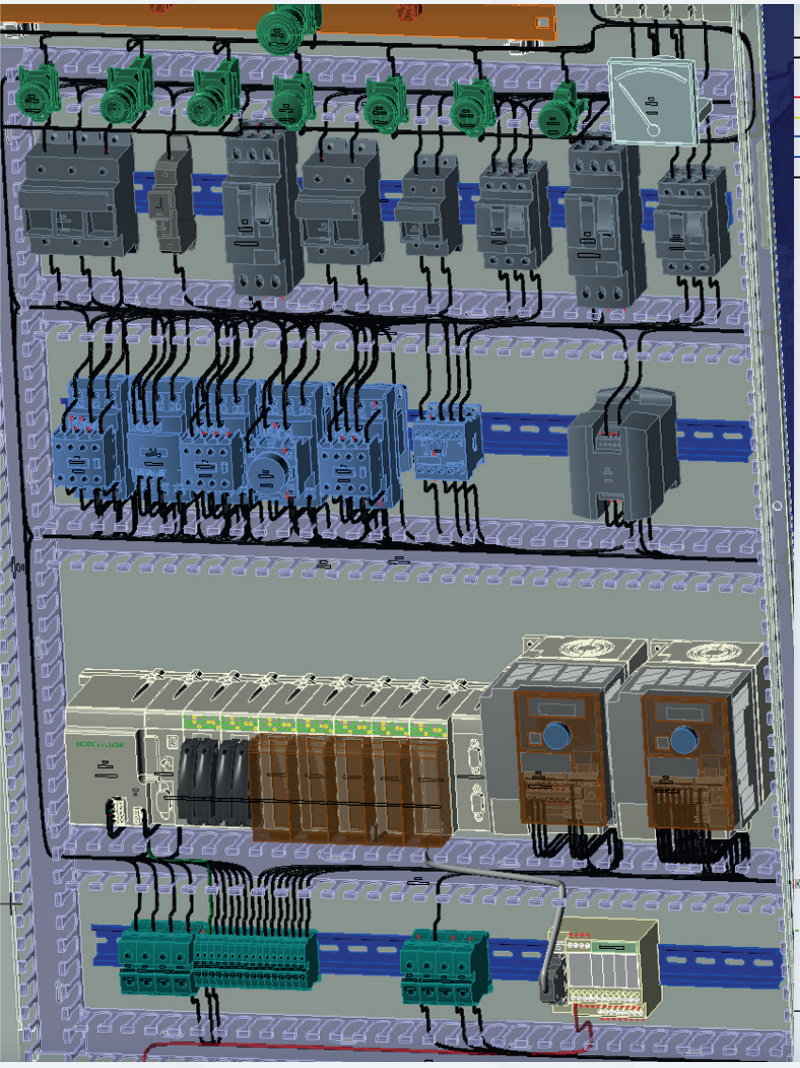
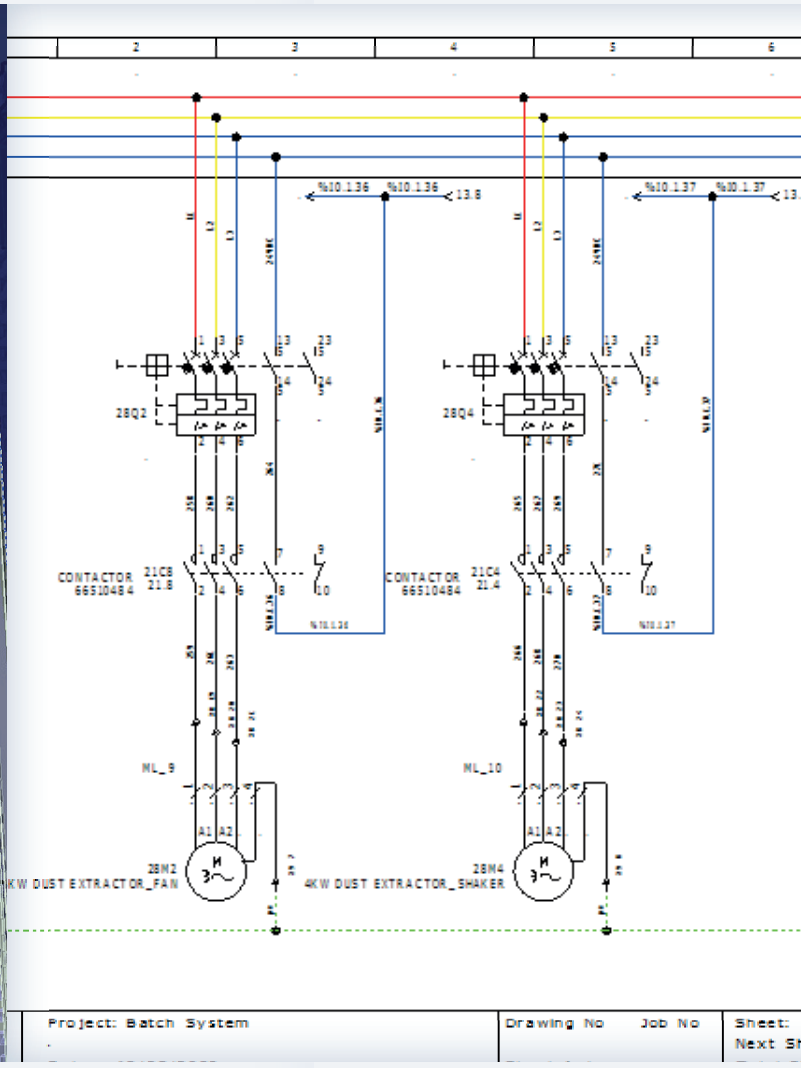
SEE Electrical





Intuitive and versatile Computer-Aided-Design software for all your electrical design needs

IGE+XAO GROUP

Shaping the Future of the Electrical PLM, CAD and Simulation

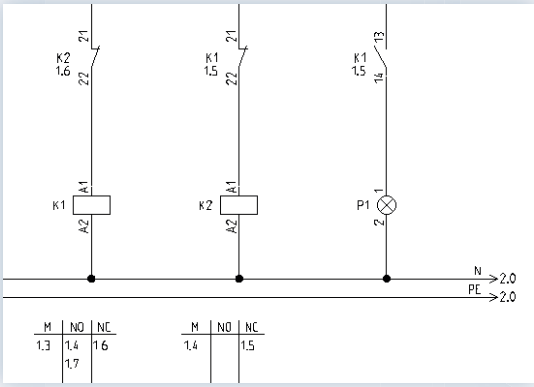
MORE THAN **91,000 PEOPLE WORLDWIDE** USE AN IGE+XAO SOFTWARE PACKAGE

SEE Electrical Basic

A cost-effective, entry-level solution
2 options: limited to 25 pages or unlimited pages

SEE Electrical Basic is the ideal entry-level solution for all industries. Its numerous functions and attractive price make it an easily accessible choice for smaller businesses involved in any aspect of electrical engineering.

- Developed to run in all existing Windows environments (7, 8 & 10).
- Intuitive, easy to use and designed specifically for electrical engineering functions.
- Users can be productive very quickly, with minimal need for training.
- Working environment personalization.
- User-friendly drawing functions facilitate schematic entry. Rubber band function, for example, allows the moving of components horizontally or vertically, while wires remain connected.
- Extensive array of industry standard symbols provided in the various available databases (custom symbols can also be created).
- Various standard and customizable component, cable, and terminal strip tagging options.
- Locking of component names.
- All project specific settings stored within the project data and easily adjusted to the user's requirements.
- Quick output of purchasing and manufacturing reports (including documents and components lists, cable, wire and terminal lists).
- Various templates included (custom templates can also be created).
- Simultaneous work on several projects.
- Documents from other Windows applications supporting Microsoft Active X® interface (including Microsoft Word®, Microsoft Excel®) and Adobe Acrobat® PDF files can be embedded into the project structure.
- DWG, DXF, DXB, DWF and XPS (DWFx) Format import and export and Enhanced Metafile Format export.
- BMP, JPEG and PCX image handling.
- Real-time and automatic functions constantly verifying the project.
- Labels for terminals, wires and components export in various printer formats, including Weidmüller and many others.
- Dimensioning and advanced CAD functions for documenting control cabinet and panel layouts.
- Hyperlinks insertion in circuit diagrams.
- SEE Electrical Viewer available for free, allowing anybody to view and print projects.
- "Redlining" functionality (available in basic software and the Viewer).



SEE Electrical offers real-time and automatic functions, which incorporate proven technology well suited to managing project information and multiple lists.

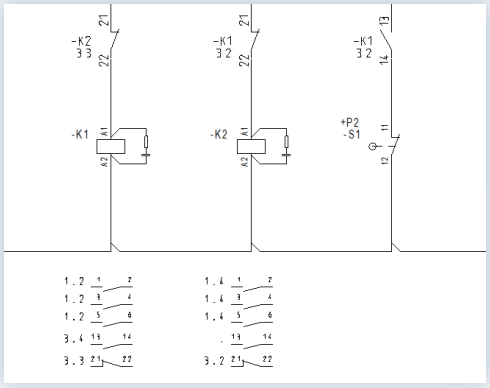
SEE Electrical is of particular benefit to manufacturers of any type of electrical machinery and cabinets.

SEE Electrical Standard

A feature-rich, high value option

SEE Electrical Standard is the second level of SEE Electrical.
An economic solution to deliver distinct advantages to those users who regularly produce and revise electrical documentation.

- Fully integrated relay contact, component auxiliary contact, connector and cable manager. Administration of both main and additional component references.
- Easy handling of devices with parts spread out across several pages in circuit diagrams (relays, pins of connectors, cable cores or multi-level terminals).
- Simple creation of detailed parts lists thanks to an integrated equipment database (manual entry or import of complete manufacturer's catalogues in spreadsheet format). Hyperlinks to manufacturers external documents. Equipment information from type database can be displayed on components.
- Automatic wires numbering in a variety of formats. Wire directions displayed and edited if required. Wiring lists generation.
- Database component modifications in editor (list format) displayed immediately in the electrical diagram. The editor allows easy selection of specific manufacturer's components from the type database.
- Automatic numbering mode for PLC addresses can be predefined (hexadecimal, decimal, or octal as well as custom numbering formula). Additional automated logical functions for PLCs allow real-time bi-directional exchange of PLC address and functional descriptions between racks and I/O signals.
- Folder management allows hierarchical project development.
- Functions and locations (including predefined and manually allocated functions and locations) supported.
- Page gap insertion or removal (component names that are related to the page number can be updated automatically).
- Complete pages can be copied with one click inside the current workspace.



In addition to the functionality of the **Basic** level, the **Standard** package offers a wider range of features to assist in the rapid production and effective management of electrical diagrams.

For **Standard** and **Advanced** levels, the IGE+XAO equipment catalogue is available as a subscription service called **SEE Web Catalogue** (prerequisite is a valid maintenance contract).

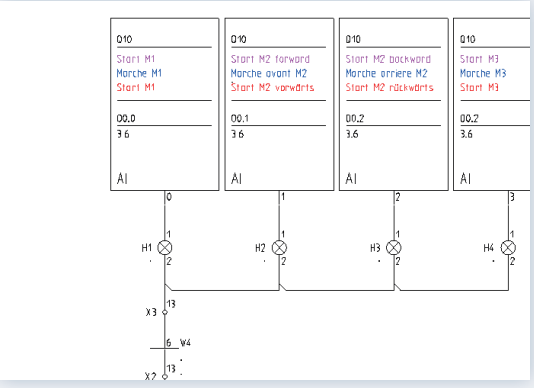
Subscription enables you to take advantage of one of the most complete electrical catalogues in the market, reducing the time required for finding and generating necessary data and circuit diagram symbols.

SEE Electrical Advanced

For the highest level of electrical design

SEE Electrical Advanced is the top level of SEE Electrical.
It offers a high-end, professional system for electrical diagram design that substantially reduces development times.

- Auto Connection, for symbols from rails, and Orthogonal Wiring allowing for multiple wires to be drawn simultaneously.
- Single pages can be copied or moved by drag and drop also between different workspaces. Multiple pages and folders can also be copied in one step.
- By double-clicking on any cross-reference, the user can navigate through a complex project quickly and effortlessly.
- PLC assignment lists can be imported in Microsoft Excel® format.
- Possibility to change all the page templates for an entire project or for some pages only, allowing for the customisation of project templates for different customers.
- Wide range of modifications possible (terminal blocks automatically renumbered to comply with new or revised definitions etc.) from database editors.
- Easy to use «Navigation from database list to drawing» function for finding objects quicker. Some graphical lists (component, terminal, PLC I/O, cable and device list and product assembly) allow navigation to the diagrams.
- Different types can be assigned to all symbols found inside a macro/group or on a page. One of the set of types defined in the macro/group or for the page is active always. Applications can be realized, for example an engine group, where an engine receives a different type (power / voltage), which has consequences for the applied terminals, the cable(s), the wires, the starter, the circuit protection, etc.
- Functionality for managing parts which don´t need to be in the drawings by list (spare terminals, end- or separation plates, mounting material…) allows either:
  - to predefine material and to position it later in the circuit diagram by using a pick list
  - or to help manage material that does not appear in a diagram but is necessary for the part list. Possibility to read in an Excel file that contains additional material (for example information already prepared in a PDM system).
- All necessary graphical list can be selected and created in one shot. Selection is saved with the workspace.
- Custom graphical list generator for creating own bespoke project reports (built-in interface allows construction of custom SQL statements).
- Merging projects with different function/ locations allows multiple users to work on specific areas of the same project.
- Sorting order for different kinds of documents can be adapted (print exactly what is needed, in the required order and size).
- Workspaces are configurable: you can hide lists not in use, define specific SQL queries and generate lists in your own formats. Workspace, page and component text attributes can be defined or renamed. Additionally user defined symbol types can be added.
- To keep track of changes made in workspaces it is possible to compare two workspaces. Differences can be commented by user and documented in a Microsoft Word format file.
- Powerful and fully automated generation of labels and tags with the report generator tools. Generation of user defined reports possible.



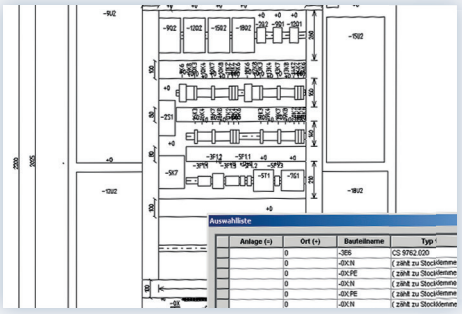
In addition to all the capabilities of the **Basic** and **Standard** levels, the **Advanced** package equips the user with further powerful functions. These have been specifically designed to enable users to rapidly and efficiently develop and manage complex electrical projects.

ADDITIONAL MODULES

Cabinet Layout*

Comprehensive set of tools for designing control cabinets and panels.

- Automatic synchronization between circuit & cabinet symbols. Components placed in circuit diagrams are listed in a cabinet pick list.
- Elements inserted into cabinets are accurately scaled using the equipment database either from the length and width of the component or from imported or user-defined symbols.
- Projects can be designed starting from the circuit diagrams or cabinet layout.
- Dimensioning and other specialized CAD functions available for professional documents.
- DIN rails and cable/wire channels can be inserted as required
- Drill-hole templates can be generated based on information from the equipment database.



3D Panel+*

Schematic and 3D panel design integration and generation of manufacturing information are provided.

- Fast 3D placement of all equipment.
- Automatic snap-to-rail feature.
- Collision detection.
- Consistency check with the schematic diagram.
- Import/export support for DWG/DXF, IGES, STEP and STL.
- Advanced wire routing features.
- Optimal wire lengths calculated.
- Manufacturing reports to support drilling plans and wire cut lists.
- Direct output for CNC tools.

Cabinet Thermal Calculation*

Allows for checking the heat properties of cabinets.

- Calculates the power dissipation of all equipment.
- Calculates the ventilation or cooling required to balance temperature increases.

IEEE Circuit Diagrams

Allows for the generation of circuits and associated documentation compliant with the US, Canadian and corresponding markets standards.
This standard supports vertical rails, numbering of wires and components based on line numbers as well as providing a full IEEE standard catalogue of symbols.

Intelligent PDF

Generates an intelligent PDF / PDFA for navigating projects using the cross references and provides an overview of the project tree and navigable component list.

- Hyperlinks defined in a workspace are available in generated PDF files.
- Multiple languages output when used with the translation module.

Open Data

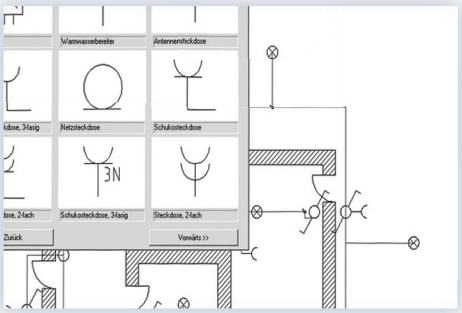
This is an essential module for companies where workflow requires updates to the project data to be done without the operators need for an Electrical CAD package.

- Use Microsoft Excel® to quickly update information for components, parts, terminals, wire labels, PLC data and much more.
- Single-click import of modified spreadsheet data to update the project.

Building+ Basic

A cost-effective, entry-level solution versatile CAD application for producing electrical installation plans.

- Easy to use Architectural tools in order to produce the building drawings (walls, doors, opening, windows and staircases), including a complete Architectural library (furniture, structural elements etc.).
- Building plans can be imported from DWG/DXF/DXB type files and edited within See Electrical Installation. Drawings can be saved back in DWG/DXF/DXB format.
- Comprehensive range of symbols and objects specifically designed for the electrical building installations, including lights, switches, sockets, appliances, machines, distribution boards, low current and KNX objects, and special wiring symbols.
- Easy placement of symbols, with automatic rotation against walls & lines. Automatic placement of symbols legend table.
- Definition of complete range of electrical properties on symbols, with automatic tagging.
- Easy cables design as lines (cable routes) and splines. Automatic calculation of cables lengths.
- Definition of Rooms and automatic grouping of symbols in Rooms.
- Tools for manual grouping of symbols in Circuits.
- Custom symbols can easily be generated to provide standard and complete documented designs.
- Product list and documents list automatically updated and printed in user defined format.



Building+ Standard

A high value tool for professional designs of electrical installations and distribution. In addition to the functionality of the Building+ Basic level, the Building+ Standard package offers design of cables/cable channels, generation of bill of material and auto created distribution diagrams

- Automatic definition of complex cable types.
- Tools to define cable channels, and automatic routing of cables.
- Bill of materials and cable lists generated from the plans.
- Automatic recognition and numbering of electrical circuits.
- Automatic generation of single-line panel distribution diagrams, based on properties defined in installation drawings.
- Possibility to define different layout to auto-created diagrams. Possibility to edit created diagrams using specific “circuits” commands.
- Includes a complete symbol library of electrical symbols (fuses, circuit breakers, switches, MCB & RCD protective devices, etc.) in single-line display according to IEC standard.
- Calculation of load demand per circuit & panel (Apparent & Con-current power), as well as number and kind of connected consumers per circuit & panel.
- Interface to define and auto generate distribution diagrams without installation drawings.
- Automatic update of “Circuits List” containing critical information of circuits defined, documenting the distribution.

Auto Generate*

Rapidly generate SEE Electrical projects from a Microsoft Excel® spreadsheet using common circuits.
Text substitutions within the spreadsheet allow for accurate control of parts, functional descriptions, terminals, wire labels, PLC addressing, loop sheet design and much more.

- The Excel file can be used by sales teams to quickly prepare a quote or tender and then automatically generate the circuit diagrams.

Intelligent Drawing Legacy

A very useful tool for maintenance services as well as any department managing legacy paper or DXF/DWG plans.

- **Basic level** – Processing of scanned raster data (BMP, JPG, TIFF) to import multiple files into individual pages in a single step. New symbols mask the picture making updates quick, simple, and easy to track.
- **Standard level** – Recognition of patterns and blocks imported via DXF/DWG. After mapping symbols, the imported legacy project files can be made intelligent in a single click allowing work to continue as normal within SEE Electrical.
- **Advanced level** – combines both methods 1 & 2 in a single license.

Translation

Provides a database driven translation tool allowing entire projects or active pages to be converted into different languages in a single click.
Texts can be translated individually and multiple languages can be displayed at once or switched from one to another.

- Unicode compatibility ensures that characters for Cyrillic, Greek, Arabic, Chinese and more are easily supported.
- The translation database is also available whilst entering text, allowing available phrases to be inserted by double-clicking.

Environment Manager

This module allows administrators to:

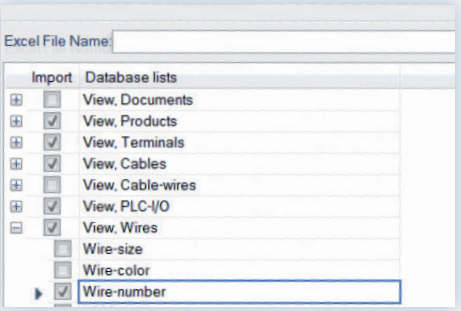
- Control what program files, symbol and template updates should be applied to connected See Electrical users computers. Users connected to the local area network when starting SEE Electrical are automatically updated with the new files ensuring all users have the same program version and company standards.
- Compare and merge 2D-symbol libraries from one folder to those from another. The same is possible for page and workspace templates. Differences found in symbol libraries, type databases, page templates can be analysed by administrator/user. When looking at a symbol library or type database for each different item it can be selected how to treat it.

SolidWorks PDM Interface

Allows secure management and indexing of SEE Electrical projects in SolidWorks Enterprise PDM® by Dassault Systèmes.

PDM Connect

Generic interface to PDM software.
Allows for custom integration of the interface between See Electrical projects and various 3rd party PDM solutions.



*These modules cannot be added to the Basic level of SEE Electrical

SEE Electrical functionalities	Basic	Standard	Advanced
Project manager	●	●	●
Real-time lists for: components, terminals, parts, contacts, cables, cable cores, wires, PLC I/Os, documents	●	●	●
Filtering/sorting into lists + storing the filter or sorting	●	●	●
Multiple symbol libraries (including IEC) with graphical overview, grouping and searching	●	●	●
Creation of custom symbols and drawing macros	●	●	●
Real-time component numbering, generation of cable names and terminal numbers, and cross referencing	●	●	●
Real time connection and open contacts check up	●	●	●
Locking of component names, terminals, and wire labels	●	●	●
Graphical cable definition - including user defined symbols	●	●	●
Custom project template creation	●	●	●
Bi-directional compatibility with other CAD systems (DWG, DXF, DXB, DWF and XPS (DWFx))	●	●	●
Microsoft ActiveX® interface	●	●	●
Importing of images (JPG, BMP, PNG, TIF, GIF, PCX and PDF)	●	●	●
Copying of symbol groups between projects	●	●	●
Working on multiple projects simultaneously	●	●	●
Customizable working environment	●	●	●
Standard CAD drawing facilities and dimensioning capabilities	●	●	●
Support for hyperlinks on graphics	●	●	●
Redlining functionality	●	●	●
512 available layers	●	●	●
Auto-backup feature	●	●	●
Export in Enhanced Metafile Format and picture files (JPG, BMP, PNG, TIF, GIF, PCX)	●	●	●
Export formats for Weidmüller and other label printers	●	●	●
Integrated equipment database		●	●
Import of manufacturer's data into equipment database in Microsoft Excel® format		●	●
Display equipment information on components		●	●
Support for finding an equipment with suitable number of contacts for coils and components with auxiliary contacts		●	●
Contact mirror display for coils		●	●
Automatic contact numbering of coils-and components with auxiliary contacts Support of automatic renumbering the contacts		●	●
Checking for overloaded contacts in coils-and components with auxiliary contacts		●	●
Completing components like coils, multilevel terminals, connectors, …		●	●
Cable management (cable equipment database)		●	●
Handling of deck terminals, Management of connectors		●	●
PLC I/O manager & PLC operands numbered automatically in several available formats		●	●
Organize diagrams in folder structures		●	●
Function/location management + graphical function/location boxes		●	●
Wire directions display and editing		●	●
User definable numbering method for all elements and references		●	●
Renumbering of entire terminal strips, renumbering of cables		●	●
Find and replace text throughout entire project		●	●
Insertion of pages and deletion of pages gaps		●	●
Duplicate component name check		●	●
Database editors (single entry editing)		●	●
Graphical terminal plan with automatic detection of up to 20 bridge types		●	●
Graphical cable plan including spare cores + wiring list		●	●
Parts list sorted by function/location		●	●
Enable duplicate wire numbering for different sub folders		●	●
Graphical signal management with predefined signal properties /wire numbering in several formats		5	●
Auto Connection			●
Draw orthogonal multi-pole wires			●
Wire flow direction control (important for wire and wiring list)			●
Several sets of types definable for macro/page (-> options)			●
Cross-reference navigator (go to) with marking function (come from)			●
Navigation from Database and specific Graphical lists to drawings			●
Database manager for functions/locations/products /products (aspects) including ability to manage nested aspects			●
Importing of PLC assignment lists in Microsoft Excel® format			●
Configure project tree allowing for custom graphical and database lists			●
User defined lists and components			●
Configuration of multicores (within single wire connections)			●
Changing of page templates for an entire project or a part of the project			●
Copy multiple pages and all sheets of a folder between projects			●
Advanced database editors (editing of several entries at once)			●
Insert components/terminals not in drawing by list			●
Terminal plan with graphics and terminal row picture plan			●
Cable terminal row plan			●
Connector matrix and plan			●
Product assembly list + Compressed BOM + Device list			●
Generate all necessary graphical lists in one shot			●
Database list/editor with texts from callouts: usable for revision management			●
Find and replace symbols throughout current page or entire project			●
List and label editor, report generator			●
Compare workspaces			●

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V8R2-UK-201905