Realflo Release Notes

Realflo 7.12.1 Release Notes

Realflo 7.12.1 was released in June 2023.

Application and Flow Computer Versions

Realflo application version is 7.12.4875
Flow computer version is 7.12.4875 for 4203, 300, and 32
Flow computer version is 7.01.90 for SCADAPack 16-bit controllers
Flow computer version 7.12.1 is integrated with SCADAPack x70 firmware 9.8.5.

New Features

These new features were added.

- Updated the Event Log options to allow the oldest events to be replaced with new configuration events, when enabled
- Added support for Flow Computer Notes in the Setup menu for SCADAPack x70 devices. These notes are retrieved with the flow computer configuration.
- Added support for the Rosemount 4088A multivariable transmitter for SCADAPack x70 devices
- Added support for using pulse rate or volume rate from a meter as the source for AGA-7, AGA-9, and AGA-11 calculations for SCADAPack x70 devices

Improvements

The following improvements were made.

- WI 67918: Clarified the documentation to indicate that the Enron timestamp applies only to gas runs
- WI 68273: Improved dialog messages to better reflect the state of the RTU
- WI 68880: Clarified the documentation to describe the statuses that can occur if a compressibility calculation is incomplete
- WI 68378: Changed instances of gage to gauge in the documentation and user interface

Fixed Issues

The following issues were fixed.

- WI 67585: The flow computer transferred an incorrect unit to the MVT which displayed a volume rate unit not a volume unit. This is corrected.

- WI 68075: Enron register block 10223 could not be read or written to and returned an Illegal Data Address exception. This is corrected.
- WI 68083: The Enron hourly, daily, and batch archive registers were not correct. This is corrected.
- WI 68119: The Set gas chromatograph IP address Enron event was incorrectly documented as event 10262. It is now documented as event 15004.
- WI 68120: the Set_AGA3 function block did not support runs 11 to 20. This is corrected.
- WI 68208: Enron system hourly/daily pointers were incremented incorrectly when time/date changes. This is corrected.
- WI 68212: The wrong Enron indexing method was read back after rebooting the RTU. This is corrected.
- WI 68264: A SCADAPack x70 configured for 100 k data logger events could not be configured with 20 runs due to a lack of memory. A status is now displayed if a controller cannot be configured with all runs due to a lack of memory.
- WI 68428: Writing a configuration to an IMV25 removed the display settings. This is corrected.
- WI 68457: When a SCADAPack x70 configuration was changed from 3 runs to 20 runs, the defaults were not set correctly. This is corrected.
- WI 68584: A SCADAPack 47xi could not be configured when licensed as a flow computer. This is corrected.
- WI 68659: The flow computer allowed a read-only user to acknowledge events and alarms on a SCADAPack x70 device. This is corrected.
- WI 68690: Selecting or clicking on any item in Modbus Mapping returned an error. This is corrected.
- WI 68790: If a Realflo history file is manually removed from the controller and the history is subsequently read from Realflo, the controller restarted. This is corrected.
- WI 69154: Reading Enron configuration registers were returning 0 after power cycle of the RTU. This is corrected.
- WI 69183: Completed batch current readings were cleared after a SCADAPack x70 was restarted. This is corrected.

Realflo 7.11.1 Release Notes

Realflo 7.11.1 was released in October 2022.

Application and Flow Computer Versions

Realflo application version is 7.11.1.2110

Flow computer version is 7.11.1.2110 for SCADAPack 32, 300 series, x70, and 4203
Flow computer version is 7.01.90 for SCADAPack 16-bit controllers

New Features

These new features were added.

- WI 64050: Added support for CO2 measurement running a NIST-14 density calculation for SCADAPack x70 devices
- WI 66645: Added additional device lock permissions for SCADAPack x70 devices
- WI 66653: Realflo is ready for an upcoming release of the SCADAPack 470i and 474i
- WI 64663: Added support for the upcoming IMP10S multivariable transmitter on SCADAPack x70

Improvements

The following improvements were made.

- WI 67194: The technical support email address has changed to supportRO@se.com <mailto:supportRO@se.com>
- WI 67044: Updated the Using RemoteConnect with Realflo manual to remove content duplicated in the SCADAPack RemoteConnect documentation set
- WI 66848: When exporting for CFX, values are now mapped for Meter Flowing Density, Meter Temperature, and Meter Pressure for a liquid flow run

Fixed Issues

The following issues were fixed.

- WI 67871: The settings were not retained from a file saved with version 6.96 and then opened in version 7.10 for the Base Density Oil parameter on the Water Cut tab. This is now corrected.
- WI 67272: When the Enron Indexing Method was set to System Wide Indexing and then the contract units were changed for a gas run, the latest Enron daily history record could not be read. This is corrected.
- WI 67064: For the AGA-3 and V-Cone tabs, you could enter a value of 0.0 in the Viscosity field. You now need to enter a value greater than 0.0.
- WI 66540: In documentation, application identifiers were missing for the SCADAPack 470 and 474. This is corrected.
- WI 66132: When reading Enron Gas Chromatograph Configuration register 10257 and Stream Configuration register 10258 together on a SCADAPack x70 device, an error was displayed. This is corrected.
- WI 65669: When AGA-8 Hexanes+ Ratios was changed from Combined to Individual, clicking the Read Actual button resulted in incorrect values being displayed in the Actual column. This is corrected.

- WI 65355: Inferred water cut was not calculated when the temperature was out of spec. The last valid calculated value was used instead. This is corrected.

Realflo 7.10.2 Release Notes

Realflo 7.10.2 was released in May 2022.

Application and Flow Computer Versions

Realflo application version is 7.10.3367
Flow computer version is 7.10.3367 for SCADAPack 32, 300 series, x70, and 4203
Flow computer version is 7.01.90 for SCADAPack 16-bit controllers

New Features

These new features were added.

- WI 65921: Logging of M (Meter) Factor and K Factor can be suppressed for AGA-7 and AGA-9 configuration commands. This reduces the number of logged changes when frequent updates are made to the factors.

Improvements

The following improvements were made.

- WI 65924: Three permission controls were added to the Device Lock permissions. These permissions are available when locked: Calibration/Forcing, Realflo Accounts, and Run Execution Control.

Fixed Issues

The following issues were fixed.

- WI 65983: Realflo could not log into the ADMIN account after using another account. This is corrected.
- WI 65981: Realflo did not update the stored PIN if the PIN was changed outside the Realflo application and accounts were later read back by Realflo. This is corrected.
- WI 65534: Status code 30027 (User is not authorized to perform this function) was returned when changing the ADMIN account pass code from an ADMIN level account. This is corrected.

Realflo 7.10.1 Release Notes

Realflo 7.10.1 was released in January 2022.

Application and Flow Computer Versions

Realflo application version is 7.10.3348
Flow computer version is 7.10.3348 for SCADAPack 32, 300 series, x70, and 4203
Flow computer version is 7.01.90 for SCADAPack 16-bit controllers

New Features

These new features were added.

- WI 60820: Increased maximum flow runs from 10 to 20 on SCADAPack x70 flow computers when a new twenty run license is employed.
- WI 64340: Increased maximum number of meter stations from 6 to 10 on SCADAPack x70 flow computers.
- WI 227: Added support for E&H Promass 300 Coriolis meters to the SCADAPack x70 flow computers.
- WI 63165: Added CSV Export from Realflo for liquid and water runs.
- WI 64819: Added CSV export and XML export for AGA-9
- WI 64764: Added register address spreadsheets for Realflo Modbus and Enron Modbus protocols to documentation.
- WI 64871: The security lock feature on SCADAPack x70 permits user selected Realflo flow computer configuration commands to be executed when the RTU is locked.

Improvements

The following improvements were made.

- WI 61531: Removed support for the obsolete NOCT60 RTU.
- WI 62679: Changed copyright to Schneider Electric Systems USA Inc.
- WI 64962: Improved Polling Recommendations documentation for SCADAPack x70 flow computers.
- WI 62754: Remove dynamically loaded Russian language DLLs that were no longer used in the product.
- WI 64049: Clarified documentation for Realflo derived function blocks `HexanePlus` values.
- WI 64190: Clarified documentation to state the AGA-10 (2003) speed of sound calculation is used when the AGA-8 (2017) compressibility calculation is employed.
- WI 64218: Renamed Appendix A and subtopics to make Release Notes more visible in documentation.
- WI 64267: 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.
    - Modbus master is now Modbus client
    - Modbus slave is now Modbus server
    - IP Whitelist is now IP Firewall

    - DNP slave and DNP slave station are now DNP Outstation
    - DNP master and DNP master station are now DNP Controlling Station
    - DNP3 slave and DNP3 slave station are now DNP3 Outstation
    - DNP3 master and DNP3 master station are now DNP3 Controlling Station

- WI 64538: Expanded AGA-8 (GERG) calculation component ranges to allow measurement of pure gases recognised by the standard. Components except for water, hydrogen, and helium are permitted to be in the range 0% to 100%.
- WI 64679: Added link to Schneider Electric Cybersecurity Best Practices document to Cybersecurity topic.
- WI 64906: Realflo (TeleBUS) protocol write commands are blocked when the RTU device lock is enabled.
- WI 64959: Enron protocol exception response changed from Illegal Data Value to Illegal Function when there is no permission to write.

Fixed Issues

The following issues were fixed.

- WI 62656: Changes to Hexanes+ configuration checked if there was space for 6 events in the event log. This is corrected. It now checks for space for 30 events as both AGA-8 and Hexanes+ configuration are logged at the same time.
- WI 63236: Some text on the PC Communications dialog was not visible on some screen resolutions. This is corrected.
- WI 63749: Changing water cut mode from direct to inferred required the flow run to be stopped. This is corrected. The change now can be made without stopping the run.
- WI 64229: Enron Modbus hourly, daily, gas quality and batch history archive registers for run 10 could not be read. This is corrected.
- WI 64625: Communication Lost Alarm was not reported for Coriolis meters. The corresponding alarm for communication restored was reported. This is corrected. Both alarms are now reported.
- WI 64726: Some registers used by AGA-7 and AGA-9 were missing documentation of the AGA-9 usage in the manual. This is corrected.
- WI 64732: Realflo switched the displayed run from run 2 to run 1 after exporting run 2 to XML. This is corrected.
- WI 64816: Enron stream registers 12600 to 12759 on the SCADAPack 350 could not be read. This is corrected.

- WI 64828: Realflo checked temperature input constant values against greyed out (disabled) temperature zero and full-scale limits. This is corrected.
- WI 64829: The flow computer configured and used alarm limits for density, temperature, and water cut inputs when the input type is Constant. This is corrected. Limits are now ignored when the input type is Constant.
- WI 64886: SCADAPack 4203 Analog Inputs read zero after cycling power. This is corrected.
- WI 65156: Floating-point numbers with exponents did not fit into some input fields in Realflo, resulting in part of the number being hidden. This is corrected.
- WI 65322: Batch trigger unavailable alarm was not raised when inputs were unavailable on a gas run. If the run was subsequently changed to a liquid run with batch trigger disabled, a batch trigger unavailable alarm was raised. This is corrected.
- WI 65012: Documentation for Liquid Run Diagnostics used the wrong formula for floating-point registers. This is corrected.

Realflo 7.02.2 Release Notes

Realflo 7.02.2 is a maintenance release.

Application and Flow Computer Versions

Realflo application version is 7.02.3269.
Flow computer version is 7.02.3269 for SCADAPack 32, 300 series, x70, and 4203
Flow computer version is 7.01.90 for SCADAPack 16-bit controllers

New Features

These new features were added.

- The security lock feature now permits user selected Realflo flow computer configuration commands to be executed when the RTU is locked.

Fixed Issues

The following issues were fixed.

- WI 64229: Enron Modbus hourly, daily, gas quality and batch history archive could not be read for run 10. This is corrected.
- WI 64816: Enron stream registers 12600 to 12759 could not be read or written on the SCADAPack 350. This is corrected.

Realflo 7.02.1 Release Notes

Realflo 7.02.1 is a feature release.

Application and Flow Computer Versions

Realflo application version is 7.02.3247
Flow computer version is 7.02.3247 for SCADAPack 32, 300 series, x70, 4203 and NOCT60
Flow computer version is 7.01.90 for SCADAPack 16-bit controllers

New Features

These new features were added.

- AGA-9 gas flow calculation for ultrasonic meters is provided on SCADAPack 57x and 47x RTUs, and on SCADAPack 300 series RTUs.
- AGA-8 (2017) density calculation is provided on SCADAPack 57x and 47x RTUs, and on SCADAPack 300 series RTUs. The following calculations are now provided:
    - AGA-8 Detail (1994)
    - AGA-8 Detail (2017)
    - AGA-8 GERG (2017)

Fixed Issues

The following issues were fixed.

- WI 59859: The flow computer produced invalid calculated values when NAN (not a number) and INF (infinite) floating-point values were read from field devices. These values now result in an input bad quality alarm.
- WI 60378: Realflo command line diagnostics on SCADAPack x70 showed confusing messages when an object type was not correct. The confusing messages have been removed.
- WI 60539: One disconnected device slowed down polling on all ports with SCADAPack 300 series flow computers. This is corrected.
- WI 60702: Inferred water cut mode cannot be changed using Enron protocol. The inferred water cut register is changed from read/write, to read only.
- WI 61912: The Batch tab displayed an incorrect actual batch trigger object name (for SCADAPack x70) when the batch trigger was disabled. This is corrected. Realflo now reads the batch trigger object name even though it is disabled.
- WI 61941: The compressibility approximate result message was not displayed when runs with a pulse input were in cutoff on SCADAPack 300 RTUs. This is corrected.
- WI 62073: The SCADAPack x70 flow computer did not write the command result to register 49506 when a set configuration command was unsuccessful. This is corrected.
- WI 62203: A full event log blocked AGA-8 or NX-19 configuration changes when configured to ignore changes. This is corrected.
- WI 62223: The Enron Modbus driver allowed writing invalid AGA-3 and V-Cone configurations and reading them back on SCADAPack 300 and SCADAPack 32 flow computers. This is corrected.

Realflo 7.01.2 Release Notes

Realflo 7.01.2 is a feature release.

Application and Flow Computer Versions

Realflo application version is 7.01.2.3176
Flow computer version is 7.01.2.3176 for SCADAPack 32, 300 series, x70, 4203 and NOCT60
Flow computer version is 7.01.90 for SCADAPack 16-bit controllers

New Features

Realflo flow computer is available for SCADAPack 470 and SCADAPack 474 RTUs. It provides up to 10 flow runs of any type (actual number depends on licensing).

- AGA-3, AGA-7, AGA-11, V-Cone, AGA-8 detailed Gas flow calculations
- API Chapter 11.1 and 11.2 Liquid flow calculations
- API Chapter 11.4 Water flow calculations

Improvements

The following improvements were made.

- WI 31: The Device Hardening topic provides additional recommendations about cybersecurity.
- WI 60063: Modbus polling performance on SCADAPack x70 was improved by eliminating unnecessary delays between polls.
- WI 60248: PEMEX and Serbia gas references were removed from the user manual for the standard release of Realflo.

Fixed Issues

The following issues were fixed.

- WI 60337: The CFX export of an AGA-11 run reported the meter type as turbine when configured for a pulse input. The meter type is now reported as Coriolis for all input types for AGA-11 runs.
- WI 31496: SCADAPack x70 flow computers reported values for unused parameters when configuration was read. The flow computers now report 0 for unused parameters.
- WI 59388: SCADAPack x70 flow computers sent repeated polls to Modbus devices following a communication loss. This is corrected.
- WI 60285: SCADAPack x70 flow computers ignored the Exclude M Factor option when calculating AGA-7 uncorrected flow volume. This is corrected.
- WI 60385: On SCADAPack x70 flow computers reconfiguration of the sensors reported status code 30129 when Sensor 1 was disconnected. This is corrected.
- WI 60404: The CFX export of a V-Cone run reported the meter type as orifice. The meter type is now reported as V-Cone.

Realflo 7.01.1 Release Notes

Realflo 7.01.1 is a feature release for field trials.

Application and Flow Computer Versions

Realflo application version is 7.01.3166
Flow computer version is 7.01.3166 for SCADAPack 32, 300 series, x70, 4203 and NOCT60
Flow computer version is 7.01.90 for SCADAPack 16-bit controllers

New Features

Realflo flow computer is available for SCADAPack 470 and SCADAPack 474 RTUs. It provides up to 10 flow runs of any type (actual number depends on licensing).

- AGA-3, AGA-7, AGA-11, V-Cone, AGA-8 detailed Gas flow calculations
- API Chapter 11.1 and 11.2 Liquid flow calculations
- API Chapter 11.4 Water flow calculations

Improvements

The following improvements were made.

- WI: 1893: Documentation uses more precise language for ranges of values.
- WI: 55196: ClearSCADA is now EcoStruxure Geo SCADA Expert. References in the documentation are updated.
- WI: 59372: The flow computer on a SCADAPack x70 RTU is stopped on a SERVICE boot of the RTU. This is consistent with other services on the RTU such as the logic engine and the Modbus scanner.
- WI: 59550: The Microsoft MSXML 4.0 Parser component used in the Realflo application was upgraded to Microsoft MSXML 6.0 Parser.
- WI: 59723: Documentation of supported Windows versions was updated to:
  Windows 8.1 Professional (32-bit or 64-bit)
  Windows 10 Professional (32-bit or 64-bit)
  Realflo is tested against the latest version of Windows 10 at the point of its release.

Corrections

The following corrections were made.

- WI: 1737: The event log cannot store the full range of possible sensor serial numbers. Sensor serial numbers that are too large to store in the event log now are recorded as zero, rather than as an approximation of the actual value.
- WI: 54953: Enron Modbus protocol returned invalid configuration data for unconfigured runs. It now returns 0 if the run is not configured.
- WI: 55496: AGA-8 configuration became invalid on transition from AGA-8 Hexanes+ Ratios Individual to Combined. This did not affect writes from the Realflo application but could affect

custom implementations of the flow computer protocol. The values now remain valid at the transition.

- WI: 57425: The SCADAPack x70 flow computer did not report unsuccessful polls of a Foxboro Coriolis meter when the meter was configured with a non-Modbus port. The unsuccessful polls are now counted.
- WI: 58293: On the SCADAPack x70 flow computer, the MVT display control did not work if the serial number was not read during configuration. The serial number is no longer required to update the MVT display.
- WI: 58295: On the SCADAPack x70 flow computer, the MVT display control did not work if the device poll was disabled and then enabled. This is corrected.
- WI: 58296: On the SCADAPack x70 flow computer, disabling a polled device during operation could result in invalid data being used by the flow calculation for the current sample. This is corrected.
- WI: 58342: Configuring a base pressure of 0 using Enron Modbus protocol set the contract configuration and AGA-3 configuration but not AGA-8 configuration. This is corrected.
- WI: 58468: The Realflo Device Lock feature would report the RTU did not support the feature if communication was lost. It now reports the communication loss.
- WI: 59336: On the SCADAPack x70 flow computer, the data stored by the flow computer was not cleared when a Realflo license was removed. The data is now set to 0 when the number of licensed runs is reduced.
- WI: 59388: Following a temporary communication loss to a polled device, the x70 flow computer attempted to send all the queued requests to the device, rather than resuming the normal polling cycle. The normal poll cycle is now resumed immediately.
- WI: 59495: The TFV and TFX files would not be written by Realflo 7.0 if the older Microsoft MSXML 4.0. was not present on the system. This older component is now replaced by Microsoft MSXML 6.0. See WI: 59550 above. This issue can be worked around in Realflo 7.00 installations by manually installing the older component.
- WI: 59756: On the SCADAPack x70 flow computer, Sensor, Coriolis meter, and stream/GC configuration event generation was inconsistent and dependent on run/device configuration order. This is corrected.
- WI: 59966: On the SCADAPack 32, SCADAPack 4203 and SCADAPack 300 flow computers, the gas quality stream parameters were validated when the gas quality source was manual. The unused parameters are no longer checked in the manual mode.

Realflo 7.00.2 Release Notes

Realflo 7.00.2 is a feature release.

Application and Flow Computer Versions

Realflo application version is 7.00.3119
Flow computer version is 7.00.3119 for SCADAPack 32, 300 series, x70, 4203 and NOCT60
Flow computer version is 7.00.88 for SCADAPack 16-bit controllers

New Features

The flow computer for the SCADAPack x70 RTUs is highly compatible with previous versions of the flow computer on earlier SCADAPack RTUs. The key characteristics are:

- The flow computer application is now part of the x70 firmware and is no longer a loadable C application. A SCADAPack x70 license is required to run the flow computer.
- Future upgrades to new flow computer versions will require loading of firmware. This is done in the conventional manner using RemoteConnect.
- The flow computer is essentially a virtual device executing within the RTU. It includes a Modbus register database that provides compatible mapping with previous versions so that existing host systems can continue to access the flow computer in a relatively seamless fashion.
- Flow computer EFM (Enron) Modbus protocol and mapping is compatible with previous flow computer versions.
- Realflo Windows™ application is the configuration, diagnostic, and field data collection tool for flow computers in the SCADAPack x70 RTU. RTU related configuration is performed using RemoteConnect.
- Access to the flow computer from x70 Logic is similar to accessing external flow computer devices. For example, the recommended method for accessing real-time flow data from x70 Logic is by polling the flow computer using the Modbus scanner facility.
- Logic Read/Write access to the flow computer configuration is accomplished by using get/set Modbus commands within logic function blocks. Tested function block examples accessing flow calculation configurations are provided on the release DVD for each type of flow calculation supported.
- RemoteConnect provides validates Modbus register usage to help avoid conflicts in register usage between the flow computer and x70 database objects with Modbus addresses.
- Flow computer inputs are configured using object names rather than Modbus register numbers. The Advanced Analog object feature set is provided for these objects including scaling into engineering units.
- Input objects include quality information and associated input alarms. If an input object goes offline, it will be detected in the flow computer and logged.

The Flow Computer for SCADAPack 570, 574, and 575 RTUs provides the following functionality:

- Up to 10 flow runs of any type (actual number depends on licensing).
    - AGA-3, AGA-7, AGA-11, V-Cone, AGA-8 detailed Gas flow calculations
    - API Chapter 11.1 and 11.2 Liquid flow calculations
    - API Chapter 11.4 Water flow calculations
- Flow run inputs from SCADAPack x70 object database with bad quality and forced value alarms. Inputs are configured using object names.
- Alarm and event logs
- Hourly, daily, and batch history
- Sensor, Coriolis meter, and Gas chromatograph polling
- 5 Meter stations
- Realflo Modbus protocol including extensions for flow computer data retrieval

- Enron Modbus protocol
- Integration of the flow computer into the SCADAPack x70 RTU firmware.
- SCADAPack logic function blocks for flow computer configuration
- Not supported: NX-19 density calculation

Realflo provides configuration of SCADAPack x70 flow computer features described above.

RemoteConnect provides configuration of SCADAPack x70 RTU features. RemoteConnect project files can be associated with Realflo configuration files. The RemoteConnect project can be opened from Realflo tool bar.

Realflo licenses are integrated with SCADAPack x70 licenses. Flow computer license changes on SCADAPack x70 flow computers take effect immediately and without RTU restart.

SCADAPack x70 command line provides Realflo status command (REALFLOSTATUS) and Realflo diagnostics (REALFLODIAG). The VER command reports the Realflo version.

Integral value is calculated and stored in history for V-Cone gas flow calculations

Improvements

The following improvements were made:

- WI 14: Diagnostic data for two-phase liquid flow is reset at the end of daily history records.
- WI 74: A constant base density can no longer be forced. A configuration change is required to modify the constant base density.
- WI 117: Improved reading of unconfigured runs on SCADAPack 32 and SCADAPack 350 flow computers.
- WI 199 and WI 273: Liquids and Water calculations using counter inputs show the smoothed flow rate in the Realflo current readings view. This functionality was previously only provided on AGA-7 gas flow runs. This also corrects an inconsistency at slow pulse rates where samples without pulses would show an instantaneous zero flow rate but would still accumulate flow time due to the smoothed rate being non-zero.
- WI 267: Flow computer information dialog redesigned for SCADAPack x70 flow computer.
- WI 330: Prioritization of liquid run alarms on the Realflo Current Readings view was revised to give higher precedence to some alarms. Alarms continue to be shown in the Alarm log view.
- WI 55322: References to ClearSCADA were changed to EcoStruxure Geo SCADA Expert to match the branding change for that application.
- WI 58238 Add support for Device Lock feature in SCADAPack firmware.

Corrections

The following corrections were made:

- WI 1: Volume was accumulated for liquid and water runs while in cutoff. Volume is now accumulated only when the run is not in cutoff.
- WI 11: The flow computer was not able to communicate with more than one Micromotion model 2700 Coriolis meter. This is corrected.
- WI 22: Stream configuration validated the gas chromatograph deviation range from 0 to 0.002% rather than the correct range of 0 to 0.2%.
- WI 39: The Realflo Run selector changed the displayed station in other windows. Similarly, the station selector changed the run displayed in other windows. The run and station selectors are now independent.
- WI 41: Documentation for hourly, daily, and batch history break triggers was made clearer in this release.
- WI 42 and WI 183: Realflo Lookup User Number command (100) updated the authorization level register. This register is no longer updated. Updated the documentation for Realflo command 100 to include register 49861.
- WI 72: Event 10112 "Set Input: DP Altitude and Latitude Compensation" was logged for AGA-11 runs. This alarm does not apply to AGA-11. This has been corrected.
- WI 90: Gage pressure type became invalid when the number of runs was changed from 4 to 1 and back to 4. This has been corrected.
- WI 91: Forcing and Calibration commands added to documentation.
- WI 99: Flow calculation alarms were not logged when a run was started, if the condition was present before the run was started. This has been corrected.
- WI 115: Removed unused registers 47532 and 43792 from documentation.
- WI 116: Flow computer did not check validity of heating values. It now checks for the same range as Realflo.
- WI 121: Realflo did not check AGA-8 components were within the expanded ranges in the described in the documentation. This check was performed by the flow computer. Realflo now checks the values at time of configuration.
- WI 166: Forcing and calibration command can no longer be done on unused inputs.
- WI 168: Forcing a negative gage pressure is allowed if the absolute pressure value is 0 or greater.

- WI 188: Liquid calculation for refined products with an equilibrium pressure that is less than atmospheric pressure now subtracts the equilibrium vapor pressure (Pe) from the pressure input values before entering the calculation sequences given in API Chapter 11, sections 11.1.5.1, 11.1.6.1, 11.1.6.2, 11.1.6.3, 11.1.7.1, 11.1.7.2, and 11.1.7.3.
- WI 197: Current Stations Readings command missing from View Menu documentation.
- WI 209: Liquid and Water XML Exports incorrectly contained the Last Compressibility Configuration Time property. This has been removed.
- WI 843: Reading batch history could miss one record if the batch ended during the reading of the log. The records are now read.
- WI 2493: Exporting AGA-8 Hexanes+ through script and though the user interface produced different results. This is corrected.
- WI 3438: 'Compressibility Calculation Error - AGA8 - Not configured' status was displayed when the flow computer was configured with a large atmospheric pressure. The AGA-8 configuration does not use this value and no longer checks it or displays a message.
- WI 4856: Documentation updated to state AGA-11 configuration commands are supported in Realflo 6.95 and newer.
- WI 4876: The K factor of an AGA-7 run was not being converted when only the input units were changed.
- WI 4884: The V-Cone configuration Copy Actual to Proposed function did not copy the adiabatic expansion factor, cone material, and pipe material values. The values are now copied.
- WI 4892: Events that occur when a run is stopped were logged, but not counted in the history. The events are now counted in the next record following the events.
- WI 4904: An empty batch history log was created when a run is stopped and the batch trigger for the run changes from off to on and then to off. The empty batch log is no longer created.
- WI 5165: Realflo would not enter the online state if a sensor was disconnected the initial time online mode was selected after writing configuration. This is corrected.
- WI 5173: When communication and sensor alarms cleared at the same time, the sensor alarm condition would not be cleared in the alarm log. The alarms are now cleared.
- WI 5191: Conversion of liquid base pressure from absolute to gauge used the configured or live atmospheric pressure. Now it uses a fixed atmospheric pressure.
- WI 9413: Changing sensor pressure type from gauge to absolute did not use the atmospheric pressure configured for the run. This is corrected.

- WI 9424: Sensor display would show the wrong units for atmospheric pressure for a gas run and static pressure for a liquid run when gauge pressure is configured for the sensor. The units did not indicate absolute or gauge for metric units. The correct units are now shown.
- WI 9441: A change in Coriolis meter pressure compensation configuration was not written to the Coriolis meter if the change was made after communication with the meter was established. Changes are now written after any modification.
- WI 9458: Incorrect values were reported for user-defined registers polled from a Coriolis meter. This is corrected.
- WI 9512: Coriolis meter diagnostics registers were not cleared on SCADAPack 35x and SCADAPack 32 flow computers. The registers are now cleared.
- WI 30113: Some user defined registers on a CFT51 Coriolis meter were not polled if there were disabled registers in the middle of the polling list. This has been corrected.
- WI 30134: Enron Modbus allowed up to 64 floating-point values to be read which is longer than the maximum Modbus message length. Up to 62 floating-point values can now be read.
- WI 30135: Enron Modbus registers 4118, 4119, and 6100 returned values for any type of sensor or MVT. The registers apply only to certain types of MVT. Zero is now returned if the value is not valid for the selected sensor or MVT type.
- WI 47320: If the water cut input was outside its usable range (0-100%), the flow calculation stopped (correct) but no alarm was reported. Alarms are now reported.
- WI 53347: Under some conditions, LNG liquid calculations would execute for a long time. During the calculation physical I/O points were not updated and the RTU would take 300 ms or more to respond to a Modbus request. I/O updates and Modbus requests are no longer slowed by long liquid calculations.
- WI 54486: The Realflo Modbus protocol allowed up to 255 hourly records per day to be read, but Realflo read a maximum of 144 hourly records per day. Realflo now reads up to 255 records.
- WI 57756: Set alarm bit was not included in Enron protocol alarm bitmap.
- WI 54663: Reading hourly, daily and gas quality history logs could miss reading a record when a new record is generated during a sequence of read commands.
- WI 56560: AGA-11 and liquid runs would accumulate negative flow when Coriolis meter pressure compensation factor was negative (out of range).

Realflo 6.96.1 Release Notes

Realflo 6.96.1 is a feature release.

Application and Flow Computer Versions

Realflo application version is 6.96.2752
Flow computer version is 6.96.2752 for SCADAPack 32, 300 series, 4203 and NOCT60
Flow computer version is 6.96.85 for SCADAPack 16-bit controllers

New Features

These new features were added.

- The user documentation is now displayed in a new format. This format provides improved navigation, search functions, and clarity.
- A constant temperature input can now be configured for gas, liquid, and water flows
- The water volume correction calculation method for liquid and water runs can now be selected from the following:
    - No Correction
    - Water (API 11.4.1)
    - Produced Water (API 20.1)

  The default option is Produced Water (API 20.1).
- The Flow Computer of Realflo 6.96.1 and newer accumulates Indicated Volume (IV) of liquid and water runs for This Month and Last Month. The data is provided through Modbus and Enron registers. Realflo shows the accumulated data in the Current Readings view.

Improvements

These improvements were made.

- Documentation of calculation standards includes standards revision dates. [RFLO-4135]
- Two-phase detection by Coriolis meter is rejected when density input type is not Coriolis meter. [RFLO-4328]
- Alarm and event acknowledgement documentation is clearer and includes links to related topics. [RFLO-4538]
- XML export includes flow calculation standards and revision dates. [RFLO-4547]
- Constant water cut is displayed as an input value on current readings. [RFLO-4550]
- Installer web site link updated. [RFLO-4564]

Corrections

These corrections were made.

- Calibration report title showed Compressibility Calculation where it should have showed Density Calculation. [RFLO-2075]
- Water Cut Input options dialog no longer has both options enabled. [RFLO-2947]
- C/C++ Loader no longer refers to applications as flow computers. [RFLO-3142]
- Forcing a pulse value no longer allows entry of fractional numbers. The fractional part was not used by the flow computer. [RFLO-3167]
- The text and unit for Base Pressure (absolute) on the Contract tab for water runs is disabled when unused. [RFLO-3173]
- Check for duplicated records did not compare some fields of hourly and daily history log. [RFLO-3401]

- Custom views did not display some values when used with ISaGRAF firmware. [RFLO-3524]
- New Value and Previous Values in alarm logs are now displayed as integers. [RFLO-3599]
- Negative Static Pressure limits were incorrectly allowed in Sensor settings. [RFLO-3948]
- Add/Edit Sensor Settings dialog incorrectly reported IP Address as different when it was the same. [RFLO-3970]
- Read button on the Stream Diagnostics dialog now reads both the configuration and the diagnostics. [RFLO-4055]
- Isentropic exponent of 0 is now rejected by flow computer. [RFLO-4214]
- Daily history Modbus registers were not updated when time is changed into a different contract day. [RFLO-4227]
- Reference manual section 2.3.1.3 now indicates registers are for gas runs only. [RFLO-4529]
- Rosemount 3095FB transmitter could not be configured using Realflo 6.94 and 6.95. [RFLO-4537]
- Suggestion of Atmospheric Pressure due to Elevation is now calculated using API 21.1 (2013) algorithm. Results differ by less than 0.02% the previous algorithm. [RFLO-4545]
- Reference manual description for register 49500 had extra text. [RFLO-4553]
- Document now indicates Modbus Command 12 is not supported on 16-bit SCADAPack RTUs. [RFLO-4555]
- Liquid alarm clearance was not recorded in log when alarm condition cleared while flow computer wasn't running. [RFLO-4577]
- Limit alarm remained active when condition cleared during power off. [RFLO-4578]
- Gas flow calculation calculated flow registers not cleared when run stopped. [RFLO-4583]
- AGA-11 raised AGA-3 alarm code when inputs were not valid. [RFLO-4588]
- 3600 second flow time per every hour and 86400 per day recorded when there were no pulses recorded for the day. [RFLO-4638]
- Liquid flow cutoff alarm was inconsistently raised when a default flow value was invoked for disconnected Coriolis meter. [RFLO-4686]

Realflo 6.95.2 Release Notes

Realflo 6.95.2 is a feature release for Serbia Gas only.

Application and Flow Computer Versions

Realflo application version is 6.95.2666
Flow computer version is 6.95. 2666 for SCADAPack 32, 300 series, 4203 and NOCT60
Flow computer version is 6.95.84 for SCADAPack 16-bit controllers

New Features

Changes were made to the SCADAPack 4203 RTU to provide additional accumulators. These accumulators are for Serbia Gas only.

Realflo 6.95.1 Release Notes

Realflo 6.95.1 is a feature release.

Application and Flow Computer Versions

Realflo application version is 6.95.2646
Flow computer version is 6.95.2646 for SCADAPack 32, 300 series, 4203 and NOCT60
Flow computer version is 6.95.79 for SCADAPack 16-bit controllers

New Features

These new features were added.

Realflo provides a comprehensive implementation of AGA-11 on SCADAPack 300, 4203, NOCT60A and SCADAPack 32 controllers with the following features.

- Pre-configured Modbus polling engine for popular Coriolis meter transmitters:
  - Foxboro CFT-51/NOCT 60A
  - Micro Motion 2700 MVD
  - Micro Motion MVD Direct Connect for F-Series and R-Series with 800 Series Enhanced Core Processor
  - E&H Promass 83
  - E&H Promass 100
- Support for pulse and analog input from meters not available in the polling engine.
- Bi-Directional flow measurement

Coriolis measurement has been enhanced with these features for gas, liquid and water runs.

- Coriolis pressure compensation can be applied in Coriolis meter or in the flow computer, allowing pressure compensation with pulse or analog inputs.
- Flexible assignment of Coriolis meters to more than one flow run
- Enhancement of Coriolis meter diagnostics showing which meters are assigned to each of the relevant flow run inputs
- Polling of Coriolis meters for diagnostics when meter is used with pulse or analog inputs.
- Clamping of inferred water cut results at 0% or 100% if results are in the range of -10% to zero, or 100% to 110% respectively.

AGA-3 (2013) is now supported providing the following items.

- Updated calculation provides changes to the Expansion Factor portion of calculation.
- Selections for individual Type 302 stainless steel, Type 316 stainless steel, and Monel 500 material types.
- 304/316 stainless (average) is also supported as this was the only selection for stainless steel expansion factor for previous versions.

Improvements

These improvements were made.

- New File Wizard allows selection of a Coriolis meter for the temperature input on gas runs. [RFLO-2837]
- The calibration report now reads and reports the actual gas composition from the flow computer, rather than reporting values from the configuration file. [RFLO-4207]
- The existing Sensors and Display Overview dialog is displayed in the configuration tree making it easier to access. [RFLO-4240]

- Current input value registers are now supported on the SCADAPack 32. See Reference Manual section 2.3.1.2 for details. [RFLO-4241]
- User Manual section 5 field and parameter descriptions are reformatted to improve consistency and understanding. [RFLO-4321]
- Cutoff alarm descriptions have been improved. [RFLO-4330]
- The SCADAPack 32 flow computer Enron Driver has been updated to provide new functionality introduced on the SCADAPack 300 series in Realflo 6.90.1. This improves compatibility and provides additional features. [RFLO-4400] and [RFLO-4444]
- The new Export Registers in Use command exports a list of registers used by the flow computer. This indicates which registers are available for use by logic applications. [RFLO-4169]

Corrections

These corrections were made.

- Sensor and Display Overview now indicates if a temperature input comes from a Coriolis meter. Previously it reported it as an analog input. [RFLO-2803] and [RFLO-3087].
- The Replace Flow Computer wizard no longer allows a user to read Alarms and Events after flow computer replacement if the user chooses not to write configuration. [RFLO-3058]
- Water Cut Input options dialog no longer has parameters for both options enabled simultaneously. [RFLO-3085]
- Location Compensation options for AGA-7, AGA-11 and Liquid runs no longer list DP and Both. These options are valid only for AGA-3 and V-Cone runs. [RFLO-3086]
- Incorrect description of Sensor configuration node in Maintenance Mode fixed. [RFLO-3291]
- Direction status Register under Run Configuration is highlighted in blue when different. [RFLO-3587]
- Export XML file excludes disabled runs and no longer displays a message indicating the runs could not be exported. [RFLO-3592]
- User manual screen shots updated and minor text changes. [RFLO-4103]
- Get Daily History Command section was out of order in Reference Manual. [RFLO-4204]
- Pulse counts are displayed as integers in Hourly/Daily/Batch logs. Formerly they were shown as floating-point numbers. [RFLO-4205]
- Data logger uses a long integer for pulse accumulation. Previously it used a floating-point value which could reduce precision with pulse rates of 49710 pulses/s or higher. The counter input hardware does not support such a high pulse rate. [RFLO-4213]
- Corrected pulse counters description in Reference Manual. Counters hold the total number of pulses, not the average as previously documented. [RFLO-4226]
- SCADAPack 32 Flow computer initializes registers for configured runs at start up. Previously it initialized licensed runs even if a run was not used. [RFLO-4228]
- Corrected the AGA-8 result when the flow computer is stopped and started. In flow computer 6.91 through 6.94 for the SCADAPack 300 series, 4203, and NOCT60 the AGA-8 result could be incorrect following a power cycle. [RFLO-4235]
- Corrected the NX-19 calculation to account for the atmospheric pressure. Previously an incorrect result could be calculated. This behaviour was introduced in flow computer 6.30. [RFLO-4242]
- The calculated inferred water cut is no longer used if a default value is in use due to an alarm. [RFLO-4293]

- Realflo no longer attempts to read logs for disabled runs after replacing a flow computer with a new version. Previously it would attempt to read invalid runs and would display a message. [RFLO-4306]
- Meter run no longer generates an empty hourly log if batch trigger is on following the loading of a new flow computer. [RFLO-4334]
- Cleared water cut alarms when changing a liquid run to a water run. Previously if a liquid run configured in direct water cut mode and with a water cut input low level alarm present was changed to a water run, the water cut input low level alarm persisted even though a water run does not have a water cut input. [RFLO-4353]
- Coriolis meter not polled alarm is cleared when liquid run is reconfigured to no longer use a Coriolis meter. [RFLO-4354]
- Promass 83 driver uses the configured byte order for tag name and system condition values. Previously pairs of characters were swapped for these values. [RFLO-4356]
- SCADAPack 32 flow computer no longer generates 1 second hour log with start time after end time when clock moved to the top of the hour. [RFLO-4360]
- The Flow Computer could stop polling a Coriolis meter when reducing then subsequently increasing the number of runs. Rewriting the configuration restarted the polling. This has been resolved. [RFLO-4369]
- Changing the polled devices could lock up flow computer 6.91 through 6.94. This has been resolved. [RFLO-4370]
- For Paired runs, the On Indicates parameter was not set correctly for the paired run in the New File Wizard. [RFLO-4372]
- Create a configuration from template file resulted in incorrect Contract parameters for runs with different unit sets. Values are now converted between unit sets. [RFLO-4374]
- Promass 83 driver no longer reports duplicate alarms. [RFLO-4381]
- Alarm log entries now distinguish between alarm off and on for Micro Motion alarms. [RFLO-4382]
- Alarm limit hysteresis in Enron registers 10127, 10131, 10135, and 10139 is now writable. Previously these values could not be set using Enron protocol. [RFLO-4414]
- Realflo can now read actual Coriolis Meter values from a SCADAPack 32 with flow computer 6.94. Previously Realflo would not read these values. [RFLO-4415]
- SCADAPack 32 flow computer ends partial hourly and daily history records when a flow computer is replaced. Previously the partial records would not be read by Realflo. [RFLO-4426]
- SCADAPack 32 flow computer will no longer allow changes to the AGA-3 flow extension method while calculation is running. [RFLO-4447]
- Removed “AGA-3” from description of alarm 20310 (Flow temperature below absolute zero) as this alarm is used by AGA-3 and AGA-11. [RFLO-4476]
- Polling user-defined registers from Coriolis meters can overwrite data in runs 8 and 9, if the runs are configured for Liquid or Water. Gas runs were not affected. A different register range for the user-defined-register update times is now used. [RFLO-4492]
- The mapping between Modbus coil/status registers and Enron registers is now working. Previously, coils could be set correctly through Enron Modbus, but coil or status registers were read incorrectly. [RFLO-4514]
- The Flow Computer Information dialog shows Production Plus options. Previously these were not shown on the main dialog but were shown on the Edit dialog. [RFLO-4500]

Realflo 6.94.1 Release Notes

Realflo 6.94.1 is a feature release.

Application and Flow Computer Versions

Realflo application version is 6.94.2459
Flow computer version is 6.94.2459 for SCADAPack 32, 300 series, 4203 and NOCT60
Flow computer version is 6.94.75 for SCADAPack 16-bit controllers

New Features

These new features were added.

- Added meter station accumulators for resettable total station volume accumulator and non-resettable total station volume accumulator. The resettable total station volume accumulator provides total flow over a time period. This accumulator can be reset using Realflo, assigned Modbus coil registers or assigned Enron coil registers. The time and date of the last reset is displayed with the accumulator value. The non-resettable total station volume accumulator provides the sum of the total accumulated flow volumes shown on the Current Readings page for each run.
- The ranges for liquid flow inputs have been extended so that liquid calculations are performed if an input is out of range. If an input is out of range, an out of range alarm is raised for the input and the liquid calculations are performed. If the liquid calculations are not successful, a calculation unsuccessful alarm is raised indicating which step of the calculations was not successful.

Improvements

These improvements were made.

- Added support for Windows 10 Professional and Windows 10 Enterprise. [RFLO-3899]
- Added four new alarms to monitor the density of a liquid when measured in IP units. These alarms measure API gravity and are defined in degrees API. Density is calculated from the API gravity value. A high API gravity level indicates low density. [RFLO-4100]
- Batch start or stop no longer causes a break in daily logs. No change was made to the behaviour of hourly logs. [RFLO-4049]

Corrections

These corrections were made.

- Serial port parity field is set to its default state when default settings are applied. [RFLO-342]
- The Static Pressure Type label and proposed value are not printed when the input type is sensor, as this value does not apply to this input. [RFLO-2397]
- The Liquid Pulse Input Limits dialog was described as Turbine Limits in step-by-step configuration mode. The correct limits were set, the text was incorrect. The text has been corrected. [RFLO-2974]
- Coriolis meter configuration of register assignment allowed out of range address to be entered. The correct limits are now used. [RFLO-3051]
- Gage pressure is not validated in the static pressure options step when gage pressure is not used for the current input. Previously the unused field was checked and under some circumstances an invalid message was displayed. [RFLO-3090]

- The text for Value on the Run Configuration density page when a constant input is selected now states that the Value is at base conditions. [RFLO-3188]
- Actual values for disabled fields on the Run Configuration dialog no longer indicate that the unused values are “Invalid”. [RFLO-3567]
- The Compressibility Calculation field is no longer enabled after Copy Actual to Proposed performed under Water/Liquid Run. [RFLO-3568]
- Validation of cone and pipe material displays a message about the material type, rather than "Enter an integer between 0 and 2" when the value is not correct. [RFLO-3589]
- A disabled percent sign was removed from the Force dialog for Gas and Water Flow. [RFLO-3595]
- Batch Trigger documentation was corrected to agree with flow computer behaviour. [RFLO-3602]
- Density Input type strings for proposed and actual values now use the same strings. Previously they were slightly different. [RFLO-3911]
- The export of Coriolis meter pressure compensation settings no longer exports actual values. Actual values should not have been included in the export. [RFLO-3912]
- Volume flow low level alarm was raised and cleared twice at the same time. Only one alarm is now raised or cleared. [RFLO-4018]
- Sensor calibration As-Left screen shot showed the As-Found step. The correct screen shot is now included in the manual. [RFLO-4060]
- The flow computer initialized registers for the licensed runs at start up even if the run was not used. Now only registers from configured runs are initialized. [RFLO-4093]
- The CFX export had incorrect values for duration and flow time when multiple records were merged into a single hour using the Export One Record per Hour option. Values were rounded down when converted to integers for the export. This affected both the flow computer (which created the records) and Realflo which merged the records. The expected values are now recorded and exported. [RFLO-4107]
- Average density on liquid runs is now recorded in history logs when there is no flow in the period. [RFLO-4146]
- Configuration of the Direction Status Register no longer allows the use of registers reserved for other functions in the flow computer. [RFLO-4170]
- Configuration of the batch trigger and two-phase detection no longer allows the use of registers reserved for other functions in the flow computer. [RFLO-4176]
- Enron history start time was rounded to the nearest hour when it was 2 seconds or less before the hour. The start time is no longer rounded. [RFLO-4198]

Realflo 6.93.2 Release Notes

Realflo 6.93.2 is a service pack release.

Application and Flow Computer Versions

Realflo application version is 6.93.2398
Flow computer version is 6.93.2398 for SCADAPack 32, 300 series, 4203 and NOCT60
Flow computer version is 6.93.78 for SCADAPack 16-bit controllers

New Features

These new features were added.

- None

Improvements

These improvements were made.

- Accumulators for liquid and water runs **now include Accumulated Indicated Volume (IV)** for today and yesterday; and **no longer include average values for CTL: Oil, CTL: Water and CPL: Oil** for today and yesterday. The latter values were of limited value and were removed to provide register space for IV. [RFLO-4068]
    - The Current Readings view for liquid and water runs was modified to show Accumulated Indicated Volume for today and yesterday; and remove average values for CTL: Oil, CTL: Water and CPL: Oil for today and yesterday.
    - The flow computer was modified to provide the new values in the registers previously used for CPL: oil and CTL: water. Consult the *Realflo Reference Manual* for details.
    - CTL: Oil, CTL: Water and CPL: Oil values continue to be provided in the hourly, daily, and batch history for the run.
- **Realflo 6.93.2 or newer is required with flow computer 6.93.2 or newer.** Older versions of Realflo will show labels for CTL: Oil, CTL: Water and CPL: Oil in the Current Readings view, but will read values for accumulated indicated volume when used with newer flow computers. **It is recommended that users of Realflo 6.93.1 upgrade to Realflo 6.93.2** or newer.

Corrections

These corrections were made.

- Liquid calculations for natural gas liquids (NGL), liquid propane gas (LPG), and liquefied natural gas (LNG) were unsuccessful in the base density range 350 to 637 kg/cubic metre when metric units and metric base conditions were used. The calculation did not return a result in this range. Calculations in US units were not affected. These calculations now return results consistent with API 11.2.2M. [RFLO-4080]

Realflo 6.93.1 Release Notes

Realflo 6.93.1 is a feature release.

Application and Flow Computer Versions

Realflo application version is 6.93.2389
Flow computer version is 6.93.2389 for SCADAPack 32, 300 series, 4203 and NOCT60
Flow computer version is 6.93.78 for SCADAPack 16-bit controllers

Realflo 6.93.1 Release Notes

Realflo 6.93.1 is a feature release.

Application and Flow Computer Versions

Realflo application version is 7.12.4875
Flow computer version is 7.12.4875 for SCADAPack 32, 300 series, 4203 and NOCT60
Flow computer version is 7.01.90 for SCADAPack 16-bit controllers

New Features

These new features were added.

- Foxboro NOCT60 Net Oil Coriolis Transmitter configuration and flow computer - [RFLO-3773]
- Integration with Foxboro CFT51 Configurator - [RFLO-3776]
- Support for Foxboro IMV25-M Multivariable Transmitter - [RFLO-3761]
- Pressure compensation for Foxboro CFT51 Coriolis meter and NOCT60 - [RFLO-3767]
- Liquid Run Default Configuration in New File wizard- [RFLO-3861]
- Support for Windows 8 [RFLO-2644]

Improvements

These improvements were made.

- User is informed if flow computer does not support batch configuration - [RFLO-3563]
- Improved formatting of values in gas history logs - [RFLO-3806]
- Average Relative Density and Heating Value include calculated values - [RFLO-3807]
- Allow Coriolis Meter configuration when polling disabled - [RFLO-3852]
- Improved documentation of Low DP Cut off - [RFLO-3902]
- Improved documentation of CFT51 Pressure Compensation - [RFLO-3938]

Corrections

These corrections were made.

- Actual poll counter higher than expected poll counter - [RFLO-3700]
- Density calculation status not updated after the gas run is stopped - [RFLO-3712]
- No event is available for changing the QTR Identifier - [RFLO-3737]
- No event for Water Cut default value - [RFLO-3750]
- Alarm Limit Indication description in Realflo User manual missing information - [RFLO-3760]
- Stream diagnostics doesn't show Hexanes Plus values - [RFLO-3800]
- Store and forward configuration does not accept Slave Station = 0 or Forward Station = 0. - [RFLO-3810]
- For Liquid and Water flow runs K Factor and Meter Factor not checked for maximum value - [RFLO-3842]
- Messages for Upper and Lower Operating Ranges Incorrect - [RFLO-3844]
- Realflo doesn't retrieve full history when more than 30 hourly records created in a day - [RFLO-3866]
- Change Constant to Constant Base Density for density input - [RFLO-3879]

- CSV Option "Export in Time Leads Data Format" does not work for Gas run - [RFLO-3890]
- Coriolis Register Configuration data not being read correctly from CFT51 - [RFLO-3898]
- Invalid status message displayed after switching controller type with a new file - [RFLO-3908]
- Forwarded serial communication with flow computer polling is intermittent - [RFLO-3918]
- Mass Flow input below zero scale shown when the mass flow is at zero scale - [RFLO-3920]
- Extra calculation incorrectly counted for each hour - [RFLO-3924]
- Cleanup of event tables in Realflo Reference Manual - [RFLO-3940]
- Exported CFX truncates description of event 10184 because text is too long. - [RFLO-3955]
- Default value under water Cut was wrongly described in manual. - [RFLO-3956]
- Default 33x configuration file does not have default COM3 serial port settings. - [RFLO-3964]
- Realflo does not ignore register assignment with ISaGRAF firmware - [RFLO-3971]
- Unable to replace Flow Computer anymore if previous replace was interrupted. - [RFLO-3981]
- Document default transmitter for Add/Edit Sensor Settings Dialog is 4203 DR. - [RFLO-3982]
- SCADAPack 357 mentioned as SCADAPack 375 in User manual. - [RFLO-3983]
- 2 status codes not consistently documented in Protocol Interface tables. - [RFLO-3985]
- Last Update Time of Coriolis Meter Diagnostics not consistent with Sensor Diagnostics - [RFLO-3989]
- Coriolis Meter Diagnostic Statistics shifted. - [RFLO-3990]
- CFT51 Coriolis Meter events 0 to 9 in Reference Manual should be 1 to 10 - [RFLO-3991]
- Forced pulse rate does not produce correct hourly total - [RFLO-3999], [RFLO-4005]
- Base Temperature and Base Pressure not highlighted in blue if Proposed no same as Actual. - [RFLO-4014]
- Read Actual also reset the Base Temperature and Base Pressure under Contract tab. - [RFLO-4015]
- Flow computer performs unnecessary initialisation of history command response registers. - [RFLO-4017]
- Values When Sensor Unavailable documentation doesn't mention Mass Flow, Volume Flow and Density. - [RFLO-4019]
- Coriolis meter not polled alarm not cleared when meter is disabled. - [RFLO-4022]
- No daily break when run is stopped - [RFLO-4023]
- Invalid value for unused Coriolis meter written to flow computer - [RFLO-4027]

- Current Gas Batch End Time lags during cutoff - [RFLO-4032]
- Stale last known good value shown on force dialog after power cycled. - [RFLO-4034]
- Force dialog shows Sensor1 and Sensor2 are forced but only Sensor1 available on dropdown list. - [RFLO-4038]
- Force input dialog only can show up to 4 forced Sensors. - [RFLO-4039]
- Daily history records created by batch trigger have wrong start time - [RFLO-4041]

Realflo 6.92.2 Release Notes

Realflo 6.92.2 is a service pack release.

Application and Flow Computer Versions

Realflo application version is 6.92.2318
Flow computer version is 6.92.2318 for SCADAPack 32 and 300 Series
Flow computer version is 6.92.75 for SCADAPack 16-bit controllers

Corrections

These corrections were made.

- Flow computer does not recognise undocumented Foxboro CFT51 volume units [RFLO-3995].

Realflo 6.92.1 Release Notes

Realflo 6.92.1 is a feature release.

Application and Flow Computer Versions

Realflo application version is 6.92.2314
Flow computer version is 6.92.2314 for SCADAPack 32 and 300 Series
Flow computer version is 6.92.73 for SCADAPack 16-bit controllers

New Features

These new features were added.

- EFM (Enron) Modbus driver supports liquid and water runs, and batch history.

Improvements

These improvements were made.

- Improved the description of the Low Density Threshold when using API degrees to make it clearer that lower densities have higher values in API degrees. [RFLO-3719]
- Changed default Coriolis Meter Type to CFT51. [RFLO-3727]
- The Configuration tree shows only the Coriolis meters in use by runs. Unused meters are hidden. [RFLO-3729]
- Improved the descriptions of Meter Run Data Registers (section 2.3) of the Reference Manual to include offsets and reduce redundancy. [RFLO-3732]

- Indicated that batch is not supported on SCADAPack 16, SCADAPack LP, SCADAPack 32, and SolarPack 410. [RFLO-3759]

Corrections

These corrections were made.

- Allow configuration changes in flow extension method only when flow run is stopped. [RFLO-3723]
- Flow weighted input average documentation does not describe differences in gas and liquid/water runs. [RFLO-3752]
- Alarm Limit Indication description in Realflo User manual missing information. [RFLO-3760]
- Two-phase-flow detection by Coriolis Meter can hang up flow computer. [RFLO-3804]
- Default Pulses for AGA-7 calculation not used. [RFLO-3805]
- Realflo User Manual incorrectly indicates a new day is started when calculations are stopped. [RFLO-3808]
- Enron Hourly/Daily Archive Timestamp documentation does not describe change in timestamps for empty records in Realflo 6.91. [RFLO-3821]
- Scripted CFX Export used CFX version 7. An option was added for version 5. [RFLO-3827]
- nButane missing in gas quality record documentation. [RFLO-3831]
- Change CTPLo to CTLo in Realflo Reference Guide. [RFLO-3854]
- Upper Limit on the Static Pressure of the 4203 transmitter is not updated from the transmitter for internal sensors. [RFLO-3895]
- Hourly history command 11 (used by legacy Cygnet Realflo driver) did not report history since version 6.91.1. [RFLO-3896]

Realflo 6.91.5 Release Notes

Realflo 6.91.5 is a service pack release.

Application and Flow Computer Versions

Realflo application version is 6.91.2249
Flow computer version is 6.91.2249 for SCADAPack 32 and 300 Series
Flow computer version is 6.91.75 for SCADAPack 16-bit controllers

Corrections

These corrections were made to the Realflo flow computer.

- Initialize the number of flow runs earlier in the cold boot process so memory allocation in the controller is successful.

Realflo 6.91.4 Release Notes

Realflo 6.91.4 is a service pack release.

Application and Flow Computer Versions

Realflo application version is 6.91.2246
Flow computer version is 6.91.2246 for SCADAPack 32 and 300 Series
Flow computer version is 6.91.74 for SCADAPack 16-bit controllers

Corrections

These corrections were made to the Realflo flow computer.

- Foxboro and Emerson Coriolis Meter were not polled when the number of licensed runs was smaller than the maximum for the RTU. This behaviour was introduced in Realflo 6.91.1. It affected flow computers for SCADAPack 330, 334, 350, 357, 410, and 4203 RTUs.
- Enron hourly history didn't wrap around correctly. The Enron hourly log pointer correctly wrapped around at index 1080 and restarted at index 1. No history could be retrieved with index 1, but could be with index 1081. This behaviour was introduced in Realflo 6.91.1. It affected flow computers for SCADAPack 330, 334, 350, 357, 410, and 4203 RTUs.

Realflo 6.91.3 Release Notes

Realflo 6.91.3 is a service pack release.

Application and Flow Computer Versions

Realflo application version is 6.91.2244
Flow computer version is 6.91.2244 for SCADAPack 32 and 300 Series
Flow computer version is 6.91.73 for SCADAPack 16-bit controllers

Corrections

These corrections were made to the Realflo flow computer.

- Static pressure setting for gauge/absolute was ignored with a Rosemount 3095FB transmitter. The setting is now applied by the flow computer. This affected flow computers for SCADAPack 32, 330, 334, 350, 357, 410, and 4203 RTUs. This did not affect flow computers for SCADAPack 16-bit RTUs.

Realflo 6.91.2 Release Notes

Realflo 6.91.2 is a service pack release.

Application and Flow Computer Versions

Realflo application version is 6.91.2243
Flow computer version is 6.91.2243 for SCADAPack 32 and 300 Series
Flow computer version is 6.91.72 for SCADAPack 16-bit controllers

Corrections

These corrections were made to the Realflo flow computer.

- The flow computer intermittently did not start when written for the first time to a new SCADAPack RTU. This affected SCADAPack 330, 334, 350, 357, 410, and 4203 RTUs. This did not affect SCADAPack 16-bit and SCADAPack 32 RTUs. This affects only the 6.91.1 release. We recommend flow computer version 6.91.1 be upgraded to flow computer version 6.91.2 on the affected RTUs.

Realflo 6.91.1 Release Notes

Realflo 6.91.1 is a feature release.

Application and Flow Computer Versions

Realflo application version is 6.91.2238
Flow computer version is 6.91.2238 for SCADAPack 32 and 300 Series
Flow computer version is 6.91.71 for SCADAPack 16-bit controllers

New Features

These new features were added.

- Realflo 6.91 adds API 11 liquid flow calculations. Liquids runs calculate net standard volume of oil (API 11.X) and water when supplied with water-cut input or density input for inferred water-cut. The inferred water cut calculation includes two phase flow detection. Water runs calculate net standard volume of water (API 11.4.1).
- Liquid and water flow runs are available on SCADAPack 300 series and 4203 RTUs. Liquid and water flow runs are not available on SCADAPack 16-bit and SCADAPack 32 RTUs.
- The Realflo protocol supports liquid flow calculations. The registers for current readings values have been upgraded for liquid calculations. Existing input commands have been updated and new input, force input, and calibration commands have been added. Registers have been added or modified to support the new parameters associated with liquid and water flow runs. These registers are documented in the Reference Manual. The Enron Modbus protocol does not support liquid or water flow runs.
- The following Coriolis meters are supported for liquid and water flow runs: Emerson Micro Motion 2700MVD Coriolis Meter (Micro Motion 2700MVD), Emerson Micro Motion F-Series Sensor (Micro Motion F-Series Sensor), Endress + Hauser Promass 83 Coriolis Meter (E+H Promass 83), and Foxboro CFT51 Coriolis Meter (Foxboro CFT51).
- Parameters have been introduced or modified to enable the configuration of liquid and water flow runs: Run ID, Flow Run Type, Input Unit Set, Meter Identifier, Meter Bank, Meter Input Type, Product Type, K Factor, Meter Factor, User Factor: Oil, User Factor: Water, Pressure, Temperature, Base Condition Temperature, and Base Condition Pressure, Water Cut.
- Device diagnostics and statistics have been added. Communication statistics are available for polled devices. Coriolis meters also provide device diagnostics read from the meter.
- Support for batch flow measurement has been introduced. Batching refers to measurement over a defined period. Information from the batch log is now included in CFX exports for liquid and water flow runs with batching configured. CFX export of gas flow runs does not include batch log (because FlowCal does not support it).
- The hourly and daily history now includes records for liquid and water run flows. A new record, the Liquid Quantity Transaction Record (QTR), has been added for runs that measure liquid flow.

Another new record, the Water Quantity Transaction Record (QTR), has been added for runs that measure water flow.

- The triggers that indicate a new hour and a new day in the records have been modified to take into account conditions inherent to liquid and water runs. The following new hour triggers were added: liquid or water configuration change; and batch is started or stopped. The following new day triggers were added: batch is started or stopped; and meter input type change for liquid or water runs.
- Five user defined history fields are available for liquid and water flow runs.
- Status codes, events and alarms are added for liquid and water flow runs.
- The Realflo user interface has been updated for liquid and water flow runs. New steps have been added to both the New File wizard and to the Template wizard to accommodate liquid and water flow runs.
- The CFX export feature has been upgraded to allow the user to choose to export in either CFX version 5 format or CFX version 7 format. Version 5 of CFX supports only gas flow runs. Version 7 of CFX supports three types of flow runs: gas, liquid, and water.
- The XML export feature has been updated to support three types of flow runs: gas, liquid, and water. A new section has been added to export Coriolis meter data relative to the flow run.
- CSV exports are not supported for liquid or water flow runs.

Improvements

These improvements were made.

- The Realflo documentation set is divided into a User Manual and a Reference Manual with technical details and information. Numerous changes were made to improve the presentation and content of the manuals.
- CFX export for gas runs now includes transmitter range (URL/LRL), alarm limits (UOL, LOL), DP cut off limit, absolute or gage pressure indication, heating value units, and flow extension. Old and new values are more clearly shown for user events.
- Realflo provides an option to stop the flow computer upgrade if the version of Realflo is older than flow computer version.
- Floating point values shown in Realflo are more consistently formatted and show the precision available in the values.
- The flow computer has improved handling of low memory conditions. Clearer feedback to the user is provided if flow runs cannot be allocated because other applications have used the memory.
- Repeated atmospheric pressure change events have been removed. Previously change events would be logged for the run and for flow calculations. Now only the run events are logged.

Corrections

These corrections were made to the Realflo configuration application.

- Run ID in title bar doesn't refresh when changed.
- Description does not update when Stream Configuration node is selected in Edit Configuration dialog of View & Configuration wizard.
- Meter Station Status Message “The yesterday's data is inaccurate” should say “Yesterday's data is not available”
- Microsoft Windows “Encountered an improper argument” message displayed when trying to open a template file.
- Exported XML does not have the Export Time under FlowComputerConfiguration Section.
- Assigned Meter Station wasn't exported into XML file.
- “Flow computer did not reply to command (code 215)” status reported when replacing flow computer.
- Check if Flow Computer upgrade is required option ignored
- Altitude and Latitude are exported to CFX when Location compensation set to ignore
- Loading new flow computer stops without displaying a message if power to the controller is lost.
- Alarm Hysteresis verification incorrect with some input values
- CFX export does not convert Heating Value units
- Unit Conversion of Flow Extension in CFX Hourly Export is Incorrect
- Replace Flow Computer operation times out prematurely when controller is heavily loaded.
- Log Flow Events parameter cannot be written to flow computer
- V-Cone configuration from version 6.00 file is not read correctly. An application crash might occur when editing VCone configuration read from this file.
- Export dated CFX from a script does not work when exporting to a network drive
- Replace Flow Computer operations displays command rejected message when controller file system is loaded down due to premature timeout.
- Configuration and logs read during flow computer replacement are lost if replacement does not complete.

These corrections were made to the Realflo flow computer.

- 4102 and 4203 sensors polled when not used by runs
- Accumulated Flow at Base Conditions for gas runs not reset after replacing the flow computer.
- AGA-11 does not detect no flow condition

These corrections were made to the documentation.

- Documentation Missing for Replace Flow Computer step in New File Wizard

- Process I/O Configuration documentation missing 4202, 4203 and SolarPack 410 RTUs
- The description of register 48478 should be previous month
- The description of the event 12207 should be "Set V-Cone Cone Measurement Temperature"
- PEMEX units for volume and volume rate should be MCF and MCF/day. Energy and energy flow rate should be Mcalories and Mcalories/day.
- Incorrect register type specified for Raw Zero and Full Scale values (for Telepace Integer Type Inputs)
- Calibration Deviation documentation should state range limits not operating limits

Realflo 6.82.7 Release Notes

Realflo 6.82.7 is a service pack release.

Application and Flow Computer Versions

Realflo application version is 6.82.1915
Flow computer version is 6.82.1915 for SCADAPack 32 and 300 Series
Flow computer version is 6.82.72 for SCADAPack 16-bit controllers

Corrections

These corrections were made to the Realflo flow computer.

- Pulse count is low" is displayed when pulse frequency is higher than minimum defined in Realflo configuration. This behaviour was introduced in Realflo 6.82.2. It does not affect earlier versions of the flow computer.

Realflo 6.82.6 Release Notes

Realflo 6.82.6 is a service pack release.

Application and Flow Computer Versions

Realflo application version is 6.82.1914
Flow computer version is 6.82.1914 for SCADAPack 32 and 300 Series
Flow computer version is 6.82.71 for SCADAPack 16-bit controllers

Corrections

These corrections were made to the documentation.

- Bookmarks Missing from User Manual were restored.

Realflo 6.82.5 Release Notes

Realflo 6.82.5 is a service pack release.

Application and Flow Computer Versions

Realflo application version is 6.82.1913

Flow computer version is 6.82.1913 for SCADAPack 32 and 300 Series
Flow computer version is 6.82.62 for SCADAPack 16-bit controllers

Corrections

These corrections were made to the Realflo configuration application.

- User was forced to enter stream configuration when upgrading from an earlier version of Realflo.

Realflo 6.82.4

Realflo 6.82.4 is a service pack release.

Application and Flow Computer Versions

Realflo application version is 6.82.1910
Flow computer version is 6.82.1910 for SCADAPack 32 and 300 Series
Flow computer version is 6.82.62 for SCADAPack 16-bit controllers

Improvements

These improvements were made.

- Documentation improvement to describe units difference when viewing DP in CFX
- Added documentation on CFX export changes for transmitter URL/LRL and Alarms

Corrections

These corrections were made to the Realflo configuration application.

- CFX export file has wrong value for Atmospheric Pressure when absolute pressure is selected

These corrections were made to the Realflo flow computer.

- Location compensation direction is reversed. This affects users who employ deadweight testers to calibrate SP and DP inputs.

Realflo 6.82.3 Release Notes

Realflo 6.82.3 is a feature release.

Application and Flow Computer Versions

Realflo application version is 6.82.1904
Flow computer version is 6.82.1904 for SCADAPack 32 and 300 Series
Flow computer version is 6.82.56 for SCADAPack 16-bit controllers

New Features

These new features were added.

- Gas Chromatograph support: Realflo supports polling of gas quality data from gas chromatographs. It supports the Daniels 2350A gas chromatograph and other devices that support the SIM_2251 protocol. Data is read from the gas chromatograph into Gas Quality streams. This feature is available on flow computers licensed with the Gas Transmission option.

- Gas Quality Stream support: Realflo supports gas quality data streams for configuration of AGA 8 calculations. Stream data may come from a gas chromatograph or from a SCADA host. This feature is available on flow computers licensed with the Gas Transmission option.

Improvements

These improvements were made.

- Location compensation for variance in gravity was improved in several ways. The uncompensated values of SP and DP are used for hourly and daily averages. The uncompensated values of SP and DP are used for calibration. The compensated values of SP and DP are used for flow calculations. The live value and the forced value of SP and DP are treated the same. Previously the live value was compensated before forcing was applied, so compensation wasn't applied to forced values.
- An option is provided to select if gas transmission specific configuration is shown in Realflo. This allows disabling these features if they are not used in the flow computer to simplify the user interface. This option does not affect the licensing of gas transmission features in the flow computer. A license is required on the controller to make use of the features.
- Sensor configuration is synchronized with the run that uses the sensor. Sensor settings are done in the same units as the run. Rosemount 3095FB sensors are not synchronized.
- Various improvements have been made to the content of the CFX export version 5 files created by the Realflo PC application. These improvements include added information for input variable alarms, transducer UOL/LOL (Upper Operating Limit/Lower Operating Limit) and transducer URL (Upper Range Limit). This data is now included within the configuration - characteristic 2 section. See the user manual for details.
- Bluetooth Security menu is disabled during update readings so changes cannot be made while communication is in progress.
- Realflo is installed in Schneider Electric folder (happy retirement wishes to Control Microsystems).
- Run units are used for sensor configuration to reduce the number of settings required.
- Installer website links to TRSS specific page
- Users are informed of communication port conflicts in configuration.
- AGA-7 pulse rate smoothing is improved.
- CFX export of pressure and DP, low and high calibration adjustments are now FlowCal native (type N) events rather than user defined events.
- Gas transmission option is selected when flow computer type is PEMEX.

These documentation improvements were made

- Improved description of how to write AGA-8 component settings with Enron Protocol
- Add data type for the URL and LRL register documentation
- Clarifications to unused command parameters for Realflo protocol commands

- Default value for the Subnet Mask is 255.255.0.0

Corrections

These corrections were made to the Realflo configuration application.

- Timeout and Interval values are rounded before performing validity checks to reduce spurious messages.
- Disable Assigned Meter Station on Run Configuration dialog for SCADAPack 410
- Unreadable tag string showed up in the Review Differences / Write Configuration step in maintenance mode
- Update Technical Support email to the new support address.
- LAN port shouldn't be available if the Sensor doesn't support LAN Configuration.
- "Communication aborted by user (code 210)" message shown twice.
- AGA-8 Log Configuration parameter actual value not shown in export
- Maintenance mode shows unsupported Gas Quality Source parameters when Gas Transmission option is disabled
- Message about wrong flow computer ID is insufficient.
- Connecting to Flow Computer Dialog pops up briefly when creating a new file through the wizard in maintenance mode

These corrections were made to the Realflo flow computer.

- Breaks occur in the history logs when changing input alarm and informational settings
- Changing atmospheric pressure of sensor configuration should break hourly log record.
- Unsuccessful read Sensor configuration under Sensor settings dialog not reported
- Hourly and daily logs break recorded without any change of AGA-8 settings on SCADAPack 32
- Changes to Relative Density and Heating Value logged when configuration events set to Ignore.

These corrections were made to the documentation.

- Temperature alarm documentation references SP range
- Flow Direction Control Documentation should say Run Direction.
- Correct Event ID 10105 description in manual
- Documentation does not define values for authorization level
- Provide additional input parameter documentation for the Get Flow Computer ID command
- Updated screen shots and corrected various typos.
- Clarify non-applicable combinations for serial port parity.
- Documentation incorrectly states copy run configuration only works with run 1

- Edit Friendly IP Address Range Dialog not mentioned in Manual.
- Document missing I/O modules for SP 350 default modules
- Access level description does not match between RF and manual.
- Correct description of protocol register 43600
- Document which flow computers and RTUs support run direction
- Documentation for registers 39000 to 39200 missing from manual.
- Update Technical Support email to the new support address.
- Incorrect documentation for Reply register 49506 in Set Enron Modbus Time Stamp command documentation
- Register 43570 should be 49679 in Set AGA-3 Configuration Command documentation