

SCADAPack

x70 Configuration

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1 Legal Information

The information provided in this documentation contains general descriptions and/or technical characteristics of the performance of the products contained herein. This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications. It is the duty of any such user or integrator to perform the appropriate and complete risk analysis, evaluation and testing of the products with respect to the relevant specific application or use thereof. Neither Schneider Electric nor any of its affiliates or subsidiaries shall be responsible or liable for misuse of the information contained herein. If you have any suggestions for improvements or amendments or have found errors in this publication, please notify us.

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All pertinent state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to help ensure compliance with documented system data, only the manufacturer should perform repairs to components.

This document contains standardized industry terms that some customers might find insensitive or offensive. These terms do not reflect the official policy or position of Schneider Electric.

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2 Technical Support

Questions and requests related to any part of this documentation can be directed to one of the following support centers.

Technical support: Americas, Europe, Middle East, Asia

Available Monday to Friday 8:00 am – 6:30 pm Eastern Time

	Check our FAQs	Explore our extensive knowledge database and FAQ videos to find answers quickly: https://se.com/faq
	Email us	Save time by emailing us your inquiry and an expert will contact you: supportTRSS@se.com Send us an email anytime.
	Call us	Need someone to provide some technical support? <ul style="list-style-type: none"> • Toll free within North America: 1-888-226-6876 • Direct Worldwide: +1-613-591-1943

Technical support: Australia/New Zealand (Pacific)

Available Monday to Friday 8:00 am - 5:00 pm Australian Eastern Standard Time

	Check our FAQs	Explore our extensive knowledge database and FAQ videos to find answers quickly: https://se.com/faq
	Email us	Save time by emailing us your inquiry and an expert will contact you: techsupport.pz@se.com Send us an email anytime.
	Call us	Need someone to provide some technical support? <ul style="list-style-type: none"> • Inside Australia: 13 73 28 (13 SEAU) • Inside New Zealand: 0800 652 999

3 Safety Information

Important information

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a Danger or Warning safety label indicates that an electrical hazard exists, which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

WARNING

WARNING indicates a hazardous situation which, if not avoided, **can result in** death or serious injury.

CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **can result in** minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

Please note

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

Before you begin

Do not use this product on machinery lacking effective point-of-operation guarding. Lack of effective point-of-operation guarding on a machine can result in serious injury to the operator of that machine.

WARNING

EQUIPMENT OPERATION HAZARD

- Verify that all installation and set up procedures have been completed.
- Before operational tests are performed, remove all blocks or other temporary holding means used for shipment from all component devices.
- Remove tools, meters, and debris from equipment.

Failure to follow these instructions can result in death or serious injury.

Follow all start-up tests recommended in the equipment documentation. Store all equipment documentation for future reference.

Test all software in both simulated and real environments.

Verify that the completed system is free from all short circuits and grounds, except those grounds installed according to local regulations (according to the National Electrical Code in the U.S.A, for instance). If high-potential voltage testing is necessary, follow recommendations in equipment documentation to help prevent accidental equipment damage.

Operation and adjustments

The following precautions prevail:

- Regardless of the care exercised in the design and manufacture of equipment or in the selection and ratings of components, there are hazards that can be encountered if such equipment is improperly operated.
- It is sometimes possible to misadjust the equipment and thus produce unsatisfactory or unsafe operation. Always use the manufacturer's instructions as a guide for functional adjustments. Personnel who have access to these adjustments should be familiar with the equipment manufacturer's instructions and the machinery used with the electrical equipment.
- Only those operational adjustments actually required by the operator should be accessible to the operator. Access to other controls should be restricted to prevent unauthorized changes in operating characteristics.

Acceptable use

WARNING

UNACCEPTABLE USE

Do not use SCADAPacks or I/O modules as an integral part of a safety system. These devices are not safety products.

Failure to follow these instructions can result in death or serious injury.

CAUTION

EQUIPMENT OPERATION HAZARD

When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

Use only Schneider Electric software or approved software with Schneider Electric hardware products.

Failure to follow these instructions can result in minor or moderate injury.

4 About the Book

Audience

WARNING

UNINTENDED EQUIPMENT OPERATION

The application of this product requires expertise in the design and programming of control systems. Only persons with such expertise are allowed to program, install, alter, and apply this product.

Follow all local and national safety codes and standards.

Failure to follow these instructions can result in death or serious injury.

This manual is written for people who need to configure SCADAPack x70 devices. These individuals are typically:

- Systems Engineers
- Commissioning Engineers
- Maintenance Technicians

Document scope

This manual assumes that:

- The SCADAPack RemoteConnect configuration software is installed and running.
- A new project has been created and SCADAPack RemoteConnect is communicating with the SCADAPack x70 device, as described in the SCADAPack RemoteConnect Configuration Software manual.

This manual describes:

- Configuring parameters for the device.
- Accessing the SCADAPack x70 Logic Editor.
- Working online with the device.
- Importing and exporting files to and from the device.
- Updating the firmware and bootloader on the device.

Validity note

This document is valid for:

- SCADAPack x70 firmware version 9.7.3 and older
- SCADAPack RemoteConnect configuration software version 3.10.3 and older

Related documents

Use this manual with the other manuals included in your SCADAPack x70 documentation set. The table below describes the manuals available in the documentation set.

Folder	Manual	Content
Getting Started	Getting Started	<ul style="list-style-type: none"> • The SCADAPack x70 family of products available in this release • The basic steps to get your SCADAPack x70 device operational • Where to get more information about configuring, monitoring and managing your SCADAPack x70 device
SCADAPack Software Installation	SCADAPack Software Installation	<ul style="list-style-type: none"> • Hardware and software requirements • Installation procedures • Accessing help • Troubleshooting guidance
Hardware Manuals	The hardware manual for your SCADAPack x70 device	<ul style="list-style-type: none"> • Installation, wiring and addressing information • Diagnostics capabilities • Maintenance recommendations • Hardware specifications
Configuration Manuals	SCADAPack RemoteConnect Configuration Software	<ul style="list-style-type: none"> • Setting up and managing projects for your SCADAPack x70 device
	PC Communication Settings -SCADAPack CommDTM	<ul style="list-style-type: none"> • Setting up communications between SCADAPack RemoteConnect and your SCADAPack x70 device
	SCADAPack x70 Configuration	<ul style="list-style-type: none"> • Configuring SCADAPack x70 device operation
	Porting Guide for SCADAPack E to SCADAPack RemoteConnect	<ul style="list-style-type: none"> • Moving from SCADAPack E to SCADAPack RemoteConnect • Locating SCADAPack E Configurator features in SCADAPack RemoteConnect • Locating SCADAPack Workbench features in SCADAPack RemoteConnect • Compatibility chart

	Porting Guide for Telepace to SCADAPack RemoteConnect	<ul style="list-style-type: none"> • Moving from Telepace to SCADAPack RemoteConnect • Tutorial for creating a project • Compatibility chart
Technical Reference Manuals	SCADAPack Communication Interfaces Technical Reference	<ul style="list-style-type: none"> • USB, serial and IP communications • Mobile communications • Dialup modem communications
	SCADAPack Operations Technical Reference	<ul style="list-style-type: none"> • The SCADAPack x70 device file system • Command line operations • Diagnostics operations • Telnet server operations • FTP server operations
	SCADAPack SCADA Protocols Technical Reference	<ul style="list-style-type: none"> • DNP3 protocol support • Modbus protocol support • IEC 60870-5-104 protocol support
Logic Programming Manuals	SCADAPack Logic Programming Overview	<ul style="list-style-type: none"> • The differences between EcoStruxure Control Expert (Unity Pro) and the SCADAPack x70 Logic Editor environment • Key programming concepts • Basic procedures needed to use the SCADAPack x70 Logic Editor
	SCADAPack Function Blocks Technical Reference	<ul style="list-style-type: none"> • The custom SCADAPack x70 function blocks that are available for developing IEC 61131-3 applications
	Using EFB Toolkit with SCADAPack x70	<ul style="list-style-type: none"> • Using the Schneider Electric EFB Toolkit with SCADAPack x70 devices and SCADAPack RemoteConnect configuration software
Security Administrator Manuals	SCADAPack Security Administrator	<ul style="list-style-type: none"> • Configuring security on your SCADAPack x70 device
	SCADAPack Security Technical Reference	<ul style="list-style-type: none"> • Security standards • Security overview • DNP3 Secure Authentication • Diagnostics

		• Attack vectors and requirements
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5 Cybersecurity

Cybersecurity is a branch of network administration that addresses attacks on or by computer systems and through computer networks that can result in accidental or intentional disruptions. The objective of cybersecurity is to help provide increased levels of protection for information and physical assets from theft, corruption, misuse, or accidents while maintaining access for intended users.

No single cybersecurity approach is adequate. Schneider Electric recommends a defense-in-depth approach. This approach layers the network with security features, appliances, and processes. The basic components of this approach are:

- Risk assessment: A systematic security analysis of the environment and related systems.
- A security plan built on the results of the risk assessment
- A multi-phase training campaign
- Network separation and segmentation: Physical separation of the control network from other networks, and the division of the control network itself into segments and security zones.
- System Access Control: Controlling access to the system with firewalls, authentication, authorization, and other software means, and traditional physical security measures such as video surveillance, fences, locked doors and gates, and locked equipment cabinets.
- Device hardening: The process of configuring a device against communication-based threats. Device hardening measures include disabling unused network ports, password management, access control, and the disabling of all unnecessary protocols and services.
- Network monitoring and maintenance: An effective defense-in-depth campaign requires continual monitoring and system maintenance to meet the challenge of new threats as they develop.
- See Security Considerations in the Security Technical Reference manual

Contact us

For more information, refer to the Schneider Electric Cybersecurity Support Portal at <http://www.se.com/b2b/en/support/cybersecurity/overview.jsp>.

Additional Resources

Schneider Electric Recommended Cybersecurity Best Practices
<https://www.se.com/ww/en/download/document/CS-Best-Practices-2019-340/>

Industrial Control Systems Cyber Emergency Response Team (ICS-CERT)
<https://ics-cert.us-cert.gov>

ICS-CERT Recommended Practices
<https://ics-cert.us-cert.gov/Recommended-Practices>

Center for Internet Security (CIS) Top 20 Critical Security Controls
<https://www.cisecurity.org/cybersecurity-best-practices>

FBI Cyber Crime

<https://www.fbi.gov/investigate/cyber>

Guide to Industrial Control Systems (ICS) Security

<https://www.nist.gov/publications/guide-industrial-control-systems-ics-security>

WaterISAC Water Security Network

<https://www.waterisac.org>

6 About the SCADAPack x70 Configuration Software

The SCADAPack x70 Controller Settings -DeviceDTM , also referred to as the SCADAPack x70 configuration software, provides a graphical user interface that lets you:

- Configure operating parameters for the SCADAPack x70 device
- Configure communication with the other devices in your SCADA network
- Access the SCADAPack x70 Logic Editor
- Update the firmware and bootloader on the device
- View status and diagnostic information from the device

The SCADAPack x70 Controller Settings -DeviceDTM is one of two components included, by default, in a SCADAPack RemoteConnect configuration software project when a new project is created. This component is an FDT 2.1 communication DTM. It appears in the catalog as SCADAPack x70.

The other component is the PC Communication Settings -SCADAPack CommDTM. Use the PC Communication Settings -SCADAPack CommDTM to configure communications between the SCADAPack x70 device and the SCADAPack RemoteConnect configuration software after you initially create your SCADAPack x70 project. For details, see the PC Communication Settings -SCADAPack CommDTM manual.

Working offline and online

Like the PC Communication Settings -SCADAPack CommDTM, the SCADAPack x70 configuration software operates in 2 modes:

- **Offline:** You can define and review configuration parameters and access the SCADAPack x70 Logic Editor without affecting device operation. The configuration parameters that are displayed depend on the role the SCADAPack x70 device is performing in your SCADA network. The device does not need to be communicating with the SCADAPack RemoteConnect configuration software to operate in offline mode. The configuration parameters take effect when you take the SCADAPack x70 configuration software online and write the configuration to the SCADAPack x70 device.
- **Online:** You can communicate directly with the SCADAPack x70 device to view status and diagnostic information and to apply parameter settings that were defined in offline mode. The device needs to be communicating with the SCADAPack RemoteConnect configuration software to operate in online mode. For details about setting up this connection, see the PC Communication Settings -SCADAPack CommDTM manual.

SCADAPack RemoteConnect displays the software component names in bold when you are operating in online mode.



For information about accessing offline and online functionality, see:

- [Accessing Offline Functionality](#) ²⁵

- [Accessing Online Functionality](#) 

Language support

The user interface for the SCADAPack x70 configuration software can be displayed in English or in French. For details, see the Changing the User Interface topic in the SCADAPack RemoteConnect Configuration Software manual.

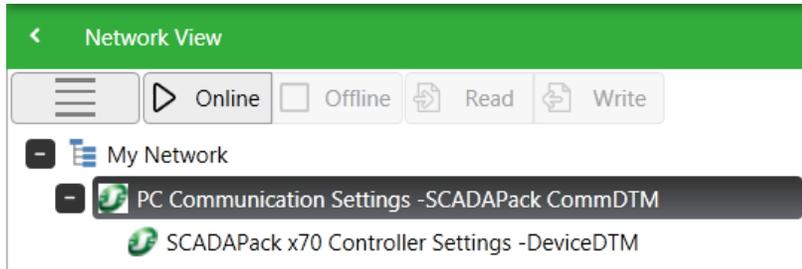
Using the SCADAPack x70 Controller Settings -DeviceDTM in external FDT frame applications

The SCADAPack x70 Controller Settings -DeviceDTM is not designed to be used in external third-party FDT 2.1 frame applications.

While the SCADAPack x70 Controller Settings -DeviceDTM adheres to the requirements of the FDT 2.1 standard for Device Type Managers (DTM), the SCADAPack x70 Controller Settings -DeviceDTM relies on the SCADAPack RemoteConnect framework to provide additional services required for SCADAPack x70 device configuration.

7 Accessing SCADAPack x70 Functionality

Every task in this manual is accessed through the SCADAPack x70 configuration software that was added when you created the SCADAPack x70 project for the SCADAPack x70 device.



There are 4 ways to access functionality in the SCADAPack x70 configuration software:

- [Using the configuration parameters](#)^[25]
- [Using the online parameters](#)^[28]
- [Using the context menu](#)^[30]
- [Using the Network View toolbar](#)^[33]

The tasks you can perform depend on whether the SCADAPack x70 configuration software is offline or online. When the SCADAPack x70 configuration software is online, you are communicating directly with the SCADAPack x70 device. Each mode provides a set of parameters and a context menu that give you access to the available functions.

Some SCADAPack x70 functions can be accessed using either the context menu or the Network View toolbar. In these cases, the procedures in this manual provide only the context menu item.

For additional information about accessing SCADAPack x70 functionality, see:

- [Basic Configuration and Advanced Configuration](#)^[40]
- [Understanding Configuration Status](#)^[40]
- [Working in Tables](#)^[34] and [Working in Pop-Up Dialogs](#)^[35]
- [Managing the Device Role in the Network](#)^[45]

7.1 Accessing Offline Functionality

When the SCADAPack x70 configuration software is offline, you are not communicating with the SCADAPack x70 device. In offline mode, you can:

- [Open the configuration parameters](#)^[26] to define device operation and access the SCADAPack x70 Logic Editor. The parameter settings and logic program take effect when you [take the SCADAPack x70 configuration software online](#)^[28] and [write the configuration to the device](#)^[35].
- [Use the context menu](#)^[27] to access additional offline functionality.

To take the SCADAPack x70 configuration software offline

- Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Go Offline**.

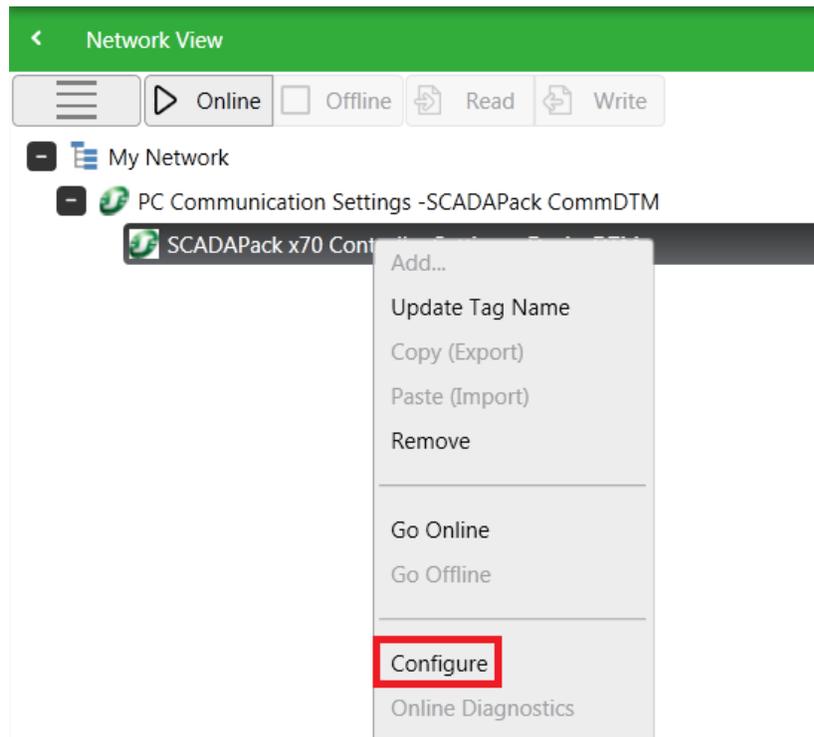
The SCADAPack x70 Controller Settings -DeviceDTM name is displayed in plain text when it is offline. The name is displayed in bold and the status bar at the bottom of SCADAPack RemoteConnect displays the word Connected when it is online.



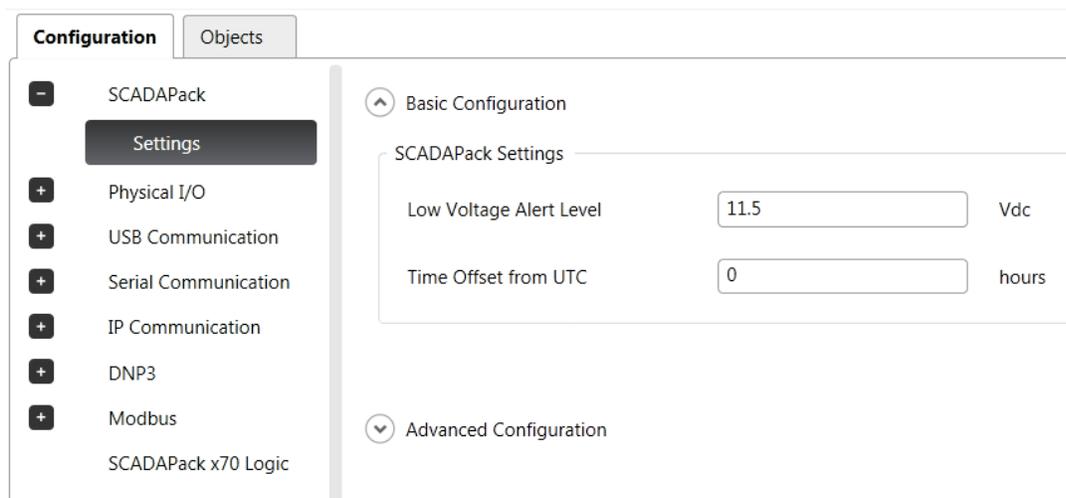
To open the offline configuration parameters

You can open the offline parameters when the SCADAPack x70 configuration software is offline or online.

- If the offline configuration parameters are not already open, under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Configure**.



The configuration parameters are displayed.



Use the configuration parameters to perform the following tasks:

- [Configuring SCADAPack x70 Settings and Identification Strings](#) ^[52]
- [Configuring Physical I/O](#) ^[55]
- [Configuring USB Communication](#) ^[83]
- [Configuring Serial Communication](#) ^[84]
- [Configuring IP Communication](#) ^[107]
- [Configuring DNP3 Operation](#) ^[125]
- [Configuring Modbus Operation](#) ^[177]
- [Configuring IEC 60870-5-104 Operation](#) ^[218]
- [Accessing SCADAPack x70 Logic](#) ^[319]
- [Configuring Database Objects](#) ^[235]

For information about accessing basic and advanced configuration parameters, see [Basic Configuration and Advanced Configuration](#) ^[40].

To access offline functionality in the context menu

- See [Using the Context Menu](#) ^[30]
- Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select the required function:
 - [Managing the Device Role in the Network](#) ^[45]
 - [Exporting and Importing Object Parameters](#) ^[346]
 - [Importing Logic Projects](#) ^[332]

7.2 Accessing Online Functionality

When the SCADAPack x70 configuration software is online, you are communicating directly with the SCADAPack x70 device. In online mode, you can:

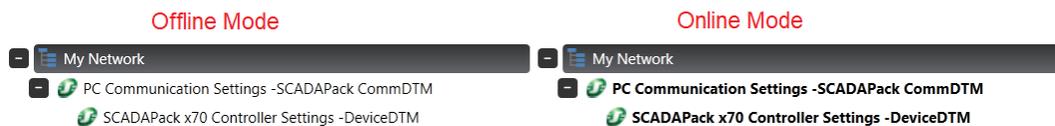
- [Open the online parameters](#) ^[28] to read status and diagnostic information from the SCADAPack x70 device.
- [Use the context menu](#) ^[29] to access additional online functionality.

The device needs to be communicating with SCADAPack RemoteConnect to operate in online mode.

To take the SCADAPack x70 configuration software online

- Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Go Online**.

The SCADAPack x70 Controller Settings -DeviceDTM name is displayed in italics when it is going online with the SCADAPack x70 device. The name is displayed in bold and the status bar at the bottom of SCADAPack RemoteConnect displays the word Connected when it is online. When you take the SCADAPack x70 Controller Settings -DeviceDTM online, the PC Communication Settings -SCADAPack CommDTM automatically goes online as well.



To open the online configuration parameters

- If the online configuration parameters are not already open, under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Online Diagnostics**.

The online parameters are displayed. The figure below shows the online parameters when the status has been read from the device.

Use the online parameters to perform the following tasks:

- [Reading Status and Version Information from the Device](#) ³⁵⁸
- [Managing the Logic Application in the Device](#) ³⁶⁹
- [Monitoring Modem Status](#) ⁴¹⁹
- [Reading Object Values from the Device](#) ³⁸²

To access online functionality in the context menu

- See [Using the Context Menu](#) ³⁰⁷
- Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select the required function:
 - [Reading the Configuration and Logic Application from the Device](#) ³⁵⁶
 - [Writing the Configuration and Logic Application to the Device](#) ³⁵⁴

Additional functions:

- [Updating the Firmware and Bootloader on the Device](#) ⁴²⁸
- [Applying the Security Configuration to the Device](#) ⁴²¹
- [Restarting the Device](#) ⁴¹⁶
- [Restarting the DNP3 Service](#) ⁴¹⁶
- [Restarting the IEC 60870-5-104 Service](#) ⁴¹⁷
- [Executing Command Line Operations on the Device](#) ⁴¹⁸

- [Applying the License File to the Device](#) ⁴²⁰
- [Setting the Time on the Device](#) ⁴²³
- [Comparing Project Configurations](#) ³⁵²
- [Reading a File from the Device](#) ⁴²⁴
- [Writing a File to the Device](#) ⁴²⁵
- [Testing the Connection to the SCADAPack x70 Device](#) ⁴²⁵
- [Getting Device Information File](#) ⁴²⁶

7.3 Using the Context Menu

The tasks you can perform from the context menu depend on whether the SCADAPack x70 is offline or online. Functions that do not apply to the current mode, or that are not supported, are grayed out in the context menu.

For information about accessing offline and online functionality, see:

- [Accessing Offline Functionality](#) ²⁵
- [Accessing Online Functionality](#) ²⁸

To access context menu functions

- Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select the required function.

Context Menu Item	Available In	Function
Add	Not supported	
Update Tag Name	Offline mode Online mode	Updates the tag at the end of the fixed DTM name
Copy (Export)	Not supported by the SCADAPack x70 configuration software	
Paste (Import)	Not supported by the SCADAPack x70 configuration software	
Remove	Offline mode Online mode	Removes the SCADAPack x70 configuration software from the network The configuration parameters and the online parameters need to be closed before you can remove the SCADAPack x70 configuration software from the network

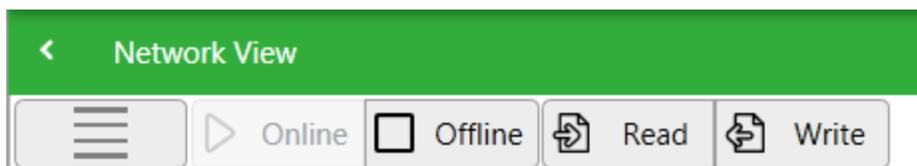
Go Online	Offline mode	Takes the SCADAPack x70 configuration software online so it is communicating with the SCADAPack x70 device
Go Offline	Online mode	Takes the SCADAPack x70 configuration software offline so it is no longer communicating with the SCADAPack x70 device
Configure	Offline mode Online mode	Opens the configuration parameters so you can define device operation
Online Diagnostics	Online mode	Opens the SCADAPack x70 online parameters so you can view status and diagnostics information from the device
Compare	Not supported by the SCADAPack x70 configuration software	
Configuration	Not supported by the SCADAPack x70 configuration software	
Observe	Not supported by the SCADAPack x70 configuration software	
Additional Functions > Project Settings	Offline mode	Opens the Project Settings so you can change the role that the device performs in your network If this menu item is not available, press Apply to accept unsaved configuration changes
Additional Functions > Export to Excel File	Offline mode	Export SCADAPack x70 device configuration settings into an Excel file
Additional Functions > Import from Excel File	Offline mode	Import configuration settings from an Excel file to the SCADAPack x70 device
Additional Functions > Import Logic Project	Offline mode	Imports an existing logic project into the SCADAPack x70 configuration software so you can work with it in the SCADAPack x70 Logic Editor
Additional Functions > Create Recovery Media	Offline mode Online mode	Only available for a SCADAPack 47x project.

		See the Creating Recovery Media on a SCADAPack 47x^[437] for details.
Additional Functions > Update Device Firmware or Bootloader	Online mode	Installs the selected firmware or bootloader file on the SCADAPack x70 device
Additional Functions > Apply Security Configuration to Device	Online mode	Applies the selected security file to the SCADAPack x70 device when you are using Security Administrator
Additional Functions > Restart Device	Online mode	Restarts the SCADAPack x70 device
Additional Functions > Restart DNP3	Online mode	Restarts the DNP3 driver in the SCADAPack x70 device
Additional Functions > Restart IEC 60870-5-104	Online mode	Restarts the IEC 60870-5-104 driver in the SCADAPack x70 device
Additional Functions > Execute command	Online mode	Opens the command line window so you can execute command line operations on the device See the Command Line Operations topic in the Operations Technical Reference manual for details about command line commands
Additional Functions > Apply License to Device	Online mode	Applies the selected license file to the SCADAPack x70 device
Additional Functions > Set Device Time	Online mode	Sets the time on the SCADAPack x70 device to either Coordinated Universal Time (UTC) or to the local time on the computer running SCADAPack RemoteConnect
Additional Functions > Compare Project Configuration	Online mode	Indicates whether the configuration and logic application on the SCADAPack x70 device match the versions in SCADAPack RemoteConnect.
Additional Functions > Read File from Device	Online mode	Reads a file from the SCADAPack x70 device and saves it to your computer
Additional Functions > Write File to Device	Online mode	Writes a file from your computer to the SCADAPack x70 device

Additional Functions > Test Connection	Online mode	Tests the communication with the SCADAPack x70 device. Possible results are: <ul style="list-style-type: none"> • Connection test successful • Connection test unsuccessful
Additional Functions > Get Device Information File	Online mode	Creates a file which contains information that identifies a device and its operational status
Read from Device	Online mode	Reads the current configuration from the SCADAPack x70 device and displays the results in the SCADAPack x70 configuration software
Write to Device	Online mode	Writes the parameter settings defined in the SCADAPack x70 configuration software to the SCADAPack x70 device
Create PDF Report	Offline mode Online mode	Lists the parameter settings configured in the SCADAPack x70 configuration software in a PDF document

7.4 Using the Network View Toolbar

The Network View toolbar provides access to a subset of the functionality available in the context menu. Toolbar items are greyed out when they do not apply to the current mode. For example, the figure below shows the Network View toolbar items that are available in offline mode. This toolbar is displayed after you create a project.



The icons are described in the table below.

Icon	Name	Function
	DTM Context Menu	When a component is selected, this icon opens a subset of the menu that is displayed when you right-click the component itself.
	Go Online	Takes the selected software component online.
	Go Offline	Takes the selected software component offline.

 Read	Read from Device	Reads the configuration and logic application from the device. For details, see Reading the Configuration and Logic Application from the Device in the SCADAPack x70 Configuration manual.
 Write	Write to Device	Writes the configuration to the device. For details, see Writing the Configuration and Logic Application to the Device in the SCADAPack x70 Configuration manual.

7.5 Working in Tables

The SCADAPack x70 configuration software uses tables to organize lists of:

- Object Configuration and Object Browsers
- Physical I/O
- IP routes and IP Firewall addresses
- Modbus Servers and scanners
- Modbus Store and Forward routes
- DNP3 Outstations and remote points
- DNP3 routes
- Online Object Browsers and Forced Objects

In each table, the column headings correspond to the main configurable parameters for the table items. The figure below shows an example table for the database objects on a SCADAPack 474.

Basic Configuration

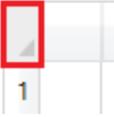
Object Configuration

Displaying 70 of 70 objects Applied Filter: Organized by 'Source Type'

	Name	Source Details	Logic Variable Type	Modbus Register	DNP3 Point Number
Physical I/O Channel : 62					
1	PIO_SP474_AI1	 SP474:0, AI1	T_SPx70_DINT		
2	PIO_SP474_AI10	 SP474:0, AI10	T_SPx70_DINT		
3	PIO_SP474_AI11	 SP474:0, AI11	T_SPx70_DINT		
4	PIO_SP474_AI12	 SP474:0, AI12	T_SPx70_DINT		
5	PIO_SP474_AI2	 SP474:0, AI2	T_SPx70_DINT		
6	PIO_SP474_AI3	 SP474:0, AI3	T_SPx70_DINT		
7	PIO_SP474_AI4	 SP474:0, AI4	T_SPx70_DINT		
8	PIO_SP474_AI5	 SP474:0, AI5	T_SPx70_DINT		
9	PIO_SP474_AI6	 SP474:0, AI6	T_SPx70_DINT		
10	PIO_SP474_AI7	 SP474:0, AI7	T_SPx70_DINT		
11	PIO_SP474_AI8	 SP474:0, AI8	T_SPx70_DINT		
12	PIO_SP474_AI9	 SP474:0, AI9	T_SPx70_DINT		
13	PIO_SP474_AO1	 SP474:0, AO1	T_SPx70_DINT		

Common functions

While the information provided varies depending on the table, the functions described below are available in each table type.

Function	Operation
Select a table row	Click anywhere in the table row.
Select multiple table rows in sequence	Hold down the Shift key while selecting the table rows.
Select multiple table rows not in sequence	Hold down the Ctrl key while selecting the table rows.
Select all objects in the table	 Click on the top left corner of the table:
View or change parameter settings for a table entry	Double-click anywhere in the table row.
Accept changes made to the table	Click Apply .
Move a table column	Click and hold on a column title and drag sideways. Release when bold line indicates new desired position.*

*Tables only retain new column positions while the Configuration tab remains open. Table returns to default column positions after tab is re-opened, project is opened, etc.

7.6 Working in Pop-Up Dialogs

Pop-up dialogs are displayed when more information needs to be configured or you need to make a choice. Reading from the SCADAPack x70 device is disabled while a pop-up dialog is open.

The following image is an example of a pop-up dialog.

Local Physical I/O  

I/O Configuration

Type	5304 Analog Out ▼
Name	Module1
Address	0
AI Filtering	▼
AI Smoothing	▼
Input Filter	▼
Line Frequency	▼
AO Output Type	▼

Ok Cancel

To close a pop-up dialog, click the close icon: 

To view content that is hidden by the pop-up dialog, click and hold the opacity icon: 

8 Configuring SCADAPack x70 Device Operation

Once you have created a new project for your SCADAPack x70 device (see [Creating a New Project in the SCADAPack RemoteConnect Configuration Software manual](#)) and set up communication between SCADAPack RemoteConnect and the device, you can use the SCADAPack x70 configuration software to define how the device operates in your SCADA network.

Each SCADAPack x70 device needs to be configured according to its role(s) in the network. For example, if the device is operating as a DNP3 Outstation, you need to define the parameters that determine how the Server communicates with and sends events to the DNP3 Data Concentrator Client(s). For simplicity, the SCADAPack x70 configuration software displays only the parameters that are relevant to the configured role.

Configuration parameters are defined offline and only take effect when you [take the SCADAPack x70 configuration software online](#)^[28] and [write the configuration to the device](#)^[354]. They are stored in a configuration file.

See the following topics for information on working in SCADAPack RemoteConnect Configuration Software manual:

- [Understanding Objects and Associations](#)^[37]
- [Basic Configuration and Advanced Configuration](#)^[40]
- [Understanding Configuration Status](#)^[40]
- [Changing the Project Settings](#)^[42]
- [Managing the Device Role in the Network](#)^[45]
- [Navigating the SCADAPack Summary Page](#)^[48]

The topics listed below provide the high-level steps required to configure the device for its role(s) in the network:

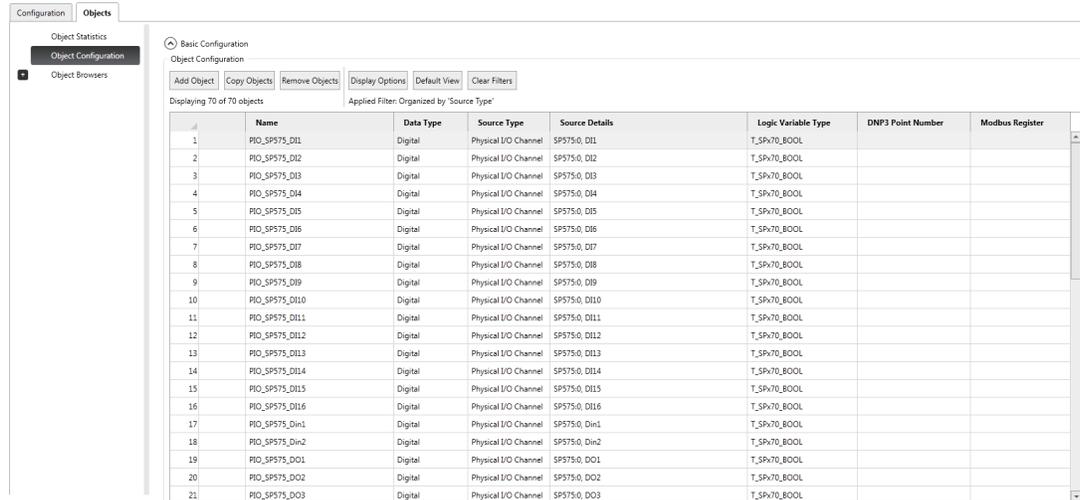
- [Configuring DNP3 Outstation Operation Overview](#)^[125]
- [Configuring DNP3 Router Operation Overview](#)^[127]
- [Configuring DNP3 Peer to Peer Client Operation Overview](#)^[128]
- [Configuring DNP3 Data Concentrator Client Operation Overview](#)^[129]
- [Configuring Modbus RTU Server Operation Overview](#)^[178]
- [Configuring Modbus RTU Client Operation Overview](#)^[179]
- [Configuring Modbus/TCP Server Operation Overview](#)^[181]
- [Configuring Modbus/TCP Client Operation Overview](#)^[182]
- [Configuring IEC 60870-5-104 Operation](#)^[218]

8.1 Understanding Objects and Associations

The SCADAPack x70 configuration software uses an object database to store configuration and status information for data items. When you configure the SCADAPack x70 parameters for data items, you are populating the object database. That information is transferred to the

SCADAPack x70 device when you take the SCADAPack x70 configuration software online and write the configuration to the device.

- Use the [Configuration tab](#)³⁷¹ to define the parameter settings that will be applied to the SCADAPack x70 device.
- Use the [Objects tab](#)²³⁵ to view and configure any type of object in the SCADAPack x70 database.



Populating the SCADAPack x70 object database

The table below summarizes the main types of information that a database object can represent and how that object is added to the SCADAPack x70 database.

Object Information	Mandatory or Optional	Added to the Object Database
The operating characteristics for the inputs and outputs on the SCADAPack x70 device	Mandatory	Automatically with default parameter settings when you first create the project for the SCADAPack x70 device.
The operating characteristics for the inputs and outputs on any I/O modules that are attached to the SCADAPack x70 device	Mandatory	Manually when you add I/O on the Configuration tab > Physical I/O > Local page. For details, see Associating Status Information with an I/O Module ⁶³¹ .
Status and control data for a remote DNP3 Outstation device when this device is operating as a DNP3 Controlling Station	Mandatory when operating as a	Automatically with default parameters when you add a remote device and points on the Configuration tab > DNP3 > Controlling Station page.

	DNP3 Controlling Station	
Status and control data for a remote Modbus RTU Server device when this device is operating as a Modbus RTU Client	Mandatory when operating as a Modbus RTU Client	Automatically with default parameters when you add a remote device and point scanners on the Configuration tab > Modbus > Client page.
Status and control data for a remote Modbus/TCP Server device when this device is operating as a Modbus/TCP Client	Mandatory when operating as a Modbus/TCP Client	Automatically with default parameters when you add a remote device and point scanners on the Configuration tab > Modbus > Client page.
Status data for a SCADAPack x70 device or I/O module These are objects that you create based on the status information you want to collect	Optional	Manually when you add an object on the Objects > Object Configuration page.
System data These objects are predefined and are described in the System Data topic of the Operations Technical Reference manual.	Optional	Automatically for system data references available in a newly created SCADAPack RemoteConnect project. Manually by creating an object and configuring its Association Source Type to System Data. See Configuring an Association with a System Data Reference ³¹⁶ .
Logic programming data These are objects that you create based on your logic programming requirements. For example, you may want to create an object that stores calculations generated by logic applications.	Optional	Manually when you add an object on the Objects > Object Configuration page.
Data from other devices connected to the SCADAPack x70 device	Optional	Manually when you add an object on the Objects > Object Configuration page.

<p>These are objects that you create based on the information you want to collect from the other devices in your network.</p>		
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8.2 Basic Configuration and Advanced Configuration

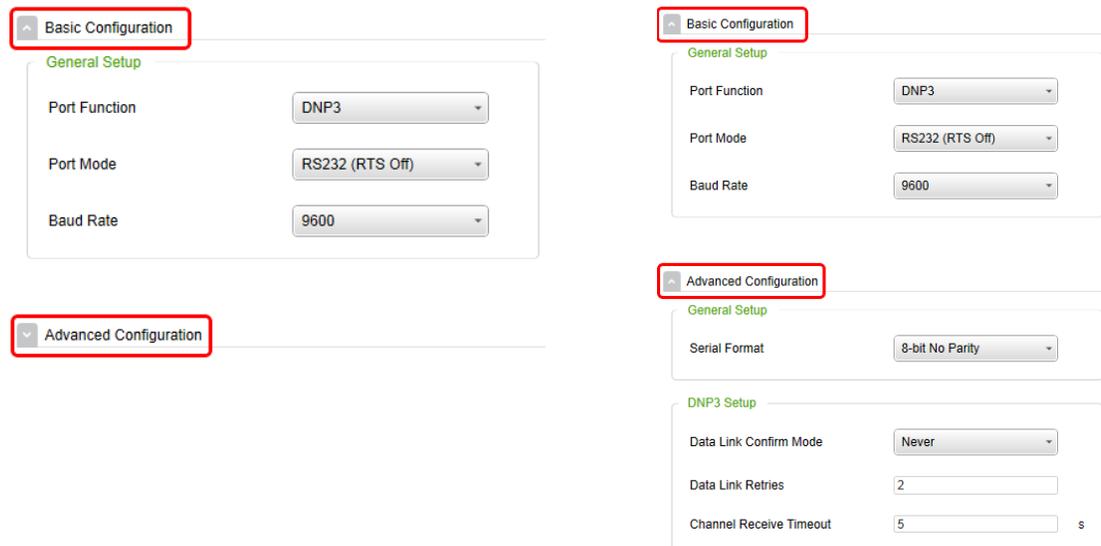
The configuration parameters in the SCADAPack x70 configuration software are grouped into 2 categories:

- Basic Configuration parameters are displayed on each page by default. These parameters are the ones that you most likely want to change.
- Advanced Configuration parameters are not displayed by default and are provided only where required. These parameters typically only need to be changed to meet unique requirements, such as networks with higher latency or frequent power interruptions, or remote devices with particular communication requirements.

Viewing and hiding configuration parameters

Click the **Show**  and **Hide**  buttons to display and hide configuration parameters.

The figure on the left shows the default view with Basic Configuration parameters displayed and Advanced Configuration parameters hidden. The figure on the right shows the Basic Configuration parameters and the Advanced Configuration parameters.



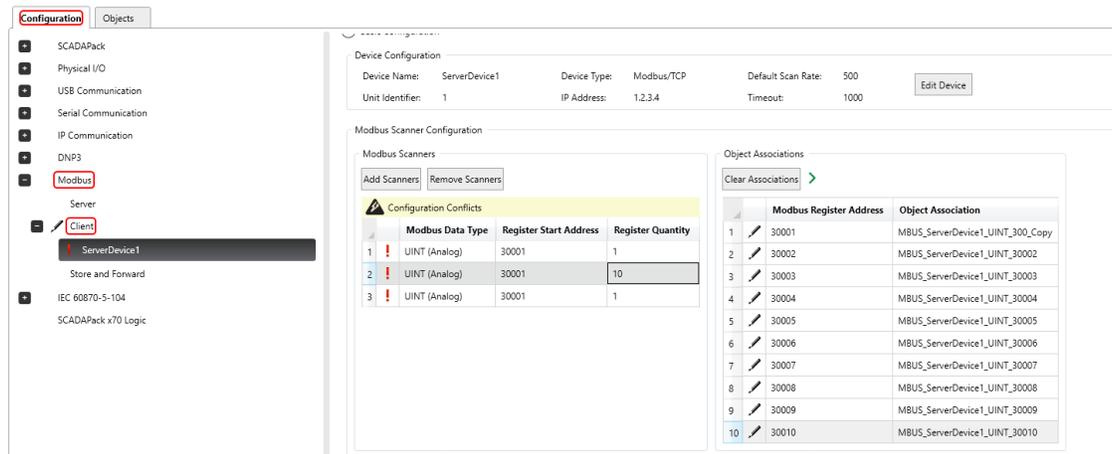
8.3 Understanding Configuration Status

The SCADAPack x70 configuration software uses the icons described below to indicate the status of the configuration.

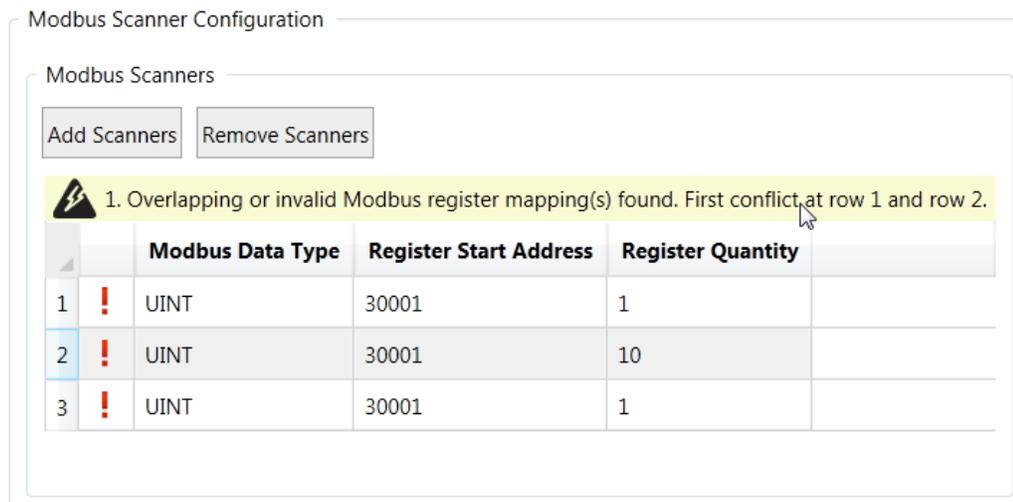
Icon	Description	Meaning
	Pen	The configuration has been modified and is valid, but has not been applied. Click Apply on the page displaying the Pen icon to accept the updated configuration in the current project.
	Red exclamation mark	The configuration is invalid. The Apply button is not available until you correct every invalid configuration setting on the page or in the table. For parameter settings, hold the mouse over the icon for guidance about valid settings. In tables, hold the mouse over the yellow exclamation mark for a description of the configuration conflict.
	Red box	The tab or page includes an item with an invalid configuration. Navigate through the hierarchy until you see an item with a red exclamation mark.
	Lightning bolt	Used in tables to list the details of the first 3 configuration conflicts. Hold the mouse over the icon to display the conflicts. The details for additional configuration conflicts are displayed as you resolve the conflicts.
	Question mark	The online status for this parameter is not available. Verify that the SCADAPack x70 configuration software is online then click Refresh to update the parameter information.

Examples

In the figure below, there is a configuration conflict in rows 1, 2 and 3 of the Modbus Scanners table and an unsaved configuration update in the Object Association table. The **Apply** button will not be available until the conflicts are resolved.



The figure below shows an example of the conflict detail that is displayed when you hold the mouse over the configuration conflict details icon.



8.4 Changing the Project Settings

After you have created your project using the wizard, you can still make changes to the configuration of your project. When you change the device type, there are a few details that you need to keep in mind. See [Changing the Project Device Type](#)⁴⁴.

NOTICE

DATA LOSS

Configuration information can be lost if the project settings are changed after a project has been created.

Failure to follow these instructions can result in equipment damage.

To change the project settings:

1. If the SCADAPack x70 Controller Settings -DeviceDTM is currently online, under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Go Offline**.
2. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Additional Functions > Project Settings**.

The screenshot shows the 'Project Settings' dialog box with the following configuration options:

- SCADAPack**: Device Type is set to SCADAPack 575.
- Modbus**:
 - Modbus IP Servers:
 - Modbus IP Clients:
 - Modbus RTU Server:
 - Modbus RTU Client:
- DNP3**:
 - DNP3 Outstation: Number of DNP3 Controlling Stations: 1 Station
 - DNP3 Router:
 - DNP3 Peer to Peer Client:
 - DNP3 Data Concentrator Client (Requires RTU License):
- IEC 60870-5-104**:
 - IEC 104 Controlled Station: Number of IEC 104 Controlling Stations: 1 Station
- Logic**:
 - Object Protocol Address(es) in Logic Editor Custom Field:
- Applications**:
 - Realflo Flow Computer (Requires RTU License):
- Data Logging**:
 - Enable Data Logging:

Buttons: Ok, Cancel

3. Select the required configuration options.
4. Click **Ok**.
5. In the Update Project Settings window, review the modifications that will be made to the current project configuration.
6. Click **Ok**.
7. To view the log file, click **View Log File**, and then click **Close**.

By default, the log file is saved here: C:\Users*your user directory*\AppData\Roaming\Schneider Electric\RemoteConnect where *your user directory* is specific to your environment.

The log file lists the changes that were made to your specific project configuration. This file can be saved for future reference.

The associated parameters are now available for configuration in the SCADAPack x70 configuration software.

8.5 Changing the Project Device Type

You can change the project device type, however, there are a few details that you need to keep in mind. Three areas that you will need review are:

- [Physical I/O](#)^[44]
- [Communication ports](#)^[44]
- [Logic program](#)^[45]

A log file is generated that lists the changes that were made to your specific project configuration when you changed the device type.

NOTICE

UNINTENDED DEVICE OPERATIONS

After changing the device type, review the use of communication ports and communication configuration settings that might have used that port.

Failure to follow these instructions can result in equipment damage.

Physical I/O

The associations and objects for external 5000 and 6000 series I/O modules are preserved when you change from an old device type to a new device type.

Existing SCADAPack x70 device I/O is disconnected, but preserved in the database with the same name. This includes channel objects and status objects.

The old device type in the I/O configuration table is replaced with the new device type.

The disconnected I/O objects and status object can be manually reconnected to the new device type or renamed.

Communication Ports

Communication ports refers to serial, Ethernet, and modem ports.

If the port on the old device type has the same functions as the corresponding port on the new device type, then the configuration is preserved on the new device type.

If the port on the old device type is not supported on the new device type, then there is no related configuration preserved on the new device type.

If the functionality of the port on the old device type is different than on the new device type, then the port functionality on the new device type is set to default. The default settings are the same as those used when creating a new project.

Logic Program

If you change the device type to one that is in the same family as your current device type, for example, change from a SCADAPack 570 to a SCADAPack 575 or from a SCADAPack 470 to a SCADAPack 474, then the conversion process will not change the logic. The application should remain built.

If you change the device type to one that is in a different family from your current device type, for example, change from a SCADAPack 570 to a SCADAPack 470 then:

- The existing project will be imported into the SCADAPack x70 Logic Editor with the new device type, and
- You will need to rebuild the application

The logic Libset will be updated to the latest available Libset.

You will need to review any references to communication ports in the logic and update them, if necessary. It is possible that the application will build even if it refers to a port that no longer exists.

8.6 Managing the Device Role in the Network

The role(s) that the SCADAPack x70 device performs in the network is first defined when you create a new project for the device. See [Creating a New Project](#) topic in the SCADAPack RemoteConnect Configuration Software manual.

NOTICE

DATA LOSS

Configuration information can be lost if the project settings are changed after a project has been created.

Failure to follow these instructions can result in equipment damage.

You can add and remove roles for the device at any time. Before you change the device role, review [Understanding the Device Role](#)⁴⁶.

The following are just a few of the situations where you will need to change the device role:

- The device is currently operating as a DNP3 Outstation and you want to increase the number of DNP3 Controlling Stations that this device reports to. A SCADAPack x70 device that is operating as a DNP3 Outstation can communicate with up to 3 DNP3 Controlling Stations.

- The device is operating as a DNP3 Outstation and you want it to operate as a Modbus RTU Server as well
- You've added a Modbus/TCP Server to your network and you want the device to operate as a Modbus/TCP Client for that Server
- You want the device to operate as an IEC 60870-5-104 Controlled Station
- The device is currently operating as an IEC 60870-5-104 Controlled station and you want to add another Controlling Station (client) for the device. SCADAPack x70 devices support connection to up to four IEC 60870-5-104 Controlling Stations.

8.7 Understanding the Device Role

The role that the SCADAPack x70 device performs in the network determines which configuration and communication parameters are displayed in the SCADAPack x70 configuration software. The SCADAPack x70 configuration software displays only the parameters that are relevant to the configured role.

For example, the configuration parameters for DNP3 Controlling Station operation are only displayed if DNP3 Data Concentrator Client is selected in the Project Settings.

Device Role	Description
DNP3 Outstation	<p>Default setting that allows the SCADAPack x70 device to respond to requests from a DNP3 Controlling Station</p> <p>The DNP3 Outstation can have up to 3 DNP3 Controlling Stations, each with different connection, object, event, and communication settings.</p>
DNP3 Router	<p>Forwards DNP3 frames between any combination of serial and Ethernet ports</p>
DNP3 Peer to Peer Client	<p>Allows DNP3 controls and reads of object data with DNP3 remote servers.</p> <p>An efficient way to exchange data between remote SCADAPack x70 devices, and other devices, over a DNP3 communication channel.</p> <p>Only reads or controls current values for specifically selected data points</p> <p>Recommended for exchanging data managed by logic function blocks between remote sites instead of DNP3 Data Concentrator Client.</p>
DNP3 Data Concentrator Client	<p>Manages DNP3 communication including requesting events from DNP3 remote Outstations</p> <p>The SCADAPack x70 device operates as a SCADA Client, setting time and retrieving device data, including buffered events,</p>

	<p>from a remote DNP3 device. A DNP3 Data Concentrator Client is typically used in a hierarchical Client/Server network.</p> <p>Not recommended for exchanging real-time data between remote devices. DNP3 Peer to Peer Client is recommended where possible.</p> <p>The SCADAPack x70 device needs to be licensed to use this role.</p>
Modbus RTU Server	Allows the SCADAPack x70 device to report information to a Modbus RTU Client
Modbus RTU Client	<p>Writes or reads Modbus register data from Modbus RTU Server devices</p> <p>This option needs to be enabled to select the following configuration parameters:</p> <ul style="list-style-type: none"> • SCADAPack Serial Port¹⁹⁶ • Modbus device type¹⁹⁵: <ul style="list-style-type: none"> ○ Modbus RTU Serial
Modbus IP Servers	Allows the SCADAPack x70 device to report information to Modbus IP Clients (for example, Modbus/TCP clients)
Modbus IP Clients	<p>Allows the SCADAPack x70 device to request information from Modbus IP Servers</p> <p>This option needs to be enabled to set or select the following configuration parameters:</p> <ul style="list-style-type: none"> • IP Address • Device Listen Port • Modbus device type: <ul style="list-style-type: none"> ○ Modbus/TCP ○ Modbus RTU over TCP ○ Modbus RTU over UDP
IEC 60870-5-104 Controlled Station (server)	<p>Allows the SCADAPack x70 device to report information to IEC 60870-5-104 Controlling Stations.</p> <p>This option needs to be configured in Project Settings.</p> <p>As well, Controlling Station needs to be enabled and configured to set or select the following configuration parameters:</p> <ul style="list-style-type: none"> • Controlling Station connection interface and IP address (for 2nd, 3rd, or 4th controlling station) • Device ASDU Address

	<ul style="list-style-type: none">• General setup parameters• Enabling Controlling Station to receive events
--	---

8.8 Navigating the SCADAPack Summary Page

On the Configuration tab, the SCADAPack page provides a summary of the device for quick reference. On the right-hand side, you can click the green arrows (➤) to navigate to the relevant page.

The summary page also:

- Highlights areas of interest when you hover the mouse over the SCADAPack x70 device image
- Provides tool tips, which provide configuration or informational details, for some areas of interest
- Changes the tab panel selection automatically to correspond to the highlighted area of interest
- Displays the hand icon when you hover the mouse over an area of interest that has a corresponding configuration page. When you click the mouse, you are navigated to the corresponding page.
- Displays the information icon when you hover the mouse over an area of interest that has a corresponding help page. When you click the mouse, the corresponding help topic in the documentation is opened.

Summary tabs

The images shown below use the SCADAPack 575 as an example. The tabs for other SCADAPack x70 devices are similar.

- **General:** Displays the DNP3 Outstation Address, Modbus/TCP Server Unit Identifier (if applicable to the configuration), IEC 60870-5-104 ASDU address, if configured, and any Supported Applications

General

DNP3

Outstation Address:	0	>
Outstation Address for Connection to Controlling Station 2:	0	>
Outstation Address for Connection to Controlling Station 3:	0	>

Modbus/TCP Server

Unit Identifier: 1 >

IEC 60870-5-104

ASDU Address for Controlling Station 1:	Disabled	>
ASDU Address for Controlling Station 2:	Disabled	>
ASDU Address for Controlling Station 3:	Disabled	>
ASDU Address for Controlling Station 4:	Disabled	>

Supported Applications

	Realflo Flow Computer (Requires RTU License)
---	---

- **Physical I/O:** Displays the configured I/O devices and the number of used and free I/O channels by type

Physical I/O

I/O Devices >

Type	Name
SCADAPack 575	SP575

I/O Channels >

Type	Used	Free
Analog Input	8	0
Analog Output	2	0
Digital Input	18	0
Digital Output	9	0
Counter	10	0

- **USB Communication:** Displays information about the USB communication port

USB Communication

USB >

Function: Enabled

- **Serial Communication:** Displays information about the Serial communication ports

Serial Communication

- Serial 1** >
Function: Modbus, Modbus Station Address: 1
Mode: RS232 (RTS Off)
Baud Rate: 9600
- Serial 2** >
Function: Modbus, Modbus Station Address: 1
Mode: RS232 (RTS Off)
Baud Rate: 9600
- Serial 3** >
Function: Modbus, Modbus Station Address: 1
Mode: RS232
Baud Rate: 9600
- Serial 4** >
Function: Command Line
Mode: RS232
Baud Rate: 9600

- **IP Communication:** Displays information about the IP communication ports including a link to the IP Services tab

IP Communication

- General** >
Gateway IP Address: 0.0.0.0
- Ethernet 1** >
IP Address: 172.16.1.200 /24
- Ethernet 2** >
IP Address: 0.0.0.0 /24
- Ethernet 3** >
IP Address: 0.0.0.0 /24

[IP Services](#)

- **IP Services:** Displays information about the IP services including which IP services are active

IP Services

IP Services

DNP3/IP:	<input checked="" type="checkbox"/>	>	Port:	20000	>
DNP3/UDP Broadcast Server:	<input type="checkbox"/>	>	Port:	20000	>
Telnet:	<input type="checkbox"/>	>	Port:	23	
FTP:	<input type="checkbox"/>	>	Port:	21	
Modbus/TCP Server:	<input checked="" type="checkbox"/>	i	Port:	502	>
HART Pass Through:	<input type="checkbox"/>	>	Port:	5001	>
Logic Debug Service:	<input checked="" type="checkbox"/>	>	Port:	504	>
IEC 60870-5-104 to Controlling Station 1:	<input type="checkbox"/>	>	Port:	2404	>
IEC 60870-5-104 to Controlling Station 2:	<input type="checkbox"/>	>	Port:	2404	IP Address: Disabled >
IEC 60870-5-104 to Controlling Station 3:	<input type="checkbox"/>	>	Port:	2404	IP Address: Disabled >
IEC 60870-5-104 to Controlling Station 4:	<input type="checkbox"/>	>	Port:	2404	IP Address: Disabled >

8.9 Configuring SCADAPack x70 Settings and Identification Strings

Use the **SCADAPack > Settings** page to configure device settings, such as the time offset from Coordinated Universal Time (UTC) and to add identification information for the SCADAPack x70 device.

To configure device settings

1. On the Configuration Tab, select **SCADAPack > Settings**.
2. On the Basic Configuration tab, configure the [SCADAPack Settings](#)^[53].

^ Basic Configuration

SCADAPack Settings

Low Voltage Alert Level	<input type="text" value="11.5"/>	Vdc
Time Offset from UTC	<input type="text" value="0"/>	hours

To configure identification information for the SCADAPack x70 device

1. On the Configuration Tab, select **SCADAPack > Settings**.
2. Expand the Advanced Configuration tab and configure the [Identification Strings and Advanced SCADAPack Settings](#)^[54].

⤴ Advanced Configuration

Identification Strings

Location Name

ID Code/Number

Device Name

SCADAPack Settings

At Limit Alert Processing

3. Click **Apply**.

8.9.1 SCADAPack Settings Parameters

The following table describes the SCADAPack settings parameters on the Basic tab.

Parameter	Parameter Description	Setting Description
Low Voltage Alert Level	The input power supply voltage at which the Input Voltage Status changes from Normal to Low . The Input Voltage Status is displayed on the Status tab in the online parameters.	Default: 11.5 Vdc Valid range: 9...32 Vdc
Time Offset from UTC	The offset from Universal Coordinated Time (UTC) for local operations such as time of day control by logic applications when the SCADAPack x70 device is operating on UTC rather than local time.	Default: 0 hours Valid range: -12...13 hours

8.9.2 Identification Strings and Advanced SCADAPack Settings Parameters

Identification Strings parameters

Parameter	Parameter Description	Setting Description
Location Name	Where the SCADAPack x70 device is installed.	Maximum length: 254 characters with spaces
ID Code/Number	A numeric identifier for the SCADAPack x70 device.	Maximum length: 31 characters with spaces
Device Name	A name for the SCADAPack x70 device.	<p>Maximum length: 31 characters with spaces</p> <p>The name can include letters, numbers, hyphens, and underscores.</p> <p>The following characters are not permitted:</p> <p>< > # % \ " ; : ? @ & = + \$ { } ^ []</p>

Advanced SCADAPack settings parameters

Parameter	Parameter Description	Setting Description
At Limit Alert Processing	<p>Indicates when the over-range limit value and the under-range limit value are considered to be transgressed.</p> <p>Object values are displayed on the Objects tab in the online parameters. For details, see Reading Object Values from the Device ³⁸².</p>	<p>When the box is checked:</p> <ul style="list-style-type: none"> The current value needs to exceed the over-range limit value to be considered over-range. The current value needs to be below the under-range limit value to be considered under-range. <p>When the box is not checked:</p> <ul style="list-style-type: none"> The current value needs to be equal to, or more than, the over-range limit to be considered over-range. The current value needs to be equal to, or below, the under-range limit value to be considered under-range. <p>Default: Not checked</p>

8.10 Configuring Physical I/O

Each input and output on the SCADAPack x70 device and its attached I/O modules are represented in the SCADAPack RemoteConnect database.

There is 1 type of physical I/O:

- Local

Local I/O

Local I/O identifies and defines the operating characteristics of the physical I/O on the SCADAPack x70 device and on any attached I/O modules. The **Physical I/O > Local** page displays local I/O in 2 tables:

- The I/O Configuration table lists each local module or device that provides I/O
- The Channel Configuration table lists the individual channels for each I/O module or device in the I/O Configuration table

For more information, see [Defining Local Physical I/O](#) ⁵⁵.

Basic Configuration
Channel Configuration

I/O Configuration

	Name	Type	Address	Status Object	AO Type
1	SP575	SCADAPack 575	0	PIO_SP575_Status	4...20 mA
2	Module1	6602 HART Analog I/O	0	PIO_Module1_Status	

Power consumption for this I/O configuration is estimated to be between 6.100 W and 8.200 W. This configuration does not require a 5103 power supply module.

Verify that the analog input DIP switches on configured SCADAPack 575 I/O modules are in the correct position.

Clear Associations >

	Channel	Object Association	Type
1	AI1	PIO_Module1_AI1	4...20 mA
2	AI2	PIO_Module1_AI2	4...20 mA
3	AI3	PIO_Module1_AI3	4...20 mA
4	AI4	PIO_Module1_AI4	4...20 mA
5	AI5	PIO_Module1_AI5	4...20 mA
6	AI6	PIO_Module1_AI6	4...20 mA
7	AI7	PIO_Module1_AI7	4...20 mA
8	AI8	PIO_Module1_AI8	4...20 mA
9	AO1	PIO_Module1_AO1	4...20 mA
10	AO2	PIO_Module1_AO2	4...20 mA
11	AO3	PIO_Module1_AO3	4...20 mA

Outputs on Logic Stop

Digital Outputs: Analog Outputs:

Advanced Configuration

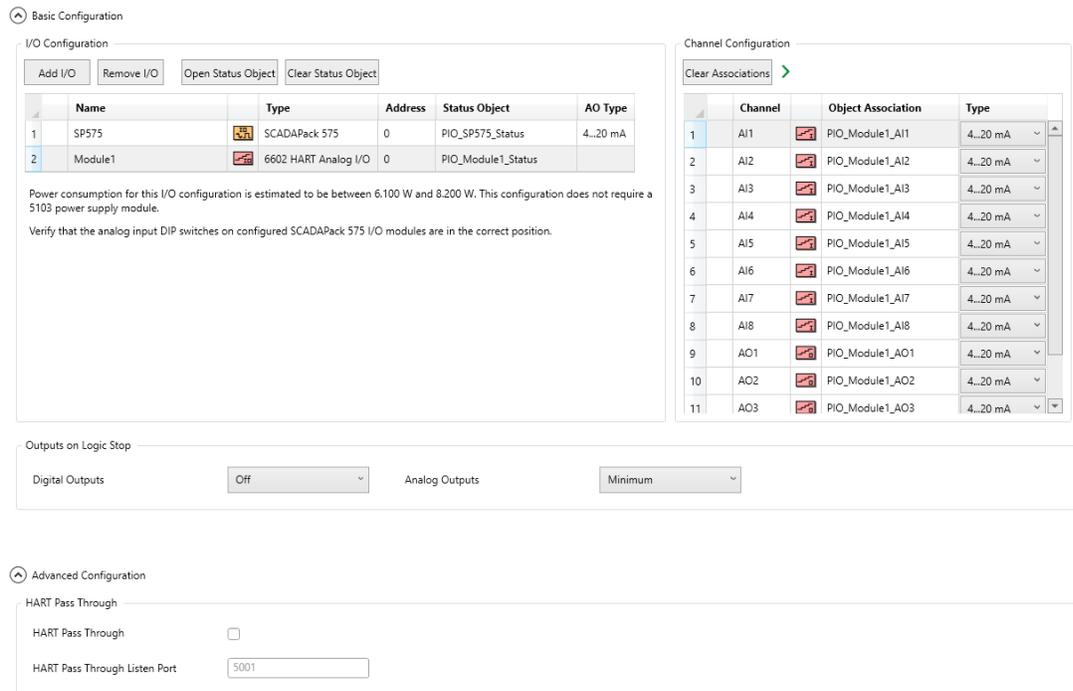
HART Pass Through

HART Pass Through:

HART Pass Through Listen Port:

8.10.1 Defining Local Physical I/O

Use the **Physical I/O > Local** page to identify and define the operating characteristics of the physical I/O on the SCADAPack x70 device and on any attached I/O modules.



I/O Configuration table

The I/O Configuration table lists the physical I/O modules and device. Use this table to add, configure, and remove I/O and to edit and clear object associations. For details, see:

- [Changing the Default Parameter Settings for Physical I/O](#)^[57]
- [Adding an I/O Module](#)^[58]
- [Removing an I/O Module](#)^[62]
- [Associating Status Information with an I/O Module](#)^[63]

Channel Configuration table

The Channel Configuration table lists the individual I/O channels on each I/O module and device. Use this table to access the configuration parameters for individual I/O channels and to clear object associations for I/O channels. For details, see:

- [Configuring Analog and Digital I/O Channels](#)^[65]
- [Configuring Counter I/O Channels](#)^[68]
- [Configuring Pulse Rate \(Frequency\) I/O Channels](#)^[72]
- [Clearing Object Associations for I/O Channels](#)^[75]

Outputs on Logic Stop

These parameters allow you to identify how outputs are processed when a logic application transitions from RUN to a STOP or HALT state, including when a logic application is updated as

the result of writing a configuration to the SCADAPack x70 device. The configuration applies to the physical output points.

When an Outputs on Logic Stop parameter is set to Hold, the local physical outputs of the type specified are held at their current values while in STOP, HALT, and while a logic program is updated. The outputs will change when the output object is next updated.

When the Digital Outputs parameter is set to Off, the local physical digital outputs are set to the Off state when the logic program goes into STOP or HALT or when the logic is updated.

When the Analog Outputs parameter is set to Minimum, the local physical analog outputs are set to the minimum output value (e.g. 4 mA on 4...20 mA outputs, 0 Vdc on 0...5 Vdc outputs, etc.) when the logic program goes into STOP or HALT or when the logic is updated.

The default parameter settings for Outputs on Logic Stop are:

- **Digital Outputs**
 - Default: Off
- **Analog Outputs**
 - Default: Minimum

Advanced Configuration: HART Pass Through

When you add a HART I/O module, the HART Pass Through parameters are displayed. See [Adding an I/O Module](#)^[58] and [HART Pass Through Parameters](#)^[82].

8.10.1.1 Changing the Default Parameter Settings for Physical I/O

When you first create the project for the SCADAPack x70 device in SCADAPack RemoteConnect:

- The SCADAPack x70 device is added to the I/O Configuration table with the default parameter settings.
- The channels on the SCADAPack x70 device are added to the Channel Configuration table and an object for each channel is added to the object database with the default parameter settings.

To change the default parameter settings for physical I/O

- Double-click on the table row to access the configuration parameters:
 - [I/O Configuration parameters](#)^[76]
 - Channel Configuration parameters:
 - [Object Configuration Parameters](#)^[249]
 - [Associations Tab](#)^[265]
 - [DNP3 Tab](#)^[268]
 - [Modbus Tab](#)^[272]

- [IEC 60870-5-104 Tab](#)^[274]
- [Alert Notifications Tab: Analog Objects](#)^[280]
- [Basic Tab: Analog Objects](#)^[283]
- [Advanced Tab: Analog Objects](#)^[289]
- [Basic Tab: Digital Objects](#)^[293]
- [Basic Tab: Counter Objects](#)^[297]

8.10.1.2 Adding an I/O Module

Each SCADAPack x70 device and I/O module needs to be listed in the tables on the **Physical I/O > Local** page, along with its I/O channels. There can be only one SCADAPack x70 device entry and it needs to correspond to the SCADAPack x70 device that you are creating a configuration for. This entry is added by default and cannot be deleted. See [I/O Configuration](#)^[76] for details about how many I/O modules can be connected.

If there is an I/O module connected to the SCADAPack x70 device, or if you connect an I/O module to the device at a later time, there are 2 ways to add it to the Local page:

- If the hardware is not yet available, add and configure the physical I/O as described below. Once the hardware is available, you can [write the configuration to the device](#)^[354].
- If the hardware is available, [take the SCADAPack x70 configuration software online](#)^[28] and [read the configuration from the device](#)^[356].

Once the physical I/O is listed in the I/O Configuration table, you can [associate status information with it](#)^[63] to monitor the health of the device and you can configure its I/O.

To add an I/O module before the hardware is available

1. On the **Configuration** tab, select **Physical I/O > Local**.

Basic Configuration

I/O Configuration

Add I/O Remove I/O Open Status Object Clear Status Object

	Name	Type	Address	Status Object	AO Type
1	SP575	SCADAPack 575	0	PIO_SP575_Status	4...20 mA
2	Module1	6602 HART Analog I/O	0	PIO_Module1_Status	

Power consumption for this I/O configuration is estimated to be between 6.100 W and 8.200 W. This configuration does not require a 5103 power supply module.
Verify that the analog input DIP switches on configured SCADAPack 575 I/O modules are in the correct position.

Channel Configuration

Clear Associations >

	Channel	Object Association	Type
1	AI1	PIO_Module1_AI1	4...20 mA
2	AI2	PIO_Module1_AI2	4...20 mA
3	AI3	PIO_Module1_AI3	4...20 mA
4	AI4	PIO_Module1_AI4	4...20 mA
5	AI5	PIO_Module1_AI5	4...20 mA
6	AI6	PIO_Module1_AI6	4...20 mA
7	AI7	PIO_Module1_AI7	4...20 mA
8	AI8	PIO_Module1_AI8	4...20 mA
9	AO1	PIO_Module1_AO1	4...20 mA
10	AO2	PIO_Module1_AO2	4...20 mA
11	AO3	PIO_Module1_AO3	4...20 mA

Outputs on Logic Stop

Digital Outputs Analog Outputs

Advanced Configuration

HART Pass Through

HART Pass Through

HART Pass Through Listen Port

2. In the I/O Configuration table, click **Add I/O**.

Local Physical I/O

I/O Configuration

Type: 5304 Analog Out

Name: Module1

Address: 0

AI Filtering: [dropdown]

AI Smoothing: [dropdown]

Input Filter: [dropdown]

Line Frequency: [dropdown]

AO Output Type: [dropdown]

Ok Cancel

3. Configure the [I/O Configuration](#) parameters, then click **Ok**.
4. In the **Object Associations** dialog, specify how objects are assigned to the I/O channels.
 - The default is **Manually connect existing objects to the I/O channels?** When this option is selected, the existing object associations are removed and no new associations are created.
 - If you select **Automatically create and connect new objects to the I/O channels?**, a new database object is automatically created for each I/O channel.
 - In the **DNP3 Options** section, if available, select one of the following:
 - Leave the DNP3 point numbers unassigned. When this option is selected, objects are created, but no DNP3 point numbers are assigned.
 - Automatically assign DNP3 point numbers with the next available values
 - If you select Assign DNP3 point numbers sequentially, choose one of the following:
 - For digital objects, enter the starting number in the Digital Input or Digital Output field

- For analog objects, enter the starting number in the Analog Input or Analog Output field
- For counter objects, enter the starting number in the Counter Input or Counter Output field
- In the **Modbus Options** section, if available, determine how to assign Modbus registers:
 - Leave Modbus registers unassigned. When this option is selected, objects are created, but no Modbus registers are assigned.
 - If you select Automatically assign Modbus registers with the next available values, choose one of the following:
 - For analog objects, choose one of the following:
 - read-only Input Registers
 - read/write Holding Registers
 - For digital objects, choose one of the following:
 - read-only Discrete Inputs
 - read/write Discrete Coils
 - For counter objects, choose one of the following:
 - read-only Input Registers
 - read/write Holding Registers
 - If you select Assign Modbus registers sequentially, enter one of the following:
 - For analog objects, enter the starting number in the Analog field
 - For digital objects, enter the starting number in the Digital field
 - For counter objects, enter the starting number in the Counter field
- In the **IEC 60870-5-104 Options** section, if available, determine how to assign Information Object Addresses (IOAs):
 - Leave IOAs unassigned. When this option is selected, objects are created, but no IEC 60870-5-104 IOAs are assigned.
 - If you select the Automatically assign IOAs with the next available values option, Monitoring Direction IOAs are automatically assigned to each created object, starting at the first available Monitor Direction IOA address not already allocated to an object.
 - If you select the Assign IOAs sequentially starting from option, you can specify the IOA for Monitor Direction for the first object. Monitor Direction IOAs are automatically assigned to objects, sequentially, from this number.

4. Click **OK**.

5. SCADAPack 570, SCADAPack 574, and SCADAPack 575 models support configuring a HART module so that data from HART instruments can be sent directly to an Asset Management System by expanding the Advanced Configuration parameters and configuring the [HART Pass Through](#) ⁸² parameters. This is presently not supported for SCADAPack 470 and SCADAPack 474 models.
6. Configure the I/O channels:
 - [Configuring Analog and Digital I/O Channels](#) ⁶⁵
 - [Configuring Counter I/O Channels](#) ⁶⁸

8.10.1.3 Removing an I/O Module

Typically, you need to remove I/O only when you are updating the offline configuration to match a new hardware configuration. When you remove the I/O module, you are deleting the I/O information for the module and its I/O channels from the device database. You can choose whether you also want to delete objects associated with the I/O module.

If you have not modified the default parameter settings for the I/O module, there is no benefit to keeping the object. However, if you have customized the object configuration to meet specific requirements, you may want to keep the object so you can associate it with a different I/O module in the future. This will save you from having to re-customize the parameter settings.

To remove an I/O module

1. On the **Configuration** tab, select **Physical I/O > Local**.

The screenshot displays the configuration interface for a SCADAPack device. It is divided into several sections:

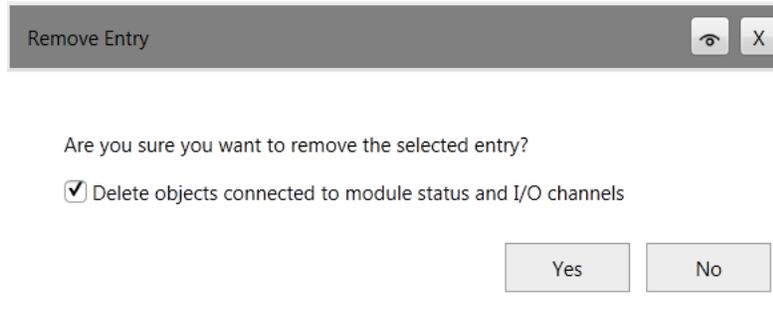
- Basic Configuration:**
 - I/O Configuration:** A table with columns: Name, Type, Address, Status Object, and AO Type.

Name	Type	Address	Status Object	AO Type
1 SP575	SCADAPack 575	0	PIO_SP575_Status	4...20 mA
2 Module1	6602 HART Analog I/O	0	PIO_Module1_Status	
 - Channel Configuration:** A table with columns: Channel, Object Association, and Type.

Channel	Object Association	Type
1 AI1	PIO_Module1_AI1	4...20 mA
2 AI2	PIO_Module1_AI2	4...20 mA
3 AI3	PIO_Module1_AI3	4...20 mA
4 AI4	PIO_Module1_AI4	4...20 mA
5 AI5	PIO_Module1_AI5	4...20 mA
6 AI6	PIO_Module1_AI6	4...20 mA
7 AI7	PIO_Module1_AI7	4...20 mA
8 AI8	PIO_Module1_AI8	4...20 mA
9 AO1	PIO_Module1_AO1	4...20 mA
10 AO2	PIO_Module1_AO2	4...20 mA
11 AO3	PIO_Module1_AO3	4...20 mA
- Outputs on Logic Stop:**
 - Digital Outputs: Off
 - Analog Outputs: Minimum
- Advanced Configuration:**
 - HART Pass Through:
 - HART Pass Through Listen Port: 5001

2. In the I/O Configuration table, select the table row(s) for the I/O you want to delete.

3. Click **Remove I/O**.



4. Confirm whether you want to delete the database object(s) associated with the table entry, then click **Yes**.

8.10.1.4 Associating Status Information with an I/O Module

Each physical I/O module or device can be associated with an object that indicates the status, or health, of the I/O module or device. In the SCADAPack x70 device, the digital object associated with the I/O device status has a current value of:

- 1 (ON state) when the I/O device is online
- 0 (OFF state) when the I/O device is offline

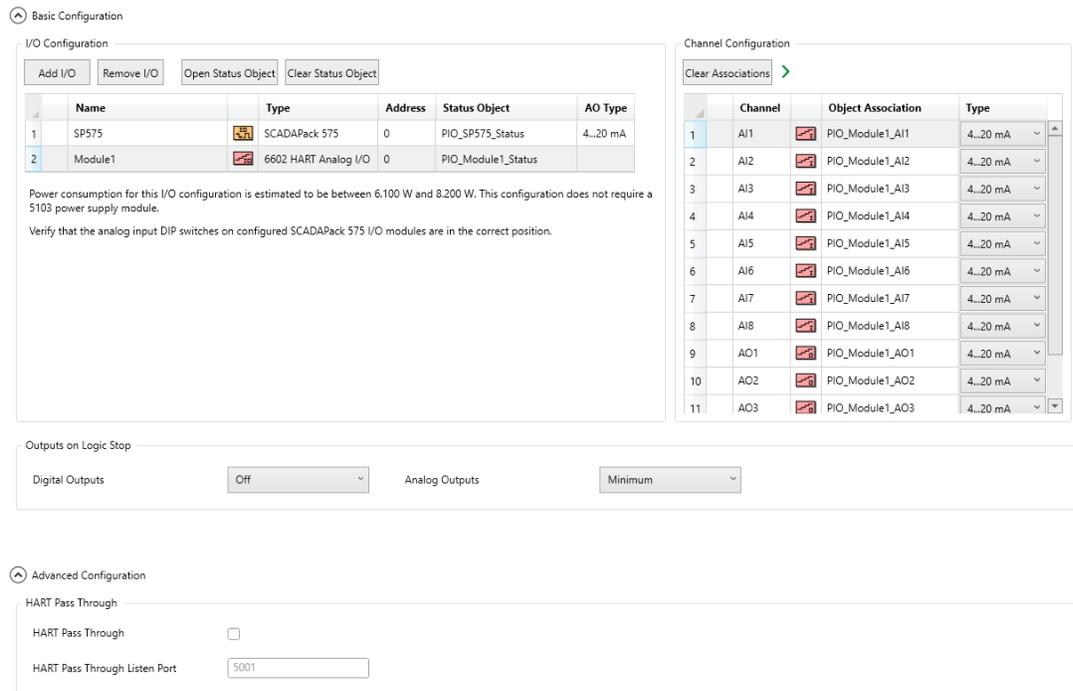
The SCADAPack x70 device cannot read or control the I/O device channels when it is offline.

When you add a status object association, you can spontaneously create a new object for status information, or you can choose an existing object. If you spontaneously create a new status object, it is displayed immediately in the **Status Object Association** field for the physical I/O, but you need to configure the object before it will provide status information. You can edit the association for one I/O module or device at a time.

When you remove, or clear, the status object association for physical I/O, you can choose whether to keep the status object in the database. Keep the status object if it is associated with other physical I/O, or if you might associate it with other physical I/O in the future. You can clear the association for multiple I/O modules or devices, or for multiple I/O channels at the same time.

To associate status information with an I/O module or device

1. On the **Configuration** tab, select **Physical I/O > Local**.



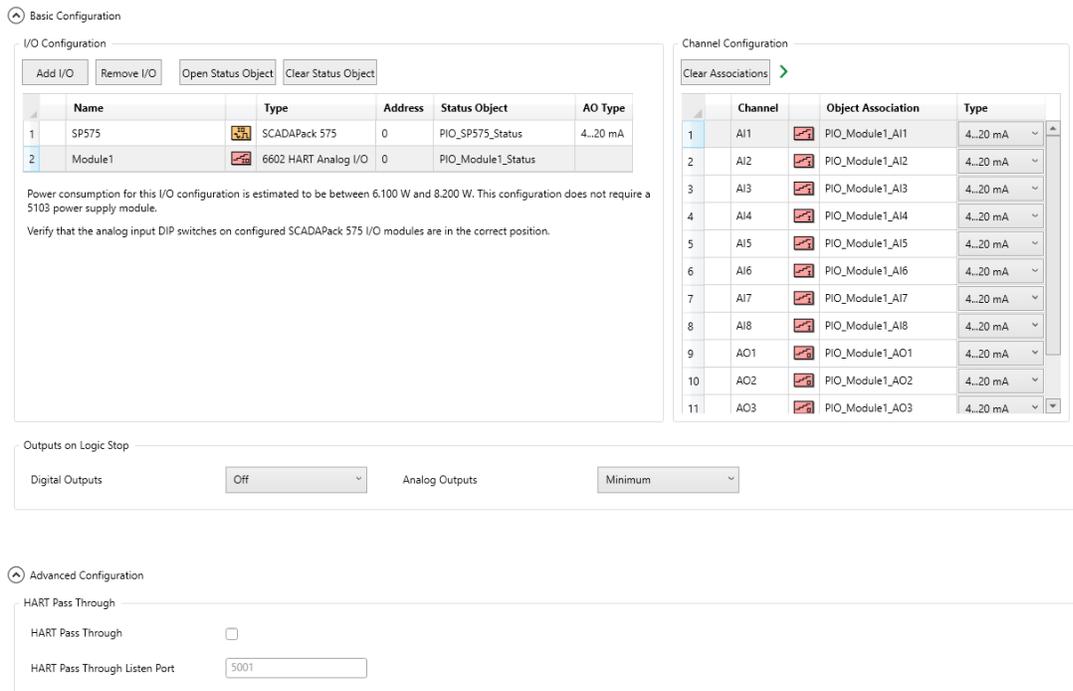
2. In the I/O Configuration table, select the row for the I/O for which you want to add an object association.
3. Click **Add Status Object**.
4. In the Object Associations window, select one of the following
 - **Associate with new object**
 - Edit the default name, if needed
 - **Associate with existing object**
 - Select the Object Name from the drop-down list
 - **Associate with object in group**
 - Select the Group and the Object Name from the drop-down lists
5. Click **OK**.

The object name can be 1...32 characters with no spaces. The name needs to begin with a letter or an underscore, and can contain only letters, numbers and underscores.

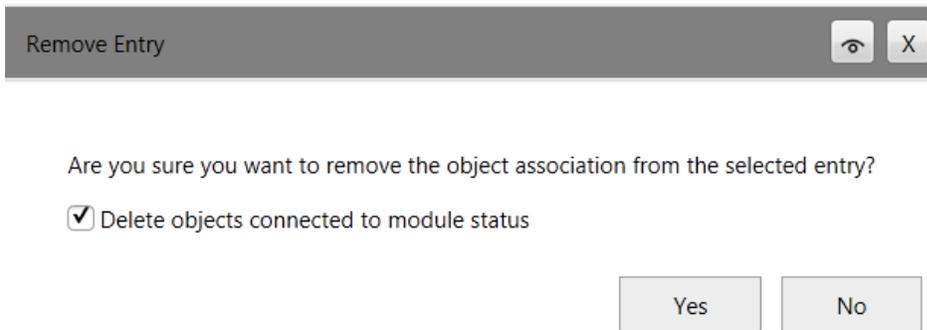
If you created a new object, you now need to configure the object parameter settings. For details, see [Configuring Database Objects](#)^[235].

To remove the status association for physical I/O

1. On the **Configuration** tab, select **Physical I/O > Local**.



- In the I/O Configuration table, select the row with the Status Object Association you want to remove.
- Click **Clear Status Object**.



- Specify whether you want to delete the status object from the object database, then click **Yes**.

8.10.1.5 Configuring Analog and Digital I/O Channels

The I/O channels available for an I/O module or device are shown in the Channel Configuration table when the I/O module or device is [added to the I/O Configuration table](#) [58].

The procedure below describes how to configure analog and digital I/O channels on a SCADAPack x70 device.

Some digital inputs on SCADAPack x70 devices provide counter capabilities. To use these capabilities, you need to configure the digital channel, as described below, and the counter

channel as described in [Configuring Counter I/O Channels](#)^[68]. To determine whether the digital inputs on the device support counter capabilities, see the hardware manual for the device.

You can also [add the object association for a channel](#)^[68].

To configure analog and digital I/O channels

1. On the **Configuration** tab, select **Physical I/O > Local**.

The screenshot displays the configuration interface for the SCADAPack x70 device, divided into two main sections: Basic Configuration and Advanced Configuration.

Basic Configuration - I/O Configuration:

- Buttons: Add I/O, Remove I/O, Open Status Object, Clear Status Object.

ID	Name	Type	Address	Status Object	AO Type
1	SP575	SCADAPack 575	0	PIO_SP575_Status	4...20 mA
2	Module1	6602 HART Analog I/O	0	PIO_Module1_Status	

- Text: Power consumption for this I/O configuration is estimated to be between 6.100 W and 8.200 W. This configuration does not require a 5103 power supply module. Verify that the analog input DIP switches on configured SCADAPack 575 I/O modules are in the correct position.

Basic Configuration - Outputs on Logic Stop:

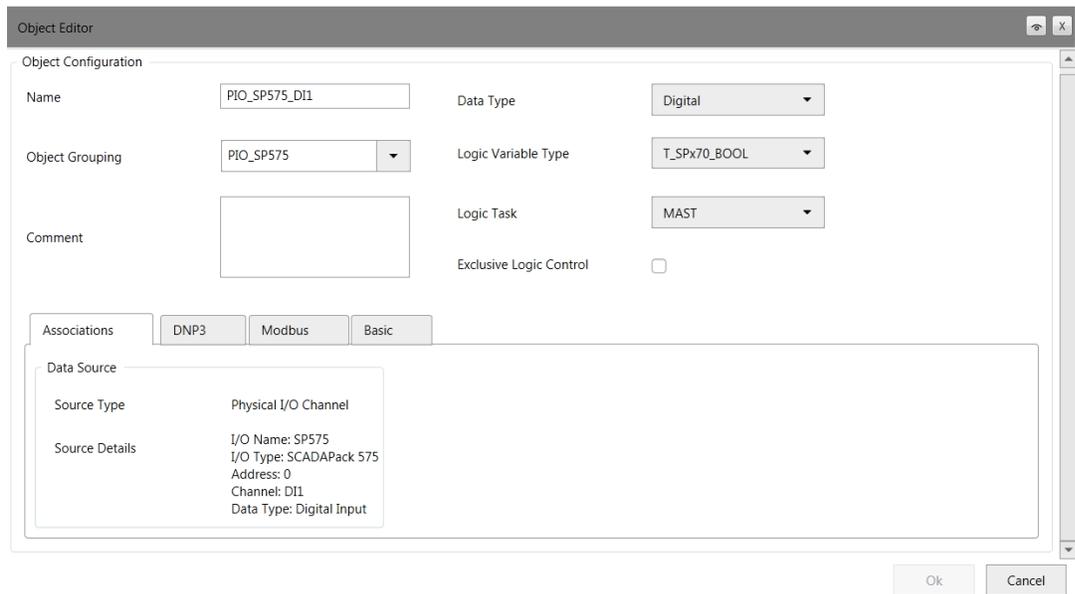
- Digital Outputs: Off
- Analog Outputs: Minimum

Basic Configuration - Channel Configuration:

ID	Channel	Object Association	Type
1	AI1	PIO_Module1_AI1	4...20 mA
2	AI2	PIO_Module1_AI2	4...20 mA
3	AI3	PIO_Module1_AI3	4...20 mA
4	AI4	PIO_Module1_AI4	4...20 mA
5	AI5	PIO_Module1_AI5	4...20 mA
6	AI6	PIO_Module1_AI6	4...20 mA
7	AI7	PIO_Module1_AI7	4...20 mA
8	AI8	PIO_Module1_AI8	4...20 mA
9	AO1	PIO_Module1_AO1	4...20 mA
10	AO2	PIO_Module1_AO2	4...20 mA
11	AO3	PIO_Module1_AO3	4...20 mA

2. In the Channel Configuration table, double-click on a table row to view the object configuration parameters.

The tabs that are displayed depend on whether the object represents digital or analog I/O and the role the SCADAPack x70 device is performing in the network. For example, if the device is operating only as a DNP3 Outstation, the Modbus tab is not displayed.



3. Configure the object parameters as required, then click **Ok**.

- [Object Configuration Parameters](#) ^[249]
- [Associations Tab](#) ^[265]
- [DNP3 Tab](#) ^[268]
- [Modbus Tab](#) ^[272]
- [IEC 60870-5-104 Tab](#) ^[274]
- [Alert Notifications Tab: Analog Objects](#) ^[280]
- [Basic Tab: Analog Objects](#) ^[285]
- [Advanced Tab: Analog Objects](#) ^[289]
- [Basic Tab: Digital Objects](#) ^[293]
- [Basic Tab: Counter Objects](#) ^[297]

4. If you are configuring an analog input channel, in the Channel Configuration table, select the **Type**.

The settings that are available depend on the I/O module or device type.

28	AI1		PIO_SP575_AI1	0...5 V
29	AI2		PIO_SP575_AI2	1...5 V
30	AI3		PIO_SP575_AI3	4...20 mA
31	AI4		PIO_SP575_AI4	4...20 mA
32	AI5		PIO_SP575_AI5	4...20 mA
33	AI6		PIO_SP575_AI6	4...20 mA

5. On the Local page, click **Apply**.

To add the object association for a channel

1. In the Channel Configuration table, double-click the row of the object where you want to add the association.
2. In the Object Associations window, select one of the following
 - **Associate with new object**
 - Edit the default name, if needed
 - **Associate with existing object**
 - Select the Object Name from the drop-down list
 - **Associate with object in group**
 - Select the Group and the Object Name from the drop-down lists
3. Click **Ok**.
4. On the Basic Configuration page, click **Apply**.

8.10.1.6 Configuring Counter I/O Channels

Some digital inputs on SCADAPack x70 devices can also provide counter capabilities. To use these capabilities, you need to configure the digital channel, as described in [Configuring Analog and Digital I/O Channels](#)^[65] and the counter channel, as described below.

To determine whether the digital inputs on the device support counter capabilities, see the hardware manual for the device.

You can also [add the object association for a channel](#)^[71].

To configure counter I/O channels

1. On the **Configuration** tab, select **Physical I/O > Local**.

Basic Configuration

I/O Configuration

Add I/O Remove I/O Open Status Object Clear Status Object

	Name	Type	Address	Status Object	AO Type
1	SP575	SCADAPack 575	0	PIO_SP575_Status	4...20 mA
2	Module1	6602 HART Analog I/O	0	PIO_Module1_Status	

Power consumption for this I/O configuration is estimated to be between 6.100 W and 8.200 W. This configuration does not require a 5103 power supply module.
Verify that the analog input DIP switches on configured SCADAPack 575 I/O modules are in the correct position.

Channel Configuration

Clear Associations >

	Channel	Object Association	Type
1	AI1	PIO_Module1_AI1	4...20 mA
2	AI2	PIO_Module1_AI2	4...20 mA
3	AI3	PIO_Module1_AI3	4...20 mA
4	AI4	PIO_Module1_AI4	4...20 mA
5	AI5	PIO_Module1_AI5	4...20 mA
6	AI6	PIO_Module1_AI6	4...20 mA
7	AI7	PIO_Module1_AI7	4...20 mA
8	AI8	PIO_Module1_AI8	4...20 mA
9	AO1	PIO_Module1_AO1	4...20 mA
10	AO2	PIO_Module1_AO2	4...20 mA
11	AO3	PIO_Module1_AO3	4...20 mA

Outputs on Logic Stop

Digital Outputs Analog Outputs

Advanced Configuration

HART Pass Through

HART Pass Through

HART Pass Through Listen Port

- In the Channel Configuration table, scroll to the bottom of the table to view the counter channels.

If you have a SCADAPack 470 or SCADAPack 474, the list looks similar to the following:

Channel Configuration

Clear Associations >

	Channel	Object Association	Type
11	DI1	PIO_SP470_CI1	10 kHz Counter
12	DI2	PIO_SP470_CI2	10 kHz Counter
13	DI3	PIO_SP470_CI3	10 kHz Counter
14	DI4	PIO_SP470_CI4	10 kHz Counter

If you have a SCADAPack 570, SCADAPack 574, or a SCADAPack 575, the list looks similar to the following:

Channel Configuration

Clear Associations >

	Channel		Object Association	Type
39	DI4		PIO_SP575_CI4	1.5 kHz
40	DI5		PIO_SP575_CI5	150 Hz
41	DI6		PIO_SP575_CI6	150 Hz
42	DI7		PIO_SP575_CI7	150 Hz
43	DI8		PIO_SP575_CI8	150 Hz
44	Din1		PIO_SP575_Cin1	10 kHz Counter
45	Din2		PIO_SP575_Cin2	10 kHz Counter

3. If you want to associate a counter with a new object, double-click on an empty channel row.
4. If you want to edit an object associated to a counter, double-click on the channel of the object.

Object Editor

Object Configuration

Name: Data Type: Counter < Prev Next >

Object Grouping: Logic Variable Type: T_SPx70_UDINT

Comment: Logic Task: MAST

Exclusive Logic Control:

Associations: DNP3 Modbus Basic

Data Source

Source Type: Physical I/O Channel

Source Details: I/O Name: SP575
I/O Type: SCADAPack 575
Address: 0
Channel: DI1
Data Type: Counter Input

Ok Cancel

5. Configure the object parameters as required, then click **Ok**.

- [Object Configuration Parameters](#) ²⁴⁹
- [Associations Tab](#) ²⁶⁵
- [DNP3 Tab](#) ²⁶⁸
- [Modbus Tab](#) ²⁷²

- [IEC 60870-5-104 Tab](#)²⁷⁴
- [Basic Tab: Counter Objects](#)²⁹⁷

6. In the Channel Configuration table, select the **Type**.

Digital inputs 1 and 2 on a SCADAPack 470, SCADAPack 474, SCADAPack 570, SCADAPack 574, or a SCADAPack 575 can have an associated Type. See [Counter Type Parameters](#)⁸¹.

Channel Configuration

Clear Associations >

	Channel		Object Association	Type
11	DI1		PIO_SP470_CI1	10 kHz Counter
12	DI2		PIO_SP470_CI2	10 kHz Counter
13	DI3		PIO_SP470_CI3	10 kHz Turbine Counter
14	DI4		PIO_SP470_CI4	Counter

7. On the **Physical I/O > Local** page, click **Apply**.

To add the object association for a channel

1. In the Channel Configuration table, double-click the row of the object where you want to add the association.
2. In the Object Associations window, select one of the following
 - **Associate with new object**
 - Edit the default name, if needed
 - **Associate with existing object**
 - Select the Object Name from the drop-down list
 - **Associate with object in group**
 - Select the Group and the Object Name from the drop-down lists
3. Click **Ok**.
4. On the Basic Configuration page, click **Apply**.

8.10.1.7 Configuring Pulse Rate (Frequency) I/O Channels

Some digital input channels on SCADAPack x70 devices can also provide pulse rate (frequency) capabilities. The value of the input's pulse rate is represented as an Analog object. To use these capabilities, you need to configure the digital channel, as described in [Configuring Analog and Digital I/O Channels](#)^[65] and the counter channel, as described below.

To determine whether the digital inputs on the device support counter capabilities, see the hardware manual for the device.

You can also [add the object association for a channel](#)^[74].

To configure counter I/O channels

1. On the **Configuration** tab, select **Physical I/O > Local**.

The screenshot displays the configuration interface for a SCADAPack device, divided into Basic Configuration and Advanced Configuration sections.

Basic Configuration - I/O Configuration:

Name	Type	Address	Status Object	AO Type
1 SP575	SCADAPack 575	0	PIO_SP575_Status	4...20 mA
2 Module1	6602 HART Analog I/O	0	PIO_Module1_Status	

Power consumption for this I/O configuration is estimated to be between 6.100 W and 8.200 W. This configuration does not require a 5103 power supply module.
Verify that the analog input DIP switches on configured SCADAPack 575 I/O modules are in the correct position.

Basic Configuration - Channel Configuration:

Channel	Object Association	Type
1 AI1	PIO_Module1_AI1	4...20 mA
2 AI2	PIO_Module1_AI2	4...20 mA
3 AI3	PIO_Module1_AI3	4...20 mA
4 AI4	PIO_Module1_AI4	4...20 mA
5 AI5	PIO_Module1_AI5	4...20 mA
6 AI6	PIO_Module1_AI6	4...20 mA
7 AI7	PIO_Module1_AI7	4...20 mA
8 AI8	PIO_Module1_AI8	4...20 mA
9 AO1	PIO_Module1_AO1	4...20 mA
10 AO2	PIO_Module1_AO2	4...20 mA
11 AO3	PIO_Module1_AO3	4...20 mA

Outputs on Logic Stop: Digital Outputs: Off; Analog Outputs: Minimum

Advanced Configuration - HART Pass Through:

HART Pass Through:

HART Pass Through Listen Port: 5001

2. In the Channel Configuration table, scroll to the pulse rate (frequency) channels. These appear as an analog icon for the Digital Input Channel.

If you have a SCADAPack 570, SCADAPack 574, or a SCADAPack 575, the list looks similar to the following:

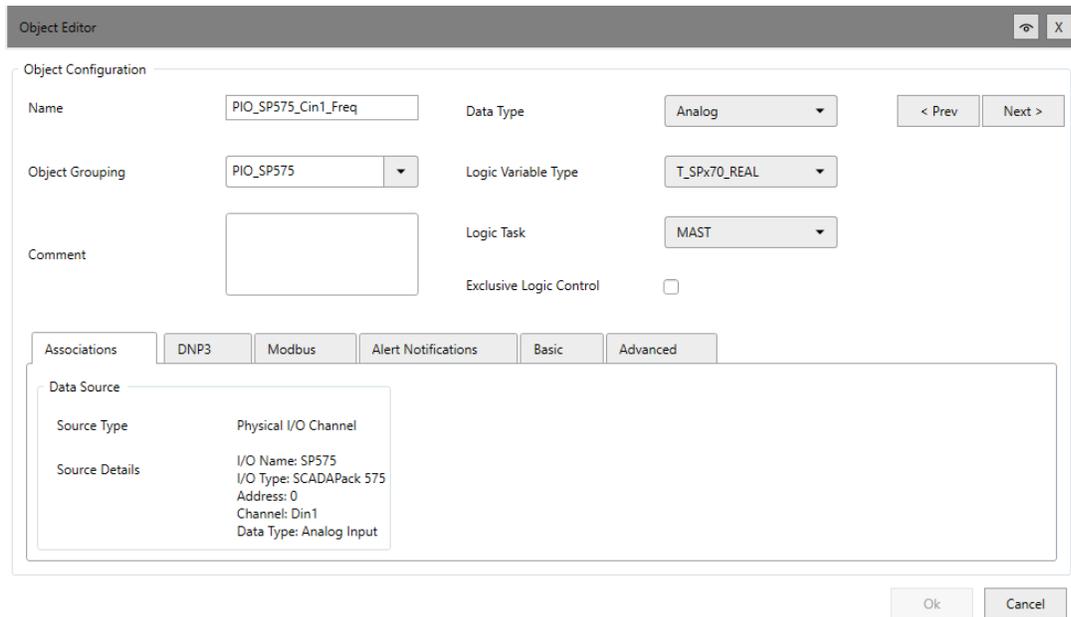
Channel Configuration

Clear Associations >

	Channel		Object Association	Type
28	AI1		PIO_SP575_AI1	4...20 mA ▾
29	AI2		PIO_SP575_AI2	4...20 mA ▾
30	AI3		PIO_SP575_AI3	4...20 mA ▾
31	AI4		PIO_SP575_AI4	4...20 mA ▾
32	AI5		PIO_SP575_AI5	4...20 mA ▾
33	AI6		PIO_SP575_AI6	4...20 mA ▾
34	Din1		PIO_SP575_Cin1_Freq	
35	Din2		PIO_SP575_Cin2_Freq	
36	AO1		PIO_SP575_AO1	
37	AO2		PIO_SP575_AO2	
38	DI1		PIO_SP575_CI1	1.5 kHz
39	DI2		PIO_SP575_CI2	1.5 kHz
40	DI3		PIO_SP575_CI3	1.5 kHz
41	DI4		PIO_SP575_CI4	1.5 kHz

If you have a SCADAPack 470 or SCADAPack 474, the list will look slightly different.

3. If you want to associate the digital input channel's pulse rate (frequency) with a new object, double-click on the channel of the object association. An Analog object is associated with the digital input channel to represent the value of the pulse rate (frequency).
4. If you want to edit an object associated to the Pulse Rate (Frequency), double-click on the channel of the object.



5. Configure the object parameters as required, then click **Ok**.

- [Object Configuration Parameters](#) ^[249]
- [Associations Tab](#) ^[265]
- [DNP3 Tab](#) ^[268]
- [Modbus Tab](#) ^[272]
- [IEC 60870-5-104 Tab](#) ^[274]
- [Alert Notifications Tab: Analog Objects](#) ^[280]
- [Basic Tab: Analog Objects](#) ^[283]
- [Advanced Tab: Analog Objects](#) ^[289]

6. On the **Physical I/O > Local** page, click **Apply**.

To add the object association for a channel

1. In the Channel Configuration table, double-click the row of the object where you want to add the association.
2. In the Object Associations window, select one of the following
 - **Associate with new object**
 - Edit the default name, if needed
 - **Associate with existing object**
 - Select the Object Name from the drop-down list

- **Associate with object in group**
 - Select the Group and the Object Name from the drop-down lists
3. Click **Ok**.
 4. On the Basic Configuration page, click **Apply**.

8.10.1.8 Clearing Object Associations for I/O Channels

Clearing the object association for an I/O channel removes the association, but it does not delete the object from the database.

To clear the object association for an I/O channel

1. On the **Configuration** tab, select **Physical I/O > Local**.

Basic Configuration

I/O Configuration

Add I/O Remove I/O Open Status Object Clear Status Object

	Name	Type	Address	Status Object	AO Type
1	SP575	SCADAPack 575	0	PIO_SP575_Status	4...20 mA
2	Module1	6602 HART Analog I/O	0	PIO_Module1_Status	

Power consumption for this I/O configuration is estimated to be between 6.100 W and 8.200 W. This configuration does not require a 5103 power supply module.

Verify that the analog input DIP switches on configured SCADAPack 575 I/O modules are in the correct position.

Outputs on Logic Stop

Digital Outputs Analog Outputs

Advanced Configuration

HART Pass Through

HART Pass Through

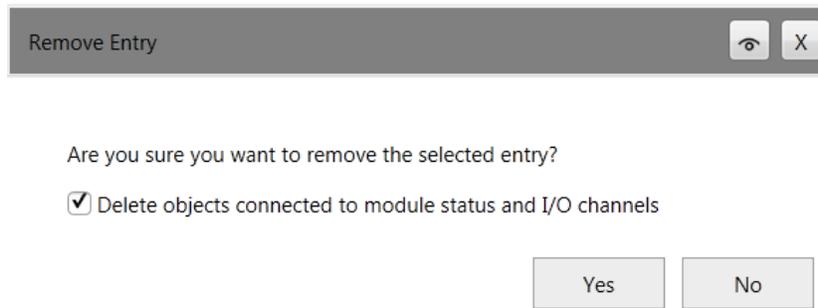
HART Pass Through Listen Port

Channel Configuration

Clear Associations >

	Channel	Object Association	Type
1	AI1	PIO_Module1_AI1	4...20 mA
2	AI2	PIO_Module1_AI2	4...20 mA
3	AI3	PIO_Module1_AI3	4...20 mA
4	AI4	PIO_Module1_AI4	4...20 mA
5	AI5	PIO_Module1_AI5	4...20 mA
6	AI6	PIO_Module1_AI6	4...20 mA
7	AI7	PIO_Module1_AI7	4...20 mA
8	AI8	PIO_Module1_AI8	4...20 mA
9	AO1	PIO_Module1_AO1	4...20 mA
10	AO2	PIO_Module1_AO2	4...20 mA
11	AO3	PIO_Module1_AO3	4...20 mA

2. In the Channel Configuration table, select the row(s) for the inputs and outputs for which you want to clear the association.
3. Click **Clear Associations**.



4. Specify whether you want to delete the database object associated with the table entry, then click **Yes**.
5. On the Local page, click **Apply**.

8.10.1.9 I/O Configuration Parameters

The following table describes the I/O Configuration parameters. The parameters that are displayed depend on the I/O module or device type.

Parameter	Parameter Description	Setting	Setting Description
Name	The name used to identify the SCADAPack x70 device or I/O module in the I/O Configuration table.	1...32 characters with no spaces	The name needs to begin with a letter, a number, or an underscore, and can contain only letters, numbers, hyphens and underscores. Default: Module#
Type	A list of every SCADAPack x70 device and I/O module that can be installed in a SCADAPack x70 system. Add each device and I/O module that is present in your system. The parameters that follow depend on the Type selection.	5304 Analog Out	Adds the inputs and outputs on the selected I/O module or SCADAPack x70 device to the configuration software. Only one SCADAPack RTU can be added. Keep in mind the following: SCADAPack 470, SCADAPack 570, and SCADAPack 574 <ul style="list-style-type: none"> • Supports up to 15 I/O modules • Maximum number of 6601 input output modules in the system is 4

		<p>5405 Digital In</p> <p>5410 Counter I/O</p> <p>5414 Digital In</p> <p>5415 Relay Out</p> <p>5505 RTD In</p> <p>5506 Analog In</p> <p>5606 Composite I/O</p> <p>5607 Composite I/O</p> <p>6601 Composite I/O</p> <p>6602 HART Analog I/O</p> <p>6602 HART Analog In</p> <p>6607 Composite I/O</p>	<ul style="list-style-type: none"> Maximum number of 6602 HART modules in the system is 1 Maximum number of 6607 input output modules in the system is 4 <p>SCADAPack 474</p> <ul style="list-style-type: none"> Supports up to 15 I/O modules Maximum number of 6601 input output modules in the system is 4 Maximum number of 6602 HART modules in the system is 1 Maximum number of 6607 input output modules in the system is 3 <p>SCADAPack 575</p> <ul style="list-style-type: none"> Supports up to 15 I/O modules Maximum number of 6601 input output modules in the system is 3 Maximum number of 6602 HART modules in the system is 1 Maximum number of 6607 input output modules in the system is 4
Address	The hardware address that is set on the SCADAPack x70 device or I/O module. Each device and I/O module is shipped with a default address of 0. See the hardware manual for details about setting the hardware address on the device.		
Input Filter	Applies to 5506 analog input module, 5606 input output module, and 5607 input output module only	3 Hz	Applies the selected frequency filter to every analog input on the I/O module or SCADAPack x70 device.

	The filter rate that is used to dampen process variations or noise in analog input channels.	6 Hz	<table border="1"> <thead> <tr> <th>Filter Frequency</th> <th>Analog Input Response Time</th> </tr> </thead> <tbody> <tr> <td>< 3 Hz</td> <td>155 ms at 60 Hz 185 ms at 50 Hz</td> </tr> <tr> <td>6 Hz</td> <td>85 ms at 60 Hz 85 ms at 50 Hz</td> </tr> <tr> <td>11 Hz</td> <td>45 ms at 60 Hz 55 ms at 50Hz</td> </tr> <tr> <td>30 Hz</td> <td>30 ms at 60 Hz 30 ms at 50 Hz</td> </tr> </tbody> </table>	Filter Frequency	Analog Input Response Time	< 3 Hz	155 ms at 60 Hz 185 ms at 50 Hz	6 Hz	85 ms at 60 Hz 85 ms at 50 Hz	11 Hz	45 ms at 60 Hz 55 ms at 50Hz	30 Hz	30 ms at 60 Hz 30 ms at 50 Hz
		Filter Frequency		Analog Input Response Time									
		< 3 Hz		155 ms at 60 Hz 185 ms at 50 Hz									
6 Hz	85 ms at 60 Hz 85 ms at 50 Hz												
11 Hz	45 ms at 60 Hz 55 ms at 50Hz												
30 Hz	30 ms at 60 Hz 30 ms at 50 Hz												
11 Hz													
30 Hz													
Applies to 5414 digital input module only The type of filter used to reduce noise on the 5414 digital input module inputs. Noise can distort signals and affect digital input values.	AC input	Filters noise from AC sources. Default.											
	DC input	Filters noise from DC sources.											
AI Filtering	The rate at which the analog inputs are sampled. Use this parameter in conjunction with the AI Smoothing parameter to reduce noise in analog input channels.	None	<ul style="list-style-type: none"> • 30 ms sampling <ul style="list-style-type: none"> ○ 6601 input output module, and 6602 HART module • 100 ms sampling <ul style="list-style-type: none"> ○ 6607 input output module 										
		50/60 Hz Filter	Filters noise at 50/60 Hz and samples at a rate that is slower than the fastest possible sampling rate. Filtering noise at 50/60 Hz can be required when equipment such as power supplies that generate noise in this frequency range is nearby. <ul style="list-style-type: none"> • 100 ms sampling 										

			<ul style="list-style-type: none"> ○ Default for SCADAPack 470 and SCADAPack 474 ● 500 ms sampling <ul style="list-style-type: none"> ○ 6607 input output module ● 620 ms sampling <ul style="list-style-type: none"> ○ SCADAPack 575 ○ 6601 input output module ● 640 ms sampling <ul style="list-style-type: none"> ○ 6602 HART module
AI Smoothing	<p>Applies to SCADAPack 575 and 6601 input output module only</p> <p>The number of analog input sample values that are collected before the averaging calculation is applied. Averaging is equivalent to low-pass filtering.</p> <p>Use this parameter in conjunction with the AI Filtering parameter to reduce noise in analog input channels.</p>	None	<p>See the table below⁸⁰¹ for guidance on selecting the AI Smoothing setting.</p> <p>Default: 3 samples</p>
		2 samples	
		3 samples	
		8 samples	
AI1 to AI4 Filtering	<p>Applies to SCADAPack 474 only</p> <p>The rate at which the analog inputs are sampled.</p>	None (30 ms sampling)	<p>Filters noise at 50/60 Hz and samples at a rate that is slower than the fastest possible sampling rate.</p> <p>Filtering noise at 50/60 Hz can be required when equipment such as power supplies that generate noise in this frequency range is nearby.</p>
		50/60 Hz Filter (100 ms sampling)	
AI5 to AI12 Filtering	<p>Applies to SCADAPack 474 only</p> <p>The rate at which the analog inputs are sampled.</p>	None (100 ms sampling)	<p>Filters noise at 50/60 Hz and samples at a rate that is slower than the fastest possible sampling rate.</p> <p>Filtering noise at 50/60 Hz can be required when equipment such as power supplies that</p>

		50/60 Hz Filter (500 ms sampling)	generate noise in this frequency range is nearby.
Line Frequency	<p>The scanning rate for analog inputs or digital inputs. Selecting the correct setting for your environment improves performance.</p> <p>For analog inputs, this parameter maximizes noise rejection.</p> <p>For digital inputs, this parameter maximizes threshold voltages in AC environments.</p> <p>The setting applies to every analog or digital input on the I/O module and is downloaded to the I/O module by the SCADAPack x70 device.</p>	50 Hz	<p>If the I/O module is used in a DC environment, the 60 Hz setting yields a slightly faster response time than the 50 Hz setting.</p>
		60 Hz	
AO Output Type	<p>The signal range for analog outputs.</p>	0...20 mA	<p>Used when the device connected to the analog output requires a 0...20 mA signal.</p> <p>Default</p>
		4...20 mA	<p>Used when the device connected to the analog output requires a 4...20 mA signal.</p>

AI Smoothing

The table below indicates the configuration selection available and the corresponding operation of the SCADAPack 575 or 6601 input output module analog inputs. AI Smoothing is available when AI filtering is disabled. All analog inputs on the SCADAPack 575 or 6601 input output module are affected by the configuration.



Samples Collected	Operation	Tradeoffs	Input Filter Applied ¹ ₈₁₇
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2 samples	Averages the value of the current sample and the previous sample. Replaces the current sample value with the average value.	Provides the fastest averaging, but allows more noise to pass through the analog input channel than the other options.	Noise suppression starts at 8 Hz
3 samples	Averages the value of the current sample with the previous sample and the next sample. Replaces the current sample value with the average value.	Provides the middle level of averaging and noise suppression compared to the other options.	Noise suppression starts at 5 Hz
8 samples	Averages the value of 8 samples starting from the current sample. Replaces the fourth sample value with the average value.	Provides the highest level of smoothing and noise suppression, but calculating the average value takes longer than the other options.	Noise suppression starts at 3 Hz
None	No sample values are collected or averaged.		None

¹These input filters can be selected for the SCADAPack 575 and 6601 input output module analog input channels when AI Filtering is set to None (30 ms sampling).

8.10.1.10 Counter Type Parameters

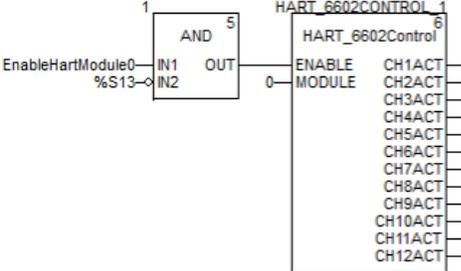
The following table describes the counter type parameters.

Parameter	Parameter Description
1.5 kHz	Default for digital inputs 1 - 4 on SCADAPack 575 Default for digital inputs 5 - 8 on SCADAPack 474
150 Hz	Default for digital inputs 5 - 8 on SCADAPack 575 Default for digital inputs 9 - 12 on SCADAPack 474
10 kHz Counter	Default for Din 1 and Din 2 on SCADAPack 570, SCADAPack 574, and SCADAPack 575 Default for digital inputs 1 - 4 on SCADAPack 470 and SCADAPack 474
10 kHz Turbine Counter	Available only for digital inputs 1 and 2 on SCADAPack 470, SCADAPack 474, SCADAPack 570, SCADAPack 574, and SCADAPack 575

8.10.1.11 HART Pass Through Parameters

The following table describes the HART Pass Through parameters.

Parameter	Parameter Description	Setting Description
<p>HART Pass Through</p>	<p>Available on SCADAPack 570, SCADAPack 574, and SCADAPack 575 models only. Not presently supported on SCADAPack 470 and SCADAPack 474 models.</p> <p>Determines whether the SCADAPack x70 device and the 6602 HART module send data from HART instruments directly to an Asset Management System (AMS).</p> <p>For the SCADAPack x70 device to discover HART devices connected to a 6602, for device scanning, or for HART Pass Through operation, you need to enable the 6602 to discover active HART devices. Add a HART_6602Control function block in the SCADAPack x70 Logic Editor to enable device discovery and provide control over the scanning process.</p> <p>A separate HART_6602Control function block is required for each 6602 HART module connected to the SCADAPack x70 device.</p> <p>The following settings are shown in the example below for a 6602 HART module to discover connected HART devices when used for HART Pass Through:</p> <ul style="list-style-type: none"> • Set the 6602 HART Analog Module to Address 0 • Set EnableHartModule0 (BOOL variable) to TRUE <p>System status bit %S13 (see the System Status Bits topic in the Logic Programming Overview manual) is used to trigger HART device discovery after SCADAPack x70 device restart.</p> <p>Other logic application content can trigger new device discovery by toggling EnableHartModule0 state from TRUE to FALSE and back to TRUE.</p>	<p>When enabled, data from HART instruments passes through the SCADAPack x70 device and the 6602 HART module to the AMS without manipulation.</p> <p>Default: Not checked</p>

	<p>See the HART_6602Control: Enable HART Module topic in the Function Blocks Technical Reference manual.</p> 	
<p>HART Pass Through Listen Port</p>	<p>The TCP port on which the SCADAPack x70 device listens for connection requests from the AMS or HART Communication DTM when HART Pass Through is enabled.</p>	<p>Default: 5001</p>

8.11 Configuring USB Communication

Use the **USB Communication > USB Port** page to activate and deactivate the USB Device port on the SCADAPack x70 device for connection to a local computer. This is typically the computer running the SCADAPack RemoteConnect configuration software.

The USB Device port operates similarly to an Ethernet port. As a result, you can USB communications to:

- Configure device parameters and write the configuration to the device
- Debug logic applications
- Transfer files to the device using FTP
- Establish a Telnet command line interface to the device

You can use USB to connect SCADAPack RemoteConnect to 1 SCADAPack x70 device.

⚠ WARNING

COMMUNICATION LOSS

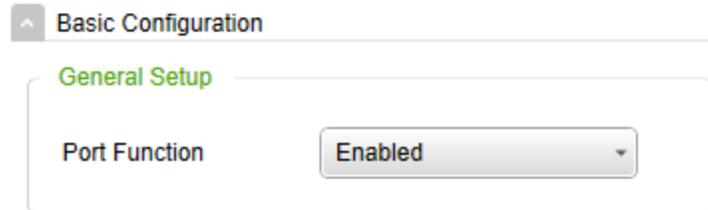
Applying invalid communication parameters can lead to loss of communication between SCADAPack RemoteConnect and your SCADAPack x70 device or between devices. A site visit may be required to re-establish communication.

Before changing communication parameters, verify that the new settings are valid for this device and valid in your network.

Failure to follow these instructions can result in death or serious injury.

To configure USB communication

1. On the Configuration tab, select **USB Communication > USB Port**.



2. Select the [Port Function](#)⁸⁴.
3. Click **Apply**.

8.11.1 General Setup Parameters

The following table describes the General Setup parameter for USB ports.

Parameter	Parameter Description	Setting	Setting Description
Port Function	Determines whether the USB port is active.	Enabled	The USB port provides communications with a local computer. Select this setting to communicate with the computer running the configuration software. Default
		Disabled	The USB port does not provide communications.

8.12 Configuring Serial Communication

Use the **Serial Communication > Ports** page to control the 5 Vdc power for the serial ports. This power is provided by pin 1 of the RJ45 connector for serial ports 1 to 4 for a SCADAPack 57x and ports 3 and 4 for a SCADAPack 47x, and can be used to power a human-machine interface (HMI) or other devices. For the SCADAPack 47x, serial port 5 is a modem.

You can also associate a Digital object with system data reference **SYS_INFO_SerialPortPowerOn**, which allows you to configure it from a logic application or through protocol control commands, or check the current state of the power pins. The system data reference is set to true when the 5 Vdc power on the serial ports is on, and is false when the 5 Vdc power on the ports is off.

Use the **Serial Communication > Ports > Serial #** page to define serial port operation. For an overview of serial communication configuration requirements, see [Serial Communication Configuration Overview](#)⁸⁶.

⚠ WARNING

COMMUNICATION LOSS

Applying invalid communication parameters can lead to loss of communication between SCADAPack RemoteConnect and your SCADAPack x70 device or between devices. A site visit may be required to re-establish communication.

Before changing communication parameters, verify that the new settings are valid for this device and valid in your network.

Failure to follow these instructions can result in death or serious injury.

To configure serial communication

1. On the **Configuration** tab, select **Serial Communication > Ports**.
2. If you want to provide power to Pin 1 of the RJ45 connector, click the drop-down list for **Serial Port +5 Vdc Power**, otherwise go to step 3.

⬆ Basic Configuration

General Setup

Serial Port +5 Vdc Power Off ▼ i

3. Select **Serial Communication > Ports > Serial #**.

⬆ Basic Configuration

General Setup

Port Function DNP3 ▼

Port Mode RS232 (RTS Off) ▼

Baud Rate 9600 ▼

4. Configure the [General Setup](#)^[93] parameters, as well as any additional parameters that are displayed, then click **Apply**.

The additional parameters that are displayed depend on your **Port Function** and **Port Mode** selections.

- [Modbus RTU Server Setup Parameters](#)^[97]
- [Terminal Server Setup Parameters](#)^[98]
- [Dialup Modem Setup Parameters](#)^[99]

- [PPP Modem Setup Parameters](#)^[100]
5. If required, expand the Advanced Configuration parameters and configure the parameters that are displayed for your **Port Function** and **Port Mode** selections, then click **Apply**.
 - [General Setup Parameters](#)^[102]
 - [DNP3 Setup Parameters](#)^[102]
 - [PPP/TCPIP Setup Parameters](#)^[104]
 6. If you configured the serial port as described below, go to the following pages and configure the Advanced Configuration parameters if required, then click **Apply**.
 - If you selected **PPP/TCPIP** as the **Port Function**, select **Serial Communication > PPP/TCPIP Settings** then configure the [PPP/TCPIP Settings](#)^[104] parameters.
 - If you selected **Terminal Server** as the **Port Function**, select **Serial Communication > Terminal Server Settings** then configure the [Terminal Server Settings](#)^[106] parameter.
 - If you selected **Dialup Modem** as the **Port Mode**, select **Serial Communication > Modem Settings** then configure the [Modem Settings](#)^[103] parameters.
 - If you selected **RS232 (RTS) Keyed** as the **Port Mode**, select **Serial Communication > Serial Multidrop** then configure the [Serial Multidrop](#)^[106] parameters.

8.12.1 Serial Communication Configuration Overview

The table below summarizes the parameters you need to configure for each type of serial port connection you can make. The **Port Function** and **Port Mode** parameter settings determine which additional parameters need to be configured.

Additional parameters that apply to a single serial port are displayed on the same page as the **Port Function** and **Port Mode** parameters.

Additional parameters that apply to every serial port are displayed on their own page. See the procedure below the table for details.

To Connect To...	Port Function Setting	Port Mode Setting	Additional Basic Parameters to Configure	Optional Advanced Parameters to Configure
Another device using DNP3 through the serial port	DNP3	RS232 or RS485 options	None	General Setup Parameters ^[102] DNP3 Setup Parameters ^[102] Serial Multidrop Parameters ^[106] (RS232 (RTS) Keyed or RS485 2w only)

<p>A dialup modem over a DNP3 connection</p>	<p>DNP3</p>	<p>Dialup Modem</p>	<p>Dialup Modem Setup ^[99]</p>	<p>General Setup Parameters ^[102]</p> <p>DNP3 Setup Parameters ^[102]</p> <p>Modem Settings Parameters ^[105]</p>
<p>An ASCII terminal session to run command line commands</p>	<p>Command Line</p>	<p>RS232 or RS485 options</p>	<p>None</p>	<p>General Setup Parameters ^[102]</p> <p>Serial Multidrop Parameters ^[106] (RS232 (RTS) Keyed or RS485 2w only)</p>
<p>Another device that has a PPP serial channel</p> <p>This could be a serial port on another SCADAPack or RTU, or on another type of device, such as a router that is using PPP</p>	<p>PPP/TCPIP</p>	<p>RS232 (RTS On)</p>	<p>None</p>	<p>General Setup Parameters ^[102]</p> <p>PPP/TCPIP Setup Parameters ^[104]</p> <p>PPP/TCPIP Settings Parameters ^[104]</p>
<p>A PPP modem, such as a GPRS cellular modem, 3G modem or LTE modem</p>	<p>PPP/TCPIP</p>	<p>PPP Modem</p>	<p>PPP Modem Setup ^[100]</p>	<p>General Setup Parameters ^[102]</p> <p>PPP/TCPIP Setup Parameters ^[104]</p> <p>PPP/TCPIP Settings Parameters ^[104]</p>
<p>A TCP port on a remote TCP/IP node, such as a terminal server, or another SCADAPack x70 device port that is configured as a Server port</p> <p>An application on a host computer, or another SCADAPack x70 device port that is configured as a Client port</p>	<p>Terminal Server</p>	<p>RS232 or RS485 options</p>	<p>Terminal Server Setup ^[98]</p>	<p>General Setup Parameters ^[102]</p> <p>Terminal Server Settings Parameter ^[106]</p> <p>Serial Multidrop Parameters ^[106] (RS232 (RTS) Keyed or RS485 2w only)</p>
<p>A Modbus RTU Server device when you are using SCADAPack x70</p>	<p>Modbus</p>	<p>RS232 or RS485 options</p>	<p>None</p>	<p>General Setup Parameters ^[102]</p>

configuration software to set up Modbus RTU Client operation				Serial Multidrop Parameters ^[106] (RS232 (RTS) Keyed or RS485 2w only)
The COM function blocks	COM User (Function Block)	RS232 or RS485 options	None	General Setup Parameters ^[102] Serial Multidrop Parameters ^[106] (RS232 (RTS) Keyed or RS485 2w only)
A Modbus RTU Client device	Modbus	RS232 or RS485 options	None	General Setup Parameters ^[102] Serial Multidrop Parameters ^[106] (RS232 (RTS) Keyed or RS485 2w only)
A multidrop hardware device	Any of the options that offer RS232 (RTS) Keyed or RS485 2w as the Port Mode	RS232 (RTS) Keyed or RS485 2w	Depends on the selected Port Function	Serial Multidrop Parameters ^[106]

8.12.1.1 Basic Serial Configuration

Use the Basic Configuration parameters to define how the serial port is used.

The General Setup parameters are displayed by default. Additional parameters are displayed based on the settings you select for the **Port Function** and **Port Mode**.

- [General Setup Parameters](#)^[93]
- [Modbus RTU Server Setup Parameters](#)^[97]
- [Terminal Server Setup Parameters](#)^[98]
- [Dialup Modem Setup Parameters](#)^[99]
- [PPP Modem Setup Parameters](#)^[100]

The following table lists the **Serial Port Function** and **Port Mode** for serial ports of each SCADAPack x70 Device. For additional details about serial ports, see the hardware manual for your SCADAPack x70 device.

SCADAPack x70 Device	Serial Port	Port Function	Port Mode
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SCADAPack 570 SCADAPack 574 SCADAPack 575 DNP3 is the default Port Function RS232 (RTS Off) is the default Port Mode	Serial1	None	
		DNP3	RS232 (RTS Off) RS232 (RTS On) RS232 (RTS) Keyed Dialup Modem
		Command Line	RS232 (RTS Off) RS232 (RTS On)
		COM User (Function Block)	RS232 (RTS Off) RS232 (RTS On) RS232 (RTS) Keyed
		PPP/TCPIP	RS232 (RTS On) PPP Modem
		Terminal Server	RS232 (RTS Off) RS232 (RTS On) RS232 (RTS) Keyed
		Modbus	RS232 (RTS Off) RS232 (RTS On) RS232 (RTS) Keyed
		SCADAPack 570 SCADAPack 574 SCADAPack 575 Modbus is the default Port Function. If Modbus settings are not enabled, DNP3 is the default Port Function. RS232 (RTS Off) is the default Port Mode	Serial2
DNP3	RS232 (RTS Off) RS232 (RTS On) RS232 (RTS) Keyed Dialup Modem		
Command Line	RS232 (RTS Off) RS232 (RTS On)		
COM User (Function Block)	RS232 (RTS Off) RS232 (RTS On) RS232 (RTS) Keyed		

		PPP/TCPIP	RS232 (RTS On) PPP Modem
		Terminal Server	RS232 (RTS Off) RS232 (RTS On) RS232 (RTS) Keyed
		Modbus	RS232 (RTS Off) RS232 (RTS On) RS232 (RTS) Keyed
SCADAPack 570 SCADAPack 574 SCADAPack 575	Serial3	None	
		DNP3	RS232 RS485 2w
		Command Line	RS232
		COM User (Function Block)	RS232 RS485 2w
		Terminal Server	RS232 RS485 2w
		Modbus	RS232 RS485 2w
SCADAPack 570 SCADAPack 574 SCADAPack 575	Serial4	None	
		DNP3	RS232 RS485 2w
		Command Line	RS232
		COM User (Function Block)	RS232 RS485 2w
		Terminal Server	RS232 RS485 2w
		Modbus	RS232

Modbus is the default Port Function, and RS485 2w is the default Port Mode.
If Modbus settings are not enabled, DNP3 is the default Port Function and RS232 is the default Port Mode.

Command Line is the default Port Function
RS232 is the default Port Mode

			RS485 2w
SCADAPack 470 SCADAPack 474 Modbus is the default Port Function. If Modbus settings are not enabled, DNP3 is the default Port Function. RS485 2w is the default Port Mode	Serial1	None	
		DNP3	RS485 2w
		COM User (Function Block)	RS485 2w
		Terminal Server	RS485 2w
		Modbus	RS485 2w
SCADAPack 470 SCADAPack 474 Modbus is the default Port Function. If Modbus settings are not enabled, DNP3 is the default Port Function. RS485 2w is the default Port Mode.	Serial2	None	
		DNP3	RS485 2w
		COM User (Function Block)	RS485 2w
		Terminal Server	RS485 2w
		Modbus	RS485 2w
SCADAPack 470 SCADAPack 474 Modbus is the default Port Function. If Modbus settings are not enabled, DNP3 is the default Port Function. RS232 (RTS On) is the default Port Mode	Serial3	None	
		DNP3	RS232 (RTS Off) RS232 (RTS On) RS232 (RTS) Keyed RS485 2w Dialup Modem
		Command Line	RS232 (RTS Off) RS232 (RTS On)
		COM User (Function Block)	RS232 (RTS Off) RS232 (RTS On) RS232 (RTS) Keyed RS485 2w
		Terminal Server	RS232 (RTS Off) RS232 (RTS On)

			RS232 (RTS) Keyed RS485 2w
		Modbus	RS232 (RTS Off) RS232 (RTS On) RS232 (RTS) Keyed RS485 2w
		PPP/TCPIP	RS232 (RTS On) PPP Modem
SCADAPack 470 SCADAPack 474 Command Line is the default Port Function RS232 (RTS On)	Serial4	None	
		DNP3	RS232 (RTS Off) RS232 (RTS On) RS232 (RTS) Keyed RS485 2w Dialup Modem
		Command Line	RS232 (RTS Off) RS232 (RTS On)
		COM User (Function Block)	RS232 (RTS Off) RS232 (RTS On) RS232 (RTS) Keyed RS485 2w
		Terminal Server	RS232 (RTS Off) RS232 (RTS On) RS232 (RTS) Keyed RS485 2w
		Modbus	RS232 (RTS Off) RS232 (RTS On) RS232 (RTS) Keyed RS485 2w
		PPP/TCPIP	RS232 (RTS On)

			PPP Modem
SCADAPack 470 SCADAPack 474 None is the default Port Function	Serial5	None	
		DNP3	RS232 (RTS Off) RS232 (RTS On) RS232 (RTS) Keyed
		Command Line	RS232 (RTS Off) RS232 (RTS On)
		COM User (Function Block)	RS232 (RTS Off) RS232 (RTS On) RS232 (RTS) Keyed
		Modbus	RS232 (RTS Off) RS232 (RTS On) RS232 (RTS) Keyed
		PPP/TCPIP	RS232 (RTS On) PPP Modem

8.12.1.1.1 General Setup Parameters

The following table describes the General Setup parameters for serial ports.

Parameter	Parameter Description	Setting	Setting Description
Port Function	Specifies how the serial port is used. The Port Function is typically tied to the role the SCADAPack x70 device performs in your SCADA network. The options presented depend on the device	DNP3	Enables DNP3 Data Concentrator Client, DNP3 Outstation, or DNP3 Peer to Peer Client operation on the serial port. Connect a port with this setting to a remote communication device or another device that supports the DNP3 protocol. Configuring multiple DNP3 ports allows any combination of DNP3 devices to simultaneously access the SCADAPack x70 device. Messages can also be routed between the DNP3 ports.

	type and serial port number.	Command Line	<p>Enables command line functions and diagnostic output on the serial port. Connect a port with this setting to a terminal emulator application on a computer.</p> <p>Only one serial port can be used for command line operation.</p>
		COM User (Function Block)	<p>This port function is required to make use of the COM_Close, COM_Open, COM_Read, COM_ReadBinary, COM_ClearReadBuffer, COM_Write, and COM_WriteBinary function blocks in the SCADAPack x70 Logic Editor. See the Communication Function Blocks in the Function Blocks Technical Reference manual.</p> <p>If you will be using the COM function blocks for communication with different device types, configure a separate serial port for each device type.</p>
		PPP/TCPIP	<p>Enables PPP over TCP/IP communications on the serial port. The serial port functions as an IP interface on the device.</p> <p>Connect a port with this setting to another device that has a PPP serial channel. This is typically a PPP modem, but could also be a serial port on another SCADAPack or RTU, or on another type of device, such as a router that is using PPP. If there is a reliable Ethernet connection between the devices, it is preferable to configure IP communications over the Ethernet port rather than over the serial port.</p> <p>If you are connecting to a PPP modem, select PPP Modem as the Port Mode then configure the PPP Modem Setup^[100] parameters.</p> <p>If you are connecting to a SCADAPack, RTU, or other device type, you need to configure an IP Address and Subnet Mask^[104] for the port.</p> <p>Configuring multiple PPP/TCPIP ports allows multiple devices to simultaneously access the SCADAPack x70 device. Each IP port on the SCADAPack x70 device</p>

			(Ethernet or PPP) needs to be configured on a different subnet.
		Terminal Server	<p>Enables terminal server functionality on the serial port. A Terminal Server port can operate in either client or server mode.</p> <p>Configuring multiple Terminal Server ports allows a combination of clients and servers to access the SCADAPack x70 device.</p>
		Modbus	<p>Enables Modbus operation on the serial port.</p> <p>To add this port function to the selection list, see Changing the Project Settings^[42]. Modbus RTU Client operation is configured using the Modbus Scanner or by using the function block MB_SERIAL_MASTER. See Modbus Serial Master in the Function Blocks Technical Reference manual. Connect a port with this setting to one or more Modbus RTU Servers.</p> <p>Configuring multiple Modbus ports allows the device to simultaneously, and more efficiently, communicate with multiple Modbus RTU Servers.</p> <p>For Modbus RTU Server operation on the serial port, connect a serial port with this setting to a Modbus RTU Client.</p>
		None	
Port Mode	Sets the hardware communications	RS232 (RTS Off)	Used for RS232 communications where the Request to Send (RTS) signal needs to be constantly deasserted. No hardware

	format for the port. The options presented depend on the SCADAPack x70 device type, the serial port number and the Port Function.		handshaking is required or supported when this mode is selected.
		RS232 (RTS On)	Used for RS232 communications where the Request to Send (RTS) signal needs to be constantly asserted. No hardware hand shaking is required or supported when this mode is selected.
		RS232 (RTS) Keyed	Used for RS232 communications where Request to Send (RTS) / Clear to Send (CTS) flow control is required.
		RS232	Used for RS232 communications on serial ports that do not provide hardware control lines for Request to Send (RTS), Clear to Send (CTS), Data Terminal Ready (DTR) or Data Carrier Detect (DCD).
		RS485 (2w)	Used for RS485 2-wire communications. No hardware handshaking is required or supported.
		Dialup Modem	Used for modem communications over a telephone line or a GSM communications link. If you choose this setting, you also need to configure the Dialup Modem Setup ^[99] parameters.
		PPP Modem	Used for modem communications over a Point-to-Point (PPP) protocol link. Only available when the PPP/TCPIP Port Function is selected. If you choose this setting, you also need to configure the PPP Modem Setup ^[100] parameters.
Baud Rate	Sets the data rate for the port.	300	Select the baud rate that matches the rate used by the device at the other end of the link. Evaluate factors such as link quality and link length when selecting the baud rate. Generally, links with lower quality or longer length require slower baud rates. Default: 9600
		600	
		1200	
		2400	
		4800	

		9600	
		19200	
		38400	
		57600	
		115200	

8.12.1.1.2 Modbus RTU Server Setup Parameters

The following table describes the Modbus RTU Server Setup parameters for serial ports. These parameters are only available when the **Port Function** is set to **Modbus**.

Parameter	Parameter Description	Setting	Setting Description
Addressing	Selects standard or extended addressing mode For addressing mode information, see: Configuring Standard and Extended Addressing ¹⁸³ .	Standard (default)	Modbus unit identifiers include 1...255
		Extended	Modbus unit identifiers include 1...65534
Station Address	The Modbus RTU Server address	<ul style="list-style-type: none"> Standard addressing : 1...255 Extended addressing : 1...65534 	Default: 1
Enron Modbus	When checked, the Enron Station Address field is enabled		Available only when the Realflo Flow Computer option is configured Default: Unchecked
Enron Station Address	The Enron Modbus address	<ul style="list-style-type: none"> Standard addressing : 1...255 Extended addressing : 1...65534 	Default: 2 Available only when the Realflo Flow Computer option is configured Enabled only when Enron Modbus is checked The Enron Station Address needs to be different than the Server Address for each port.

8.12.1.1.3 Terminal Server Setup Parameters

The following table describes the Terminal Server Setup parameters for serial ports. These parameters are only available when the **Port Function** is set to **Terminal Server**.

Parameter	Parameter Description	Setting	Setting Description
Port Mode	Determines whether the port operates as a client or a server for terminal server sessions.	Client	A Client port initiates connection requests to a TCP port on a remote TCP/IP node, such as a terminal server, or another SCADAPack x70 device port that is configured as a Server port.
		Server	A Server port listens on the specified TCP port for connection requests from a client, such as an application on a host computer, or another SCADAPack x70 device port that is configured as a Client port. Default setting
TCP Listen Port Number	Identifies the TCP port that the SCADAPack x70 device listens on when the Port Mode is set to Server .	1...65535 Default: <ul style="list-style-type: none"> • Serial 1: 50001 • Serial 2: 50002 • Serial 3: 50003 • Serial 4: 50004 	Data received from a remote device that made a connection to the SCADAPack x70 at this TCP port number, is transmitted on the SCADAPack x70 serial port. Data received on the SCADAPack x70 serial port is sent to the remote device. You can use any port number for the SCADAPack x70 TCP port that does not conflict with another port number in use on the SCADAPack x70 device. For example, (assuming default port configuration), do not use: <ul style="list-style-type: none"> • Port 502 when the SCADAPack x70 device is operating as a Modbus/TCP Server • Port 504 when logic debugging is enabled on the SCADAPack x70 device • Port 5001 when HART pass through is enabled on the SCADAPack x70 device

TCP Port Number	Identifies the remote TCP port number that this client connects to when the Port Mode is set to Client .	1...65535 Default: <ul style="list-style-type: none"> Serial 1: 50001 Serial 2: 50002 Serial 3: 50003 Serial 4: 50004 	Set this field to the TCP port number of the remote (server) device. The SCADAPack x70 opens a TCP connection with the remote device at this port number. Data received on the SCADAPack x70 device serial port is sent to the remote device. Data received from the remote device is transmitted to the SCADAPack x70 serial port
IP Address	Identifies the remote IP address that this client connects to when the Port Mode is set to Client .	Standard IP address format	Default: 1.0.0.0 Set this field to the IP address of the remote (server) device. The SCADAPack x70 opens a TCP connection with the remote device at this IP address.

8.12.1.1.4 Dialup Modem Setup Parameters

The following table describes the Dialup Modem Setup parameters for serial ports. These parameters are only available when the **Port Function** is set to **DNP3** and the **Port Mode** is set to **Dialup Modem**.

Parameter	Parameter Description	Setting	Setting Description
Low Power	Determines whether low power support is enabled on the modem. Use this parameter in conjunction with the DTR Delay Time ^[10⁵] parameter.	When the box is checked, the SCADAPack x70 device raises the Data Terminal Ready (DTR) line when communicating with the modem and drops the DTR line when communication is complete. The SCADAPack x70 device waits the DTR Delay Time ^[10⁵] between raising DTR and sending a command string to the modem. This is to allow a low-powered modem to wake from sleep mode. The modem Initialization String may need to include modem-specific commands to activate low power mode based on the DTR signal. When the box is not checked, the DTR line remains asserted. Default: Unchecked	
Initialization String	The initialization string that is sent to the modem	Default: ATE0Q0V0&D2S	The default string sets up modem parameters such as auto-answer

	every 30 seconds to check modem status.	0=1	(S0=1) and hardware hand-shaking requirements. Specific modem settings can be tailored by using this string. For example, if a SCADAPack x70 device will receive in-bound calls through the modem, it needs to be set for auto-answer.
Dial Prefix	The prefix that is added to the beginning of the phone number that causes the modem to dial the desired number.	Default: ATDT	The default string is sufficient in most situations. The phone number is not entered here. It is entered in the Connect Number parameter for the DNP3 route ^[154] .
Modem Mode	Determines whether the SCADAPack x70 device maintains a permanent connection with the remote device, or if it will disconnect the modem after a period of time in which no data is transmitted or received.	Hangup Enabled	The SCADAPack x70 device disconnects the modem after a timeout period if it has not transmitted or received any data during that time period. The timeout period is set using the Inactivity Timeout parameter ^[105] . The Inactivity Timeout is only configured when Hangup Enabled is selected. Default
		Hangup Disabled	The SCADAPack x70 device does not disconnect the modem if it has not transmitted or received data during the Inactivity Timeout ^[105] .

8.12.1.1.5 PPP Modem Setup Parameters

The following table describes the Dialup Modem Setup parameters for serial ports. These parameters are only available when the **Port Function** is set to **PPP/TCPIP** and the **Port Mode** is set to **PPP Modem**.

Parameter	Parameter Description	Setting	Setting Description
Initialization String	The initialization string that is sent to the modem every 30 seconds to check modem status.	Default: ATE0V0&D0&C1 &W	The default string sets up modem parameters such as auto-answer (S0=1) and hardware hand-shaking requirements. Specific modem settings can be tailored

			by using this string. For example, if a SCADAPack x70 device will receive in-bound calls through the modem, it needs to be set for auto-answer.
APN String	The network specific setup string that is sent to the PPP modem when a connection is being established.	Default: AT+CGDCONT=1,"IP","apnexample"	The "apnexample" part of the default string is typically the network name. Consult your network operator for the specific value.
Dial Prefix	The dial string for the PPP modem to go online.	Default: ATDT*99***1#	The string is specific to the modem, but the default string is sufficient in most situations.
PAP/CHAP Username	The Password Authentication Protocol/Challenge Handshake Authentication Protocol (PAP/CHAP) username that is used for authentication during log on to the PPP network.	Obtain the PAP/CHAP username from your network operator.	
PAP/CHAP Password	The password that is used for authentication during log on to the PPP network.	Obtain the PAP/CHAP password from your network operator.	

8.12.2 Advanced Configuration

Use the Advanced Configuration parameters to customize the communication settings. The parameters that are displayed are based on the settings you select for the **Port Function** and **Port Mode**.

- [General Setup Parameters](#) ^[102]
- [DNP3 Setup Parameters](#) ^[102]
- [PPP/TCPIP Setup Parameters](#) ^[104]
- [PPP/TCPIP Settings Parameters](#) ^[104]
- [Modem Settings Parameters](#) ^[105]
- [Terminal Server Settings Parameter](#) ^[106]
- [Serial Multidrop Parameters](#) ^[106]

8.12.2.1 General Setup Parameters

The following table describes the General Setup parameter for serial ports.

Parameter	Parameter Description	Setting	Setting Description
Serial Format	The formatting for data that is sent over the serial port.	8-bit No Parity	Select the Serial Format that matches the format used by the device at the other end of the connection. For most devices, the default setting of 8-bit No Parity is fine. Settings with names that do not specify stop bits send 1 stop bit. Default: 8-bit No Parity
		8-bit Even Parity	
		8-bit Odd Parity	
		7-bit Even Parity	
		7-bit Odd Parity	
		8-bit No Parity, 2 Stop Bits	

8.12.2.2 DNP3 Setup Parameters

The following table describes the DNP3 Setup parameters for serial ports. These parameters are available only when the **Port Function** is set to **DNP3**.

Parameter	Parameter Description	Setting	Setting Description
Data Link Confirm Mode	<p>Determines whether the SCADAPack x70 device requests a confirmation message when it sends DNP3 data link layer frames.</p> <p>If a confirmation message is requested, the SCADAPack x70 device waits until the confirmation is received before sending the next DNP3 frame.</p>	Sometimes	<p>The SCADAPack x70 device requests a confirmation message only when it sends multi-frame DNP3 messages. This mode can improve data delivery on low-quality links because individual frames can be resent rather than entire multi-frame messages.</p> <p>Select Sometimes if the SCADAPack x70 device is sending a range of message sizes on potentially congested or unreliable links.</p>

		Always	<p>The SCADAPack x70 device always requests a confirmation message when it sends DNP3 frames.</p> <p>Select Always to improve communications delivery on unreliable links.</p>
		Never	<p>The SCADAPack x70 device never requests a confirmation message when it sends DNP3 frames.</p> <p>Select Never when using a robust communication medium, such as a local serial connection between two devices. This mode provides the highest efficiency and the highest throughput of the three options.</p> <p>Default</p>
Data Link Retries	<p>The number of times a data link layer frame is resent if a confirmation message was requested but has not been received.</p> <p>The SCADAPack x70 device resends frames when the Channel Receive Timeout elapses, but it has not yet received a confirmation message. If the number of retries is exceeded, the frame is considered to be undeliverable and transmission of the entire DNP3 message is aborted.</p> <p>This setting applies only when the Data Link Confirm Mode parameter is set to Sometimes or Always.</p>	0...100	Default: 2
Channel Receive Timeout	<p>The amount of time the SCADAPack x70 device waits for a data link layer confirmation message when one has been requested.</p>	0...65535 seconds (s)	Default: 5 s

	<p>If a confirmation message is not received within this time, the frame is either retransmitted, or discarded.</p> <p>This setting applies only when the Data Link Confirm Mode is set to Sometimes or Always.</p>		
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8.12.2.3 PPP/TCPIP Setup Parameters

The following table describes the PPP/TCPIP Setup parameters for serial ports. These parameters are available only when the **Port Function** is set to **PPP/TCPIP** and only need to be configured when you are creating a point-to-point RS232 link to another device. They do not need to be configured when you are connecting to a PPP modem.

Parameter	Parameter Description	Setting	Setting Description
IP Address	The IP address for the serial port when it is configured for the PPP/TCPIP Port Function and operating as an IP interface.	Standard IP address format	Default: Negotiate
Subnet Mask	The subnet mask for the serial port when it is configured for the PPP/TCPIP Port Function and operating as an IP interface.	Standard subnet mask format	Default: 255.255.255.0 Disabled when the IP Address is Negotiate.

8.12.2.4 PPP/TCPIP Settings Parameters

The following table describes the PPP/TCPIP Settings parameters for serial ports. These parameters are available only when the **Port Function** is set to **PPP/TCPIP**. To view these parameters, select **Ports > PPP/TCPIP Settings**.

Parameter	Parameter Description	Setting	Setting Description
PPP DCD Drop Delay	<p>The time that the data carrier detect signal (DCD) needs to be off before the PPP link is disconnected.</p> <p>This parameter helps to improve PPP connection reliability when best-effort mobile data services, such as GPRS, are used.</p>	0...60000 milliseconds (ms)	Default: 500 ms

8.12.2.5 Modem Settings Parameters

The following table describes the Modem Settings parameters for serial ports. These parameters are available only when the **Port Function** is set to **DNP3** and the **Port Mode** is set to **Dialup Modem**. To view these parameters, select **Ports > Modem Settings**.

Parameter	Parameter Description	Setting	Setting Description
Inactivity Timeout	The amount of time the SCADAPack x70 device waits to hangup the modem when no further messages are being sent on the modem channel. Use this timeout when the Modem Mode parameter is set to Hangup Enabled .	0...65535 seconds (s)	Default: 30 s
Message Tx Timeout	The amount of time the SCADAPack x70 device stores an outbound message in its transmit queue before discarding it. This timeout accounts for delayed transmission while waiting for modem connection.	0...65535 seconds (s)	Set this timeout to a value that is slightly less than the DNP3 Application Layer Timeout parameter. Default: 120 s
Modem Test Interval	The amount of time between Modem health tests while the modem is not connected.	0...65535 seconds (s)	Default: 60 s
Send Delay	The amount of time the SCADAPack x70 device waits for a new outbound request if the modem channel is about to be connected by an inbound call. The timer starts when a modem ring response is received. This allows the existing modem transaction to complete before attempting to send the new request. If a new request is sent during this period, the modem hangs up prematurely.	0...65535 seconds (s)	Set this delay to a value that is higher than the Modem Inactivity Timeout to allow the modem to hang-up normally. Default: 20 s
DTR Delay Time	The amount of time the SCADAPack x70 device waits between asserting Data Terminal Ready (DTR) and sending a command string to the modem. Use this timeout when the Low Power ⁹⁹ parameter is enabled.	0...5000 milliseconds (ms)	Default: 500 ms

8.12.2.6 Terminal Server Settings Parameter

The following table describes the Terminal Server Settings parameter for serial ports. This parameter is available only when the **Port Function** is set to **Terminal Server**. To view this parameter, select **Ports > Terminal Server Settings**.

Parameter	Parameter Description	Setting	Setting Description
Inactivity Timeout	The amount of time the serial port waits for activity before disconnecting the TCP port.	0...65535 seconds (s)	Default: 250 s

8.12.2.7 Serial Multidrop Parameters

The following table describes the Serial Multidrop parameters for serial ports.

If the **Port Mode** is set to **RS232 (RTS) Keyed**, these parameters are available.

If the **Port Mode** is set to **RS485 2w**, **Response Delay** is the only parameter available.

Parameter	Parameter Description	Setting	Setting Description
Tx Warmup Delay	The amount of time between the transmission media being activated and the actual transmission of data.	0...65535 milliseconds (ms)	Default: 60 ms
Maximum Random Delay	The amount of time the SCADAPack x70 device waits before it reattempts a data transmission after a collision in the communication media. If this parameter and the Fixed Delay parameter are both set to 0, then no media access collision avoidance timing is performed.	0...65535 milliseconds (ms)	Default: 100 ms
Postamble Delay	A fixed time to delay deactivation of the transmission media after the completion of a message. Use this parameter to overcome the case where the transmission media deactivates the communication channel too early, resulting in incomplete transfer of some of the data transmitted by the SCADAPack x70 device.	0...65535 milliseconds (ms)	Default: 20 ms
Fixed Delay	The amount of time the SCADAPack x70 device waits before transmitting data onto the physical channel if the channel is	0...65535 milliseconds (ms)	Default: 0 ms

	<p>busy when the device first tries to transmit data (after the Response Delay).</p> <p>This time is valid for communications drivers using collision avoidance, and is applied after the SCADAPack x70 device first detects the channel is available.</p>		
Response Delay	<p>The amount of time data transmission is delayed prior to any collision avoidance mechanisms. This parameter is typically used in situations where a radio repeater may be slow to drop its carrier and the SCADAPack x70 device tries to respond to a request too quickly.</p>	0...65535 milliseconds (ms)	Default: 0 ms

8.13 Configuring IP Communication

The procedure below describes how to configure IP communication between the SCADAPack x70 device and another device. It does not describe how to activate TCP/IP services on the SCADAPack x70 device. For information about activating TCP/IP services, see [Using TCP/IP Services](#)^[110].

As part of this procedure, you will configure a Default Gateway IP Address. This is the IP address of the gateway node through which IP communications pass if no other path can be determined for an IP address. A path is defined by Ethernet or PPP port interfaces, or by IP Routing table entries.

WARNING

COMMUNICATION LOSS

Applying invalid communication parameters can lead to loss of communication between SCADAPack RemoteConnect and your SCADAPack x70 device or between devices. A site visit may be required to re-establish communication.

Before changing communication parameters, verify that the new settings are valid for this device and valid in your network.

Failure to follow these instructions can result in death or serious injury.

To configure IP communication between the SCADAPack x70 device and another device

1. On the **Configuration** tab, select **IP Communication > Ethernet Ports**.
2. Configure the [Default Gateway IP Address](#)^[108] parameter that will be used by every Ethernet port.
3. Select **IP Communication > Ethernet Ports > Ethernet #**, configure the [General Setup](#)^[110] parameters, then click **Apply**.

Basic Configuration

General Setup

IP Address: 172.16.1.200

Subnet Mask: 255.255.255.0

Default Gateway IP Address: 0.0.0.0

IP Address Range: 172.16.1.1 - 172.16.1.254
 Network Address: 172.16.1.0
 Broadcast Address: 172.16.1.255

4. Select **IP Communication > Routing Table**.

Basic Configuration

IP Routing Table

Add IP Route Remove IP Routes

Destination IP Address	Subnet Mask	Destination Port	Gateway IP Address	Metric

IP Forwarding

Disable IP Forwarding

- Click **Add IP Route**.
- [Define the route to the device you want to connect to](#), then click **Ok**.
- On the Routing Table page, click **Apply**.

8.13.1 Using Ethernet Ports

Use the **IP Communication > Ethernet Ports** page to define the IP address for the default gateway that is used by every Ethernet port on the SCADAPack x70 device.

Use the **IP Communication > Ethernet Ports > Ethernet #** page to define the IP address and subnet mask for each Ethernet port on the SCADAPack x70 device.

To configure the Default Gateway IP Address

- On the Configuration tab, select **IP Communication > Ethernet Ports**.

Basic Configuration

General Setup

Default Gateway IP Address

2. Configure the [Default Gateway IP Address](#)^[109] parameter then click **Apply**.

To configure the parameters for individual Ethernet ports

1. On the Configuration tab, select **IP Communication > Ethernet Ports > Ethernet #**.

When no Gateway IP Address is entered, the Basic Configuration is displayed as follows:

Basic Configuration

General Setup

IP Address IP Address Range: 172.16.1.1 - 172.16.1.254
 Network Address: 172.16.1.0
 Broadcast Address: 172.16.1.255

Subnet Mask

Default Gateway IP Address None >

When a Gateway IP Address is entered, the address is displayed as follows:

Basic Configuration

General Setup

IP Address IP Address Range: 172.16.1.1 - 172.16.1.254
 Network Address: 172.16.1.0
 Broadcast Address: 172.16.1.255

Subnet Mask

Default Gateway IP Address 172.16.1.10 >

2. Configure the [General Setup](#)^[110] parameters, then click **Apply**.

8.13.1.1 Default Gateway IP Address Parameter

The following table describes the IP address parameter that is used by every Ethernet port on the SCADAPack x70 device if a gateway is not defined for the IP route.

Parameter	Parameter Description	Setting
Default Gateway IP Address	The IP address of the default gateway node through which IP communications pass if no other path can be determined for an IP address.	Standard IP address format

	<p>If the Ethernet port subnets, PPP port subnets or IP Routing Table does specify a route for an IP address, the communication is routed through the default gateway node.</p> <p>If this device and the device at the other end of the connection are on the same subnet, you do not need to define a Default Gateway IP Address here or a route in the IP Routing Table. This Default Gateway IP Address needs to be an IP address on a subnet for an interface configured on this SCADAPack x70 device.</p> <p>If you define a gateway node and you want it to be available for a specific subnet, add a route to the IP Routing Table.</p>	<p>The Default Gateway IP Address is displayed for every Ethernet port, but can only be changed here.</p> <p>Default: Empty</p>
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8.13.1.2 General Setup Parameters

The following table describes the General Setup parameters for individual Ethernet ports.

Parameter	Parameter Description	Setting
IP Address	<p>The IP address for the Ethernet port on the SCADAPack x70 device.</p> <p>Each Ethernet port needs to be on a different subnet.</p>	Standard IP address format
Subnet Mask	The subnet mask for the Ethernet port.	Standard subnet mask format
Default Gateway IP Address	<p>Displays the Default Gateway IP Address for information purposes.</p> <p>The Default Gateway IP Address is set on the IP Communication > Ethernet Ports page.</p>	Standard IP address format

8.13.2 Using TCP/IP Services

NOTICE
<p>INSECURE COMMUNICATIONS</p> <p>The Telnet server and the FTP server on the SCADAPack x70 device can be insecure if they are not externally secured. This is because TCP/IP application protocols transmit data, including user names and passwords, in clear text.</p>

It is strongly recommended that the Telnet server and the FTP server on the device be disabled when not in use. Leaving these servers enabled can create a security vulnerability if the remote IP connection to the device is not secured.

Failure to follow these instructions can result in equipment damage.

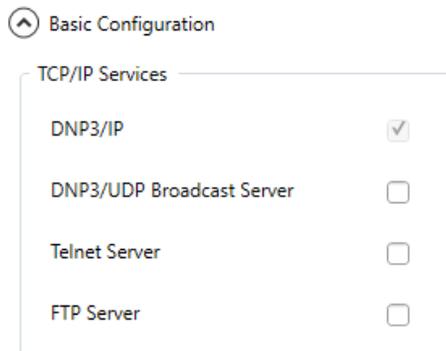
Use the **IP Communication > Services** page to activate and deactivate TCP/IP services on the SCADAPack x70 device. By default, DNP3/IP communications are activated on the device. You can also activate:

- Telnet server functionality to enable remote access to the device command line
- FTP server functionality to enable remote access to the device file system
- DNP3/UDP Broadcast Server to receive DNP3 broadcast messages sent over UDP/IP

Every TCP/IP interface – Ethernet, PPP, USB – has access to enabled services except where not allowed by IP Firewall configuration.

To activate DNP3/UDP Broadcast Server, Telnet Server, or FTP Server functionality on the SCADAPack x70 device

1. On the Configuration tab, select **IP Communication > Services**.



2. Select the checkbox [for each TCP/IP service that you want to activate on the SCADAPack x70 device](#).
3. Click **Apply**.

8.13.2.1 TCP/IP Services Parameters

The following table describes the TCP/IP Services parameters.

Parameter	Parameter Description	Setting
DNP3/IP	DNP3/IP communications are enabled on the SCADAPack x70 device and cannot be disabled.	

Telnet Server	Determines whether the Telnet server in the SCADAPack x70 device is activated.	<p>When the box is checked, the Telnet server in the device is enabled and multiple users can remotely connect to the device command line.</p> <p>For details about Telnet Server operations, see the Telnet Server Operations topic in the Operations Technical Reference manual.</p> <p>Default: Unchecked</p>
FTP Server	Determines whether the FTP server in the SCADAPack x70 device is activated.	<p>When the box is checked, the FTP server in the device is enabled and multiple users can remotely access the file system on the device using FTP client software.</p> <p>For details about FTP Server operations, see the FTP Server Operations topic in the Operations Technical Reference manual.</p> <p>Default: Unchecked</p>
DNP3/UDP Broadcast Server	Determines whether the DNP3/UDP Broadcast server in the SCADAPack x70 device is activated.	<p>When the box is checked, the DNP3/UDP Broadcast server in the device is enabled and the SCADAPack x70 device will listen for DNP3 Broadcast messages sent over UDP/IP.</p> <p>For details about DNP3/UDP Broadcast Server operations, see the DNP3/UDP Broadcast Server Operations topic in the Operations Technical Reference manual.</p> <p>Default: Unchecked</p>

8.13.3 Using IP Routes

Use the **IP Communication > Routing Table** page to define routes to the devices not directly connected to the SCADAPack x70 device. For details about IP route types, routing priorities and automatic IP route entries, see the Communication Interfaces Technical Reference manual. A maximum of 20 IP routes can be added.

For examples on how to use IP routes, see [IP Routing Examples](#) ^[116].

To add an IP route

1. On the Configuration tab, select **IP Communication > Routing Table**.

Basic Configuration

IP Routing Table

Add IP Route Remove IP Routes

	Destination IP Address	Subnet Mask	Destination Port	Gateway IP Address	Metric

IP Forwarding

Disable IP Forwarding

2. Click **Add IP Route**.

IP Routing Table

IP Route Configuration

Destination IP Address !

Destination Subnet Mask !

Destination Port

Gateway IP Address !

Metric

Ok Cancel

3. Configure the [IP Routing](#)^[114] parameters, then click **Ok**.
4. If required, [enable IP forwarding](#)^[115].
5. On the Routing Table page, click **Apply**.

To remove an IP route

1. On the Configuration tab, select **IP Communication > Routing Table**.

Basic Configuration

IP Routing Table

Add IP Route Remove IP Routes

Destination IP Address	Subnet Mask	Destination Port	Gateway IP Address	Metric

IP Forwarding

Disable IP Forwarding

2. In the IP Routing Table, select the route you want to remove.
3. Click **Remove IP Routes**.
4. Click **Yes** to confirm that you want to remove the IP route.
5. On the Routing Table page, click **Apply**.

8.13.3.1 Add/Edit IP Routing Table Parameters

The following table describes the add/edit IP Routing Table entry parameters.

Parameter	Parameter Description	Setting	Setting Description
Destination IP Address	The IP address of the device or sub-network in a remote network. This parameter is used for Host, Network and Gateway routes.	A valid IP address	Standard IP address format
Destination Subnet Mask	The network subnet address for the remote sub-network.	A valid subnet mask	Standard subnet mask format
Destination Port	The physical serial or Ethernet port on the SCADAPack x70 device that will be used for the route.	Serial #	Select the serial port number from the list provided. Only serial ports with the Port Function set to PPP/TCPIP can be used for IP routing. The following table indicates the serial ports that can be used for IP

			<p>communications on each SCADAPack.</p> <table border="1"> <thead> <tr> <th></th> <th>SP57x</th> <th>SP47x</th> </tr> </thead> <tbody> <tr> <td>Serial1</td> <td>✓</td> <td>X</td> </tr> <tr> <td>Serial2</td> <td>✓</td> <td>X</td> </tr> <tr> <td>Serial3</td> <td>X</td> <td>✓</td> </tr> <tr> <td>Serial4</td> <td>X</td> <td>✓</td> </tr> <tr> <td>Serial5</td> <td>n/a</td> <td>✓</td> </tr> </tbody> </table>		SP57x	SP47x	Serial1	✓	X	Serial2	✓	X	Serial3	X	✓	Serial4	X	✓	Serial5	n/a	✓
	SP57x	SP47x																			
Serial1	✓	X																			
Serial2	✓	X																			
Serial3	X	✓																			
Serial4	X	✓																			
Serial5	n/a	✓																			
		Ethernet #	Select the Ethernet port number from the list provided.																		
Gateway IP Address	<p>The IP address of the gateway node for the route.</p> <p>If this device and the destination device are on the same interface (destination), you do not need to define a Gateway IP Address.</p>	A valid IP address	Standard IP address format																		
Metric	<p>The priority, or cost, of an interface when multiple paths exist for interconnecting IP hosts.</p> <p>Generally, PPP interfaces have a higher metric, and therefore a lower priority, than Ethernet interfaces.</p>	0...65535	Default: 0																		

8.13.3.2 IP Forwarding Parameter

The following table describes the IP Forwarding parameter.

Parameter	Parameter Description	Setting Description
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<p>Disable IP Forwarding</p>	<p>Determines whether IP packets received by the SCADAPack x70 device, with a destination address that is on the same subnet as one of the IP interfaces on the SCADAPack x70 device, are automatically forwarded to that IP interface.</p> <p>Routes between the IP interfaces on the SCADAPack x70 device do not need a static route entry in the IP Routing Table.</p>	<p>When selected, the SCADAPack x70 device does not automatically forward IP packets to other local IP interfaces on the same subnet.</p> <p>IP forwarding is typically disabled for security reasons.</p> <p>Default: Checked, indicating that IP forwarding is disabled.</p>
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8.13.3.3 IP Routing Examples

This section describes various IP routing scenarios and how to configure them for a SCADAPack x70 device.

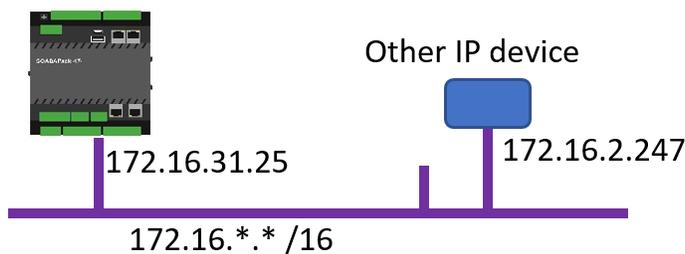
IP routes instruct a device how to pass on messages to other devices in a network. Each message for a destination IP address can be routed as the result of one the following IP routing rules and IP interface configurations being applied:

- [Destination IP Address in a Local Subnet](#)^[116]
- [Default Gateway](#)^[117]
- [Host Route](#)^[117]
- [Gateway Route](#)^[118]
- Messages, to which none of the above routing applies, are discarded

Destination IP Address in a Local Subnet

Communication with a device whose IP address is in the subnet of a SCADAPack interface does not require a routing table configuration. The SCADAPack can communicate with the device directly.

Example:



* Indicates any address in the subnet

/16 refers to a subnet mask of 255.255.0.0

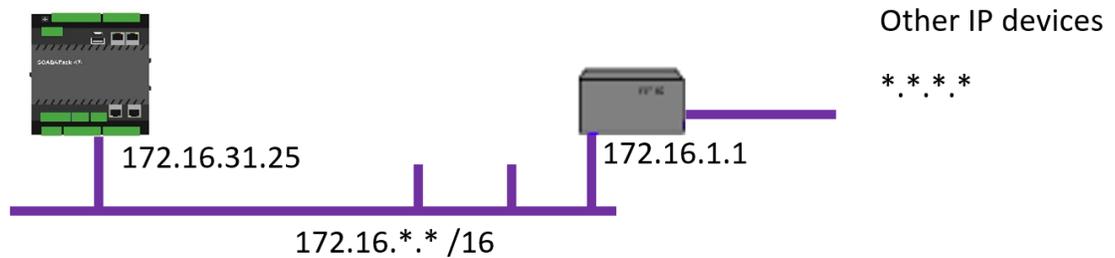
Default Gateway

A default gateway is configured to a device that can route messages when no other routing rules are applicable to a destination IP address.

The SCADAPack x70 configuration field [Default Gateway IP Address](#)^[109] specifies the address of the default gateway device.

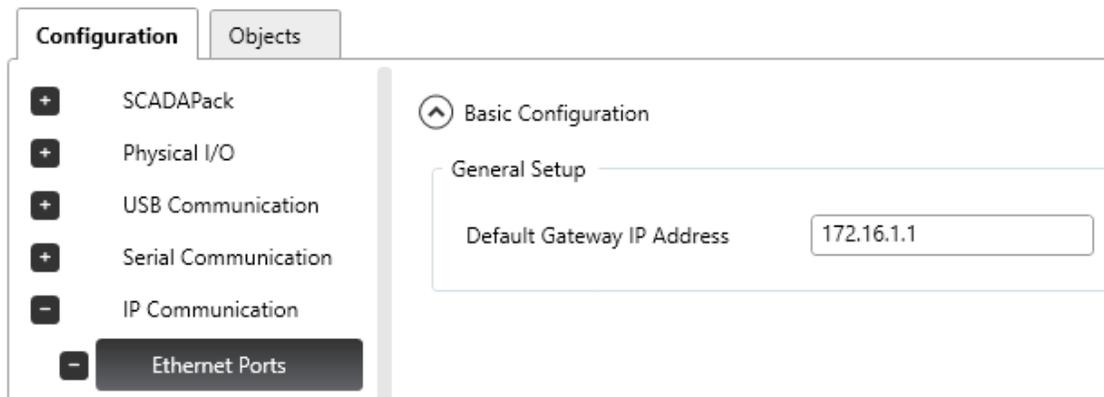
The Default Gateway IP Address needs to be in the subnet address range of one of the local interfaces on the SCADAPack x70 device.

Example:



* Indicates any address in the subnet

/16 refers to a subnet mask of 255.255.0.0



Special Default Gateway Route for PPP (Point-to-Point Protocol) Connections

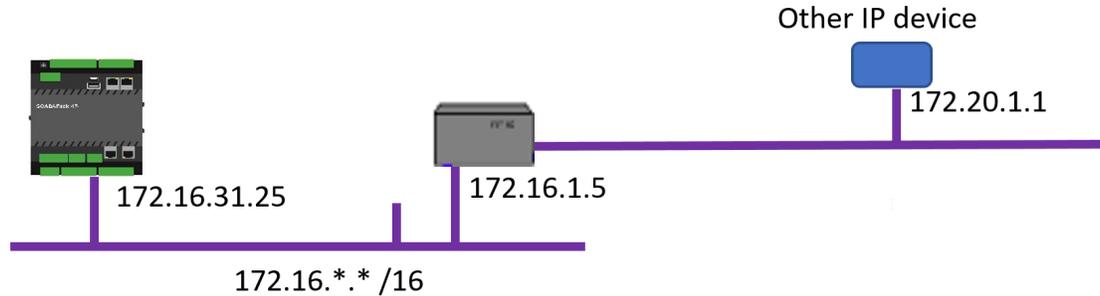
Where a PPP connection is configured in the SCADAPack x70 device, a DEFAULT GATEWAY route is automatically added based on the PPP interface's IP address. This allows the SCADAPack x70 device to direct messages for unknown addresses via the PPP link (to devices accessible via a serial cellular IP modem, for example).

Host Route

A HOST route defines a specific IP address for a device that is in a subnet separate from the SCADAPack x70 device's interface subnets. The subnet mask is 255.255.255.255 for this type of route. The IP address of a gateway that can access the device is also provided.

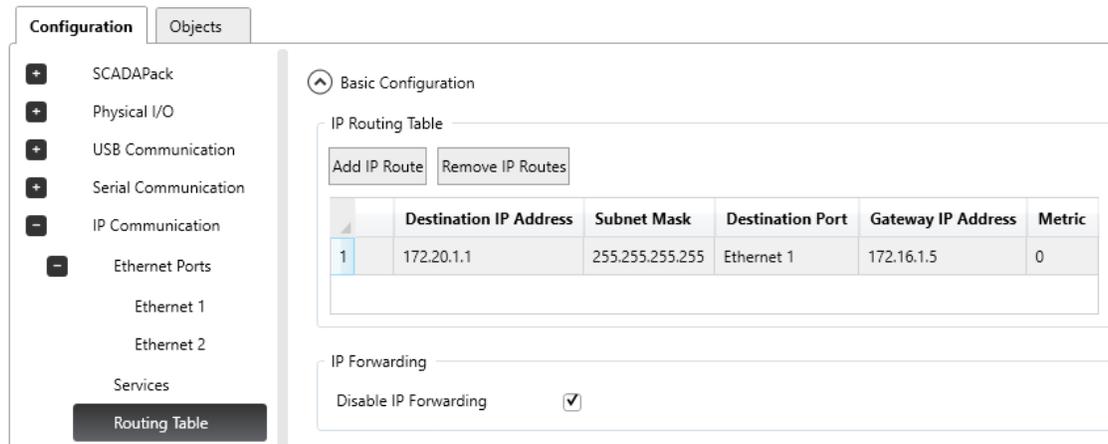
The gateway IP address needs to be in the subnet address range of one of the local interfaces on the SCADAPack x70 device.

Example:



* Indicates any address in the subnet

/16 refers to a subnet mask of 255.255.0.0

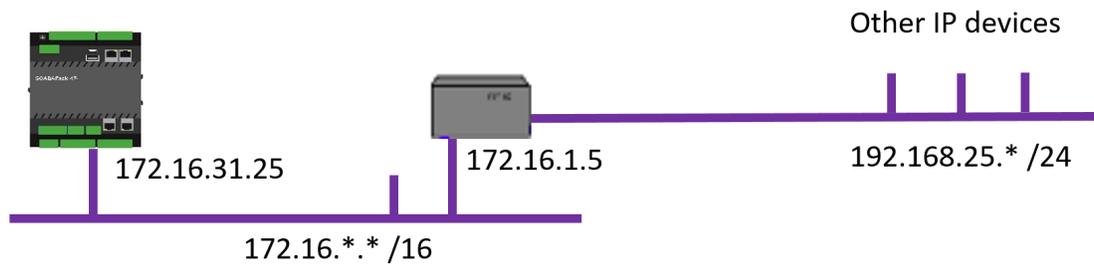


Gateway Route

A GATEWAY route defines a sub-network separate from the SCADAPack x70 device interface subnets and the IP address of the device which is the gateway to that specific sub-network. The subnet mask of the sub-network is also provided.

The gateway IP address needs to be in the subnet address range of one of the local interfaces on the SCADAPack x70 device.

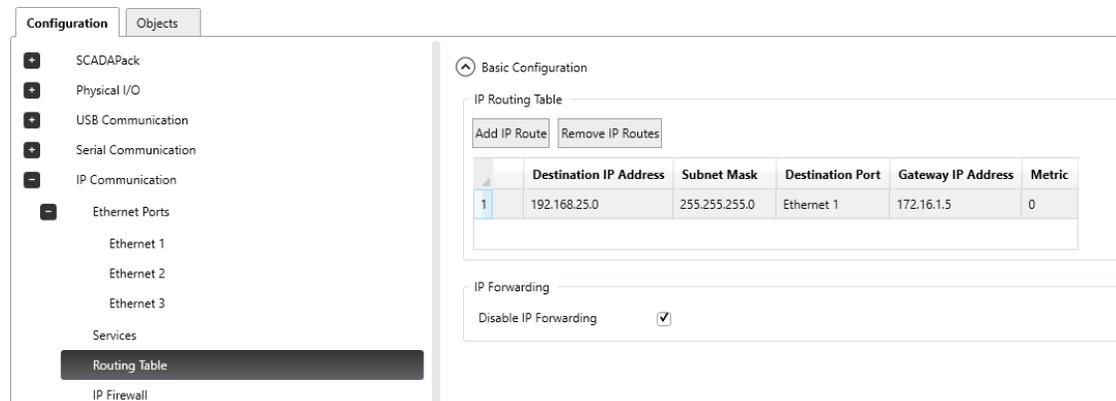
Example:



* Indicates any address in the subnet

/16 refers to a subnet mask of 255.255.0.0

/24 refers to a subnet mask of 255.255.255.0



8.13.4 Using IP Firewall to Control Communication

Use the **IP Communication > IP Firewall Table** page to help control the flow of network traffic into the SCADAPack. The maximum number of user-created entries is 100.

The IP Firewall operation is a means for restricting access from and to other devices, monitors, or other addresses.

By default, the IP Firewall is disabled meaning that all network traffic can flow through the SCADAPack.

When the IP Firewall operation is enabled, no inbound or outbound network traffic is permitted except for those addresses and services that are identified on the IP Firewall table. By default, an entry is added that permits all inbound and outbound services for USB. This entry cannot be removed and does not count as one of the user-created entries.

When changes are made to the IP Firewall settings, the device may temporarily lose connectivity as the firewall is reconfigured. Some TCP/IP connections may need to be re-established.

To add an IP Firewall entry

1. On the Configuration tab, select **IP Communication > IP Firewall Table**.

Basic Configuration

IP Firewall

Enable IP Firewall

IP Firewall Table

Add IP Address Remove IP Address

IP Address	Subnet Mask	Description	Permitted Services

2. Click the [Enable IP Firewall](#) checkbox.

Basic Configuration

IP Firewall

Enable IP Firewall

IP Firewall Table

Add IP Address Remove IP Address

IP Address	Subnet Mask	Description	Permitted Services

IP Interface: USB Permitted Services: All (Inbound and Outbound)

3. Click **Add IP Address**.

IP Firewall Table

IP Firewall Configuration

IP Address

Subnet Mask

IP Address: 0.0.0.0
Network Address: N/A
Broadcast Address: N/A

Description

Traffic Direction

Port Number

Protocol

Permitted Services

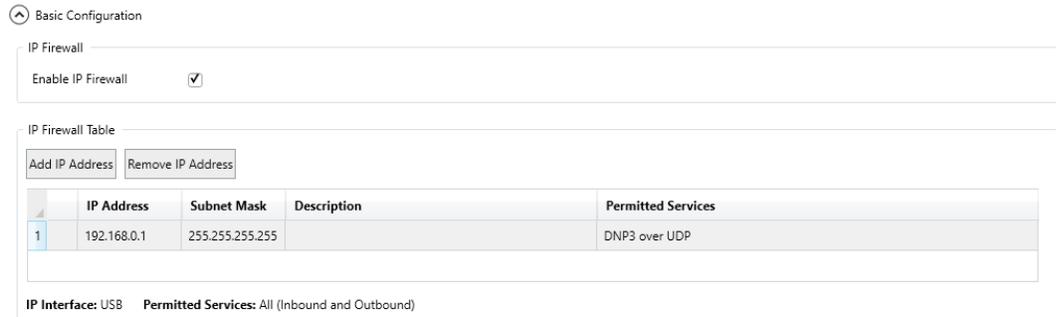
- DNP3 over TCP
- DNP3 over UDP
- Modbus/TCP
- Modbus RTU over TCP
- Modbus RTU over UDP
- Logic Debug Service
- Telnet
- FTP
- HART Pass Through
- IEC 60870-5-104
- Terminal Server for Serial Port 1
- Terminal Server for Serial Port 2
- Terminal Server for Serial Port 3
- Terminal Server for Serial Port 4

Ok Cancel

4. Configure the [IP Firewall](#) parameters, then click **Ok**.
5. On the IP Firewall Table page, click **Apply**.

To remove an IP Firewall entry

1. On the Configuration tab, select **IP Communication > IP Firewall Table**.



2. In the IP Firewall Table, select the IP address that you want to remove.
3. Click **Remove IP Address**.
4. Click **Yes** to confirm that you want to remove the IP address.
5. On the IP Firewall Table page, click **Apply**.

8.13.4.1 IP Firewall Parameter

The following table describes the Enable IP Firewall parameter.

Parameter	Parameter Description	Setting Description
Enable IP Firewall	Determines whether traffic from and to the SCADAPack x70 device is permitted or blocked.	<p>When not selected, all traffic is permitted and the IP Firewall Table is unavailable.</p> <p>When selected, all inbound and outbound traffic is blocked unless explicitly permitted in the firewall table. See IP Firewall Table^[119].</p> <p>Default: Not checked, indicating that the IP firewall is disabled.</p>

8.13.4.2 Add/Edit IP Firewall Table Parameters

The following table describes the add/edit IP Firewall Table entry parameters.

Parameter	Parameter Description	Setting	Setting Description
-----------	-----------------------	---------	---------------------

IP Address	The IP Address of the source of the traffic. This could be a device, a monitor PC, or other addresses.	A valid IP address	Standard IP address format
Subnet Mask	The network subnet address The subnet mask that is applied to the IP address that defines the range of accepted IP addresses.	A valid subnet mask	Standard subnet mask format
IP Address Range	The range of IP addresses allowed	Read only	
Network Address	The lowest number in the IP Address range	Read only	
Broadcast Address	The highest number in the IP Address range	Read only	
Description	Allows you to enter short descriptive text for each entry	Max length: 64 characters	
Traffic Direction	<p>Indicates in which direction(s) traffic is to be permitted</p> <p>Inbound: Traffic is initiated from another device and comes in to the SCADAPack x70 device.</p> <p>Outbound: Traffic is initiated and sent out by the SCADAPack x70 device to another device.</p> <p>Inbound and Outbound: Traffic can be initiated in both directions.</p> <p>Consider the following when determining directionality:</p> <ul style="list-style-type: none"> • DNP3 over UDP, Modbus RTU over UDP <ul style="list-style-type: none"> ○ These services uses the UDP protocol, which requires both Inbound and Outbound traffic since there is no concept of a direct response in this protocol. • Telnet, HART Pass Through, Logic Debug Server <ul style="list-style-type: none"> ○ These services will not work with an Outbound direction, 	<ul style="list-style-type: none"> • Inbound • Outbound • Inbound and Outbound 	Default: Inbound and Outbound

	<p>since the connection is always initiated by an external device, such as a PC.</p> <ul style="list-style-type: none"> • FTP <ul style="list-style-type: none"> ○ This service requires both Inbound and Outbound traffic because it uses two separate connections for different purposes to complete the connection - an Inbound FTP control connection for receiving commands, and an Outbound FTP data connection for transferring data back and forth. • ICMP Ping Traffic, All ICMP Traffic <ul style="list-style-type: none"> ○ These services are typically initiated in one direction, but require a response in the other direction. It is the initial connection that determines the relevant Traffic Direction setting. 		
Port Number	If Custom Service is selected in Permitted Services, you can enter a Port Number and Protocol for the rule	0...65535	Default: 0
Protocol	If Custom Service is selected in Permitted Services, you can enter a Port Number and Protocol for the rule	<ul style="list-style-type: none"> • TCP • UDP • TCP and UDP 	Default: TCP
Permitted Services	The services whose ports that traffic is permitted on. At least one needs to be enabled.	DNP3 over TCP	
		DNP3 over UDP	
		Modbus/TCP	
		Modbus RTU over TCP	
		Modbus RTU over UDP	

		Logic Debug Service	See Modifying a Logic Application Online ^[375] and Disabling Logic Debugging ^[331]
		Telnet	
		FTP	Active FTP supported Passive FTP not supported
		HART Pass Through	
		IEC 60870-5-104	
		Terminal Server for Serial Port 1	
		Terminal Server for Serial Port 2	
		Terminal Server for Serial Port 3	
		Terminal Server for Serial Port 4	
		ICMP Ping Traffic	Permits ICMP ping traffic for the specified rule and only ping traffic
		All ICMP Traffic	Permits all ICMP traffic for the specified rule, including ICMP ping
		Custom Service	Allows you to specify a custom port number and protocol to allow traffic over

8.14 Configuring DNP3 Operation

SCADAPack x70 devices can operate as a DNP3 Controlling Station or as a DNP3 Outstation with up to 3 DNP3 Controlling Stations. For details, see:

- [Configuring Outstation Operation](#) ^[131]
- [Configuring DNP3 Layer Settings](#) ^[145]
- [Configuring DNP3 Routes](#) ^[152]
- [Configuring Data Concentrator Client Operation](#) ^[157]

Default operation

By default, each SCADAPack x70 project is configured for DNP3 Outstation operation and the relevant configuration parameters are displayed in the SCADAPack x70 configuration software.

The configuration parameters for DNP3 Controlling Station operation are only displayed if DNP3 Data Concentrator Client is selected in the [Project Settings](#) ^[42]. These options are initially configured when you first create the project, but can be changed at any time if you need the SCADAPack x70 device to perform different functions in your network. For details, see [Managing the Device Role in the Network](#) ^[45].

For an overview of DNP3 communication configuration requirements, see:

- [Configuring DNP3 Outstation Operation Overview](#) ^[125]
- [Configuring DNP3 Router Operation Overview](#) ^[127]
- [Configuring DNP3 Peer to Peer Client Operation Overview](#) ^[128]
- [Configuring DNP3 Data Concentrator Client Operation Overview](#) ^[129]

8.14.1 Configuring DNP3 Outstation Operation Overview

The following procedure provides the high-level steps to configure the SCADAPack x70 device to operate as a DNP3 Outstation. Each step in the procedure below is described later in this manual. Follow the links for details.

Before following the procedure below:

- Verify that the device can communicate with the SCADAPack RemoteConnect configuration software. If you have not already set up this connection, follow the procedure in the Configuring Communication Parameters topic in the PC Communication Settings -SCADAPack CommDTM manual before following the steps below.
- Create a new SCADAPack project, as described in the Creating a New Project topic in the SCADAPack RemoteConnect Configuration Software manual. This adds the physical I/O on the SCADAPack x70 device to the SCADAPack x70 configuration software.
- [Open the configuration parameters](#) ^[25]

The configuration takes effect in the SCADAPack x70 device when you take the SCADAPack x70 configuration software online and write the configuration to the device as described at the end of the procedure.

To configure the SCADAPack x70 device to operate as a DNP3 Outstation

1. On the **Configuration** tab, select **Physical I/O > Local**, then double-click on the row in the I/O Configuration table to [define the operating characteristics for the SCADAPack x70 device](#)^[76].
2. If required, [add any I/O modules that are connected to the SCADAPack x70 device](#)^[58].
3. In the **Physical I/O > Local** page **Channel Configuration** table, double-click on each channel to define how it operates:
 - [Object Configuration Parameters](#)^[249]
 - [Associations Tab](#)^[265]
 - [DNP3 Tab](#)^[268]
 - [Alert Notifications Tab: Analog Objects](#)^[280]
 - [Basic Tab: Analog Objects](#)^[283]
 - [Advanced Tab: Analog Objects](#)^[289]
 - [Basic Tab: Digital Objects](#)^[293]
 - [Basic Tab: Counter Objects](#)^[297]
4. On the **Configuration** tab, select one or more of the following to configure the physical connection to each DNP3 Controlling Station(s). A DNP3 Outstation can have up to 3 DNP3 Controlling Stations.
 - [Serial Communication > Ports > Serial #](#)^[84]
 - [IP Communication > Ethernet Ports > Ethernet #](#)^[110]
5. On the **Configuration** tab, select **DNP3**, then select:
 - [Outstation > Connection to Controlling Station](#)^[131] to configure the connection to each DNP3 Controlling Station.
 - [Events](#)^[138] if you need to customize how the DNP3 Outstation generates events.
 - [Layer Settings](#)^[145] if you need to customize the default DNP3 layer settings.
 - [DNP3 Routing Table](#)^[152] if you want the DNP3 Outstation to send events to a DNP3 Controlling Station before the DNP3 Controlling Station has tried to communicate with it.
6. On the **Objects** tab, select **Object Configuration**, then [add database objects as required](#)^[235].
7. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Go Online**.
8. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Write to Device**.

8.14.2 Configuring DNP3 Router Operation Overview

The following procedure provides the high-level steps to configure the SCADAPack x70 device to operate as a DNP3 Router. Each step in the procedure below is described later in this manual. Follow the links for details.

Before following the procedure below:

- Verify that the device can communicate with the SCADAPack RemoteConnect configuration software. If you have not already set up this connection, follow the procedure in the Configuring Communication Parameters topic in the PC Communication Settings -SCADAPack CommDTM manual before following the steps below.
- Create a new SCADAPack project, as described in the Creating a New Project topic in the SCADAPack RemoteConnect Configuration Software manual. This adds the physical I/O on the SCADAPack x70 device to the SCADAPack x70 configuration software.
- [Open the configuration parameters](#) ^[25]

The configuration takes effect in the SCADAPack x70 device when you take the SCADAPack x70 configuration software online and write the configuration to the device as described at the end of the procedure.

To configure the SCADAPack x70 device to operate as a DNP3 Router

1. On the **Configuration** tab, select **Physical I/O > Local**, then double-click on the row in the I/O Configuration table to [define the operating characteristics for the SCADAPack x70 device](#) ^[76].
2. If required, [add any I/O modules that are connected to the SCADAPack x70 device](#) ^[58].
3. In the **Physical I/O > Local** page **Channel Configuration** table, double-click on each channel to define how it operates:
 - [Object Configuration Parameters](#) ^[249]
 - [Associations Tab](#) ^[265]
 - [DNP3 Tab](#) ^[268]
 - [Alert Notifications Tab: Analog Objects](#) ^[280]
 - [Basic Tab: Analog Objects](#) ^[283]
 - [Advanced Tab: Analog Objects](#) ^[289]
 - [Basic Tab: Digital Objects](#) ^[293]
 - [Basic Tab: Counter Objects](#) ^[297]
4. On the **Configuration** tab, select one or more of the following to configure the physical connection to the other DNP3 Peer devices.
 - [Serial Communication > Ports > Serial #](#) ^[84]
 - [IP Communication > Ethernet Ports > Ethernet #](#) ^[110]
5. On the **Configuration** tab, select **DNP3**, then select:
 - [Layer Settings](#) ^[145] if you need to customize the default [DNP3 layer settings](#) ^[145].

- [DNP3 Routing Table](#)^[152] to configure the routes to the other devices the SCADAPack x70 device needs to communicate with.
6. On the **Objects** tab, select **Object Configuration**, then [add database objects as required](#)^[235].
 7. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Go Online**.
 8. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Write to Device**.

8.14.3 Configuring DNP3 Peer to Peer Client Operation Overview

DNP3 Peer to Peer Client operation is an efficient way to exchange data between remote SCADAPack x70 devices, and other devices, over a DNP3 communication channel. It differs from DNP3 Data Concentrator Client and DNP3 Outstation operation in that a DNP3 Peer only reads or controls current values for specifically selected data points. This is the recommended way of exchanging data between remote sites. DNP3 Data Concentrator Client operation is not recommended for exchanging specific real-time data between remote devices.

The following procedure provides the high-level steps to configure the SCADAPack x70 device to operate as a DNP3 Peer. Each step in the procedure below is described later in this manual. Follow the links for details.

Follow these same steps to set up DNP3 local data and DNP3 communications where you want to generate requests for this SCADAPack x70 device to read or control DNP3 data in other DNP3 Peer devices. In addition, use the SCADAPack x70 Logic Editor to build a logic application using DNP3Peer_xxx function blocks to setup and execute communications to DNP3 Peer devices. For more information, see DNP3 Peer Communication Function Blocks topic in the Function Blocks Technical Reference manual.

Before following the procedure below:

- Verify that the device can communicate with the SCADAPack RemoteConnect configuration software. If you have not already set up this connection, follow the procedure in the Configuring Communication Parameters topic in the PC Communication Settings -SCADAPack CommDTM manual before following the steps below.
- Create a new SCADAPack project, as described in the Creating a New Project topic in the SCADAPack RemoteConnect Configuration Software manual. This adds the physical I/O on the SCADAPack x70 device to the SCADAPack x70 configuration software.
- [Open the configuration parameters](#)^[25]

The configuration takes effect in the SCADAPack x70 device when you take the SCADAPack x70 configuration software online and write the configuration to the device as described at the end of the procedure.

To configure the SCADAPack x70 device to operate as a DNP3 Peer

1. On the **Configuration** tab, select **Physical I/O > Local**, then double-click on the row in the I/O Configuration table to [define the operating characteristics for the SCADAPack x70 device](#)^[76].

2. If required, [add any I/O modules that are connected to the SCADAPack x70 device](#) ^[58].
3. In the **Physical I/O > Local** page **Channel Configuration** table, double-click on each channel to define how it operates:
 - [Object Configuration Parameters](#) ^[249]
 - [Associations Tab](#) ^[265]
 - [DNP3 Tab](#) ^[268]
 - [Alert Notifications Tab: Analog Objects](#) ^[280]
 - [Basic Tab: Analog Objects](#) ^[283]
 - [Advanced Tab: Analog Objects](#) ^[289]
 - [Basic Tab: Digital Objects](#) ^[293]
 - [Basic Tab: Counter Objects](#) ^[297]
4. On the **Configuration** tab, select one or more of the following to configure the physical connection to the other DNP3 Peer devices.
 - [Serial Communication > Ports > Serial #](#) ^[84]
 - [IP Communication > Ethernet Ports > Ethernet #](#) ^[110]
5. On the **Configuration** tab, select **DNP3**, then select:
 - [Layer Settings](#) ^[143] if you need to customize the default [DNP3 layer settings](#) ^[145].
 - [DNP3 Routing Table](#) ^[152] to configure the routes to the other devices the SCADAPack x70 device needs to communicate with.
6. On the **Objects** tab, select **Object Configuration**, then [add database objects as required](#) ^[235].
7. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Go Online**.
8. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Write to Device**.

The SCADAPack x70 device objects that you have configured with DNP3 addresses are now available to be read or controlled as remote data in a DNP3 Peer device.

8.14.4 Configuring DNP3 Data Concentrator Client Operation Overview

When DNP3 Data Concentrator Client operation is configured, the SCADAPack x70 device operates as a SCADA Client, retrieving device data, including buffered events, from a remote DNP3 device. A DNP3 Data Concentrator Client is typically used in a hierarchical Client/Server network. DNP3 Data Concentrator Client operation is not recommended for exchanging specific real-time data between remote devices. For this purpose, use [DNP3 Peer to Peer Client Operation](#) ^[128].

The following procedure provides the high-level steps to configure the SCADAPack x70 device to operate as a DNP3 Data Concentrator Client. Each step in the procedure below is described later in this manual. Follow the links for details.

Before following the procedure below:

- Verify that the device can communicate with the SCADAPack RemoteConnect configuration software. If you have not already set up this connection, follow the procedure in the Configuring Communication Parameters topic in the PC Communication Settings -SCADAPack CommDTM manual before following the steps below.
- Create a new SCADAPack project, as described in the Creating a New Project topic in the SCADAPack RemoteConnect Configuration Software manual. This adds the physical I/O on the SCADAPack x70 device to the SCADAPack x70 configuration software.
- [Open the configuration parameters](#) ^[25]

The configuration takes effect in the SCADAPack x70 device when you take the SCADAPack x70 configuration software online and write the configuration to the device as described at the end of the procedure.

To configure the SCADAPack x70 device to operate as a DNP3 Controlling Station

1. On the **Configuration** tab, select **Physical I/O > Local**, then double-click on the row in the I/O Configuration table to [define the operating characteristics for the SCADAPack x70 device](#) ^[76].
2. If required, [add any I/O modules that are connected to the SCADAPack x70 device](#) ^[58].
3. In the **Physical I/O > Local** page **Channel Configuration** table, double-click on each channel to define how it operates:
 - [Object Configuration Parameters](#) ^[249]
 - [Associations Tab](#) ^[265]
 - [DNP3 Tab](#) ^[268]
 - [Alert Notifications Tab: Analog Objects](#) ^[280]
 - [Basic Tab: Analog Objects](#) ^[283]
 - [Advanced Tab: Analog Objects](#) ^[289]
 - [Basic Tab: Digital Objects](#) ^[293]
 - [Basic Tab: Counter Objects](#) ^[297]
4. On the **Configuration** tab, select one or more of the following to configure the physical connections to the DNP3 Outstations:
 - [Serial Communication > Ports > Serial #](#) ^[84]
 - [IP Communication > Ethernet Ports > Ethernet #](#) ^[110]
5. On the **Configuration** tab, select **DNP3**, then select:

- [Data Concentrator](#)^[157] to add the Remote Devices and Remote Points.
 - [Layer Settings](#)^[145] if you need to customize the default DNP3 Link Layer or Application Layer settings.
 - [DNP3 Routing Table](#)^[152] to add the routes to the DNP3 Outstations.
6. On the **Objects** tab, select **Object Configuration**, then [add database objects as required](#)^[235].
 7. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Go Online**.
 8. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Write to Device**.

8.14.5 Configuring Outstation Operation

Use the **DNP3 > Outstation** page to:

- Set the active time deadband
- [Configure a connection to Controlling Station](#)^[131]

Including time deadband data in Class 0

This checkbox applies to all objects that have deadbands configured. To set deadbands, see [Alert Notifications](#)^[289] and [Event Attributes](#)^[295].

When this option is selected, an active time deadband on a DNP3 point will delay creation of DNP3 events and will include the current state or value in Class 0 poll responses.

When this option is not selected, an active time deadband will delay creation of DNP3 events and withhold the relevant data from Class 0 poll responses.

To include time deadband data in Class 0

1. Expand the **Advanced Configuration** parameters.
2. Select the **Include Time Deadband data in Class 0** checkbox.
3. Click **Apply**.

8.14.5.1 Configuring Connection to Controlling Station

Use the **DNP3 > Outstation > Connection to Controlling station** page to define how the DNP3 Outstation communicates with the DNP3 Controlling Station. A DNP3 Outstation can have up to 3 DNP3 Controlling Station, each with different connection, event and communication settings.

When you have defined the basic connection to the DNP3 Controlling Station, you can configure Events, Layer Settings and the DNP3 Routing Table if required.

The procedure below takes you through each step in configuring DNP3 Outstation operation. The parameter settings take effect when you write the configuration to the SCADAPack x70 device.

To configure the DNP3 Outstation connection to the DNP3 Controlling Station

1. On the Configuration tab, select **DNP3 > Outstation > Connection to Controlling Station #**.

Basic Configuration

Connection Setup

DNP3 Outstation Address	<input type="text" value="0"/>
DNP3 Controlling Station Address	<input type="text" value="30000"/>
Communication Port	<input type="text" value="Ethernet 1"/> <input style="float: right;" type="button" value="Add DNP3 Route"/>
Unsolicited Allowed	<input type="checkbox"/>

2. Configure the [Connection Setup](#)^[133] parameters, then click **Apply**.
3. If required, display the Advanced Configuration parameters on the same page and change the [Event Transmission Setup](#)^[135] parameters.
4. If required, select **DNP3 > Outstation > Events** and display the Advanced Configuration parameters to customize how the DNP3 Outstation generates events.
 - [Event Configuration Parameters](#)^[138]
 - [Unsolicited Message Generation \(Triggered Events\) Parameters](#)^[144]
 - [Unsolicited Message Generation \(Buffered Events\) Parameters](#)^[144]
 - [Unsolicited Configuration Parameters](#)^[145]
5. If required, select **DNP3 > Layer Settings** and display the Advanced Configuration parameters to customize the DNP3 layer settings.
 - [General Link Layer Setup Parameter](#)^[147]
 - [Ethernet Link Layer Setup Parameters](#)^[147]
 - [Application Layer Setup Parameters](#)^[150]
6. If you want the DNP3 Outstation to send unsolicited information to a DNP3 Controlling Station before the DNP3 Controlling Station has tried to communicate with it, click **Add DNP3 Route**, and, if you selected Ethernet Port for the Communication Port, fill in the IP Address or Phone Number as required, and click **OK**.
See [Configuring DNP3 Routes](#)^[152] for more information.
7. Repeat the steps above for each DNP3 Controlling Station that this DNP3 Outstation will report to.

8.14.5.2 Connection Setup Parameters

This following table describes the Connection Setup parameters for DNP3 Outstation operation.

Parameter	Parameter Description	Setting	Setting Description
DNP3 Outstation Address for Connection to Controlling Station 1	<p>The DNP3 Address that was configured for this SCADAPack x70 device.</p> <p>This DNP3 Outstation uses this address to communicate with DNP3 Controlling Station 1. If it is configured as a Controlling Station for other devices, it will reuse this address to communicate with those other devices.</p> <p>The SCADAPack x70 device uses this address to communicate with other devices in the network.</p> <p>This is not the DNP3 address that the configuration software uses to communicate with the SCADAPack x70 device. The configuration software uses the Target DNP3 Address specified in the PC Communication Settings -SCADAPack CommDTM to communicate with the device.</p>	0...655 19	<p>While 0 is a valid DNP3 address for the SCADAPack x70 device, it is not a good choice because:</p> <ul style="list-style-type: none"> • 0 is the default address when the device is shipped and after it is started in Cold Boot or Factory Boot mode. • 0 is the assumed DNP3 address when the device is started in Service Boot mode. • The device uses the value 0 to terminate some internal searches.
DNP3 Outstation Address for Connection to Controlling Station 2 and Controlling Station 3	The DNP3 Address this DNP3 Outstation uses to communicate with DNP3 Controlling Station 2 or Controlling Station 3.	0...655 19	<p>0 means the DNP3 Outstation connection to Controlling Station 2 or Controlling Station 3 is disabled.</p> <p>Default: 0</p>
DNP3 Controlling Station Address for DNP3 Controlling Station 1	The DNP3 Address of the DNP3 Controlling Station for this DNP3 Outstation.	0...655 19	Default: 30000
DNP3 Controlling Station	The DNP3 Address of the DNP3 Controlling Station for this DNP3 Outstation.	0...655 19	Default: 0

<p>Address for DNP3 Controlling Station 2 and Controlling Station 3</p>		
<p>Communication Port</p>	<p>Identifies the SCADAPack x70 device port that will be used for spontaneous communication with the DNP3 Controlling Station.</p>	<p>The list includes every configured Ethernet port and every serial port with the Port Function parameter set to DNP3.</p>
<p>Add DNP3 Route</p>	<p>Adds a connection to the Controlling Station when unsolicited reporting is required. See Configuring DNP3 Routes [152].</p> <p>A route row is added as follows:</p> <p>Source Port = Any Port</p> <p>Source Start = 0</p> <p>Source End = 65535</p> <p>Destination Start = DNP3 Controlling Station Address</p> <p>Destination End = DNP3 Controlling Station Address</p> <p>Destination Port = Communication Port</p> <p>Connect Number = User-entered connection value</p> <p>Routing Status = On Static</p>	<p>Entries in the DNP3 Routing table are flagged as duplicates if all of the following criteria applies:</p> <ul style="list-style-type: none"> • The Destination address ranges overlaps, AND • The Source Port of one or both entries is "Any Port" or the Source Port of both entries is the same, AND • The Routing Status of both ports is either "On Static" or "On Fixed"
<p>Unsolicited Allowed</p>	<p>Determines whether the DNP3 Outstation sends spontaneous information to the DNP3 Controlling Station.</p>	<p>When the box is checked, the DNP3 Outstation can spontaneously send information for objects where unsolicited responses to the DNP3 Controlling Station are enabled.</p> <p>For example, unsolicited responses can be enabled for Event Deviation parameters and for Out of Range Limits parameters for analog objects.</p> <p>The DNP3 Routing table needs to have a corresponding route that includes the DNP3 Outstation</p>

		<p>Address in the Source Address range and the DNP3 Controlling Station Address in the Destination Address range. See Configuring DNP3 Routes^[152].</p> <p>When you enable unsolicited communications, you can configure the unsolicited message parameters on the DNP3 > Outstation > Events^[136] page.</p> <p>Default: Unchecked</p>
--	--	--

8.14.5.3 Event Transmission Setup Parameters

The following table describes the Event Transmission Setup parameters for DNP3 Outstation operation.

Parameter	Parameter Description	Setting	Setting Description
Minimum Unsolicited Event Tx Delay	<p>The minimum amount of time between consecutive unsolicited responses sent from the DNP3 Outstation to the DNP3 Controlling Station.</p> <p>After the DNP3 Outstation has sent an unsolicited response, no unsolicited responses are generated until this time period elapses.</p> <p>This parameter is displayed only when the Unsolicited Allowed setting is enabled for this DNP3 Controlling Station.</p> <p>The value of the Minimum Unsolicited Event Tx Delay parameter needs to be no less than the value of the Triggered Event Notification Delay^[144] parameter. If the Triggered Event Notification Delay parameter is bigger, the firmware will use the value of the Triggered Event Notification Delay for the Minimum Unsolicited Event Tx Delay.</p>	0...65535 seconds (s)	Default: 30 s
Quiet Time Delay	<p>The delay that is applied when the number of timed-out unsolicited responses reaches the Unsolicited Attempts per Burst count.</p>	0...65535 seconds (s)	Default: 120 s

	<p>This delay allows the DNP3 Outstation to wait an extended time period before it tries to send another burst of unsolicited responses to the DNP3 Controlling Station.</p> <p>This parameter is displayed only when the Unsolicited Allowed setting is enabled for this DNP3 Controlling Station.</p>		
Application Layer Confirm Timeout	<p>The amount of time the DNP3 Outstation waits for a DNP3 application layer confirmation message from the DNP3 Controlling Station after it has transmitted event data in a poll response or in an unsolicited response.</p> <p>If data link confirmations are used to acknowledge successful transmission of frames to the DNP3 Controlling Station, then the minimum application layer confirm timeout is calculated by the DNP3 Outstation so that data link retries can be completed.</p> <p>The application layer event timer is restarted when a data link confirmation message is received from the DNP3 Controlling Station. This allows the transmission of a complete fragment without the application layer timing out.</p>	<p>Minimum timeout = ((Data Link Retries + 1) * Channel Receive Timeout) + 1</p> <p>The Data Link Retries and Channel Receive Timeout are those specified for the port that is used to communicate with the DNP3 Controlling Station.</p> <p>Maximum timeout = 65535 seconds (s)</p>	<p>Default: 16 s</p>
Unsolicited Attempts per Burst	<p>A read-only view of the setting configured on the DNP3 > Server > Events ^[145] page.</p> <p>This parameter is displayed only when the Unsolicited Allowed setting is enabled for this DNP3 Controlling Station.</p>		

8.14.5.4 Configuring DNP3 Outstation Events

Use the **DNP3 > Outstation > Events** page to specify how the DNP3 Outstation sends events and unsolicited responses to the DNP3 Controlling Station. These are Advanced Configuration parameters that only need to be changed from their default values when you have specific requirements for event generation, event storage and unsolicited response timing.

⬆️ Advanced Configuration

Event Configuration

Maximum Event Storage	<input type="text" value="5000"/> 
Analog Input/Float Input Event Buffer Mode	<input type="text" value="Multiple"/>
Generate Digital Input Events	<input type="text" value="With Absolute Time"/>
Generate Analog Input Events	<input type="text" value="With Time"/>
Generate Float Input Events	<input type="text" value="With Time"/>
Generate Counter Input Events	<input type="text" value="With Time"/>
Generate Digital Output Events	<input type="text" value="With Time"/>
Generate Analog Output/Float Output Events	<input type="text" value="With Time"/>
File Event Class	<input type="text" value="Class 3"/>
Discard New Events if Buffer Full	<input type="checkbox"/>

The following parameters are available only if the **Unsolicited Allowed** parameter was checked on at least one of the **Connection to Controlling Station** pages.

Unsolicited Message Generation (Triggered Events)

Event Notification Delay

Unsolicited Message Generation (Buffered Events)

Class 1 Minimum Events

Class 2 Minimum Events

Class 3 Minimum Events

Unsolicited Configuration

Unsolicited Attempts per Burst

Default Enabled Event Classes

- [Event Configuration Parameters](#)^[138]
- [Unsolicited Message Generation \(Triggered Events\) Parameters](#)^[144]
- [Unsolicited Message Generation \(Buffered Events\) Parameters](#)^[144]
- [Unsolicited Configuration Parameters](#)^[145]

8.14.5.4.1 Event Configuration Parameters

The following table describes the Event Configuration parameters for DNP3 Outstation operation.

Parameter	Parameter Description	Setting	Setting Description
Maximum Event Storage	<p>The maximum number of events that can be stored by the DNP3 Outstation.</p> <p>Changes to this parameter require that you restart the device. After writing the changes to the device, use Additional Functions > Restart Device.</p>	10...40,000 events	<p>If IEC 60870-5-104 is enabled in the project, the default DNP3 Event Buffer size is 1000.</p> <p>If IEC 60870-5-104 is not enabled in the project, the default DNP3 Event Buffer size is 5000.</p> <p>The combined maximum number of events between DNP3 and IEC 60870-5-104 is 40000.</p> <p>See IEC 60870-5-104 Parameters^[223].</p>

Analog Input/Float Input Event Buffer Mode	Specifies whether multiple analog and float events for the same point are buffered, or whether the DNP3 Outstation overwrites existing events with a more recent event for the same point.	Multiple	<p>The DNP3 Outstation buffers multiple event objects for each analog and float point that generates buffered events.</p> <p>Because buffered events need to be timestamped for the DNP3 Controlling Station to process them, you need to select one of the With Time settings for analog input events and float events.</p> <p>Default setting</p>
		Single	<p>The DNP3 Outstation overwrites any existing event that already exists in the event buffer for an integer or float point analog input that generates a new event.</p> <p>Events may exist for multiple points in the event buffer, but only one event per point is buffered.</p>
Generate Digital Input Events	<p>The DNP3 object that the DNP3 Outstation uses to report digital input events in an unsolicited response or an event class poll response.</p> <p>Digital input events are also known as DNP3 binary input events.</p>	No Time	Use this setting to generate DNP3 group 2, variation 1 digital input event objects when timestamps are not required, or when the DNP3 Controlling Station does not support timestamped digital events.
		With Absolute Time	<p>Use this setting to generate DNP3 group 2, variation 2 digital input event objects when the DNP3 Controlling Station supports timestamped digital events, but does not support relative time objects.</p> <p>Default setting</p>
		With Relative Time	<p>Use this setting to generate DNP3 group 2, variation 3 digital input events when the DNP3 Controlling Station supports relative time timestamps and DNP3 group 51, variation 1 and variation 2 CTO objects.</p> <p>If multiple digital events tend to occur in close succession and need to be transmitted together,</p>

			<p>this is a more efficient object than DNP3 group 2, variation 2.</p>
<p>Generate Analog Input Events</p>	<p>The DNP3 object that the DNP3 Outstation uses to report integer analog input events in an unsolicited response or event class poll response.</p>	<p>With Time</p>	<p>Use these settings for integer analog input events when the DNP3 Controlling Station supports timestamped analog events.</p> <p>The DNP3 Outstation automatically determines 16-bit or 32-bit event size for each point based on its Static Group and Variation^[268].</p> <ul style="list-style-type: none"> • 32-bit events with time are sent as DNP3 group 32, variation 3 objects. • 16-bit events with time are sent as DNP3 group 32, variation 4 objects. <p>Default setting</p>
		<p>No Time</p>	<p>Use these settings for integer analog input events when the DNP3 Controlling Station does not support, or does not require, timestamped analog events.</p> <p>The DNP3 Outstation automatically determines 16-bit or 32-bit event size for each point based on its Static Group and Variation^[268].</p> <ul style="list-style-type: none"> • 32-bit events with no time are sent as DNP3 group 32, variation 1 objects. • 16-bit events with no time are sent as DNP3 group 32, variation 2 objects.
<p>Generate Float Input Events</p>	<p>The DNP3 object that the DNP3 Outstation uses to report floating point analog input events in an unsolicited response or event class poll response.</p>	<p>With Time</p>	<p>Use this setting for float events when the DNP3 Controlling Station supports timestamped float events.</p> <p>The DNP3 Outstation reports DNP3 group 32, variation 7 events for floating point analog input point types.</p>

			Default setting
		No Time	<p>Use this selection for float events when the DNP3 Controlling Station does not support timestamped float events.</p> <p>The DNP3 Outstation reports DNP3 group 32, variation 5 events for floating point analog input point types.</p>
Generate Counter Input Events	The DNP3 object that the DNP3 Outstation uses to report counter input events in an unsolicited response or event class poll response.	With Time	<p>Use these settings for counter events when the DNP3 Controlling Station supports timestamped counter events.</p> <p>The DNP3 Outstation automatically determines 16-bit or 32-bit event size for each point, based on its Static Group and Variation^[268].</p> <ul style="list-style-type: none"> • 32-bit counter events with time are sent as DNP3 group 32, variation 5 objects. • 16-bit counter events with time are sent as DNP3 group 32, variation 6 objects. <p>Default setting</p>
		No Time	<p>Use these settings for counter events when the DNP3 Controlling Station does not support, or does not require, timestamped counter events.</p> <p>The DNP3 Outstation automatically determines 16-bit or 32-bit event size for each counter point based on its Static Group and Variation^[268].</p> <ul style="list-style-type: none"> • 32-bit counter events with no time are sent as DNP3 group 22, variation 1 objects. • 16-bit counter events with no time are sent as DNP3 group 22, variation 2 objects.

Generate Digital Output Events	<p>The DNP3 object that the DNP3 Outstation uses to report digital output events in an unsolicited response or event class poll response.</p> <p>Digital output events are also known as DNP3 binary output events.</p>	With Time	<p>Use this setting to generate DNP3 group 11, variation 2 digital output event objects when the DNP3 Controlling Station supports digital output events with timestamping.</p> <p>Default setting</p>
		No Time	<p>Use this setting to generate DNP3 group 11, variation 1 digital output event objects when timestamps are not required or when the DNP3 Controlling Station does not support timestamped digital events.</p> <p>If the DNP3 Controlling Station does not support digital output event objects, set the Point Data Class^[271] for each point to Local or Class 0.</p>
Generate Analog Output/Float Output Events	<p>The DNP3 object that the DNP3 Outstation uses to report integer analog output and float analog output events in an unsolicited response or event class poll response.</p>	With Time	<p>Use this setting when the DNP3 Controlling Station supports analog output and float analog output event objects with timestamping.</p> <p>The DNP3 Outstation generates events based on the analog output point's Static Group and Variation^[268].</p> <ul style="list-style-type: none"> • 32-bit integer analog output events are sent as DNP3 group 42, variation 3 events. • 16-bit integer analog output events are sent as DNP3 group 42, variation 4 events. • 32-bit short floating point analog output events are sent as DNP3 group 42, variation 7 events. <p>Default setting</p>
		No Time	<p>Use this setting when the DNP3 Controlling Station supports analog output and float analog output event objects, but does not support or require timestamped analog output events.</p>

			<p>The DNP3 Outstation generates events compatible with the analog output point's Static Group and Variation²⁶⁸.</p> <ul style="list-style-type: none"> • 32-bit integer analog output events are sent as DNP3 group 42, variation 1 events. • 16-bit integer analog output events are sent as DNP3 group 42, variation 2 events. • 32-bit short floating point analog output events are sent as DNP3 group 42, variation 5 events.
File Event Class	<p>This configures the event class in which a DNP3 file event status is generated.</p> <p>When the RTU has previously opened a file from a DNP3 File Open request, but automatically closed it due to inactivity (not read or written recently, according to the DNP3 > Layer Settings > File Inactivity Timeout), the DNP3 standard requires that the RTU generate a file status event to report that it closed the file.</p>	<p>None</p> <p>Class 1</p> <p>Class 2</p> <p>Class 3</p>	<p>Default: Class 3 (recommended setting)</p>
Discard New Events if Buffer Full	<p>The SCADAPack x70 device stops adding events to the local buffer and discards any new events. The events that are already in the buffer are saved.</p>		<p>Not Checked: When the event buffer is filled, the SCADAPack x70 device will discard the oldest events already in the buffer to make room to add new events.</p> <p>Checked: When the event buffer is filled, the SCADAPack x70 device stops adding events to the event buffer and discards any new events. The events that are already in the buffer are saved.</p> <p>Default: Not checked (disabled)</p>

8.14.5.4.2 Unsolicited Message Generation (Triggered Events) Parameter

This following table describes the Unsolicited Message Generation (Triggered Events) parameter for DNP3 Outstation operation. This parameter is available only if the **Unsolicited Allowed** parameter was checked on at least one of the **Connection to Controlling Station** pages.

Parameter	Parameter Description	Setting	Setting Description
Event Notification Delay	<p>The amount of time the SCADAPack x70 device waits after an event occurs before the event object is sent to the DNP3 Controlling Station.</p> <p>This delay can reduce network bandwidth usage because it allows the first event, and any events that occur during this period, to be sent to the DNP3 Controlling Station in a single unsolicited response.</p>	0...65535 seconds (s)	Default: 10 s

8.14.5.4.3 Unsolicited Message Generation (Buffered Events) Parameters

This following table describes the Unsolicited Message Generation (Buffered Events) parameters for DNP3 Outstation operation. This parameter is available only if the **Unsolicited Allowed** parameter was checked on at least one of the **Connection to Controlling Station** pages.

Parameter	Parameter Description	Setting	Setting Description
Class 1 Minimum Events	<p>The minimum number of buffered events that will lead to generation of an unsolicited response.</p> <p>An unsolicited response may also be generated before the number of buffered events reaches this configured value if unsolicited events were enabled for alert notifications, over-range and under-range parameters.</p> <p>When an unsolicited response is generated by the SCADAPack x70 device, every buffered event for the matching configured and enabled event classes is sent. Use the Point Data Class ^[27] parameter in the Object Editor to configure the event class for each DNP3 Controlling Station.</p>	0...65535	Default: 250
Class 2 Minimum Events			
Class 3 Minimum Events			

8.14.5.4 Unsolicited Configuration Parameters

This following table describes the Unsolicited Configuration parameters for DNP3 Outstation operation. These parameters are available only if the **Unsolicited Allowed** parameter was checked on at least one of the **Connection to Controlling Station** pages.

Parameter	Parameter Description	Setting	Setting Description
Unsolicited Attempts per Burst	<p>The number of unsolicited transmissions in a single burst. Receiving confirmation of an unsolicited event transmission stops further transmissions of the same events.</p> <p>Each transmission in a burst is separated by the Minimum Unsolicited Event Tx Delay^[135] parameter setting.</p> <p>The time between bursts is determined by the Quiet Time Delay^[135] parameter setting.</p>	0...65535	Default: 3
Default Enabled Event Classes	<p>The event classes that generate unsolicited responses by default after the device is restarted.</p> <p>Use this setting only when the DNP3 Controlling Station does not have the functionality required to enable and disabled unsolicited event classes using DNP3.</p> <p>The DNP3 Controlling Station typically overrides this default setting at a later time.</p>		<p>Select the combination of event classes for which unsolicited responses are generated by default.</p> <p>Default: No Classes (recommended setting)</p>

8.14.6 Configuring DNP3 Layer Settings

Use the **DNP3 > Layer Settings** page if you need to customize DNP3 communication parameters to accommodate networks with latency or frequent communication interruptions, or to accommodate remote device requirements. In most cases, the default parameters are adequate.

To configure DNP3 layer settings

1. Select **Configuration tab > DNP3 > Layer Settings**, then expand the Advanced Configuration parameters.

⬆️ Advanced Configuration

General Link Layer Setup

Maximum Frame Size

Ethernet Link Layer Setup

DNP3/TCP Keep-Alive s

Channel Receive Timeout s

Data Link Confirm Mode ▼

Data Link Retries

Application Layer Setup

Application Layer Attempts

Application Layer Timeout s

File Inactivity Timeout s

Select Arm Timeout s

Default Pulse Time ms

Time Update Request Rate min

Maximum Transmit Fragment Size bytes

Security Response Timeout ms

Default DNP3 Transport ▼

Default DNP3 Port

2. Configure the following parameters as required:

- [General Link Layer Setup Parameter](#)^[147]
- [Ethernet Link Layer Setup Parameters](#)^[147]
- [Application Layer Setup Parameters](#)^[150]

3. Click **Apply**.

8.14.6.1 General Link Layer Setup Parameter

The following table describes the General Link Layer Setup parameter for DNP3 communications.

Parameter	Parameter Description	Setting	Setting Description
Maximum Frame Size	The highest allowed transmit frame size for data that can be included in a single DNP3 frame.	14 to 292	Some radios and other communication devices may require this value to be set lower than the default. Default: 292

8.14.6.2 Ethernet Link Layer Setup Parameters

The following table describes the Ethernet Link Layer Setup parameters for DNP3 communications.

Parameter	Parameter Description	Setting	Setting Description
DNP3/TCP Keep-Alive	<p>The rate at which a DNP3 link status test message is sent across active TCP sockets to verify an active TCP link.</p> <p>Use this setting when the SCADAPack x70 device connects to remote intelligent electronic devices (IEDs) or Remote Terminal Units (RTUs) through DNP3 TCP/IP.</p> <p>The SCADAPack x70 device sends DNP3 link status requests to devices using TCP transport, not UDP. The keep-alive timer can help to recover from communication stoppages, and to help keep remote TCP sockets connected.</p> <p>When setting this timer, keep in mind that the shorter the timer, the higher the number of DNP3 link status messages. Higher numbers of messages can potentially affect communications costs.</p> <p>The timer restarts each time DNP3 traffic passes through the TCP socket. As a result, this timer is typically set to be longer than the standard poll rate.</p>	0...65535 seconds (s)	0 = Deactivate the timer Default: 1150 s

<p>Channel Receive Timeout</p>	<p>The amount of time the SCADAPack x70 device waits to receive a data link layer confirmation message from the remote device when it has requested a confirmation message for transmitted frames.</p> <p>If a confirmation message is not received within this time, the frame is either retransmitted or discarded.</p> <p>When the SCADAPack x70 device sends DNP3 Controlling Station requests, such as polls, this parameter is also used as the time to wait for the next expected receive frame on the port.</p>	<p>0...65535 seconds (s)</p>	<p>Default: 5 s</p>
<p>Data Link Confirm Mode</p>	<p>Specifies when the SCADAPack x70 device requests a confirmation message for data link layer frames that it transmits.</p> <p>If a confirmation message is requested, the SCADAPack x70 device waits until the confirmation is received before sending the next DNP3 frame.</p>	<p>Sometimes</p>	<p>The SCADAPack x70 device requests confirmation that data link layer frames were received when multi-frame DNP3 fragments are transmitted.</p> <p>Select this mode when the device is transmitting a range of message sizes, from single to multi-frame, on potentially unreliable links.</p> <p>This mode improves data delivery because it re-transmits individual frames rather than entire multi-frame messages.</p>
		<p>Always</p>	<p>The SCADAPack x70 device</p>

			<p>requests confirmation that data link layer frames were received.</p> <p>Select this mode to improve communication delivery on potentially unreliable links.</p>
		Never	<p>The SCADAPack x70 device does not request confirmation that data link layer frames were received</p> <p>This setting is the most efficient and enables the highest throughput of the three options.</p> <p>It is the setting that the DNP3 standard recommends for DNP3 communications over Ethernet.</p> <p>Default setting</p>
Data Link Retries	<p>The number of times the SCADAPack x70 device attempts to resend a data link frame if a data link confirmation message is requested, but not received within the Channel Receive Timeout period. This parameter is only available when the Data Link Confirm Mode parameter is set to Sometimes or Always.</p> <p>If the number of retries is exceeded, the frame is considered undeliverable and the application layer generating the message is</p>	0...100	Default: 2

	<p>notified. When this occurs, the application layer transmission is considered unsuccessful.</p> <p>Knowing that the Ethernet Link Layer has exhausted its Data Link Retries can help with troubleshooting DNP3 communications and may mean that you need to adjust your application layer settings^[150] to better align with the Ethernet Link Layer Setup.</p>		
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8.14.6.3 Application Layer Setup Parameters

The following table describes the Application Layer Setup parameters for DNP3 communications.

Parameter	Parameter Description	Setting	Setting Description
Application Layer Attempts	<p>The number of times the SCADAPack x70 device attempts to send any single application layer request before discarding the fragment and stopping the request.</p> <p>Requests are only retransmitted if a response to the request is not received within the Application Layer Timeout.</p> <p>The DNP3 standard does not permit sending multiple attempts on control messages. This is enforced by the SCADAPack x70 device regardless of how this parameter is set.</p>	1...10	Default: 2 attempts
Application Layer Timeout	The amount of time the SCADAPack x70 device waits for an application layer response before attempting to send the same application layer request again, or before discarding and stopping an application layer request.	0...65535 seconds (s)	Default: 24 s
File Inactivity Timeout	<p>The amount of time after which a file is automatically closed by the SCADAPack x70 device when a DNP3 file transfer does not successfully complete.</p> <p>The timer restarts after each successful file transfer.</p>	5...3600 seconds (s)	Default: 60 s

Select Arm Timeout	<p>The amount of time within which an Operate command needs to be received after the Select command is received for a two-phase Select/Operate DNP3 control.</p> <p>If an Operate command that matches a recently received Select command is not received within this period, then the Control operation is aborted. In this case, a Select Arm Timeout status is returned in a DNP3 Control Relay Output Block (Operate) response to the sender.</p> <p>If an Operate command that matches a recently received Select command is received within this period, then the Control operation is performed.</p>	0...65 seconds (s)	Default: 10 s
Default Pulse Time	<p>The duration of the activation time of a pulse of a Digital object state, when the initiator of a pulse operation does not provide a pulse time.</p> <p>E.g. receiving a DNP3 CROB (NULL Pulse, Trip or Close command) with On-time = 0</p> <p>E.g. receiving a DNP3 CROB Unlatch or Latch command to a complementary (single-index) control, emulating a Trip or Close command</p> <p>E.g. Device_CROB logic function block with On-time input = 0</p>	0...65535 ms	Default: 250 ms
Time Update Request Rate	<p>The rate at which the SCADAPack x70 device requests a time update from the DNP3 Controlling Station.</p> <p>The device requests a time update by setting an Internal Indication (IIN) bit in each DNP3 communications response.</p> <p>The next outgoing DNP3 response — either a response to a DNP3 Controlling Station request sent to the SCADAPack x70 device, or an unsolicited event response sent from the DNP3 Outstation to the DNP3</p>	0...65535 minutes	<p>0 = Periodic time update requests are not sent</p> <p>Default: 1440 minutes</p>

	<p>Controlling Station — contains this IIN bit.</p> <p>The SCADAPack x70 device also requests a time update when DNP3 is restarted. DNP3 is restarted when the device is restarted and when you select the Restart DNP3 context menu item.</p>		
Maximum Transmit Fragment Size	<p>The size of the application layer packet.</p> <p>Reduce the value of this parameter to improve communication performance over unreliable links.</p>	Serial, Ethernet, and USB ports: 100...2048 bytes	Default: 2048 bytes
Security Response Timeout	<p>The time after which the device stops waiting for a reply to a security challenge.</p>	1000...360000 milliseconds (ms)	Default: 2000 ms
Default DNP3 Transport	<p>The transport protocol used to transmit initiating DNP3 frames if no specific transport is indicated in the Connect Number parameter.</p> <p>Response frames use the same protocol as their initiating frames.</p>	<p>UDP</p> <hr/> <p>TCP</p>	<p>If the SCADAPack x70 device is an end node in a TCP/IP network and DNP3 communications is used, set to the same as the DNP3 Controlling Station transport unless the DNP3 Routing Table Connect Number parameter overrides this.</p> <p>Default: UDP</p>
Default DNP3 Port	<p>The TCP/UDP port that DNP3 frames will be sent to and received from. The setting for the DNP3 Routing Table Connect Number parameter can override this parameter for DNP3 messages sent to remote IP device UDP ports.</p>	0...65535	Default: 20000, the port number assigned to the DNP3 protocol

8.14.7 Configuring DNP3 Routes

Use the **DNP3 > Routing Table** page to configure the routes to the DNP3 Controlling Station, DNP3 Peer, and DNP3 Outstation devices that this SCADAPack x70 device communicates with. A maximum of 100 DNP3 route entries can be added.

A SCADAPack x70 device that is operating as a DNP3 Peer device or DNP3 Data Concentrator, needs routes to be configured for each DNP3 device that reports to it.

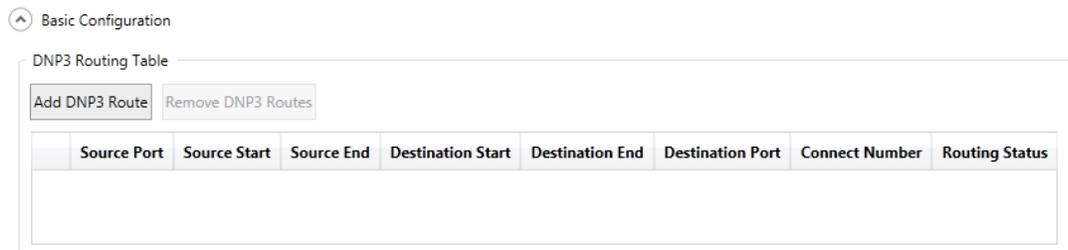
For a SCADAPack x70 device that is operating as a DNP3 Outstation only, it is recommended that a Static route is configured for communication with the DNP3 Controlling Station.

A SCADAPack x70 device that is operating as a DNP3 Outstation that is also configured for unsolicited event reporting, requires at least one static route to be configured for communication with the DNP3 Controlling Station.

- For additional information about Static, Fixed, and Dynamic Routes, see:
 - **Configuring DNP3 Routing** in the SCADA Protocols Technical Reference manual
- For additional information about DNP3 Routing Rules, see:
 - **DNP3 Routing Rules** in the SCADA Protocols Technical Reference manual
- For additional information about Routing and Forwarding DNP3 protocol over TCP/IP, see:
 - **DNP3 Routing over TCP/IP** in the SCADA Protocols Technical Reference manual

To add a static or a fixed route to the DNP3 Routing Table

1. Select **Configuration tab > DNP3 > Routing Table**.



The screenshot shows a web-based configuration interface for the DNP3 Routing Table. At the top, there is a breadcrumb trail: "Basic Configuration" with a dropdown arrow. Below it, the title "DNP3 Routing Table" is displayed. Two buttons are present: "Add DNP3 Route" and "Remove DNP3 Routes". Below the buttons is a table with the following columns: "Source Port", "Source Start", "Source End", "Destination Start", "Destination End", "Destination Port", "Connect Number", and "Routing Status". The table is currently empty.

2. Click **Add DNP3 Route**.

3. [Define the route](#) ¹⁵⁴ parameters, then click **Ok**.
4. On the Routing Table page, click **Apply**.

8.14.7.1 DNP3 Routing Table Entry Parameters

The following table describes the DNP3 Routing Table Entry Parameters.

Parameter	Parameter Description	Setting	Setting Description
Source Port	<p>The port from which the DNP3 frame needs to arrive for this entry to be valid.</p> <p>The SCADAPack x70 device matches the Source Port, the Source Start and the Source End range as part of the route filtering.</p>	The USB, serial or Ethernet port on the SCADAPack x70 device. If it does not matter which port is used, select Any Port.	Default: Any Port

Source Start	<p>The range of source DNP3 addresses from which the frame needs to have originated to be considered valid.</p> <p>In some network architectures, store and forward routing can use Source Port, Source Start and Source End parameters. You can also use these parameters to partition networks and to stop SCADAPack x70 devices on different networks from communicating with each other.</p> <p>To improve routing efficiency and simplify network configurations, enter Source Start and Source End ranges that are as general as possible.</p>	0...65535	<p>If you enter 0 as the Source Start and 65535 as the Source End, it means the frame can originate from any DNP3 node in the network.</p> <p>Default: 65519</p>								
Source End											
Destination Start	<p>The range of destination DNP3 addresses to which this routing table entry refers.</p> <p>A packet received by this SCADAPack x70 device and going on to another device in this destination range is routed to the Destination Port, providing the source filtering is satisfied.</p>	0...65535	<p>Avoid entering a Destination Start of 0 and a Destination End of 65535.</p> <p>Instead, subdivide DNP3 addressing into sub-networks of consecutive DNP3 node groups.</p> <p>Default: 65519</p>								
Destination End											
Destination Port	<p>The SCADAPack x70 device port to which DNP3 frames are forwarded for this route.</p>	<p>A USB, serial or Ethernet port on the SCADAPack x70 device.</p> <p>Default: USB</p>									
Connect Number	<p>The connection number to reach the destination.</p> <p>A routing table entry needs to be configured for each remote device with which the SCADAPack x70 device needs to communicate using a TCP/IP, UDP, PSTN or GSM connection.</p> <table border="1"> <tr> <td>Destination Port</td> <td>State</td> </tr> </table>	Destination Port	State	<p>Maximum characters: 51</p> <p>Default: Empty</p> <p>Ethernet and Serial port configured for PPP/TCPIP</p> <table border="1"> <thead> <tr> <th>Format</th> <th>Indicates</th> <th>Example</th> </tr> </thead> <tbody> <tr> <td>nnn.nnn.nnn</td> <td>IP address only</td> <td>192.168.0.249</td> </tr> </tbody> </table>		Format	Indicates	Example	nnn.nnn.nnn	IP address only	192.168.0.249
Destination Port	State										
Format	Indicates	Example									
nnn.nnn.nnn	IP address only	192.168.0.249									

	<table border="1"> <tr> <td>USB</td> <td>Disabled</td> </tr> <tr> <td>Ethernet</td> <td>Enabled</td> </tr> <tr> <td>Serial port configured for PPP/TCPIP</td> <td>Enabled</td> </tr> <tr> <td>Serial port configured for DNP3</td> <td>Enabled</td> </tr> <tr> <td>Serial port configured for dialup modem</td> <td>Enabled</td> </tr> </table> <p>Static routes: Updated when a DNP3 message is received from the target DNP3 device. The updated Connect Number includes the IP address, IP transport (TCP or UDP) indicator, and the IP port number. If a fixed IP address and port number are required, use a fixed route.</p> <p>Dialup devices: Stores the telephone numbers for the SCADAPack x70 device or other devices that will be directly dialed using a dialup modem.</p>	USB	Disabled	Ethernet	Enabled	Serial port configured for PPP/TCPIP	Enabled	Serial port configured for DNP3	Enabled	Serial port configured for dialup modem	Enabled	<table border="1"> <tr> <td>nnn.nnn.n nn.nnn:T</td> <td>Use TCP transport</td> <td>192.168. 0.249:T</td> </tr> <tr> <td>nnn.nnn.n nn.nnn:U</td> <td>Use UDP transport</td> <td>192.168. 0.249:U</td> </tr> <tr> <td>nnn.nnn.n nn.nnn:pp pppU</td> <td>Use UDP port number</td> <td>192.168. 0.249:70 01U</td> </tr> </table> <p>Serial port configured for dialup modem</p> <ul style="list-style-type: none"> • Enter the PSTN or GSM phone number of the remote device 	nnn.nnn.n nn.nnn:T	Use TCP transport	192.168. 0.249:T	nnn.nnn.n nn.nnn:U	Use UDP transport	192.168. 0.249:U	nnn.nnn.n nn.nnn:pp pppU	Use UDP port number	192.168. 0.249:70 01U
USB	Disabled																				
Ethernet	Enabled																				
Serial port configured for PPP/TCPIP	Enabled																				
Serial port configured for DNP3	Enabled																				
Serial port configured for dialup modem	Enabled																				
nnn.nnn.n nn.nnn:T	Use TCP transport	192.168. 0.249:T																			
nnn.nnn.n nn.nnn:U	Use UDP transport	192.168. 0.249:U																			
nnn.nnn.n nn.nnn:pp pppU	Use UDP port number	192.168. 0.249:70 01U																			
<p>Routing Status</p>	<p>The status of this routing table entry.</p> <p>For more information about route types, see Configuring DNP3 Routes [152].</p>	<table border="1"> <tr> <td>On Static</td> <td> <p>A user-entered route that is active and will be automatically updated if the remote device sends a request on a different interface, IP address or IP port than the one identified in the route.</p> <p>Default setting</p> </td> </tr> <tr> <td>Off Static</td> <td> <p>A user-entered route that is disabled.</p> </td> </tr> <tr> <td>On Fixed</td> <td> <p>A user-entered route that is active, but will</p> </td> </tr> </table>	On Static	<p>A user-entered route that is active and will be automatically updated if the remote device sends a request on a different interface, IP address or IP port than the one identified in the route.</p> <p>Default setting</p>	Off Static	<p>A user-entered route that is disabled.</p>	On Fixed	<p>A user-entered route that is active, but will</p>													
On Static	<p>A user-entered route that is active and will be automatically updated if the remote device sends a request on a different interface, IP address or IP port than the one identified in the route.</p> <p>Default setting</p>																				
Off Static	<p>A user-entered route that is disabled.</p>																				
On Fixed	<p>A user-entered route that is active, but will</p>																				

			<p>not be updated if the remote device sends a request on a different port than the one identified in the route.</p> <p>If your system is using a SCADAPack 32 controller, a SCADAPack 300 series controller, or a SCADAPack 4203 controller, use On Fixed.</p>
		Off Fixed	<p>A user-entered route that is disabled.</p> <p>If the Route Status is Off Fixed, a dynamic route entry is not added to the DNP3 Routing Table.</p>

8.14.8 Configuring Data Concentrator Client Operation

Use the **DNP3 > Data Concentrator Client** page to:

- [Add the remote DNP3 Outstation devices for this DNP3 Data Concentrator Client](#) ^[156]
- View the Number of Remote Point Objects

When devices are added, you can:

- [Add the remote points on each DNP3 Outstation device](#) ^[169]

When you have completed these steps, configure the:

- [DNP3 Layer Settings](#) ^[145] parameters if you need to customize the default DNP3 Link Layer or Application Layer settings
- [Configure DNP3 Routes](#) ^[152] to add the routes to the DNP3 Outstations

The following table lists the maximums for DNP3 Controlling Station operation.

Item	Maximum Number
Maximum DNP3 Outstation devices (polled by the SCADAPack when it is operating as a DNP3 Controlling Station)	Approximately 90*

* The number of supported connections to DNP3 devices can vary depending on:

- The number of DNP3 routing table entries (maximum 100). See the DNP3 Routing topic in the SCADA Protocols Technical Reference manual.

- The number of DNP3 association entries (maximum 100). See the DNP3 Status Associations topic in the SCADA Protocols Technical Reference manual.

The configuration parameters for DNP3 Controlling Station operation are only displayed if DNP3 Data Concentrator Client is selected in the [Project Settings](#)^[42]. These options are initially configured when you first create the project, but can be changed at any time if you need the SCADAPack x70 device to perform different functions in your network. For details, see [Managing the Device Role in the Network](#)^[45].

8.14.8.1 Working with Remote Devices

Use the Remote Devices table on the **DNP3 > Data Concentrator Client** page to [add and configure](#)^[158], [edit](#)^[169], and [remove](#)^[159] remote DNP3 Outstation devices for this DNP3 Data Concentrator Client.

When you add a remote device, a page with the same name as the Remote Device is created under the Data Concentrator Client page. Use the Remote Device page to manage the remote points and their object associations after the points are added. For details, see [Managing Remote Points](#)^[167].

The Number of Remote Point Objects field shows you how many objects are currently mapped.

The figure below shows the Remote Devices table. To change the parameter settings for a remote device entry, do one of the following:

- Double-click on the table row to access the configuration parameters
- Navigate to **DNP3 > Data Concentrator Client > DNP3 Device Name** and click **Edit Device**

Basic Configuration

Remote Devices ⓘ

Add Device Remove Devices Number of Remote Point Objects: 0

	Device Name		Device Type	Device Address	Polling Type	Poll Rates	Application Timeout	Set Time
1	RemoteDevice1	>	DNP3 Device	0	No Poll		60	No
2	RemoteDevice2	>	DNP3 Device	1	Class Poll / Time & IIN	65, 65, 65, 65	60	No
3	RemoteDevice3	>	DNP3 Device	2	Ratio Poll	65, 65	60	No

To add and configure a remote device

1. In the Remote Devices table, click **Add Device**.

2. Configure the [Remote Device](#)¹⁵⁹, [Poll Rate\(s\)](#)¹⁶¹, and [Configuration](#)¹⁶³ parameters, then click **Ok**.
3. To assign or change the DNP3 point number assigned to an object, use the Object Editor as described in [Changing the Object Configuration](#)³⁰¹.
4. If required, expand the Advanced Configuration parameters and configure the [General Setup](#)¹⁶⁵ parameters.
5. On the Data Concentrator Client page, click **Apply**.

To remove a remote device

1. In the Remote Devices table, select the device(s) that you want to remove, then click **Remove Devices**.
2. Specify whether you want to delete the object(s) associated with the device, then click **Yes** to remove the device entry.

When you remove a remote device, the corresponding status and control objects are also removed.

8.14.8.1.1 Remote Device Parameters

The following table describes the Remote Device parameters for DNP3 Outstations.

Parameter	Parameter Description	Setting	Setting Description
Device Name	The name that identifies the DNP3 Outstation.		Maximum length: 14 characters The name can include letters, numbers, hyphens, and underscores.

		Default: RemoteDevice#	
Device Address	The DNP3 address for the DNP3 Outstation. See Connection Setup ¹³³ parameters.	Default: 0	
Device Type	The type of outstation device.	DNP3 Device	The server device is a DNP3 Outstation.
Polling Type	The type of polling that the DNP3 Controlling Station uses with this DNP3 Outstation.	No Poll	The DNP3 Controlling Station does not issue poll requests to this DNP3 Outstation. The DNP3 Controlling Station will process and confirm unsolicited responses from the DNP3 Outstation.
		Background Poll	<p>The DNP3 Controlling Station sends integrity polls to, and expects to receive unsolicited responses from, the DNP3 Outstation.</p> <p>The DNP3 Controlling Station sends an integrity poll at the Must Poll Interval, irrespective of the communications activity between the DNP3 Controlling Station and the DNP3 Outstation.</p> <p>The DNP3 Controlling Station also sends an integrity poll if it does not receive an unsolicited response from the DNP3 Outstation within the Background Poll time.</p> <p>If the DNP3 Outstation sends an unsolicited response to the DNP3 Controlling Station, the background poll is rescheduled at the Background Poll time.</p>
		Ratio Poll	<p>The DNP3 Controlling Station polls the DNP3 Outstation using an event poll to integrity poll ratio.</p> <p>For example, if you leave the default value of 65, there will be one integrity poll for every 65 event polls.</p> <p>The DNP3 Controlling Station also processes unsolicited responses from the DNP3 Outstation.</p>
		Class Poll / Time & IIN	The DNP3 Controlling Station uses a configured poll interval for each class poll, including an integrity poll.

			<p>If the DNP3 Outstation reports events for its event classes in responses containing Internal Indication (IIN) flags, additional polls to those classes are automatically generated.</p> <p>The DNP3 Controlling Station also processes unsolicited responses from the DNP3 Outstation.</p>
		Static Only Poll	<p>The DNP3 Controlling Station sends Class 0 polls only and does not respond to the class data that is indicated as available in Internal Indication (IIN) flags from the DNP3 Outstation.</p> <p>This provides a simplistic multi-client interface for DNP3 Outstations that do not support multi-client operation.</p> <p>With this setting, events are not collected from the DNP3 Outstation.</p> <p>Default setting.</p>
		Class Poll / Time	<p>The DNP3 Controlling Station uses a configured poll interval for each event class poll, including an integrity poll. However, it ignores the event Class Data Available Internal Indication (IIN) flag in responses from the DNP3 Outstation.</p> <p>The DNP3 Controlling Station also processes unsolicited responses from the DNP3 Outstation.</p>

8.14.8.1.2 Poll Rate(s) Parameters

The following table describes the Poll Rates (seconds) parameters for Remote Devices. The Poll Rate parameters provided depend on the setting for the **Polling Type** parameter.

Polling Type	Poll Rate Parameter	Setting	Parameter Description
Background Poll	Background Poll	0...65535 seconds	The interval, in seconds, at which the DNP3 Controlling Station sends an integrity poll to the DNP3 Outstation. This poll is delayed when the DNP3 Controlling Station receives an unsolicited response from the DNP3 Outstation.

			<p>The Background Poll time is typically set to a smaller value than the Must Poll Interval.</p> <p>Default: 65 seconds</p>
	Must Poll Interval	0...65535 seconds	<p>The interval, in seconds, at which the DNP3 Controlling Station sends an integrity poll to the DNP3 Outstation regardless of received unsolicited responses.</p> <p>Default: 65 seconds</p>
Ratio Poll	Event Poll Interval	0...65535 seconds	<p>The interval, in seconds, between event polls.</p> <p>Default: 65 seconds</p>
	Integrity Poll Ratio	0...65535	<p>Determines how many event polls are issued between integrity polls. For example, if you leave the default value of 65, there will be one integrity poll for every 65 event polls.</p> <p>If you set the value of 0 or 1, there will be one integrity poll for each event poll.</p> <p>Default: 65</p>
Static Only Poll	Poll Interval	0...65535 seconds	<p>The interval, in seconds, between Class 0 polls.</p> <p>Default: 65 seconds</p>
Class Poll / Time & IIN Class Poll / Time	Class 1	0...65535 seconds	<p>The poll interval, in seconds, for the selected Event Class.</p> <p>Default: 65 seconds</p>
	Class 2	0...65535 seconds	
	Class 3	0...65535 seconds	
	Integrity	0...65535 seconds	<p>The integrity poll interval in seconds.</p> <p>Default: 65 seconds</p>

8.14.8.1.3 Configuration Parameters

The following table describes the Configuration parameters for Remote Devices.

Parameter	Parameter Description	Setting	Setting Description
Poll Limit	The number of unsuccessful polls before the remote device is considered to be offline.	0...65535	Default: 2 unsuccessful polls
Health Poll Rate	The interval at which the DNP3 Controlling Station sends a health poll to DNP3 Outstations when there has been a communications interruption. The DNP3 Controlling Station sends the selected Health Poll Type at this rate until the DNP3 Outstation comes online again.	0...65535 seconds (s)	Default: 120 seconds
Multiple Fragment Response	Indicates whether the DNP3 Outstation supports multi-fragment responses.	Yes	The DNP3 Outstation supports multi-fragment responses. Default
		No	The DNP3 Outstation does not support multi-fragment responses. If the DNP3 Outstation sends a complete fragment poll response with no "class data available IIN" set, the SCADAPack x70 device sends another integrity poll so that static data is returned to the DNP3 Controlling Station.
Application Timeout	The timeout that is applied to application layer messages, such as class poll requests, that are sent to this DNP3 Outstation.	1...300 seconds (s)	Default: 60 s
Health Poll Type	The type of health poll the DNP3 Controlling Station sends to the DNP3 Outstation to initialize	Delay Measurement	The DNP3 Controlling Station sends a delay measurement poll to reestablish communications.

	<p>communications at startup, and to reestablish communications if there has been a communications interruption.</p> <p>The DNP3 Controlling Station sends the selected poll type to the DNP3 Outstation at the Health Poll Rate.</p>		<p>This option sends the smallest message of the three options. The response from the DNP3 Outstation will be small and predictable and should not affect the state of the DNP3 Outstation. Unless the DNP3 Outstation does not support the Delay Measurement request type, this is the recommended setting.</p> <p>Default setting</p>
		<p>Class 0 Poll</p>	<p>The DNP3 Controlling Station sends a Class 0 poll to reestablish communications.</p> <p>Because a Class 0 poll returns static data for every DNP3 point on the DNP3 Outstation, this option has the potential to return a high volume of data. High traffic volumes can disrupt network communications. This option is typically only recommended for DNP3 Outstations with a small number of DNP3 points and no events.</p>
		<p>Event Poll</p>	<p>The DNP3 Controlling Station sends an event poll to reestablish communications.</p> <p>Because the DNP3 Controlling Station has to read the events the DNP3 Outstation sends and acknowledge them, this option also has the potential to generate high volumes of network traffic that can disrupt network communications. The size of the response is unpredictable as the response is based on the number of events in the DNP3 Outstation.</p> <p>Event poll responses can be delayed if the DNP3 Outstation also reports events using unsolicited responses. Use this setting only when necessary.</p>

Set Time	Indicates whether the DNP3 Controlling Station sets the time in the DNP3 Outstation.	Yes	If the DNP3 Controlling Station receives a DNP3 Outstation response with the Time Synchronization Required IIN (IIN1.4) set, it sends a Delay Measurement message followed by a DNP3 Write Time message to the DNP3 Outstation (object 50, variation 1).
		No	The DNP3 Controlling Station does not set the time in the DNP3 Outstation. Default setting.

8.14.8.1.4 General Setup Parameters

This topic describes the Advanced Configuration General Setup parameters for DNP3 Outstations. These settings apply to every DNP3 Outstation in the Remote Devices table.

Parameter	Parameter Description	Setting	Setting Description
Update Points on Successful Command	<p>Determines whether the DNP3 point value in the DNP3 Controlling Station is updated when a successful control status is received from the DNP3 Outstation.</p> <p>Consider disabling this parameter:</p> <ul style="list-style-type: none"> • If the DNP3 Outstation is configured to send unsolicited control point states using DNP3 Output Event objects. • If you want to poll the controlled states along with input states before updating the database in the DNP3 Controlling Station. 		<p>When the box is checked, the DNP3 point value is updated in the DNP3 Controlling Station database.</p> <p>Default: Checked (enabled)</p>
Enable Command Events on IED Control Fail	<p>Determines whether a DNP3 Outstation adds DNP3 Output Command Events to the event list regardless of the command status.</p> <p>Enable this parameter if upstream DNP3 Controlling Stations support DNP3 Output Command Events. This DNP3 Controlling Station can then:</p> <ul style="list-style-type: none"> • Pass on output command events to upstream DNP3 Controlling Stations if it 		<p>When the box is checked, the DNP3 Outstation adds DNP3 Output Command Events to the event list regardless of the command status.</p> <p>Default: Not checked (disabled)</p>

	<p>receives them from an intelligent electronic device (IED).</p> <ul style="list-style-type: none"> • Generate its own output command events when it receives a response with a Control Fail status from an IED. This can provide upstream DNP3 Controlling Stations with more timely information that downstream controls were unsuccessful. 		
<p>Stop Event Polling if Buffer Full</p>	<p>When this parameter is not checked and the event buffers are filled, any new DNP3 events generated by the data concentrator will over-write the oldest events in the buffer. The data concentrator will maintain communications with configured remote devices.</p> <p>When this parameter is checked, and the data concentrator DNP3 event buffers are filled, any new DPN3 events generated by the data concentrator will be discarded. The data concentrator will suspend communications with configured remote devices except I/O expansion modules.</p>	<p>Default: Not Checked (disabled)</p>	
<p>DNP3/TCP Keep-Alive</p>	<p>The rate at which a DNP3 link status test message is sent across active TCP sockets to verify that the TCP link is active.</p> <p>Use this setting when the SCADAPack x70 device connects to remote intelligent electronic devices (IEDs) through DNP3 TCP/IP.</p> <p>The SCADAPack x70 device sends DNP3 Link Status requests to devices using TCP transport, not UDP. The keep-alive timer can help to recover from communication stoppages, and to help keep remote TCP sockets connected.</p> <p>When setting this timer, keep in mind that the shorter the timer, the higher the number of DNP3 Link Status messages. Higher numbers of messages can potentially affect communications costs.</p> <p>The timer restarts each time DNP3 traffic passes through the TCP socket. As a</p>	<p>0...65535 seconds (s)</p>	<p>0 = Deactivate the timer.</p> <p>Default: 1150 seconds.</p>

	result, this timer is typically set to be longer than the standard poll rate.		
Security Response Timeout	The duration within which the DNP3 Controlling Station expects a response to security authentication messages it sends to DNP3 Outstations	1000...3600000 milliseconds (ms)	<p>DNP3 secure authentication message exchange times are typically short. As a result, the timeout should only be as long as the latency of the network and the response times of the devices.</p> <p>Setting a longer timeout than is necessary can delay poll requests and disrupt network operations.</p> <p>Default: 2000 ms.</p>

8.14.8.2 Managing Remote Points and Objects

When you add a remote device, a page with the same name as the Remote Device is created under the Data Concentrator Client page. Use the Remote Device page to:

- [Edit the device configuration](#) ^[169]
- [Add remote points](#) ^[169]
- [Remove remote points](#) ^[170]

- [Change remote point parameters](#)^[170]
- [Change DNP3 object parameters](#)^[171]
- [Clear the object association for a remote point](#)^[171]
- [Link a status and control object with an object association](#)^[172]
- [Clear the object association for a status and control object](#)^[172]
- [Add the object association for a remote point](#)^[171]

To access the Remote Device page, on the Configuration tab, select **DNP3 > Data Concentrator Client > Remote Device**. The figure below shows an example Remote Device page. To change the parameter settings for a remote points entry, double-click on the table row to access the configuration parameters.

Basic Configuration

Device Configuration

Device Name: RemoteDevice1 Polling Type: Static Only Poll Application Timeout: 60

Device Address: 0 Poll Rates: 65 Set Time: No Edit Device

Remote Point Configuration

Remote Points

Add Points Remove Points

	Remote Point Type	Remote Point Number	Local Point Quantity
1	Digital Input	0	1
2	Digital Input	30	1
3	Digital Input	1	10

Object Associations

Clear Associations >

	Remote Point Number	Object Association
1	1	DNP3_RemoteDevic e1_DI_1
2	2	DNP3_RemoteDevic e1_DI_2

Status and Control Configuration

Object Associations

Clear Associations >

	Description	Data Type	Object Association
1	Poll Count	Analog	
2	Poll Response Error Count	Analog	
3	Communication Status	Analog	
4	Unsolicited Response Count	Analog	
5	Last Reported Internal Indication Flag	Analog	
6	Poll 1 Countdown Timer	Analog	
7	Poll 2 Countdown Timer	Analog	
8	Poll 3 Countdown Timer	Analog	
9	Poll 4 Countdown Timer	Analog	
10	Put Device In Service	Digital	
11	Force Event Poll	Digital	

To edit the device configuration

1. In the Device Configuration section, click **Edit Device**.
2. Configure the [Remote Device](#)^[159], [Poll Rates](#)^[161] and [Configuration](#)^[163] parameters, then click **Ok**.
3. On the Data Concentrator page, click **Apply**.

To add remote points

1. In the Remote Points table, click **Add Points**.
2. Define the [Remote Point Configuration](#)^[176] parameters, then click **Ok**.
3. In the **Object Associations** dialog, specify how to connect objects to the DNP3 remote points.
 - The default is **Manually connect existing objects to the DNP3 remote points?** When this option is selected, the existing object associations are removed and no new associations are created.
 - If you select **Automatically create and connect new objects to the DNP3 remote points?**, database objects are created corresponding to the Local Point Quantity specified.
 - In the **DNP3 Options** section, if available, select one of the following:
 - Leave the DNP3 point numbers unassigned. When this option is selected, objects are created, but no DNP3 point numbers are assigned.
 - Automatically assign DNP3 point numbers with the next available values
 - If you select Assign DNP3 point numbers sequentially, choose one of the following:
 - For digital objects, enter the starting number in the Digital Input or Digital Output field
 - For analog objects, enter the starting number in the Analog Input or Analog Output field
 - For counter objects, enter the starting number in the Counter Input or Counter Output field
 - In the **Modbus Options** section, if available, determine how to assign Modbus registers:
 - Leave Modbus registers unassigned. When this option is selected, objects are created, but no Modbus registers are assigned.
 - If you select Automatically assign Modbus registers with the next available values, choose one of the following:
 - For analog objects, choose one of the following:
 - read-only Input Registers

- read/write Holding Registers
 - For digital objects, choose one of the following:
 - read-only Discrete Inputs
 - read/write Discrete Coils
 - For counter objects, choose one of the following:
 - read-only Input Registers
 - read/write Holding Registers
 - If you select Assign Modbus registers sequentially, enter one of the following:
 - For analog objects, enter the starting number in the Analog field
 - For digital objects, enter the starting number in the Digital field
 - For counter objects, enter the starting number in the Counter field
 - In the **IEC 60870-5-104 Options** section, if available, determine how to assign Information Object Addresses (IOAs):
 - Leave IOAs unassigned. When this option is selected, objects are created, but no IEC 60870-5-104 IOAs are assigned.
 - If you select the Automatically assign IOAs with the next available values option, Monitoring Direction IOAs are automatically assigned to each created object, starting at the first available Monitor Direction IOA address not already allocated to an object.
 - If you select the Assign IOAs sequentially starting from option, you can specify the IOA for Monitor Direction for the first object. Monitor Direction IOAs are automatically assigned to objects, sequentially, from this number.
4. Click **OK**.
 5. On the Remote Device page, click **Apply**.

By default, when an object is created or added, it is not automatically made available to the SCADAPack x70 Logic Editor. You need to configure the Logic Variable Type. For more information, see [Changing the Object Configuration](#)^[301] and [Assigning a Logic Variable and Task to an Object](#)^[323].

To remove remote points

1. In the Remote Points table, select the table row(s) for the points, then click **Remove Points**.
2. Specify whether you want to delete the objects associated with the points, then click **Yes** to remove the points entry.

To change remote point parameters

1. Double-click on the row in the Remote Points table to access the remote point parameters.

2. Edit the parameters.
3. Click **OK**.
4. In the **Object Associations** dialog, follow the steps for [adding remote points](#)¹⁶⁹.
5. Determine if objects previously associated with DNP3 points will be deleted from the object database by clicking the checkbox for **Delete objects connected to DNP3 remote points**.
6. Click **Ok**.

When you change remote point ranges:

- DNP3 points for entries that are no longer in the remote point range are automatically removed. You can specify whether the objects associated with the DNP3 points are also deleted from the object database. If you are going to reassign the DNP3 point numbers, it may make sense to keep the objects and reconfigure them if necessary rather than create new objects to associate with the points.
- A database object is automatically created for each new entry in the remote point range. As was the case when you initially added the remote point range, you can specify how the DNP3 point numbers are assigned to the database objects.
- The changes are automatically reflected in the Remote Points table on the Data Concentrator page.

To change DNP3 object parameters

- Double-click on the table row in the Object Associations table to access the object configuration parameters.

To clear the object association for a remote point

1. In the Object Associations table, select the point for which you want to remove the association, then click **Clear Association**.
2. Specify whether you want to delete the object as well as the association, then click **Yes**.
3. On the Remote Device page, click **Apply**.

To add the object association for a remote point

1. In the Object Associations table, double-click the row of the object where you want to add the association.
2. In the Object Associations window, select one of the following
 - **Associate with new object**
 - Edit the default name, if needed
 - **Associate with existing object**
 - Select the Object Name from the drop-down list

- **Associate with object in group**
 - Select the Group and the Object Name from the drop-down lists
3. Click **Ok**.
 4. On the Remote Device page, click **Apply**.

8.14.8.2.1 Configuring Status and Control for DNP3

Use the Status and Control Configuration table on the **DNP3 > Data Concentrator Client > Remote Device Name** page to [link a status and control object](#)^[172] with an object association and to [clear associations](#)^[172] for a status and control object. You can only clear object associations if they have already been associated.

To change the parameter settings for a status and control object, double-click on the table row in the Object Associations table to access the object configuration parameters.

To link a status and control object with an object association

1. On the Configuration tab, select **DNP3 > Data Concentrator Client > Remote Device Name**.
2. In the Remote Points table, select the entry for which you want to link status and control objects.
3. In the Status and Control configuration section, double-click the row with the object.
4. In the Object Associations window, select one of the following
 - **Associate with new object**
 - Edit the default name, if needed
 - **Associate with existing object**
 - Select the Object Name from the drop-down list
 - **Associate with object in group**
 - Select the Group and the Object Name from the drop-down lists
5. Click **Ok**.
6. On the Remote Device page, click **Apply**.

For details about the Status and Control objects, see [Status and Control Object Details](#)^[173].

To clear the object association for a status and control object

1. On the Configuration tab, select **DNP3 > Data Concentrator Client > Remote Device Name**.

Basic Configuration

Device Configuration

Device Name: RemoteDevice1 Polling Type: Static Only Poll Application Timeout: 60

Device Address: 0 Poll Rates: 65 Set Time: No

Remote Point Configuration

Remote Points

	Remote Point Type	Remote Point Number	Local Point Quantity
1	Digital Input	0	1
2	Digital Input	30	1
3	Digital Input	1	10

Object Associations

>

	Remote Point Number	Object Association
1	1	DNP3_RemoteDevice1_DL1
2	2	DNP3_RemoteDevice1_DL2

Status and Control Configuration

Object Associations

>

	Description	Data Type	Object Association
1	Poll Count	Analog	
2	Poll Response Error Count	Analog	
3	Communication Status	Analog	
4	Unsolicited Response Count	Analog	
5	Last Reported Internal Indication Flag	Analog	
6	Poll 1 Countdown Timer	Analog	
7	Poll 2 Countdown Timer	Analog	
8	Poll 3 Countdown Timer	Analog	
9	Poll 4 Countdown Timer	Analog	
10	Put Device In Service	Digital	
11	Force Event Poll	Digital	

2. In the Remote Points table, select the entry for which you want to view status and control objects.
3. In the Status and Control Configuration section, select the object for which you want to clear the association, then click **Clear Associations**.
4. Click **Yes**.
5. On the Remote Device page, click **Apply**.

8.14.8.2.2 Status and Control Object Details

Digital control objects for each device

Name	Data Type	Description
------	-----------	-------------

Put Device In Service	Digital	<p>This is a control object that can be used to either bring the device online (into service by enabling the device) or to manually put the device offline (out of service by disabling the device).</p> <p>When this digital object is in the ON state (logic 1), the appropriate device is put online.</p> <p>When this digital object is in the OFF state (logic 0), the appropriate device is put offline.</p> <p>When remote devices are put offline, the DNP3 Controlling Station does not initiate communications with the relevant device, and the value of the Device Status object is Device is disabled.</p> <p>The Object Name is in the format <i>DNP3_DeviceName_PutInSrc.</i></p>
Force Event Poll	Digital	<p>Pulsing this object with a “positive edge” transition will invoke an event poll (class 1, 2, and 3) to the relevant outstation.</p> <p>The Object Name is in the format <i>DNP3_DeviceName_FrcEvtPoll.</i></p>
Force Integrity Poll	Digital	<p>Pulsing this object with a “positive edge” transition will invoke an integrity poll (class 1, 2, 3, and 0) to the relevant outstation.</p> <p>The Object Name is in the format <i>DNP3_DeviceName_FrcIntPoll.</i></p>
Force Warm Restart	Digital	<p>Pulsing this object with a “positive edge” transition will invoke a DNP3 Warm Restart request to the relevant outstation.</p> <p>The Object Name is in the format <i>DNP3_DeviceName_FrcWarmRst.</i></p>
Force Cold Restart	Digital	<p>Pulsing this object with a “positive edge” transition will invoke a DNP3 Cold Restart request to the relevant outstation.</p> <p>The Object Name is in the format <i>DNP3_DeviceName_FrcColdRst.</i></p>

Analog status objects for each device

Name	Data Type	Description
------	-----------	-------------

Poll Count	Analog	<p>Indicates the number of ONLINE polls previously issued to the device. That is, polls of the type determined by the remote device “poll type” configuration, as well as any other forced polls. This poll count does not include health check polls that are issued after a device is determined to be OFFLINE. The poll count value can be reset by sending an analog output control to this object (for example, from a DNP3 Controlling Station).</p> <p>Use DINT (32-bit signed integer) data types to represent the count value.</p> <p>The Object Name is in the format <i>DNP3_DeviceName_PollCount</i>.</p>
Poll Response Error Count	Analog	<p>Indicates the number of unsuccessful polls to a particular device, that is, the number of polls issued with no response. Unlike the Poll Count status object, the Poll Response Error Count does include unsuccessful health check polls. This value can be reset by sending an analog output control to this object (for example, from a DNP3 Controlling Station).</p> <p>Use DINT (32-bit signed integer) data types to represent the count value.</p> <p>The Object Name is in the format <i>DNP3_DeviceName_RespErrCnt</i>.</p>
Communication Status	Analog	<p>This read-only object represents the current status of the outstation as seen by the DNP3 Controlling Station.</p> <p>Valid status codes:</p> <ul style="list-style-type: none"> 0 - Device not found 1 - Trying to contact device 2 - Initializing device 3 - Communications with device were unsuccessful 4 - Device is online 5 - Device is disabled <p>The Object Name is in the format <i>DNP3_DeviceName_CommStatus</i>.</p>
Unsolicited Response Count	Analog	<p>This Unsolicited Response Count object indicates the number of unsolicited responses received by the DNP3 Controlling Station from a given device. NUL Unsolicited Responses are included in this count. This object can be reset by sending an analog output control to this object (for example, from a DNP3 Controlling Station).</p>

		The Object Name is in the format DNP3_DeviceName_UnsolCount.
Last Reported Internal Indication Flag	Analog	Stores the recently received Internal Indication (IIN) from a particular outstation. The IIN is included in every application layer response received from the device and is used to indicate to the DNP Controlling Station-specific device information, not necessarily related to the preceding request. The IIN is a 16-bit field, where each of the bits are assigned and well defined. See the DNP3 Internal Indication (IIN) Flags topic in the SCADA Protocols Technical Reference manual The Object Name is in the format DNP3_DeviceName_IINFlags.
Poll 1 Countdown Timer Poll 2 Countdown Timer Poll 3 Countdown Timer Poll 4 Countdown Timer	Analog	These read-only countdown timers report the time left in seconds before the poll associated with the poll countdown timer is sent. Once the relevant poll is sent, the countdown timer object is restored with the poll interval value. Not all poll countdown timers are used for every poll type. See Poll Rate(s) ^[167] parameters for more information. Background Poll - Poll 1, Poll 2 Ratio Poll - Poll 1, Poll 2 Static Only Poll - Poll 1 Class Poll / Time & IIN Class Poll / Time - Poll 1, Poll 2, Poll 3, Poll 4 The Object Name is in the format DNP3_DeviceName_Poll<n>Timer.

8.14.8.2.3 Remote Point Configuration Parameters

The following table describes the Remote Point Configuration parameters for DNP3 Outstations. You can only add Remote Points for Remote Devices that are listed in the [Remote Devices table](#)^[167].

Parameter	Parameter Description	Setting	Setting Description
Remote Point Type	The type of points on the DNP3 Outstation. You	Digital Input	Adds points with the selected type to the Remote Points table. Default: Digital Input

	need to create a separate table entry for each point type.	Digital Output	
		Analog Input	
		Analog Output	
		Counter Input	
Remote Point Number	The first DNP3 Outstation point number in the range that you want to add to the Remote Points table.		
Local Point Quantity	The number of points in the DNP3 Controlling Station that need to be mapped to points on the DNP3 Outstation. If these points do not already exist in the DNP3 Controlling Station, they are created.		

8.15 Configuring Modbus Operation

SCADAPack x70 devices can operate as a:

- Modbus RTU Client
- Modbus RTU Server
- Modbus/TCP Client
- Modbus/TCP Server
- Modbus Store and Forward
- Realflo Flow Computer

Server operation

When the SCADAPack x70 device is operating as a Modbus RTU Server or Modbus/TCP Server, it responds to requests from a Modbus RTU Client or Modbus/TCP Client. A Client can be another SCADAPack or RTU, or it can be a different type of device, such as a SCADA host or local human machine interface (HMI). For configuration details, see:

- [Configuring Server Operation](#)¹⁸⁴

Client operation

When the SCADAPack x70 device is operating as a Modbus RTU Client or a Modbus/TCP Client, it requests information from a Modbus RTU Server or Modbus/TCP Server. A Server can be another SCADAPack or RTU, or it can be a different type of device, such as a programmable logic controller (PLC), or a smart device with Modbus protocol capability. For configuration details, see:

- [Configuring Client Operation Using the Modbus Scanner](#)^[189]

Store and Forward operation

A SCADAPack configured for Store and Forward operation, receives messages destined for an Outstation on the Forward Interface. The SCADAPack forwards the message on the Forward Interface to the Forward Station.

- [Configuring Store and Forward Operation](#)^[211]

Realflo Flow Computer

A SCADAPack configured as a Realflo Flow Computer measures natural gas or petroleum liquid flow. For configuration details, see:

- [Configuring Server Operation](#)^[184]

Default operation

By default, each SCADAPack RemoteConnect project is configured for Modbus Server operation and the relevant configuration parameters are displayed in the SCADAPack x70 configuration software.

The configuration parameters for Modbus RTU Client, Modbus/TCP Client and Modbus/TCP Server operation are only displayed if those settings are selected in the [Project Settings](#)^[42]. These options are initially configured when you first create the project, but can be changed at any time if you need the SCADAPack x70 device to perform different functions in your network. For details, see [Managing the Device Role in the Network](#)^[45].

8.15.1 Configuring Modbus RTU Server Operation Overview

The following procedure provides the high-level steps to configure the SCADAPack x70 device to operate as a Modbus RTU Server. Each step in the procedure below is described later in this manual. Follow the links for details.

Before following the procedure below:

- Verify that the device can communicate with the SCADAPack RemoteConnect configuration software. If you have not already set up this connection, follow the procedure in the Configuring Communication Parameters topic in the PC Communication Settings -SCADAPack CommDTM manual before following the steps below.
- Create a new SCADAPack project, as described in the Creating a New Project topic in the SCADAPack RemoteConnect Configuration Software manual. This adds the physical I/O on the SCADAPack x70 device to the SCADAPack x70 configuration software.
- [Open the configuration parameters](#)^[25]

The configuration takes effect in the SCADAPack x70 device when you take the SCADAPack x70 configuration software online and write the configuration to the device as described at the end of the procedure.

To configure the SCADAPack x70 device to operate as a Modbus RTU Server

1. On the **Configuration** tab, select **Physical I/O > Local**, then double-click on the row in the I/O Configuration table to [define the operating characteristics for the SCADAPack x70 device](#)^[76].
2. If required, [add any I/O modules that are connected to the SCADAPack x70 device](#)^[58].
3. In the **Physical I/O > Local** page **Channel Configuration** table, double-click on each channel to define how it operates:
 - [Object Configuration Parameters](#)^[249]
 - [Associations Tab](#)^[265]
 - [Modbus Tab](#)^[272]
 - [Alert Notifications Tab: Analog Objects](#)^[280]
 - [Basic Tab: Analog Objects](#)^[283]
 - [Advanced Tab: Analog Objects](#)^[289]
 - [Basic Tab: Digital Objects](#)^[293]
 - [Basic Tab: Counter Objects](#)^[297]
4. On the **Configuration** tab, select [Serial Communication > Ports > Serial #](#)^[84] to configure the physical connection to the Modbus RTU Clients(s).
5. On the **Configuration** tab, select [Modbus > Server](#)^[184], then configure the:
 - [Modbus Server Address Mode](#)^[187], if you are using 6-digit Modbus addressing rather than 5-digit addressing.
6. On the **Objects** tab, select **Object Configuration**, then [add database objects as required](#)^[235].

For each SCADAPack x70 object that you want to access through the Modbus RTU Server, configure the object's Modbus Register and Modbus Data Type.
7. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Go Online**.
8. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Write to Device**.

8.15.2 Configuring Modbus RTU Client Operation Overview

The following procedure provides the high-level steps to configure the SCADAPack x70 device to operate as a Modbus RTU Client. Each step in the procedure below is described later in this manual. Follow the links for details.

Before following the procedure below:

- Verify that the device can communicate with the SCADAPack RemoteConnect configuration software. If you have not already set up this connection, follow the procedure in the Configuring Communication Parameters topic in the PC Communication Settings -SCADAPack CommDTM manual before following the steps below.
- Create a new SCADAPack project, as described in the Creating a New Project topic in the SCADAPack RemoteConnect Configuration Software manual. This adds the physical I/O on the SCADAPack x70 device to the SCADAPack x70 configuration software.
- [Open the configuration parameters](#)^[25]

The configuration takes effect in the SCADAPack x70 device when you take the SCADAPack x70 configuration software online and write the configuration to the device as described at the end of the procedure.

To configure the SCADAPack x70 device to operate as a Modbus RTU Client

1. On the **Configuration** tab, select **Physical I/O > Local**, then double-click on the row in the I/O Configuration table to [define the operating characteristics for the SCADAPack x70 device](#)^[76].
2. If required, [add any I/O modules that are connected to the SCADAPack x70 device](#)^[58].
3. In the **Physical I/O > Local** page **Channel Configuration** table, double-click on each channel to define how it operates:
 - [Object Configuration Parameters](#)^[249]
 - [Associations Tab](#)^[266]
 - [Alert Notifications Tab: Analog Objects](#)^[280]
 - [Basic Tab: Analog Objects](#)^[283]
 - [Advanced Tab: Analog Objects](#)^[289]
 - [Basic Tab: Digital Objects](#)^[293]
 - [Basic Tab: Counter Objects](#)^[297]
4. On the **Configuration** tab, select [Serial Communication > Ports > Serial #](#)^[84] to configure the physical connection to the Modbus RTU Server(s).
5. On the **Configuration** tab, select [Modbus > Client](#)^[189] to add the Modbus RTU Servers and Point Scanners.
6. On the **Objects** tab, select **Object Configuration**, then [add database objects as required](#)^[235].
7. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Go Online**.
8. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Write to Device**.

8.15.3 Configuring Modbus/TCP Server Operation Overview

The following procedure provides the high-level steps to configure the SCADAPack x70 device to operate as a Modbus/TCP Server. Each step in the procedure below is described later in this manual. Follow the links for details.

Before following the procedure below:

- Verify that the device can communicate with the SCADAPack RemoteConnect configuration software. If you have not already set up this connection, follow the procedure in the Configuring Communication Parameters topic in the PC Communication Settings -SCADAPack CommDTM manual before following the steps below.
- Create a new SCADAPack project, as described in the Creating a New Project topic in the SCADAPack RemoteConnect Configuration Software manual. This adds the physical I/O on the SCADAPack x70 device to the SCADAPack x70 configuration software.
- [Open the configuration parameters](#) ^[25]

The configuration takes effect in the SCADAPack x70 device when you take the SCADAPack x70 configuration software online and write the configuration to the device as described at the end of the procedure.

To configure the SCADAPack x70 device to operate as a Modbus/TCP Server

1. On the **Configuration** tab, select **Physical I/O > Local**, then double-click on the row in the I/O Configuration table to [define the operating characteristics for the SCADAPack x70 device](#) ^[76].
2. If required, [add any I/O modules that are connected to the SCADAPack x70 device](#) ^[58].
3. In the **Physical I/O > Local** page **Channel Configuration** table, double-click on each channel to define how it operates:
 - [Object Configuration Parameters](#) ^[249]
 - [Associations Tab](#) ^[265]
 - [Modbus Tab](#) ^[272]
 - [Alert Notifications Tab: Analog Objects](#) ^[280]
 - [Basic Tab: Analog Objects](#) ^[283]
 - [Advanced Tab: Analog Objects](#) ^[289]
 - [Basic Tab: Digital Objects](#) ^[293]
 - [Basic Tab: Counter Objects](#) ^[297]
4. On the **Configuration** tab, select one or more of the following to configure the physical connection to the Modbus/TCP Client. Select the Serial Communication option if you want to make a TCP connection to the Modbus/TCP Client using a serial port.
 - [Serial Communication > Ports > Serial #](#) ^[84]
 - [IP Communication > Ethernet Ports > Ethernet #](#) ^[110]

5. On the **Configuration** tab, select [Modbus > Server](#)^[184], then configure the:
 - [Unit Identifier](#)^[185]
 - [Modbus Server Address Mode](#)^[187] if you are using 6-digit Modbus addressing rather than 5-digit addressing.
6. On the **Objects** tab, select **Object Configuration**, then [add database objects as required](#)^[235].

For each SCADAPack x70 object that you want to access through the Modbus/TCP Server, configure the object's Modbus Register and Modbus Data Type.
7. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Go Online**.
8. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Write to Device**.

8.15.4 Configuring Modbus/TCP Client Operation Overview

The following procedure provides the high-level steps to configure the SCADAPack x70 device to operate as a Modbus/TCP Client. Each step in the procedure below is described later in this manual. Follow the links for details.

Before following the procedure below:

- Verify that the device can communicate with the SCADAPack RemoteConnect configuration software. If you have not already set up this connection, follow the procedure in the Configuring Communication Parameters topic in the PC Communication Settings -SCADAPack CommDTM manual before following the steps below.
- Create a new SCADAPack project, as described in the Creating a New Project topic in the SCADAPack RemoteConnect Configuration Software manual. This adds the physical I/O on the SCADAPack x70 device to the SCADAPack x70 configuration software.
- [Open the configuration parameters](#)^[25]

The configuration takes effect in the SCADAPack x70 device when you take the SCADAPack x70 configuration software online and write the configuration to the device as described at the end of the procedure.

To configure the SCADAPack x70 device to operate as a Modbus/TCP Client

1. On the **Configuration** tab, select **Physical I/O > Local**, then double-click on the row in the I/O Configuration table to [define the operating characteristics for the SCADAPack x70 device](#)^[76].
2. If required, [add any I/O modules that are connected to the SCADAPack x70 device](#)^[58].
3. In the **Physical I/O > Local** page **Channel Configuration** table, double-click on each channel to define how it operates:
 - [Object Configuration Parameters](#)^[249]
 - [Associations Tab](#)^[265]

- [Alert Notifications Tab: Analog Objects](#) ^[280]
 - [Basic Tab: Analog Objects](#) ^[283]
 - [Advanced Tab: Analog Objects](#) ^[289]
 - [Basic Tab: Digital Objects](#) ^[293]
 - [Basic Tab: Counter Objects](#) ^[297]
4. On the **Configuration** tab, select one or more of the following to configure the physical connection to each Modbus/TCP Server. Select Serial Communication if you want to make a TCP connection to the Modbus/TCP Server using a serial port.
 - [Serial Communication > Ports > Serial #](#) ^[84]
 - [IP Communication > Ethernet Ports > Ethernet #](#) ^[110]
 5. On the **Configuration** tab, select [Modbus > Client](#) ^[189] to add the Modbus/TCP Servers and Point Scanners.
 6. On the **Objects** tab, select **Object Configuration**, then [add additional database objects as required](#) ^[235].
 7. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Go Online**.
 8. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Write to Device**.

8.15.5 Configuring Standard and Extended Addressing

Modbus serial communication and Modbus IP communication interfaces in SCADAPack x70 devices are configured with a Standard or Extended addressing mode and an address number which is referred to as a Station Address or a Unit Identifier. The ranges of the address numbers are as follows:

- Standard addresses: 1...254
- Standard or extended address: 255
- Extended addresses: 256...65534

Address 255 can be configured with either standard or extended mode. Standard address 255 is different from extended address 255.

When configuring the station/unit addresses in Modbus Scanner and Store and Forward parameters, the following configuration rules apply:

- If an address of a server/forward device is between 1 and 254, the addressing mode of the client and server/forward communication interfaces can be either Standard or Extended.
- If the address of a server/forward device is 255, the addressing mode of the client communications interface needs to be the same as the server/forward communications interface.

- If an address of a server/forward device is between 256 and 65534, the addressing mode of the client communications interface and the server/forward communications interface needs to be Extended.

8.15.6 Configuring Server Operation

Use the **Modbus > Server** page to define how the Modbus RTU Server or Modbus/TCP Server communicates with the Modbus RTU Client or Modbus/TCP Client.

To configure the Modbus RTU Server or Modbus/TCP Server connection to the Client

1. On the Configuration tab, select **Modbus > Server**.

If you are not using Realflo Flow Computer, the following is displayed:

⤴ Basic Configuration

Modbus/TCP Server

Addressing	<input type="text" value="Standard"/>	
Unit Identifier	<input type="text" value="255"/>	
Inactivity Timeout	<input type="text" value="60"/>	s

If you are using Realflo Flow Computer, the following is displayed:

⤴ Basic Configuration

Modbus/TCP Server

Addressing	<input type="text" value="Standard"/>	
Unit Identifier	<input type="text" value="255"/>	
Inactivity Timeout	<input type="text" value="60"/>	s
Enron Modbus	<input checked="" type="checkbox"/>	
Enron Unit Identifier	<input type="text" value="2"/>	

2. Configure the [Modbus/TCP Server](#)^[185] parameters.
3. If required, display the Advanced Configuration parameters to view the [Modbus/TCP Server](#)^[186] parameter or change the [Modbus Broadcast](#)^[186] and [Modbus/TCP Server and Modbus/RTU Server](#)^[187] parameters.

⬆️ Advanced Configuration

Modbus/TCP Server

TCP Server Port

Modbus RTU Server

Modbus Broadcast Enabled

Modbus/TCP Server and Modbus RTU Server

Modbus Server Address Mode

Byte Ordering for 32-bit Values ⓘ

Swap Word Order for 32-bit Integers ⓘ

4. On the Server page, click **Apply**.

8.15.6.1 Modbus Server Basic Parameters

The following table describes Modbus/TCP Server parameters.

Parameter	Parameter Description	Setting	Setting Description
Addressing	Selects standard or extended addressing mode For addressing mode information, see: Configuring Standard and Extended Addressing ^[183] .	Standard (default)	Modbus unit identifiers include 1...255
		Extended	Modbus unit identifiers include 1...65534
Unit Identifier	The Modbus/TCP Server address.	<ul style="list-style-type: none"> • Standard addressing: 	Default: 1

		1...255 <ul style="list-style-type: none"> Extended addressing: 1...65534 	
Inactivity Timeout	The Modbus/TCP Server will close incoming connections after there has been no activity for the time set.	60...86400 seconds (s)	Default: 60 s
Enron Modbus	When checked, the Enron Unit Identifier field is enabled		Available only when the Realflo Flow Computer option is configured Default: Unchecked
Enron Unit Identifier	The Enron Modbus address	<ul style="list-style-type: none"> Standard addressing: 1...255 Extended addressing: 1...65534 	Default: 2 Available only when the Realflo Flow Computer option is configured Enabled only when Enron Modbus is checked The Enron Unit Identifier needs to be different than the Unit Identifier for each port.

8.15.6.2 Modbus Server Advanced Parameters

The following table describes the Modbus/TCP Server parameter.

Parameter	Parameter Description	Setting	Setting Description
TCP Server Port	The TCP port on which the Modbus/TCP Server listens for incoming connections from the Modbus/TCP Client.	502	Default: 502 Valid values: 1...65535

The following table describes the Modbus Broadcast parameter.

Parameter	Parameter Description	Setting	Setting Description
Modbus Broadcast	Enables handling of Modbus broadcast station address	No	Default: No

Enabled	0.	Yes	<p>No</p> <ul style="list-style-type: none"> • Modbus broadcast station address 0 is not handled by Modbus RTU server nor Store and Forward or logic <p>Yes</p> <ul style="list-style-type: none"> • Modbus broadcast station address 0 is handled by Modbus RTU server • Modbus broadcast station address 0 is allowed on serial interfaces in Store and Forward entries. • Modbus broadcast station address 0 is allowed to be used by logic using Modbus function blocks. <p>See the in the SCADA Protocols Technical Reference manualModbus Broadcast topic in the SCADA Protocols Technical Reference manual for details.</p>
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The following table describes the Modbus/TCP Server and Modbus RTU Server parameters.

Parameter	Parameter Description	Setting	Setting Description
Modbus Server Address Mode	<p>The Modbus addressing mode used by the Modbus/TCP Server or Modbus RTU Server.</p> <p>Select the addressing mode that matches the mode used by the Modbus/TCP Client or Modbus RTU Client.</p>	5 Digits	<p>The Modbus/TCP Server or Modbus RTU Server uses 5-digit addressing.</p> <p>In 5-digit Modbus addressing, the leading digit generally represents the register data type. For example, if a SCADAPack x70 device reads Modbus register 40010, it is represented by Modbus protocol function code 3 and protocol register address 0x0009.</p> <p>Default</p>

		6 Digits	<p>The Modbus/TCP Server or Modbus RTU Server uses 6-digit addressing.</p> <p>In 6-digit Modbus addressing, the address is composed of a single-digit numeric prefix and a 5-digit Modbus register number to enable access to additional registers in each register range.</p>
Byte Ordering for 32-bit Values	<p>Determines how UDINT, DINT, and REAL data from objects is converted into Modbus register data.</p> <p>The setting configures the order of the bytes for register values received or sent by a Modbus RTU Server or Modbus/TCP Server.</p> <p>Select the byte order and word order combination that matches the order expected by the Modbus RTU Client or Modbus/TCP Client that is polling the RTU.</p> <p>The order you select is used for 32-bit register values.</p> <ul style="list-style-type: none"> • 2 bytes (1 word) are contained in the first register, and 2 bytes (1 word) are contained in the second 	<p>High byte/Low word first (3412)</p> <p>High byte/High word first (1234)</p> <p>Low byte/High word first (2143)</p> <p>Low byte/Low word first (4321)</p>	<p>The numbers 1, 2, 3, and 4 represent the 4 bytes in a 32-bit register value.</p> <ul style="list-style-type: none"> • High byte/Low word first <ul style="list-style-type: none"> ○ Sends 32-bit values in byte order 3412 ○ Default setting ○ Select this setting to emulate SCADAPack 300E RTUs • High byte/High word first <ul style="list-style-type: none"> ○ Sends 32-bit values in byte order 1234 ○ Default setting if Realflo is enabled ○ Select this setting to emulate SCADAPack 32 and SCADAPack 300 RTUs • Low byte/High word first <ul style="list-style-type: none"> ○ Sends 32-bit values in byte order 2143 • Low byte/Low word first <ul style="list-style-type: none"> ○ Sends 32-bit values in byte order 4321
Swap Word Order for 32-bit Integers	<p>Telepace firmware has a different word order for floats and long integers.</p> <p>A SCADAPack x70 device replacing a SCADAPack</p>	<p>No</p> <p>Yes</p>	<ul style="list-style-type: none"> • No <ul style="list-style-type: none"> ○ Long integers have the same byte order as floats ○ Default setting for newly created projects with Realflo disabled

	<p>3xx or 32 needs to behave in the same way.</p> <p>This setting defines if the 4 byte long integer data needs to be word swapped. This only happens for 32 bit long integer values, not for floats. For example, a configured byte order 1234 becomes 3412 for long integers only.</p>		<ul style="list-style-type: none"> ○ Select this setting to emulate SCADAPack 32 and SCADAPack 300 RTUs with ISaGRAF firmware ○ Select this setting to emulate SCADAPack 300E RTUs • Yes <ul style="list-style-type: none"> ○ Words for long integers are swapped ○ Default setting for newly created projects with RealFlo enabled ○ Select this setting to emulate SCADAPack 32 and SCADAPack 300 RTUs with Telepace firmware
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8.15.7 Configuring Client Operation Using the Modbus Scanner

Use the Modbus scanner for configurable polling.

Alternatively, you can use the Modbus function blocks in the SCADAPack x70 Logic Editor. See the Modbus function blocks topics in the Function Blocks Technical Reference manual.

Use the **Modbus > Client** page to:

- [Add Modbus RTU Server or Modbus/TCP Server devices for this Modbus RTU Client](#) ^[190]
- [Remove a Modbus Server](#) ^[192]
- View the **Number of Modbus Scanner Objects**
 - The Number of Modbus Scanner Objects field shows you how many objects are currently mapped. The maximum number of Modbus scanner objects mapped from Modbus devices is 3000.

When the devices are added:

- [Add the scanners for each Modbus RTU Server or Modbus/TCP Server](#) ^[204]
- [Configure Status and Control](#) ^[192]

Basic Configuration

Modbus Server Devices

Add Device Remove Devices Number of Modbus Scanner Objects: 10

	Device Name	Device Type	Identifier/Address	SCADAPack Serial Port	IP Address	Default Scan Rate	Timeout
1	ServerDevice1	Modbus/TCP	1		1.2.3.4	500	1000
2	ServerDevice2	Modbus/TCP	2		192.168.1.1	500	1000
3	ServerDevice3	Modbus RTU serial	3	Serial 1		500	1000

TCP connections are state based. The SCADAPack x70 device supports a finite number of these state based connections. These connections are also shared with open files on the file system. A total of 200 simultaneous TCP connections and open files across all IP capable ports and all file systems are permitted. Once the limit is reached, new requests will be denied until older TCP connections time out or are closed due to SCADA protocol retry failures.

Options to reduce the number of state based connections include UDP communications or TCP network layouts that locate multiple Modbus or DNP3 devices at the same IP address from the perspective of the SCADAPack x70 device.

The following table lists the maximums for Client operation.

Item	Maximum Number
Maximum Modbus Server devices (polled by the SCADAPack when it is operating as a Client) If a logic application needs more than 150 Modbus Server devices, use the Modbus function blocks (see the Function Blocks Technical Reference manual) instead of the Modbus Scanner.	150
Maximum number of scanner objects mapped from Modbus devices (using any Modbus RTU Client, Modbus/TCP Client, Modbus RTU in UDP Client, or Modbus RTU in TCP Client connections)	3000

The configuration parameters for Client operation are only displayed if Modbus RTU Client or Modbus/TCP Client is selected in the [Project Settings](#)^[42]. These options are initially configured when you first create the project, but can be changed at any time if you need the SCADAPack x70 device to perform different functions in your network. For details, see [Managing the Device Role in the Network](#)^[45].

8.15.7.1 Working with Remote Devices

Use the Modbus Server Devices table on the **Modbus > Client** page to [add, configure](#)^[191], [edit](#)^[203], and [remove](#)^[192] Modbus Server devices for this Modbus Client.

When you add a Modbus Server device, a page with the same name as the Modbus Server is created under the Client page. Use the Modbus Server device page to manage the remote points and their object associations after the points are added. For details, see:

- [Managing Modbus Scanners](#)^[202]

- [Configuring Status and Control for Modbus](#)^[192]

To change the parameter settings for a Modbus Server device, do one of the following:

- Double-click on the table row to access the configuration parameters
- Navigate to **Modbus > Client > Device Name** and click **Edit Device**

Basic Configuration

Device Configuration						
Device Name:	ServerDevice1	Device Type:	Modbus/TCP	Default Scan Rate:	500	<input type="button" value="Edit Device"/>
Unit Identifier:	1	IP Address:	1.2.3.4	Timeout:	1000	

The procedure below describes how to add a Modbus Server device. To change the parameter settings for a Modbus Server device that is already in the Modbus Server Devices table, double-click on the table row to access the configuration parameters.

If you are configuring Modbus RTU Client operation, verify that at least one serial port **Port Function** parameter is set to **Modbus** before beginning this procedure.

To add and configure a Modbus Server

1. In the Modbus Server Devices table, click **Add Device**.

Modbus Server Device
⌵ X

Device Name

Device Name

Communication

Device Type <input type="text" value="Modbus/TCP"/>	Unit Identifier <input type="text" value="1"/>
IP Address <input type="text" value="1.2.3.4"/>	SCADAPack Serial Port <input type="text" value="None"/>
Device Listen Port <input type="text" value="502"/>	

Configuration

Timeout <input type="text" value="1000"/> ms	Write Coils <input type="text" value="Multiple (FC 15)"/>
Maximum Consecutive Timeouts <input type="text" value="3"/>	Write Holding Registers <input type="text" value="Multiple (FC 16)"/>
Default Scan Rate <input type="text" value="500"/> ms	Modbus Byte Order <input type="text" value="High byte/Low word first (3412)"/>
Register Addressing <input type="text" value="5 digit"/>	Modbus Bit Order <input type="text" value="Most significant bit first"/>

2. Configure the [Device Name](#)^[192], [Communication](#)^[194] and [Configuration](#)^[196] parameters, then click **Ok**.
3. To assign or change the DNP3 point number or IEC 60870-5-104 IOA assigned to an object, use the Object Editor as described in [Changing the Object Configuration](#)^[301].
4. On the Client page, click **Apply**.

To remove a Modbus Server

1. In the Modbus Server Devices table, select the device(s) that you want to remove, then click **Remove Devices**.
2. Specify whether you want to delete the object(s) associated with the device, then click **Yes** to remove the device entry.

When you remove a remote device, the corresponding status and control objects are also removed.

8.15.7.1.1 Device Name Parameter

The following table describes the Device Name parameter.

Parameter	Parameter Description	Setting Description
Device Name	<p>A name for the device that will act as a Modbus RTU Server or Modbus/TCP Server.</p> <p>The name is used to identify the device in the Modbus Server Devices table.</p> <p>The name is mandatory.</p>	<p>1...14 characters with no spaces.</p> <p>The name can include letters, numbers, hyphens, and underscores.</p> <p>Default: ServerDevice#</p>

8.15.7.1.2 Configuring Status and Control for Modbus

Use the Status and Control Configuration table on the **Modbus > Client > Modbus Server Device Name** page to [link a status and control object](#)^[192] with an object association and to [clear associations](#)^[193] for a status and control object. You can only clear object associations if they have already been associated.

To change the parameter settings for a status and control object, double-click on the table row in the Object Associations table to access the object configuration parameters.

To link a status and control object with an object association

1. On the Configuration tab, select **Modbus > Client > Modbus Server Device Name**.
2. In the Modbus Scanners table, select the entry for which you want to link status and control objects.
3. In the Status and Control configuration section, double-click the row with the object.
4. In the Object Associations window, select one of the following
 - **Associate with new object**
 - Edit the default name, if needed

- **Associate with existing object**
 - Select the Object Name from the drop-down list
 - **Associate with object in group**
 - Select the Group and the Object Name from the drop-down lists
5. Click **Ok**.
 6. On the Remote Device page, click **Apply**.

For details about the Status and Control objects, [Status and Control Object Details](#) 

To clear the object association for a status and control object

1. On the Configuration tab, select **Modbus > Client > *Modbus Server Device Name***.
2. In the Modbus Scanners table, select the entry for which you want to view status and control objects.

Basic Configuration

Device Configuration

Device Name:	ServerDevice1	Device Type:	Modbus/TCP	Default Scan Rate:	500	<input type="button" value="Edit Device"/>
Unit Identifier:	1	IP Address:	1.2.3.4	Timeout:	1000	

Modbus Scanner Configuration

Modbus Scanners

	Modbus Data Type	Register Start Address	Register Quantity
1	UINT (Analog)	30001	10

Object Associations

>

	Modbus Register Address	Object Association
1	30001	MBUS_ServerDevice1_UINT_30001
2	30002	MBUS_ServerDevice1_UINT_30002
3	30003	MBUS_ServerDevice1_UINT_30003
4	30004	MBUS_ServerDevice1_UINT_30004
5	30005	MBUS_ServerDevice1_UINT_30005
6	30006	MBUS_ServerDevice1_UINT_30006
7	30007	MBUS_ServerDevice1_UINT_30007
8	30008	MBUS_ServerDevice1_UINT_30008
9	30009	MBUS_ServerDevice1_UINT_30009
10	30010	MBUS_ServerDevice1_UINT_30010

Status and Control Configuration

Object Associations

>

	Description	Data Type	Object Association
1	Message Count	Analog	MBUS_ServerDevice1_MsgCount
2	Message Error Count	Analog	MBUS_ServerDevice1_MsgErrCnt
3	Communication Status	Analog	MBUS_ServerDevice1_CommStatus
4	Default Read Scan Countdown Time	Analog	
5	Default Write Scan Countdown Time	Analog	
6	Put Device In Service	Digital	MBUS_ServerDevice1_PutInSrv
7	Force All Reads	Digital	
8	Force All Writes	Digital	
9	Enable All Reads	Digital	
10	Enable All Writes	Digital	

3. Select the object for which you want to clear the association, then click **Clear Associations**.
4. Click **Yes**.
5. On the Modbus Server Device page, click **Apply**.

8.15.7.1.3 Communication Parameters

The following table describes the Communication parameters.

Parameter	Parameter Description	Setting	Setting Description
-----------	-----------------------	---------	---------------------

Device Type	<p>The protocol used on the communication link between the SCADAPack x70 device and the Modbus RTU Server device or the Modbus IP Server service.</p> <p>The option you select here needs to correspond to the Ethernet device configuration.</p> <p>To change the Modbus Device Type after it has been added, you need to delete the device then recreate it with the new Modbus Device Type.</p> <p>The remaining Communication parameters depend on the protocol you select.</p> <p>The standard addressing or extended addressing below is the addressing mode configured for the selected device type.</p> <p>For addressing mode information, see: Configuring Standard and Extended Addressing^[183].</p>	Modbus/TCP	Requires Modbus IP Clients to be set in Project Settings ^[42] Default
		Modbus RTU Serial	Requires Modbus RTU Client to be set in Project Settings ^[42]
		Modbus RTU over TCP	Requires Modbus IP Clients to be set in Project Settings ^[42]
		Modbus RTU over UDP	Requires Modbus IP Clients to be set in Project Settings ^[42]
Unit Identifier	The Modbus/TCP Server device address.	<ul style="list-style-type: none"> • Standard addressing: 1...255 • Extended addressing: 1...65534 	Default: 1
Device Address	<p>The device address of the Modbus RTU Server. Available only when the Device Type is one of:</p> <ul style="list-style-type: none"> • Modbus RTU Serial • Modbus RTU over TCP • Modbus RTU over UDP 	<ul style="list-style-type: none"> • Standard addressing: 1...255 • Extended addressing: 1...65534 	Default: 0
IP Address	The IP address of the Modbus IP Servers.	Standard IP address format	Default: Empty

	<p>Available only when the Device Type is set to:</p> <ul style="list-style-type: none"> • Modbus/TCP • Modbus RTU over TCP • Modbus RTU over UDP 										
Device Listen Port	<p>The port on which the Modbus IP Server device listens, and to which communications from the SCADAPack x70 device are sent.</p> <p>Available only when the Device Type is set to:</p> <ul style="list-style-type: none"> • Modbus/TCP • Modbus RTU over TCP • Modbus RTU over UDP 	0...65535	<p>Defaults:</p> <table border="1"> <thead> <tr> <th>Device Type</th> <th>Device Listen Port</th> </tr> </thead> <tbody> <tr> <td>Modbus/TCP</td> <td>502</td> </tr> <tr> <td>Modbus RTU over TCP</td> <td>49152</td> </tr> <tr> <td>Modbus RTU over UDP</td> <td>49152</td> </tr> </tbody> </table>	Device Type	Device Listen Port	Modbus/TCP	502	Modbus RTU over TCP	49152	Modbus RTU over UDP	49152
Device Type	Device Listen Port										
Modbus/TCP	502										
Modbus RTU over TCP	49152										
Modbus RTU over UDP	49152										
SCADAPack Serial Port	<p>A list of the SCADAPack x70 serial ports.</p> <p>Available only when Modbus RTU Client is enabled in Project Settings^[42] and Device Type is set to Modbus RTU Serial.</p>	Serial #	<p>Select the serial port that you want to use for communications with the Modbus RTU Server device.</p> <p>A red exclamation mark next to the parameter indicates that the SCADAPack x70 device Port function for the selected serial port is not set to Modbus.</p>								

8.15.7.1.4 Configuration Parameters

The following table describes the Configuration parameters.

Parameter	Parameter Description	Setting	Setting Description
Timeout	The amount of time the Modbus RTU Client or Modbus/TCP Client waits before considering	0...65530 milliseconds (ms)	<p>Default values:</p> <ul style="list-style-type: none"> • Modbus/TCP: 1000 ms

	communications with the device to be interrupted.		<ul style="list-style-type: none"> • Modbus Serial RTU: 1000 ms • Modbus RTU over TCP: 1000 ms • Modbus RTU over UDP: 1000 ms
Maximum Consecutive Timeouts	<p>The number of consecutive communications interruptions that can occur between the Modbus RTU Client and Modbus RTU Server or the Modbus/TCP Client and the Modbus/TCP Server before communications is considered to be down.</p> <p>If the Maximum Consecutive Timeouts is exceeded, and the Default Scan Rate is set faster than 15000 ms (15 seconds), the scan rate is automatically slowed to 15 seconds to accommodate the ongoing communications interruptions.</p>	0...65535	Default: 3
Default Scan Rate	<p>The time interval at which the Modbus RTU Client or Modbus/TCP Client checks for changes on this device.</p> <p>If the Maximum Consecutive Timeouts is exceeded, and the Default Scan Rate is set faster than 15000 ms (15 seconds), the scan rate is automatically slowed to 15 seconds to accommodate the ongoing communications interruptions. The Scan Rate column in the Modbus Server Devices table continues to display the configured Default Scan Rate.</p> <p>The scan rate returns to the configured Default Scan Rate after the first successful scan and response.</p>	10...9999 99999 milliseconds (ms)	<p>Default values:</p> <ul style="list-style-type: none"> • Modbus/TCP: 500 ms • Modbus Serial RTU: 500 ms • Modbus RTU over TCP: 500 ms • Modbus RTU over UDP: 500 ms
Register Addressing	The Modbus addressing mode the Modbus/TCP Client or Modbus RTU Client uses to communicate	5 digit	The Modbus/TCP Client or Modbus RTU Client uses 5-digit addressing to

	<p>with the Modbus RTU Server or Modbus/TCP Server.</p> <p>Select the addressing mode that matches the mode used by the Modbus RTU Server or Modbus/TCP Server.</p> <p>Modbus register addressing is configurable only when adding a new Modbus Server device.</p>		<p>communicate with the Modbus RTU Server or Modbus/TCP Server.</p> <p>In 5-digit Modbus addressing, the leading digit generally represents the register data type. For example, Modbus register 40010 is represented by Modbus protocol function code 3 and protocol register address 0x0009.</p> <p>Default setting</p>
		6 digit	<p>The Modbus/TCP Client or Modbus RTU Client uses 6-digit addressing to communicate with the Modbus RTU Server or Modbus/TCP Server.</p> <p>In 6-digit Modbus addressing, the address is composed of a single-digit numeric prefix and a 5-digit Modbus register number to enable access to additional registers in each register range.</p>
Write Coils	<p>The Modbus request function code (FC) sent to the Modbus RTU Server or Modbus/TCP Server to be scanned. The Server needs to support this FC.</p>	Multiple (FC 15)	<p>Sends requests to write multiple coils to the Modbus RTU Server or Modbus/TCP Server</p> <p>Default setting</p>
		Single (FC 5)	<p>Sends requests to write a single coil to the Modbus RTU Server or Modbus/TCP Server</p>
Write Holding Registers	<p>The Modbus request function code (FC) supported by the Modbus RTU Server or Modbus/TCP Server to be scanned.</p>	Multiple (FC 16)	<p>Sends requests to write multiple holding registers to the Modbus RTU Server or Modbus/TCP Server</p> <p>Default setting</p>
		Single (FC 6)	<p>Sends requests to write a single holding register to the Modbus RTU Server or Modbus/TCP Server</p>

Modbus Byte Order	<p>The order of the bytes exchanged with a Modbus RTU Server or Modbus/TCP Server.</p> <p>Select the byte order and word order combination that matches the order used on the Modbus RTU Server or Modbus/TCP Server.</p> <p>The order you select is used for 32-bit and 16-bit register values, but the second part of the selection — the word order — is not used for 16-bit values because these values consist of just 2 bytes, or 1 word.</p> <ul style="list-style-type: none"> For 32-bit register values, 2 bytes (1 word) are contained in the first register, and 2 bytes (1 word) are contained in the second register. For 16-bit register values, the 2 bytes (1 word) are contained in the only register. A second register is not required. <p>In the setting description, the numbers 1, 2, 3 and 4 represent the 4 bytes in a 32-bit register value</p>	High byte/Low word first	<p>Exchanges 32-bit values in byte order 3412</p> <p>Exchanges 16-bit values in byte order 12</p> <p>Default setting</p>
		High byte/High word first	<p>Exchanges 32-bit values in byte order 1234</p> <p>Exchanges 16-bit values in byte order 12</p>
		Low byte/High word first	<p>Exchanges 32-bit values in byte order 2143</p> <p>Exchanges 16-bit values in byte order 21</p>
		Low byte/Low word first	<p>Exchanges 32-bit values in byte order 4321</p> <p>Exchanges 16-bit values in byte order 21</p>
Modbus Bit Order	<p>The order of the bits in each byte exchanged with a Modbus RTU Server or Modbus/TCP Server. The bit order selection is applied to every byte that is sent regardless of the byte order.</p> <p>Select the bit order that matches the order used on the Modbus RTU Server or Modbus/TCP Server.</p>	Most significant bit first	<p>Exchanges bits in the order 1...8</p> <p>Default setting</p>
		Least significant bit first	<p>Exchanges bits in the order 8...1</p>

8.15.7.1.5 Status and Control Object Details

The table below describes the status and control details for each object.

Name	Data Type	Description
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<p>Message Count</p>	<p>Analog</p>	<p>The number of messages that have been exchanged with the selected Modbus device, including forced reads and writes.</p> <p>Use DINT (32-bit signed integer) data types to represent the count value.</p> <p>Reset this counter by changing the value of the object to zero using the Object Value column of the Object Browser.</p> <p>The Object Name is in the format MBUS_DeviceName_MsgCount.</p>
<p>Message Error Count</p>	<p>Analog</p>	<p>The number of unsuccessful messages sent to the selected Modbus device. A message is considered unsuccessful when the Modbus device does not respond within the configured timeout a number of times consecutively, as configured by the Maximum Consecutive Timeouts¹⁹⁷ parameter.</p> <p>Use DINT (32-bit signed integer) data types to represent the count value.</p> <p>Reset this counter by changing the value of the object to zero using the Object Value column of the Object Browser.</p> <p>The Object Name is in the format MBUS_DeviceName_MsgErrCnt.</p>
<p>Communication Status</p>	<p>Analog</p>	<p>The read-only current state of communications with the Modbus RTU Server or Modbus/TCP Server.</p> <p>Valid status codes:</p> <ul style="list-style-type: none"> 0 - Device not found 1 - Trying to contact device 2 - Initializing device 3 - Communications with device were unsuccessful 4 - Device is online 5 - Device is disabled <p>The Object Name is in the format MBUS_DeviceName_CommStatus.</p>
<p>Default Read Scan Countdown Time</p>	<p>Analog</p>	<p>The number of seconds remaining until read operations are executed on the selected Modbus device.</p> <p>Typically, the configured Scan Rate determines the Next Default Scan Time. However, in certain cases</p>

		<p>where there are ongoing communications interruptions, the Scan Rate is automatically set to 15 seconds. For details, see Default Scan Rate¹⁹⁷.</p> <p>To define the Default Scan Rate for a device, use the Modbus Server Devices table.</p> <p>To define the Scan Rate for specific registers on the device, use the Modbus Scanners table.</p> <p>To update this value, change the value using the Object Value column of the Object Browser.</p> <p>The Object Name is in the format MBUS_<i>DeviceName</i>_RdScanTimr.</p>
<p>Default Write Scan Countdown Time</p>	<p>Analog</p>	<p>The number of seconds remaining until write operations are executed on the selected Modbus device.</p> <p>Typically, the configured Scan Rate determines the Next Default Scan Time. However, in certain cases where there are ongoing communications interruptions, the Scan Rate is automatically set to 15 seconds. For details, see Default Scan Rate¹⁹⁷.</p> <p>To define the Default Scan Rate for a device, use the Modbus Server Devices table.</p> <p>To define the Scan Rate for specific registers on the device, use the Modbus Scanners table.</p> <p>To update this value, change the value using the Object Value column of the Object Browser.</p> <p>The Object Name is in the format MBUS_<i>DeviceName</i>_WrScanTimr.</p>
<p>Put Device in Service</p>	<p>Digital</p>	<p>Set this digital object to a value of 1 to bring the selected Modbus RTU Server or Modbus/TCP Server online for communications. When the Modbus device is online, the Modbus RTU Client or Modbus/TCP Client scans the defined registers and updates status information at the Scan Rate.</p> <p>Set this digital object to a value of 0 to take the selected Modbus device offline. When the Modbus device is offline, the Modbus RTU Client or Modbus/TCP Client does not scan its registers or update its status information.</p> <p>The Modbus device needs to be online to enable read or write communications.</p> <p>The Object Name is in the format MBUS_<i>DeviceName</i>_PutInSvc.</p>

Force All Reads	Digital	To request a spontaneous scan of Modbus registers with the Operation parameter set to Read, write a value of 1 to the appropriate digital object. The Object Name is in the format MBUS_DeviceName_FrcAllRds.
Force All Writes	Digital	To request a spontaneous scan of Modbus registers with the Operation parameter set to Write, write a value of 1 to the appropriate digital object. The Object Name is in the format MBUS_DeviceName_FrcAllWrs.
Enable All Reads	Digital	Set this digital object to a value of 1 if you want the Modbus RTU Client or Modbus/TCP Client to read Modbus registers that are configured for Read operations. Set this digital object to a value of 0 if you want to disable read operations on the selected Modbus device. The Object Name is in the format MBUS_DeviceName_EnblAllRds.
Enable All Writes	Digital	Set this digital object to a value of 1 if you want the Modbus RTU Client or Modbus/TCP Client to write to Modbus registers that are configured for write operations. Set this digital object to a value of 0 if you want to disable write operations on the selected Modbus device. The Object Name is in the format MBUS_DeviceName_EnblAllWrs.

8.15.7.2 Managing Modbus Scanners

When you add a Modbus Server Device, a page with the same name as the Server Device is created under the Client page. Use the Server Device page to:

- [Edit the device configuration](#) ^[203]
- [Add scanners](#) ^[204]
- [Remove scanners](#) ^[205]
- [Change scanner parameters](#) ^[205]
- [Change Modbus object parameters](#) ^[206]
- [Clear the object association for a scanner](#) ^[206]
- [Add the object association for a scanner](#) ^[206]

To access the Server Device page, on the Configuration tab, select **Modbus > Client > Server Device**. The figure below shows an example Server Device page. Every procedure in this topic starts on this page. To change the parameter settings for a scanner entry, double-click on the table row to access the configuration parameters.

Basic Configuration

Device Configuration

Device Name:	ServerDevice1	Device Type:	Modbus/TCP	Default Scan Rate:	500	<input type="button" value="Edit Device"/>
Unit Identifier:	1	IP Address:	1.2.3.4	Timeout:	1000	

Modbus Scanner Configuration

Modbus Scanners

	Modbus Data Type	Register Start Address	Register Quantity
1	UINT (Analog)	30001	10

Object Associations

>

	Modbus Register Address	Object Association
1	30001	MBUS_ServerDevice1_UINT_30001
2	30002	MBUS_ServerDevice1_UINT_30002
3	30003	MBUS_ServerDevice1_UINT_30003
4	30004	MBUS_ServerDevice1_UINT_30004
5	30005	MBUS_ServerDevice1_UINT_30005
6	30006	MBUS_ServerDevice1_UINT_30006
7	30007	MBUS_ServerDevice1_UINT_30007
8	30008	MBUS_ServerDevice1_UINT_30008
9	30009	MBUS_ServerDevice1_UINT_30009
10	30010	MBUS_ServerDevice1_UINT_30010

Status and Control Configuration

Object Associations

>

	Description	Data Type	Object Association
1	Message Count	Analog	MBUS_ServerDevice1_MsgCount
2	Message Error Count	Analog	MBUS_ServerDevice1_MsgErrCnt
3	Communication Status	Analog	MBUS_ServerDevice1_CommStatus
4	Default Read Scan Countdown Time	Analog	
5	Default Write Scan Countdown Time	Analog	
6	Put Device In Service	Digital	MBUS_ServerDevice1_PutInSvc
7	Force All Reads	Digital	
8	Force All Writes	Digital	
9	Enable All Reads	Digital	
10	Enable All Writes	Digital	

To edit the device configuration

1. In the Device Configuration section, click **Edit Device**.
2. Configure the [Device Name](#)^[192], [Communication](#)^[194] and [Configuration](#)^[196] parameters, then click **Ok**.
3. On the Client page, click **Apply**.

To add scanners

1. In the Modbus Scanners table, click **Add Scanners**.
2. Configure the [Modbus Scanners](#)^[207] and [Configuration](#)^[209] parameters, then click **Ok**.
3. In the **Object Associations** dialog, specify how to connect objects to the Modbus Scanners.
 - The first time this window opens, the default is **Manually connect existing objects to the Modbus Scanners?** When this option is selected, the existing object associations are removed and no new associations are created. The next time this window opens, the previously selected options are displayed.
 - If you select **Automatically create and connect new objects to the Modbus Scanners?**, a new database object is automatically created for each entry in the scanner range.
 - In the **DNP3 Options** section, if available, select one of the following:
 - Leave the DNP3 point numbers unassigned. When this option is selected, objects are created, but no DNP3 point numbers are assigned.
 - Automatically assign DNP3 point numbers with the next available values
 - If you select Assign DNP3 point numbers sequentially, choose one of the following:
 - For digital objects, enter the starting number in the Digital Input or Digital Output field
 - For analog objects, enter the starting number in the Analog Input or Analog Output field
 - For counter objects, enter the starting number in the Counter Input or Counter Output field
 - In the **Modbus Options** section, if available, determine how to assign Modbus registers:
 - Leave Modbus registers unassigned. When this option is selected, objects are created, but no local Modbus register attributes are assigned to the object.
 - If you select Automatically assign Modbus registers with the next available values, choose one of the following:
 - For analog objects, choose one of the following:
 - read-only Input Registers
 - read/write Holding Registers
 - For digital objects, choose one of the following:
 - read-only Discrete Inputs
 - read/write Discrete Coils
 - For counter objects, choose one of the following:

- read-only Input Registers
 - read/write Holding Registers
 - If you select Assign Modbus registers sequentially, enter one of the following:
 - For analog objects, enter the starting number in the Analog field
 - For digital objects, enter the starting number in the Digital field
 - For counter objects, enter the starting number in the Counter field
 - In the **IEC 60870-5-104 Options** section, if available, determine how to assign Information Object Addresses (IOAs):
 - Leave IOAs unassigned. When this option is selected, objects are created, but no IEC 60870-5-104 IOAs are assigned.
 - If you select the Automatically assign IOAs with the next available values option, Monitoring Direction IOAs are automatically assigned to each created object, starting at the first available Monitor Direction IOA address not already allocated to an object.
 - If you select the Assign IOAs sequentially starting from option, you can specify the IOA for Monitor Direction for the first object. Monitor Direction IOAs are automatically assigned to objects, sequentially, from this number.
4. Click **OK**.
 5. On the Modbus Server Device page, click **Apply**.

By default, when an object is created or added, it is not automatically made available to the SCADAPack x70 Logic Editor. You need to configure the Logic Variable Type. For more information, see [Changing the Object Configuration](#)^[301] and [Assigning a Logic Variable and Task to an Object](#)^[323].

To remove scanners

1. In the Modbus Scanners table, select the table row(s) for the scanner(s), then click **Remove Scanners**.
2. In the Remove Entry window, specify whether you want to delete the objects connected to Modbus Scanners.
3. Click **Yes** to remove the scanner entry.

To change scanner parameters

1. Double-click on the row in the Modbus Scanners table to access the scanner parameters.
2. Edit the parameters.
3. Click **OK**.
4. In the **Object Associations** dialog, follow the steps for [adding scanners](#)^[204].

5. Determine if objects previously associated with Modbus scanners will be deleted from the object database by clicking the checkbox for **Delete objects connected to Modbus Scanners**.

6. Click **Ok**.

When you change scanner ranges:

- Objects previously associated with the scanners are removed. You can specify whether the objects are also deleted from the object database. If you want to reassign the objects, you may want to keep the objects and reconfigure them, if necessary, rather than create new objects.
- The changes are automatically reflected in the Modbus Scanners table on the Client page.

To change Modbus object parameters

- Double-click on the table row in the Object Associations table to access the object configuration parameters.

To clear the object association for a scanner

1. In the Object Associations table, select the object(s) for which you want to remove the association, then click **Clear Associations**.
2. In the Remove Entry window, specify whether you want to delete the objects connected to Modbus Scanners.
3. Click **Yes**.
4. On the Modbus Server Device page, click **Apply**.

To add the object association for a scanner

1. In the Object Associations table, double-click the row of the object where you want to add the association.
2. In the Object Associations window, select one of the following
 - **Associate with new object**
 - Edit the default name, if needed
 - **Associate with existing object**
 - Select the Object Name from the drop-down list
 - **Associate with object in group**
 - Select the Group and the Object Name from the drop-down lists
3. Click **Ok**.
4. On the Modbus Server Device page, click **Apply**.

8.15.7.2.1 Modbus Scanners Parameters

The following table describes the Modbus Scanners parameters. You can only add Modbus Scanners for devices that are listed in the [Modbus Server Devices table](#)¹⁸⁹.

Parameter	Parameter Description	Setting	Setting Description
Operation	The type of operation performed on the selected Modbus RTU Server or Modbus/TCP Server.	Read	Reads the specified registers. Default setting.
		Write	Writes to the specified registers.
		Read/Write	<p>Reads from and writes to the specified registers. The only Write Output available is On change.</p> <p>If objects are not forced:</p> <ul style="list-style-type: none"> at start up, reads from the remote device and updates the associated objects before writing to the remote device writes to the remote device when the object values change <p>If objects are forced:</p> <ul style="list-style-type: none"> at start up, writes the forced value to the remote device writes to the remote device when the object values change
Operation for Offline Devices	<p>When Operation is set to Read/Write, you can specify which requests the Modbus RTU Client or Modbus/TCP Client sends when the Modbus RTU Server or Modbus/TCP Server is offline.</p> <p>Requests are sent to offline devices at the defined scan rate.</p>	Send read requests	<p>Sends read requests to the Server at the scan rate specified for the device, or at the scan rate specified for the point scanner if that scan rate is different than the device scan rate.</p> <p>Default setting.</p>

	When Operation is set to Read or Write , Operation for Offline Devices is disabled.	Send write requests	<p>Sends write requests to the Server after a change in value or after a write command from another source.</p> <p>If a write request is sent while a read request is still in progress, the value of database objects that are part of both requests is not updated.</p> <p>If a write request is sent while there are buffered read requests for that point scanner, the buffered read requests are canceled. If a read request is in progress, it continues.</p>
Write Outputs	<p>When Operation is set to Write, you can specify how often the Modbus RTU Client or Modbus/TCP Client writes changes to the Modbus RTU Server or Modbus/TCP Server.</p> <p>When Operation is set to Read, Write Outputs is disabled.</p> <p>When Operation is set to Read/Write, you can specify the On Change setting.</p>	At scan rate	<p>Changes are written at the time of the next scan.</p> <p>Default setting.</p>
		On change	<p>Changes are written only after a change in value, or after a write command for the mapped points is received from another source.</p> <p>Default setting when Operation is Read/Write</p>
		On change and at scan rate	<p>Changes are written after a change in value or a write command from another source, as well as at every scan.</p>
Unsuccessful Write Operations	<p>When Operation is set to Read/Write, you can specify how database object values are treated when a write operation is unsuccessful.</p> <p>When Operation is set to Read or Write, Unsuccessful Write Operations is disabled.</p>	Revert point values	<p>Returns database objects to their previous value when the write operation is unsuccessful.</p> <p>Default setting.</p>
		Retain point values	<p>Keeps the current values for database objects when</p>

			the write operation is unsuccessful.
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8.15.7.2.2 Modbus Configuration Parameters

The following table describes the Modbus Configuration parameters. You can only add Modbus Scanners for devices that are listed in the [Modbus Server Devices table](#)¹⁸⁹.

Parameter	Parameter Description	Setting	Setting Description
Modbus Data Type	The type of data contained in the Modbus registers.	Discrete (Digital)	Discrete Applies to Object Type: Digital
		UINT (Digital)	Unsigned integer Applies to Object Type: Digital Valid only for versions 2.6.1 and newer
		UINT (Analog)	Unsigned integer Default setting Applies to Object Type: Analog
		INT	Integer Applies to Object Type: Analog
		DINT	Double integer Applies to Object Type: Analog
		REAL (Floating Point)	Real Applies to Object Type: Analog
		UINT (Counter)	Unsigned integer Applies to Object Type: Counter
		UDINT	Unsigned double integer

			Applies to Object Type: Counter
Modbus Register Start Address	The first address in the Modbus register range that you want scanned.	<p>5 digit</p> <ul style="list-style-type: none"> • 1...9999 • 10001...19999 • 30001...39999 • 40000...49999 <p>6 digit</p> <ul style="list-style-type: none"> • 1...65536 • 100001...165536 • 300001...365536 • 400001...465536 	<p>Valid registers for Modbus data type:</p> <p>Discrete</p> <ul style="list-style-type: none"> • 1...9999 • 10001...19999 • 1...65536 • 100001...165536 <p>INT, UINT, DINT, REAL</p> <ul style="list-style-type: none"> • 30001...39999 • 40000...49999 • 300001...365536 • 400001...455536
Modbus Register Quantity	<p>The total number of Modbus registers that you want to be scanned and mapped.</p> <p>This parameter is only configurable after a valid Modbus Register Start Address is entered. It is automatically updated based on the Modbus Data Type. For example, DINT and REAL data types require twice as many Modbus Registers as UINT or INT data types.</p>	1...3000	<p>Each Modbus Scanner entry can have up to 1000 registers at one time, to a maximum of 3000 registers across all entries.</p> <p>The maximum quantity of registers for each UINT (Digital) is 64.</p>
Object Type	This read-only field shows the type of database object that you want the specified Modbus registers mapped to. The setting is determined by the Modbus Data Type selection.	Analog Default setting	<p>When the Modbus Data Type is set to one of the following:</p> <ul style="list-style-type: none"> • UINT (Analog) • INT • DINT • REAL (Floating Point)

		Digital	When the Modbus Data Type is set to: <ul style="list-style-type: none"> • Discrete (Digital) • UINT (Digital)
		Counter	When the Modbus Data Type is set to one of the following: <ul style="list-style-type: none"> • UINT (Counter) • UDINT
Scan Rate	Set this scan rate only if you want the Modbus registers specified in this dialog box to have a different scan rate than the Modbus RTU Server or Modbus/TCP Server on which they reside.	0...99999999 9 milliseconds (ms)	Sets the rate at which this point scanner will send requests. To use the default scan rate of the Modbus device, leave this value as the default setting of 0. See Default Scan Rate ^[197] .
Timeout	Set this timeout only if you want the Modbus registers specified in this dialog box to have a different timeout than the Modbus RTU Server or Modbus/TCP Server on which they reside.	0...65535 milliseconds (ms)	Sets the timeout for point scanner requests. To use the default timeout of the Modbus device, leave this value as the default setting of 0. See Timeout ^[196] .

8.15.8 Configuring Store and Forward Operation

Use the Store and Forward operation to add a new route entry or edit an existing route entry in the Store and Forward table. A maximum of 128 Modbus Store and Forward operations can be added.

Modbus Store and Forward operation is required on systems where there is no direct Modbus link between a host computer and the remote sites. This can occur in radio networks where the host computer transmission is not in range of every remote site. It can also occur on systems where one controller is used as a data concentrator for several remote Modbus devices. With Store and Forward operation, a request to a Modbus device that cannot be directly accessed by a host is routed through an intermediate SCADAPack, which can communicate with both the host and the remote Modbus device.

The Modbus protocol provides Store and Forward operation through address translation. A SCADAPack configured for Store and Forward operation receives messages destined for a remote station, re-addresses them according to the translation table, and then forwards the message to the remote station. Responses from the remote station are processed in the same manner.

The Modbus protocol allows messages to be re-transmitted on the same port with address translation. With a radio system, the radio at the intermediate site is used as a type of repeater. The protocol allows messages to be re-transmitted on a different port, with or without address translation. This is used where the intermediate controller is a bridge between two networks.

The Modbus protocol driver maintains diagnostics counters at the Store and Forward site on the number of messages received and transmitted to aid in diagnosing unexpected communication events.

To add and configure a Store and Forward route entry

1. On the Configuration tab, select **Modbus > Store and Forward**.

Basic Configuration

Modbus Store and Forward

Enable Modbus Store and Forward

Modbus Store and Forward Table

Add Route Remove Route

Incoming Interface	Server Station	Forward Interface	Forward Station	Forward IP Address	Timeout (ms)

2. Click the **Enable Modbus Store and Forward** checkbox.

Basic Configuration

Modbus Store and Forward

Enable Modbus Store and Forward

Modbus Store and Forward Table

Add Route Remove Route

Incoming Interface	Server Station	Forward Interface	Forward Station	Forward IP Address	Timeout (ms)

3. Click **Add Route**.

Basic Configuration

Modbus Store and Forward

Enable Modbus Store and Forward

Modbus Store and Forward Table

Add Route Remove Route

Incoming Interface	Server Station	Forward Interface	Forward Station	Forward IP Address	Timeout (ms)

4. In the Modbus Store and Forward dialog, configure the [Store and Forward](#) ²¹⁵ parameters.

Modbus Store and Forward

Modbus Store and Forward Configuration

Incoming Interface Modbus/TCP Server

Server Station 4

Forward Interface Serial 3

Forward Station 4

Forward IP Address

Timeout 2000 ms

Enabled

Ok Cancel

5. Click **OK**.
6. Click **Apply**.

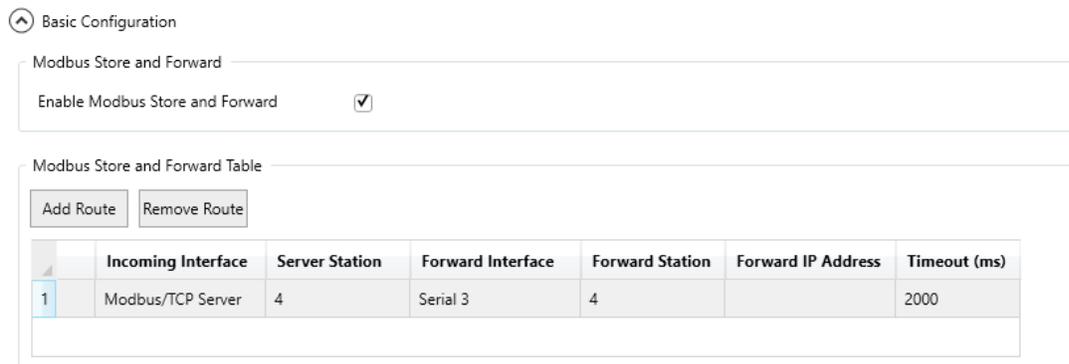


To edit a Store and Forward route entry

1. On the Configuration tab, select **Modbus > Store and Forward**.
2. Double-click the route that you want to edit.
3. In the Modbus Store and Forward dialog, configure the [Store and Forward](#)²¹⁵ parameters.
4. Click **OK**.
5. Click **Apply**.

To remove a Store and Forward route entry

1. On the Configuration tab, select **Modbus > Store and Forward**.



2. Click the route that you want to remove.
3. Click **Remove Route**.



4. In the Remove Entry dialog, click **Yes**.
5. Click **Apply**.

8.15.8.1 Store and Forward Parameters

The following table describes the Enable Modbus Store and Forward parameter.

Parameter	Parameter Description	Setting Description
Enable Modbus Store and Forward	Determines whether Modbus Store and Forward is enabled.	When not selected, Modbus Store and Forward is disabled. Default: Not checked, indicating that Modbus Store and Forward is disabled.

The following table describes the Store and Forward parameters.

Parameter	Parameter Description	Setting	Setting Description
Incoming Interface	Contains the receiving server interface the message is received from for each translation	Serial 1	Only if configured for Modbus
		Serial 2	Only if configured for Modbus
		Serial 3	Only if configured for Modbus
		Serial 4	Only if configured for Modbus
		Serial 5 (Modem)	Only if configured for Modbus and only for SCADAPack 470 and SCADAPack 474

		Modbus/TCP Server	<p>Default</p> <p>Applies to all Ethernet and PPP ports</p> <p>Modbus/TCP Server needs to be enabled in the project settings. See Changing the Project Settings^[42].</p>
Server Station	<p>Contains the Modbus station address of the server message. This address needs to be different from the Modbus address assigned to the Incoming Interface.</p> <p>For addressing mode information, see: Configuring Standard and Extended Addressing^[183].</p>	<ul style="list-style-type: none"> • Valid range <ul style="list-style-type: none"> ○ 1...255 when standard addressing is configured for the serial interface and Modbus broadcast disabled ○ 0...255 when standard addressing is configured for the serial interface and Modbus broadcast enabled ○ 1...65534 when extended addressing is configured for the serial interface and Modbus broadcast disabled ○ 0...65534 when extended addressing is configured for the serial interface and Modbus broadcast enabled ○ 1...255 when standard addressing is configured for the Modbus/TCP interface ○ 1...65534 when extended addressing is configured for the Modbus/TCP interface ○ Default: 1 	
Forward Interface	Contains the interface the message is forwarded from.	Serial 1	Only if configured for Modbus
		Serial 2	Only if configured for Modbus
		Serial 3	<p>Default</p> <p>Only if configured for Modbus</p>
		Serial 4	Only if configured for Modbus
		Serial 5 (Modem)	Only if configured for Modbus and only for

			SCADAPack 470 and SCADAPack 474
		Modbus/TCP	Requires a Forward IP Address to be assigned
Forward Station	<p>Contains the Modbus station address of the forwarded message. This address needs to be different from the Modbus address assigned to the Forward Interface.</p> <p>For addressing mode information, see: Configuring Standard and Extended Addressing ^[183].</p>	<ul style="list-style-type: none"> • Valid range <ul style="list-style-type: none"> ○ 1...255 when standard addressing is configured for the serial interface and Modbus broadcast disabled ○ 0...255 when standard addressing is configured for the serial interface and Modbus broadcast enabled ○ 1...65534 when extended addressing is configured for the serial interface and Modbus broadcast disabled ○ 0...65534 when extended addressing is configured for the serial interface and Modbus broadcast enabled ○ 1...255 when standard addressing is configured for the Modbus/TCP interface ○ 1...65534 when extended addressing is configured for the Modbus/TCP interface ○ Default: 1 	
Forward IP Address	<p>Contains the IP address of the Forward Station. This field is blank unless a TCP network is selected for the Forward Interface.</p>	<ul style="list-style-type: none"> • Standard IP address format: 1...255 for each byte in the IP address 	
Timeout	<p>The maximum time that the forwarding task waits for a valid response from the Forward Station.</p> <p>The timeout should be equal to or less than the timeout set for the client message received on the Server Interface.</p>	<ul style="list-style-type: none"> • Valid entries: 50...120000 • Default: 2000 • Units: milliseconds (ms) 	
Enabled	<p>When checked, Modbus Store and Forward is enabled for that specific route.</p>	Read only	

8.16 Configuring IEC 60870-5-104 Operation

IEC 60870-5-104 is an international standard SCADA communications protocol. It describes standards for remote SCADA protocol facilities over TCP/IP connections (known as balanced communications), supporting data polling, events, cyclic reporting of values and spontaneous transmission along with quality and time tag information (monitoring direction) as well as controls to provide information to the remote device (controlling direction).

SCADAPack x70 devices provide IEC 60870-5-104 controlled station (server) protocol facilities for communication with up to four IEC 60870-5-104 controlling stations (clients). Redundant IP communication links are supported between controlling stations and the SCADAPack x70 device.

For details, see:

- [Configuring IEC 60870-5-104 Controlled Station Operation Overview](#)^[218]
- [IEC 60870-5-104 Controlled Station Operation](#)^[218]

Default operation

By default, each SCADAPack x70 project is configured with the IEC 60870-5-104 Controlled Station option disabled. The option can be enabled when you first create the project or by [changing the project settings](#)^[42].

8.16.1 Configuring IEC 60870-5-104 Controlled Station Operation Overview

The following procedure provides the high-level steps to configure the SCADAPack x70 device to operate as an IEC 60870-5-104 Controlled Station. Each step in the procedure below is described later in this manual. Follow the links for details.

Before following the procedure below:

1. Verify that the device can communicate with the SCADAPack RemoteConnect configuration software. If you have not already set up this connection, follow the procedure in the Configuring Communication Parameters topic in the PC Communication Settings - SCADAPack CommDTM manual before following the steps below.
2. Create a new SCADAPack project, as described in the Creating a New Project topic in the SCADAPack RemoteConnect Configuration Software manual. This adds the physical I/O on the SCADAPack x70 device to the SCADAPack x70 configuration software.
3. [Open the configuration parameters](#)^[25]

The configuration takes effect in the SCADAPack x70 device when you take the SCADAPack x70 configuration software online and write the configuration to the device as described at the end of the procedure.

To configure the SCADAPack x70 device to operate as an IEC 60870-5-104 Server

1. On the **Configuration** tab, select **Physical I/O > Local**, then double-click on the row in the I/O Configuration table to [define the operating characteristics for the SCADAPack x70](#)

- [device](#)^[76]. If required, [add any I/O modules that are connected to the SCADAPack x70 device](#)^[58].
2. In the **Physical I/O > Local** page **Channel Configuration** table, double-click on each channel to define how it operates:
 - [Object Configuration](#)^[249]
 - [Associations Tab](#)^[265]
 - [IEC 60870-5-104 Tab](#)^[274]
 - [Alert Notifications Tab: Analog Objects](#)^[280]
 - [Basic Tab: Analog Objects](#)^[283]
 - [Advanced Tab: Analog Objects](#)^[289]
 - [Basic Tab: Digital Objects](#)^[293]
 - [Basic Tab: Counter Objects](#)^[297]
 3. On the **Configuration** tab, select [IP Communication > Ethernet Ports > Ethernet #](#)^[110] to configure the physical connection to the first IEC 60870-5-104 Controlling Station.

IP settings for the SCADAPack x70 device when communicating with the 2nd, 3rd, or 4th controlling stations is configured on the Controlling Station x page.
 4. On the **Configuration** tab, select **IEC 60870-5-104**, then select:
 - **Server** to select the IOA Format and Event Buffer Size, followed by,
 - **Controlling Station x** (where x is the number of the Controlling Station) to configure communication with each IEC 60870-5-104 Controlling Station
 5. On the **Objects** tab, select **Object Configuration**, then [add database objects as required](#)^[235].
 6. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Go Online**.
 7. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Write to Device**.

8.16.2 IEC 60870-5-104 Controlled Station Operation

The SCADAPack x70 device's IEC 60870-5-104 controlled station reports data to its controlling station(s) through several mechanisms:

- General Interrogation (polling of SCADAPack x70 object data by the controlling station)
- Spontaneous transmissions (reporting of buffered event data from SCADAPack x70 objects after connection from the controlling station). Events are reported with time tagged by the SCADAPack x70 device. Where the clock validity period has expired, or the clock has not been synchronized by the controlling station, events are stored and reported as not having valid time tags until the clock is synchronized.
- Counter Interrogation (polling of counter data by the controlling station)

- Spontaneous transmission of counter events (as the result of a Freeze or Freeze+Reset command by the controlling station)

The controlling station can also send command requests to the IEC 60870-5-104 controlled station to update SCADAPack x70 device object data.

For more information, see IEC 60870-5-104 Protocol Reference Information in the SCADA Protocols Technical Reference manual.

- [Define the Event Buffer Size](#)^[220]
- [Configure communication with the IEC 60870-5-104 Controlling Station](#)^[220]

Define the IOA Format

1. On the Configuration tab, select **IEC 60870-5-104 > Server**.

⤴ Basic Configuration

General Setup

IOA Format Unstructured IOA ▼

IEC 60870-5-104 Events

Event Buffer Size 4000

Discard New Events if Buffer Full

2. From the drop-down list, select the [IOA Format](#)^[222].

Define the Event Buffer Size for IEC 60870-5-104 events

1. On the Configuration tab, select **IEC 60870-5-104 > Server**.
2. Update the [Event Buffer Size](#)^[223], as needed.
3. On the **IEC 60870-5-104 > Server** page, click **Apply**.

Configure communication with the IEC 60870-5-104 Controlling Station

Use the **IEC 60870-5-104 > Server > Controlling Station x** (where x is the number of the Controlling Station) page to configure communication with the Controlling Station.

1. On the Configuration tab, select **IEC 60870-5-104 > Server**.

Before you enable the Controlling Station, none of the parameters are enabled.

2. To enable communication with the Controlling Station, click the checkbox, as shown below.

⤴ Basic Configuration

IEC 60870-5-104 Controlling Station 1

Controlling Station Enabled

Connection Setup

Interface Any

Port 2404

Application Setup

ASDU Address

General Setup

Clock Valid Period hours

Cyclic Period s

Background Period s

Maximum Command Age ms

Short Pulse Duration ms

Long Pulse Duration ms

Select Required

Select Timeout s

Analog Event Buffer

Controlling Station Uses Events

3. Configure the [IEC 60870-5-104](#)^[222] parameters.
4. On the **IEC 60870-5-104 > Server > Controlling Station x** page, click **Apply**.

8.16.2.1 IEC 60870-5-104 Parameters

The following table describes the configuration parameters for IEC 60870-5-104 operation.

Parameter	Parameter Description	Setting	Setting Description
IEC 60870-5-104 Server			
IOA Format	<p>A structured IOA is a trio of numbers that represent an object and cannot be duplicated. <high byte>/<mid byte>/<low byte></p> <p>Structured IOA can be used to create logical groupings for a system. The numbers can be purely abstract groupings or can represent something recognizable for users. For example one byte could be an enumeration that represents information about the object (1 for physical IO, 2 for an internal value produced by logic, 3 for RTU system data), another byte could represent the relative importance of the object (1 for very important, 5 for unimportant), and the third byte could be used to distinguish between objects in the same categories.</p> <p>An unstructured IOA is a number that represents an object and cannot be duplicated.</p> <p>For every structured IOA value, there is a corresponding unstructured IOA. For example an unstructured address of 459110, is equivalent to a structured address of 7/1/102. $7 \times 256^2 + 1 \times 256 + 102 \times 1 = 459110$.</p> <p>IEC 60870-5-104 protocol allows for communication between systems using both structured and unstructured IOA.</p>		<p>Unstructured IOA (default)</p> <ul style="list-style-type: none"> • Valid values: 1...16777215 <p>Structured IOA (high/mid/low octet)</p>

Event Buffer Size	The Event Buffer Size configures the number of available events for IEC 60870-5-104.	0...40000	<p>Default: 4000 events</p> <p>If IEC 60870-5-104 is enabled in the project, the default DNP3 Event Buffer size is 1000.</p> <p>The combined maximum number of events between DNP3 and IEC 60870-5-104 is 40000.</p> <p>See Event Configuration Parameters ^[138]</p>
Discard New Events if Buffer Full	<p>When unchecked and the number of IEC 60870-5-104 events generated exceeds the event buffer size, the oldest events are discarded.</p> <p>When checked, the oldest IEC 60870-5-104 events are kept and newest events are discarded when the event buffer is filled.</p>		Default: Unchecked
Controlling Station x (where x is the number of the Controlling Station)			
Controlling Station Enabled	When checked, the Controlling Station is enabled.		Default: Unchecked
Connection Setup			
Interface	Configurable for Controlling Stations 2...4	<p>Controlling Station 1: Any</p> <p>Controlling Station 2...4: Ethernet 1, 2, 3</p>	<p>Default for Controlling Station 1: Any</p> <p>Default for Controlling Station 2...4: Ethernet 1</p> <p>The Ethernet port corresponding to the selected Interface needs to have an IP Address configured to use the IEC 60870-5-104 SCADAPack IP Address. See Using Ethernet Ports ^[109].</p>
IEC 60870-5-104 SCADAPac	<p>Configurable for Controlling Stations 2...4</p> <p>An empty IP Address is valid</p>		The IP address for the Controlled Station with which the IEC 60870-5-104

<p>k IP Address</p>			<p>controlling station communicates:</p> <ul style="list-style-type: none"> • Cannot belong to the Network Range of Eth1, Eth2, or Eth3 (for SP57x), with the exception of the selected interface • Needs to be part of the selected Interface's Network Range • Cannot be the same as any of the SCADAPack x70 device Ethernet interface addresses • Cannot be the same as any other IEC 60870-5-104 IP address for Controlling Station connections
<p>Port</p>	<p>Not configurable.</p> <p>The TCP port on the IEC 60870-5-104 Controlled Station that the IEC 60870-5-104 Controlling Station listens to.</p> <p>To establish a connection, an IEC 60870-5-104 Controlling Station makes a TCP connection to the appropriate IP address using this TCP port.</p>	<p>The SCADAPack x70 device listens on TCP port 2404 on all SCADAPack interfaces, for connections from Controlling Station 1.</p> <p>The SCADAPack x70 device listens on the TCP port 2404 on the configured interface, or on the additionally configured</p>	

		IP address on the configured interface for connections from the appropriate Controlling Station.	
Application Setup			
ASDU Address	The ASDU address used by the Controlled Station to communicate with this IEC 60870-5-104 Controlling Station.	1...65534	The valid range for a 2 Octet ASDU Size.
General Setup			
Clock Valid Period	<p>The period of time for which timestamps are considered valid after the IEC 60870-5-104 Controlled Station receives a clock synchronization command.</p> <p>When the IEC 60870-5-104 Controlled Station starts, timestamps are identified as invalid until a clock synchronization command is received from the IEC 60870-5-104 Controlling Station.</p>	1...744 hours	Default: 24 hours
Cyclic Period	<p>The rate at which the IEC 60870-5-104 Controlled Station returns cyclic data to the IEC 60870-5-104 Controlling Station.</p> <p>A value of 0 means no cyclic data will be sent by the Controlled Station.</p> <p>Cyclic data is generated by analog objects with an Information Object Address (IOA) and the Enable Cyclic Scan parameter checked. These parameters are configured in the Object Editor on the IEC 60870-5-104 tab.</p>	0...86400 seconds (s)	Default: 60 s

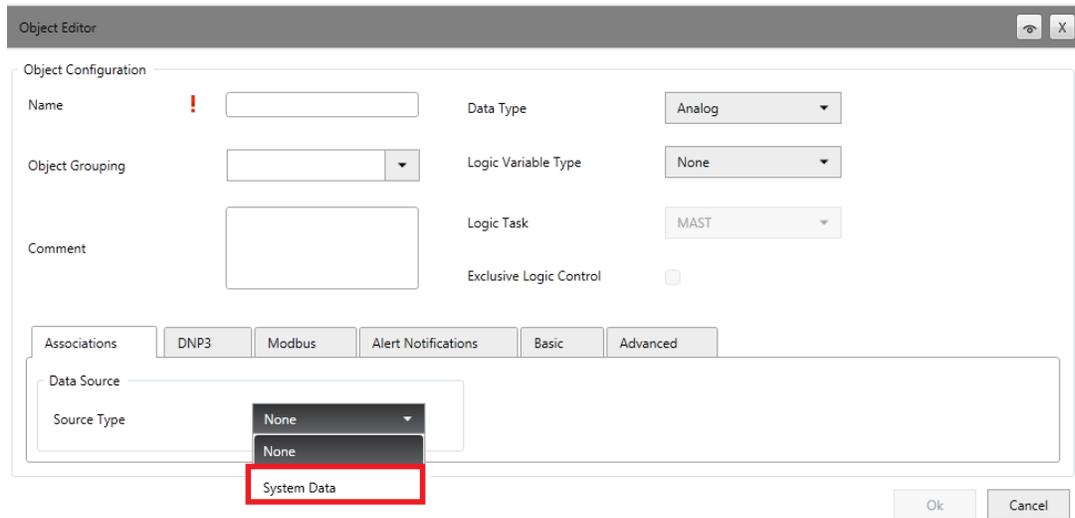
<p>Background Period</p>	<p>The rate at which the IEC 60870-5-104 Controlled Station returns background data to the IEC 60870-5-104 Controlling Station.</p> <p>A value of 0 means no background data will be sent by the Controlled Station.</p> <p>Background data is generated by objects with an Information Object Address (IOA) and a valid Application Service Data Unit (ASDU) type. These parameters are configured in the Object Editor on the IEC 60870-5-104 tab.</p>	<p>0...86400 seconds (s)</p>	<p>Default: 3600 s</p>
<p>Maximum Command Age</p>	<p>The maximum time tag for time-tagged commands.</p> <p>Received commands that are older than this age are not executed.</p>	<p>100...65535 milliseconds (ms)</p>	<p>Default: 5000 ms</p>
<p>Short Pulse Duration</p>	<p>The PULSE ON duration used when a valid digital control is received by the IEC 60870-5-104 Controlled Station, where the <i>qualifier of command</i> for the relevant control object specifies Short Pulse Duration.</p>	<p>100...65535 milliseconds (ms)</p>	<p>Default: 100 ms</p>
<p>Long Pulse Duration</p>	<p>The PULSE ON duration used when a valid digital control is received by the IEC 60870-5-104 Controlled Station, where the <i>qualifier of command</i> for the relevant control object specifies Long Pulse Duration.</p>	<p>100...65535 milliseconds (ms)</p>	<p>Default: 1000 ms (1 second)</p>
<p>Select Required</p>	<p>Determines whether a Select message is required before an Execute message to invoke the specified control.</p>	<p>When the box is checked, a Select message needs to be issued first, followed by an Execute message. The Execute message needs to be received within the Select Timeout period for the control to be invoked.</p> <p>When the box is not checked, only an Execute message is required for the control to be invoked.</p> <p>Default: Unchecked</p>	

Select Timeout	The period within which an Execute command needs to be received. If an Execute command matching a recently received Select command is not received within this period, then the control operation is aborted.	1...3600 seconds (s)	Default: 5 s
Analog Event Buffer Mode	Specifies whether multiple analog events for the same IOA are buffered, or whether the IEC 60870-5-104 Controlled Station overwrites an existing event with a more recent event for the same IOA.	Single	The IEC 60870-5-104 Controlled Station overwrites an existing event in the event buffer for an analog IOA that generates a new event. Events can exist for multiple IOAs in the event buffer, but only one event per IOA is buffered.
		Multiple	The IEC 60870-5-104 Controlled Station buffers multiple events for each analog IOA that generates events. Each event is buffered with a timestamp, allowing an IEC 60870-5-104 Controlling Station to process the events. Default
Controlling Station Uses Events	When checked, the IEC 60870-5-104 controlled station sends events to this controlling station.		Default: <ul style="list-style-type: none"> • Checked for Controlling Station 1 • Unchecked for Controlling Stations 2, 3, 4

8.17 Accessing System Data in a Remote Protocol

System data is internal information that represents the operating status of the SCADAPack x70 device. This topic describes how to access system data in a remote protocol such as DNP3, IEC 60870-5-104, or Modbus.

1. In SCADAPack RemoteConnect, create a database object and configure an association with a System Data Reference.

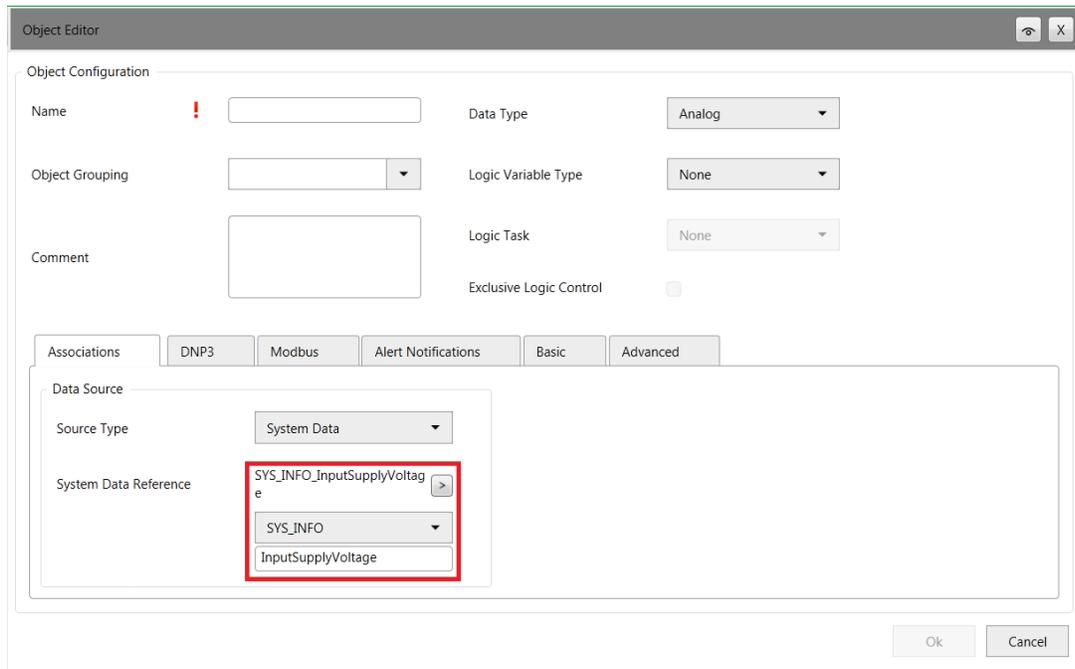


2. The system data reference, and other information required to configure the object, is obtained from the tables describing system data in the System Data topic in the Operations Technical Reference manual

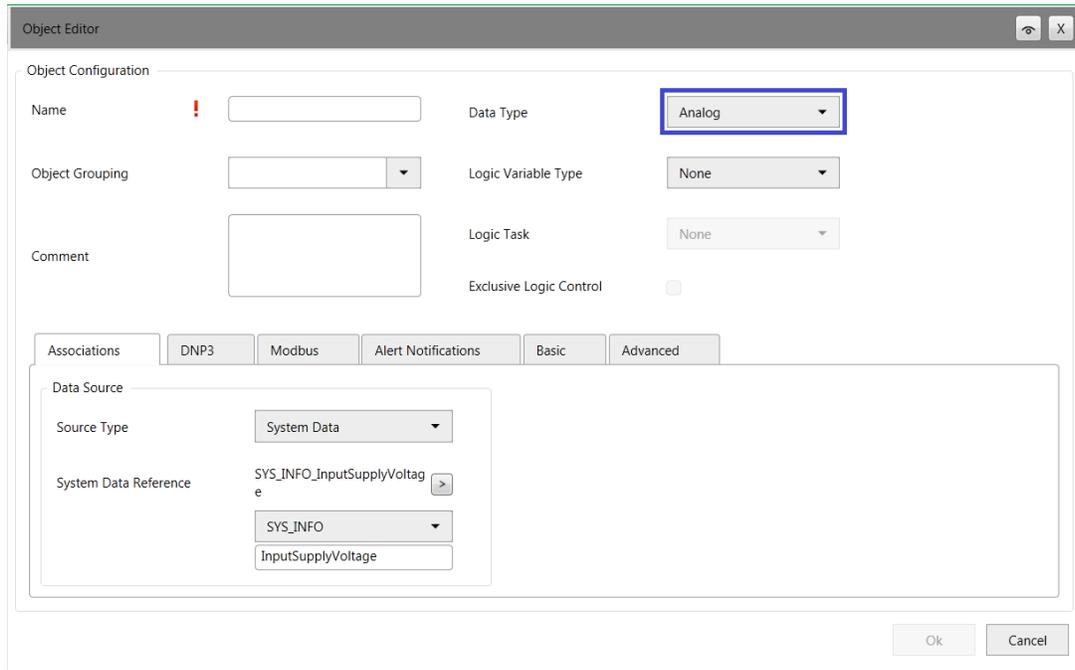
For example, if you want to provide the SCADAPack input supply voltage value to a remote protocol, choose the following system data reference:

System Data Description	System Data Reference	Associate with Object Type (optional)	Select Object's Logic Variable Type (optional)	Data Access	Comment
Input Supply Voltage	SYS_INFO_InputSupplyVoltage	Analog	T_SPx70_REAL	Read Only	Volts

3. Set up the system data reference for the created object.



4. Set the correct Data Type from the table. For this example, use Analog.

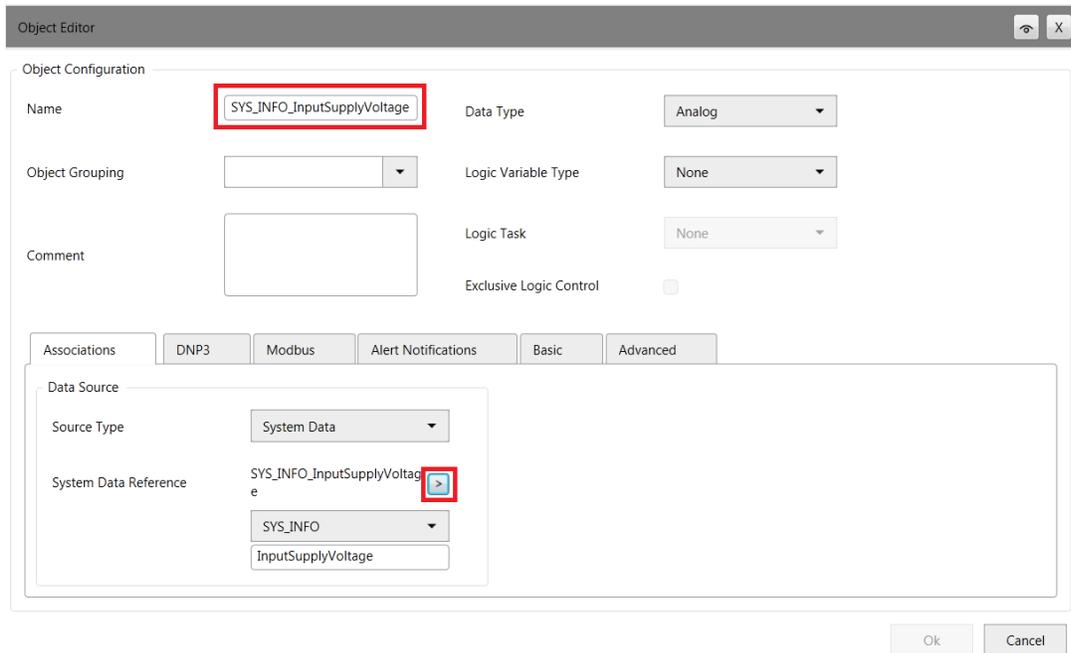


5. Set the name of the object to one of the following:

- The name of the system data reference (needs to be an exact match with the association's System Data Reference configuration)
 - To set the name of the object to the system data reference, click the Copy System Data Reference to Name button, shown below.

- An object name of your choosing (that does not begin with the prefix "SYS_")

For example:



6. Setup the object's remote protocol settings. For this example, use Modbus Register and Modbus Data Type.

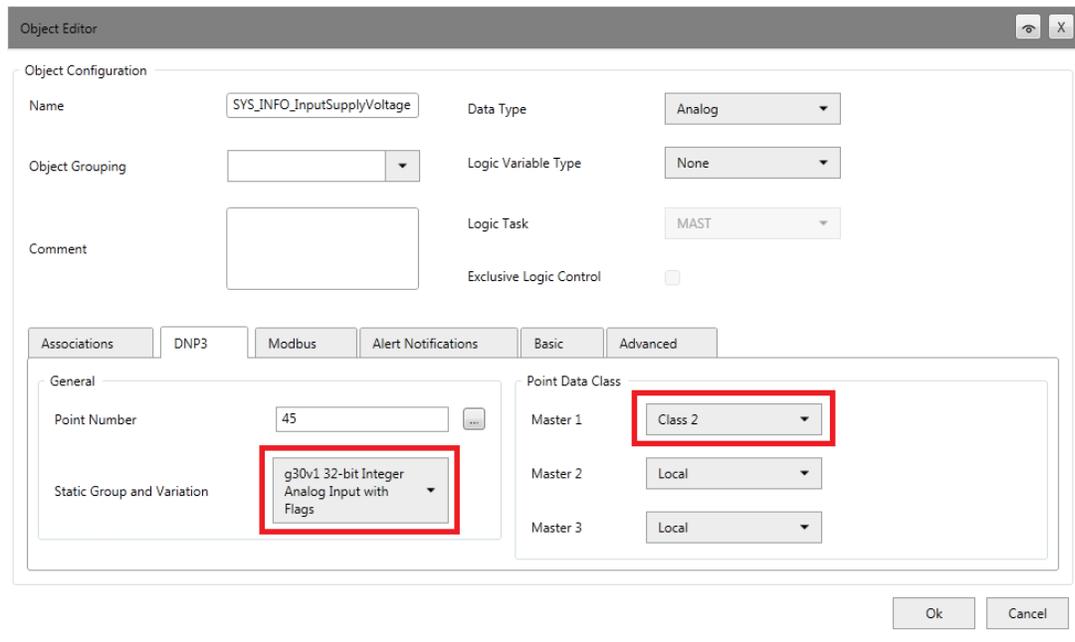
You can get information about the type of data produced by the SCADAPack x70 device for this system data (See the System Data topic in the Operations Technical Reference manual) reference from the table column **Select Object's Logic Variable Type (optional)**. In this case, even though you may not link the object to a logic variable, it indicates T_SPx70_REAL meaning that the system data natively produces a REAL value. You can choose to use a matching data type for the remote protocol, REAL (Floating Point) in this example. No data conversion is necessary as the system data type and the configured remote protocol data are compatible. In the case where you want to use a different data type in the remote protocol, for example an Integer type in this example, you could choose the Modbus UINT type and have the SCADAPack object automatically provide data conversion using the Scaling parameters on the Basic tab. For more information see [Scaling](#)²⁸³.

The screenshot shows the 'Object Editor' window with the 'Modbus' tab selected. The 'General' section is active, showing 'Modbus Register' set to 40001 and 'Modbus Data Type' set to UINT. A red box highlights these two fields. To the right, the 'Valid Modbus Register Range' is defined as 30001-39999 (read-only Input Registers) and 40001-49999 (read/write Holding Registers). Other fields include Name (SYS_INFO_InputSupplyVoltage), Data Type (Analog), Logic Variable Type (None), Logic Task (MAST), and Exclusive Logic Control (unchecked). Buttons for 'Ok' and 'Cancel' are at the bottom right.

The screenshot shows the 'Object Editor' window with the 'Advanced' tab selected. The 'Scaling' section is active, with a red box highlighting the 'Raw Minimum' (0), 'Raw Maximum' (10000), 'Engineering Minimum' (0), and 'Engineering Maximum' (100) fields. The 'Value Deviation' section shows 'Event Deviation Type' set to 'Percentage of Span' and 'Event Deviation' set to 100%. The 'Out of Range Limits' section includes 'Under Range Limit', 'Over Range Limit', and 'Zero Threshold Limit', each with a checkbox and a value field. The 'Periodic Event Generation' section includes 'Periodic Event Rate' and 'Periodic Event Offset' fields. Buttons for 'Ok' and 'Cancel' are at the bottom right.

This default scaling would indicate, for example in the Modbus UINT register, a value of 2350 when the system data value indicates 23.5 (volts).

7. Another remote protocol configuration could be provided on the same object (DNP3 for example).



8. The remote protocol's value will update at a rate determined by the SCADAPack x70 firmware. Typically, at 2, 5, or 10 second intervals depending upon the characteristics of the system data.

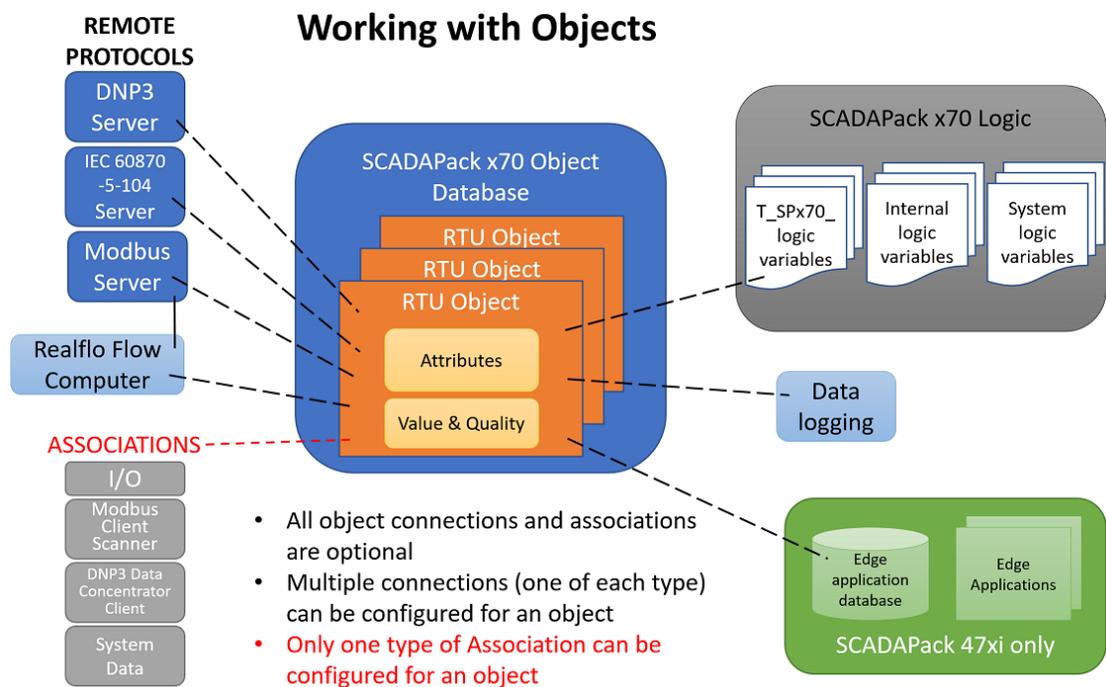
The same SCADAPack object could also be configured to provide the system data value to a logic variable. For more information, see the Accessing System Data in a Logic Program topic in the Logic Programming Overview manual.

9 Working with Objects

The core of the data model used in a SCADAPack x70 device is the RTU Object. The SCADAPack x70 object database holds the configuration attributes and real-time data values for the RTU objects (e.g. object value, data quality).

When configuring the SCADAPack x70 device, you create objects to represent the data entities in your system (for example pump running, tank level, out-flow, etc.) Then you make connections from the data object to other RTU services. All connections are optional.

When an RTU object is connected to an RTU service, the RTU object and the RTU service can share data values, quality, and attributes, according to how the service uses the RTU object data.



You can choose to configure one, none, or many connections to an RTU object depending on how you want to use the data in your system. From the RTU object configuration dialog in SCADAPack RemoteConnect you can:

- Connect an object to a Logic variable, and/or
- Connect an object to one or more remote protocols (DNP3, Modbus, IEC 60870-5-104), and/or
- Connect an object to a data log, and/or
- Connect an object to Edge applications on a SCADAPack 47xi device

An association is a special type of connection to an RTU object from a configurable data source. Data from a physical I/O point, an external device, or an internal RTU system data reference can be connected to an RTU object using an association. Only one association can be configured per object as follows:

- Configure an I/O association between an I/O channel and an RTU object by using the Physical I/O page in SCADAPack RemoteConnect, or

- Configure a Modbus client association between an external device and an RTU object by using the Modbus Scanner page in SCADAPack RemoteConnect, or
- Configure a DNP3 client association between an external device and an RTU object by using the DNP3 Data Concentrator page in SCADAPack RemoteConnect, or
- Configure an association between an RTU system data reference and an RTU object by using the RTU object configuration dialog in SCADAPack RemoteConnect

Connections for the Realflo flow computer are managed by the Realflo application. Use Realflo to configure connections with RTU objects and with Modbus server data.

The following information is provided in this section:

- [Viewing Object Statistics](#) ^[234]
- [Configuring Database Objects](#) ^[235]
- [Configuring Parameter Settings Using the Object Editor](#) ^[248]
- [Changing the Object Configuration](#) ^[301]
- [Managing the Offline Browser List](#) ^[303]
- [Configuring Data Logging](#) ^[313]
- [Configuring an Association with a System Data Reference](#) ^[316]

9.1 Viewing Object Statistics

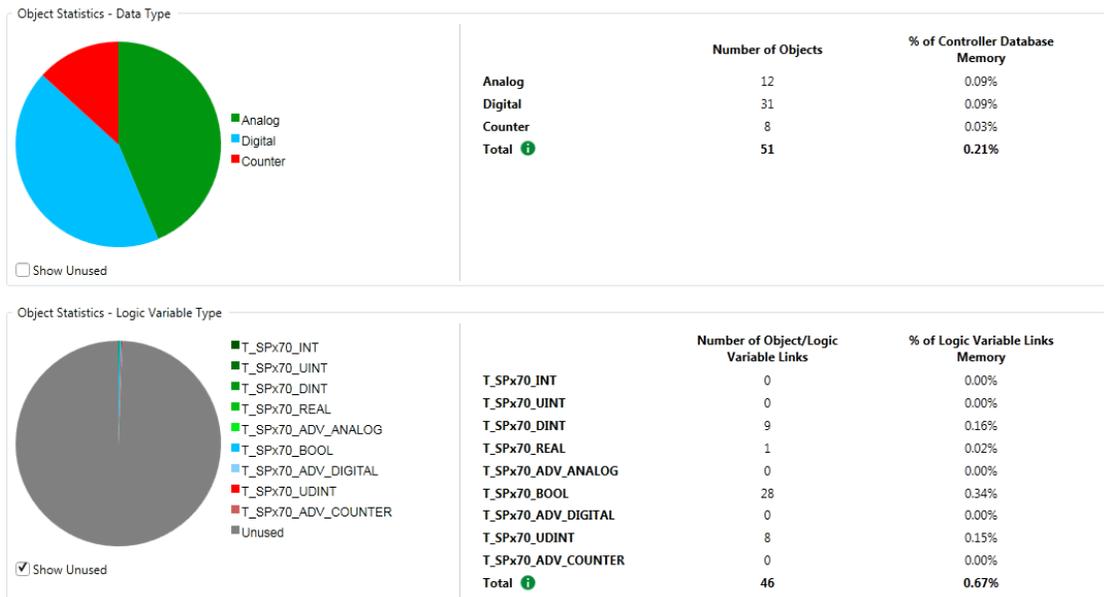
To view a summary of configured database objects

- Select **Objects > Object Statistics**

In the following image, Object Statistics by Data Type and Object Statistics by Logic Variable Type are displayed.

Each pie chart shows the memory used by each data type or logic variable type, including the unused memory when the Show Unused box is checked. This is checked by default. When the box is not checked, the relative memory use of each type is displayed.

If a Total memory statistic exceeds 100%, a message is shown on the Object Statistics and Object Configuration pages.



9.2 Configuring Database Objects

Use the **Objects > Object Configuration** page to manually add, copy, remove and reconfigure database objects. The default display for Object Configuration is similar to the following:

Basic Configuration

Object Configuration

Displaying 70 of 70 objects Applied Filter: Organized by 'Data Type'

Name	Source Details	Logic Variable Type	Modbus Register	DNP3 Point Number
▶ Analog : 22				
▶ Digital : 36				
▶ Counter : 12				

SCADAPack x70 objects associated with the physical I/O for the selected SCADAPack are automatically provided in the database when you create a new project. The objects for additional I/O are provided when you add the I/O module or device on the **Configuration > Physical I/O > Local** page.

You can also create objects to store information such as:

- Status information for physical I/O modules or devices. Objects that store status information are configured using the same parameters as physical I/O objects. After you create a status object, go to **Configuration > Physical I/O > Local** page and click **Add Status Object** to associate the object with a physical I/O module or device. For details, see [Associating Status Information with I/O Modules](#)⁶³.
- System information. Objects that store system information operate in the same way as other objects. For details about the system data and control capabilities available, see [Configuring an Association with a System Data Reference](#)³¹⁶.

- Logic programming data. For example, you may want to create an object that stores calculations generated by logic applications.
- Information from other devices connected to the SCADAPack x70 device.

The procedure to create a database object is the same for each object type. However, the parameters that can be configured depend on the object type and the data type — analog, digital or counter. For details, see:

- [Adding Objects](#) ^[236]
- [Copying Objects](#) ^[237]
- [Removing Objects](#) ^[239]
- [Refining the Objects Table](#) ^[240]
- [Grouping Objects](#) ^[246]
- [Managing the Offline Browser List](#) ^[303]
- [Changing the Object Configuration](#) ^[301]
- [Configuring an Association with a System Data Reference](#) ^[316]
- [Configuring Parameter Settings Using the Object Editor](#) ^[248]

For an overview of database objects and associations, see [Understanding Objects and Associations](#) ^[37].

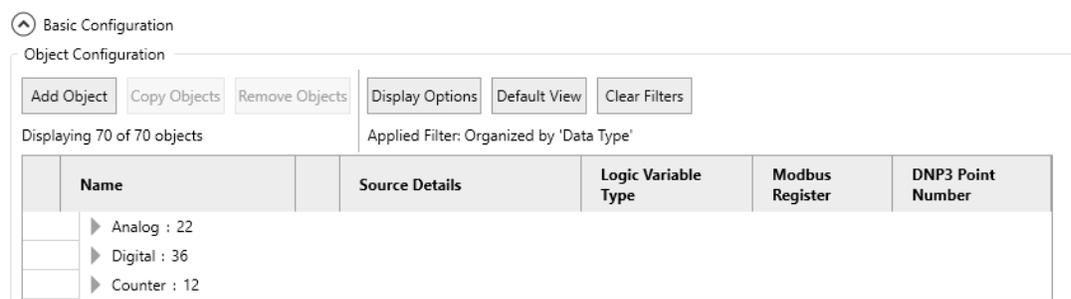
9.2.1 Adding Objects

The procedure below explains how to add an object to the database. It applies to any object, but is typically used when you are adding objects that represent system information or status information. For an overview of how objects are added to the database, see [Understanding Objects and Associations](#) ^[37].

By default, when an object is created or added, it is not automatically made available to the SCADAPack x70 Logic Editor. You need to configure the Logic Variable Type. For more information, see [Changing the Object Configuration](#) ^[301] and [Assigning a Logic Variable and Task to an Object](#) ^[323].

To add a database object

1. On the **Objects** tab, select **Object Configuration**.



2. In the Object Configuration table, click **Add Object**.

3. In the **Object Editor**, configure the object parameters, as required.

The protocol tabs displayed depend on the role selected for the SCADAPack x70 device when you created the project. The other tabs displayed depend on the object **Data Type**: analog, digital or counter.

- [Object Configuration Parameters](#) ^[249]
- [Associations Tab](#) ^[265]
- [DNP3 Tab](#) ^[268]
- [Modbus Tab](#) ^[272]
- [IEC 60870-5-104 Tab](#) ^[274]
- [Alert Notifications Tab: Analog Objects](#) ^[280]
- [Basic Tab: Analog Objects](#) ^[283]
- [Advanced Tab: Analog Objects](#) ^[288]
- [Basic Tab: Digital Objects](#) ^[293]
- [Basic Tab: Counter Objects](#) ^[297]

4. Click **Ok**.
5. On the **Object Configuration** page, click **Apply**.

9.2.2 Copying Objects

The procedure below explains how to copy database objects.

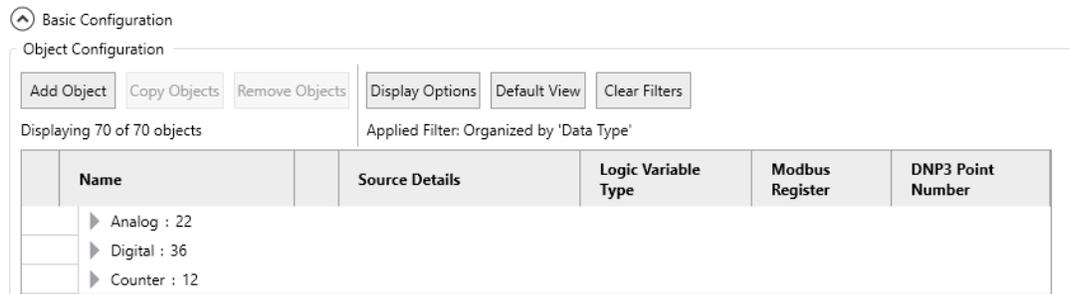
Copying database objects is an efficient way to create new objects that have the same, or similar, parameter settings to objects that already exist. For example, you may want to copy objects when you are:

- Adding physical I/O and want to replicate the configuration settings used for existing physical I/O.

- Creating objects to store other types of data and want to base the parameter settings on those used by existing objects. Other types of data may include reporting information that is sent to a SCADA client, setpoint information from a SCADA client or local access by a human-machine interface (HMI).

To copy database objects

1. On the **Objects** tab, select **Object Configuration**.



2. Select the object(s) that you want to copy. You may need to expand the Data Type to select the object.
3. In the Object Configuration table, click **Copy Objects**.
4. Enter the **Number of copies**.
5. In the **DNP3 Options** section, if available, determine if you want to **Assign unique DNP3 point number(s)** to the copied object(s).
 - The default is **Automatically assign DNP3 point numbers with the next available values**. When this option is selected, the next available point number for the object data type is selected.
 - If you selected **Assign DNP3 point numbers sequentially**, enter one of the following:
 - For analog objects, enter the starting number in the **Analog Input** or **Analog Output** field
 - For digital objects, enter the starting number in the **Digital Input** or **Digital Output** field
 - For counter objects, enter the starting number in the **Counter Input** or **Counter Output** field
 - If you deselect this option, the original objects and the new objects are marked with a configuration conflict due to the duplicated DNP3 point number. You cannot apply the changes to add the copied objects to the database until the conflicts are corrected.
6. In the **Modbus Options** section, if available, determine if you want to **Assign unique Modbus register(s)**.
 - The default is **Automatically assign Modbus registers with the next available values**. When this option is selected, choose one of the following:
 - For analog objects, choose one of the following:

- read-only Input Registers
 - read/write Holding Registers
 - For digital objects, choose one of the following:
 - read-only Discrete Inputs
 - read/write Discrete Coils
 - For counter objects, choose one of the following:
 - read-only Input Registers
 - read/write Holding Registers
 - If you selected **Assign Modbus registers sequentially**, enter one of the following:
 - For analog objects, enter the starting number in the **Analog** field
 - For digital objects, enter the starting number in the **Digital** field
 - For counter objects, enter the starting number in the **Counter** field
7. Click **Yes**.
 8. On the **Object Configuration** page, click **Apply**.

9.2.3 Removing Objects

Follow the procedure below to remove one or more objects from the database.

To remove database objects

1. On the **Objects** tab, select **Object Configuration**.

Basic Configuration

Object Configuration

Add Object Copy Objects Remove Objects Display Options Default View Clear Filters

Displaying 70 of 70 objects Applied Filter: Organized by 'Data Type'

Name	Source Details	Logic Variable Type	Modbus Register	DNP3 Point Number

▶ Analog : 22

▶ Digital : 36

▶ Counter : 12

2. In the Object Configuration table, select the object(s) that you want to remove. You may need to expand the Data Type to select the object.
3. Click **Remove Objects**.
4. Click **Yes** to confirm that you want to remove the object(s).
5. On the **Object Configuration** page, click **Apply**.

9.2.4 Refining the Objects Table

The objects table can get very large, depending on your project. There are several ways that you can sort, organize, or filter the results to focus on specific content. To facilitate refining the objects table, carefully consider how [objects are grouped](#)^[246].

See:

- [Sorting](#)^[240]
- [Using the Display Options](#)^[240]
- [Organize by Options](#)^[243]
- [Filter by Options](#)^[244]

9.2.4.1 Sorting

You can sort the columns of the objects table. The row number is unrelated to the content in the row.

To sort the objects table columns

1. On the **Objects** tab, select **Object Configuration**.
2. Click the column header of the column you want to sort.

The results are sorted in alphabetical or numerical order, depending on the column.

The column that is being sorted is indicated by  or .

3. Click again to reverse the order or click another column to sort on different content.

9.2.4.2 Using the Display Options

You can organize the contents of the objects table by using the Display Options.

- [Organizing the objects table](#)^[240]
- [Displaying the Default View](#)^[243]
- [Clearing Filters](#)^[243]

Organizing the objects table

To organize the objects table

1. On the **Objects** tab, select **Object Configuration**.
2. Click **Display Options**.

Basic Configuration

Object Configuration

Add Object Copy Objects Remove Objects **Display Options** Default View Clear Filters

Displaying 70 of 70 objects Applied Filter: Organized by 'Data Type'

Name	Source Details	Logic Variable Type	Modbus Register	DNP3 Point Number
▶ Analog : 22				
▶ Digital : 36				
▶ Counter : 12				

Display Options

Display Options

Organize by Data Type

Filter by None

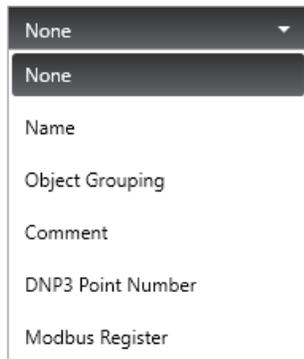
equals

Apply Cancel

3. Click the **Organize by** drop-down list and make a selection.

See [Organize by Options](#)^[243] for details.

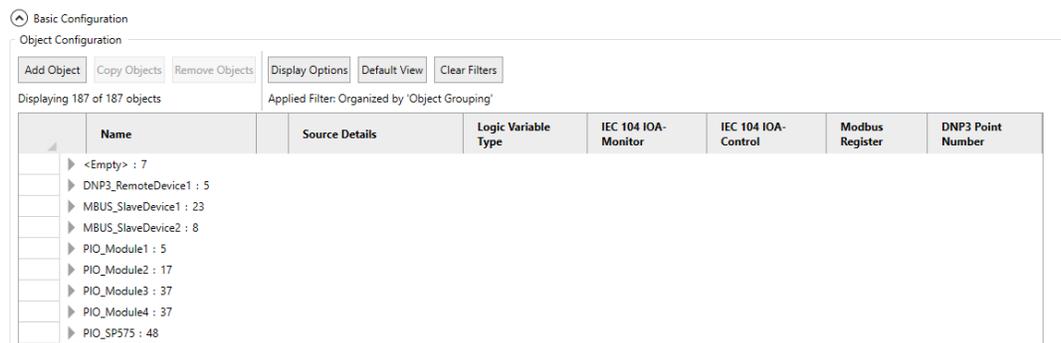
4. Click the **Filter by** drop-down list and make a selection.



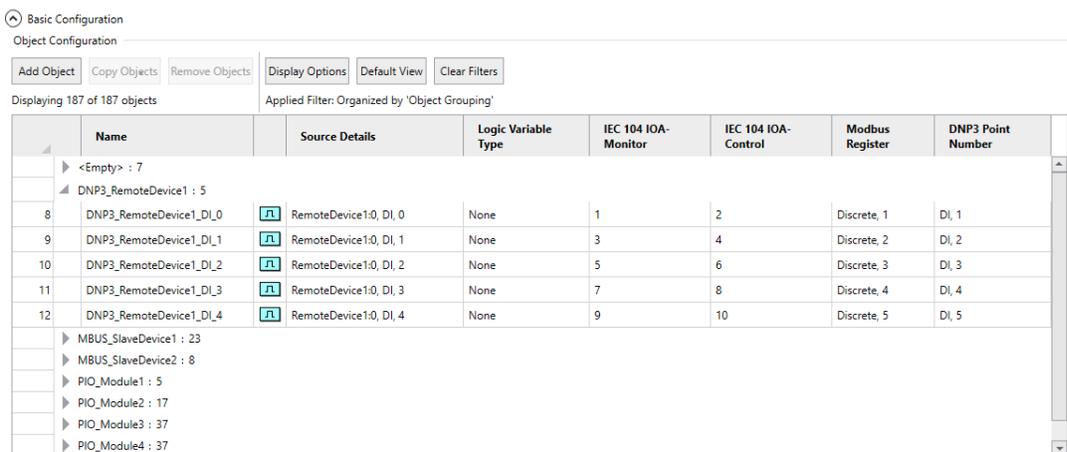
See [Filter by Options](#) ²⁴⁴ for details.

3. Select and enter further filtering options from the drop-down lists, as needed.
4. Click **Apply**.

The following image shows an example of organizing by Object Grouping.

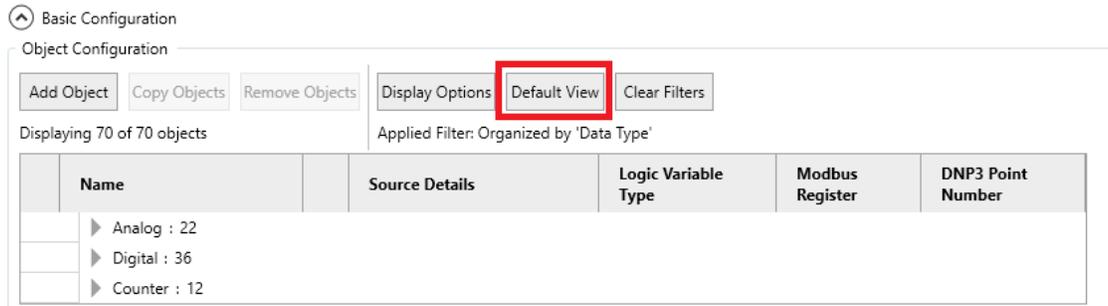


In the objects table, you can expand the results by clicking on the ▶.



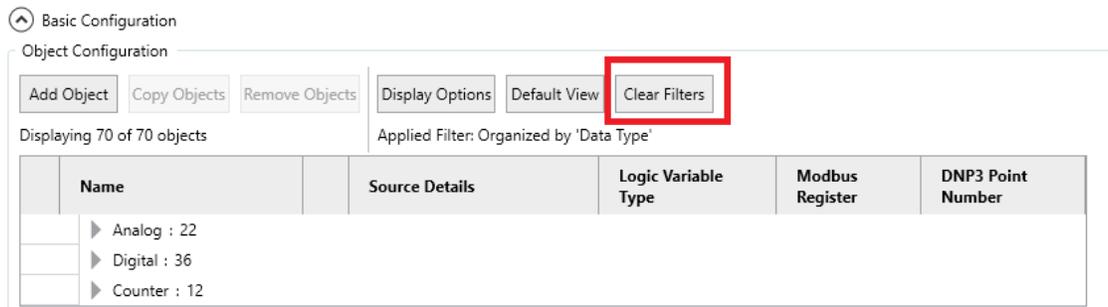
Displaying the Default View

To revert to the Default View where the content is displayed with the Data Type option applied, click **Default View**.



Clearing filters

To clear all display options and filtering, click **Clear Filters**.



9.2.4.3 Organize by Options

The table below describes the object groupings available for each **Organize by** option.

Organize by option	Object Groupings
None	No Organize by grouping
Object Grouping	PIO_SP570, PIO_SP574, PIO_SP575, or whatever name you assigned to the group in the Object Editor
Data Type	Analog, Digital, Counter
Source Type	None, System Data
Logic Variable Type	<p>Analog objects:</p> <ul style="list-style-type: none"> T_SPx70_INT

	<ul style="list-style-type: none"> • T_SPx70_UINT • T_SPx70_DINT • T_SPx70_REAL • T_SPx70_ADV_ANALOG <p>Digital objects:</p> <ul style="list-style-type: none"> • T_SPx70_BOOL • T_SPx70_ADV_DIGITAL <p>Counter objects:</p> <ul style="list-style-type: none"> • T_SPx70_UDINT • T_SPx70_ADV_COUNTER
Logic Task	MAST, FAST, AUX0, AUX1
DNP3 Static Group and Variation	See Static Group and Variation ^[268]
DNP3 Controlling Station 1/2/3 Point Data Class	None, Class 0 (static), Class 1, Class 2, Class 3, Local
Modbus Data Type	UINT, INT, DINT, REAL (Floating Point), Discrete, UDINT
IEC 104 ASDU-Monitor	See IEC 60870-5-104 Objects General Parameters ^[274] for Monitor direction ASDU types
IEC 104 ASDU-Control	See IEC 60870-5-104 Objects General Parameters ^[274] for Control direction ASDU types

9.2.4.4 Filter by Options

The table below describes the object filtering options available for each **Filter by** option.

Filter by:	Filtering options	Settings
None	Not available	
Name	<ul style="list-style-type: none"> equals contains 	<p>Enter a string value</p> <p>Valid values: 1...64 characters in length</p>

Object Grouping	equals	Enter a string value
	contains	
Comment	equals	Enter a string value Valid values: 1...128 characters in length
	contains	
DNP3 Point Number	equals	Enter an integer or integer range in the format x-y using values between 0 and 65534
	is in range	
	is less than or equal to	
	is greater than or equal to	
Modbus Register	equals	Enter an integer or integer range in the format x-y using: 5-digit addressing valid value:
		<ul style="list-style-type: none"> • 1...9999 • 10001...19999 • 30001...39999 • 40001...49999 6-digit addressing valid values: <ul style="list-style-type: none"> • 1...65535 • 100001...165535 • 300001...365535 • 400001...465535
	is in range	The starting and ending range limit values needs to be in the valid Modbus range: 5-digit addressing valid value:
		<ul style="list-style-type: none"> • 1...49999 6-digit addressing valid values: <ul style="list-style-type: none"> • 1...465535
	is less than or equal to	Same as 'equals'
	is greater than or equal to	Sames as 'equals'

IEC 104 IOA-Monitor	equals is in range is less than or equal to is greater than or equal to	Valid values: 1...16777215
IEC 104 IOA-Control	equals is in range is less than or equal to is greater than or equal to	Valid values: 1...16777215

9.2.5 Grouping Objects

Use object grouping to organize and categorize database objects in the way that is most efficient for your operations.

By default, the database object for a physical input or output is added to the group for the hardware on which it resides. The object group is assigned using the [Object Grouping parameter in the Object Editor](#)^[250].

You can reassign an object to a different group at any time. For example, you may want to create a group that contains every object related to a particular application in your network. Or you may want to create a separate group for each type of I/O on a SCADAPack x70 device and its attached I/O modules. This would allow you to easily view and change the parameters for a particular I/O type.

To view the group for an object

1. On the **Objects** tab, select **Object Configuration**.
2. In the objects table, double-click on the row for the object.

The [Object Grouping](#)^[250] parameter indicates which group the object is in.

Object Editor

Object Configuration

Name: PIO_SP575_DI1 Data Type: Digital < Prev Next >

Object Grouping: PIO_SP575 Logic Variable Type: T_SPx70_BOOL

Comment: Logic Task: MAST

Exclusive Logic Control:

Associations: DNP3 Modbus Basic

Data Source

Source Type: Physical I/O Channel

Source Details: I/O Name: SP575
I/O Type: SCADAPack 575
Address: 0
Channel: DI1
Data Type: Digital Input

Ok Cancel

To reassign objects to a new group

1. On the **Objects** tab, select **Object Configuration**.
2. In the Object Configuration table, double-click on the row for the object you want to reassign.
3. In the **Object Grouping** parameter, enter a new group name, or select an existing group, then click **Ok**.

Object Editor

Object Configuration

Name: PIO_SP575_DI1 Data Type: Digital < Prev Next >

Object Grouping: PIO_SP575 Logic Variable Type: T_SPx70_BOOL

Comment: Logic Task: MAST

Exclusive Logic Control:

Associations: DNP3 Modbus Basic

Data Source

Source Type: Physical I/O Channel

Source Details: I/O Name: SP575
I/O Type: SCADAPack 575
Address: 0
Channel: DI1
Data Type: Digital Input

Ok Cancel

The group name can contain up to 32 characters with spaces. It cannot contain the following characters: < > # % \ " ; : ? @ & = + \$ { } | ^ []

4. Repeat steps 2 and 3 for each object you want to reassign.

5. On the **Object Configuration** page, click **Apply**.

9.3 Configuring Parameter Settings Using the Object Editor

Use the Object Editor to configure and change parameter settings for the object. The tabs that are displayed depend on the role(s) the SCADAPack x70 device is performing in your SCADA network.

The screenshot shows the Object Editor window with the following configuration:

- Name:** PIO_SP575_DI2
- Data Type:** Digital
- Object Grouping:** PIO_SP575
- Logic Variable Type:** T_SPx70_BOOL
- Logic Task:** MAST
- Exclusive Logic Control:**
- Comment:** (Empty text box)
- Associations:** DNP3, Modbus, Basic
- Data Source:**
 - Source Type: Physical I/O Channel
 - Source Details: I/O Name: SP575, I/O Type: SCADAPack 575, Address: 0, Channel: DI2, Data Type: Digital Input

Buttons: < Prev, Next >, Ok, Cancel

If you are using structure or array objects, some fields are non-configurable. These are marked by a lock icon.

The screenshot shows the Object Editor window with the following configuration:

- Name:** StructureDataType.Object2 (locked)
- Data Type:** Analog (locked)
- Object Grouping:** StructureDataType
- Logic Variable Type:** T_SPx70_INT (locked)
- Logic Task:** MAST
- Exclusive Logic Control:**
- Comment:** (Empty text box)
- Associations:** DNP3, Modbus, Alert Notifications, Basic, Advanced
- Data Source:**
 - Source Type: None

Buttons: < Prev, Next >, Ok, Cancel

See the following topics for details about each parameter:

- [Object Configuration Parameters](#)²⁴⁹

- [Analog Logic Variable Types](#) ^[253]
- [Digital Logic Variable Types](#) ^[261]
- [Counter Logic Variable Types](#) ^[263]
- [Associations Tab](#) ^[265]
- [DNP3 Tab](#) ^[268]
- [Modbus Tab](#) ^[272]
- [IEC 60870-5-104 Tab](#) ^[274]
- [Alert Notifications Tab: Analog Objects](#) ^[280]
- [Basic Tab: Analog Objects](#) ^[283]
- [Advanced Tab: Analog Objects](#) ^[289]
- [Basic Tab: Digital Objects](#) ^[293]
- [Basic Tab: Counter Objects](#) ^[297]
- [Data Logging Tab](#) ^[299]

9.3.1 Object Configuration Parameters

The following table describes the Object Configuration parameters available in the Object Editor.

Parameter	Parameter Description	Setting	Setting Description
Name	<p>The name assigned to the object.</p> <p>This name is used to identify the object in the object tables.</p>	<p>1...32^[253] characters with no spaces.</p> <p>The Name needs to begin with a letter or an underscore, and can contain only letters, numbers and underscores.</p>	<p>Each object needs to have a unique name.</p> <p>The name is not case sensitive.</p> <p>If the Name begins with SYS_, then the object's Data Source needs to be set to System Data and the object Name needs to match the System Data Reference name. See the System Data topic in the Operations Technical Reference manual.</p> <p>If you do not want to match the System Data reference's name, choose a name that does not begin with SYS_.</p> <p>When you add physical I/O, the configuration software assigns a default name that describes the physical object. For example, the name PIO_SP575_DI1 is assigned to digital input 1 on a SCADAPack 575. You can change the default object name to any name that follows the naming rules described in the Setting column.</p>

			If you are creating an object, you can assign it any name that follows the naming rules.
Object Grouping	<p>The grouping assigned to the object.</p> <p>Use the object grouping to categorize objects of similar types, for example physical I/O objects or status objects.</p>	<p>0...32 characters with spaces.</p> <p>The Object Grouping cannot contain the following characters: < > # % \ " ; : ? @ & = + \$ { } ^ []</p>	<p>The Object Grouping name is not case sensitive.</p> <p>When you add physical I/O, the configuration software assigns a default object grouping based on the object type and device. For example, the Object Grouping PIO_SP575 is assigned to physical I/O objects on the SCADAPack 575. You can change or delete the default object grouping.</p> <p>If you are creating an object, you can assign a grouping if it helps you categorize and organize your objects, but it is not mandatory. For example, you may want to have a grouping for analog system objects that monitor SCADAPack x70 device operation.</p>
Comment	An optional description for the object.	<p>0...128 characters with spaces.</p> <p>The Comment cannot contain the following characters: < > # % \ " ; : ? @ & = + \$ { } ^ []</p>	<p>You can add any description that helps you identify the object, but it is not mandatory.</p> <p>Comments that are added to objects with a configured Logic Variable Type are shared with the SCADAPack x70 logic variables comment.</p> <p>Default: Empty</p>
Data Type	The data type for the object.	<p>Analog</p> <hr/> <p>Digital</p> <hr/> <p>Counter</p>	<p>When you add physical I/O, the configuration software assigns the data type based on the I/O type. For example, analog inputs and analog outputs are assigned the Data Type Analog. You cannot change the Data Type for a physical I/O object.</p> <p>If you clicked Add Object to create the object, assign the data type that matches the object you want to create.</p>
Logic Variable Type	Lists the pre-defined logic variables for the SCADAPack x70 device.	None	Default setting for objects that provide counter information, system information or status information.

	<p>You only need to configure this parameter if you will be using the object in the SCADAPack x70 Logic Editor to develop an IEC 61131-3 application for the SCADAPack x70 device.</p>	<p>Analog objects:</p> <ul style="list-style-type: none"> • T_SPx70_INT • T_SPx70_UINT • T_SPx70_DINT • T_SPx70_REAL • T_SPx70_ADV_ANALOG <p>Digital objects:</p> <ul style="list-style-type: none"> • T_SPx70_BOOL • T_SPx70_ADV_DIGITAL <p>Counter objects:</p> <ul style="list-style-type: none"> • T_SPx70_UDINT • T_SPx70_ADV_COUNTER 	<p>Select the Logic Variable Type that matches the format of the data and for which you will be developing an IEC 61131-3 application.</p> <p>The ADV types are advanced variable types that expose attributes that are not included in the basic variable types. For details about the object attributes exposed in each logic variable type, see</p> <ul style="list-style-type: none"> • Analog Logic Variable Types^[253] • Digital Logic Variable Types^[261] • Counter Logic Variable Types^[263] <p>When you set the Logic Variable Type you can also set the Exclusive Logic Control^[253] parameter for the object.</p> <p>Default settings:</p> <ul style="list-style-type: none"> • Objects that represent physical analog I/O: T_SPx70_DINT • Objects that represent physical digital I/O: T_SPx70_BOOL • Objects that represent physical counter inputs: T_SPx70_UDINT
<p>Logic Task</p>	<p>The logic task in which the input acquisition and the output update take place.</p> <p>You only need to configure this parameter if you will be using the SCADAPack x70 Logic Editor to develop an IEC 61131-3 application for the SCADAPack x70 device.</p>	<p>MAST</p>	<p>The MAST task typically executes the majority of logic programmed in the SCADAPack x70 Logic Editor.</p> <p>The MAST task is executed in 3 phases:</p> <ul style="list-style-type: none"> • Input Management (IN): SCADAPack x70 object data is copied to MAST variables that are T_SPx70 types. The input value of T_SPx70_INT and T_SPx70_UINT variable types can be modified by logic forcing. • Program Processing: The program sections are executed. • Output Management (OUT): MAST variables that are T_SPx70 types are copied to writable SCADAPack x70 object data. The output value of T_SPx70_INT and T_SPx70_UINT variable types can be modified by logic forcing. <p>Default</p>

<p>For details about the task types, see the documentation included with the SCADAPack x70 Logic Editor.</p>	<p>FAST</p>	<p>An optional, time-triggered task that executes short duration, time-sensitive logic at a higher priority than the MAST task. The FAST task can solve logic more than once per MAST task scan.</p> <p>The FAST task is executed in 3 phases:</p> <ul style="list-style-type: none"> • Input Management (IN): SCADAPack x70 object data is copied to FAST variables that are T_SPx70 types. The input value of T_SPx70_INT and T_SPx70_UINT variable types can be modified by forcing. • Program Processing: The program sections are executed. • Output Management (OUT): FAST variables that are T_SPx70 types are copied to writable SCADAPack x70 object data during the Output Management (OUT) phase. The output value of variables of T_SPx70_INT and T_SPx70_UINT types can be modified by forcing.
	<p>AUX0</p>	<p>An optional auxiliary task that executes slower, less important background logic at a lower priority than logic in the MAST tasks.</p> <p>Using auxiliary tasks for low priority tasks relieves some of the burden from MAST tasks and helps to improve MAST task scanning for essential functions.</p> <p>The AUX0 task operates in a similar way to the MAST task regarding IN, Program Processing and OUT phases, including forcing support.</p> <p>The AUX0 task executes its code sections in the time remaining after the FAST and MAST task sections are executed, and other SCADAPack x70 system processing is complete.</p> <p>Configure the MAST task for Periodic scanning when you are using the AUX0 task.</p>
	<p>AUX1</p>	<p>An optional auxiliary task that executes slower, less important background logic</p>

			<p>at a lower priority than MAST and AUX0 logic.</p> <p>The AUX1 task typically has a slower Periodic scan rate than the AUX0 task.</p> <p>The AUX1 task operates in a similar way to the MAST task regarding IN, Program Processing and OUT phases, including forcing support.</p> <p>The AUX1 task executes its code sections in the time remaining after the FAST, MAST and AUX0 task sections are executed, and other SCADAPack x70 system processing is complete.</p> <p>Configure the MAST task for Periodic scanning when you are using the AUX1 task.</p>
<p>Exclusive Logic Control</p>	<p>Determines whether the object can only be updated by the logic application.</p>	<p>When the box is checked, the object is under the exclusive control of the logic application and can only be updated by the logic application.</p> <p>When the box is unchecked, the object can be written from multiple sources, for example through the SCADAPack x70 DNP3 Outstation from a Controlling Station, IEC 60870-5-104 Controlled Station, Modbus RTU Server, Modbus/TCP Server, DNP3 Peer node, or a SCADAPack x70 logic application.</p> <p>When the box is checked, requests from other sources, for example DNP3 or Modbus protocol requests to update the value of the object or to control the object, are blocked and a status code is generated.</p> <p>Default: Unchecked</p>	

¹ Object names longer than 32 characters are permitted when objects are created from user DDT logic variables. See the Creating a New SCADAPack x70 Variable in the Logic Programming Overview manual. They are presented using dot notation where the portion of the object name preceding the dot is the DDT instance variable name, and the portion of the name following the dot is the DDT element name (of T_SPx70_ type). Only a single level of user DDT is permitted (therefore only a single dot in the name is permitted). The total name length is 64 characters including the dot. This means that the variable instance name length + the DDT element name length can not exceed 63 characters.

9.3.1.1 Analog Logic Variable Types

The following table summarize the attributes that are exposed for analog logic variable types.

All attributes are read-only, except where noted as "Writable".

Logic Variable Type	Attributes Exposed	Data Type	Comments
T_SPx70_INT	OBJ_QUALITY	BYTE	Object quality value comprising the following bits: bit 0 = ONLINE_QUAL bit 1 = UNDER_RANGE_QUAL bit 2 = OVER_RANGE_QUAL bit 3 = FORCED_QUAL
	ONLINE_QUAL	BOOL	Object is online and reports good quality
	UNDER_RANGE_QUAL	BOOL	Engineering value is under-range (see Out of Range Limits Parameters ^[287])
	OVER_RANGE_QUAL	BOOL	Engineering value is over-range (see Out of Range Limits Parameters ^[287])
	FORCED_QUAL	BOOL	Object value is forced (by a user)
	VALUE	INT	Analog object current integer value (Writable)
	OBJ_ID	DWORD	Object services identifier (used to connect to logic function blocks having an OBJ_ID input)
T_SPx70_UINT	OBJ_QUALITY	BYTE	Object quality value comprising the following bits: bit 0 = ONLINE_QUAL bit 1 = UNDER_RANGE_QUAL bit 2 = OVER_RANGE_QUAL bit 3 = FORCED_QUAL
	ONLINE_QUAL	BOOL	Object is online and reports good quality

	UNDER_RANGE_QUAL	BOOL	Engineering value is under-range (see Out of Range Limits Parameters ^[287])
	OVER_RANGE_QUAL	BOOL	Engineering value is over-range (see Out of Range Limits Parameters ^[287])
	FORCED_QUAL	BOOL	Object value is forced (by a user)
	VALUE	UINT	Analog object current integer value (Writable)
	OBJ_ID	DWORD	Object services identifier (connect to logic function blocks having an OBJ_ID input)
T_SPx70_DINT	OBJ_QUALITY	BYTE	Object quality value comprising the following bits: bit 0 = ONLINE_QUAL bit 1 = UNDER_RANGE_QUAL bit 2 = OVER_RANGE_QUAL bit 3 = FORCED_QUAL
	ONLINE_QUAL	BOOL	Object is online and reports good quality
	UNDER_RANGE_QUAL	BOOL	Engineering value is under-range (see Out of Range Limits Parameters ^[287])
	OVER_RANGE_QUAL	BOOL	Engineering value is over-range (see Out of Range Limits Parameters ^[287])
	FORCED_QUAL	BOOL	Object value is forced (by a user)
	VALUE	DINT	Analog object current integer value (Writable)
	OBJ_ID	DWORD	Object services identifier (used to connect to logic function)

			blocks having an OBJ_ID input)
T_SPx70_REAL	OBJ_QUALITY	BYTE	Object quality value comprising the following bits: bit 0 = ONLINE_QUAL bit 1 = UNDER_RANGE_QUAL bit 2 = OVER_RANGE_QUAL bit 3 = FORCED_QUAL
	ONLINE_QUAL	BOOL	Object is online and reports good quality
	UNDER_RANGE_QUAL	BOOL	Engineering value is under-range (see Out of Range Limits Parameters ^[287])
	OVER_RANGE_QUAL	BOOL	Engineering value is over-range (see Out of Range Limits Parameters ^[287])
	FORCED_QUAL	BOOL	Object value is forced (by a user)
	VALUE	REAL	Analog object current scaled Engineering value (Writable)
	OBJ_ID	DWORD	Object services identifier (used to connect to logic function blocks having an OBJ_ID input)
T_SPx70_ADV_ANALOG	COMMON_OBJ_QUALITY	WORD	Object quality value comprising the following bits: bit 0 = ONLINE_QUAL bit 1 = IO_NORESPONSE_QUAL bit 2 = USER_SET_OFFLINE_QUAL bit 3 = LOGIC_QUAL bit 5 = FORCED_QUAL

	ONLINE_QUAL	BOOL	Object is online and reports good quality
	IO_NORESPONSE_QUAL	BOOL	I/O not responding
	USER_SET_OFFLINE_QUAL	BOOL	Object set Offline by user ONLINE_QUAL = 0 (Writable)
	LOGIC_QUAL	BOOL	Updated by logic
	FORCED_QUAL	BOOL	Object value is forced (by a user)
	ANALOG_OBJ_QUALITY	BYTE	Counter object quality value comprising the following bits: bit 0 = OVER_RANGE_QUAL bit 1 = UNDER_RANGE_QUAL bit 2 = ROR_EXCEEDED_QUAL bit 3 = ROF_EXCEEDED_QUAL bit 4 = NO_CHANGE_QUAL bit 5 = CHECK_REFERENCE_QUAL
	OVER_RANGE_QUAL	BOOL	Engineering value is under-range (see Out of Range Limits Parameters ^[287])
	UNDER_RANGE_QUAL	BOOL	Engineering value is over-range (see Out of Range Limits Parameters ^[287])
	ROR_EXCEEDED_QUAL	BOOL	Engineering value change has exceeded the Rate of Rise limit (see Rate of Change Parameters ^[291])
	ROF_EXCEEDED_QUAL	BOOL	Engineering value change has exceeded the Rate of Fall limit (see Rate of Change Parameters ^[291])

	NO_CHANGE_QUAL	BOOL	Engineering value has not changed as expected (see Rate of Change Parameters ^[291])
	CHECK_REFERENCE_QUAL	BOOL	Check analog input hardware is reporting correctly
	VALUE_ENG	REAL	Analog object current scaled Engineering value (Writable)
	VALUE_RAW	DINT	Analog object current integer value (Writable)
	ANALOG_OBJ_CONFIG	BYTE	Analog object configuration fields value comprising the following bits (Writable): bit 0 = ALERT_INHIBIT
	ALERT_INHIBIT	BOOL	Inhibits protocol events on this object (Writable)
	TREND_INHIBIT	BOOL	Not available for use
	HNLN_STATES	BYTE	Analog object Engineering High and Low alert limit exceeded indications comprising the following bits: bit 0 = H4_STATE bit 1 = H3_STATE bit 2 = H2_STATE bit 3 = H1_STATE bit 4 = L1_STATE bit 5 = L2_STATE bit 6 = L3_STATE bit 7 = L4_STATE
	H4_STATE	BOOL	Engineering High Limit 4 exceeded
	H3_STATE	BOOL	Engineering High Limit 3 exceeded

	H2_STATE	BOOL	Engineering High Limit 2 exceeded
	H1_STATE	BOOL	Engineering High Limit 1 exceeded
	L1_STATE	BOOL	Engineering Low Limit 1 exceeded
	L2_STATE	BOOL	Engineering Low Limit 2 exceeded
	L3_STATE	BOOL	Engineering Low Limit 3 exceeded
	L4_STATE	BOOL	Engineering Low Limit 4 exceeded
	HNLN_ENABLES	BYTE	Analog object fields indicating enabled Engineering Limits alert checking, comprising the following bits: bit 0 = H4_ENABLE bit 1 = H3_ENABLE bit 2 = H2_ENABLE bit 3 = H1_ENABLE bit 4 = L1_ENABLE bit 5 = L2_ENABLE bit 6 = L3_ENABLE bit 7 = L4_ENABLE
	H4_ENABLE	BOOL	Engineering High Limit 4 enabled
	H3_ENABLE	BOOL	Engineering High Limit 3 enabled
	H2_ENABLE	BOOL	Engineering High Limit 2 enabled
	H1_ENABLE	BOOL	Engineering High Limit 1 enabled
	L1_ENABLE	BOOL	Engineering Low Limit 1 enabled

	L2_ENABLE	BOOL	Engineering Low Limit 2 enabled
	L3_ENABLE	BOOL	Engineering Low Limit 3 enabled
	L4_ENABLE	BOOL	Engineering Low Limit 4 enabled
	H4_LIMIT	REAL	Engineering High Limit 4 value. When the limit is disabled, the value will be +3.4E+038 (Writable).
	H3_LIMIT	REAL	Engineering High Limit 3 value. When the limit is disabled, the value will be +3.4E+038 (Writable).
	H2_LIMIT	REAL	Engineering High Limit 2 value. When the limit is disabled, the value will be +3.4E+038 (Writable).
	H1_LIMIT	REAL	Engineering High Limit 1 value. When the limit is disabled, the value will be +3.4E+038 (Writable).
	L1_LIMIT	REAL	Engineering Low Limit 1 value. When the limit is disabled, the value will be -3.4E+038 (Writable).
	L2_LIMIT	REAL	Engineering Low Limit 2 value. When the limit is disabled, the value will be -3.4E+038 (Writable).
	L3_LIMIT	REAL	Engineering Low Limit 3 value. When the limit is disabled, the value will be -3.4E+038 (Writable).
	L4_LIMIT	REAL	Engineering Low Limit 4 value. When the limit is disabled, the value will be -3.4E+038 (Writable).

	UNDER_RANGE_LIMIT	REAL	Engineering Under Range Limit. When the limit is disabled, the value will be -3.4E+038 (Writable)
	OVER_RANGE_LIMIT	REAL	Engineering Over Range Limit. When the limit is disabled, the value will be +3.4E+038 (Writable)
	RAW_MINSCALE	DINT	Raw Minimum Scaling integer value (Writable)
	RAW_MAXSCALE	DINT	Raw Maximum Scaling integer value (Writable)
	ENG_MINSCALE	REAL	Engineering Minimum Scaling value (Writable)
	ENG_MAXSCALE	REAL	Engineering Maximum Scaling value (Writable)
	OBJ_ID	DWORD	Object services identifier (used to connect to logic function blocks having an OBJ_ID input)

9.3.1.2 Digital Logic Variable Types

The following table summarize the attributes that are exposed for digital logic variable types.

All attributes are read-only, except where noted as "Writable".

Logic Variable Type	Attributes Exposed	Data Type	Comment
T_SPx70_BOOL	OBJ_QUALITY	BYTE	Object quality value comprising the following bits: bit 0 = ONLINE_QUAL bit 3 = FORCED_QUAL
	ONLINE_QUAL	BOOL	Object is online and reports good quality
	FORCED_QUAL	BOOL	Object value is forced (by a user)

	VALUE	BOOL	Digital object current state (Writable)
	OBJ_ID	DWORD	Object services identifier (used to connect to logic function blocks having an OBJ_ID input)
T_SPx70_ADV_DIGITAL	COMMON_OBJ_QUALITY	WORD	Object quality value comprising the following bits: bit 0 = ONLINE_QUAL bit 1 = IO_NORESPONSE_QUAL bit 2 = USER_SET_OFFLINE_QUAL bit 3 = LOGIC_QUAL bit 5 = FORCED_QUAL
	ONLINE_QUAL	BOOL	Object is online and reports good quality
	IO_NORESPONSE_QUAL	BOOL	I/O not responding
	USER_SET_OFFLINE_QUAL	BOOL	Object set Offline by user, ONLINE_QUAL = 0 (Writable)
	LOGIC_QUAL	BOOL	Updated by logic
	FORCED_QUAL	BOOL	Object value is forced (by a user)
	DIGITAL_OBJ_QUALITY	BYTE	Digital object quality value comprising the following bits: bit 0 = CHATTER_QUAL bit 1 = ALERT_STATE_QUAL
	CHATTER_QUAL	BOOL	Physical digital input updates are suppressed or restricted due to rapidly state changes (see I/O module hardware manual for more information)
	ALERT_STATE_QUAL	BOOL	Object is in an Alert State. ALERT_STATE_QUAL = 1

			when VALUE = ALERT_ACTIVE_STATE
	VALUE	BOOL	Digital object current state (Writable)
	DIGITAL_OBJ_CONFIG	BYTE	Digital object configuration fields value comprising the following bits (Writable): bit 0 = ALERT_INHIBIT bit 1 = ALERT_ACTIVE_STATE
	ALERT_INHIBIT	BOOL	Inhibits protocol events on this object ALERT_STATE_QUAL = 0 (Writable)
	ALERT_ACTIVE_STATE	BOOL	The active state of this object that constitutes an Alert (Writable). ALERT_STATE_QUAL = 1 when VALUE = ALERT_ACTIVE_STATE
	OBJ_ID	DWORD	Object services identifier (used to connect to logic function blocks having an OBJ_ID input)

9.3.1.3 Counter Logic Variable Types

The following table summarize the attributes that are exposed for counter logic variable types.

All attributes are read-only, except where noted as "Writable".

Logic Variable Type	Attributes Exposed	Data Type	Comment
T_SPx70_UDINT	OBJ_QUALITY	BYTE	Object quality value comprising the following bits: bit 0 = ONLINE_QUAL bit 3 = FORCED_QUAL
	ONLINE_QUAL	BOOL	Object is online and reports good quality

	FORCED_QUAL	BOOL	Object value is forced (by a user)
	VALUE	UDINT	Counter object current value (Writable)
	OBJ_ID	DWORD	Object services identifier (used to connect to logic function blocks having an OBJ_ID input)
T_SPx70_ADV_COUNTER	COMMON_OBJ_QUALITY	WORD	Object quality value comprising the following bits: bit 0 = ONLINE_QUAL bit 1 = IO_NORESPONSE_QUAL bit 2 = USER_SET_OFFLINE_QUAL bit 3 = LOGIC_QUAL bit 5 = FORCED_QUAL
	ONLINE_QUAL	BOOL	Object is online and reports good quality
	IO_NORESPONSE_QUAL	BOOL	I/O not responding
	USER_SET_OFFLINE_QUAL	BOOL	Object set offline by user ONLINE_QUAL = 0 (Writable)
	LOGIC_QUAL	BOOL	Updated by logic
	FORCED_QUAL	BOOL	Object value is forced (by a user)
	COUNTER_OBJ_QUALITY	BYTE	Counter object quality value comprising the following bits (Writable): bit 0 = HIGH_LIMIT_QUAL
	HIGH_LIMIT_QUAL	BOOL	High Limit Alert state. HIGH_LIMIT_QUAL = 1 when VALUE >= HIGH_LIMIT
	VALUE	UDINT	Counter object current value (Writable)

	HIGH_LIMIT	UDINT	High Limit Alert value (Writable)
	COUNTER_OBJ_CONFIG	BYTE	Counter object configuration fields value comprising the following bits: bit 0 = ALERT_INHIBIT
	ALERT_INHIBIT	BOOL	Inhibits protocol events on this object (Writable)
	OBJ_ID	DWORD	Object services identifier (used to connect to logic function blocks having an OBJ_ID input)

9.3.2 Associations Tab

Use the Associations tab to view a description of the associations for the object. The following is an example of a SCADAPack 575 configuration.

The **Data Source** options change based on the object **Source Type** setting.

If you add a new object, then Data Source is displayed similarly to the following, with default set to None.

Data Source

Source Type None ▼

If the object is to be associated to a system data reference, from the Source Type drop-down list, select **System Data**. The Data Source panel is displayed similarly to the following.

Data Source

Source Type System Data ▼

System Data Reference ! SYS_CLOCK_ >

SYS_CLOCK ▼

The Source Type for objects that are associated to physical I/O, DNP3 Controlling Stations, or Modbus Clients cannot be modified. These associations are automatically created by the system. Data Source is displayed similarly to the following:

Data Source

Source Type	Physical I/O Channel
Source Details	I/O Name: SP575 I/O Type: SCADAPack 575 Address: 0 Channel: DI1 Data Type: Digital Input

See:

- [Object Associations Parameters](#) ²⁶⁶

9.3.2.1 Object Associations Parameters

The following table describes the Object Associations parameters that are displayed for each object.

Parameter	Parameter Description	Setting	Setting Description
Source Type	The item with which the object is associated. For example, an object can be associated with a: <ul style="list-style-type: none"> • Physical I/O channel • Physical I/O status • DNP3 Remote Point • DNP3 Status and Control • Modbus Scanner • Modbus Status and Control This field is configurable as System Data only if the object is not already associated with another data source.	None System Data	Available only if the object is not associated with another data source.
Source Details	Information about the data source for the object		
System Data Reference	Allows System Data Fields to be associated with objects. <ul style="list-style-type: none"> • Available when the Source Type is System Data • System field names are not case sensitive 	Needs to begin with a known prefix, which is one of: SYS_CAPACITY SYS_CLOCK SYS_CODE	Max length: 32 characters

	<ul style="list-style-type: none"> • Not available when the object is already associated with another data source. <p>The Copy System Data Reference to Name  button allows you to set the name of the object to the system data reference.</p> <p>See: Configuring an Association with a System Data Reference ³¹⁸</p>	<p>SYS_CONFIG</p> <p>SYS_DEVICE</p> <p>SYS_DNP3Hosts</p> <p>SYS_ETH</p> <p>SYS_EVENTS</p> <p>SYS_INFO</p> <p>SYS_LICENSE</p> <p>SYS_LOCATION</p> <p>SYS_LOGIC</p> <p>SYS_MODEM</p> <p>SYS_PROTOCOL</p> <p>SYS_ResetStats</p> <p>SYS_RESTART</p> <p>SYS_SERIAL1</p> <p>SYS_SERIAL2</p> <p>SYS_SERIAL3</p> <p>SYS_SERIAL4</p> <p>SYS_SET</p> <p>SYS_StatsDNP3</p> <p>SYS_StatsETH</p> <p>SYS_StatsIO</p> <p>SYS_StatsIOP</p> <p>SYS_StatsIP</p> <p>SYS_StatsMODEM</p> <p>SYS_StatsSecLock</p> <p>SYS_StatsSerial1</p> <p>SYS_StatsSerial2</p> <p>SYS_StatsSerial3</p> <p>SYS_StatsSerial4</p> <p>SYS_STATUS</p> <p>See the System Data topics in the Operations</p>	
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		Technical Reference manual	
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9.3.3 DNP3 Tab

Use the DNP3 tab to define how the object value and attributes are used by the SCADAPack x70 DNP3 Outstation when it interacts with its DNP3 Controlling Station(s).

The **Static Group and Variation** options change based on the object **Data Type** setting: digital, analog or counter.

General

Point Number >

Static Group and Variation g1v2 Binary Input with Flags

Point Data Class

Controlling Station 1 Local ▾

Controlling Station 2 Local ▾

Controlling Station 3 Local ▾

- [DNP3 Objects General Parameters](#)²⁶⁸
- [DNP3 Point Data Class Parameters](#)²⁷¹

9.3.3.1 DNP3 Objects General Parameters

The following table describes the General parameters for DNP3 objects.

Parameter	Parameter Description	Setting	Setting Description
Point Number	The identifier for the DNP3 point.	0...65534	To find the next available DNP3 point number for the currently selected Data Type, click  To start the search from a particular point number, enter that point number, then click  .
Static Group and Variation	The data object returned in response to a DNP3 Class 0 (static) data poll request from a DNP3 Controlling Station. In the parameter settings below, the prefix indicates the Group and Variation. For example, g30v1 is Group 30, Variation 1.		
	Analog data types	g30v1 32-bit Integer Analog Input with Flags	Use this object to return a 32-bit signed integer analog value as a DNP3 analog input point in the range -2147483648 to +2147483647 where the DNP3 Controlling

			Station can process additional point status flags, such as over-range or under-range.
		g30v2 16-bit Integer Analog Input with Flags	Use this object to return a 16-bit signed integer analog value as a DNP3 analog input point in the range -32768 to +32767 where the DNP3 Controlling Station can process additional point status flags, such as over-range or under-range.
		g30v3 32-bit Integer Analog Input No Flags	Use this object to return a 32-bit signed integer analog value as a DNP3 analog input point in the range -2147483648 to +2147483647. This object does not include DNP3 status flags. However, if the point does not have good quality, a group 30, variation 1 object is automatically reported for the point. This is a DNP3 protocol requirement.
		g30v4 16-bit Integer Analog Input No Flags	Use this object to return a signed 16-bit signed integer analog value as a DNP3 analog input point in the range -32768 to +32767. This object does not include DNP3 status flags. However, if the point does not have good quality, a group 30, variation 2 object is automatically reported for the point. This is a DNP3 protocol requirement.
		g30v5 32-bit Floating Point Analog Input with Flags	Use this object to return the value and status of a floating point value as a DNP3 analog input point in 32-bit IEEE floating point format.
		g40v1 32-bit Integer Analog Output with Flags	Use this object to return the value and status of a 32-bit signed integer value as a DNP3 analog output point. You can also use this object to notify the DNP3 Controlling Station if the point value is modified elsewhere, for example due to internal state validation and point quality.
		g40v2 16-bit Integer Analog Output with Flags	Use this object to return the value and status of a 16-bit signed integer value as a DNP3 analog output point. You can also use this object to notify the DNP3 Controlling Station if the point value is modified elsewhere, for example due to internal state validation and point quality.

		g40v3 32-bit Floating Point Analog Output with Flags	<p>Use this object to return the value and status of a floating point value as a DNP3 analog output point for control data.</p> <p>Use this object to notify the DNP3 Controlling Station if the point value is modified elsewhere, for example due to internal state validation and point quality.</p>
	Digital data types	g1v1 Binary Input No Flags	<p>Use this object to return the status of digital data as a DNP3 input point. The minimum transmitted data size for this object is 8 bits. Eight consecutive binary input objects are the same data length as a single binary input object. To improve transmission efficiency, group binary objects together in consecutive addresses.</p> <p>If the point quality is not indicated as good quality, a group 1, variation 2 object is automatically reported for the point. This is a DNP3 protocol requirement.</p>
		g1v2 Binary Input With Flags	Use this object to return the status of digital data as a DNP3 input point when the DNP3 Controlling Station can process point status flags, for example, online, offline or downstream device communications lost.
		g10v2 Binary Output with Flags	Use this object to return the status of digital data as a DNP3 output point. You can also use this object to notify the DNP3 Controlling Station if the point value is modified elsewhere, for example due to internal state validation and point quality.
		g12v1, g10v2 Complementary (single-index) Trip	Use this selection to allow Trip/Close control of a pair of digital objects using DNP3 single-index complementary mode. The digital object using this selection pulses when a CROB Trip control is received. Control status flags representing the quality of the digital object pair can be returned to the DNP3 Controlling Station. A separate digital object needs to be configured with the complementary (single-index) Close configuration.
		g12v1, g10v2 Complementary	Use this selection in conjunction with a separate digital object using the complementary (single-index) Trip configuration to allow control of a pair of digital

		(single-index) Close	objects using DNP3 single-index complementary mode. The Digital object using this selection pulses when a CROB Close control is received.
	Counter data types	g20v1 32-bit Counter with Flags	Use this object to return data for a counter or unsigned integer data with 32-bit resolution in the range 0...4294967295 where the DNP3 Controlling Station can process additional point status flags, such as counter offline.
		g20v2 16-bit Counter with Flags	Use this object to return data for a counter or unsigned integer data with 16-bit resolution in the range 0...65535 where the DNP3 Controlling Station can process additional point status flags, such as counter offline.
		g20v5 32-bit Counter No Flags	Use this object to return data for a counter or unsigned integer data with 32-bit resolution in the range 0...4294967295. This object does not include DNP3 status flags. However, if the point does not have good quality, a group 20, variation 1 object type is automatically reported for the point. This is a DNP3 protocol requirement.
		g20v6 16-bit Counter No Flags	Use this object to return data for a counter or unsigned integer data with 16-bit resolution in the range 0...65535. This object does not include DNP3 status flags. However, if the point does not have good quality, a group 20, variation 2 object is automatically reported for the point. This is a DNP3 protocol requirement.

9.3.3.2 DNP3 Point Data Class Parameters

The following table describes the DNP3 Point Data Class parameters.

Parameter	Parameter Description	Setting	Setting Description
Point Data Class	<p>The type of event data that the SCADAPack x70 DNP3 Outstation returns to its DNP3 Controlling Station.</p> <p>The DNP3 Outstation has three event buffers, one for each of the three event classes. If a point is</p>	Local	Point data is not returned to the DNP3 Controlling Station in Class 0, 1, 2, or 3 polls, and DNP3 events are not generated for the point. Point data is available to:

	<p>assigned a Class 1, 2 or 3 data class, then events generated by the point are placed in the appropriate buffer and sent to the DNP3 Controlling Station in response to a poll for that data class.</p> <p>Events in the buffer can also be sent to the DNP3 Controlling Station in unsolicited responses if unsolicited responses are enabled for the SCADAPack x70 DNP3 Outstation and for that event class.</p> <p>The most recently updated value data for a point configured for Class 1, 2, or 3 is also returned in response to a Class 0 poll request.</p>		<ul style="list-style-type: none"> • The DNP3 Controlling Station using specific DNP3 point index reads. • Peer DNP3 nodes through DNP3 requests for specific point index data. • IEC 61131-3 applications. • The configuration software. <p>Default</p>
		Class 0 (static)	Returns the most recently updated data value (static object data) for the point to the DNP3 Controlling Station. The setting for the Static Group and Variation ^[268] parameter determines the format of the point data that is returned.
		Class 1	The DNP3 Outstation generates events for the point in Class 1 and returns them to the DNP3 Controlling Station in response to a Class 1 poll, an integrity poll, and optionally, in an unsolicited response.
		Class 2	The DNP3 Outstation generates events for the point in Class 2 and returns them to the DNP3 Controlling Station in response to a Class 2 poll, an integrity poll, and optionally, in an unsolicited response.
		Class 3	The DNP3 Outstation generates events for the point in Class 3 and returns them to the DNP3 Controlling Station in response to a Class 3 poll, an integrity poll, and optionally, in an unsolicited response.

9.3.4 Modbus Tab

Use the Modbus tab to define how an object value is used by the SCADAPack x70 Modbus RTU Server or Modbus/TCP Server when it interacts with a Modbus RTU Client or Modbus/TCP Client.

The **Modbus Data Type** options and **Valid Modbus Register Range** change based on the object **Data Type** setting: digital, analog or counter, and the [Modbus Server Address Mode](#)^[187].

General

Modbus Register >

Modbus Data Type None ▾

Valid Modbus Register Range

30001-39999 (read-only Input Registers)

40001-49999 (read/write Holding Registers)

- [Modbus Objects General Parameters](#)^[273]

9.3.4.1 Modbus Objects General Parameters

The following table describes the General parameters for Modbus objects. These parameters are only displayed when the device is configured to operate as a Modbus RTU Server or a Modbus/TCP Server.

Parameter	Parameter Description	Setting	Setting Description
Modbus Register	The Modbus address for the object.		Use the Valid Modbus Register Range to confirm that the Modbus Register entry falls within a valid range. If you are configuring an object with a DINT, Real, or UDINT data type, 2 sequential registers are used, starting with the first register you enter.
Modbus Data Type	The data type that is returned when a request is sent to this Modbus RTU Server or Modbus/TCP Server.		
	Analog data type	UINT	Returns an unsigned integer value.
		INT	Returns a signed integer value.
		DINT	Returns a signed double integer value.
		Real	Returns a floating point real value.
	Digital data type	Discrete	Returns a discrete value.
	Counter data type	UINT	Returns an unsigned integer value.
UDINT		Returns an unsigned double integer value.	

9.3.5 IEC 60870-5-104 Tab

Use the IEC 60870-5-104 tab to define how an object on an IEC 60870-5-104 Controlled Station interacts with its Controlling Station.

The **Application Service Data Unit (ASDU)** options change based on the object **Data Type** setting: digital, analog or counter.

If [Unstructured IOA](#)²²² is selected, the following is displayed:

If [Structured IOA \(high/mid/low octet\)](#)²²² is selected, the following displayed:

- [IEC 60870-5-104 Objects General Parameters](#)²⁷⁴

9.3.5.1 IEC 60870-5-104 Objects General Parameters

The following table describes the General parameters for IEC 60870-5-104 object data. These parameters are only displayed when the device is configured to operate as an IEC 60870-5-104 Controlled Station.

Parameter	Parameter Description	Setting	Setting Description
Monitor Direction			
Information Object Address (IOA)	The IEC 60870-5 address for the object.	1...16777215	A unique identifier for the object. Structured IOA is listed as “<high byte>/<mid byte>/<low byte>”. Sorting based on the unstructured value groups common high byte and mid byte values together, making it easy to find common groupings of structured IOA.
Application Service	The type of Application Service Data Unit (ASDU) for the object.		

Data Unit (ASDU)	To generate events for the selected ASDU, use the ASDU type that includes the (<i>with event</i>) suffix.	
	Analog data type	<p>5 - Step Position Information</p> <p>Type ID 5: M_ST_NA_1 - Step position information</p> <p>Includes a 7-bit value in the Information Object and applies to analog integer values in the database. The current integer value of the analog object (when in the range -64 to 63) is presented in this 7-bit value.</p>
		<p>5 - Step Position Information (with Event)</p> <p>As for 5 - Step Position Information, but also generates events using:</p> <ul style="list-style-type: none"> Type ID 32: M_ST_TB_1 - Step position information with time tag CP56Time2a
		<p>9 - Measured Value, Normalized Value</p> <p>Type ID 9: M_ME_NA_1 – Measured value, normalized value</p> <p>Includes a 16-bit value in the Information Object and applies to analog object integer values in the database. The current integer value of the analog object is mapped to this 16-bit value.</p>
		<p>9 - Measured Value, Normalized Value (with Event)</p> <p>As for 9 - Measured Value, Normalized value, but also generates events using:</p> <ul style="list-style-type: none"> Type ID 34: M_ME_TD_1 - Measured value, normalized value with time tag CP56Time2a
		<p>11 - Measured Value, Scaled Value</p> <p>Type ID 11: M_ME_NB_1 – Measured value, scaled value</p> <p>Includes a 16-bit value in the Information Object and applies to analog object integer values in the database. The current integer value of the analog object is mapped to this 16-bit value.</p>
		<p>11 - Measured Value, Scaled Value (with Event)</p> <p>As for 11 - Measured Value, scaled value, but also generates events using:</p> <ul style="list-style-type: none"> Type ID 35: M_ME_TE_1 - Measured value, scaled value with time tag CP56Time2a

		13 - Measured Value, Short Floating Point Value	<p>Type ID 13: M_ME_NC_1 – Measured value, short floating point value</p> <p>The short float value of the analog object is mapped to the current value of the protocol object.</p> <p>Default</p>
		13 - Measured Value, Short Floating Point Value (with Event)	<p>As for 13 - Measured Value, Short floating point value, but also generates events using:</p> <ul style="list-style-type: none"> • Type ID 36: M_ME_TF_1 - Measured value, short floating point value with time tag CP56Time2a
		21 - Measured Value, Normalized Value without Quality Descriptor	<p>Type ID 21: M_ME_ND_1 – Measured Value, normalized value without quality descriptor</p> <p>Includes a 16-bit value in the Information Object and applies to analog object integer values in the database. The current integer value of the analog object is mapped to this 16-bit value.</p>
		21 - Measured Value, Normalized Value without Quality Descriptor (with Event)	<p>As for 21 - Measured Value, normalized value, but also generates events using:</p> <ul style="list-style-type: none"> • Type ID 34: M_ME_TD_1 - Measured value, normalized value with time tag CP56Time2a
	Digital object type	1 - Single Point Information	<p>Type ID 1: M_SP_NA_1 – Single point information</p> <p>The value reported in the SPI of the Information Object is derived from the current state of the digital object.</p> <p>Default</p>
		1 - Single Point Information (with Event)	<p>As for 1 - Single Point Information, but also generates events using:</p> <ul style="list-style-type: none"> • Type ID 30: M_SP_TB_1 - Single-point information with time tag CP56Time2a
		3 - Double Point Information	<p>Type ID 3: M_DP_NA_1 - Double-point information</p>

			<p>The value reported in the DPI of the information object is derived from the current state of two digital objects.</p> <p>The second point in a double point information pair needs to be configured as Secondary Double Point type, with the same monitor direction IOA.</p>
		3 - Double Point Information (with Event)	<p>As for 3 - Double Point Information, but also generates events using:</p> <ul style="list-style-type: none"> • Type ID 31: M_DP_TB_1 - Double-point information with time tag CP56Time2a
		Secondary Double Point	<p>Use this ASDU selection for the digital object corresponding to the second point of a Double Point Information object pair. This object is paired with a digital object with the same monitor direction IOA.</p>
	Counter object type	15 - Integrated totals	<p>Type ID 15: M_IT_NA_1 – Integrated totals</p> <p>The counter values reported are frozen values. Counter (integrated total) values are retrieved from the SCADAPack x70 device using Counter Interrogation Commands.</p> <p>Default</p>
		15 - Integrated totals (with Event)	<p>As for 15 - Integrated totals, but also generates events using:</p> <ul style="list-style-type: none"> • Type ID 37: M_IT_TB_1 - Integrated totals with time tag CP56Time2a
Enable Cyclic Scan	Determines whether the analog object is included in IEC 60870-5-104 cyclic responses.	When the box is checked, the analog object is included in IEC 60870-5-104 cyclic responses.	Default: Not checked (disabled)
Control Direction			
Information Object	The IEC 60870-5 address for the object.	1...16777215	<p>A unique identifier for the object.</p> <p>Structured IOA is listed as “<high byte>/<mid byte>/<low byte>”. Sorting</p>

Address (IOA)			based on the unstructured value groups common high byte and mid byte values together, making it easy to find common groupings of structured IOA.
Application Service Data Unit (ASDU)	Analog data type SCADAPack x70 Analog objects can simultaneously be configured for a Monitor direction ASDU type and a Control direction ASDU type, where the types are of a corresponding format. Independent IOA configurations are provided for Monitor and Control direction.	48 - Set Point Command, Normalized Value	Type ID 48: C_SE_NA_1 - Set point command, normalized value Sets the current integer value of the analog object to the 16-bit value in the command
		49 - Set Point Command, Scaled Value	Type ID 49: C_SE_NB_1 - Set point command, scaled value Sets the current integer value of the analog object to the 16-bit value in the command
		50 - Set Point Command, Short Floating Point Value	Type ID 50: C_SE_NC_1 - Set point command, short floating point value Sets the current engineering value of the analog object to the 32-bit short floating point value in the command Default
		61 - Set Point Command, Normalized Value with Time Tag	Type ID 61: C_SE_TA_1 - Set point command, normalized value with time tag Operates the same as ASDU Type ID 48, except the command is time tagged and is only valid for the Command Age time
		62 - Set Point Command, Scaled Value with Time Tag	Type ID 62: C_SE_TB_1 - Set point command, scaled value with time tag Operates the same as ASDU Type ID 49, except the command is time tagged and is only valid for the Command Age time
		63 - Set Point Command, Short Floating Point Value with Time Tag	Type ID 63: C_SE_TC_1 - Set point command, short floating point value with time tag Operates the same as ASDU Type ID 50, except the command is time

			tagged and is only valid for the Command Age time
	Digital data type	45 - Single Command	<p>Type ID 45: C_SC_NA_1 – Single command</p> <p>SCADAPack x70 Digital objects configured with this Control direction ASDU type can also be configured with a Monitor Direction ASDU type of either:</p> <ul style="list-style-type: none"> • 1 - Single Point Information • 1 - Single Point Information (with Event) <p>Independent IOA configurations are provided for Monitor and Control direction.</p> <p>Default</p>
		46 - Double Command	<p>Type ID 46: C_DC_DA_1 – Double command</p> <p>The second point in a double command pair needs to be configured as Secondary Double Point type, with the same control direction IOA.</p>
		47 - Regulating Step Command	<p>Type ID 47: C_RC_NA_1 – Regulating step command</p> <p>The second point in a regulating step (double command) pair does not have to be configured as a regulating step command ASDU type.</p>
		58 - Single Command with Time Tag	<p>Type ID 58: C_SC_TA_1 – Single command with time tag</p> <p>SCADAPack x70 Digital objects configured with this Control direction ASDU type can also be configured with a Monitor Direction ASDU type of either:</p> <ul style="list-style-type: none"> • 1 - Single Point Information • 1 - Single Point Information (with Event)

			<p>Independent IOA configurations are provided for Monitor and Control direction.</p> <p>Operates the same as ASDU Type ID 45, except the command is time tagged and is only valid for the Command Age time.</p>
		59 - Double Command with Time Tag	<p>Type ID 59: C_DC_TA_1 – Double command with time tag</p> <p>Operates the same as ASDU Type ID 46, except the command is time tagged and is only valid for the Command Age time.</p>
		60 - Regulating Step Command with Time Tag	<p>Type ID 60: C_RC_TA_1 – Regulating step command with time tag</p> <p>Operates the same as ASDU Type ID 47, except the command is time tagged and is only valid for the Command Age time.</p>
		Secondary Double Point	<p>Use this ASDU selection for the digital object corresponding to the second point of a Double Command object pair. This object is paired with a digital object with the same control direction IOA.</p>

9.3.6 Alert Notifications Tab: Analog Objects

Use the Alert Notifications tab to enable and disable alerts and to specify when analog objects generate alert events.

Alert Notification Limits				
	Enabled	Unsolicited Events (DNP3 Only)	Value	
Limit 4H	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>	Eng.
Limit 3H	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>	Eng.
Limit 2H	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>	Eng.
Limit 1H	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>	Eng.
Limit 1L	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>	Eng.
Limit 2L	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>	Eng.
Limit 3L	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>	Eng.
Limit 4L	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>	Eng.

- [Alert Notification Limits Parameters](#)²⁸¹

9.3.6.1 Alert Notification Limits Parameters

- You can configure up to 8 limits for each analog object:
- 4 low limits: 1L, 2L, 3L, 4L
- 4 high limits: 1H, 2H, 3H, 4H

Limits can be used to generate events. They can also be used by SCADAPack x70 logic. T_SPx70_ADV_ANALOG variables that are linked with analog objects indicate the alert notification limit values and the Limit Exceeded alert state of each alert limit.

The value for each limit is a floating point value that is compared to the current engineering value of the object to determine when the limit has been transgressed.

There are no restrictions on which alert limits can be used, however they need to be configured such that the values of the limits are as follows:

$$4L \leq 3L \leq 2L \leq 1L \leq 1H \leq 2H \leq 3H \leq 4H$$

It is typically easiest to start with Limit 1H and Limit 1L and work outwards toward Limit 4H and Limit 4L. This will help you follow the rules for limits. See the [example](#)²⁸² below for additional guidance.

The following table describes the Alert Notification Limits parameters for analog objects.

Parameter	Parameter Description	Setting	Setting Description
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Enabled	<p>Determines whether change-of-value events are generated for the object when the associated limit is transgressed.</p> <p>The Exceeded states for the limits are indicated in the online parameters no matter how you set this parameter.</p>	<p>When the box is checked, change-of-value events are generated for the object when the associated limit is transgressed.</p> <p>Default: Not checked</p>	
Unsolicited Events (DNP3 only)	<p>Determines whether the DNP3 Outstation spontaneously reports DNP3 events to its DNP3 Controlling Station.</p> <p>Valid for analog objects where the Point Data Class parameter is set to Class 1, Class 2 or Class 3.</p>	<p>When the box is checked, the DNP3 Outstation spontaneously reports DNP3 events to the DNP3 Controlling Station.</p> <p>When the box is not checked, unsolicited reporting of DNP3 events for the associated limit is disabled. The SCADAPack x70 device continues to buffer events as they are generated, but does not send them to the DNP3 Controlling Station until it receives a request for events.</p> <p>Default: Not checked (disabled)</p>	
Value	<p>The value at which an event is generated if Enabled is selected for the limit.</p>	Any floating point value	<p>Compares the value entered with the object's current engineering value to determine the state of the alert limit.</p> <p>The At Limit Alert Processing^[54] parameter setting determines when the over-range limit value and the under-range limit value are considered to be transgressed.</p>

Example

In the example below, Limits 2H through 2L are set with specific values. Events are generated based on the [At Limit Alert Processing](#)^[54] parameter setting when these values are transgressed. Events are not generated for Limits 4H, 3H, 3L or 4L.

Alert Notification Limits				
	Enabled	Unsolicited Events (DNP3 Only)	Value	
Limit 4H	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>	Eng.
Limit 3H	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>	Eng.
Limit 2H	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="text" value="700"/>	Eng.
Limit 1H	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="text" value="400"/>	Eng.
Limit 1L	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="text" value="200"/>	Eng.
Limit 2L	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="text" value="-50"/>	Eng.
Limit 3L	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>	Eng.
Limit 4L	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>	Eng.

9.3.7 Basic Tab: Analog Objects

Use the Basic tab for analog objects to define analog object operation. These parameters need to be configured for each analog object regardless of the role the SCADAPack x70 device is performing in the network.

<p>Scaling</p> <p>Raw Minimum <input type="text" value="0"/></p> <p>Raw Maximum <input type="text" value="10000"/></p> <p>Engineering Minimum <input type="text" value="0"/></p> <p>Engineering Maximum <input type="text" value="100"/></p>	<p>Out of Range Limits</p> <p>Under Range Limit <input type="checkbox"/> <input type="text"/> Eng.</p> <p>Over Range Limit <input type="checkbox"/> <input type="text"/> Eng.</p> <p>Zero Threshold Limit <input type="checkbox"/> <input type="text"/> Eng.</p> <p>Unsolicited Events (DNP3 Only) <input type="checkbox"/></p>
<p>Value Deviation</p> <p>Event Deviation Type <input type="text" value="None"/></p> <p>Event Deviation <input type="text" value="100"/></p> <p>Unsolicited Events (DNP3 Only) <input type="checkbox"/></p>	<p>Periodic Event Generation</p> <p>Periodic Event Rate <input type="checkbox"/> <input type="text" value="0"/> : <input type="text" value="0"/> : <input type="text" value="0"/> h:m:s</p> <p>Periodic Event Offset <input type="text" value="0"/> s</p>

- [Scaling Parameters](#) ²⁸⁵
- [Value Deviation Parameters](#) ²⁸⁵
- [Out of Range Limits Parameters](#) ²⁸⁷
- [Period Event Generation Parameters](#) ²⁸⁹

9.3.7.1 Scaling Parameters

SCADAPack x70 analog objects have a raw (integer) value and a scaled engineering (floating point) value. Depending on how the analog object is used in the SCADAPack x70 configuration,

either the raw value or engineering value is used. Both values can be in use at the same time in different parts of the SCADAPack x70 configuration.

Four analog object parameters define the scaling conversion between raw (integer) and engineering (floating point) values. The same parameters are also used to convert from engineering to integer values. These parameters are not optional. The following range checking is performed on these parameters:

RAW_MAXIMUM > RAW_MINIMUM, ENGINEERING_MAXIMUM > ENGINEERING_MINIMUM

The following table describes the Scaling parameters for analog objects.

Parameter	Parameter Description
Raw Minimum	<p>The minimum raw value for the analog object.</p> <p>When the analog object is associated with a physical analog input or physical analog output, this value represents the user-defined integer value at the minimum electrical signal. For example, for a 4...20 mA channel:</p> <ul style="list-style-type: none"> • A value of 0 means an integer value of 0 represents 4 mA. • A value of 400 means an integer value of 400 represents 4 mA. <p>When the analog object is not associated with a physical analog input or output, set this value to the lowest expected operating integer value for the object. This could be a negative value.</p> <p>Default: 0</p> <p>Limit: Greater than -1000000000 (negative 1 Billion)</p>
Raw Maximum	<p>The maximum raw value for the analog object.</p> <p>When the analog object is associated with a physical analog input or physical analog output, this value represents the user-defined integer value at the maximum electrical signal. For example, for a 4...20 mA channel:</p> <ul style="list-style-type: none"> • A value of 10000 means an integer value of 10000 represents 20 mA. • A value of 20000 means an integer value of 20000 represents 20 mA. <p>When the analog object is not associated with a physical analog input or output, set this value to the highest expected operating integer value for the object.</p> <p>Default: 10000</p> <p>Limit: Less than 1000000000 (1 Billion)</p>
Engineering Minimum	<p>The minimum engineering, or floating point, value for the analog object.</p> <p>This is the floating point engineering units value when the object value is at the Raw Minimum integer value.</p>

	Default: 0
Engineering Maximum	<p>The maximum engineering, or floating point, value for the analog object.</p> <p>This is the floating point engineering units value when the object value is at the Raw Maximum integer value.</p> <p>Default: 100</p>

9.3.7.2 Value Deviation Parameters

The following table describes the Value Deviation parameters for analog objects.

Parameter	Parameter Description	Setting	Setting Description
Event Deviation Type	Used to detect changes in an analog object's current value.	Percentage of Span	<p>An event is generated when a value change exceeds the Event Deviation percentage. This setting works only when:</p> <ul style="list-style-type: none"> The Alert Inhibit parameter is set to No The DNP3 Point Data Class parameter is set to Class 1, Class 2, or Class 3 <p>OR</p> <ul style="list-style-type: none"> The IEC 60870-5-104 ASDU is configured as a "with Event" type <p>With this setting, the Event Deviation percentage is a percentage of the analog object's full-scale range as defined by the Engineering Minimum and Engineering Maximum parameters.</p>
		Absolute	<p>An event is generated when a value change exceeds the absolute value by the Event Deviation Raw Units. This setting works only when:</p> <ul style="list-style-type: none"> The Alert Inhibit parameter is set to No The DNP3 Point Data Class parameter is set to Class 1, Class 2, or Class 3 <p>OR</p> <ul style="list-style-type: none"> The IEC 60870-5-104 ASDU is configured as a "with Event" type <p>If the DNP3 Static Group and Variation or IEC 60870-5-104 ASDU type for the object is set to a floating point type, then the absolute</p>

			<p>value deviation applies to the engineering value of the object.</p> <p>If the DNP3 Static Group and Variation or IEC 60870-5-104 ASDU type for the object is not set to a floating point type, the absolute value deviation applies to the raw value of the object.</p>
		Integration	<p>An event is generated when a value change exceeds the integrated value by the Event Deviation Unit-Seconds. This setting works only when:</p> <ul style="list-style-type: none"> • The Alert Inhibit parameter is set to No • The DNP3 Point Data Class parameter is set to Class 1, Class 2, or Class 3 <p>OR</p> <ul style="list-style-type: none"> • The IEC 60870-5-104 ASDU is configured as a "with Event" type <p>The analog object deviation is calculated as the sum of the value change and time products since the last value that was reported as an event.</p> <p>A small value change over a long time period can contribute to the deviation as well as a large value change over a short time period.</p> <p>If the DNP3 Static Group and Variation or IEC 60870-5-104 ASDU type for the object is set to a floating point, then the value deviation applies to the engineering value of the object over time.</p> <p>If the DNP3 Static Group and Variation or IEC 60870-5-104 ASDU type for the object is not set to a floating point, the value deviation applies to the raw value of the object over time. The time constant part of the integration-product is measured in seconds.</p>
		None	<p>An event is not generated when the analog object value changes.</p> <p>Default</p>
Event Deviation	The value change required to generate an event for the object		<p>Default: 100</p> <p>See the Setting Description for each Event Deviation Type.</p>

	<p>dependent on the chosen Event Deviation Type.</p> <p>The higher the value, the more significant the value change required to generate an event.</p>	
<p>Unsolicited Events (DNP3 only)</p>	<p>Determines whether the DNP3 Outstation spontaneously reports events to the DNP3 Controlling Station when the Event Deviation is exceeded.</p> <p>This parameter is only valid when the DNP3 Point Data Class parameter is set to Class 1, Class 2 or Class 3.</p>	<p>When the box is checked, the DNP3 Outstation spontaneously reports events to the DNP3 Controlling Station when a deviation event is generated.</p> <p>Default: Not checked (disabled).</p>

9.3.7.3 Out of Range Limits Parameters

The table below describes the Out of Range limits parameters for analog objects.

Use these parameters to specify analog object behavior when engineering values are out of range. Analog objects with a DNP3 **Static Group and Variation** or **IEC 60870-5-104 ASDU** type that is set to one of the engineering float options provide indication of the current engineering value. To see the object value, [check the Object Value for the object](#) ^[382] in the online parameters.

Parameter	Parameter Description	Setting	Setting Description
Under Range Limit	<p>The value to compare with the object's current engineering value in order to determine the state of the under range property.</p> <p>Under range quality is indicated in SCADAPack x70 logic T_SPx70_xxx types for variables linked with analog objects. It is also available as OUT_OF_RANGE through the</p>	Any floating point value	<p>Compares the value entered with the object's current engineering value. If the current value is less than the under-range limit, the analog object reports that it is under-range.</p> <p>The At Limit Alert Processing ^[54] parameter setting determines when the over-range limit value and the under-range limit value are considered to be transgressed.</p>

	<p>DNP3 or IEC 60870-5-104 quality flags returned by the SCADAPack x70 device.</p> <p>This parameter is active only when the box is checked.</p>		<p>Default: Unchecked</p>
Over Range Limit	<p>The value to compare with the object's current engineering value to determine the state of the over range property.</p> <p>Over range quality is indicated in SCADAPack x70 logic T_SPx70_xxx types for variables linked with analog objects. It is also available as OUT_OF_RANGE through the DNP3 or IEC 60870-5-104 quality flags returned by the SCADAPack x70 DNP3 device.</p> <p>This parameter is active only when the box is checked.</p>	Any floating point value	<p>Compares the value entered with the object's current engineering value. If the current value is greater than the Over Range Limit, the analog object reports that it is over range.</p> <p>The At Limit Alert Processing^[54] parameter setting determines when the over-range limit value and the under-range limit value are considered to be transgressed.</p> <p>Default: Unchecked</p>
Zero Threshold Limit	<p>Constrains the current engineering value. If the engineering value is below the Zero Threshold Limit, the current engineering value is set to 0.0.</p> <p>This parameter does not apply to analog objects that are connected to physical analog output channels.</p> <p>This parameter is active only when the box is checked</p>	Any floating point value	<p>Compares the value entered to the current engineering value for the Zero Threshold Limit.</p> <p>Default: Unchecked</p>
Unsolicited Events (DNP3 only)	<p>Determines whether the DNP3 Outstation spontaneously reports events to the DNP3 Controlling Station when the Range Limit is exceeded.</p> <p>This parameter is valid when the DNP3 Point Data Class parameter is set to Class 1, Class 2 or Class 3.</p>		<p>When the box is checked, the DNP3 Outstation spontaneously reports events for under range and over range to the DNP3 Controlling Station.</p> <p>Default: Unchecked. Parameter is not active.</p>

9.3.7.4 Periodic Event Generation Parameters

The following table describes the Periodic Event Generation parameters for analog objects. Events are generated based on the settings for the DNP3 **Static Group and Variation** and **Point Data Class** parameters for the object or the **IEC 60870-5-104 ASDU** parameters.

Parameter	Parameter Description	Setting	Setting Description
Periodic Event Rate	The frequency at which events are generated for the analog object. This parameter is active only when the box is checked.	Range: 10...999999999 seconds (s) expressed in hours, minutes and seconds	Default: Unchecked. Parameter is not active.
Periodic Event Offset	The offset from Coordinated Universal Time (UTC) for the Periodic Event Rate. Use this parameter to specify when event generation begins.	0...999999999 seconds (s)	The number of seconds after Monday at 00:00:00 that the Period Event Rate starts. Default: 0

9.3.8 Advanced Tab: Analog Objects

Use the Advanced tab for analog objects if you need to customize how the analog object reports actual values compared to configured thresholds.

Alert Notifications

Alert Set Time Deadband s

Alert Clear Time Deadband s

Alert Clear Value Deadband Eng.

Event/Alert Inhibit

Rate of Change

Rate of Rise %

Rate of Fall %

Period s

No Change

Expected Change %

Period s

- [Analog Alert Notifications Parameters](#)²⁸⁹
- [Rate of Change Parameters](#)²⁹¹
- [No Change Parameters](#)²⁹²

9.3.8.1 Analog Alert Notifications Parameters

The following table describes time and value deadband parameters that affect the Alert Notifications behavior for analog objects.

When an alert limit has been crossed, and deadbands are configured, a timer starts in the device. This is referred to as an Active Deadband Timer.

While the object has one or more active deadband timers, the SCADAPack x70 device withholds object event data for the analog object from DNP3 and IEC 60870-5-104 responses.

Each alert limit for an analog object is processed individually, so a single object can have several Active Deadband Timers.

See [Active Deadband Setup > Filter Class 0 Data](#) ^[131] to configure additional DNP3 effects on objects with active deadband timers.

If the deadband times are configured to 0, or when the timers expire, the SCADAPack x70 device reports the object's event and current values in DNP3 and IEC 60870-5-104 responses as per its event configuration.

Parameter	Parameter Description	Setting	Setting Description
Alert Set Time Deadband	The amount of time that the value of an analog object needs to have exceeded an alert limit before it is considered to have transgressed the limit.	0...65535 seconds (s)	Default: 0, no time deadband
Alert Clear Time Deadband	The amount of time that the value of an analog object needs to have returned within the alert limit before it is considered within the limit.	0...65535 seconds (s)	Default: 0, no time deadband
Alert Clear Value Deadband	Determines when a transgressed limit alert is cleared. When an alert limit has been transgressed, an object's value needs to return to within the alert limit and the deadband before it is cleared. This helps to avoid generating excessive alerts when a value is fluctuating around an alert limit. A single value deadband is specified as a floating-point number that operates on each of the eight limits. The Alert Clear Value Deadband is subtracted from the High limits and added to the Low limits.		Maximum value: The absolute value of (Engineering Maximum - Engineering Minimum) Minimum value: 0 Default: 0, no value deadband

Event/Alert Inhibit	Determines whether events are collected and reported for the object. The setting for this parameter can be changed by SCADAPack x70 logic.	No	Events for the object are collected and reported. Default setting
		Yes	Events for the object are not collected or reported. Alerts for the object are not generated.

9.3.8.2 Rate of Change Parameters

The table below describes the Rate of Change parameters for analog objects.

Use these parameters to determine if an analog object value is rising or falling too rapidly for your requirements. The SCADAPack x70 device compares the current engineering value for the object with its value over the specified time period and calculates the rate of change. The rate of rise and rate of fall calculation is evaluated every time the current engineering value of the analog object changes.

To see the object value, see [Reading Object Values from the Device](#)³⁸² in the online parameters.

Parameter	Parameter Description	Setting	Setting Description
Rate of Rise	The percentage of the analog object's full scale engineering range by which the analog value is not expected to rise, within the time Period	0...100 percent (%)	Default: 100% meaning disabled Other configured value: If the object's analog value's rise exceeds the Rate of Rise percentage during the time Period, the following occurs: <ul style="list-style-type: none"> • The RoR Exceeded object quality status is activated and shown in RemoteConnect online Object Browser lists • The ROR_EXCEEDED_QUAL BOOL field of a T_SPx70_ADV_ANALOG type logic variable changes from 0 to 1 • The value of the BOOL attribute

			ATTRIB_RateOfRiseAlert for the object changes from value 0 to 1 (when using the OBJ_ReadField function block - see Function Blocks Technical Reference manual)
Rate of Fall	The percentage of the analog object's full scale engineering range by which the analog value is not expected to fall, within the time Period	0...100 percent (%)	<p>Default: 100% meaning disabled</p> <p>Other configured value: If the object's analog value's fall exceeds the Rate of Fall percentage during the time Period, the following occurs:</p> <ul style="list-style-type: none"> • The RoF Exceeded object quality status is activated and shown in RemoteConnect online Object Browser lists • The ROF_EXCEEDED_QUAL BOOL field of a T_SPx70_ADV_ANALOG type logic variable changes from 0 to 1 • The value of the BOOL attribute ATTRIB_RateOfFallAlert for the object changes from value 0 to 1 (when using the OBJ_ReadField function block - see Function Blocks Technical Reference manual)
Period	The time period over which the rate of rise and rate of fall calculations are evaluated.	0...65535 seconds (s)	Default: 0 s

9.3.8.3 No Change Parameters

The table below describes the No Change parameters for analog objects.

Use these parameters to determine if an analog object value that is expected to change is remaining static. The SCADAPack x70 device compares the current engineering value for the object with its value over the specified time period and calculates the change percentage. The calculation is performed every time the current engineering value of the analog object changes.

To see the object value, see [Reading Object Values from the Device](#)^[382] in the online parameters.

Parameter	Parameter Description	Setting	Setting Description
Expected Change	The percentage of the analog object's full scale engineering range by which the analog value is expected to change within the time Period	0...100 percent (%)	Default: 0% meaning disabled Other configured value: If the object's analog value does not change by the Expected Change percentage during the time Period, the following occurs: <ul style="list-style-type: none"> • The No Change object quality status is activated and shown in RemoteConnect online Object Browser lists • The NO_CHANGE_QUAL BOOL field of a T_SPx70_ADV_ANALOG type logic variable changes from 0 to 1 • The value of the BOOL attribute ATTRIB_NoChangeAlert for the object changes from value 0 to 1 (when using the OBJ_ReadField function block - see Function Blocks Technical Reference manual)
Period	The time period over which the analog object's value change is evaluated.	0...65535 seconds (s)	Default: 0 s

9.3.9 Basic Tab: Digital Objects

Use the Basic tab for digital objects to define digital object operation. These parameters need to be configured for each digital object regardless of the role the SCADAPack x70 device is performing in the network. The figure below shows the parameters for digital objects that are not associated with physical I/O.

Event Attributes

Alert Set Time Deadband s

Alert Clear Time Deadband s

Unsolicited (DNP3 Only)

Alert Notifications

Event/Alert Inhibit

Alert Active State

The figure below shows the parameters for digital objects that are associated with physical digital inputs on SCADAPack x70 devices and on 6000 series I/O modules.

- [Physical I/O Performance Parameters](#) ²⁹⁴
- [Event Attributes Parameters](#) ²⁹⁵
- [Alert Notifications Parameters](#) ²⁹⁶
- [Periodic Event Generation Parameters](#) ²⁹⁶

9.3.9.1 Physical I/O Performance Parameters

The following table describes the Physical I/O Performance parameters for digital objects. These parameters can only be configured for digital objects that are associated with physical digital inputs on SCADAPack x70 devices and on 6000 series I/O modules.

Parameter	Parameter Description	Setting	Setting Description
Debounce Time	The length of time that the physical digital input must remain in a new state before the state is reported as changed. Use this parameter to avoid over-reporting of state changes in an environment where fast state fluctuations can occur.	0...2500 milliseconds (ms)	Default: 0 ms, no debounce time The debounce time is validated in multiples of 10 for the following: <ul style="list-style-type: none"> • SCADAPack 575: digital input channels 1 to 16 • SCADAPack 474: digital input channels 5 to 20 • 6601 input output module and 6607 input output module: digital input associated objects
Invert State	The state of the digital input or output in the object database needs to indicate the opposite state compared to its physical state.	No	The current state for the object is the same as the physical hardware state as long as the physical

			hardware state remains the same for the duration of the Debounce Time. Default.
		Yes	The current state for the point is the inverse of the physical hardware state.

9.3.9.2 Event Attributes Parameters

The following table describes the Event Attributes parameters for digital objects.

When an alert limit has been crossed, and deadbands are configured, a timer starts in the device. This is referred to as an Active Deadband Timer.

While the object has an active deadband timer, the SCADAPack x70 device withholds DNP3 and IEC 60870-5-104 object event data for the digital object.

See [Active Deadband Setup > Filter Class 0 Data](#)^[131] to configure additional DNP3 effects on objects with active deadband timers.

If the deadband times are configured to 0, or when the timers expire, the SCADAPack x70 device reports the object's event and current state in DNP3 and IEC 60870-5-104 responses as per its event configuration.

Parameter	Parameter Description	Setting	Setting Description
Alert Set Time Deadband	The amount of time that the value of a digital object needs to have exceeded an alert limit before it is considered to have breached the limit.	0...65535 seconds (s)	Default: 0 s, no time deadband
Alert Clear Time Deadband	The amount of time that the value of a digital object needs to have returned within the alert limit before it is considered within the limit.	0...65535 seconds (s)	Default: 0 s, no time deadband
Unsolicited (DNP3 only)	Determines whether the DNP3 Outstation spontaneously reports events to the DNP3 Controlling Station when there is a change in state for the DNP3 point. The Point Data Class for the point determines the event class in which the event is reported. The event is timestamped with the time the change occurred.	When the box is checked, the DNP3 Outstation spontaneously reports state changes for the point to the DNP3 Controlling Station. Default: Not checked (disabled).	

	This parameter is only valid when the DNP3 Point Data Class parameter is set to Class 1, Class 2 or Class 3.	
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9.3.9.3 Alert Notifications Parameters

The following table describes the Alert Notifications parameters for digital objects.

Parameter	Parameter Description	Setting	Setting Description
Event/Alert Inhibit	Determines whether event collection and reporting for the object are inhibited.	No	Event collection and reporting for the object are not inhibited. This means that events for the object are collected and reported. Default setting.
		Yes	Event collection and reporting for the object are inhibited. This means that events for the object are neither collected nor reported, and alerts for the object are not generated. SCADAPack x70 logic can change the Event/Alert Inhibit parameter of an object.
Alert Active State	Configures the Value of the digital object that is considered to be an alert condition. The object Value is displayed in the online parameters.	On	When this configuration is set to On, the object is considered to have an alert condition when the Value is On. Default
		Off	When this configuration is set to Off, the object is considered to have an alert condition when the Value is Off.

9.3.9.4 Periodic Event Generation Parameters

The following table describes the Periodic Event Generation parameters for digital objects. These parameters are displayed only when Enable Data Logging is configured in the [Project Settings](#)^[42].

Parameter	Parameter Description	Setting	Setting Description
Periodic Event Rate	The frequency at which events are generated for the analog object. This parameter is active only when the box is checked.	Range: 10...999999999 seconds (s) expressed in hours, minutes and seconds	Default: Unchecked. Parameter is not active.
Periodic Event Offset	The offset from Coordinated Universal Time (UTC) for the Periodic Event Rate. Use this parameter to specify when event generation begins.	0...999999999 seconds (s)	The number of seconds after Monday at 00:00:00 that the Period Event Rate starts. Default: 0

9.3.10 Basic Tab: Counter Objects

Use the Basic tab for counter objects to define counter object operation. These parameters need to be configured for each counter object regardless of the role the SCADAPack x70 device is performing in the network.

Event Attributes

Counter Change Deviation

Counter High Limit

Unsolicited (DNP3 Only)

Alert Notifications

Event/Alert Inhibit

Periodic Event Generation

Periodic Event Rate : : h:m:s

Periodic Event Offset s

Reset Period min

- [Counter Event Attributes Parameters](#) ²⁹⁷
- [Counter Alert Notifications Parameters](#) ²⁹⁸
- [Periodic Event Generation Parameters](#) ²⁹⁹

9.3.10.1 Counter Event Attributes Parameters

The following table describes the Event Attributes parameters for counter objects.

Parameter	Parameter Description	Setting	Setting Description
Counter Change Deviation	Used to detect changes in a counter value.	Any positive integer value up to	An event is generated when a value change exceeds this setting. This parameter requires the following: <ul style="list-style-type: none"> • The Alert Inhibit parameter is set to No

		999999 999	<ul style="list-style-type: none"> The DNP3 Point Data Class parameter is set to Class 1, Class 2 or Class 3 <p>OR</p> <ul style="list-style-type: none"> The IEC 60870-5-104 ASDU is configured as a "with Event" type <p>Default: 50</p>
Counter High Limit	The value at which the counter limit is considered to be exceeded.	Any positive integer value up to 999999999	<p>An event is generated when the counter value exceeds this limit.</p> <p>This parameter requires the following:</p> <ul style="list-style-type: none"> The Alert Inhibit parameter is set to No The DNP3 Point Data Class parameter is set to Class 1, Class 2 or Class 3 <p>OR</p> <ul style="list-style-type: none"> The IEC 60870-5-104 ASDU is configured as a "with Event" type <p>Default: 0</p>
Unsolicited (DNP3 only)	<p>Determines whether the DNP3 Outstation spontaneously reports events to the DNP3Controlling Station when the Counter High Limit is exceeded or the Counter Change Deviation is exceeded.</p> <p>The event is timestamped with the time the change occurred.</p>		<p>When the box is checked, the DNP3 Outstation spontaneously reports events to the DNP3 Controlling Station when the Counter High Limit is exceeded and each time the Counter Change Deviation is exceeded.</p> <p>Default: Not checked (disabled).</p>

9.3.10.2 Counter Alert Notifications Parameters

The following table describes the Alert Notification parameters for counter objects.

Parameter	Parameter Description	Setting	Setting Description
Event/Alert Inhibit	Determines whether events are collected and reported for the object.	No	<p>Events for the object are collected and reported.</p> <p>Default.</p>

		Yes	Events for the object are not collected or reported. Alerts for the object are not generated.
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9.3.10.3 Periodic Event Generation Parameters

The following table describes the Periodic Event Generation parameters for counter objects. Events are generated based on the settings for the **Static Group and Variation** and **Point Data Class** parameters for the object.

Parameter	Parameter Description	Setting	Setting Description
Periodic Event Rate	The frequency at which events are generated for the analog object. This parameter is active only when the box is checked.	Range: 10...999999999 seconds (s) expressed in hours, minutes and seconds	Default: Unchecked. Parameter is not active.
Periodic Event Offset	The offset from Coordinated Universal Time (UTC) for the Periodic Event Rate. Use this parameter to specify when event generation begins.	0...999999999 seconds (s)	The number of seconds after Monday at 00:00:00 that the Period Event Rate starts. Default: 0
Reset Period	The frequency at which the counter object value is reset to 0 after an event has been generated to record the current counter value.	0...999999999 minutes (min)	Default: 0

9.3.11 Data Logging Tab

Use the Data Logging tab to enable data logging on a particular object. See [Data Logging Object Parameters](#)^[300].

Data logging stores events for SCADAPack x70 objects for changes in data and quality values in the same way that events are generated for DNP3 and IEC 60870-5-104 protocols. As such, set up basic protocol parameters for event generation for one of these protocols (even if the protocols are not being used) for event logging to store event data.

For DNP3, set the following object configurations (see [DNP3 Tab](#)^[268]):

- DNP3 Point Number
- Point Data Class to one of Class 1, Class 2 or Class 3

Or, for IEC 60870-5-104, set Controlling Station Enabled (see [IEC 60870-5-104 Objects General Parameters](#)^[274]) and the following object configurations (see [IEC 60870-5-104 Tab](#)^[274]):

- Monitor Direction IOA
- ASDU to a selection that includes “with Event”

For analog objects

For digital objects

For counter objects

9.3.11.1 Data Logging Object Parameters

The following table describes the Data Logging parameters that are displayed for each object.

Parameter	Parameter Description	Setting	Setting Description
Enable data Logging	When checked, data logging is enabled.		Default: unchecked
Data Log Name	Select a previously added ^[314] data log to add the object to.		When data logging is enabled, if the default log SCADAPack_x70_log exists, it is

			selected by default. Otherwise, the first data log in the collection is selected by default.
Selected Events	Selects which events are logged for each object.	Analog <ul style="list-style-type: none"> • Deviation • Alerts • Out of range • Periodic • Object Quality Change • Logic 	Deviation <ul style="list-style-type: none"> • percentage, absolute value, integration Alerts <ul style="list-style-type: none"> • 4H, 3H, 2H, 1H, 1L, 2L, 3L, 4L
		Counter <ul style="list-style-type: none"> • Deviation • High Limit • Periodic • Object quality change • Logic 	Deviation <ul style="list-style-type: none"> • absolute value
		Digital <ul style="list-style-type: none"> • Change of state • Periodic • Object quality change • Logic 	

9.4 Changing the Object Configuration

You may want to change the parameters of a database object to enable or modify options.

For example, before you can access a database object in the SCADAPack x70 Logic Editor, you need to assign a **Logic Variable Type** and a **Logic Task** to it in the SCADAPack x70 configuration software.

The procedure below describes how to change the parameter settings for one database object at a time. If available, use the **Next** and **Prev** buttons in the Object Editor to move through the object table entries.

If you need to change the parameter settings for many objects at once, the most efficient approach is to export the parameters to an Excel file, edit them, then import the parameters

back into the SCADAPack x70 configuration software. For details, see [Exporting and Importing Object Parameters](#) ^[346].

To change the configuration for a database object

1. On the **Objects** tab, select **Object Configuration** or **Object Browsers > Browser List Name**.

Basic Configuration

Object Configuration

Add Object Copy Objects Remove Objects Display Options Default View Clear Filters

Displaying 70 of 70 objects Applied Filter: Organized by 'Source Type'

	Name		Source Details	Logic Variable Type	Modbus Register	DNP3 Point Number
Physical I/O Channel : 62						
1	PIO_SP474_AI1		SP474:0, AI1	T_SPx70_DINT		
2	PIO_SP474_AI10		SP474:0, AI10	T_SPx70_DINT		
3	PIO_SP474_AI11		SP474:0, AI11	T_SPx70_DINT		
4	PIO_SP474_AI12		SP474:0, AI12	T_SPx70_DINT		
5	PIO_SP474_AI2		SP474:0, AI2	T_SPx70_DINT		
6	PIO_SP474_AI3		SP474:0, AI3	T_SPx70_DINT		
7	PIO_SP474_AI4		SP474:0, AI4	T_SPx70_DINT		
8	PIO_SP474_AI5		SP474:0, AI5	T_SPx70_DINT		
9	PIO_SP474_AI6		SP474:0, AI6	T_SPx70_DINT		
10	PIO_SP474_AI7		SP474:0, AI7	T_SPx70_DINT		
11	PIO_SP474_AI8		SP474:0, AI8	T_SPx70_DINT		
12	PIO_SP474_AI9		SP474:0, AI9	T_SPx70_DINT		
13	PIO_SP474_AO1		SP474:0, AO1	T_SPx70_DINT		

2. In the Object Configuration table, double-click on the row for the object you want to reconfigure.

The Object Editor is displayed, as shown below. The protocol tabs displayed depend on the role selected for the SCADAPack x70 device when you created the project. The object tabs displayed depend on the object **Data Type**: analog, digital or counter.

The screenshot shows the 'Object Editor' window with the following configuration:

- Name:** PIO_SP575_DI2
- Object Grouping:** PIO_SP575
- Comment:** (Empty text box)
- Data Type:** Digital
- Logic Variable Type:** T_SPx70_BOOL
- Logic Task:** MAST
- Exclusive Logic Control:**

The 'Associations' tab is selected, showing a 'Data Source' pop-up window with the following details:

- Source Type:** Physical I/O Channel
- Source Details:**
 - I/O Name: SP575
 - I/O Type: SCADAPack 575
 - Address: 0
 - Channel: DI2
 - Data Type: Digital Input

3. In the Object Editor, change the object parameters, as required.

- [Object Configuration Parameters](#) ^[249]
- [Associations Tab](#) ^[265]
- [DNP3 Tab](#) ^[268]
- [Modbus Tab](#) ^[272]
- [IEC 60870-5-104 Tab](#) ^[274]
- [Alert Notifications Tab: Analog Objects](#) ^[280]
- [Basic Tab: Analog Objects](#) ^[285]
- [Advanced Tab: Analog Objects](#) ^[289]
- [Basic Tab: Digital Objects](#) ^[293]
- [Basic Tab: Counter Objects](#) ^[297]

4. Click **Ok**.

5. On the **Object Configuration** page, click **Apply**.

9.5 Managing the Offline Browser List

Use the offline Browser List to create permanent browser lists that contain object and system data references. These permanent browser lists, which are saved in the SCADAPack RemoteConnect project and SCADAPack x70 device configuration, can also be used in Online mode. See [Managing the Online Object Browser List](#) ^[384].

You can create browser lists to read and write object or system data values to a SCADAPack x70 device when SCADAPack RemoteConnect is online.

When you create a new project, a default browser list called SCADAPack I/O is created.

When you add objects to a browser list, the maximum number of objects is 2000.

Configuring an object's [Object Grouping](#)^[250] attribute should be considered in the context of a collection of like objects. This can greatly assist in adding objects to a browser list. See [Grouping Objects](#)^[246] for more information.

The following table lists the fields that are present in the offline Browser List.

Field Name	Description	
Name	The name of the object	
Type	Analog Digital Counter System Group	
Display Format	Digital	BOOL
	Analog	DINT REAL (Eng) INT UINT OS TIME Binary (Raw) Hex (Raw) Hex (Eng)
	Counter	UDINT UINT Binary Hex
	String	Hex ASCII
Preset Value	<p>Use this field to enter preset values for sets of objects that can be written to the SCADAPack x70 device.</p> <p>Double-click the row to enter a value in this field.</p> <p>The value has the same format as the Display Format field for the specified row.</p> <p>See Working with Preset Values^[312].</p>	

Source Type	The item with which the object is associated. For example, an object can be associated with a: Physical I/O channel Physical I/O status DNP3 Remote Point DNP3 Status and Control Modbus Scanner Modbus Status and Control System Data Group System Data Reference
Source Details	Information about the data source for the object
DNP3 Point Number	The identifier for the DNP3 point
Modbus Register	The identifier for the Modbus address

See the following topics for more information:

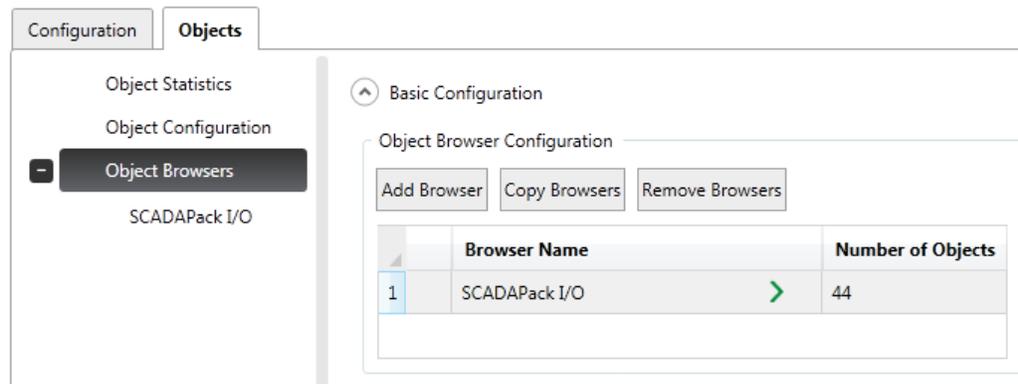
- [Adding a Browser List](#) ^[305]
- [Copying or Removing a Browser List](#) ^[306]
- [Adding an Entry to the Browser List](#) ^[308]
- [Removing Entries from a Browser List](#) ^[310]
- [Editing the Display Format and Preset Value](#) ^[311]
- [Working with Preset Values](#) ^[312]

9.5.1 Adding a Browser List

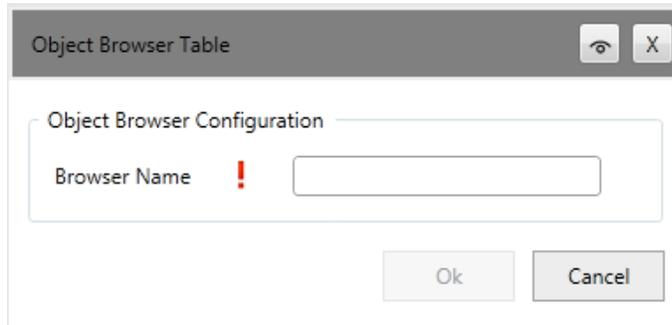
The procedure below explains how to add a browser list. This browser list is saved in the SCADAPack RemoteConnect project and SCADAPack x70 device configuration.

To add a browser list

1. On the **Objects** tab, select **Object Browsers**.



2. Click **Add Browser**.



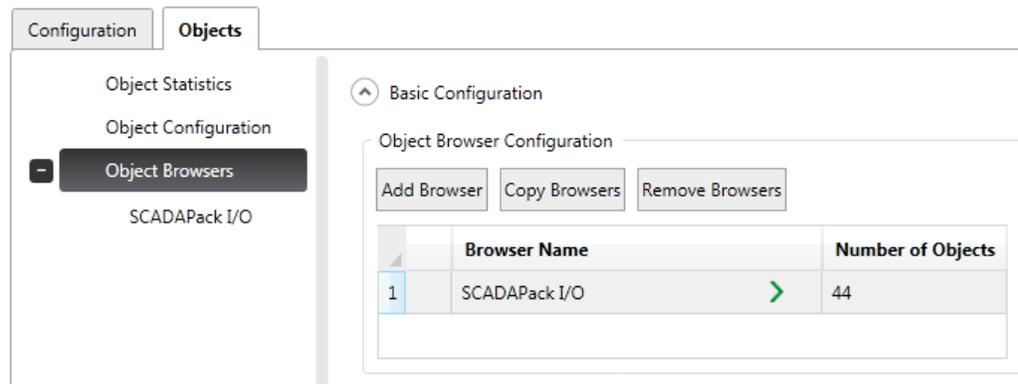
3. In the **Browser Name** field, enter a name that indicates the purpose of the list and the content that you intend to define.
4. Click **Ok**.
5. Click **Apply**.

9.5.2 Copying or Removing a Browser List

- [Copying a Browser List](#)^[306]
- [Removing a Browser List](#)^[307]

To copy a browser list

1. On the **Objects** tab, select **Object Browsers**.



2. Select one or more **Browser Names**.
3. Click **Copy Browsers**.



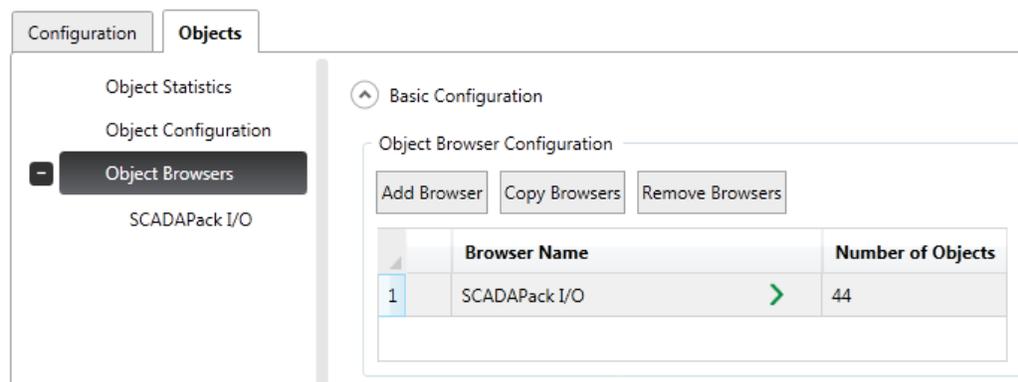
Are you sure you want to copy the selected entries?



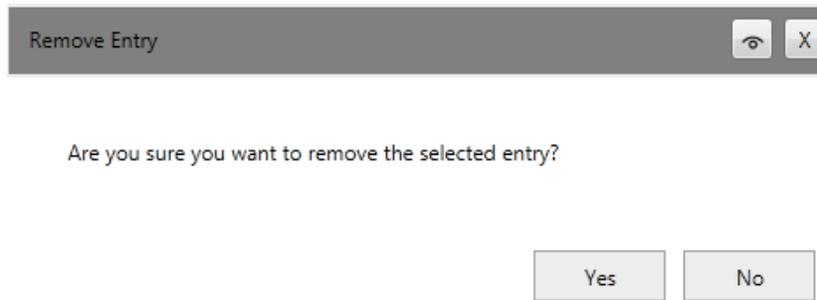
4. Click **Yes**.
5. Click **Apply**.

To remove a browser list

1. On the **Objects** tab, select **Object Browsers**.



2. Select one or more **Browser Names**.
3. Click **Remove Browsers**.



4. Click **Yes**.
3. Click **Apply**.

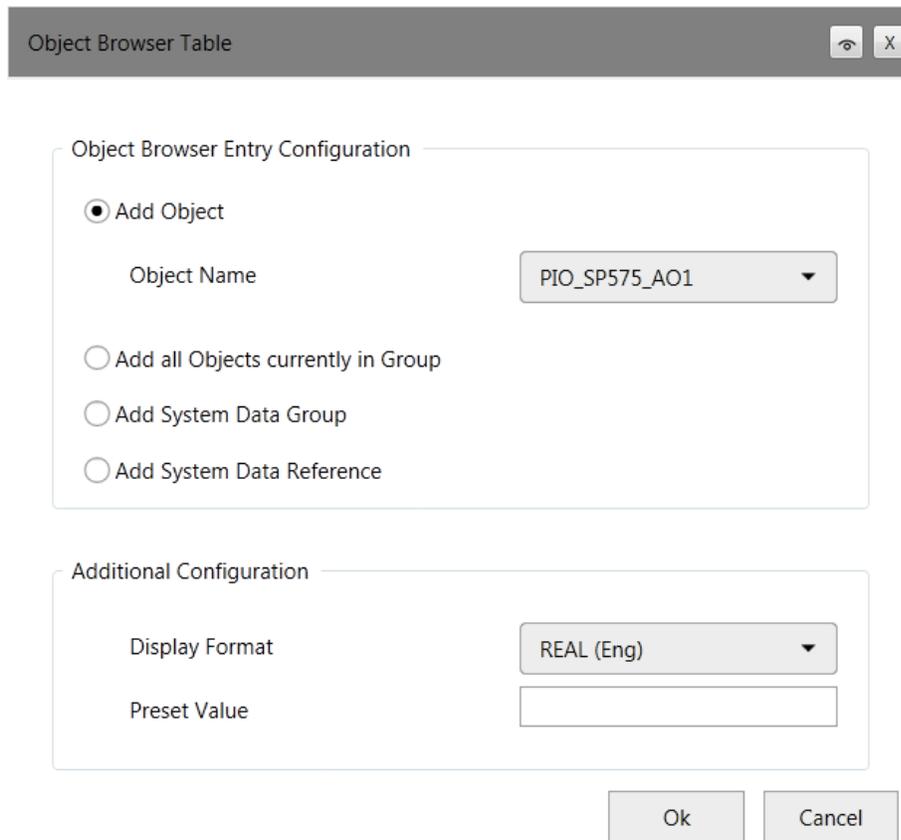
9.5.3 Adding an Entry to the Browser List

You can add several kinds of objects to a browser list:

- Individual objects
- All objects in a group
 - Creates an instantaneous snapshot of all of the objects in the same group. The objects need to have the same Object Group identified. See [Grouping Objects](#) ^[246].
 - This browser list is not dynamically updated if objects are reconfigured to modify their group attribute
 - The maximum number of objects in a browser list is 2000
- A System Data Group
 - Automatically filled in when data is read from the SCADAPack x70 device
- A System Data Reference
 - See the System Data topic in the Operations Technical Reference manual for more information

To add an entry to the browser list

1. Navigate to **Objects > Object Browsers > *Browser List Name*** and click **Add Entry**.



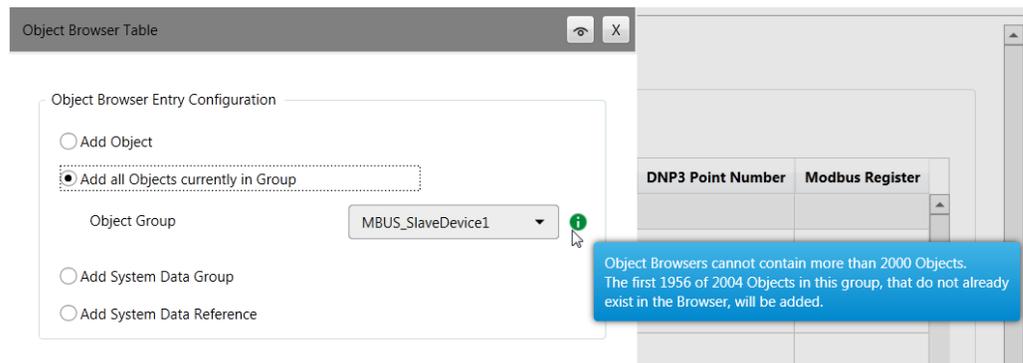
2. Choose one of the following:

- **Add Object**

- Click the drop-down list and select the **Object Name** to add

- **Add all Objects currently in Group**

- Click the drop-down list and select the **Object Group** to add
- The maximum number of objects in a browser list is 2000. If the list will have more than 2000 after you add the objects, an information icon is displayed. If you hover the mouse over the icon, a message similar to the following is displayed:



- **Add System Data Group**
 - Click the drop-down list and select the **System Data Group** to add
 - **Add System Data Reference**
 - Click the drop-down list and select the **Object Group** and then the **System Data Reference Name** to add
3. If available, click the drop-down list for the **Display Format** and select the appropriate format for the object.

If no display format is selected, the default display format is applied as follows:

Object	Default Display Format
Analog	DINT
Digital	BOOL
Counter	UDINT

4. Optionally, enter a **Preset Value** in the Offline Browser list to pre-define a **Proposed Value** when the browser list is opened in Online mode.

See [Working with Preset Values](#) ³¹².

5. Click **Ok**.
6. Click **Apply**.

9.5.4 Removing Entries from a Browser List

To remove entries from a browser list

1. Navigate to **Objects > Object Browsers > Browser List Name**.
2. Select one or more browser list entries.
3. Click **Remove Entries**.



Are you sure you want to remove the selected entry?



4. Click **Yes**.
5. Click **Apply**.

9.5.5 Editing the Display Format and Preset Value

You may want to edit the default format displayed online, depending on the purpose of the data or the format you would like to see. For example, matching the logic variable type, to see the protocol representation, debugging communications packets, to view the Engineering value instead of raw value, etc.

Or, you may want to add Preset Values for specific objects so that you can write those values to the SCADAPack x70 device.

To edit the Display Format and Preset Value of the browser entry

1. Navigate to **Objects > Object Browsers > *Browser List Name*** and click **Edit Entry**.
2. From the **Object Browser Table** drop-down list, select a format.

The following table lists the display formats available.

Type	Display Formats Available
Digital	BOOL
Analog	DINT REAL (Eng) INT UINT OS TIME Binary (Raw) Hex (Raw) Hex (Eng)
Counter	UDINT UINT Binary Hex
String	Hex ASCII
System Data Reference and System Data Group	BOOL

<p>Because the format is not known until the value is read from the device, you can choose from the formats available.</p>	<p>DINT REAL (Eng) Binary (Raw) Hex (Raw) Hex (Eng) OS TIME UDINT ASCII</p>
--	---

- Optionally, enter a **Preset Value** in the Offline Browser list to pre-define a **Proposed Value** when the browser list is opened in Online mode.

See [Working with Preset Values](#) ³¹².

- Click **Ok**.
- Click **Apply**.

9.5.6 Working with Preset Values

You can create one or more pre-configured lists of values using the **Preset Value** field. These lists can be used, for example, to configure a SCADAPack x70 device after a hardware replacement, to provide a set of pre-defined values when commissioning a system, to compare initial settings with current operating settings, etc.

An outline of the basic steps are as follows:

- In the Offline Browser, enter **Preset Values** for each object that will later be updated in the SCADAPack x70 device.
- Apply the updates.
- Save the project file.
- At the site, open the project file.
- Go into Online mode and open the Object Browser.

The **Preset Values** are automatically populated into the Object Browser **Proposed Value** fields.

- To write all the **Proposed Values** to the device, click **Write All**.

Alternatively, select one or more rows to be written to the device and click **Write Selected**.

See [Transferring Current Values to the Offline Preset Values](#) ³⁹³ for more information.

9.6 Configuring Data Logging

This screen is displayed only when Enable Data Logging is configured in the [Project Settings](#) ⁴².

You can use data logging to log the values of database objects to files when events occur on the object.

A data log is a named collection of files containing the recorded values of one or more SCADAPack x70 RTU objects.

The following information is recorded for each event in a data logging file:

- Sequence number
- Time stamp
- Object name
- Object value
- Object type (e.g. Analog, Digital, Counter)
- Object quality
- Event type (e.g. periodic, deviation, out of range, etc.)

When logging is enabled, the current value of the object is logged when an event trigger occurs.

The data log files are stored in CSV and compressed ZIP format files. They can be saved to the SCADAPack x70 device file system, or optionally to a USB media device.

You can use SCADAPack RemoteConnect to retrieve and display data log files. You can use other methods to read and process data log files from the SCADAPack x70 RTU, such as FTP file transfer and Microsoft Excel.

Basic Configuration

General Setup

Internal Drive Space Reserved for Logging KB

Log Initial Value Events 

Data Logging



	Name	Location	Number of Objects Assigned to Log
1	SCADAPack_x70_Log	Internal	0

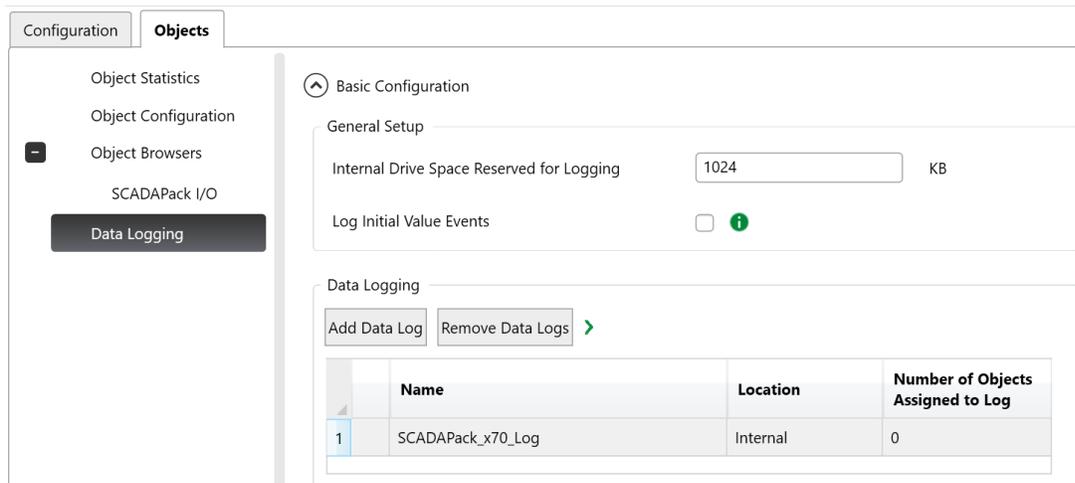
9.6.1 Adding a Data Log

The procedure below explains how to add a data log.

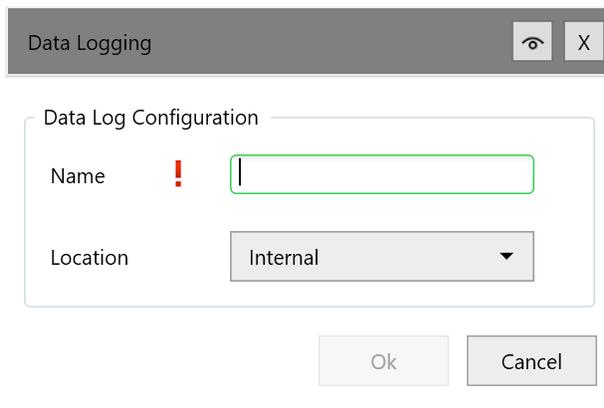
The Add Data Log button is enabled as long as the maximum number of table entries has not been exceeded. The maximum number of data logs is 10. The maximum number of objects that can be assigned to each log is 300.

To add a browser list

1. On the **Objects** tab, select **Data Logging**.



2. Click **Add Data Log**.



3. In the **Name** field, enter a name that indicates the purpose of the data log.
4. Click the drop-down list for **Location** to select where the data log is saved:
 - **Internal**: Data log files are saved to the /user/data_logs directory on the SCADAPack x70 device
 - **USB**: Saved to a USB media device plugged into the SCADAPack USB Host port to the data_logs directory

5. Click **Ok**.
6. Click **Apply**.

To navigate to the Object Configuration table to configure objects for data logging or to set other object parameters, you can click on the green  symbol on the Data Logging page.

9.6.2 Removing Data Logs

Follow the procedure below to remove one or more data log definitions.

To remove data logs

1. On the **Objects** tab, select **Data Logging**.
2. In the Data Logging table, select the data log(s) that you want to remove.
3. Click **Remove Data Logs**.
4. Click **Yes** to confirm that you want to remove the data log(s).

The data log definition is removed from the table.

9.6.3 Data Logging Parameters

The following table describes the data logging parameters.

Parameter	Parameter Description	Setting	Setting Description
Internal Drive Space Reserved for Logging	Used to configure the maximum amount of internal file system drive space that the data logging feature will use in the SCADAPack x70 device (when data logs are configured to be saved as Internal). See Adding a Data Log ³¹⁴ . When the size of stored data log files on the internal drive exceeds this length, older data log files are deleted as new data log files are added.	Range: 512...51200 KB	Default: 1024 KB
Log Initial Value Events	Determines if an event representing the value for each object is logged each time a new file is created in		Default: unchecked

	<p>the data log. This is called the initial value.</p> <p>When enabled, this selection provides an initial value for each object for each data log file so that independent files can represent object values from the time that the file was created.</p> <p>Enable this selection if you will primarily graph the content of the data log using SCADAPack RemoteConnect.</p>		
--	--	--	--

9.7 Configuring an Association with a System Data Reference

The [Associations Tab](#) ²⁶⁵ in the object editor provides a configuration for allocating a data source to system data when the object has no other association. If you identify that you do need an object to be associated with system data, the object must not have an association with another data source, such as an I/O module, a Modbus Client scanner, a DNP3 Data Concentrator Client.

System data is internal information that represents the operating status of the SCADAPack x70 device.

Associate an object with system data only when you want to:

- Access a system data field from logic to influence control behavior, or to manipulate a writeable system data field from a logic program
- Map a system data field into a remote protocol, such as DNP3, IEC 60870-5-104, or Modbus, for permanent remote monitoring

System data can also be accessed in an ad-hoc way using SCADAPack RemoteConnect. This type of access does not require that system data be associated with a SCADAPack object or linked to a logic variable. All system data is available to SCADAPack RemoteConnect through a Browser List. Access is by name only, identifying individual system data references, or identifying a collection of system data fields belonging to a System Data Group.

Enter a System Data Reference to associate this SCADAPack object with a piece of system data. System Data References have fixed names. See the System Data topic in the Operations Technical Reference manual.

Individual system data references belong to a System Data Group which is a collection of system data references with similar SCADAPack functionality. The System Data Group name prefixes each system reference. All valid system data references begin with one of the prefixes which can be viewed by hovering over the  information symbol adjacent to the system data reference configuration.

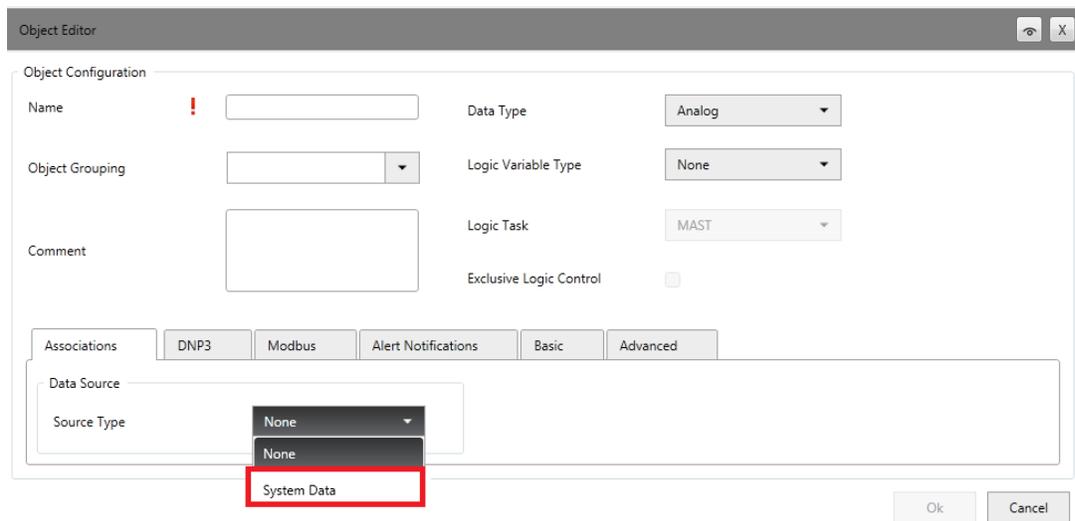
Some system data references are SCADAPack model specific, and not available on all models.

When associating an object with a System Data Reference, other object configurations need to be specifically set to use the object as a representation of the system data. The tables in the System Data topic in the Operations Technical Reference manual. topic indicate configuration requirements for object type, logic variable type and access methods which vary between system data fields.

For additional information see the Accessing System Data in a Logic Program topic in the Logic Programming Overview manual and [Accessing System Data in a Remote Protocol](#)^[227].

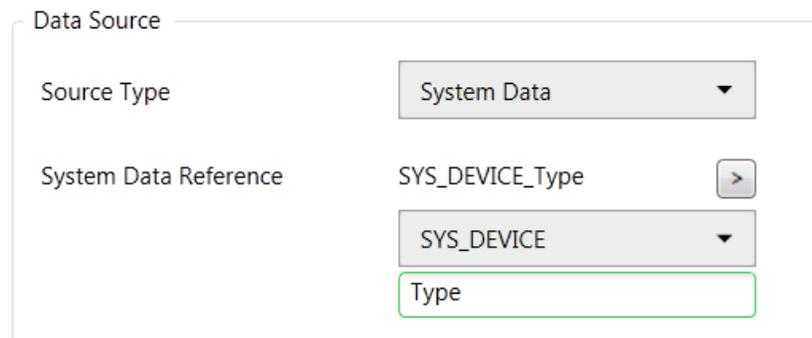
To add a System Data Reference

1. On the **Associations** tab of the object editor, from the **Source Type** drop-down list, select **System Data**.



2. From the **System Data Reference** drop-down list, select the **System Data Reference** prefix that you want to associate the object with.
3. Enter the extension of the System Data Reference.

The extension is displayed beside the System Data Reference prefix. The extension needs to be a valid extension for the given prefix or the SCADAPack x70 Logic Editor will not build correctly.



4. Set the name of the object to one of the following:

- The name of the system data reference (needs to be an exact match with the association's System Data Reference configuration).
 - To set the name of the object to the system data reference, click the **Copy System Data Reference to Name** button, shown below. The **Name** field is overwritten.
- An object name of your choosing (that does not begin with the prefix "SYS_")

The screenshot shows the 'Object Editor' dialog box with the 'Object Configuration' tab active. The 'Name' field contains 'SYS_DEVICE_Type'. The 'Data Type' is set to 'Analog'. The 'Object Grouping' is empty. The 'Comment' field is empty. The 'Logic Variable Type' is 'None'. The 'Logic Task' is 'None'. The 'Exclusive Logic Control' checkbox is unchecked. Below the configuration fields are tabs for 'Associations', 'DNP3', 'Modbus', 'Alert Notifications', 'Basic', and 'Advanced'. The 'Associations' tab is selected, and the 'Data Source' section is visible. In the 'Data Source' section, the 'Source Type' is 'System Data', the 'System Data Reference' is 'SYS_DEVICE_Type', and the 'Type' is 'SYS_DEVICE'. A red box highlights the 'Copy System Data Reference to Name' button (a blue arrow pointing right) next to the 'System Data Reference' field. At the bottom right of the dialog are 'Ok' and 'Cancel' buttons.

5. Click **Ok**.

6. Click **Apply**.

For a description of the **Associations** parameters, see [Associations Tab](#)^[265].

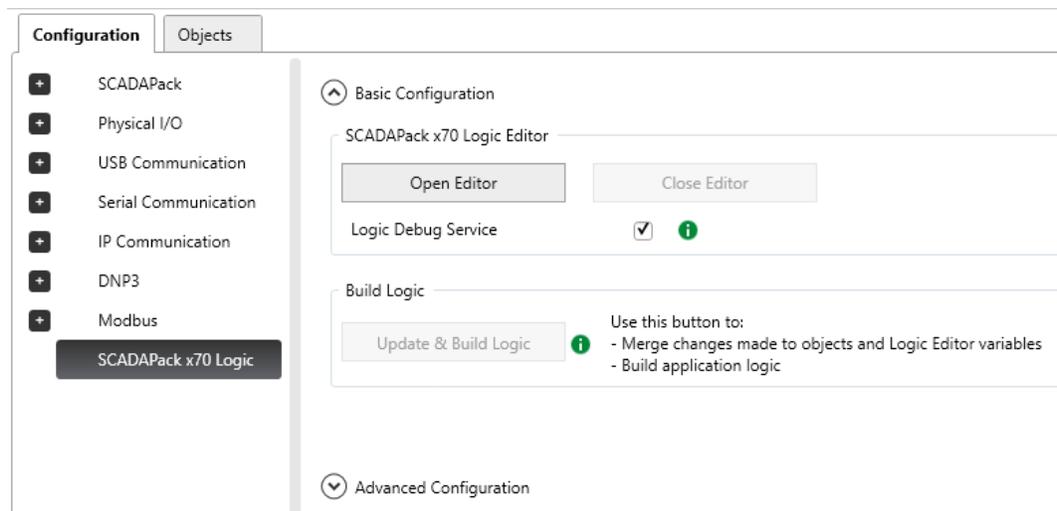
10 Accessing SCADAPack x70 Logic

Use the **Open Editor** button on the SCADAPack x70 Logic page to access the SCADAPack x70 Logic Editor, an IEC 61131-3 programming environment where you can write applications to customize SCADAPack x70 device operation.

The **Logic Debug Service** is enabled by default. When the **Logic Debug Service** box is checked, you can connect to the SCADAPack x70 logic applications on the device for debugging purposes. See [Modifying a Logic Application Online](#)^[375].

To open the SCADAPack x70 Logic Editor

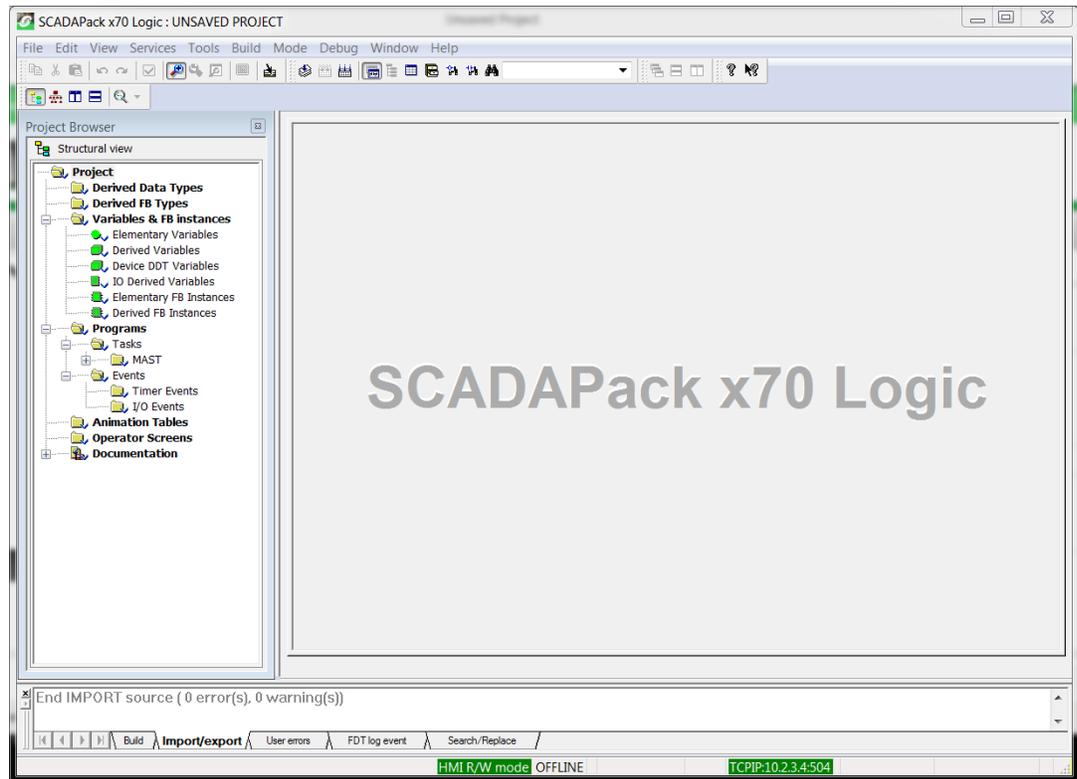
1. On the Configuration tab, select **SCADAPack x70 Logic**.



2. Click **Open Editor**.

The SCADAPack x70 Logic Editor opens in the background, so you may not see it immediately. Check your taskbar for one of the following icons:





10.1 Logic Programming Activities

The SCADAPack x70 Logic Editor and the SCADAPack x70 configuration software share information about the physical I/O objects that are shared between SCADAPack x70 logic and the SCADAPack x70 object database. The SCADAPack x70 configuration software is used to transfer the logic application to the device and to monitor its operation.

The table below summarizes the main logic programming activities and where they are performed.

Activity	Software	Location
Configure the SCADAPack x70 object information to be shared with logic variables by specifying the variable type and logic task Specify that the object is under exclusive control of the logic application Associate physical I/O channels with objects	SCADAPack x70 configuration software	<ul style="list-style-type: none"> • Configuration tab > Physical I/O > Local page • Objects tab > Object Configuration page
Open and close the SCADAPack x70 Logic Editor	SCADAPack x70 configuration software	Configuration tab > SCADAPack x70 Logic page

Update variables and build the logic application Unlock and resynchronize variables Replace the logic variables in the SCADAPack x70 Logic Editor with those in SCADAPack RemoteConnect		
Disable logic debugging over Ethernet or USB interfaces	SCADAPack x70 configuration software	Configuration tab > SCADAPack x70 Logic page
Create or edit logic program content, including program tasks, sections, subroutines, user-defined data types, function blocks and variables	SCADAPack x70 Logic Editor	Context menu items in the Project Browser structural view
Analyze or build logic program content	SCADAPack x70 Logic Editor	Build menu items
Specify the TCP port number used for communication with the SCADAPack x70 Logic Editor	SCADAPack x70 configuration software	Configuration tab > SCADAPack x70 Logic page
Simulate the application	SCADAPack x70 Logic Editor	Mode > Start simulation menu item
Debug the application	SCADAPack x70 Logic Editor	<ul style="list-style-type: none"> • Mode > Connect menu item • Debug > Go menu item
Transfer the application to the SCADAPack x70 device	SCADAPack x70 configuration software	Write to Device context menu item when the SCADAPack x70 configuration software is online
Modify logic application online	SCADAPack x70 Logic Editor	See Modifying a Logic Application Online
Update logic application source in the SCADAPack x70 device after an online logic modification	SCADAPack x70 configuration software	<ul style="list-style-type: none"> • On the Logic tab in the SCADAPack x70 online parameters, Write Logic Source button • SCADAPack RemoteConnect Online Modification dialog

<p>Monitor application status Restart the application Reset scan times</p>	<p>SCADAPack x70 configuration software</p>	<p>Logic tab in the SCADAPack x70 online parameters</p>
<p>Import an archived logic application</p>	<p>SCADAPack x70 configuration software</p>	<p>Additional Functions > Import Logic Project context menu item when the SCADAPack x70 configuration software is offline</p>
<p>Save object data values</p>	<p>SCADAPack x70 configuration software</p>	<p>Use T_SPx70_ variable types to link logic variable data to SCADAPack x70 objects for each data value that you want to save.</p> <ol style="list-style-type: none"> 1. Create a configuration for the Object Browser lists. 2. Navigate to the online Object Browser. 3. Select the browser and click Refresh. 4. Click Transfer Current Values to copy values to the offline Object Browser Preset Values. 5. Navigate to the offline Object Browser and click Apply. 6. Save the project.
<p>Restore object data values</p>	<p>SCADAPack x70 configuration software</p>	<p>Logic variable data values for T_SPx70_ variable types have their values restored when their linked SCADAPack x70 object data values are written.</p> <ol style="list-style-type: none"> 1. Open the project. 2. Navigate to the online Object Browser. 3. Select the browser and click Refresh. 4. Click Write All.

10.2 Assigning Variables to Database Objects

Objects that represent analog or digital I/O

Each database object that represents analog or digital physical I/O is automatically assigned a default logic variable when the object is created. The default types of logic variables are:

- Analog objects: T_SPx70_DINT
- Digital objects: T_SPx70_BOOL

To change the default variable assignment, configure the physical I/O channel as described in [Configuring Analog and Digital I/O Channels](#)^[65].

Objects that represent counter inputs or data

The default type of logic variable is:

- Counter objects: T_SPx70_UDINT

For database objects that represent counter inputs or data, such as status data or logic data, there are 2 ways to assign variables:

- Assign a **Logic Variable Type** and **Logic Task** to the object in the SCADAPack x70 configuration software. Variables created this way are automatically available in the SCADAPack x70 Logic Editor. For details, see [Assigning a Logic Variable and Task to an Object](#)^[323].
- Create a variable in the SCADAPack x70 Logic Editor. These variables are added to the SCADAPack x70 configuration software when you click **Update & Build Logic** on the SCADAPack x70 Logic page. For details about creating variables in the SCADAPack x70 Logic Editor, see the Creating a New SCADAPack x70 Variable topic in the Logic Programming Overview manual.

SCADAPack x70 logic variables that are synchronized with SCADAPack x70 objects with T_SPx70_xxxx types are shown as being in a Locked state in the SCADAPack x70 Logic Editor. A small yellow lock icon identifies each locked variable. If you need to make changes to a variable that is locked in the SCADAPack x70 Logic Editor, unlock it in the SCADAPack x70 configuration software, modify it, then resynchronize it with the SCADAPack x70 Logic Editor and the SCADAPack x70 object database. For details, see [Unlocking and Modifying a SCADAPack x70 Variable](#)^[336].

10.3 Assigning a Logic Variable and Task to an Object

Before you can access a database object in the SCADAPack x70 Logic Editor, you need to assign a **Logic Variable Type** and a **Logic Task** to it in the SCADAPack x70 configuration software.

The following table lists the default settings.

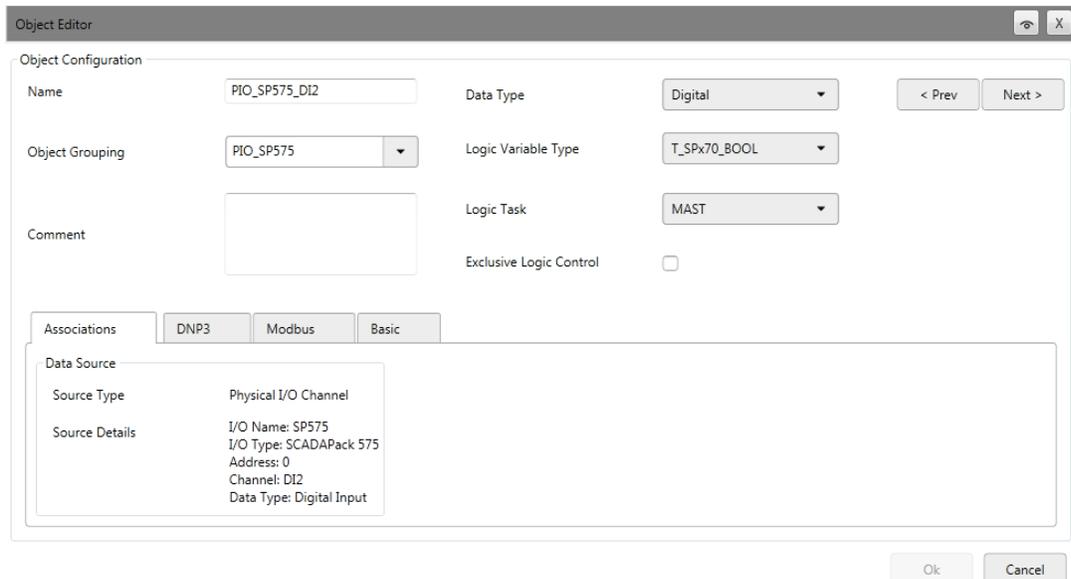
Object Represents	Default Logic Variable Type	Default Logic Task
-------------------	-----------------------------	--------------------

Physical analog input or output	T_SPx70_DINT	MAST
Physical digital input or output	T_SPx70_BOOL	MAST
Physical Counter Input	T_SPx70_UDINT	MAST
Status data	None	None

Follow the procedure below to assign or change a **Logic Variable Type** and a **Logic Task** so you can work with the object in the SCADAPack x70 Logic Editor.

To assign a logic variable and task to an object

1. On the **Objects** tab, select **Object Configuration**.
2. Double-click on the object entry in the table.



3. Select a [Logic Variable Type](#)²⁵⁰ and [Logic Task](#)²⁵¹ for the object.
4. Click **OK**.
5. On the Configuration page, click **Apply**.

10.4 Displaying Object Protocol Addresses in the Logic Editor

To help with end-to-end debugging, you can view the DNP3 point numbers and/or Modbus register addresses of logic variables for SCADAPack objects in the SCADAPack x70 Logic Editor.

NOTICE**DATA LOSS**

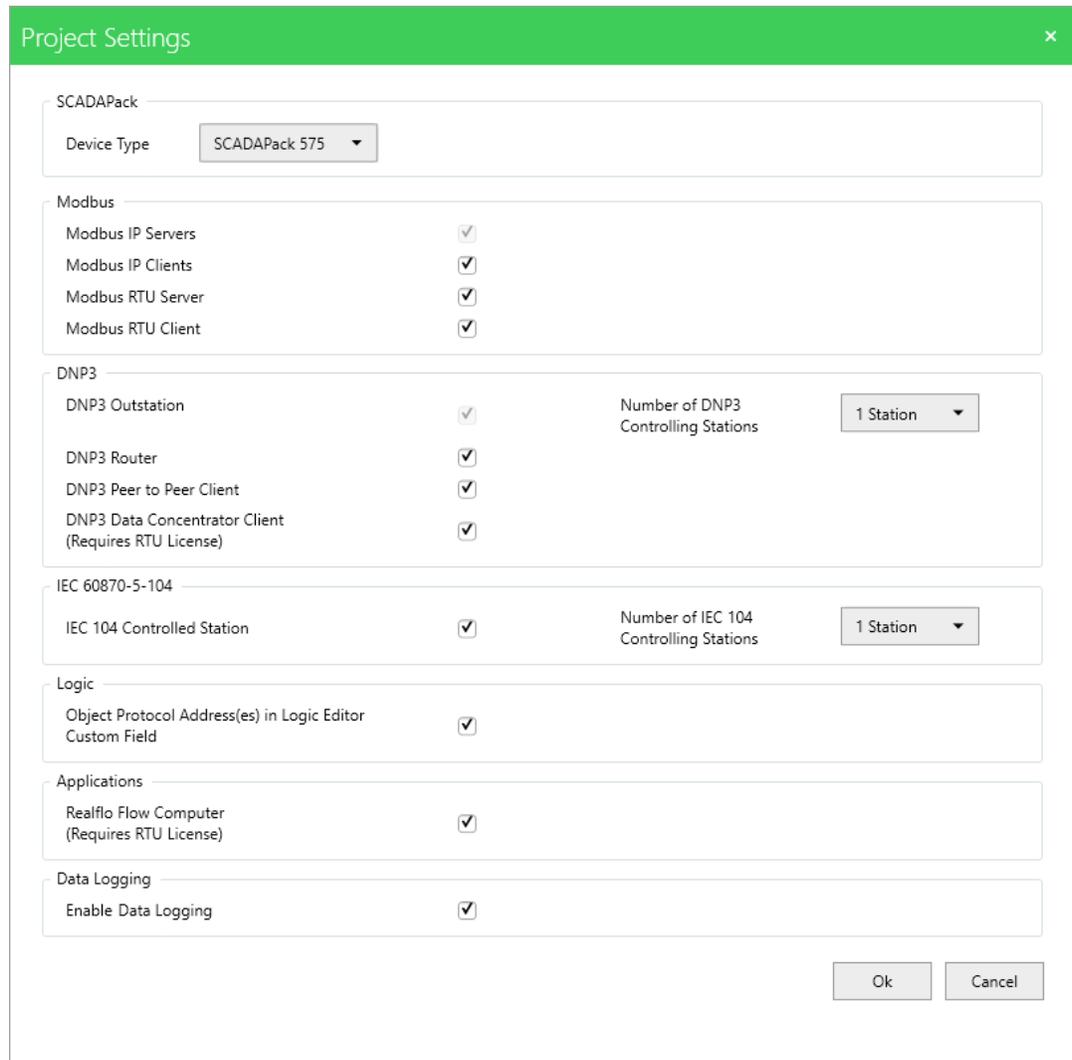
Content that is in the Logic Editor Custom field is overwritten when you use the Object Protocol Address(es) in Logic Editor Custom Field feature and apply the changes.

Save the content to another location.

Failure to follow these instructions can result in equipment damage.

To display object protocol address(es) in the SCADAPack x70 Logic Editor

1. If the SCADAPack x70 is currently online, under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Go Offline**.
2. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Additional Functions > Project Settings**.
3. Select the **Object Protocol Address(es) in Logic Editor Custom Field** checkbox.



4. Click **Ok**.
5. Do one of the following:
 - [Add an object](#)^[236]
 - [Change an object's configuration](#)^[301]
 - [Add I/O](#)^[58]
6. Apply the changes.

See [Viewing Object Protocol Addresses in the Logic Tool](#)^[327].

If you added DNP3 point numbers and/or Modbus register addresses **before** you selected the Object Protocol Address(es) in Logic Editor Custom field, you can display those addresses in the SCADAPack x70 Logic Editor:

1. If the SCADAPack x70 is currently online, under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Go Offline**.
2. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Additional Functions > Project Settings**.
3. Select the **Object Protocol Address(es) in Logic Editor Custom Field** checkbox.
4. Click **Ok**.
5. [Replace SCADAPack x70 Logic Editor Variables with SCADAPack RemoteConnect Variables](#)^[342].

10.4.1 Viewing Object Protocol Addresses in the Logic Tool

When the **Object Protocol Address(es) in Logic Editor Custom Field** option is selected in the Project Settings, SCADAPack RemoteConnect presents data in the logic custom field.

The following may be included:

- I/O information
- DNP3 Point Number
- Modbus Register address

All sections of the logic custom field are optional (I/O, DNP, MB). Where multiple sections are present in the custom field string, they are separated by a period followed by a space. The format of the custom field is as follows:

```
[I/OsourceName I/OChannelName][. ][[DNP pointType,pointNumber][. ][[MB
registerType,registerAddress]
```

Where:

pointType is one of the DNP3 types: **DI, DO, AI, AO, CI**

pointNumber (preceded by a comma) is a DNP3 point index in the range 0...65534

registerType is one of: **Discrete, INT, UINT, DINT, REAL, UDINT**

registerAddress (preceded by a comma) is a 5-digit or 6-digit Modbus address (e.g. 40001, 400001) depending on the RTU configuration for the Modbus Server.

Examples

A RemoteConnect object that represents physical I/O and has a configured DNP3 point number and Modbus address might look as follows:

```
SP574 DI8. DNP DI,99. MB Discrete,109
```

Other examples:

- A RemoteConnect object that is not a physical I/O point and has only a configured DNP3 point number might look as follows:

```
DNP AO,516
```

- A RemoteConnect object that is not a physical I/O point and has only a configured Modbus address might look as follows:

MB INT,30008

Custom field values are also presented in the logic editor's variable export file when the XSY file type is selected. Various applications may import or parse this content. The "CustomerString" attribute presents the Custom attribute field value for each variable.

Following is an example of part of the XSY export file showing a variable with custom addressing content:

```
<variables name="PIO_SP574_DI8" typeName="T_SPx70_BOOL">
  <attribute name="ManagedKey" value="0449eb77-dd9e-4e6d-a7ec-
57407989319a"></attribute>
  <attribute name="CustomerString" value="SP574 DI8. DNP DI,99. MB
Discrete,109"></attribute>
  <attribute name="Owner" value="TRSS_RSC"></attribute>
```

The **ManagedKey** and **Owner** attributes are private data used by RemoteConnect for tracking and locking the variable content for SCADAPack objects and logic synchronization. Ignore them when parsing the XSY file.

To view the object protocol addresses in the SCADAPack x70 Logic Editor

1. In the SCADAPack x70 Logic Editor, in the **Project Browser**, under **Variables and FB instances**, double-click **Derived Variables**.
2. If the Custom column is not visible:
 - a. Right-click the column heading and select **Customize Columns**.
 - b. Select **Custom**.
 - c. Click **OK**.
3. Scroll to the variable.

The DNP3 point numbers and/or Modbus register addresses that were configured in SCADAPack RemoteConnect are displayed in the Custom column.

Addresses are displayed only for variables that are not of type struct or array.

10.5 Updating Variables and Building Logic

When you have completed your logic application, use the **Update & Build Logic** button on the SCADAPack x70 Logic page to build the application and update the logic variables in SCADAPack RemoteConnect with any new variables created in the SCADAPack x70 Logic Editor.

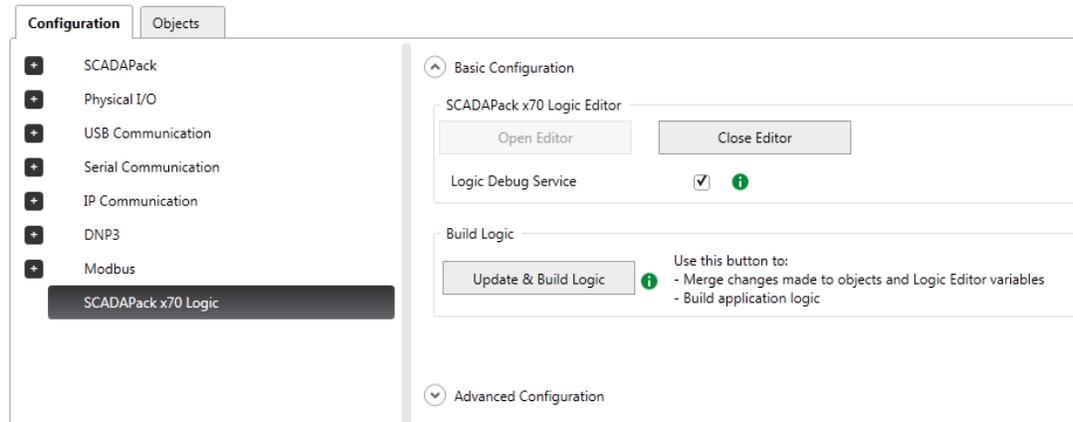
This button is available only when the SCADAPack x70 Logic Editor is open. If you have pending updates that have not been applied, or if there are any validation errors, the button is not available.

Alternatively, you can select **Build > Rebuild All Project** in the SCADAPack x70 Logic Editor. However, using this command does not update the variables in the SCADAPack x70 object

database. It can also result in a message indicating there are inconsistencies with variables. If you see this message, click **Update & Build Logic** on the SCADAPack x70 Logic page.

To update variables and build logic

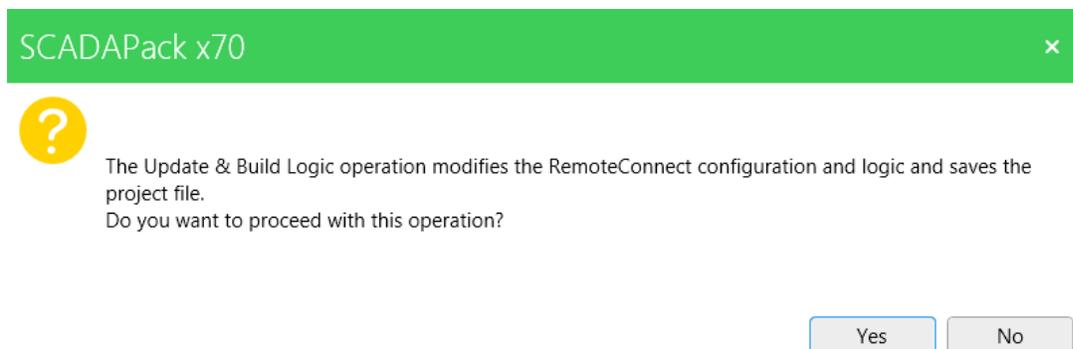
1. On the Configuration tab, select **SCADAPack x70 Logic**.



2. If you used the SCADAPack x70 Logic Editor to modify or create your own DDT structures containing T_SPx70_xxxx variables, analyze the DDT structure definition using **Build > Analyze** or **CTRL+SHIFT+B** in the SCADAPack x70 Logic Editor before proceeding.
3. Click **Update & Build Logic**.

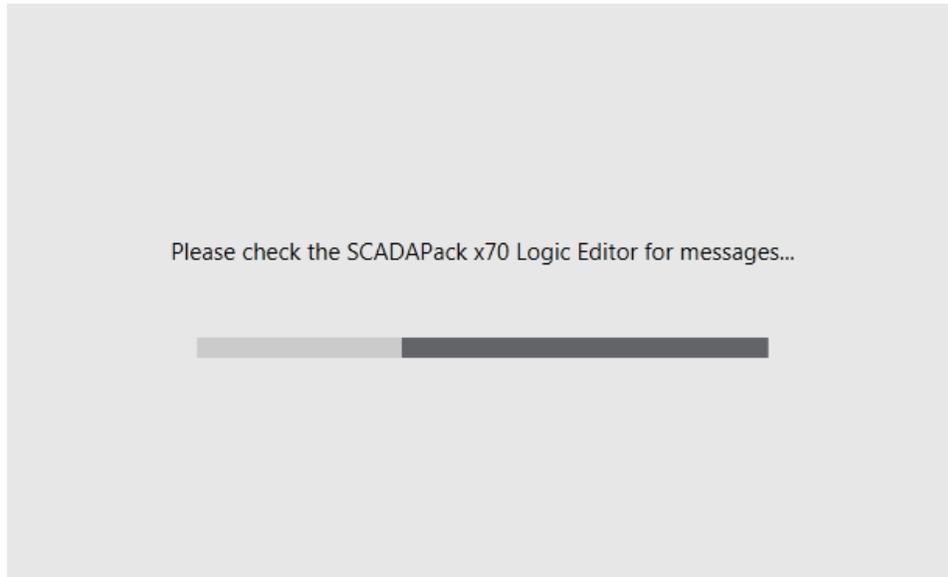
In a new project, save the project to enable the **Update & Build Logic** button.

You are prompted to confirm that you accept that the SCADAPack RemoteConnect configuration and logic will be modified, and that the project file will be saved.

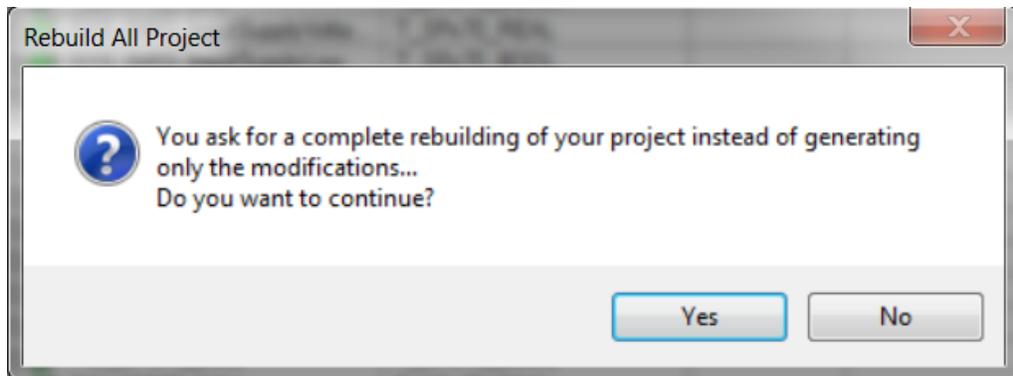


4. To proceed with the operation, click **Yes**.

The SCADAPack x70 Logic Editor may prompt you to confirm modifications to the application. If the build operation does not complete, check whether you need to acknowledge this prompt in the SCADAPack x70 Logic Editor.

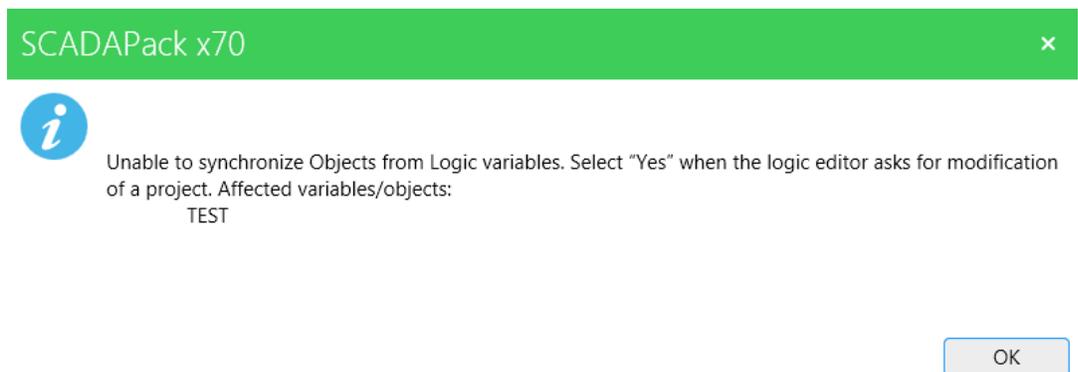


In the SCADAPack x70 Logic Editor, the following message is displayed:



- 5. To maintain synchronization of the variables in the SCADAPack x70 object database and the SCADAPack x70 Logic Editor, click **Yes**.

If you click No, you will be unable to build your application. A message similar to the following is displayed in SCADAPack RemoteConnect:



- 6. Click OK and then click **Update & Build Logic**.

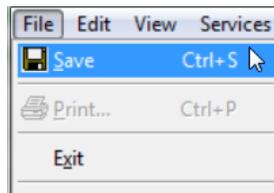
10.6 Saving and Closing the SCADAPack x70 Logic Editor

Saving your project

By default, projects are saved on the SCADAPack RemoteConnect computer in C:\Users\Public\Public Documents\Schneider Electric\RemoteConnect. Saving to a network drive may not be successful if the network drive performance is not optimal.

To save your project in the SCADAPack x70 Logic Editor

- In the SCADAPack x70 Logic Editor, select **File > Save**.



Saving your project in the SCADAPack x70 Logic Editor also saves your project in SCADAPack RemoteConnect.

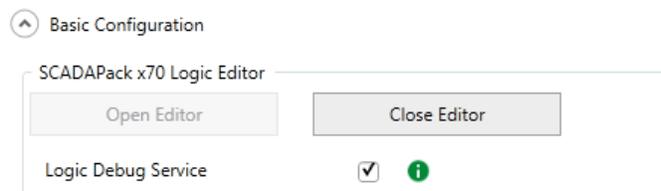
Closing your project

Use the **Close Editor** button on the SCADAPack x70 Logic page to close the SCADAPack x70 Logic Editor.

Alternatively, you can select **File > Exit** in the SCADAPack x70 Logic Editor.

To close the SCADAPack x70 Logic Editor

1. On the Configuration tab, select **SCADAPack x70 Logic**.
2. Click **Close Editor**.



10.7 Disabling Logic Debugging

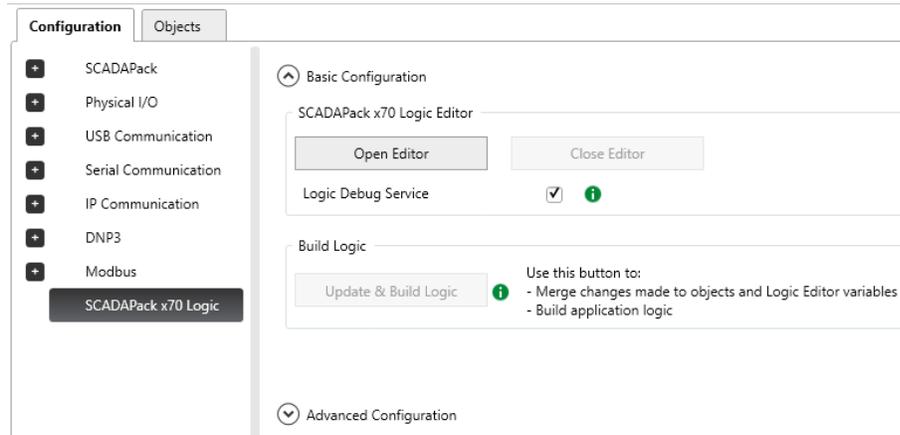
By default, you can access a connection for debugging the logic application on the SCADAPack x70 device.

Limiting users to local access can help you comply with safety, security, permission, or administrative policy requirements. When the **Logic Debug Service** box is unchecked, you cannot connect to the SCADAPack x70 logic applications on the device for debugging purposes.

To disable local or remote access to the logic application using a USB, Ethernet or PPP TCP/IP connection, deactivate the **Logic Debug Service**, as described below.

To disable logic debugging

1. On the Configuration tab, select **SCADAPack x70 Logic**.



2. Uncheck the **Logic Debug Service** checkbox.
3. Click **Apply**.
4. [Write the configuration](#) ³⁵⁴.

10.8 Importing Logic Projects

SCADAPack RemoteConnect allows you to import 4 different import formats:

- **STA**: A compressed archive version of the logic project (.stu) file that is generated by the SCADAPack x70 Logic Editor. If the project has password protection, you will need to enter the password to complete the import of the project.
- **XEF and ZEF**: Logic project exports generated by the SCADAPack x70 Logic Editor that can also be generated by external tools. They are used by SCADAPack RemoteConnect to import a full logic application for the SCADAPack x70 device type selected in the RemoteConnect Project Settings. The ZEF file is a compressed version of the XEF file. Importing an encrypted .ZEF file is not supported.
- **XPG**: Logic content that is developed in the SCADAPack x70 Logic Editor can be exported from the MAST, FAST, AUX0, or AUX1 tasks in the Project Browser. The exported content is contained in a .xpg file that can be imported into another SCADAPack x70 project by the SCADAPack RemoteConnect configuration software.

Import an archived or exported logic file into the SCADAPack x70 Logic Editor when you want to:

- Work with a logic project developed in another project using the SCADAPack x70 Logic Editor
- Revert to a back-up copy of a SCADAPack x70 logic project

For the import to be successful, the device type of the logic project needs to match the device type of the SCADAPack RemoteConnect project. For example, a logic project developed on a

SCADAPack 47x can be imported into a SCADAPack 47x SCADAPack RemoteConnect project. The same is true for a SCADAPack 57x logic project that is imported into a SCADAPack 57x SCADAPack RemoteConnect project.

⚠ WARNING

DATA LOSS

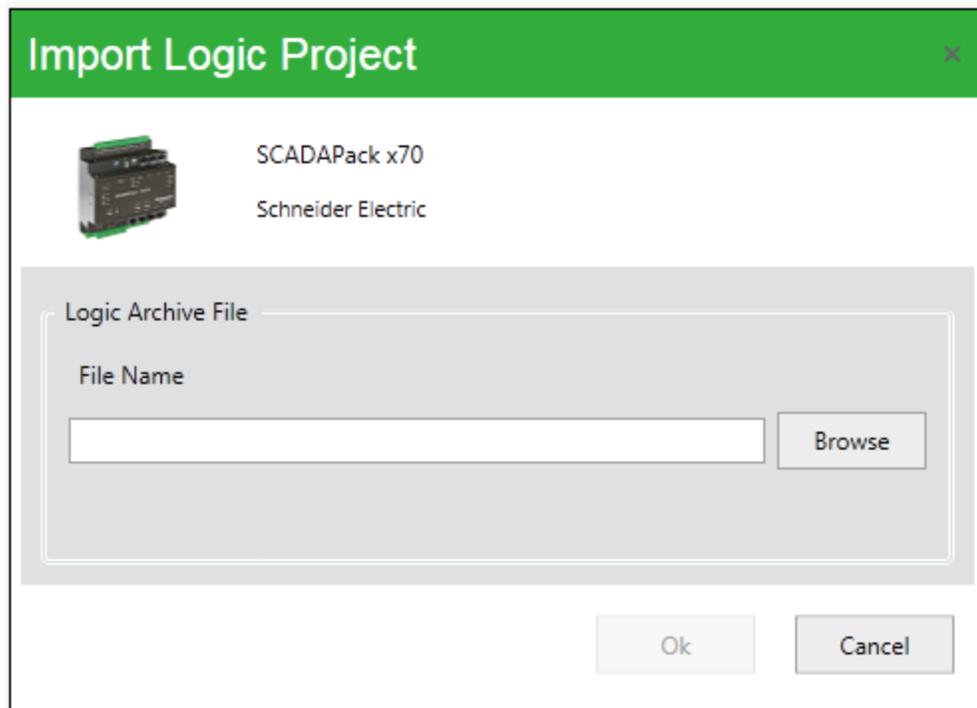
Importing an archive or export file for a logic project overwrites the information in the SCADAPack x70 object database with the information contained in the imported file. Objects currently in the RemoteConnect database that are linked with logic variables will be removed after the file is imported.

Before importing an archive file into the SCADAPack x70 configuration software backup the current project and configuration files, as described in the SCADAPack RemoteConnect Configuration Software manual, in case you need to access them in the future.

Failure to follow these instructions can result in death or serious injury.

To import a SCADAPack x70 Logic Editor project

1. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Additional Functions > Import Logic Project**.



2. In the **Import Logic Project** dialog, click **Browse** to navigate to the file.
An archived logic project file has one of the extensions **.XEF**, **.ZEF**, or **.STA**.
Exported task logic content has a **.xpg** extension.

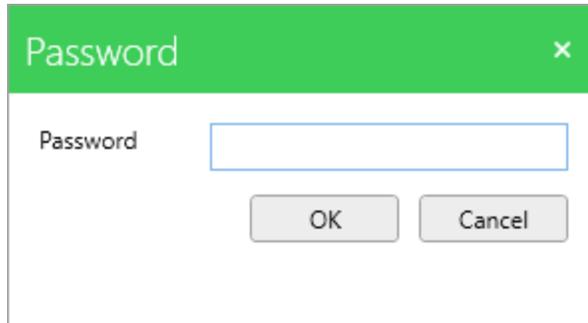
3. In the **Open** dialog, locate the file that you want to import, then click **Open**.
4. In the **Import Logic Project** dialog, click **Ok**.

A confirmation dialog is displayed when the operation successfully completes.

5. Click **Ok**.

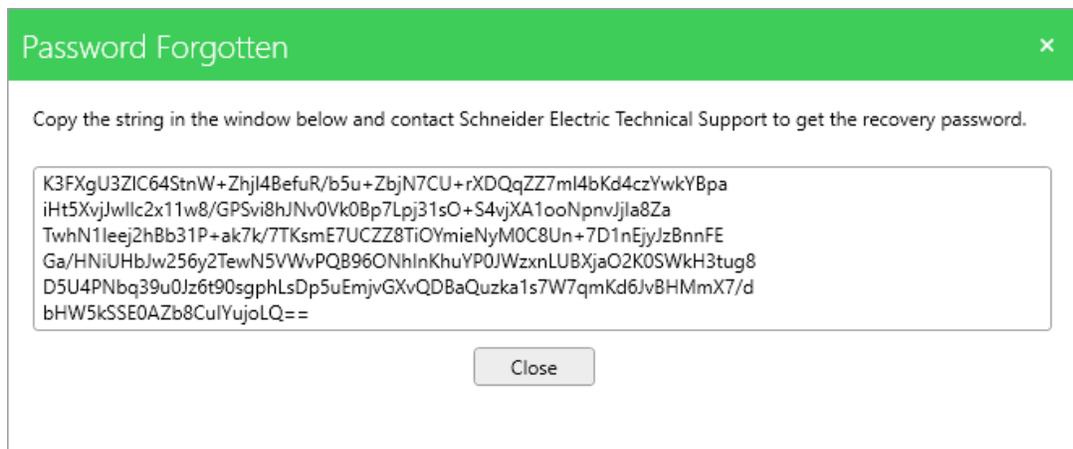
If the .STA project is password protected, the **Password** dialog opens.

6. Enter the password for the project and click **Ok**.



7. If you have forgotten the password, in the **Password** field, press Shift+F2.

The **Password Forgotten** dialog is displayed with information for retrieving the forgotten password.



8. Follow the instructions in the dialog and click **Close**.

10.9 Importing Logic and Configuration from Geo SCADA

You can import logic and configuration from a Geo SCADA / SCADAPack x70 configuration export.

- If logic is present in the RTZ file, array and structure objects are imported
- If logic is not present in the RTZ file, array and structure objects are not imported since no corresponding logic variables exist. Array and structure variables will need to be recreated in the SCADAPack x70 Logic Editor after the import is completed.

To import logic and configuration from a Geo SCADA / SCADAPack x70 configuration export

1. On the SCADAPack x70 Configuration tab in SCADAPack RemoteConnect, select **SCADAPack x70 Logic**, then expand the Advanced Configuration parameters.

Advanced Configuration

Modify an existing SCADAPack Variable in the Logic Editor

Use this button when working with structures or arrays:
 - Modify a structure or array, containing a SCADAPack variable
 - Analyze the project - in the Logic Editor for any new build errors
 - Update the SCADAPack object database - using the Resynchronize button

Replace missing SCADAPack Variables in the Logic Editor

Use this button when:
 - A SCADAPack Logic Variable type object is missing in the Logic Editor (this may be discovered using Logic Analyze or Build)

Logic Debugger

Logic Editor IP Address 172.16.1.200

Logic Debug TCP Port

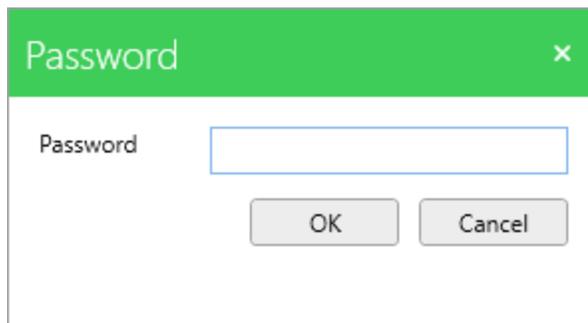
Geo SCADA

Use this button to import logic and configuration from a Geo SCADA / SCADAPack x70 configuration export.

Logic Library

Use this button to upgrade the Logic Library in use to the latest version.

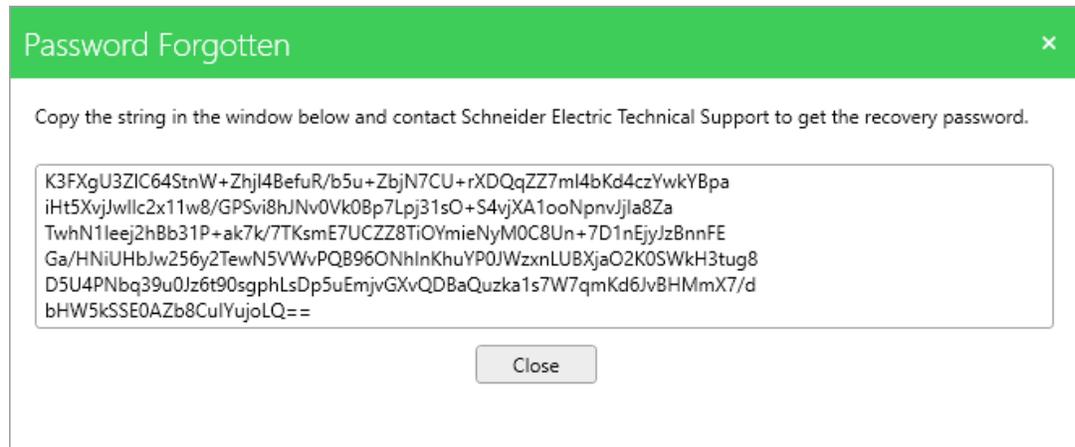
2. In the Geo SCADA section, click **Import**.
3. Navigate to the RTZ file you want to import and click **Open**.
If the RTZ project is password protected, the **Password** dialog is opens.
4. Enter the password for the project and click **Ok**.



The image shows a 'Password' dialog box with a green title bar. It contains a text input field labeled 'Password' and two buttons: 'OK' and 'Cancel'.

5. If you have forgotten the password, in the **Password** field, press Shift+F2.

The **Password Forgotten** dialog is displayed with information for retrieving the forgotten password.



4. Follow the instructions in the dialog and click **Close**.
5. If the project is not password protected or when the password is successfully entered, you can use SCADAPack RemoteConnect and the SCADAPack x70 Logic Editor to create or modify logic and objects.
 - Any objects added or modified in SCADAPack RemoteConnect for use in logic need to be added or modified in Geo SCADA
 - Any changes to the T_SPx70_ logic type attribute or the logic task attribute of SCADAPack RemoteConnect objects needs to be updated in Geo SCADA
 - Any other object attribute or configuration changes made in SCADAPack RemoteConnect are not updated in Geo SCADA when they are imported. Make configuration changes in Geo SCADA objects only.
6. On the **SCADAPack x70 Logic** page, click **Update & Build Logic**.
7. Save the project in SCADAPack RemoteConnect.
8. In Geo SCADA, import the updated RTZ file.
9. Create or modify Geo SCADA configuration objects for logic, as needed.

10.10 Unlocking and Modifying a SCADAPack x70 Variable

NOTICE

OBJECT CONFIGURATION LOSS

Editing a DDT definition may result in the loss of object configuration, specifically DNP3 Address and/or Modbus register assignments and Physical I/O channel associations.

After editing of the DDT definition is complete, check the object configuration of any objects in the edited DDT.

Failure to follow these instructions can result in equipment damage.

Use the **Unlock Variable** button in the Advanced section of the SCADAPack x70 Logic page to:

- Unlock a SCADAPack x70 logic variable in the Logic Editor
- Make changes to the variable
- Analyze the variable to apply the modification across the project if it is a structured variable
- Resynchronize the variable in the Logic Editor with the SCADAPack x70 object database

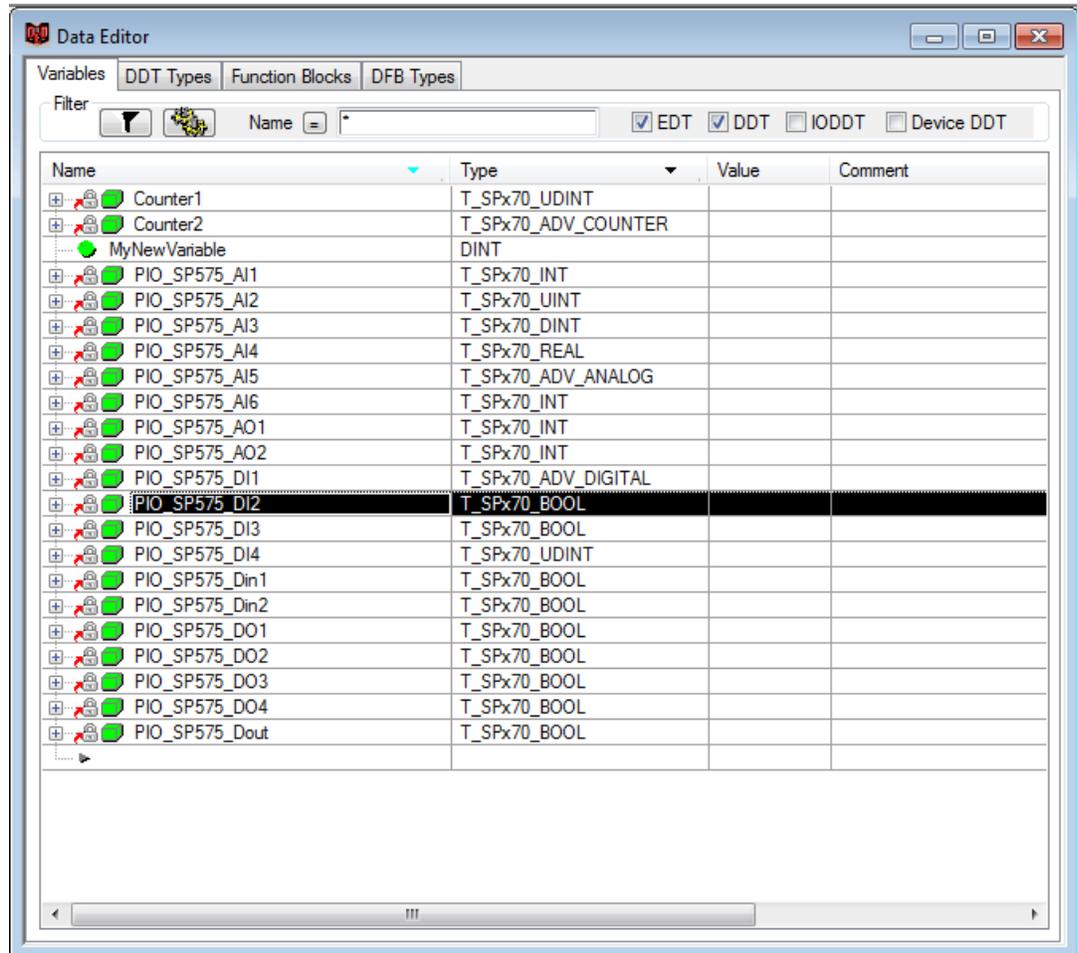
If you unlock a structured variable (user DDT), every other variable with the same type is also unlocked so you can modify the DDT structure.

If you increase the size of an array of T_SPx70_xxxx type, objects are added to the object database entries with default attributes. If you decrease the size of an array, the corresponding object database entries are removed.

If you delete a structured variable while it is unlocked in the SCADAPack x70 Logic Editor, every object linked to that variable is also deleted.

To unlock, modify and resynchronize a SCADAPack x70 variable

1. In the SCADAPack x70 Logic Editor, select **Tools > Data Editor** and locate the name of the variable that you want to unlock.



2. On the Configuration tab in the SCADAPack x70 configuration software, select **SCADAPack x70 Logic**, then expand the Advanced Configuration parameters.

Advanced Configuration

Modify an existing SCADAPack Variable in the Logic Editor

Unlock Variable

Use this button when working with structures or arrays:

- Modify a structure or array, containing a SCADAPack variable
- Analyze the project - in the Logic Editor for any new build errors
- Update the SCADAPack object database - using the Resynchronize button

Replace missing SCADAPack Variables in the Logic Editor

Replace Variables

Use this button when:

- A SCADAPack Logic Variable type object is missing in the Logic Editor (this may be discovered using Logic Analyze or Build)

Logic Debugger

Logic Editor IP Address: 172.16.1.200

Logic Debug TCP Port:

Geo SCADA

Import

Use this button to import logic and configuration from a Geo SCADA / SCADAPack x70 configuration export.

Logic Library

Upgrade Logic Library

Use this button to upgrade the Logic Library in use to the latest version.

3. Click **Unlock Variable**.

Unlock Logic Variable and Resynchronize with Logic Editor

Logic Variable

Logic Variable Name:

Unlock **Resynchronize** **Close**

4. Enter the name of the logic variable that you want to unlock, then click **Unlock**.

Unlock Logic Variable and Resynchronize with Logic Editor

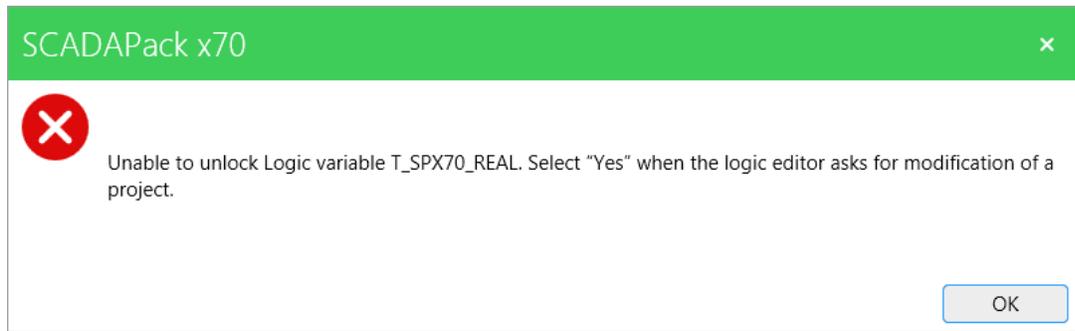
Logic Variable

Logic Variable Name:

Unlock **Resynchronize** **Close**

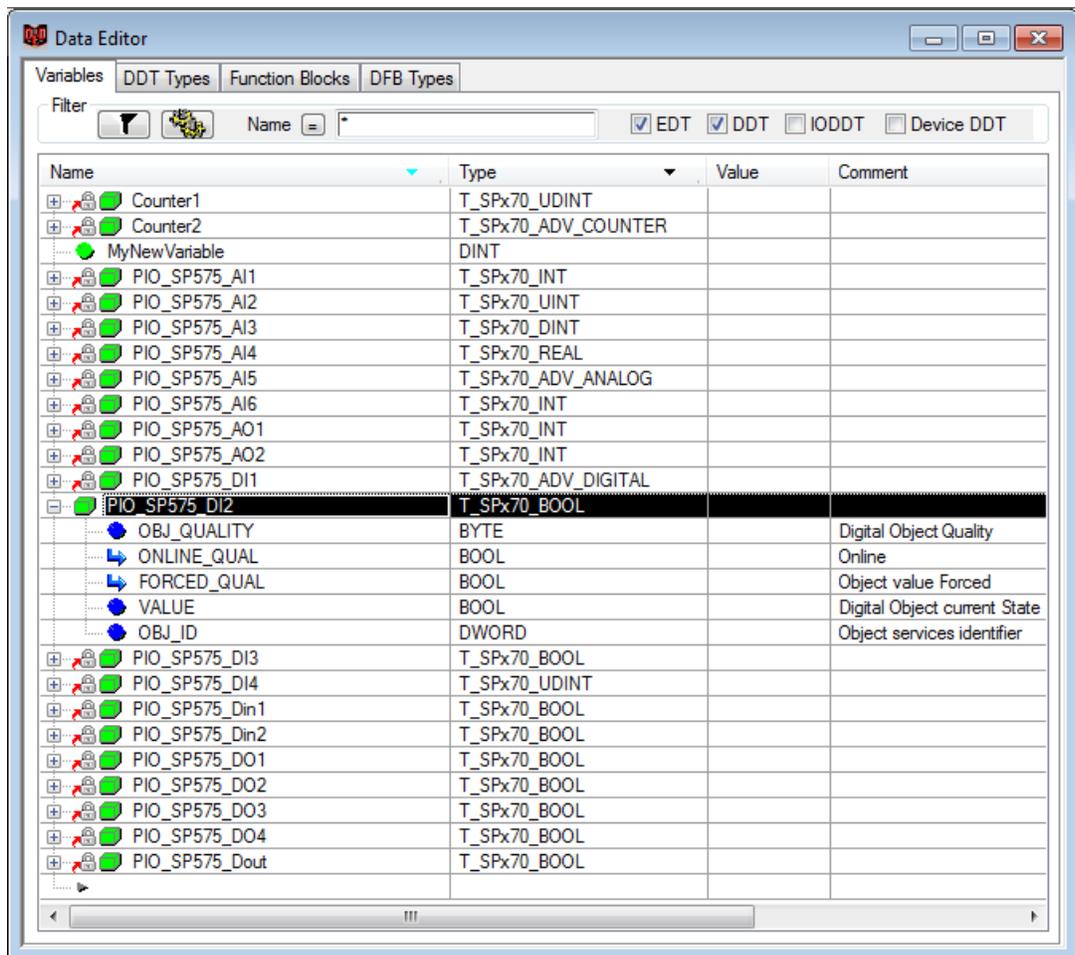
The SCADAPack x70 Logic Editor may prompt you to confirm modifications to the application. If the build operation does not complete, check whether you need to acknowledge this prompt in the SCADAPack x70 Logic Editor.

If you click No, a message similar to the following is displayed:



5. Click **OK** and click **Unlock Variable**.

The lock icon is no longer shown beside the variable name in the Data Editor.

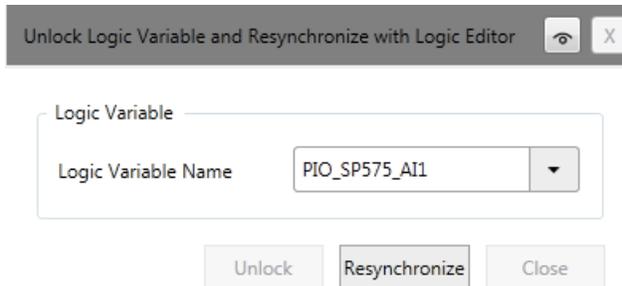


6. Modify the variable name and fields as required.
7. If the SCADAPack x70 Logic Editor indicates that the variable needs to be analyzed, select it then select **Build > Analyze** from the main menu.

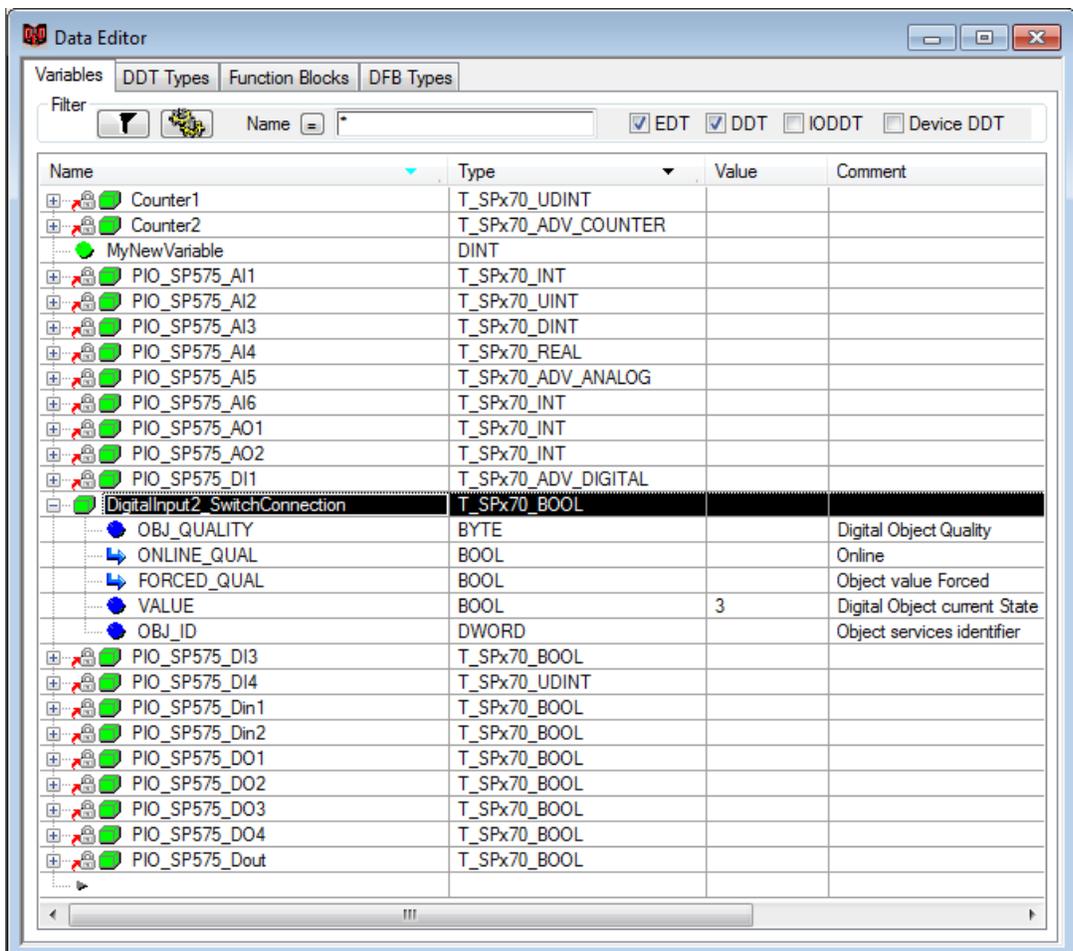
The Analyze icon  indicates when the variable requires the Analyze function. It is typically needed for structured variables (user DDTs).

- Return to the **SCADAPack x70 Logic** page and click **Resynchronize**.

The dialog shows the original name for the variable, even if you renamed it as part of your modifications.



When the resynchronization is complete, the variable is updated and relocked in the SCADAPack x70 Logic Editor and updated in the SCADAPack x70 object database. In the examples below, the variable PIO_SP575_DI2 was renamed to DigitalInput2_SwitchConnection and the VALUE was set to 3 while it was unlocked.



Basic Configuration

Object Configuration

Add Object Copy Objects Remove Objects Display Options Default View Clear Filters

Displaying 70 of 70 objects Applied Filter: Organized by 'Source Type'

	Name		Source Details	Logic Variable Type	IEC 104 IOA-Monitor	IEC 104 IOA-Control	Modbus Register	DNP3 Point Number
1	PIO_SP575_DI1		SP575:0, DI1	T_SPx70_BOOL				
2	DigitalInput2_SwitchConnection		SP575:0, DI2	T_SPx70_BOOL				
3	PIO_SP575_DI3		SP575:0, DI3	T_SPx70_BOOL				
4	PIO_SP575_DI4		SP575:0, DI4	T_SPx70_BOOL				
5	PIO_SP575_DI5		SP575:0, DI5	T_SPx70_BOOL				
6	PIO_SP575_DI6		SP575:0, DI6	T_SPx70_BOOL				
7	PIO_SP575_DI7		SP575:0, DI7	T_SPx70_BOOL				
8	PIO_SP575_DI8		SP575:0, DI8	T_SPx70_BOOL				

10.11 Replacing SCADAPack x70 Logic Editor Variables with SCADAPack RemoteConnect Variables

Use the **Replace Variables** button in the Advanced section of the SCADAPack x70 Logic page to replace the SCADAPack x70 (T_SPx70_xxxx) logic variables in the Logic Editor with the corresponding objects in SCADAPack RemoteConnect. This is only required if the Logic Editor is missing variables that are available in SCADAPack RemoteConnect.

NOTICE

DATA LOSS

Clicking the **Replace Variables** button when changes to the object database have not been applied can lead to further inconsistencies between the variables in the SCADAPack x70 Logic Editor and in SCADAPack RemoteConnect.

Do not click the **Replace Variables** button when the **Apply** button on the Objects tab, or on the SCADAPack x70 Logic page is active.

Failure to follow these instructions can result in equipment damage.

To replace SCADAPack x70 Logic Editor variables with SCADAPack RemoteConnect variables

1. On the SCADAPack x70 Configuration tab in SCADAPack RemoteConnect, select **SCADAPack x70 Logic**, then expand the Advanced Configuration parameters.

Advanced Configuration

Modify an existing SCADAPack Variable in the Logic Editor

Unlock Variable

Use this button when working with structures or arrays:
 - Modify a structure or array, containing a SCADAPack variable
 - Analyze the project - in the Logic Editor for any new build errors
 - Update the SCADAPack object database - using the Resynchronize button

Replace missing SCADAPack Variables in the Logic Editor

Replace Variables

Use this button when:
 - A SCADAPack Logic Variable type object is missing in the Logic Editor (this may be discovered using Logic Analyze or Build)

Logic Debugger

Logic Editor IP Address: 172.16.1.200

Logic Debug TCP Port: 504

Geo SCADA

Import

Use this button to import logic and configuration from a Geo SCADA / SCADAPack x70 configuration export.

Logic Library

Upgrade Logic Library

Use this button to upgrade the Logic Library in use to the latest version.

2. Click **Replace Variables**.

The SCADAPack x70 Logic Editor may prompt you to confirm modifications to the application. If the build operation does not complete, check whether you need to acknowledge this prompt in the SCADAPack x70 Logic Editor.

If you do not click **Yes**, a message similar to the following is displayed in SCADAPack RemoteConnect:

Information

The Logic Editor appears to be missing one or more variables for object(s) in the Object Database. Click the "Replace Variables" button to replace them.

Missing Logic Variable(s)

Logic Variable Name/Object Tag	Logic Variable Type
TEST2	T_SPx70_DINT

Do not Replace Variables Replace Variables

3. Click **Replace Variables** and in the SCADAPack x70 Logic Editor, click **Yes** to confirm the modification to the variables.

10.12 Upgrading the Logic Library

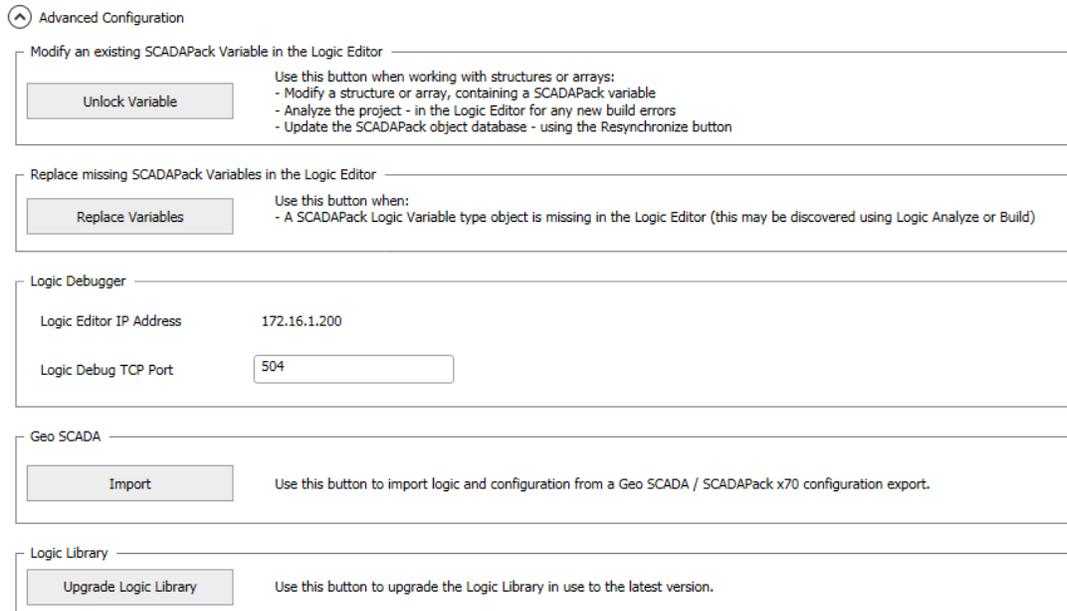
Use the **Upgrade Logic Library** button in the Advanced section of the SCADAPack x70 Logic page to use the latest Logic Library version. You will need to rebuild and you may need to modify some logic in the SCADAPack x70 Logic Editor. It is a good idea to verify that the project functions as expected on the SCADAPack x70 device.

The **Upgrade Logic Library** button is disabled if:

- There are pending changes in the configuration that have not been saved
- The logic library is already the most current version

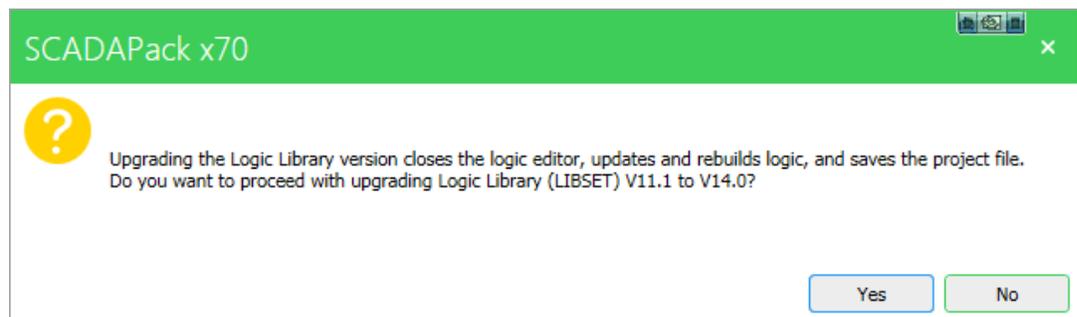
To upgrade the logic library

1. On the SCADAPack x70 Configuration tab in SCADAPack RemoteConnect, select **SCADAPack x70 Logic**, then expand the Advanced Configuration parameters.



2. Click **Upgrade Logic Library**.

You are prompted to confirm that you accept that you want to upgrade the logic library. The logic will be modified and the project file will be saved.



3. To proceed with the operation, click **Yes**.
4. In the Information dialog, click **Ok**.

The **Update Logic Library** button is now disabled.

10.13 Logic Debugger Parameters

The table below describes the Advanced Configuration Logic Debugger parameters for the SCADAPack x70 Logic Editor.

Parameter	Parameter Description	Setting	Setting Description
Logic Editor IP Address	A read-only parameter that is displayed when there is a valid IP address or hostname specified in the PC Communication Settings -SCADAPack CommDTM and TCP, UDP or USB is being used for communication between SCADAPack RemoteConnect and the SCADAPack x70 device.	Standard IP address format	
Logic Debug TCP Port	The TCP port number used for communication with the SCADAPack x70 Logic Editor.	Default: 504	The default setting is typically adequate and only needs to be changed if requested by your Network Administrator. For example, a firewall or other network infrastructure may require a different port number. Enabled only when Logic Debug Service is enabled.

11 Working Offline with the SCADAPack x70 Device

When the configuration software is offline, you are not communicating with the SCADAPack x70 device. For details about functionality while offline, see [Accessing Offline Functionality](#)^[25].

If you need to change many parameter settings at the same time or manipulate object parameters in another SCADA application you can [Export and Importing Object Parameters](#)^[346].

11.1 Exporting and Importing Object Parameters

If you need to change many parameter settings at the same time or manipulate object parameters in another SCADA application, the most efficient approach is to export the parameters to an Excel file. You can then:

- Make bulk changes to parameter settings and then import the file back into SCADAPack RemoteConnect. The updated parameter settings take effect the next time you [write the configuration to the device](#)^[354].
- Reformat or manipulate the data so it can be imported into a SCADA client or into an external application that is being used to configure the SCADA client and the SCADAPack x70 device.

Only .XLS format is supported

The exported Excel file includes the following SCADAPack RemoteConnect current parameter settings:

- Export Settings
- Project Settings
- Database Objects
- Local Physical I/O
- Local Physical I/O Channels
- DNP3 Controlling Station Devices
- DNP3 Controlling Station Points
- DNP3 Routing
- IP Routing
- Modbus Server Devices
- Modbus Scanners
- DNP3 Controlling Station Device - Object associations
- Modbus Scanner - Object associations
- Modbus Store and Forward
- IP Firewall
- Serial Ports
- Parameters
 - SCADAPack Identification, time zone, and miscellaneous settings
 - Modbus/TCP Server protocol settings
 - DNP3 Outstation protocol and event settings
 - DNP3 protocol layer settings
 - IP services settings
 - HART Pass Through protocol settings
 - IEC 60870-5-104 settings
- Ethernet Ports

- DNP3 Controlling Station Point - Object associations
- Modbus Server Device - Object associations
- Browser Lists
- Browser objects
- Data logs

See:

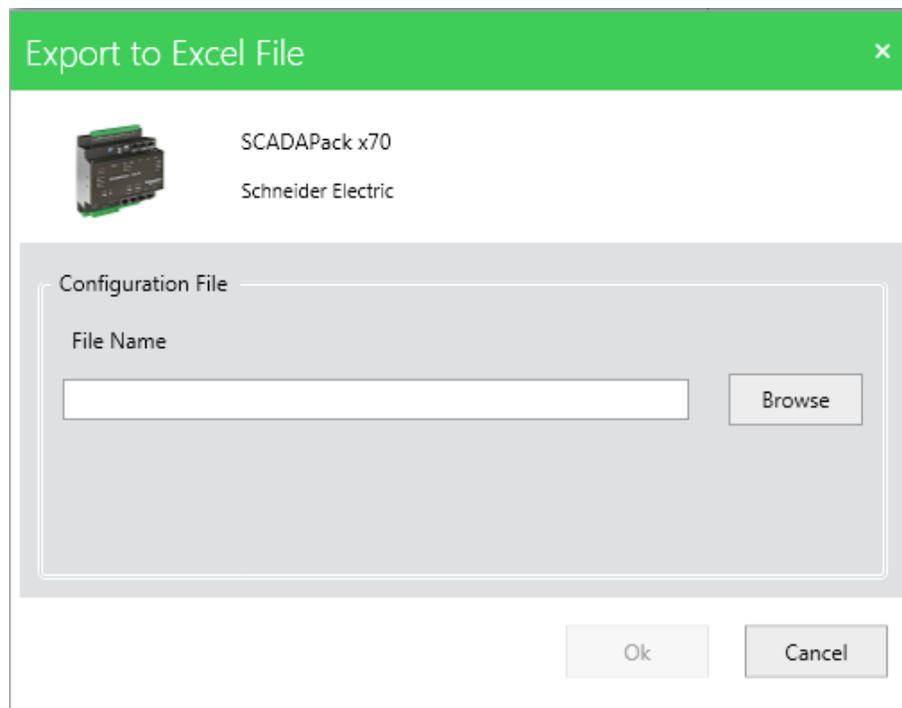
- [Exporting to Excel File](#)^[347]
- [Manipulating Object Parameters](#)^[348]
- [Adding Objects Using the Excel File](#)^[349]
- [Importing from Excel File](#)^[350]

11.1.1 Exporting to Excel File

You can give the exported Excel file any name and store it in any location.

To export the object parameters to Excel

1. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Additional Functions > Export to Excel File**.



2. In the Export to Excel File dialog, click **Browse** to navigate to a location.
3. In the **Save As** dialog, enter a name and select a location for the Excel file, then click **Save**.

Only .XLS format is supported

4. In the Export to Excel File dialog, click **Ok**.

11.1.2 Manipulating Object Parameters

You can use the exported Excel file to create templates, merge configurations, disable object rows, and edit data. For example, if you wanted to assign DNP3 point numbers to your objects, you can edit the spreadsheet and then import the file.

It is recommended that you do not change the object Name. A modified object Name is not updated in the logic program sections.

To manipulate the object parameters

1. [Export the file](#)³⁴⁷.
2. Open the saved Excel file.
3. [Choose the Import Method](#)³⁴⁸.
4. [Enable or disable specific object rows](#)³⁴⁹.
5. [Edit the parameter settings as required](#)³⁴⁹.
6. Save the file.
7. [Import the file](#)³⁵⁰.

Choose the Import Method

- On the **(0) Export Settings** worksheet, in the Value Column, second row, use the drop-down list to choose one of the following:
 - **Replace all configuration <0>** (default)
 - All SCADAPack RemoteConnect data set configuration from the various worksheets is replaced. Objects in the SCADAPack RemoteConnect data set and SCADAPack x70 Logic Editor whose object names do not appear in the **(2) Objects** worksheet are deleted.
 - **Merge objects only <1>**
 - Only the **(2) Objects** worksheet is imported into SCADAPack RemoteConnect. No changes are made to other configurations in the SCADAPack RemoteConnect data set other than to the objects list.
 - Only rows in the **(2) Objects** worksheet configured as Enable Import On <1> are merged.
 - Imported Object worksheet rows with new Object Name fields results in the creation of new objects in the SCADAPack RemoteConnect data set. The configuration attributes are set from the spreadsheet columns.

- Imported Object worksheet rows with modified attributes update the attributes of the SCADAPack RemoteConnect object. Do not modify the object Name.
- Changes merged for existing objects or newly created objects may have configuration mismatches after the import merge. You need to manually resolve the mismatches in SCADAPack RemoteConnect to complete a valid configuration.
- No configuration in SCADAPack RemoteConnect is deleted when using this import method.

Enable or disable specific object rows

You can selectively disable object rows from being imported by setting a row selection to Off using the drop-down list.

- On the **(2) Objects** worksheet, in the Enable Import column, for each row, choose one of
 - **On <1>** (default)
 - **Off <0>**

Edit parameter settings

You can selectively edit parameter settings using the drop-down list for the parameter.

1. On a worksheet, select a parameter that you want to change.
2. Click the arrow on the right side of the cell.
3. Select the option from the list.

Only options that are available for that parameter are displayed.

11.1.3 Adding Objects Using the Excel File

You can use the Excel file to add objects. It is recommended that you use this feature only if you are an advanced user and familiar with the interactions of the configuration parameters of the SCADAPack x70 system. Updates may be required on more than one worksheet.

If you want to add a number of objects that have similar parameters, you can use the exported Excel file to add them and then import the file.

To create a new object, copy an existing row or block of rows for the type of new objects that you require. For example, if you want to create more digital objects, copy a row or block or rows of digital objects.

When using the Merge objects only <1> setting, the Object Sequence ID is optional for new objects.

Take care copying system objects that start with SYS_. The object name needs to match the system data reference name exactly or not start with SYS_.

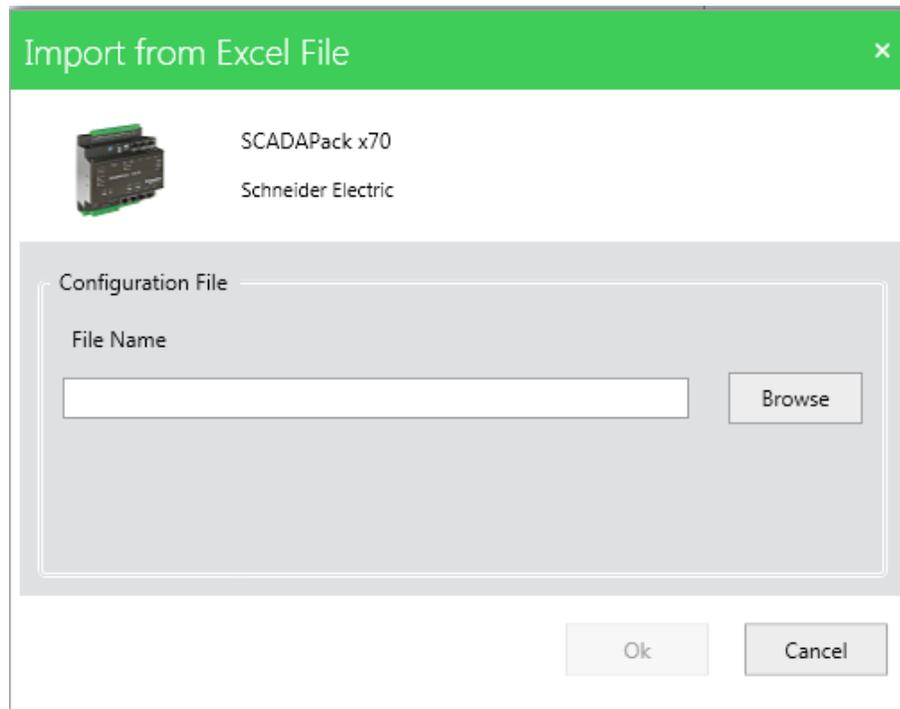
To add an object using the Excel file

1. [Export to an Excel File](#)³⁴⁷.
2. On the **(2) Objects** worksheet, do one of the following:
 - Copy and paste an existing row or a block of rows
 - Add a new row
3. Edit the **Name** of the object.
Each object **Name** needs to be unique.
4. Leave the **Object Sequence ID** blank.
The import process assigns a new **Object Sequence ID** as long as the object **Name** is unique.
5. Edit the parameters, as needed.
Each **DNP Point Number** (if used) needs to be unique for the same DNP3 point group.
Each object **Modbus Register Address** (if used) needs to be unique.
Each object **IEC 60870-5-104 Monitor** and **Control** direction IOA address (if used) needs to be unique.
6. Save and close the file.
7. In SCADAPack RemoteConnect, [import from an Excel file](#)³⁵⁰.

11.1.4 Importing from Excel File

To import object parameters from Excel

1. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Additional Functions > Import from Excel File**.



2. In the **Import from Excel File** dialog, click **Browse**.
3. In the **Open** dialog, navigate to the updated Excel file, then click **Open**.
Only .XLS format is supported
4. In the **Import from Excel File** dialog, click **Ok**.

The parameter settings are updated in the offline configuration. They take effect in the SCADAPack x70 device the next time you [write the configuration to the device](#)³⁵⁴.

12 Working Online with the SCADAPack x70 Device

When the configuration software is online, you are communicating with the SCADAPack x70 device. For details about functionality while online, see [Accessing Online Functionality](#)^[28].

To access online functionality, under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select the required function:

- [Reading the Configuration and Logic Application from the Device](#)^[356]
- [Writing the Configuration and Logic Application to the Device](#)^[354]

To access more online functionality, under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Additional Functions**. From there you can access the [Device Operation](#)^[415] functions.

While online you can:

- [Transfer the Configuration and Logic Application to and from the Device](#)^[352]
- [Read Status and Version Information from the Device](#)^[358]
- [Manage Licensing](#)^[368]
- [Manage the Logic Application in the Device](#)^[369]
- [Add a RemoteConnect Object and Logic Variable Online](#)^[381]
- [Read Object Values from the Device](#)^[382]
- [Manage the Online Object Browser List](#)^[384]
- [Manage Object Forcing](#)^[394]
- [Managing Data Logging](#)^[403]
- [Managing Device Operation](#)^[415]
- [Update the Firmware and Bootloader on the Device](#)^[428]

12.1 Transferring the Configuration and Logic Application to and from the Device

The settings for configuration parameters and the logic application are transferred to and from the SCADAPack x70 device at the same time.

- [Comparing Project Configurations](#)^[352]
- [Writing the Configuration and Logic Application to the Device](#)^[354]
- [Reading the Configuration and Logic Application from the Device](#)^[356]

12.1.1 Comparing Project Configurations

To help determine whether you need to write the latest configuration and logic application to the SCADAPack x70 device, you can compare the versions on the device with those in SCADAPack RemoteConnect.

- If the versions are equal, you do not need to take any action.
- If the versions are different, read or write the configuration and logic application to realign them.

Comparison details

When the project configurations are compared, the parameter settings in SCADAPack RemoteConnect are compared to those in the device. As a result:

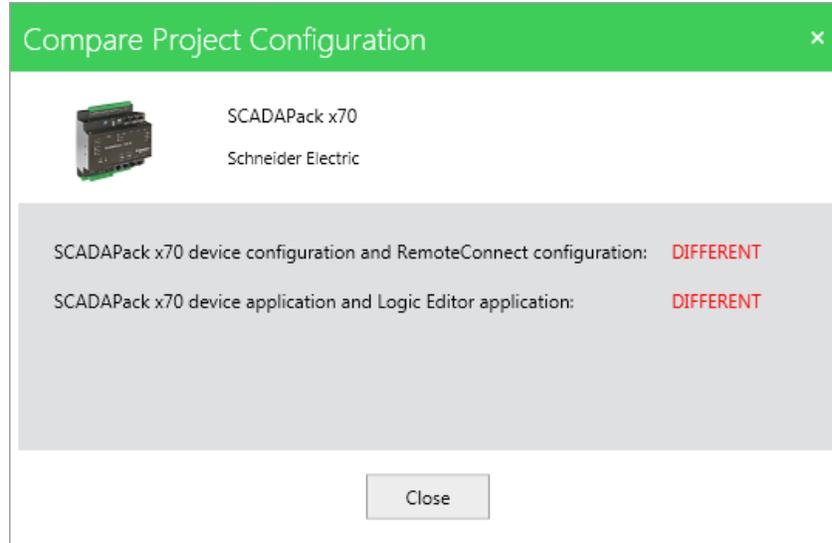
- If you change a parameter setting in SCADAPack RemoteConnect after reading or writing the configuration to the device, the 2 configurations are considered to be different.
- If you then revert the configuration change in SCADAPack RemoteConnect to its original state, the 2 configurations are considered to once again be equal.

When SCADAPack x70 Logic Editor applications are compared, each new build of the application in the SCADAPack x70 Logic Editor is considered to be a different application. As a result, 2 applications that appear to be identical in terms of content — function blocks, variables and connections — may not be considered identical because the build number for the SCADAPack x70 Logic Editor version has been incremented. If the application was rebuilt in the SCADAPack x70 Logic Editor, but no changes were made, the build number is not incremented and the 2 applications are still considered to be equal.

To compare project configurations

1. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Additional Functions > Compare Project Configuration**.

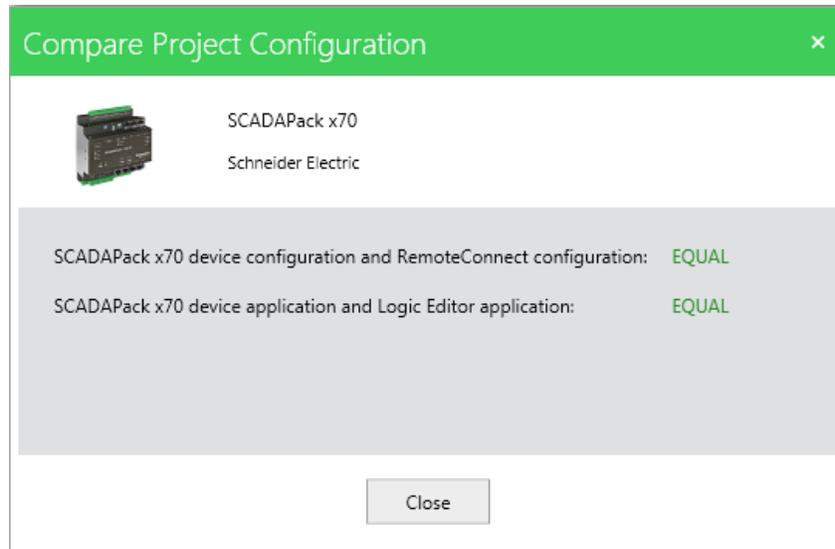
If the versions are different, follow the rest of this procedure to realign them.



2. Do one of the following:
 - To update the versions in the SCADAPack x70 device to match those in SCADAPack RemoteConnect, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Write to Device**.
 - To update the versions in SCADAPack RemoteConnect to match those in the SCADAPack x70 device, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Read from Device**.

- When the operation is complete, right-click on **SCADAPack x70 Controller Settings - DeviceDTM** and select **Additional Functions > Compare Project Configuration**.

The versions should now be equal.



12.1.2 Writing the Configuration and Logic Application to the Device

Write the configuration to the device to transfer and activate the latest parameter settings and the logic application in the SCADAPack x70 device. The SCADAPack x70 device needs to match the device type configured for the project. You can use Additional Functions > Project Settings to change the Device Type.

WARNING

UNINTENDED EQUIPMENT OPERATION

When you write the configuration to the SCADAPack x70 device:

- Any parameter settings that have been updated in the SCADAPack x70 configuration software since the last write operation take effect in the device.
- The logic application automatically begins to run in the device.

Before writing the configuration and the logic application to the SCADAPack x70 device, evaluate the operational state of the equipment being monitored and controlled by the SCADAPack x70 device.

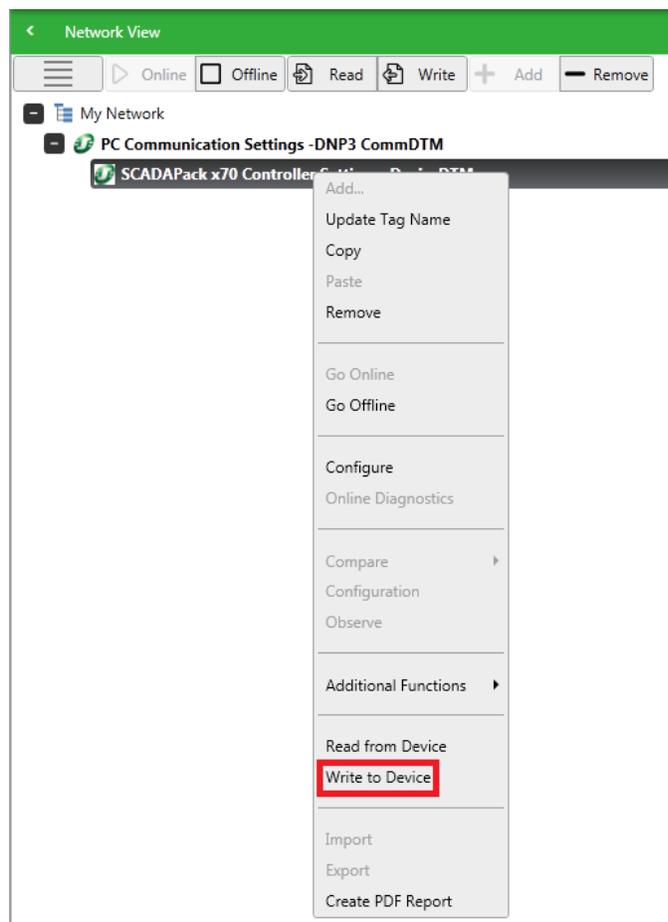
Failure to follow these instructions can result in death or serious injury.

Schneider Electric believes cybersecurity is critical in today's connected world. Improved cybersecurity mechanisms are now included in SCADAPack products and updated tools are required to apply the new device configurations. Before installing the new hardware, install the latest version of the configuration software. Old versions of software will not be able to configure products equipped with these enhanced cybersecurity features. See the Working With Security Locking topic in the Getting Started manual.

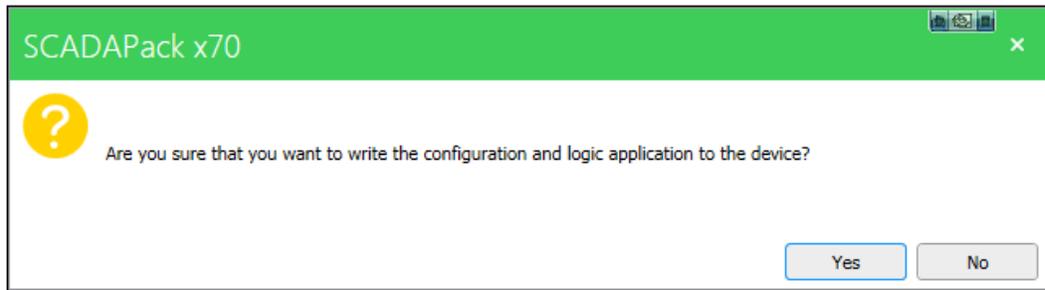
For assistance in obtaining these updated versions, contact [Technical Support](#)¹³¹.

To write the configuration and logic application to the device

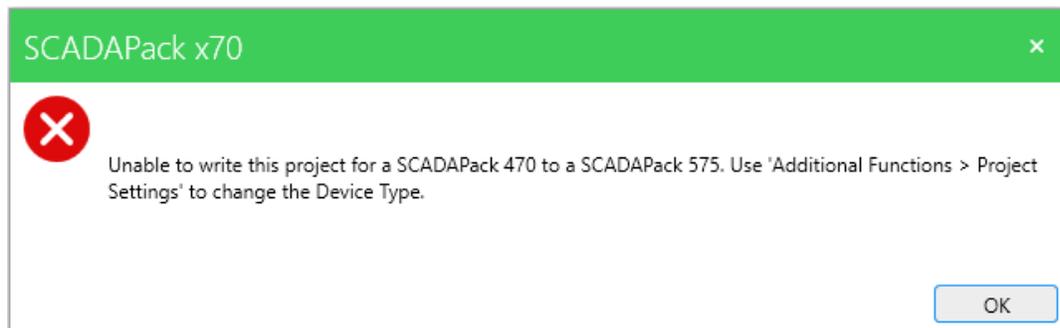
1. Under **My Network**, select **SCADAPack x70 Controller Settings -DeviceDTM** and click **Online**.
2. Do one of the following:
 - On the Network View toolbar, click **Write**.
 - Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Write to Device**.



3. In the confirmation dialog, click **Yes**.



If the project's configured controller type does not match the actual configured device, a message similar to the following is displayed:



See [Changing the Project Settings](#)^[42].

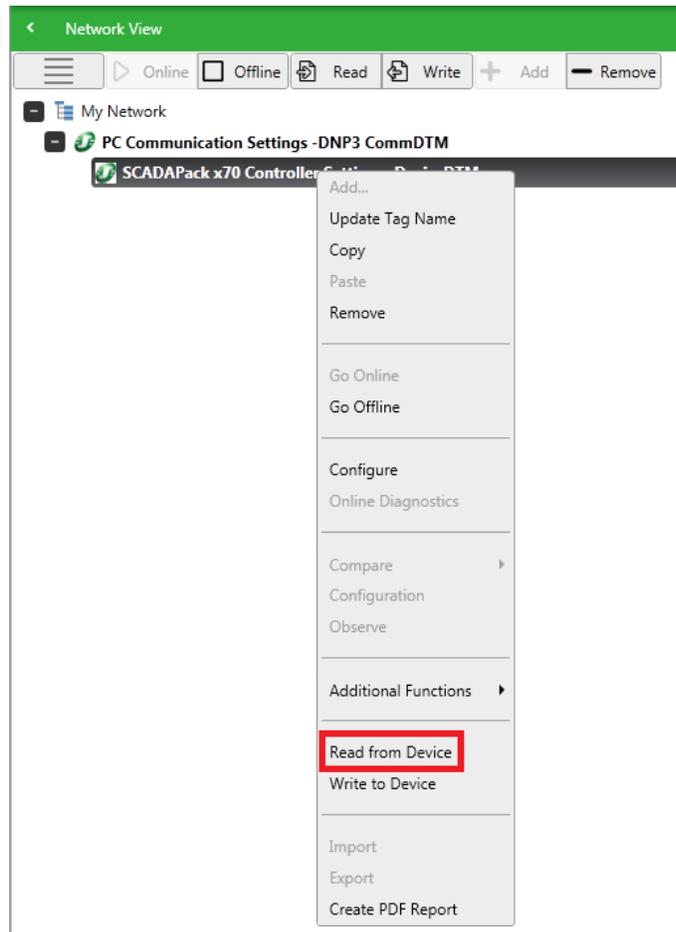
12.1.3 Reading the Configuration and Logic Application from the Device

When you read the configuration from the SCADAPack x70 device, the parameter settings defined on the device overwrite the parameter settings defined in the SCADAPack x70 configuration software and the local configuration file is updated.

If you have developed a logic application in the SCADAPack x70 Logic Editor, it is also transferred from the SCADAPack x70 device with the configuration.

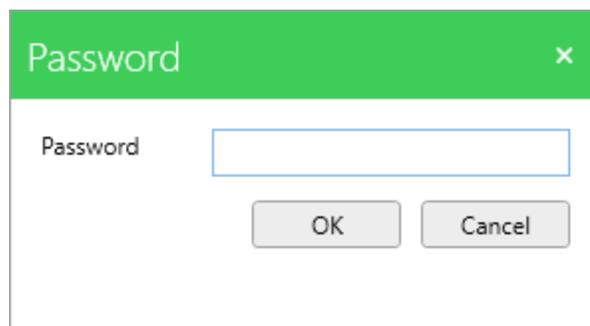
To read the configuration and logic application from the device

1. Under **My Network**, select **SCADAPack x70 Controller Settings -DeviceDTM** and click **Online**.
2. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Read from Device**.



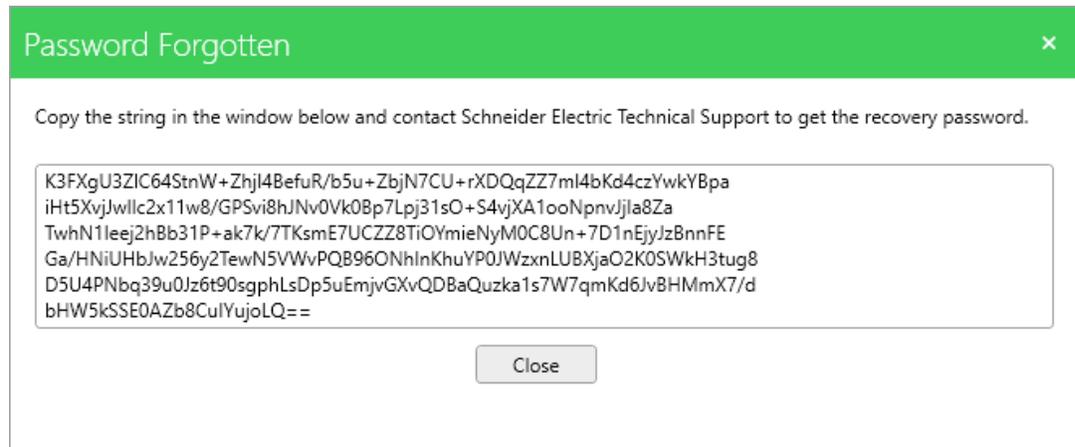
If the project is password protected, the **Password** dialog is opens.

3. Enter the password for the project and click **Ok**.



4. If you have forgotten the password, in the **Password** field, press Shift+F2.

The **Password Forgotten** dialog is displayed with information for retrieving the forgotten password.



5. Follow the instructions in the dialog and click **Close**.

When the password is entered correctly, or when there is no password required, and the read operation is complete, the parameter settings and the logic application are updated in the SCADAPack x70 configuration software.

12.2 Reading Status and Version Information from the Device

Use the Status tab in the SCADAPack x70 online parameters to view and reset status information from the SCADAPack x70 device.

- [Control Actions Functionality](#)^[361]
- [Status Tab Details](#)^[361]
- [Status Tab Details - Advanced](#)^[365]

Status tab

Online Status: Connected Connection: USB DNP3 Target Address: 0 Device Serial Number: 8025723

Status Licensing Logic Objects

Device Status Refresh Reset Diagnostic Status Last Updated 10/12/2019 15:41:02

Identification

SCADAPack Type SCADAPack 575

Serial Number 8025723

Release SCADAPack x70 Firmware R2.4

Firmware Version 9.4.1.550

Operation Status

Forcing None

Input Voltage 24.6 Vdc, Normal (Low Threshold 11.5 Vdc)

Memory Battery 3.7 Vdc, Normal

Internal Temperature 34.0 °C, 94.0 °F

Security

Locked State Unlocked Device Lock

Diagnostics

Uptime 1d, 01h, 19m, 14s

System Status Code Code: 0 Normal operation Open Configuration Log

Configuration Status Configured

Clock

Device System Time 10/12/2019 15:40:50 Set Device Time

Device Local Time 10/12/2019 15:40:50

Daylight Savings ⓘ

Advanced Status

Status tab - Advanced Status

Advanced Status

Status Code History Diagnostics

System Status Code Code: 0 Normal Metadata 0

Status Code 1 Code: 1012 The configuration file contains an invalid object attribute. See Timestamp 26/07/2018 15:29:35 Metadata 0

Status Code 2 --- Timestamp --- Metadata ---

Status Code 3 --- Timestamp --- Metadata ---

Status Code 4 --- Timestamp --- Metadata ---

Status Code 5 --- Timestamp --- Metadata ---

Restart History Diagnostics

Task Watchdogs Code: 0x0000

Restart Count 1

Restart Reasons Code: 0x4004 - SCADAPack device firmware changed - Hardware watchdog

Restart Reasons 1 Code: 0x4000 - Hardware watchdog restart Timestamp 26/07/2018 13:45:42

Restart Reasons 2 Code: 0x0004 - SCADAPack device firmware changed Timestamp 26/07/2018 13:45:42

Restart Reasons 3 --- Timestamp ---

Restart Reasons 4 --- Timestamp ---

Restart Reasons 5 --- Timestamp ---

Device Information

Ethernet 1 MAC Address 00-05-21-02-4C-DF

Ethernet 2 MAC Address 00-05-21-02-4C-E0

Ethernet 3 MAC Address 00-05-21-02-4C-E1

I/O Board 0 Firmware 1.80.10

Bootloader Version 1.10

To read the latest status and version information from the device

- On the Status tab, click **Refresh**.

This is a good way to confirm that the SCADAPack x70 device is communicating with the SCADAPack x70 configuration software.

The information remains until the next time you click **Refresh**.

Online Status	<p>The current status of communication between SCADAPack RemoteConnect and the SCADAPack x70 device. One of:</p> <ul style="list-style-type: none"> • Stand by • Checking • Connecting • Connected • Disconnecting • Disconnected • Disturbed <p>These connection states are the same as those displayed along the bottom bar in SCADAPack RemoteConnect. For details, see the Status Indicators topic in the SCADAPack RemoteConnect Configuration Software manual.</p>
Connection Information	<p>The currently configured communication type between SCADAPack RemoteConnect and the SCADAPack x70 device. When connected with USB, the device serial number is also indicated.</p>

To clear the Task Watchdogs, Restart Reason and System Status Code fields

- On the Status tab, click **Reset Diagnostic Status**.

Because new mask values are added to existing values, clearing these fields makes it easier to detect new conditions.

To set the device system time

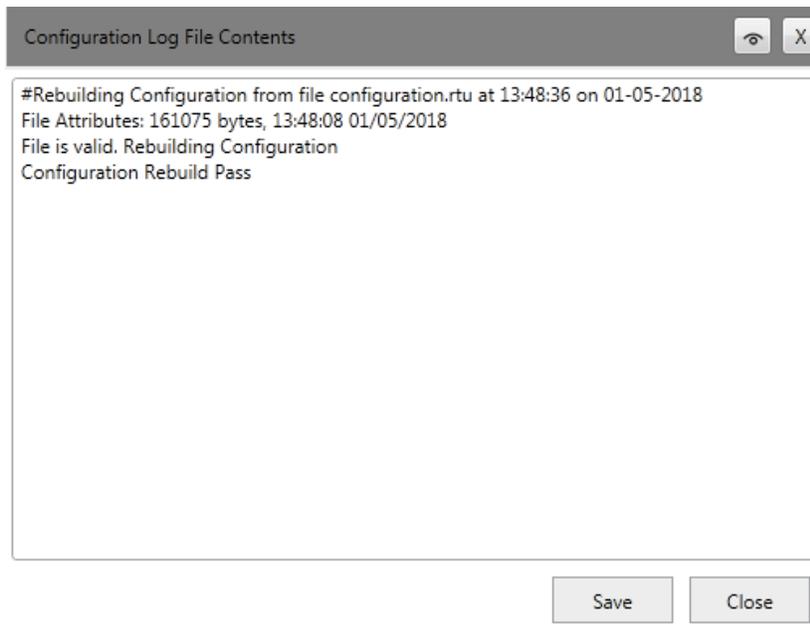
- On the Status tab, click **Set Device Time**.

See [Setting the Time on the Device](#)^[423].

To view the contents of config.log

- On the Status tab, click **Open Configuration Log**.

You can use this button to view the date and time that the configuration was written, and check the validity of the configuration. The following is a sample log file:



12.2.1 Control Actions Functionality

The following table describes the functionality available in the Control Actions section on the Status tab.

Button or Field	Description
Refresh	Updates the online Status Tab Details with the latest values from the SCADAPack x70 device.
Reset Diagnostic Status	Clears online mask values displayed in the Task Watchdogs, Restart Count, Restart Reasons, and System Status Code fields. Because new mask values are added to the existing mask values in these fields each time the SCADAPack x70 device is restarted, clearing these fields can help you troubleshoot new conditions that are causing the device to restart.
Last Updated	The PC date and time that information was last read from the SCADAPack x70 device. Format: <ul style="list-style-type: none"> • 24-hour clock • dd/mm/yyyy hh:mm:ss

12.2.2 Status Tab Details

The following tables describe the information provided on the Status tab.

NOTICE

CONFIGURATION DATA LOSS

If the onboard RAM back-up battery loses its charge, SCADAPack x70 device configuration data can be lost.

If the **RAM Battery** parameter displays **Low**, see the hardware manual for information about replacing the battery in the device.

Failure to follow these instructions can result in equipment damage.

Identification

Information	Description
SCADAPack Type	The type of device that is communicating with the SCADAPack RemoteConnect configuration software.
Serial Number	The unique numerical identifier for the device that is communicating with the SCADAPack RemoteConnect configuration software.
Release	The description and release number of the firmware running in the device that is communicating with the SCADAPack RemoteConnect configuration software.
Firmware Version	The version number of the firmware running in the device that is communicating with the SCADAPack RemoteConnect configuration software.

Operation Status

Information	Description
Forcing	<p>Displays if forcing is active and the number of objects and EBOOL logic variables that are forced. See Managing Object Forcing^[394].</p> <p>n forced objects: Indicates the number of SCADAPack x70 objects that are currently forced. In Online mode, see Objects > Forced Objects.</p> <p>n forced EBOOL logic variables: Indicates the number of EBOOL logic variables that are currently forced. In the SCADAPack x70 Logic Editor, in Connected mode, double-click the red F in the lower status bar.</p> <p>If forcing is not active:</p> <ul style="list-style-type: none"> • The Force LED on the SCADAPack x70 is not lit

	<ul style="list-style-type: none"> • None is displayed <p>If forcing is active:</p> <ul style="list-style-type: none"> • The Force LED on the SCADAPack x70 is lit • Active is displayed
Input Voltage	<p>The voltage being applied to the device that is communicating with the SCADAPack RemoteConnect configuration software. Measured in Vdc.</p> <p>The status of the voltage being applied to the device compared with the Low Voltage Alert Level setting in the configuration parameters^[53].</p> <p>Normal: The input voltage is above the Input Voltage Low Threshold setting. No action is required.</p> <p>Low: The input voltage is below the Input Voltage Low Threshold setting. Check the source of the input voltage to the device.</p> <p>Used to determine the Input Voltage Status. Measured in Vdc.</p>
Memory Battery	<p>The voltage and status of the onboard RAM back-up battery in the device that is communicating with the SCADAPack RemoteConnect configuration software. Voltage is measured in Vdc.</p> <p>Normal: The battery is in good condition.</p> <p>Low: The battery condition has deteriorated. For information about replacing the battery, see the hardware manual for the device.</p>
Internal Temperature	<p>The internal operating temperature of the device that is communicating with the SCADAPack RemoteConnect configuration software in degrees Celsius and Fahrenheit.</p>

Security

Information	Description
Locked State	<p>The SCADAPack will be in one of the following states:</p> <ul style="list-style-type: none"> • Initial <ul style="list-style-type: none"> ○ SCADAPack is new or has been cold booted, factory booted, or service boot has been used to initialize the security lock • No password required <ul style="list-style-type: none"> ○ SCADAPack does not require a password for configuration. This state can be set only when the device Locked state is Initial. • Locked

	<ul style="list-style-type: none"> ○ SCADAPack is password protected and configuration and other actions are not allowed because the SCADAPack is in a locked state • Unlocked ○ SCADAPack is password protected and configuration is allowed because the SCADAPack is in an unlocked state. You should lock the SCADAPack x70 device after you finish interacting with it. <p>For more details, see: Working with security locking in the Getting Started manual.</p>
Device Lock	<p>Use this button to:</p> <ul style="list-style-type: none"> • Read the current lock status of the controller • Unlock the controller with the password so configuration changes can be made • Lock the controller with the password so configuration changes cannot be made • Change the controller password by entering the old password and new password <p>For more details, see: Working with security locking in the Getting Started manual.</p>

Diagnostics

Information	Description
Uptime	The number of days, hours, minutes and seconds the device has been running.
System Status Code	<p>A numerical code and description that indicates the operational status of the device that is communicating with the SCADAPack RemoteConnect configuration software.</p> <p>To clear the system status code, click Reset Diagnostic Status.</p> <p>For details about system status codes, see the System Status Codes topic in the Operations Technical Reference manual.</p>
Configuration Status	<p>Indicates if the device is configured. If Needs configuration is displayed, see Writing the Configuration and Logic Application to the Device ^[354].</p> <p>Values:</p> <ul style="list-style-type: none"> • Needs configuration • Configured

Open Configuration Log	Use this button to view the date and time that the configuration was written, and check the validity of the configuration.
------------------------	--

Clock

Information	Description
Device System Time	<p>The device system time in the SCADAPack x70 device.</p> <p>The time at which DNP events get generated.</p> <p>For access to the SCADAPack real-time clock, see the Real-Time Clock Function Blocks topic in the Function Blocks Technical Reference manual.</p> <p>The system words supported by the SCADAPack x70 Logic Editor can be found here: the System Status Words topic, %SW49 row in the Logic Programming Overview manual.</p>
Device Local Time	<p>The device system time offset by the time offset from UTC configuration and daylight saving time state.</p> <p>If no time offset or daylight saving time are in effect, Device System Time and Device Local Time are the same.</p> <p>For access to the SCADAPack real-time clock, see the Real-Time Clock Function Blocks topic in the Function Blocks Technical Reference manual.</p> <p>The system words supported by the SCADAPack x70 Logic Editor can be found here: the System Status Words topic, %SW49 row in the Logic Programming Overview manual.</p>
Daylight Savings	<p>When the System Data Reference the SYS_CLOCK_DST_State topic in the Operations Technical Reference manual. is set, the checkbox is checked. Otherwise, it is unchecked.</p>
Set Device Time	<p>Use this button to set device system time to:</p> <ul style="list-style-type: none"> • PC UTC time • PC local time • Custom time <p>See Setting the Time on the Device⁴²³.</p>

12.2.3 Status Tab Details - Advanced Status

The following tables describe the information provided on the Status tab - Advanced Status.

NOTICE**CONFIGURATION DATA LOSS**

If the onboard RAM back-up battery loses its charge, SCADAPack x70 device configuration data can be lost.

If the **RAM Battery** parameter displays **Low**, see the hardware manual for information about replacing the battery in the device.

Failure to follow these instructions can result in equipment damage.

Status Code History Diagnostics

Information	Description
System Status Code and Metadata	<p>The System Status Code value and text is repeated from the Device Status diagnostics System Status code. See Status Tab Details^[361].</p> <p>It indicates the operational status of the device that is communicating with the SCADAPack RemoteConnect configuration software.</p> <p>Some status code values provide additional information in the Metadata field. See the System Status Codes topic in the Operations Technical Reference manual for the status code number. The Further Actions field describes the meaning of the metadata information for the status code.</p> <p>To clear the System Status Code, click Reset Diagnostic Status.</p> <p>For details about system status codes, see the System Status Codes topic in the Operations Technical Reference manual.</p>
Status Code 1 - 5	<p>A history of 5 previous System Status Codes, with Metadata and Timestamp fields. This history is not cleared when Reset Diagnostic Status is used.</p>
Metadata	<p>Additional information associated with the status code value. See the System Status Codes topic in the Operations Technical Reference manual for the status code number. The Further Actions field describes the meaning of the metadata information for the status code.</p>
Timestamp	<p>The device time when the system status code was reported.</p>

Device Information

Information	Description
-------------	-------------

Ethernet 1 MAC Address	The IEEE 802.3 media access control (MAC) address used in Ethernet communications from this Ethernet port.
Ethernet 2 MAC Address	Ethernet 3 MAC address is not applicable for the SCADAPack 47x.
Ethernet 3 MAC Address	
I/O Board 0 Firmware	<p>For a SCADAPack 575: The firmware version number of the first 6601 input output module in the device that is communicating with the SCADAPack RemoteConnect configuration software. If there is no 6601 input output module, then the firmware version number displays 0.0.00. See the SYS_DEVICE: Device Information topic in the Operations Technical Reference manual.</p> <p>For a SCADAPack 474: The firmware version number of the 6607 input output module in the device that is communicating with the SCADAPack RemoteConnect configuration software. If there is no 6607 input output module, then the firmware version number displays 0.0.00.</p>
Bootloader Version	The version number of the bootloader firmware running in the device that is communicating with the SCADAPack RemoteConnect configuration software.

Restart History Diagnostics

Information	Description
Task Watchdogs	<p>A hexadecimal mask value indicating which operating system tasks caused the device to restart since the Task Watchdogs were last cleared. If additional task watchdogs are generated before the mask value is cleared, the new mask values are added to the existing value.</p> <p>To clear the Task Watchdogs value, click Reset Diagnostic Status.</p> <p>For details about the hexadecimal mask values for task watchdogs, see the the Task Watchdogs topic in the Operations Technical Reference manual.</p>
Restart Count	<p>The number of SCADAPack x70 device restarts.</p> <p>To clear the Restart Count, click Reset Diagnostic Status.</p>
Restart Reasons	<p>A hexadecimal mask value indicating why the device restarted. If additional restart reasons are generated before the mask value is cleared, the new mask values are added to the existing value.</p> <p>To clear the Restart Reasons, click Reset Diagnostic Status.</p>

	For details about the hexadecimal mask values for restart reasons, see the the Restart Reasons topic in the Operations Technical Reference manual.
Restart Reasons 1 - 5	A history of the last 5 Restart Reasons.

12.3 Managing Licensing

Use the Licensing tab in the SCADAPack x70 online parameters to view details about licensed features on the SCADAPack x70 device.

- [Control Actions Functionality](#)³⁶⁸
- [Licensing Tab Details](#)³⁶⁹

Licensing tab

Online Status: Connected Connection: USB DNP3 Target Address: 0 Device Serial Number: B172687

Status **Licensing** Logic Objects

Licensing

Refresh Last Updated 09/11/2021 10:25:19

Licensed Features

DNP3 Data Concentrator Client

DNP3 Secure Authentication

Licensed Applications

	Name	Level	Options (hex)
1	RealfloRuns	10	0

12.3.1 Control Actions Functionality

The following table describes the functionality available in the Control Actions section on the License tab.

Button or Field	Description
Refresh	Updates the online Licensing Tab details ³⁶⁹ with the latest values from the SCADAPack x70 device.

Last Updated	Displays the date and time that the content on the Licensing page was last refreshed.
--------------	---

12.3.2 Licensing Tab Details

The following tables describe the information provided on the License tab.

NOTICE
<p>CONFIGURATION DATA LOSS</p> <p>If the onboard RAM back-up battery loses its charge, SCADAPack x70 device configuration data can be lost.</p> <p>If the RAM Battery parameter displays Low, see the hardware manual for information about replacing the battery in the device.</p> <p>Failure to follow these instructions can result in equipment damage.</p>

The License tab indicates which features are currently licensed on the SCADAPack x70 device. When the box is checked, it means the feature is licensed. To add any of the functionality listed here, contact your Schneider Electric representative to obtain a software license file that can be applied locally or remotely.

Information	Description
DNP3 Data Concentrator Client	Needs to be enabled if the device is operating as a DNP3 Controlling Station. Default: Checked
DNP3 Secure Authentication	When checked, indicates that DNP3 Secure Authentication is licensed.
Licensed Applications	Displays details of the licensed applications in the SCADAPack x70 device.

12.4 Managing the Logic Application in the Device

Use the Logic tab in the SCADAPack x70 online parameters to read the latest information about the logic application from the device and to manage the logic application in the device. The logic application is transferred to the SCADAPack x70 device when you [write the configuration to the device](#)^[354].

- [Control Actions Functionality](#)^[371]
- [Logic Tab Details](#)^[372]
- [Modifying a Logic Application Online](#)^[375]
- [Writing Logic Source](#)^[378]

Online Status: Connected **Connection:** TCP **DNP3 Target Address:** 0 **IP Address or Hostname:** 172.16.13.1

Status
Licensing
Logic
Objects

SCADAPack x70 Logic Status

Refresh
Restart Application
Reset Scan Times
Write Logic Source

Last Updated 21/05/2019 10:56:20

Application Information

Project Name	<input style="width: 90%;" type="text" value="Project"/>	Logic Status	<input style="width: 90%;" type="text" value="RUN"/>
Project Version	<input style="width: 90%;" type="text" value="0.0.0"/>	Logic Status Code	<input style="width: 90%;" type="text" value="Code: 0 (16#0000)
Normal"/> (%SW125)
Start Time	<input style="width: 90%;" type="text" value="21/05/2019 09:43:40"/>	Number of Forced EBOOL Variables	<input style="width: 90%;" type="text" value="0"/>
Stop Time	<input style="width: 90%;" type="text" value="21/05/2019 09:43:18"/>	Arithmetic Overflow	<input type="checkbox"/> (%S18)
Logic Saved Data Usage	<input style="width: 90%;" type="text" value="3"/> %	Array Index Overflow	<input type="checkbox"/> (%S20)
Application Signature	<input style="width: 90%;" type="text" value="60607512-60607512"/>	String Overflow	<input type="checkbox"/> (%S15)

Scan Times

MAST Period	<input style="width: 90%;" type="text" value="125"/> ms	FAST Period	<input style="width: 90%;" type="text" value="25"/> ms
MAST Current Time	<input style="width: 90%;" type="text" value="0"/> ms	FAST Current Time	<input style="width: 90%;" type="text" value="0"/> ms
MAST Maximum Time	<input style="width: 90%;" type="text" value="9"/> ms	FAST Maximum Time	<input style="width: 90%;" type="text" value="0"/> ms
MAST Minimum Time	<input style="width: 90%;" type="text" value="0"/> ms	FAST Minimum Time	<input style="width: 90%;" type="text" value="0"/> ms
AUX0 Period	<input style="width: 90%;" type="text" value="200"/> ms	AUX1 Period	<input style="width: 90%;" type="text" value="300"/> ms

To read the latest status and version information from the device

- On the Logic tab, click **Refresh**.

This is a good way to confirm that the SCADAPack x70 device is communicating with the SCADAPack x70 configuration software.

The information remains until the next time you click **Refresh**.

Online Status	<p>The current status of communication between SCADAPack RemoteConnect and the SCADAPack x70 device. One of:</p> <ul style="list-style-type: none"> Stand by Checking Connecting Connected Disconnecting Disconnected
----------------------	---

	<ul style="list-style-type: none"> • Disturbed <p>These connection states are the same as those displayed along the bottom bar in SCADAPack RemoteConnect. For details, see the Status Indicators topic in the SCADAPack RemoteConnect Configuration Software manual.</p>
Connection Information	The currently configured communication type between SCADAPack RemoteConnect and the SCADAPack x70 device. When connected with USB, the device serial number is also indicated.

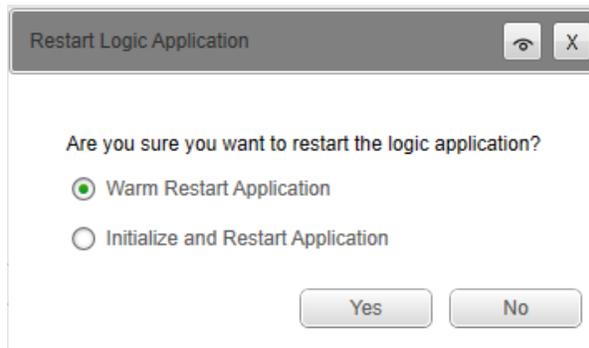
To read the latest information for the logic application from the device

- On the Logic tab, click **Refresh**.

For details about the information displayed, see [Logic Tab Details](#)³⁷².

To restart the logic application in the device

1. On the Logic tab, click **Restart Application**.



2. Select the [type of restart required](#)³⁷¹, then click **Yes**.

To clear the scan times for the logic application in the SCADAPack x70 device

- Click **Reset Scan Times**

To update the logic archive in the SCADAPack x70 device

- Click **Write Logic Source**

12.4.1 Control Actions Functionality

The following table describes the functionality available in the Control Actions section on the Logic tab.

Button or Field	Description
-----------------	-------------

Refresh	Updates the Logic Tab Details ³⁷² with the latest values from the SCADAPack x70 device.
Restart Application	<p>Restarts the logic application in the SCADAPack x70 device.</p> <p>If the logic editor is in debug mode while connected and the application is restarted, the connection between the logic editor and SCADAPack x70 device is disconnected.</p> <p>Warm Restart Application: Restarts the application in the SCADAPack x70 device without initializing variables to the default values specified in the SCADAPack x70 Logic Editor Data Editor. This option is equivalent to selecting Mode > Stop then Mode > Run in the SCADAPack x70 Logic Editor.</p> <p>Initialize and Restart Application: Initializes every variable to the default value specified in the SCADAPack x70 Logic Editor Data Editor then restarts the application. This option is equivalent to selecting Mode > Stop then Mode > Init then Mode > Run in the SCADAPack x70 Logic Editor.</p>
Reset Scan Times	Resets every Scan Time to 0. To view the latest scan times for the logic application in the SCADAPack x70 device, click Refresh .
Write Logic Source	Updates the logic source in the controller, after an online modification, to keep the logic source and the logic executing in the controller synchronized. This is not required if you are not performing online updates of the logic.
Last Updated	<p>The PC date and time that information was last read from the SCADAPack x70 device.</p> <p>Format:</p> <ul style="list-style-type: none"> • 24-hour clock • dd/mm/yyyy hh:mm:ss

12.4.2 Logic Tab Details

The following tables describe the information provided on the Logic tab.

Application Information

Information	Description
Project Name	The name given to the application when it was developed in the SCADAPack x70 Logic Editor
Project Version	The version number of the logic application in the SCADAPack x70 device

Start Time	<p>The date and time on the SCADAPack x70 device clock that the logic application started running</p> <p>Format:</p> <ul style="list-style-type: none"> • 24-hour clock • dd/mm/yyyy hh:mm:ss
Stop Time	<p>The date and time on the SCADAPack x70 device clock that the logic application last stopped running</p> <p>Format:</p> <ul style="list-style-type: none"> • 24-hour clock • dd/mm/yyyy hh:mm:ss
Logic Saved Data Usage	Percentage of logic memory used for saved data
Application Signature	Used to identify if there is a change to the application
Logic Status	<p>The status of the logic application in the SCADAPack x70 device. For more details, see SCADAPack x70 Logic States in the Operations Technical Reference manual.</p> <p>HALT: A programmed condition or an exception has occurred while executing the logic</p> <p>IDLE: Logic project is loaded but has not yet been started</p> <p>NOCONF: Logic project is not loaded, or the loaded project is invalid</p> <p>RUN: Logic project with at least one task is running</p> <p>STOP: Logic project is not running, but the loaded project was in a RUN state at least once</p> <p>UNAVAILABLE: The logic engine is unavailable to execute the logic project</p> <p>OBJMISSING: The SCADAPack x70 device configuration is corrupted or totally blank, but valid logic files are on the file system.</p> <p>BREAKPOINT: The logic editor is running in debug and a break point is encountered.</p>
Logic Status Code	The status code produced by the logic program. See the System Status Words topic, %SW125 row, in the Logic Programming Overview manual.
Number of Forced EBOOL Variables	Total number of variables in logic with EBOOL data type that are forced. See the EBOOL Variable Type topic in the Logic Programming Overview manual.

Arithmetic Overflow	When checked, there is an arithmetic overflow, such as an assignment overflow or a divide by 0, in MAST task logic
Array Index Overflow	When checked, an index value exceeds the defined size of an array in MAST task logic
String Overflow	When checked, a destination string in MAST task logic is insufficient in size

Scan Times

Information	Description
MAST Period	The configured scan period of the MAST task Displays as Cyclic when the logic application MAST task is configured as Cyclic Displays the configured period in ms when the logic application MAST task is configured as Periodic
MAST Current Time	The most recent scan time for the MAST task in the logic application that is running in the SCADAPack x70 device. Measured in ms.
MAST Maximum Time	The longest scan time for the MAST task in the logic application that is running in the SCADAPack x70 device since the scan times were reset. Measured in ms.
MAST Minimum Time	The fastest scan time for the MAST task in the logic application that is running in the SCADAPack x70 device since the scan times were reset. Measured in ms.
AUX0 Period	The configured scan period of the AUX0 task Displayed in ms
FAST Period	The configured scan period of the FAST task Displayed in ms
FAST Current Time	The most recent scan time for the FAST task in the logic application that is running in the SCADAPack x70 device. Measured in ms.
FAST Maximum Time	The longest scan time for the FAST task in the logic application that is running in the SCADAPack x70 device since the scan times were reset. Measured in ms.
FAST Minimum Time	The fastest scan time for the FAST task in the logic application that is running in the SCADAPack x70 device since the scan times were

	reset. Measured in ms.
AUX1 Period	The configured scan period of the AUX1 task Displayed in ms

12.4.3 Modifying a Logic Application Online

The SCADAPack x70 Logic Editor supports modifying a running logic application on a SCADAPack x70 device.

- [Conditions for making online modifications](#) ^[375]
- [Activating logic application changes](#) ^[376]
- [Applying online modifications automatically to the SCADAPack x70 device](#) ^[376]
- [Allocating more memory online](#) ^[377]

NOTICE

APPLICATION LOSS

If you use the SCADAPack x70 Logic Editor to modify the logic application online, for example when you are debugging, and you do not update the logic source in the controller, you will not be able to read the logic application from the SCADAPack x70 device in the future.

After modifying the logic application online, make sure to write a logic source update to the SCADAPack x70 device.

Failure to follow these instructions can result in equipment damage.

Online logic application modifications are retained on the SCADAPack, however as they are incremental in nature they can not be uploaded from the SCADAPack x70 device in the future. To be able to upload a modified application in the future, write the logic source updates to the SCADAPack x70 device using SCADAPack RemoteConnect following the online changes. A logic source update is an online action that does not disturb the operation of the SCADAPack x70 device. See [Writing Logic Source](#) ^[378].

A variety of logic changes can be performed online, but there are some restrictions. For more information on online modification in the SCADAPack x70 Logic Editor help, see SCADAPack x70 Logic Editor > Operating Modes > General > Global Project management > Project management > Allowed Online Modifications.

For online modification of SCADAPack RemoteConnect objects, see [Adding a RemoteConnect Object and Logic Variable Online](#) ^[381].

Conditions for making online modifications

You can make online modifications to the logic application when the following conditions are met:

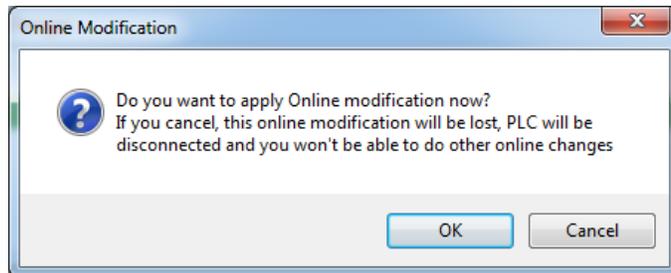
- A USB, Ethernet, or PPP TCP/IP connection is available between SCADAPack RemoteConnect and the SCADAPack x70 device
- The SCADAPack configuration has **Logic Debug Service** enabled
- The application loaded on the SCADAPack x70 device exactly matches the application build present in the SCADAPack RemoteConnect project. See [Comparing Project Configurations](#) ³⁵².

Activating logic application changes

Logic application changes are activated after a successful build when the following conditions are met:

- The SCADAPack x70 Logic Editor is connected online to the SCADAPack x70 device using the **Mode > Connect** menu option in the SCADAPack x70 Logic Editor
- Modifications are made through the SCADAPack x70 Logic Editor
- The application is built while online using **Build > Build Changes**

In the SCADAPack x70 Logic Editor, when you are in Connected mode and select **Build > Build Changes**, by default a confirmation dialog is displayed.



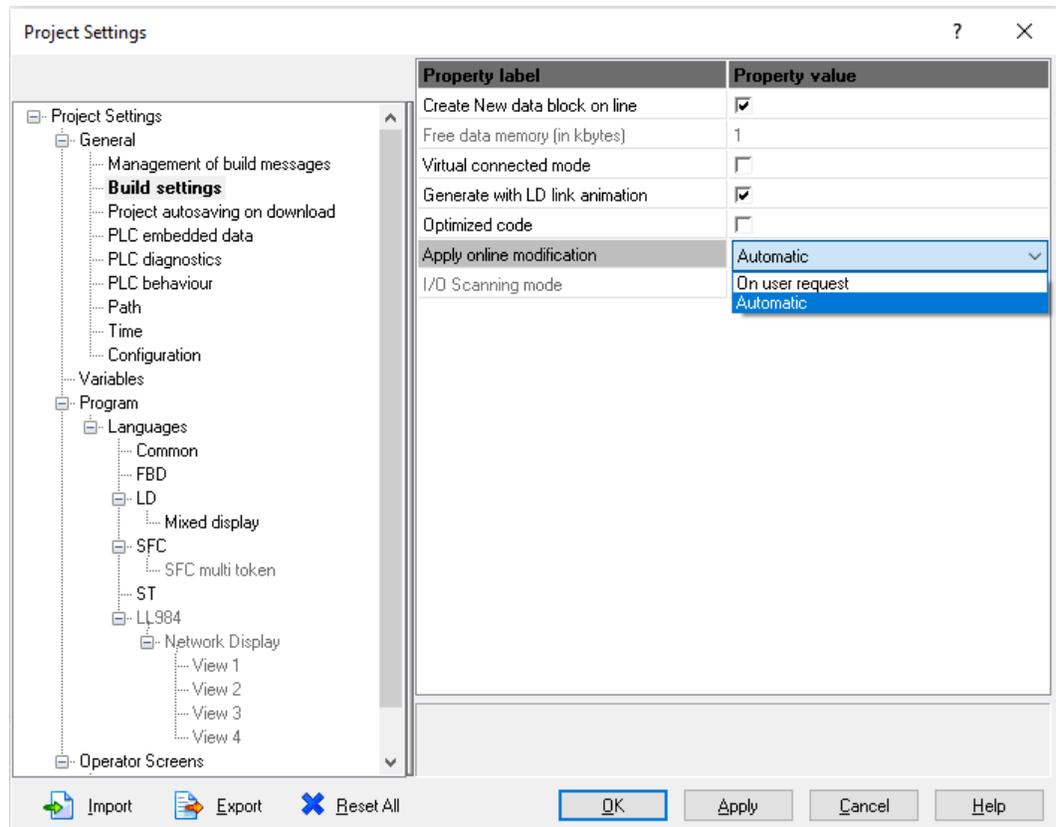
To modify the running application in the SCADAPack x70 device, click **OK**.

To you do not want the modification deployed on the SCADAPack x70 device, click **Cancel**.

Applying online modifications automatically to the SCADAPack x70 device

You can avoid having to confirm online modifications every time you Build Changes when connected to the SCADAPack x70 device by changing the Build Settings.

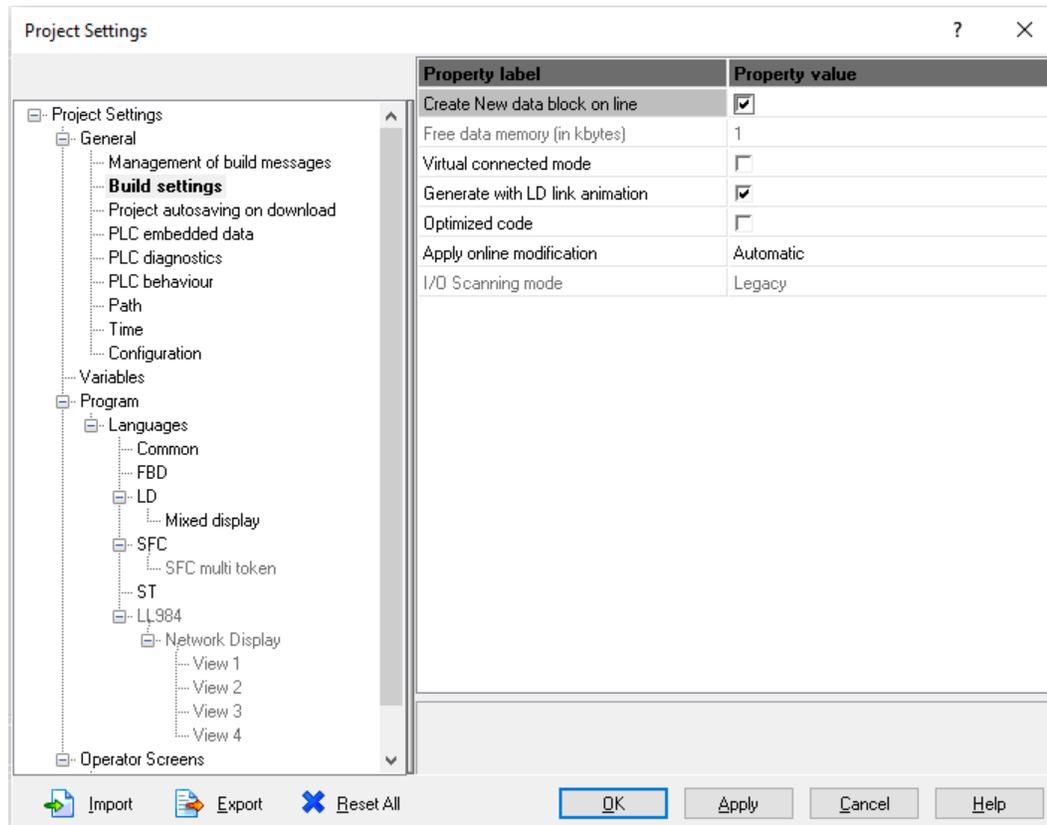
1. In the SCADAPack x70 Logic Editor, navigate to **Tools > Project Settings > Build Settings > Apply online modification**.
2. Change the option from **On user request** to **Automatic**.



Allocating more memory online

Depending on the SCADAPack x70 Logic Editor version when the project was created, the SCADAPack x70 device can automatically allocate data memory for online modifications using the **Create New data block on line** feature.

In the SCADAPack x70 Logic Editor, navigate to **Tools > Project Settings > Build Settings > Create New data block on line**.



Prior to SCADAPack RemoteConnect version 3.7.1, the SCADAPack x70 device may run out of data memory while making online modifications.

To help avoid this situation or to use the Program Unit feature in SCADAPack RemoteConnect versions 3.7.1 and later, you need to enable this setting.

For projects created using SCADAPack RemoteConnect versions 3.7.1 and later, the **Create New data block on line** feature is enabled by default.

For projects created using SCADAPack RemoteConnect prior to version 3.7.1, it is recommended that you enable this feature.

Following a change in this setting, you will be prompted to rebuild the project.

12.4.4 Writing Logic Source

When the logic application in a SCADAPack x70 device has been modified online, the logic application source is removed from the SCADAPack x70 device. To be able to upload a modified application in the future, write the logic source updates to the SCADAPack x70 device after online modifications have been completed.

- [Writing logic source when offline](#) ³⁷⁹
- [Writing logic source when online](#) ³⁷⁹

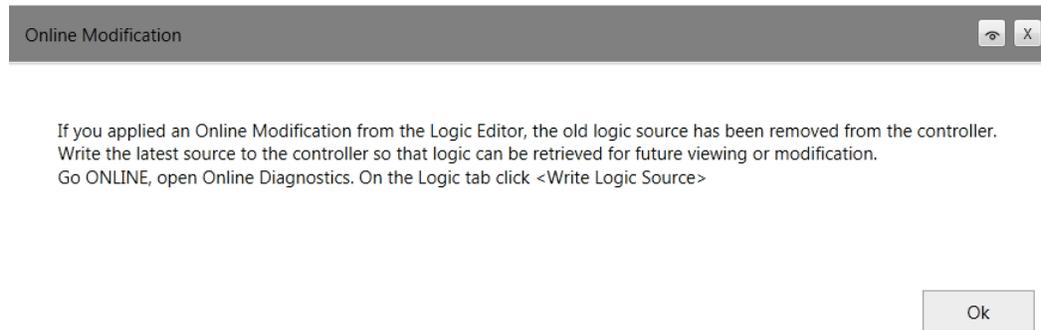
- [Writing logic source when no dialogs are open](#) ³⁸⁰

Writing logic source when SCADAPack RemoteConnect is offline

If you have made online modifications from the SCADAPack x70 Logic Editor and SCADAPack RemoteConnect is offline, a message is displayed to remind you to write the logic source to the SCADAPack x70 device.

1. After the logic application modification has been applied to the SCADAPack x70 device, make SCADAPack RemoteConnect your active window.

The SCADAPack RemoteConnect **Online Modification** dialog is displayed.



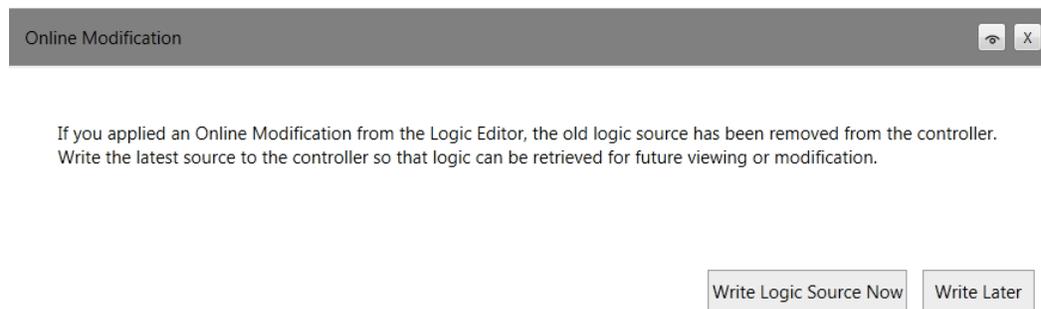
2. Read the instructions, click **OK**, and then complete the following steps:
 - a. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Go Online**.
 - b. On the **Logic** tab, click **Write Logic Source**.

Writing logic source when SCADAPack RemoteConnect is online

You can write the logic source immediately, or delay writing to a later time. You may want to delay writing if you have more online modifications to make.

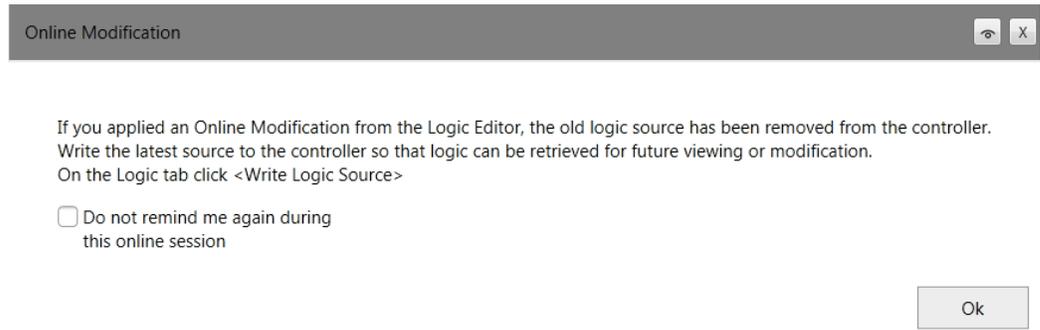
1. After the logic application modification has been applied to the SCADAPack x70 device, make SCADAPack RemoteConnect your active window.

The SCADAPack RemoteConnect **Online Modification** dialog is displayed.



2. Choose one of the following:

- **Write Logic Source Now**
- **Write Later**
 - Follow the instructions in the dialog.



3. Click **OK**.

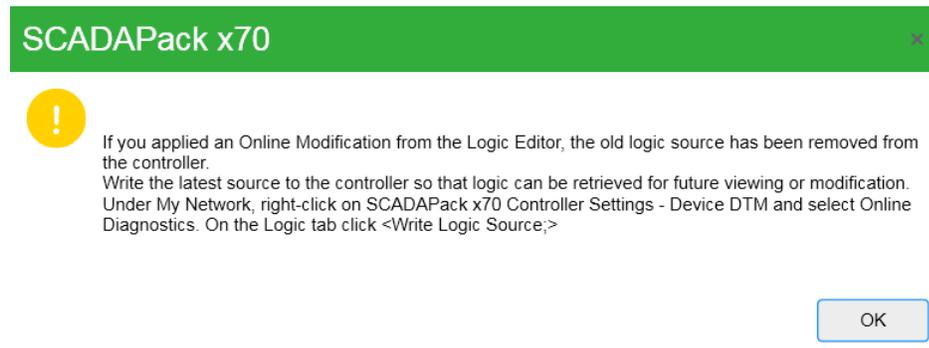
To write logic source later

1. Right-click on the SCADAPack x70 Controller Settings -DeviceDTM and select **Online Diagnostics**.
2. On the **Logic** tab, click **Write Logic Source**.

Writing logic source when no SCADAPack RemoteConnect dialogs are open

1. After the logic application modification has been applied to the SCADAPack x70 device, make SCADAPack RemoteConnect your active window.

The SCADAPack x70 dialog is displayed.



2. Read the instructions, click **OK**, and then complete the following steps:

- c. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Online Diagnostics**.
- d. On the **Logic** tab, click **Write Logic Source**.

12.5 Adding a RemoteConnect Object and Logic Variable Online

An object configured with a T_SPx70_xxxx logic variable type can be added to SCADAPack RemoteConnect and deployed to a SCADAPack x70 device online, without disturbing the operation of the logic application.

Both the logic editor and RemoteConnect need to be connected online to the SCADAPack x70 device. The object is added using RemoteConnect.

An existing object and its linked variable cannot be renamed online. An existing object's logic variable type cannot be changed online. Changes to user DDT variables from the logic editor, subsequently changing RemoteConnect objects, cannot be changed online.

Requirements

- Local USB or Ethernet connection to the SCADAPack, or Remote IP connection to the SCADAPack
- Configuration in the SCADAPack x70 device has Logic Debug service enabled
- Logic project in the device is EQUAL to the logic editor project

The following steps explain how to create an object in RemoteConnect while the logic editor is connected, deploy the logic change online, then download the configuration to the SCADAPack x70 device. This allows the SCADAPack to connect the new logic variable to the new SCADAPack x70 object, on-the-fly.

1. Open the SCADAPack x70 Logic Editor and connect online to the SCADAPack x70 device.
2. Check that the logic editor indicates that the project is in the EQUAL state with the logic in the device.
3. Return to the SCADAPack RemoteConnect window (while the logic editor is still open and online), add an object and configure its attributes, including setting the logic variable attribute to a T_SPx70_ type.
4. Accept the change in the RemoteConnect object editor by clicking **OK** and then the **Apply** button.
5. Return to the logic editor window and accept the change made by RemoteConnect.

The Logic Editor displays the NOT BUILT state.

6. Select **Build > Build Changes**.
7. To deploy the logic changes to the SCADAPack x70 device, click **OK**.
8. Return to the RemoteConnect Online Diags – SPx70 Controller tab.
A dialog is displayed prompting you to write the logic source.
9. In the dialog displayed, click **Write Later** and then click **OK**.
10. To transfer the modified configuration to the SCADAPack, under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Write to Device**.

11. Return to the Logic Editor and add the new variable to an animation table.
12. Expand the variable and confirm that the ONLINE_QUAL element indicates a value of 1, or the OBJ_ID element indicates a non-zero value.

If the RemoteConnect Configuration – SPx70 Controller tab is open and displaying a reminder to write the logic source press Ok. There is no further action to take as the configuration was written in step 9.

12.6 Reading Object Values from the Device

Use the Objects tab in the SCADAPack x70 online parameters to read the current value for database objects from the SCADAPack x70 device.

- [Control Actions Functionality](#) ³⁸³
- [Viewing Object Values](#) ³⁸⁴

Online Status: Connected Connection: USB DNP3 Target Address: 0 Device Serial Number: 8025723

Status Logic Objects

Object Browsers

SCADAPack I/O

Forced Objects

Object Browser

Refresh Write Selected Write All Last Updated 20/02/2019 11:30:23

Auto refresh every 5 second(s)

Object Browser: SCADAPack I/O

Add Entry Remove Entries Clear Proposed Values Transfer Current Values Forcing Mode

	Name	Type	Source Type	Source Details	Display Format	Current Value	Proposed Value	Quality	DNP3 Point Number	Modbus Register
1	PIO_SP575_D11	Digital	Physical I/O Channel	SP575.0, D11	BOOL	0		Online		
2	PIO_SP575_D12	Digital	Physical I/O Channel	SP575.0, D12	BOOL	0		Online		
3	PIO_SP575_D13	Digital	Physical I/O Channel	SP575.0, D13	BOOL	0		Online		
4	PIO_SP575_D14	Digital	Physical I/O Channel	SP575.0, D14	BOOL	0		Online		
5	PIO_SP575_D15	Digital	Physical I/O Channel	SP575.0, D15	BOOL	0		Online		
6	PIO_SP575_D16	Digital	Physical I/O Channel	SP575.0, D16	BOOL	0		Online		
7	PIO_SP575_D17	Digital	Physical I/O Channel	SP575.0, D17	BOOL	0		Online		
8	PIO_SP575_D18	Digital	Physical I/O Channel	SP575.0, D18	BOOL	0		Online		

To read the latest status and version information from the device

- On the Objects tab, click **Refresh**.

This is a good way to confirm that the SCADAPack x70 device is communicating with the SCADAPack x70 configuration software.

The information remains until the next time you click **Refresh**.

Online Status	<p>The current status of communication between SCADAPack RemoteConnect and the SCADAPack x70 device. One of:</p> <ul style="list-style-type: none"> • Stand by • Checking • Connecting • Connected • Disconnecting
---------------	---

	<ul style="list-style-type: none"> • Disconnected • Disturbed <p>These connection states are the same as those displayed along the bottom bar in SCADAPack RemoteConnect. For details, see the Status Indicators topic in the SCADAPack RemoteConnect Configuration Software manual.</p>
Connection Information	The currently configured communication type between SCADAPack RemoteConnect and the SCADAPack x70 device. When connected with USB, the device serial number is also indicated.

To read the current object value for database objects

- On the Objects tab, click **Refresh**.
For details, see [Viewing Object Values](#) ³⁸⁴.

12.6.1 Control Actions Functionality

The following table describes the functionality available in the Control Actions section on the Objects tab.

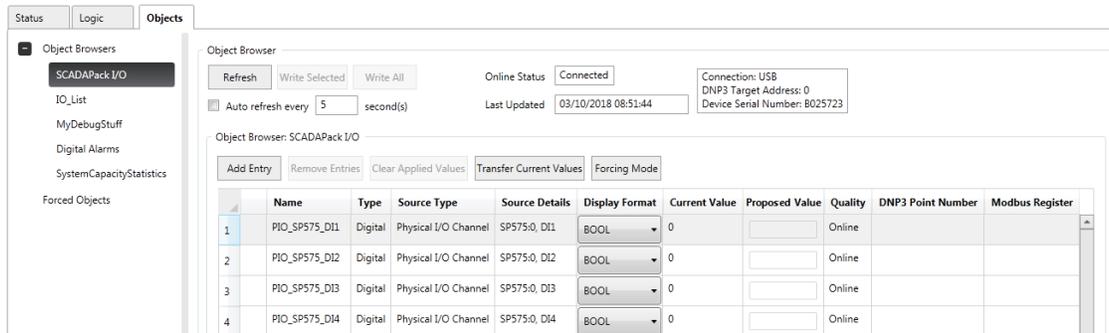
Button or Field	Description
Refresh	Updates the Object Table ³⁸⁴ with the latest values from the SCADAPack x70 device.
Write Selected	Sends the values entered in the Proposed Value fields from the selected rows to the device
Write All	Sends all values entered in the Proposed Value fields to the device
Auto refresh every	<p>When selected, the Object Browser is refreshed every time unit specified in the field following the checkbox. The time unit needs to be specified first.</p> <p>If the time unit is set too short for the Object Browser to completely refresh, additional refresh requests are ignored until the previous refresh is completed.</p> <p>Valid values: 1...43200 seconds</p> <p>Default value: 5 seconds</p>
Last Updated	<p>The PC date and time that information was last read from the SCADAPack x70 device.</p> <p>Format:</p> <ul style="list-style-type: none"> • 24-hour clock

- dd/mm/yyyy hh:mm:ss

12.6.2 Viewing Object Values

Use the Object Table to view object value for each object. The groups listed under the Object Browser match those created in the SCADAPack x70 configuration parameters.

To update the object value, click **Refresh**.



The Display Format selector changes the way that the value is displayed in the Current Value field. It does not change the underlying object value.

12.7 Managing the Online Object Browser List

Create browser lists in [Offline](#) mode to read and write object or system data values to a SCADAPack x70 device when SCADAPack RemoteConnect is online.

You can also add ad-hoc entries to the default browser or configured browser lists. These entries are not permanent. You can create permanent entries only while in Offline mode. When you add objects to a browser list, the maximum number of objects is 2000.

The following table lists the fields that are present in the online Browser List.

Field Name	Description
Name	The name of the object
Type	Analog Digital Counter System Group
Source Type	The item with which the object is associated. For example, an object can be associated with a: Physical I/O channel Physical I/O status

	<p>DNP3 Remote Point</p> <p>DNP3 Status and Control</p> <p>Modbus Scanner</p> <p>Modbus Status and Control</p> <p>System Data Group</p> <p>System Data Reference</p>
Source Details	Information about the data source for the object
Display Format	<p>BOOL</p> <p>DINT</p> <p>REAL (Eng)</p> <p>INT</p> <p>UINT</p> <p>OS TIME</p> <p>Binary (Raw)</p> <p>Hex (Raw)</p> <p>Hex (Eng)</p>
Current Value	<p>The value read from the SCADAPack x70 device.</p> <p>If the Current Value is out of range for the selected Display Format, an Out of Range label is added to the Quality column and the Current Value is displayed as follows:</p> <p>UINT</p> <ul style="list-style-type: none"> • Less than 0 is displayed as 0 • Greater than 65535 is displayed as 65535 <p>INT</p> <ul style="list-style-type: none"> • Less than -32768 is displayed as -32768 • Greater than 32767 is displayed as 32767
Proposed Value	<p>Enter a value manually, or use the Offline Browser list Preset Value field to pre-define a value in the Online Browser list. The value has the same format as the Display Format field for the specified row.</p> <p>See Working with Preset Values ³¹².</p>
Quality	Offline

	<p>Online</p> <p>Not Responding</p> <p>User set offline</p> <p>Remote Forced</p> <p>Updated by Logic</p> <p>Forced</p> <p>Chatter filter</p> <p>Under-range</p> <p>Over-range</p> <p>RoR exceeded</p> <p>RoF exceeded</p> <p>No change</p> <p>Check reference</p> <p>Alert state</p> <p>High limit</p> <p>H4 state</p> <p>...</p> <p>H1 state</p> <p>L1 state</p> <p>...</p> <p>L4 state</p> <p>Out of Range is displayed if the Display Format is changed and the Current Value is now out of range for the new Display Format.</p>
DNP3 Point Number	The identifier for the DNP3 point
Modbus Register	The identifier for the Modbus address

See:

- [Reading From the Device](#)^[387]
- [Editing the Display Format Online](#)^[388]
- [Writing Data to the SCADAPack x70 Device](#)^[390]

- [Adding Ad-Hoc Entries](#) 
- [Removing Ad-Hoc Entries](#) 
- [Transferring Current Values to the Offline Preset Values](#) 

12.7.1 Reading From the Device

The **Current Value** and **Quality** information for the object entries in the browser list are read from the SCADAPack x70 device. Quality information is shown regarding the status of the object in the device. Where there a number of simultaneous quality indicators, hover over the field to display more information. See [Managing the Online Object Browser List](#) .

If there is a problem reading objects or system data from the device, an indicator is provided in the first column of the row where the read was unsuccessful. You can hover the mouse over the column to see the reason. Possible reasons are:

- Object does not exist
- Bad object type
- Object locked
- Missing configuration
- Database locked
- Unknown error
- Unauthorized request
- Object offline
- File invalid
- Update failed

To read the current value and quality information

1. In Online mode, navigate to **Objects > Object Browsers > Browser List Name**.
2. Click **Refresh**.

To refresh the current value and quality information at a set interval

1. In Online mode, navigate to **Objects > Object Browsers > Browser List Name**.
2. Set the time in seconds that you want to refresh the Object Browser.
3. Select the **Auto refresh every** checkbox.

If the time unit is set too short for the Object Browser to completely refresh, additional refresh requests are ignored until the previous refresh is completed.

12.7.2 Editing the Display Format Online

Depending on the purpose of the data or the format you would like to see, you may want to edit the default format displayed online. For example, matching the logic variable type, seeing the protocol representation, debugging communications packets, viewing the Engineering value instead of the raw value, etc.

To edit the display format of the browser entry

1. In Online mode, navigate to **Objects > Object Browsers > Browser List Name**.
2. In the row of the entry that you want to edit, click **Display Format**.
3. From the **Display Format** drop-down list, select a format.

The **Display Format** selection also affects the data format entered in the **Proposed Value** field when writing data to objects. See [Writing Data to the SCADAPack x70 Device](#)³⁹⁰.

The following table lists the display formats available.

Type	Display Formats Available	Comment
Digital	BOOL	
Analog	DINT REAL (Eng) INT UINT OS TIME Binary (Raw) Hex (Raw) Hex (Eng)	<p>Real (Eng) or Hex (Eng)</p> <ul style="list-style-type: none"> The value displayed is the representation of the object's scaled Engineering value. All other formats display representations of the object's unscaled integer Raw value. <p>INT</p> <ul style="list-style-type: none"> If the integer value of the analog object exceeds a 16-bit signed value, the value is fixed at either -32768 (if the value is negative) or 32767 (if the value is positive). The displayed INT value is the value that a DNP3 16-bit analog point, IEC 60870-5-104 Measured Value Scaled value or Normalized value, or Modbus INT register would present from the object. <p>UINT</p> <ul style="list-style-type: none"> If the integer value of the analog object exceeds a 16-bit unsigned value, the value is fixed at 65535. The displayed UINT value is the value that a Modbus UINT register would present from the object. <p>OSTIME</p>

		<ul style="list-style-type: none"> Represents the value in operating system time format (seconds since 00:00:00 January 1, 1970 UTC).
Counter	UDINT UINT Binary Hex	The current integer value of the counter is displayed in the selected format. UINT <ul style="list-style-type: none"> If the value of the counter exceeds a 16-bit unsigned value, the least significant 16-bits of the counter value will be displayed. The displayed UINT value is the value that a DNP3 16-bit counter point, IEC 60870-5-104 Counter, or Modbus UINT register would present from the object.
String	Hex ASCII	
System Data Reference and System Data Group	<p>Before the value is read from the device, the data type is unknown. You can choose from the following formats (organized by typical object type):</p>	
	<p>Digital</p> <ul style="list-style-type: none"> o BOOL <p>Analog</p> <ul style="list-style-type: none"> o DINT o REAL (Eng) o OS TIME o Binary (Raw) o Hex (Raw) o Hex (Eng) <p>Counter</p> <ul style="list-style-type: none"> o UDINT <p>String</p> <ul style="list-style-type: none"> o ASCII 	
	<p>After the value is read from the device, you can change the Display Format to one of the following:</p>	
	Digital	BOOL
Analog	DINT	

		REAL (Eng) INT UINT OS TIME Binary (Raw) Hex (Raw) Hex (Eng)
	Counter	UDINT UINT Binary Hex
	String	Hex ASCII

4. Click **Ok**.
5. Click **Apply**.

12.7.3 Writing Data to the SCADAPack x70 Device

Use the **Proposed Value** field to enter a value that you want to write to the device. A **Proposed Value** field is unavailable to enter a value if the SCADAPack x70 device is reporting that the object or system data reference is read-only. Values for multiple objects can be entered.

You can clear an individual **Proposed Value** field by removing the field content.

You can clear all **Proposed Value** fields by clicking **Clear Proposed Values**.

If there is a problem writing objects or system data to the device, an indicator is provided in the first column of the row that the read was unsuccessful. See [Reading From the Device](#)^[387].

When writing a **Proposed Value** to the SCADAPack x70 device, you will notice that the **Current Value** and **Proposed Value** are different. Click **Refresh** from the SCADAPack x70 device to determine if the **Current Value** updated successfully. Other device operations may prevent updating a value, if for example, logic is in control of an object.

The **Display Format** selection affects the data format entered in the **Proposed Value** field when writing data to objects. For more information on the **Display Format** selection see [Editing the Display Format Online](#)^[388].

To write data to the SCADAPack x70 device

1. In Online mode, navigate to **Objects > Object Browsers > Browser List Name**.

2. To update the current values and quality information, click **Refresh**.
3. Select the row(s) that you want to write to the SCADAPack x70 device.
4. Choose one of the following:
 - **Write Selected**
 - Sends the values entered in the **Proposed Value** field from specific rows to the device
 - **Write All**
 - Sends all values entered in the **Proposed Value** fields to the device
5. Click **Ok**.

12.7.4 Adding Ad-Hoc Entries

Entries can be added to the browser list while in Online mode. These entries are called ad-hoc entries and are shown in italics. These are the only entries that can be removed from a configured browser list. Ad-hoc entries are not permanent. If you want an entry to be permanent, it needs to be added in Offline mode. See [Adding an Entry to the Browser List](#)^[308].

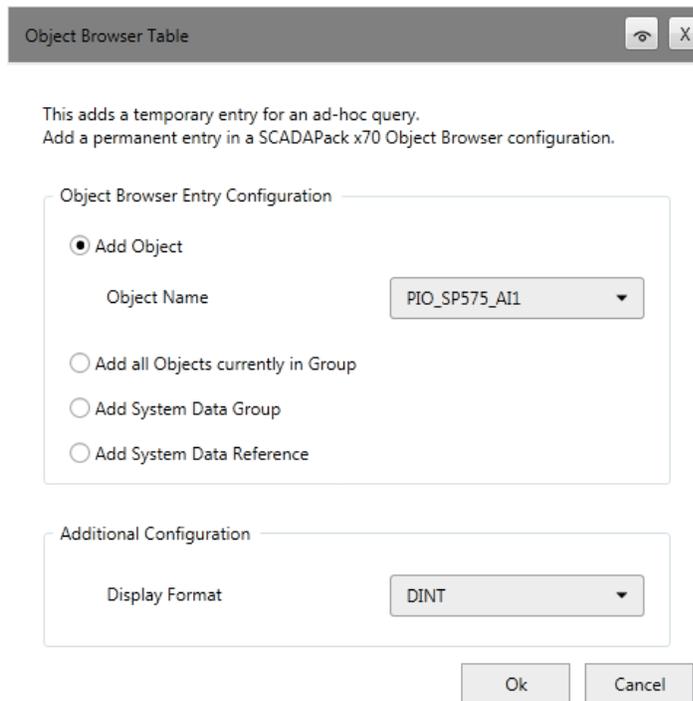
This can be done while the online UI is either opened or closed. If the online UI is open, changes to the offline browser list configuration are transferred and updated to the Online browser list.

You can add several kinds of objects to a browser list:

- Individual objects
- All objects in a group
 - Creates an instantaneous snapshot of all of the objects in the same group. The objects need to have the same **Object Group** identified. See [Grouping Objects](#)^[246].
 - This browser list is not dynamically updated if objects are reconfigured to modify their group attribute
 - The maximum number of objects in a browser list is 2000
- A System Data Group
 - Automatically filled in when data is read from the SCADAPack x70 device
- A System Data Reference
 - See the System Data topic in the Operations Technical Reference manual. for more information

To add an entry to the browser list

1. In Online mode, navigate to **Objects > Object Browsers > Browser List Name** and click **Add Entry**.



2. Choose one of the following:

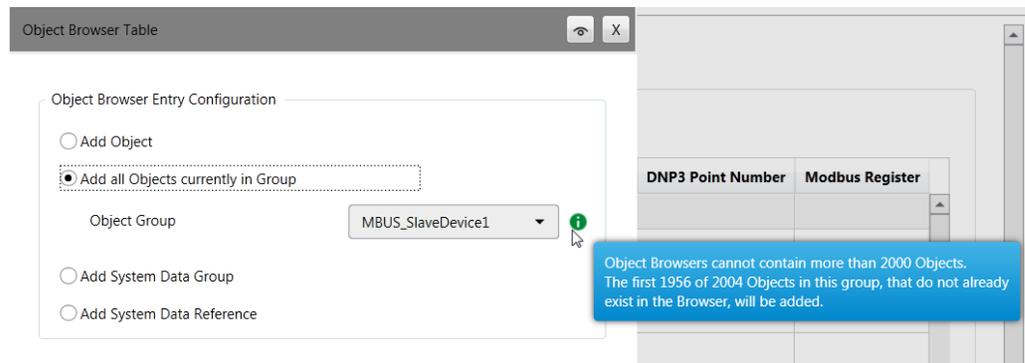
- **Add Object**

- Click the drop-down list and select the **Object Name** to add

- **Add all Objects currently in Group**

- Click the drop-down list and select the **Object Group** to add

- The maximum number of objects in a browser list is 2000. If the list will have more than 2000 after you add the objects, an information icon is displayed. If you hover the mouse over the icon, a message similar to the following is displayed:



- **Add System Data Group**

- Click the drop-down list and select the **System Data Group** to add

- **Add System Data Reference**

- o Click the drop-down list and select the **Object Group** and then the **System Data Reference Name** to add
3. If available, click the drop-down list for the **Display Format** and select the appropriate format for the object.

If no display format is selected, the default display format is applied as follows:

Object	Default Display Format
Analog	DINT
Digital	BOOL
Counter	UDINT

4. Click **Ok**.
5. Click **Apply**.

12.7.5 Removing Ad-Hoc Entries

The only entries that can be removed from the online browser list are entries that were added while online, or ad-hoc entries.

To remove entries from a browser list

1. On the **Objects** tab, select **Object Browsers > Browser List Name**.
2. Select the entry that you want to remove and click **Remove Entries**.
3. Click **Remove Entries**.



Are you sure you want to remove the selected entry?



4. Click **Yes**.

12.7.6 Transferring Current Values to the Offline Preset Values

You can transfer Current Values from an online Object Browser to the offline Object Browser Preset Values.

This allows the Online Browser to be used in the future with a set of pre-defined values, for example to configure a SCADAPack x70 device after a hardware replacement, for commissioning a system, to compare initial settings with current operating settings, etc. For more information, see [Working with Preset Values](#)^[312].

Ad-hoc entries that were added to the online browser list do not have their current values transferred.

To transfer the online Current Value to the offline Preset Value

1. In Online mode, navigate to **Objects > Object Browsers > Browser List Name**.
2. To get the most recent values, click **Refresh**.
3. Do one of the following:
 - If you want to transfer the Current Values for specific row(s) to the offline Object Browser list Preset Values, select the row(s) that you want to transfer, click **Transfer Current Values** and then click **Transfer Selected Current Values**
 - If you want to transfer all Current Values to the offline Object Browser list Preset Values, click **Transfer Current Values** and then click **Transfer All Current Values**

Modifications cannot be undone after you click **Yes**.

3. Click **Yes**.
4. In the pop-up dialog, click **OK**.

12.8 Managing Object Forcing

It is often convenient and necessary to be able to change the value of an object while the program is in operation. Toggling a digital output or changing the value contained in an analog object, for example, enables you to simulate a particular condition and then test the operation of the program. You may want to replace the measured value with a fixed forced value on a temporary basis to allow the process to continue while the problem is corrected. If there is a power outage, objects maintain their forced condition.

You activate forcing by clicking the **Forcing Mode** button. The button turns green when it is active. Forcing mode is deactivated when auto refresh is activated. See [Auto refresh every](#)^[383].

The forcing button is available in two locations in Online mode:

- By navigating to **Objects > Object Browsers > Browser List Name**
- By navigating to **Objects > Forced Objects**

Each location is independent of the other. For example, disabling forcing mode in a browser list does not disable forcing mode in the **Forced Objects** list.

You can track forced objects in the **Objects > Forced Objects** list.

See [Forcing a Value to an Object From a Browser List](#)^[397], [Forcing a Value to an Object From Forced Objects](#)^[400], and [Clearing a Forced Object](#)^[402].

When an object is forced, a green arrow  appears beside the object name.

If the object does not appear in the offline configuration table, a red arrow  appears beside the object name.

Forcing is not supported for, and will have no impact on, Digital objects configured as DNP3 single point number complementary Trip/Close control.

Forcing is not supported for, and will have no impact on, Digital objects configured as IEC 60870-5-104 Double Command or Regulating Step Command controls.

The following table shows the fields in the Forced Objects list.

Field Name	Description
Name	The name of the object
Type	Analog Digital Counter
Source Type	The item with which the object is associated. For example, an object can be associated with a: Physical I/O channel Physical I/O status DNP3 Remote Point DNP3 Status and Control Modbus Point Scanner Modbus Status and Control System Data Group System Data Reference
Source Details	Information about the data source for the object
Display Format	BOOL DINT REAL (Eng) INT UINT

	<p>OS TIME</p> <p>Binary (Raw)</p> <p>Hex (Raw)</p> <p>Hex (Eng)</p>
Forced Value	After a refresh of the page, shows the object's current Forced Value in the format of the Display Format.
Source Value	<p>After a refresh of the page, shows the object's Source Value or pre-forced value in the format of the Display Format. Clearing a Forced Value will cause the Current Value to return to this value.</p> <p>Where an object is linked to a logic variable that is writable from logic, the Source Value is updated with the Forced Value. This provides consistency of the value present in the logic variable at the start of a scan, with the value in the object. It overrides a value written by logic such that the object retains a constant value and provides a smooth transition of the logic variable value when forcing is removed. Logic variables which are read-only, owing to being associated with other data sources (e.g. Physical Inputs, scanner data), indicate the original Source Value.</p>
Quality	<p>Offline</p> <p>Online</p> <p>Not Responding</p> <p>User set offline</p> <p>Remote Forced</p> <p>Updated by Logic</p> <p>Forced</p> <p>Chatter filter</p> <p>Under-range</p> <p>Over-range</p> <p>RoR exceeded</p> <p>RoF exceeded</p> <p>No change</p> <p>Check reference</p> <p>Alert state</p> <p>High limit</p>

	H4 state ... H1 state L1 state ... L4 state
DNP3 Point Number	The identifier for the DNP3 point
Modbus Register	The identifier for the Modbus address

12.8.1 Forcing a Value to an Object From a Browser List

You can force an object to have the current or source value read from the SCADAPack x70 device or you can force an object to have a specific value.

- [Forcing a value to an object that is not in a forced state](#)³⁹⁷
- [Forcing a value to an object that is already in a forced state](#)³⁹⁸

Forcing cannot be applied to a System Data Group or a System Data Reference. If an object is associated with a system data reference, forcing can be applied to the object. The name of the object can be the same as the system data reference, or it can have a different name. See the System Data topic in the SCADAPack Operations Technical Reference.

If an Object Browser contains only System Data types of objects, the Forcing Mode button is not available.

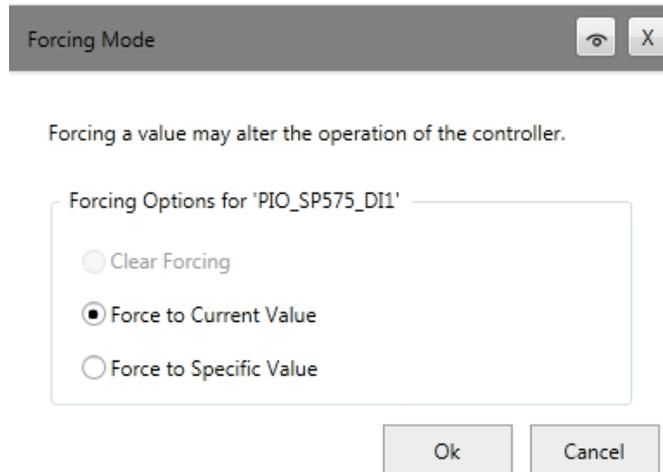
If an Object Browser contains a mix of System Data and other types of objects, the Forcing Mode button is available. If you double-click on a System object, a pop-up dialog indicates that the object cannot be forced.

Forcing is not supported for, and will have no impact on, Digital objects configured as DNP3 single point number complementary Trip/Close controls.

Forcing is not supported for, and will have no impact on, Digital objects configured as IEC 60870-5-104 Double Command or Regulating Step Command controls.

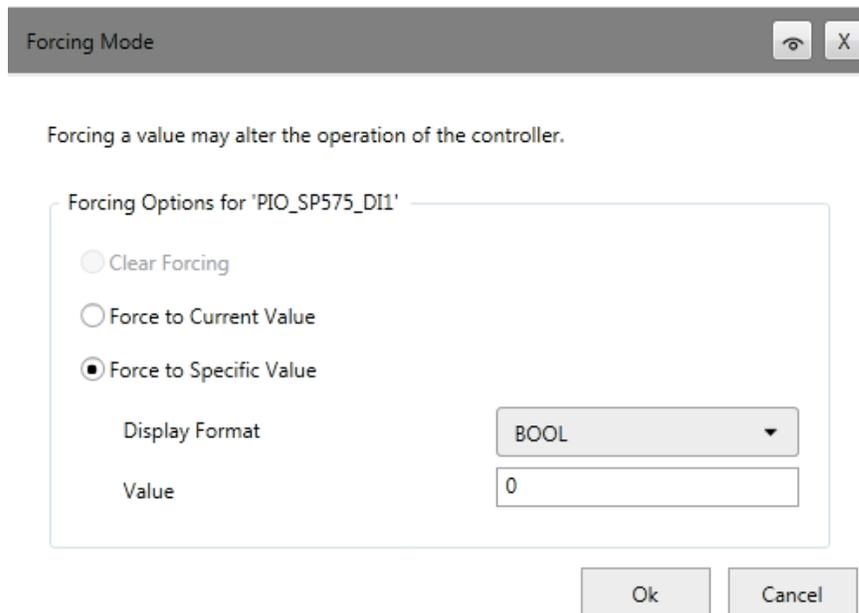
To force a value to an object that is not in a forced state

1. In Online mode, navigate to **Objects > Object Browsers > Browser List Name**.
2. Click **Refresh**.
3. Click **Forcing Mode**.
The button turns green.
4. Double-click the object that you want to force.

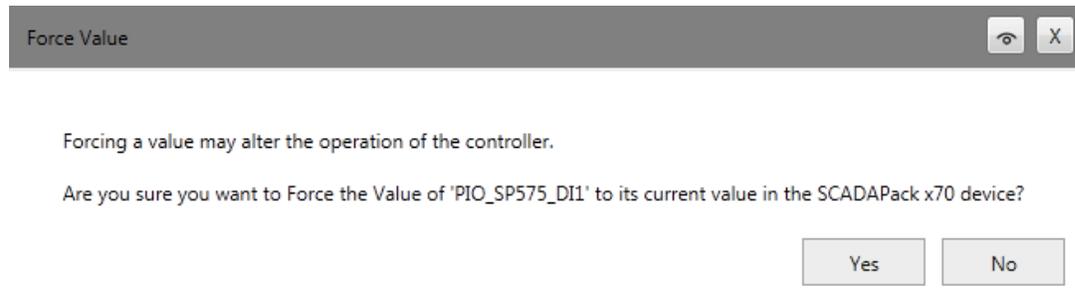


5. In the **Forcing Mode** dialog, choose one of the following:

- **Force to Current Value**
- **Force to Specific Value**



- a. Using the drop-down list, change the **Display Format**, if needed.
 - b. Enter a **Value** that you want to force to the object.
6. Click **OK**.



7. Confirm that you want to force the value by clicking **Yes**.

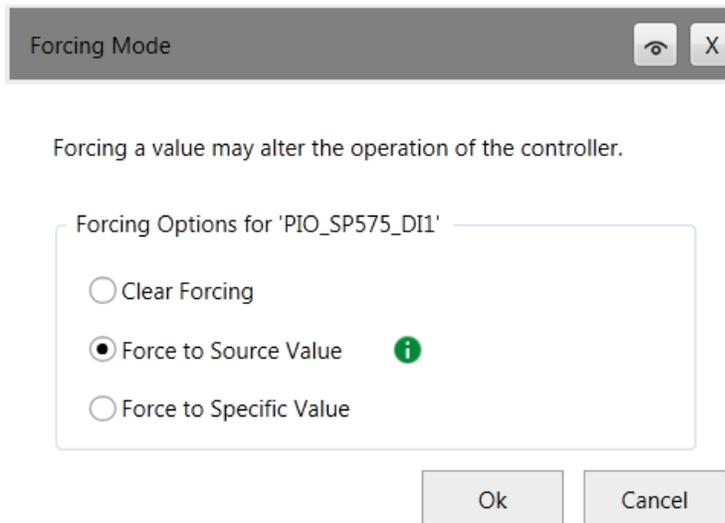
A green arrow  appears beside the object name.

To force a value to an object that is already in a forced state

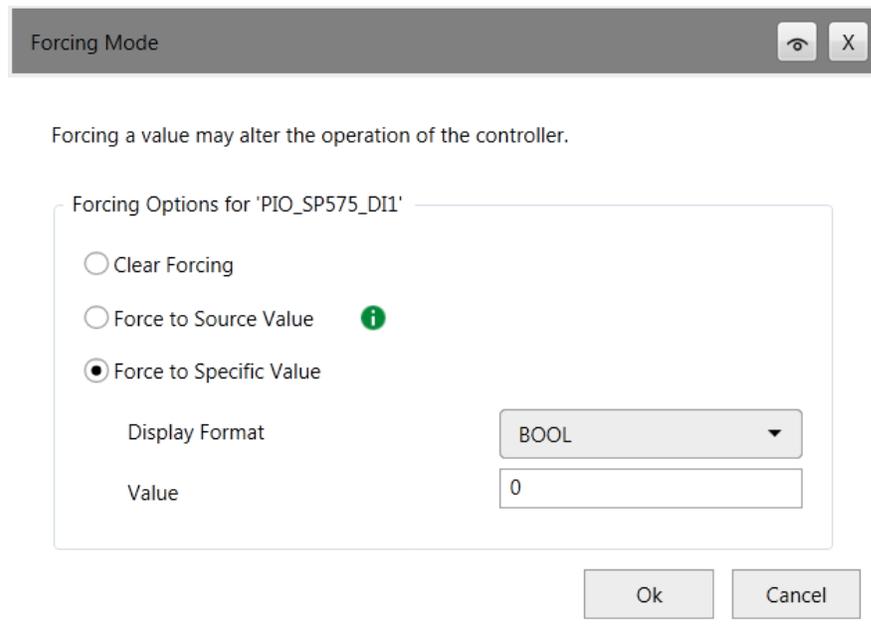
1. In Online mode, navigate to **Objects > Object Browsers > Browser List Name**.
2. Click **Refresh**.
3. Click **Forcing Mode**.

The button turns green.

4. Double-click the object that you want to force.



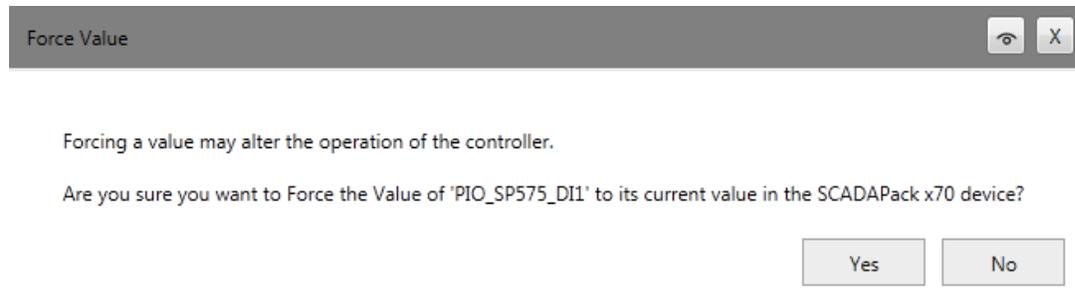
4. In the **Forcing Mode** dialog, choose one of the following:
 - **Force to Source Value**
 - **Force to Specific Value**



c. Using the drop-down list, change the **Display Format**, if needed.

d. Enter a **Value** that you want to force to the object.

5. Click **Ok**.



6. Confirm that you want to force the value by clicking **Yes**.

A green arrow  appears beside the object name.

12.8.2 Forcing a Value to an Object From Forced Objects

You can force an object to have the current or source value read from the SCADAPack x70 device or you can force an object to have a specific value.

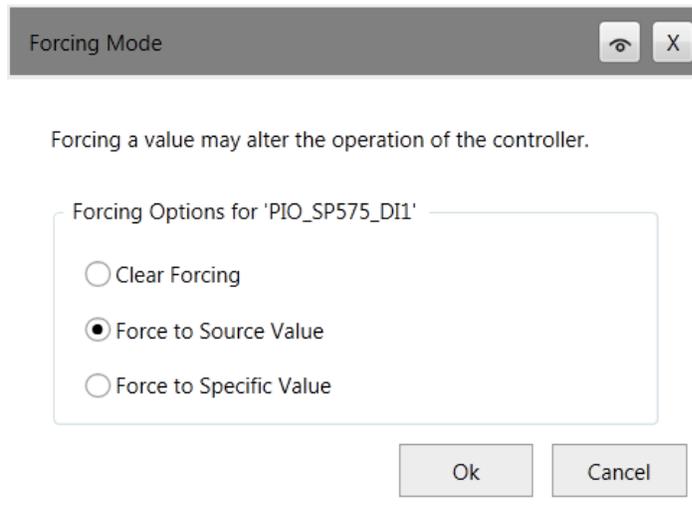
Forcing cannot be applied to a System Data Group or a System Data Reference. If an object is associated with a system data reference, forcing can be applied to the object. The name of the object can be the same as the system data reference, or it can have a different name. See the System Data topic in the SCADAPack Operations Technical Reference.

To force a value to an object from Forced Objects

1. In Online mode, navigate to **Objects > Forced Objects**.
2. Click **Refresh**.
3. Click **Forcing Mode**.

The button turns green.

4. Double-click the object that you want to force.



4. In the **Forcing Mode** dialog, choose one of the following:
 - **Force to Source Value**
 - **Force to Specific Value**

- a. Using the drop-down list, change the **Display Format**, if needed.
- b. Enter a **Value** that you want to force to the object.

5. Click **Ok**.

6. Confirm that you want to force the value by clicking **Yes**.

A green arrow  appears beside the object name.

12.8.3 Clearing a Forced Object

There are two ways that you can clear a forced object:

- From the browser list
- From the **Forced Objects** list

To clear a forced object from the browser list

1. In Online mode, navigate to **Objects > Object Browsers > Browser List Name**.
2. Make sure that **Forcing Mode** is active. The button should be green.
3. Double-click the **Name** of the object for which you want to clear forcing.
4. In the **Forcing Mode** dialog, select **Clear Forcing**.
5. Click **Ok**.
6. Confirm that you want to clear forcing by clicking **Yes**.

To clear forced objects from the Forced Objects list

1. In Online mode, navigate to **Objects > Forced Objects**.
2. Make sure that **Forcing Mode** is active. The button should be green.
3. To make sure that the list is complete, click **Refresh**.
4. Do one of the following:
 - Double-click the **Name** of the object for which you want to clear forcing
 - a. In the **Forcing Mode** dialog, select **Clear Forcing**.
 - b. Click **Ok**.
 - c. Confirm that you want to clear forcing for that object by clicking **Yes**.
 - Select the objects for which you want to clear forcing
 - a. Click **Clear Forcing**.
 - b. Select **Clear Selected Forced Values**.
 - c. Confirm that you want to clear forcing for the object(s) by clicking **Yes**.
 - Click **Clear Forcing**
 - a. Select **Clear All Forced Values**.
 - b. Confirm that you want to clear forcing for the object(s) by clicking **Yes**.

12.9 Managing Data Logging

When Data Logging is enabled, you can use the Objects tab in the SCADAPack x70 online parameters to retrieve and view data logs.

To enable Data Logging, see [Changing the Project Settings](#) ⁴².

Data logs are stored on the SCADAPack x70 device according to data log configurations and object configurations which select if and when object data is stored in data logs files, and the arrangement of the data log files.

The same types of events that are reported though DNP3 and IEC 60870-5-104 protocols can be stored in data log files on the SCADAPack x70 device.

Set up event reporting on objects using DNP3 or IEC 60870-5-104 configurations. See [Data Logging Tab](#)^[299].

When you are connected online with a SCADAPack x70 device, you can select from which data logs and for which timeframe you want to retrieve logged data.

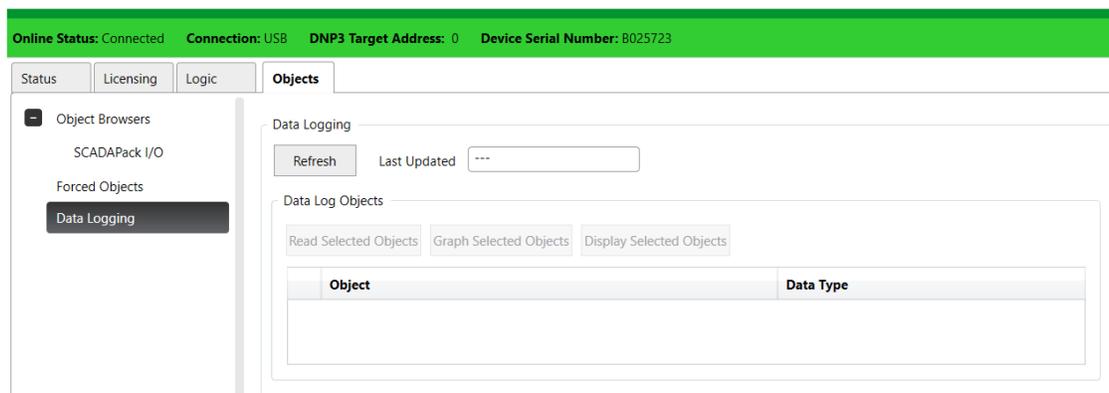
Once logged data is retrieved from the SCADAPack x70 device you can:

- View a list of the objects for which data log events can be retrieved
- Graph a selection of the data log events that have been retrieved
- Display data log events for a single object
- Display a data log event chronology for multiple objects
- Use the retrieved data log files in other applications (for example in a spreadsheet)

Also:

- [Control Actions Functionality](#)^[405]
- [Selecting Data Logs and Timeframe](#)^[406]
- [Reading Object Data Logs](#)^[409]
- [Online Data Logging Object Pages](#)^[410]
- [Graphing Data Logging Objects](#)^[412]
- [Displaying Data Logging Objects](#)^[415]

The Data Logging page looks similar to the following:



To read the data logging information

1. In Online mode, navigate to **Objects > Object Browsers > Data Logging**.

2. Click **Refresh**.

The Data Logging dialog is displayed where you can select which Data Logs and what Timeframe you want to retrieve.

See [Selecting Data Logs and Timeframe](#)⁴⁰⁶.

3. Choose the options you want and then click **Ok**.

It may take several minutes to retrieve the data logs from the SCADAPack x70 device.

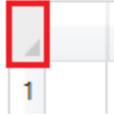
Objects which are present in the retrieved files are shown in the Data Log Objects table.

When the log files have been successfully downloaded for the selected Objects, the Object statuses are cleared and no longer display **?**, and Data Logging Object pages are created, see [Online Data Logging Object Pages](#)⁴¹⁰.

12.9.1 Control Actions Functionality

The following table describes the functionality available in the Control Actions section on the Objects tab.

Button or Field	Description
Refresh	Obtains a list of Objects from the SCADAPack x70 device for which logged data is available within a given timeframe, and optionally, within a specific

	set of data logs. See Selecting Data Logs and Timeframe ^[406] .
Last Updated	Displays the date and time that the content on the Data Logging page was last refreshed.
Read Selected Objects	<p>Enabled when one or more object entries in the Data Log Objects table is selected. Reads data log files to the local PC, from the SCADAPack x70 device for the selected objects. See Reading Object Data Logs^[409].</p> <p>Select objects in the table by clicking on the table rows.</p> <p>To select all objects in the table, click on the top left corner of the table:</p>  <p>To select a range of objects, click on the first object then hold down the <Shift> key and clicking on the last object.</p> <p>To select multiple objects, hold down the <Ctrl> key while clicking individual objects.</p>
Graph Selected Objects	<p>Displays a graphing tool in a new dialog to view data for selected objects. See Graphing Data Logging Objects^[412]. A maximum of 10 Objects may be selected to graph at once.</p> <p>To compare/graph multiple objects, you can launch the graphing tool from the main Online Data Logging page, with the objects of interest selected in the table.</p> <p>Only analog, digital, and counter objects can be graphed. String objects are not graphable.</p> <p>Default: Enabled when logged data has been read from the device for at least one of the selected objects in the table.</p>
Display Selected Objects	<p>Displays a list of data events in a new dialog for selected objects. See Displaying Data Logging Objects^[415].</p> <p>To view a chronological list of data events, you can launch the data display from the main Online Data Logging page, with the objects of interest selected in the table.</p> <p>Default: Enabled when logged data has been read from the device for at least one of the selected objects in the table.</p>

12.9.2 Selecting Data Logs and Timeframe

When you click **Refresh** on the **Objects > Object Browsers > Data Logging** page, the Data Logging dialog is displayed.

Choose the options for selecting object data to retrieve, display, or graph, and click **Ok**.

Data Logging 👁 X

Data Logs

- Get Object data from all logs
- Get Object data from specific logs

Timeframe

- Get all Object data logs
- Get Object data logs for a specific timeframe

Start Time : : , / /

hh:mm:ss, dd/mm/yyyy

End Time : : , / /

hh:mm:ss, dd/mm/yyyy

Data Logging
👁️ ✕

Data Logs

Get Object data from all logs

Get Object data from specific logs

SCADAPack_x70_Log
 TestDataLog

Timeframe

Get all Object data logs

Get Object data logs for a specific timeframe

Start Time : : , / /
hh:mm:ss, dd/mm/yyyy

End Time : : , / /
hh:mm:ss, dd/mm/yyyy

Data Logs	
Get Object data from all logs	Allows data to be read from all Data Logs available in the SCADAPack x70 device. The Data Log Objects table shows a list of Objects for which logged data is present in the SCADAPack x70 device. Default
Get Object data from specific logs	Allows you to select one or more of the configured Data Logs from which data can be read. The Data Log Objects table shows a list of Objects for which logged data is present in the selected Data Logs and present in the SCADAPack x70 device. You can select one or more Data Logs.
Timeframe	

Get all Object data logs	Allows data to be read from the selected Data Logs across the full time range of lagged data available on the SCADAPack x70 device. Default
Get Object data logs for a specific timeframe	Allows data to be read from the specified Data Logs within a time range on the SCADAPack x70 device. Allows you to select a start time and end time. You can manually enter a valid date and time. The Start Time needs to be less than the End Time. Default values when selected: End time is current time; Start time is 1 hour earlier than the current time.

12.9.3 Reading Object Data Logs

The **Read Selected Objects** button is enabled if data for one or more of the selected entries in the table not yet been read from the SCADAPack x70 device to the PC.

A ? status next to an object name indicates that data for the object is available to be read from the SCADAPack x70 device that is not already available on the PC.

To read object data logs

1. On the **Objects > Object Browsers > Data Logging** page, select one or more objects in the table to be read.
2. Click **Read Selected Objects**.
3. In the pop-up dialog, browse to select a destination folder for the log file.
4. Click **Select Folder**.
5. Choose one of the following:
 - If files are already present in the folder but you want to replace that data by reading up-to-date data from the SCADAPack x70 device, click **Overwrite**.
 - If you want to use the data already read from the SCADAPack x70 device and present on the PC, click **Skip**.

When the log files have been successfully read for the selected Data Logs, Timeframes, and Objects, the Object status fields are cleared and no longer display ?.

Data Logging Object pages are created for each object where logged data was retrieved. See [Online Data Logging Object Pages](#)⁴¹⁰.

Also, see:

- [Graphing Data Logging Objects](#)⁴¹²
- [Displaying Data Logging Objects](#)⁴¹⁵

12.9.4 Online Data Logging Object Pages

After one or more Objects' log files have been successfully read from the SCADAPack x70 device, new Data Logging Object pages are appended as children to the main Online Data Logging page. Each page represents one object.

Online Status: Connected Connection: USB DNP3 Target Address: 0 Device Serial Number: B025723

Status Licensing Logic **Objects**

- Object Browsers
 - SCADAPack I/O
 - Forced Objects
- Data Logging
 - PIO_SP575_AI1**

Object: PIO_SP575_AI1

Location of Log File(s): C:\Users\Rennie\Desktop\Data AI1

View Log File(s) in Windows Explorer Graph Object Graph Selected

	Timestamp	Object Value	Quality	Event Type
1	20/04/2022 14:42:30	0.00	Online	Periodic
2	20/04/2022 14:42:40	0.00	Online	Periodic
3	20/04/2022 14:42:50	0.00	Online	Periodic
4	20/04/2022 14:43:00	0.00	Online	Periodic
5	20/04/2022 14:43:10	0.00	Online	Periodic
6	20/04/2022 14:43:20	0.00	Online	Periodic
7	20/04/2022 14:43:30	0.00	Online	Periodic
8	20/04/2022 14:43:40	0.00	Online	Periodic
9	20/04/2022 14:43:50	0.00	Online	Periodic
10	20/04/2022 14:44:00	0.00	Online	Periodic
11	20/04/2022 14:44:10	0.00	Online	Periodic
12	20/04/2022 14:44:20	0.00	Online	Periodic
13	20/04/2022 14:44:30	0.00	Online	Periodic
14	20/04/2022 14:44:40	0.00	Online	Periodic
15	20/04/2022 14:44:50	0.00	Online	Periodic
16	20/04/2022 14:45:00	0.00	Online	Periodic
17	20/04/2022 14:45:10	0.00	Online	Periodic

Button or Field	Description
Location of Log file(s): 	Shows the location of the log files on the PC for the object data shown in the table. Clicking on the information icon shows a list of the Log File(s) names retrieved from the SCADAPack x70 device and present on the PC for the object.
View Log File(s) in Windows Explorer	Opens the folder containing the log files in Windows Explorer. Log files are stored as csv and zip files. Default: Enabled

Graph Object	<p>Displays a graphing tool, see Graphing Data Logging Objects in a new dialog. When launching the graphing tool from the Data Logging Object page, only a single Object (the current Object) is graphed to a maximum of the first 5000 data events. Only analog, digital, and counter Objects can be graphed. String Objects are not graphable.</p> <p>Default: Enabled if at least one data entry exists in the table</p>
Graph Selected	<p>Displays the graphing tool, see Graphing Data Logging Objects in a new dialog using only the selected data event entries, up to a maximum of 5000 data events.</p> <p>Default: Enabled if 1...5000 entries are selected in the table</p>

Parameter	Values
Timestamp	Valid timestamp in the format: DD/MM/YYYY HH:MM:SS
Object Value	<p>The value of the Object event in the log file.</p> <p>Analog, digital, and counter objects are represented as an integer.</p> <p>Analog objects with a SCADAPack x70 configuration using a REAL (Engineering) component of the object are represented as a float.</p> <p>String objects are represented as a string.</p>
Quality	<p>Online</p> <p>Not Responding</p> <p>User Set Offline</p> <p>Logic Controlled</p> <p>Interlock Active</p> <p>Forced</p> <p>Chatter Filter</p> <p>Under Range</p> <p>Over Range</p> <p>RoR Exceeded</p> <p>RoF Exceeded</p> <p>No Change</p> <p>Check Reference</p>

	Alert State
	High Limit
	H4 State
	H3 State
	H2 State
	H1 State
	L1 State
	L2 State
	L3 State
	L4 State
	Remote Forced
	Initial Value

12.9.5 Graphing Data Logging Objects

You can use the graphing tool to visualize Object Data Log data.

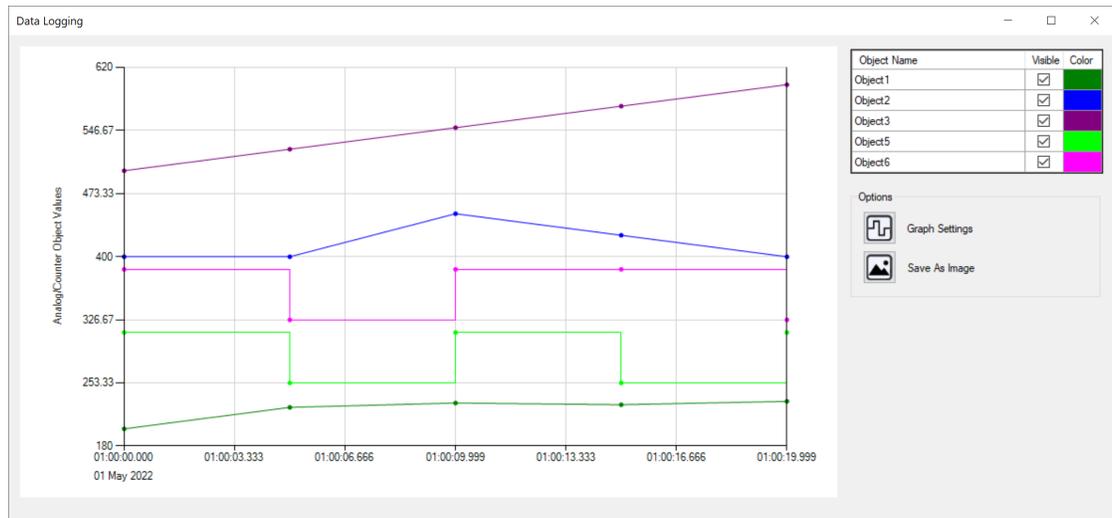
When you click **Graph Selected Objects** in either the online Data Logging page or one of the Data Logging Object children pages, the graphing tool opens in a new dialog.

Each series is indicated in the legend and each object's value is represented as a separate series in the graph, sorted by timestamp.

Up to 10 objects can be graphed at one time. If more than 10 objects are selected, the **Graph Selected Objects** button is disabled.

You can select individual objects or a collection of objects.

The following is an example of graphed objects.



Graphing dialog

The graphing dialog shows a graphical representation of the data for the selected objects.

- Analog and counter objects are displayed as line graphs
- Digital objects are displayed as step-line graphs because they are binary values
- String data is not graphable

The legend indicates the Object Name, visibility and color associated with each object.

Change the color

1. Click the color beside the object name that you want to change.

The standard color picker is displayed.

2. Choose the color you want and click **OK**.

The color of the object series changes to the selected color.

Change the visibility

- Toggle the checkbox beside the object name to display or hide the object series in the graph

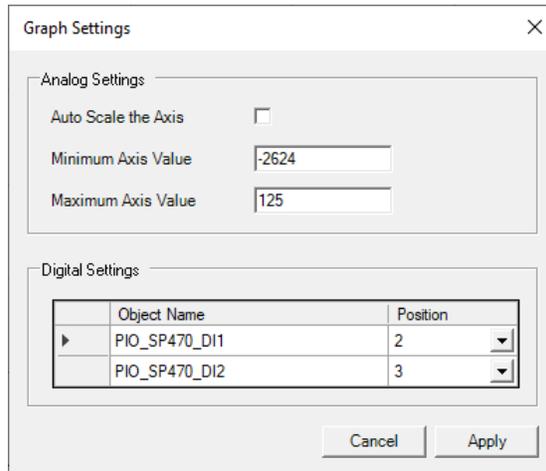
Graph Settings

When selected, you can configure the settings for analog, counter, and digital objects.

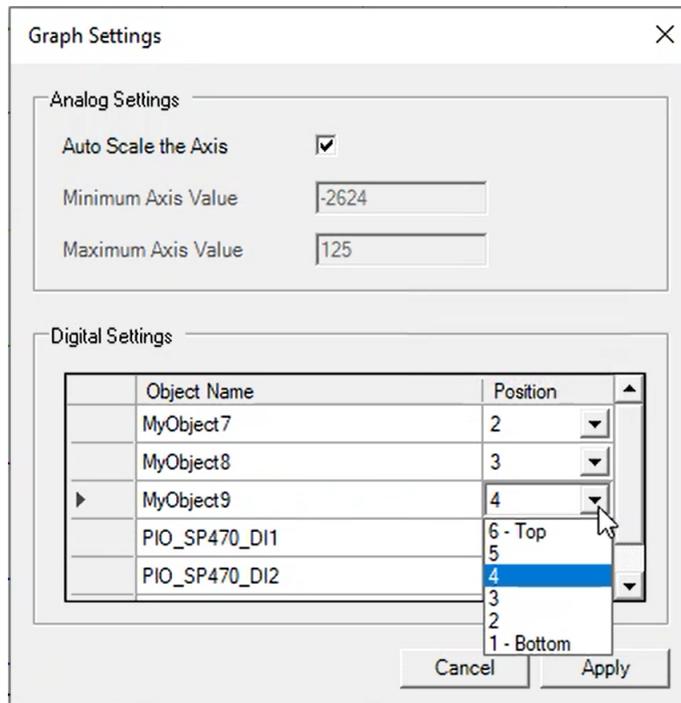
The display depends on which objects are selected.

1. Click **Graph Settings**.
2. In the pop-up dialog,
 - For analog and counter objects:

- **Auto Scale the Axis:** By default, the y-axis is auto scaled. When unchecked, the **Minimum Axis Value** and **Maximum Axis Value** fields are enabled.
- **Minimum Axis Value** and **Maximum Axis Value:** The minimum value needs to be less than the maximum value



- For digital objects:
 - A maximum of 10 objects is displayed. You can change the order of position by clicking the down arrow for each object and selecting the relative position.



3. Click **Apply**.

Save As Image

When selected, you can save the current graph as a JPEG, BMP, GIF, or PNG image.

1. Click **Save As Image**.
2. In the pop-up dialog, enter a **File name** for the graph image.
3. Click **Save**.

The **Save Image Complete** dialog is display with the location of the image.

4. Click **OK**.

12.9.6 Displaying Data Logging Objects

The **Display Selected Objects** button is enabled if data for one or more of the selected entries in the table has been read from the SCADAPack x70 device to the PC and the Objects no longer display a ?.

A dialog opens to display a list of the data log entries in sequential order for the selected Objects.

To display data logging objects

1. On the **Objects > Object Browsers > Data Logging** page, select one or more objects in the table to display.
2. Click **Display Selected Objects**.

A dialog opens to display a list of the data log entries in sequential order for the selected Objects.

3. When you are finished viewing the data logs, click **Close**.

12.10 Managing Device Operation

The topics in this section describe how to perform the following tasks:

- [Restarting the Device](#)^[416]
- [Restarting the DNP3 Service](#)^[416]
- [Restarting the IEC 60870-5-104 Service](#)^[417]
- [Executing Command Line Operations on the Device](#)^[418]
- [Monitoring Modem Status](#)^[419]
- [Applying the License File to the Device](#)^[420]
- [Applying the Security Configuration to the Device](#)^[421]
- [Setting the Time on the Device](#)^[423]
- [Reading a File from the Device](#)^[424]
- [Writing a File to the Device](#)^[425]

- [Testing the Connection to the SCADAPack x70 Device](#) ⁴²⁵
- [Getting Device Information File](#) ⁴²⁶

12.10.1 Restarting the Device

If required for troubleshooting or maintenance activities, you can restart the SCADAPack x70 device.

When you restart the device, there is a period of time when it is offline and is unable to monitor or control the equipment to which it is connected.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

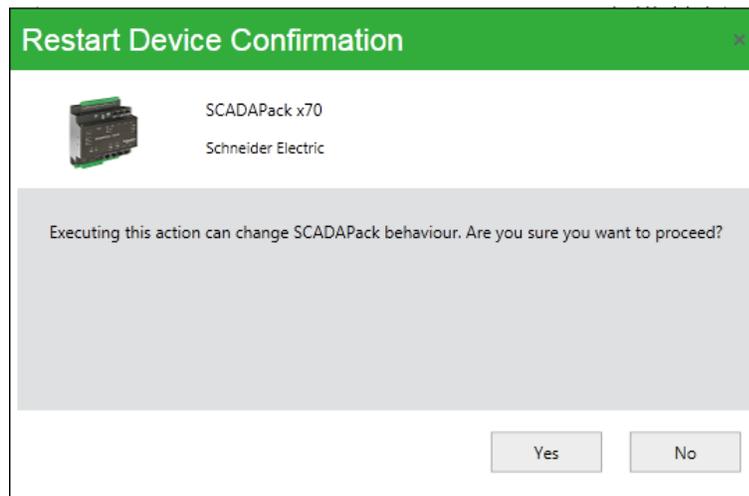
Before restarting the SCADAPack x70 device, evaluate the operational state of the equipment being monitored and controlled by the device.

Failure to follow these instructions can result in death or serious injury.

If there is a logic application running in the device, restarting the device is equivalent to stopping then restarting the application. See the Resetting Variables to their Default Values topic in the Logic Programming Overview manual.

To restart the SCADAPack x70 device

1. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Additional Functions > Restart Device**.



2. Click **Yes** to confirm the action.

12.10.2 Restarting the DNP3 Service

If required for troubleshooting or maintenance activities, you can restart the DNP3 service on the SCADAPack x70 device.

When you restart the DNP3 service, there is a period of time when communication functions are not available.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Before restarting the DNP3 service on the SCADAPack x70 device, evaluate the operational state of the equipment being monitored and controlled by the device.

Failure to follow these instructions can result in death or serious injury.

Restarting the DNP3 service is equivalent to remotely sending a DNP3 Warm Restart command.

To restart the DNP3 service on the device

1. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Additional Functions > Restart DNP3**.

Restart DNP3 Confirmation×



SCADAPack x70

Schneider Electric

Executing this action can change SCADAPack behaviour. Are you sure you want to proceed?

Yes

No

2. Click **Yes** to confirm the action.

12.10.3 Restarting the IEC 60870-5-104 Service

If required for troubleshooting or maintenance activities, you can restart the IEC 60870-5-104 service on the SCADAPack x70 device.

When you restart the IEC 60870-5-104 service, there is a period of time when communication functions are not available.

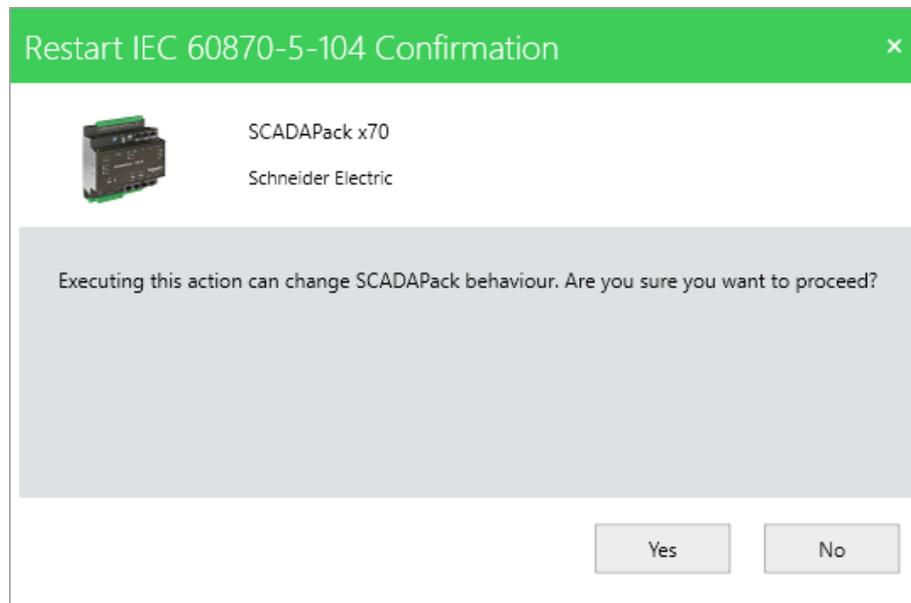
⚠ WARNING**UNINTENDED EQUIPMENT OPERATION**

Before restarting the IEC 60870-5-104 service on the SCADAPack x70 device, evaluate the operational state of the equipment being monitored and controlled by the device.

Failure to follow these instructions can result in death or serious injury.

To restart the IEC 60870-5-104 service on the device

1. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Additional Functions > Restart IEC 60870-5-104**.



2. Click **Yes** to confirm the action.

12.10.4 Executing Commands on the Device

You can execute some commands on the SCADAPack x70 device. The following commands are available:

- Device management commands
 - CLEAR
 - GETCONFIG
 - RESTART
- Diagnostics commands
 - FILEDIAG

- SYSDIAG
- File commands
 - APPEND
 - COPY
 - DEL
 - RENAME
 - UNPACK

See the Device Management Commands topic in the Operations Technical Reference manual.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Before executing any command that restarts the device or a service on the SCADAPack x70 device, evaluate the operational state of the equipment being monitored and controlled by the device.

Failure to follow these instructions can result in death or serious injury.

To execute command line operations on the device

1. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Additional Functions > Execute Command**.



2. Enter the command you want to execute and then click **Ok**.

12.10.5 Monitoring Modem Status

When you are using a dialup modem connection or a PPP modem connection, use the Modem tab in the SCADAPack x70 online parameters to read the modem connection status from the device .

Online Status: Connected **Connection:** TCP **DNP3 Target Address:** 0 **IP Address or Hostname:** 172.16.13.1

Status
Licensing
Modem
Logic
Objects

Modem Status

Last Updated

Serial 1

Modem Status

Connect Status

Serial 2

Modem Status

Connect Status

To read the modem status from the device

- On the Modem tab, click **Refresh**
- The Connect Status is one of:
 - Not Available
 - Check Modem Hardware
 - Modem OK

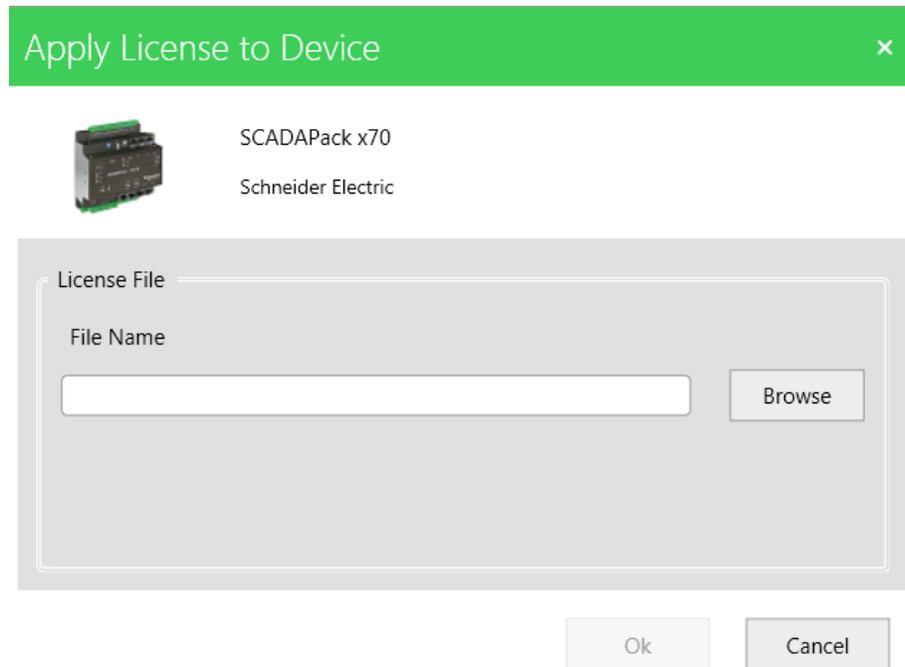
12.10.6 Applying the License File to the Device

The license file for the SCADAPack x70 device activates the purchased features on the device. The file is provided by your Schneider Electric representative.

Follow the procedure below to transfer the license file to the SCADAPack x70 device and apply its content.

To apply the license file to the device

1. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Additional Functions > Apply License to Device**.



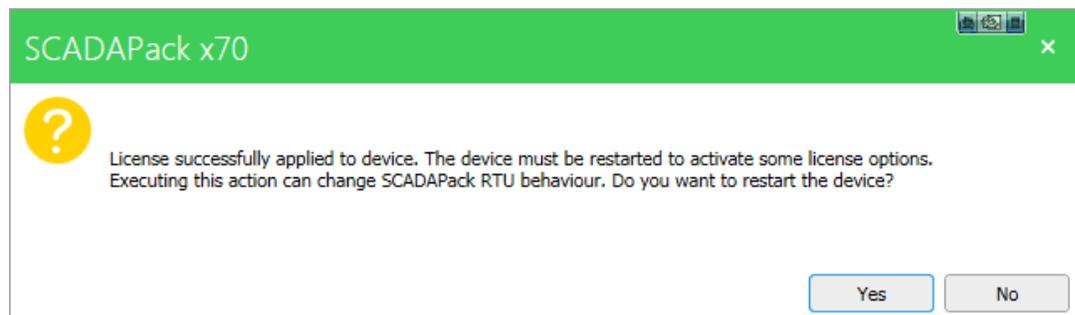
2. In the Apply License to Device dialog, click **Browse** to navigate to the location where the license file is stored.

The license file has a .lic extension.

3. In the **Open** dialog, select the license file, then click **Open**.
4. In the Apply License to Device dialog, click **Ok**.

When the license is successfully applied to the device, the device needs to be restarted to activate some license options.

5. In the pop-up dialog, click **Yes** to confirm.



12.10.7 Applying the Security Configuration to the Device

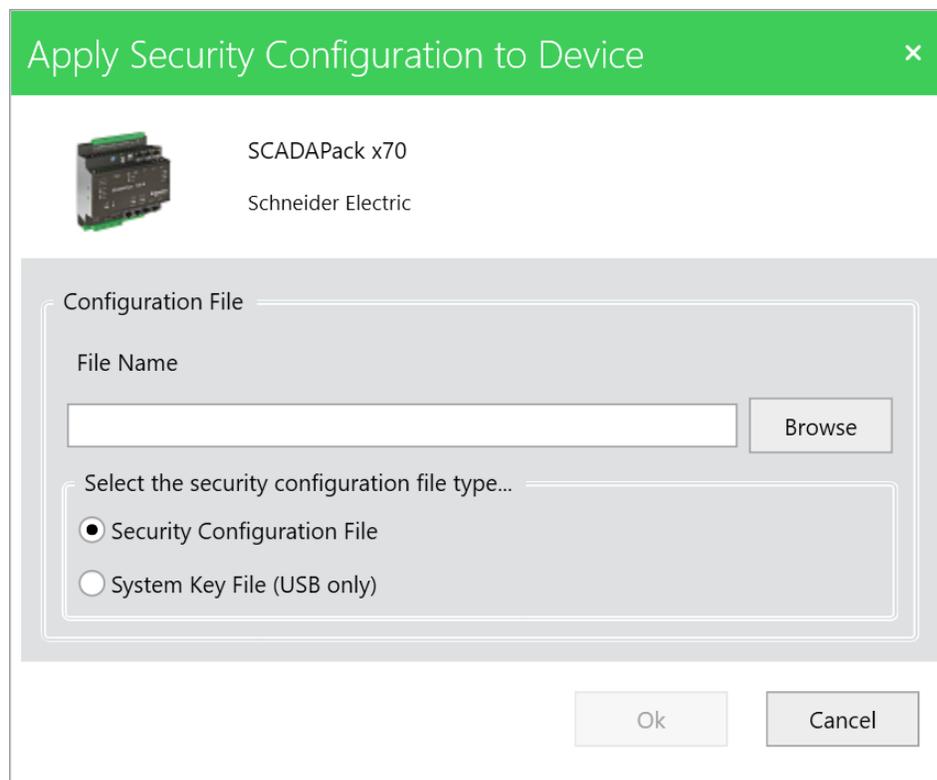
Security configuration files are created by the Security Administrator application. These files have a .rtk extension. They are described in the Security Administrator manual.

For the Security Configuration File, you can apply the security configuration using serial, USB, or Ethernet connection.

For the System Key File, you can only apply the security configuration to the SCADAPack x70 device using a local USB connection. This helps to reduce the risk of unauthorized access the file. If there is not currently a USB connection between the SCADAPack RemoteConnect computer and the device, see the Configuring Communication Parameters topic in the PC Communication Settings -SCADAPack CommDTM manual for details about setting up the connection.

To apply the security configuration to the device

1. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Additional Functions > Apply Security Configuration to Device**.



2. Select the security configuration file type.
3. Click **Browse** to navigate to the location where the security configuration file is stored.
 - The Security Configuration File is called **system.rtk**
 - The System Key File is called **system.key**
4. In the Open dialog, locate the file, then click **Open**.
5. In the Configuration File dialog, click **Ok**.

A confirmation dialog is displayed when the operation successfully completes.

6. Click **Ok** to acknowledge the message.

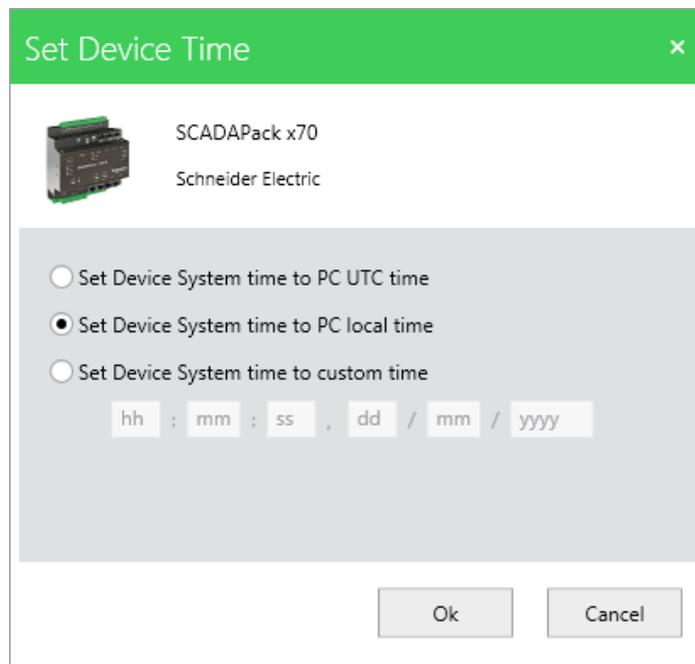
12.10.8 Setting the Time on the Device

You can set the time on the SCADAPack x70 device to either:

- Coordinated Universal Time (UTC)
- The local time on the PC running SCADAPack RemoteConnect

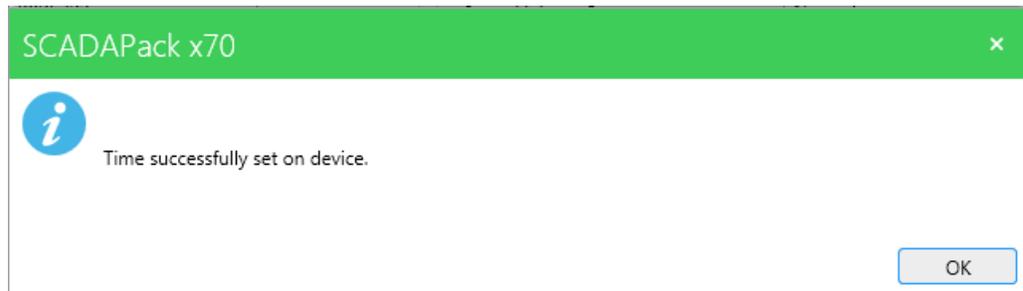
To set the time on the SCADAPack x70 device

1. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Additional Functions > Set Device Time**.



2. Select one of the following:

- To set the time on the SCADAPack x70 device to UTC time, select **Set Device System time to PC UTC time**, then click **Ok**.
- To set the time on the SCADAPack x70 device to the local time on the PC running SCADAPack RemoteConnect, select **Set Device System time to PC local time**, then click **Ok**.
- To set the time on the SCADAPack x70 device to a custom time, select **Set Device System time to custom time**, enter the custom time and date into the appropriate fields, then click **Ok**.



3. In the confirmation dialog, click **OK**.

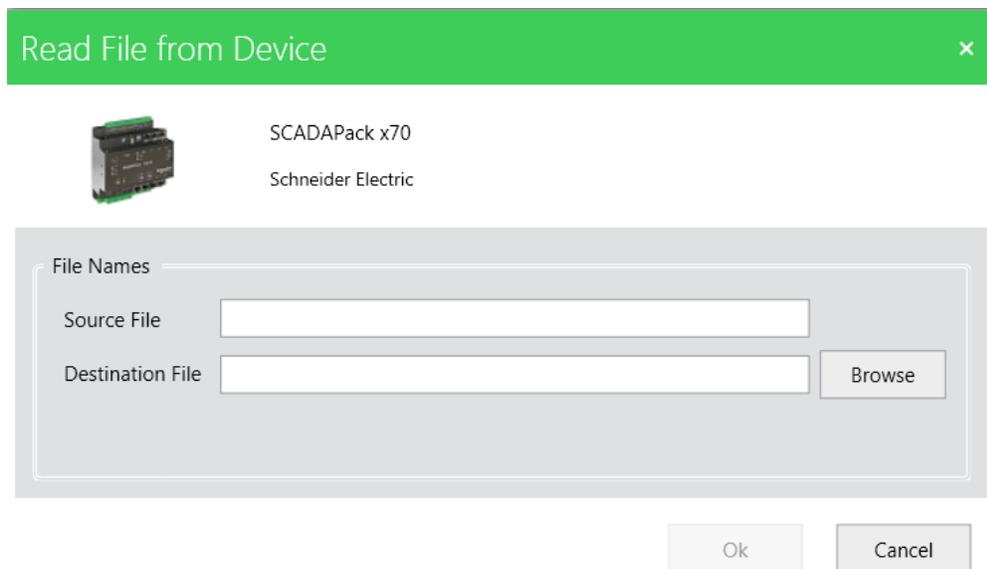
12.10.9 Reading a File from the Device

Follow the procedure below to read a file from the SCADAPack x70 device and save it to your computer.

You need to know the name and location of the file on the SCADAPack x70 device before you start this procedure. To see a list of the subdirectories and files on the SCADAPack x70 device, see the DIR: List Directory Contents topic in the Operations Technical Reference manual.

To read a file from the SCADAPack x70 device

1. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Additional Functions > Read File from Device**.



2. In the **Source File** field, enter the name and location of the file that you want to read from the device.
3. In the **Destination File** field, click **Browse** to navigate to the location where the file will be saved on your computer.
4. In the Read File from Device dialog, click **Ok**.

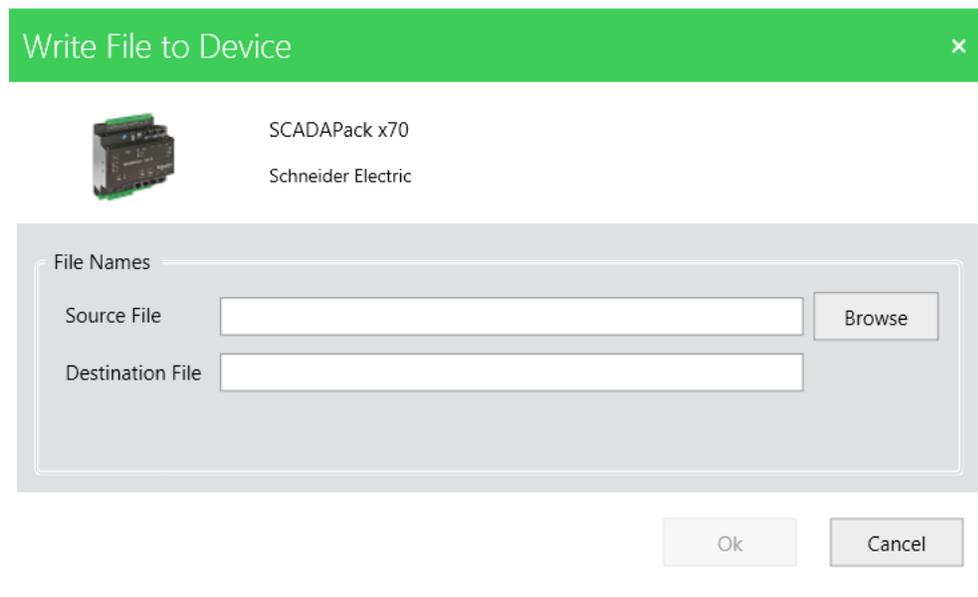
12.10.10 Writing a File to the Device

Follow the procedure below to write a file from your computer to the SCADAPack x70 device.

To see a list of the subdirectories and files on the SCADAPack x70 device, see the DIR: List Directory Contents topic in the Operations Technical Reference manual.

To write a file to the SCADAPack x70 device

1. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Additional Functions > Write File to Device**.



The screenshot shows a dialog box titled "Write File to Device" with a green header. It features a small image of the SCADAPack x70 device and the text "SCADAPack x70" and "Schneider Electric". Below this, there are two text input fields: "Source File" and "Destination File". The "Source File" field has a "Browse" button to its right. At the bottom of the dialog are "Ok" and "Cancel" buttons.

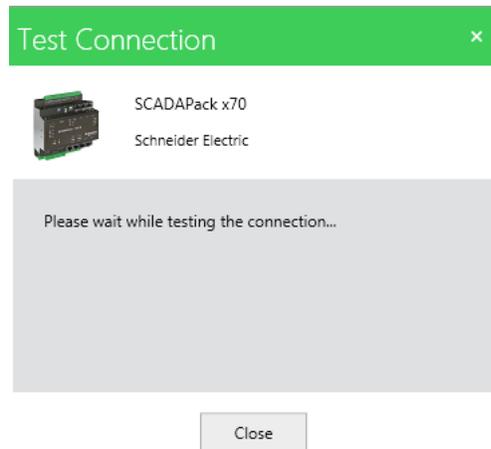
2. In the **Source File** field, click **Browse** to navigate to the location of the file on your computer.
3. In the **Destination File** field, enter the name and location on the device where you want to write the file.
4. In the Write File to Device dialog, click **Ok**.

12.10.11 Testing the Connection to the SCADAPack x70 Device

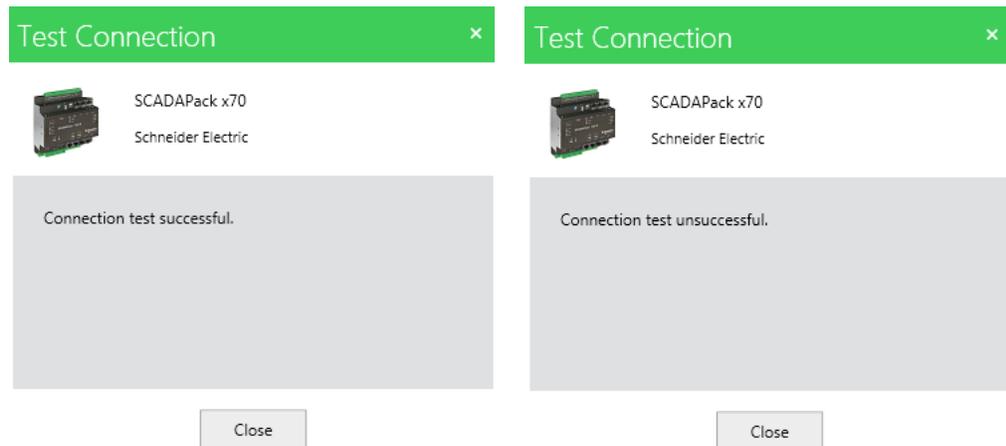
Follow the procedure below to test the connection to the SCADAPack x70.

To test the connection to the SCADAPack x70 device

1. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Additional Functions > Test Connection**.



Either of the following images is displayed when the connection test is complete.



2. Click **Close**.

If the connection test is unsuccessful, your computer is not communicating with the SCADAPack x70 device. The following are some suggestions for resolving the communication issue:

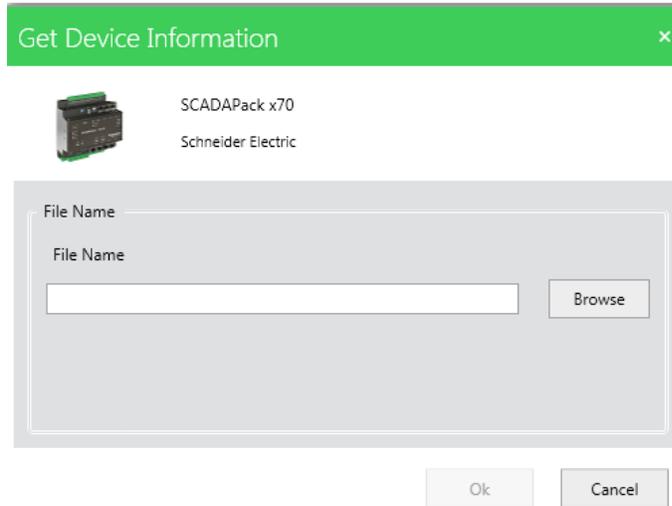
- Check that the device has power
- Check that the cables are connected correctly
- If using TCP or UDP, check that the IP address is correct
- If using serial communications, check that the serial port settings are correct
- Check that the target DNP3 address is correct

12.10.12 Getting Device Information File

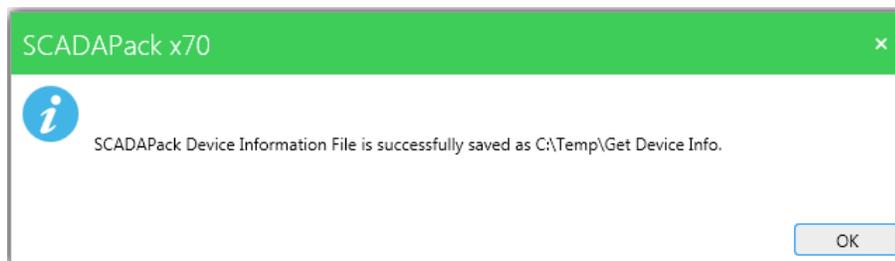
Follow the procedure below to get a device information file from the SCADAPack x70 device and save it to your computer.

To get a device information file from the SCADAPack x70 device

1. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Additional Functions > Get Device Information**.



2. In the Get Device Information dialog, click **Browse** to navigate to the location where the file will be saved on your computer.
3. In the Save As dialog, enter the name of the file on the SCADAPack x70 device, then click **Save**.
4. In the Get Device Information dialog, click **Ok**.



5. When the file is successfully saved, navigate to the file on your computer and open it.

The following information is displayed:

- Associations information
- Date and Time information:
 - System Date/Time
 - Local Date/Time
- DNP3 routing table information

- Events information
- I/O Processor information
- IP information
- MEMSHOW information
- NETINFO information
- REALFLOSTATUS information
- Status information
- Security
- Task information
- UNITY PERFORMANCE information
- VER information
- WATCHDOG information
- WHOAMI information

12.11 Updating the Firmware and Bootloader on the Device

When you receive a new version of the firmware or bootloader for your SCADAPack x70 device, you need to download the file to the device to activate the new features.

- [Updating Firmware on a SCADAPack 47x](#)⁴²⁸
- [Updating Firmware on a SCADAPack 57x](#)⁴³²
- [Updating the Bootloader](#)⁴³⁵
- [Creating Recovery Media](#)⁴³⁷

12.11.1 Updating Firmware on a SCADAPack 47x

Schneider Electric believes cybersecurity is critical in today's connected world. Improved cybersecurity mechanisms are now included in SCADAPack products and updated tools are required to apply the new device configurations. Before installing the new hardware, install the latest version of the configuration software. Old versions of software will not be able to configure products equipped with these enhanced cybersecurity features. See Working with Security Locking in the Getting Started manual.

For assistance in obtaining these updated versions, contact [Technical Support](#)¹³.

Use the context menu that is available when the SCADAPack x70 configuration software is online to update the firmware on your SCADAPack x70 device. The following table lists important details to be aware of.

SCADAPack x70 Device or Module	Instructions	Firmware Filename for the Device
-----------------------------------	--------------	-------------------------------------

SCADAPack 570	Follow the procedure below	xxxe57x.biz or xxxxe57x.biz
SCADAPack 574	Follow the procedure below. You cannot update the firmware on the 5607 input output module.	
SCADAPack 575	Follow the procedure below, then follow the procedure in the Updating Module Firmware topic of the SCADAPack 6601 Input Output Module manual to update the firmware for the I/O, if required.	Where xxx or xxxx is the firmware version number, such as 904 or 1001
SCADAPack 470	Follow the procedure below	xxxe47x.fwz or xxxxe47x.fwz Where xxx or xxxx is the firmware version number, such as 904 or 1001
SCADAPack 474	Follow the procedure below, then follow the procedure in the Updating Module Firmware topic of the SCADAPack 6607 Input Output Module manual to update the firmware for the I/O, if required.	
An attached 6000 series I/O module	See the hardware manual for the I/O module	

⚠ WARNING

LOSS OF CONTROL

During a firmware update, the 6000 series I/O module does not monitor or control any of the devices to which it is connected. Before updating firmware:

- Confirm that you are connected to the correct SCADAPack.
- Evaluate the operational state of the devices that are monitored and controlled by the I/O module.

Failure to follow these instructions can result in death or serious injury.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Do not remove power from the SCADAPack during the firmware update.

Do not disconnect the 6000 series I/O module from the SCADAPack during the firmware update.

If power is interrupted for any reason during the firmware update, contact Technical Support.

Failure to follow these instructions can result in death or serious injury.

Preserving data

When you update the firmware on the device:

- The device configuration is preserved
- Routes are preserved, with the exception of dynamic DNP3 routes and IP routes that were added using the `ROUTE` command
- The logic application and the state of logic variables are preserved

NOTICE

DATA LOSS

Updating the firmware sets the Realflo flow computer to defaults without any configuration.

Save the configuration before starting the firmware update.

Failure to follow these instructions can result in loss of flow computer history and configuration.

- During firmware upgrade the Realflo flow computer is set to defaults without any configuration. Follow these steps to preserve the device configuration of the flow computer:
 1. Open Realflo and open the project file for the target to be upgraded.
 2. Stop the flow computer runs.
 3. Read the Realflo configuration from the flow computer.
 4. Read the event and alarm logs as well as the hourly, daily and batch history.
 5. Save the Realflo file.
 6. Update the firmware as described below.
 7. Write the Realflo configuration to the target.
 8. Start the flow computer runs.

This procedure restores the Realflo configuration. Accumulators and history are not restored. Event and Alarm indexes restart at index 1.

If there is insufficient space on the file system to store the items listed above during the firmware update, a message is generated and the firmware update is aborted.

NOTICE

UNINTENDED EQUIPMENT OPERATION

The SCADAPack x70 device automatically restarts when the firmware is updated.

Evaluate the operational state of the equipment being monitored or controlled by the SCADAPack x70 device before updating the firmware.

Failure to follow these instructions can result in equipment damage.

NOTICE

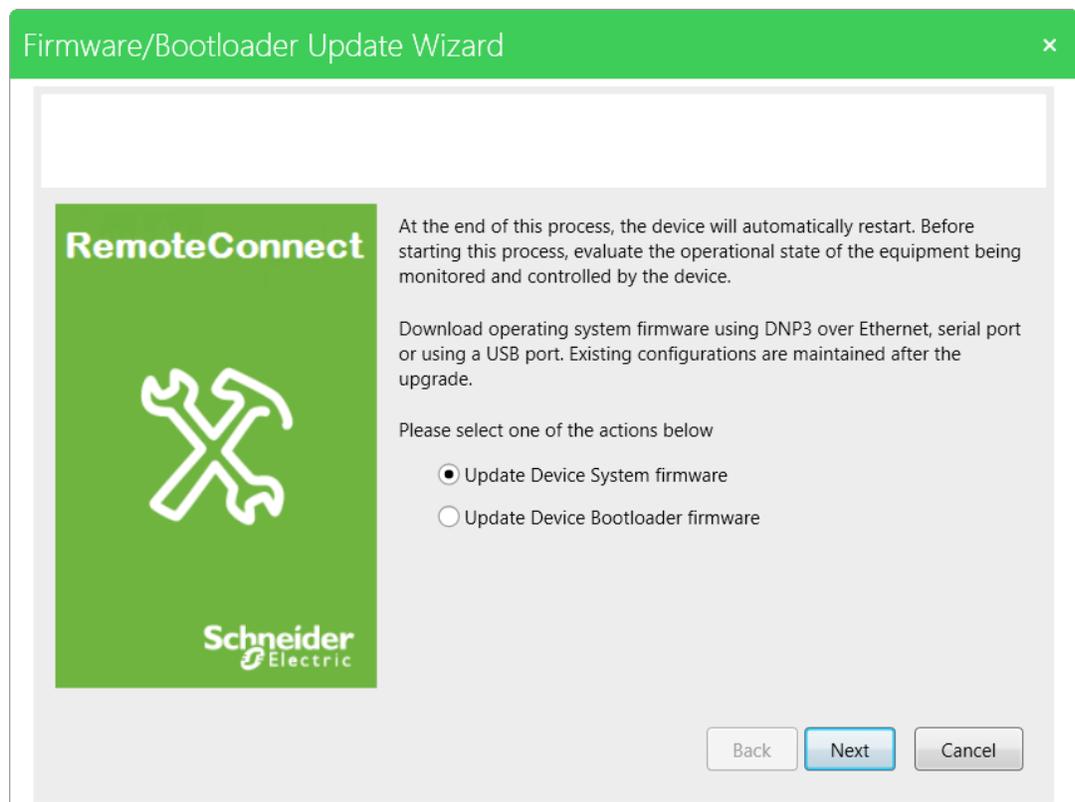
INCOMPATIBLE FIRMWARE VERSIONS

Before installing any firmware updates, check the Release Notes for the firmware update to determine the most suitable firmware versions for the functionality you are using and to confirm version compatibility.

Failure to follow these instructions can result in equipment damage.

To update the firmware on the device

1. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Additional Functions > Update Device Firmware or Bootloader**.



2. Follow the instructions in the wizard to download the firmware to the device and update it.

The firmware file has a **.fwz** file extension. By default, the firmware file is stored in one of the following directories:

64-bit systems: C:\Program Files (x86)\Schneider Electric\RemoteConnect\Firmware\SCADAPack 47x

32-bit systems: C:\Program Files\Schneider Electric\RemoteConnect\Firmware\SCADAPack 47x

3. After the device has restarted, open the Online Diags – SPx70 Controller parameters and click **Refresh** on the Status tab to verify that the **Firmware Version** field was correctly

updated.

12.11.2 Updating Firmware on a SCADAPack 57x

Schneider Electric believes cybersecurity is critical in today's connected world. Improved cybersecurity mechanisms are now included in SCADAPack products and updated tools are required to apply the new device configurations. Before installing the new hardware, install the latest version of the configuration software. Old versions of software will not be able to configure products equipped with these enhanced cybersecurity features. See Working with Security Locking in the Getting Started manual.

For assistance in obtaining these updated versions, contact [Technical Support](#)^[13].

Use the context menu that is available when the SCADAPack x70 configuration software is online to update the firmware on your SCADAPack x70 device. The following table lists important details to be aware of.

SCADAPack x70 Device or Module	Instructions	Firmware Filename for the Device
SCADAPack 570	Follow the procedure below	xxxe57x.biz
SCADAPack 574	Follow the procedure below. You cannot update the firmware on the 5607 input output module.	or xxxxe57x.biz
SCADAPack 575	Follow the procedure below, then follow the procedure in the Updating Module Firmware topic of the SCADAPack 6601 Input Output Module manual to update the firmware for the I/O, if required.	Where xxx or xxxx is the firmware version number, such as 904 or 1001
SCADAPack 470	Follow the procedure below	xxxe47x.fwz
SCADAPack 474	Follow the procedure below, then follow the procedure in the Updating Module Firmware topic of the SCADAPack 6607 Input Output Module manual to update the firmware for the I/O, if required.	or xxxxe47x.fwz Where xxx or xxxx is the firmware version number, such as 904 or 1001
An attached 6000 series I/O module	See the hardware manual for the I/O module	

⚠ WARNING**LOSS OF CONTROL**

During a firmware update, the 6000 series I/O module does not monitor or control any of the devices to which it is connected. Before updating firmware:

- Confirm that you are connected to the correct SCADAPack.
- Evaluate the operational state of the devices that are monitored and controlled by the I/O module.

Failure to follow these instructions can result in death or serious injury.

⚠ WARNING**UNINTENDED EQUIPMENT OPERATION**

Do not remove power from the SCADAPack during the firmware update.

Do not disconnect the 6000 series I/O module from the SCADAPack during the firmware update.

If power is interrupted for any reason during the firmware update, contact Technical Support.

Failure to follow these instructions can result in death or serious injury.

Preserving data

When you update the firmware on the device:

- The device configuration is preserved
- Routes are preserved, with the exception of dynamic DNP3 routes and IP routes that were added using the `ROUTE` command
- The logic application and the state of logic variables are preserved

NOTICE**DATA LOSS**

Updating the firmware sets the Realflo flow computer to defaults without any configuration.

Save the configuration before starting the firmware update.

Failure to follow these instructions can result in loss of flow computer history and configuration.

- During firmware upgrade the Realflo flow computer is set to defaults without any configuration. Follow these steps to preserve the device configuration of the flow computer:
 1. Open Realflo and open the project file for the target to be upgraded.
 2. Stop the flow computer runs.

3. Read the Realflo configuration from the flow computer.
4. Read the event and alarm logs as well as the hourly, daily and batch history.
5. Save the Realflo file.
6. Update the firmware as described below.
7. Write the Realflo configuration to the target.
8. Start the flow computer runs.

This procedure restores the Realflo configuration. Accumulators and history are not restored. Event and Alarm indexes restart at index 1.

If there is insufficient space on the file system to store the items listed above during the firmware update, a message is generated and the firmware update is aborted.

NOTICE

UNINTENDED EQUIPMENT OPERATION

The SCADAPack x70 device automatically restarts when the firmware is updated.

Evaluate the operational state of the equipment being monitored or controlled by the SCADAPack x70 device before updating the firmware.

Failure to follow these instructions can result in equipment damage.

NOTICE

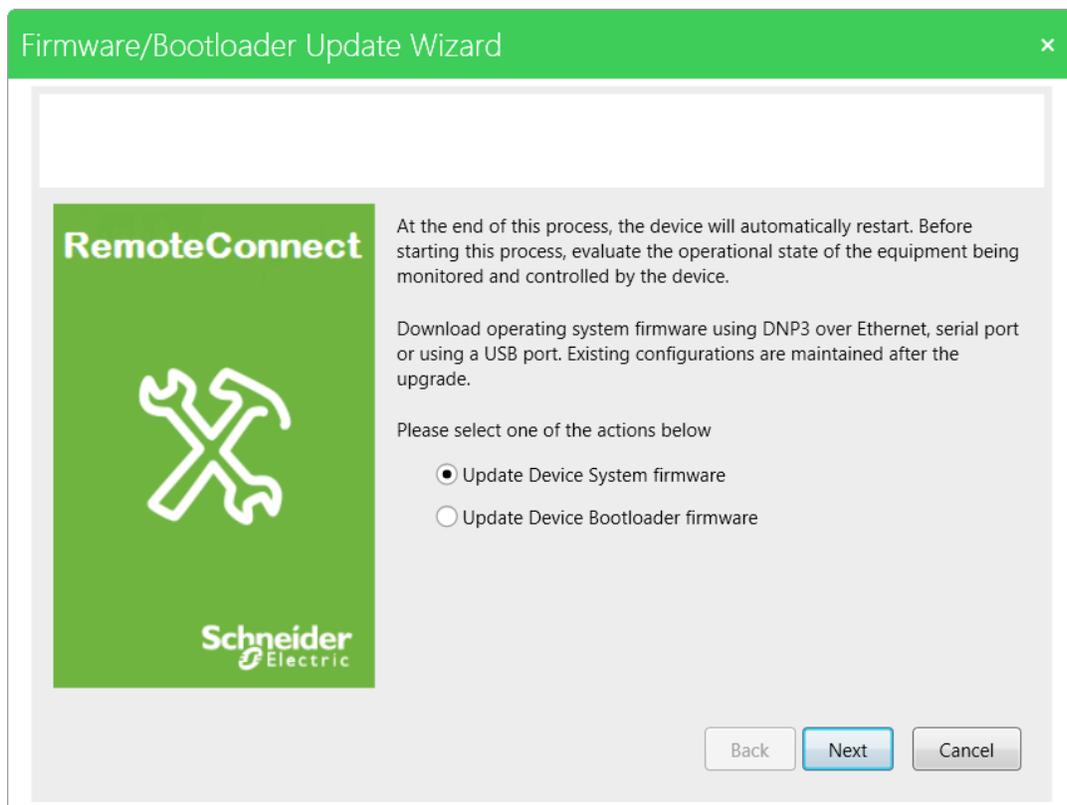
INCOMPATIBLE FIRMWARE VERSIONS

Before installing any firmware updates, check the Release Notes for the firmware update to determine the most suitable firmware versions for the functionality you are using and to confirm version compatibility.

Failure to follow these instructions can result in equipment damage.

To update the firmware on the device

1. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Additional Functions > Update Device Firmware or Bootloader**.



2. Follow the instructions in the wizard to download the firmware to the device and update it.

The firmware file has a **.biz** file extension. By default, the firmware file is stored in one of the following directories:

64-bit systems: C:\Program Files (x86)\Schneider
Electric\RemoteConnect\Firmware\SCADAPack 57x

32-bit systems: C:\Program Files\Schneider Electric\RemoteConnect\Firmware\SCADAPack
57x

3. After the device has restarted, open the Online Diags – SPx70 Controller parameters and click **Refresh** on the Status tab to verify that the **Firmware Version** field was correctly updated.

12.11.3 Updating the Bootloader

Use the context menu that is available when the SCADAPack x70 configuration software is online to update the bootloader on your SCADAPack x70 device.

⚠ WARNING**LOSS OF CONTROL**

During a bootloader update, the 6000 series I/O module does not monitor or control any of the devices to which it is connected. Before updating the bootloader on the I/O module:

- Confirm that you are connected to the correct SCADAPack
- Evaluate the operational state of the devices that are monitored and controlled by the I/O module.

Failure to follow these instructions can result in death or serious injury.

⚠ WARNING**UNINTENDED EQUIPMENT OPERATION**

Do not remove power from the SCADAPack during the bootloader update.

Do not disconnect the 6000 series I/O module from the SCADAPack during the bootloader update.

If power is interrupted for any reason during the bootloader update, contact Technical Support.

Failure to follow these instructions can result in death or serious injury.

NOTICE**UNINTENDED EQUIPMENT OPERATION**

The SCADAPack x70 device automatically restarts when the bootloader is updated.

Evaluate the operational state of the equipment being monitored or controlled by the SCADAPack x70 device before updating the bootloader.

Failure to follow these instructions can result in equipment damage.

Preserving data

When you update the bootloader on the device:

- The device configuration is preserved
- Routes are preserved, with the exception of dynamic DNP3 routes and IP routes that were added via logic or from the RTU command line
- The logic application and the state of logic variables are preserved
- The device restarts to apply the update

To update the bootloader on the device

1. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Additional Functions > Update Device Firmware or Bootloader**.



2. Follow the instructions in the wizard to download the bootloader to the device and update it.
3. Open the Online Diags - SPx70 Controller parameters if they are not already open and click **Refresh** on the Status tab to verify that the **Bootloader Version** field was correctly updated.

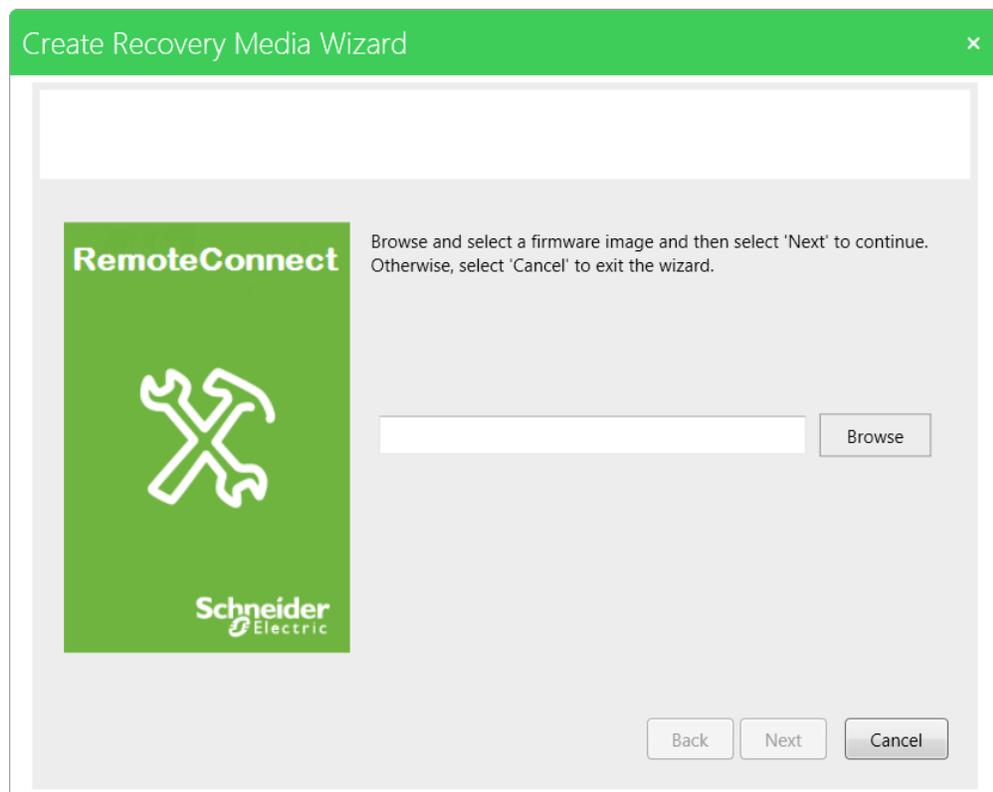
12.11.4 Creating Recovery Media on a SCADAPack 47x

This feature applies to SCADAPack 470 and SCADAPack 474 devices only. It is available in online and offline mode.

If the SCADAPack will not boot and you are unable to communicate with the RTU, then the firmware on the SCADAPack 47x may have become corrupted or invalid. Use Create Recovery Media to recover the firmware. After you have completed this process, the RTU will be in a cold booted state. You will have to rewrite the RemoteConnect configuration to the RTU.

To create recovery media

1. Insert a USB media device in your PC and format it as FAT32.
2. Under **My Network**, right-click on **SCADAPack x70 Controller Settings -DeviceDTM** and select **Additional Functions > Create Recovery Media**.

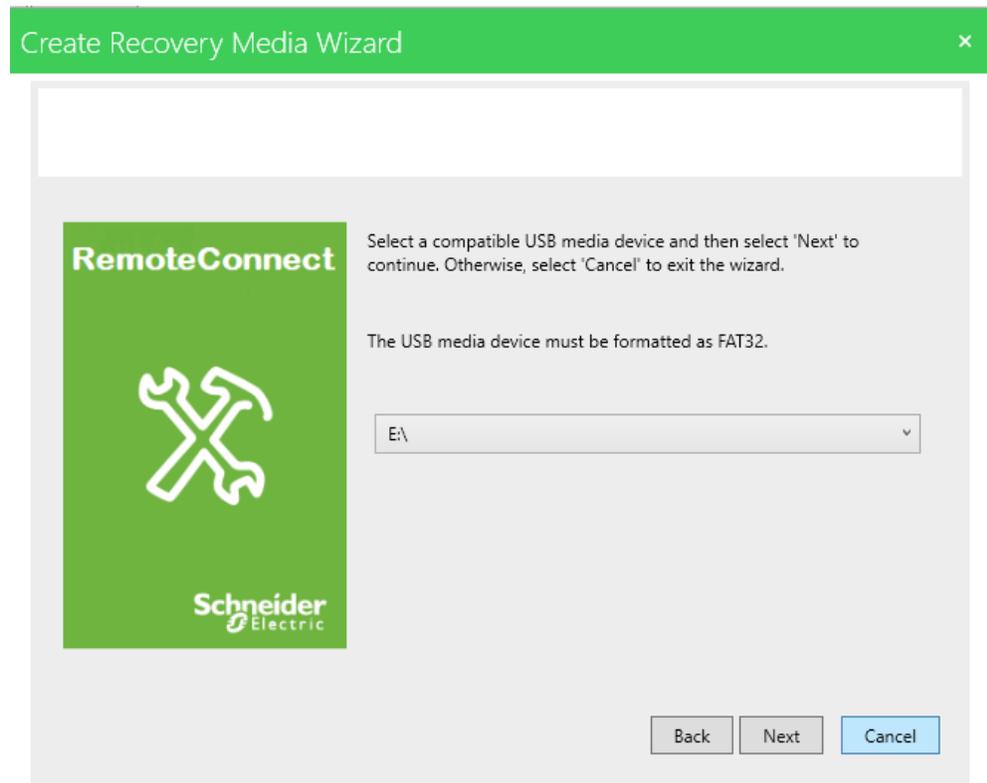


3. Browse to the location of the .fwz firmware file.

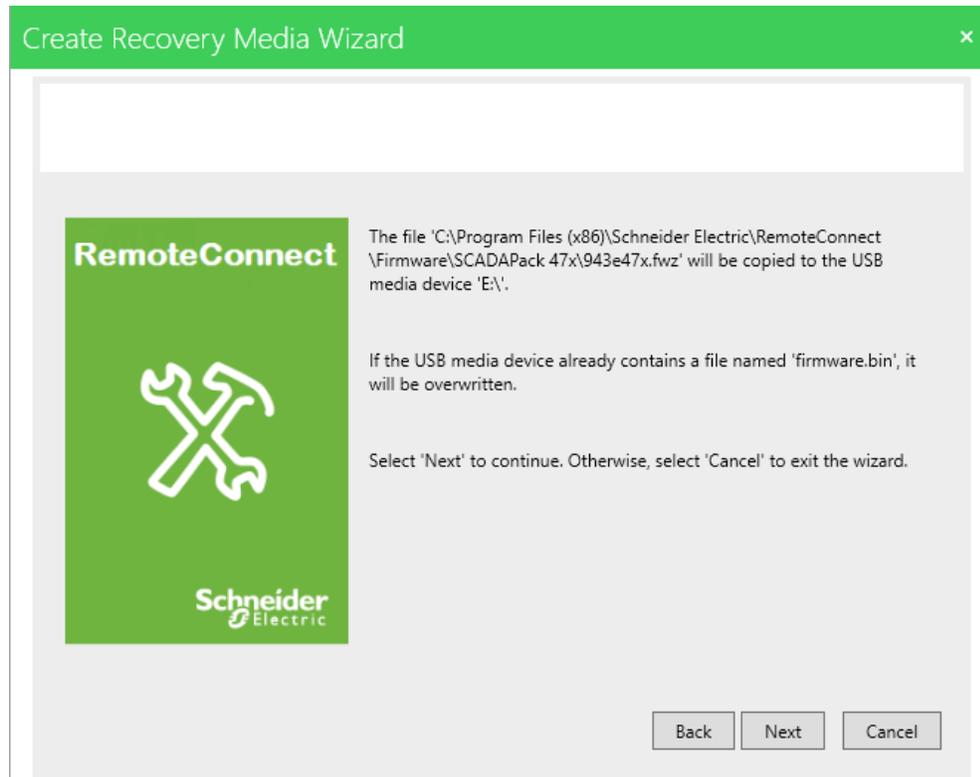
The default location for this file is:

- 32-bit systems: C:\Program Files\Schneider Electric\RemoteConnect\Firmware\SCADAPack 47x
- 64-bit systems: C:\Program Files (x86)\Schneider Electric\RemoteConnect\Firmware\SCADAPack 47x

4. Click **Next**.

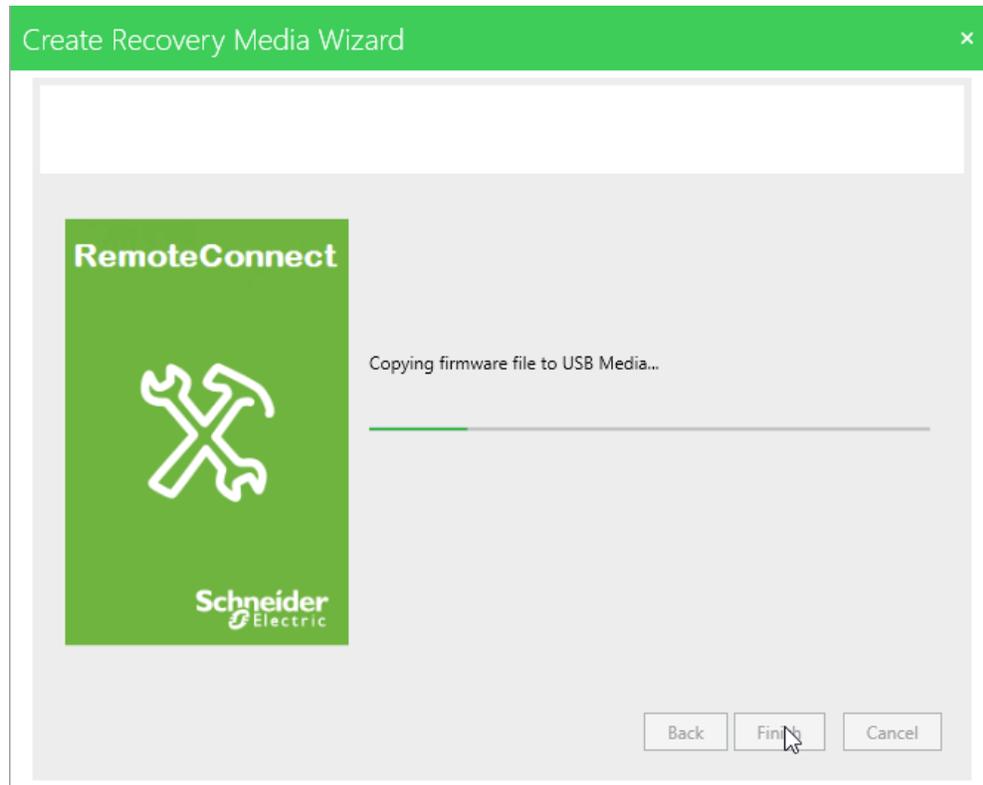


5. From the drop-down list, select the USB media device formatted as FAT32.
If the USB media device is not formatted as FAT32, it will not appear in the list.
6. Click **Next**.

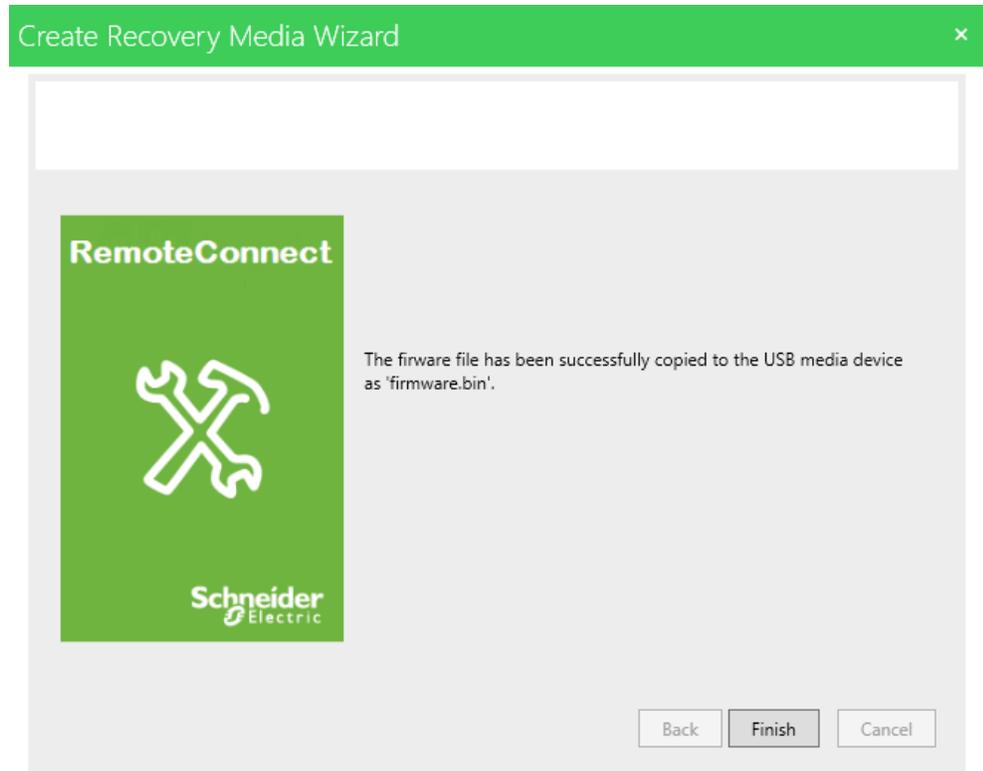


7. Confirm that the information in the dialog is correct and that it is ok to overwrite any existing firmware.bin file on the USB media device and click **Next**.

A progress bar is displayed.



- 8. Confirm that the progress has completed successfully and click **Finish**.



There is now a firmware.bin file on the USB media device.

For details on how to use the recovery media on a SCADAPack 470, see the Recovering Firmware topic in the SCADAPack 470 Hardware manual.

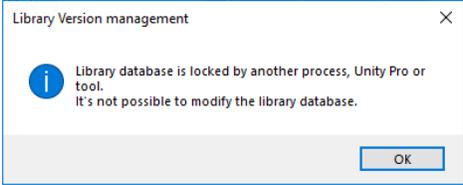
For details on how to use the recovery media on a SCADAPack 474, see the Recovering Firmware topic in the SCADAPack 474 Hardware manual.

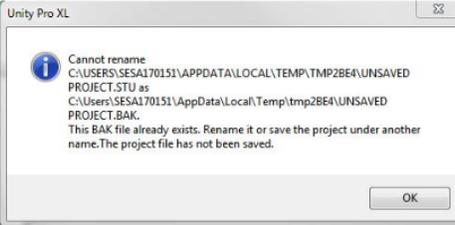
13 Troubleshooting

The table below provides suggestions for handling diagnostic messages and symptoms.

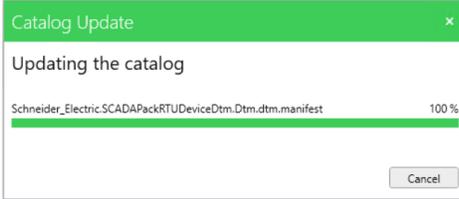
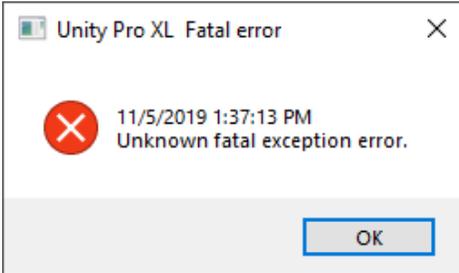
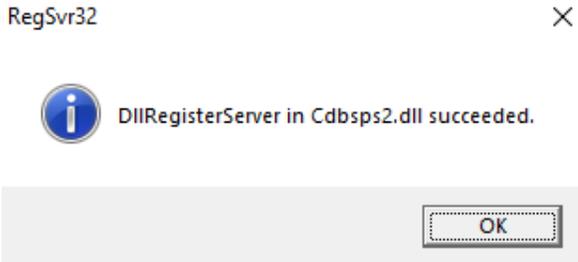
- [Missing or duplicate SCADAPack logic variables](#)^[444]
- [Library database is locked](#)^[444]
- [Logic Editor unavailable diagnostic message](#)^[445]
- [Cannot rename diagnostic message](#)^[445]
- [The device has reported conditions that require attention](#)^[445]
- [The Logic content of this project is not compatible with the current version of the Logic Editor](#)^[446]
- [Unexpected behavior after adding or updating a DTM](#)^[446]
- [Opened window is not visible and not accepting input](#)^[446]
- [Catalog Update dialog remains open at 100%](#)^[447]
- [Unity Pro XL Fatal error](#)^[447]
- [Logic Editor V14.0 doesn't start when Logic Editor V11.1 was previously installed](#)^[447]
- [Logic Editor V11.1 doesn't start when Logic Editor V14.0 was previously installed](#)^[448]
- [SCADAPack RemoteConnect communication is disturbed when device is restarted in Service, Cold, or Factory boot modes](#)^[448]
- [# 768: Invalid field Id: 550608](#)^[449]
- [Loss of communication to I/O modules](#)^[449]
- [The SCADAPack x70 device has reset unexpectedly](#)^[450]
- [SCADAPack RemoteConnect has restarted 3 times consecutively](#)^[450]
- [System status code 1013 was reported, but there is no message in config.log](#)^[450]
- [Checkbox for Object Protocol Address\(es\) in Logic Editor Custom Field is not available under SCADAPack x70 Controller Settings -DeviceDTM > Additional Functions > Project settings](#)^[450]
- [Logic Editor V14.0 doesn't start if UnitySoControl_V140_HF_RAT_PSBROKER.exe was applied](#)^[451]
- [The Integrity Check window is displayed after installing SCADAPack RemoteConnect](#)^[451]
- [Unable to change the user interface language](#)^[451]
- [Logic Editor doesn't start after Control Expert V15.0 hotfixes are applied](#)^[452]
- [Message IS_PAR_CON is displayed](#)^[452]
- [Installation Message displayed when starting SCADAPack RemoteConnect](#)^[452]
- [Missing SCADAPack x70 Library Content](#)^[453]

Condition	What to Do
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<p>Missing or duplicate SCADAPack logic variables</p> <p>The SCADAPack x70 Logic Editor or SCADAPack RemoteConnect may have terminated unexpectedly.</p>	<ol style="list-style-type: none"> 1. Restart SCADAPack RemoteConnect and open the project. 2. Check in the SCADAPack x70 Logic Editor for missing or duplicate T_SPx70_xxxx type variables. 3. On the SCADAPack x70 Configuration tab in SCADAPack RemoteConnect, click SCADAPack x70 Logic, expand the Advanced Configuration parameters, and click Replace Variables. 4. In the SCADAPack x70 Logic Editor, click Yes to confirm the modification to the variables. <p>The missing or duplicate logic editor variables where RemoteConnect objects are configured with linked logic variables are updated.</p>
<p>Library database is locked</p> <p>When attempting to modify the logic library, the SCADAPack x70 Logic Editor or the Types Library Update tool reports that the library is opened by another application.</p> 	<p>Try each of the following:</p> <ul style="list-style-type: none"> • Close all instances of Unity Pro, Control Expert, SCADAPack RemoteConnect and the Types Library Update tool • If necessary, stop SCADAPack RemoteConnect from the Windows Task Manager <p>If the problem persists it is likely because of Windows folder permissions settings.</p> <p>Check the following:</p> <ol style="list-style-type: none"> 1. With administrator privileges, right-click on C:\ProgramData\Schneider Electric 2. Select Properties. 3. Click the Security tab. 4. Click Edit. 5. In the Group or user names section, click on the Users entry. 6. In the Permissions for Users section, scroll down until you see a row called Write. 7. For the Write row, click the checkbox in the Allow column. 8. Click OK. <p>The security settings are updated on all the sub-folders.</p> <ol style="list-style-type: none"> 9. To exit the Properties dialog, click OK.

<p>Logic Editor unavailable diagnostic message</p> <p>If SCADAPack RemoteConnect cannot connect to the logic editor, you may see a message that the SCADAPack x70 Logic Editor is unavailable.</p>  <p>The SCADAPACK_x70 Type library folder may be missing under:</p> <p>C:\ProgramData\Schneider Electric\UnitySoControl 14.0\CustomLibset\V11.1</p> <p>or</p> <p>C:\ProgramData\Schneider Electric\UnitySoControl 14.0\CustomLibset\V14.0</p>	<p>Try the following:</p> <ol style="list-style-type: none"> 1. Shutdown SCADAPack RemoteConnect. 2. If necessary, stop SCADAPack RemoteConnect from the Windows Task Manager. 3. Restart SCADAPack RemoteConnect. <p>If the message reappears, follow the repair instructions in one of the following:</p> <ul style="list-style-type: none"> • the Post-Installation Steps for Unity Pro (V13.1 or later) and SCADAPack RemoteConnect in the Software Installation manual • the Post-Installation Steps for Control Expert (V14.0 and V14.1) and SCADAPack RemoteConnect in the Software Installation manual • the Post-Installation Steps for Control Expert (V15.0) and SCADAPack RemoteConnect in the Software Installation manual <p>You may need to reinstall the missing SCADAPACK_x70 Type library.</p> <p>Follow the steps in the Installing a Family topic in the Logic Programming Overview manual.</p>
<p>Cannot rename diagnostic message</p> <p>If the SCADAPack x70 Logic Editor project has not been saved, you may see the following diagnostic message.</p> 	<p>Save the project.</p>
<p>The device has reported conditions that require attention.</p> <p>You may see one of the following messages if, for example:</p> <ul style="list-style-type: none"> • There is a hardware condition on the SCADAPack x70 device. For example, the real time clock could 	<p>There are several things you can check.</p> <p>If the online configuration parameters are not already open, under My Network, right-click on SCADAPack x70 Controller Settings - DeviceDTM and select Online Diagnostics.</p> <ul style="list-style-type: none"> • On the Status tab, click Refresh and check the Memory Battery status, System Status Code, or any other error indications.

<p>not be initialized properly or there is something wrong with the battery.</p> <ul style="list-style-type: none"> The configuration is not correct. For example, the configuration has become corrupted or does not exist on the device. <p> The device has reported conditions that require attention. Please check status conditions below.</p> <p> The device has reported conditions that require attention. Please check the online Status tab.</p>	<ul style="list-style-type: none"> If there is a System Status Code, check what the cause is determine a course of action based on the code
<p>The Logic content of this project is not compatible with the current version of the Logic Editor.</p> <p>If the .sta file does not exist, you may see the following message:</p> 	<p>Resolution</p> <ol style="list-style-type: none"> Using an earlier version of SCADAPack RemoteConnect, on the Configuration tab, select SCADAPack x70 Logic. Click Update & Build. Close this version of SCADAPack RemoteConnect and open the latest version. Open the project.
<p>Unexpected behavior after adding or updating a DTM</p> <p>The DTM catalog is automatically updated when you add or update a DTM. If you notice unexpected behavior after adding or updating a DTM, you can disable automatic DTM catalog updates.</p>	<p>To disable automatic updates of the DTM catalog:</p> <ol style="list-style-type: none"> From Windows, run regedit.exe with administrator privileges. Add the registry key: HKEY_CURRENT_USER\Software\Schneider Electric\RemoteConnect\UserOptions\ConfirmCatalogUpdate [DWORD32] Set the value to 1.
<p>Opened window is not visible and not accepting input</p> <p>When a laptop is switched from a multiple screen display to a single screen display, application windows may become orphaned on the no longer visible screen. If the logic editor is not accepting input after attempting to open a secondary window such as the Types Library Manager or FFB Input Assistance, it's possible that the window is open on a previously opened display. If you've moved from using a multi-screen display to a laptop, for example, the opened window may not be visible.</p>	<p>Press Alt-F4 to close the hidden window and resume using the logic editor main screen.</p> <p>OR</p> <p>Press Alt-Space then M and hold down the left-arrow key to move the window onto the current display.</p>

<p>Catalog Update dialog remains open at 100%</p> <p>The automatic catalog update dialog usually closes when it is complete. If the dialog does not close automatically, you will see the following.</p> 	<p>To close the Catalog Update when it does not close automatically:</p> <ol style="list-style-type: none"> 1. Close SCADAPack RemoteConnect. 2. Delete the DTMCatalog folder under: C:\ProgramData\Schneider Electric\RemoteConnect <p>The location of the folder is the same under 64-bit and 32-bit and doesn't depend on where the applications was installed.</p> <ol style="list-style-type: none"> 3. Start SCADAPack RemoteConnect again. <p>The automatic update catalog should complete updating.</p>
<p>Unity Pro XL Fatal error</p> <p>When attempting to create an M340 CANOpen project from Unity Pro V13.0 or Unity Pro V13.1 after removing the SCADAPack x70 Logic Editor V14.0, an exception dialog is displayed.</p> 	<p>Resolution</p> <ol style="list-style-type: none"> 1. Close all instances of Unity Pro. 2. Open a command prompt with administrator privileges. 3. Run the following command: <ul style="list-style-type: none"> • 32-bit PC: Regsvr32 "C:\Program Files\Schneider Electric\Unity Pro\Cdbps2.dll" • 64-bit PC: Regsvr32 "C:\Program Files (x86)\Schneider Electric\Unity Pro\Cdbps2.dll" <p>The following dialog is displayed if the registration is successful.</p> 
<p>Logic Editor V14.0 doesn't start when Logic Editor V11.1 was previously installed</p> <p>If SCADAPack x70 Logic Editor V11.1 was previously installed, and then upgraded to V14.0, when you open an existing project or create a new project,</p>	<p>Resolution</p> <ol style="list-style-type: none"> 1. Close all instances of SCADAPack RemoteConnect. 2. Open a command prompt with administrator privileges. 3. Run the following command:

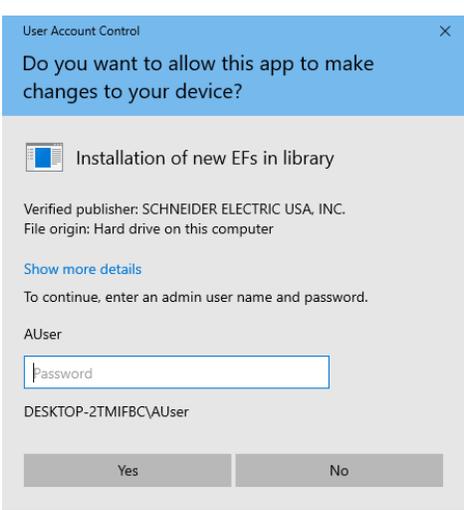
<p>the SCADAPack x70 Logic Editor doesn't start. The PSBroker.exe register may be missing.</p>	<ul style="list-style-type: none"> • 32-bit PC: cd "C:\Program Files\Common Files\Schneider Electric Shared\CommonControlExpert\PSBROKER" • 64-bit PC: cd "C:\Program Files (x86)\Common Files\Schneider Electric Shared\CommonControlExpert\PSBROKER" <p>4. Type psbroker.exe /regserver</p> <p>5. Start SCADAPack RemoteConnect again.</p> <p>The SCADAPack x70 Logic Editor should start correctly.</p>
<p>Logic Editor V11.1 doesn't start when Logic Editor V14.0 was previously installed</p> <p>If SCADAPack x70 Logic Editor V14.0 was previously installed, and then downgraded to V11.1, when you open an existing project or create a new project the SCADAPack x70 Logic Editor doesn't start. The RAT and PSBroker may not be the correct version for SCADAPack x70 Logic Editor V11.1.</p>	<p>Resolution</p> <ol style="list-style-type: none"> 1. Close all instances of SCADAPack RemoteConnect. 2. To repair the SCADAPack x70 Logic Editor, run the following RemoteConnect repair utility by double-clicking the repair executable and following the installation wizard. By default, the path to the executable file is one of the following: <ul style="list-style-type: none"> • 32-bit Windows: C:\Program Files\Schneider Electric\RemoteConnect\Repair\UnityPro_V111_HF_RAT_SRCSDK.exe • 64-bit Windows: C:\Program Files (x86)\Schneider Electric\RemoteConnect\Repair\UnityPro_V111_HF_RAT_SRCSDK.exe 3. Start SCADAPack RemoteConnect again. <p>The SCADAPack x70 Logic Editor should start correctly.</p>
<p>SCADAPack RemoteConnect communication is disturbed when device is restarted in Service, Cold, or Factory boot modes.</p>	<p>To restore communication:</p> <p>For USB:</p> <ol style="list-style-type: none"> 1. Go offline before restarting the device. 2. Wait for the device to restart.

	<p>3. Go online after the device has restarted.</p> <p>It can take up to 90 seconds for the SCADAPack x70 USB port to be ready.</p> <p>For Serial or Ethernet:</p> <ol style="list-style-type: none"> 1. Go offline before restarting the device. 2. In SCADAPack RemoteConnect configuration software, change the PC Communication Settings to match the device. 3. Go online after the device has restarted.
<p># 768: Invalid field Id: 550608</p> <p>After clicking the Open Configuration Log button on the Status tab, the message # 768: Invalid field Id: 550608 may be displayed when a new feature of SCADAPack RemoteConnect is not compatible with an older version of firmware.</p>	<p>Resolution</p> <p>Upgrade the firmware on your SCADAPack x70 device. See the hardware manual for your device for details.</p>
<p>Loss of communication to I/O modules</p> <p>System status code 6601 or any other I/O module related communication status codes is displayed (see the System Status Codes topic in the Operations Technical Reference manual) and the status code can not be cleared.</p> <p>I/O Module objects display the quality Not Responding.</p>	<p>Resolution</p> <ol style="list-style-type: none"> 1. Check the 6601 I/O firmware version used by 6601 I/O modules: <ul style="list-style-type: none"> • Retrieve a Device Information file (see Getting Device Information File^[426]) and check the VER information section. The latest released 6601 I/O firmware version should be listed. • Alternatively, issue the command ver on a command console 2. Update all 6601 I/O modules where the latest I/O firmware is not installed: <ul style="list-style-type: none"> • Follow the update procedure through RemoteConnect described in the Updating Module Firmware topic in the SCADAPack 6601 Input Output Module manual. • Alternatively transfer the 6601 I/O firmware file to the SCADAPack x70 device and issue the follow command for each module replacing <i>module_address</i> with the correct number: <pre>restart iofirm fw6601_Version.bin module_address</pre> <p>where <i>Version</i> represents the current version.</p>

	<ol style="list-style-type: none"> 3. Verify that the correct I/O firmware version was installed by repeating step 1. 4. Restart the SCADAPack x70 device. 5. Reset the Diagnostic Status after reboot. <p>See To clear the Task Watchdogs, Restart Reason and System Status Code fields³⁶⁰</p> <p>The System Status Code should not show any I/O module related codes.</p>
<p>The SCADAPack x70 device has reset unexpectedly</p> <p>If the SCADAPack x70 device resets unexpectedly, look for a dump file in the root folder of the file system (/user).</p>	<p>Resolution</p> <p>Contact Technical Support¹³¹ and look for a dump file at /user.</p>
<p>SCADAPack RemoteConnect has restarted 3 times consecutively</p> <p>When creating a new project, opening an existing project, or reading a project from the device, you may see a message that the SCADAPack x70 Logic Editor is unavailable. If the logic editor does not appear to be running and SCADAPack RemoteConnect has restarted 3 times consecutively, you will need to perform the suggested resolution.</p>	<p>Resolution</p> <p>Launch SCADAPack RemoteConnect using the provided DVD and follow the wizard to reinstall SCADAPack RemoteConnect.</p>
<p>System status code 1013 was reported, but there is no message in config.log</p>	<p>Resolution</p> <p>Upgrade the firmware on your SCADAPack x70 device. See the hardware manual for your device for details.</p>
<p>Checkbox for Object Protocol Address(es) in Logic Editor Custom Field is not available under SCADAPack x70 Controller Settings - DeviceDTM > Additional Functions > Project settings</p>	<p>Resolution</p> <ol style="list-style-type: none"> 1. Close SCADAPack RemoteConnect. 2. From Windows, run regedit.exe with administrator privileges. 3. Remove the registry key: HKEY_CURRENT_USER\Software\Schneider Electric\RemoteConnect\Dev\CustomVariableFieldOptions 4. Start SCADAPack RemoteConnect again.

	<p>The Object Protocol Address(es) in Logic Editor Custom Field option should now be available under SCADAPack x70 Controller Settings - DeviceDTM > Additional Functions > Project settings</p>
<p>Logic Editor V14.0 doesn't start if UnitySoControl_V140_HF_RAT_PSBROKER.exe was applied</p> <p>If UnitySoControl_V140_HF_RAT_PSBROKER.exe was applied before or after the Logic Editor V14.0 was installed, the Logic Editor may not start properly when you attempt to launch from RemoteConnect.</p>	<p>Resolution</p> <ol style="list-style-type: none"> 1. Under Control Panel > Programs and Features: <ol style="list-style-type: none"> a. Select UnitySoControl. b. Click Uninstall. c. Follow the wizard to select the Remove option. 2. Launch the RemoteConnect DVD. 3. Select Install RemoteConnect. 4. When prompted to Remove or Repair, select Repair to continue with the installation.
<p>The Integrity Check window is displayed after installing SCADAPack RemoteConnect</p> <p>If you see the Integrity Check window displayed after installing SCADAPack RemoteConnect, you may need to install a missing certificate.</p>	<p>Resolution</p> <p>See the Installing a Missing Certificate Manually topic in the Software Installation manual.</p>
<p>Unable to change the user interface language</p> <p>You are unable to change the user interface language for the SCADAPack x70 Logic Editor when performing side-by-side operation with Control Expert V14.0 or V14.1.</p>	<p>Resolution</p> <ol style="list-style-type: none"> 1. Close all instances and end all processes related to SCADAPack RemoteConnect, UnitySoControl, Unity Pro, and Control Expert. 2. Run the SCADAPack RemoteConnect repair utilities by double-clicking the repair executable and following the installation wizard. By default, the path to the executable file is one of the following: <ul style="list-style-type: none"> • 64-bit Windows: C:\Program Files (x86)\Schneider Electric\RemoteConnect\Repair\UnitySoControl_V140_HF_LanguageSelector.exe • 32-bit Windows: C:\Program Files\Schneider

	<p>Electric\RemoteConnect\Repair\UnitySoControl_V140_HF_LanguageSelector.exe</p> <p>3. To change the user interface language in the SCADAPack x70 Logic Editor, follow the steps in the Accessing SCADAPack RemoteConnect Functionality topic in the SCADAPack RemoteConnect Configuration Software manual.</p>
<p>Logic Editor doesn't start after Control Expert V15.0 hotfixes are applied</p> <p>If the Logic Editor displays a diagnostic message or the integrity check window from Logic Editor is displayed after Control Expert V15.0 hotfixes are applied, then follow the steps in the Resolution.</p>	<p>Resolution</p> <ol style="list-style-type: none"> 1. Close all instances and end all processes related to SCADAPack RemoteConnect, UnitySoControl, Unity Pro, and Control Expert. 2. Run the SCADAPack RemoteConnect repair utilities by double-clicking the repair executable and following the installation wizard. By default, the path to the executable file is one of the following: <ul style="list-style-type: none"> • 64-bit Windows: C:\Program Files (x86)\Schneider Electric\RemoteConnect\Repair\ControlExpert_V150_HF0380489E_B.exe • 32-bit Windows: C:\Program Files\Schneider Electric\RemoteConnect\Repair\ControlExpert_V150_HF0380489E_B.exe
<p>Message IS_PAR_CON is displayed</p> <p>A logic project previously built using SCADAPack x70 Logic Editor versions 11.1 or 14.0 and using LIBSET V11.1 does not build with the following message:</p> <p>The type IS_PAR_CON is not available for the current target PLC configuration</p>	<p>Update the project to the latest LIBSET version:</p> <ol style="list-style-type: none"> 1. On the SCADAPack x70 Configuration tab in SCADAPack RemoteConnect, select SCADAPack x70 Logic. 2. Expand the Advanced Configuration parameters. 3. Click Upgrade Logic Library.
<p>Installation Message displayed when starting SCADAPack RemoteConnect</p> <p>Starting SCADAPack RemoteConnect from a non-privileged user account following a Control Expert upgrade results in the following installation message:</p>	<p>If the non-privileged user does not have access credentials for the privileged account, follow the instructions in the Post-Installation Steps for Control Expert (V15.1 and later) and SCADAPack RemoteConnect topic in the SCADAPack Software Installation manual.</p>

	
<p>Missing SCADAPack x70 Library Content</p> <p>SCADAPack x70 Library content is partially or wholly missing when opening a SCADAPack RemoteConnect project. This may occur where the RemoteConnect project was created on a different PC with a different version of Control Expert.</p>	<p>To install the SCADAPack x70 RTU System and/or Extensions library content into the LIBSET version used by the project, follow the instructions in the Installing a Family topic in the Logic Programming Overview manual.</p> <p>You can check the project's LIBSET version by opening the SCADAPack x70 Logic Editor's Types Library Manager tool.</p>

SCADAPack

x70 Release Notes

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1 Legal Information

The information provided in this documentation contains general descriptions and/or technical characteristics of the performance of the products contained herein. This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications. It is the duty of any such user or integrator to perform the appropriate and complete risk analysis, evaluation and testing of the products with respect to the relevant specific application or use thereof. Neither Schneider Electric nor any of its affiliates or subsidiaries shall be responsible or liable for misuse of the information contained herein. If you have any suggestions for improvements or amendments or have found errors in this publication, please notify us.

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All pertinent state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to help ensure compliance with documented system data, only the manufacturer should perform repairs to components.

This document contains standardized industry terms that some customers might find insensitive or offensive. These terms do not reflect the official policy or position of Schneider Electric.

Trademarks

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2 Technical Support

Questions and requests related to any part of this documentation can be directed to one of the following support centers.

Technical support: Americas, Europe, Middle East, Asia

Available Monday to Friday 8:00 am – 6:30 pm Eastern Time

	Check our FAQs	Explore our extensive knowledge database and FAQ videos to find answers quickly: https://se.com/faq
	Email us	Save time by emailing us your inquiry and an expert will contact you: supportTRSS@se.com Send us an email anytime.
	Call us	Need someone to provide some technical support? <ul style="list-style-type: none"> • Toll free within North America: 1-888-226-6876 • Direct Worldwide: +1-613-591-1943

Technical support: Australia/New Zealand (Pacific)

Available Monday to Friday 8:00 am - 5:00 pm Australian Eastern Standard Time

	Check our FAQs	Explore our extensive knowledge database and FAQ videos to find answers quickly: https://se.com/faq
	Email us	Save time by emailing us your inquiry and an expert will contact you: techsupport.pz@se.com Send us an email anytime.
	Call us	Need someone to provide some technical support? <ul style="list-style-type: none"> • Inside Australia: 13 73 28 (13 SEAU) • Inside New Zealand: 0800 652 999

3 Safety Information

Important information

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a Danger or Warning safety label indicates that an electrical hazard exists, which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER
DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.
⚠ WARNING
WARNING indicates a hazardous situation which, if not avoided, can result in death or serious injury.
⚠ CAUTION
CAUTION indicates a hazardous situation which, if not avoided, can result in minor or moderate injury.
NOTICE
NOTICE is used to address practices not related to physical injury.

Please note

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

Before you begin

Do not use this product on machinery lacking effective point-of-operation guarding. Lack of effective point-of-operation guarding on a machine can result in serious injury to the operator of that machine.

WARNING

EQUIPMENT OPERATION HAZARD

- Verify that all installation and set up procedures have been completed.
- Before operational tests are performed, remove all blocks or other temporary holding means used for shipment from all component devices.
- Remove tools, meters, and debris from equipment.

Failure to follow these instructions can result in death or serious injury.

Follow all start-up tests recommended in the equipment documentation. Store all equipment documentation for future reference.

Test all software in both simulated and real environments.

Verify that the completed system is free from all short circuits and grounds, except those grounds installed according to local regulations (according to the National Electrical Code in the U.S.A, for instance). If high-potential voltage testing is necessary, follow recommendations in equipment documentation to help prevent accidental equipment damage.

Operation and adjustments

The following precautions prevail:

- Regardless of the care exercised in the design and manufacture of equipment or in the selection and ratings of components, there are hazards that can be encountered if such equipment is improperly operated.
- It is sometimes possible to misadjust the equipment and thus produce unsatisfactory or unsafe operation. Always use the manufacturer's instructions as a guide for functional adjustments. Personnel who have access to these adjustments should be familiar with the equipment manufacturer's instructions and the machinery used with the electrical equipment.
- Only those operational adjustments actually required by the operator should be accessible to the operator. Access to other controls should be restricted to prevent unauthorized changes in operating characteristics.

Acceptable use

WARNING

UNACCEPTABLE USE

Do not use SCADAPacks or I/O modules as an integral part of a safety system. These devices are not safety products.

Failure to follow these instructions can result in death or serious injury.

CAUTION

EQUIPMENT OPERATION HAZARD

When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

Use only Schneider Electric software or approved software with Schneider Electric hardware products.

Failure to follow these instructions can result in minor or moderate injury.

4 About the Book

Audience

WARNING

UNINTENDED EQUIPMENT OPERATION

The application of this product requires expertise in the design and programming of control systems. Only persons with such expertise are allowed to program, install, alter, and apply this product.

Follow all local and national safety codes and standards.

Failure to follow these instructions can result in death or serious injury.

This manual is written for people who need to install or update the SCADAPack x70 configuration environment for SCADAPack x70 devices. These individuals are typically:

- Systems Engineers
- Commissioning Engineers
- Maintenance Technicians

Document scope

This manual describes:

- The history of release notes for the SCADAPack x70

Validity note

This document is valid for:

- SCADAPack x70 firmware version 9.7.3 and older
- SCADAPack RemoteConnect configuration software version 3.10.3 and older
- Security Administrator version 1.6.2

Related documents

Use this manual with the other manuals included in your SCADAPack x70 documentation set. The table below describes the manuals available in the documentation set.

Folder	Manual	Content
Getting Started	Getting Started	<ul style="list-style-type: none"> • The SCADAPack x70 family of products available in this release • The basic steps to get your SCADAPack

		<p>x70 device operational</p> <ul style="list-style-type: none"> • Where to get more information about configuring, monitoring and managing your SCADAPack x70 device
SCADAPack Software Installation	SCADAPack Software Installation	<ul style="list-style-type: none"> • Hardware and software requirements • Installation procedures • Accessing help • Troubleshooting guidance
Hardware Manuals	The hardware manual for your SCADAPack x70 device	<ul style="list-style-type: none"> • Installation, wiring and addressing information • Diagnostics capabilities • Maintenance recommendations • Hardware specifications
Configuration Manuals	SCADAPack RemoteConnect Configuration Software	<ul style="list-style-type: none"> • Setting up and managing projects for your SCADAPack x70 device
	PC Communication Settings -SCADAPack CommDTM	<ul style="list-style-type: none"> • Setting up communications between SCADAPack RemoteConnect and your SCADAPack x70 device
	SCADAPack x70 Configuration	<ul style="list-style-type: none"> • Configuring SCADAPack x70 device operation
	Porting Guide for SCADAPack E to SCADAPack RemoteConnect	<ul style="list-style-type: none"> • Moving from SCADAPack E to SCADAPack RemoteConnect • Locating SCADAPack E Configurator features in SCADAPack RemoteConnect • Locating SCADAPack Workbench features in SCADAPack RemoteConnect • Compatibility chart
	Porting Guide for Telepace to SCADAPack RemoteConnect	<ul style="list-style-type: none"> • Moving from Telepace to SCADAPack RemoteConnect • Tutorial for creating a project • Compatibility chart
Technical Reference Manuals	SCADAPack Communication Interfaces Technical Reference	<ul style="list-style-type: none"> • USB, serial and IP communications • Mobile communications • Dialup modem communications

	SCADAPack Operations Technical Reference	<ul style="list-style-type: none"> • The SCADAPack x70 device file system • Command line operations • Diagnostics operations • Telnet server operations • FTP server operations
	SCADAPack SCADA Protocols Technical Reference	<ul style="list-style-type: none"> • DNP3 protocol support • Modbus protocol support • IEC 60870-5-104 protocol support
Logic Programming Manuals	SCADAPack Logic Programming Overview	<ul style="list-style-type: none"> • The differences between EcoStruxure Control Expert (Unity Pro) and the SCADAPack x70 Logic Editor environment • Key programming concepts • Basic procedures needed to use the SCADAPack x70 Logic Editor
	SCADAPack Function Blocks Technical Reference	<ul style="list-style-type: none"> • The custom SCADAPack x70 function blocks that are available for developing IEC 61131-3 applications
	Using EFB Toolkit with SCADAPack x70	<ul style="list-style-type: none"> • Using the Schneider Electric EFB Toolkit with SCADAPack x70 devices and SCADAPack RemoteConnect configuration software
Security Administrator Manuals	SCADAPack Security Administrator	<ul style="list-style-type: none"> • Configuring security on your SCADAPack x70 device
	SCADAPack Security Technical Reference	<ul style="list-style-type: none"> • Security standards • Security overview • DNP3 Secure Authentication • Diagnostics • Attack vectors and requirements

5 Cybersecurity

Cybersecurity is a branch of network administration that addresses attacks on or by computer systems and through computer networks that can result in accidental or intentional disruptions. The objective of cybersecurity is to help provide increased levels of protection for information and physical assets from theft, corruption, misuse, or accidents while maintaining access for intended users.

No single cybersecurity approach is adequate. Schneider Electric recommends a defense-in-depth approach. This approach layers the network with security features, appliances, and processes. The basic components of this approach are:

- Risk assessment: A systematic security analysis of the environment and related systems.
- A security plan built on the results of the risk assessment
- A multi-phase training campaign
- Network separation and segmentation: Physical separation of the control network from other networks, and the division of the control network itself into segments and security zones.
- System Access Control: Controlling access to the system with firewalls, authentication, authorization, and other software means, and traditional physical security measures such as video surveillance, fences, locked doors and gates, and locked equipment cabinets.
- Device hardening: The process of configuring a device against communication-based threats. Device hardening measures include disabling unused network ports, password management, access control, and the disabling of all unnecessary protocols and services.
- Network monitoring and maintenance: An effective defense-in-depth campaign requires continual monitoring and system maintenance to meet the challenge of new threats as they develop.
- See Security Considerations in the Security Technical Reference manual

Contact us

For more information, refer to the Schneider Electric Cybersecurity Support Portal at <http://www.se.com/b2b/en/support/cybersecurity/overview.jsp>.

Additional Resources

Schneider Electric Recommended Cybersecurity Best Practices
<https://www.se.com/ww/en/download/document/CS-Best-Practices-2019-340/>

Industrial Control Systems Cyber Emergency Response Team (ICS-CERT)
<https://ics-cert.us-cert.gov>

ICS-CERT Recommended Practices
<https://ics-cert.us-cert.gov/Recommended-Practices>

Center for Internet Security (CIS) Top 20 Critical Security Controls
<https://www.cisecurity.org/cybersecurity-best-practices>

FBI Cyber Crime

<https://www.fbi.gov/investigate/cyber>

Guide to Industrial Control Systems (ICS) Security

<https://www.nist.gov/publications/guide-industrial-control-systems-ics-security>

WaterISAC Water Security Network

<https://www.waterisac.org>

6 SCADAPack x70 Release Notes

- [SCADAPack x70 R2.7.3 Release Notes 05/2022](#)^[21]
- [SCADAPack x70 R2.7.2 Release Notes 03/2022](#)^[33]
- [SCADAPack x70 R2.7.1 Release Notes 12/2021](#)^[41]
- [SCADAPack x70 R2.6.1 Release Notes 07/2021](#)^[51]
- [SCADAPack x70 R2.5.2 Release Notes 04/2021](#)^[72]
- [SCADAPack x70 R2.5.1 Release Notes 01/2021](#)^[80]
- [SCADAPack x70 R2.4.2 Release Notes 08/2020](#)^[93]
- [SCADAPack x70 R2.4.1 Release Notes 05/2020](#)^[105]
- [SCADAPack x70 R2.4 Release Notes 03/2020](#)^[116]
- [SCADAPack x70 R2.3.2 Release Notes 01/06/2020](#)^[134]
- [SCADAPack x70 R2.3.1 Release Notes 06/9/2019](#)^[143]
- [SCADAPack x70 R2.2.2 Release Notes 10/7/2019](#)^[153]
- [SCADAPack x70 R2.2.1 Release Notes 01/05/2019](#)^[161]
- [SCADAPack x70 R2.2 Release Notes 01/03/2019](#)^[170]
- [SCADAPack x70 R2.1.1 Release Notes 25/10/2018](#)^[185]
- [SCADAPack x70 R2.1 Release Notes 5/09/2018](#)^[193]
- [SCADAPack x70 R2.0 Release Notes 20/07/2018](#)^[213]

6.1 SCADAPack x70 R2.7.3 Release Notes 05/2022

SCADAPack x70 R2.7.3 was first available in May 2022.

- [SCADAPack 47x Upgrade Requirements](#)^[21]
- [SCADAPack 57x Upgrade Requirements](#)^[22]

SCADAPack 47x Upgrade Requirements

Some SCADAPack 47x RTUs with Cypress (Spansion) NOR flash components did not boot after a power cycle. SCADAPack 47x bootloader 1.41 helps to protect against overwriting of one-time-programmable configuration registers in Cypress (Spansion) NOR flash.

Identifying Affected Units

Upgrade the SCADAPack 47x firmware to version 9.6.1 or newer.

Use the VER command to identify the type of NOR flash. Hardware with Cypress (Spansion) NOR flash will display

```
NOR Flash Chip ID: 0x4d190201
```

To determine the NOR Flash Chip ID do one of the following

- Using SCADAPack RemoteConnect
 1. Open a project.
 2. Click **Online** to connect to the SCADAPack 47x RTU.
 3. Right-click **SCADAPack x70 Controller Settings – Device DTM**.
 4. Select **Additional Functions > Get Device Information**.
 5. Click **Browse** and specify a file name.
 6. Click **OK**.
 7. Open the Device Information file read from the RTU and search for NOR Flash Chip ID.
- Using the SCADAPack 47x command line
 1. Type **VER** and press **Enter**.
 2. Check the NOR Flash Chip ID displayed.

SCADAPack 47x RTUs with other NOR flash components are not affected.

SCADAPack 57x RTUs are not affected.

Action

Upgrade the SCADAPack 47x bootloader to version 1.41 or newer on hardware with Cypress (Spansion) NOR Flash.

SCADAPack 57x Upgrade Requirements

It is highly recommended that updates be installed on your SCADAPack 57x devices if using

- SCADAPack 57x firmware version 9.1.2 and older, or
- SCADAPack 57x bootloader firmware version 1.10.

First, install SCADAPack 57x firmware version 9.2.1 or newer, then install SCADAPack 57x bootloader firmware version 1.30 or newer.

SCADAPack 57x bootloader firmware version 1.30 corrects a start-up initialization issue and digital output initialization issue.

SCADAPack 57x firmware version 9.2.1 corrects an issue for users of firmware version 9.1.2 and older. Logic variables T_SPx70_INT and T_SPx70_UINT may indicate incorrect values following an online logic modification and a SCADAPack 57x device restart.

The firmware in this release includes these corrections.

⚠ WARNING**UNINTENDED EQUIPMENT OPERATION**

Upgrade SCADAPack 57x firmware version 9.1.2 and earlier versions to firmware version 9.2.1 or newer.

Failure to follow these instructions can result in death or serious injury.

⚠ WARNING**UNINTENDED EQUIPMENT OPERATION**

Upgrade SCADAPack 57x bootloader firmware version 1.10 to bootloader firmware version 1.30 or newer. Cold boot the SCADAPack 57x device following the upgrade.

Failure to follow these instructions can result in death or serious injury.

6.1.1 Installation Requirements, Instructions, and Troubleshooting

Refer to “Software Installation.pdf” located both at the root of the folder that contains the installation files, and SCADAPack Software Installation in the documentation set that is installed with RemoteConnect.

6.1.2 Application and Firmware Versions

SCADAPack x70 RemoteConnect application version is 3.10.3

- SCADAPack DNP3 Communication DTM version is 3.10
- SCADAPack x70 Device DTM version is 3.10
- Schneider Electric Generic HART DTM version is 5.1.1189.11
- HART STB Multiplexer Communication DTM version is 1.0.8.0
- SCADAPack x70 English Documentation version is 3.10.3
- Realflo flow computer version is 7.10.2

SCADAPack x70 Security Administrator version is 1.6.2

SCADAPack 47x firmware version is 9.7.3

SCADAPack 47x bootloader version is 1.41

SCADAPack 57x firmware version is 9.7.3

SCADAPack 57x bootloader version is 1.40

6601 I/O module firmware version is 2.2.27

6601 I/O module bootloader version is 2.2.27

6602 I/O module firmware version is 2.1.127

6602 I/O module bootloader version is 2.1.127

6607 I/O module firmware version is 2.2.4

6607 I/O module bootloader version is 2.2.4

6.1.3 Software and Firmware Version Compatibility

SCADAPack RemoteConnect version 3.10.3 is intended for use with SCADAPack x70 firmware version 9.7.3 and Control Expert Version V15.1.02227 or later.

6.1.4 SCADAPack 57x Hardware and Firmware Version Compatibility

SCADAPack 570, 574, and 575 modules with hardware version V4.00 and newer require minimum bootloader and operating system firmware versions as described in the table below.

If you attempt to install bootloader firmware 1.30 or older on a SCADAPack 57x device with hardware version 4.00 or newer, the firmware installation will be unsuccessful. System status code 1060 will be generated. Avoid using bootloader firmware 1.30 or older with SCADAPack 57x hardware versions 4.00 or newer.

If you attempt to install operating system firmware 9.4.3 or older on a SCADAPack 57x device with hardware version 4.00 or newer, the firmware installation will be unsuccessful. System status code 1061 will be generated. Avoid using operating system firmware version 9.4.3 or older with SCADAPack 57x hardware versions 4.00 or newer.

See table below for hardware and firmware compatibility.

	SP57x Hardware Version	SP57x Bootloader Firmware Version	SP57x Operating System Firmware Version	Comment
✓	3.02 or older	any	any	Use bootloader version 1.30 or newer. See SCADAPack 57x Upgrade Requirements older in this document.

✓	4.00 or newer	1.40 or newer	9.5.1 or newer	
✗	4.00 or newer	1.30 or older are not supported	9.4.3 or older are not supported	Use bootloader firmware version 1.40 or newer. Use Operating system firmware version 9.5.1 or newer.

You can check the SCADAPack 57x hardware version, bootloader firmware version and operating system firmware version by using RemoteConnect online **Additional Functions > Get Device Information** and opening the retrieved text file; or by using the SCADAPack command line VER command.

6.1.5 Supported Devices

SCADAPack 470
 SCADAPack 474
 SCADAPack 570
 SCADAPack 574
 SCADAPack 575

6.1.6 Supported Operating Systems

Windows 10 Professional (64-bit) - version 20H2 and 21H1
 Windows 10 Enterprise (64-bit) - version 2019 LTSC (version 1809)
 Windows Server 2019, standard 1809 version

6.1.7 SCADAPack RemoteConnect and Control Expert Compatibility

SCADAPack RemoteConnect installations can coexist with specific Unity Pro or Control Expert installations. If RemoteConnect is installed on a computer that had Unity Pro or Control Expert installed previously, the RemoteConnect installation automatically confirms that components in the SCADAPack x70 Logic Editor and Unity Pro or Control Expert are correctly referenced. If Unity Pro or Control Expert is installed or upgraded on a computer that already had RemoteConnect installed, then a **repair** process is likely required on RemoteConnect to confirm that components are correctly referenced. Use **Run as administrator** to run the repair process.

SCADAPack RemoteConnect R2.7.3 has been tested and is compatible with:

- EcoStruxure Control Expert version 15.1

6.1.8 New and Improved Features (R2.7.3)

WI: 65163	SCADAPack x70 RTUs support configurable Data Logging. Data logs can be read as CSV files. RemoteConnect displays tables and graphs of logged data.
WI: 65319	The SCADAPack x70 Logic Editor is updated to Control Expert 15.1. The side-by-side logic editor installation is replaced with a shared installation of Control Expert. This provides support for new Control Expert features and resolves problems with the side-by-side installation. Control Expert logic password features are supported by SCADAPack RemoteConnect R2.7.3 and later, and by SCADAPack x70 firmware 9.7.3 or later. This provides additional security for logic applications.
WI: 65812	SCADAPack x70 RTUs support the Modbus broadcast address.
WI: 60906	SCADAPack 47x RTUs support Micro SD cards.
WI: 64348	The SCADAPack x70 Extensions Library is now included with RemoteConnect.
WI: 65238	SCADAPack x70 RTUs support structured IOA addressing for IEC 60870-5-104 protocol.
WI: 65851	Firmware will detect and correct duplicate MAC addresses on SCADAPack 47x RTUs.
WI: 64693	Improved hardware documentation on ribbon cables between modules and from 6103 power supply.
WI: 66385	Improved documentation of SFC program warm start operation. This operation is different on SCADAPack x70 RTUs and Modicon PLCs.
WI: 66451	RemoteConnect automatically saves the project when the Device Type is changed.
WI: 61997	Improved descriptions of ports in the DNP3Route_SelectOnline example documentation.
WI: 65364	Improved further actions documentation for system status code 5000, 5002 and 5003.
WI: 65427	Added conceptual information in the Working with Objects topic.

6.1.9 Fixed Issues (R2.7.3)

WI: 59839	The F_DeviceReady function block indicated that a SD card or USB drive was installed when it was not. This is corrected.
WI: 59920	Logic Editor Memory Usage dialog showed incorrect values and calculated the % of memory used using incorrect values. This is corrected. See also WI: 59921.
WI: 59921	A project showed an internal memory usage of 86.6 % of executable code but did not load due to lack of memory. The actual size of the project was greater than 100% of available memory. The memory usage calculation was incorrect. This is corrected. See also WI: 59920.
WI: 61206	Arrays could not be added to animation tables in the logic editor. This is corrected.
WI: 62072	Logic Editor crashed when building logic on some projects with jumps and labels in function block diagram code. This is corrected.
WI: 62654	Some characters in Project comments prevented RemoteConnect export to .RCZ file. This is corrected.
WI: 62885	Logic Editor did not allow copy and paste of function blocks between two Logic Editor instances. This is corrected.
WI: 62904	SCADAPack 47x RTU continuously restarted with reason 0x0400 after loading some logic projects converted from SCADAPack 57x to SCADAPack 47x (see WI: 65012). A cold boot was required to recover. This is corrected.
WI: 62988	USB connection to non-zero DNP3 address was not possible without Remote Routing configuration. This is corrected.
WI: 63298	The user manual incorrectly described the Acceptable Data Size for with String output arguments on x70 function blocks. This is corrected.
WI: 64134	SCADAPack 47x restarted with reasons internal BSP Reset (0x0010) and processor interrupt exception (0x0800) when connected to VFDs with significant electrical noise on the serial connection. This is corrected and additional guidance for wiring VFDs was added to the documentation.
WI: 64220	Addressed Logic Editor security vulnerabilities CVE-2021-22778, CVE-2021-22780, and CVE-2020-7560.
WI: 64221	Addressed Logic Editor security vulnerabilities CVE-2021-21825, CVE-2021-21830, CVE-2021-21826, CVE-2021-21827, CVE-2021-21828 and CVE-2021-21829.

WI: 64431	Addressed Logic Editor security vulnerability CVE-2021-22797.
WI: 64669	A background task watchdog (0x0008) boot loop occurred on the SCADAPack 470 or 474 RTUs after pushing large logic editor update. This is corrected.
WI: 64710	Modbus Scanner associations were removed following an Excel import. This is corrected.
WI: 64734	The logic editor crashed when rebuilding some logic programs. This is corrected.
WI: 64766	Installation instructions did not state that ADMIN rights are required to install or uninstall RemoteConnect. This is corrected.
WI: 64771	Objects did not synchronize in RemoteConnect when importing a Logic editor program. This is corrected.
WI: 64795	Update and Build project succeeded but after writing the program, system status code 5000 was reported. This is corrected.
WI: 64820	RemoteConnect was unable to export some projects after successful Update and Build logic. This is corrected.
WI: 64898	Extensions Library - TOTAL_Daily function block accumulated less than 24 hours in a 24-hour period. This is corrected.
WI: 64903	Extensions Library – Some status codes for the DLOG_F function block were not documented. This is corrected.
WI: 65102	A SCADAPack 570 project converted to SCADAPack 470 was not compressed correctly by the logic editor so the RTU firmware was not able to load the project. This is corrected.
WI: 65130	Extensions Library - FLOW_Daily function block accumulated less than 1 day in a 1-day period. This is corrected.
WI: 65142	Extensions Library - TOTAL_Hourly function block accumulated less than 60 minutes in 60 minutes period. This is corrected.
WI: 65143	Extensions Library – TOTAL_Monthly and FLOW_Monthly function blocks accumulated less than a month in a full month period. This is corrected.
WI: 65153	Extensions Library - TOTAL_* function blocks reported an unexpected Status code. This is corrected.
WI: 65180	Memory manager overwrote non-volatile memory resulting in loss of RTU configuration and unloaded logic on next reboot. This is corrected.

WI: 65217	Extensions Library – CTD_Retained function block PV input CV output were documented UDINT but the MAX value was incorrectly documented as 2147483647. This is corrected.
WI: 65234	Extensions Library - Documentation stated DINT data type for multiple DFBs that used UDINT data type. This is corrected.
WI: 65236	R2.7.1 release notes listed incorrect Supported Operating Systems. This is corrected.
WI: 65309	Logic did not compile when a newline character was placed at the beginning of string "DATA" input. This is corrected.
WI: 65310	Extensions Library – The DLOG_F function block did not report the same status in SP57x and SP47x when the USB stick not available. This is corrected.
WI: 65325	Object browser read and write was permitted in the locked state when using Modbus protocols. This is corrected.
WI: 65633	Memory leak occurred on SCADAPack 47x RTU generating DIN and 6607 counter events. This is corrected.
WI: 65701	The user manual did not describe data that is preserved when updating the bootloader. This is corrected.
WI: 66143	R2.7.2 release notes incorrectly mentioned 57x bootloader version as 1.41. This is corrected to 1.40.
WI: 66204	Enron float registers in the 30000 to 59999 range of the Realflo flow computer could not be read or written. This is corrected.
WI: 66269	Documentation was missing information for user debugging of status code 5000. This is corrected.
WI: 66513	6602 I/O module Analog Input status was not updated under some conditions. This is corrected.

6.1.10 Known Issues (R2.7.3)

WI: 47841	<p>When reconfiguring a SCADAPack RTU from one large configuration to another large configuration, the configuration rebuild might not succeed and would report configuration log messages such as “# 565: Unable to create object due to insufficient configuration memory space”.</p> <p>Workaround: Cold boot the RTU before applying the new configuration. Alternatively, apply a configuration with a very small number of objects and restart the RTU. The new large configuration should then be accepted.</p>
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<p>WI: 59358</p>	<p>A USB C connection from a PC does not work with the SCADAPack 47x USB C port.</p> <p>Workaround: Use a USB A port on the PC to connect to the USB C port on the SCADAPack 47x.</p>
<p>WI: 62703</p>	<p>The telnet command prompt will not completely display long output in the following cases and others.</p> <ul style="list-style-type: none"> • NETINFO output when the table is greater than 46 entries • TYPE output when displaying a .RTU file or other long files • Other commands with long output <p>Workarounds:</p> <p>Use a serial port command prompt when connected locally.</p> <p>Long NETINFO output can be obtained by executing the GETINFO command, transferring the file created to a PC, and opening it on the PC.</p> <p>Long files can be examined by transferring the file created to a PC and opening it on the PC.</p>
<p>WI: 66529</p>	<p>System Status code 1047 is reported at device restart if Data Logging is configured to use the USB mass storage device.</p> <p>Workaround: The status code can be disregarded. Clear the status code from RemoteConnect after restart.</p>
<p>WI: 66530</p>	<p>System status code 1049 is sometimes reported when reading configuration from a SCADAPack 47x device with Data Logging configured.</p> <p>Workaround: The status code can be disregarded. Clear the status code from RemoteConnect if it occurs.</p>
<p>N/A</p>	<p>SCADAPack x70 firmware versions 9.7.2 and older return an invalid response for a Modbus broadcast message if the Realflo flow computer is enabled.</p> <p>Workaround: Upgrade to firmware version 9.7.3 or later or avoid using Modbus broadcast messages.</p>

6.1.11 Post Installation Troubleshooting

<p>RemoteConnect and Logic Editor Start Up</p>	<p>SCADAPack RemoteConnect Configuration Software start-up may be blocked from reopening if previous instances of RemoteConnect or the Logic Editor were not closed cleanly.</p>
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	<p>Workaround: Launch the Task Manager and shut down any RemoteConnect processes, then restart RemoteConnect.</p>
<p>Logic Editor</p>	<p>Logic editor or Types Library update tool library modification</p> <p>Symptoms</p> <p>SCADAPack Logic Editor or Types Library Update tool reports the library is opened by another application when attempting to modify the logic library</p> <p>Steps to resolve</p> <p>Check that no instances of Unity Pro, Control Expert, and RemoteConnect/SCADAPack x70 Logic Editor are running. Launch the Task Manager and shut down any Unity Pro, Control Expert, and RemoteConnect/SCADAPack x70 Logic Editor processes. If the symptoms persist, it is likely that Windows folder permissions are incorrect.</p> <p>Check the following:</p> <ol style="list-style-type: none"> 1. With administrator privilege right-click on the following folder: C:\ProgramData\Schneider Electric 2. Select Properties. 3. Select the Security tab. 4. Click Edit. 5. Click on the Users entry in the Group or user names section. 6. Scroll down the Permissions for Users area until you see a row called "Write". 7. Check the box in the "Allow" column for the "Write" row. 8. Click OK. <p>The security settings will update on the sub-folders.</p> <ol style="list-style-type: none"> 9. Click OK to exit the Properties dialog.

6.1.12 SCADAPack x70 and 6601 Firmware Version Compatibility

Customer Guidance for SCADAPack 47x

SCADAPack 47x supports 6601 input output module firmware version 2.0.20 and later.

Customer Guidance for SCADAPack 57x

6601 upgrade recommendations: Upgrade 6601 input output modules (both external and built into SP575) to firmware version 2.0.20 and bootloader version 1.80.10. For 6601 input output modules shipped with firmware 1.77.131 or earlier, and where extended over-range capabilities

(up to 22 mA) are required, the module may be returned to a Schneider Electric facility for recalibration.

6601 minimum firmware version: 6601 input output modules shipped from the factory with 1.80.6 or 1.80.10 firmware should not be downgraded to versions earlier than 1.80.6.

NOTICE	
LOSS OF SENSOR ACCURACY	
If you use firmware versions that are incompatible with extended over-range calibration on 6601 analog inputs, the analog inputs may report values 10% lower than the actual value.	
Use only firmware versions that are compatible with extended over-range calibration.	
Do not use 6601 firmware earlier than 1.80.6 with extended over-range calibration. They are not compatible.	
For information on SCADAPack 57x firmware versions 9.03 or earlier, refer to the RemoteConnect R2.0 release notes in the documentation.	
Failure to follow these instructions can result in equipment damage.	

A new calibration format for 6601 analog inputs has been added to support extended over-range capabilities. Interoperability of various versions of firmware and calibration is described below.

	SP57x Firmw are	6601 Firmw are	6601 Calibrati on	6601 AI Value	Over- range	Comment
✓	9.0.4 or later	1.77.131 or earlier	0...20 mA	Reporte d normal l y	Always active at 20.05mA	
✓	9.0.4 or later	1.80.06 or later	0...20 mA	Reporte d normal l y	Always active at 20.05mA	
✓	9.0.4 or later	1.80.06 or later	0...22 mA	Reporte d normal l y	Always active at 22.00mA	Recommended choice for new installations
✗	9.0.4 or later	1.77.131 or earlier	0...22 mA	AI report. 10% lower values	Always active at 20.05mA	NOT RECOMMENDED. Should only occur when a 6601 is mistakenly downgraded from 1.80.6 to an earlier version.

6.2 SCADAPack x70 R2.7.2 Release Notes 03/2022

SCADAPack x70 R2.7.2 was first available in March 2022.

- [SCADAPack 47x Upgrade Requirements](#)^[33]
- [SCADAPack 57x Upgrade Requirements](#)^[34]

SCADAPack 47x Upgrade Requirements

Some SCADAPack 47x RTUs with Cypress (Spansion) NOR flash components did not boot after a power cycle. SCADAPack 47x bootloader 1.41 helps to protect against overwriting of one-time-programmable configuration registers in Cypress (Spansion) NOR flash.

Identifying Affected Units

Upgrade the SCADAPack 47x firmware to version 9.6.1 or newer.

Use the VER command to identify the type of NOR flash. Hardware with Cypress (Spansion) NOR flash will display

```
NOR Flash Chip ID: 0x4d190201
```

To determine the NOR Flash Chip ID do one of the following

- Using RemoteConnect
 1. Open a project.
 2. Click **Online** to connect to the SCADAPack 47x RTU.
 3. Right-click **SCADAPack x70 Controller Settings – Device DTM**.
 4. Select **Additional Functions > Get Device Information**.
 5. Click **Browse** and specify a file name.
 6. Click **OK**.
 7. Open the Device Information file read from the RTU and search for NOR Flash Chip ID.
- Using the SCADAPack 47x command line
 1. Type **VER** and press **Enter**.
 2. Check the NOR Flash Chip ID displayed.

SCADAPack 47x RTUs with other NOR flash components are not affected.

SCADAPack 57x RTUs are not affected.

Action

Upgrade the SCADAPack 47x bootloader to version 1.41 or newer on hardware with Cypress (Spanion) NOR Flash.

SCADAPack 57x Upgrade Requirements

SCADAPack 570, 574, and 575 RTUs require minimum bootloader and operating system firmware versions. It is highly recommended that updates be installed on your SCADAPack 57x RTUs.

1. Install SCADAPack 57x firmware version 9.5.1 or newer, then
2. Install SCADAPack 57x bootloader version 1.40 or newer.

WARNING

UNINTENDED EQUIPMENT OPERATION

Upgrade SCADAPack 57x firmware version 9.1.2 and earlier versions to firmware version 9.2.1 or newer.

Failure to follow these instructions can result in death or serious injury.

SCADAPack 57x firmware version 9.2.1 corrects an issue for users of firmware version 9.1.2 and older. Logic variables T_SPx70_INT and T_SPx70_UINT may indicate incorrect values following an online logic modification and a SCADAPack 57x device restart.

WARNING

UNINTENDED EQUIPMENT OPERATION

Upgrade SCADAPack 57x bootloader firmware version 1.10 to bootloader firmware version 1.30 or newer. Cold boot the SCADAPack 57x device following the upgrade.

Failure to follow these instructions can result in death or serious injury.

SCADAPack 57x bootloader firmware version 1.30 corrects a start-up initialization issue and digital output initialization issue.

SCADAPack bootloader 1.40 and firmware 9.5.1 added support for new hardware versions. Older bootloader and firmware versions do not support the newer hardware.

NOTICE

UNEXPECTED OPERATION

Do not use a bootloader version earlier than 1.40 with SCADAPack 57x hardware versions 4.00 or later.

Do not use an operating system firmware version earlier than 9.5.1 with SCADAPack 57x hardware versions 4.00 or later.

Failure to follow these instructions can result in unexpected operation.

If you attempt to install bootloader firmware 1.30 or older on a SCADAPack 57x device with hardware version 4.00 or newer, the firmware installation may be unsuccessful. System status code 1060 may be generated. Avoid using bootloader firmware 1.30 or older with SCADAPack 57x hardware versions 4.00 or newer.

If you attempt to install operating system firmware 9.4.3 or older on a SCADAPack 57x device with hardware version 4.00 or newer, the firmware installation may be unsuccessful. System status code 1061 may be generated. Avoid using operating system firmware version 9.4.3 or older with SCADAPack 57x hardware versions 4.00 or newer.

You can check the SCADAPack 57x hardware version, bootloader firmware version and operating system firmware version by using RemoteConnect online **Additional Functions > Get Device** Information and opening the retrieved text file; or by using the SCADAPack command line VER command. On some SCADAPack RTUs the hardware version may be incorrectly reported due to a manufacturing issue.

Follow the recommendations in this document regardless of the reported hardware version.

6.2.1 Installation Requirements, Instructions, and Troubleshooting

Refer to "Software Installation.pdf" located both at the root of the folder that contains the installation files, and SCADAPack Software Installation in the documentation set that is installed with RemoteConnect.

6.2.2 Application and Firmware Versions

SCADAPack x70 RemoteConnect application version is 3.10.2

- SCADAPack DNP3 Communication DTM version is 3.10
- SCADAPack x70 Device DTM version is 3.10
- SCADAPack x70 Logic Editor version is 14.0 - 200313
- Schneider Electric Generic HART DTM version is 5.1.1189.11
- HART STB Multiplexer Communication DTM version is 1.0.8.0
- SCADAPack x70 English Documentation version is 3.10.2
- SCADAPack x70 French Documentation version is 1.2.3
- Realflo flow computer version is 7.10.1

SCADAPack x70 Security Administrator version is 1.6.2

SCADAPack 47x firmware version is 9.7.2

SCADAPack 47x bootloader version is 1.41

SCADAPack 57x firmware version is 9.7.2

SCADAPack 57x bootloader version is 1.40

6601 I/O module firmware version is 2.2.27

6601 I/O module bootloader version is 2.2.27

6602 I/O module firmware version is 2.1.127

6602 I/O module bootloader version is 2.1.127

6607 I/O module firmware version is 2.2.4

6607 I/O module bootloader version is 2.2.4

6.2.3 Software and Firmware Version Compatibility

RemoteConnect version 3.10.2 is intended for use with SCADAPack x70 firmware version 9.7.2.

6.2.4 Supported Devices

SCADAPack 470

SCADAPack 474

SCADAPack 570

SCADAPack 574

SCADAPack 575

6.2.5 Supported Operating Systems

Windows 8.1 Professional (32-bit or 64-bit)

Windows 10 Professional (32-bit or 64-bit) - version 20H2 and 21H1

Windows 10 Enterprise (32-bit or 64-bit) - version 20H2 and 21H1

Windows Server 2016

6.2.6 SCADAPack RemoteConnect, Unity Pro, and Control Expert Compatibility

RemoteConnect installations can coexist with specific Unity Pro or Control Expert installations. If RemoteConnect is installed on a computer that had Unity Pro or Control Expert installed previously, the RemoteConnect installation automatically confirms that components in the SCADAPack x70 Logic Editor and Unity Pro or Control Expert are correctly referenced. If Unity

Pro or Control Expert is installed or upgraded on a computer that already had RemoteConnect installed, then a **repair** process is likely required on RemoteConnect to confirm that components are correctly referenced. Use **Run as administrator** to run the repair process.

The Unity Pro or Control Expert versions that are verified as suitable for coexisting installation with RemoteConnect are:

- Unity Pro version 13.0*
- Unity Pro version 13.1*
- EcoStruxure Control Expert version 14.0
- EcoStruxure Control Expert version 14.1
- EcoStruxure Control Expert version 15.0 and 15.0 SP1

* RemoteConnect has a known issue with Unity Pro version 13.0 and 13.1 on Windows French edition. See WI: [50233](#) in the Known Issues section below.

6.2.7 New and Improved Features (R2.7.2)

	Updated Realflo flow computer to version 7.10.1. See Realflo release notes for details.
WI 65321	Added support for SD card on SCADAPack 47x RTUs.
WI 65427	Added conceptual information about working with objects to the user documentation.
WI 65433	Updated the address on the Legal Information page of the documentation.

6.2.8 Fixed Issues (R2.7.2)

WI 59839	The F_DeviceReady function block (FB) indicated that an SD card or USB mass storage device was installed when it was not. This is corrected.
WI 62654	Certain characters in Project Comments blocked RemoteConnect export to .RCZ file. This is corrected.
WI 64795	Update and Build project succeeded but after writing the program, system status code 5000 was reported. This is corrected.
WI 65180	Exhaustion of the dynamic memory pool could have overwritten non-volatile memory resulting in loss of RTU configuration and unloaded logic on next reboot. Another defect would have to exist to trigger this to occur. The firmware now guards against this condition.

6.2.9 Known Issues (R2.7.2)

<p>Installation</p>	<p>Control Expert and Unity Pro installation compatibility</p> <p>The SCADAPack RemoteConnect Configuration Software installation process and Control Expert / Unity Pro software installation process can interfere with one another. It is recommended that when installing new versions of Control Expert / Unity Pro software that the repair installation option be run for SCADAPack RemoteConnect. Coexisting installations of RemoteConnect and Unity Pro are supported for Unity Pro versions 13.0, 13.1, and EcoStruxure Control Expert version 14.0, 14.1, 15.0 and 15.0 - SP1.</p> <p>Workaround: Follow the relevant Post-installation Steps for the Unity Pro or Control Expert version in the Software installation Manual.</p>
<p>WI: 47841</p>	<p>When reconfiguring a SCADAPack RTU from one large configuration to another large configuration, the configuration rebuild might not succeed and would report configuration log messages such as “# 565: Unable to create object due to insufficient configuration memory space”.</p> <p>Workaround: Cold boot the RTU before applying the new configuration. Alternatively, apply a configuration with a very small number of objects and restart the RTU. The new large configuration should then be accepted.</p>
<p>WI: 50233</p>	<p>Installing Unity Pro v13.0 or v13.1 on Windows (French edition) followed by RemoteConnect installs shortcuts to All programs > Schneider Electric > SoCollaborative > Unity Pro for both Unity Pro and SCADAPack Logic applications.</p> <p>Workaround: Identify, from the shortcut path properties, which shortcuts relate to SCADAPack Logic.</p>
<p>WI: 59358</p>	<p>A USB C connection from a PC does not work with the SCADAPack 47x USB C port.</p> <p>Workaround: Use a USB A port on the PC to connect to the USB C port on the SCADAPack 47x.</p>
<p>WI: 59220</p>	<p>Logic Editor Memory Consumption dialog shows incorrect values and calculates the % of memory used using incorrect values. This is displayed with the Mode > Memory Consumption command. When memory usage is 87% or higher on the dialog, the SCADAPack RTU will be unable to load the application. When writing to the RTU the message “PLC program internal memory full” is displayed. The Greatest value below the graph is correct. The value above the graph should read 3072 Kbytes.</p> <p>Workaround:</p> <p>Multiply the % usage values in the graph on the left by 1.16 to get the actual values.</p> <p>Ignore the % memory available value in the graph on the left.</p>

	<p>Subtract 525000 from the Total (memory available) value below the graph on the left to get the actual value.</p>
WI: 62703	<p>The telnet command prompt will not completely display long output in the following cases and others.</p> <ul style="list-style-type: none"> • NETINFO output when the table is greater than 46 entries • TYPE output when displaying a .RTU file or other long files • Other commands with long output <p>Workarounds:</p> <p>Use a serial port command prompt when connected locally.</p> <p>Long NETINFO output can be obtained by executing the GETINFO command, transferring the file created to a PC, and opening it on the PC.</p> <p>Long files can be examined by transferring the file created to a PC and opening it on the PC.</p>

6.2.10 Post Installation Troubleshooting

RemoteConnect and Logic Editor Start Up	<p>SCADAPack RemoteConnect Configuration Software start-up may be blocked from reopening if previous instances of RemoteConnect or the Logic Editor were not closed cleanly.</p> <p>Workaround: Launch the Task Manager and shut down any RemoteConnect processes, then restart RemoteConnect.</p>
Logic Editor	<p>Logic editor or Types Library update tool library modification</p> <p>Symptoms</p> <p>SCADAPack Logic Editor or Types Library Update tool reports the library is opened by another application when attempting to modify the logic library</p> <p>Steps to resolve</p> <p>Check that no instances of Unity Pro, Control Expert, and RemoteConnect/SCADAPack x70 Logic Editor are running. Launch the Task Manager and shut down any Unity Pro, Control Expert, and RemoteConnect/SCADAPack x70 Logic Editor processes. If the symptoms persist, it is likely that Windows folder permissions are incorrect.</p> <p>Check the following:</p> <ol style="list-style-type: none"> 1. With administrator privilege right-click on the following folder: C:\ProgramData\Schneider Electric 2. Select Properties.

3. Select the **Security** tab.
4. Click **Edit**.
5. Click on the Users entry in the Group or user names section.
6. Scroll down the Permissions for Users area until you see a row called "Write".
7. Check the box in the "Allow" column for the "Write" row.
8. Click **OK**.
The security settings will update on the sub-folders.
9. Click OK to exit the Properties dialog.

6.2.11 SCADAPack x70 and 6601 Firmware Version Compatibility

Customer Guidance for SCADAPack 47x

SCADAPack 47x supports 6601 input output module firmware version 2.0.20 and later.

Customer Guidance for SCADAPack 57x

6601 upgrade recommendations: Upgrade 6601 input output modules (both external and built into SP575) to firmware version 2.0.20 and bootloader version 1.80.10. For 6601 input output modules shipped with firmware 1.77.131 or earlier, and where extended over-range capabilities (up to 22 mA) are required, the module may be returned to a Schneider Electric facility for recalibration.

6601 minimum firmware version: 6601 input output modules shipped from the factory with 1.80.6 or 1.80.10 firmware should not be downgraded to versions earlier than 1.80.6.

NOTICE

LOSS OF SENSOR ACCURACY

If you use firmware versions that are incompatible with extended over-range calibration on 6601 analog inputs, the analog inputs may report values 10% lower than the actual value.

Use only firmware versions that are compatible with extended over-range calibration.

Do not use 6601 firmware earlier than 1.80.6 with extended over-range calibration. They are not compatible.

For information on SCADAPack 57x firmware versions 9.03 or earlier, refer to the RemoteConnect R2.0 release notes in the documentation.

Failure to follow these instructions can result in equipment damage.

A new calibration format for 6601 analog inputs has been added to support extended over-range capabilities. Interoperability of various versions of firmware and calibration is described below.

	SP57x Firmware	6601 Firmware	6601 Calibration	6601 AI Value	Over-range	Comment
✓	9.0.4 or later	1.77.131 or earlier	0...20 mA	Reported normally	Always active at 20.05mA	
✓	9.0.4 or later	1.80.06 or later	0...20 mA	Reported normally	Always active at 20.05mA	
✓	9.0.4 or later	1.80.06 or later	0...22 mA	Reported normally	Always active at 22.00mA	Recommended choice for new installations
✗	9.0.4 or later	1.77.131 or earlier	0...22 mA	AI report. 10% lower values	Always active at 20.05mA	NOT RECOMMENDED. Should only occur when a 6601 is mistakenly downgraded from 1.80.6 to an earlier version.

6.3 SCADAPack x70 R2.7.1 Release Notes 12/2021

SCADAPack x70 R2.7.1 was first available in Dec 2021.

SCADAPack 47x Upgrade Requirements

Some SCADAPack 47x RTUs with Cypress (Spansion) NOR flash components did not boot after a power cycle. SCADAPack 47x bootloader 1.41 helps to protect against overwriting of one-time-programmable configuration registers in Cypress (Spansion) NOR flash.

Identifying Affected Units

Upgrade the SCADAPack 47x firmware to version 9.6.1 or newer.

Use the VER command to identify the type of NOR flash. Hardware with Cypress (Spansion) NOR flash will display

NOR Flash Chip ID: 0x4d190201

To determine the NOR Flash Chip ID do one of the following

- Using RemoteConnect
 1. Open a project.

2. Click **Online** to connect to the SCADAPack 47x RTU.
 3. Right-click **SCADAPack x70 Controller Settings – Device DTM**.
 4. Select **Additional Functions > Get Device Information**.
 5. Click **Browse** and specify a file name.
 6. Click **OK**.
 7. Open the Device Information file read from the RTU and search for NOR Flash Chip ID.
- Using the SCADAPack 47x command line
 1. Type **VER** and press **Enter**.
 2. Check the NOR Flash Chip ID displayed.

SCADAPack 47x RTUs with other NOR flash components are not affected.

SCADAPack 57x RTUs are not affected.

Action

Upgrade the SCADAPack 47x bootloader to version 1.41 or newer on hardware with Cypress (Spansion) NOR Flash.

SCADAPack 57x Upgrade Requirements

It is highly recommended that updates be installed on your SCADAPack 57x devices if using:

- SCADAPack 57x firmware version 9.1.2 and earlier, or
- SCADAPack 57x bootloader firmware version 1.10.

First, install SCADAPack 57x firmware version 9.2.1 or newer, then install SCADAPack 57x bootloader firmware version 1.30 or newer.

WARNING

UNINTENDED EQUIPMENT OPERATION

Upgrade SCADAPack 57x firmware version 9.1.2 and earlier versions to firmware version 9.2.1 or newer.

Failure to follow these instructions can result in death or serious injury.

⚠ WARNING**UNINTENDED EQUIPMENT OPERATION**

Upgrade SCADAPack 57x bootloader firmware version 1.10 to bootloader firmware version 1.30 or newer. Cold boot the SCADAPack 57x device following the upgrade.

Failure to follow these instructions can result in death or serious injury.

SCADAPack 57x bootloader firmware version 1.30 corrects a start-up initialization issue and digital output initialization issue.

SCADAPack 57x firmware version 9.2.1 corrects an issue for users of firmware version 9.1.2 and earlier. Logic variables T_SPx70_INT and T_SPx70_UINT may indicate incorrect values following an online logic modification and a SCADAPack 57x device restart.

The firmware in this release includes these corrections.

6.3.1 Installation Requirements, Instructions, and Troubleshooting

Refer to “Software Installation.pdf” located both at the root of the folder that contains the installation files, and SCADAPack Software Installation in the documentation set that is installed with RemoteConnect.

6.3.2 Application and Firmware Versions

SCADAPack x70 RemoteConnect application version is 3.10.1

- SCADAPack DNP3 Communication DTM version is 3.10
- SCADAPack x70 Device DTM version is 3.10
- SCADAPack x70 Logic Editor version is 14.0 - 200313
- Schneider Electric Generic HART DTM version is 5.1.1189.11
- HART STB Multiplexer Communication DTM version is 1.0.8.0
- SCADAPack x70 English Documentation version is 3.10.1
- SCADAPack x70 French Documentation version is 1.2.3
- Realflo flow computer version is 7.02.1

SCADAPack x70 Security Administrator version is 1.6.2

SCADAPack 47x firmware version is 9.7.1

SCADAPack 47x bootloader version is 1.41

SCADAPack 57x firmware version is 9.7.1

SCADAPack 57x bootloader version is 1.40

6601 I/O module firmware version is 2.2.27

6601 I/O module bootloader version is 2.2.27

6602 I/O module firmware version is 2.1.127

6602 I/O module bootloader version is 2.1.127

6607 I/O module firmware version is 2.2.4

6607 I/O module bootloader version is 2.2.4

6.3.3 Software and Firmware Version Compatibility

RemoteConnect version 3.10.1 is intended for use with SCADAPack x70 firmware version 9.7.1.

6.3.4 SCADAPack 57x Hardware and Firmware Version Compatibility

SCADAPack 570, 574, and 575 modules with hardware version V4.00 and later require minimum bootloader and operating system firmware versions, as described in the table below.

If you attempt to install bootloader firmware 1.30 or earlier on a SCADAPack 57x device with hardware version 4.00 or later, the firmware installation will be unsuccessful. System status code 1060 will be generated. Avoid using bootloader firmware 1.30 or earlier with SCADAPack 57x hardware versions 4.00 or later.

If you attempt to install operating system firmware 9.4.3 or earlier on a SCADAPack 57x device with hardware version 4.00 or later, the firmware installation will be unsuccessful. System status code 1061 will be generated. Avoid using operating system firmware version 9.4.3 or earlier with SCADAPack 57x hardware versions 4.00 or later.

See table below for hardware and firmware compatibility.

	SP57x Hardware Version	SP57x Bootloader Firmware Version	SP57x Operating System Firmware Version	Comment
✓	3.02 or earlier	any	any	Use bootloader version 1.30 or later. See SCADAPack 57x Upgrade Requirements earlier in this document.
✓	4.00 or later	1.40 or later	9.5.1 or later	

X	4.00 or later	1.30 or earlier are not supported	9.4.3 or earlier are not supported	Use Bootloader firmware version 1.40 or later. Use Operating system firmware version 9.5.1 or later.
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You can check the SCADAPack 57x hardware version, bootloader firmware version, and operating system firmware version by using RemoteConnect online **Additional Functions > Get Device Information** and opening the retrieved text file; or by using the SCADAPack command line VER command.

6.3.5 Supported Devices

SCADAPack 470
 SCADAPack 474
 SCADAPack 570
 SCADAPack 574
 SCADAPack 575

6.3.6 Supported Operating Systems

Windows 8.1 Professional (32-bit or 64-bit)
 Windows 10 Professional (32-bit or 64-bit) - version 20H2 and 21H1
 Windows 10 Enterprise (32-bit or 64-bit) - version 20H2 and 21H1
 Windows Server 2016

6.3.7 SCADAPack RemoteConnect, Unity Pro, and Control Expert Compatibility

RemoteConnect installations can coexist with specific Unity Pro or Control Expert installations. If RemoteConnect is installed on a computer that had Unity Pro or Control Expert installed previously, the RemoteConnect installation automatically confirms that components in the SCADAPack x70 Logic Editor and Unity Pro or Control Expert are correctly referenced. If Unity Pro or Control Expert is installed or upgraded on a computer that already had RemoteConnect installed, then a **repair** process is likely required on RemoteConnect to confirm that components are correctly referenced. Use **Run as administrator** to run the repair process.

The Unity Pro or Control Expert versions that are verified as suitable for coexisting installation with RemoteConnect are:

- Unity Pro version 13.0*
- Unity Pro version 13.1*
- EcoStruxure Control Expert version 14.0
- EcoStruxure Control Expert version 14.1

- EcoStruxure Control Expert version 15.0 and 15.0 SP1

* RemoteConnect has a known issue with Unity Pro version 13.0 and 13.1 on Windows French edition. See WI: [50233](#) in the Known Issues section below.

6.3.8 New and Improved Features (R2.7.1)

WI: 60832	RemoteConnect supports the model 6103 power supply on dialogs where expansion power supply information is displayed. 6103 power supply modules do not require configuration in RemoteConnect.
WI: 62540	Documentation for the model 6103 power supply is provided in the user manual.
WI 64592	DNP3 Data Concentrator and DNP3 Secure Authentication features on SCADAPack x70 RTUs are automatically licensed. It is no longer necessary to purchase a license for these features. A software license is still required for SCADAPack Security Administrator.
WI: 64633	The operating elevation specification for SCADAPack 47x and 6607 modules was updated in documentation to include details on use in elevations between 3000 m (1.864 mi) and 4000 m (2.485 mi).
WI: 64687	DIN rail specifications in hardware manuals clarified to state 1 mm DIN rail is the DIN rail size supported.
WI: 64695	A procedure for using USB drives larger than 32 GB with SCADAPack x70 was added to the documentation.

6.3.9 Fixed Issues (R2.7.1)

WI: 63347	Object floating point values could change by small amounts after a SCADAPack x70 RTU was power cycled. This is corrected.
WI: 63569	Unexpected values from floating point or long integer calculations (including from logic functions or RTU object scaling after integer updates) could be reported on rare occasions in SCADAPack x70 RTU logic variables, or in analog or counter objects. This is corrected.
WI: 64113	IEC 60870-5-104 ASDU drop-down list was sometimes grayed out when attempting to update the IOA between Monitor Direction and Control

	Direction. This could be worked around by reopening the object editor dialog. This is corrected.
WI: 64179	In the Logic Editor, changing a Derived Variable name and then returning to RemoteConnect to resynchronize lost the connection between database objects and DDT variables. This is corrected.
WI: 64266	IEC 60870-5-104 Control Direction ASDU was read as Single Command instead of Double Command when opening a project file. This is corrected.
WI: 64273	RemoteConnect projects created in versions 2.5.3 and older did not connect to devices over Modbus protocols. RemoteConnect could not go into online mode using these projects. This is corrected.
WI: 64275	A large SCADAPack 57x project converted to a SCADAPack 47x could result in the RTU restarting continually with Restart Mask 0x0400 after writing the application to the SCADAPack 47x RTU. This is corrected.
WI: 64284	RemoteConnect projects created in versions 2.5.3 and older could not be opened if the RemoteConnect communication used Modbus protocols. This is corrected.
WI: 64467	IEC 60870-5-104 ASDU default configuration values were different between RemoteConnect and the firmware This is corrected.
WI: 64524	Digital Objects associated with Modbus Write operations and that had a DNP3 static group and variation other than the default value of group variation 2 were reset to the default when opening a project file. This is corrected.
WI: 64527	The serial port functions for Modbus were available when only Modbus IP servers and clients were enabled. This is corrected.
WI: 64648 WI: 64723	Status code 5004 - Object Variable Inconsistency – was reported with some projects after writing to the RTU. The connection between database objects and DDT variables was lost. This is corrected.
WI: 64677	IEC 60870-5-104 Double Command and Regulating step pulses returned a negative activation confirmation in response to a GS control action. This is corrected.

WI: 64694	RemoteConnect installation troubleshooting did not include list of folders to delete when removing Unity Pro 13.1. This is corrected.
WI: 64961	The message "Please wait while the Logic Editor is receiving updates..." could remain in place if the logic editor was not open while writing the configuration. This is corrected.
WI: 65011	Firmware update procedure did not describe flow computer configuration is not preserved. This is corrected.

6.3.10 Known Issues (R2.7.1)

Installation	<p>Control Expert and Unity Pro installation compatibility</p> <p>The SCADAPack RemoteConnect Configuration Software installation process and Control Expert / Unity Pro software installation process can interfere with one another. It is recommended that when installing new versions of Control Expert / Unity Pro software that the repair installation option be run for SCADAPack RemoteConnect. Coexisting installations of RemoteConnect and Unity Pro are supported for Unity Pro versions 13.0, 13.1, and EcoStruxure Control Expert version 14.0, 14.1, 15.0 and 15.0 - SP1.</p> <p>Workaround: Follow the relevant Post-installation Steps for the Unity Pro or Control Expert version in the Software installation Manual.</p>
WI: 47841	<p>When reconfiguring a SCADAPack RTU from one large configuration to another large configuration, the configuration rebuild might not succeed and would report configuration log messages such as "# 565: Unable to create object due to insufficient configuration memory space".</p> <p>Workaround: Cold boot the RTU before applying the new configuration. Alternatively, apply a configuration with a very small number of objects and restart the RTU. The new large configuration should then be accepted.</p>
WI: 50233	<p>Installing Unity Pro v13.0 or v13.1 on Windows (French edition) followed by RemoteConnect installs shortcuts to All programs > Schneider Electric > SoCollaborative > Unity Pro for both Unity Pro and SCADAPack Logic applications.</p> <p>Workaround: Identify, from the shortcut path properties, which shortcuts relate to SCADAPack Logic.</p>
WI: 54918	<p>The SD card on the SCADPack 47x is not supported.</p> <p>Workaround: Use a USB mass storage device (USB drive) instead.</p>

<p>WI: 59358</p>	<p>A USB C connection from a PC does not work with the SCADAPack 47x USB C port.</p> <p>Workaround: Use a USB A port on the PC to connect to the USB C port on the SCADAPack 47x.</p>
<p>WI: 59220</p>	<p>Logic Editor Memory Consumption dialog shows incorrect values and calculates the % of memory used using incorrect values. This is displayed with the Mode > Memory Consumption command. When memory usage is 87% or higher on the dialog, the SCADAPack RTU will be unable to load the application. When writing to the RTU the message "PLC program internal memory full" is displayed. The Greatest value below the graph is correct. The value above the graph should read 3072 Kbytes.</p> <p>Workaround:</p> <p>Multiply the % usage values in the graph on the left by 1.16 to get the actual values.</p> <p>Ignore the % memory available value in the graph on the left.</p> <p>Subtract 525000 from the Total (memory available) value below the graph on the left to get the actual value.</p>
<p>WI: 62703</p>	<p>The telnet command prompt will not completely display long output in the following cases and others.</p> <ul style="list-style-type: none"> • NETINFO output when the table is greater than 46 entries • TYPE output when displaying a .RTU file or other long files • Other commands with long output <p>Workarounds:</p> <p>Use a serial port command prompt when connected locally.</p> <p>Long NETINFO output can be obtained by executing the GETINFO command, transferring the file created to a PC, and opening it on the PC.</p> <p>Long files can be examined by transferring the file created to a PC and opening it on the PC.</p>

6.3.11 Post Installation Troubleshooting

<p>RemoteConnect and Logic Editor Start Up</p>	<p>SCADAPack RemoteConnect Configuration Software start-up may be blocked from reopening if previous instances of RemoteConnect or the Logic Editor were not closed cleanly.</p> <p>Workaround: Launch the Task Manager and shut down any RemoteConnect processes, then restart RemoteConnect.</p>
<p>Logic Editor</p>	<p>Logic editor or Types Library update tool library modification</p>

	<p>Symptoms</p> <p>SCADAPack Logic Editor or Types Library Update tool reports the library is opened by another application when attempting to modify the logic library</p> <p>Steps to resolve</p> <p>Check that no instances of Unity Pro, Control Expert, and RemoteConnect/SCADAPack x70 Logic Editor are running. Launch the Task Manager and shut down any Unity Pro, Control Expert, and RemoteConnect/SCADAPack x70 Logic Editor processes. If the symptoms persist, it is likely that Windows folder permissions are incorrect.</p> <p>Check the following:</p> <ol style="list-style-type: none">1. With administrator privilege right-click on the following folder: C:\ProgramData\Schneider Electric2. Select Properties.3. Select the Security tab.4. Click Edit.5. Click on the Users entry in the Group or user names section.6. Scroll down the Permissions for Users area until you see a row called "Write".7. Check the box in the "Allow" column for the "Write" row.8. Click OK. <p>The security settings will update on the sub-folders.</p> <ol style="list-style-type: none">9. Click OK to exit the Properties dialog.
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6.3.12 SCADAPack x70 and 6601 Firmware Version Compatibility

Customer Guidance for SCADAPack 47x

SCADAPack 47x supports 6601 input output module firmware version 2.0.20 and later.

Customer Guidance for SCADAPack 57x

6601 upgrade recommendations: Upgrade 6601 input output modules (both external and built into SP575) to firmware version 2.0.20 and bootloader version 1.80.10. For 6601 input output modules shipped with firmware 1.77.131 or earlier, and where extended over-range capabilities (up to 22 mA) are required, the module may be returned to a Schneider Electric facility for recalibration.

6601 minimum firmware version: 6601 input output modules shipped from the factory with 1.80.6 or 1.80.10 firmware should not be downgraded to versions earlier than 1.80.6.

NOTICE

LOSS OF SENSOR ACCURACY

If you use firmware versions that are incompatible with extended over-range calibration on 6601 analog inputs, the analog inputs may report values 10% lower than the actual value.

Use only firmware versions that are compatible with extended over-range calibration.

Do not use 6601 firmware earlier than 1.80.6 with extended over-range calibration. They are not compatible.

For information on SCADAPack 57x firmware versions 9.03 or earlier, refer to the RemoteConnect R2.0 release notes in the documentation.

Failure to follow these instructions can result in equipment damage.

A new calibration format for 6601 analog inputs has been added to support extended over-range capabilities. Interoperability of various versions of firmware and calibration is described below.

	SP57x Firmw are	6601 Firmw are	6601 Calibrati on	6601 AI Value	Over- range	Comment
✓	9.0.4 or later	1.77.131 or earlier	0...20 mA	Reporte d normal ly	Always active at 20.05mA	
✓	9.0.4 or later	1.80.06 or later	0...20 mA	Reporte d normal ly	Always active at 20.05mA	
✓	9.0.4 or later	1.80.06 or later	0...22 mA	Reporte d normal ly	Always active at 22.00mA	Recommended choice for new installations
✗	9.0.4 or later	1.77.131 or earlier	0...22 mA	AI report. 10% lower values	Always active at 20.05mA	NOT RECOMMENDED. Should only occur when a 6601 is mistakenly downgraded from 1.80.6 to an earlier version.

6.4 SCADAPack x70 R2.6.1 Release Notes 07/2021

SCADAPack x70 R2.6.1 was first available in July 2021.

SCADAPack 57x Upgrade Requirements

It is highly recommended that updates be installed on your SCADAPack 57x devices if using:

- SCADAPack 57x firmware version 9.1.2 and earlier, or
- SCADAPack 57x bootloader firmware version 1.10.

First, install SCADAPack 57x firmware version 9.2.1 or newer, then install SCADAPack 57x bootloader firmware version 1.30 or newer.

WARNING

UNINTENDED EQUIPMENT OPERATION

Upgrade SCADAPack 57x firmware version 9.1.2 and earlier versions to firmware version 9.2.1 or newer.

Failure to follow these instructions can result in death or serious injury.

WARNING

UNINTENDED EQUIPMENT OPERATION

Upgrade SCADAPack 57x bootloader firmware version 1.10 to bootloader firmware version 1.30 or newer. Cold boot the SCADAPack 57x device following the upgrade.

Failure to follow these instructions can result in death or serious injury.

SCADAPack 57x bootloader firmware version 1.30 corrects a start-up initialization issue and digital output initialization issue.

SCADAPack 57x firmware version 9.2.1 corrects an issue for users of firmware version 9.1.2 and earlier. Logic variables T_SPx70_INT and T_SPx70_UINT may indicate incorrect values following an online logic modification and a SCADAPack 57x device restart.

The firmware in this release includes these corrections.

SCADAPack 47x Upgrade Requirements

Some SCADAPack 47x RTUs with Cypress (Spansion) NOR flash components did not boot after a power cycle. SCADAPack 47x bootloader 1.41 helps to protect against overwriting of one-time-programmable configuration registers in Cypress (Spansion) NOR flash.

Identifying Affected Units

Upgrade the SCADAPack 47x firmware to version 9.6.1 or newer.

Use the VER command to identify the type of NOR flash. Hardware with Cypress (Spansion) NOR flash will display

NOR Flash Chip ID: 0x4d190201

To determine the NOR Flash Chip ID do one of the following

- Using RemoteConnect
 - Open a project
 - Click Online to connect to the SCADAPack 47x RTU
 - Right-click SCADAPack x70 Controller Settings – Device DTM
 - Select Additional Functions > Get Device Information
 - Click Browse and specify a file name
 - Click OK
 - Open the Device Information file read from the RTU and search for NOR Flash Chip ID.
- Using the SCADAPack 47x command line
 - Type VER and press Enter
 - Check the NOR Flash Chip ID displayed

SCADAPack 47x RTUs with other NOR flash components are not affected.

SCADAPack 57x RTUs are not affected.

Action

Upgrade the SCADAPack 47x bootloader to version 1.41 or newer on hardware with Cypress (Spansion) NOR Flash.

6.4.1 Installation Requirements, Instructions, and Troubleshooting

Refer to “Software Installation.pdf” located both at the root of the folder that contains the installation files, and SCADAPack Software Installation in the documentation set that is installed with RemoteConnect.

6.4.2 Application and Firmware Versions

SCADAPack x70 RemoteConnect application version is 3.9.1

- SCADAPack DNP3 Communication DTM version is 3.9
- SCADAPack x70 Device DTM version is 3.9
- SCADAPack x70 Logic Editor version is 14.0 - 200313
- Schneider Electric Generic HART DTM version is 5.1.1189.11

- HART STB Multiplexer Communication DTM version is 1.0.8.0
- SCADAPack x70 English Documentation version is 3.9.1
- SCADAPack x70 French Documentation version is 1.2.3
- Realflo flow computer version is 7.02.1

SCADAPack x70 Security Administrator version is 1.6.2

SCADAPack 47x firmware version is 9.6.1

SCADAPack 47x bootloader version is 1.41

SCADAPack 57x firmware version is 9.6.1

SCADAPack 57x bootloader version is 1.40

6601 I/O module firmware version is 2.2.27

6601 I/O module bootloader version is 2.2.27

6602 I/O module firmware version is 2.1.127

6602 I/O module bootloader version is 2.1.127

6607 I/O module firmware version is 2.2.4

6607 I/O module bootloader version is 2.2.4

6.4.3 Software and Firmware Version Compatibility

RemoteConnect version 3.9.1 is intended for use with SCADAPack x70 firmware version 9.6.1.

NOTICE

INCONSISTENT DATA, UNPREDICTABLE RESULTS

RemoteConnect versions R2.0 and later are not compatible with projects created with RemoteConnect versions R1.6 and earlier.

See the release notes for RemoteConnect version 2.0 in the documentation for more instructions.

Failure to follow these instructions can result in equipment damage.

6.4.4 SCADAPack 57x Hardware and Firmware Version Compatibility

SCADAPack 570, 574, and 575 modules with hardware version V4.00 and later require minimum bootloader and operating system firmware versions, as described in the table below.

If you attempt to install bootloader firmware 1.30 or earlier on a SCADAPack 57x device with hardware version 4.00 or later, the firmware installation will be unsuccessful. System status code 1060 will be generated. Avoid using bootloader firmware 1.30 or earlier with SCADAPack 57x hardware versions 4.00 or later.

If you attempt to install operating system firmware 9.4.3 or earlier on a SCADAPack 57x device with hardware version 4.00 or later, the firmware installation will be unsuccessful. System status code 1061 will be generated. Avoid using operating system firmware version 9.4.3 or earlier with SCADAPack 57x hardware versions 4.00 or later.

See table below for hardware and firmware compatibility.

	SP57x Hardware Version	SP57x Bootloader Firmware Version	SP57x Operating System Firmware Version	Comment
✓	3.02 or earlier	any	any	Use bootloader version 1.30 or later. See SCADAPack 57x Upgrade Requirements earlier in this document.
✓	4.00 or later	1.40 or later	9.5.1 or later	
X	4.00 or later	1.30 or earlier are not supported	9.4.3 or earlier are not supported	Use Bootloader firmware version 1.40 or later. Use Operating system firmware version 9.5.1 or later.

You can check the SCADAPack 57x hardware version, bootloader firmware version, and operating system firmware version by using RemoteConnect online **Additional Functions > Get Device Information** and opening the retrieved text file; or by using the SCADAPack command line VER command.

6.4.5 Supported Devices

SCADAPack 470

SCADAPack 474

SCADAPack 570

SCADAPack 574

SCADAPack 575

6.4.6 Supported Operating Systems

Windows 8.1 Professional (32-bit or 64-bit)

Windows 10 Professional (32-bit or 64-bit) - version 1909 and 2004

Windows 10 Enterprise (32-bit or 64-bit) - version 1909 and 2004

Windows Server 2016

6.4.7 SCADAPack RemoteConnect, Unity Pro, and Control Expert Compatibility

RemoteConnect installations can coexist with specific Unity Pro or Control Expert installations. If RemoteConnect is installed on a computer that had Unity Pro or Control Expert installed previously, the RemoteConnect installation automatically confirms that components in the SCADAPack x70 Logic Editor and Unity Pro or Control Expert are correctly referenced. If Unity Pro or Control Expert is installed or upgraded on a computer that already had RemoteConnect installed, then a **repair** process is likely required on RemoteConnect to confirm that components are correctly referenced. Use **Run as administrator** to run the repair process.

The Unity Pro or Control Expert versions that are verified as suitable for coexisting installation with RemoteConnect are:

- Unity Pro version 13.0*
- Unity Pro version 13.1*
- EcoStruxure Control Expert version 14.0
- EcoStruxure Control Expert version 14.1
- EcoStruxure Control Expert version 15.0 and 15.0 SP1

* RemoteConnect has a known issue with Unity Pro version 13.0 and 13.1 on Windows French edition. See WI: [50233](#) in the Known Issues section below.

6.4.8 New and Improved Features (R2.6.1)

<p>WI: 48360</p>	<p>Modbus protocol can be used on USB, serial, and TCP connections for configuring, monitoring and debugging with RemoteConnect. Previously these features required using a DNP3 connection.</p>
<p>WI: 48376</p>	<p>Added support for Modbus extended addressing to firmware and RemoteConnect. Extended addressing can be used with Modbus and Enron Modbus protocols on client and server interfaces.</p>
<p>WI: 53996</p>	<p>Added support for support Windows 10 Enterprise (32-bit or 64-bit) - version 1909 and 2004.</p>

WI: 56728	The PERF and REALFLOSTATUS command outputs were added to the device information file and can be read with "Get Device Information File".
WI: 61104	Improved the documentation of the FILEDIAG command to indicated that logging stops when the device restarts and once stopped the log file will be deleted from /ramdir. There was no change made to the firmware.
WI: 61949	<p>Schneider Electric is committed to replacing problematic language in our code, applications, and documentation. This is a large task and will be implemented over several releases. In this release we have changed the following terms.</p> <ul style="list-style-type: none"> • Modbus Master/Client is now Modbus Client • Modbus Slave/Server is now Modbus Server • Modbus master is now Modbus client • Modbus slave is now Modbus server • DNP3 slave or DNP3 slave station is now DNP3 outstation • DNP3 master or DNP3 master station is now DNP3 controlling station • HART master is now HART client • Master key is now Passphrase System Key (presently limited to the context of securing the config files used for DNP3 Secure Authentication) • IP Whitelist is now IP Firewall • IEC 60870-5-104 Master is now Controlling Station • IEC 60870-5-104 Slave is now Controlled Station • Grandfathered is now legacy • DNP3 Device Profile file names "SCADAPack xxxx Master DNP3 Device Profile" are now "SCADAPack xxxx Client DNP3 Device Profile" • DNP3 Device Profile file names "SCADAPack xxxx Slave DNP3 Device Profile" are now "SCADAPack xxxx Outstation DNP3 Device Profile" • DNP3 Device Profile content referencing Master and Slave was updated where possible. Some terms were maintained for backward compatibility with XSLT files from the DNP3 Users Group. • Folder paths for DNP3 device profiles now use Client and Outstation terminology. • Folder path references in documentation for DNP3 device profiles now use Client and Outstation terminology.
WI: 62396	Updated FDT 2.0 to FDT 2.1 in manuals to match the version numbers of components in RemoteConnect.
WI: 62671	Changed copyright statements to Schneider Electric Systems USA Inc.

WI: 62761	Improved usability of the Object table filtering mechanism. Reduced the screen space required for the controls benefitting users with smaller displays.
WI: 62766	Added a watchdog on 6602 I/O module firmware to improve robustness against potential hardware or firmware problems.
WI: 62788	Added support for Modbus multiple-bit digital object mapping in the Modbus Scanner. Each of the 16 bits in a Modbus input or holding register can be mapped to a UINT digital object.
WI: 62896	Added EFB Toolkit V14 release note information to x70 documentation.
WI: 62899	Improved documentation of steps to repair Control Expert installations.
WI: 63369	Updated certification information for SCADAPack 470, 474, and 6607.
WI: 63407	Improved the Security Administrator documentation.
WI: 63490	Improved documentation of RTU time usage and time-related system status bits/words.
WI: 63543	Added a word order parameter for emulation of Telepace long integers.
WI: 63674	Added a document number on the title page of each document.
WI: 64027	The VER command displays the NOR Flash Chip ID for SCADAPack 47x RTUs. This information is used to identify the manufacturer of the NOR flash component.

6.4.9 Fixed Issues (R2.6.1)

WI: 51255	5606, 5607, and 5506 I/O modules reported additional out of range events based on status codes from the module. The modules now report out of range events only based on the configured Upper Range and Lower Range limits.
WI: 60659	F1 help in RemoteConnect was missing information for the Copy icon on the Object Associations tab. This is corrected.
WI: 62245	RemoteConnect Modbus Scanner configuration allowed overlapping registers of different object types. This is corrected.
WI: 62529	System status code 3019 description was missing from RemoteConnect and documentation. This is corrected.

WI: 62736	The complete DNP3 route table was printed on the command line when no dynamic or static routes were in the list. This is corrected to print nothing if there are no routes in a section.
WI: 62887	Installer didn't install logic editor hotfixes and register cdbps2.dll on French and Russian Windows versions. This is corrected.
WI: 62890	EFB toolkit documentation did not indicate Control Expert installation is required to use the toolkit. This is corrected.
WI: 62929	Certain alert time deadband settings could result in a SCADAPack x70 reset due to a processor exception and task watchdog. This is corrected.
WI: 63006	The task watchdog flag and dump file were inconsistent following a restart. This is corrected.
WI: 63019 WI: 62995	System status code 3000 "A DNP3 Data Concentrator or Modbus Scanner contains either more remote devices OR more mapped objects than permitted" was reported when fewer than 3000 Modbus registers were mapped. The firmware was counting the number of used and unused registers in Modbus scanners. It now counts objects assigned to registers.
WI: 63062	RemoteConnect did not validate that the Incoming and Forward Station address was different from the Station address of the interface. This is corrected.
WI: 63064	RemoteConnect online ad-hoc object entries were not updated to reflect changes in the offline Object configuration. This is corrected.
WI: 63202	The SCADAPack 470 command line on serial 4 did not respond after a power cycle or RESTART RTU command, when high rate RS485 traffic (for another device) was present on serial 1 or 2. This is corrected.
WI: 63256	Upgrading the SCADAPack 47x firmware required two attempts. Restart reason 0x0004 was not reported after the first attempt. This is corrected. To apply the correction, first upgrade the SCADAPack 47x boot loader to version 1.40 or newer, then upgrade the firmware.
WI: 63331	RemoteConnect validation and documentation of the Channel Receive Timeout parameter used an incorrect range. The correct range of 0... 65535 was used in firmware. RemoteConnect and documentation are corrected.
WI: 63385	Modbus serial scanners could generate "Unable to send message - Corrupt message" logs when 200 analog point scanner were configured. This is corrected.

<p>WI: 63432</p>	<p>The Modbus IP scanner could generate "Exception: Unknown" logs when 200 analog point scanners were configured. This is corrected.</p>
<p>WI: 63438</p>	<p>SCADAPack 47x stopped responding to Modbus polls when polled every 10 ms. In some scenarios the RTU restarted with reset reason 800 or reset reason 10. This is corrected.</p> <p>Diagnostics output is affected by this change. If a high volume of diagnostics are enabled on a command line serial port with a low baud rate configured, some diagnostics may be discarded and you may notice time gaps in the diagnostics displayed. This can be mitigated by configuring a higher baud rate for the command line serial port.</p>
<p>WI: 63494</p>	<p>Code signing certificates in the DVD were missing recent certificates. The certificates are added.</p>
<p>WI: 63513</p>	<p>Installation of Control Expert hotfix ControlExpert_V150_HF_BMENOR2200H.exe caused integrity check errors in both Control Expert and x70 Logic Editor. This is corrected. A second hot fix is provided to correct the effects of the first.</p>
<p>WI: 63517</p>	<p>I/O module hardware manuals indicated a 20 to 16 pin adapter was provided with I/O modules, when it was a separately ordered part. This is corrected.</p>
<p>WI: 63534</p>	<p>Serial port Modbus station addresses were invalid (zero) after a cold boot. The station address is now set to 1.</p>
<p>WI: 63357</p>	<p>System status code 3019 was reported multiple times within a single project. It is now reported once.</p>
<p>WI: 63558</p>	<p>String parameters were written to the RTU configuration file without using the proper double quote escape characters. This caused an interoperability issue with EcoStruxure Geo SCADA Expert. This is corrected.</p>
<p>WI: 63626</p>	<p>Documentation stated it was possible to build a read only Modbus scanner and a write only Modbus scanner with overlapping register addresses. RemoteConnect does not allow this combination. The documentation is corrected.</p>
<p>WI: 63746</p>	<p>Some SCADAPack 47x RTUs with Cypress (Spansion) NOR flash components did not boot after a power cycle. SCADAPack 47x bootloader 1.41 helps to protect against overwriting of one-time-programmable configuration registers in Cypress (Spansion) NOR flash.</p> <p>Identifying Affected Units</p> <p>Upgrade the SCADAPack 47x firmware to version 9.6.1 or newer. Use the VER command to identify the type of NOR flash. Hardware with Cypress (Spansion) NOR flash will display</p>

	<p>NOR Flash Chip ID: 0x4d190201</p> <p>SCADAPack 47x RTUs with other NOR flash components are not affected.</p> <p>SCADAPack 57x RTUs are not affected.</p> <p>Action</p> <p>Upgrade the SCADAPack 47x bootloader to version 1.41 or newer on hardware with Cypress (Spansion) NOR Flash.</p>
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6.4.10 Known Issues (R2.6.1)

Installation	<p>Control Expert and Unity Pro installation compatibility</p> <p>The SCADAPack RemoteConnect Configuration Software installation process and Control Expert / Unity Pro software installation process can interfere with one another. It is recommended that when installing new versions of Control Expert / Unity Pro software that the repair installation option be run for SCADAPack RemoteConnect. Coexisting installations of RemoteConnect and Unity Pro are supported for Unity Pro versions 13.0, 13.1, and EcoStruxure Control Expert version 14.0, 14.1, 15.0 and 15.0 - SP1.</p> <p>Workaround: Follow the relevant Post-installation Steps for the Unity Pro or Control Expert version in the Software installation Manual.</p>
WI: 47841	<p>When reconfiguring a SCADAPack RTU from one large configuration to another large configuration, the configuration rebuild might not succeed and would report configuration log messages such as “# 565: Unable to create object due to insufficient configuration memory space”.</p> <p>Workaround: Cold boot the RTU before applying the new configuration. Alternatively, apply a configuration with a very small number of objects and restart the RTU. The new large configuration should then be accepted.</p>
WI: 50233	<p>Installing Unity Pro v13.0 or v13.1 on Windows (French edition) followed by RemoteConnect installs shortcuts to All programs > Schneider Electric > SoCollaborative > Unity Pro for both Unity Pro and SCADAPack Logic applications.</p> <p>Workaround: Identify, from the shortcut path properties, which shortcuts relate to SCADAPack Logic.</p>
WI: 54918	<p>The SD card on the SCADAPack 47x is not supported.</p> <p>Workaround: Use a USB mass storage device (USB drive) instead.</p>

<p>WI: 59358</p>	<p>A USB C connection from a PC does not work with the SCADAPack 47x USB C port.</p> <p>Workaround: Use a USB A port on the PC to connect to the USB C port on the SCADAPack 47x.</p>
<p>WI: 59220</p>	<p>Logic Editor Memory Consumption dialog shows incorrect values and calculates the % of memory used using incorrect values. This is displayed with the Mode > Memory Consumption command. When memory usage is 87% or higher on the dialog, the SCADAPack RTU will be unable to load the application. When writing to the RTU the message “PLC program internal memory full” is displayed. The Greatest value below the graph is correct. The value above the graph should read 3072 Kbytes.</p> <p>Workaround:</p> <p>Multiply the % usage values in the graph on the left by 1.16 to get the actual values.</p> <p>Ignore the % memory available value in the graph on the left.</p> <p>Subtract 525000 from the Total (memory available) value below the graph on the left to get the actual value.</p>
<p>WI: 62703</p>	<p>The telnet command prompt will not completely display long output in the following cases and others.</p> <ul style="list-style-type: none"> • NETINFO output when the table is greater than 46 entries • TYPE output when displaying a .RTU file or other long files • Other commands with long output <p>Workarounds:</p> <p>Use a serial port command prompt when connected locally.</p> <p>Long NETINFO output can be obtained by executing the GETINFO command, transferring the file created to a PC, and opening it on the PC.</p> <p>Long files can be examined by transferring the file created to a PC and opening it on the PC.</p>

6.4.11 Post Installation Troubleshooting

<p>RemoteConnect and Logic Editor Start Up</p>	<p>SCADAPack RemoteConnect Configuration Software start-up may be blocked from reopening if previous instances of RemoteConnect or the Logic Editor were not closed cleanly.</p> <p>Workaround: Launch the Task Manager and shut down any RemoteConnect processes, then restart RemoteConnect.</p>
<p>Logic Editor</p>	<p>Logic editor or Types Library update tool library modification</p>

	<p>Symptoms</p> <p>SCADAPack Logic Editor or Types Library Update tool reports the library is opened by another application when attempting to modify the logic library</p> <p>Steps to resolve</p> <p>Check that no instances of Unity Pro, Control Expert, and RemoteConnect/SCADAPack x70 Logic Editor are running. Launch the Task Manager and shut down any Unity Pro, Control Expert, and RemoteConnect/SCADAPack x70 Logic Editor processes. If the symptoms persist, it is likely that Windows folder permissions are incorrect.</p> <p>Check the following:</p> <ol style="list-style-type: none">1. With administrator privilege right-click on the following folder: C:\ProgramData\Schneider Electric2. Select Properties.3. Select the Security tab.4. Click Edit.5. Click on the Users entry in the Group or user names section.6. Scroll down the Permissions for Users area until you see a row called "Write".7. Check the box in the "Allow" column for the "Write" row.8. Click OK. <p>The security settings will update on the sub-folders.</p> <ol style="list-style-type: none">9. Click OK to exit the Properties dialog.
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6.4.12 SCADAPack x70 and 6601 Firmware Version Compatibility

Customer Guidance for SCADAPack 47x

SCADAPack 47x supports 6601 input output module firmware version 2.0.20 and later.

Customer Guidance for SCADAPack 57x

6601 upgrade recommendations: Upgrade 6601 input output modules (both external and built into SP575) to firmware version 2.0.20 and bootloader version 1.80.10. For 6601 input output modules shipped with firmware 1.77.131 or earlier, and where extended over-range capabilities (up to 22 mA) are required, the module may be returned to a Schneider Electric facility for recalibration.

6601 minimum firmware version: 6601 input output modules shipped from the factory with 1.80.6 or 1.80.10 firmware should not be downgraded to versions earlier than 1.80.6.

NOTICE

LOSS OF SENSOR ACCURACY

If you use firmware versions that are incompatible with extended over-range calibration on 6601 analog inputs, the analog inputs may report values 10% lower than the actual value.

Use only firmware versions that are compatible with extended over-range calibration.

Do not use 6601 firmware earlier than 1.80.6 with extended over-range calibration. They are not compatible.

For information on SCADAPack 57x firmware versions 9.03 or earlier, refer to the RemoteConnect R2.0 release notes in the documentation.

Failure to follow these instructions can result in equipment damage.

A new calibration format for 6601 analog inputs has been added to support extended over-range capabilities. Interoperability of various versions of firmware and calibration is described below.

	SP57x Firmw are	6601 Firmw are	6601 Calibrati on	6601 AI Value	Over- range	Comment
✓	9.0.4 or later	1.77.131 or earlier	0...20 mA	Reporte d normal ly	Always active at 20.05mA	
✓	9.0.4 or later	1.80.06 or later	0...20 mA	Reporte d normal ly	Always active at 20.05mA	
✓	9.0.4 or later	1.80.06 or later	0...22 mA	Reporte d normal ly	Always active at 22.00mA	Recommended choice for new installations
✗	9.0.4 or later	1.77.131 or earlier	0...22 mA	AI report. 10% lower values	Always active at 20.05mA	NOT RECOMMENDED. Should only occur when a 6601 is mistakenly downgraded from 1.80.6 to an earlier version.

6.5 SCADAPack x70 R2.5.3 Release Notes 05/2021

SCADAPack x70 R2.5.3 was first available in May 2021.

Upgrade Requirements

It is highly recommended that updates be installed on your SCADAPack 57x devices if using:

- SCADAPack 57x firmware version 9.1.2 and earlier, or
- SCADAPack 57x bootloader firmware version 1.10.

First, install SCADAPack 57x firmware version 9.2.1 or newer, then install SCADAPack 57x bootloader firmware version 1.30 or newer.

WARNING

UNINTENDED EQUIPMENT OPERATION

Upgrade SCADAPack 57x firmware version 9.1.2 and earlier versions to firmware version 9.2.1 or newer.

Failure to follow these instructions can result in death or serious injury.

WARNING

UNINTENDED EQUIPMENT OPERATION

Upgrade SCADAPack 57x bootloader firmware version 1.10 to bootloader firmware version 1.30 or newer. Cold boot the SCADAPack 57x device following the upgrade.

Failure to follow these instructions can result in death or serious injury.

SCADAPack 57x bootloader firmware version 1.30 corrects a start-up initialization issue and digital output initialization issue.

SCADAPack 57x firmware version 9.2.1 corrects an issue for users of firmware version 9.1.2 and earlier. Logic variables T_SPx70_INT and T_SPx70_UINT may indicate incorrect values following an online logic modification and a SCADAPack 57x device restart.

The firmware in this release includes these corrections.

6.5.1 Installation Requirements, Instructions, and Troubleshooting

Refer to “Software Installation.pdf” located both at the root of the folder that contains the installation files, and SCADAPack Software Installation in the documentation set that is installed with RemoteConnect.

6.5.2 Application and Firmware Versions

SCADAPack x70 RemoteConnect application version is 3.8.3

- SCADAPack DNP3 Communication DTM version is 3.8
- SCADAPack x70 Device DTM version is 3.8
- SCADAPack x70 Logic Editor version is 14.0 - 200313

- Schneider Electric Generic HART DTM version is 5.1.1189.11
- HART STB Multiplexer Communication DTM version is 1.0.8.0
- SCADAPack x70 English Documentation version is 3.8.3
- SCADAPack x70 French Documentation version is 1.2.3

SCADAPack x70 Security Administrator version is 1.6.2

SCADAPack 47x firmware version is 9.5.3

SCADAPack 47x bootloader version is 1.00

SCADAPack 57x firmware version is 9.5.3

SCADAPack 57x bootloader version is 1.40

6601 I/O module firmware version is 2.2.27

6601 I/O module bootloader version is 2.2.27

6602 I/O module firmware version is 2.0.123

6602 I/O module bootloader version is 2.0.123

6607 I/O module firmware version is 2.2.4

6607 I/O module bootloader version is 2.2.4

6.5.3 Software and Firmware Version Compatibility

RemoteConnect version 3.8.3 is intended for use with SCADAPack x70 firmware version 9.5.3.

NOTICE

INCONSISTENT DATA, UNPREDICTABLE RESULTS

RemoteConnect versions R2.0 and later are not compatible with projects created with RemoteConnect versions R1.6 and earlier.

See the release notes for RemoteConnect version 2.0 in the documentation for more instructions.

Failure to follow these instructions can result in equipment damage.

6.5.4 SCADAPack 57x Hardware and Firmware Version Compatibility

SCADAPack 570, 574, and 575 modules with hardware version V4.00 and later require minimum bootloader and operating system firmware versions, as described in the table below.

If you attempt to install bootloader firmware 1.30 or earlier on a SCADAPack 57x device with hardware version 4.00 or later, the firmware installation will be unsuccessful. System status code 1060 will be generated. Avoid using bootloader firmware 1.30 or earlier with SCADAPack 57x hardware versions 4.00 or later.

If you attempt to install operating system firmware 9.4.3 or earlier on a SCADAPack 57x device with hardware version 4.00 or later, the firmware installation will be unsuccessful. System status code 1061 will be generated. Avoid using operating system firmware version 9.4.3 or earlier with SCADAPack 57x hardware versions 4.00 or later.

See table below for hardware and firmware compatibility.

	SP57x Hardware Version	SP57x Bootloader Firmware Version	SP57x Operating System Firmware Version	Comment
✓	3.02 or earlier	any	any	Use bootloader version 1.30 or later. See SCADAPack 57x Upgrade Requirements earlier in this document.
✓	4.00 or later	1.40 or later	9.5.1 or later	
✗	4.00 or later	1.30 or earlier are not supported	9.4.3 or earlier are not supported	Use Bootloader firmware version 1.40 or later. Use Operating system firmware version 9.5.1 or later.

You can check the SCADAPack 57x hardware version, bootloader firmware version, and operating system firmware version by using RemoteConnect online **Additional Functions > Get Device Information** and opening the retrieved text file; or by using the SCADAPack command line VER command.

6.5.5 Supported Devices

SCADAPack 470

SCADAPack 474

SCADAPack 570

SCADAPack 574

SCADAPack 575

6.5.6 Supported Operating Systems

Windows 8.1 Professional (32-bit or 64-bit)

Windows 10 Professional (32-bit or 64-bit)

Windows Server 2016

6.5.7 SCADAPack RemoteConnect, Unity Pro, and Control Expert Compatibility

RemoteConnect installations can coexist with specific Unity Pro or Control Expert installations. If RemoteConnect is installed on a computer that had Unity Pro or Control Expert installed previously, the RemoteConnect installation automatically confirms that components in the SCADAPack x70 Logic Editor and Unity Pro or Control Expert are correctly referenced. If Unity Pro or Control Expert is installed or upgraded on a computer that already had RemoteConnect installed, then a *repair* process is likely required on RemoteConnect to confirm that components are correctly referenced. Use **Run as administrator** to run the repair process.

The Unity Pro or Control Expert versions that are verified as suitable for coexisting installation with RemoteConnect are:

- Unity Pro version 13.0*
- Unity Pro version 13.1*
- EcoStruxure Control Expert version 14.0
- EcoStruxure Control Expert version 14.1
- EcoStruxure Control Expert version 15.0

* RemoteConnect has a known issue with Unity Pro version 13.0 and 13.1 on Windows French edition. See WI: [50233](#) in the Known Issues section below.

6.5.8 New and Improved Features (R2.5.3)

WI: 63393	Trip/Close complementary pulse operation for DNP3 binary outputs is supported. Two objects work together as a Trip/Close output pair from a single DNP3 point index.
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6.5.9 Fixed Issues (R2.5.3)

WI: 63324	A gross miscalibration of the SCADAPack 57x power supply voltage could result in inaccurate readings in the system data reference. This value can be viewed in RemoteConnect. Now, a gross miscalibration of more than
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	+/- 3% from the theoretical value is detected and a default calibration is used. Calibrated devices are not affected by this change.
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6.5.10 Known Issues (R2.5.3)

Installation	<p>Control Expert and Unity Pro installation compatibility</p> <p>The SCADAPack RemoteConnect Configuration Software installation process and Control Expert / Unity Pro software installation process can interfere with one another. It is recommended that when installing new versions of Control Expert / Unity Pro software that the repair installation option be run for SCADAPack RemoteConnect. Coexisting installations of RemoteConnect and Unity Pro are supported for Unity Pro versions 13.0, 13.1, and EcoStruxure Control Expert version 14.0, 14.1 and 15.0.</p> <p>Workaround: Follow the relevant Post-installation Steps for the Unity Pro or Control Expert version in the Software installation Manual.</p>
WI: 47841	<p>When reconfiguring a SCADAPack RTU from one large configuration to another large configuration, the configuration rebuild might not succeed and would report configuration log messages such as “# 565: Unable to create object due to insufficient configuration memory space”.</p> <p>Workaround: Cold boot the RTU before applying the new configuration. Alternatively, apply a configuration with a very small number of objects and restart the RTU. The new large configuration should then be accepted.</p>
WI: 50233	<p>Installing Unity Pro v13.0 or v13.1 on Windows (French edition) followed by RemoteConnect installs shortcuts to All programs > Schneider Electric > SoCollaborative > Unity Pro for both Unity Pro and SCADAPack Logic applications.</p> <p>Workaround: Identify, from the shortcut path properties, which shortcuts relate to SCADAPack Logic.</p>
WI: 54918	<p>The SD card on the SCADPack 47x is not supported.</p> <p>Workaround: Use a USB mass storage device (USB drive) instead.</p>
WI: 59358	<p>A USB C connection from a PC does not work with the SCADAPack 47x USB C port.</p> <p>Workaround: Use a USB A port on the PC to connect to the USB C port on the SCADAPack 47x.</p>
WI: 59220	<p>Logic Editor Memory Consumption dialog shows incorrect values and calculates the % of memory used using incorrect values. This is displayed with the Mode > Memory Consumption command. When memory usage is 87% or higher on the dialog, the SCADAPack RTU will be unable to load the application. When writing to the RTU the message “PLC program</p>

	<p>internal memory full" is displayed. The Greatest value below the graph is correct. The value above the graph should read 3072 Kbytes.</p> <p>Workaround:</p> <p>Multiply the % usage values in the graph on the left by 1.16 to get the actual values.</p> <p>Ignore the % memory available value in the graph on the left.</p> <p>Subtract 525000 from the Total (memory available) value below the graph on the left to get the actual value.</p>
<p>WI: 62703</p>	<p>The telnet command prompt will not completely display long output in the following cases and others.</p> <ul style="list-style-type: none"> • NETINFO output when the table is greater than 46 entries • TYPE output when displaying a .RTU file or other long files • Other commands with long output <p>Workarounds:</p> <p>Use a serial port command prompt when connected locally.</p> <p>Long NETINFO output can be obtained by executing the GETINFO command, transferring the file created to a PC, and opening it on the PC.</p> <p>Long files can be examined by transferring the file created to a PC and opening it on the PC.</p>

6.5.11 Post Installation Troubleshooting

<p>RemoteConnect and Logic Editor Start Up</p>	<p>SCADAPack RemoteConnect Configuration Software start-up may be blocked from reopening if previous instances of RemoteConnect or the Logic Editor were not closed cleanly.</p> <p>Workaround: Launch the Task Manager and shut down any RemoteConnect processes, then restart RemoteConnect.</p>
<p>Logic Editor</p>	<p>Logic editor or Types Library update tool library modification</p> <p>Symptoms</p> <p>SCADAPack Logic Editor or Types Library Update tool reports the library is opened by another application when attempting to modify the logic library</p> <p>Steps to resolve</p> <p>Check that no instances of Unity Pro, Control Expert, and RemoteConnect/SCADAPack x70 Logic Editor are running. Launch the Task Manager and shut down any Unity Pro, Control Expert, and RemoteConnect/SCADAPack x70 Logic Editor processes. If the</p>

	<p>symptoms persist, it is likely that Windows folder permissions are incorrect.</p> <p>Check the following:</p> <ol style="list-style-type: none">1. With administrator privilege right-click on the following folder: C:\ProgramData\Schneider Electric2. Select Properties.3. Select the Security tab.4. Click Edit.5. Click on the Users entry in the Group or user names section.6. Scroll down the Permissions for Users area until you see a row called "Write".7. Check the box in the "Allow" column for the "Write" row.8. Click OK. The security settings will update on the sub-folders.9. Click OK to exit the Properties dialog.
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6.5.12 SCADAPack x70 and 6601 Firmware Version Compatibility

Customer Guidance for SCADAPack 47x

SCADAPack 47x supports 6601 input output module firmware version 2.0.20 and later.

Customer Guidance for SCADAPack 57x

6601 upgrade recommendations: Upgrade 6601 input output modules (both external and built into SP575) to firmware version 2.0.20 and bootloader version 1.80.10. For 6601 input output modules shipped with firmware 1.77.131 or earlier, and where extended over-range capabilities (up to 22 mA) are required, the module may be returned to a Schneider Electric facility for recalibration.

6601 minimum firmware version: 6601 input output modules shipped from the factory with 1.80.6 or 1.80.10 firmware should not be downgraded to versions earlier than 1.80.6.

NOTICE

LOSS OF SENSOR ACCURACY

If you use firmware versions that are incompatible with extended over-range calibration on 6601 analog inputs, the analog inputs may report values 10% lower than the actual value.

Use only firmware versions that are compatible with extended over-range calibration.

Do not use 6601 firmware earlier than 1.80.6 with extended over-range calibration. They are not compatible.

For information on SCADAPack 57x firmware versions 9.03 or earlier, refer to the RemoteConnect R2.0 release notes in the documentation.

Failure to follow these instructions can result in equipment damage.

A new calibration format for 6601 analog inputs has been added to support extended over-range capabilities. Interoperability of various versions of firmware and calibration is described below.

	SP57x Firmware	6601 Firmware	6601 Calibration	6601 AI Value	Over-range	Comment
✓	9.0.4 or later	1.77.131 or earlier	0...20 mA	Reported normally	Always active at 20.05mA	
✓	9.0.4 or later	1.80.06 or later	0...20 mA	Reported normally	Always active at 20.05mA	
✓	9.0.4 or later	1.80.06 or later	0...22 mA	Reported normally	Always active at 22.00mA	Recommended choice for new installations
✗	9.0.4 or later	1.77.131 or earlier	0...22 mA	AI report. 10% lower values	Always active at 20.05mA	NOT RECOMMENDED. Should only occur when a 6601 is mistakenly downgraded from 1.80.6 to an earlier version.

6.6 SCADAPack x70 R2.5.2 Release Notes 04/2021

SCADAPack x70 R2.5.2 was first available in April 2021.

Upgrade Requirements

It is highly recommended that updates be installed on your SCADAPack 57x devices if using:

- SCADAPack 57x firmware version 9.1.2 and earlier, or
- SCADAPack 57x bootloader firmware version 1.10.

First, install SCADAPack 57x firmware version 9.2.1 or newer, then install SCADAPack 57x bootloader firmware version 1.30 or newer.

⚠ WARNING**UNINTENDED EQUIPMENT OPERATION**

Upgrade SCADAPack 57x firmware version 9.1.2 and earlier versions to firmware version 9.2.1 or newer.

Failure to follow these instructions can result in death or serious injury.

⚠ WARNING**UNINTENDED EQUIPMENT OPERATION**

Upgrade SCADAPack 57x bootloader firmware version 1.10 to bootloader firmware version 1.30 or newer. Cold boot the SCADAPack 57x device following the upgrade.

Failure to follow these instructions can result in death or serious injury.

SCADAPack 57x bootloader firmware version 1.30 corrects a start-up initialization issue and digital output initialization issue.

SCADAPack 57x firmware version 9.2.1 corrects an issue for users of firmware version 9.1.2 and earlier. Logic variables T_SPx70_INT and T_SPx70_UINT may indicate incorrect values following an online logic modification and a SCADAPack 57x device restart.

The firmware in this release includes these corrections.

6.6.1 Installation Requirements, Instructions, and Troubleshooting

Refer to “Software Installation.pdf” located both at the root of the folder that contains the installation files, and SCADAPack Software Installation in the documentation set that is installed with RemoteConnect.

6.6.2 Application and Firmware Versions

SCADAPack x70 RemoteConnect application version is 3.8.2

- SCADAPack DNP3 Communication DTM version is 3.8
- SCADAPack x70 Device DTM version is 3.8
- SCADAPack x70 Logic Editor version is 14.0 - 200313
- Schneider Electric Generic HART DTM version is 5.1.1189.11
- HART STB Multiplexer Communication DTM version is 1.0.8.0
- SCADAPack x70 English Documentation version is 3.8.2
- SCADAPack x70 French Documentation version is 1.2.3

SCADAPack x70 Security Administrator version is 1.6.2

SCADAPack 47x firmware version is 9.5.2

SCADAPack 47x bootloader version is 1.00

SCADAPack 57x firmware version is 9.5.2

SCADAPack 57x bootloader version is 1.30

6601 I/O module firmware version is 2.2.27

6601 I/O module bootloader version is 2.2.27

6602 I/O module firmware version is 2.0.123

6602 I/O module bootloader version is 2.0.123

6607 I/O module firmware version is 2.2.4

6607 I/O module bootloader version is 2.2.4

6.6.3 Software and Firmware Version Compatibility

RemoteConnect version 3.8.2 is intended for use with SCADAPack x70 firmware version 9.5.2.

NOTICE

INCONSISTENT DATA, UNPREDICTABLE RESULTS

RemoteConnect versions R2.0 and later are not compatible with projects created with RemoteConnect versions R1.6 and earlier.

See the release notes for RemoteConnect version 2.0 in the documentation for more instructions.

Failure to follow these instructions can result in equipment damage.

6.6.4 SCADAPack 57x Hardware and Firmware Version Compatibility

SCADAPack 570, 574, and 575 modules with hardware version V4.00 and later require minimum bootloader and operating system firmware versions, as described in the table below.

If you attempt to install bootloader firmware 1.30 or earlier on a SCADAPack 57x device with hardware version 4.00 or later, the firmware installation will be unsuccessful. System status code 1060 will be generated. Avoid using bootloader firmware 1.30 or earlier with SCADAPack 57x hardware versions 4.00 or later.

If you attempt to install operating system firmware 9.4.3 or earlier on a SCADAPack 57x device with hardware version 4.00 or later, the firmware installation will be unsuccessful. System status

code 1061 will be generated. Avoid using operating system firmware version 9.4.3 or earlier with SCADAPack 57x hardware versions 4.00 or later.

See table below for hardware and firmware compatibility.

	SP57x Hardware Version	SP57x Bootloader Firmware Version	SP57x Operating System Firmware Version	Comment
✓	3.02 or earlier	any	any	Use bootloader version 1.30 or later. See SCADAPack 57x Upgrade Requirements earlier in this document.
✓	4.00 or later	1.40 or later	9.5.1 or later	
✗	4.00 or later	1.30 or earlier are not supported	9.4.3 or earlier are not supported	Use Bootloader firmware version 1.40 or later. Use Operating system firmware version 9.5.1 or later.

You can check the SCADAPack 57x hardware version, bootloader firmware version, and operating system firmware version by using RemoteConnect online **Additional Functions > Get Device Information** and opening the retrieved text file; or by using the SCADAPack command line VER command.

6.6.5 Supported Devices

- SCADAPack 470
- SCADAPack 474
- SCADAPack 570
- SCADAPack 574
- SCADAPack 575

6.6.6 Supported Operating Systems

- Windows 8.1 Professional (32-bit or 64-bit)
- Windows 10 Professional (32-bit or 64-bit)
- Windows Server 2016

6.6.7 SCADAPack RemoteConnect, Unity Pro, and Control Expert Compatibility

RemoteConnect installations can coexist with specific Unity Pro or Control Expert installations. If RemoteConnect is installed on a computer that had Unity Pro or Control Expert installed previously, the RemoteConnect installation automatically confirms that components in the SCADAPack x70 Logic Editor and Unity Pro or Control Expert are correctly referenced. If Unity Pro or Control Expert is installed or upgraded on a computer that already had RemoteConnect installed, then a *repair* process is likely required on RemoteConnect to confirm that components are correctly referenced. Use *Run as administrator* to run the repair process.

The Unity Pro or Control Expert versions that are verified as suitable for coexisting installation with RemoteConnect are:

- Unity Pro version 13.0*
- Unity Pro version 13.1*
- EcoStruxure Control Expert version 14.0
- EcoStruxure Control Expert version 14.1
- EcoStruxure Control Expert version 15.0

* RemoteConnect has a known issue with Unity Pro version 13.0 and 13.1 on Windows French edition. See WI: [50233](#) in the Known Issues section below.

6.6.8 New and Improved Features (R2.5.2)

None

6.6.9 Fixed Issues (R2.5.2)

WI: 63234	Alert time deadband settings could cause a SCADAPack x70 Processor Exception and Task Watchdog. This is corrected.
WI: 63258	RemoteConnect reported invalid object names on DDT type objects after reading a valid application from the SCADAPack RTU. This is corrected.

6.6.10 Known Issues (R2.5.2)

Installation	<p>Control Expert and Unity Pro installation compatibility</p> <p>The SCADAPack RemoteConnect Configuration Software installation process and Control Expert / Unity Pro software installation process can interfere with one another. It is recommended that when installing new versions of Control Expert / Unity Pro software that the repair installation option be run for SCADAPack RemoteConnect. Coexisting installations of</p>
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	<p>RemoteConnect and Unity Pro are supported for Unity Pro versions 13.0, 13.1, and EcoStruxure Control Expert version 14.0, 14.1 and 15.0.</p> <p>Workaround: Follow the relevant Post-installation Steps for the Unity Pro or Control Expert version in the Software installation Manual.</p>
WI: 47841	<p>When reconfiguring a SCADAPack RTU from one large configuration to another large configuration, the configuration rebuild might not succeed and would report configuration log messages such as “# 565: Unable to create object due to insufficient configuration memory space”.</p> <p>Workaround: Cold boot the RTU before applying the new configuration. Alternatively, apply a configuration with a very small number of objects and restart the RTU. The new large configuration should then be accepted.</p>
WI: 50233	<p>Installing Unity Pro v13.0 or v13.1 on Windows (French edition) followed by RemoteConnect installs shortcuts to All programs > Schneider Electric > SoCollaborative > Unity Pro for both Unity Pro and SCADAPack Logic applications.</p> <p>Workaround: Identify, from the shortcut path properties, which shortcuts relate to SCADAPack Logic.</p>
WI: 54918	<p>The SD card on the SCADPack 47x is not supported.</p> <p>Workaround: Use a USB mass storage device (USB drive) instead.</p>
WI: 59358	<p>A USB C connection from a PC does not work with the SCADAPack 47x USB C port.</p> <p>Workaround: Use a USB A port on the PC to connect to the USB C port on the SCADAPack 47x.</p>
WI: 59220	<p>Logic Editor Memory Consumption dialog shows incorrect values and calculates the % of memory used using incorrect values. This is displayed with the Mode > Memory Consumption command. When memory usage is 87% or higher on the dialog, the SCADAPack RTU will be unable to load the application. When writing to the RTU the message “PLC program internal memory full” is displayed. The Greatest value below the graph is correct. The value above the graph should read 3072 Kbytes.</p> <p>Workaround:</p> <p>Multiply the % usage values in the graph on the left by 1.16 to get the actual values.</p> <p>Ignore the % memory available value in the graph on the left.</p> <p>Subtract 525000 from the Total (memory available) value below the graph on the left to get the actual value.</p>
WI: 62703	<p>The telnet command prompt will not completely display long output in the following cases and others.</p>

	<ul style="list-style-type: none"> • NETINFO output when the table is greater than 46 entries • TYPE output when displaying a .RTU file or other long files • Other commands with long output <p>Workarounds:</p> <p>Use a serial port command prompt when connected locally.</p> <p>Long NETINFO output can be obtained by executing the GETINFO command, transferring the file created to a PC, and opening it on the PC.</p> <p>Long files can be examined by transferring the file created to a PC and opening it on the PC.</p>
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6.6.11 Post Installation Troubleshooting

RemoteConnect and Logic Editor Start Up	<p>SCADAPack RemoteConnect Configuration Software start-up may be blocked from reopening if previous instances of RemoteConnect or the Logic Editor were not closed cleanly.</p> <p>Workaround: Launch the Task Manager and shut down any RemoteConnect processes, then restart RemoteConnect.</p>
Logic Editor	<p>Logic editor or Types Library update tool library modification</p> <p>Symptoms</p> <p>SCADAPack Logic Editor or Types Library Update tool reports the library is opened by another application when attempting to modify the logic library</p> <p>Steps to resolve</p> <p>Check that no instances of Unity Pro, Control Expert, and RemoteConnect/SCADAPack x70 Logic Editor are running. Launch the Task Manager and shut down any Unity Pro, Control Expert, and RemoteConnect/SCADAPack x70 Logic Editor processes. If the symptoms persist, it is likely that Windows folder permissions are incorrect.</p> <p>Check the following:</p> <ol style="list-style-type: none"> 1. With administrator privilege right-click on the following folder: C:\ProgramData\Schneider Electric 2. Select Properties. 3. Select the Security tab. 4. Click Edit. 5. Click on the Users entry in the Group or user names section.

- | | |
|--|---|
| | <ol style="list-style-type: none"> 6. Scroll down the Permissions for Users area until you see a row called "Write". 7. Check the box in the "Allow" column for the "Write" row. 8. Click OK.
The security settings will update on the sub-folders. 9. Click OK to exit the Properties dialog. |
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6.6.12 SCADAPack x70 and 6601 Firmware Version Compatibility

Customer Guidance for SCADAPack 47x

SCADAPack 47x supports 6601 input output module firmware version 2.0.20 and later.

Customer Guidance for SCADAPack 57x

6601 upgrade recommendations: Upgrade 6601 input output modules (both external and built into SP575) to firmware version 2.0.20 and bootloader version 1.80.10. For 6601 input output modules shipped with firmware 1.77.131 or earlier, and where extended over-range capabilities (up to 22 mA) are required, the module may be returned to a Schneider Electric facility for recalibration.

6601 minimum firmware version: 6601 input output modules shipped from the factory with 1.80.6 or 1.80.10 firmware should not be downgraded to versions earlier than 1.80.6.

NOTICE	
<p>LOSS OF SENSOR ACCURACY</p> <p>If you use firmware versions that are incompatible with extended over-range calibration on 6601 analog inputs, the analog inputs may report values 10% lower than the actual value.</p> <p>Use only firmware versions that are compatible with extended over-range calibration.</p> <p>Do not use 6601 firmware earlier than 1.80.6 with extended over-range calibration. They are not compatible.</p> <p>For information on SCADAPack 57x firmware versions 9.03 or earlier, refer to the RemoteConnect R2.0 release notes in the documentation.</p> <p>Failure to follow these instructions can result in equipment damage.</p>	

A new calibration format for 6601 analog inputs has been added to support extended over-range capabilities. Interoperability of various versions of firmware and calibration is described below.

	SP57x Firmw are	6601 Firmw are	6601 Calibrati on	6601 AI Value	Over-range	Comment

✓	9.0.4 or later	1.77.131 or earlier	0...20 mA	Reported normally	Always active at 20.05mA	
✓	9.0.4 or later	1.80.06 or later	0...20 mA	Reported normally	Always active at 20.05mA	
✓	9.0.4 or later	1.80.06 or later	0...22 mA	Reported normally	Always active at 22.00mA	Recommended choice for new installations
✗	9.0.4 or later	1.77.131 or earlier	0...22 mA	AI report. 10% lower values	Always active at 20.05mA	NOT RECOMMENDED. Should only occur when a 6601 is mistakenly downgraded from 1.80.6 to an earlier version.

6.7 SCADAPack x70 R2.5.1 Release Notes 01/2021

SCADAPack x70 R2.5.1 was first available in January 2021.

Upgrade Requirements

It is highly recommended that updates be installed on your SCADAPack 57x devices if using:

- SCADAPack 57x firmware version 9.1.2 and earlier, or
- SCADAPack 57x bootloader firmware version 1.10.

First, install SCADAPack 57x firmware version 9.2.1 or newer, then install SCADAPack 57x bootloader firmware version 1.30 or newer.

 **WARNING**

UNINTENDED EQUIPMENT OPERATION

Upgrade SCADAPack 57x firmware version 9.1.2 and earlier versions to firmware version 9.2.1 or newer.

Failure to follow these instructions can result in death or serious injury.

⚠ WARNING**UNINTENDED EQUIPMENT OPERATION**

Upgrade SCADAPack 57x bootloader firmware version 1.10 to bootloader firmware version 1.30 or newer. Cold boot the SCADAPack 57x device following the upgrade.

Failure to follow these instructions can result in death or serious injury.

SCADAPack 57x bootloader firmware version 1.30 corrects a start-up initialization issue and digital output initialization issue.

SCADAPack 57x firmware version 9.2.1 corrects an issue for users of firmware version 9.1.2 and earlier. Logic variables T_SPx70_INT and T_SPx70_UINT may indicate incorrect values following an online logic modification and a SCADAPack 57x device restart.

The firmware in this release includes these corrections.

6.7.1 Installation Requirements, Instructions, and Troubleshooting

Refer to “Software Installation.pdf” located both at the root of the folder that contains the installation files, and SCADAPack Software Installation in the documentation set that is installed with RemoteConnect.

6.7.2 Application and Firmware Versions

SCADAPack x70 RemoteConnect application version is 3.8.1

- SCADAPack DNP3 Communication DTM version is 3.8
- SCADAPack x70 Device DTM version is 3.8
- SCADAPack x70 Logic Editor version is 14.0 - 200313
- Schneider Electric Generic HART DTM version is 5.1.1189.11
- HART STB Multiplexer Communication DTM version is 1.0.8.0
- SCADAPack x70 English Documentation version is 3.8.1
- SCADAPack x70 French Documentation version is 1.2.3

SCADAPack x70 Security Administrator version is 1.6.2

SCADAPack 47x firmware version is 9.5.1

SCADAPack 47x bootloader version is 1.00

SCADAPack 57x firmware version is 9.5.1

SCADAPack 57x bootloader version is 1.30

6601 I/O module firmware version is 2.2.27

6601 I/O module bootloader version is 2.2.27

6602 I/O module firmware version is 2.0.123

6602 I/O module bootloader version is 2.0.123

6607 I/O module firmware version is 2.2.4

6607 I/O module bootloader version is 2.2.4

6.7.3 Software and Firmware Version Compatibility

RemoteConnect version 3.8.1 is intended for use with SCADAPack x70 firmware version 9.5.1.

NOTICE	
INCONSISTENT DATA, UNPREDICTABLE RESULTS	
RemoteConnect versions R2.0 and later are not compatible with projects created with RemoteConnect versions R1.6 and earlier.	
See the release notes for RemoteConnect version 2.0 in the documentation for more instructions.	
Failure to follow these instructions can result in equipment damage.	

6.7.4 SCADAPack 57x Hardware and Firmware Version Compatibility

SCADAPack 570, 574 and 575 modules with hardware version V4.00 and later require minimum bootloader and operating system firmware versions, as described in the table below.

If you attempt to install bootloader firmware 1.30 or earlier on a SCADAPack 57x device with hardware version 4.00 or later, the firmware installation will be unsuccessful. System status code 1060 will be generated. Avoid using bootloader firmware 1.30 or earlier with SCADAPack 57x hardware versions 4.00 or later.

If you attempt to install operating system firmware 9.4.3 or earlier on a SCADAPack 57x device with hardware version 4.00 or later, the firmware installation will be unsuccessful. System status code 1061 will be generated. Avoid using operating system firmware version 9.4.3 or earlier with SCADAPack 57x hardware versions 4.00 or later.

See table below for hardware and firmware compatibility.

	SP57x Hardware Version	SP57x Bootloader	SP57x Operating System	Comment

		Firmware Version	Firmware Version	
✓	3.02 or earlier	any	any	Use bootloader version 1.30 or later. See SCADAPack 57x Upgrade Requirements earlier in this document.
✓	4.00 or later	1.40 or later	9.5.1 or later	
✗	4.00 or later	1.30 or earlier are not supported	9.4.3 or earlier are not supported	Use Bootloader firmware version 1.40 or later. Use Operating system firmware version 9.5.1 or later.

You can check the SCADAPack 57x hardware version, bootloader firmware version, and operating system firmware version by using RemoteConnect online **Additional Functions > Get Device Information** and opening the retrieved text file; or by using the SCADAPack command line VER command.

6.7.5 Supported Devices

SCADAPack 470

SCADAPack 474

SCADAPack 570

SCADAPack 574

SCADAPack 575

6.7.6 Supported Operating Systems

Windows 8.1 Professional (32-bit or 64-bit)

Windows 10 Professional (32-bit or 64-bit)

Windows Server 2016

6.7.7 SCADAPack RemoteConnect, Unity Pro, and Control Expert Compatibility

RemoteConnect installations can coexist with specific Unity Pro or Control Expert installations. If RemoteConnect is installed on a computer that had Unity Pro or Control Expert installed previously, the RemoteConnect installation automatically confirms that components in the SCADAPack x70 Logic Editor and Unity Pro or Control Expert are correctly referenced. If Unity Pro or Control Expert is installed or upgraded on a computer that already had RemoteConnect installed, then a **repair** process is likely required on RemoteConnect to confirm that components are correctly referenced. Use **Run as administrator** to run the repair process.

The Unity Pro or Control Expert versions that are verified as suitable for coexisting installation with RemoteConnect are:

- Unity Pro version 13.0*
- Unity Pro version 13.1*
- EcoStruxure Control Expert version 14.0
- EcoStruxure Control Expert version 14.1
- EcoStruxure Control Expert version 15.0

* RemoteConnect has a known issue with Unity Pro version 13.0 and 13.1 on Windows French edition. See WI: [50233](#)^[90] in the Known Issues section below.

6.7.8 New and Improved Features (R2.5.1)

WI: 53895	SCADAPack 47x and 57x support 5505 RTD analog-input modules.
WI: 60800	SCADAPack 47x and 57x support 5410 counter-input modules.
WI: 61414	SCADAPack 47x supports the 6602 HART module with a limited feature set.
WI: 60799	SCADAPack 57x and 47x support IEC 60870-5-104 protocol.
WI: 62006	The Clear Counters command was removed from RemoteConnect. This function only worked with objects mapped to DNP3 points. This function is superseded by the ability to use the object browser, including defining saved browser presets, allowing the user to define a browser table with presets of 0 as a short-cut method for defining nominated counters to clear.
WI: 61162	EFB Toolkit v14 is supported by the logic editor. This feature allows adding custom C function blocks to the logic library, for use by SCADAPack x70 applications.
WI: 47679	Added the NETINFO command to provide additional diagnostics of IP connections.
WI: 61353	Added Geo SCADA Import option for the SCADAPack 47x platform.
WI: 61368	Added XEF and ZEF file formats to the "Import Logic Project" option.
WI: 61308	Added support for SCADAPack 57x version 4 hardware in Boot loader and firmware.

WI: 59095	Factory boot aborts after 60 seconds to guard against a boot mode switch stuck in the closed position. A normal boot is performed if the factory boot aborts.
WI: 54171	Improved the Logic Status indication when logic is not run due to an empty object database.
WI: 55732	Added GETDNPROUTE command to show DNP3 routes.
WI: 61681	Improved 6602 I/O module HART update time to 10 seconds maximum.
WI: 62075	Clarified that Excel import and export support only the XLS format.
WI: 51392	Improved deletion of objects that are mapped to user DDT variable instances. Previously, if the removed instance variable was the only remaining instance of the DDT type, then the DDT type definition was also deleted.
WI: 48685	Added a software watchdog for logic tasks to improve behavior if a logic program contains an infinite loop or the execution time is unexpectedly long.
WI: 62164	Disabled the Under Range Limit, Over Range Limit and Zero Threshold Limit by default for new objects.
WI: 62167	Improved the usability of the Object Table by removing the source type column, replacing the data type column with an icon, changing the order of the last 4 columns to IEC-M, IEC-C, Modbus, DNP3, and moving some table controls.
WI: 62154	Side by side operation with Control Expert 15 is supported.
WI: 62518	Updated the DNP3 device profile documentation.
WI: 62081	Improved documentation of IP routing.
WI: 61333	Updated the technical support information for Australia, New Zealand, and Canada.
WI: 61600	Integrated documentation of battery replacement that was formerly supplied as a separate document.
WI: 60738	Clarified logic documentation for %SW2, %SW3.
WI: 61010	Clarified that file system is not case sensitive in documentation.
WI: 61321	Added Porting Guide for SCADAPack E to SCADAPack RemoteConnect to the documentation.

WI: 49663	Improved DNP3 protocol descriptions in SCADA Protocols Technical Reference.
WI: 55311	Changed name of ClearSCADA to EcoStruxure Geo SCADA Expert to match the new name for the product.
WI: 60668	Improved the further action documentation of system status code 1038.
WI: 61009	Updated the description of the Discard New Events if Buffer Full parameter.
WI: 61916	Addressed security vulnerability CVE-2020-12525 and improved solution to security vulnerability CVE-2020-7528.
WI: 61917	Added additional layers of defence to the solution for RemoteConnect security vulnerability CVE-2020-7529. There is no change in functionality.

6.7.9 Fixed Issues (R2.5.1)

WI: 47414	6602 I/O module analog outputs periodically reported field instrument not yet scanned. This is corrected.
WI: 47417	The 6602 analog output module did not limit the output for out of range values. This is corrected. Output values greater than the maximum are limited to 20 mA. Output values less than the minimum are limited to 0 mA.
WI: 47824	The documentation of the Delete command function block didn't state that the function block may not remove all files. The documentation now states ""Deleting hundreds of files may require multiple executions of the del command, as the del command may time out before all the files are removed. Check the directory contents following the completion of the command. Execute the command again if some files were not deleted.""
WI: 48517	F_DeviceReady function block only worked with a forward slash in paths but F_DirInfo EFB works with both forward and back slash. Both function blocks now work with forward and back slashes.
WI: 48561	USB mass storage device (drive) size was always detected as 3.2 GB. This is corrected.
WI: 52795	HART devices were not correctly discovered by 6602 modules when they were unconnected at power up and connected later. This is corrected.
WI: 55707	SCADAPack 47x folder date was incorrect (01/01/1970) after factory boot. This is corrected.

WI: 56401	SCADAPack 47x VER Command did not display 5304 and 5405 module versions. This is corrected.
WI: 57284	The whoami command displayed incorrect information for Serial 5 on SCADAPack 47x. This is corrected.
WI: 58504	F_COPY function block returned status code 0 (success) when trying to overwrite an open file. This is corrected and the function block now returns code -1008, 'Destination file name in use'.
WI: 58831	The F_DelTree function block incorrectly returned a status code of -1 when attempting to delete a non-existent directory. It now returns status code -1015 (File or directory does not exist).
WI: 59184	Diagnostics reported "Duplicate requests removed from queue. Request cancelled for IED 53 (Duplicate Request)" when polling. This is the intended operation. The unnecessary message was removed.
WI: 59276	RemoteConnect closed unexpectedly when adding an Altivar ATV6xx drive DTM object. This is corrected.
WI: 59364	10 Mbps Ethernet connection did not work on SCADAPack 47x devices. This is corrected.
WI: 59379	File diagnostics maximum file size was limited to 12.5 MB on SCADAPack 47x. This is corrected.
WI: 59598	The route print command did not include "Route Priority: HOST NETWORK GATEWAY DEFAULT-GW" output. This is corrected.
WI: 60058	The NAME output of the F_FindFile Function block was truncated. This is corrected. The full name is now returned.
WI: 60281	Counter inputs from a 6601 I/O module could report incorrect counts if the 6601 module was disconnected and reconnected from the I/O bus with power on. This is corrected.
WI: 60284	The documentation of the F_FindFile function block was unclear. This is corrected.
WI: 60924	The FREERUN function block output was affected by Real Time Clock (RTC) changes on SCADAPack 57x. This is corrected.
WI: 61081	The logic task was terminated after setting a break point in the logic application. This is corrected.
WI: 61159	Disabling the telnet service could cause a device restart. This is corrected.

WI: 61255	RemoteConnect was not able to open an RCZ file on systems where FDT 2.1 libraries were installed by another application. This is corrected.
WI: 61283	The documentation for system status code 1410 did not describe all the conditions that set the flag. The documentation now states "This condition is checked when the device is started and when the clock is set".
WI: 61377	Writes to UINT arrays longer than 512 elements mapped to RemoteConnect objects from a logic program updated the wrong element in the object. This is corrected.
WI: 61378	Unexpected DNP3 unsolicited messages were sent if the Triggered Event Notification Delay was larger than the Minimum Unsolicited TX Event Delay. The configured Class min events buffered event value was disregarded and the unsolicited events were sent to the configured host as per the Minimum Unsolicited Event Tx Delay setting. This is corrected.
WI: 61407	Logic Editor R2.4.2 could not open a project created in R2.4.1 (field trial release). This is corrected.
WI: 61522	SCADAPack 47x could lose communication with 6601 and 5000 series I/O modules following a 6601 firmware or bootloader update. The SCADAPack 47x would require a restart to establish communication. This is corrected.
WI: 61542	Locked objects could not be connected to a Modbus Scanner in RemoteConnect. This is corrected.
WI: 61574	Update & Build Logic could be executed before a project was saved, resulting in inconsistent project files. The Update & Build logic button is now disabled until the project has been saved.
WI: 61669	The F_FindFile function block didn't use the /user directory when the input "DIR" was not specified. This is corrected.
WI: 61702	French language selection did not work with a side-by-side installation of Control Expert 14.1. This is corrected.
WI: 61728	An internet connection was required during installation of RemoteConnect 2.4.2 to obtain an intermediate certificate. The internet connection will still be used if present with RemoteConnect R2.5.1. If a connection is not available, the certificate can be installed manually. Instructions are provided in the Software Installation manual.
WI: 61750	CPU temperature in degrees F was rounded down to the nearest degree. This is corrected. The CPU temperature is returned as a floating-point value rounded to the nearest tenth of a degree.

WI: 61782	The HART_6602Control function block only worked when the MODULE input was set to 0. This is corrected. Set the MODULE input to the address of the 6602 module.
WI: 61783	The Device Listen Port setting of the Modbus scanner changed back to 502 (the default) when reading from the SCADAPack device. The setting now retains the configured value.
WI: 61799	The SCADAPack 47x did not report system status code 1410 when the battery was low. This is corrected.
WI: 61810	Documentation for OBJ Readfield and OBJ_WriteField function blocks listed an incorrect DATATYPE for ATTRIB_EventDevUnsol. This is corrected.
WI: 61837	Documentation incorrectly stated that DNP3 events were preserved across firmware upgrades. This is corrected. There is no change to product functionality.
WI: 62052	Switching the Host interface could send DNP3 Request Link Status messages (used for the DNP/TCP keep-alive) out the wrong port. This is corrected.
WI: 62320	Documentation incorrectly described online modification of logic and objects in the Modifying a Logic Application Online topic. This is corrected.
WI: 62328	DNP3 Objects with Status Flags documentation incorrectly stated bit [4] - Local Forced Data is "Not Used". The documentation now describes the operation of this bit.
WI: 62365	When a Structure element was selected, the function Unlock Variable > Logic variable Name list box was blank after pressing the Unlock button. This is corrected.
WI: 62710	The wiring example for the 6607 I/O module digital outputs showed diodes in the wrong orientation. The example now shows the correct diode orientation and clarifies the wiring connections.

6.7.10 Known Issues (R2.5.1)

Installation	<p>Control Expert and Unity Pro installation compatibility</p> <p>The SCADAPack RemoteConnect Configuration Software installation process and Control Expert / Unity Pro software installation process can interfere with one another. It is recommended that when installing new versions of Control Expert / Unity Pro software that the repair installation option be run for SCADAPack RemoteConnect. Coexisting installations of</p>
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	<p>RemoteConnect and Unity Pro are supported for Unity Pro versions 13.0, 13.1, and EcoStruxure Control Expert version 14.0, 14.1 and 15.0.</p> <p>Workaround: Follow the relevant Post-installation Steps for the Unity Pro or Control Expert version in the Software installation Manual.</p>
WI: 47841	<p>When reconfiguring a SCADAPack RTU from one large configuration to another large configuration, the configuration rebuild might not succeed and would report configuration log messages such as “# 565: Unable to create object due to insufficient configuration memory space”.</p> <p>Workaround: Cold boot the RTU before applying the new configuration. Alternatively, apply a configuration with a very small number of objects and restart the RTU. The new large configuration should then be accepted.</p>
WI: 50233	<p>Installing Unity Pro v13.0 or v13.1 on Windows (French edition) followed by RemoteConnect installs shortcuts to All programs > Schneider Electric > SoCollaborative > Unity Pro for both Unity Pro and SCADAPack Logic applications.</p> <p>Workaround: Identify, from the shortcut path properties, which shortcuts relate to SCADAPack Logic.</p>
WI: 54918	<p>The SD card on the SCADAPack 47x is not supported.</p> <p>Workaround: Use a USB mass storage device (USB drive) instead.</p>
WI: 59358	<p>A USB C connection from a PC does not work with the SCADAPack 47x USB C port.</p> <p>Workaround: Use a USB A port on the PC to connect to the USB C port on the SCADAPack 47x.</p>
WI: 59220	<p>Logic Editor Memory Consumption dialog shows incorrect values and calculates the % of memory used using incorrect values. This is displayed with the Mode > Memory Consumption command. When memory usage is 87% or higher on the dialog, the SCADAPack RTU will be unable to load the application. When writing to the RTU the message “PLC program internal memory full” is displayed. The Greatest value below the graph is correct. The value above the graph should read 3072 Kbytes.</p> <p>Workaround:</p> <p>Multiply the % usage values in the graph on the left by 1.16 to get the actual values.</p> <p>Ignore the % memory available value in the graph on the left.</p> <p>Subtract 525000 from the Total (memory available) value below the graph on the left to get the actual value.</p>
WI: 62703	<p>The telnet command prompt will not completely display long output in the following cases and others.</p>

	<ul style="list-style-type: none"> • NETINFO output when the table is greater than 46 entries • TYPE output when displaying a .RTU file or other long files • Other commands with long output <p>Workarounds:</p> <p>Use a serial port command prompt when connected locally.</p> <p>Long NETINFO output can be obtained by executing the GETINFO command, transferring the file created to a PC, and opening it on the PC.</p> <p>Long files can be examined by transferring the file created to a PC and opening it on the PC.</p>
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6.7.11 Post Installation Troubleshooting

RemoteConnect and Logic Editor Start Up	<p>SCADAPack RemoteConnect Configuration Software start-up may be blocked from reopening if previous instances of RemoteConnect or the Logic Editor were not closed cleanly.</p> <p>Workaround: Launch the Task Manager and shut down any RemoteConnect processes, then restart RemoteConnect.</p>
Logic Editor	<p>Logic editor or Types Library update tool library modification</p> <p>Symptoms</p> <p>SCADAPack Logic Editor or Types Library Update tool reports the library is opened by another application when attempting to modify the logic library</p> <p>Steps to resolve</p> <p>Check that no instances of Unity Pro, Control Expert, and RemoteConnect/SCADAPack x70 Logic Editor are running. Launch the Task Manager and shut down any Unity Pro, Control Expert, and RemoteConnect/SCADAPack x70 Logic Editor processes. If the symptoms persist, it is likely that Windows folder permissions are incorrect.</p> <p>Check the following:</p> <ol style="list-style-type: none"> 1. With administrator privilege right-click on the following folder: C:\ProgramData\Schneider Electric 2. Select Properties. 3. Select the Security tab. 4. Click Edit. 5. Click on the Users entry in the Group or user names section.

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| | <ol style="list-style-type: none"> 6. Scroll down the Permissions for Users area until you see a row called "Write". 7. Check the box in the "Allow" column for the "Write" row. 8. Click OK.
The security settings will update on the sub-folders. 9. Click OK to exit the Properties dialog. |
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6.7.12 SCADAPack x70 and 6601 Firmware Version Compatibility

Customer Guidance for SCADAPack 47x

SCADAPack 47x supports 6601 input output module firmware version 2.0.20 and later.

Customer Guidance for SCADAPack 57x

6601 upgrade recommendations: Upgrade 6601 input output modules (both external and built into SP575) to firmware version 2.0.20 and bootloader version 1.80.10. For 6601 input output modules shipped with firmware 1.77.131 or earlier, and where extended over-range capabilities (up to 22 mA) are required, the module may be returned to a Schneider Electric facility for recalibration.

6601 minimum firmware version: 6601 input output modules shipped from the factory with 1.80.6 or 1.80.10 firmware should not be downgraded to versions earlier than 1.80.6.

NOTICE	
LOSS OF SENSOR ACCURACY	
If you use firmware versions that are incompatible with extended over-range calibration on 6601 analog inputs, the analog inputs may report values 10% lower than the actual value.	
Use only firmware versions that are compatible with extended over-range calibration.	
Do not use 6601 firmware earlier than 1.80.6 with extended over-range calibration. They are not compatible.	
For information on SCADAPack 57x firmware versions 9.03 or earlier, refer to the RemoteConnect R2.0 release notes in the documentation.	
Failure to follow these instructions can result in equipment damage.	

A new calibration format for 6601 analog inputs has been added to support extended over-range capabilities. Interoperability of various versions of firmware and calibration is described below.

	SP57x Firmw are	6601 Firmw are	6601 Calibrati on	6601 AI Value	Over-range	Comment

✓	9.0.4 or later	1.77.131 or earlier	0...20 mA	Reported normally	Always active at 20.05mA	
✓	9.0.4 or later	1.80.06 or later	0...20 mA	Reported normally	Always active at 20.05mA	
✓	9.0.4 or later	1.80.06 or later	0...22 mA	Reported normally	Always active at 22.00mA	Recommended choice for new installations
✗	9.0.4 or later	1.77.131 or earlier	0...22 mA	AI report. 10% lower values	Always active at 20.05mA	NOT RECOMMENDED. Should only occur when a 6601 is mistakenly downgraded from 1.80.6 to an earlier version.

6.8 SCADAPack x70 R2.4.2 Release Notes 08/2020

SCADAPack x70 R2.4.2 was first available in August 2020.

Upgrade Requirements

It is highly recommended that updates be installed on your SCADAPack 57x devices if using:

- SCADAPack 57x firmware version 9.1.2 and earlier, or
- SCADAPack 57x bootloader firmware version 1.10.

First, install SCADAPack 57x firmware version 9.2.1 or newer, then install SCADAPack 57x bootloader firmware version 1.30 or newer.

 **WARNING**

UNINTENDED EQUIPMENT OPERATION

Upgrade SCADAPack 57x firmware version 9.1.2 and earlier versions to firmware version 9.2.1 or newer.

Failure to follow these instructions can result in death or serious injury.

⚠ WARNING**UNINTENDED EQUIPMENT OPERATION**

Upgrade SCADAPack 57x bootloader firmware version 1.10 to bootloader firmware version 1.30 or newer. Cold boot the SCADAPack 57x device following the upgrade.

Failure to follow these instructions can result in death or serious injury.

SCADAPack 57x bootloader firmware version 1.30 corrects a start-up initialization issue and digital output initialization issue.

SCADAPack 57x firmware version 9.2.1 corrects an issue for users of firmware version 9.1.2 and earlier. Logic variables T_SPx70_INT and T_SPx70_UINT may indicate incorrect values following an online logic modification and a SCADAPack 57x device restart.

The firmware in this release includes these corrections.

6.8.1 Installation Requirements, Instructions, and Troubleshooting

Refer to “Software Installation.pdf” located both at the root of the folder that contains the installation files, and SCADAPack Software Installation in the documentation set that is installed with RemoteConnect.

6.8.2 Application and Firmware Versions

SCADAPack x70 RemoteConnect application version is 3.7.3

- SCADAPack DNP3 Communication DTM version is 3.7
- SCADAPack x70 Device DTM version is 3.7
- SCADAPack x70 Logic Editor version is 14.0 - 200313
- Schneider Electric Generic HART DTM version is 5.1.1189.11
- HART STB Multiplexer Communication DTM version is 1.0.8.0
- SCADAPack x70 English Documentation version is 3.7.3
- SCADAPack x70 French Documentation version is 1.2.3

SCADAPack x70 Security Administrator version is 1.6.2

SCADAPack 47x firmware version is 9.4.3

SCADAPack 47x bootloader version is 1.00

SCADAPack 57x firmware version is 9.4.3

SCADAPack 57x bootloader version is 1.30

6601 I/O module firmware version is 2.1.22

6602 I/O module firmware version is 1.81.2

6602 I/O module bootloader version is 1.81.2

6607 I/O module firmware version is 2.2.4

6607 I/O module bootloader version is 2.2.4

6.8.3 Software and Firmware Version Compatibility

RemoteConnect version 3.7.3 is intended for use with SCADAPack x70 firmware version 9.4.3.

As of R2.0 and newer, RemoteConnect and SCADAPack x70 firmware is cross compatible with future software and firmware releases. This compatibility is limited to features common to the version of software and firmware available. Unknown feature configurations are parsed and do not block reconfiguration, though the features themselves may be unavailable.

NOTICE

INCONSISTENT DATA, UNPREDICTABLE RESULTS

RemoteConnect versions R2.0 and later are not compatible with projects created with RemoteConnect versions R1.6 and earlier.

See the release notes for RemoteConnect version 2.0 in the documentation for more instructions.

Failure to follow these instructions can result in equipment damage.

6.8.4 Supported Devices

SCADAPack 470

SCADAPack 474

SCADAPack 570

SCADAPack 574

SCADAPack 575

6.8.5 Supported Operating Systems

Windows 8.1 Professional (32-bit or 64-bit)

Windows 10 Professional (32-bit or 64-bit)

Windows Server 2016

6.8.6 SCADAPack RemoteConnect, Unity Pro, and Control Expert Compatibility

RemoteConnect installations can coexist with specific Unity Pro or Control Expert installations. If RemoteConnect is installed on a computer that had Unity Pro or Control Expert installed previously, the RemoteConnect installation automatically confirms that components in the SCADAPack x70 Logic Editor and Unity Pro or Control Expert are correctly referenced. If Unity Pro or Control Expert is installed or upgraded on a computer that already had RemoteConnect installed, then a *repair* process is likely required on RemoteConnect to confirm that components are correctly referenced. A *repair* process must always be **Run as administrator**.

The Unity Pro or Control Expert versions that are verified as suitable for coexisting installation with RemoteConnect are:

- Unity Pro version 13.0*
- Unity Pro version 13.1*
- EcoStruxure Control Expert version 14.0
- EcoStruxure Control Expert version 14.1

* RemoteConnect has a known issue with Unity Pro version 13.0 and 13.1 on Windows French edition. See WI: [50233](#) in the Known Issues section below.

6.8.7 New and Improved Features (R2.4.2)

WI: 53267	Added OBJ_NameToID function block and extended the OBJ_ReadField and OBJ_WriteField function blocks to support system data values.
WI: 55235	SCADAPack 47x firmware now includes a firmware recovery mode. If system firmware is corrupted or invalid, RemoteConnect can create recovery media on a USB drive. The drive can be used to replace the corrupted firmware on the RTU.
WI: 57202	SYS_PROTOCOL system data includes the following Modbus and Enron references SYS_PROTOCOL_MB_ModbusTCPPort and SYS_PROTOCOL_MB_EnronTCPUnitId.
WI: 57767	Improved robustness of configuration file parsing when unknown configuration elements are present in the file.
WI: 58243	Additional RAM memory is available on the SCADAPack 57x RTU. This improves operation with large configurations.
WI: 58703	USB drives are dismounted before restarting the RTU following a firmware patch or a command to restart the RTU.
WI: 58724	USB port DHCP lease information is cached more frequently. This improves reconnection times on USB following a power cycle or RTU restart command.

WI: 59118	User manual updated to indicate that files are closed when logic is not running.
WI: 59127	Improved the documentation and the safety message for these logic function blocks: F_DelTree, F_RMDIR, F_CLOSE, F_COPY, F_DEL, F_EOF, F_JOIN, F_Read_DINT, F_Read_STRING, F_REN, F_ROPEN, F_WOPEN, F_Write_DINT, F_Write_STRING
WI: 59175	Added OBJ_ModbusRegToID and OBJ_DNP3PointToID function blocks to SCADAPack x70 RTU System library.
WI: 59204	User manual now indicates that restarting the logic application will also disconnect the Logic editor from debug (connect) mode.
WI: 59882	The DNP3/UDP Broadcast server can be disabled in RemoteConnect if it is not required. This improves cybersecurity for systems not requiring DNP3 broadcast messages.
WI: 60193	Improved documentation for repairing Unity Pro and Control Expert installations after uninstalling RemoteConnect.
WI: 60275	SCADAPack x70 Security Administrator now requires a user-defined password for the .SDB configuration file. Opening an older format file requires defining a password for the file.
WI: 60283	Counter objects are writable from the RemoteConnect object browser. This can be used to clear a counter or set it to a specific value.
WI: 60344	<p>The F_JOIN function block is deprecated and not available in logic library LIBSET 14.0 and later. Use the Device_ExecuteCommand function block to execute an APPEND command to perform this function.</p> <p>RemoteConnect R2.4.2 can open older programs using F_JOIN. If the logic library used by the older program is not upgraded, the program will continue to function as before. If you choose to upgrade the logic library, you must modify the program to use the Device_ExecuteCommand function block.</p>
WI: 60510	Security Administrator start menu is updated for better compatibility with Windows 10.
WI: 60636	User manual was updated to describe how to save and restore logic data using files.
WI: 60778	Added a "Helpful Hints" section to the RemoteConnect installer. Hints are displayed during the installation to amuse and inform the user.
WI: 60668	Improved the documentation of status code 1038.
WI: 60716	Added troubleshooting instructions for the Logic Editor V14.0 not starting.

6.8.8 Fixed Issues (R2.4.2)

WI: 60763	Excel import of Modbus Byte Order was incorrect when the Modbus/TCP Slave had an IP address of 127.0.0.1. This is corrected.
WI: 56293	Addressed VxWorks security vulnerabilities CVE-2019-12256, CVE-2019-12260, CVE-2019-12261, CVE-2019-12263, CVE-2019-12258, CVE-2019-12259, CVE-2019-12262, CVE-2019-12265, CVE-2019-12264.
WI: 56650	The RemoteConnect bootloader firmware update did not send the final command to complete the upgrade, so the bootloader was not replaced. This is corrected.
WI: 57723	SCADAPack Hardware manuals used the term of "SCADAPack Logic" and "SCADAPack Logic Power" to refer to the power to the RTU circuits. This is replaced with "SCADAPack RTU circuitry" and "SCADAPack RTU Input Power".
WI: 58073	The OBJ_ReadField function block returned zero for ROR and ROF Quality flags. This is corrected.
WI: 58360	F_DirInfo did not indicate correct sizes for USB drives over 4 GB. The function now reports sizes in kBytes instead of bytes.
WI: 58534	RemoteConnect could not read from the RTU when there was no logic present in the RTU. This is corrected.
WI: 58535, 59392 and 60146	Configurations with many objects with logic variable types defined would fail to load the logic application. NOCONF was reported on the RemoteConnect (Online) Logic tab. System status code 5004 was reported. This is corrected.
WI: 58948	The Over Range flag from an analog input I/O module was not visible in the RemoteConnect Object Browser but was visible from logic. The flag is now shown in the object browser.
WI: 59236	Modbus Scanner polls were delayed by one cycle when the remote devices did not respond, and the TCP connection reset before the next poll. This occurred with long poll intervals. This is corrected.
WI: 59285	Logic non-volatile memory was not cleared on a cold or factory boot. The logic application was removed, but the underlying non-volatile memory still retained the last used values. When an identical application was loaded previous values reappear. This is corrected.
WI: 59416	F1 help for 'Include Time Deadband data in Class 0' showed the wrong topic. This is corrected.

WI: 59481	Serial communication function blocks (COM_READ and COM_WRITE) could crash the RTU firmware when used in cyclic mode. The function blocks are now disabled in cyclic mode and the user manual is updated to indicate these function blocks are supported only in periodic mode.
WI: 59691	The RTU did not perform a graceful shutdown of TCP connections if there was active DNP/TCP communication to the target when a DNP device restart occurs. This is corrected.
WI: 59694	The IPCONFIG command would accept ETH3 configuration on a SCADAPack 47x RTU. This is corrected.
WI: 59879 and 59998	The F_DelTree function block did not remove folders on USB drives if the folder was specified using a relative path. This is corrected.
WI: 59902	RemoteConnect crashed when transferring a file to a SCADAPack RTU when the file name was longer than 253 characters. This is corrected.
WI: 59964	6601 I/O module analog inputs could stop updating. This is corrected.
WI: 60000	A logic project could not be debugged after converting it from SCADAPack 575 to SCADAPack 470. This is corrected.
WI: 60011 and 59982	Addressed RemoteConnect security vulnerabilities with malformed project files: CVE-2020-7528 and CVE-2020-7529.
WI: 60012	Addressed a logic editor security vulnerability with file permissions: CVE-2020-7530.
WI: 60013	Addressed a RemoteConnect security vulnerability with file permissions: CVE-2020-7531.
WI: 60014	Addressed SCADAPack x70 Security Administrator security vulnerability: CVE-2020-7532.
WI: 60191	The logic SCBUser task was suspended when an invalid filename was applied to the F_WOPEN FB. This is corrected.
WI: 60233	The loading project dialog would remain open when double clicking an invalid .prj file. This is corrected.
WI: 60346	A SCADAPack 570 project could not be converted to a SCADAPack 470 project. This is corrected.
WI: 60347	SCADAPack 47x RTUs did not report the DNP3 address correctly on the USB connection. This is corrected.

WI: 60448	The SYS_CODE documentation was missing metadata information. This is corrected.
WI: 60449	There was insufficient information in the SYS_RESTART documentation. This is corrected. Additional information is provided for SYS_RESTART_ReasonMask , SYS_RESTART_TaskWdogMask, and SYS_RESTART_1_Reason through SYS_RESTART_5_Reason.
WI: 60675	Excel import of a large configuration stops at 90% for a long time before completing. Additional progress messages were added to provide better feedback. Long intervals between messages are still possible.
WI: 60701	RemoteConnect created inconsistently numbered object names for 5607 I/O modules on a SCADAPack 57x. This is corrected.
WI: 60743	Excel import and export of Modbus slave device addresses was incorrect when the Realflo flow computer option was enabled. This is corrected.
WI: 60744	The label "Maximum Record Delay" in the Serial Port settings was corrected to "Maximum Random Delay".
WI: 60749	Importing an RTZ file in RemoteConnect would not create object arrays. This is corrected.
WI: 60695	Removed SCADAPack 47x IECEx Certification from documentation and labels. This certification is not yet available for SCADAPack 47x.
WI: 57480	Some Modbus/TCP responses were not transmitted on USB if the message length was a specific size. This occurred only with some custom Modbus command for reading Realflo batch records. It could be worked around by changing the number of records read. This is corrected.
WI: 59379	FILEDIAG documentation was unclear on the default behaviour. The documentation was updated.
WI: 57284	The Modbus slave address was not displayed by the whoami command for some serial port configurations. This is corrected.
WI: 47815	The restart command help output listed several obsolete services from the SCADAPack E RTU. The options had no effect. They are removed from the help output.
WI: 59277	Addressed a third-party component vulnerability affecting Triangle MicroWorks DNP3 stack: CVE-2020-6996 Triangle MicroWorks DNP3 Outstation LibrariesDNP3 Outstation .NET Protocol components and DNP3 Outstation ANSI C source code libraries.

6.8.9 Known Issues (R2.4.2)

Installation	<p>Control Expert and Unity Pro installation compatibility</p> <p>The SCADAPack RemoteConnect Configuration Software installation process and Control Expert / Unity Pro software installation process can interfere with one another. It is recommended that when installing new versions of Control Expert / Unity Pro software that the repair installation option be run for SCADAPack RemoteConnect. Coexisting installations of RemoteConnect and Unity Pro are supported for Unity Pro versions 13.0, 13.1, and EcoStruxure Control Expert version 14.0 and 14.1.</p> <p>Workaround: Repair the installations as mentioned above. Remember to “Run as administrator” when doing a Repair.</p> <p>When installing new versions of SCADAPack RemoteConnect, the installer will automatically attempt a Repair on Unity Pro software.</p>
WI: 47824	<p>del * command leaves some files on a USB drive when there are many files on the drive.</p> <p>Workaround: Repeat the command until the files are removed.</p> <p>OR</p> <p>Connect the USB drive to a PC (or other computer) and delete the files.</p>
WI: 47841	<p>When reconfiguring a SCADAPack RTU from one large configuration to another large configuration, the configuration rebuild might not succeed and would report configuration log messages such as “# 565: Unable to create object due to insufficient configuration memory space”.</p> <p>Workaround: Cold boot the RTU before applying the new configuration. Alternatively, apply a configuration with a very small number of objects and restart the RTU. The new large configuration should then be accepted.</p>
WI: 50233	<p>Installing Unity Pro v13.0 or v13.1 on Windows (French edition) followed by RemoteConnect installs shortcuts to All programs > Schneider Electric > SoCollaborative > Unity Pro for both Unity Pro and SCADAPack Logic applications.</p> <p>Workaround: Identify, from the shortcut path properties, which shortcuts relate to SCADAPack Logic.</p>
WI: 54918	<p>The SD card on the SCADPack 47x is not supported.</p> <p>Workaround: Use a USB mass storage device (USB drive) instead.</p>
WI: 57666	<p>The 6602 I/O module is not supported on the SCADAPack 47x.</p> <p>Workaround: None.</p>
WI: 59358	<p>A USB C connection from a PC does not work with the SCADAPack 47x USB C port.</p>

	<p>Workaround: Use a USB A port on the PC to connect to the USB C port on the SCADAPack 47x.</p>
WI:60552	<p>The logic editor may fail to start after upgrading from beta test releases R2.4 or R2.4.1 to R2.4.2. Logic editor files should be installed in the C:\Program Files (x86)\Schneider Electric\UnitySoControl 14.0. On some occasions files are installed in C:\Program Files (x86)\Schneider Electric\UnitySoControl.</p> <p>Workaround: Uninstall UnitySoControl from the control panel. Then install R2.4.2.</p>
WI: 59220	<p>Logic Editor Memory Consumption dialog shows incorrect values and calculates the % of memory used using incorrect values. This is displayed with the Mode > Memory Consumption command. When memory usage is 87% or higher on the dialog, the SCADAPack RTU will be unable to load the application. When writing to the RTU the message “PLC program internal memory full” is displayed. The Greatest value below the graph is correct. The value above the graph should read 3072 Kbytes.</p> <p>Workaround:</p> <p>Multiply the % usage values in the graph on the left by 1.16 to get the actual values.</p> <p>Ignore the % memory available value in the graph on the left.</p> <p>Subtract 525000 from the Total (memory available) value below the graph on the left to get the actual value.</p>
WI: 60765	<p>SCADAPack 47x RTUs may report CAN bus overruns when file operations are performed. The CAN bus operation is automatically retried. The system data reference SYS_StatsIO_CANOverrun will show a non-zero number if this occurs.</p> <p>Workaround: Do not use the SYS_StatsIO_CANOverrun value. Use other SYS_StatsIO_CANxxx system data references to detect abnormal CAN bus operation.</p>
WI: 61159	<p>The RTU may restart if command line diagnostics are running over a Telnet connection, and a configuration is written to the RTU that disables the Telnet service.</p> <p>Workaround: Stop the command line diagnostics before disabling Telnet.</p>

6.8.10 Post Installation Troubleshooting

RemoteConnect and Logic Editor Start Up	<p>SCADAPack RemoteConnect Configuration Software start-up may be blocked from reopening if previous instances of RemoteConnect or the Logic Editor were not closed cleanly.</p>
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	<p>Workaround: Launch the Task Manager and shut down any RemoteConnect processes, then restart RemoteConnect.</p>
<p>Logic Editor</p>	<p>Logic editor or Types Library update tool library modification</p> <p>Symptoms</p> <p>SCADAPack Logic Editor or Types Library Update tool reports the library is opened by another application when attempting to modify the logic library</p> <p>Steps to resolve</p> <p>Check that no instances of Unity Pro, Control Expert, and RemoteConnect/SCADAPack x70 Logic Editor are running. Launch the Task Manager and shut down any Unity Pro, Control Expert, and RemoteConnect/SCADAPack x70 Logic Editor processes. If the symptoms persist, it is likely that Windows folder permissions are incorrect.</p> <p>Check the following:</p> <ol style="list-style-type: none"> 1. With administrator privilege right-click on the following folder: C:\ProgramData\Schneider Electric 2. Select Properties. 3. Select the Security tab. 4. Click Edit. 5. Click on the Users entry in the Group or user names section. 6. Scroll down the Permissions for Users area until you see a row called "Write". 7. Check the box in the "Allow" column for the "Write" row. 8. Click OK. The security settings will update on the sub-folders. 9. Click OK to exit the Properties dialog.

6.8.11 SCADAPack x70 and 6601 Firmware Version Compatibility

Customer Guidance for SCADAPack 47x

SCADAPack 47x supports 6601 input output module firmware version 2.0.20 and later.

Customer Guidance for SCADAPack 57x

6601 upgrade recommendations: Upgrade 6601 input output modules (both external and built into SP575) to firmware version 2.0.20 and bootloader version 1.80.10. For 6601 input output modules shipped with firmware 1.77.131 or earlier, and where extended over-range capabilities

(up to 22 mA) are required, the module may be returned to a Schneider Electric facility for recalibration.

6601 minimum firmware version: 6601 input output modules shipped from the factory with 1.80.6 or 1.80.10 firmware should not be downgraded to versions earlier than 1.80.6.

NOTICE	
<p>LOSS OF SENSOR ACCURACY</p> <p>If you use firmware versions that are incompatible with extended over-range calibration on 6601 analog inputs, the analog inputs may report values 10% lower than the actual value.</p> <p>Use only firmware versions that are compatible with extended over-range calibration.</p> <p>Do not use 6601 firmware earlier than 1.80.6 with extended over-range calibration. They are not compatible.</p> <p>For information on SCADAPack 57x firmware versions 9.03 or earlier, refer to the RemoteConnect R2.0 release notes in the documentation.</p> <p>Failure to follow these instructions can result in equipment damage.</p>	

A new calibration format for 6601 analog inputs has been added to support extended over-range capabilities. Interoperability of various versions of firmware and calibration is described below.

	SP57x Firmw are	6601 Firmw are	6601 Calibrati on	6601 AI Value	Over-range	Comment
✓	9.0.4 or later	1.77.131 or earlier	0...20 mA	Reported normally	Always active at 20.05mA	
✓	9.0.4 or later	1.80.06 or later	0...20 mA	Reported normally	Always active at 20.05mA	
✓	9.0.4 or later	1.80.06 or later	0...22 mA	Reported normally	Always active at 22.00mA	Recommended choice for new installations
✗	9.0.4 or later	1.77.131 or earlier	0...22 mA	AI report. 10% lower values	Always active at 20.05mA	NOT RECOMMENDED. Should only occur when a 6601 is mistakenly downgraded from 1.80.6 to an earlier version.

6.9 SCADAPack x70 R2.4.1 Release Notes 05/2020

SCADAPack x70 R2.4.1 was first available in May 2020.

Upgrade Requirements

It is highly recommended that updates be installed on your SCADAPack 57x devices if using

- SCADAPack 57x firmware version 9.1.2 and earlier, or
- SCADAPack bootloader firmware version 1.10.

First, install SCADAPack 57x firmware version 9.2.1 or newer, then install SCADAPack 57x bootloader firmware version 1.30 or newer.

WARNING

UNINTENDED EQUIPMENT OPERATION

Upgrade SCADAPack firmware version 9.1.2 and earlier versions to firmware version 9.2.1 or newer.

Failure to follow these instructions can result in death or serious injury.

WARNING

UNINTENDED EQUIPMENT OPERATION

Upgrade SCADAPack bootloader firmware version 1.10 to bootloader firmware version 1.30 or newer. Cold boot the SCADAPack device following the upgrade.

Failure to follow these instructions can result in death or serious injury.

Bootloader firmware version 1.30 corrects a start-up initialization issue and digital output initialization issue.

SCADAPack 57x firmware version 9.2.1 corrects an issue for users of firmware version 9.1.2 and earlier. Logic variables T_SPx70_INT and T_SPx70_UINT may indicate incorrect values following an online logic modification and a SCADAPack x70 device restart.

The firmware in this release includes these corrections.

6.9.1 Installation Requirements, Instructions, and Troubleshooting

Refer to “Software Installation.pdf” located both at the root of the folder that contains the installation files, and SCADAPack Software Installation in the documentation set that is installed with RemoteConnect.

6.9.2 Application and Firmware Versions

SCADAPack x70 RemoteConnect application version is 3.7.2

- SCADAPack DNP3 Communication DTM version is 3.7

- SCADAPack x70 Device DTM version is 3.7
- SCADAPack x70 Logic Editor version is 14.0 - 200313
- Schneider Electric Generic HART DTM version is 5.1.1189.11
- HART STB Multiplexer Communication DTM version is 1.0.8.0
- SCADAPack x70 English Documentation version is 3.7.2
- SCADAPack x70 French Documentation version is 1.2.3

SCADAPack x70 Security Administrator version is 1.6.1

SCADAPack 47x firmware version is 9.4.2

SCADAPack 47x bootloader version is 0.00

SCADAPack 57x firmware version is 9.4.2

SCADAPack 57x bootloader version is 1.30

6601 I/O module firmware version is 2.0.20

6602 I/O module firmware version is 1.81.2

6602 I/O module bootloader version is 1.81.2

6607 I/O module firmware version is 2.1.11

6607 I/O module bootloader version is 2.1.11

6.9.3 Software and Firmware Version Compatibility

RemoteConnect version 3.7.2 is intended for use with SCADAPack x70 firmware version 9.4.2.

As of R2.0 and newer, RemoteConnect and SCADAPack x70 firmware is cross compatible with future software and firmware releases. This compatibility is limited to features common to the version of software and firmware available. Unknown feature configurations are parsed and do not block reconfiguration, though the features themselves may be unavailable.

NOTICE

INCONSISTENT DATA, UNPREDICTABLE RESULTS

RemoteConnect versions R2.0 and later are not compatible with projects created with RemoteConnect versions R1.6 and earlier.

See the release notes for RemoteConnect version 2.0 in the documentation for more instructions.

Failure to follow these instructions can result in equipment damage.

6.9.4 Supported Devices

SCADAPack 470

SCADAPack 474

SCADAPack 570

SCADAPack 574

SCADAPack 575

6.9.5 Supported Operating Systems

Windows 8.1 Professional (32-bit or 64-bit)

Windows 10 Professional (32-bit or 64-bit)

Windows Server 2016

6.9.6 SCADAPack RemoteConnect, Unity Pro, and Control Expert Compatibility

RemoteConnect installations can coexist with specific Unity Pro or Control Expert installations. If RemoteConnect is installed on a computer that had Unity Pro or Control Expert installed previously, the RemoteConnect installation automatically confirms that components in the SCADAPack x70 Logic Editor and Unity Pro or Control Expert are correctly referenced. If Unity Pro or Control Expert is installed or upgraded on a computer that already had RemoteConnect installed, then a **repair** process is likely required on RemoteConnect to confirm that components are correctly referenced. A **repair** process must always be **Run as administrator**.

The Unity Pro or Control Expert versions that are verified as suitable for coexisting installation with RemoteConnect are:

- Unity Pro version 13.0*
- Unity Pro version 13.1*
- EcoStruxure Control Expert version 14.0
- EcoStruxure Control Expert version 14.1

* RemoteConnect has a known issue with Unity Pro version 13.0 and 13.1 on Windows French edition. See WI: [50233](#)^[114] in the Known Issues section below.

6.9.7 SCADAPack x70 Logic Editor V14.0

New and Improved Features

- New!** Expanded menu items when using LD editor, including customizable Favorites menu
- New!** Color customization available for language editor displays. See Tools > Color Settings.
- New!** Program Units added for logic task programs (also known as IEC 61131-3 POU's). This feature allows application logic to be shared and more easily deployed. Each program unit defines local content independent from other program units and from global variables. Each program unit provides a defined external interface to the logic project to which specific "effective parameters" are attached. For example, I/O variables, SCADAPack x70 object variables can be attached as effective parameters.
- New!** Integrity checks are performed at logic editor startup for detecting unexpected modifications to logic editor components
- New!** Build-time code generation performance improvements
- PEP0387277R** A search of a DDT type can now find instances of the DDT where nested in other DDT types
- PEP0414041R** In the LD and FBD editor, Select View / Page Break allows page breaks to be inserted for documentation printing
- PEP0454763R** Color (red/green) is now set on a Connector according to its Boolean value

Fixed Issues

- PEP0362017R** When printing a logic project, the page numbers were not consistent. This is now fixed.
- PEP0408801R** Adding a block such as AND then double clicking on a pin and selecting the ellipsis... opened the variable window, but it could immediately contract the variable list instead of leaving it expanded. This is now fixed.
- PEP0439249R** After declaring an out interface variable in an SFC Step action on the process side and in the global variables, and creating an SFC section in the process side, you could get an error message "assignment on read variable". This is now fixed.
- PEP0454722R** After adding a new section to a functional module and building the application, all functional modules were expanded. This is now fixed.

- PEP0418945R** The DFB version is now updated after a function block display difference, following Refine. A REFRESH button is also added in FBD toolbar to adapt the display when required.
- PEP0462542R**
- PEP0475114R** JMP instructions in an ST section of a DFB may not have operated correctly. This is now fixed.
- PEP0476462R** Opening an FBD section could take a long time. This is now fixed.
- PEP0483519R** Error message "This variable doesn't exist" could be displayed when refining a DFB online. This is now fixed.
- PEP0487560R** If the Implicit Conversion project setting was set, when an output pin was directly connected to an input block with a different type, the next block could have a calculation overflow error. This is now fixed.
- PEP0489284R** When a TON Variable was created in the Private Section of a DFB, an error message appeared "This type can't be used here". This is now fixed.
- PEP0489562R** The Logic Editor displays shown on a secondary screen were not visible when the computer switched back to a single screen. This is now fixed.
- PEP0490038R** Export and Import of variables in .TXT format was not possible. This is now fixed.
- PEP0329921R** Boolean variable values were not displayed correctly in the case where "Tools//Project Settings... //General//Build Settings//Generate with LD animation" flag was OFF. This is now fixed.
- PEP0351626R** Depending on the Logic Editor internal windows size and/or after resizing, some fields in some operator screens were unreadable (mixed fields, partially hidden...). This is now fixed.
- PEP0353275R** A compilation error could occur with the message "Fail GCC Compilation 249 and 272" when JUMP instructions were used. This is now fixed.
- PEP0386705R** When the selection input of a SEL EF was a bit extract of a word of indexed array (example: InputRegisters[index].3) the result of the SEL EF was not correct. This is now fixed.
- PEP0393132R** Depending on the screen resolution and zoom level, in an FBD section the variable names could be truncated on the right. This is now fixed.
- PEP0394251R** Searching in a project could cause the Logic Editor to freeze. This is now fixed.
- PEP0398992R** If you created a family of a DFBs under a library name (on a computer with the Logic Editor in English), this name was not correctly displayed on a computer

with the Logic Editor in German. Default names were displayed instead. This is now fixed.

PEP0402124R The ENO pin of the DEC function block did not provide any output value. This is now fixed.

PEP0413522R In Mixed Display Mode some variable names displayed for the OPERATE block were not consistent. This is now fixed.

PEP0414352R In graphical languages, error “E1199 Left side of in-out-pin can only be connected with in-out-pin or variable” could appear if a new function block was added and not linked (isolated) to the block containing the error. This is now fixed.

6.9.8 New and Improved Features (R2.4.1)

New! Realflo flow computer 7.01 is available for SCADAPack 47x RTUs.

New! RemoteConnect checks the integrity of the executable components in itself, the communication DTM, and the device DTM at start up. The function can be manually run from the Help > Integrity Check command.

WI: 56300 Added SYS_MODEM_PowerControl system data reference to control the power to the SCADAPack 47x RTU modem port.

WI: 56322 Added stack dump file creation on SCADAPack 47x RTU. The dump file will be created if an unexpected exception occurs on the RTU.

WI: 56921 Added documentation topic “Adding a RemoteConnect Object and Logic Variable Online”.

WI: 58458 Improved robustness of the I/O bus when CAN-H and CAN-L signals are shorted together.

WI: 58949 Improved backward compatibility with firmware 9.2.3 and earlier. SCADAPack 57x I/O module channels are only written to the configuration file if they have an Object association.

WI: 59482 Improved the documentation of x70 Ladder Editor and Control Expert differences.

WI: 59707 Added documentation of system status code 1013 in the troubleshooting guide.

WI: 59726 Clarified the documentation of 6607 sampling rates.

6.9.9 Fixed Issues (R2.4.1)

- WI: 47743** Status IP_Stats command reported IP address 127.0.0.1 when the IP was disabled. This is corrected.
- WI: 48632** Some routing information was missing from the PRINT ROUTE command output. The Type and Metric values are now displayed.
- WI: 50144** In RemoteConnect the SCADAPack 574 Analog Input Channel Configuration column was too narrow. This is corrected.
- WI: 57821** Reading the SYS_Status system data group returned an invalid reference SYS_Status_NTPState. This is no longer returned.
- WI: 58092** I/O Object names and groups were changed when the I/O Board name was changed. The names are now updated if the name or group is the default name, but are left unchanged if they have been edited by the user.
- WI: 58140** SCADAPack 57x analog input values were retained over a power cycle. The outputs are now set to zero at power up.
- WI: 58181** System status code 5014 and 5017 were sometimes reported when restarting the RTU from the command line. This is corrected.
- WI: 58344** F_FindFile behaviour with an empty DIR input was not documented. This is corrected.
- WI: 58400** Help text for F_RMDIR was not complete. Now it is.
- WI: 58682** An unsupported Remote I/O feature was generated by RemoteConnect in the RTU configuration file. The unsupported feature is no longer included in the file.
- WI: 58834** Addressed a logic editor security vulnerability: CVE-2020-7475
- WI: 58933** The values for the SYS_StatsSecLock system data reference were not documented. The documentation is corrected.
- WI: 59043** The last reported internal indication flag was reported incorrectly from polled outstations. The correct IIN flags are now reported.
- WI: 59072** The documentation of the DNP3 master 'No Poll' Polling Type was incorrect. This is corrected.
- WI: 59094** "Help on Type" for the DNP3Peer function blocks did not describe the error codes. This is corrected.
- WI: 59200** DNP3 Master communication with outstations could be lost on SCADAPack 47x RTUs when diagnostics were running over a Telnet connection. This is corrected.

- WI: 59222** The STATUS IP_STATS command displayed incorrect information, including that enabled ports were disabled. The correct information is now displayed.
- WI: 59263** DNP3 CROB request to a digital input did not generate an event on boot if the state of the point was active prior to restart. The firmware now waits for I/O driver tasks to be initialized before sending DNP3 unsolicited messages, accepting control actions or starting Logic applications.
- WI: 59385** DNP3 master addresses 65520 to 65535 were incorrectly allowed. The correct range 0 to 65519 is now used.
- WI: 59389** Corrected a memory leak on SCADAPack 47x RTUs when calling logic function blocks.
- WI: 59393** SCADAPack 47x non-volatile logic data was not cleared on reconfiguration. This is corrected.
- WI: 59522**
- WI: 59432** F1 (context sensitive) help opened incorrect topics for several pages. This is corrected.
- WI: 59433**
- WI: 57177**
- WI: 58209**
- WI: 59480** SCADAPack 47x Counter Frequency objects had a default display format of REAL. The format is now DINT.
- WI: 59484** The logic state could be set to RUN before I/O boards were ready to accept analog output controls at start up. The logic now waits for the I/O board to be ready.
- WI: 59496** Addressed a firmware security vulnerability.
- WI: 59526** The SCHEDULE and RRTC_DT_MS function blocks did not work and returned an incorrect status code if the time had not been set. The function now returns the correct status code (clock unavailable) if the clock is not set.
- WI: 59527** The metric value was not set when adding a route to the IP routing table. This is corrected.
- WI: 59556** System data reference for SYS_StatsIOP could not be added to associations in RemoteConnect. This is corrected.
- WI: 59558** An unsupported object type (T_SPx70_EBOOL or T_SPx70_ADV_EBOOL) in an Excel file imported into RemoteConnect R2.4 could cause the Logic Editor to become unavailable. The unsupported object is now marked as invalid.
- WI: 59601** DNP3 protocol incorrectly reported receiving an unexpected Confirm on start up. This is corrected.

- WI: 59640** System Data object SYS_MODEM_SIMcardMissing was reported as Object Does Not Exist. The object now returns 0.
- WI: 59645** Importing an incompatible M340 .STA file into RemoteConnect caused the Logic Editor to become unavailable. This is corrected.
- WI: 59735** SCADAPack 47x battery switch documentation was missing. This is corrected.
- WI: 59755** RemoteConnect could crash during the Update and Build step while displaying *Saving the Project*. This is corrected.
- WI: 59768** SYS_PROTOCOL_MB_FC7ExcepStatus was not documented. Now it is.
- WI: 59824** Exceeding the Modbus Master scanner point count was described as a license limitation. The status code 3000 description and documentation is updated to state "A DNP3 Data Concentrator or Modbus Scanner configuration contains either more remote devices OR more mapped objects than permitted."
- WI: 59848** Converting a project from a 575 to a 474 retained the Ethernet 3 information and prevented the use of the IP address. This is corrected.
- WI: 59982** Addressed a RemoteConnect security vulnerability.
- WI: 60034** RemoteConnect could not import from an Excel file with read only permissions. This is corrected.
- WI: 60040** Addressed a RemoteConnect security vulnerability.
- WI: 60015** Renaming a duplicated Modbus Slave device name displayed the progress dialog forever. The progress dialog now closes after the operation is complete.

6.9.10 Known Issues (R2.4.1)

- Installation** Unity Pro installation compatibility
- The SCADAPack RemoteConnect Configuration Software installation process and Unity Pro software installation process can interfere with one another. It is recommended that when installing new versions of Unity Pro software that the repair installation option be run for SCADAPack RemoteConnect. Coexisting installations of RemoteConnect and Unity Pro are supported for Unity Pro versions 13.0, 13.1, and EcoStruxure Control Expert version 14.0 and 14.1.
- Workaround:** Repair the installations as mentioned above. Remember to "Run as administrator" when doing a Repair.
- When installing new versions of SCADAPack RemoteConnect, the installer will automatically attempt a Repair on Unity Pro software.

- WI: 47824** **del *** command leaves some files on a USB drive when there are many files on the drive.
- Workaround:** Repeat the command until the files are removed.
- OR
- Connect the USB drive to a PC (or other computer) and delete the files.
- WI: 47841** When reconfiguring a SCADAPack RTU from one large configuration to another large configuration, the configuration rebuild might not succeed and would report configuration log messages such as “# 565: Unable to create object due to insufficient configuration memory space”.
- Workaround:** Cold boot the RTU before applying the new configuration. Alternatively, apply a configuration with a very small number of objects and restart the RTU. The new large configuration should then be accepted.
- WI: 50233** Installing Unity Pro v13.0 or v13.1 on Windows (French edition) followed by RemoteConnect installs shortcuts to All programs > Schneider Electric > SoCollaborative > Unity Pro for both Unity Pro and SCADAPack Logic applications.
- Workaround:** Identify, from the shortcut path properties, which shortcuts relate to SCADAPack Logic.
- WI: 54918** The SD card on the SCADPack 47x is not supported.
- Workaround:** Use a USB mass storage device (USB drive) instead.
- WI: 57666** The 6602 I/O module is not supported on the SCADAPack 47x.
- Workaround:** None.
- WI: 59358** A USB C connection from a PC does not work with the SCADAPack 47x USB C port.
- Workaround:** Use a USB A port on the PC to connect to the USB C port on the SCADAPack 47x.
- WI: 60166** After installing RemoteConnect and Control Expert, if you uninstall Control Expert, RemoteConnect will no longer work.
- Workaround:** Do not uninstall Control Expert after installing the RemoteConnect update.

6.9.11 Post Installation Troubleshooting

- RemoteConnect and Logic** SCADAPack RemoteConnect Configuration Software start-up may be blocked from reopening if previous instances of RemoteConnect or the Logic Editor were not closed cleanly.

Editor Start Up **Workaround:** Launch the Task Manager and shut down any RemoteConnect processes, then restart RemoteConnect.

Logic Editor Logic editor or Types Library update tool library modification

Symptoms

SCADAPack Logic Editor or Types Library Update tool reports the library is opened by another application when attempting to modify the logic library

Steps to resolve

Check that no instances of Unity Pro, Control Expert, and RemoteConnect/SCADAPack x70 Logic Editor are running. Launch the Task Manager and shut down any Unity Pro, Control Expert, and RemoteConnect/SCADAPack x70 Logic Editor processes. If the symptoms persist, it is likely that Windows folder permissions are incorrect.

Check the following:

1. With administrator privilege right-click on the following folder:
C:\ProgramData\Schneider Electric
2. Select **Properties**.
3. Select the **Security** tab.
4. Click **Edit**.
5. Click on the Users entry in the Group or user names section.
6. Scroll down the Permissions for Users area until you see a row called "Write".
7. Check the box in the "Allow" column for the "Write" row.
8. Click **OK**.
The security settings will update on the sub-folders.
9. Click **OK** to exit the Properties dialog.

6.9.12 SCADAPack 57x and 6601 Firmware Version Compatibility

Customer Guidance

6601 upgrade recommendations: Upgrade 6601 I/O modules (both external and built into SP575) to firmware version 2.0.20 and bootloader version 1.80.10. For 6601 input output modules shipped with firmware 1.77.131 or earlier, and where extended over-range capabilities (up to 22 mA) are required, the module may be returned to a Schneider Electric facility for recalibration.

6601 minimum firmware version: 6601 I/O modules shipped from the factory with 1.80.6 or 1.80.10 firmware should **not** be downgraded to versions earlier than 1.80.6.

NOTICE

LOSS OF SENSOR ACCURACY

If you use firmware versions that are incompatible with extended over-range calibration on 6601 analog inputs, the analog inputs may report values 10% lower than the actual value.

Use only firmware versions that are compatible with extended over-range calibration.

Do not use 6601 firmware earlier than 1.80.6 with extended over-range calibration. They are not compatible.

For information on SCADAPack 57x firmware versions 9.03 or earlier, refer to the RemoteConnect R2.0 release notes in the documentation.

Failure to follow these instructions can result in equipment damage.

A new calibration format for 6601 analog inputs has been added to support extended over-range capabilities. Interoperability of various versions of firmware and calibration is described below.

	SP57x Firmw are	6601 Firmw are	6601 Calibrati on	6601 AI Value	Over-range	Comment
✓	9.0.4 or later	1.77.131 or earlier	0...20 mA	Reported normally	Always active at 20.05mA	
✓	9.0.4 or later	1.80.06 or later	0...20 mA	Reported normally	Always active at 20.05mA	
✓	9.0.4 or later	1.80.06 or later	0...22 mA	Reported normally	Always active at 22.00mA	Recommended choice for new installations
✗	9.0.4 or later	1.77.131 or earlier	0...22 mA	AI report. 10% lower values	Always active at 20.05mA	NOT RECOMMENDED. Should only occur when a 6601 is mistakenly downgraded from 1.80.6 to an earlier version.

6.10 SCADAPack x70 R2.4 Release Notes 03/2020

SCADAPack x70 R2.4 was first available in March 2020.

Upgrade Requirements

It is highly recommended that updates be installed on your SCADAPack 57x devices if using

- SCADAPack 57x firmware version 9.1.2 and earlier, or
- SCADAPack bootloader firmware version 1.10.

First, install SCADAPack 57x firmware version 9.2.1 or newer, then install SCADAPack 57x bootloader firmware version 1.30 or newer.

WARNING

UNINTENDED EQUIPMENT OPERATION

Upgrade SCADAPack firmware version 9.1.2 and earlier versions to firmware version 9.2.1 or newer.

Failure to follow these instructions can result in death or serious injury.

WARNING

UNINTENDED EQUIPMENT OPERATION

Upgrade SCADAPack bootloader firmware version 1.10 to bootloader firmware version 1.30 or newer. Cold boot the SCADAPack device following the upgrade.

Failure to follow these instructions can result in death or serious injury.

Bootloader firmware version 1.30 corrects a start-up initialization issue and digital output initialization issue.

SCADAPack 57x firmware version 9.2.1 corrects an issue for users of firmware version 9.1.2 and earlier. Logic variables T_SPx70_INT and T_SPx70_UINT may indicate incorrect values following an online logic modification and a SCADAPack x70 device restart.

The firmware in this release includes these corrections.

6.10.1 Installation Requirements, Instructions, and Troubleshooting

Refer to “Software Installation.pdf” located both at the root of the folder that contains the installation files, and SCADAPack Software Installation in the documentation set that is installed with RemoteConnect.

6.10.2 Application and Firmware Versions

SCADAPack x70 RemoteConnect application version is 3.7.1

- SCADAPack DNP3 Communication DTM version is 3.7
- SCADAPack x70 Device DTM version is 3.7
- SCADAPack x70 Logic Editor version is 14.0 - 191125
- Schneider Electric Generic HART DTM version is 5.1.1189.11
- HART STB Multiplexer Communication DTM version is 1.0.8.0
- SCADAPack x70 English Documentation version is 3.7.1

- SCADAPack x70 French Documentation version is 1.2.3

SCADAPack x70 Security Administrator version is 1.5.1

SCADAPack 47x firmware version is 9.4.1

SCADAPack 47x bootloader version is 0.00

SCADAPack 57x firmware version is 9.4.1

SCADAPack 57x bootloader version is 1.30

6601 I/O module firmware version is 2.0.20

6601 I/O module bootloader version is 1.80.10

6602 I/O module firmware version is 1.81.2

6602 I/O module bootloader version is 1.81.2

6607 I/O module firmware version is 2.1.11

6607 I/O module bootloader version is 2.1.11

6.10.3 Software and Firmware Version Compatibility

RemoteConnect version 3.7.1 is intended for use with SCADAPack x70 firmware version 9.4.1.

As of R2.0 and newer, RemoteConnect and SCADAPack 57x firmware is cross compatible with future software and firmware releases. This compatibility is limited to features common to the version of software and firmware available. Unknown feature configurations are parsed and do not block reconfiguration, though the features themselves may be unavailable.

NOTICE

INCONSISTENT DATA, UNPREDICTABLE RESULTS

RemoteConnect versions R2.0 and later are not compatible with projects created with RemoteConnect versions R1.6 and earlier.

See the release notes for RemoteConnect version 2.0 in the documentation for more instructions.

Failure to follow these instructions can result in equipment damage.

6.10.4 Supported Devices

SCADAPack 470

SCADAPack 474

SCADAPack 570

SCADAPack 574

SCADAPack 575

6.10.5 Supported Operating Systems

Windows 8.1 Professional (32-bit or 64-bit)

Windows 10 Professional (32-bit or 64-bit)

Windows Server 2016

6.10.6 SCADAPack RemoteConnect, Unity Pro, and Control Expert Compatibility

RemoteConnect installations can coexist with specific Unity Pro or Control Expert installations. If RemoteConnect is installed on a computer that had Unity Pro or Control Expert installed previously, the RemoteConnect installation automatically confirms that components in the SCADAPack x70 Logic Editor and Unity Pro or Control Expert are correctly referenced. If Unity Pro or Control Expert is installed or upgraded on a computer that already had RemoteConnect installed, then a **repair** process is likely required on RemoteConnect to confirm that components are correctly referenced. A **repair** process must always be **Run as administrator**.

The Unity Pro or Control Expert versions that are verified as suitable for coexisting installation with RemoteConnect are:

- Unity Pro version 13.0*
- Unity Pro version 13.1*
- EcoStruxure Control Expert version 14.0
- EcoStruxure Control Expert version 14.1

* RemoteConnect has a known issue with Unity Pro version 13.0 and 13.1 on Windows French edition. See WI: [50233](#)^[131] in the Known Issues section below.

6.10.7 New and Improved Features (R2.4)

New! Added SCADAPack 470 and SCADAPack 474 RTUs.

New! Added 6607 I/O module support to SCADAPack 57x and SCADAPack 47x.

New! Logic editor version 14.0 for SCADAPack 57x and SCADAPack 47x is available.

SCADAPack 57x projects support both V11.1 projects and libraries for existing installations, and V14.0 projects and libraries. The version is selected in RemoteConnect.

- WI: 47521** MAST task default mode is periodic with a period of 125 ms.
FAST task default mode is periodic with a period of 25 ms.
- WI: 47554** Languages Reference topic is added to SCADAPack x70 logic editor documentation.
- WI: 49564** Improved documentation of the IP whitelist feature.
WI: 49390
WI: 49531
- WI: 49582** Added conversion guide for Telepace logic users.
- WI: 49715** Documentation describes side-by-side use of x70 logic editor and Unity Pro / Control Expert for users with both tools.
- WI: 50142** Improved entry of custom time when setting device time from RemoteConnect.
- WI: 50473** RTU configuration created in Geo SCADA Expert can be imported. Use the Import button on the SCADAPack x70 Logic page, Advanced Configuration section.
- WI: 50556** Added confirmation dialog before writing configuration and logic to RTU.
- WI: 51085** Object creation and protocol configuration operations often repeated by users now remember the last selection and use it as the default for subsequent operations.
- WI: 51345** Clicking the RemoteConnect icon in the upper left corner displays the Start Page and makes it visible if it is closed.
- WI: 52839** The SYS_LOGIC system data group now includes the periods of the MAST, FAST, AUX0, and AUX1 tasks. RemoteConnect displays the periods on the online Logic status page.
- WI: 52976** Event configuration on the DNP3 > Slave > Events page now includes **File Event Class**. This configures the event class in which a DNP3 file event status is generated.
- WI: 53178** Improved validation of DNP3 route entries to provide better guidance when
WI: 57928 unsolicited response routes or the connect number is missing.
- WI: 53294** The DNP Internal Indications (IIN) now include the LOCAL_CONTROL flag (IIN.5) when forcing is active. RemoteConnect displays this in the online status bar so users are aware of forced values.

- WI: 53354** Object Browser **Applied Value** column is renamed to **Proposed Value**.
- WI: 53355** DNP3 slave event configuration workflow was simplified by removing redundant selections.
- WI: 53358** The Add and Remove buttons were removed from the Network View. These buttons were rarely used. The functions are available by right-clicking a selection in the view.
- WI: 53401** Modbus byte ordering text was made consistent on the Modbus > Slave/Server page and the Modbus Scanners page.
- WI: 53467** Improved guidance in the documentation for the placement of 5103 power supplies.
- WI: 53504** Moved the online status information to the top of the online pages for better visibility. Improved the layout and color to provide better information.
- WI: 53550** Improved the documentation of the STU and STA files in the x70 logic editor. Documented compatibility with logic editor v11.1.
- WI: 53716** Double clicking an entry in the Object Browser opens the Object Editor dialog.
- WI: 53721** Popup dialogs can be made transparent by holding down the “eye” icon. This allows information under the dialog to be viewed.
- WI: 54119** Open telnet sessions are closed when the service is disabled by configuration.
- WI: 54121** Improved the organization of the Getting Started section of the logic programming manual.
- WI: 54192** Removed the obsolete CLEAR LOGIC command from the command line and RemoteConnect.
- WI: 54319** Added SYS_StatsIO communication statistics to system data.
- WI: 56644**
- WI: 54992** Simplified the workflow for Modbus scanner data type selection by combining some configuration fields. This did not affect the RTU configuration.
- WI: 55057** Documented use of system status function in the x70 logic Multitasking topic.
- WI: 55058** Object Browser supports OS_TIME and Hexadecimal display options for System Data.
- WI: 55446** CAD drawings for SCADAPack 570, 574, 575, 470, 474, 6601, 6602, and 6607 are part of the installed files added to your PC.

- WI: 55688** Changing project settings retains a configuration that is compatible with the new settings making changing a device type simpler.
- WI: 55691** When the Object collection is large, the 'Add Object Association' list can include many entries. To help the user filter the list, a new option selects Objects sorted by group.
- WI: 56057** Logic status codes, such as divide by zero in the logic application, no longer set the system status code or cause the STATUS LED to blink. The information is reported in system status words %SW125, %S18, %S20, and %S15 for use in the logic application.
- WI: 56316** Addressed security vulnerabilities on SCADAPack 57x.
- WI: 56316** Improved documentation of the limitations of file management function blocks and
WI: 56378 added safety messages.
- WI: 56338** Provided additional feedback to the user during the **Update and Build Logic** operation.
- WI: 56339** Increased the number of Modbus scanner devices from 60 to 150.
- WI: 58599** Ended support for Windows 7.
- WI: 58972** Improved IP Address validation to prevent use of first and last address in the subnet as the RTU IP address.

6.10.8 Fixed Issues (R2.4)

- WI: 47352** The Mode > Start Simulation action in the Logic Editor could take an extended time to start. This was corrected.
- WI: 47624** 6602 I/O module analog outputs were reported online when unconnected or removed. The correct status is now reported.
- WI: 47643** DNP3 integrity polls responses that included unsupported objects were rejected. DNP3 integrity polls that return unsupported objects will now generate diagnostic messages and parse the remaining objects in the response.
- WI: 47705** A low change interval for the DNP3 Secure Authentication session key caused slow response times. Additional validation of the DNP3 SAv2 Session Key Update time and Update Count parameters was added to detect if the values are outside expected limits.
- WI: 47725** Modbus master could be configured and would poll devices when the Modbus RTU master was disabled in RemoteConnect. Additional validation was added in RemoteConnect to prevent this.

- WI: 47753** Where an online modification leads to the clearing of the project version system data field (SYS_LOGIC_ProjectVersion), and a configuration is written with the same modified logic application, the project version was not updated. The project version is now updated.
- WI: 47764** Cancelling a Modbus Master function block request does not cancel the request until the timeout expires. A new request cannot be made until the timeout is complete. The documentation was clarified to state "Following a cancelled request, wait the timeout period before generating a new request".
- WI: 47808** The "whoami" command and the Terminal Server task were reading from the PPP IP address. They now use the configured IP address for the serial port.
- WI: 47890** Modbus function block output message was retained after device restart. Status code 31 was added to indicate that the function block is idle.
- WI: 47939** Removed some Object Browser diagnostics previously shown on a Write operation. Browser diagnostics are now only shown in the case of an unexpected condition.
- WI: 48021** The 6602 HART Analog Input module was not detected unless at least one AI point (channel) on the module is associated with an object. This was corrected.
- WI: 48092** The saveconfig command was provided incorrectly on from the command line and user manual. The command was removed.
- WI: 48126** DNP3 Master <n> address and Local Address were not displayed by whoami after RemoteConnect updated the field. This was corrected.
- WI: 48129** Modbus store and forward table was cleared after a power cycle or RTU restart. This was corrected.
- WI: 48400** Device_ChangeParam function block with the parameter of PARAM_DISABLE_DCONS incorrectly reported output parameters. This was corrected.
- WI: 48549** Corrected documentation of the file system capacity for /user and /ramdir drives.
- WI: 48687** A directory named 's' could not be deleted using command line or F_Deltree function block. This was corrected.
- WI: 48696** DNP3Peer_AddToRDList and DNP3Peer_AddtoWRList function blocks could add new content to old lists when an application was stopped and started. The lists are now cleared when the application is stopped.
- WI: 48862** Inconsistent file and folder timestamps were shown in telnet, serial and FTP sessions. The timestamps are now consistent. FTP treats timestamps from the RTU as UTC.

- WI: 48863** File system timestamps were shifted by the current offset from UTC after writing configuration. This was corrected.
- WI: 48873** The SetTimeDate function block showed unexpected values when the year was set beyond 2038. The year is now limited to 2000 to 2037.
- WI: 49067** Corrected the DNP3 master device profile documentation.
- WI: 49072** Clarified the Modbus RTU master operation documentation.
- WI: 49073** Clarified the Modbus RTU slave operation documentation.
- WI: 49091** Corrected the documentation of the maximum entries for the Data Concentrator and Modbus Scanner Devices and Points.
- WI: 49422** Corrected documentation by removing the (incorrect) ATTRIB_ObjectType as a supported attribute for OBJ_WriteField function block.
- WI: 50145** Firmware files installed with RemoteConnect were removed when RemoteConnect was uninstalled. The firmware files are now retained.
- WI: 50152** RemoteConnect allowed different numbers of entries in the Data Concentrator and Modbus Scanner tables than firmware. Corrected the validation of maximum number of entries in the Data Concentrator and Modbus Scanner tables in RemoteConnect.
- WI: 50389** Configuration conflicts occurred if a group of more than 2000 objects was added to the object browser. RemoteConnect now limits the number of objects to 2000 and displays an information icon if there are more than 2000 objects in a group.
- WI: 50417** In RemoteConnect, switching a Device to Offline when Auto-Refreshing blocked the Online tab from closing. This was corrected.
- WI: 51928** Clarified documentation of the diagnostic timestamps to state which diagnostics use the PC clock and which use the RTU clock.
- WI: 52983** RemoteConnect crashed when switching from Online to Offline with the Object Browser configured to automatically refresh. This was corrected.
- WI: 53064** Modbus/TCP and Modbus RTU over TCP / UDP terminology was inconsistent in RemoteConnect. The user interface and documentation have been made more consistent.
- WI: 53086** Previously, the IP Whitelist sets the TCP or UDP port for a given service (e.g. DNP3 over TCP) from the configuration as it exists when the Whitelist rule is configured. If the port is changed in the RTU configuration at some later point, it is possible that the Whitelist may become out of sync with these values. This was corrected.

- WI: 53237** Object configuration in RemoteConnect and the logic editor could be out of sync if changes were not saved in RemoteConnect. RemoteConnect now saves the configuration when the logic is saved and does not automatically save the logic when the type of a variable is changed.
- WI: 53436** Changing the Default DPN3 Port value requires a full RTU restart to take effect. This was missing from the documentation. The behaviour is now documented.
- WI: 53553** A project could be exported before it was built, leading to inconsistencies in the configuration and logic. Export Project function is now available only after the project has been built, and a message is shown to the user.
- WI: 53618** RemoteConnect reported incorrect object configurations after importing a logic project. This was corrected.
- WI: 53724** The metadata for status code 6602 reported 0. Now, it reports the address of the I/O module to which the status code applies.
- WI: 53896** An unsuccessful firmware update of a 6602 I/O module was not reported. Status code 3015 is now reported if the update is unsuccessful.
- WI: 53944** DNP3 "Device Attributes" Group 0 Variation 203, 204, and 205 store data related to the RTU location in a floating-point format. Previously, if these fields were written from DNP3 specifying a double-precision float value, the firmware would just store a value of zero. The firmware will now accept either a single or double-precision floating-point value.
- WI: 53948** Updated the description of Status code 1410 to provide better guidance on recovering from a low battery.
- WI: 53969** Configuring an IP Route without a gateway resulted in an incorrect gateway address reported by route print. Now, when no gateway is specified, the port IP address is used as the gateway.
- WI: 53981** If logic validation was unsuccessful on the RTU and was not loaded, it could still be put into a RUN state. Now, the device reports the NOCONF state and status code 5004. The logic cannot be run from this state.
- WI: 54092** Status code 6602 was not raised when communication with a 6602 I/O module was lost. This was corrected.
- WI: 54107** Corrected the documentation of serial port 2 and 3 settings after cold boot and factory boot.
- WI: 54144** Forcing current value did not work when an object was already forced. Now, the current source value is applied, and the object remains forced.
- WI: 54338** Patching 9.3.1 firmware build 327 reports restart reason code 0x0001 - Non-volatile RAM initialized. This was corrected and the expected restart reason is reported.

- WI: 54343** Reconfiguration of the DNP3 TCP port number prevented RemoteConnect from automatically connecting to the RTU on the USB port. The DNP3 port number and the Modbus port number are now constant for the USB interface, so the connection parameters are always known.
- WI: 54504** A second attempt to patch I/O module firmware could be started before the first attempt was complete. The firmware now checks for an update in progress before starting a new update.
- WI: 54575** The RemoteConnect DTM catalog update was not performed if the user declined it. RemoteConnect now automatically updates the catalog.
- WI: 54608** RemoteConnect could lock up if there is an Object Editor open when Read Configuration was selected. RemoteConnect will now block the operation when a dialog is open.
- WI: 54658** A single maximum I/O capacity was documented for all SCADAPack RTUs and the value was too small. Documentation now states the maximum number of digital and analog I/O for each SCADAPack x70 model.
- WI: 54702** Corrected the temperature range specification in the SCADAPack 5103 Power Supply Module manual from -40...70 °C (-40...158 °F) to -40...60 °C (-40...140 °F).
- WI: 54848** Duplicate objects were created in the logic editor when users rejected changes made in RemoteConnect, then subsequently made additional changes. RemoteConnect now handles this case and displays a message instructing the user how to resolve conflicts caused by rejecting the changes.
- WI: 54948** RemoteConnect froze after being left running in online mode for an extended period. This was corrected.
- WI: 54989** DNP3 routing table validation rejected some valid routes. RemoteConnect was modified as follows:
- Source Port, Start and End, and Destination Port, Start and End cannot be identical for any two entries
 - An overlapping, non-identical range on the same Source port is not allowed
 - An overlapping, non-identical range on the same Destination port is not allowed
- WI: 55017** Importing serial ports with functions set to 'None' caused RemoteConnect to report an invalid configuration. This was corrected.
- WI: 55043** I/O forcing did not operate when an I/O module was offline. The firmware now processes the forcing request if the control action was unsuccessful, as it would with an Offline channel.
- WI: 55206** Objects with single letter names were not recognized by the RTU firmware. This was corrected.

- WI: 55259** The POINT_IS_BAD quality flag was set unnecessarily for some I/O module conditions. It was replaced with POINT_FAILED for Modbus and DNP3 objects, and STATS_REFERENCE_CHECK when the input is uncalibrated.
- WI: 55268** Invalid addresses were allowed when configuring SCADAPack 574 I/O modules. RemoteConnect now limits the address range on the SP574 I/O module to 0-7.
- WI: 55461** Status code 6602 was reported after updating SCADAPack 57x firmware followed by updating 6602 firmware followed by restarting the RTU. This was corrected.
- WI: 55557** Some dialogs in RemoteConnect were too large to acknowledge and correct invalid configuration. The dialogs are now sized to fit in the available space.
- WI: 55583** Documentation of the configurable Modbus/TCP port number was missing from R2.3.2 release. The information was added.
- WI: 55662** The SYS_LOGIC_AUX0period and SYS_LOGIC_AUX1period values were incorrect by a factor of 10. This was corrected.
- WI: 55781** Changing the Device Type (From DTM > Project Settings) more than once caused the logic editor to stop working. This was corrected.
- WI: 55822** The 6601 firmware did not apply the inversion property when the first 4 counters were set to High speed counter, thus still counting on a rising edge, instead of a falling edge. This was corrected.
- WI: 55923** Changing the SCADAPack Type (e.g. 575 to 574) created an invalid configuration which could not be written to the RTU. This was corrected.
- WI: 55937** The Object browser treated REAL SYSTEM DATA as INT when the value returned was 0.0. The data type of the object is now explicitly checked.
- WI: 55956** Analog object event deviation settings for physical inputs were different from default analog object settings. The default event deviation type is now set to None for both.
- WI: 56076** SCADAPack 57x RTU could reset when the ping function block is triggered with PPP port configured, but there is no connected modem. This was corrected.
- WI: 56083** The RTU can not be configured if the file system is full. Two system status codes were added to inform the user of low resources. Status code 1037 is raised when the available memory drops under 20MB. Status code 1039 is raised when the available memory drops below 10MB.
- WI: 56108** Changing the protocol in the Project creation wizard deselected Modbus IP Clients and Modbus IP Servers options. The selected options are now retained.
- WI: 56155** When a project was copied or saved under a different project name, opening the original and the copied/saved version in two instances of RemoteConnect did not

work. This was corrected.

- WI: 56188** Documented that F_WOPEN function block can be used to open a maximum of 10 files. Previously this information was missing from the documentation.
- WI: 56258** Restart command line help and documentation were missing some services. Missing services were added, and deprecated services removed in both the documentation and the command line help.
- WI: 56416** Scale parameters were not written to the RTU when changed from the default values. RemoteConnect now writes these parameters to the configuration file, if at least one differs from the default values.
- WI: 56490** The RemoteConnect shutdown process is more robust, reducing the need for users to manually kill processes in the event of an unexpected shutdown.
- WI: 56511**
- WI: 58377** Removed the Process Scrubber application from the Windows Start Menu.
- WI: 56683** Updated the 570, 574, and 575 hardware manuals Specifications topics. Rewrote the Data Capacity section to provide more detailed information and updated the Communications section.
- WI: 56686** Improved validation rules for IP addresses in RemoteConnect to exclude invalid IP addresses.
- WI: 56687** When a Modbus Scanner is added for a device with a Modbus RTU serial Device Type the Modbus Registers assigned to the scanner objects had a blank Modbus Data Type. RemoteConnect now creates objects with the expected Modbus Register and Modbus Data Types values.
- WI: 56700** Revised documentation of Modbus message counters to match the operation of the RTU.
- WI: 56710** Changing Number of DNP3 Masters from 2 to 1 did not remove all information from the RTU configuration file. This was corrected.
- WI: 56924** Documentation did not indicate that changes to DNP3 event buffers required restarting the device. This was corrected.
- WI: 56932** SCADAPack 57x RTUs could reset when the generated output of the MULTIME function block exceeded 49 days. This was corrected.
- WI: 57117** SCADAPack 57x RTUs could reset when configuration and logic was written from RemoteConnect. RemoteConnect would report a NOCONF logic status. This was corrected.
- WI: 57120** Changed documentation of the default mode for the MAST task from cyclic to periodic.

- WI: 57148** The Hart scanner did not stop when the RTU was reconfigured without a Hart IO Module. This was corrected.
- WI: 57159** Corrected documentation of maximum Modbus Slave devices from 128 to 150.
- WI: 57201** RemoteConnect allowed entry of any value for 6601 I/O module debounce time. The values are now validated to be a multiple of 10 ms.
- WI: 57215** Added missing documentation of digital inputs Debounce and Invert parameters.
- WI: 57570** Added missing documentation for Data Concentrator behaviour when the Integrity Poll Ratio is set to 0 or 1.
- WI: 57612** DNP3 class polls were not sent when the data concentrator detected a Restart IIN or Buffer Overflow IIN. The data concentrator now forces an integrity poll under these conditions.
- WI: 57622** Communication with the 6601 I/O module could stop and require an RTU restart to restore operation. This was corrected in the 6601 I/O module firmware. See Loss of communication to I/O module(s) in Troubleshooting.
- WI: 57650** System status code 6601 was not reported when the SCADAPack 575 internal I/O board (which is a 6601 module) was not connected. This was corrected.
- WI: 57796** The 20th IP route and 100th DNP3 Route were not imported from an Excel file. This was corrected.
- WI: 57889** The SYS_STATUS_Modeswitch didn't return the HEX switch value on SCADAPack 57x. This was corrected.
- WI: 57926** Corrected the description of status code 3009 to "Unable to create a DNP3 master session due to missing or invalid IP address or destination port"
- WI: 57994** Added an Addendum to the x70 logic documentation describing that MAX_REAL and LIMIT_REAL function blocks don't trigger %S18 and %SW17 when input is out of range.
- WI: 57998** RemoteConnect incorrectly reported applying a security file when a loss of communication prevented transfer of the file. It also correctly displayed a message indicating the communication loss. Now, it no longer displays the incorrect message.
- WI: 58115** The PTC function blocks reported 0 for the stop time when a running logic application was rewritten to the RTU. This was corrected.
- WI: 58267** A device using DNP3 Secure Authentication (SAv2) could lose communication with RemoteConnect with some key change parameters. RemoteConnect now allows editing of the Key Change Interval and Key Change Count parameters in the Comms DTM for the default key option.

- WI: 58428** The Device Lock feature did not re-establish communication with the RTU following a communication loss. RemoteConnect will now attempt to re-establish communication.
- WI: 58466** Digital input LEDs on the SCADAPack 575 were not active after a factory boot. This was corrected. It could be worked around by writing a configuration to the SCADAPack 575.
- WI: 58492** The MKDIR function block reported -1 when a directory could not be created rather than the expected -1016. This was corrected and additional checking of the file path is done.
- WI: 58523** The PID_INT function block would halt the logic and reported an illegal function block call if the in/out parameter array was smaller than 44 elements. This was corrected. This can be worked around using the correct declaration ARRAY [0..43] OF INT.
- WI: 58605** The RTU GETCONFIG command did not report the value of the SYS_ID_INFO_SERIALPORTPOWERON system data reference. This was corrected.
- WI: 58725** RemoteConnect could write a configuration containing Simulator logic. RemoteConnect now checks if the logic editor is in simulation mode before writing.
- WI: 58880** The PID_INT function block logic scan time parameter in pid_para[5] always reported 0 in periodic mode. This was corrected. This parameter will continue to report 0 in cyclic mode as the function block is not compatible with cyclic mode (as documented).
- WI: 58901** Executing an invalid command via "Execute Command" set the connection state to "Disturbed". The connection now remains in the Connected state.
- WI: 58935** Object Browser Object names were not automatically updated when an I/O module was renamed. RemoteConnect now updates the names.
- WI: 58944** The target DNP3 address on the USB connections in RemoteConnect was changed to 0 after a device restart. RemoteConnect now verifies the DNP3 address is successfully read before it is updated in the connection info.
- WI: 58951** Attempting to read a configuration when first launching RemoteConnect could be unsuccessful. RemoteConnect now waits for the device type check to complete before reading.
- WI: 59108** DNP3 Peer Write List was unsuccessful if there were unprintable characters in the file list strings. Unprintable characters are now removed from the start and end of the file list strings.
- WI: 59122** PPP modem connection could be lost and not reacquire its PPP IP address after writing configuration from RemoteConnect. This was corrected.

WI: 59323 The SCADAPack 574 analog input channels were labeled from AI1-AI8 instead of AI0-AI7. This was corrected.

6.10.9 Known Issues (R2.4)

Installation Unity Pro installation compatibility

The SCADAPack RemoteConnect Configuration Software installation process and Unity Pro software installation process can interfere with one another. It is recommended that when installing new versions of Unity Pro software that the repair installation option be run for SCADAPack RemoteConnect. Coexisting installations of RemoteConnect and Unity Pro are supported for Unity Pro versions 13.0, 13.1, and EcoStruxure Control Expert version 14.0 and 14.1.

Workaround: Repair the installations as mentioned above. Remember to “Run as administrator” when doing a Repair.

When installing new versions of SCADAPack RemoteConnect, the installer will automatically attempt a Repair on Unity Pro software.

WI: 47824 **del *** command leaves some files on a USB drive when there are many files on the drive.

Workaround: Repeat the command until the files are removed.

OR

Connect the USB drive to a PC (or other computer) and delete the files.

WI: 47841 When reconfiguring a SCADAPack RTU from one large configuration to another large configuration, the configuration rebuild might not succeed and would report configuration log messages such as “# 565: Unable to create object due to insufficient configuration memory space”.

Workaround: Cold boot the RTU before applying the new configuration. Alternatively, apply a configuration with a very small number of objects and restart the RTU. The new large configuration should then be accepted.

WI: 50233 Installing Unity Pro v13.0 or v13.1 on Windows (French edition) followed by RemoteConnect installs shortcuts to All programs > Schneider Electric > SoCollaborative > Unity Pro for both Unity Pro and SCADAPack Logic applications.

Workaround: Identify, from the shortcut path properties, which shortcuts relate to SCADAPack Logic.

WI: 54918 The SD card on the SCADPack 47x is not supported.

Workaround: Use a USB mass storage device (USB drive) instead.

WI: 57666 The 6602 I/O module is not supported on the SCADAPack 47x.

Workaround: None.

WI: 58181 System status code 5014 and 5017 are sometimes reported when restarting the RTU from the command line.

Workaround: The status codes are incorrect and may be ignored.

6.10.10 Post Installation Troubleshooting

RemoteConnect and Logic Editor Start Up SCADAPack RemoteConnect Configuration Software start-up may be blocked from reopening if previous instances of RemoteConnect or the Logic Editor were not closed cleanly.

Workaround: Launch the Task Manager and shut down any RemoteConnect processes, then restart RemoteConnect.

Logic Editor Logic editor or Types Library update tool library modification

Symptoms

SCADAPack Logic Editor or Types Library Update tool reports the library is opened by another application when attempting to modify the logic library

Steps to resolve

Check that no instances of Unity Pro, Control Expert, and RemoteConnect/SCADAPack x70 Logic Editor are running. Launch the Task Manager and shut down any Unity Pro, Control Expert, and RemoteConnect/SCADAPack x70 Logic Editor processes. If the symptoms persist, it is likely that Windows folder permissions are incorrect.

Check the following:

1. With administrator privilege right-click on the following folder:
C:\ProgramData\Schneider Electric
2. Select **Properties**.
3. Select the **Security** tab.
4. Click **Edit**.
5. Click on the Users entry in the Group or user names section.
6. Scroll down the Permissions for Users area until you see a row called "Write".
7. Check the box in the "Allow" column for the "Write" row.

8. Click **OK**.
The security settings will update on the sub-folders.
9. Click **OK** to exit the Properties dialog.

6.10.11 SCADAPack 57x and 6601 Firmware Version Compatibility

Customer Guidance

6601 upgrade recommendations: Upgrade 6601 I/O modules (both external and built into SP575) to firmware version 2.0.20 and bootloader version 1.80.10. For 6601 input output modules shipped with firmware 1.77.131 or earlier, and where extended over-range capabilities (up to 22 mA) are required, the module may be returned to a Schneider Electric facility for recalibration.

6601 minimum firmware version: 6601 I/O modules shipped from the factory with 1.80.6 or 1.80.10 firmware should **not** be downgraded to versions earlier than 1.80.6.

NOTICE

LOSS OF SENSOR ACCURACY

If you use firmware versions that are incompatible with extended over-range calibration on 6601 analog inputs, the analog inputs may report values 10% lower than the actual value.

Use only firmware versions that are compatible with extended over-range calibration.

Do not use 6601 firmware earlier than 1.80.6 with extended over-range calibration. They are not compatible.

For information on SCADAPack 57x firmware versions 9.03 or earlier, refer to the RemoteConnect R2.0 release notes in the documentation.

Failure to follow these instructions can result in equipment damage.

A new calibration format for 6601 analog inputs has been added to support extended over-range capabilities. Interoperability of various versions of firmware and calibration is described below.

	SP57x Firmw are	6601 Firmw are	6601 Calibrati on	6601 AI Value	Over- range	Comment
✓	9.0.4 or later	1.77.131 or earlier	0...20 mA	Reported normally	Always active at 20.05mA	
✓	9.0.4 or later	1.80.06 or later	0...20 mA	Reported normally	Always active at 20.05mA	

✓	9.0.4 or later	1.80.0 6 or later	0...22 mA	Reported normally	Always active at 22.00mA	Recommended choice for new installations
✗	9.0.4 or later	1.77.131 or earlier	0...22 mA	AI report. 10% lower values	Always active at 20.05mA	NOT RECOMMENDED. Should only occur when a 6601 is mistakenly downgraded from 1.80.6 to an earlier version.

6.11 SCADAPack x70 R2.3.2 Release Notes 01/06/2020

SCADAPack x70 R2.3.2 was first available in January 2020.

Upgrade Requirements

It is highly recommended that updates be installed on your SCADAPack 57x devices if using

- SCADAPack 57x firmware version 9.1.2 and earlier, or
- SCADAPack bootloader firmware version 1.10.

First, install SCADAPack 57x firmware version 9.2.1 or newer, then install SCADAPack 57x bootloader firmware version 1.30 or newer.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Upgrade SCADAPack firmware version 9.1.2 and earlier versions to firmware version 9.2.1 or newer.

Failure to follow these instructions can result in death or serious injury.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Upgrade SCADAPack bootloader firmware version 1.10 to bootloader firmware version 1.30 or newer. Cold boot the SCADAPack device following the upgrade.

Failure to follow these instructions can result in death or serious injury.

Bootloader firmware version 1.30 corrects a start-up initialization issue and digital output initialization issue.

SCADAPack 57x firmware version 9.2.1 corrects an issue for users of firmware version 9.1.2 and earlier. Logic variables T_SPx70_INT and T_SPx70_UINT may indicate incorrect values following an online logic modification and a SCADAPack x70 device restart.

The firmware in this release includes these corrections.

6.11.1 Installation Requirements, Instructions, and Troubleshooting

Refer to “Software Installation.pdf” located both at the root of the folder that contains the installation files and in the documentation set that is installed with RemoteConnect.

6.11.2 Application and Firmware Versions

SCADAPack x70 RemoteConnect application version is 3.6.3

- SCADAPack DNP3 Communication DTM version is 3.6
- SCADAPack x70 Device DTM version is 3.6
- SCADAPack x70 Logic Editor version is 11.1 - 181010
- Schneider Electric Generic HART DTM version is 5.1.1189.11
- HART STB Multiplexer Communication DTM version is 1.0.8.0
- SCADAPack x70 English Documentation version is 3.6.3
- SCADAPack x70 French Documentation version is 1.2.3

SCADAPack x70 Security Administrator version is 1.2.0

SCADAPack 57x firmware version is 9.3.3

SCADAPack 57x bootloader version is 1.30

6601 I/O module firmware version is 1.80.10

6601 I/O module bootloader version is 1.80.10

6602 I/O module firmware version is 1.81.2

6602 I/O module bootloader version is 1.81.2

6.11.3 Software and Firmware Version Compatibility

RemoteConnect version 3.6.3 is intended for use with SCADAPack x70 firmware version 9.3.3.

As of R2.0 and newer, RemoteConnect and SCADAPack 57x firmware is cross compatible with future software and firmware releases. This compatibility is limited to features common to the version of software and firmware available. Unknown feature configurations are parsed and do not block reconfiguration, though the features themselves may be unavailable.

NOTICE

INCONSISTENT DATA, UNPREDICTABLE RESULTS

RemoteConnect versions R2.0 and later are not compatible with projects created with RemoteConnect versions R1.6 and earlier.

See the release notes for RemoteConnect version 2.0 in the documentation for more instructions.

Failure to follow these instructions can result in equipment damage.

6.11.4 Supported Devices

SCADAPack 570

SCADAPack 574

SCADAPack 575

6.11.5 Supported Operating Systems

Windows 7 Professional (32-bit or 64-bit)

Windows 8.1 Professional (32-bit or 64-bit)

Windows 10 Professional (32-bit or 64-bit)

Windows Server 2016

6.11.6 SCADAPack RemoteConnect, Unity Pro, and Control Expert Compatibility

RemoteConnect installations can coexist with specific Unity Pro or Control Expert installations. If RemoteConnect is installed on a computer that had Unity Pro or Control Expert installed previously, the RemoteConnect installation automatically confirms that components in the SCADAPack x70 Logic Editor and Unity Pro or Control Expert are correctly referenced. If Unity Pro or Control Expert is installed or upgraded on a computer that already had RemoteConnect installed, then a **repair** process is likely required on RemoteConnect to confirm that components are correctly referenced. A **repair** process must always be **Run as administrator**.

The Unity Pro or Control Expert versions that are verified as suitable for coexisting installation with RemoteConnect are:

- Unity Pro version 11.1
- Unity Pro version 12.0
- Unity Pro version 13.0*
- Unity Pro version 13.1*
- EcoStruxure Control Expert version 14.0

* RemoteConnect has a known issue with Unity Pro version 13.0 and 13.1 on Windows French edition. See WI: [50233](#)¹³⁹ in the Known Issues section below.

6.11.7 New and Improved Features (R2.3.2)

WI: 48369 Added 2 counter inputs on SCADAPack 570 and SCADAPack 575.

WI: 48371 Added support for Realflo licensing.

WI: 54742 Added Realflo flow computer option in Project settings, the new file wizard,
WI: 54747 and in the SCADAPack status page.

WI: 55730 When the flow computer option is enabled:

WI: 48364

- Modbus registers for Realflo flow computer use are reserved in object configuration.
- Enron Modbus serial port parameters are available.

WI: 57456 The Export Project function is blocked if the project has not been built. This synchronizes logic and configuration before exporting.

WI: 57485 Modified the Update and Build Logic function to automatically save the RemoteConnect project (logic and configuration) after the user confirms the logic should be built. Previously the logic was saved, but the configuration was not.

WI: 57623 Added Device Lock feature. The RTU is locked by default and requires the user to provide a password (or disable the feature) at the first use of the device and following a cold or factory boot.

WI: 58270 Added troubleshooting procedure for RemoteConnect start up when SCADAPack x70 logic library is missing.

WI: 58336 Changed the SERVICE boot settings to provide one DNP3 port (com1) and one Modbus port (com2) and set both ports to RS232.

6.11.8 Fixed Issues (R2.3.2)

WI: 56810 When writing configuration with a large number of objects to the RTU the firmware restarted and RemoteConnect reported a timeout. This is fixed.

WI: 57131 The Read Project command was available when the communication DTM was offline. It is now disabled.

WI: 57182 Update and Build Logic button text was in English when the language was set to French. It is now in French.

- WI: 57252** Pinned RemoteConnect shortcuts on the Windows 10 taskbar would not work after upgrading RemoteConnect. This is fixed.
- WI: 57455** Improved import function to accept files exported from ClearSCADA (Geo SCADA) that don't contain any logic.
- WI: 57464** Closing RemoteConnect without saving changes incorrectly saved changes made in the logic editor, resulting in RemoteConnect settings being out of sync with the logic editor. Now, the logic changes are not saved when the user chooses to close without saving.
- WI: 57531** Fixed a problem preventing renaming object arrays in RemoteConnect. Arrays can now be renamed.
- WI: 57538** Changed the message displayed following export of a project after renaming an object. The message now instructs the user to Update and Build logic from RemoteConnect.
- WI: 57634** RemoteConnect could become non-responsive if objects in RemoteConnect and logic editor were out of sync. This is fixed.
- WI: 57758** Making multiple DNP3 Slave Address changes for elements of a struct variable caused the Logic Editor variable to remain unlocked. The variable is now locked correctly.
- WI: 57903** The RTU was missing some DNP3 points in integrity polls. Fixed a problem that caused the object's pending deadband state to not clear when the deadband time cleared.
- Changed the RemoteConnect setting **Class 0 Data Filter** to **Include Time Deadband data in Class 0** to better describe the operation and updated the description to "When this option is selected, an active time deadband on a DNP3 point will delay creation of DNP3 events and will include the current state or value in Class 0 poll responses. When this option is not selected, an active time deadband will delay creation of DNP3 events and withhold the relevant data from Class 0 poll responses."
- WI: 58109** The RemoteConnect connection state would toggle between Connected and Disturbed when the TCP address of the RTU was different from RemoteConnect. The state now stays in Disturbed.
- WI: 58156** RemoteConnect did not display the Device Type correctly when first launched and connected to an RTU. The Device Type is now displayed correctly.

WI: 58250 RemoteConnect could block the user from clicking the OK button if the Set Device Time button was clicked when the information dialog was open, requiring the user to force close the RemoteConnect application. The button no longer prevents closing the information dialog.

6.11.9 Known Issues (R2.3.2)

Installation Unity Pro installation compatibility

n

The SCADAPack RemoteConnect Configuration Software installation process and Unity Pro software installation process can interfere with one another. It is recommended that when installing new versions of Unity Pro software that the repair installation option be run for SCADAPack RemoteConnect. Coexisting installations of RemoteConnect and Unity Pro are supported for Unity Pro versions 13.0, 13.1, and EcoStruxure Control Expert version 14.0.

Workaround: Repair the installations as mentioned above. Remember to “Run as administrator” when doing a Repair.

When installing new versions of SCADAPack RemoteConnect, the installer will automatically attempt a Repair on Unity Pro software.

WI: 47523 Logic Editor PLC Simulator

The Mode > Start Simulation action in the Logic Editor can take an extended period of time to start. The PLC Simulator is started and the project is prepared for download, but it can take up to 2 minutes for the download to start. After the first download, subsequent uses of the PLC Simulator don't experience this issue while the SCADAPack x70 Logic Editor and PLC simulator remain open.

Workaround: Start the simulator manually from the Windows Programs menu. This may take multiple attempts. After starting via the Windows menu, it should be possible to use Mode > Start Simulation.

WI: 47824 **del *** command leaves some files on a USB drive when there are many files on the drive.

Workaround: Repeat the command until the files are removed.

OR

Connect the USB drive to a PC (or other computer) and delete the files.

- WI: 47841** When reconfiguring a SCADAPack RTU from one large configuration to another large configuration, the configuration rebuild might not succeed and would report configuration log messages such as “# 565: Unable to create object due to insufficient configuration memory space”.
- Workaround:** Cold boot the RTU before applying the new configuration. Alternatively, apply a configuration with a very small number of objects and restart the RTU. The new large configuration should then be accepted.
- WI: 50233** Installing Unity Pro v13.0 or v13.1 on Windows (French edition) followed by RemoteConnect installs shortcuts to All programs > Schneider Electric > SoCollaborative > Unity Pro for both Unity Pro and SCADAPack Logic applications.
- Workaround:** Identify, from the shortcut path properties, which shortcuts relate to SCADAPack Logic.
- WI: 53086** The IP Whitelist sets the TCP or UDP port for a given service (e.g. DNP3 over TCP) from the configuration as it exists when the Whitelist rule is configured. If the port is changed in the RTU configuration at some later point, it is possible that the Whitelist may become out of sync with these values.
- Workaround:** Make a change to the IP whitelist configuration. This will trigger an update from the associated TCP or UDP port configuration.
- OR
- Restart the device after writing the configuration change to the device.
- WI: 53436** If you change the Default DPN3 Port value, the changes to the configuration do not take effect.
- Workaround:** Restart the RTU

6.11.10 Post Installation Troubleshooting

- RemoteC
onnect
and Logic
Editor
Start Up** SCADAPack RemoteConnect Configuration Software start-up may be blocked from reopening if previous instances of RemoteConnect or the Logic Editor were not closed cleanly.
- Workaround:** Run the **Process Scrubber** application, which will shut down any remaining processes, then restart RemoteConnect.
- Logic
Editor** Logic Editor is unable to communicate with SCADAPack RemoteConnect
- Symptoms**

The SCADAPack x70 Logic Editor is starting, but is unable to communicate with SCADAPack RemoteConnect. When this occurs, the Logic Editor may not display variables that were created in the Object Editor and you may not be able to build the application from RemoteConnect.

Steps to resolve

Register pserver.dll as described below

1. Close the Logic Editor and RemoteConnect applications if they are running on the PC.
2. In the Windows menu, search for **cmd.exe** then right-click on it and select **Run as administrator** to open it.
3. In the command line window, change to the default installation directory by typing one of the following commands:

64-bit systems:

```
cd "C:\Program Files (x86)\Schneider Electric\UnityScadaPack 11.1"
```

32-bit systems:

```
cd "C:\Program Files\Schneider Electric\UnitySCADAPack 11.1"
```

4. Type the following command to complete the registration:

```
regsvr32.exe pserver.dll
```

When the registration is complete, a dialog box with the message **DllRegisterServer in pserver.dll succeeded** is displayed.

Logic Editor

Logic editor or Types Library update tool library modification

Symptoms

SCADAPack Logic Editor or Types Library Update tool reports the library is opened by another application when attempting to modify the logic library

Steps to resolve

Check that no instances of Unity Pro and RemoteConnect/SCADAPack x70 Logic Editor are running. Use the **Process Scrubber**, if necessary. If the symptoms persist, it is likely that Windows folder permissions are incorrect.

Check the following:

1. With administrator privilege right-click on the following folder:
C:\ProgramData\Schneider Electric
2. Select **Properties**.
3. Select the **Security** tab.
4. Click **Edit**.

5. Click on the Users entry in the Group or user names section.
6. Scroll down the Permissions for Users area until you see a row called "Write".
7. Check the box in the "Allow" column for the "Write" row.
8. Click **OK**.
The security settings will update on the sub-folders.
9. Click **OK** to exit the Properties dialog.

6.11.11 SCADAPack 57x and 6601 Firmware Version Compatibility

Customer Guidance

6601 upgrade recommendations: Upgrade 6601 I/O modules (both external and built into SP575) to firmware version 1.80.10 and bootloader version 1.80.10. For 6601 input output modules shipped with firmware 1.77.131 or earlier, and where extended over-range capabilities (up to 22 mA) are required, the module may be returned to a Schneider Electric facility for recalibration.

6601 minimum firmware version: 6601 I/O modules shipped from the factory with 1.80.6 or 1.80.10 firmware should **not** be downgraded to versions earlier than 1.80.6.

6601 bootloader upgrade mechanism: The command line command "**restart iofirm <filename> <module address>**" is provided for 6601 firmware upgrades. The 6601 firmware upgrade command can be used to upgrade the 6601 bootloader. This is supported only on 6601 firmware 1.80.6 and later. "**restart iofirm bl6601.bin <module address>**" will apply bootloader file bl6601.bin. The filename **bl6601.bin** is the only filename that is accepted for the bootloader. Other file names will result in an attempt to patch the 6601 firmware and not the 6601 bootloader. The 6601 bootloader version is not reported on the command line.

NOTICE

LOSS OF SENSOR ACCURACY

If you use firmware versions that are incompatible with extended over-range calibration on 6601 analog inputs, the analog inputs may report values 10% lower than the actual value.

Use only firmware versions that are compatible with extended over-range calibration.

Do not use 6601 firmware earlier than 1.80.6 with extended over-range calibration. They are not compatible.

For information on SCADAPack 57x firmware versions 9.03 or earlier, refer to the RemoteConnect R2.0 release notes in the documentation.

Failure to follow these instructions can result in equipment damage.

A new calibration format for 6601 analog inputs has been added to support extended over-range capabilities. Interoperability of various versions of firmware and calibration is described below.

	SP57x Firmware	6601 Firmware	6601 Calibration	6601 AI Value	Over-range	Comment
✓	9.0.4 or later	1.77.131 or earlier	0...20 mA	Reported normally	Always active at 20.05mA	
✓	9.0.4 or later	1.80.06 or later	0...20 mA	Reported normally	Always active at 20.05mA	
✓	9.0.4 or later	1.80.06 or later	0...22 mA	Reported normally	Always active at 22.00mA	Recommended choice for new installations
✗	9.0.4 or later	1.77.131 or earlier	0...22 mA	AI report. 10% lower values	Always active at 20.05mA	NOT RECOMMENDED. Should only occur when a 6601 is mistakenly downgraded from 1.80.6 to an earlier version.

6.12 SCADAPack x70 R2.3.1 Release Notes 06/9/2019

SCADAPack x70 R2.3.1 was first available in September 2019.

Upgrade Requirements

It is highly recommended that updates be installed on your SCADAPack 57x devices if using

- SCADAPack 57x firmware version 9.1.2 and earlier, or
- SCADAPack bootloader firmware version 1.10.

First, install SCADAPack 57x firmware version 9.2.1 or newer, then install SCADAPack 57x bootloader firmware version 1.30 or newer.

WARNING

UNINTENDED EQUIPMENT OPERATION

Upgrade SCADAPack firmware version 9.1.2 and earlier versions to firmware version 9.2.1 or newer.

Failure to follow these instructions can result in death or serious injury.

⚠ WARNING**UNINTENDED EQUIPMENT OPERATION**

Upgrade SCADAPack bootloader firmware version 1.10 to bootloader firmware version 1.30 or newer. Cold boot the SCADAPack device following the upgrade.

Failure to follow these instructions can result in death or serious injury.

Bootloader firmware version 1.30 corrects a start-up initialization issue and digital output initialization issue.

SCADAPack 57x firmware version 9.2.1 corrects an issue for users of firmware version 9.1.2 and earlier. Logic variables T_SPx70_INT and T_SPx70_UINT may indicate incorrect values following an online logic modification and a SCADAPack x70 device restart.

The firmware in this release includes these corrections.

6.12.1 Installation Requirements, Instructions, and Troubleshooting

Refer to “Software Installation.pdf” located both at the root of the folder that contains the installation files and in the documentation set that is installed with RemoteConnect.

6.12.2 Application and Firmware Versions

SCADAPack x70 RemoteConnect application version is 3.6.2

- SCADAPack DNP3 Communication DTM version is 3.6
- SCADAPack x70 Device DTM version is 3.6
- SCADAPack x70 Logic Editor version is 11.1 - 181010
- Schneider Electric Generic HART DTM version is 5.1.1189.11
- HART STB Multiplexer Communication DTM version is 1.0.8.0
- SCADAPack x70 English Documentation version is 3.6.2
- SCADAPack x70 French Documentation version is 1.2.3

SCADAPack x70 Security Administrator version is 1.2.0

SCADAPack 57x firmware version is 9.3.2

SCADAPack 57x bootloader version is 1.30

6601 I/O module firmware version is 1.80.10

6601 I/O module bootloader version is 1.80.10

6602 I/O module firmware version is 1.81.2

6602 I/O module bootloader version is 1.81.2

6.12.3 Software and Firmware Version Compatibility

RemoteConnect version 3.6.2 is intended for use with SCADAPack x70 firmware version 9.3.2.

As of R2.0 and newer, RemoteConnect and SCADAPack 57x firmware is cross compatible with future software and firmware releases. This compatibility is limited to features common to the version of software and firmware available. Unknown feature configurations are parsed and do not block reconfiguration, though the features themselves may be unavailable.

NOTICE

INCONSISTENT DATA, UNPREDICTABLE RESULTS

RemoteConnect versions R2.0 and later are not compatible with projects created with RemoteConnect versions R1.6 and earlier.

See the release notes for RemoteConnect version 2.0 in the documentation for more instructions.

Failure to follow these instructions can result in equipment damage.

6.12.4 Supported Devices

SCADAPack 570

SCADAPack 574

SCADAPack 575

6.12.5 Supported Operating Systems

Windows 7 Professional (32-bit or 64-bit)

Windows 8.1 Professional (32-bit or 64-bit)

Windows 10 Professional (32-bit or 64-bit)

Windows Server 2016

6.12.6 SCADAPack RemoteConnect, Unity Pro, and Control Expert Compatibility

RemoteConnect installations can coexist with specific Unity Pro or Control Expert installations. If RemoteConnect is installed on a computer that had Unity Pro or Control Expert installed previously, the RemoteConnect installation automatically confirms that components in the SCADAPack x70 Logic Editor and Unity Pro or Control Expert are correctly referenced. If Unity Pro or Control Expert is installed or upgraded on a computer that already had RemoteConnect installed, then a **repair** process is likely required on RemoteConnect to confirm that components are correctly referenced. A **repair** process must always be **Run as administrator**.

The Unity Pro or Control Expert versions that are verified as suitable for coexisting installation with RemoteConnect are:

- Unity Pro version 11.1
- Unity Pro version 12.0
- Unity Pro version 13.0*
- Unity Pro version 13.1*
- EcoStruxure Control Expert version 14.0

* RemoteConnect has a known issue with Unity Pro version 13.0 and 13.1 on Windows French edition. See WI: [50233](#)^[181] in the Known Issues section below.

6.12.7 New and Improved Features (R2.3.1)

WI: 47734 Modbus master and slave diagnostics are integrated into a single

WI: 47742 MODBUSDIAG command on the command line. The information provided by the diagnostics is improved.

WI: 47833 Improved the RTU start up time with large DNP3 configurations.

WI: 48275 Modbus register byte order for 32-bit values (REAL, DINT, UDINT) can be selected for Modbus/TCP Server and Modbus RTU Slave.

WI: 48377 Modbus master and slave are supported on the same serial port. Select the Modbus port function in RemoteConnect.

WI: 54749 Added a Licensing tab to the online mode. This tab shows all license information for the RTU and improves the presentation of application licenses.

WI: 55583 The Modbus/TCP port number is configurable. Previously it was fixed at 502.

WI: 56222 Added Import from Geo SCADA button on the offline logic page, advanced section.

The following features will be used with a future Realflo release. They are visible in RemoteConnect.

WI: 54742 Added Realflo flow computer option in Project settings, the new file wizard,
WI: 54747 and in the SCADAPack status page.

WI: 55730 When the flow computer option is enabled:
WI: 48364

- Modbus registers for Realflo flow computer use are reserved in object configuration.
- Enron Modbus serial port parameters are available.

WI: 48371 Added support for Realflo licensing.

6.12.8 Fixed Issues (R2.3.1)

WI: 56868 Fixed occasional loss of configuration after firmware update. Firmware prior to version 9.3.2 generated invalid Modbus Scanner and DNP3 Data Concentrator configurations under some circumstances. The firmware would reject the invalid configuration after a firmware update and return to default settings. Firmware version 9.3.2 does not produce the invalid configuration and can identify and correct the problem when reading configurations produced by earlier versions of firmware.

WI: 56794 RemoteConnect created duplicate variables in the Object Editor and the Logic Editor under some circumstances. Additional checks have been added and the user is presented with options for fixing inconsistencies when they are detected. The “Replace Variables” command has been extended to address the situation.

WI: 56405 Update and Build logic operations display a dialog and complete before other functions can be selected.

WI: 55774 Improved documentation for launching the PLC Simulator for SCADAPack logic.

WI: 56444 Fixed an issue where the DNP3 device address was not changed after writing a large configuration.

WI: 55683 Corrected conditions that led to invalid reports of status code 1040. Previously this was incorrectly reported when scaling some raw integer values into floating point engineering values. Removed the status code as it can no longer occur.

WI: 55705 Fixed an issue where F_MKDIR Function Block did not return 0 when a directory is successfully created.

- WI: 55829** Fixed an issue with Modbus RTU serial slave that rejected some valid commands.
- WI: 55719** Fixed an issue where importing an Excel file twice would result in duplicate objects.
- WI: 55826** Removed invalid setting for inverting digital inputs on 5000 series modules. Inverting inputs is not supported in these modules. Previously, the invalid setting in RemoteConnect was ignored by the firmware.
- WI: 56461** Fixed RTU continuous restart with task watchdog of 0x2000 when loading large configurations into the RTU.
- WI: 56574** Fixed RTU restart with task watchdog of 0x4000 when serial data was received on the console port during start up.
- WI: 56647** Fixed RTU restart when IP_PING is called with some invalid IP addresses such as non-nodal addresses ending in 0 (e.g. 10.2.3.0).
- WI: 55599** Fixed occasional read errors with 5000 series and 6601 I/O modules during file write operations. Previously, this could delay reading of data from the modules. The data would be read on the next attempt.
- WI: 55598** Fixed lock up of Ethernet and USB communication during execution of some logic applications.
- WI: 56609** Added check of RemoteConnect archive file (RCZ) version. RemoteConnect will display a message and abort opening the file if the file is from a newer version of RemoteConnect.

6.12.9 Known Issues (R2.3.1)

Installation Unity Pro installation compatibility

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The SCADAPack RemoteConnect Configuration Software installation process and Unity Pro software installation process can interfere with one another. It is recommended that when installing new versions of Unity Pro software that the repair installation option be run for SCADAPack RemoteConnect. Coexisting installations of RemoteConnect and Unity Pro are supported for Unity Pro versions 13.0, 13.1, and EcoStruxure Control Expert version 14.0.

Workaround: Repair the installations as mentioned above. Remember to “Run as administrator” when doing a Repair.

When installing new versions of SCADAPack RemoteConnect, the installer will automatically attempt a Repair on Unity Pro software.

WI: 47523 Logic Editor PLC Simulator

The Mode > Start Simulation action in the Logic Editor can take an extended period of time to start. The PLC Simulator is started and the project is prepared for download, but it can take up to 2 minutes for the download to start. After the first download, subsequent uses of the PLC Simulator don't experience this issue while the SCADAPack x70 Logic Editor and PLC simulator remain open.

Workaround: Start the simulator manually from the Windows Programs menu. This may take multiple attempts. After starting via the Windows menu, it should be possible to use Mode > Start Simulation.

WI: 47824 **del *** command leaves some files on a USB drive when there are many files on the drive.

Workaround: Repeat the command until the files are removed.

OR

Connect the USB drive to a PC (or other computer) and delete the files.

WI: 47841 When reconfiguring a SCADAPack RTU from one large configuration to another large configuration, the configuration rebuild might not succeed and would report configuration log messages such as “# 565: Unable to create object due to insufficient configuration memory space”.

Workaround: Cold boot the RTU before applying the new configuration. Alternatively, apply a configuration with a very small number of objects and restart the RTU. The new large configuration should then be accepted.

WI: 50233 Installing Unity Pro v13.0 or v13.1 on Windows (French edition) followed by RemoteConnect installs shortcuts to All programs > Schneider Electric > SoCollaborative > Unity Pro for both Unity Pro and SCADAPack Logic applications.

Workaround: Identify, from the shortcut path properties, which shortcuts relate to SCADAPack Logic.

WI: 53086 The IP Whitelist sets the TCP or UDP port for a given service (e.g. DNP3 over TCP) from the configuration as it exists when the Whitelist rule is configured.

If the port is changed in the RTU configuration at some later point, it is possible that the Whitelist may become out of sync with these values.

Workaround: Make a change to the IP whitelist configuration. This will trigger an update from the associated TCP or UDP port configuration.

OR

Restart the device after writing the configuration change to the device.

WI: 53436 If you change the Default DPN3 Port value, the changes to the configuration do not take effect.

Workaround: Restart the RTU

48546 String input parameters for file function blocks are limited to 126 characters in function block diagram program sections, and 254 characters in structured text program sections due to logic editor restrictions. Animation tables display only the first 100 characters of the strings. This is not clear in the documentation.

Workaround: Be aware of these limitations when creating and debugging applications.

6.12.10 Post Installation Troubleshooting

RemoteConnect and Logic Editor Start Up SCADAPack RemoteConnect Configuration Software start-up may be blocked from reopening if previous instances of RemoteConnect or the Logic Editor were not closed cleanly.

Workaround: Run the **Process Scrubber** application, which will shut down any remaining processes, then restart RemoteConnect.

Logic Editor Logic Editor is unable to communicate with SCADAPack RemoteConnect

Symptoms

The SCADAPack x70 Logic Editor is starting, but is unable to communicate with SCADAPack RemoteConnect. When this occurs, the Logic Editor may not display variables that were created in the Object Editor and you may not be able to build the application from RemoteConnect.

Steps to resolve

Register pserver.dll as described below

1. Close the Logic Editor and RemoteConnect applications if they are running on the PC.
2. In the Windows menu, search for **cmd.exe** then right-click on it and select **Run as administrator** to open it.
3. In the command line window, change to the default installation directory by typing one of the following commands:

64-bit systems:

```
cd "C:\Program Files (x86)\Schneider Electric\UnityScadaPack 11.1"
```

32-bit systems:

```
cd "C:\Program Files\Schneider Electric\UnitySCADAPack 11.1"
```

4. Type the following command to complete the registration:

```
regsvr32.exe pserver.dll
```

When the registration is complete, a dialog box with the message **DllRegisterServer in pserver.dll succeeded** is displayed.

Logic Editor

Logic editor or Types Library update tool library modification

Symptoms

SCADAPack Logic Editor or Types Library Update tool reports the library is opened by another application when attempting to modify the logic library

Steps to resolve

Check that no instances of Unity Pro and RemoteConnect/SCADAPack x70 Logic Editor are running. Use the **Process Scrubber**, if necessary. If the symptoms persist, it is likely that Windows folder permissions are incorrect.

Check the following:

1. With administrator privilege right-click on the following folder:
C:\ProgramData\Schneider Electric
2. Select **Properties**.
3. Select the **Security** tab.
4. Click **Edit**.
5. Click on the Users entry in the Group or user names section.
6. Scroll down the Permissions for Users area until you see a row called "Write".
7. Check the box in the "Allow" column for the "Write" row.
8. Click **OK**.

- The security settings will update on the sub-folders.
- Click **OK** to exit the Properties dialog.

6.12.11 SCADAPack 57x and 6601 Firmware Version Compatibility

Customer Guidance

6601 upgrade recommendations: Upgrade 6601 I/O modules (both external and built into SP575) to firmware version 1.80.10 and bootloader version 1.80.10. For 6601 input output modules shipped with firmware 1.77.131 or earlier, and where extended over-range capabilities (up to 22 mA) are required, the module may be returned to a Schneider Electric facility for recalibration.

6601 minimum firmware version: 6601 I/O modules shipped from the factory with 1.80.6 or 1.80.10 firmware should **not** be downgraded to versions earlier than 1.80.6.

6601 bootloader upgrade mechanism: The command line command “**restart iofirm <filename> <module address>**” is provided for 6601 firmware upgrades. The 6601 firmware upgrade command can be used to upgrade the 6601 bootloader. This is supported only on 6601 firmware 1.80.6 and later. “**restart iofirm bl6601.bin <module address>**” will apply bootloader file bl6601.bin. The filename **bl6601.bin** is the only filename that is accepted for the bootloader. Other file names will result in an attempt to patch the 6601 firmware and not the 6601 bootloader. The 6601 bootloader version is not reported on the command line.

NOTICE	
LOSS OF SENSOR ACCURACY	
If you use firmware versions that are incompatible with extended over-range calibration on 6601 analog inputs, the analog inputs may report values 10% lower than the actual value.	
Use only firmware versions that are compatible with extended over-range calibration.	
Do not use 6601 firmware earlier than 1.80.6 with extended over-range calibration. They are not compatible.	
For information on SCADAPack 57x firmware versions 9.03 or earlier, refer to the RemoteConnect R2.0 release notes in the documentation.	
Failure to follow these instructions can result in equipment damage.	

A new calibration format for 6601 analog inputs has been added to support extended over-range capabilities. Interoperability of various versions of firmware and calibration is described below.

	SP57x Firmw are	6601 Firmw are	6601 Calibrati on	6601 AI Value	Over- range	Comment

✓	9.0.4 or later	1.77.131 or earlier	0...20 mA	Reported normally	Always active at 20.05mA	
✓	9.0.4 or later	1.80.06 or later	0...20 mA	Reported normally	Always active at 20.05mA	
✓	9.0.4 or later	1.80.06 or later	0...22 mA	Reported normally	Always active at 22.00mA	Recommended choice for new installations
✗	9.0.4 or later	1.77.131 or earlier	0...22 mA	AI report. 10% lower values	Always active at 20.05mA	NOT RECOMMENDED. Should only occur when a 6601 is mistakenly downgraded from 1.80.6 to an earlier version.

6.13 SCADAPack x70 R2.2.2 Release Notes 10/7/2019

SCADAPack x70 R2.2.2 was first available in July 2019.

Upgrade Requirements

This release includes SCADAPack 57x bootloader and firmware updates. It is highly recommended that these updates be installed on your SCADAPack 57x devices.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Upgrade SCADAPack firmware 9.1.2 and earlier versions to firmware 9.2.1 or newer.

Failure to follow these instructions can result in death or serious injury.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Upgrade SCADAPack bootloader firmware 1.10 to bootloader firmware 1.30 or newer. Cold boot the SCADAPack device following the upgrade.

Failure to follow these instructions can result in death or serious injury.

Bootloader 1.30 corrects a start-up initialization issue and digital output initialization issue. For more information see [WI: 53096^{\[175\]}](#) in the Fixed Issues section below.

Firmware 9.2.1 corrects an issue for users of firmware 9.1.2 and earlier. Logic variables T_SPx70_INT and T_SPx70_UINT may indicate incorrect values following an online logic modification and a SCADAPack x70 device restart. For more information, see [WI: 53148¹⁷⁶](#) in the Fixed Issues section below.

First, install SCADAPack 57x firmware version 9.2.1, then install SCADAPack 57x bootloader version 1.30 or newer.

6.13.1 Installation Requirements, Instructions, and Troubleshooting

Refer to “Software Installation.pdf” located both at the root of the folder that contains the installation files and in the documentation set that is installed with RemoteConnect.

6.13.2 Application and Firmware Versions

SCADAPack x70 RemoteConnect application version is 3.5.3

- SCADAPack DNP3 Communication DTM version is 3.5
- SCADAPack x70 Device DTM version is 3.5
- SCADAPack x70 Logic Editor version is 11.1 - 181010
- Schneider Electric Generic HART DTM version is 5.1.1189.11
- HART STB Multiplexer Communication DTM version is 1.0.8.0
- SCADAPack x70 English Documentation version is 3.5.3
- SCADAPack x70 French Documentation version is 1.2.3

SCADAPack x70 Security Administrator version is 1.2.0

SCADAPack 57x firmware version is 9.2.3

SCADAPack 57x bootloader version is 1.30

6601 I/O module firmware version is 1.80.10

6601 I/O module bootloader version is 1.80.10

6602 I/O module firmware version is 1.81.2

6602 I/O module bootloader version is 1.81.2

6.13.3 Software and Firmware Version Compatibility

RemoteConnect version **3.5.3** is intended for use **with** SCADAPack x70 **firmware** version **9.2.1, 9.2.2, 9.2.3**.

As of R2.0 and newer, RemoteConnect and SCADAPack 57x firmware is cross compatible with future software and firmware releases. This compatibility is limited to features common to the version of software and firmware available. Unknown feature configurations are parsed and do not block reconfiguration, though the features themselves may be unavailable.

NOTICE

INCONSISTENT DATA, UNPREDICTABLE RESULTS

RemoteConnect versions R2.0 and later are not compatible with projects created with RemoteConnect versions R1.6 and earlier.

See the release notes for RemoteConnect version 2.0 in the documentation for more instructions.

Failure to follow these instructions can result in equipment damage.

6.13.4 Supported Devices

SCADAPack 570

SCADAPack 574

SCADAPack 575

6.13.5 Supported Operating Systems

Windows 7 Professional (32-bit or 64-bit)

Windows 8.1 Professional (32-bit or 64-bit)

Windows 10 Professional (32-bit or 64-bit)

Windows Server 2016

6.13.6 Unity Pro Compatibility

RemoteConnect installations can coexist with specific Unity Pro installations. If RemoteConnect is installed on a computer that had Unity Pro installed previously, the RemoteConnect installation automatically confirms that components in the SCADAPack x70 Logic Editor and Unity Pro are correctly referenced. If Unity Pro is installed or upgraded on a computer that already had RemoteConnect installed, then a **repair** process is likely required on RemoteConnect to confirm that components are correctly referenced. A **repair** process must always be **Run as administrator**.

The Unity Pro versions that are verified as suitable for coexisting installation with RemoteConnect are:

- Unity Pro version 11.1

- Unity Pro version 12
 - Unity Pro version 13.0*
 - Unity Pro version 13.1*
 - EcoStruxure™ Control Expert (formerly known as Unity Pro) version 14.0
- * RemoteConnect has a known issue with Unity Pro version 13.0 and 13.1 on Windows (French edition). See WI: [50233](#)^[181].

6.13.7 New and Improved Features (R2.2.2)

There are no updates in this release

6.13.8 Fixed Issues (R2.2.2)

WI: 55888 MODBUS Read/Write scanners associated with logic variables, performed a write on startup before commencing periodic read operations and write-on-change operations.

This functionality has been updated to perform read operations at startup to update the RTU database from slave device register values. Only Forced RTU objects are written to the MODBUS device at startup. Thereafter, periodic read & write-on-change operations occur.

WI: 55711 RTU watchdog restarts repeatedly occurred on some Modbus Scanner configurations due to a resource conflict between the Modbus Scanner and a Serial Port.

The resource conflict no longer occurs.

WI: 55556 The Logic Editor could not be opened after migrating some projects from earlier versions.

The project is now migrated successfully, after which the Logic Editor can be opened.

6.13.9 Known Issues (R2.2.2)

Installation Unity Pro installation compatibility

The SCADAPack RemoteConnect Configuration Software installation process and Unity Pro software installation process can interfere with one another.

It is recommended that when installing new versions of Unity Pro software that the repair installation option be run for SCADAPack RemoteConnect. Coexisting installations of RemoteConnect and Unity Pro are supported for Unity Pro versions 11.1, 12, 13.0, 13.1, and EcoStruxure Control Expert 14.

Workaround: Repair the installations as mentioned above. Remember to “Run as administrator” when doing a Repair.

When installing new versions of SCADAPack RemoteConnect, the installer will automatically attempt a Repair on Unity Pro software.

WI: 47523 Logic Editor PLC Simulator

The Mode > Start Simulation action in the Logic Editor can take an extended period of time to start. The PLC Simulator is started and the project is prepared for download, but it can take up to 2 minutes for the download to start. After the first download, subsequent uses of the PLC Simulator don't experience this issue while the SCADAPack x70 Logic Editor and PLC simulator remain open.

Workaround: Start the simulator manually from the Windows Programs menu. This may take multiple attempts. After starting via the Windows menu, it should be possible to use Mode > Start Simulation.

WI:47780 Modbus master and Modbus slave diagnostics on serial connections don't show both transmit and received messages.

Workaround: To see the messages, enable both master and slave diagnostics. See the MODMASTERDIAG and MODSLAVEDIAG commands.

WI: 47824 **del *** command leaves some files on a USB drive when there are many files on the drive.

Workaround: Repeat the command until the files are removed.

OR

Connect the USB drive to a PC (or other computer) and delete the files.

WI: 47841 When reconfiguring a SCADAPack RTU from one large configuration to another large configuration, the configuration rebuild might not succeed and would report configuration log messages such as “# 565: Unable to create object due to insufficient configuration memory space”.

Workaround: Cold boot the RTU before applying the new configuration. Alternatively, apply a configuration with a very small number of objects and restart the RTU. The new large configuration should then be accepted.

WI: 50233 Installing Unity Pro v13.0 or v13.1 on Windows (French edition) followed by RemoteConnect installs shortcuts to All programs > Schneider Electric > SoCollaborative > Unity Pro for both Unity Pro and SCADAPack Logic applications.

Workaround: Identify, from the shortcut path properties, which shortcuts relate to SCADAPack Logic.

WI: 53086 The IP Whitelist sets the TCP or UDP port for a given service (e.g. DNP3 over TCP) from the configuration as it exists when the Whitelist rule is configured. If the port is changed in the RTU configuration at some later point, it is possible that the Whitelist may become out of sync with these values.

Workaround: Make a change to the IP whitelist configuration. This will trigger an update from the associated TCP or UDP port configuration.

OR

Restart the device after writing the configuration change to the device.

WI: 53435 If you change the Default DNP3 Port value, the changes to the configuration do not take effect.

Workaround: Restart the RTU

6.13.10 Post Installation Troubleshooting

RemoteConnect Issue

and Logic Editor Start Up

SCADAPack RemoteConnect Configuration Software start-up may be blocked from reopening if previous instances of RemoteConnect or the Logic Editor were not closed cleanly.

Workaround: Run the **Process Scrubber** application, which will shut down any remaining processes, then restart RemoteConnect.

Logic Editor

Logic Editor is unable to communicate with SCADAPack RemoteConnect

Symptoms

The SCADAPack x70 Logic Editor is starting, but is unable to communicate with SCADAPack RemoteConnect. When this occurs, the Logic Editor may not display variables that were created in the Object Editor and you may not be able to build the application from RemoteConnect.

Steps to resolve

Register pserver.dll as described below

1. Close the Logic Editor and RemoteConnect applications if they are running on the PC.
2. In the Windows menu, search for **cmd.exe** then right-click on it and select **Run as administrator** to open it.
3. In the command line window, change to the default installation directory by typing one of the following commands:

64-bit systems:

```
cd "C:\Program Files (x86)\Schneider Electric\UnityScadaPack 11.1"
```

32-bit systems:

```
cd "C:\Program Files\Schneider Electric\UnitySCADAPack 11.1"
```

4. Type the following command to complete the registration:

```
regsvr32.exe pserver.dll
```

When the registration is complete, a dialog box with the message **DllRegisterServer in pserver.dll succeeded** is displayed.

Logic Editor

Issue

Logic editor or Types Library update tool library modification

Symptoms

SCADAPack Logic Editor or Types Library Update tool reports the library is opened by another application when attempting to modify the logic library

Steps to resolve

Check that no instances of Unity Pro and RemoteConnect/SCADAPack x70 Logic Editor are running. Use the **Process Scrubber**, if necessary. If

the symptoms persists, it is likely that Windows folder permissions are incorrect.

Check the following:

1. With administrator privilege right-click on the following folder:
C:\ProgramData\Schneider Electric
2. Select **Properties**.
3. Select the **Security** tab.
4. Click **Edit**.
5. Click on the Users entry in the Group or user names section.
6. Scroll down the Permissions for Users area until you see a row called "Write".
7. Check the box in the "Allow" column for the "Write" row.
8. Click **OK**.
The security settings will update on the sub-folders.
9. Click **OK** to exit the Properties dialog.

6.13.11 SCADAPack 57x and 6601 Firmware Version Compatibility

Customer Guidance

6601 upgrade recommendations: Upgrade 6601 I/O modules (both external and built into SP575) to firmware version 1.80.10 and bootloader version 1.80.10. For 6601 input output modules shipped with firmware 1.77.131 or earlier, and where extended over-range capabilities (up to 22 mA) are required, the module may be returned to a Schneider Electric facility for recalibration.

6601 minimum firmware version: 6601 I/O modules shipped from the factory with 1.80.6 or 1.80.10 firmware should **not** be downgraded to versions earlier than 1.80.6.

6601 bootloader upgrade mechanism: The command line command "**restart iofirm <filename> <module address>**" is provided for 6601 firmware upgrades. The 6601 firmware upgrade command can be used to upgrade the 6601 bootloader. This is supported only on 6601 firmware 1.80.6 and later. "**restart iofirm bl6601.bin <module address>**" will apply bootloader file bl6601.bin. The filename **bl6601.bin** is the only filename that is accepted for the bootloader. Other file names will result in an attempt to patch the 6601 firmware and not the 6601 bootloader. The 6601 bootloader version is not reported on the command line.

NOTICE

LOSS OF SENSOR ACCURACY

If you use firmware versions that are incompatible with extended over-range calibration on 6601 analog inputs, the analog inputs may report values 10% lower than the actual value.

Use only firmware versions that are compatible with extended over-range calibration.

Do not use 6601 firmware earlier than 1.80.6 with extended over-range calibration. They are not compatible.

For information on SCADAPack 57x firmware versions 9.03 or earlier, refer to the RemoteConnect R2.0 release notes in the documentation.

Failure to follow these instructions can result in equipment damage.

A new calibration format for 6601 analog inputs has been added to support extended over-range capabilities. Interoperability of various versions of firmware and calibration is described below.

	SP57x Firmw are	6601 Firmw are	6601 Calibrati on	6601 AI Value	Over-range	Comment
✓	9.0.4 or later	1.77.131 or earlier	0...20 mA	Reporte d normal ly	Always active at 20.05mA	
✓	9.0.4 or later	1.80.06 or later	0...20 mA	Reporte d normal ly	Always active at 20.05mA	
✓	9.0.4 or later	1.80.06 or later	0...22 mA	Reporte d normal ly	Always active at 22.00mA	Recommended choice for new installations
✗	9.0.4 or later	1.77.131 or earlier	0...22 mA	AI report. 10% lower values	Always active at 20.05mA	NOT RECOMMENDED. Should only occur when a 6601 is mistakenly downgraded from 1.80.6 to an earlier version.

6.14 SCADAPack x70 R2.2.1 Release Notes 01/05/2019

SCADAPack x70 R2.2.1 was first available in May 2019.

Upgrade Requirements

This release includes SCADAPack 57x bootloader and firmware updates. It is highly recommended that these updates be installed on your SCADAPack 57x devices.

⚠ WARNING**UNINTENDED EQUIPMENT OPERATION**

Upgrade SCADAPack firmware 9.1.2 and earlier versions to firmware 9.2.1 or newer.

Failure to follow these instructions can result in death or serious injury.

⚠ WARNING**UNINTENDED EQUIPMENT OPERATION**

Upgrade SCADAPack bootloader firmware 1.10 to bootloader firmware 1.30 or newer. Cold boot the SCADAPack device following the upgrade.

Failure to follow these instructions can result in death or serious injury.

Bootloader 1.30 corrects a start-up initialization issue and digital output initialization issue. For more information see [WI: 53096](#)^[175] in the Fixed Issues section below.

Firmware 9.2.1 corrects an issue for users of firmware 9.1.2 and earlier. Logic variables T_SPx70_INT and T_SPx70_UINT may indicate incorrect values following an online logic modification and a SCADAPack x70 device restart. For more information, see [WI: 53148](#)^[176] in the Fixed Issues section below.

First, install SCADAPack 57x firmware version 9.2.1, then install SCADAPack 57x bootloader version 1.30 or newer.

6.14.1 Installation Requirements, Instructions, and Troubleshooting

Refer to “Software Installation.pdf” located both at the root of the folder that contains the installation files and in the documentation set that is installed with RemoteConnect.

6.14.2 Application and Firmware Versions

SCADAPack x70 RemoteConnect application version is 3.5.2

- SCADAPack DNP3 Communication DTM version is 3.5
- SCADAPack x70 Device DTM version is 3.5
- SCADAPack x70 Logic Editor version is 11.1 - 181010
- Schneider Electric Generic HART DTM version is 5.1.1189.11
- HART STB Multiplexer Communication DTM version is 1.0.8.0
- SCADAPack x70 English Documentation version is 3.5.2
- SCADAPack x70 French Documentation version is 1.2.3

SCADAPack x70 Security Administrator version is 1.2.0

SCADAPack 57x firmware version is 9.2.2

SCADAPack 57x bootloader version is 1.30

6601 I/O module firmware version is 1.80.10

6601 I/O module bootloader version is 1.80.10

6602 I/O module firmware version is 1.81.2

6602 I/O module bootloader version is 1.81.2

6.14.3 Software and Firmware Version Compatibility

RemoteConnect version **3.5.2** is intended for use **with** SCADAPack x70 **firmware** version **9.2.1** or **9.2.2**

As of R2.0 and newer, RemoteConnect and SCADAPack 57x firmware is cross compatible with future software and firmware releases. This compatibility is limited to features common to the version of software and firmware available. Unknown feature configurations are parsed and do not block reconfiguration, though the features themselves may be unavailable.

NOTICE

INCONSISTENT DATA, UNPREDICTABLE RESULTS

RemoteConnect versions R2.0 and later are not compatible with projects created with RemoteConnect versions R1.6 and earlier.

See the release notes for RemoteConnect version 2.0 in the documentation for more instructions.

Failure to follow these instructions can result in equipment damage.

6.14.4 Supported Devices

SCADAPack 570

SCADAPack 574

SCADAPack 575

6.14.5 Supported Operating Systems

Windows 7 Professional (32-bit or 64-bit)

Windows 8.1 Professional (32-bit or 64-bit)

Windows 10 Professional (32-bit or 64-bit)

Windows Server 2016

6.14.6 Unity Pro Compatibility

RemoteConnect installations can coexist with specific Unity Pro installations. If RemoteConnect is installed on a computer that had Unity Pro installed previously, the RemoteConnect installation automatically confirms that components in the SCADAPack x70 Logic Editor and Unity Pro are correctly referenced. If Unity Pro is installed or upgraded on a computer that already had RemoteConnect installed, then a **repair** process is likely required on RemoteConnect to confirm that components are correctly referenced. A **repair** process must always be **Run as administrator**.

The Unity Pro versions that are verified as suitable for coexisting installation with RemoteConnect are:

- Unity Pro version 11.1
- Unity Pro version 12
- Unity Pro version 13.0*
- Unity Pro version 13.1*
- EcoStruxure™ Control Expert (formerly known as Unity Pro) version 14.0

* RemoteConnect has a known issue with Unity Pro version 13.0 and 13.1 on Windows (French edition). See WI: [50233](#)¹⁸¹.

6.14.7 New and Improved Features (R2.2.1)

WI: 55071

A hotfix is provided on the RemoteConnect R2.2.1 DVD to add the function IS_PAR_CON to the SCADAPack x70 logic library. This function is compatible with the Unity Pro / Control Expert function of the same name. It is used in DFBs to determine, for a DFB instance in a program section, whether the user has connected a variable to the specified parameter (pin) of the DFB instance. The IS_PAR_CON function is not installed automatically.

If this function is required in logic, you can install the hotfix from the RemoteConnect DVD menu.

6.14.8 Fixed Issues (R2.2.1)

WI: 54733 Logic source written from the logic editor could not be read from the RTU. This is corrected. Additional diagnostics were added to the firmware.

WI: 55025 A missing I/O module (5000 series or 6601) resulted in loss of communication with other I/O modules.

- WI: 55026** I/O communication did not recover after loss of communication to a 5000 series or 6601 I/O module.
- WI: 55061** 6601 firmware could not be updated, and the I/O module remained in the bootloader state after attempting to update the module.

6.14.9 Known Issues (R2.2.1)

Installation Unity Pro installation compatibility

The SCADAPack RemoteConnect Configuration Software installation process and Unity Pro software installation process can interfere with one another. It is recommended that when installing new versions of Unity Pro software that the repair installation option be run for SCADAPack RemoteConnect. Coexisting installations of RemoteConnect and Unity Pro are supported for Unity Pro versions 11.1, 12, 13.0, 13.1, and EcoStruxure Control Expert 14.

Workaround: Repair the installations as mentioned above. Remember to “Run as administrator” when doing a Repair.

When installing new versions of SCADAPack RemoteConnect, the installer will automatically attempt a Repair on Unity Pro software.

WI: 47523 Logic Editor PLC Simulator

The Mode > Start Simulation action in the Logic Editor can take an extended period of time to start. The PLC Simulator is started and the project is prepared for download, but it can take up to 2 minutes for the download to start. After the first download, subsequent uses of the PLC Simulator don't experience this issue while the SCADAPack x70 Logic Editor and PLC simulator remain open.

Workaround: Start the simulator manually from the Windows Programs menu. This may take multiple attempts. After starting via the Windows menu, it should be possible to use Mode > Start Simulation.

WI:47780 Modbus master and Modbus slave diagnostics on serial connections don't show both transmit and received messages.

Workaround: To see the messages, enable both master and slave diagnostics. See the MODMASTERDIAG and MODSLAVEDIAG commands.

- WI: 47824** **del *** command leaves some files on a USB drive when there are many files on the drive.
- Workaround:** Repeat the command until the files are removed.
- OR
- Connect the USB drive to a PC (or other computer) and delete the files.
- WI: 47841** When reconfiguring a SCADAPack RTU from one large configuration to another large configuration, the configuration rebuild might not succeed and would report configuration log messages such as “# 565: Unable to create object due to insufficient configuration memory space”.
- Workaround:** Cold boot the RTU before applying the new configuration. Alternatively, apply a configuration with a very small number of objects and restart the RTU. The new large configuration should then be accepted.
- WI: 50233** Installing Unity Pro v13.0 or v13.1 on Windows (French edition) followed by RemoteConnect installs shortcuts to All programs > Schneider Electric > SoCollaborative > Unity Pro for both Unity Pro and SCADAPack Logic applications.
- Workaround:** Identify, from the shortcut path properties, which shortcuts relate to SCADAPack Logic.
- WI: 53086** The IP Whitelist sets the TCP or UDP port for a given service (e.g. DNP3 over TCP) from the configuration as it exists when the Whitelist rule is configured. If the port is changed in the RTU configuration at some later point, it is possible that the Whitelist may become out of sync with these values.
- Workaround:** Make a change to the IP whitelist configuration. This will trigger an update from the associated TCP or UDP port configuration.
- OR
- Restart the device after writing the configuration change to the device.
- WI: 53435** If you change the Default DPN3 Port value, the changes to the configuration do not take effect.
- Workaround:** Restart the RTU

6.14.10 Post Installation Troubleshooting

RemoteConnect Issue

and Logic Editor Start Up

SCADAPack RemoteConnect Configuration Software start-up may be blocked from reopening if previous instances of RemoteConnect or the Logic Editor were not closed cleanly.

Workaround: Run the **Process Scrubber** application, which will shut down any remaining processes, then restart RemoteConnect.

Logic Editor

Logic Editor is unable to communicate with SCADAPack RemoteConnect

Symptoms

The SCADAPack x70 Logic Editor is starting, but is unable to communicate with SCADAPack RemoteConnect. When this occurs, the Logic Editor may not display variables that were created in the Object Editor and you may not be able to build the application from RemoteConnect.

Steps to resolve

Register pserver.dll as described below

1. Close the Logic Editor and RemoteConnect applications if they are running on the PC.
2. In the Windows menu, search for **cmd.exe** then right-click on it and select **Run as administrator** to open it.
3. In the command line window, change to the default installation directory by typing one of the following commands:

64-bit systems:

```
cd "C:\Program Files (x86)\Schneider Electric\UnityScadaPack 11.1"
```

32-bit systems:

```
cd "C:\Program Files\Schneider Electric\UnitySCADAPack 11.1"
```

4. Type the following command to complete the registration:
regsvr32.exe pserver.dll

When the registration is complete, a dialog box with the message **DllRegisterServer in pserver.dll succeeded** is displayed.

Logic Editor

Issue

Logic editor or Types Library update tool library modification

Symptoms

SCADAPack Logic Editor or Types Library Update tool reports the library is opened by another application when attempting to modify the logic library

Steps to resolve

Check that no instances of Unity Pro and RemoteConnect/SCADAPack x70 Logic Editor are running. Use the **Process Scrubber**, if necessary. If the symptoms persists, it is likely that Windows folder permissions are incorrect.

Check the following:

1. With administrator privilege right-click on the following folder:
C:\ProgramData\Schneider Electric
2. Select **Properties**.
3. Select the **Security** tab.
4. Click **Edit**.
5. Click on the Users entry in the Group or user names section.
6. Scroll down the Permissions for Users area until you see a row called "Write".
7. Check the box in the "Allow" column for the "Write" row.
8. Click **OK**.
The security settings will update on the sub-folders.
9. Click **OK** to exit the Properties dialog.

6.14.11 SCADAPack 57x and 6601 Firmware Version Compatibility

Customer Guidance

6601 upgrade recommendations: Upgrade 6601 I/O modules (both external and built into SP575) to firmware version 1.80.10 and bootloader version 1.80.10. For 6601 input output modules shipped with firmware 1.77.131 or earlier, and where extended over-range capabilities (up to 22 mA) are required, the module may be returned to a Schneider Electric facility for recalibration.

6601 minimum firmware version: 6601 I/O modules shipped from the factory with 1.80.6 or 1.80.10 firmware should **not** be downgraded to versions earlier than 1.80.6.

6601 bootloader upgrade mechanism: The command line command “**restart iofirm <filename> <module address>**” is provided for 6601 firmware upgrades. The 6601 firmware upgrade command can be used to upgrade the 6601 bootloader. This is supported only on 6601 firmware 1.80.6 and later. “**restart iofirm bl6601.bin <module address>**” will apply bootloader file bl6601.bin. The filename **bl6601.bin** is the only filename that is accepted for the bootloader. Other file names will result in an attempt to patch the 6601 firmware and not the 6601 bootloader. The 6601 bootloader version is not reported on the command line.

NOTICE

LOSS OF SENSOR ACCURACY

If you use firmware versions that are incompatible with extended over-range calibration on 6601 analog inputs, the analog inputs may report values 10% lower than the actual value.

Use only firmware versions that are compatible with extended over-range calibration.

Do not use 6601 firmware earlier than 1.80.6 with extended over-range calibration. They are not compatible.

For information on SCADAPack 57x firmware versions 9.03 or earlier, refer to the RemoteConnect R2.0 release notes in the documentation.

Failure to follow these instructions can result in equipment damage.

A new calibration format for 6601 analog inputs has been added to support extended over-range capabilities. Interoperability of various versions of firmware and calibration is described below.

	SP57x Firmw are	6601 Firmw are	6601 Calibrati on	6601 AI Value	Over-range	Comment
✓	9.0.4 or later	1.77.131 or earlier	0...20 mA	Reported normally	Always active at 20.05mA	
✓	9.0.4 or later	1.80.06 or later	0...20 mA	Reported normally	Always active at 20.05mA	
✓	9.0.4 or later	1.80.06 or later	0...22 mA	Reported normally	Always active at 22.00mA	Recommended choice for new installations

X	9.0.4 or later	1.77.131 or earlier	0...22 mA	AI report. 10% lower values	Always active at 20.05mA	NOT RECOMMENDED. Should only occur when a 6601 is mistakenly downgraded from 1.80.6 to an earlier version.
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6.15 SCADAPack x70 R2.2 Release Notes 01/03/2019

SCADAPack x70 R2.2 was first available in March 2019.

Upgrade Requirements

This release includes SCADAPack 57x bootloader and firmware updates. It is highly recommended that these updates be installed on your SCADAPack 57x devices.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Upgrade SCADAPack firmware 9.1.2 and earlier versions to firmware 9.2.1 or newer.

Failure to follow these instructions can result in death or serious injury.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Upgrade SCADAPack bootloader firmware 1.10 to bootloader firmware 1.30 or newer. Cold boot the SCADAPack device following the upgrade.

Failure to follow these instructions can result in death or serious injury.

Bootloader 1.30 corrects a start-up initialization issue and digital output initialization issue. For more information see [WI: 53096](#)^[175] in the Fixed Issues section below.

Firmware 9.2.1 corrects an issue for users of firmware 9.1.2 and earlier. Logic variables T_SPx70_INT and T_SPx70_UINT may indicate incorrect values following an online logic modification and a SCADAPack x70 device restart. For more information, see [WI: 53148](#)^[176] in the Fixed Issues section below.

First, install SCADAPack 57x firmware version 9.2.1, then install SCADAPack 57x bootloader version 1.30 or newer.

6.15.1 Installation Requirements, Instructions, and Troubleshooting

Refer to “Software Installation.pdf” located both at the root of the folder that contains the installation files and in the documentation set that is installed with RemoteConnect.

6.15.2 Application and Firmware Versions

SCADAPack x70 RemoteConnect application version is 3.5.1

- SCADAPack DNP3 Communication DTM version is 3.5
- SCADAPack x70 Device DTM version is 3.5
- SCADAPack x70 Logic Editor version is 11.1 - 181010
- Schneider Electric Generic HART DTM version is 5.1.1189.11
- HART STB Multiplexer Communication DTM version is 1.0.8.0
- SCADAPack x70 English Documentation version is 3.5.1
- SCADAPack x70 French Documentation version is 1.2.3

SCADAPack x70 Security Administrator version is 1.2.0

SCADAPack 57x firmware version is 9.2.1

SCADAPack 57x bootloader version is 1.30

6601 I/O module firmware version is 1.80.10

6601 I/O module bootloader version is 1.80.10

6602 I/O module firmware version is 1.81.2

6602 I/O module bootloader version is 1.81.2

6.15.3 Software and Firmware Version Compatibility

RemoteConnect version **3.5.1** is intended for use **with** SCADAPack x70 **firmware** version **9.2.1**

As of R2.0 and newer, RemoteConnect and SCADAPack 57x firmware is cross compatible with future software and firmware releases. This compatibility is limited to features common to the version of software and firmware available. Unknown feature configurations are parsed and do not block reconfiguration, though the features themselves may be unavailable.

NOTICE

INCONSISTENT DATA, UNPREDICTABLE RESULTS

RemoteConnect versions R2.0 and later are not compatible with projects created with RemoteConnect versions R1.6 and earlier.

See the release notes for RemoteConnect version 2.0 in the documentation for more instructions.

Failure to follow these instructions can result in equipment damage.

6.15.4 Supported Devices

SCADAPack 570

SCADAPack 574

SCADAPack 575

6.15.5 Supported Operating Systems

Windows 7 Professional (32-bit or 64-bit)

Windows 8.1 Professional (32-bit or 64-bit)

Windows 10 Professional (32-bit or 64-bit)

Windows Server 2016

6.15.6 Unity Pro Compatibility

RemoteConnect installations can coexist with specific Unity Pro installations. If RemoteConnect is installed on a computer that had Unity Pro installed previously, the RemoteConnect installation automatically confirms that components in the SCADAPack x70 Logic Editor and Unity Pro are correctly referenced. If Unity Pro is installed or upgraded on a computer that already had RemoteConnect installed, then a **repair** process is likely required on RemoteConnect to confirm that components are correctly referenced. A **repair** process must always be **Run as administrator**.

The Unity Pro versions that are verified as suitable for coexisting installation with RemoteConnect are:

- Unity Pro version 11.1
- Unity Pro version 12
- Unity Pro version 13.0*
- Unity Pro version 13.1*
- EcoStruxure™ Control Expert (formerly known as Unity Pro) version 14.0

* RemoteConnect has a known issue with Unity Pro version 13.0 and 13.1 on Windows (French edition). See WI: [50233](#)¹⁸¹.

6.15.7 New and Improved Features (R2.2)

Excel Import and Export

Improved the Excel Import from File and Export to File feature: provided a new format, added more configuration parameters to the exported file, and provided confirmation information in RemoteConnect after importing the Excel file.

Forcing Object Values

Added a forcing mechanism to let you override data in the SCADAPack x70 device database so that you can set data to a required state or value (for example, during commissioning or maintenance activities).

Object Browser Presets

Added a preset mechanism to let you configure an online browser list with optional preset values for each object. This allows you to build browser lists for rapid deployment of value sets to database objects (for example, during commissioning or maintenance activities). The preset values are stored along with the browser lists in the RemoteConnect project, and as well in the RTU configuration which can be read back from a SCADAPack device.

Hold Outputs on Logic Stop

Added parameters that allow you to influence the state of outputs when a logic application transitions from RUN to a STOP or HALT state.

Logic and Logic Editor

Added Help on Type for SCADAPack x70 function blocks. Added System Status Words %SW54 to %SW58.

Modbus Protocols

Added new protocols to the Modbus master scanner for Modbus RTU over TCP and Modbus RTU over UDP. Modbus/TCP inactivity timeout to terminate a connection is now configurable.

6.15.8 Miscellaneous Improvements (R2.2)

- WI: 47620** Exposed RTU's unsolicited state to System Data
- WI: 47702** Revised the default Serial Port functions
- WI: 47810** STATUS LED indicates an I/O module alert

- WI: 47925** Modbus scanner configuration parser rejects invalid variable size / function code combinations.
- WI: 48175** Added system data fields SYS_SET_DNP3M_StopPollingIfFull and SYS_SET_DNP3S_DiscardEvntsIfFull.
- WI: 49124** Added release notes history to documentation. The release notes shown during installation now describe the current release, and do not include history.
- WI: 49142** Improved documentation for IP Whitelist to state “When changes are made to the IP Whitelist settings, the device may temporarily lose connectivity as the firewall is reconfigured. Some TCP/IP connections may need to be re-established.”
- WI: 50131** Provided support for Windows 10 Professional builds 1803 and 1809
- WI: 50160** Updated technical support contact information and website in About dialog and Installer.
- WI: 50172** Added a pop-up dialog in the x70 DTM for 'Corrupt Configuration' and 'Device Trouble' indications
- WI: 50196** Added a tooltip to the project settings Slave address custom field option to let the user know that selecting the option can cause loss of data in Custom fields of logic variables.
- WI: 50197** Online modification notifications are not shown for the Logic Editor Simulator.
- WI: 50214** Added a 'Do not show this message again' option to the Write confirmation popup in the Object Browser.
- WI: 50229** Updated the Start menu organization for compatibility with Windows 10
- WI: 50251** RemoteConnect DNP3 > Slave > Events Advanced section has a new checkbox control for "Discard New Events if Buffer Full"
- WI: 50264** DNP3 Point Data Class Object Table organization includes a None grouping
WI: 50366 and can be organized by DNP3 Point Data Class.
- WI: 50310** Removed SCADAPack 57x modules from the list of configurable I/O modules. A permanent SCADAPack 57x module is added to the project based on the controller type and cannot be deleted.

- WI: 50461** Read File from Device provides more control over the source file and destination file
- WI: 50658** RemoteConnect provides more automatic DNP3 and Modbus point number assignment options when creating copies of objects.
- WI: 51037** Added “Slave Address(es) in Logic Editor Custom Field” to the Project Settings dialog to allow you to view DNP3 point numbers and/or Modbus register addresses in the Logic Editor.
- WI: 53249** A message reporting a hardware condition or invalid configuration in the SCADAPack device is now displayed as a banner at the top of the RemoteConnect online pages and not as a pop-up message.
- WI: 54058** Removed CLEAR CONFIG command option.
- WI: 54069** The cold boot and factory boot default configurations now include the SYS_CODE_StatusCode.

6.15.9 Fixed Issues (R2.2)

- WI: 53096** Bootloader version 1.30 for SCADAPack 57x corrects a start up initialization issue and digital output issue.
- Bootloader 1.10 can result in the SCADAPack devices not booting, resetting after booting, or in loaded configurations and programs not executing as expected. It is highly recommended that the bootloader be upgraded on SCADAPack 57x devices. Bootloader 1.20 corrects this issue.
- Bootloader 1.20 and earlier versions turn on the SCADAPack 57x device DOUT digital output for 2 to 3 seconds at power up or reset. It is highly recommended that the bootloader be upgraded if the DOUT digital output is used or will be used on the device. Bootloader 1.30 corrects this issue.
- To upgrade bootloader 1.10 or earlier to version 1.30**
1. Back up the configuration.
 2. Place the system in a safe state. The SCADAPack device will reset as part of this procedure.
 3. Install SCADAPack 57x firmware version 9.2.1 or newer.
 4. Install SCADAPack 57x bootloader version 1.30.

5. Cold boot the SCADAPack device.
6. Reload the configuration from the backup.
7. Restore the system to operation.

To upgrade bootloader 1.20 to version 1.30

1. Place the system in a safe state. The SCADAPack device will reset as part of this procedure.
2. Install SCADAPack 57x firmware version 9.2.1 or newer.
3. Install SCADAPack 57x bootloader version 1.30.
4. Restore the system to operation.

WI: 53148 Firmware 9.1.2 and earlier may experience logic running with an incomplete logic configuration. This occurs if an online modification is made, the user ignores the RemoteConnect message indicating the logic application must be written to the SCADAPack device, and the SCADAPack device is reset or power is cycled. In this situation logic inputs may have incorrect values and outputs can be written to incorrect values. This issue was corrected in firmware 9.1.3.

Users that upgraded from firmware 9.1.2 to firmware 9.1.3 may experience the behaviour above if condition was present at the time of the upgrade. It is necessary to write the logic application prior to or following the upgrade.

Additional checks of logic variable DDT versions were added in version 9.2.1. SCADAPack 57x firmware version 9.2.1 reports a new system status code (5013) and doesn't start the logic application if the DDT versions are not valid. To resolve status code 5013, rewrite the configuration to the SCADAPack 57x device after the firmware upgrade.

WI: 47514 System > System Status specific task library function blocks are now supported in the logic editor: SYST_READ_FLOAT_STATUS, SYST_READ_TASK_BIT, SYST_RESET_TASK_BIT and SYST_TIME

WI: 47515 Types Library Update didn't operate when you changed the Installation Path

WI: 47524 "Error allocating PAT memory space" reported when launching PLC Simulator in x70 Logic Editor

WI: 47539 The Function Input Assistant in Logic Editor could not be closed on a single screen if previously opened on a multiple screen system.

- WI: 47542** Fixed logic editor exception caused by opening a Derived Function Block (selecting Refine on the FB Instance), then selecting a private variable, and trying to Initialize an Animation Table.
- WI: 47623** SYS_CLOCK System Objects were not updated after a time change to PC Local Time
- WI: 47631** Irregular events generated instead of Periodic Events on System Data
- WI: 47644** Device restarted with restart reason 0x4206 and watchdog 0x10000080 (DNP3 task and Modbus Scanner task) when writing configuration to the device.
- WI: 47645** The logic application is not run if the device configuration is corrupted due to a discharged battery on the device.
- WI: 47666** Modbus Serial Master function block stopped polling when serial port baud rate changed.
- WI: 47701** Configuration of Maximum Event Storage was read incorrectly while new configuration was being applied.
- WI: 47703** Physical 6601 Counters were not initialized on the SCADAPack 575 RTU.
- WI: 47707** DNP3 g10v2 objects for DNP3 point 0 were not reported in an integrity poll.
- WI: 47709** There was no report if a license could not be applied because the file system had no remaining space to store the license.
- WI: 47711** System status code 1036 (backup license file missing) was reported after loading new firmware.
- WI: 47715** Group50Var1 (Time and Date - absolute time) object write requests did not reject some invalid requests.
- WI: 47744** Device could restart with restart reason 0x4200 and Watchdog mask 0x0010 after write configuration with Serial 3 or 4 changed to Modbus, RS485, 115200.
- WI: 47747** For some date changes, logic system status words %SW49 (day of week) and %SW70 (week of year) were incorrect after device restart.
- WI: 47779** Some diagnostic messages were still reported after turning off diagnostics with the **modslavediag disable *** command.

- WI: 47788** Modbus RTU transmissions could have gaps longer than 3.5 character-times, which could cause some Modbus devices to reject the messages.
- WI: 47804** CAPITALISED commands on command line were rejected.
- WI: 47809** Updating 6601 I/O firmware on a system with 4 or more I/O modules was unreliable.
- WI: 47818** Rounding in USB drive free size measurement reported on command line was incorrect.
- WI: 47823** USB drive statistics were incorrect for drives larger than 16 GB.
- WI: 47831** USB drive information did not update after the drive was removed. The correct state is now reported. The update is performed every 60 seconds. Old information may be reported for up to 60 seconds after the drive is removed, inserted, or updated.
- WI: 47838** The whoami command displayed incorrect information about the licensed services after applying the license but before restart of the RTU.
- WI: 47852** The I/O bus occasionally reported incorrect checksums when multiple 6601 I/O modules were connected. Invalid messages are correctly rejected, and the operation retries on the next I/O scan. The response time to an input or output change increases slightly when an incorrect checksum is detected.
- WI: 47964** ATTRIB_ValueString constant was incorrectly set to 105. The correct value of 138 is now used.
- WI: 48074** The SCADAPack device USB port could take over 70 seconds to be detected by Windows following a SCADAPack x70 device restart. This time has been reduced to less than 20 seconds, unless the SCADAPack x70 device was cold booted.
- WI: 48409** Logic application halted when clock management function blocks from the System > SysClock library were used in the logic. These function blocks were not implemented in earlier firmware versions.
- WI: 48419** The Modbus scanner did not revert the database value in response to an unsuccessful write (an exception response from the remote device). The database value now reverts to the previous value if the write is unsuccessful.

- WI: 48533** PPP dynamic reconfiguration required a device restart to apply the configuration. Configuration no longer requires a device restart.
- WI: 49059** Device reconfiguration caused a memory leak and processor exception when memory was low. This was observed on a system using about 98% of available memory.
- WI: 49107** Function block *Help on Type* feature in the logic editor did not work with SCADAPack x70 > RTU System library function blocks. These now display help in a web page.
- WI: 49155** System Status Double Words %SD18 and %SD20 are now supported.
- WI: 50184** An incorrect logic variable type for SYS_INFO_CPUmoduleTempC could hang RemoteConnect.
- WI: 50213** DNP3 and Modbus parameters were incorrectly configured when using custom templates in logic editor.
- WI: 50255** Launching help using F1 could block use of RemoteConnect.
- WI: 50261** Enabled Modbus IP Services information in whoami command was inconsistent
- WI: 50262** Elementary Variables and Derived Variables may be cleared in x70 Logic when creating a new object in RemoteConnect.
- WI: 50269** Online/Offline button was out of sync after canceling a write operation with a large number of logic objects
- WI: 50287** Deleting Scanner and keeping objects deleted object groups. Now when an Object Association is cleared, and the Object is not deleted, only the association-related attributes are cleared. The group name is left as is.
- WI: 50785** Default Scan Rates for Modbus were too short for some common applications.
- WI: 51167** Control validation tooltips were displayed in English regardless of the language setting.
- WI: 51742** Logic debugger's indication of online connection was inconsistent if communication path changed when connected.

- WI: 52826** RemoteConnect R2.1.1 froze when using Copy Objects from Object Configuration pane.
- WI: 53501** Corrected DNP3 Data Concentrator sessions handling under high communications load.
- WI: 53773** Logic status was not updated when the backup file was not present, which was not correct. The logic status is now updated by default, then updated again if the backup is present.
- WI: 53829** Writing a default project twice could cause RemoteConnect to lock up.
- WI: 53986** Documentation about adding 16 I/O modules should have stated 15 I/O modules. There are 16 I/O module entries available including the I/O on the SCADAPack device.
- WI: 54014** 6602 I/O module resets every 1 minute when 24 Vdc applied at power up.

6.15.10 Known Issues (R2.2)

Installation Unity Pro installation compatibility

The SCADAPack RemoteConnect Configuration Software installation process and Unity Pro software installation process can interfere with one another. It is recommended that when installing new versions of Unity Pro software that the repair installation option be run for SCADAPack RemoteConnect. Coexisting installations of RemoteConnect and Unity Pro are supported for Unity Pro versions 11.1, 12, 13.0, 13.1, and EcoStruxure Control Expert 14.

Workaround: Repair the installations as mentioned above. Remember to “Run as administrator” when doing a Repair.

When installing new versions of SCADAPack RemoteConnect, the installer will automatically attempt a Repair on Unity Pro software.

WI: 47523 Logic Editor PLC Simulator

The Mode > Start Simulation action in the Logic Editor can take an extended period of time to start. The PLC Simulator is started and the project is prepared for download, but it can take up to 2 minutes for the download to start. After the first download, subsequent uses of the PLC Simulator don't experience this issue while the SCADAPack x70 Logic Editor and PLC simulator remain open.

Workaround: Start the simulator manually from the Windows Programs menu. This may take multiple attempts. After starting via the Windows menu, it should be possible to use Mode > Start Simulation.

WI:47780 Modbus master and Modbus slave diagnostics on serial connections don't show both transmit and received messages.

Workaround: To see the messages, enable both master and slave diagnostics. See the MODMASTERDIAG and MODSLAVEDIAG commands.

WI: 47824 **del *** command leaves some files on a USB drive when there are many files on the drive.

Workaround: Repeat the command until the files are removed.

OR

Connect the USB drive to a PC (or other computer) and delete the files.

WI: 47841 When reconfiguring a SCADAPack RTU from one large configuration to another large configuration, the configuration rebuild might not succeed and would report configuration log messages such as “# 565: Unable to create object due to insufficient configuration memory space”.

Workaround: Cold boot the RTU before applying the new configuration. Alternatively, apply a configuration with a very small number of objects and restart the RTU. The new large configuration should then be accepted.

WI: 50233 Installing Unity Pro v13.0 or v13.1 on Windows (French edition) followed by RemoteConnect installs shortcuts to All programs > Schneider Electric > SoCollaborative > Unity Pro for both Unity Pro and SCADAPack Logic applications.

Workaround: Identify, from the shortcut path properties, which shortcuts relate to SCADAPack Logic.

WI: 53063 A change in master connection addressing information (DNP3 slave address or DNP3 master address) can result in unsolicited messages not being reported if a DNP3 routing table entry for the new address pair is not present.

Workaround: Update or add a DNP3 route for the new DNP3 address pair and use the RemoteConnect ‘Restart DNP3’ function to activate the modified configuration

WI: 53086 The IP Whitelist sets the TCP or UDP port for a given service (e.g. DNP3 over TCP) from the configuration as it exists when the Whitelist rule is configured. If the port is changed in the RTU configuration at some later point, it is possible that the Whitelist may become out of sync with these values.

Workaround: Make a change to the IP whitelist configuration. This will trigger an update from the associated TCP or UDP port configuration.

OR

Restart the device after writing the configuration change to the device.

WI: 53435 If you change the Default DPN3 Port value, the changes to the configuration do not take effect.

Workaround: Restart the RTU

6.15.11 Post Installation Troubleshooting

RemoteConnect and Logic Editor Start Up

SCADAPack RemoteConnect Configuration Software start-up may be blocked from reopening if previous instances of RemoteConnect or the Logic Editor were not closed cleanly.

Workaround: Run the **Process Scrubber** application, which will shut down any remaining processes, then restart RemoteConnect.

Logic Editor

Logic Editor is unable to communicate with SCADAPack RemoteConnect

Symptoms

The SCADAPack x70 Logic Editor is starting, but is unable to communicate with SCADAPack RemoteConnect. When this occurs, the Logic Editor may not display variables that were created in the Object Editor and you may not be able to build the application from RemoteConnect.

Steps to resolve

Register psver.dll as described below

1. Close the Logic Editor and RemoteConnect applications if they are running on the PC.
2. In the Windows menu, search for **cmd.exe** then right-click on it and select **Run as administrator** to open it.
3. In the command line window, change to the default installation directory by typing one of the following commands:

64-bit systems:

cd "C:\Program Files (x86)\Schneider Electric\UnityScadaPack 11.1"

32-bit systems:

cd "C:\Program Files\Schneider Electric\UnitySCADAPack 11.1"

4. Type the following command to complete the registration:
regsvr32.exe pserver.dll

When the registration is complete, a dialog box with the message **DllRegisterServer in pserver.dll succeeded** is displayed.

Logic Editor

Issue

Logic editor or Types Library update tool library modification

Symptoms

SCADAPack Logic Editor or Types Library Update tool reports the library is opened by another application when attempting to modify the logic library

Steps to resolve

Check that no instances of Unity Pro and RemoteConnect/SCADAPack x70 Logic Editor are running. Use the **Process Scrubber**, if necessary. If the symptoms persists, it is likely that Windows folder permissions are incorrect.

Check the following:

1. With administrator privilege right-click on the following folder:
C:\ProgramData\Schneider Electric
2. Select **Properties**.
3. Select the **Security** tab.
4. Click **Edit**.

5. Click on the Users entry in the Group or user names section.
6. Scroll down the Permissions for Users area until you see a row called "Write".
7. Check the box in the "Allow" column for the "Write" row.
8. Click **OK**.
The security settings will update on the sub-folders.
9. Click **OK** to exit the Properties dialog.

6.15.12 SCADAPack 57x and 6601 Firmware Version Compatibility

Customer Guidance

6601 upgrade recommendations: Upgrade 6601 I/O modules (both external and built into SP575) to firmware version 1.80.10 and bootloader version 1.80.10. For 6601 input output modules shipped with firmware 1.77.131 or earlier, and where extended over-range capabilities (up to 22 mA) are required, the module may be returned to a Schneider Electric facility for recalibration.

6601 minimum firmware version: 6601 I/O modules shipped from the factory with 1.80.6 or 1.80.10 firmware should **not** be downgraded to versions earlier than 1.80.6.

6601 bootloader upgrade mechanism: The command line command "**restart iofirm <filename> <module address>**" is provided for 6601 firmware upgrades. The 6601 firmware upgrade command can be used to upgrade the 6601 bootloader. This is supported only on 6601 firmware 1.80.6 and later. "**restart iofirm bl6601.bin <module address>**" will apply bootloader file bl6601.bin. The filename **bl6601.bin** is the only filename that is accepted for the bootloader. Other file names will result in an attempt to patch the 6601 firmware and not the 6601 bootloader. The 6601 bootloader version is not reported on the command line.

NOTICE

LOSS OF SENSOR ACCURACY

If you use firmware versions that are incompatible with extended over-range calibration on 6601 analog inputs, the analog inputs may report values 10% lower than the actual value.

Use only firmware versions that are compatible with extended over-range calibration.

Do not use 6601 firmware earlier than 1.80.6 with extended over-range calibration. They are not compatible.

For information on SCADAPack 57x firmware versions 9.03 or earlier, refer to the RemoteConnect R2.0 release notes in the documentation.

Failure to follow these instructions can result in equipment damage.

A new calibration format for 6601 analog inputs has been added to support extended over-range capabilities. Interoperability of various versions of firmware and calibration is described below.

	SP57x Firmw are	6601 Firmw are	6601 Calibrati on	6601 AI Value	Over- range	Comment
✓	9.0.4 or later	1.77.131 or earlier	0...20 mA	Reported normally	Always active at 20.05mA	
✓	9.0.4 or later	1.80.06 or later	0...20 mA	Reported normally	Always active at 20.05mA	
✓	9.0.4 or later	1.80.06 or later	0...22 mA	Reported normally	Always active at 22.00mA	Recommended choice for new installations
✗	9.0.4 or later	1.77.131 or earlier	0...22 mA	AI report. 10% lower values	Always active at 20.05mA	NOT RECOMMENDED. Should only occur when a 6601 is mistakenly downgraded from 1.80.6 to an earlier version.

6.16 SCADAPack x70 R2.1.1 Release Notes 25/10/2018

SCADAPack x70 R2.1.1 was first available in October 2018.

6.16.1 Installation Requirements, Instructions, and Troubleshooting

Refer to "Software Installation.pdf" located both at the root of the folder that contains the installation files and in the documentation set that is installed with RemoteConnect.

6.16.2 Application and Firmware Versions

SCADAPack x70 **RemoteConnect** application version is **3.4.3**

SCADAPack x70 **English Documentation** version is **3.4.3**

SCADAPack x70 **French Documentation** version is **1.2.3**

SCADAPack x70 **Security Administrator** version is **1.2.0**

SCADAPack 57x **Firmware** version is **9.1.3**

6601 **I/O** module **firmware** version **1.80.10**

6601 **I/O** module **bootloader** version **1.80.10**

6602 **I/O** module **firmware** version **1.77.64**

6602 I/O module **bootloader** version **1.77.64**

6.16.3 Software and Firmware Version Compatibility

RemoteConnect version **3.4.3** is intended for use **with** SCADAPack x70 **firmware** version **9.1.3**

As of R2.0 and newer, RemoteConnect and SCADAPack 57x firmware is cross compatible with future software and firmware releases. This compatibility is limited to features common to the version of software and firmware available. Unknown feature configurations are parsed and do not block reconfiguration, though the features themselves may be unavailable.

6.16.4 Supported Devices

SCADAPack 570

SCADAPack 574

SCADAPack 575

6.16.5 Supported Operating Systems

Windows 7 Professional (32-bit or 64-bit)

Windows 8.1 Professional (32-bit or 64-bit)

Windows 10 Professional (32-bit or 64-bit)

Windows Server 2012 R2

Windows Server 2016

6.16.6 Unity Pro Compatibility

RemoteConnect installations can coexist with specific Unity Pro installations. If RemoteConnect is installed on a computer that had Unity Pro installed previously, the RemoteConnect installation automatically confirms that all components in the SCADAPack x70 Logic Editor and Unity Pro are correctly referenced. If Unity Pro is installed or upgraded on a computer that already had RemoteConnect installed, then a “repair” process is likely required on RemoteConnect to confirm that all components are correctly referenced. A “repair” process must always be “Run as administrator”.

The Unity Pro versions that are verified as suitable for coexisting installation with RemoteConnect are:

- Unity Pro version 11.1
- Unity Pro version 12
- Unity Pro version 13

6.16.7 Removing Unused Function Blocks

After you click **Update & Build Logic** on the SCADAPack x70 Logic page, the SCADAPack x70 Logic Editor may display an error that a function block is not in the library. This situation can occur if you have an existing project that contains EFBs that are no longer in the latest custom library. You will need to rework your logic application to resolve the issues and remove the function blocks that are no longer in the custom library.

NOTICE

INCONSISTENT DATA, UNPREDICTABLE RESULTS

When you remove elementary function blocks and derived function blocks, the project will no longer perform as it did in the past.

You will need to add new function blocks to update the logic application.

Failure to follow these instructions can result in equipment damage.

To remove function blocks that are no longer in the custom library

1. In the SCADAPack x70 Logic Editor, remove the EFBs from your project that are causing the errors.
2. Navigate to **Project > Variables & FB Instances > Elementary FB Instances** and double-click to open.
3. In the Data Editor, delete the function block(s).
4. Navigate to **Tools > Types Library Manager > Application** and right-click on any item.
5. Select **Purge Unused Types**.

The project is updated and linking to EFBs that were in the project, but no longer in the custom library, is cleaned up.

6.16.8 Fixed Issues (R2.1.1)

- **Feature Affected:** Modbus Scanner

Issue: The Modbus scanner did not write values when configured to write On change. Values were written at the scan rate when configured to write At scan rate or On change and at scan rate.

Resolution: Values are written when a change is detected when configured to write On change.

Engineering reference: FUN-1471

- **Feature Affected:** DNP3 File Transfer

Issue: A cancelled DNP3 file transfer would block subsequent transfers until the original file transfer timed out.

Resolution: The subsequent transfer is no longer blocked.

Engineering reference: FUN-1367

- **Feature Affected:** Modbus Scanner

Issue: Modbus Scanner didn't start after firmware patch and writing configuration.

Resolution: The Modbus Scanner restarts after firmware patch and writing configuration.

Engineering reference: FUN-1455

- **Feature Affected:** Modbus Serial Master and Slave

Issue: Modbus serial task can deadlock when a new configuration is applied and a Modbus slave request is received.

Resolution: The Modbus serial task restarts after a configuration is applied.

Engineering reference: FUN-1495

- **Feature Affected:** Force LED

Issue: The Force LED turns on incorrectly after a firmware upgrade when no variables are forced due to T_SPx70_INT and T_SPx70_UINT analog forcing, which was removed in R2.1.

Resolution: The Force LED turns on when variables are forced.

Engineering reference: FUN-1503

- **Feature Affected:** RemoteConnect project export

Issue: After opening an archived project upgraded from R1.6 to R2.1, the project cannot be exported without making a change to the project.

Resolution: The project can now be exported without making a change

Engineering reference: RSC-2721

- **Feature Affected:** RemoteConnect project management

Issue: Opening and closing an unmodified program from an older version of RemoteConnect results in "There are unapplied changes in the project" message.

Resolution: The project is no longer marked as modified until a modification is made by the user.

Engineering reference: RSC-2743

- **Feature Affected:** RemoteConnect Read from Device

Issue: The Source Details column in the Object Configuration view is empty after reading from a SCADAPack device. The information is available from the pop-up dialog but not in the table.

Resolution: The information read from the device is now displayed.

Engineering reference: RSC-2765

- **Feature Affected:** RemoteConnect Communication Settings

Issue: When a configuration is written to a SCADAPack device with a changed DNP3 address, RemoteConnect does not reconnect to the device with the new DNP3 address.

Resolution: The new DNP3 address is now used.

Engineering reference: RSC-2769

- **Feature Affected:** HART Documentation

Issue: A user must wait 30 seconds before reconnecting a HART device when moving it from one channel to another. This allows the host enough time to recognize that the device is disconnected.

Resolution: Added a procedure for disconnecting and reconnecting a HART device to the documentation.

Engineering reference: DSUM-1049

6.16.9 Known Issues/ Known Customer Difficulties (R2.1.1)

See the section Known Issues / Known Customer Difficulties (R2.1) later in this document.

6.16.10 Post Installation Troubleshooting

Logic Editor is unable to communicate with SCADAPack RemoteConnect

Symptoms:

The SCADAPack x70 Logic Editor is starting, but is unable to communicate with SCADAPack RemoteConnect. When this occurs, the Logic Editor may not display variables that were created in the Object Editor and you may not be able to build the application from RemoteConnect.

Steps to resolve:

Register pserver.dll as described below

1. Close the Logic Editor and RemoteConnect applications if they are running on the PC.

2. In the Windows menu, search for **cmd.exe** then right-click on it and select **Run as administrator** to open it.
3. In the command line window, change to the default installation directory by typing one of the following commands:

64-bit systems: **cd "C:\Program Files (x86)\Schneider Electric\UnityScadaPack 11.1"**

32-bit systems: **cd "C:\Program Files\Schneider Electric\UnitySCADAPack 11.1"**
4. Type the following command to complete the registration:

regsvr32.exe pserver.dll

When the registration is complete, a dialog box with the message **DllRegisterServer in pserver.dll succeeded** is displayed.

Logic editor or Types Library update tool library modification

Symptoms:

SCADAPack Logic Editor or Types Library Update tool reports the library is opened by another application when attempting to modify the logic library

Steps to resolve:

Check that no instances of Unity Pro and RemoteConnect/SCADAPack x70 Logic Editor are running. Use the "Process Scrubber" if necessary. If the problem persists it is likely a Windows folder permissions problem.

Check the following:

- With administrator privilege right click on the following folder: C:\ProgramData\Schneider Electric
- Select Properties
- Select the Security tab
- Click Edit
- Click on the Users entry in the Group or user names section
- Scroll down the Permissions for Users area until you see a row called "Write"
- Check the box in the "Allow" column for the "Write" row
- Click OK
- The security settings will update on all the sub-folders
- Click OK to exit the Properties dialog

Engineering reference: DSUM-919

6.16.11 SCADAPack 57x and 6601 Firmware Version Compatibility

Customer Guidance

6601 upgrade recommendations: Upgrade 6601 I/O modules (both external and built into SP575) to firmware version 1.80.10 and bootloader version 1.80.10. For 6601 input output modules shipped with firmware 1.77.131 or earlier, and where extended over-range capabilities (up to 22 mA) are required, the module may be returned to a Schneider Electric facility for recalibration.

6601 minimum firmware version: 6601 I/O modules shipped from the factory with 1.80.6 or 1.80.10 firmware should **not** be downgraded to versions earlier than 1.80.6.

6601 bootloader upgrade mechanism: The command line command “**restart iofirm <filename> <module address>**” is provided for 6601 firmware upgrades. The 6601 firmware upgrade command can be used to upgrade the 6601 bootloader. This is only supported on device firmware 9.0.4 and later and 6601 firmware 1.80.6 and later. “**restart iofirm bl6601.bin <module address>**” will apply bootloader file bl6601.bin. The filename **bl6601.bin** is the only filename that is accepted for the bootloader. Other file names will result in an attempt to patch the 6601 firmware and not the 6601 bootloader. The 6601 bootloader version is not reported on the command line.

SP57x minimum firmware version: If there is an attached 6601 or a built-in 6601 (SP575) the device firmware version should be 9.0.4 or later.

NOTICE						
LOSS OF SENSOR ACCURACY						
If you use firmware versions that are incompatible with extended over-range calibration on 6601 analog inputs, the analog inputs may report values 10% lower than the actual value.						
Use only firmware versions that are compatible with extended over-range calibration.						
Do not use SP570 or SP575 9.0.3 or earlier firmware in conjunction with a 6601 1.80.6 or later with extended over-range calibration. They are not compatible.						
Do not use 6601 firmware earlier than 1.80.6 with extended over-range calibration. They are not compatible.						
Failure to follow these instructions can result in equipment damage.						

A new version of 6601 I/O module firmware and bootloader has been released since the release of SP57x firmware 9.0.3. A new calibration format for 6601 analog inputs has been added to support extended over-range capabilities. Interoperability of various versions of firmware and calibration is described below.

	SP57x Firmw are	6601 Firmw are	6601 Calibrati on	6601 AI Value	Over-range	Comment

✓	9.0.3 or earlier	1.77.131 or earlier	0...20 mA	Reported normally	Always active at 20.05mA	
✓	9.0.4 or later	1.77.131 or earlier	0...20 mA	Reported normally	Always active at 20.05mA	
✓	9.0.3 or earlier	1.80.06 or later	0...20 mA	Reported normally	Always active at 20.05mA	6601 I/O modules upgraded to 1.80.6 from earlier versions will leave calibration unchanged. Recommended for upgrading systems that do not require extended over-range capabilities.
✓	9.0.4 or later	1.80.06 or later	0...20 mA	Reported normally	Always active at 20.05mA	
✓	9.0.4 or later	1.80.06 or later	0...22 mA	Reported normally	Always active at 22.00mA	Recommended choice for new installations
✗	9.0.3 or earlier	1.77.131 or earlier	0...22 mA	AI report 10% lower values	Always active at 20.05mA	NOT RECOMMENDED. Should only occur when a 6601 is mistakenly downgraded from 1.80.6 to an earlier version.
✗	9.0.4 or later	1.77.131 or earlier	0...22 mA	AI report. 10% lower values	Always active at 20.05mA	NOT RECOMMENDED. Should only occur when a 6601 is mistakenly downgraded from 1.80.6 to an earlier version.
✗	9.0.3 or earlier	1.80.06 or later	0...22mA	AI report 10% lower values	Always active at 20.05mA	NOT RECOMMENDED. When adding new 6601 I/O modules to existing systems, SP57x firmware should be upgraded to 9.0.4 or later. If this is not practical, contact Schneider Electric technical support.

6.17 SCADAPack x70 R2.1 Release Notes 5/09/2018

SCADAPack x70 R2.1 is a version, first available in September 2018.

6.17.1 Application and Firmware Versions

SCADAPack x70 **RemoteConnect** application version is **3.4.2**

SCADAPack x70 **English Documentation** version is **3.4.2**

SCADAPack x70 **French Documentation** version is **1.2.3**

SCADAPack x70 **Security Administrator** version is **1.2.0**

SCADAPack 57x **Firmware** version is **9.1.2**

6601 **I/O** module **firmware** version **1.80.10**

6601 **I/O** module **bootloader** version **1.80.10**

6602 **I/O** module **firmware** version **1.77.64**

6602 **I/O** module **bootloader** version **1.77.64**

6.17.2 Software and Firmware Version Compatibility

RemoteConnect version **3.4.2** is intended for use **with** SCADAPack x70 **firmware** version **9.1.2**

As of R2.0 and newer, RemoteConnect and SCADAPack 57x firmware is cross compatible with future software and firmware releases. This compatibility is limited to features common to the version of software and firmware available. Unknown feature configurations are parsed and do not block reconfiguration, though the features themselves may be unavailable.

6.17.3 Supported Devices

SCADAPack 570

SCADAPack 574

SCADAPack 575

6.17.4 Supported Operating Systems

Windows 7 Professional (32-bit or 64-bit)

Windows 8.1 Professional (32-bit or 64-bit)

Windows 10 Professional (32-bit or 64-bit)

Windows Server 2012 R2

Windows Server 2016

6.17.5 Unity Pro compatibility

RemoteConnect installations can coexist with specific Unity Pro installations. If RemoteConnect is installed on a computer that had Unity Pro installed previously, the RemoteConnect installation automatically confirms that all components in the SCADAPack x70 Logic Editor and Unity Pro are correctly referenced. If Unity Pro is installed or upgraded on a computer that already had RemoteConnect installed, then a “repair” process is likely required on RemoteConnect to confirm that all components are correctly referenced. A “repair” process must always be “Run as administrator”.

The Unity Pro versions that are verified as suitable for coexisting installation with RemoteConnect are:

- Unity Pro version 11.1
- Unity Pro version 12
- Unity Pro version 13

6.17.6 Removing Unused Function Blocks

After you click **Update & Build Logic** on the SCADAPack x70 Logic page, the SCADAPack x70 Logic Editor may display an error that a function block is not in the library. This situation can occur if you have an existing project that contains EFBs that are no longer in the latest custom library. You will need to rework your logic application to resolve the issues and remove the function blocks that are no longer in the custom library.

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When you remove elementary function blocks and derived function blocks, the project will no longer perform as it did in the past.

You will need to add new function blocks to update the logic application.

Failure to follow these instructions can result in equipment damage.

To remove function blocks that are no longer in the custom library

1. In the SCADAPack x70 Logic Editor, remove the EFBs from your project that are causing the errors.
2. Navigate to **Project > Variables & FB Instances > Elementary FB Instances** and double-click to open.
3. In the Data Editor, delete the function block(s).
4. Navigate to **Tools > Types Library Manager > Application** and right-click on any item.

5. Select **Purge Unused Types**.

The project is updated and linking to EFBs that were in the project, but no longer in the custom library, is cleaned up.

6.17.7 New Features (R2.1)

- **Feature:** SCADAPack RAM battery status reporting.

Summary: The RAM battery voltage is now exposed via SYSTEM DATA in addition to the RAM battery state and is displayed on the RemoteConnect Online Status page. The RAM battery state has had a value deadband of 100 mVdc added to it. It will report low battery at 3 Vdc and return to reporting good battery at 3.1 Vdc.

Engineering reference: FUN-1341, FUN-1405, RSC-2605

- **Feature:** System Status Codes

Summary: The following system status codes have been added:

1013: Object creation error

1014: Object deletion error

1037: File system has insufficient space to carry out operation

1038: Unable to create object due to insufficient configuration memory space

3300: One or more default IP Whitelist rules was not successfully applied

3301: A user-created IP Whitelist rule was not successfully applied

Engineering reference: DSUM-939, RSC-2678, RSC-2676, RSC-2646, FUN-1374

- **Feature:** RemoteConnect “Get Device Information” command

Summary: RemoteConnect now supports generating and collecting a diagnostic file from the RTU with a single command. The “Get Device Information” command has the SCADAPack generate a file that includes the output of many common commands and then transfers the file to the PC. This file is typically used by technical support to help diagnose operational issues.

Engineering reference: RSC-2599

- **Feature:** Logic editor system bits

Summary: System bit %S51 is supported and displays the same information as System Data SYS_CLOCK_QualityAlert. It represents the quality of the real-time clock.

Engineering reference: FUN-1390, DSUM-956

- **Feature:** Modbus TCP server

Summary: The inactivity timeout for Modbus TCP server connections is configurable. It was fixed at 60 seconds in previous versions of SCADAPack x70 firmware.

Engineering reference: FUN-1397

- **Feature:** RemoteConnect serial port 5 Vdc line

Summary: RemoteConnect can configure the state of the 5 Vdc power line on the serial ports. This was previously possible only via logic.

Engineering reference: RSC-2079

- **Feature:** 6602 Hart Analog module

Summary: Support has been added for one 6602 HART Analog module to connect to the SCADAPack 570, 574, and 575.

Engineering reference: RSC-2497

- **Feature:** DNP3 Device Trouble Internal Indication(IIN)

Summary: The SCADAPack now raises DNP3 Device Trouble IIN 1.6 when the NVRAM battery has a low voltage or a real-time clock issue is detected.

Engineering reference: DSUM-999

6.17.8 Updates (R2.1)

- **Feature Affected:** IP Whitelist

Update: The maximum number of entries for the IP whitelist has been increased from 20 to 100.

Engineering reference: DSUM-950, FUN-1385

- **Feature Affected:** GETINFO command

Update: The GETINFO command now has a fixed filename rather than the filename being based on the SCADAPack serial number. This is to facilitate easier file transfers.

Engineering reference: FUN-1036

- **Feature Affected:** Physical I/O controlled via logic

Update: The documentation has been updated to clarify the behaviour of physical digital outputs and physical analog outputs when the logic application enters the HALT state or the running of the logic is affected for other reasons.

Engineering reference: DSUM-905

- **Feature Affected:** SCADAPack diagnostics

Update: The documentation and RemoteConnect have been updated to describe and translate additional software task watchdog codes.

Engineering reference: DSUM-938, RSC-2648

- **Feature Affected:** Ethernet configuration

Update: The default value for a subnet mask is 255.255.255.0. Previously the default was 0.0.0.0, which was not a valid subnet.

Engineering reference: FUN-1325

- **Feature Affected:** Logic application System Words

Update: The RemoteConnect “Reset Diagnostic Status” and command line RESTART MASK command now also clears %SW17 and %SW125.

Engineering reference: FUN-1329

- **Feature Affected:** IP whitelist

Update: The direction restrictions for some services in the IP whitelist have been updated. Direction restrictions for a particular service do not limit the creation of a single bidirectional rule for all services.

Engineering reference: FUN-1358, RSC-2568

- **Feature Affected:** Logic editor function blocks

Update: The comments for MB_WORD_TO_BOOL and MB_BOOL_TO_WORD inputs and outputs have been updated.

Engineering reference: FUN-1388

- **Feature Affected:** Modbus Store and Forward

Update: Modbus Store and Forward (MS&F) support has been extended to support TELEBUS commands issued from Telepace Studio. MS&F has been updated to queue only the last message from each source. The default timeout for MS&F has been increased to 1200ms.

Engineering reference: FUN-1396, FUN-1411, RSC-2637

- **Feature Affected:** Database Objects

Update: The Source Type object attribute is no longer locked for objects associated with logic variables that are part of an array or DDT element. The Logic Task attribute is configurable for objects associated with logic variables that are part of an array or structure.

Engineering reference: RSC-2640, RSC-2565.

- **Feature Affected:** Modbus TCP Client

Update: The configuration of the Device Listen Port for a Modbus TCP device in the Modbus Master/Client configuration has been limited to between 1 and 49151. 0 is not a valid port number and ports above 49151 are reserved for ephemeral ports.

Engineering reference: RSC-2630

- **Feature Affected:** RemoteConnect

Update: The number of instances of the SCADAPack Communication DTM and SCADAPack Device DTM have been restricted to one. Previously it was possible to add additional DTM instances although the additional DTM instances did not serve a useful purpose.

Engineering reference: RSC-2106, RSC-2275, RSC-2522, RSC-2552

- **Feature Affected:** RemoteConnect Low Voltage Alert Level

Update: The default of the Low Voltage Alert Level in RemoteConnect has been updated from 23 Vdc to 11.5 Vdc.

Engineering reference: RSC-2324

- **Feature Affected:** DNP3 Data Concentrator Master

Update: The DNP3 Master page has been renamed to the DNP3 Data Concentrator Master page.

Engineering reference: RSC-2562

- **Feature Affected:** DNP3 object attributes

Update: The DNP3 Static group and variation attribute defaults to None when no DNP3 point number is configured.

Engineering reference: RSC-2578

- **Feature Affected:** RemoteConnect Get Device Time command

Update: The Get Device Time command has been removed as the SCADAPack time is presented on the online Status page along with details about local time zone offset and daylight-saving time.

Engineering reference: RSC-2666

6.17.9 Improvements (R2.1)

- **Feature Affected:** RemoteConnect online Status page

Improvement: The online mode Status page has been reworked to include a variety of new fields, an Advanced Status section and more detailed information relating to existing fields.

Engineering reference: RSC-2603, RSC-2648, RSC-2513

- **Feature Affected:** RemoteConnect Project Export

Improvement: A RemoteConnect project can be exported prior to saving the project.

Engineering reference: RSC-2195

- **Feature Affected:** RemoteConnect Logic editor

Improvement: Performance for projects with hundreds, or thousands, of objects associated with logic variables has been improved.

Engineering reference: RSC-2629

- **Feature Affected:** RemoteConnect object Quality indicators

Improvement: The obsolete Logic Controlled quality indicator has been removed from RemoteConnect.

Engineering reference: RSC-2634

- **Feature Affected:** RemoteConnect Terminology

Improvement: Modified some terminology in RemoteConnect to provide better clarity about objects and the association of objects with logic variables or other data sources.

Engineering reference: RSC-2575, DSUM-930

- **Feature Affected:** RemoteConnect dialogs

Improvement: The Clear Counters dialog has been reworked. A number of other dialogs have been modified, give cancellation options, progress bars or other updates.

Engineering reference: RSC-2534, RSC-2528, RSC-2491, RSC-2402, RSC-2548, RSC-2491, RSC-2086, RSC-2219, RSC-2280, RSC-2354

- **Feature Affected:** System Data

Improvement: RemoteConnect Object Editor system data reference configuration has been improved.

Engineering reference: RSC-2199

- **Feature Affected:** RemoteConnect Import from Excel File

Improvement: The Import from Excel File command can be attempted while the logic editor is in connected mode.

Engineering reference: RSC-2298

- **Feature Affected:** RemoteConnect objects

Improvement: RemoteConnect now indicates when Object attributes are locked due to an object's association with logic variables that are elements of a logic variable array a logic variable structure.

Engineering reference: RSC-2448

- **Feature Affected:** RemoteConnect CommDTM

Improvement: The communication settings fields of the CommDTM fields are now disabled while RemoteConnect is online. These settings can now be modified only in offline mode.

Engineering reference: RSC-2456

- **Feature Affected:** SCADAPack 57x hardware type

Improvement: RemoteConnect will now indicate to the user when a configuration for a variation of SCADAPack 57x is deployed to a different variation of SCADAPack 57x (e.g. a SP570 configuration deployed to a SP575). The deployment of the configuration is still permitted as this may be necessary when replacing a unit with a spare.

Engineering reference: RSC-2492

- **Feature Affected:** Logic editor custom user libraries

Improvement: Custom user library content is now preserved when upgrading from an earlier version of RemoteConnect. SCADAPack library functions are now updated using the Types Library Update tool. The tool can be used to update or install new custom library content in the SCADAPack Logic Editor libset. To do this run the Types Library Update tool from Programs > Schneider Electric > SoCollaborative > SCADAPack Logic > Types Library Update. The tool can also be used to replace the SCADAPack x70 library functions if they are accidentally removed or modified. To do this run the Types Library Update and open the following file: C:\Program Files (x86)\Common Files\FDT\DTMs\Schneider Electric\SCADAPack x70\SCADAPack Logic Library Definitions\V11.1\RTU System\family.DSC.

Engineering reference: RSC-2502

- **Feature Affected:** RemoteConnect and unapplied changes
Improvement: RemoteConnect notifies the user about the loss of unapplied data when closing a project that has changes that have not been applied.
Engineering reference: RSC-2536
- **Feature Affected:** IP Whitelist
Improvement: A description column was added to the IP whitelist table. This can be used to provide additional context for users trying to understand the network topology the SCADAPack resides in.
Engineering reference: RSC-2540
- **Feature Affected:** Logic Task object attribute
Improvement: The Logic Task attribute now defaults to None so that organizing the object list by logic task does not display objects that are not linked to logic variables.
Engineering reference: RSC-2625

6.17.10 Fixed Issues (R2.1)

- **Feature Affected:** Modbus Scanner
Issue: The SCADAPack would report system status code 1350 (Modbus Master/Client invalid Slave Device configuration) after the application of some legitimate configurations.
Resolution: The SCADAPack does not report system status code 1350 for legitimate configurations.
Engineering reference: FUN-1372
- **Feature Affected:** Modbus TCP Server
Issue: The Modbus TCP Server unit identifier configuration would not always be applied after reconfiguration and would require a restart to be applied.
Resolution: The Modbus TCP Server unit identifier configuration is applied after reconfiguration.
Engineering reference: FUN-1373, RSC-2619
- **Feature Affected:** CHM help files
Issue: The manuals opened via RemoteConnect context sensitive help (F1 key) could lock up when a link in the manual was clicked on. Process Scrubber would be required to close the help file. This was a Microsoft CHM issue.
Resolution: The Microsoft CHM issue persists but manuals opened via context sensitive

help now have cross-manual links disabled to prevent this issue from occurring. The full documentation set opened via the start menu or RemoteConnect Help menu option still has working cross-manual links.

Engineering reference: DSUM-926

- **Feature Affected:** Modbus Master and Slave

Issue: The SCADAPack permitted the use of the same Modbus address as both slave and master on the same port. This produced unreliable communications.

Resolution: RemoteConnect and the SCADAPack now restrict the configuration of the same Modbus address as both Master and Slave on any given serial port.

Engineering reference: FUN-1057, FUN-1406, RSC-2651

- **Feature Affected:** Modbus

Issue: The description of Modbus exception code 04 in SCADAPack diagnostics was incorrect.

Resolution: The description of Modbus exception code 04 has been updated from "Illegal Response Length" to "Slave Device Failure" to be in line with current standards.

Engineering reference: FUN-1342

- **Feature Affected:** RemoteConnect Recent Projects

Issue: RemoteConnect would display Excel export files and other file types in the list of Recent Projects. When selected these would not work.

Resolution: The RemoteConnect Recent Projects list is now restricted to project files.

Engineering reference: RSC-2570

- **Feature Affected:** DNP3 Counter Initialization

Issue: The DNP3 counter write command would only be processed if the initialization value was zero.

Resolution: The DNP3 counter write command is processed regardless of the initialization value.

Engineering reference: FUN-1240

- **Feature Affected:** IP forwarding

Issue: The IP forwarding feature was enabled after a factory boot of the SCADAPack. The RemoteConnect default configuration is to have IP forwarding disabled.

Resolution: The IP forwarding feature is now disabled after a factory boot of the SCADAPack.

Engineering reference: FUN-1323

- **Feature Affected:** File deletion
 - Issue:** The number of files reported as deleted by the delete command would count directories traversed as well as files deleted.
 - Resolution:** The delete command reports the number of files deleted.
 - Engineering reference:** FUN-1335

- **Feature Affected:** FILEDIAG command
 - Issue:** The FILEDIAG command argument requirements were not clearly specified in the command line help and it was easy to enter an invalid command without it being clear why the command was rejected.
 - Resolution:** The FILEDIAG command arguments have been made more robust and flexible to allow a greater range of inputs to be processed.
 - Engineering reference:** FUN-1383

- **Feature Affected:** RS485 serial port communications
 - Issue:** Some configurations using RS485 serial communications would experience software task watchdogs, which would then prompt the SCADAPack to restart. This typically occurred only under heavier serial communication loads.
 - Resolution:** The software task watchdog no longer occurs.
 - Engineering reference:** FUN-1403, FUN-1415

- **Feature Affected:** Logic System Words
 - Issue:** The Logic System Words representing time (%SW49, %SW50, %SW51, %SW52, %SW53 and %SW70) were not updated when the SCADAPack time was updated by an external source like a DNP3 time write. The SCADAPack clock time itself was correctly updated.
 - Resolution:** The Logic System Words representing time are now updated when an external time update is received by the SCADAPack.
 - Engineering reference:** FUN-1417

- **Feature Affected:** RemoteConnect and Logic Editor synchronization
 - Issue:** User actions in the Logic Editor were blocked when RemoteConnect had a “write configuration was successful” dialog opened.
 - Resolution:** The Logic Editor is not blocked by the “write configuration was successful” dialog.
 - Engineering reference:** RSC-1973

- **Feature Affected:** IP address validation

Issue: IP address, Subnet Mask and Gateway fields with an invalid value would revert to the previous valid value after the field no longer had focus.

Resolution: Invalid values will persist in these fields until the value is corrected by the user.

Engineering reference: RSC-1974

- **Feature Affected:** Logic Editor Online modification

Issue: The online modification of some function blocks could result in those function blocks not working as intended when internal logic STOPRUN or RUNSTOP events occurred at some later point in time. A restart of the SCADAPack would eliminate the chance of this occurring.

Resolution: Function blocks that are modified online perform some additional steps to register to receive STOPRUN and RUNSTOP events.

Engineering reference: USOC-49

- **Feature Affected:** Object browser

Issue: String values with a Display Format of "Hex" were validated in groups of 4 bytes and not validated as a series of individual bytes.

Resolution: String values with a Display Format of "Hex" are validated byte by byte with each byte containing two Hex characters.

Engineering reference: RSC-2677

- **Feature Affected:** SCADAPack Identification Strings

Issue: The identification strings Location Name, ID Code/Number and Device Name were not read from the SCADAPack to RemoteConnect though they were written to and stored in the SCADAPack correctly.

Resolution: RemoteConnect successfully reads the identification strings from the SCADAPack.

Engineering reference: RSC-2656

- **Feature Affected:** Modbus Slave and Modbus Server

Issue: The Modbus register address attribute of objects would not persist through an export to Excel file and subsequent import from Excel file.

Resolution: The Modbus register address attribute is correctly supported by Excel import and export options.

Engineering reference: RSC-2650

- **Feature Affected:** Modbus Scanner

Issue: The Modbus Scanner would mark a valid serial port configuration as invalid in some configurations after an import from Excel file was performed.

Resolution: The issue no longer occurs.

Engineering reference: RSC-2635

- **Feature Affected:** RemoteConnect USB communications

Issue: The USB target DNP3 address was not updated in the DNP3 CommDTM automatically after a new configuration was written to the SCADAPack. This could result in communication issues when DNP3 addresses became mismatched.

Resolution: The settings of the DNP3 CommDTM are updated after a configuration is written.

Engineering reference: RSC-2414

- **Feature Affected:** RemoteConnect and Logic Editor synchronization

Issue: The synchronization between RemoteConnect and the Logic Editor would be broken if a project that contained T_SPx70_EBOOL data types was imported from an Excel file. Support for this data type was removed in R2.0. RemoteConnect would report "The Logic Editor is currently unavailable. Please close the RemoteConnect application, run Process Scrubber and then reopen the project in RemoteConnect".

Resolution: T_SPx70_EBOOL objects are now excluded from the import from Excel file process.

Engineering reference: RSC-2511

- **Feature Affected:** Object editor navigation

Issue: The Prev and Next buttons of the object editor would not respect the order of an object list that had been sorted using criteria other than the default.

Resolution: The Prev and Next buttons move between objects based on the current object sorting being used.

Engineering reference: RSC-2512

- **Feature Affected:** Object and logic variable association

Issue: When Logic variables that were part of a DDT variable were associated with an object, it was possible to produce object names that were too long.

Resolution: The maximum name length for DDT logic variables and their sub elements are now matched to the maximum name length for objects.

Engineering reference: RSC-2515

- **Feature Affected:** RemoteConnect validation

Issue: RemoteConnect would not immediately display some errors when reading a configuration from the SCADAPack. The error would not be reported until the section of the navigation tree containing the relevant page was expanded.

Resolution: RemoteConnect displays errors with a newly read project regardless of the state of the navigation tree.

Engineering reference: RSC-2527

- **Feature Affected:** Object attribute validation

Issue: RemoteConnect did not enforce some validation rules for raw minimum and raw maximum or for engineering minimum and engineering maximum. The firmware would then detect these issues after the configuration had been applied.

Resolution: RemoteConnect performs additional validation on raw minimum, raw maximum, engineering minimum and engineering maximum.

Engineering reference: RSC-2538

- **Feature Affected:** Object Browser

Issue: Object browser names that contained spaces were not read from the SCADAPack to RemoteConnect correctly.

Resolution: Space characters are now supported in object browser names.

Engineering reference: RSC-2545

- **Feature Affected:** 5506 Analog Input Module

Issue: The Input Type of analogs on the 5506 was always set to 4...20 mA after importing a configuration from an Excel file.

Resolution: The Input Type of 1...5 Vdc is now properly supported in exports to and imports from Excel files.

Engineering reference: RSC-2583

- **Feature Affected:** Object browser

Issue: Some objects would remain in the object browser after being deleted from the list of objects in the configuration.

Resolution: The objects are cleared from the object browser when deleted from the list of objects in the configuration.

Engineering reference: RSC-2588

- **Feature Affected:** Modbus RTU

Issue: The Modbus serial port configuration was absent when importing some project configurations.

Resolution: The issue has been resolved.

Engineering reference: RSC-2607

- **Feature Affected:** Modbus Scanner, DNP3 Data Concentrator

Issue: RemoteConnect performance was significantly degraded once the number of devices configured exceeded 10 for either the Modbus Scanner or DNP3 Data Concentrator. The slowdown was most significant when opening a project or adding a device. The firmware's

performance was unaffected.

Resolution: The issue has been resolved.

Engineering reference: RSC-2616

- **Feature Affected:** Object validation

Issue: RemoteConnect would sometimes raise a validation error “Invalid Engineering Scaling value” for Digital Objects after upgrading projects created under older versions of RemoteConnect. This was not a valid attribute for digital objects.

Resolution: The issue no longer occurs.

Engineering reference: RSC-2627

- **Feature Affected:** SCADAPack RemoteConnect Configuration Software

Issue: When attempting to open the DTM pane by double-clicking, a spurious error message would sometimes appear:

“An unexpected error occurred:

DTM Topology Editor

Cannot open DTM UI: Object reference not set to an instance of an object.”

Resolution: This message no longer appears.

Engineering reference: RSC-514

6.17.11 Known Issues/ Known Customer Difficulties (R2.1)

- **Feature Affected:** Logic Editor Defined Function Block debugging

Issue: When a Refine operation is used in the SCADAPack x70 Logic Editor to debug an instance of a user defined function block (DFB), attempting to add a private DFB instance variable to an animation table can cause a Logic Editor exception.

Work around: Hover over a private variable to view the value, but do not add the private variable to an animation table.

Engineering reference: USOC-70

- **Feature Affected:** Multiple screen display.

Issue: When a laptop is switched from a multiple screen display to a single screen display, application windows may become orphaned on the no longer visible screen. If the logic editor is not accepting input after attempting to open a secondary window such as the Types Library Manager or FFB Input Assistance, it's possible that the window is open on a previously opened display. If you've moved from using a multi-screen display to a laptop, for example, the opened window may not be visible.

Work around:

Press Alt-F4 to close the hidden window and resume using the logic editor main screen.

OR

Press Alt-Space then M and hold down the left-arrow key to move the window onto the current display.

- **Feature Affected:** RemoteConnect on Windows 10.

Issue: RemoteConnect dialog content is blank.

Work around: Some Windows 10 versions may show blank display content as a result of interaction between Windows WPF and Windows 10 Video Drivers. Microsoft have suggested a temporary solution as follows:

1. With administrator privileges, run **regedit** from Windows.
2. Navigate to the following registry key:
HKEY_CURRENT_USER\SOFTWARE\Microsoft\Avalon.Graphics
3. Add a New DWORD value (or modify the value if it exists):
DisableHWAcceleration
4. Set the value to 1.
5. Log out of Windows.
6. Log in again, and start RemoteConnect.

Engineering reference: DSUM-914

- **Feature Affected:** SCADAPack RTU Object database configuration.

Issue: When reconfiguring a SCADAPack RTU from one large configuration to another large configuration, the configuration rebuild may fail with configuration log messages similar to “# 565: Unable to create object due to insufficient configuration memory space”.

Work around: Cold boot the RTU before applying the new configuration. Alternatively apply a configuration with a very small number of objects and restart the RTU. The new large configuration should then be accepted.

Engineering reference: FUN-1314

- **Feature Affected:** Logic Editor PLC Simulator

Issue: The Mode > Start Simulation action in the Logic Editor can take an extended period of time to start. The PLC Simulator is started and the project is prepared for download, but it can take up to 2 minutes for the download to start. After the first download, subsequent uses of the PLC Simulator don't experience this issue while the SCADAPack x70 Logic Editor and PLC simulator remain open. In some cases, a message from the simulator, stating "Error allocating PAT memory space" can occur.

Workaround: Press OK and ignore this message.

Engineering reference: USOC-94, USOC-95

- **Feature Affected:** Logic Editor PLC Simulator

Issue: The Mode > Start Simulation action in the Logic Editor may not start.

Workaround: Start the simulator manually. From the Windows menu type in “PLC Simulator”. This may take multiple attempts. After starting via the Windows menu it should be possible to use “Mode > Start Simulation.

Engineering reference: USOC-94, USOC-95

- **Feature Affected:** SCADAPack RemoteConnect Configuration Software start-up

Issue: The SCADAPack RemoteConnect Configuration Software may be blocked from reopening if previous instances of RemoteConnect or the Logic Editor were not closed cleanly.

Workaround: Run the “Process Scrubber” application, which will shut down any remaining processes, then restart RemoteConnect.

- **Feature Affected:** Unity Pro installation compatibility

Issue: The SCADAPack RemoteConnect Configuration Software installation process and Unity Pro software installation process can interfere with one another. It is recommended that when installing new versions of Unity Pro software that the repair installation option be run for SCADAPack RemoteConnect. Coexisting installations of RemoteConnect and Unity pro are only supported for **Unity Pro** versions **11.1, 12** and **13**.

Work around: Use a virtual machine for RemoteConnect installations or for Unity Pro installations or **Repair** the installations as mentioned above. Remember for a **Repair** to always be “Run as administrator”.

When installing new versions of SCADAPack RemoteConnect, the installer will automatically attempt a **Repair** on Unity Pro software.

6.17.12 Post Installation Troubleshooting

Logic Editor is unable to communicate with SCADAPack RemoteConnect

Symptoms:

The SCADAPack x70 Logic Editor is starting, but is unable to communicate with SCADAPack RemoteConnect. When this occurs, the Logic Editor may not display variables that were created in the Object Editor and you may not be able to build the application from RemoteConnect.

Steps to resolve:

Register pserver.dll as described below

1. Close the Logic Editor and RemoteConnect applications if they are running on the PC.
2. In the Windows menu, search for **cmd.exe** then right-click on it and select **Run as administrator** to open it.

3. In the command line window, change to the default installation directory by typing one of the following commands:

64-bit systems: **cd "C:\Program Files (x86)\Schneider Electric\UnityScadaPack 11.1"**

32-bit systems: **cd "C:\Program Files\Schneider Electric\UnitySCADAPack 11.1"**

4. Type the following command to complete the registration:

regsvr32.exe pserver.dll

When the registration is complete, a dialog box with the message **DIRegisterServer in pserver.dll succeeded** is displayed.

Logic editor or Types Library update tool library modification

Symptoms:

SCADAPack Logic Editor or Types Library Update tool reports the library is opened by another application when attempting to modify the logic library

Steps to resolve:

Check that no instances of Unity Pro and RemoteConnect/SCADAPack x70 Logic Editor are running. Use the "Process Scrubber" if necessary. If the problem persists it is likely a Windows folder permissions problem.

Check the following:

- With administrator privilege right click on the following folder: C:\ProgramData\Schneider Electric
- Select Properties
- Select the Security tab
- Click Edit
- Click on the Users entry in the Group or user names section
- Scroll down the Permissions for Users area until you see a row called "Write"
- Check the box in the "Allow" column for the "Write" row
- Click OK
- The security settings will update on all the sub-folders
- Click OK to exit the Properties dialog

Engineering reference: DSUM-919

6.17.13 SCADAPack 57x and 6601 Firmware Version compatibility table

Customer Guidance

6601 upgrade recommendations: Upgrade 6601 I/O modules (both external and built into SP575) to firmware version 1.80.10 and bootloader version 1.80.10. For 6601 input output modules shipped with firmware 1.77.131 or earlier, and where extended over-range capabilities (up to 22 mA) are required, the module may be returned to a Schneider Electric facility for recalibration.

6601 minimum firmware version: 6601 I/O modules shipped from the factory with 1.80.6 or 1.80.10 firmware should **not** be downgraded to versions earlier than 1.80.6.

6601 bootloader upgrade mechanism: The command line command “**restart iofirm <filename> <module address>**” is provided for 6601 firmware upgrades. The 6601 firmware upgrade command can be used to upgrade the 6601 bootloader. This is only supported on device firmware 9.0.4 and later and 6601 firmware 1.80.6 and later. “**restart iofirm bl6601.bin <module address>**” will apply bootloader file bl6601.bin. The filename **bl6601.bin** is the only filename that is accepted for the bootloader. Other file names will result in an attempt to patch the 6601 firmware and not the 6601 bootloader. The 6601 bootloader version is not reported on the command line.

SP57x minimum firmware version: If there is an attached 6601 or a built-in 6601 (SP575) the device firmware version should be 9.0.4 or later.

NOTICE	
LOSS OF SENSOR ACCURACY	
If you use firmware versions that are incompatible with extended over-range calibration on 6601 analog inputs, the analog inputs may report values 10% lower than the actual value.	
Use only firmware versions that are compatible with extended over-range calibration.	
Do not use SP570 or SP575 9.0.3 or earlier firmware in conjunction with a 6601 1.80.6 or later with extended over-range calibration. They are not compatible.	
Do not use 6601 firmware earlier than 1.80.6 with extended over-range calibration. They are not compatible.	
Failure to follow these instructions can result in equipment damage.	

A new version of 6601 I/O module firmware and bootloader has been released since the release of SP57x firmware 9.0.3. A new calibration format for 6601 analog inputs has been added to support extended over-range capabilities. Interoperability of various versions of firmware and calibration is described below.

	SP57x Firmw are	6601 Firmw are	6601 Calibrati on	6601 AI Value	Over-range	Comment

✓	9.0.3 or earlier	1.77.131 or earlier	0...20 mA	Reported normally	Always active at 20.05mA	
✓	9.0.4 or later	1.77.131 or earlier	0...20 mA	Reported normally	Always active at 20.05mA	
✓	9.0.3 or earlier	1.80.06 or later	0...20 mA	Reported normally	Always active at 20.05mA	6601 I/O modules upgraded to 1.80.6 from earlier versions will leave calibration unchanged. Recommended for upgrading systems that do not require extended over-range capabilities.
✓	9.0.4 or later	1.80.06 or later	0...20 mA	Reported normally	Always active at 20.05mA	
✓	9.0.4 or later	1.80.06 or later	0...22 mA	Reported normally	Always active at 22.00mA	Recommended choice for new installations
✗	9.0.3 or earlier	1.77.131 or earlier	0...22 mA	AI report 10% lower values	Always active at 20.05mA	NOT RECOMMENDED. Should only occur when a 6601 is mistakenly downgraded from 1.80.6 to an earlier version.
✗	9.0.4 or later	1.77.131 or earlier	0...22 mA	AI report. 10% lower values	Always active at 20.05mA	NOT RECOMMENDED. Should only occur when a 6601 is mistakenly downgraded from 1.80.6 to an earlier version.
✗	9.0.3 or earlier	1.80.06 or later	0...22mA	AI report 10% lower values	Always active at 20.05mA	NOT RECOMMENDED. When adding new 6601 I/O modules to existing systems, SP57x firmware should be upgraded to 9.0.4 or later. If this is not practical, contact Schneider Electric technical support.

6.18 SCADAPack x70 R2.0 Release Notes 20/07/2018

SCADAPack x70 R2.0 is a version, first available in July 2018.

6.18.1 Application and Firmware Versions

SCADAPack x70 **RemoteConnect** application version is **3.4.1**

SCADAPack x70 **English Documentation** version is **3.4.1**

SCADAPack x70 **French Documentation** version is **1.2.3**

SCADAPack x70 **Security Administrator** version is **1.2.0**

SCADAPack 57x **Firmware** version is **9.1.1**

6601 **I/O** module **firmware** version **1.80.10**

6601 **I/O** module **bootloader** version **1.80.10**

6.18.2 Software and Firmware Version Compatibility

RemoteConnect version **3.4.1** is intended for use **with** SCADAPack x70 **firmware** version **9.1.1**

As of R2.0, RemoteConnect and SCADAPack 57x firmware is cross compatible with future software and firmware releases. This compatibility is limited to features common to the version of software and firmware available. Unknown feature configurations are parsed and do not block reconfiguration.

6.18.3 Supported Devices

SCADAPack 570

SCADAPack 574

SCADAPack 575

6.18.4 Supported Operating Systems

Windows 7 Professional (32-bit or 64-bit)

Windows 8.1 Professional (32-bit or 64-bit)

Windows 10 Professional (32-bit or 64-bit)

Windows Server 2012 R2

Windows Server 2016

6.18.5 Unity Pro Compatibility

RemoteConnect installations can coexist with specific Unity Pro installations. If RemoteConnect is installed on a computer that had Unity Pro installed previously, a “repair” process is likely required for Unity Pro to confirm that all components are correctly referenced. If Unity Pro is installed on a computer that already had RemoteConnect installed, then a “repair” process is likely required on RemoteConnect to confirm that all components are correctly referenced.

The Unity Pro versions that are suitable for coexisting installation with RemoteConnect are:

- Unity Pro version 11.1
- Unity Pro version 12
- Unity Pro version 13

6.18.6 Removing Unused Function Blocks

After you click **Update & Build Logic** on the SCADAPack x70 Logic page, the SCADAPack x70 Logic Editor may display an error that a function block is not in the library. This situation can occur if you have an existing project that contains EFBs that are no longer in the latest custom library. You will need to rework your logic application to resolve the issues and remove the function blocks that are no longer in the custom library.

NOTICE

INCONSISTENT DATA, UNPREDICTABLE RESULTS

When you remove elementary function blocks and derived function blocks, the project will no longer perform as it did in the past.

You will need to add new function blocks to update the logic application.

Failure to follow these instructions can result in equipment damage.

To remove function blocks that are no longer in the custom library

1. In the SCADAPack x70 Logic Editor, remove the EFBs from your project that are causing the errors.
2. Navigate to **Project > Variables & FB Instances > Elementary FB Instances** and double-click to open.
3. In the Data Editor, delete the function block(s).
4. Navigate to **Tools > Types Library Manager > Application** and right-click on any item.
5. Select **Purge Unused Types**.

The project is updated and linking to EFBs that were in the project, but no longer in the custom library, is cleaned up.

6.18.7 New Features (R2.0)

- **Feature:** IP whitelist.

Summary: The IP whitelist can be used to limit traffic by IP address and port number. This can be used to enhance security or to prevent misconfigured devices elsewhere on the network from sending SCADA protocol commands.

Engineering reference: FUN-119

- **Feature:** System data.

Summary: The System data feature replaces the old system point interface. System data can be connected to objects individually or a group of related system data can be associated with a group of objects. These system data objects can be added to the new object browser. A number of system data references are now included by default in a new project.

Engineering reference: FUN-260, RSC-527, RSC-2082, RSC-2136, RSC-2202

- **Feature:** Revised Online Object Browser.

Summary: The online object browser has been overhauled. New features include periodic refresh, the ability to read unconfigured system data at runtime and the display of data in a variety of formats (e.g HEX, REAL, UINT).

Engineering reference: RSC-2249, RSC-2164, RSC-875

- **Feature:** Configuration filtering options.

Summary: Added filtering, sorting and organizing options to the Object editor page of RemoteConnect.

Engineering reference: RSC-265

- **Feature:** Modbus Master addressing.

Summary: The Modbus master can now poll address range 1 - 255 rather than 1 – 247.

Engineering reference: RSC-1791

- **Feature:** Modbus serial port.

Summary: Modbus RTU slave and Modbus RTU master ports have been amalgamated into a single **Modbus** port option. Both Slave and Master functionality has access to any port configured as **Modbus**. Master request can also be sent via EFB on the same port.

Engineering reference: RSC-2213

- **Feature:** Modbus Store & Forward.

Summary: Modbus requests and responses can be exchanged via the SCADAPack x70 RTU, with the SCADAPack x70 handling message routing and address translation for both Modbus RTU and Modbus TCP messages.

Engineering reference:

6.18.8 Updates (R2.0)

- **Feature Affected:** Modbus Scanner

Update: Removed UINT as a data type for digital objects. Storing the bits of input registers and holding registers will be done with a new multi-bit digital object type that will be available in a subsequent release.

Engineering reference: RSC-2426

- **Feature Affected:** Logic editor EFB

Update: Removed legacy EFBs DNP3Peer_AddToRDList, DNP3Peer_AddToWRList, OBJ_GetAttrib_REAL, OBJ_GetAttrib_DINT, OBJ_SetAttrib_REAL, OBJ_SetAttrib_DINT and OBJ_GetAttrib_STRING.

Engineering reference: RSC-2128

- **Feature Affected:** Logic editor variable forcing

Update: Removed inadequate forcing data types (EBOOL & Forced Analog) from logic editor. A new forcing mechanism will be available in a subsequent release. RemoteConnect has been modified to help with the update of projects that include forcing variable types.

Engineering reference: FUN-1131, FUN-1134, RSC-1818, RSC-2065

- **Feature Affected:** DNP3 file transfer

Update: DNP3 Legacy file transfer mode was removed from RemoteConnect. DNP3 revised file transfer is now the only option.

Engineering reference: RSC-2154

- **Feature Affected:** DNP3 Data Concentrator

Update: DNP3 Data concentrator is now a licenced feature by default.

Engineering reference: FUN-1191

- **Feature Affected:** Physical I/O

Update: RemoteConnect restricts the number of configurable 6601 I/O modules to 4.

Engineering reference: RSC-2415

6.18.9 Improvements (R2.0)

- **Feature Affected:** Serial Cell modems
Improvement: Exposed PAP/CHAP username and password strings.
Engineering reference: FUN-305
- **Feature Affected:** SCADAPack Clock and uptime functionality
Improvement: Improved Real Time Clock performance to minimize drift over time and reduce gradual differences in accumulated timers like TON EFBs and SCADAPack uptime.
Engineering reference: FUN-341
- **Feature Affected:** DNP3 Protocol
Improvement: Valid DNP3 point numbers have been extended to 0-65534. Previously they were limited to 0-49999.
Engineering reference: RSC-2137
- **Feature Affected:** Logic application memory consumption
Improvement: The NVRAM usage of the logic application can now be reported.
Engineering reference: FUN-635, USOC-55
- **Feature Affected:** Logic editor System bits and system words
Improvement: %SW10 First cycle after cold start was added to the list of supported %S and %SW
Engineering reference: FUN-636
- **Feature Affected:** Physical I/O
Improvement: Hardware over-range and under-range on the SP574 generate an event instead of relying on over-range and under-range settings in the configuration.
Engineering reference: FUN-685
- **Feature Affected:** Modbus RTU over serial ports
Improvement: Modbus frame timing on serial ports improved to distinguish between messages that appear in rapid succession on a multidrop link.
Engineering reference: FUN-875
- **Feature Affected:** Logic application

Improvement: Minor configuration changes do not result in disruption to the running logic application if the logic application signature is unchanged

Engineering reference: FUN-935

- **Feature Affected:** Logic application scan time

Improvement: Improved logic performance when the SCADAPack is under heavy load from IP communications traffic.

Engineering reference: FUN-1025

- **Feature Affected:** Logic editor EFBs

Improvement: Request(REQ) and confirm (CNF) pins added to the F_FindFile, F_DelTree & F_DirInfo EFBs

Engineering reference: FUN-1124

- **Feature Affected:** Logic application status

Improvement: Added new logic status elements to report HALT and other status conditions.

Engineering reference: FUN-1125

- **Feature Affected:** Logic application

Improvement: Added system status code 5012 for when the logic application HALTs with a non-recoverable error

Engineering reference: FUN-1172

- **Feature Affected:** RemoteConnect general operation

Improvement: Performance enhancements to RemoteConnect to allow it to handle larger collections of objects and save and restore projects faster. Object creation, editing and deletion performance was improved.

Engineering reference: RSC-838, RSC-264, RSC-1802, RSC-1814, RSC-2084, RSC-1690, RSC-1658, RSC-1795, RSC-1799, RSC-1864

- **Feature Affected:** Modbus Scanner

Improvement: The Modbus Data Type is now editable after creation of a Modbus Scanner device. Previously this field was not editable after the device had been created.

Engineering reference: RSC-1257

- **Feature Affected:** Logic debugger service

Improvement: The Option for enabling the Logic debugger IP service has been moved to the SCADAPack x70 Logic page.

Engineering reference: RSC-1272

- **Feature Affected:** RemoteConnect Online operation

Improvement: A periodic connection check was added to help RemoteConnect detect when the ONLINE connection to a RTU has been interrupted. Various improvements to the reporting of connectivity status.

Engineering reference: RSC-1381, RSC-2524

- **Feature Affected:** Import from Excel file

Improvement: Importing from Excel now accepts blank ID values for newly created objects.

Engineering reference: RSC-1385

- **Feature Affected:** Software and firmware interoperability

Improvement: Compatibility between SCADAPack x70 firmware and RemoteConnect has been improved. Future versions will be compatible with multiple other versions as long as the features being used are present in both firmware and software.

Engineering reference: RSC-1551

- **Feature Affected:** RemoteConnect tree navigation

Improvement: The SCADAPack page has been converted to a summary page that provides a variety of information. Additional summary pages have also been added to provide quick access to configuration information.

Engineering reference: RSC-1564, RSC-1712, RSC-1713, RSC-1728

- **Feature Affected:** Logic application

Improvement: Logic tasks like FAST, AUX0 & AUX1 will now automatically be added when an object is added that uses one of these tasks.

Engineering reference: RSC-1618

- **Feature Affected:** RemoteConnect general operation

Improvement: Improved the detail and differentiation of many status messages, confirmation dialogs and popup windows in RemoteConnect. Improved progress dialogs. Addressed minor issues relating to notification and progress dialogs.

Engineering reference: RSC-1621, RSC-1664, RSC-2478, RSC-1710, RSC-1905, RSC-1922, RSC-1963, RSC-2354, RSC-2282, USOC-58, RSC-2532, RSC-2530

- **Feature Affected:** RemoteConnect general operation
Improvement: Information icons have been added to provide useful details when using RemoteConnect. These are represented by a white 'i' in a blue circle.
Engineering reference: RSC-1681

- **Feature Affected:** RemoteConnect installation
Improvement: The installer for RemoteConnect has been improved and streamlined.
Engineering reference: RSC-1688

- **Feature Affected:** RemoteConnect and Logic Editor synchronization
Improvement: Added an indicator that the logic editor is starting so that it is obvious when RemoteConnect has started but the logic editor has not yet started. Added a message to indicate if the logic editor does not start.
Engineering reference: RSC-1691, RSC-2069, RSC-1990

- **Feature Affected:** DNP3 master & Modbus Master
Improvement: The point and register tables on the general DNP3 master and Modbus master pages have been limited to just the device pages so that the main page for each of these features is not overly cluttered.
Engineering reference: RSC-1726

- **Feature Affected:** Import from Excel file and Export to Excel file
Improvement: Exporting to and importing from Excel now supports additional configuration parameters.
Engineering reference: RSC-2006, RSC-2167, RSC-2083

- **Feature Affected:** RemoteConnect compatibility with Unity Pro
Improvement: Added detection for when the SCADAPack x70 logic editor's libraries have been replaced by Unity Pro libraries (e.g. as a result of upgrading Unity Pro).
Engineering reference: RSC-2060

- **Feature Affected:** SCADAPack Diagnostics
Improvement: Added system status codes:
 - 5011: New Logic execution status code generated. See RemoteConnect Online Logic page, SCADAPack Logic Diagnostic Viewer or Logic variable %SW125

- 5012: Logic execution Unavailable. Restart the Controller
- 1350: Modbus Master/Client invalid Slave Device configuration
- 1351: Modbus Master/Client invalid Point Scanner configuration
- 1036: Backup firmware license not found (This may appear when upgrading an RTU from older versions of firmware that do not perform additional backup actions on the firmware licence)
- 3202: Configuration conflict in the System Data object table

Engineering reference: RSC-2093, RSC-2208, RSC-1766, RSC-2276

- **Feature Affected:** RemoteConnect configuration read from SCADAPack

Improvement: Added a Read configuration option to the RemoteConnect start page to read configuration directly from the RTU rather than first opening a project or creating a new project.

Engineering reference: RSC-2099

- **Feature Affected:** RemoteConnect unapplied changes

Improvement: RemoteConnect will now prompt the user if a project is about to be closed and there are changes that have not been added to the project with the “Apply” button.

Engineering reference: RSC-2107

- **Feature Affected:** RemoteConnect Online operation

Improvement: Improved the icons and status information for reporting of communication and connectivity issues between RemoteConnect and the RTU.

Engineering reference: RSC-2146

- **Feature Affected:** RemoteConnect Firmware update wizard

Improvement: Improved the firmware update wizard. Improved the cancellation process of the firmware update wizard.

Engineering reference: RSC-2150, RSC-1956, RSC-2280

- **Feature Affected:** RemoteConnect on low resolution screens

Improvement: Adjusted screen layout to better accommodate small laptop screens. Added emphasis in the documentation to the full screen mode option.

Engineering reference: RSC-2153

- **Feature Affected:** RemoteConnect and Unity Pro compatibility

Improvement: Various improvements to reduce the impact RemoteConnect can have on a Unity Pro installation. Automated running the Unity Pro repair option after a RemoteConnect installation. Users are encouraged to retain the installer for Unity Pro and SCADAPack x70 Logic Editor to facilitate running a **Repair** step in the future. Users are also reminded to always **Run as administrator** for a **Repair** step.

Engineering reference: RSC-2156, RSC-2325

- **Feature Affected:** RemoteConnect setting SCADAPack time

Improvement: Improved RTU time setting options in RemoteConnect. It is now possible to nominate a time rather than just relying on the current PC time.

Engineering reference: RSC-2175

- **Feature Affected:** RemoteConnect project opening

Improvement: RemoteConnect now opens the configuration UI automatically when an existing project is opened.

Engineering reference: RSC-2182

- **Feature Affected:** RemoteConnect Online UI

Improvement: Online UI Status, logic and objects pages have been revised and improved.

Engineering reference: RSC-2186

- **Feature Affected:** RemoteConnect Online operation

Improvement: The RemoteConnect online UI is now opened automatically when entering online mode

Engineering reference: RSC-2201

- **Feature Affected:** DNP3 Master and Modbus Master

Improvement: Moved status and control configuration from the advanced section to the basic section for the Modbus Scanner and DNP3 data concentrator.

Engineering reference: RSC-2217

- **Feature Affected:** RemoteConnect Import from Excel file

Improvement: Added “Enable Import” option in Excel configuration export to provide more control when importing. Renamed the export and import options “Export to Excel File” and “Import from Excel File”. Improved Configuration error reporting during an import.

Engineering reference: RSC-2407, RSC-2405, RSC-1804

- **Feature Affected:** Object Database

Improvement: Increased the maximum number of objects supported by RemoteConnect and the RTU. Configurations with 15000 objects can be loaded into the RTU. Approximately 6000 objects can be connected to logic variables.

Engineering reference: FUN-1209, RSC-2211

- **Feature Affected:** Physical I/O

Improvement: Automatically associate a status object to a physical I/O module when the module is first added to the configuration.

Engineering reference: RSC-2474

6.18.10 Fixed Issues (R2.0)

- **Feature Affected:** Device_CROB function block

Issue: The Device_CROB function block generates DNP3 Control Relay Output Block (CROB) requests. Only the Pulse ON option of the DNP3 CROB latch and pulse commands can be sent from the function block.

Resolution: The Device_CROB EFB supports the full range of CROB options.

Engineering reference: FUN-340

- **Feature Affected:** RemoteConnect logic status reporting

Issue: The logic application's name and version would sometimes disappear from RemoteConnect and the command line.

Resolution: The issue no longer occurs.

Engineering reference: FUN-387

- **Feature Affected:** Modbus Slave

Issue: Modbus exception code response was not correctly generated for all exception codes.

Resolution: The issue no longer occurs.

Engineering reference: FUN-472

- **Feature Affected:** Modbus TCP server

Issue: On Modbus TCP, Modbus function code 0x02 would only work with a register count of 1984 or less.

Resolution: Function code 0x02 works with the maximum register count of 2000.

Engineering reference: FUN-475

- **Feature Affected:** File system function blocks
 - Issue:** F_DirInfo EFB wouldn't function correctly with multiple instances of the function block in an application.
 - Resolution:** The issue no longer occurs.
 - Engineering reference:** FUN-571

- **Feature Affected:** COM function blocks
 - Issue:** COM_OPEN, COM_WRITE and COM_CLOSE being called repeatedly in rapid succession would cause the RTU to restart.
 - Resolution:** This no longer occurs.
 - Engineering reference:** FUN-587

- **Feature Affected:** Analog outputs at reconfiguration
 - Issue:** Analog outputs are not properly initialized after redeploying a RemoteConnect project.
 - Resolution:** Analog outputs are reinitialized after deploying a RemoteConnect project
 - Engineering reference:** FUN-789

- **Feature Affected:** Service boot mode
 - Issue:** Service Boot wouldn't stop the logic application from running.
 - Resolution:** A service boot now stops the logic application from running.
 - Engineering reference:** FUN-851

- **Feature Affected:** USB communication
 - Issue:** Disabling the USB port function wouldn't disable the USB port communications.
 - Resolution:** The USB port can be disabled.
 - Engineering reference:** FUN-929

- **Feature Affected:** SCADAPack Factory Boot
 - Issue:** SP570 reports as a SP575 after factory boot.
 - Resolution:** SP570 reports as SP570 after factory boot.
 - Engineering reference:** FUN-991

- **Feature Affected:** Ethernet port configuration
 - Issue:** Ethernet IP configured as 0.0.0.0 reports as 127.0.0.1 on the command line of the RTU.
 - Resolution:** Ethernet IP configured as 0.0.0.0 reports as 0.0.0.0 on the command line of the RTU.

Engineering reference: FUN-995

- **Feature Affected:** Modbus Scanner

Issue: Modbus scanner did not set the point quality when communications with a remote device are unsuccessful.

Resolution: The Modbus Scanner sets the point quality to bad when communications with a remote device are unsuccessful.

Engineering reference: FUN-1026

- **Feature Affected:** 5103 I/O power module

Issue: The SCADAPack would be unable to communicate with 5000 series modules if it was connected to a 5103 power module with a blown 5v fuse.

Resolution: SCADAPack communications are unaffected as long as there remains sufficient power for I/O modules

Engineering reference: FUN-1049 (Customer)

- **Feature Affected:** SCADAPack Run LED

Issue: The RUN LED would stay on solid when the logic application entered the HALT state.

Resolution: The RUN LED now flashes when the logic application enters the HALT state.

Engineering reference: FUN-1092

- **Feature Affected:** SCADAPack Command line

Issue: The command line **CLEAR EVENTS** command would cause the free event pool to be set to zero.

Resolution: The **CLEAR EVENTS** command now clears events as intended.

Engineering reference: FUN-1097

- **Feature Affected:** USB memory stick

Issue: When deleting hundreds of files on a connected USB memory stick, the RTU would restart due to a Task watchdog being triggered.

Resolution: A task watchdog is not triggered.

Engineering reference: FUN-1107

- **Feature Affected:** Serial Cell Modem communications

Issue: Default routes could not be correctly added to a cell modem PPP link unless the link had already been established.

Resolution: The RTU now adds a default route for the PPP serial port after a cell modem data connection is established.

Engineering reference: FUN-1111

- **Feature Affected:** Analog event generation

Issue: Spurious analog events were generated during reconfiguration of the RTU. These could have invalid values due to changes to analog scaling or the restarting of I/O drivers.

Resolution: The issue no longer occurs.

Engineering reference: FUN-1119

- **Feature Affected:** %S logic bits

Issue: System status bits %S0 (warm start), %S1 (cold start) and %S13 (First scan in RUN) were not set correctly in some situations.

Resolution: The issue no longer occurs.

Engineering reference: FUN-1136

- **Feature Affected:** RemoteConnect online operation

Issue: The RTU could restart with a task watchdog after being issued controls via the RemoteConnect R1.6 object browser.

Resolution: The online object browser has been overhauled as part of a feature update and this issue no longer occurs.

Engineering reference: FUN-1163, FUN-1210, FUN-1045

- **Feature Affected:** MB_IPMaster and MB_Serial_Master function blocks

Issue: MB_IP_Master and MB_Serial_Master EFBs would report "INVALID_FN_CODE" when using function code 5 or 6. The request message would still be sent out.

Resolution: "INVALID_FN_CODE" is no longer reported.

Engineering reference: FUN-1165

- **Feature Affected:** RemoteConnect Logic application reporting

Issue: RemoteConnect would report the logic application as being in a STOP state when the logic was in a RUN state. The value in RemoteConnect would be updated to the correct RUN value after less than a minute.

Resolution: The issue no longer occurs.

Engineering reference: FUN-1176

- **Feature Affected:** Logic Debug service

Issue: The logic engine in the firmware would generate an exception if the Logic Debug service was disabled and then a reconfiguration enabled the Logic debug service.

Resolution: The issue no longer occurs.

Engineering reference: FUN-1183

- **Feature Affected:**

Issue: The Modbus Slave and DNP3 slave did not deal with UINT values from Counter objects consistently. DNP3 would roll over the value while Modbus would cap the value at 65535.

Resolution: Both protocol drivers now roll over the value.

Engineering reference: FUN-1192

- **Feature Affected:** SCADAPack DNP3 pulse operations

Issue: DNP3 pulse output commands with an OFF TIME of zero were accepted only once for any given point. Subsequent pulse commands received a busy response. Pulse commands with a non-zero OFF TIME were unaffected.

Resolution: Subsequent commands work as intended.

Engineering reference: FUN-1194

- **Feature Affected:** 6601 chatter filter

Issue: The 6601 digital input Chatter Filter feature would set the **POINT_IS_BAD** quality instead of the **CHATTER_FILTER** quality.

Resolution: The **CHATER_FILTER** quality is set.

Engineering reference: FUN-1198

- **Feature Affected:** RemoteConnect Counter Reset command

Issue: The RemoteConnect counter reset command was not being processed correctly.

Resolution: The counter reset command now clears the specified range of counters or all counters as requested.

Engineering reference: FUN-1227, RSC-2416

- **Feature Affected:** SCADAPack Reconfiguration

Issue: Reconfiguring the Serial port function from **None** to **Command line** or from **Command line** to **None** would cause the RTU to restart.

Resolution: The issue no longer occurs.

Engineering reference: FUN-1247

- **Feature Affected:** DNP3Peer_AddObjToWRList function block

Issue: The DNP3 peer function block **DNP3Peer_AddObjToWRList** would not accept **PEER_BinaryOutput_Write** as an **OBJTY** input. The documentation incorrectly listed this functionality as being supported.

Resolution: Documentation has been updated to exclude **PEER_BinaryOutput_Write**

Engineering reference: FUN-1253

- **Feature Affected:** USB memory stick

Issue: The capacity and free size of a connected USB memory stick was not reported correctly via the **MEMSHOW** command-line command or via the **SYS_CAPACITY_USB_Files_SizeUsed** and **SYS_CAPACITY_USB_Files_SizeFree** system data fields.

Resolution: Capacity and free size information is correctly reported

Engineering reference: FUN-1258

- **Feature Affected:** IFCONFIG on command-line

Issue: Using the **IFCONFIG** command to set the IP address for Ethernet port 3 would instead set the IP address for Ethernet port 2. The subnet mask was set correctly.

Resolution: The command now correctly sets the IP address for Ethernet port 3.

Engineering reference: FUN-1261

- **Feature Affected:** SCADAPack Reconfiguration

Issue: Reconfiguration that added or removed I/O modules could lead to a task watchdog restart for certain configurations.

Resolution: The issue no longer occurs.

Engineering reference: FUN-1263

- **Feature Affected:** SCADAPack Modbus Reconfiguration

Issue: Reconfiguration of Modbus/TCP Server Unit ID would not be applied until after a power cycle of the RTU

Resolution: The new configuration is applied at configuration time.

Engineering reference: FUN-1288

- **Feature Affected:** Modbus Scanner

Issue: The Modbus Scanner did not correctly issue read requests for UINT values mapped to Counter objects in the database. The Modbus Scanner did not correctly issue write requests for UINT or UDINT values mapped to Counter objects in the database. RemoteConnect did not present UINT and UDINT as the only data types for a Counter object. Modbus Scanner entries with an object type of Counter were not saved by RemoteConnect.

Resolution: Counter objects are supported.

Engineering reference: FUN-1293, FUN-1294, FUN-1297, RSC-1740, RSC-1828, RSC-2443, RSC-2426

- **Feature Affected:** RemoteConnect invalid parameters indication

Issue: Pages in the navigation pane were not always marked as containing invalid parameters after reading a configuration from the SCADAPack.

Resolution: The issue no longer occurs.

Engineering reference: RSC-1050

- **Feature Affected:** RemoteConnect Read File from Device

Issue: Attempting the “Read File from Device” option for a file that didn’t exist in the RTU would cause the RemoteConnect UI to freeze after the second consecutive attempt.

Resolution: The issue no longer occurs.

Engineering reference: RSC-1497

- **Feature Affected:** RemoteConnect French language support

Issue: RemoteConnect Install and Uninstall options would still be in English when the Windows OS language settings were set to French.

Resolution: The RemoteConnect Install and uninstall windows are presented in French when the Windows OS language settings are set to French.

Engineering reference: RSC-1592

- **Feature Affected:** RemoteConnect Import from Excel File

Issue: Modbus 6 digit register addresses would not be successfully imported from an Excel file.

Resolution: The issue no longer occurs.

Engineering reference: RSC-1601

- **Feature Affected:** RemoteConnect configuration.

Issue: The Apply button could remain disabled after changes had been made to the configuration.

Resolution: The issue no longer occurs.

Engineering reference: RSC-1606

- **Feature Affected:** RemoteConnect Input voltage status reporting

Issue: RemoteConnect didn’t correctly report the **Input Voltage Status**. It would report as Normal and not switch to Low when the voltage dropped below the configured threshold.

Resolution: The issue no longer occurs.

Engineering reference: RSC-1608

- **Feature Affected:** IP forwarding

Issue: IP forwarding settings were applied at reconfiguration time and saved in the configuration but IP forwarding was always enabled at RTU startup. This led to a mismatch between information displayed in RemoteConnect and information displayed on the command line.

Resolution: The issue no longer occurs.

Engineering reference: RSC-1656

- **Feature Affected:** Serial Cell Modem support

Issue: PAP/CHAP passwords were visible in the RemoteConnect UI.

Resolution: PAP/CHAP passwords are now obscured in the RemoteConnect UI.

Engineering reference: RSC-1683

- **Feature Affected:** RemoteConnect serial communications

Issue: RemoteConnect could not communicate via serial ports to a RTU with a DNP3 address of 256 or above.

Resolution: The issue no longer occurs.

Engineering reference: RSC-1695

- **Feature Affected:** DNP3 master

Issue: Renaming a DNP3 master remote device in RemoteConnect would incorrectly rename the associated Status and control objects.

Resolution: The issue no longer occurs.

Engineering reference: RSC-1708

- **Feature Affected:** Variable unlock and resynchronize

Issue: Unlocking an object associated with a logic variable and renaming it would cause another unrelated object to be unlocked.

Resolution: The issue no longer occurs.

Engineering reference: RSC-1709

- **Feature Affected:** SCADAPack 574 I/O configuration

Issue: RemoteConnect allowed the configuration of **Debounce Time** and **Invert point state** for SCADAPack 574 digital inputs DI0 – 15 even though these are not valid options for the Digital input hardware.

Resolution: **Debounce Time** and **Invert point state** are disabled.

Engineering reference: RSC-1720

- **Feature Affected:** RemoteConnect navigation tree

Issue: In some scenarios, RemoteConnect would display the incorrect page for the selected item in the navigation tree.

Resolution: The issue no longer occurs.

Engineering reference: RSC-1783

- **Feature Affected:** RemoteConnect Import from Excel file

Issue: RemoteConnect UI would lock up if the configuration was marked as invalid when an **Import from Excel file** action was performed.

Resolution: The issue no longer occurs.

Engineering reference: RSC-1797

- **Feature Affected:**

Issue: Due to a Windows 10 default folder permissions issue, the RemoteConnect project export feature would cause RemoteConnect to lock up on Windows 10.

Resolution: The issue no longer occurs.

Engineering reference: RSC-1806

- **Feature Affected:** DNP3 master and Modbus Master

Issue: Manually created objects were not properly added to DNP3 master data concentrators or to Modbus Scanners and the association information was incorrect. Automatically created objects were unaffected.

Resolution: The issue no longer occurs.

Engineering reference: RSC-1868

- **Feature Affected:** Logic Editor

Issue: Attempting to save a project while the logic editor was still starting would cause RemoteConnect to display a saving progress dialog indefinitely. This did not occur once the logic editor had been started.

Resolution: To ensure integrity of logic and configuration, the save operation cannot be run until the logic editor has finished starting.

Engineering reference: RSC-1874

- **Feature Affected:** RemoteConnect validation

Issue: RemoteConnect did not prohibit carriage return and line feed characters from being entered into the comments field. The RTU would reject these configurations as being incorrect.

Resolution: RemoteConnect does not permit carriage return and line feed characters to be entered in the comments field.

Engineering reference: RSC-1909

- **Feature Affected:** RemoteConnect reporting of SCADAPack status
Issue: RemoteConnect reports the RAM battery state as NORMAL even if it was not. Reading the RAM battery status via the Logic application was unaffected.
Resolution: The issue no longer occurs.
Engineering reference: RSC-1969

- **Feature Affected:** RemoteConnect validation
Issue: RemoteConnect did not correctly validate 6 digit Modbus register addresses when opening a configuration that used 6 digit addressing.
Resolution: The issue no longer occurs.
Engineering reference: RSC-1975

- **Feature Affected:** DNP3 master and Modbus Master
Issue: The DNP3 Master and Modbus Scanner pages would not refresh correctly when a device entry was deleted and the Apply button was not enabled. The Object page and Object Group page were unaffected.
Resolution: The issue no longer occurs.
Engineering reference: RSC-2005

- **Feature Affected:** Modbus Master
Issue: When loading or importing a configuration, the Write Outputs field of the Modbus Scanner would change a setting of **On Change** to **At Scan Rate**.
Resolution: The **On Change** setting is correctly retained.
Engineering reference: RSC-2023

- **Feature Affected:** RemoteConnect and Logic Editor synchronization
Issue: Using the copy object option in the object editor page and then changing the logic variable type of the new object before applying the changes would result in the logic editor not creating a new variable for the new object-to-variable relationship.
Resolution: The issue no longer occurs.
Engineering reference: RSC-2028

- **Feature Affected:** Logic Editor custom libraries
Issue: Logic editor custom libraries could not be created without first marking the installed custom.db file with read-write instead of read-only file permissions.
Resolution: The custom.db file is now installed with read-write file permissions by default.
Engineering reference: RSC-2124

- **Feature Affected:** RemoteConnect general operation
Issue: RemoteConnect would sometimes display an empty white tab in addition to the normal configuration and online tabs. The white tab could not be closed but did not otherwise interfere with user operations.
Resolution: The issue no longer occurs.
Engineering reference: RSC-2132

- **Feature Affected:** RemoteConnect Object Editor
Issue: In certain circumstances the OK button on the Object Editor popup was not enabled after a modification was made.
Resolution: This issue has been corrected.
Engineering reference: RSC-2221

- **Feature Affected:** RemoteConnect project settings
Issue: RemoteConnect would not clean up all objects that were made irrelevant by a project settings change. For example, when removing Modbus master from the project settings.
Resolution: Objects impacted by project settings changes are now cleaned up.
Engineering reference: RSC-2244

- **Feature Affected:** RemoteConnect validation
Issue: In RemoteConnect the PPP/CHAP username field did not prevent the entry of carriage return and line feed characters. The addition of these characters would cause configuration parsing problems for the firmware.
Resolution: Carriage return and line feed characters are not permitted.
Engineering reference: RSC-2251

- **Feature Affected:** RemoteConnect UI
Issue: RemoteConnect tables would sometimes be displayed with columns that were only one character-width wide.
Resolution: The issue no longer occurs.
Engineering reference: RSC-2269

- **Feature Affected:** Modbus Master
Issue: In RemoteConnect, the Modbus Scanner allowed the user to select FC 6 for REAL and DINT values. FC 6 writes only a single register at a time and is not a valid choice for multi register data formats.
Resolution: FC 6 is not permitted for 32 bit data types.
Engineering reference: RSC-2273

- **Feature Affected:** RemoteConnect object editor
 - Issue:** The edit icon could appear next to an object when an object edit was started but cancelled.
 - Resolution:** The issue no longer occurs.
 - Engineering reference:** RSC-2339

- **Feature Affected:** RemoteConnect general operation
 - Issue:** Rapid and repeated opening and closing of projects in RemoteConnect could cause the configuration window to no longer display. The window would continue to not display until RemoteConnect was restarted.
 - Resolution:** The issue no longer occurs.
 - Engineering reference:** RSC-2403

- **Feature Affected:** RemoteConnect recent projects
 - Issue:** Excel files would incorrectly be listed under recent projects when an **export to Excel file** or **import from Excel file** action was performed.
 - Resolution:** Excel files are no longer listed under recent projects.
 - Engineering reference:** RSC-2483

- **Feature Affected:** RemoteConnect USB communication
 - Issue:** USB communications would not work when the DNP3 or Modbus address of the RTU were over 3 digits long.
 - Resolution:** The issue no longer occurs.
 - Engineering reference:** RSC-2444, FUN-1211

- **Feature Affected:** DNP3 point numbers for database objects.
 - Issue:** Database objects required a DNP3 address as a mandatory field.
 - Resolution:** RemoteConnect no longer considers DNP3 point numbers mandatory for objects
 - Engineering reference:** RSC-1887

- **Feature Affected:** DNP3 routing
 - Issue:** Certain DNP3 routes were not permitted by validation rules.
 - Resolution:** Loosened DNP3 route validation rules to permit more routing combinations.
 - Engineering reference:** RSC-2071

- **Feature Affected:** DNP3 secure authentication

Issue: Applying a Master key via the USB interface did not work. It was rejected in the same manner as when the action is attempted via Ethernet.

Resolution: The issue has been corrected and applying a master key via the USB interface works as intended.

Engineering reference: FUN-661, RSC-1997

- **Feature Affected:** Variable unlocking and resynchronization

Issue: DNP3 point number and Modbus register object attributes were lost after logic variables were unlocked and resynchronized.

Resolution: The issue no longer occurs.

Engineering reference: RSC-2587

- **Feature Affected:** Variable unlocking and resynchronization

Issue: Any modifications to the comments attribute of an object made after unlocking a logic variable but before resynchronizing would not be passed to the logic editor during the resynchronization operation.

Resolution: The issue no longer occurs.

Engineering reference: RSC-2395

- **Feature Affected:** DTM Create PDF report

Issue: The **Create PDF report** options for the DTMs did not work in offline or online mode.

Resolution: The issue no longer occurs.

Engineering reference: RSC-2313

- **Feature Affected:** DNP3 Secure Authentication

Issue: The SCADAPack did not correctly report the state of the DNP3 secure authentication licence to RemoteConnect. The state of the licence was correctly displayed on the SCADAPack command line.

Resolution: The issue no longer occurs.

Engineering reference: FUN-1225

- **Feature Affected:** RemoteConnect TCP communications

Issue: RemoteConnect could not connect to a SCADAPack that was using a DNP3 port number other than the default of 20000.

Resolution: RemoteConnect can communicate over DNP3 port numbers other than the default.

Engineering reference: RSC-2586

- **Feature Affected:** SCADAPack DTM

Issue: It was possible to import a DTM XML file and create multiple instances of the Communication and Device DTMs. Once there are multiple DTM instances, communications and configuration would not work as intended.

Resolution: Duplicate DTMs are now prevented by blocking imports for SCADAPack DTMs.

Engineering reference: RSC-2275

6.18.11 Known Issues/ Known Customer Difficulties (R2.0)

- **Feature Affected:** Modbus Master

Issue: The Modbus Master configuration can cause slow RemoteConnect performance. When RemoteConnect Modbus Master has more than 10 Modbus Slave devices configured, performance of RemoteConnect can be impacted.

This results in high CPU usage by RemoteConnect when the project is opening, closing, the logic editor is opening, and when other object configuration changes are being made. In rare cases it may cause the Configuration interface to display an incorrect menu and not select pages. If this occurs close the **Configuration – SPx70 Controller** tab and double-click on **SCADAPack x70 Controller Settings** to open the configuration again.

This issue does not affect the run-time communication with the Modbus Devices when the configuration is loaded on to the SCADAPack controller.

Workaround: when configuring for 11 or more external devices, allow extra time for projects to open and apply changes. Consider removing “placeholder” Modbus devices that are not in use. Alternatively, consider using logic MB_IP_Master or MB_Serial_Master function blocks.

Engineering Reference: RSC-2601

Resolution: expected in RemoteConnect release R2.1

- **Feature Affected:** Logic variable to object mapping.

Issue: Logic applications in the SCADAPack will not work correctly with over 64 Kilobytes of variable data mapped to the object database.

Work around: Both RemoteConnect and the SCADAPack track the variable-to-object data required and prevent the configuration of or execution of applications that exceed this amount.

Engineering Reference: FUN-1352, RSC-2593

- **Feature Affected:** Multiple screen display.

Issue: When a laptop is switched from a multiple screen display to a single screen display, application windows may become orphaned on the no longer visible screen. If the logic editor is not accepting input after attempting to open a secondary window such as the Types Library Manager or FFB Input Assistance, it's possible that the window is open on a previously opened display. If you've moved from using a multi-screen display to a laptop, for example, the opened window may not be visible.

Work around:

Press Alt-F4 to close the hidden window and resume using the logic editor main screen.

OR

Press Alt-Space then M and hold down the left-arrow key to move the window onto the current display.

- **Feature Affected:** RemoteConnect on Windows 10.

Issue: RemoteConnect dialog content is blank.

Work around: Some Windows 10 versions may show blank display content as a result of interaction between Windows WPF and Windows 10 Video Drivers. Microsoft have suggested a temporary solution as follows:

- With administrator privilege run regedit from Windows
- Navigate to the following registry key:
HKEY_CURRENT_USER\SOFTWARE\Microsoft\Avalon.Graphics.
- Add a New DWORD value (or modify the value if it exists):
- DisableHWAcceleration. Set the value to 1
- Log out of Windows
- Log in again, and start RemoteConnect.

Engineering reference: DSUM-914

- **Feature Affected:** Object database configuration.

Issue: When reconfiguring from one large configuration to another large configuration, the configuration rebuild may fail with configuration log messages similar to “# 565: Unable to create object due to insufficient configuration memory space”.

Work around: Cold boot the RTU before applying the new configuration. Alternatively apply a configuration with a very small number of objects and restart the RTU. The new large configuration should then be accepted.

Engineering reference: FUN-1314

- **Feature Affected:** Custom function block and DDT components.

Issue: During a RemoteConnect software upgrade, the custom function block and DDT component libraries may be removed.

Work around: Backup custom function blocks and DDT components prior to upgrading the RemoteConnect software.

- **Feature Affected:** SCADAPack RemoteConnect configuration software

Issue: When attempting to open the DTM pane by double-clicking, a spurious error message may appear:

“An unexpected error occurred:

DTM Topology Editor

Cannot open DTM UI: Object reference not set to an instance of an object.”

Workaround: Restart the RemoteConnect application

Engineering reference: RSC-514

- **Feature Affected:** Logic Editor PLC Simulator

Issue: The Mode > Start Simulation action in the Logic Editor can take an extended period of time to start. The PLC Simulator is started and the project is prepared for download, but it can take up to 2 minutes for the download to start. After the first download, subsequent uses of the PLC Simulator don't experience this issue while the SCADAPack x70 Logic Editor and PLC simulator remain open. In some cases, a message from the simulator, stating "Error allocating PAT memory space" can occur.

Workaround: Press OK and ignore this message.

Engineering reference: USOC-94, USOC-95

- **Feature Affected:** Logic Editor PLC Simulator

Issue: The Mode > Start Simulation action in the Logic Editor may not start.

Workaround: Start the simulator manually. From the Windows menu type in "PLC Simulator". This may take multiple attempts. After starting via the Windows menu it should be possible to use "Mode > Start Simulation.

Engineering reference: USOC-94, USOC-95

- **Feature Affected:** SCADAPack x70 factory boot

Issue: The SCADAPack RemoteConnect configuration software does not read the configuration from a SCADAPack x70 device that has been factory booted.

Workaround: Write the configuration to the device or restart the device.

Engineering reference: RSC-893

- **Feature Affected:** SCADAPack RemoteConnect configuration software start-up

Issue: The SCADAPack RemoteConnect configuration software may be blocked from reopening if previous instances of RemoteConnect or the Logic Editor were not closed cleanly.

Workaround: Run the "Process Scrubber" application, which will shut down any remaining processes, then restart RemoteConnect.

- **Feature Affected:** Unity Pro installation compatibility

Issue: The SCADAPack RemoteConnect configuration software installation process and Unity Pro software installation process can interfere with one another. It is recommended that

when installing new versions of Unity Pro software that the repair installation option be run for SCADAPack RemoteConnect. Coexisting installations of RemoteConnect and Unity pro are only supported for **Unity Pro** versions **11.1, 12** and **13**.

Work around: Use a virtual machine for RemoteConnect installations or for Unity Pro installations or **Repair** the installations as mentioned above.

When installing new versions of SCADAPack RemoteConnect, the installer will automatically attempt a **Repair** on Unity Pro software.

- **Feature Affected:** IEC 60870-5-101 and IEC 60870-5-104 slave protocol support.

Issue: The IEC 60870-5-101 and IEC 60870-5-104 slave protocol drivers have been temporarily disabled in the SCADAPack RemoteConnect configuration software.

Work around: SCADAPack E devices use the same protocol drivers as the SCADAPack x70 devices. Use SCADAPack E Configurator to evaluate the IEC 60870-5-101 and IEC 60870-5-104 slave protocol drivers for their suitability in applications.

6.18.12 Post Installation Troubleshooting

Logic Editor is unable to communicate with SCADAPack RemoteConnect

Symptoms:

The SCADAPack x70 Logic Editor is starting, but is unable to communicate with SCADAPack RemoteConnect. When this occurs, the Logic Editor may not display variables that were created in the Object Editor and you may not be able to build the application from RemoteConnect.

Steps to resolve:

Register pserver.dll as described below

1. Close the Logic Editor and RemoteConnect applications if they are running on the PC.
2. In the Windows menu, search for **cmd.exe** then right-click on it and select **Run as administrator** to open it.
3. In the command line window, change to the default installation directory by typing one of the following commands:

64-bit systems: **cd "C:\Program Files (x86)\Schneider Electric\UnityScadaPack 11.1"**

32-bit systems: **cd "C:\Program Files\Schneider Electric\UnitySCADAPack 11.1"**

4. Type the following command to complete the registration:

regsvr32.exe pserver.dll

When the registration is complete, a dialog box with the message **DllRegisterServer in pserver.dll succeeded** is displayed.

Logic editor or Types Library update tool library modification

Symptoms:

SCADAPack Logic Editor or Types Library Update tool reports the library is opened by another application when attempting to modify the logic library

Steps to resolve:

Check that no instances of Unity Pro and RemoteConnect/SCADAPack x70 Logic Editor are running. Use the "Process Scrubber" if necessary. If the problem persists it is likely a Windows folder permissions problem.

Check the following:

- With administrator privilege right click on the following folder: C:\ProgramData\Schneider Electric
- Select Properties
- Select the Security tab
- Click Edit
- Click on the Users entry in the Group or user names section
- Scroll down the Permissions for Users area until you see a row called "Write"
- Check the box in the "Allow" column for the "Write" row
- Click OK
- The security settings will update on all the sub-folders
- Click OK to exit the Properties dialog

Engineering reference: DSUM-919

6.18.13 SCADAPack 57x and 6601 Firmware Version compatibility table

Customer Guidance

6601 upgrade recommendations: Upgrade 6601 I/O modules (both external and built into SP575) to firmware version 1.80.10 and bootloader version 1.80.10. For 6601 input output modules shipped with firmware 1.77.131 or earlier, and where extended over-range capabilities (up to 22 mA) are required, the module may be returned to a Schneider Electric facility for recalibration.

6601 minimum firmware version: 6601 I/O modules shipped from the factory with 1.80.6 or 1.80.10 firmware should **not** be downgraded to versions earlier than 1.80.6.

6601 bootloader upgrade mechanism: The command line command "**restart iofirm <filename> <module address>**" is provided for 6601 firmware upgrades. The 6601 firmware upgrade command can be used to upgrade the 6601 bootloader. This is only supported on

device firmware 9.0.4 and later and 6601 firmware 1.80.6 and later. “**restart iofirm bl6601.bin <module address>**” will apply bootloader file bl6601.bin. The filename **bl6601.bin** is the only filename that is accepted for the bootloader. Other file names will result in an attempt to patch the 6601 firmware and not the 6601 bootloader. The 6601 bootloader version is not reported on the command line.

SP57x minimum firmware version: If there is an attached 6601 or a built-in 6601 (SP575) the device firmware version should be 9.0.4 or later.

NOTICE	
LOSS OF SENSOR ACCURACY	
If you use firmware versions that are incompatible with extended over-range calibration on 6601 analog inputs, the analog inputs may report values 10% lower than the actual value.	
Use only firmware versions that are compatible with extended over-range calibration.	
Do not use SP570 or SP575 9.0.3 or earlier firmware in conjunction with a 6601 1.80.6 or later with extended over-range calibration. They are not compatible.	
Do not use 6601 firmware earlier than 1.80.6 with extended over-range calibration. They are not compatible.	
Failure to follow these instructions can result in equipment damage.	

A new version of 6601 I/O module firmware and bootloader has been released since the release of SP57x firmware 9.0.3. A new calibration format for 6601 analog inputs has been added to support extended over-range capabilities. Interoperability of various versions of firmware and calibration is described below.

	SP57x Firmw are	6601 Firmw are	6601 Calibrati on	6601 AI Value	Over-range	Comment
✓	9.0.3 or earlier	1.77.131 or earlier	0...20 mA	Reported normally	Always active at 20.05mA	
✓	9.0.4 or later	1.77.131 or earlier	0...20 mA	Reported normally	Always active at 20.05mA	
✓	9.0.3 or earlier	1.80.06 or later	0...20 mA	Reported normally	Always active at 20.05mA	6601 I/O modules upgraded to 1.80.6 from earlier versions will leave calibration unchanged. Recommended for upgrading

						systems that do not require extended over-range capabilities.
✓	9.0.4 or later	1.80.06 or later	0...20 mA	Reported normally	Always active at 20.05mA	
✓	9.0.4 or later	1.80.06 or later	0...22 mA	Reported normally	Always active at 22.00mA	Recommended choice for new installations
✗	9.0.3 or earlier	1.77.131 or earlier	0...22 mA	AI report 10% lower values	Always active at 20.05mA	NOT RECOMMENDED. Should only occur when a 6601 is mistakenly downgraded from 1.80.6 to an earlier version.
✗	9.0.4 or later	1.77.131 or earlier	0...22 mA	AI report. 10% lower values	Always active at 20.05mA	NOT RECOMMENDED. Should only occur when a 6601 is mistakenly downgraded from 1.80.6 to an earlier version.
✗	9.0.3 or earlier	1.80.06 or later	0...22mA	AI report 10% lower values	Always active at 20.05mA	NOT RECOMMENDED. When adding new 6601 I/O modules to existing systems, SP57x firmware should be upgraded to 9.0.4 or later. If this is not practical, contact Schneider Electric technical support.

7 SCADAPack RemoteConnect, Unity Pro, and Control Expert Compatibility

The following matrix describes compatible versions of SCADAPack RemoteConnect, Unity Pro, and Control Expert.

- X indicates versions that are NOT compatible
- ✓ indicates compatibility between the SCADAPack RemoteConnect version and the Unity Pro or Control Expert version
- Where an X or ✓ is not present, concurrent installation and operation of the two versions may be possible, but is not supported.

SCADAPack RemoteConnect Installer / About Version	Unity Pro					<%CONTROLEXPERTECOSTRUX%>				
	11.0 and Earlier	V11.1	V12.0	V13.0	V13.1	V14.0	V14.1	V15.0	V15.0-SP1	V15.1 and later
R2.0 / 3.4.1 R2.1 / 3.4.2	X	✓	✓	✓	n/a	n/a	n/a	n/a	n/a	X
R2.1.1 / 3.4.3	X	✓	✓	✓	✓	n/a	n/a	n/a	n/a	X
R2.2 / 3.5.1 R2.2.1 / 3.5.2 R2.2.2 / 3.5.3 R2.3 / 3.6.1 R2.3.1 / 3.6.2 R2.3.2 / 3.6.3	X	✓	✓	✓	✓	✓	X	X	n/a	X
R2.4 / 3.7.1 R2.4.1 / 3.7.2 R2.4.2 / 3.7.3	X	X	X	✓	✓	✓	✓	X	n/a	X
R2.5.1 / 3.8.1 R2.5.2 / 3.8.2 R2.5.3 / 3.8.3	X	X	X	✓	✓	✓	✓	✓	n/a	X

R2.6.1 / 3.9.1										
R2.7.1 / 3.10.1	X	X	X	✓	✓	✓	✓	✓	✓	X
R2.7.2 / 3.10.2										
R2.7.3 / 3.10.3	X	X	X	X	X	X	X	X	X	✓

