Training catalog

ABB Distribution & Transmission Protection and Control training 2012-13
Relay schools, application, product, and automation communications training
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Now offering Continuing Education Units (CEUs)!
Transmission Line Protection

Objective
This 4 1/2 day course is designed to give attendees the tools necessary to understand, apply and set transmission line relays on power systems.

Topics covered:
- Relay input sources
- Directional protection
- Distance protection
- Current differential protection
- Pilot Protection
- Short, medium, & long line protection
- Transformer terminated lines
- Tapped lines
- Cable protection
- Series compensated lines
- Bus bar protection
- Transformer protection
- Shunt capacitor bank protection
- Reclosing
- Breaker Failure protection

Participants Learn
- How to design and implement transmission line protection for various line configurations
- Apply theory to real world examples
- Multifunction microprocessor based relay application considerations
- Current differential protection, directional comparison protection and pros and cons of each
- Protection for transformers, reactors, and shunt capacitor banks
- Bus bar protection

Participant Profile
Relay engineers, protection engineers, transmission planning engineers

Prerequisites
At least two years experience in system protection, knowledge of symmetrical components is desirable.

What to Bring
Scientific calculator

CEUs Earned
3.2 credits

Added Bonus!
Symmetrical Components Refresher (three hours)
Free to course participants and intended to refresh the student on the subject of symmetrical components. Participation in this refresher module will help students understand the concepts used during the Transmission Line Protection course.

Topics covered: Symmetrical component theory, Transformer models, Line Models, Generator models, Shunt fault analysis, Series fault analysis
IEC 61850 for Protection & Control

Objectives
This three day IEC 61850 School course is designed to give attendees the tools necessary to understand, engineer, and deploy protection and control schemes based on IEC 61850.

Training segments covered:
- History of IEC 61850
- Fundamentals of Ethernet networks
- Ethernet network design for real time applications
- Substation Configuration Language (SCL)
- IEC 61850 Data model
- SCL Engineering
- GOOSE message engineering
- System integration with multiple manufacturers
- IET600 – IEC 61850 Engineering Tool
- ITT600 – IEC 61850 Testing Tool

Participants Learn:
- How to design and deploy IEC 61850 protection and control schemes
- Apply theory to real world examples
- How to use IEC 61850 engineering and testing tools
- How to achieve interoperability with GOOSE messages

Prerequisites
Participants must have experience with microprocessor relays, protection & control application theory, and PCM600. At least two years experience in system protection, automation, and control is required.

What to Bring
Laptop computer with admin rights and authorization to install software on it

CEUs Earned
2.4 credits
Objectives
This two-day training course is designed for participants to become proficient in application, installation, operation, maintenance, testing and commissioning of PCD Relays and OVR Reclosers.

Topics covered:
- Receiving, handling, and storage
- Installation
- Recloser assemblies
- Using AFSuite™ software
- Communications, programming, and troubleshooting
- Recloser operation and testing the PCD control
- Maintenance and adjustments

Participants Learn and Perform Hands-On
- Functionality of the settings
- Fast and efficient techniques for application
- How to minimize downtime
- How to optimize availability of resources
- How to maximize performance
- How to quickly and effectively test the control
- To decrease commissioning time with advanced features
- Proper setup for event capture and fault record recording

Prerequisites
Knowledge of distribution operation and protection principles

What to Bring
You will need to bring your own laptop that meets the following requirements:
- 256 MB of RAM or higher
- 30 MB of Hard Drive Space
- Windows NT 4.0, Windows 98 2nd Edition, Windows XP or Windows 2000 operating system
- Internet Explorer 5.50 or higher
- AFSuite™
- RS-232 serial port or USB port and USB to serial port converter RS-232
- Null modem cable

Participant Profile
Relay Engineers, Protection Engineers, Technicians, and Operators
GridShield Recloser and RER620 Applications

Objectives
This three-day hands-on training course is designed for participants to become proficient in the application, installation, operation, maintenance, testing and commissioning of RER620 Relays and GridShield Reclosers.

Topics covered:
− Introduction of the GridShield recloser; high and low voltage cabinets
− Using the RER620 LHMI, WebHMI and COM600
− RER620 settings over WebHMI and Parameter Setting Tool
− Using the Graphical Display Editor to customize RER620 HMI
− Configuring the RER620 recloser application
− Relay protection applications
− Relay logic design with Application Configuration Tool
− DNP3 point remapping using the Communication Management Tool
− Understanding DNP3 objects, classes, variations, events and deadbands

Participants Learn and Perform Hands-On
− RER620 settings using the WebHMI and PCM600
− RER620 Application Configuration Tool for customized logic
− DNP3 serial and TCP communications

Participant Profile
Relay Engineers, Protection Engineers, Technicians, Operators, Dispatchers, SCADA and Communication Engineers

Prerequisites
Knowledge of distribution operation and protection principles

What to Bring
You will need to bring your own laptop that meets the following requirements:
− 2 GB of RAM or higher
− 30 GB of Hard Drive Space
− Windows XP or Windows 7 operating system
− Internet Explorer 7 or higher
− ASE2000 DNP3 key
COM600 Communication Gateway
Configuration

Objectives
A three day training program designed for engineers and technicians to become proficient in installation, operation and configuration of the COM600 gateway/HMI. Our mission is to train a new and changing power utility work force to become experienced in ABB’s substation automation COM600 series product using personalized, hands-on training.

Training segments include:

- Hardware identification and configuration
- Operating the COM600, both locally and remotely
- License upgrades
- Configuration of master and slave communications
- Configuration of the HMI
- Implementation of the advanced features of the COM600
- How to use event and alarm lists
- How to use the Web HMI
- How to use advanced features of the COM600 such as historical data storage and IEC61131-3 active logic programming (emphasis will be placed on the implementation of the Fault Detection Isolation and Restoration (FDIR) algorithm unique to the COM600)
- Troubleshooting techniques

Participants Learn and Perform Hands-On:

- Where and how to apply COM600 in various applications
- How to set up the COM600
- How to set up communication networks for your specific application
- How to configure and apply HMI functions
- How to configure and apply functions utilizing ABB connectivity packages and templates
- Upload and download configurations to/from the COM600

Product Highlights

- COM600: Gateway and/or HMI
- Communication protocols including IEC61850, DNP and Modbus
- Simple configuration and commissioning
- Bottom up engineering approach

CEUs Earned

3.2 credits
**Objectives**
This three day course will offer training on PCM 600, the engineering tool used to configure, set, and interrogate the Relion series products. With this background, the Application configuration of select (by user preference) Relion products will be discussed. Finally, the student will be given hands on experience with the relay. At the conclusion of the course the student will possess the knowledge necessary to apply, set, and test the Relion relay chosen for this school.

**Topics covered:**
- PCM600
- Connectivity Packages
- Application configurations
- Adding elements
- Settings
- Connecting the relay
- Downloading settings
- Testing relay
- Monitoring Analogs and binary signals
- Obtaining DFR records from relay
- Commissioning

**Participants Learn/Perform Hands-On:**
- Applications: learn to apply relays for various situations
- Settings: set up relay functions for your specific application
- Acceptance Testing: test relays to verify acceptance criteria and characteristics
- Troubleshooting Techniques: use relay tools to reduce operating costs and minimize downtime

**Participant Profile**
Relay engineers, protection engineers, relay technicians

**Prerequisites**
At least two years experience in system protection. Some knowledge of test sets is desired.

**What to Bring**
- Scientific Calculator
- Laptop with Windows 7 or Windows XP operating system

**CEUs Earned**
2.4 credits
Please register for courses by visiting us online. Please make reservations at least four weeks before the start of the course, as we are only able to accept a limited number of participants on each course. We accept bookings in the order they arrive. To find course dates, please refer to the course descriptions or course schedule. You can email us at allschools@us.abb.com.

Confirmation, facilities and accommodations
A confirmation will be returned upon receipt of your application with specific details about the hours, and location. We’ve negotiated the best rates available in each area during the ABB training program, please contact us for hotel information.

Cancellation and notice
If the course is cancelled or postponed, you will be informed at least one week prior to the course start. We reserve the right to postpone or cancel courses. If you need to cancel, please send an email to allschools@us.abb.com as soon as possible, but no later than two weeks prior to course start. The course fee will not be reimbursed to anyone canceling with less than two weeks notice from the scheduled course date.

Course certificate
Each participant will receive a course certificate upon the completion of the course.

Instructors and staff
Training is conducted by our professional instructors who are specialized in delivering the latest information and knowledge about the subject at hand.

On-site and customized customer training
On-site and customized customer training sessions are offered upon request. We will gladly arrange courses at any agreed location. Our training staff will be happy to assist in the planning and organization of your on-site or customized training requirements. Arrangements may also be made by contacting the Customer Support Department.

Course descriptions
Course descriptions concern standard courses only. For tailor-made courses please call +1 954-825-0633. ABB reserves the right to make changes to standard courses without notice.
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More courses will be added to the 2013 schedule. Check online for the most current information.

*A multi-session 10% discount is granted on the total tuition fee of the same student registering to more than one class during the same calendar year.

Please contact the hosting ABB facility for more information:

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Webinars

Visit us online to view the 2012 ABB Protective Relay School webinar calendar or to access recorded webinar archives from previous webinar events.