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ABB protective relay school webinar series

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ABB protective relay school webinar series

PCM600 Relion® software tool
Installation and usage
We will begin at 2:00 pm EST, August 26, 2014
Tim Erwin is a Northeast Regional Technical Manager for ABB’s Distribution Automation and Protection division. Tim holds a Bachelor of Science degree in electrical engineering technology from the New Jersey Institute of Technology.

Prior to his six years of service at ABB, he held positions as customer service supervisor, senior sales engineer for protective relays, and senior development application engineer at RFL Inc. Tim is a member of IEEE.
PCM600 Relion® software tool

Introduction

Combined with online instructions, this webinar will guide you through PCM600 installation and usage.

By participating in this webinar, you will have a working installation of PCM600, and be able to connect to a relay.
PCM600 Relion® software tool
Learning objectives

In this webinar you will learn to:

- Install PCM600
- Use the Update Manager to install a connectivity package
- Connect to a relay and validate connection
- Access PCM600 user preferences
- Create a project
- Import/export PCM600 project and IED files
- Start the software exploration
PCM600 Relion® software tool
Installation: architecture overview

- This module will use PCM600 2.6 and the RER620 relay as examples
- PCM600 installation is comprised of PCM600 Installation and Connectivity Packages needed for each specific relay
PCM600 Relion® software tool
Installation: pre-download notes

- Installation requires operating system administrator rights. In all versions of Windows, it might be necessary to switch off or configure antivirus software to allow installation and operation of PCM600.

- PCM600 2.6 may be installed in parallel with a previous version. If only one version is needed, it is recommended to uninstall the previous version of PCM600 before installing PCM600 2.6.

- Backup (export from PCM600) any project made in previous versions to your hard drive.

- If PCM600 2.4 SP1 or an older version is uninstalled after PCM600 2.6 has been installed, PCM600 2.6 may fail and must be repaired.

- PCM600 repair can be done through the Windows menus: Control Panel → Uninstall a program. Select the PCM600 program and select REPAIR. [menus according to Windows 7]

- Note that the Lifecycle Service Tool will only work with one version of PCM600. If you want to operate the Lifecycle Service Tool with the previous version of PCM600 (e.g. PCM600 2.4 SP1), please uncheck the Lifecycle Service Tool in the PCM600 2.6 installation dialog.

- When opening projects in PCM600 2.6 that have been created with previous versions of PCM600, the projects will be converted to the new version. After project conversion, the projects are not compatible with previous PCM600 versions.
PCM600 Relion® software tool
Installation: available software sources

- PCM600 installation via installation CD or downloaded from the ABB website
- Installation CDs are available in most instances with a product purchase, or may be requested from Customer Service. Customer Service contact information is available on the ABB website for each product
- Online download requires registration to ABB Software Library
- Registration is recommended for all users, to be kept informed of updates
PCM600 Relion® software tool
Installation: software and hardware requirements

System requirements (PCM600 2.5)
- Operating system (32-bit versions): Windows XP
- SP3, Server 2003 SP2, Windows Vista SP2,
- Windows 7 (32-bit/64-bit)
- Windows 8/8.1 (32bit-64bit)
- Administrator rights

Minimum Hardware requirements (Min/Recommended)
- Physical RAM memory: 2 GB / 3 GB
- Free hard disk space: 2 GB / 4 GB
- Processor: 1.0 GHz / 2.2 GHz

License:
- There are no licenses required for PCM600 ver.2.6

Other Windows version specific requirements can be obtained in the PCM600 installation guide available from the ABB software library.
PCM600 Relion® software tool
Installation: web access

- To access the software library and download PCM600, click on [https://www143.abb.com/SoftwareLibrary](https://www143.abb.com/SoftwareLibrary)
- If needed, copy and paste the address into your web browser
- Once on the site, click LOG IN from the menu found on the left side of the screen
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Installation: library registration

- Enter your account information as requested
- Register, if you do not have an account
- Once logged-in, go into the library, download the desired version of PCM600, and proceed with installation
Poll question #1

For PCM600 installation:

A. It is not necessary, though recommended, to register on the ABB software library website if you have a PCM600 installation CD

B. You must register on the ABB software library site to download PCM600

C. ABB software library will notify users of new versions and fixes via email

D. All of the above
PCM600 Relion® software tool
Poll question #1 answer

For PCM600 installation:

A. It is not necessary, though recommended, to register on the ABB Software Library website if you have a PCM600 installation CD

B. You must register on the ABB Software Library site to download PCM600.

C. ABB Software Library will notify users of new versions and fixes via email

D. All of the above
PCM600 Relion® software tool
Update manager: location

Start the UPDATE MANAGER by either:

- Clicking on the desktop icon
- Clicking on Windows Start → All Programs → ABB → Update Manager
- Opening up PCM600 and going through the menu structure: Help → Update Manager

Update manager requires an internet connection to operate
PCM600 Relion® software tool
Update manager: settings

- Click on SETTINGS
- Verify selections under ADD-ONS INSTALLED WITH CONNECTIVITY PACKAGES per your requirements
- Click on HOME after changes are made
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Update manager: connectivity package software updates installation

- Review latest updates on HOME page
- Retrieve the latest available PCM600 hotfix or rollup under SOFTWARE UPDATES. A rollup will contain all previous hotfixes.
- Retrieve the desired connectivity package for the necessary devices, i.e. RER620, under GET CONNECTIVITY PACKAGES.
PCM600 Relion® software tool
Update manager: connectivity package management

- Select the required Connectivity Package, typically the latest revision, from dropdown list. This will be the active Connectivity Pack.
The update manager should be run every time you use PCM600.

A. True
B. False
The update manager should be run every time you use PCM600.

A. True

B. False

**FALSE:** Update manager should be run on a regular basis to maintain updates or, if you registered on the ABB software site, when you are notified via email that updates are available. It is **not** necessary to run every time PCM600 is used.
PCM600 Relion® software tool
Relay connection: front and rear ports

Front port characteristics
- The front relay port runs a DHCP server
- The front IP address of the relay is fixed at 192.168.0.254
- Link LEDs are on top of the port

Rear port characteristics
- The rear relay port does not run a DHCP server
- IP address is configurable
- The factory rear IP address of the relay is 192.168.2.10
- TCP port LEDs are next to the black 9-pin connector
When you connect to the relay rear port, your PC ethernet adapter needs to be configured to be on the same subnet as the relay. This step is not required when connecting to the front port.

1. Left mouse click on the network icon
2. Select OPEN NETWORK AND SHARING CENTER
3. Select CHANGE ADAPTER SETTINGS
4. If used adaptor is unknown, plug/unplug network cable to determine which adapter make/breaks the link connection
5. Right mouse click on the adapter and select PROPERTIES
PCM600 Relion® software tool
Relay connection: adapter configuration continued

Scroll down to TCP/IP V4 and select PROPERTIES
PCM600 Relion® software tool
Relay connection: adapter configuration continued

- Select the ALTERNATE CONFIGURATION tab
- Configure your adapter to be on the same subnet. This means the first three IP address octets should match the rear IP address in the relay and the last one should be a different value between 2 and 254
- The subnet mask should be 255 for the first 3 octets and 0 for the last octet
- If the rear IP address is not the factory default address as previously defined, use the following local HMI menu path on the relay to view it:
  Configuration ➔ Communication ➔ Ethernet ➔ Rear port(s)
- Set the PC IP address to an address where the first three IP address octets should match the rear IP address in the relay and the last one should be a different value between 2 and 254
PCM600 Relion® software tool
Relay connection: verification

Open the DOS prompt window

- Left click on the Windows Start button. This will bring up a small window.

- In that window type `cmd` and press enter. This will bring up the DOS prompt.

Ping the relay to verify connectivity

- For a front port connection, type: `ping 192.168.0.254`

- For a rear port connection, type: `ping 192.168.2.10`

Note: Factory default IP addresses are shown. If rear port is different than factory default, use programmed IP address.
PCM600 Relion® software tool
Relay connection: verification continued

Follow these steps to enable the Telnet client on your Windows machine:

- Go to Control Panel → Programs and Features.
- Click TURN WINDOWS FEATURES on or off.
- Enable Telnet Client and click OK.

Telnet to verify if port 21 can be opened

- Open the DOS prompt
- If connected to the front port, type:
  `telnet 192.168.0.254 21`
- For a rear port connection, type:
  `telnet 192.168.2.10 21`

- If Telnet times out, access the firewall settings to enable port 21 or contact your network administrator
- Type QUIT to exit

Note: Factory default IP addresses are shown. If rear port is different than factory default, use programmed IP address.
When connecting to the relay front port, it is not necessary to ping the relay or telnet port 21.

A. True  
B. False
Poll question #3 answer

When connecting to the relay front port, it is not necessary to ping the relay or telnet port 21.

A. True
B. False

FALSE: It is still necessary to check connectivity and ability to open port 21 when connecting to the relay front port.
PCM600 has some options that are customizable, and may need to be changed, depending on the relay application.

- Open PCM600
- Select TOOLS
- Select OPTIONS

Among the settings are system settings which, when opened, will allow customization in terms of ANSI and IEC configurations.
PCM600 Relion® software tool
Project creation: initiating new project

This exercise shows the basic steps for getting started with PCM600. Once PCM600 is open, follow the steps below:

- Select FILE
- Select NEW PROJECT
  - If a project is already open, you will be prompted to close it
- Fill in the project name and description
- Select CREATE
PCM600 Relion® software tool
Project creation: plant structure

- With the new project open, right click on the first element, which should have the project name. Then follow the menu structure and select SUBSTATION.
- Continue by right clicking on the SUBSTATION and inserting a VOLTAGE LEVEL.
- Follow the same action to insert a BAY. Please note that BAY is synonymous to FEEDER.
PCM600 Relion® software tool
Project creation: plant structure continued

- Right click on BAY and select the desired relay
- This selection will prompt the relay installation procedure
- Relay configuration can be done two ways:
  - Online
  - Offline
- As the relay is communicating with the computer, continue with ONLINE CONFIGURATION, and select NEXT
PCM600 Relion® software tool
Project creation: relay configuration

- Ensure the correct port is being used. If the rear port is being used, the IP address will need to be entered.
- Online configuration requires selecting SCAN to read the order code and functions from the relay.
- Offline configuration will require manual order code entry and then select GENERATE.
- Close the configuration wizard when prompted.
PCM600 Relion® software tool
Poll question #4

The connectivity package:

A. Is the relay driver, and is only used to connect to a relay.
B. Will allow a user to work in online and offline modes.
C. Uses IEC61850 and is therefore interoperable with all IEC61850 relays.
The connectivity package:

A. Is the relay driver, and is only used to connect to a relay.
B. Will allow a user to work in online and offline modes.
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B. A conn pack will allow you to work in online and offline modes.
PCM600 Relion® software tool

Import/export: project file

- Open the Project Manager through File → Open/Manage Project
- Select an existing project for options
  - Open project
  - Delete project
  - Export project
- When importing projects, keep in mind that project files end in .pcmp

.pcmp = PCM600 Project file
PCM600 Relion® software tool
Import/export: IED file

- A .pcmi file contains all relay settings and configuration
  - Right click on desired relay to export the .pcmi file
  - Right click on the Bay to imported the .pcmi file
- When working with the relay files, keep in mind that IED files end in .pcmi

  .pcmi = PCM600 IED file
PCM600 Relion® software tool
Software exploration: window toggle buttons
PCM600 Relion® software tool
Software exploration: relay menu

- PCM600 will detect the relay technical key (a.k.a IEC1850 relay address) and will prompt you to use one of these options:
  - PCM600 assigned key
  - Relay key
  - A user-defined key

- If the relay is assigned a new technical key, it will reboot

- Once the relay has been created, you may right click on the relay to access the relay menu. The relay menu allows you to access the various PCM600 tools listed at the beginning of this learning module
PCM600 Relion® software tool
Software exploration: tools

- **Update Manager** is used for downloading updates and managing the current installation of PCM600 and connectivity packages.
- **Project Explorer** is used for navigating, creating a plant structure, importing and exporting IED (relay) configurations, accessing and filtering the content of other tool components.
- **Application Configuration** is used for configuring the IED logic.
- **Parameter Setting** is used for parameterizing (setting) the IEDs and viewing the parameter (settings) data for the selected node (relay).
- **Signal Matrix** is used to create connections between source and target objects in an IED configuration.
- **Signal Monitoring** is used for monitoring online the measured values and the status of the binary input and output signals of an IED and for commissioning and testing physical connections.
- **Disturbance Handling** is used for uploading and processing the disturbance (oscillography) files located in a specific IED, for viewing and processing the disturbance recording data and creating reports.
- **Event Viewer** displays the SOE record stored in an IED.
- **Graphical Display Editor** is used for customizing the graphical display of an IED, and for creating one-line diagrams on the HMI.
- **Hardware Configuration** is used for viewing, adding and changing the hardware modules of an IED and for troubleshooting the IED hardware configuration.
- **Communication Management** is used for configuring communication protocols (DNP) for an IED and for mapping IED signals and outputs.
- **IEC 61850 Configuration** is used for viewing the IEC 61850 data flow configuration and for engineering the dataflow between the IEDs and IEC 61850 clients.
- **IED Compare** is used for comparing the IED configuration of two same type of IEDs.
PCM600 Relion® software tool
Software exploration: parameter settings

Parameter Setting is used for parameterizing (setting) the IEDs and viewing the parameter (settings) data for the selected node (relay).
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Software exploration: parameter settings

After selecting IED, right click and select PARAMETER SETTING to open parameter settings tool.
PCM600 Relion® software tool
Software exploration: parameter settings

The IED is divided into two sections:

1. IED Configuration: where device specific parameters are set. For example, CT/PT ratios, time keeping parameters

2. Application configuration: where application specific parameters are set. For example, protection settings like 50/51 elements and the recloser control functions

The box with a + inside indicates there are sub menus
PCM600 Relion® software tool

Software exploration: parameter settings

Selecting an object under the application configuration section of the IED will display that object’s settings in the parameter settings tab to the right of the Plant Structure window.
PCM600 Relion® software tool
Software exploration: relay documentation

Relay documentation can be accessed in three ways

1. **PCM600**: Right click on the relay in the Plant Structure and select DOCUMENTATION

2. **Windows file manager**: Use the following directory path:
   
   C:\Program Files(x86)\ABB\Connectivity Packages\RER620A\1.1.3\Documents\EN\IEC

3. **Relay webpage**

   Note: If you open a document in Adobe reader, the Ctl+Shift+F search will display the search results in a separate window within a one-line context.
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Relion. Thinking beyond the box.
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Power and productivity for a better world™
Thank you for your participation

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