Protection and Control IED Manager PCM600

Product Guide



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Conformity

This product complies with following directive and regulations.

Directives of the European parliament and of the council:

- Electromagnetic compatibility (EMC) Directive 2014/30/EU
- Low-voltage Directive 2014/35/EU
- RoHS Directive 2011/65/EU
- RoHS Directive (EU) 2015/863 amending Annex II

UK legislations:

- Electromagnetic Compatibility Regulations 2016
- Electrical Equipment (Safety) Regulations 2016
- The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

These conformities are the result of tests conducted by the third-party testing in accordance with the product standard EN / BS EN 60255-26 for the EMC directive / regulation, and with the product standards EN / BS EN 60255-1 and EN / BS EN 60255-27 for the low voltage directive / safety regulation.

The product is designed in accordance with the international standards of the IEC 60255 series.

1. Description

The Protection and Control IED Manager PCM600 tool provides versatile functionalities for the entire life-cycle of all Relion® protection and control IED applications, at all voltage levels. This easy-to-handle tool helps the user to manage your protection and control equipment all the way from application and communication configuration to disturbance handling, including automatic disturbance reporting.

Designed to communicate, PCM600 interacts with intelligent electronic devices (IEDs) over the fast and reliable TCP/IP via corporate LAN or WAN, or alternatively directly through the communication port at the front of the IED. PCM600 tool is able to read and write all configuration and setting data of an IED with a single command.

The user interface, workflow and the IEC 61850-based data model in PCM600 are designed according to the same philosophy as the Relion® protection and control IEDs, ensuring smooth and seamless integration between the tool and the IEDs.

PCM600 has been designed from the beginning with the IEC 61850 standard in mind. All the functionality is modeled in a way that it reflects the IEC 61850 configuration directly during the engineering. Multivendor product and system interoperability is guaranteed with an independently verified IEC 61850 Edition 2 certificate.

PCM600 also secures the projects and data created with earlier versions of the PCM600 tool, which enables full backwards compatibility.

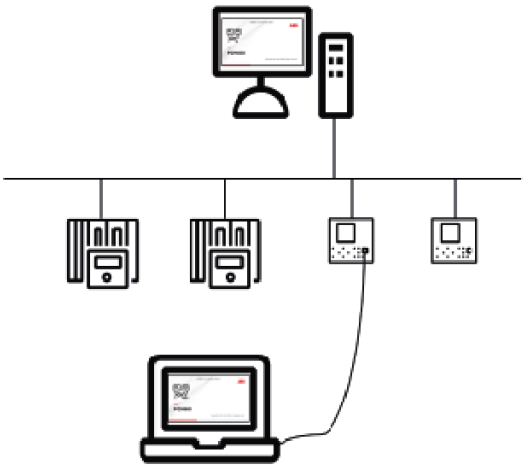


Figure 1: PCM600 connected locally or remotely to IEDs

2. Project explorer

The project explorer can be used to navigate to the used IEDs within a project / substation and furthermore within an IED to navigate to the different functionality of an IED. The user is able to create a plant structure with a substation, voltage levels, bays and IEDs.

New IEDs can also be created by use of IED templates. This enables the reuse of existing IED configurations. IEDs, bays, voltage levels or a whole substation can be copied and pasted in the plant structure. Selection of a specific IED in the project explorer gives access to the IED's tools. The function of importing and exporting descriptions of IEC 61850 substation configurations, configured devices and device functionality allows information to be shared with other engineering and system integration tools. By using the filtering feature of the project explorer the user can filter information of other tools according to the selection made.

3. Parameter setting

Parameter Setting enables viewing and setting IED parameters offline (stored in the tool) and online (stored in both the tool and the IED). The parameters can be read from the IED to PCM600 or written from PCM600 to the IED while the IED is in service. In addition, the parameters can be exported and imported for test sets in the XRIO format (for example,

Omicron Test Universe) or in the CSV format to be easily read and reused.

The parameter setting function can be used in two different modes. The normal mode allows a quick viewing and changing of the most commonly used parameters, whereas the advanced mode unveils all parameters that can be set.

PCM600 further offers a filtering function that allows the viewing of all IED parameters or the parameters related to a specific function block. In addition, it can be chosen to only view parameters that have been changed or parameters with values deviating from the IED's setting. Changed parameters with different values in the tool and in the IED are clearly indicated.

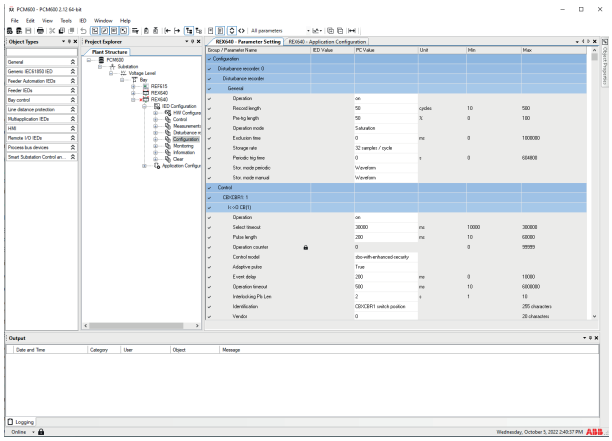


Figure 2: Parameter Setting view

The graphical representation of the distance protection function supports in the visual verification of the parameter setting of the distance protection function.

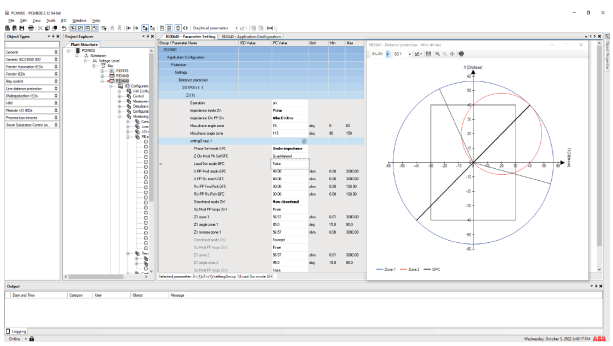


Figure 3: Graphical representation of the distance protection function

4. Graphical application configuration

The graphical application configuration functionality offers powerful ways to create, adapt and modify application configurations, which also can be made as templates for later re-use. PCM600 also enables presentation of the whole signal flow from input to output. It also assists the user during the creation of application configuration through colour indications of the function blocks to ensure that the mandatory inputs have been correctly connected. Before writing the configuration to an IED, the tool offers validation of the complete IED configuration which ensures that the configuration does not contain errors.

Additionally, the user can compare the configuration in the tool to the one in the IED. Further, the signal status on-line monitoring functionality helps to verify the real-time processes in the IED, which is extremely useful for troubleshooting.

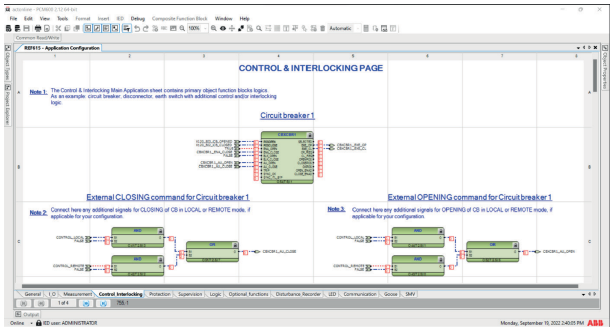


Figure 4: Application Configuration, online monitoring

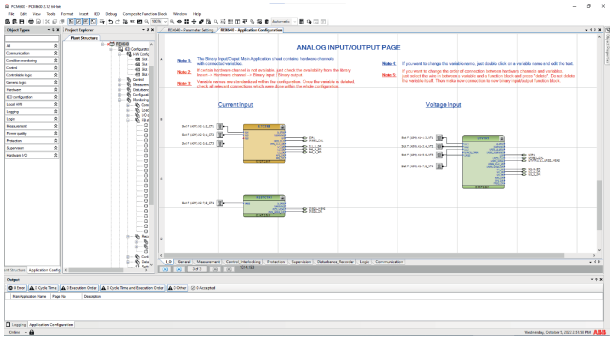


Figure 5: Application Configuration, visual indication of the configuration

5. Signal matrix

The graphical signal matrix of PCM600 allows connecting efficiently CTs, VTs, binary input and output signals to the configuration. The configuration can also be changed from here. The tool can also be used for connecting the LEDs on the IED as well as for connection of the GOOSE signals between the IEDs.

Once the IEDs have been configured and parameterized, PCM600 enables the configuration of the horizontal bay-tobay communication for station-wide interlocking and sends the complete IED description to a system engineering tool.

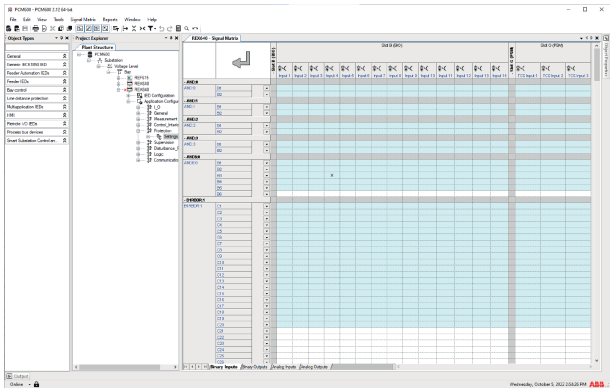


Figure 6: Signal Matrix view

6. Graphical display editor

Graphical Display Editor is used for configuring the display of an IED. The graphical display consists of one or more pages. A display page contains the drawing area where the actual display configuration is made. A display is configured by dragging predefined graphical symbols from a library to the drawing area. The directed link tool can be used to draw connections between symbols. Every symbol type has a corresponding representation in both the ANSI and the IEC symbol palettes. Symbols can be connected to the application configuration.

Graphical Display Editor also supports the reuse of display page templates made for other IEDs.

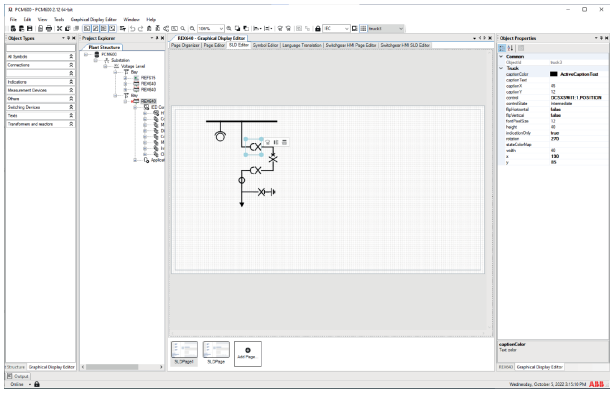


Figure 7: Graphical Display Editor, configuring the display of an IED

7. Hardware configuration

Hardware Configuration can be used to get a quick overview of an IED and to add or change hardware modules. It is possible to view the front and back of the IED including card information and their slot position. Furthermore it is possible to compare the hardware configuration used in the tool to the actual one in the IED.

8. IED configuration comparison

IED comparison is used for comparing configurations of two IEDs of the same kind. Comparison can be made offline regardless of the IEDs being in the same PCM600 project or not. Additionally, the configuration of an IED can be compared to a loose PCMI file. When connected to the IED, it is possible to compare the configurations between the IED and the PCM600 online. A report of the differences between the two different IED configurations is provided as a result of the comparison.

9. IED summary

IED Summary can be used to document and view a quick snapshot of all the protection and control IEDs on the substation. PCM600 can collect all the important identification information from the IEDs and illustrate them in a user-friendly browser. IED summary result can be printed for documentation directly from the tool.

10. Signal monitoring

The signal monitoring function provides the user with online information about the measured values and displays the status of binary input and output signals of an IED. Furthermore, PCM600 facilitates commissioning and testing of physical connections via Signal Monitoring (forcing of signals).

11. Event viewer

Event Viewer enables viewing the IED sequence of events information including timestamps. The event log facilitates detailed post-fault analysis of faults and disturbances. Event Viewer additionally enables reading the security events from the IED.

12. Disturbance handling

PCM600 offers effective handling and monitoring of disturbance records from the IEDs. The disturbance files stored in the standard COMTRADE format allow the user to view the disturbance record using Wavewin™ software or any commercially available disturbance analyzer supporting the COMTRADE format. If required, the report layout and contents can be adapted to user-specific needs.

By means of the task scheduler of PCM600, the records can be set to be automatically read from the IED. The task scheduler is an independent process and does not require PCM600 to be activated. After receiving the file, PCM600 automatically creates a disturbance report, which can immediately be forwarded to subscribers by e-mail. Such a notification shortens the time from disturbance detection to corrective action.

13. Communication management

Communication Management is used to configure different communication protocols for an IED. DNP3, IEC 60870-5-101/103/104 or Modbus® are the communication protocols that can be engineered. Depending on the used protocol, the tool provides different views and capabilities to support in the selection or mapping of communication signals.

14. Ethernet configuration

Ethernet Configuration is used to configure Ethernet ports both online and offline. Ethernet Configuration can be used to configure access points, the merging unit and routers on separate tabs of Ethernet Configuration. The access point tab shows access points based on the supported hardware. The merging unit's availability depends on the hardware module selection.

15. IEC 61850 configuration

IEC 61850 Configuration provides the viewing or engineering of the dataset and dataflow configuration for a vertical or horizontal IEC 61850 communication.

In the view mode, the tool supports the viewing of the IEC 61850 configuration, whereas in the engineering mode it is possible to configure IEC 61850 datasets and dataflow for the horizontal and vertical communication.

Table 1: Recommendations for using the IEC 61850 configuration tools

	IEC 61850 tools in a Substation automation system (SAS)	
	No external tool	**3rd party system tool**
ABB Relion IEDs	Engineering mode [1]	View mode [2]
ABB and 3rd party IEDs	View mode [2]	View mode [2]

16. Communication Connection

The Communication Connection tool is used to create GOOSE connections between IEC 61850 data attributes and GOOSE receive signals. Besides providing an overview of the GOOSE connections in a PCM600 project, it allows creating GOOSE connections between GOOSE receive function blocks and logical nodes.

The tool view is refreshed based on the node selected in the plant structure. The tool is split into top and bottom views. Double-clicking a configurable cell in the top view makes the bottom view visible. In the bottom view, valid GOOSE connections can be made between data attributes and GOOSE receive signals.

17. Connectivity packages

PCM600 incorporates ABB's connectivity package concept, which simplifies protection engineering and reduces the risk of errors. The connectivity packages can be downloaded and installed using Update Manager. Alternatively, the connectivity packages for the 630, 620, 615, 611 and 610 series, RIO600, REX521, RE_54_, SPACOM, REF 542plus and REX640 IED can be downloaded from the *ABB Digital Substation Products* page.

18. User management

PCM600 tool supports access management both for the tool and the IEDs. User accounts in PCM600 can be linked to Windows user account. The user management feature allows the administrator to create user groups with different access rights and profiles.

The access management for the IEDs can be enabled or disabled with the IED user management tool in PCM600. PCM600 also includes functionality to activate central account management on IEDs, and manage certificates on the IEDs.

19. Project configuration data management

PCM600 offers functionality for managing configuration data of projects. Complete substation configurations can be exported and imported for long term archiving or for sharing between different engineers. All the configuration data on a workstation can be backed up with a simple manual operation or as scheduled automatic backup functionality.

20. Integrated help menus

All the necessary instructions for using the tool are integrated in PCM600. Context sensitive help menus and tool tips provide the user with information about the selected tools. The IED documentation and guides available from the connectivity package can be directly accessed from the help menus.

21. Data transfer

PCM600 offers improved data transfer between the IEDs and the IED management tool. The IEDs can be accessed remotely using the TCP/IP protocol via a local area network (LAN) and standard Ethernet cables, a secured

[1] Engineering mode of IEC 61850 Configuration of PCM600 is recommended for simple applications. Advanced applications require an IEC 61850 system tool and view mode.

[2] View mode of IEC 61850 Configuration of PCM600 for the transparancy of IEC 61850 configuration made by an external IEC 61850 system tool.

wide area network (WAN), a secured wireless network (WLAN) or, locally, using the IEDs' front communication port.

22. System requirements

Table 2: Hardware requirements

Hardware	Minimum	Recommended
CPU	1.5 GHz	2.4 GHz
Physical RAM memory	8 GB	16 GB [1]
Free hard disk space	6 GB	8 GB
Monitor	1024 × 768	1280 × 1024
Ethernet port	Required	Required

Table 3: Supported operating systems

Operating system	Version
Microsoft Windows Server 2022 (64-bit)	-
Windows 11 (64-bit)	-

Table 4: Communication

Protocols
TCP/IP via LAN or WLAN
Serial Port (RS-232) or USB/RS-232 converter if SPA-based communication is used
Opto/electrical (RS-232) cable for front communication if SPA-based communication is used

23. Download PCM600

To download PCM600, visit the *PCM600 product page*.

24. Document revision history

Document revision/date	Product version	History
A/2007-12-20	2.0	First release
B/2008-05-30	2.0 SP1	Content updated
C/2009-03-03	2.0 SP2	Content updated
D/2009-07-06	2.1	Content updated to correspond to the product version

Table continues on the next page

[1] With large projects, it is recommended to have 24 GB or 32 GB of physical RAM.

Document revision/date	Product version	History
E/2009-11-23	2.2	Content updated to correspond to the product version
F/2010-05-28	2.3	Content updated to correspond to the product version
G/2011-04-08	2.4	Content updated to correspond to the product version
H/2013-01-10	2.5	Content updated to correspond to the product version
K/2013-12-10	2.6	Content updated to correspond to the product version
L/2015-11-20	2.7	Content updated to correspond to the product version
M/2016-09-29	2.8	Content updated to correspond to the product version
N/2018-04-10	2.8	Content updated
P/2018-04-18	2.9	Content updated to correspond to the product version
R/2020-01-22	2.10	Content updated to correspond to the product version
S/2021-11-17	2.11	Content updated to correspond to the product version
T/2022-11-30	2.12	Content updated to correspond to the product version
U/2024-03-11	2.13	Content updated to correspond to the product version
V/2025-09-11	2.14	Content updated to correspond to the product version

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