Training catalog

ABB Distribution & Transmission Protection and Control training 2010

Relay schools, application, product, and automation communications training

Power and productivity
for a better world™

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Relay & Automation Schools

Relay Product Training

Symmetrical Components and Fault Analysis

Objective

This three day school is designed to provide a comprehensive coverage of symmetrical components, their application in relay design, and performance analysis. The school discusses the symmetrical component representation of various power system components, and comprehensively analyzes faults.

Relay segments covered:

- Per unit system
- Introduction to symmetrical components
- System faults
- Fault calculations
- Sequence network modeling: Generator
- Sequence network modeling: Transformer
- Sequence network modeling: Overhead lines

Participants Learn

- Mathematical fault analysis techniques
- Fault calculations and system stability for single and multiple fault scenarios
- Understand real case examples
- Rapid calculation of how your system will behave under extreme conditions

Participant Profile

Engineers and Senior Level Technicians who wish to reacquaint themselves with vector mathematics and fault analysis computations

Prerequisites

A general knowledge of basic electrical engineering is recommended, as well as Elementary Vector Mathematics, Mathematical Matrix Manipulation, and Power System Basics

What to Bring

Only Scientific Calculator

Basic Relay School (Distribution Protection)

Objectives

This three and a half day school provides comprehensive relay application principles on distribution protection. Personalized hands-on training with ABB application engineers, using real-world examples, allows participants to practice each theory with fault simulators and relays.

Training segments covered:

- Introduction to Protective Relaying
- Phasors, Polarity, Per Unit system, and basic Power concepts
- Review of Symmetrical Components
- Relay Input Sources
- Overcurrent and Directional Overcurrent protection
- Feeder, Transformer, Motor, and Arc Flash protection
- Auto Reclosing

Participants Learn and Perform Hands-On

- Distribution network protection, system design and implementation
- Distribution equipment protection, system design and implementation
- Apply theory to real system examples
- Protection theory and practice on microprocessor based relays and electromechanical relays

Participant Profile

Electrical Engineers, Relay Engineers, and Senior Technicians.

Prerequisites

Knowledge of basic electrical engineering is required. Symmetrical Component School is recommended.

What to Bring

Only Scientific Calculator

Distribution Protection Units DPU2000R/ MSOC/REF550

Objectives

This one day training program is designed for participants to become proficient in application, installation, operation, and testing of ABB Distribution Relays. Our mission is to train a new and changing Power Utility workforce to become experienced in the ABB DPU2000R, MSOC, and REF550 through the use of personalized, hands-on training.

Training segments:

- Download/upload settings
- Save/View records and waveforms
- Become familiar with WinECP, WinFPI and WaveWIN
- Upgrade software, hardware, and the relay
- Test and troubleshoot
- Use optional features
- Communicating to the relay

Participants Learn and 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
- Complete protection, common look and feel

Product Highlights

- Advanced feeder protection
- Optional synch-check
- Optional Sensitive Earth Fault (SEF) protection
- Common control and automation features

Participant Profile

Relay Engineers, Technicians, and Operators

Prerequisites

Knowledge of/experience with Protective Relaying and use of electrical equipment

What to Bring

Laptop with serial port or USB-serial converter, serial cable, and null modem adapter are required.

Arc Protection System (REA10_)

Objectives

This half day training program is designed for participants to become proficient in application, installation, operation, and testing of ABB Arc Protection Relays. Our mission is to train a new and changing Power Utility workforce to become experienced in REA101, 103, 105 and 107 using personalized, hands-on training.

Training segments include:

- Basic relay operation
- Loop-type or radial optical fiber for arc detection
- High speed semiconductor outputs for tripping
- Relay settings
- Setting up and communicating with the relay
- Testing and troubleshooting
- Using additional features
- Upgrading the relay

Participants Learn and 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
- Compliance with new US OSHA regulations
- To reduce catastrophic events

Product Highlights

- Unique, maintenance free fiber optic technology
- Three-phase overcurrent, circuit breaker, and selective tripping
- Perfect solution for retrofit and new installations
- Fast trip time (< 2.5 ms) with semiconductor outputs

Participant Profile

Relay Engineers, Technicians, and Operators

Prerequisites

Knowledge of/experience with Protective Relaying and use of electrical equipment

What to Bring

Laptop is recommended

Electromechanical Relays & FT Switches

Objectives

This one to three-and-a-half day training program is designed for participants to become proficient in application, installation, operation, maintenance, and testing of ABB Electromechanical Relays and FT Switches. Our mission is to train a new and changing Power Utility workforce to become experienced in these products using personalized, hands-on training.

Training segments include:

- Current non-directional and current directional
- Distance
- Current differential
- Auxiliary and annunciator
- Under/over voltage
- Power directional
- Under/over frequency
- FT Switches

Participants Learn and Perform Hands-On

- Applications: learn to apply relays for various combinations of fault protection
- Settings: set up relay functions for your specific application
- Maintenance: maintain relays to perform for a lifetime
- Calibration: calibrate relays to precision accuracy
- Acceptance Testing: test relays to verify acceptance criteria and characteristics
- Relay Construction: learn cylinder unit, induction disc element, transformer, compensator, polar unit and auxiliary relay components
- Troubleshooting Techniques: use relay tools to reduce operating costs and minimize downtime

Participant Profile

Relay Engineers, Technicians, and Operators

Prerequisites

Knowledge of/experience with Protective Relaying and use of electrical equipment

What to Bring

Laptop is recommended

OVR Recloser and PCD Control Application

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

Participant Profile

Relay Engineers, Protection Engineers, Technicians, and Operators

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

COM600 Communication Gateway Configuration

Objectives

A four 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

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
- 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
- Troubleshooting techniques

Product Highlights

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

Registration Information
Please register for the course by using the Registration Form. Please make reservations at least two 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.

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 organizing 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 800 523 2620. ABB reserves the right to make changes to standard courses without notice.

2010 Course Schedule

Course #	Course Name	Price (USD) *	February	March	April
SCH001	Symmetrical Components and Fault Analysis	$1,500			6-8 Napa, CA
SCH002	Basic Relay School (Distribution Protection)	$1,500			
RPT001	Distribution Feeder Protection (DPU2000R/MSOC/ REF550)	$500	23 Coral Springs, FL		
RPT004	Arc Protection System (REA 10X)	$300	24 Coral Springs, FL (4 hrs)		
RPT006	Electromechanical relays and FT switches	$1,000			6-9 Coral Springs, FL
OVR001	Recloser and Recloser Control (OVR, PCD, AFSuite)	$750		10-11 Lake Mary, FL	21-22 (Spanish) Lake Mary, FL
RPT009	COM600 Configuration	$2,000		16-19 Lake Mary, FL	

* A 25% discount is granted to registration forms received at least 30 days before the start of the course.
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.

May	June	August	September	October	December
	15-17 Coral Springs, FL				
25-28 Napa, CA				5-8 Coral Springs, FL	
		17 Napa, CA			
		18 Napa, CA (4 hrs)			
	15-18 Napa, CA				7-10 Coral Springs, FL
	9-10 Lake Mary, FL		22-23 Lake Mary, FL	20-21 (Spanish) Lake Mary, FL	8-9 Lake Mary, FL
				19-22 Napa, CA	

2010 School Registration Form

You can register for any course on-line or by faxing or mailing this form. To register on-line, go to www.abb.us/mvservice and click on Training. If you prefer, **mail or fax this form to CORAL SPRINGS NO LATER THAN TWO WEEKS PRIOR to the start of the school**. Tuition fee must be paid ONE WEEK PRIOR to the first day of the school. Checks are to be made payable to ABB Inc. and sent to the attention of Education Dept. at the Coral Springs address below. Indicate the name of the attendee plus name and date of the school on the check stub. Please note that checks from foreign countries must designate “payable in U.S. Dollars”. Please fax your PO to +1 954-345-5329.

Arrangements

Course Name: _____

Course Date:_____ Course Location:_____

Tuition Fee: $_____ Method of Payment: ___Check ___Visa ___ Mastercard

___ Purchase Order #_____

Student Information

Name: _____

(First Name) (Initial) (Last Name)

Title: _____

Company: _____

(company name)

Company Address: _____

(street or P.O. Box number)

_____

(city) (state) (zip)

Phone: _____

(area code) (number)

Fax: _____

(area code) (number)

E-mail address: _____

Highest Level of Education: _____

Work Experience in Protective Relaying: _____ Years

Return completed form to:
Education Department
ABB Inc.
4300 Coral Ridge Drive
Coral Springs, FL 33065

Phone: +1 954-752-6700
Fax: +1 954-345-5329
Toll Free: (800) 523-2620
Email: allschools@us.abb.com

Note: [1] ABB reserves the right to cancel at any time prior to the start of the school (with full refund to the applicant) in the event minimum class sizes are not met.

[2] Please do not include your credit card information on the registration form. An ABB representative will call and confirm the registration and payment information.

Contact us

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www.abb.com/mediumvoltage
www.abb.us/mvservice

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