Workforce Development Catalog

Creating a plan to fill workforce skill gaps

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Allen-Bradley • Rockwell Software

Rockwell Automation

Not Just a Catalog of Classes – A Holistic Approach to Workforce Development

The cost of unscheduled downtime, safety compliance, and new technology integration can significantly impact productivity. However, many of these issues can be minimized with proper workforce training and development.

The demands of your business are increasing and the supply of skilled employees is decreasing. Do you have a plan to address these issues and bring together all the necessary steps to create a comprehensive workforce development solution?

With well thought-out plans and a strategy, you can not only reap the benefits of a more satisfied and more productive workforce, but you will be able to measure it with key metrics to show your return on investment.

Rockwell Automation developed a lifecycle to show how creating a highly-skilled workforce is a disciplined process, rather than just a one-time event. There are four key steps to the process that our team of experts will walk you through when deciding how to execute your plan.

Assess: This step enables you to gauge the current abilities of your employees and better create individualized development plans.

Train: Using data from your assessment, you can leverage specific, flexible and customizable approaches to not only fit your employees' learning needs, but also fit your business' production goals.

Scan this code to visit Rockwell Automation Training Services on the web.

Apply: After your training is completed, Rockwell Automation has developed job aids and refresher tools so employees can continuously improve their skills and practice in an offline environment.

Measure: Using essential manufacturing metrics, you can leverage assessment data both pre- and post-training to ensure the effectiveness of your training plan.

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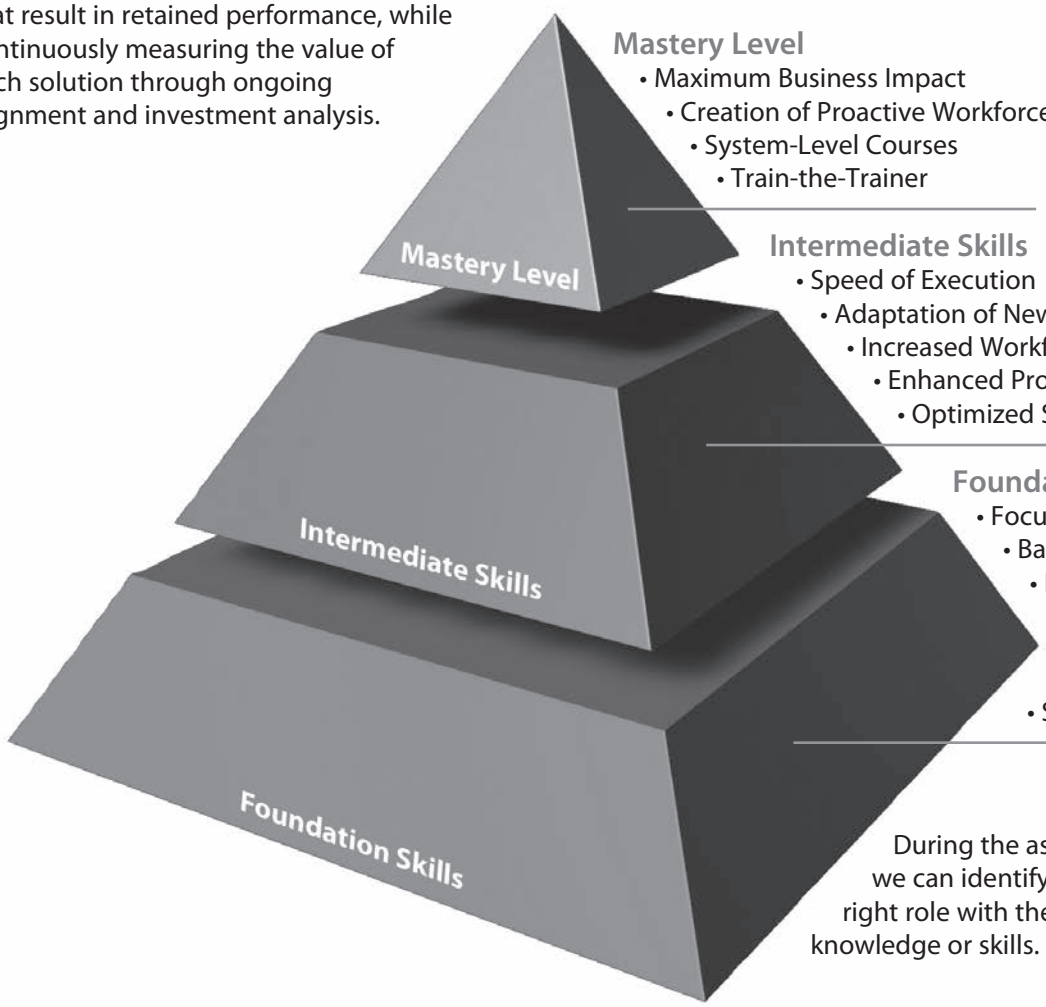
Global Workforce Solutions

Global Workforce Solutions collaborates with thought-leading companies focused on driving consistent global training programs and creating employee development roadmaps.

By partnering with our clients as their single source training provider, together we achieve consistent results in their electrical, mechanical, and automation controls training programs.

Global Workforce Solutions designs and implements future-proof, sustainable, flexible solutions that result in retained performance, while continuously measuring the value of each solution through ongoing alignment and investment analysis.



Mastery Level
- Maximum Business Impact
- Creation of Proactive Workforce
- System-Level Courses
- Train-the-Trainer

Intermediate Skills
- Speed of Execution
- Adaptation of New Technologies
- Increased Workforce Flexibility
- Enhanced Problem-Solving
- Optimized Skills for First Responders

Foundation Skills
- Focus on Installed Base
- Baseline Skills
- Hands-on Experience
- Standard Operating Procedures
- Risk-free Practice
- Safety Compliant

During the assessment stage, we can identify and align the right role with the right set of knowledge or skills.

Custom Hands-on Courses • Native Language • Local Delivery
Time-Proven Methods of Learning Effectiveness • Factory-Developed Instructors
Certificate Programs • Skills and Knowledge Assessments

Rockwell Automation

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Top 20

Rockwell Automation Courses

Course Number		Course Title
1	CCP299	Studio 5000 Logix Designer: ControlLogix Fundamentals and Troubleshooting
2	CCP146	Studio 5000 Logix Designer: ControlLogix System Fundamentals
3	CCP153	Studio 5000 Logix Designer: ControlLogix Maintenance and Troubleshooting
4	CCP143	Studio 5000 Logix Designer: Project Development
5	CCP151	Studio 5000 Logix Designer: Basic Ladder Logic Programming
6	CCV204	FactoryTalk View ME and PanelView Plus Programming
7	CCPS43	SLC 500 and RSLogix 500 Maintenance and Troubleshooting
8	CCV207	FactoryTalk View SE Programming
9	CCP122	PLC-5/SLC 500 and RSLogix Fundamentals
10	CCPS41	SLC 500 and RSLogix 500 Programming
11	CCP164	DeviceNet and RSNetWorx Configuration and Troubleshooting
12	CCP178	EtherNet/IP Design and Troubleshooting
13	CCN142	Studio 5000 Logix Designer: Kinetix 6000 (SERCOS) Programming
14	CCA183	PowerFlex 750-Series Maintenance and Troubleshooting
15	CCCL21	Studio 5000 Logix Designer: Basic Ladder Logic Interpretation
16	CCA163	PowerFlex 700 Vector Control Maintenance and Troubleshooting
17	CCP298	Studio 5000 Logix Designer: CompactLogix Fundamentals and Troubleshooting
18	CCV209	FactoryTalk View ME and PanelView Plus Maintenance and Troubleshooting
19	CCN200	Kinetix 6000 Troubleshooting and Project Interpretation
20	CCP152	Studio 5000 Logix Designer: Function Block Programming

The Right Training Makes All the Difference

4 Easy Ways to Enroll

Phone: Call your local Allen-Bradley distributor or 440-646-3434 (option 4)

Fax: Send completed Training Enrollment Form in the back of this catalog to your local Allen-Bradley distributor or Rockwell Automation Training office

Web:
www.rockwellautomation.com/services/training

Email: Send completed Training Enrollment Form in the back of this catalog to trainingservices@ra.rockwell.com

General Information

- **Training Schedules and Pricing**
  Refer to the Training Services website for current schedules and course tuition.

  www.rockwellautomation.com/services/training

- **Cancellation Policy**
  Cancellation of registration for a Rockwell Automation course less than 14 days prior to the start date is subject to a cancellation fee of 50% of the tuition. If a student fails to appear for a scheduled course, full tuition will be charged.

  Rockwell Automation strongly suggests that students only make refundable travel and lodging arrangements. Rockwell Automation reserves the right to alter course schedules, content, limit class size, reschedule, discontinue, or cancel courses.

- **Continuing Education Units (CEUs)**
  Rockwell Automation awards Continuing Education Units (CEUs) for a variety of courses from the International Association for Continuing Education and Training (IACET). Refer to the course description, which can be found in the training catalog or training schedule (www.rockwellautomation.com/services/training).

- **Terms and Conditions**
  Printed materials provided in Rockwell Automation training courses are copyrighted and may not be reproduced. No audio or visual recording of Rockwell Automation training courses, or Rockwell Automation personnel teaching such courses, may be taken or reproduced electronically.

Scan this code to access the Training Services website and online enrollment.

Rockwell Automation Training Offices

Rockwell Automation training is conducted in several cities across the United States and in Canada. Call 440-646-3434 (option 4) to be routed to the nearest Rockwell Automation training coordinator in one of these locations:

United States

Atlanta
Boston
Charlotte
Chicago
Cincinnati
Cleveland
Dallas
Davenport
Denver
Detroit
Houston
Indianapolis
Kalamazoo
Little Rock
Los Angeles
Milwaukee
Minneapolis
Nashville
New York City
Philadelphia
Richmond
Rochester
San Francisco
Seattle
St. Louis
Tampa

Canada

Brampton
Calgary
Cambridge
Dartmouth
Edmonton
Montreal
Vancouver

Call 440-646-3434 (option 4) or email trainingservices@ra.rockwell.com with questions.

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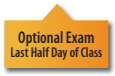
How to Use the Curriculum Map

Curriculum maps show a recommended path based on your job responsibilities within a technology area. For example, the courses in the maintain section are designed for and instruct students on maintenance-related responsibilities.

1. Locate the start icon . This is the beginning of the **"Understand"** section. Courses with a **"START"** icon are required prerequisites. If there is no start icon, identify the recommended courses in the **"Understand"** section. Courses in the **"Understand"** section apply to all students and provide the prerequisite knowledge required to successfully complete courses in both the **"Maintain or Troubleshoot"** and **"Program or Design"** sections. It is highly recommended you complete the courses in the **"Understand"** track before progressing to the other tracks in the curriculum.
2. Select the course that best fits your job responsibilities in either the **"Maintain or Troubleshoot"** and **"Program or Design."** Note that some curriculum maps offer additional sections and courses related to **"Safety Standards," "Integrate or Design,"** and **"Application-Specific Courses."** Courses with an arrow represent a progression in the content covered. Be sure to consult the course descriptions because some courses may require additional prerequisites.

   NOTE: *When presented with a choice of two courses, select the most appropriate one by reviewing the course description or using the Course Selection Tool* ***(www.rockwellautomation.com/services/training)*** *to assess your knowledge on the course.*
3. Review related products that are available for prerequisite, refresher, or supplemental courses in the **"e-LEARNING"** section of the curriculum map. e-Learning options include web-based training, computer-based training, mobile app, and iBooks.
4. Use the legend in each map to identify and locate additional information.

Course is taught virtually with a live-instructor. Refer to the Virtual Classroom section of the catalog for more information.



Optional exam can be completed to receive certification.

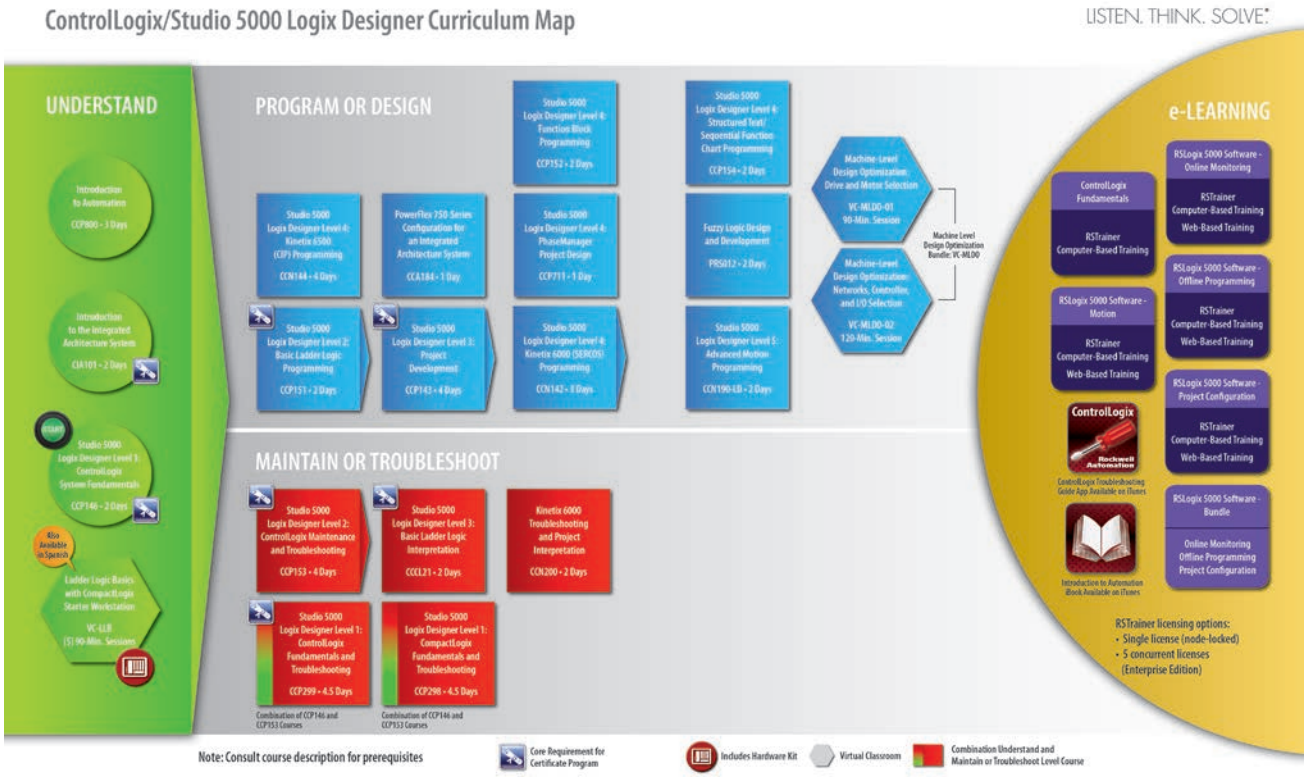
Combination Understand and Maintain or Troubleshoot Level Course.

Combination Program or Design and Maintain or Troubleshoot Level Course.

Core Requirement for Certificate Program for the specific technology. Refer to the Certificate Program section of the catalog for more information.

Hardware is included with the purchase of the course.

Course is delivered on-site at the customer's facility.



ControlLogix®/Studio 5000 Logix Designer™

ControlLogix/Studio 5000 Logix Designer Curriculum Map

UNDERSTAND

Introduction to Automation
CCP800 • 3 Days

Introduction to the Integrated Architecture System
CIA101 • 2 Days

START

Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals
CCP146 • 2 Days

Also Available in Spanish

Ladder Logic Basics with CompactLogix Starter Workstation
VC-LLB
(5) 90-Min. Sessions

PROGRAM OR DESIGN

Studio 5000 Logix Designer Level 4: Function Block Programming
CCP152 • 2 Days

Studio 5000 Logix Designer Level 4: Kinetix 6500 (CIP) Programming
CCN144 • 4 Days

PowerFlex 750-Series Configuration for an Integrated Architecture System
CCA184 • 1 Day

Studio 5000 Logix Designer Level 4: PhaseManager Project Design
CCP711 • 1 Day

Studio 5000 Logix Designer Level 2: Basic Ladder Logic Programming
CCP151 • 2 Days

Studio 5000 Logix Designer Level 3: Project Development
CCP143 • 4 Days

Studio 5000 Logix Designer Level 4: Kinetix 6000 (SERCOS) Programming
CCN142 • 3 Days

MAINTAIN OR TROUBLESHOOT

Studio 5000 Logix Designer Level 2: ControlLogix Maintenance and Troubleshooting
CCP153 • 4 Days

Studio 5000 Logix Designer Level 3: Basic Ladder Logic Interpretation
CCCL21 • 2 Days

Kinetix 6000 Troubleshooting and Project Interpretation
CCN200 • 2 Days

Studio 5000 Logix Designer Level 1: ControlLogix Fundamentals and Troubleshooting
CCP299 • 4.5 Days

Combination of CCP146 and CCP153 Courses

Studio 5000 Logix Designer Level 1: CompactLogix Fundamentals and Troubleshooting
CCP298 • 4.5 Days

Combination of CCP146 and CCP153 Courses

Note: Consult course description for prerequisites

Core Requirement for Certificate Program

Studio 5000 Logix Designer Level 4: Structured Text/ Sequential Function Chart Programming

CCP154 • 2 Days

Fuzzy Logic Design and Development

PRS012 • 2 Days

Studio 5000 Logix Designer Level 5: Advanced Motion Programming

CCN190-LD • 2 Days

Machine-Level Design Optimization: Drive and Motor Selection

VC-MLDO-01
90-Min. Session

Machine-Level Design Optimization: Networks, Controller, and I/O Selection

VC-MLDO-02
120-Min. Session

Machine Level Design Optimization Bundle: VC-MLDO

e-LEARNING

ControlLogix Fundamentals

RSTrainer Computer-Based Training

RSLogix 5000 Software - Motion

RSTrainer Computer-Based Training

Web-Based Training

ControlLogix Troubleshooting Guide App Available on iTunes

Introduction to Automation iBook Available on iTunes

RSLogix 5000 Software - Online Monitoring

RSTrainer Computer-Based Training

Web-Based Training

RSLogix 5000 Software - Offline Programming

RSTrainer Computer-Based Training

Web-Based Training

RSLogix 5000 Software - Project Configuration

RSTrainer Computer-Based Training

Web-Based Training

RSLogix 5000 Software - Bundle

Online Monitoring
Offline Programming
Project Configuration

RSTrainer licensing options:

- Single license (node-locked)
- 5 concurrent licenses (Enterprise Edition)

Includes Hardware Kit

Virtual Classroom

Combination Understand and Maintain or Troubleshoot Level Course

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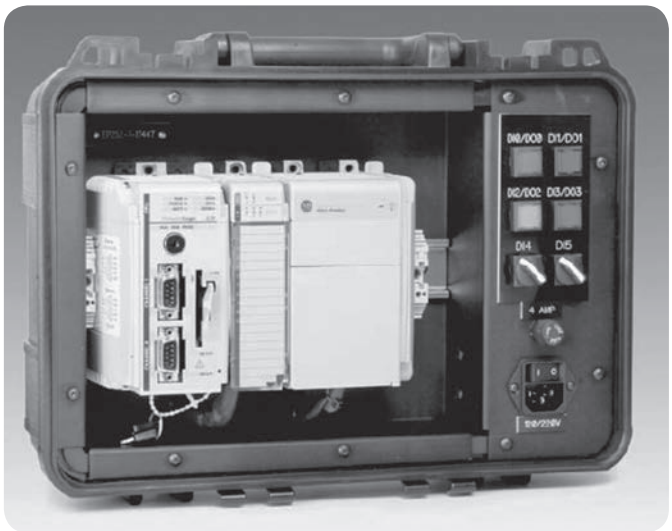
Training + Starter Workstation
with "Build Your Own" workstation option

Attend ControlLogix courses and maintain your skills with our Starter Workstation



Take Your Classroom Training Back to Your Job

Six Rockwell Automation ControlLogix courses are bundled with a CompactLogix Starter Workstation to provide an opportunity for ongoing practice. The CompactLogix Starter Workstation allows you to reinforce the skills acquired from any of the ControlLogix training classes. With this offer you can elect to "build your own" starter workstation or receive a pre-assembled workstation.

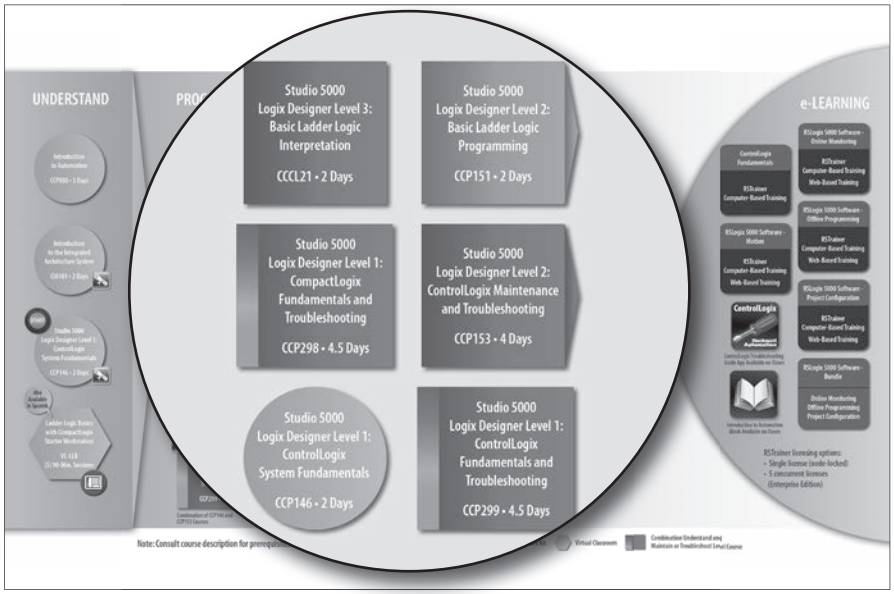
The workstation can be used for:
- Providing opportunities for realistic and safe practice
- Refreshing skills
- Reinforcing and practicing maintenance and troubleshooting skills

CompactLogix Starter Workstation
Your CompactLogix Starter Workstation will include the following:
- Assembled workstation or a "build your own" workstation that includes a kit and an instruction guide
- 1 CompactLogix L30ER processor
- 1 CompactLogix AC power supply
- 1 digital combo, 6 digital in/4 digital out
- 4 momentary push buttons
- 2 selector switches
- 1 Compactbus end cap
- AmeriPak shipping case

Note: *Software is not included with the starter workstation.*

Dimensions
- Width - 14 in. (36 cm)
- Height - 10 in. (25 cm)
- Depth - 6 in. (15 cm)
- Weight - 15 lb (7 kg)

ControlLogix/Studio 5000 Logix Designer Curriculum Map



For a schedule of ControlLogix classes in your area and detailed course descriptions, go to: www.rockwellautomation.com/services/training

Introduction to Automation

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCP800
3 Days CEUs 2.1

Course Purpose

After completing this course, students should have a broad and fundamental understanding of industrial automation. Topics range from an overview of common automation industries to an introduction of basic automated system components, such as controllers, I/O, drives, and Human Machine Interfaces (HMI). In addition, students will learn common automation terminology, what tools are used with industrial automation, and what careers may be available to students within this field.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identify:
  - Common industries and applications in industrial automation
  - Industrial automation standards and regulations
  - I/O devices and modules
  - System documentation
  - HMI
  - AC and DC motors and drives
- Understand:
  - Industrial automation careers
  - Basic mechanical components
  - Automation control systems
  - Controllers
  - Networks
  - Safety in automation
  - Process control
- Recognize logic and basic programming concepts

Who Should Attend?

Individuals who:

- Have little or no experience with automation systems
- Are interested in gaining a broad understanding of automation systems

Prerequisites

Basic training in electricity and electrical safety

Introduction to the Integrated Architecture® System

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CIA101
2 Days CEUs 1.4

Course Purpose

This course will assist students in developing and building a solid foundation of Integrated Architecture and automation system knowledge. Students will learn about and interact with a variety of automation hardware. They will have an opportunity to use Rockwell Automation software to perform basic system configuration tasks. While performing these tasks, students will gain an understanding of how controllers, drives, motors, networks, and human-machine interface (HMI) products function together within Integrated Architecture.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identify components of the integrated architecture system
- Establish communications in an integrated system
- Program a basic Logix Designer project for an integrated system
- Program with tag-based addressing in an integrated system
- Identify programming languages in an integrated system
- Understand Logix5000™ multi-discipline control
- Understand NetLinx-enabled networks
- Understand the visualization development environment of an integrated system
- Understand HMI direct tag referencing in an integrated system

Who Should Attend?

Individuals who:

- Have little or no working experience with automation systems
- Are interested in gaining a broad understanding of automation and the Integrated Architecture System

Prerequisites

Experience operating a computer within a Microsoft® Windows® environment

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Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals

AUTHORIZED IACET PROVIDER International Association for Continuing Education and Training

CCP146

2 Days CEUs 1.4

Course Purpose

This course will assist students in developing and building a solid foundation with a fundamental knowledge of Logix5000 systems. Students will be introduced to Logix5000 system components and functionality and will have an opportunity to use Studio 5000 Logix Designer application to perform basic system configuration tasks.

Objectives

After completing this course, students should be able to perform the following tasks:

- Understand ControlLogix system components
- Select and connect to industrial networks in a Logix5000 system
- Download and go online to a Logix5000 controller
- Operate the Logix Designer application
- Configure local 1756-I/O modules
- Create tags and monitor data in a Logix Designer project
- Draft basic ladder logic for a Logix Designer routine
- Select basic ladder logic instructions for a Logix Designer routine
- Enter ladder logic components in a Logix Designer routine
- Locate ControlLogix system components, I/O Tags, and devices in a Logix5000 system

This course is intended for maintainers or programmers. Some topics may be similar to topics covered in course CCP299.

Who Should Attend?

Individuals who have little or no working experience with Logix5000 systems or other programmable controllers

Prerequisites

Experience operating a computer within a Microsoft Windows environment

Job Aids Included	Catalog #
Logix5000 Documentation Reference Guide	ABT-1756-DRG70
Logix5000 Systems Glossary	ABT-1756-TSG10
Studio 5000 Logix Designer and Logix5000 Fundamentals Procedures Guide	ABT-1756-TSJ53

Ladder Logic Basics with CompactLogix™ Starter Workstation

Virtual Classroom

AUTHORIZED IACET PROVIDER International Association for Continuing Education and Training

VC-LLB

(5) 90-Min. Sessions CEUs 0.75

Course Purpose

This course will teach students how to write and test basic ladder logic code and how to employ common programming strategies and best practices. Students will learn how to select and program bit, timer, counter, compare, and move instructions. Examples and labs will use a Logix Designer Application and a CompactLogix L31 controller; however, the general ladder logic concepts covered in this course are applicable to most common programmable controllers.

Objectives

After completing this course, students should be able to perform the following tasks:

- Review basic logic flow
- Convert scenarios to if – then statements
- Convert if – then statements to simple rungs
- Enter ladder logic into software
- Download a project
- Monitor the ladder logic
- Tie the alias to an existing address
- Apply bit instructions and common ladder logic strategies
- Select a class of instruction categories
- Select and integrate timers and counters
- Select and integrate compare and move instructions
- Combine compare with move instructions

Who Should Attend?

Beginning programmers or individuals who are required to edit ladder logic

Prerequisites

A general knowledge of automation, including the general purpose of a controller, data, and I/O; and the purpose of common devices like push buttons, pilot lights, limit switches, relays, contractors, and solenoids is required

Technical Requirements

- A computer and phone
- A Logix Designer Application must be installed and activated. The virtual classroom invitation will provide details on how to obtain a temporary installation of the software if students do not have it.
- CompactLogix Starter Workstation (shipped prior to class)

Studio 5000 Logix Designer Level 1: ControlLogix Fundamentals and Troubleshooting

AUTHORIZED IACET PROVIDER International Association for Continuing Education and Training

CCP299

4.5 Days CEUs 3.2

Course Purpose

Upon completion of this course, students should be able to troubleshoot a previously operational ControlLogix system and restore normal operation. Students will have the opportunity to develop and practice these skills by learning basic concepts and terminology, practicing a systematic strategy for diagnosing and troubleshooting problems, and performing hands-on exercises.

Objectives

After completing this course, students should be able to perform the following tasks:

- Locate CompactLogix system components
- Navigate through the Logix Designer application
- Connect a computer to a communications network
- Download and go online
- Locate I/O tags and devices
- Interpret Logix Designer project organization and execution
- Interpret ladder logic structure
- Locate and edit tag values
- Interpret bit and frequently used instructions
- Interpret arrays
- Interpret tags of user defined data types
- Search for project components
- Force I/O and toggle bits
- Troubleshoot digital I/O, analog I/O, remote I/O, controller, power supply, and noise related problems
- Update Logix5000 firmware
- Analyze and troubleshoot a system using a trend chart
- Edit ladder logic online
- Manage Logix Designer project files
- Document and print components

Who Should Attend?

Individuals who need to maintain and troubleshoot a ControlLogix or other Logix5000 system, but have no current working experience with Logix5000 systems

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Experience with common industrial control system concepts

Job Aids Included	Catalog #
Logix5000 Systems Glossary	ABT-1756-TSG10
RSLogix 5000 and Logix5000 Procedures Guide	ABT-1756-TSJ50
ControlLogix Troubleshooting Guide	ABT-1756-TSJ20
Logix5000 Documentation Reference Guide	ABT-1756-DRG70

This course is intended for maintainers. Some topics may be similar to topics covered in course CCP146, CCP153, and CCP298.

Studio 5000 Logix Designer Level 1: CompactLogix Fundamentals and Troubleshooting

AUTHORIZED IACET PROVIDER International Association for Continuing Education and Training

CCP298

4.5 Days CEUs 3.2

Course Purpose

Upon completion of this course, students should be able to troubleshoot a previously operational ControlLogix system and restore normal operation. Students will develop and practice these skills by learning basic concepts and terminology used, practicing a systematic strategy for diagnosing and troubleshooting problems, and performing hands-on exercises.

Objectives

After completing this course, students should be able to perform the following tasks:

- Locate CompactLogix system components
- Navigate through the Logix Designer application
- Connect a computer to a communications network
- Download and go online
- Locate I/O tags and devices
- Interpret Logix Designer project organization and execution
- Interpret ladder logic structure
- Locate and edit tag values
- Interpret bit and frequently used instructions
- Interpret arrays
- Interpret tags of user defined data types
- Search for project components
- Force I/O and toggle bits
- Troubleshoot digital I/O, analog I/O, banked local I/O, distributed I/O, controller, power supply, and noise related problems
- Update Logix5000 firmware
- Analyze and troubleshoot a system using a trend chart
- Edit ladder logic online
- Manage Logix Designer project files
- Document and print components

Who Should Attend?

This course is intended for individuals who need to maintain and troubleshoot a CompactLogix system – but have no or little current working experience with CompactLogix systems

Prerequisites

- Ability to perform basic Microsoft Windows tasks
- Previous experience with common industrial control system concepts

Job Aids Included	Catalog #
Studio 5000 Logix Designer Procedures Guide	ABT-1756-TSJ50
Logix5000 Systems Glossary	ABT-1756-TSG10

This course is intended for maintainers. Some topics may be similar to topics covered in course CCP146, CCP153, and CCP299.

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Studio 5000 Logix Designer Level 2: ControlLogix Maintenance and Troubleshooting

AUTHORIZED IACET PROVIDER International Association for Continuing Education and Training

CCP153

4 Days CEUs 2.8

Course Purpose

This course provides students with the necessary resources and hands-on practice to efficiently troubleshoot a previously operational ControlLogix system and restore normal operation. This course adds to students' skill sets by introducing new tasks, such as connecting to a network, interpreting project execution, and editing ladder logic online. After practicing such skills, students will be presented with a systematic strategy for diagnosing and troubleshooting a variety of system errors, such as controller, I/O, and other hardware problems, noise-related problems, and software configuration problems.

Objectives

After completing this course, students should be able to perform the following tasks:

- *Optional:* Locate ControlLogix system components
- Interpret project organization and execution, frequently used instructions, arrays, and tags of user-defined data types
- Locate and edit tag values
- Force I/O and toggle bits
- Troubleshoot digital, analog, and remote I/O
- Update Logix5000 firmware
- Troubleshoot controller, power supply, noise related, and digital I/O module problems
- Analyze and troubleshoot a system using trend chart
- Edit ladder logic online
- *Optional:* Edit FDB's online
- Document, print, and search project components

This course is intended for maintainers. Some topics may be similar to topics covered in course CCP299.

Who Should Attend?

Individuals who need to maintain and troubleshoot a ControlLogix or other Logix 5000 system

Prerequisites

- Completion of the *Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals* course (CCP146) or equivalent experience
- Knowledge of basic ladder logic instructions

Job Aids Included	Catalog #
Studio 5000 Logix Designer and Logix5000 Procedures Guide	ABT-1756-TSJ50
ControlLogix Troubleshooting Guide	ABT-1756-TSJ20

Studio 5000 Logix Designer Level 3: Basic Ladder Logic Interpretation

AUTHORIZED IACET PROVIDER International Association for Continuing Education and Training

CCCL21

2 Days CEUs 1.4

Course Purpose

This course is a skill-building course that provides maintainers with a more detailed understanding of Studio 5000 Logix Designer ladder logic instructions and terminology. It also provides the resources and hands-on practice required to interpret ladder logic instructions for any Logix5000 controller. Students will have the opportunity to use the Logix Designer application to perform basic software tasks to meet the requirements of a given functional specification. In addition to using ladder logic, students will be introduced to ladder logic techniques, established standards, and common rules for interpretation ladder logic.

Objectives

After completing this course, students should be able to perform the following tasks:

- Review basic ladder logic
- Document and search ladder logic
- Interpret timer and counter instructions
- Interpret program control instructions
- Interpret compare instructions
- Interpret move instructions
- Interpret math instructions
- Interpret expression handling instructions
- Interpret copy and file fill instructions

Job Aids Included	Catalog #
Studio 5000 Logix Designer and Logix5000 Procedures Guide	ABT-1756-TSJ50
Logix5000 Documentation Reference Guide CD	ABT-1756-DRG70

Who Should Attend?

Maintainers who need to interpret ladder logic using the Logix Designer application

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals* course (CCP146) or equivalent experience
- Completion of the *Studio 5000 Logix Designer Level 2: ControlLogix Maintenance and Troubleshooting* course (CCP153) or equivalent experience

This course is intended for maintainers. Some topics may be similar to topics covered in course CCP151.

Kinetix® 6000 Troubleshooting and Project Interpretation

International Association for Continuing Education and Training

CCN200

2 Days CEUs 1.4

Course Purpose

This course provides students with skills required to diagnose common problems on a Kinetix 6000 system. Students will practice operating and troubleshooting the system through hands-on exercises using the Studio 5000 Logix Designer Application. Students will learn how to maintain and troubleshoot a multi-axis motion control system. Students will practice identifying faults related to hardware and software by employing methods such as fault code tables, system LEDs, and other status indicators. Upon completion of this course, students will be able to apply maintenance and troubleshooting techniques to diagnose and correct common problems on a Kinetix 6000 system.

Objectives

After completing this course, students should be able to perform the following tasks:

- Locate Kinetix 6000 components
- Check Kinetix 6000 connections
- Interpret Kinetix 6000 indicators
- Analyze fault codes in a Kinetix 6000 system
- Interpret motion state and motion move instructions in a Logix Designer Project
- Test and tune axes in a Logix Designer project
- Replace a Kinetix 6000 drive

Job Aids Included	Catalog #
Studio 5000 Logix Designer and Logix5000 Motion Control Procedures Guide	ABT-1756-TSJ52
Logix5000 Documentation Reference Guide CD	ABT-1756-DRG70

Who Should Attend?

Individuals who need to maintain and troubleshoot Kinetix 6000 motion control systems

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *Motion Control Fundamentals* course (CCN130) or equivalent experience with drives, feedback devices, and velocity and position loop systems
- Completion of the *Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals* course (CCP146) or equivalent knowledge of or experience with the ControlLogix platform and basic ladder logic

Studio 5000 Logix Designer Level 2: Basic Ladder Logic Programming

International Association for Continuing Education and Training

CCP151

2 Days CEUs 1.4

Course Purpose

This is a skill-building course that provides programmers with the resources and hands on practice required to program basic ladder logic instructions for a Logix5000 controller. Students will use the Logix Designer Application to perform basic software tasks to meet the requirements of a given functional specification. In addition, students will set up a sequencer to run equipment through a predefined procedure and separate production procedure from equipment control.

Objectives

After completing this course, students should be able to perform the following tasks:

- Start and test a ladder diagram
- Program timer and counter instructions
- Program compare, move, and math instructions
- Document and search and handle expressions
- Program and separate the procedure from equipment control
- Copy and fill an array

Job Aids Included	Catalog #
Studio 5000 Logix Designer and Logix5000 Procedures Guide	ABT-1756-TSJ50
Logix5000 Documentation Reference Guide CD	ABT-1756-DRG70

Who Should Attend?

Individuals who:

- Have little controller experience
- Are responsible for programming Logix5000 controllers using the Logix Designer Application
- Need to learn how to draft ladder logic for any application

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals* course (CCP146) or equivalent experience

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Studio 5000 Logix Designer Level 3: Project Development

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCP143
4 Days CEUs 2.8

Course Purpose

Given a functional specification for a Logix5000 application, students will be able to develop a project during the course to meet the specification requirements. This course covers tasks common to all controllers that use the Logix5000 control engine or operating system, including ControlLogix, CompactLogix, and SoftLogix™ controllers. This course presents a deeper understanding of project development tasks, such as organizing tasks and routines, organizing controller data, configuring modules, and sharing data. Students will use Producer/Consumer technology to multicast input and output devices, share data between controllers, and control remote I/O.

Objectives

After completing this course, students should be able to perform the following tasks:

- Create and organize a project
- Create periodic and event tasks
- Develop an add-on instruction in ladder diagram
- Organize arrays
- Create a user-defined data type
- Import components
- Enter, edit, and verify ladder logic
- Configure a controller to produce and consume data
- Configure controllers to share data over EtherNet/IP™
- Communicate with a local 1756-I/O module and over an EtherNet/IP network
- Configure a message
- Allocate connections
- Retrieve and set controller status values with GSV/SSV instructions
- Program a BTD instruction
- Handle a major fault
- Manage project files
- Update firmware

Who Should Attend?

Individuals who need to develop Logix Designer projects for any Logix5000 controller

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Knowledge of common controller terms and operation through experience or completion of the *Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals* course (CCP146) or completion of the *RSTrainer for ControlLogix Fundamentals* computer-based training (9393-RSTCLX)
- Ability to write basic ladder logic with common instructions or through completion of the *Studio 5000 Logix Designer Level 2: Basic Ladder Logic Programming* course (CCP151)

Job Aids Included	Catalog #
Studio 5000 Logix Designer and Logix5000 Procedures Guide	ABT-1756-TSJ50
Logix5000 Documentation Reference Guide CD	ABT-1756-DRG70

Studio 5000 Logix Designer Level 4: Function Block Programming

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCP152
2 Days CEUs 1.4

Course Purpose

This course provides students with an understanding of Logix Designer function block diagrams and terminology. Resources and hands on practice are provided to program a Logix5000 controller using function block diagrams. Students will perform parameter modifications to individual function block instructions and create and develop function block diagram programs and routines.

Objectives

After completing this course, students should be able to perform the following tasks:

- Create a function block diagram
- Program logical function block instructions
- Program timer and counter function block instructions
- Program analog function block instructions
- Program device driver function block instructions
- Select timing modes in a function block instruction
- Program a totalizer function block instruction
- Program and monitor an RMPS (ramp/soak) function block instruction
- Control program flow using function block instructions
- Program a PID loop using function block diagram
- Tune a PID loop using ActiveX controls
- Develop an add-on instruction in function block diagram

Who Should Attend?

Individuals who:

- Are responsible for developing, debugging, and programming Logix5000 controllers using Logix Designer application with function block diagrams
- Use ActiveX controls in an operator interface such as FactoryTalk View ME software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Understanding of basic measurement and control theory, including basic loop control
- Completion of the *Studio 5000 Logix Designer Level 3: Project Developing* course (CCP143) or equivalent experience

Job Aids Included	Catalog #
Studio 5000 Logix Designer and Logix5000 Procedures Guide	ABT-1756-TSJ50

Studio 5000 Logix Designer Level 4: Kinetix 6000 (SERCOS) Programming

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCN142

3 Days CEUs 2.1

Course Purpose

This course provides students with the skills to configure and program Logix5000 applications specifically for integrated motion control functionality using ladder logic, including both SERCOS and analog motion control technologies. Students will learn how to apply the Logix5000 architecture to a multi-axis motion control system while developing programming skills that incorporate other components in a Logix5000 system, such as adding system modules, sharing tasks between multiple controllers, programming ladder logic, and using digital I/O.

Objectives

After completing this course, students should be able to perform the following tasks:

- Start a Logix5000 system for motion control applications
- Add hardware
- Test and tune axes
- Program basic motion and fault routines
- Program electronic gearing and camming routines
- Program a virtual axis
- Preview drives and motion accelerator toolkit

Job Aids Included	Catalog #
Studio 5000 Logix Designer and Logix5000 Motion Procedures Guide	ABT-1756-TSJ52
Logix5000 Documentation Reference Guide CD	ABT-1756-DRG70

Who Should Attend?

Individuals who need to configure and program Logix5000 motion control systems

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *Motion Control Fundamentals* course (CCN130) or equivalent experience with general motion control, drives, feedback devices, and velocity and position loop systems
- Completion of the *Studio 5000 Logix Designer Level 3: Project Development* course (CCP143) or equivalent experience
- Experience with entering and debugging ladder logic

Studio 5000 Logix Designer Level 5: Advanced Motion Programming

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCN190-LD

2 Days CEUs 1.4

Course Purpose

This course is intended to provide students with the skills to configure and program Logix5000 applications specifically for integrated motion control functionality using ladder logic including SERCOS motion control technology. Students will learn how to apply advanced programming skills including tuning with motion analyzer software, advanced camming techniques, coordinated motion, and add-on instructions for motion applications.

Objectives

After completing this course, students should be able to perform the following tasks:

- Tune a servo axis with motion analyzer software
- Program event driven tasks
- Program output cam instructions
- Calculate a cam profile
- Program coordinate and motion add-on instructions
- Develop a motion control project using the power programming state model
- Program coordinated move transform instructions in a pick and place application

Job Aids Included	Catalog #
Studio 5000 Logix Designer and Logix5000 Motion Procedures Guide	ABT-1756-TSJ52
Logix5000 Documentation Reference Guide CD	ABT-1756-DRG70

Who Should Attend?

Individuals who need to program advanced Logix5000 motion control systems

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *Studio 5000 Logix Designer Level 3: Project Development* course (CCN143) or equivalent experience with basic ladder logic programming
- Completion of the *Studio 5000 Logix Designer Level 4: Kinetix 6000 (SERCOS) Programming* course (CCN142) or equivalent experience
- Completion of the *Motion Control Fundamentals* course (CCN130) or equivalent experience with general motion control

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Studio 5000 Logix Designer Level 4: Structured Text/ Sequential Function Chart Programming

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCP154

2 Days | CEUs 1.4

Course Purpose

This course provides students with the skills and knowledge to program using the structured text and sequential function chart programming languages. Students will learn how to select instructions, expressions, and constructs, and then enter these elements and more into a routine. Students will also learn how to test sequential function chart logic using forces and step throughs.

Objectives

After completing this course, students should be able to perform the following tasks:

- Program assignments, expressions, and instructions in structured text
- Program constructs and comments in structured text
- Design a sequential function chart
- Program and test a sequential function chart
- Store, pause, and reset sequential function chart data

Who Should Attend?

Individuals who need to program structured text and sequential function chart routines in Logix Designer projects for any Logix5000 controller

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *Studio 5000 Logix Designer Level 3: Project Development* course (CCP143) or experience with basic Logix Designer projects (navigating the software, creating tags, creating routines, etc.)

Job Aids Included	Catalog #
Studio 5000 Logix Designer and Logix5000 Procedures Guide	ABT-1756-TSJ50

Studio 5000 Logix Designer Level 4: PhaseManager Project Design

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCP711

1 Days | CEUs 0.7

Course Purpose

This course is intended to provide students with the skills to configure and program Logix5000 applications in accordance with the S88 state model using the PhaseManager feature. This course presents a tool that will help students effectively organize and structure batch applications. Students will organize a Studio 5000 Logix Designer project by identifying control and equipment modules within application code. They will separate equipment code from equipment phase code, test an equipment phase, and configure a sequential function chart as an internal sequencer.

Objectives

After completing this course, students should be able to perform the following tasks:

- Define equipment phases and state models in a Logix Designer project
- Separate equipment phrase code from equipment code
- Test an equipment phase
- Configure a sequential function chart as an internal sequencer

Who Should Attend?

Individuals who need to apply the S88 state model to Logix Designer projects for any Logix5000 controller

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *Studio 5000 Logix Designer Level 3: Project Development* course (CCP143) or advanced programming experience using the Logic Designer Application
- Familiarity with sequential function chart programming language

Fuzzy Logic Design and Development

PRS012
2 Days

Course Purpose

This course provides students with the skills to produce a fuzzy control system for a continuous process application. It introduces the range of options for fuzzy systems but focuses on using fuzzy logic to adjust the gains of a PID loop to meet specific control requirements. Starting with a description of a process, students will decide whether fuzzy logic is the best control method, and then will design a fuzzy system, develop it in FuzzyDesigner software, and implement it in a Logix5000 controller. Students will use FuzzyDesigner's simulation, graphing, and online monitoring tools to validate the system against control requirements.

Objectives

After completing this course, students should be able to perform the following tasks:
- Decide when to use fuzzy logic
- Chose a fuzzy control scheme
- Identify input and output variables, terms, and membership parameters
- Write rules
- Chose a defuzzification method
- Create FuzzyDesigner project
- Create ports and variables
- Enter terms and rules
- Chain rules
- Simulate a fuzzy system execution
- Graph inputs and outputs
- Create, import, monitor, and change add-on instruction

Who Should Attend?

Individuals who need to design, develop, or implement advanced process control applications

Prerequisites

- Ability to perform these Logix Designer Application skills:
  - Enter and edit logic
  - Download and go online
  - Monitor and edit data
- Completion of the *Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals* course (CCP146)

Studio 5000 Logix Designer Level 4: Kinetix 6500 (CIP) Programming

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCN144
4 Days CEUs 2.8

Course Purpose

After completing this course, students should be able to configure, test, tune, and program CIP motion axes in the Studio 5000 Logix Designer programming environment. Building upon the skills gained in the *Studio 5000 Logix Designer Level 3: Project Development* course (CCP143), students will learn how to apply the Logix5000 architecture to a multi-axis CIP motion control system. Students will practice project planning and efficient programming skills necessary for translating a machine specification into reliable ladder logic code. Because all Logix5000 products share common features and a common operating system, students will be able to apply the configuring and programming motion control skills they learn in this course to any of the Logix5000 controllers that are capable of motion control.

Objectives

After completing this course, students should be able to perform the following tasks:
- Create a Studio 5000 Logix Designer project for a CIP motion application
- Add drives and configure CIP motion axes
- Test CIP motion hardware
- Autotune CIP motion axes
- Plan a motion project
- Create user-defined data types, axis-level program shell, and axis-level tags
- Program the:
  - Axis-level dispatch and power up routines
  - Axis-level command routine
  - Axis-level waiting routine
  - Aborting, clearing, stopping, resetting, and starting routine
- Replicate the axis program
- Replicate an application-level program and program the execute routine
- Add a virtual axis
- Program electronic gearing and camming

Who Should Attend?

Individuals who need to configure and program Logix5000 motion control systems

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *Motion Control Fundamentals* course (CCN130) or equivalent knowledge of general motion control, drives, feedback devices, and servo motion systems
- Completion of the *Studio 5000 Logix Designer Level 3: Project Development* course (CCP143) or equivalent experience

Job Aids Included	Catalog #
Studio 5000 Logix Designer and Logix5000 Motion Procedures Guide	ABT-1756-TSJ52
Logix5000 Documentation Reference Guide CD	ABT-1756-DRG70

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PowerFlex® 750-Series Configuration for an Integrated Architecture System

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCA184

1 Day | CEUs 0.7

Course Purpose

Upon completion of this course, given a PowerFlex 750-Series drive (PowerFlex 753 or PowerFlex 755) that has been successfully started up, students will be able to integrate their drive into a system that includes Logix5000 controllers and PanelView Plus terminals running FactoryTalk View ME software. Throughout the course, students will have the chance to use a variety of hardware and software tools, including the A6 LCD HIM, Logix Designer software, and FactoryTalk View ME software. After each demonstration, students will be given exercises that offer extensive hands-on practice using a PowerFlex 753 or PowerFlex 755 drive.

Objectives

After completing this course, students should be able to perform the following tasks:

- Add a PowerFlex 750-Series drive to a Logix Designer project
- Locate and modify PowerFlex 750-Series data using Logix Designer software
- Integrate a PowerFlex 750-Series drive with a Logix5000 controller
- Add PowerFlex 750-Series faceplates to a FactoryTalk View ME application
- Operate a PowerFlex 750-Series drive in an Integrated Architecture system

Job Aids Included	Catalog #
PowerFlex 750-Series AC Drives Documentation Reference Guide CD	ABT-20G-DRG70
PowerFlex Accelerator Toolkit for Drive Systems Quick Start	
Studio 5000 Logix Designer and Logix5000 Procedures Guide	ABT-1756-TSJ50

Who Should Attend?

Individuals who need to add PowerFlex 750-Series drives to an Integrated Architecture system

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- General knowledge of electricity and electrical/industrial safety
- ControlLogix controller experience
- Completion of the *PowerFlex 750-Series Startup and Configuration* course (CCA182)
- Completion of one of the following methods: *Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals* course (CCP146), RSLogix 5000 software computer-based and/or web-based training or equivalent experience
- Previous experience with FactoryTalk® View ME software is suggested, but not required

Machine-Level Design Optimization: Drive and Motor Selection

Virtual Classroom

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

VC-MLDO-01

90 Minutes | CEUs 0.15

Course Purpose

This course covers best practices for architecting control solutions for machines. The instructor will show students how to size and select drives and motors and then they will practice these tasks with an application. The design tools and best practices covered in the course aim to optimize and reduce build time with machine-level design.

Objectives

After completing this course, students should be able to perform the following tasks:

- Configure a motion profile, a mechanism, and transmissions
- Select a motor and drive

Who Should Attend?

Control engineers and OEMs who design machine-level control applications

Prerequisites

There are no prerequisites for this course; however, experience with designing machine-level control applications is helpful

Technical Requirements

- A computer and phone
- Motion Analyzer software, version 6.1, must be installed and activated. The virtual classroom invitation will provide details on how to obtain a temporary installation of the software if students do not have it.

Machine-Level Design Optimization: Networks, Controller, and I/O Selection

Virtual Classroom

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

VC-MLDO-02

120 Minutes CEUs 0.2

Course Purpose

This course covers best practices for architecting control solutions for machines. The instructor will show students how to size and select control platforms and machine-level networks and then they will practice these tasks with an application. The design tools and best practices covered in the course aim to optimize and reduce build time with machine-level design.

Objectives

After completing this course, students should be able to perform the following tasks:

- Select network topology/components and a controller and I/O
- Add devices to the network
- Verify network loading

Who Should Attend?

Control engineers and OEMs who design machine-level control applications

Prerequisites

There are no prerequisites for this course; however, experience with designing machine-level control applications is helpful

Technical Requirements

- A computer and phone
- Integrated Architecture Builder software, version 9.1, must be installed and activated. The virtual classroom invitation will provide details on how to obtain a temporary installation of the software if students do not have it.

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Fundamentals Training + One

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Micro Controllers and Connected Components

Micro Controllers and Connected Components Curriculum Map

UNDERSTAND

Introduction to Automation

CCP800 • 3 Days

Introduction to the Integrated Architecture System

CIA101 • 2 Days

PROGRAM OR DESIGN

MicroLogix 1400 Processor Installation and Data Monitoring

CCPM41 • 1 Day

MicroLogix 1400 Processor Embedded Web Server Management

CCPM43 • 1 Day

MicroLogix 1400 Processor Installation, Data Monitoring and Embedded Web Server Management

CCPM44 • 2 Days

Combination of CCPM41 and CCPM43 Courses

MAINTAIN OR TROUBLESHOOT

Micro850 Installation, Wiring, and Troubleshooting with Micro850 Workstation

VC-M850
(5) 120-Min. Sessions

Note: Consult course description for prerequisites

Micro850 Programming

M850P • 2 Days

PowerFlex 523/525 Drive Programming with PowerFlex 525 Drive Kit

VC-PF523P
120-Min. Session

e-LEARNING

Introduction to Automation
iBook Available on iTunes

Includes Hardware Kit

Virtual Classroom

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Introduction to Automation

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCP800

3 Days | CEUs 2.1

Course Purpose

After completing this course, students should have a broad and fundamental understanding of industrial automation. Topics range from an overview of common automation industries to an introduction of basic automated system components, such as controllers, I/O, drives, and Human Machine Interfaces (HMI). In addition, students will learn common automation terminology, what tools are used with industrial automation, and what careers may be available to you within this field.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identify:
  - Common industries and applications in industrial automation
  - Industrial automation standards and regulations
  - I/O devices and modules
  - System documentation
  - HMI
  - AC and DC motors and drives
- Understand:
  - Industrial automation careers
  - Basic mechanical components
  - Automation control systems
  - Controllers
  - Networks
  - Safety in automation
  - Process control
- Recognize logic and basic programming concepts

Who Should Attend?

Individuals who:

- Have little or no experience with automation systems
- Are interested in gaining a broad understanding of automation systems

Prerequisites

Basic training in electricity and electrical safety

Introduction to the Integrated Architecture™ System

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CIA101

2 Days | CEUs 1.4

Course Purpose

This course will assist students in developing and building a solid foundation of Integrated Architecture and automation system knowledge. Students will learn about and interact with a variety of automation hardware. They will also have an opportunity to use Rockwell Automation software to perform basic system configuration tasks. While performing these tasks, students will gain an understanding of how controllers, drives, motors, networks, and human-machine interface (HMI) products function together within Integrated Architecture.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identify components of the integrated architecture system
- Establish communications in an integrated system
- Program a basic Logix Designer project for an integrated system
- Program with tag-based addressing in an integrated system
- Identify programming languages in an integrated system
- Understand Logix5000 multi-discipline control
- Understand NetLinx-enabled networks
- Understand the visualization development environment of an integrated system
- Understand HMI direct tag referencing in an integrated system

Who Should Attend?

Individuals who:

- Have little or no working experience with automation systems
- Are interested in gaining a broad understanding of automation and the Integrated Architecture System

Prerequisites

Experience operating a computer within a Microsoft® Windows® environment

MicroLogix™ 1400 Processor Installation and Data Monitoring

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCPM41

1 Day — CEUs 0.7

Course Purpose

This course provides students with the resources and hands-on practice required to efficiently install a MicroLogix 1400 processor and monitor data. Each lesson in this course is devoted to a step in the installation and data monitoring sequence. Students will begin by learning about the hardware features of the MicroLogix 1400 processor. Next, students will install their own MicroLogix processor on a DIN Rail. Students will then learn a step-by-step procedure on how to monitor data using the LCD and keypad. Students will be given an opportunity to apply what they have learned by monitoring data in their MicroLogix 1400 processor. Students keep the installed and programmed MicroLogix processor for additional practice.

Objectives

After completing this course, students should be able to perform the following tasks:

- Install the processor
- Use the LCD and keypad
- Monitor user defined target files
- Use the mode switch and user defined LCD
- Configure the Ethernet port on the processor

Who Should Attend?

Individuals who need to install and monitor data on a MicroLogix 1400 processor

Prerequisites

- Completion of the *PLC-5/SLC 500 and RSLogix Fundamentals* course (CCP122)
  OR
- Basic experience with MicroLogix processors or SLC processors (including the ability to go online and program basic ladder logic)

MicroLogix 1400 Processor Embedded Web Server Management

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCPM43

1 Day — CEUs 0.7

Course Purpose

This course provides students with the resources and hands-on practice required to efficiently monitor data for their MicroLogix1400 processor remotely over an Ethernet/IP network. Each lesson in the course is devoted to a step in the process of accessing processor and control systems data with remote access applications. After each procedure has been demonstrated, students will be given an opportunity to apply what they have learned by accessing a simple web page view and the custom designed user-provided page views. Students will receive a kit of hardware in this course. Students keep the installed and programmed MicroLogix processor for additional practice.

Objectives

After completing this course, students should be able to perform the following tasks:

- Understand the embedded web server
- Monitor processor diagnostics
- Configure server settings and user accounts
- Understand simple web pages
- Generate user-provided web pages
- *Optional:* Configure an Ethernet network

Who Should Attend?

Individuals who need to remotely access processor and control system data for MicroLogix 1400 processor

Prerequisites

- Completion of the *PLC-5/SLC 500 and RSLogix Fundamentals* course (CCP122)
  OR
- Basic experience with MicroLogix processors or SLC processors (including the ability to go online and program basic ladder logic)

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MicroLogix 1400 Processor Installation, Data Monitoring, and Embedded Web Server Management

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCPM44 *

2 Days | CEUs 1.4

Course Purpose

This course provides students with the resources and hands-on practice required to efficiently install a MicroLogix 1400 processor and monitor data. Students will begin by learning about the hardware features of the MicroLogix 1400 processor. Next, students will install their own MicroLogix processor on a DIN Rail. Students will learn a step-by-step procedure on how to monitor data using the LCD and keypad. Students will be given the resources and hands-on practice required to efficiently monitor data for their MicroLogix 1400 processor remotely over an Ethernet network. Students will learn to access control systems data with remote access applications. Students will be given an opportunity to access a simple web page view and the custom user-provided page views. Students keep the installed and programmed MicroLogix system for additional practice.

Objectives

After completing this course, students should be able to perform the following tasks:

- Install the processor
- Use the LCD and keypad
- Monitor user defined target files
- Use the mode switch and user defined LCD
- Configure the Ethernet port on the processor
- Understand the embedded web server
- Monitor processor diagnostics
- Configure server settings and user accounts
- Understand simple web pages
- Generate user-provided web pages

Who Should Attend?

Individuals who need to install a MicroLogix 1400 processor, monitor data, and work with the embedded web server

Prerequisites

- Completion of the *PLC-5/SLC 500 and RSLogix Fundamentals* course (CCP122) OR
- Basic experience with MicroLogix processors or SLC processors (including the ability to go online and program basic ladder logic)

** Course CCPM44 is a combination class of courses CCPM41 and CCPM43.*

Micro850® Programming

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

M850P

2 Days | CEUs 1.4

Course Purpose

After completing this course, students should be able to program Micro850 controllers using ladder diagram, function block diagram, and structured text programming languages. The instructor will demonstrate and students will practice programming multiple example applications using programming best practices in each of the programming languages.

Objectives

After completing this course, students should be able to perform the following tasks:

- Establish EtherNet/IP™ communications and validate Micro850 controller firmware
- Create a new Connected Components Workbench™ project
- Configure plug-in and expansion I/O modules for Micro850 controllers
- Organize functional specifications for Micro850 controllers
- Program Micro850 controllers using:
  - Basic ladder diagrams
  - Ladder diagrams with boolean instructions
  - Ladder diagrams with data conversion, arithmetic, and comparator instructions
  - Ladder diagrams with counter and timer instructions
  - Function block diagrams
  - Structured text

Who Should Attend?

Individuals who need to learn how to program Micro850 controllers

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Working knowledge of electricity, and knowledge of electrical/industrial safety

Micro850 Installation, Wiring, and Troubleshooting with Micro850 Workstation

Virtual Classroom

AUTHORIZED IACET PROVIDER International Association for Continuing Education and Training

VC-M850

(5) 120-Min. Sessions CEUs 1.0

Course Purpose

After completing this course, students should be able to install and wire Micro850 controllers, plug-in and expansion I/O modules, power supplies, and I/O devices. This course will also teach students how to troubleshoot basic controller and power supply problems. Throughout this course, the instructor will cover a range of topics from understanding the basics of control systems and wiring, to installing I/O devices and identifying common Micro850 problems.

Objectives

After completing this course, students should be able to perform the following tasks:

- Install a Micro850 controller, a power supply, I/O devices, and plug-in and expansion I/O modules
- Wire a Micro850 controller and a power supply
- Wire I/O devices to a Micro850 controller
- Ensure proper electrical connection of I/O devices
- Isolate the cause of a fault or failure condition
- Troubleshoot a Micro850 controller and power supply
- Resolve common controller and power supply faults

Technical Requirements

- A computer and phone
- Micro850 workstation (shipped unassembled, prior to class)

Who Should Attend?

Individuals who are new to controllers and need to install and wire Micro850 system components

Prerequisites

Basic working knowledge of safe electrical practices including but not limited to:

- Understanding electricity, how it works, and the dangers involved in working with electricity
- Identifying hazardous conditions
- Adhering to all safety regulations

PowerFlex 523/525 Drive Programming with PowerFlex 525 Drive Kit

Virtual Classroom

AUTHORIZED IACET PROVIDER International Association for Continuing Education and Training

VC-PF523P

120 Minutes CEUs 0.2

Course Purpose

After completing this course, students should be able to program drive parameters for a drive application. This course will teach students how to create a custom parameter group based upon drive applications. Throughout this course, the instructor will cover a range of topics from establishing communications with a PowerFlex 523/525 drive via an EtherNet/IP network to testing parameters of a PowerFlex® 523/525 drive using the HIM.

Objectives

After completing this course, students should be able to perform the following tasks:

- Establish communications with a PowerFlex 523/525 drive
- Edit parameters using Connected Components Workbench software
- Create a CustomView™ parameter group
- Test a PowerFlex 523/525 drive using the HIM

Who Should Attend?

Individuals who have drive programming experience but are new to PowerFlex component-class drives

Prerequisites

- Knowledge of AC/DC drive fundamentals and drives programming experience
- Basic working knowledge of safe electrical practices including, but not limited to:
  - Understanding electricity, how it works, and the dangers involved in working with electricity
  - Identifying hazardous conditions
  - Adhering to all safety regulations

Technical Requirements

- PowerFlex 525 drive kit (shipped prior to class)
- A computer and phone
- Connected Components Workbench software must be installed and activated. The virtual classroom invitation will provide details on how to obtain a temporary installation of the software if students do not have it.

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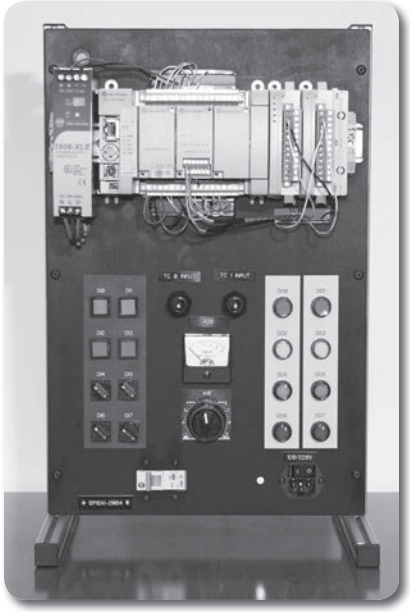
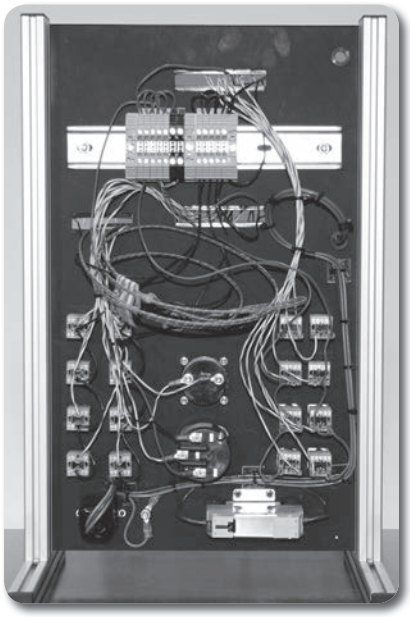
Stay Ahead of the Technology Curve

Industry-Recognized Curriculum and Cutting-Edge Lab Equipment





Micro850™ Programmable Controller

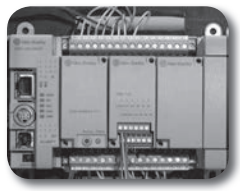
Rapid changes in manufacturing and automation technology can make it difficult for educators with technical programs to stay up to date on the latest information. Rockwell Automation provides an affordable educational support program for schools interested in advancing their technical curriculums.

Rockwell Automation offers a Micro850 Configuration, Programming and Troubleshooting curriculum and lab workstation, to help you achieve current industry standards. These resources will help you stay ahead of the technology curve:

- Micro850 Classroom Curriculum (TCT-M850-TIP and TCT-M850-TSP)
- Micro850 Workstation and Wiring Kit (ABT-TDM850 and ABT-TDM850KIT) An assembled workstation and optional case are also available for purchase.

Students assemble and build their own workstation and learn about Micro850 controllers and system components. Wiring kits are available so workstations can be dismantled and used for the next class. Hands-on lab exercises provided in the curriculum materials allow students to practice the following skills:

- Fully wire, install, and configure a Micro850 workstation
- Program the Micro850 controller using the free downloadable Connected Components Workbench software. Students learn to program Ladder Logic, Function Block Diagrams, and Structured Text.



- Develop troubleshooting skills needed to assess abnormal conditions in a working system

For information about other education resources and partnership opportunities with Rockwell Automation, please email us at TrainingServices@ra.rockwell.com or call 440-646-3434, select option 4.

PLC-5®/RSLogix™ 5

PLC-5/RSLogix 5 Curriculum Map

UNDERSTAND

START

PLC-5/SLC 500 and RSLogix Fundamentals

CCP122 • 2 Days

PROGRAM OR DESIGN

SLC 500 and PLC-5 Communications

CCPS65 • 1 Day

PLC-5 and RSLogix 5 Programming

CCP410 • 4 Days

PLC-5 and RSLogix 5 Advanced Programming

CCP411 • 4.5 Days

MAINTAIN OR TROUBLESHOOT

PLC-5 and RSLogix 5 Maintenance and Troubleshooting

CCP412 • 4 Days

PLC-5 and RSLogix 5 Advanced Maintenance and Troubleshooting

CCP409 • 4 Days

Note: Consult course description for prerequisites

e-LEARNING

RSLogix 5 Software

RSTrainer
Computer-Based Training

RSLinx Software

RSTrainer
Computer-Based Training

PLC Fundamentals

Web-Based Training

RSTrainer licensing options:
- Single license (node-locked)
- 5 concurrent licenses (Enterprise Edition)

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PLC-5/SLC™ 500 and RSLogix Fundamentals

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCP122
2 Days CEUs 1.4

Course Purpose

This course is an introduction to programmable controller systems. Students will identify the main components of programmable controller systems and describe their functions and describe the flow of information through a programmable controller system. They will receive a thorough introduction to RSLogix 5 or RSLogix 500 software, and will learn how to transfer, monitor, and run projects on a PLC-5 or SLC 500 processor and how to interpret simple ladder logic.

Objectives

After completing this course, students should be able to perform the following tasks:

- Understand programmable controller systems
- Identify common hardware components of processors
- Identify hardware components of I/O systems
- Identify I/O configurations
- Get started with programming systems
- Change the radix (base) of a number
- Set up communications between a programming system and a processor
- Identify PLC-5 and SLC 500 system addresses
- Interpret ladder logic
- Interpret Timer On-Delay (TON) and Count Up (CTU) instructions

Who Should Attend?

Individuals who:

- Have little or no working experience with programmable controller systems
- Are preparing for the following courses: *PLC-5 and RSLogix 5 Programming* (CCP410), *SLC 500 and RSLogix 500 Programming* (CCPS41), *PLC-5 and RSLogix 5 Maintenance and Troubleshooting* (CCP412), and *SLC 500 and RSLogix 500 Maintenance and Troubleshooting* (CCPS43)

Prerequisites

Experience operating a computer within a Microsoft® Windows® environment

PLC-5 and RSLogix 5 Maintenance and Troubleshooting

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCP412
4 Days CEUs 2.8

Course Purpose

This skill-building course provides students with the knowledge and the practice needed to interpret, isolate, and diagnose common hardware problems related to noise, power, and discrete and analog I/O. In troubleshooting scenarios, students are introduced to basic ladder logic interpretation, which is applied to diagnostic tasks. Students practice these diagnostic skills by tracing through ladder logic instructions in an RSLogix 5 project.

Objectives

After completing this course, students should be able to perform the following tasks:

- Communicate with a PLC-5 processor
- Monitor and enter data
- Interpret bit instructions
- Edit and search ladder logic
- Document a project
- Force inputs and outputs
- Configure and preview a project report
- Create a histogram and trend chart
- Troubleshoot noise, discrete and analog I/O, I/O channel and chassis, and processor/power supply problems
- Interpret and edit counter and timer instructions
- Search and interpret basic ladder logic
- Interpret and edit compare, data manipulation, and program control instructions
- Maintain and troubleshoot a PLC-5 system

Who Should Attend?

Individuals who are responsible for troubleshooting and maintaining PLC-5 systems using RSLogix 5 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Experience maintaining electrically controlled systems
- Working knowledge of programmable controllers or completion of the *PLC-5/SLC 500 and RSLogix Fundamentals* course (CCP122)

Job Aids Included	Catalog #
PLC-5 and RSLogix 5 Troubleshooting Guide	ABT-1785-TSJ22
RSLogix 5 and PLC-5 Procedures Guide	ABT-1785-TSJ53
PLC-5 Documentation Reference Guide CD	ABT-1785-DRG70

PLC-5 and RSLogix 5 Advanced Maintenance and Troubleshooting

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCP409
4 Days CEUs 2.8

Course Purpose

This course builds upon students' knowledge of basic maintenance and troubleshooting techniques and provides the practice needed to interpret, isolate, and diagnose problems found in advanced PLC-5 applications. Students will interpret and modify advanced ladder logic instructions in troubleshooting scenarios. In addition, students will practice diagnostic skills by tracing through ladder logic instructions and troubleshooting communications problems with Data Highway Plus™ (DH+™) and remote I/O networks.

Objectives

After completing this course, students should be able to perform the following tasks:

- Communicate with a PLC-5 processor on a DH+ network
- Interpret program flow and interrupt routines
- Troubleshoot:
  - Sequential function charts
  - Multiple main control programs
  - Fault, STI, and PII routines
  - FSC, immediate I/O update, shift register, and sequencer instructions
  - Indexed and indirect addressing
  - Message and PID instructions
  - Analog data transfers
  - Data transfers between scanner and adapter
- Apply preventative maintenance and troubleshooting strategies to a PLC-5 system

Who Should Attend?

Individuals who are responsible for maintaining and troubleshooting advanced PLC-5 applications using RSLogix 5 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Experience maintaining electrically controlled systems
- Completion of the *PLC-5 and RSLogix 5 Maintenance and Troubleshooting* course (CCP412)

Job Aids Included	Catalog #
PLC-5 and RSLogix 5 Troubleshooting Guide	ABT-1785-TSJ22
RSLogix 5 and PLC-5 Procedures Guide	ABT-1785-TSJ53
PLC-5 Documentation Reference Guide CD	ABT-1785-DRG70

PLC-5 and RSLogix 5 Programming

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCP410
4 Days CEUs 2.8

Course Purpose

This course introduces students to programming techniques and instructions to configure and program a 1785 PLC-5 system. The instructor will demonstrate how to use programming instructions and techniques to create a ladder logic project. Students will be given exercises that provide them with hands-on practice using RSLogix 5 software to program a PLC-5 processor.

Objectives

After completing this course, students should be able to perform the following tasks:

- Establish communications
- Configure channels
- Identify addresses and organize the data table
- Draft ladder logic
- Program bit instructions
- Enter, edit, and verify ladder logic
- Select and program timer and counter instructions
- Control program flow
- Enter documentation
- Search ladder logic
- Convert integer values to and from binary coded decimal values
- Select and program mathematical, compare, and manipulation instructions
- Configure and preview a project printout

Who Should Attend?

Individuals who have to write ladder logic projects for 1785 PLC-5 processors

Prerequisites

- Experience with basic control and electrical principles
- Completion of the *PLC-5/SLC 500 and RSLogix Fundamentals* course (CCP122) or equivalent experience

Job Aids Included	Catalog #
RSLogix 5 and PLC-5 Procedures Guide	ABT-1785-TSJ53
PLC-5 Documentation Reference Guide CD	ABT-1785-DRG70

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PLC-5 and RSLogix 5 Advanced Programming

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCP411
4.5 Days CEUs 3.2

Course Purpose

This course will help provide students with the skills needed to program PLC-5 processors using RSLogix 5 software. Students will practice using advanced programming techniques and instructions. The instructor will demonstrate all relevant procedures, then provide students with realistic situations in which to practice those procedures.

Objectives

After completing this course, students should be able to perform the following tasks:

- Set up a PLC-5 system on a DH+ network
- Plan program flow strategies
- Program SFCs, MCPs, and advanced routines
- Program various advanced instructions
- Apply indirect and indexed addressing
- Transfer data between processors and analog modules
- Transfer data between scanner and adapter processors
- Program a message (MSG) instruction for DH+ communications
- Program Proportional Integral Derivative (PID) and ASCII instructions

Who Should Attend?

Individuals who need to write or interpret ladder logic projects using advanced programming techniques and instructions for PLC-5 processors

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *PLC-5 and RSLogix 5 Programming* course (CCP410) or equivalent experience

Job Aids Included	Catalog #
RSLogix 5 and PLC-5 Procedures Guide	ABT-1785-TSJ53
PLC-5 Documentation Reference Guide CD	ABT-1785-DRG70

SLC 500 and PLC-5 Communications

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCPS65
1 Day CEUs 0.7

Course Purpose

This course introduces students to the communication capabilities of RSLinx® software. This course gives students the needed skills required to configure and manage various communications options between RSLinx software and RSLogix 500 or RSLogix 5 software. Using features built into RSLinx software, students will learn how to monitor, optimize, and diagnose industrial network communications.

Objectives

After completing this course, students should be able to perform the following tasks:

- Configure a Data Highway Plus (DH+) communications and serial driver in RSLinx software
- Navigate RSLinx software
- Download and upload a project
- Go online to an SLC 500 or PLC-5 processor
- Change the processor operating mode
- Determine available system resources on RSLinx software
- Apply diagnostic tools and utilities
- Configure client application communications

Who Should Attend?

Individuals who are responsible for programming or maintaining and troubleshooting SLC 500 or PLC-5 applications using RSLogix 500 or RSLogix 5 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Experience maintaining electrically controlled systems
- Completion of the *Fundamentals of Programmable Controller Systems Using RSLogix 5 or RSLogix 500 Software* course (CCP122) or a fundamental knowledge of programmable controllers

Job Aids Included	Catalog #
RSLogix 500 and SLC 500 Procedures Guide	ABT-1747-TSJ52
RSLogix 5 and PLC-5 Procedures Guide	ABT-1785-TSJ53
SLC 500 Documentation Reference Guide CD	ABT-1747-DRG70

SLC™ 500/RSLogix™ 500

SLC 500/RSLogix 500 Curriculum Map

UNDERSTAND

START

PLC-5/SLC 500 and RSLogix Fundamentals

CCP122 • 2 Days

PROGRAM OR DESIGN

SLC 500 and PLC-5 Communications

CCPS65 • 1 Day

SLC 500 and RSLogix 500 Programming

CCPS41 • 4 Days

SLC 500 and RSLogix 500 Advanced Programming

CCPS42 • 4 Days

MAINTAIN OR TROUBLESHOOT

SLC 500 and RSLogix 500 Maintenance and Troubleshooting

CCPS43 • 4 Days

SLC 500 and RSLogix 500 Advanced Maintenance and Troubleshooting

CCPS45 • 4 Days

Note: Consult course description for prerequisites

e-LEARNING

Also Available in Spanish

RSLogix 500 Software - Offline Programming
- RSTrainer Computer-Based Training
- Web-Based Training

RSLogix 500 Software - Online Monitoring
- RSTrainer Computer-Based Training
- Web-Based Training

RSLogix 500 Software - Documenting and Searching
- RSTrainer Computer-Based Training
- Web-Based Training

RSLogix 500 - Software Bundle
- Offline Programming
- Online Monitoring
- Documenting and Searching

RSLinx Software
- RSTrainer Computer-Based Training

SLC 500 - Hardware Fundamentals
- RSTrainer Computer-Based Training
- Web-Based Training

SLC 500 - Programming Fundamentals
- RSTrainer Computer-Based Training
- Web-Based Training

SLC 500 - Fundamentals Bundle
- Hardware Fundamentals
- Programming Fundamentals

RSTrainer licensing options:
- Single license (node-locked)
- 5 concurrent licenses (Enterprise Edition)

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PLC-5®/SLC 500 and RSLogix Fundamentals

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCP122
2 Days CEUs 1.4

Course Purpose

This course is an introduction to programmable controller systems. Students will learn how to describe the flow of information and functions of a programmable controller system. Students will learn how to navigate through RSLogix 5 or RSLogix 500 software. Students will learn how to transfer, monitor, and run projects on a PLC-5 or SLC 500 processor and how to interpret simple ladder logic.

Objectives

After completing this course, students should be able to perform the following tasks:

- Understand programmable controller systems
- Identify common hardware components of processors
- Identify hardware components of I/O systems
- Identify I/O configurations
- Change the radix (base) of a number
- Set up communications between a programming system and a processor
- Identify PLC-5 and SLC 500 system addresses
- Interpret ladder logic
- Interpret Timer-On Delay (TON) and Count Up (CTU) instructions

Who Should Attend?

Individuals who have little or no working experience with programmable controller systems

Prerequisites

Experience operating a computer within a Microsoft® Windows® environment

SLC 500 and RSLogix 500 Maintenance and Troubleshooting

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCPS43
4 Days CEUs 2.8

Course Purpose

This skill-building course provides the necessary practice needed to interpret, isolate, and diagnose common hardware problems related to noise, power, and discrete and analog I/O. In troubleshooting scenarios, students will be introduced to basic ladder logic interpretation, which is applied to diagnostic tasks. Students practice these diagnostic skills by tracing through ladder logic instructions in an RSLogix 500 project.

Objectives

After completing this course, students should be able to perform the following tasks:

- Communicate with an SLC 500 processor
- Identify memory layout and SLC 500 system addresses
- Monitor and enter data
- Search, document, and edit ladder logic
- Interpret various ladder logic instructions
- Configure and preview a project report
- Troubleshoot processor, power supply, and noise-related problems
- Troubleshoot discrete and analog I/O problems
- Create a histogram
- Force inputs and outputs
- Maintain and troubleshoot an SLC 500 system

Who Should Attend?

Individuals who need to troubleshoot and maintain SLC 500 systems using RSLogix 500 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Experience maintaining electrically controlled systems
- Working knowledge of programmable controllers or completion of the *PLC-5/SLC 500 and RSLogix Fundamentals* course (CCP122)

Job Aids Included	Catalog #
RSLogix 500 and SLC 500 Procedures Guide	ABT-1747-TSJ52
SLC 500 and RSLogix 500 Troubleshooting Guide	ABT-1747-TSJ22
SLC 500 Documentation Reference Guide CD	ABT-1747-DRG70

SLC 500 and RSLogix 500 Advanced Maintenance and Troubleshooting

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCPS45
4 Days CEUs 2.8

Course Purpose

This course provides the practice needed to interpret, isolate, and diagnose problems found in advanced SLC 500 applications. In troubleshooting scenarios, students will interpret and modify advanced ladder logic instructions by operating a variety of simulation devices and software HMI applications, such as PanelView™ terminals, and RSView®32 software applications. Students will practice these diagnostic skills by tracing through ladder logic instructions and troubleshooting communication problems with DH+ and remote I/O networks.

Objectives

After completing this course, students should be able to perform the following tasks:

- Setup an SLC 500 system on a DH+ network
- Troubleshoot RSLogix 500 projects containing the following:
  - STI, DII, program flow/interrupt, and fault routines
  - Immediate I/O update, shift register, sequencer, and PID instructions
  - Indexed and indirect addressing
  - Message instructions for DH+ communications
  - Remote I/O addressing
  - Discrete data transfers on a remote I/O link
  - Block transfers on a remote I/O link
- Apply preventative maintenance and troubleshooting strategies

Who Should Attend?

Individuals who are responsible for maintaining and troubleshooting advanced SLC 500 applications using RSLogix 500 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Experience maintaining electrically controlled systems
- Completion of the *SLC 500 and RSLogix 500 Maintenance and Troubleshooting* course (CCPS43)

Job Aids Included	Catalog #
RSLogix 500 and SLC 500 Procedures Guide	ABT-1747-TSJ52
SLC 500 and RSLogix 500 Troubleshooting Guide	ABT-1747-TSJ22
SLC 500 Documentation Reference Guide CD	ABT-1747-DRG70

SLC 500 and RSLogix 500 Programming

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCPS41
4 Days CEUs 2.8

Course Purpose

This course provides students with the resources and hands-on practice to program an SLC 500 processor. Students will create a program, step-by-step, to meet the requirements of a given functional specification. As each section of the program is built, students will gain experience that can be applied to more advanced RSLogix 500 projects.

Objectives

After completing this course, students should be able to perform the following tasks:

- Communicate with an SLC 500 processor
- Create a new project and draft ladder logic
- Determine addresses and assign symbols
- Determine program flow and create subroutines
- Select and program timer, counter, math, data handling, and comparison instructions
- Enter and search for documentation
- Organize the data table
- Enter, edit, and verify ladder logic
- Test a project
- Configure and preview a project report

Who Should Attend?

Individuals who are responsible for programming SLC 500 applications using RSLogix 500 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Experience with basic control and electrical principles
- Working knowledge of programmable controllers
  OR
- Completion of the *PLC-5/SLC 500 and RSLogix Fundamentals* course (CCP122)

Job Aids Included	Catalog #
RSLogix 500 and SLC 500 Procedures Guide	ABT-1747-TSJ52
SLC 500 Documentation Reference Guide CD	ABT-1747-DRG70

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SLC 500 and RSLogix 500 Advanced Programming

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCPS42

4 Days | CEUs 2.8

Course Purpose

This course provides programmers with skills to develop advanced ladder logic projects for SLC 500 systems using RSLogix 500 software. This course covers several networking options, particularly Data Highway Plus™ (DH+™) and remote I/O communications. Students will be introduced to DH+ and remote I/O communications configurations and will have the opportunity to program advanced instructions for data transfer over a DH+ network and a remote I/O link.

Objectives

After completing this course, students should be able to perform the following tasks:

- Setup an SLC 500 system on a DH+ network
- Plan program flow strategies
- Program STI, DII, and fault routines
- Apply immediate I/O update instructions
- Program shift register, sequencer, and PID instructions
- Assign remote I/O addresses
- Configure an SLC 500 system for discrete data transfers and block transfers on a remote I/O link
- Apply indirect and indexed addressing
- Program a message instruction for DH+ communications

Who Should Attend?

Individuals who:

- Need to program advanced ladder logic instructions or
- Set up and configure SLC 500 systems for DH+ and/or remote I/O communications

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Experience with basic control and electrical principles
- Completion of the *SLC 500 and RSLogix 500 Programming* course (CCPS41)

Job Aids Included	Catalog #
RSLogix 500 and SLC 500 Procedures Guide	ABT-1747-TSJ52
SLC 500 Documentation Reference Guide CD	ABT-1747-DRG70

SLC 500 and PLC-5 Communications

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCPS65

1 Day | CEUs 0.7

Course Purpose

This course introduces students to the communication capabilities of RSLinx® software. This course gives students the needed skills required to configure and manage various communications options between RSLinx software and RSLogix 500 or RSLogix 5 software. Using features built into RSLinx software, students will learn how to monitor, optimize, and diagnose industrial network communications.

Objectives

After completing this course, students should be able to perform the following tasks:

- Configure a Data Highway Plus (DH+) communications and serial driver in RSLinx software
- Navigate RSLinx software
- Download and upload a project
- Go online to an SLC 500 or PLC-5 processor
- Change the processor operating mode
- Determine available system resources on RSLinx software
- Apply diagnostic tools and utilities
- Configure client application communications

Who Should Attend?

Individuals who are responsible for programming or maintaining and troubleshooting SLC 500 or PLC-5 applications using RSLogix 500 or RSLogix 5 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Experience maintaining electrically controlled systems
- Completion of the *PLC-5/SLC 500 and RSLogix Fundamentals* course (CCP122) or a fundamental knowledge of programmable controllers

Job Aids Included	Catalog #
RSLogix 500 and SLC 500 Procedures Guide	ABT-1747-TSJ52
RSLogix 5 and PLC-5 Procedures Guide	ABT-1785-TSJ53
SLC 500 Documentation Reference Guide CD	ABT-1747-DRG70

Safety

SAFETY ASSESSMENT
Rockwell Automation
Safety Solutions
TÜV Rheinland Functional Safety Training
TÜV Rheinland
Rockwell Automation

Safety Curriculum Map

UNDERSTAND

GuardPLC 1600/1800 Controller Systems Fundamentals

SAF-PLC101 • 1 Day

2030 ElectroGuard Safety Isolation System Maintenance and Troubleshooting Fundamentals

SAF-ELE101-LD
1 Day

SAFETY STANDARDS

Functional Safety for Machinery Introduction (TÜV Rheinland)

SAF-TUV1 • 3 Days

Functional Safety for Machinery Engineer Certification (TÜV Rheinland)

SAF-TUV2 • 4 Days

Exam SAF-TUVT 0.5 Day

Functional Safety for Machinery Technician Certification (TÜV Rheinland)

SAF-TUV3 • 2.5 Days

Exam SAF-TUVT3 60 Min.

Electrical Safety and Lockout/Tagout

SAF-001 • 1 Day

On-Site Only Course

Mechanical Safety and Lockout/Tagout

SAF-003 • 1 Day

On-Site Only Course

Electrical Safety for Non-Electrical Personnel

SAF-004 • 1 Day

On-Site Only Course

PROGRAM OR DESIGN

Studio 5000 Logix Designer Level 3: Project Development

CCP143 • 4 Days

GuardLogix Application Development

SAF-LOG101 • 2 Days

GuardPLC 1600/1800 Controller Systems Programming

SAF-PLC103 • 1 Day

MAINTAIN OR TROUBLESHOOT

GuardLogix Fundamentals and Troubleshooting

SAF-LOG103 • 1 Day

GuardPLC 1600/1800 Controller Systems Maintenance and Troubleshooting

SAF-PLC102 • 1 Day

2030 ElectroGuard Safety Isolation System Authorized Maintenance and Troubleshooting

SAF-ELE102-LD • 2 Days

Note: Consult course description for prerequisites

NFPA 70E 2012 - Arc Flash Awareness

SAF-SFT106 • 1 Day

NFPA 70E 2012 - Electrical Safety and Arc Flash Compliance

SAF-SFT112 • 2 Days

Machine Functional Safety and ISO 13849 System Design: Risk Assessment

VC-MFSISO-01
120-Min. Session

NFPA 70E 2012 - Arc Flash Awareness

VC-SFT106
(4) 90-Min. Sessions

2014 National Electrical Code (NEC): Update Awareness

SAF-SFT2014A • 2 Days

2014 National Electrical Code (NEC): Update for License Renewal

SAF-SFT2014L • 2 Days

2014 National Electrical Code (NEC): Comprehensive Awareness

SAF-SFT2014C • 4 Days

e-LEARNING

Industrial Safety

Web-Based Training

AADvance Comprehensive System Training

PRST9063LD • 3 Days

AADvance Operation, Maintenance, and Troubleshooting

PRST9064LD • 2 Days

Core Requirement for Certificate Program

Virtual Classroom

Combination Understand and Maintain or Troubleshoot Level Course

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GuardPLC™ 1600/1800 Controller Systems Fundamentals

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

SAF-PLC101

1 Days | CEUs 0.7

Course Purpose

This course is a skill-building opportunity for students who want to develop a fundamental knowledge of GuardPLC 1600/1800 systems and RSLogix™ Guard PLUS software. Students will be introduced to GuardPLC safety standards, functionality and controller circuitry, controller components, and distributed I/O modules. Students will have hands-on opportunities to use RSLogix Guard PLUS software to establish communications with a controller. This course provides students with the resources and hands-on practice required to download a project to a GuardPLC 1600 controller and start a routine.

Objectives

After completing this course, students should be able to perform the following tasks:

- Understand the safety principles of a GuardPLC system
- Understand the functionality of a GuardPLC system
- Identify GuardPLC 1600/1800 system components
- Get started with RSLogix Guard PLUS software
- Configure communications for a GuardPLC 1600/1800 controller
- Download and start the RSLogix Guard PLUS project

Who Should Attend?

Individuals who have no or little experience using GuardPLC 1600/1800 controllers

Prerequisites

- Experience operating a computer within a Microsoft® Windows® environment
- Experience with industrial control applications is recommended

Job Aids Included	Catalog #
RSLogix Guard PLUS and GuardPLC Procedures Guide	ABT-1753-TSJ50
GuardPLC Documentation Reference Guide CD	ABT-1753-DRG70

2030 ElectroGuard® Safety Isolation System Maintenance and Troubleshooting Fundamentals

SAF-ELE101-LD

1 Day

Course Purpose

This course will help provide students with the fundamental skills needed to operate, start up, maintain, and troubleshoot an ElectroGuard Safety Isolation System. The instructor will describe and demonstrate basic system functionality and procedures for checkout, troubleshooting, and preventive maintenance. Students will then practice these procedures using ElectroGuard Safety Isolation System modules. Highlights of this course include working on an ElectroGuard system equipped with expansion, communication, and pneumatic isolation modules.

Objectives

After completing this course, students should be able to perform the following tasks:

- Understand workplace practices for using the ElectroGuard system
- Perform system checkout
- Troubleshoot an ElectroGuard system
- Interpret the status indicator lights
- Replace ElectroGuard modules
- Create a service log
- Perform preventive maintenance

This course is intended for maintainers or programmers. Some topics may be similar to topics covered in course SAF-ELE102-LD.

Who Should Attend?

Individuals who need to maintain and troubleshoot an ElectroGuard Safety Isolation System

Prerequisites

- General knowledge of electrical principles, circuits, and safety practices
- Ability to perform lockout/tagout procedures
- Experience using a multimeter and reading an electrical schematic
- Ability to interpret an electrical schematic

GuardLogix® Fundamentals and Troubleshooting

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

SAF-LOG103

1 Day | CEUs 0.7

Course Purpose

This course will assist students in developing and building a solid foundation with a fundamental knowledge of a GuardLogix system. Upon completion of this course, students should be able to efficiently troubleshoot a previously operational GuardLogix system. Students will have the opportunity to develop and practice these skills by learning basic GuardLogix concepts and terminology and troubleshooting a GuardLogix project.

Objectives

After completing this course, students should be able to perform the following tasks:

- Understand GuardLogix controller safety operation
- Identify GuardLogix system hardware and project components
- Download and upload a GuardLogix project
- Troubleshoot GuardLogix controller components
- Troubleshoot and replace GuardLogix CompactBlock guard I/O safety modules

Who Should Attend?

Individuals who need to monitor and troubleshoot Logix Designer projects and hardware for GuardLogix controllers

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *Studio 5000 Logix Designer Level 1: ControlLogix Systems Fundamentals* course (CCP146) and *Studio 5000 Logix Designer Level 2: ControlLogix Maintenance and Troubleshooting* course (CCP153) or equivalent experience with Logix Designer application
- General experience with industrial controls

Job Aids Included	Catalog #
GuardLogix Documentation Reference Guide CD	ABT-GRDLX-DRG70

GuardPLC 1600/1800 Controller Systems Maintenance and Troubleshooting

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

SAF-PLC102

1 Day | CEUs 0.7

Course Purpose

This course provides students with the necessary resources and hands-on practice to efficiently maintain an RSLogix Guard PLUS project and troubleshoot a GuardPLC controller. It builds upon students' fundamental knowledge of common controller terms and operation, and students' ability to save, compile code, and download a project. This course adds to students' skill sets by introducing new tasks, such as creating and connecting signals, modifying a function block program, and troubleshooting problems with the controller. Students will learn offline and online monitoring, testing of a routine, forcing project signals, and configuring and exporting diagnostic logs for locating errors and simulating test conditions that do not occur in normal operation.

Objectives

After completing this course, students should be able to perform the following tasks:

- Modify and download an RSLogix Guard PLUS project
- Configure and export GuardPLC diagnostic logs
- Troubleshoot GuardPLC 1600/1800 controller errors
- Monitor and test an RSLogix Guard PLUS routine
- Force an RSLogix Guard PLUS project signal
- Archive and restore an RSLogix Guard PLUS project

Job Aids Included	Catalog #
RSLogix Guard PLUS and GuardPLC Procedures Guide	ABT-1753-TSJ50
GuardPLC Documentation Reference Guide CD	ABT-1753-DRG70

Who Should Attend?

Individuals who:

- Need to maintain RSLogix Guard PLUS projects
- Troubleshoot GuardPLC controllers

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *GuardPLC 1600/1800 Controller Systems Fundamentals* course (SAF-PLC101)
- Experience with industrial control applications is recommended

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2030 ElectroGuard Safety Isolation System Authorized Maintenance and Troubleshooting

SAF-ELE102-LD
2 Days

Course Purpose

This course will help provide students with the skills and authorization level needed to maintain and troubleshoot the factory-sealed modules of a 2030 ElectroGuard Safety Isolation System. The instructor will describe and demonstrate procedures for module checkout, troubleshooting, and preventative maintenance. Students will then practice these procedures using ElectroGuard Safety Isolation System modules. Highlights of this course include working on an ElectroGuard system equipped with expansion, communication, and pneumatic isolation modules. This course will provide students with opportunities to practice troubleshooting module faults.

Objectives

After completing this course, students should be able to perform the following tasks:

- Understand functional specifications of ElectroGuard modules, including power panel, control module, expansion module, remote lockout station, and pneumatic isolation module
- Perform module checkout
- Break the factory seal of an ElectroGuard module
- Troubleshoot within the module
- Interpret status indicator lights
- Replace the module seal
- Create a service log
- Perform preventive maintenance
- Troubleshoot an ElectroGuard system to the component level

This course is intended for maintainers. Some topics may be similar to topics covered in course SAF-ELE101-LD.

Who Should Attend?

Individuals who:

- Need to maintain and troubleshoot an ElectroGuard System
- Require authorization to repair sealed modules

Prerequisites

- General knowledge of electrical principles, circuits, and safety practices
- Ability to perform lockout/tagout procedures
- Experience using a multimeter
- Ability to interpret an electrical schematic
- Completion of the *2030 ElectroGuard Safety Isolation System Maintenance and Troubleshooting Fundamentals* course (SAF-ELE101-LD) or equivalent experience

AADvance™ Operation, Maintenance, and Troubleshooting

PRST9064LD
2 Days

Course Purpose

This course provides students with an overview of AADvance hardware, software, and troubleshooting. The instructor will use a mixture of lecture and hands-on lessons.

Objectives

After completing this course, students should understand the following topics:

- Failsafe and fault-tolerant designs
- System hardware overview
- Baseplates, processor, I/O modules, termination assemblies, and cables
- LED diagnostics
- Wire interfaces
- Projects
- Dictionary and I/O configuration
- Application programs
- Diagnostics variables
- Cross references
- Monitor programs
- Lock/force
- Troubleshoot
- Diagnostics collection
- Replace modules

Do not take both PRST9063LD and PRST9064LD because they share similar content. If you are responsible for designing, building, or programming an AADvance system, take this course instead: AADvance Comprehensive System Training (PRST9063LD).

Who Should Attend?

Individuals who are responsible for maintaining and troubleshooting an AADvance system

Prerequisites

- General knowledge of programmable logic controllers (PLCs)
- Background in industrial electronic control principles and practices

Studio 5000 Logix Designer™ Level 3: Project Development

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCP143
4 Days CEUs 2.8

Course Purpose

Given a functional specification for a Logix5000 application, students will be able to develop a project during the course to meet the specification requirements. This course covers tasks common to all controllers that use the Logix5000 control engine or operating system, including ControlLogix, CompactLogix, and SoftLogix controllers. This course presents a deeper understanding of project development tasks, such as organizing tasks and routines, organizing controller data, configuring modules, and sharing data. Students will use Producer/Consumer technology to multicast input and output devices, share data between controllers, and control remote I/O.

Objectives

After completing this course, students should be able to perform the following tasks:

- Create and organize a project
- Create periodic and event tasks
- Develop an add-on instruction in ladder diagram
- Organize arrays
- Create a user-defined data type
- Import components
- Enter, edit, and verify ladder logic
- Configure a controller to produce and consume data
- Configure controllers to share data over EtherNet/IP™
- Communicate with a local 1756-I/O module and over an EtherNet/IP network
- Configure a message
- Allocate connections
- Retrieve and set controller status values with GSV/SSV instructions
- Program a BTD instruction
- Handle a major fault
- Manage project files
- Update firmware

Who Should Attend?

Individuals who need to develop Logix Designer projects for any Logix5000 controller

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Knowledge of common controller terms and operation through experience or completion of the *Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals* course (CCP146) or completion of the *RSTrainer for ControlLogix Fundamentals* computer-based training (9393-RSTCLX)
- Ability to write basic ladder logic with common instructions or through completion of the *Studio 5000 Logix Designer Level 2: Basic Ladder Logic Programming* course (CCP151)

Job Aids Included	Catalog #
Studio 5000 Logix Designer and Logix5000 Procedures Guide	ABT-1756-TSJ50
Logix5000 Documentation Reference Guide CD	ABT-1756-DRG70

Safety

GuardLogix Application Development

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

SAF-LOG101
2 Days CEUs 1.4

Course Purpose

Upon completion of this course, students will be able to create a Logix Designer project for a GuardLogix system and maintain the system. Students will have the opportunity to develop and practice these skills by: adding and configuring CompactBlock Guard I/O safety modules; creating and configuring a GuardLogix project; generating safety signatures and lock/unlock a GuardLogix controller; and programming safety instructions.

Objectives

After completing this course, students should be able to perform the following tasks:

- Create a new GuardLogix project using the Logix Designer application
- Configure CompactBlock Guard I/O safety modules for a GuardLogix project using the Logix Designer application
- Get CompactBlock Guard I/O point status information via explicit messaging using the Logix Designer application
- Configure a GuardLogix controller to produce and consume safety data over EtherNet/IP
- Configure GuardLogix controller safety option
- Program a dual-channel input stop instruction and dual-channel input stop with test and mute instruction
- Program a configurable redundant output instruction
- Program a five position mode selector instruction
- Program a safety mat instruction

Who Should Attend?

Individuals who need to develop Logix Designer projects for GuardLogix controllers

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *Studio 5000 Logix Designer Level 3: Project Development* course (CCP143) and *GuardLogix Fundamentals and Troubleshooting* course (SAF-LOG103).
- General experience with industrial controls

Job Aids Included	Catalog #
GuardLogix Documentation Reference Guide CD	ABT-GRDLX-DRG70

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GuardPLC 1600/1800 Controller Systems Programming

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

SAF-PLC103

1 Day | CEUs 0.7

Course Purpose

This course provides students with the necessary resources and hands-on practice to effectively program an RSLogix Guard PLUS project for GuardPLC controller communications with other devices, such as an OPC server and another controller. This course adds to students' skill set by introducing new tasks, such as creating user-defined function blocks, configuring a distributed I/O module, and configuring OPC and peer-to-peer communications. Students will learn how to configure user accounts for restricting access to windows of an RSLogix Guard PLUS project and for performing certain tasks on a GuardPLC controller.

Objectives

After completing this course, students should be able to perform the following tasks:

- Create an RSLogix Guard PLUS function block routine
- Configure a GuardPLC distributed I/O module
- Create RSLogix Guard PLUS project user accounts
- Configure a GuardPLC OPC server
- Configure GuardPLC peer-to-peer communications

Job Aids Included	Catalog #
RSLogix Guard PLUS and GuardPLC Procedures Guide	ABT-1753-TSJ50
GuardPLC Documentation Reference Guide CD	ABT-1753-DRG70

Who Should Attend?

Individuals who:

- Need to program an RSLogix Guard PLUS project
- Configure a GuardPLC controller to communicate with other devices

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *GuardPLC 1600/1800 Controller Systems Fundamentals* course (SAF-PLC101)
- Completion of the *GuardPLC 1600/1800 Controller Systems Maintenance and Troubleshooting* course (SAF-PLC102)
- Experience with industrial control applications is recommended

AADvance Comprehensive System Training

PRST9063LD

3 Days

Course Purpose

This course provides students with a comprehensive overview of AADvance hardware, software, and troubleshooting.

Objectives

After completing this course, students should understand the following topics:

- Failsafe and fault-tolerant designs
- System hardware overview
- Assembling a system
- Create a project
- Dictionary and I/O configuration
- Application programs and editors
- Generating runtime code
- Offline simulation
- Load and monitor applications
- Create functions and function blocks
- Bindings between resources
- Lock/force
- Online changes
- Cross references
- Version control
- Printing
- Passwords
- Sequence of events
- OPC server
- Application exercise
- Troubleshoot
- Replace modules
- Diagnostics collection

Do not take both PRST9063LD and PRST9064LD because they share similar content. If your responsibilities are limited to maintaining and troubleshooting the AADvance system, take this course instead: AADvance Operation, Maintenance, & Troubleshooting (PRST9064LD).

Who Should Attend?

Individuals who are responsible for designing, building, programming, and troubleshooting an AADvance system

Prerequisites

- General knowledge of programmable logic controllers (PLCs)
- Background in industrial electronic control principles and practices

Electrical Safety and Lockout/Tagout
(Available On-Site Only)

SAF-001
1 Day

Course Purpose
This course provides students with information about potential safety hazards, safety precautions, personnel protection equipment, general emergency response, and the local lockout/tag-out program.

Objectives
After completing this course, students should be able to perform the following tasks:
- List electrical shock effects
- Describe general safety practices
- Use locks and tags
- Work around energized equipment
- Explain the purpose of preventive maintenance
- Describe arc flash
- Explain multiple personnel safety requirements
- Use and maintain personal protective equipment (PPE) and electrical safety equipment
- Follow good housekeeping
- Perform a controlled restoration of power

Who Should Attend?
Maintenance technicians

Prerequisites
There are no prerequisites for this course.

Mechanical Safety and Lockout/Tagout
(Available On-Site Only)

SAF-003
1 Day

Course Purpose
This course provides students with information potential safety hazards, safety precautions, personnel protection equipment, general emergency response, and the local lockout/tag-out program.

Objectives
After completing this course, students should be able to perform the following tasks:
- List general safety practices
- Use locks and tags
- Maintain and using personal protective equipment (PPE)
- Use fall protection
- Interpret material data safety sheets (MSDS)
- Read chemical labeling
- Perform hot work
- Follow fire prevention guidelines
- Use and maintaining fire extinguishers

Who Should Attend?
Mechanical maintenance technicians

Prerequisites
There are no prerequisites for this course.

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Electrical Safety for Non-Electrical Personnel
(Available On-Site Only)

SAF-004
1 Day

Course Purpose
This course provides students with an overview for compliance with OSHA and NFPA 70E electrical safety regulations including arc flash protection.

Objectives
After completing this course, students should be able to perform the following tasks:
- List applicable policies and regulations
- Define a qualified person
- Follow general safety precautions
- Define the voltage level convention
- Follow tool and equipment safety guidelines
- Control hazardous energy
- Work on energized equipment (OSHA requirements)
- Follow arc flash protection
- Use and care for personal protective equipment
- Avoid specific electrical hazards

Who Should Attend?
Facility non-electrical and non-technical personnel

Prerequisites
There are no prerequisites for this course.

2014 National Electrical Code® (NEC®): Update Awareness

SAF-SFT2014A
2 Days

Course Purpose
This course builds on a student's working knowledge of the National Electrical Code and provides a detailed review of the 2014 NEC changes.

Objectives
After completing this course, students should be able to identify changes in the following chapters of the 2014 National Electrical Code:
- Chapter 1 – Article 100
- Chapter 2 – Article 200
- Chapter 3 – Article 300
- Chapter 4 – Article 400
- Chapter 5 – Article 500
- Chapter 6 – Article 600
- Chapter 7 – Article 700
- Chapter 8 – Article 800

Who Should Attend?
Electricians and other individuals working with electrical equipment or enrolled in an up-grader or apprentice program

Prerequisites
- Familiarity with fundamentals of electricity
- A working knowledge of NEC

Job Aids Included
2014 NEC Paperback edition

2014 National Electrical Code (NEC): Update for License Renewal

SAF-SFT2014L
2 Days

Course Purpose

This course builds on a student's working knowledge of the National Electrical Code and provides a detailed review of the 2014 NEC changes. Course may vary depending on state licensing regulations.

Objectives

After completing this course, students should be able to identify changes in the following chapters of the 2014 National Electrical Code:

- Chapter 1 – Article 100
- Chapter 2 – Article 200
- Chapter 3 – Article 300
- Chapter 4 – Article 400
- Chapter 5 – Article 500
- Chapter 6 – Article 600
- Chapter 7 – Article 700
- Chapter 8 – Article 800

Who Should Attend?

Electricians, other individuals working with electrical equipment or enrolled in an up-grader or apprentice program, and individuals wishing to log continuing education hours for license renewal

Prerequisites

- Familiarity with fundamentals of electricity
- A working knowledge of NEC

Job Aids Included

2014 NEC Paperback edition

2014 National Electrical Code (NEC): Comprehensive Awareness

SAF-SFT2014C
4 Days

Course Purpose

This course builds on a student's working knowledge of the National Electric Code and provides a detailed review of the 2014 NEC changes.

Objectives

Review of the NFPA 70 NEC for 2014 will follow the following agenda:

- General Requirements Art. 90 - 240
- Grounding Vs. Bonding Art. 250
- Wiring Methods Art. 300 - 392
- Equipment for General Use Art. 400 – 450
- Special Occupancies Art. 500 - 590
- Special Equipment Art. 600 – 702
- Limited Energy and Communication Systems Art. 725 - 820

Who Should Attend?

New electricians and other individuals working with electrical equipment or enrolled in an up-grader or apprentice program

Prerequisites

Familiarity with fundamentals of electricity

Job Aids Included

2014 NEC Paperback edition

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Functional Safety for Machinery Introduction (TÜV Rheinland)

SAF-TUV1

3 Days

Course Purpose

This course defines the design and proof requirements for functional safety of machines, according to current standards and guidelines. Practical examples will demonstrate possible techniques for machine guarding and protection. This course will introduce organizational measures that can be instituted to protect employees and equipment. The organizational measures include quality assurance techniques and documentation for life-cycle design and validation. After completing this course, students should understand how safety devices and components are assembled and applied to reduce hazards from machinery so the necessary safety for people and the environment is achieved.

Objectives

After completing this course, students should be knowledgeable about the following topics and tasks:

- Understand the Functional Safety for Machinery Certification (TÜV Rheinland)
- Define:
  - European and OSHA guidelines and requirements
  - Risk analysis and processes (ISO 12100:2010)
  - ISO 13894-1, ISO 13849-1/2, and IEC 62061
  - New standards regarding safety of machinery
  - Basic electrical safety principles (IEC 60204-1)
- Identify:
  - Safety devices
  - Safety functions of machines
  - Circuits, schematics, and examples
- Perform ISO 13849/IEC 62061 calculations

Who Should Attend?

Application engineers, system integrators, developers, safety specialists, and authorized experts in machinery

Prerequisites

It is highly recommended that training participants have professional experience in the field of Functional Safety or have attended another introduction course on Functional Safety

Functional Safety for Machinery Engineer Certification (TÜV Rheinland)

SAF-TUV2

(Exam: SAF-TUVT)

4 Days *(additional 0.5 days for exam)*

Course Purpose

In this course, students will learn how current standards dictate the design and proof of functional safety for machines. The participant will learn how safety devices and components are assembled and applied to reduce hazards from machinery so the necessary safety for people and environment is achieved. Practical examples will demonstrate possibilities regarding machine protection. In addition to the technical requirements, students will learn about organizational measures, quality assurance techniques, and documentation for lifecycle design and validation. After completing this course, students should understand and be able to use IEC 60204-1, IEC 62061, ISO 12100, ISO 13849-1, -2, and other relevant machine functional safety standards. The exam is optional for students who would like to attend the training, but do not want certification.

Objectives

After completing this course, students should be knowledgeable about the following topics and tasks:

- Understand the Functional Safety for Machinery Engineer Certification (TÜV Rheinland)
- Define:
  - Legal guidelines and standards
  - Risk analysis and processes (ISO 12100:2010)
  - Basic electrical safety principles (IEC 60204-1)
  - New standards regarding safety of machinery
  - ISO 13849-1, ISO 13849-2, and IEC 62061
- Identify:
  - Safety devices
  - Safety functions of machines
  - Circuits, schematics, and examples
- Perform ISO 13849/IEC 62061 calculations

Who Should Attend?

Application engineers, system integrators, developers, safety specialists and authorized experts in machinery

Prerequisites

- Recommended completion of the *Functional Safety for Machinery Introduction (TÜV Rheinland)* course (SAF-TUV1), but not mandatory
- A completed and approved Functional Safety Technician eligibility form from TÜV Rheinland is required for admittance to the exam

Exam and Eligibility Requirements for TÜV Functional Safety Engineer

The following requirements must be met in order to receive the TÜV Functional Safety Engineer certificate:

- A completed and approved eligibility form from TÜV Rheinland proving:
  - Minimum of 3-5 years experience in the field of Functional Safety
  - University engineering degree (master's or bachelor's) or equivalent engineer level responsibilities and status certified by employer
- Completion of eligibility form from Rockwell Automation/TÜV Rheinland
- A passing grade of 70% or higher on *Functional Safety for Machinery Engineer Certification (TÜV Rheinland)* exam (SAF-TUVT)

Functional Safety for Machinery Technician Certification (TÜV Rheinland)

SAF-TUV3
(Exam: SAF-TUVT3)
2.5 Days *(additional 60 min. for exam)*

Course Purpose

In this course, students will learn how the current standards dictate the selection, assembly, installation, validation, and maintenance of safety devices and components to reduce hazards from machinery and ensure the safety of people and the environment. Practical examples will demonstrate possibilities regarding machine protection. This training will cover safety topics, such as: redundancy, testing, distance calculations, assigning required level of risk reduction as PL, monitoring moveable guard positions, and fault avoidance for relevant life cycle phases. Students who want Functional Safety for Machinery Technician Certification (TÜV Rheinland) must register for and pass the exam (SAF-TUVT3). The exam is optional for students who would like to attend the training, but do not want certification.

Objectives

After completing this course, students should be able to perform the following tasks:

- Understand the Functional Safety Technician certification (TÜV Rheinland)
- Define:
  - Legal guidelines and standards
  - Risk analysis and processes (ISO 12100:2010)
  - Basic electrical safety principles (IEC 60204-1)
  - Basic safety principles
  - Machine guarding principles
  - New standards regarding safety of machinery
- Identify:
  - Safety functions
  - Safety devices
  - Circuits, schematics, and examples
- Evaluate machine safety using a practical example

Who Should Attend?

Machine technicians, application engineers, safety specialists and those responsible for repairing and maintaining machine safety

Prerequisites

- Basic working knowledge of electrical and electronic control functions for machinery is recommended
- Awareness of basic safety principles is recommended
- A completed and approved Functional Safety Technician eligibility form from TÜV Rheinland is required for admittance to the exam

Exam and Eligibility Requirements for TÜV Functional Safety Technician

The following requirements must be met in order to receive the TÜV Functional Safety Technician certificate:

- A completed and approved eligibility form from TÜV Rheinland proving:
  - Minimum of 1-2 years of experience working on industrial machinery
  - Experience in machinery maintenance and operation, verified by employer
- Proof of eligibility form (see Prerequisites)
- Successful completion of *Functional Safety for Machinery Technician Certification (TÜV Rheinland)* (SAF-TUV3)
- A passing grade of 70% or higher on *Functional Safety for Machinery Technician Certification Exam (TÜV Rheinland)* (SAF-TUVT3)

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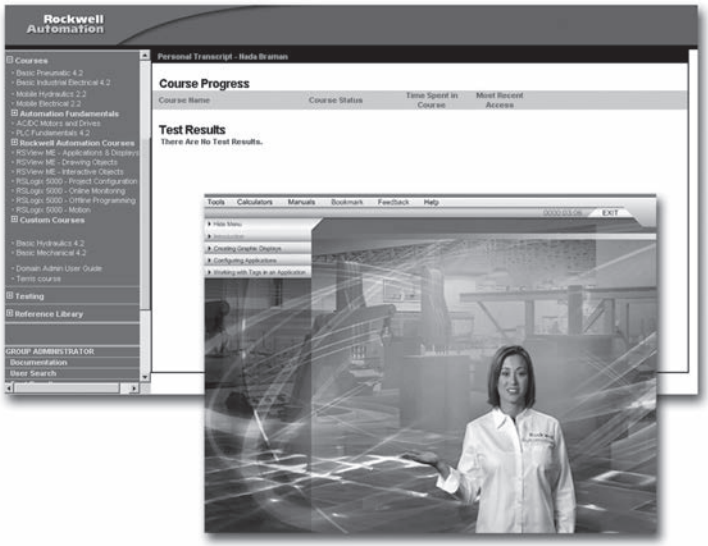

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NFPA 70E® 2012 – Arc Flash Awareness

SAF-SFT106
1 Day

Course Purpose

The purpose of this course is to provide the student with an overall understanding of the current requirements of the NFPA 70E 2012. A complete review of the standard will be provided, along with a review of the calculation methods and tables used in the standard for establishing arc flash boundary and proper personal protective equipment (PPE). This course will present review of the NFPA 70E 2012, calculating flash protection boundary, NFPA 70E 2012 Standards on PPE, and safe electrical practices.

Objectives

After completing this course, students should understand the following topics:

- Arc flash ruling and hazard
- Operational voltage
- Flash hazard statistics
- Protecting the electrical worker
- Applicable standards
- Arc flash hazard boundary terms
- Arc flash calculations review (NFPA 70E 2012)
- PPE selections (NFPA 70E 2012)
- Overcurrent protective devices
- Arc flash considerations
- Safety-related work practices

Who Should Attend?

Individuals that require access to, or will be exposed to the work area designated by the flash protection boundary

Prerequisites

- Familiarity with basic electricity
- Proficiency in student's respective classification
  OR
- Enrolled in an up-grader or apprentice program

Job Aids Included

Ugly's Electrical Safety and NFPA 70E

NFPA 70E 2012 – Electrical Safety and Arc Flash Compliance

SAF-SFT112
2 Days

Course Purpose

In this course, students will gain an in-depth understanding of the current requirements of NFPA 70E 2012. A complete presentation of the standard will be provided, along with examples and exercises covering the calculation methods and tables used in the standard for establishing arc flash boundaries and proper personal protective equipment (PPE). This course will present NFPA 70E 2012 electrical safety requirements and safe electrical practices.

Objectives

After completing this course, students should understand the following topics:

- Arc flash ruling
- Operational voltage
- Arc flash hazard
  - Requirements
  - Facts and statistics
  - Thermal intensity, pressure, auditory, projectile, and inhalation
- Flash hazard statistics
- Protecting the electrical worker
  - Company/electrical safety programs, government regulations, and enforcement
  - OSHA 29 CFR 1910.333(a)(1)
  - OSHA 29 CFR 1910.335
  - OSHA 29 CFR 1910.132(d)(1)
- Applicable standards
  - 2002 NEC Article 110.16 Flash Protection
  - NFPA 70E 2012 110.8(A)
  - Electronically safe work conditions
  - Qualified person
  - NFPA 70E 2012 130.3
- Arc flash hazard boundary terms
  - Flash protection
  - Limited, restricted, and prohibited approach
- Energized work permit
- Article 130 tables
- Personal protective equipment (PPE)

Who Should Attend?

Individuals who:

- Are responsible for ensuring compliance with, developing training on, or supervising employees who are required to work in accordance with NFPA 70E 2012
- Will be exposed to work areas designated by the flash protection boundary

Prerequisites

- Familiarity with basic electricity
- Proficiency in student's respective classification
  OR
- Enrolled in an upgrader or apprentice program

Job Aids Included

NFPA 70E: Standard for Electrical Safety in the Workplace®, 2012 Edition

Machine Functional Safety and ISO 13849 System Design: Risk Assessment

Virtual Classroom

AUTHORIZED IACET PROVIDER International Association for Continuing Education and Training

VC-MFSISO-01

120 Min. Session CEUs 0.2

Course Purpose

This course teaches students to use a structured risk assessment process based on ISO 13849. Students will learn how to identify the hazards of a machine, estimate the level of risk, and choose risk reduction techniques. During the exercises, students will make their decisions using the terms and rating system from ISO 13849. As students work through the process, they will build documentation that they can use throughout the lifecycle of their machines.

Objectives

After completing this course, students should be able to perform the following tasks:

- Define the scope of the risk assessment
- Identify the hazards
- Determine the risk level of each hazard
- Identify potential risk reduction techniques
- Choose risk reduction techniques
- Write a risk assessment report

Who Should Attend?

Design engineers, maintenance managers, or people in health and safety roles

Prerequisites

Experience with the design, development, maintenance, or supervision of industrial automation systems is required

Technology Requirements

A computer and phone are required

NFPA 70E 2012 – Arc Flash Awareness

Virtual Classroom

AUTHORIZED IACET PROVIDER International Association for Continuing Education and Training

VC-SFT106

(4) 90 Min. Sessions CEUs 0.15 each

Course Purpose

This course will teach students to assess arc flash hazards and act to mitigate them by selecting appropriate PPE and determining protection boundaries. Students will learn how to use NFPA 70E 2012 and calculation methods to determine protection boundaries. This course provides some of the key requirements necessary to become a "qualified" person as defined in OSHA 1910.269, 332, 333, and NFPA 70E, such as: determining minimum approach distances; being capable of using special precautionary techniques, PPE, insulating and shielding materials, and insulated tools; receiving safety training to recognize and avoid hazards.

Objectives

After completing this course, students should be able to perform the following tasks:

- Determine appropriate PPE
- Determine thermal and shock boundaries
- Perform bolted fault calculations
- Perform arc fault calculations

Technology Requirements

- A computer and phone
- A calculator must be available for Session 2
- A scientific calculator must be available for Session 3 and Session 4

Students can use the calculator found in Microsoft Windows>Programs>Accessories for all three sessions.

Who Should Attend?

Individuals required to work in accordance with NFPA 70E or who will be exposed to work areas designated by a flash protection boundary

Prerequisites

- Experience distinguishing exposed live parts from other parts of electrical equipment
- Determining nominal system voltage of exposed live parts
- Skills and knowledge related to the construction and operation of electrical equipment and installations

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Networks

Networks Curriculum Map

UNDERSTAND

Introduction to Automation

CCP800 • 3 Days

Introduction to the Integrated Architecture System

CIA101 • 2 Days

SLC 500 and PLC-5 Communications

CCPS65• 1 Day

PROGRAM OR DESIGN

Stratix 5700 Switch Configuration for an EtherNet/IP Network

CCP179 • 2 Days

PowerFlex 700 Vector Control Communications on DeviceNet

CCA162 • 1 Day

PowerFlex 700 Vector Control Communications on ControlNet

CCA164 • 2 Days

DeviceNet and RSNetWorx Configuration and Troubleshooting

CCP164 • 3 Days

ControlNet and RSNetWorx Configuration and Troubleshooting

CCP173 • 3 Days

Studio 5000 Logix Designer Level 4: Kinetix 6500 (CIP) Programming

CCN144 • 4 Days

MAINTAIN OR TROUBLESHOOT

EtherNet/IP Fundamentals and Troubleshooting

CCP180 • 1 Day

NetLinx System Maintenance and Troubleshooting

CCP177 • 4 Days

Combination of DeviceNet, ControlNet and EtherNet/IP Maintenance Topics

Note: Consult course description for prerequisites

PowerFlex 700 Vector Control Communications over EtherNet/IP

CCA165 • 1 Day

Data Highway/Ethernet Peer-to-Peer Communications

CCP310-LD • 4.5 Days

e-LEARNING

RSLinx Software

RSTrainer Computer-Based Training

EtherNet/IP - Hardware and IP Addressing

RSTrainer Computer-Based Training

Web-Based Training

EtherNet/IP - Communications and Diagnostics

RSTrainer Computer-Based Training

Web-Based Training

EtherNet/IP Bundle

Hardware and IP Addressing

Communications and Diagnostics

Introduction to Automation iBook Available on iTunes

RSTrainer licensing options:

- Single license (node-locked)
- 5 concurrent licenses (Enterprise Edition)

Combination Program or Design and Maintain or Troubleshoot Level Course

Combination Understand and Maintain or Troubleshoot Level Course

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Introduction to Automation

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCP800

3 Days | CEUs 2.1

Course Purpose

After completing this course, students should have a broad and fundamental understanding of industrial automation. Topics range from an overview of common automation industries to an introduction of basic automated system components, such as controllers, I/O, drives, and Human Machine Interfaces (HMI). In addition, students will learn common automation terminology, what tools are used with industrial automation, and what careers may be available to you within this field.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identify:
  - Common industries and applications in industrial automation
  - Industrial automation standards and regulations
  - I/O devices and modules
  - System documentation
  - HMI
  - AC and DC motors and drives
- Understand:
  - Industrial automation careers
  - Basic mechanical components
  - Automation control systems
  - Controllers
  - Networks
  - Safety in automation
  - Process control
- Recognize logic and basic programming concepts

Who Should Attend?

Individuals who:

- Have little or no experience with automation systems
- Are interested in gaining a broad understanding of automation systems

Prerequisites

Basic training in electricity and electrical safety

Introduction to the Integrated Architecture™ System

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CIA101

2 Days | CEUs 1.4

Course Purpose

This course will assist students in developing and building a solid foundation of Integrated Architecture and automation system knowledge. Students will learn about and interact with a variety of automation hardware. They will have an opportunity to use Rockwell Automation software to perform basic system configuration tasks. While performing these tasks, students will gain an understanding of how controllers, drives, motors, networks, and human-machine interface (HMI) products function together within Integrated Architecture.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identify components of the integrated architecture system
- Establish communications in an integrated system
- Program a basic Logix Designer project for an integrated system
- Program with tag-based addressing in an integrated system
- Identify programming languages in an integrated system
- Understand Logix5000 multi-discipline control
- Understand NetLinx-enabled networks
- Understand the visualization development environment of an integrated system
- Understand HMI direct tag referencing in an integrated system

Who Should Attend?

Individuals who:

- Have little or no working experience with automation systems
- Are interested in gaining a broad understanding of automation and the Integrated Architecture System

Prerequisites

Experience operating a computer within a Microsoft® Windows® environment

SLC™ 500 and PLC-5® Communications

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCPS65
1 Day — CEUs 0.7

Course Purpose

This blended-media course introduces students to the communication capabilities of RSLinx® software. This course gives students the needed skills required to configure and manage various communication options between RSLinx software and RSLogix™ 500 or RSLogix 5 software. Using features built into RSLinx software, students will learn how to monitor, optimize, and diagnose industrial network communications.

Objectives

After completing this course, students should be able to perform the following tasks:
- Configure a Data Highway Plus™ (DH+™) communications and serial driver in RSLinx software
- Navigate RSLinx software
- Download and upload a project
- Go online to an SLC 500 or PLC-5 processor
- Change the processor operating mode
- Determine available system resources on RSLinx software

Who Should Attend?

Individuals who are responsible for programming or maintaining and troubleshooting SLC 500 or PLC-5 applications using RSLogix 500 or RSLogix 5 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Experience maintaining electrically controlled systems
- Completion of the *PLC-5/SLC 500 and RSLogix Fundamentals* course (CCP122) or a fundamental knowledge of programmable controllers

Job Aids Included	Catalog #
RSLogix 500 and SLC 500 Procedures Guide	ABT-1747-TSJ52
RSLogix 5 and PLC-5 Procedures Guide	ABT-1785-TSJ53
SLC 500 Documentation Reference Guide CD	ABT-1747-DRG70

Networks

NetLinx System Maintenance and Troubleshooting

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCP177 *
4 Days — CEUs 2.8

Course Purpose

This course is designed to provide students with the necessary skills to effectively maintain and troubleshoot DeviceNet™, ControlNet™, and EtherNet/IP™ hardware and software. Students will build their skills by using troubleshooting best practices and network troubleshooting tools; gain experience troubleshooting DeviceNet, ControlNet, and EtherNet/IP networks by maintaining connectivity to the networks; and learn a variety of software packages and hardware indicators to ensure that the Logix5000 controllers and devices on the networks maintain communications to sustain optimal performance.

Objectives

After completing this course, students should be able to perform the following tasks:
- Identify NetLinx networks and hardware components of an EtherNet/IP system
- Connect a computer to a Logix5000 system over an EtherNet/IP network
- Troubleshoot EtherNet/IP network media components
- Monitor/troubleshoot EtherNet/IP media components
- Identify ControlNet media components/signal measuring equipment
- Connect to a ControlNet network using RSLinx classic software
- Troubleshoot a scheduled ControlNet data connection for a ControlLogix controller
- Troubleshoot a ControlNet network using RSNetWorx for ControlNet software
- Identify DeviceNet network components
- Commission nodes on, and troubleshoot, a DeviceNet network
- Troubleshoot a DeviceNet network using RSNetWorx for DeviceNet software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals* course (CCP146) or equivalent experience

Who Should Attend?

Individuals who are responsible for maintaining and troubleshooting existing DeviceNet, ControlNet, and EtherNet/IP networks

Job Aids Included	Catalog #
ControlNet and RSNetWorx Troubleshooting Guide	ABT-N200-TSJ20
ControlNet and RSNetWorx Procedures Guide	ABT-N200-TSJ50
ControlNet Documentation Reference Guide CD	ABT-N200-DRG70
DeviceNet and RSNetWorx Troubleshooting Guide	ABT-N100-TSJ20
DeviceNet and RSNetWorx Procedures Guide	ABT-N100-TSJ50
DeviceNet Documentation Reference Guide CD	ABT-N100-DRG70
EtherNet/IP Procedures Guide	ABT-N300-TSJ50
EtherNet/IP Documentation Reference Guide CD	ABT-N300-DRG70
Studio 5000 Logix Designer and Logix 5000 Procedures Guide	ABT-1756-TSJ50
Logix 5000 Documentation Reference Guide	ABT-1756-DRG70

This course is intended for maintainers. Some topics may be similar to topics covered in courses CCP164, CCP173, and CCP178.

**Combination of DeviceNet, ControlNet, and EtherNet maintenance topics*

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DeviceNet and RSNetWorx™ Configuration and Troubleshooting

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCP164
3 Days CEUs 2.1

Course Purpose

This course prepares students to successfully design and configure an efficient DeviceNet network using components for the ControlLogix platform. To meet this objective, students begin by designing a cable system, and then configure a driver, a 1756-DNB scanner module, and network devices. This course prepares students to troubleshoot a malfunctioning DeviceNet network and return it to normal operation with minimum downtime. Students will verify proper network installation and perform both hardware and software-based tasks used to isolate DeviceNet problems, as well as practice the tasks necessary to add and replace network devices.

Objectives

After completing this course, students should be able to perform the following tasks:
- Identify DeviceNet network components and design a DeviceNet cable system
- Create a DeviceNet network configuration
- Commission nodes on a DeviceNet network
- Configure a 1756-DNB DeviceNet scanner module
- Map inputs and outputs on a DeviceNet network
- Manage DeviceNet EDS files
- Configure Automatic Device Recovery (ADR) on a DeviceNet network
- Communicate on a DeviceNet network using explicit messaging
- Troubleshoot a DeviceNet network using:
  - RSNetWorx for DeviceNet software
  - RSLogix 5000 software
  - DeviceNet and ControlLogix hardware indicators
- Troubleshoot duplicate node addresses on a DeviceNet network
- Restore a malfunctioning DeviceNet network to normal operation

Who Should Attend?

Individuals who are:
- Responsible for designing and configuring a new DeviceNet network
- Responsible for isolating and correcting problems or performing basic maintenance on a DeviceNet network

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *RSLogix 5000 Level 1: ControlLogix System Fundamentals* course (CCP146)
  OR
- Knowledge of common ControlLogix terminology and the ability to program and interpret basic ladder logic instructions in RSLogix 5000 software

Job Aids Included	Catalog #
DeviceNet and RSNetWorx Troubleshooting Guide	ABT-N100-TSJ20
DeviceNet and RSNetWorx Procedures Guide	ABT-N100-TSJ50
DeviceNet Documentation Reference Guide CD	ABT-N100-DRG70

ControlNet and RSNetWorx Configuration and Troubleshooting

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCP173
3 Days CEUs 2.1

Course Purpose

This course provides students with the skills necessary to efficiently design and configure a ControlNet network. Students will gain these skills from the ground up, practicing each step in the design and configure process from choosing the correct cable to configuring the connections that will transmit data from ControlLogix (Logix5000) controllers and other devices across that cable. This course provides students with the skills needed to safely and efficiently return a malfunctioning network to normal operation. The instructor will introduce a logical process for troubleshooting ControlNet and RSNetWorx components and demonstrate how to identify problems with communications cards, cabling, and other network hardware.

Objectives

After completing this course, students should be able to perform the following tasks:
- Design and troubleshoot a ControlNet media system
- Go online to a ControlNet network
- Enter scheduled ControlNet I/O data connections for Logix5000 controllers
- Enter ControlNet messages for Logix5000 controllers
- Isolate faulty ControlNet and RSNetWorx media using signal measurement equipment
- Isolate ControlNet and RSNetWorx network malfunctions using LEDs and mnemonic displays
- Identify a ControlNet and RSNetWorx network malfunction using RSLinx software
- Troubleshoot a ControlNet and RSNetWorx network using RSNetWorx for ControlNet software

Who Should Attend?

Individuals who are:
- Responsible for designing/configuring a new ControlNet &RSNetWorx network
- Managing/modifying an existing ControlNet & RSNetWorx network

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Experience with Windows-based programming software (Studio 5000 Logix Designer)

Job Aids Included	Catalog #
ControlNet and RSNetWorx Procedures Guide	ABT-N200-TSJ50
ControlNet and RSNetWorx Troubleshooting Guide	ABT-N200-TSJ20
ControlNet Documentation Reference Guide CD	ABT-N200-DRG70

Data Highway/Ethernet Peer-to-Peer Communications

CCP310-LD
4.5 Days

Course Purpose

This course provides students with an overall systems approach of how Data Highway Plus (DH+) and Ethernet networks relate to both programmable controllers and computers. General network architectures are discussed along with system interconnections, cabling, and installation. Students will be introduced to programming for controllers relative to the DH+ and EtherNet networks. Students will learn about the structure of DH+ and EtherNet communication protocols.

Objectives

After completing this course, students should understand the following topics:

- DH+ and Ethernet topologies
- Token passing protocol
- Channel diagnostics
- PLC-5 channel buffers
- PC-PLC-5 communications
- PLC-5-to-PLC-5 remote communications
- Ethernet protocols
- PLC-5, SLC-5/05, and ControlLogix CIP Ethernet messages
- SLC-5/04 and ControlLogix DH+ messages

Who Should Attend?

Individuals who:

- Are responsible for designing, developing, or system programming programmable logic controllers
- Senior level maintenance personnel who will be involved in specifying, installing, programming, or planning PLC-5, SLC-500, or ControlLogix peer-to-peer communications over DH+ or Ethernet networks

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *PLC-5 Programming* course (CCP410)
- Completion of the *SLC-500 Programming* course (CCPS41)
- Completion of the *ControlLogix Project Development* course (CCP143)

Networks

PowerFlex® 700 Vector Control Communications on DeviceNet

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCA162
1 Day CEUs 0.7

Course Purpose

This skill-building course introduces techniques and instructions that will assist students in successfully configuring a PowerFlex 700 vector control drive to communicate on an existing DeviceNet network. Throughout the course, students will learn how to use RSNetWorx for DeviceNet software to perform tasks, such as browsing the network, commissioning the PowerFlex 700 node, and configuring drive parameters. The students will learn scanner module configuration and input and output mapping. Students will be given an application-based exercise that offers extensive hands-on practice using the PowerFlex 700 vector control drive and RSNetWorx for DeviceNet software.

Objectives

After completing this course, students should be able to perform the following tasks:

- Connect a drive to a DeviceNet network
- Commission a PowerFlex 700 node on a DeviceNet network
- Configure drive and adapter parameters using RSNetWorx for DeviceNet software
- Manage DeviceNet EDS files for the PowerFlex 700 drive
- Configure a 1756-DNB module to communicate with a PowerFlex 700 vector control drive using RSNetWorx for DeviceNet software
- Map PowerFlex 700 vector control drive inputs and outputs to a 1756-DNB module using RSNetWorx for DeviceNet software

Job Aids Included	Catalog #
PowerFlex 700 Standard and Vector Control Procedures Guide	ABT-20B-TSJ50
DeviceNet and RSNetWorx Procedures Guide	ABT-N100-TSJ50
PowerFlex 700 Standard and Vector Control Documentation Reference Guide CD	ABT-20B-DRG70

Who Should Attend?

Individuals who are responsible for configuring PowerFlex 700 vector control drives to communicate on a DeviceNet network

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *AC/DC Motors and Drives Fundamentals* course (CCA101) or equivalent experience
- Completion of the *PowerFlex 700 Vector Control Configuration and Startup* course (CCA161) is recommended but not required

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PowerFlex 700 Vector Control Communications on ControlNet

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCA164

2 Days | CEUs 1.4

Course Purpose

This skill-building course introduces techniques and instructions that will assist students in successfully starting up a PowerFlex 700 vector control AC drive and commissioning it on a ControlNet network. Students will learn how to configure PowerFlex 700 vector control drive parameters and install and commission a ControlNet communications adapter and learn to configure a ControlNet network and create network connections for Logix5000 controllers.

Objectives

After completing this course, students should be able to perform the following tasks:

- Configure PowerFlex 700 vector control drive parameters using the LCD HIM, DriveExplorer™ software, and DriveExecutive™ software
- Upload and download PowerFlex 700 vector control drive data
- Start up a PowerFlex 700 vector control drive
- Install and configure a PowerFlex 700 vector control drive ControlNet communications adapter
- Configure an offline ControlNet network
- Enter scheduled ControlNet I/O data connections for Logix5000 controllers
- Enter ControlNet messages for Logix5000 controllers
- Control PowerFlex 700 vector control drive operation

Who Should Attend?

Individuals responsible for configuring parameters and starting up PowerFlex 700 vector control drives

Prerequisites

- Experience operating a computer within a Microsoft Window environment
- Working knowledge of electricity, and knowledge of electrical/industrial safety
- Completion of the *AC/DC Motors and Drives Fundamentals* course (CCA101) or *Fundamentals of AC and DC Motors and Drives* web-based training (ePass/WBT1PACK) or equivalent experience

Job Aids Included	Catalog #
PowerFlex 700 Standard and Vector Control Procedures Guide	ABT-20B-TSJ50
PowerFlex 700 Standard and Vector Control Documentation Reference Guide CD	ABT-20B-DRG70
PowerFlex 700 Standard and Vector Control Quick Reference Guide	ABT-20AB-TQR90
ControlNet and RSNetWorx Procedures Guide	ABT-N200-TSJ50

EtherNet/IP Fundamentals and Troubleshooting

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCP180

1 Day | CEUs 0.7

Course Purpose

This course will assist students in developing fundamental knowledge of industrial communications over an EtherNet/IP network. Students will learn basic concepts and learn how to use various tools to assign IP addresses to EtherNet/IP devices. This course prepares students to effectively resolve issues with communications between a controller and the devices it is controlling. Students will troubleshoot EtherNet/IP network media and components, including a Stratix 5700 switch. Students will have an opportunity to monitor diagnostic information using web-based technologies and modify web server module data views and tag values.

Objectives

After completing this course, students should be able to perform the following tasks:

- Assign an IP address to a computer
- Ping a module IP address
- Assign IP addresses using:
  - RSLinx® classic software and rotary switches
  - BOOTP-DHCP server software
- Isolate an EtherNet/IP network problem
- Diagnose problems with EtherNet/IP modules and network components
- Monitor an EtherNet/IP network using web-enabled technologies

Who Should Attend?

Individuals who are:

- Responsible for configuring a new EtherNet/IP network
- Troubleshooting an existing EtherNet/IP network

Prerequisites

- Completion of the *Studio 5000 Logix Designer™ Level 1: ControlLogix Systems Fundamentals* course (CCP146) or equivalent experience
- Completion of the *Studio 5000 Logix 5000 Level 2: ControlLogix Maintenance and Troubleshooting* course (CCP153)

Job Aids Included	Catalog #
EtherNet/IP Procedures Guide	ABT-N300-TSJ50
EtherNet/IP Documentation Reference Guide CD	ABT-N300-DRG70

Stratix 5700 Switch Configuration for an EtherNet/IP™ Network

International Association for Continuing Education and Training

CCP179

2 Days CEUs 1.4

Course Purpose

This course will assist students in configuring a Stratix 5700 switch for industrial communications over an EtherNet/IP network. Students will learn how to use the Device Manager Web Interface, a graphical device management tool, and Studio 5000 Logix Designer™ software to configure and monitor the switch. Students will learn to effectively secure and limit access to the switch. This course covers one-to-one IP address translation (referred to as Network Address Translation) for segmenting machine-level network devices from the plant network. Students will have an opportunity to run diagnostic tests to help resolve system and port issues on the switch as well as perform common functions such as resetting the switch.

Objectives

After completing this course, students should be able to perform the following tasks:

- Configure:
  - Stratix 5700 switch settings
  - VLANs
  - DHCP persistence
  - Network address translation
  - Security and traffic monitoring parameters
- Monitor Stratix 5700 switch status and performance
- Troubleshoot the Stratix 5700 switch
- Update the Stratix 5700 switch firmware
- Manage the Stratix 5700 switch using Studio 5000 Logix Designer software

Who Should Attend?

Individuals responsible for configuring a Stratix 5700 switch for an EtherNet/IP network

Prerequisites

Completion of the *EtherNet/IP™ Fundamentals and Troubleshooting* course (CCP180) or equivalent experience

Job Aids Included	Catalog #
EtherNet/IP Procedures Guide	ABT-N300-TSJ50
EtherNet/IP Documentation Reference Guide CD	ABT-N300-DRG70

Studio 5000 Logix Designer Level 4: Kinetix® 6500 (CIP) Programming

International Association for Continuing Education and Training

CCN144

4 Days CEUs 2.8

Course Purpose

After completing this course, students should be able to configure, test, tune, and program CIP motion axes in the Studio 5000 Logix Designer programming environment. Building upon the skills gained in the *Studio 5000 Logix Designer Level 3: Project Development* course (CCP143), students will learn how to apply the Logix5000 architecture to a multi-axis CIP motion control system. Students will practice project planning and efficient programming skills necessary for translating a machine specification into reliable ladder logic code. Because all Logix5000 products share common features and a common operating system, students will be able to apply the configuring and programming motion control skills they learn in this course to any of the Logix5000 controllers that are capable of motion control.

Objectives

After completing this course, students should be able to perform the following tasks:

- Create a Studio 5000 Logix Designer project for a CIP motion application
- Add drives and configure CIP motion axes
- Test CIP motion hardware
- Autotune CIP motion axes
- Plan a motion project
- Create user-defined data types, axis-level program shell, and axis-level tags
- Program the:
  - Axis-level dispatch and power up routines
  - Axis-level command routine
  - Axis-level waiting routine
  - Aborting, clearing, stopping, resetting, and starting routine
- Replicate the axis program
- Replicate an application-level program and program the execute routine
- Add a virtual axis
- Program electronic gearing and camming

Who Should Attend?

Individuals who need to configure and program Logix5000 motion control systems should attend this course. In addition, only students who are already familiar with Logix5000 systems and general motion control

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *Motion Control Fundamentals* course (CCN130) or equivalent knowledge of drives, feedback devices, and servo motion systems
- Completion of the *Studio 5000 Logix Designer Level 3: Project Development* course (CCP143) or equivalent experience

Job Aids Included	Catalog #
Studio 5000 Logix Designer and Logix5000 Motion Procedures Guide	ABT-1756-TSJ52
Logix5000 Documentation Reference Guide CD	ABT-1756-DRG70

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PowerFlex® 700 Vector Control Communications over EtherNet/IP

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCA165

1 Day | CEUs 0.7

Course Purpose

After completing this course, given a PowerFlex 700 vector control drive that has been successfully started up and configured, students should be able to add their drive to an EtherNet/IP network that includes Logix5000™ controllers or PanelView™ Plus terminals running FactoryTalk® View ME software. Throughout the course, students will have the chance to use a variety of hardware and software tools, including: A3 LCD HIM; Studio 5000 Logix Designer™ application; and drive configuration software (DriveExecutive™, Connected Components Workbench™). After each demonstration, students will be given exercises that offer extensive hands-on practice using a PowerFlex 700 vector control drive in tandem with a CompactLogix™ controller and/or PanelView Plus terminal.

Objectives

After completing this course, students should be able to perform the following tasks:

- Add a PowerFlex 700 vector control drive to a Studio 5000 Logix Designer project
- Import PowerFlex 700 vector control drive control code into a Studio 5000 Logix Designer project
- Create new PowerFlex 700 vector control drive control code in a Studio 5000 Logix Designer project
- Synchronize data and test PowerFlex 700 vector control drive operating modes
- Configure PowerFlex 700 vector control drive peer-to-peer communications

Job Aids Included	Catalog #
PowerFlex 700 Standard and Vector Control Procedures Guide	ABT-20B-TSJ50
PowerFlex 700 Standard and Vector Control Documentation Reference Guide CD	ABT-20B-DRG70
Studio 5000 Logix Designer and Logix5000 Procedures Guide	ABT-1756-TSJ50

Who Should Attend?

Individuals responsible for commissioning PowerFlex 700 vector control drives on an EtherNet/IP network

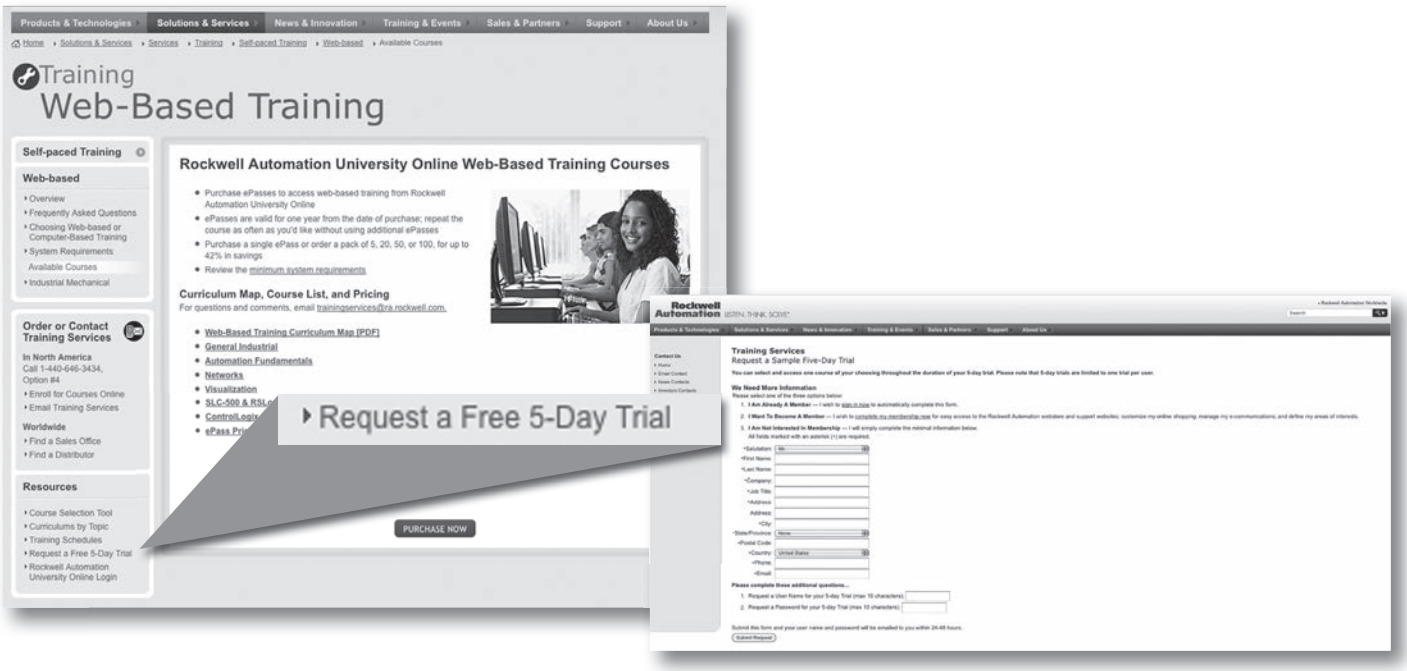
Prerequisites

- Working knowledge of electricity, and knowledge of electrical/industrial safety
- Completion of the *PowerFlex 700 Vector Control Configuration and Startup* course (CCA161) or equivalent experience
- Knowledge of Logix5000 system fundamentals and basic programming skills through one of the following methods:
  - Completion of the *Studio 5000 Logix Designer Level 2: Basic Ladder Logic Programming* course (CCP151)
  - Completion of available RSLogix 5000/Studio 5000 software computer-based and/or web-based training
  - Equivalent on-the-job experience

Web-Based Training

Try it for Free!

Sign up for a free five-day trial of our web-based training and visit Rockwell Automation University Online! Go to: www.rockwellautomation.com/services/training/self-paced



Visualization/HMI

Visualization/HMI Curriculum Map

UNDERSTAND

Introduction to Automation

CCP800 • 3 Days

Introduction to the Integrated Architecture System

CIA101 • 2 Days

PROGRAM OR DESIGN

FactoryTalk View ME and PanelView Plus Programming

CCV204 • 4 Days

FactoryTalk View SE Programming

CCV207 • 4.5 Days

FactoryTalk View SE Architecture

CCV205-LD • 2 Days

Microsoft VBA Configuration with FactoryTalk View SE Applications

VBAFTVSE • 4 Days

RSView32 Project Development

CCV201 • 4.5 Days

PanelView 300/550/600/900/1000/1400 and PanelBuilder32 Application Development

CCP196 • 2 Days

MAINTAIN OR TROUBLESHOOT

FactoryTalk View ME and PanelView Plus Maintenance and Troubleshooting

CCV209 • 2 Days

FactoryTalk View SE Maintenance and Troubleshooting

CCV206-LD • 2 Days

RSView32 Project Maintenance

CCP200 • 4 Days

Note: Consult course description for prerequisites

Also Available in Spanish

FactoryTalk ViewPoint Implementation

VC-FTVIEW-01
90-Min. Session

e-LEARNING

FactoryTalk View Machine Edition - Applications and Displays

RSTrainer Computer-Based Training

Web-Based Training

FactoryTalk View Machine Edition - Drawing Objects

RSTrainer Computer-Based Training

Web-Based Training

FactoryTalk View Machine Edition - Interactive Objects

RSTrainer Computer-Based Training

Web-Based Training

FactoryTalk View Machine Edition - Bundle

Applications and Displays

Drawing Objects

Interactive Objects

Introduction to Automation iBook Available on iTunes

RSTrainer licensing options:

- Single license (node-locked)
- 5 concurrent licenses (Enterprise Edition)

Virtual Classroom

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Introduction to Automation

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCP800

3 Days | CEUs 2.1

Course Purpose

After completing this course, students should have a broad and fundamental understanding of industrial automation. Topics range from an overview of common automation industries to an introduction of basic automated system components, such as controllers, I/O, drives, and Human Machine Interfaces (HMI). In addition, students will learn common automation terminology, what tools are used with industrial automation, and what careers may be available to you within this field.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identify
  - Common industries and applications in industrial automation
  - Industrial automation standards and regulations
  - I/O devices and modules
  - System documentation
  - HMI
  - AC and DC motors and drives
- Understand
  - Industrial automation careers
  - Basic mechanical components
  - Automation control systems
  - Controllers
  - Networks
  - Safety in automation
  - Process control
- Recognize logic and basic programming concepts

Who Should Attend?

Individuals who:

- Have little or no experience with automation systems
- Are interested in gaining a broad understanding of automation systems

Prerequisites

Basic training in electricity and electrical safety

Introduction to the Integrated Architecture™ System

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CIA101

2 Days | CEUs 1.4

Course Purpose

This course will assist students in developing and building a solid foundation of Integrated Architecture and automation system knowledge. Students will learn about and interact with a variety of automation hardware. They will have an opportunity to use Rockwell Automation software to perform basic system configuration tasks. While performing these tasks, students will gain an understanding of how controllers, drives, motors, networks, and human-machine interface (HMI) products function together within Integrated Architecture.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identify components of the integrated architecture system
- Establish communications in an integrated system
- Program a basic Logix Designer project for an integrated system
- Program with tag-based addressing in an integrated system
- Identify programming languages in an integrated system
- Understand Logix5000 multi-discipline control
- Understand NetLinx-enabled networks
- Understand the visualization development environment of an integrated system
- Understand HMI direct tag referencing in an integrated system

Who Should Attend?

Individuals who:

- Have little or no working experience with automation systems
- Are interested in gaining a broad understanding of automation and the Integrated Architecture System

Prerequisites

Experience operating a computer within a Microsoft® Windows® environment

FactoryTalk® View ME and PanelView™ Plus Maintenance and Troubleshooting

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCV209
2 Days CEUs 1.4

Course Purpose

This course provides students with the skills necessary to maintain and troubleshoot FactoryTalk View Machine Edition (ME) applications that run on PanelView Plus terminals. This course provides opportunities to work with both the hardware and software. Students will gain the hands-on skills required to prepare a PanelView Plus terminal for operation. Students will work with FactoryTalk View ME software and RSLinx Enterprise software and will practice downloading FactoryTalk View ME applications to a PanelView Plus terminal.

Objectives

After completing this course, students should be able to perform the following tasks:

- Replace components on a PanelView Plus terminal
- Set options on a PanelView Plus terminal
- Manage runtime files on a PanelView Plus terminal
- Manage development files using the application manager
- Modify RSLinx Enterprise communications in a FactoryTalk View ME application
- Download and upload FactoryTalk View ME runtime files
- Troubleshoot a PanelView Plus terminal
- Create tags and test data in a FactoryTalk View ME application
- Modify graphic displays in a FactoryTalk View ME application
- View and print FactoryTalk View ME components using the application documenter

Who Should Attend?

Individuals who need to maintain FactoryTalk ME applications and troubleshoot PanelView Plus terminals

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals* course (CCP146) or basic experience with ControlLogix tags and architecture

Job Aids Included	Catalog #
FactoryTalk View ME and PanelView Plus Procedures Guide	ABT-2711P-TSJ50

FactoryTalk View SE Maintenance and Troubleshooting

CCV206-LD
2 Days

Course Purpose

This course is intended to provide students with the skills required to diagnose common problems on a FactoryTalk View SE system. Students will practice operating and troubleshooting the system through hands-on exercises using FactoryTalk View SE software. In the class, students will practice troubleshooting methods such as alarming, diagnostics logging, data logging, and trending. Students will learn how to configure communications with a processor and the functions of redundancy.

Objectives

After completing this course, students should be able to perform the following tasks:

- Understand FactoryTalk View SE software
- Establish and maintain communications
- Monitor and interact with alarms
- Utilize diagnostics/data logging and trending
- Configure redundancy
- Development and operating tips

Who Should Attend?

Individuals who maintain FactoryTalk View SE projects

Prerequisites

Experience operating a computer within a Microsoft Windows environment

Job Aids Included	Catalog #
FactoryTalk View SE Procedures Guide	ABT-9701SE-TSJ50

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RSView®32 Project Maintenance

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCP200
4 Days CEUs 2.8

Course Purpose

This course is designed to provide students with the skills needed to maintain and modify an RSView32 human-machine interface (HMI) automation project used to control and monitor an operation. Students will use RSView32 software to practice the tasks associated with maintaining an existing RSView32 project by modifying functionality and features. Students will demonstrate the proper operation of the project by interacting with a computer and a Logix5000 controller, PLC-5® processor, or SLC™ 500 processor. Students will learn how to track real-time plant activity to reduce maintenance costs and optimize productivity.

Objectives

After completing this course, students should be able to perform the following tasks:
- Configure direct driver, DDE, and OPC communications
- Modify the tag database and a tag monitor
- Create and modify graphic displays and objects
- Configure and run activity log files
- Configure trends, security, and startup settings
- Create macros and symbols
- Configure and run alarms
- Create and modify key definition control
- Create, modify, and download recipe files
- Modify and run derived tag, parameter, and event files and data log models

This course is intended for maintainers. Some topics may be similar to topics covered in course CCV201.

Who Should Attend?

Individuals who:
- Need to maintain and modify an existing RSView32 project
- Need to control and monitor an operation using RSView32 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *PLC-5/SLC 500 and RSLogix Fundamentals* course (CCP122) or the *Studio 5000 Logix Designer Level I: ControlLogix® System Fundamentals* course (CCP146) or equivalent experience

Job Aids Included

RSView32 Procedures Guide

Catalog

ABT-9301-TSJ50

FactoryTalk View ME and PanelView Plus Programming

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCV204
4 Days CEUs 2.8

Course Purpose

This course is a skill-building course that provides students with the skills necessary to develop FactoryTalk View Machine Edition (ME) applications that run on the next-generation PanelView Plus terminals. During class, students will gain hands-on skills, like preparing a PanelView Plus terminal for operation, creating a new application and run it on a terminal, creating/configuring/animating graphic objects on graphic displays, configuring security for granting/restricting access to certain graphic displays or for rights to perform certain actions, and creating/configuring messages and alarms for alerting operators to changes in a process.

Objectives

After completing this course, students should be able to perform the following tasks:
- Configure a PanelView Plus terminal, RSLinx enterprise communications, FactoryTalk security, and display security
- Create and customize a FactoryTalk View ME application
- Create and modify tags and graphic objects
- Add and configure graphic display
- Create and manipulate graphic objects
- Create and configure interactive controls, information messages, alarms, and macros
- Create and manage FactoryTalk View ME runtime files
- Configure basic animation for FactoryTalk View ME objects, recipes with the RecipePlus system, and language switching
- Create data logs and trends, tag placeholders, and parameter files
- Add global objects
- Insert faceplates

Who Should Attend?

Individuals who need to create FactoryTalk View ME applications for use on a PanelView Plus terminal

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals* course (CCP146)
  OR
- Basic experience with ControlLogix tags and architecture

Job Aids Included

FactoryTalk ME and PanelView Plus Procedures Guide

Catalog

ABT-2711P-TSJ50

FactoryTalk ViewPoint Implementation

Virtual Classroom

AUTHORIZED IACET PROVIDER International Association for Continuing Education and Training

VC-FTVIEW-01

90 Minutes CEUs 0.15

Course Purpose

This course will teach students how to monitor their FactoryTalk View ME projects in a web browser. This course will show students how to create a new FactoryTalk View ME web application and connect to an existing FactoryTalk View ME web application via Ethernet from a PanelView Plus.

Objectives

After completing this course, students should be able to perform the following tasks:

- Verify client requirements
- Verify server requirements
- Create a new ME web application
- Connect to an existing ME web application
- Troubleshoot common integration problems

Who Should Attend?

Individuals who need to monitor installations from any remote location with Internet access, but without FactoryTalk View ME software

Prerequisites

Experience using FactoryTalk View ME software and PanelView Plus programming is required. Specifically, students must know how to create .apa files and download files to PanelView Plus terminals

Technology Requirements

A computer and phone

FactoryTalk View SE Programming

AUTHORIZED IACET PROVIDER International Association for Continuing Education and Training

CCV207

4.5 Days CEUs 3.2

Course Purpose

This course will aid students in developing FactoryTalk View Site Edition (SE) applications. All aspects of the FactoryTalk View SE software are presented, followed by interactive hands-on lab assignments emphasizing application of the concepts in an industrial setting. Students will have the opportunity to create an application and build graphic displays. Students will work with RSLinx® Enterprise communications software and the FactoryTalk diagnostics system.

Objectives

After completing this course, students should be able to perform the following tasks:

- Configure RSLinx enterprise communications
- Configure OPC communications
- Create a network FactoryTalk View SE application
- Create graphic displays
- Build and animate an interactive graphic display
- Configure global objects
- Configure HMI tag-based alarms and FactoryTalk alarms/events
- Create and configure a trend
- Create macros, symbols, and keys
- Create an HMI tag database
- Use tag placeholders and create a FactoryTalk View SE client
- Create and view a data log model
- Create a derived tag tile and an event file
- *Optional:* Add VBA display code

Who Should Attend?

Individuals who need to develop FactoryTalk View SE local (stand-alone) or network (distributed) applications

Prerequisites

Experience operating a computer within a Microsoft Windows environment

Job Aids Included

FactoryTalk View SE Procedures Guide

Catalog

ABT-9701SE-TSJ50

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FactoryTalk View SE Architecture

CCV205-LD
2 Days

Course Purpose

This course will allow students to successfully deploy a finished FactoryTalk View SE distributed application. Building on students' knowledge of HMI (human-machine interface) application development and their experience with operating these systems, this course covers: review of Windows domains and Windows 2003 security; Windows networking basics; FactoryTalk View SE distributed application architecture guidelines; deployment of components for a distributed application; terminal server and remote desktop connection configuration; and troubleshooting.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identify network/Windows considerations for a Distributed FactoryTalk
- View SE Application
- Design a FactoryTalk View SE network (distributed) application
- Evaluate FactoryTalk View SE system design using the reference system
- Add terminal services to a FactoryTalk View SE network system
- Implement FactoryTalk Security
- Install FactoryTalk View SE software
- Deploy a FactoryTalk View SE network application
- Implement redundancy in a FactoryTalk View SE Network Application
- Use remote desktop connection and terminal services to view remote
- FactoryTalk View SE clients

Who Should Attend?

Individuals who need to move a distributed FactoryTalk View SE application from an engineering environment to the plant floor

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Familiarity with Windows 2003 Server and Windows networking concepts
- Completion of the *FactoryTalk View SE Programming* course (CCV207)
  OR
- Previous experience working with FactoryTalk View SE software or similar HMI/SCADA (Supervisory Control and Data Acquisition) products

Microsoft® VBA Configuration with FactoryTalk View SE Applications

VBAFTVSE
4 Days

Course Purpose

In this course, students will learn to develop and implement Visual Basic for Applications (VBA) procedures or subroutines within a FactoryTalk View SE project. The course covers VBA concepts, an overview of the VBA language, FactoryTalk View SE software's Object Model and the creation, modification and execution of VBA procedures from within FactoryTalk View SE software. Students will learn the fundamentals of Microsoft Excel, Word, and Access Object Models. Interacting with these Object Models from within their FactoryTalk View SE VBA procedures will allow students to create applications that perform such tasks as creating and printing Word documents or Excel spreadsheets with charts, and reading and writing to Access database files.

Objectives

After completing this course, students should be able to perform the following tasks:

- Configure VBA within an FactoryTalk View SE project
- Configure UserForms and events in FactoryTalk View SE VBA
- Debug tools and error handling in VBA
- Triggering a command on a client from an HMI server
- Access the FactoryTalk View SE object model from an external automation controller
- Control Microsoft Excel, Word, and Access with VBA
- Configure OPC automation with VBA
- Configure trend object

Who Should Attend?

Individuals who wish to implement VBA procedures within their FactoryTalk View SE projects to meet application requirements

Prerequisites

- Familiarity with the Windows XP user interface and FactoryTalk View SE software
- Familiarity with processors

RSView32 Project Development

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCV201
4.5 Days CEUs 3.2

Course Purpose

This course is designed to provide students with the skills needed to create an RSView32 human-machine interface (HMI) automation project used to control and monitor an operation. Students will use RSView32 software to practice the tasks associated with creating an RSView32 project, including using Microsoft OLE, ActiveX, and DDE technologies. Students will demonstrate the proper operation of the project by interacting with a computer and either a ControlLogix™ controller or software that simulates ControlLogix or SLC hardware. Students will learn how to track real-time plant activity to reduce maintenance costs and optimize productivity.

Objectives

After completing this course, students should be able to perform the following tasks:
- Create RSView32 projects, derived tag & event files, ActiveX objects, and graphic displays
- Configure direct driver communications, OPC/DDE communications, trends & pens, and security
- Create and monitor tags, alarms, and activities
- Configure and run data log models
- Add animation to graphic displays
- Create and run parameter files, macros, and symbols
- Create RAD server, client connections, key definition control, and OLE objects
- Enter and run VBA code

This course is intended for programmers. Some topics may be similar to topics covered in course CCP200.

Who Should Attend?

Individuals who:
- Need to create an RSView32 project to control
- Need to monitor an operation using RSView32 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *PLC-5/SLC 500 and RSLogix Fundamentals* course (CCP122) or the *Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals* course (CCP146) or equivalent experience

Job Aids Included

RSView32 Procedures Guide

Catalog

ABT-9301-TSJ50

PanelView™ 300/550/600/900/1000/1400 and PanelBuilder™32 Application Development

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCP196
2 Days CEUs 1.4

Course Purpose

This course prepares students to successfully design and configure a control panel application for a PanelView standard terminal that is used to control and monitor an operation. Students will use PanelBuilder 32 software to practice the tasks associated with creating the operator interface screens and they will demonstrate proper operation of the screens by interacting with the terminal and the processor. Students will learn how to troubleshoot a terminal and PanelBuilder32 application to help decrease downtime of equipment.

Objectives

After completing this course, students should be able to perform the following tasks:
- Prepare a standard PanelView terminal for operation
- Connect communications cables
- Create an application, a tag database, and background text
- Define network communication parameters
- Download an application
- Create control objects and displays
- Create messages and reports
- Add bitmap graphic images
- Troubleshoot a PanelView standard terminal and a PanelBuilder32 application

Who Should Attend?

Individuals who:
- Need to diagnose and correct application and/or terminal problems
- Need to create a PanelBuilder32 application
- Need to control and monitor an operation using a PanelView standard terminal

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Experience creating ladder logic using RSLogix 500 software
- Completion of the *PLC-5/SLC 500 and RSLogix Fundamentals* course (CCP122) or equivalent experience

Job Aids Included

PanelView 300/550/600/900/1000/1400 and PanelBuilder32 Procedures Guide

Catalog

ABT-2711-TSJ50

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Instructor-Led Training

Bring Expert Instructors to Your Location with Rockwell Automation On-Site Training!

Training costs can quickly rise when one or more individuals are sent to a remote location to attend a training course. It is often tempting to allow employees to learn through trial and error, but this is also a waste of time and money. A simple solution to such a logistical problem is the Rockwell Automation on-site training services.

On-site training can work in a typical classroom environment or one-on-one on the plant floor. Certain factors will dictate whether classroom or individual training is best, such as the number of students, current skill levels, and desired skill levels.

You Choose . . .

- Flexibility
- Shift schedules
- Training time frames
- Days of the week
- Class size

- Content
- Standard
- Tailored
- Custom

- Location
- Your classroom
- On the plant floor
- Other site

Contact your local Rockwell Automation sales office or Allen-Bradley distributor, 440-646-3434 (option 4) to initiate a discussion about our on-site training courses.

Standard, on-site training courses provide these benefits:

- Flexible location – at your facility, in your training center, on the plant floor
- Flexible schedule (any date, time, or shift) that works best for your employees
- **Free!** pre- and posttests that measure your students' knowledge gain and demonstrate the value of Rockwell Automation training solutions
- Dedicated instructor emphasizing hands-on, job related training relevant to your employees' skill and knowledge needs, as well as your requirements
- Adjustment of training content based on students' prerequisite and current skill levels
- Overall training cost-savings – eliminate expenses associated with employees traveling to off-site training
- Consistent instruction – employees that attend the same training and learn the same information from the same instructor

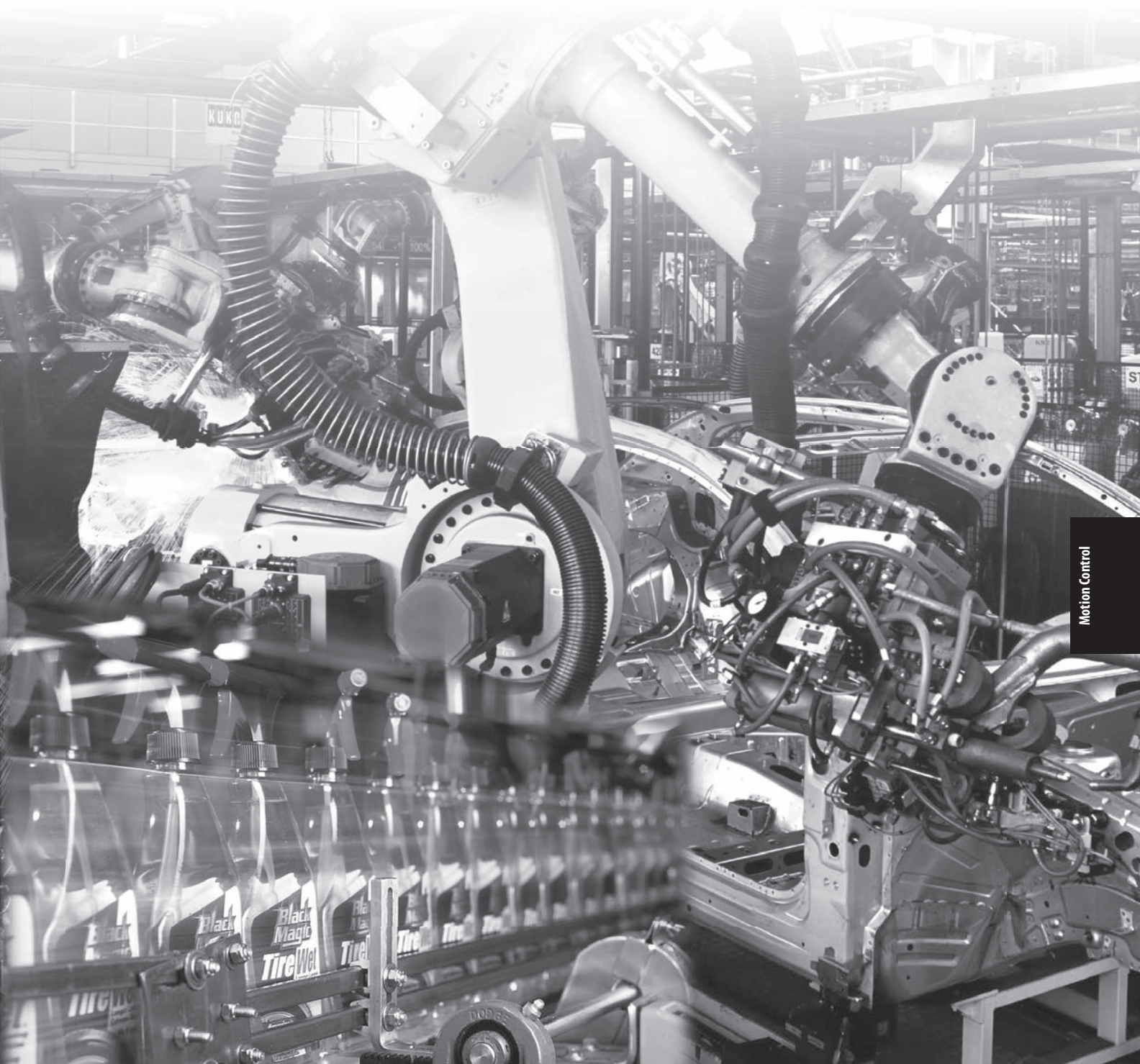
Personal Trainer

Our Rockwell Automation instructor can help you create automation expertise with one-on-one training. The personal trainer is an experienced instructor and technical expert who develops and implements an individualized training plan for one to two individuals on-site at your facility. The personal trainer can provide in-depth technical experience or help mentor newly hired employees.

Custom On-Site Training

Rockwell Automation provides custom on-site, classroom training to meet your industry, application, and system-level training needs. This type of instructor-led instruction is available for companies who want to ensure their employees are highly skilled in certain applications or systems, or within certain industries. The training content focuses not only on the Rockwell Automation technology but the integration of the technology in your specific application and industry.

Motion Control



Motion Control Curriculum Map

UNDERSTAND

Introduction to Automation

CCP800 • 3 Days

START

Motion Control Fundamentals

CCN130 • 2 Days

Introduction to the Integrated Architecture System

CIA101 • 2 Days

PROGRAM OR DESIGN

Studio 5000 Logix Designer Level 4: Kinetix 6500 (CIP) Programming

CCN144 • 4 Days

Studio 5000 Logix Designer Level 4: Kinetix 6000 (SERCOS) Programming

CCN142 • 3 Days

Studio 5000 Logix Designer Level 5: Advanced Motion Programming

CCN190-LD • 2 Days

MAINTAIN OR TROUBLESHOOT

Kinetix 6000 Troubleshooting and Project Interpretation

CCN200 • 2 Days

Note: Consult course description for prerequisites

Integrated Motion on EtherNet/IP: Configuration

VC-CCN300-01
120-Min. Session

Integrated Motion on EtherNet/IP: Commissioning

VC-CCN300-02
90-Min. Session

Integrated Motion on EtherNet/IP Bundle: VC-CCN300

e-LEARNING

RSLogix 5000 Software - Motion

RSTrainer
Computer-Based Training

Web-Based Training

Introduction to Automation
iBook Available on iTunes

RSTrainer licensing options:
- Single license (node-locked)
- 5 concurrent licenses (Enterprise Edition)

Virtual Classroom

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Introduction to Automation

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCP800

3 Days | CEUs 2.1

Course Purpose

After completing this course, students should have a broad and fundamental understanding of industrial automation. Topics range from an overview of common automation industries to an introduction of basic automated system components, such as controllers, I/O, drives, and Human Machine Interfaces (HMI). In addition, students will learn common automation terminology, what tools are used with industrial automation, and what careers may be available to you within this field.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identify
  - Common industries and applications in industrial automation
  - Industrial automation standards and regulations
  - I/O devices and modules
  - System documentation
  - HMI
  - AC and DC motors and drives
- Understand
  - Industrial automation careers
  - Basic mechanical components
  - Automation control systems
  - Controllers
  - Networks
  - Safety in automation
  - Process control
- Recognize logic and basic programming concepts

Who Should Attend?

Individuals who:

- Have little or no experience with automation systems
- Are interested in gaining a broad understanding of automation systems

Prerequisites

Basic training in electricity and electrical safety

Introduction to the Integrated Architecture™ System

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CIA101

2 Days | CEUs 1.4

Course Purpose

This course will assist students in developing and building a solid foundation of Integrated Architecture and automation system knowledge. Students will learn about and interact with a variety of automation hardware. They will have an opportunity to use Rockwell Automation software to perform basic system configuration tasks. While performing these tasks, students will gain an understanding of how controllers, drives, motors, networks, and human-machine interface (HMI) products function together within Integrated Architecture.

Objectives

After completing this course, students should be able to perform the following tasks:

- Establish communications in an integrated system
- Program a basic Logix Designer project for an integrated system
- Program with tag-based addressing in an integrated system
- Understand Logix5000™ multi-discipline control
- Understand NetLinx-enabled networks
- Understand the visualization development environment of an integrated system
- Understand HMI direct tag referencing in an integrated system

Who Should Attend?

Individuals who:

- Have little or no working experience with automation systems
- Are interested in gaining a broad understanding of automation and the Integrated Architecture System

Prerequisites

Experience operating a computer within a Microsoft® Windows® environment

Motion Control Fundamentals

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCN130
2 Days CEUs 1.4

Course Purpose

This course provides students with an overview of motion control concepts, terminology, functionality, and applications. In addition, students will learn how motion control applications function using the concepts and principles discussed in each lesson. This course allows students to establish the strong essential foundation needed to attend other courses in the Motion Control curriculum.

Objectives

After completing this course, students should be able to perform the following tasks:
- Identify motion control system components and functions
- Apply basic motion control concepts
- Identify the components of a digital servo motion controller
- Identify the functionality of AC and DC servo motors and servo drives
- Identify the functionality of feedback devices and software servo loop
- Apply motion profiles
- Apply electronic gearing and camming profiles

Who Should Attend?

Individuals who:
- Need to learn basic motion control concepts for their job
- Need a prerequisite for attending other motion control courses

Prerequisites

Background in basic electricity, electronics, controllers operation, and computer concepts is helpful

Job Aids Included	Catalog #
Motion Control Glossary	ABT-M100-TSG10

Kinetix® 6000 Troubleshooting and Project Interpretation

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCN200
2 Days CEUs 1.4

Course Purpose

This course provides students with skills required to diagnose common problems on a Kinetix 6000 system. Students will practice operating and troubleshooting the system through hands-on exercises using the Studio 5000 Logix Designer application. Students will learn how to maintain and troubleshoot a multi-axis motion control system. Students will practice identifying faults related to hardware and software by employing methods such as fault code tables, system LEDs, and other status indicators. Upon completion of this course, students will be able to apply maintenance and troubleshooting techniques to diagnose and correct common problems on a Kinetix 6000 system.

Objectives

After completing this course, students should be able to perform the following tasks:
- Locate Kinetix 6000 system components
- Check Kinetix 6000 connections
- Interpret Kinetix 6000 indicators
- Analyze fault codes in a Kinetix 6000 system
- Interpret motion state and move instructions in a Logix Designer project
- Test and tune axes in a Logix Designer project
- Replace a Kinetix 6000 drive

Job Aids Included	Catalog #
Studio 5000 Logix Designer and Logix5000 Motion Control Procedures Guide	ABT-1756-TSJ52
Logix5000 Documentation Reference Guide CD	ABT-1756-DRG70

Who Should Attend?

Individuals who need to maintain and troubleshoot Kinetix 6000 motion control systems

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *Motion Control Fundamentals* course (CCN130) or equivalent experience with drives, feedback devices, and velocity and position loop systems
- Completion of the *Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals* course (CCP146) or equivalent experience with the ControlLogix platform and basic ladder logic

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Studio 5000 Logix Designer™ Level 4: Kinetix 6000 (SERCOS) Programming

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCN142
3 Days CEUs 2.1

Course Purpose

This course provides students with the skills to configure and program Logix5000 applications specifically for integrated motion control functionality using ladder logic and SERCOS motion control technology. Students will learn how to apply the Logix5000 architecture to a multi-axis motion control system while developing programming skills that incorporate other components in a Logix5000 system, such as adding system modules, sharing tasks between multiple controllers, programming ladder logic, and using digital I/O.

Objectives

After completing this course, students should be able to perform the following tasks:

- Start a Logix5000 motion control application
- Add hardware
- Test and tune axes
- Program a basic motion routine
- Program a fault routine
- Program an electronic gearing routine
- Program an electronic camming routine
- Program a virtual axis
- Preview of the drives and motion accelerator toolkit

Job Aids Included	Catalog #
Studio 5000 Logix Designer and Logix5000 Motion Procedures Guide	ABT-1756-TSJ52
Logix5000 Documentation Reference Guide CD	ABT-1756-DRG70

Who Should Attend?

Individuals who need to configure and program Logix5000 motion control systems

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *Motion Control Fundamentals* course (CCN130) or equivalent experience with general motion control, drives, feedback devices, and velocity and position loop systems
- Completion of the *Studio 5000 Logix Designer Level 3: Project Development* course (CCP143) or equivalent experience
- Experience with entering and debugging ladder logic

Studio 5000 Logix Designer Level 5: Advanced Motion Programming

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCN190-LD
2 Days CEUs 1.4

Course Purpose

This course is intended to provide students with the skills to configure and program Logix5000 applications specifically for integrated motion control functionality using ladder logic, including SERCOS motion control technology. Students will learn how to apply advanced programming skills including tuning with Motion Analyzer software, advanced camming techniques, coordinated motion, and add-on instructions for motion applications.

Objectives

After completing this course, students should be able to perform the following tasks:

- Tune a servo axis with Motion Analyzer software
- Program event driven tasks
- Program output cam instructions
- Calculate a cam profile
- Program coordinate and motion add-on instructions
- Develop a motion control project using the power programming state model
- Programming coordinated move transform instructions in a pick and place application

Job Aids Included	Catalog #
Studio 5000 Logix Designer and Logix5000 Motion Procedures Guide	ABT-1756-TSJ52
Logix5000 Documentation Reference Guide CD	ABT-1756-DRG70

Who Should Attend?

Individuals who need to configure and program advanced Logix5000 motion control systems

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *Studio 5000 Logix Designer Level 3: Project Development* course (CCP143) or equivalent knowledge or experience with basic ladder logic programming
- Completion of the *Studio 5000 Logix Designer Level 4: Kinetix 6000 (SERCOS) Programming* course (CCN142) or equivalent experience
- Completion of the *Motion Control Fundamentals* course (CCN130) or equivalent experience with general motion control

Integrated Motion on EtherNet/IP: Configuration

Virtual Classroom

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

VC-CCN300-01

120 Minutes CEUs 0.2

Course Purpose

This course will teach students how to choose topology and components, configure controllers and axes, and add drives to their configuration.

Objectives

After completing this course, students should be able to perform the following tasks:

- Choose topology and components
- Configure a controller for the network
- Add drives
- Configure axes

Who Should Attend?

Individuals who design and develop motion control applications and who will be working with Integrated Motion on EtherNet/IP networks

Prerequisites

Experience developing motion control applications and working with RSLogix 5000 software

Technology Requirements

- A computer and phone
- RSLogix 5000 software (version 19) must be installed and activated. The virtual classroom invitation will provide details on how to obtain a temporary installation of the software if students do not have it.

Integrated Motion on EtherNet/IP: Commissioning

Virtual Classroom

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

VC-CCN300-02

90 Minutes CEUs 0.15

Course Purpose

This course will show students how to start up the network, test axes with motion direct commands, run hookup tests, and autotune axes.

Objectives

After completing this course, students should be able to perform the following tasks:

- Start up the network
- Test axes with motion direct commands
- Run hookup tests
- Autotune axes

Who Should Attend?

Individuals who design and develop motion control applications and who will be working with Integrated Motion on EtherNet/IP networks

Prerequisites

Experience developing motion control applications and working with RSLogix 5000 software

Technology Requirements

- A computer and phone
- RSLogix 5000 software (version 19) must be installed and activated. The virtual classroom invitation will provide details on how to obtain a temporary installation of the software if students do not have it.

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Studio 5000 Logix Designer Level 4: Kinetix 6500 (CIP) Programming

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCN144

4 Days | CEUs 2.8

Course Purpose

After completing this course, students should be able to configure, test, tune, and program CIP motion axes in the Studio 5000 Logix Designer programming environment. Building upon the skills gained in the *Studio 5000 Logix Designer Level 3: Project Development* course (CCP143), students will learn how to apply the Logix5000 architecture to a multi-axis CIP motion control system. Students will practice project planning and efficient programming skills necessary for translating a machine specification into reliable ladder logic code. Because all Logix5000 products share common features and a common operating system, students will be able to apply the configuring and programming motion control skills they learn in this course to any of the Logix5000 controllers that are capable of motion control.

Objectives

After completing this course, students should be able to perform the following tasks:

- Create a Studio 5000 Logix Designer project for a CIP motion application
- Add drives and configure CIP motion axes
- Test CIP motion hardware
- Autotune CIP motion axes
- Plan a motion project
- Create user-defined data types, axis-level program shell, and axis-level tags
- Program the:
  - Axis-level dispatch and power up routines
  - Axis-level command routine
  - Axis-level waiting routine
  - Aborting, clearing, stopping, resetting, and starting routine
- Replicate the axis program
- Replicate an application-level program and program the execute routine
- Add a virtual axis
- Program electronic gearing and camming

Who Should Attend?

Individuals who need to configure and program Logix5000 motion control systems

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *Motion Control Fundamentals* course (CCN130) or equivalent knowledge of general motion control, drives, feedback devices, and servo motion systems
- Completion of the *Studio 5000 Logix Designer Level 3: Project Development* course (CCP143) or equivalent experience

Job Aids Included	Catalog #
Studio 5000 Logix Designer and Logix5000 Motion Procedures Guide	ABT-1756-TSJ52
Logix5000 Documentation Reference Guide CD	ABT-1756-DRG70

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Drives

Drives Curriculum Map

UNDERSTAND

Introduction to Automation

CCP800 • 3 Days

START

AC/DC Motors and Drives Fundamentals

CCA101 • 2 Days

On-Site Only Course

Motor Theory

EM-202 • 3 Days

APPLICATION-SPECIFIC COURSES

PowerFlex 400 AC Drive Field Startup for HVAC Applications

CCA171-LD • 1 Day

PowerFlex 400/70/700/753 AC Drive Field Startup for Water Wastewater Applications

CCA177 • 2 Days

PROGRAM OR DESIGN

AutoMax Programming Fundamentals

RE0523 • 4 Days

PowerFlex 700 Vector Control Communications on DeviceNet

CCA162 • 1 Day

PowerFlex 700 Vector Control Communications on ControlNet

CCA164 • 2 Days

PowerFlex 700 Vector Control Configuration and Startup

CCA161 • 1 Day

PowerFlex 750-Series Configuration and Startup

CCA182 • 2 Days

PowerFlex 750-Series Configuration for an Integrated Architecture System

CCA184 • 1 Day

MAINTAIN OR TROUBLESHOOT

PowerFlex 70 Maintenance and Troubleshooting

CCA159-LD • 1 Day

AutoMax Maintenance and Troubleshooting

RE0520 • 4 Days

PowerFlex 700S Phase II Maintenance and Troubleshooting

PFX700S2-LD • 3 Days

PowerFlex 700 Vector Control Maintenance and Troubleshooting

CCA163 • 1 Day

PowerFlex 750-Series Maintenance and Troubleshooting

CCA183 • 2 Days

1336 PLUS II Maintenance and Troubleshooting

CCA137 • 3 Days

Note: Consult course description for prerequisites

PowerFlex 700 Vector Control Communications over EtherNet/IP

CCA165 • 1 Day

IntelliCENTER and DeviceNet Configuration

CCI106-LD • 2 Days

On-Site Only Course

PowerFlex DC Drive Configuration and Startup

CDD161 • 2 Days

On-Site Only Course

PowerFlex 700S Phase II HiHP Maintenance and Troubleshooting

PFX700S2-HIHP-LD • 3 Days

On-Site Only Course

PowerFlex DC Drive Troubleshooting

CDD163 • 2 Days

On-Site Only Course

Motor Control

EM-204 • 5 Days

ArmorStart Distributed Motor Controller Maintenance and Troubleshooting

CCA190 • 1 Day

PowerFlex 523/525 Drive Programming with PowerFlex 525 Drive Kit

VC-PF523P
120-Min. Session

PowerFlex 755 Floor Mounted Drives: Pre-Installation Planning

VC-PF755H-01
120-Min. Session

Includes Hardware Kit

Core Requirement for Certificate Program

Virtual Classroom

e-LEARNING

Fundamentals of AC/DC Motors and Drives

Web-Based Training

AC and DC Drives
iBook Available on iTunes

Introduction to Automation
iBook Available on iTunes

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Introduction to Automation

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCP800
3 Days CEUs 2.1

Course Purpose

After completing this course, students should have a broad and fundamental understanding of industrial automation. Topics range from an overview of common automation industries to an introduction of basic automated system components, such as controllers, I/O, drives, and Human Machine Interfaces (HMI). In addition, students will learn common automation terminology, what tools are used with industrial automation, and what careers may be available to you within this field.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identify
  - Common industries and applications in industrial automation
  - Industrial automation standards and regulations
  - I/O devices and modules
  - System documentation
  - HMI
  - AC and DC motors and drives
- Understand
  - Industrial automation careers
  - Basic mechanical components
  - Automation control systems
  - Controllers
  - Networks
  - Safety in automation
  - Process control
- Recognize logic and basic programming concepts

Who Should Attend?

Individuals who:

- Have little or no experience with automation systems
- Are interested in gaining a broad understanding of automation systems

Prerequisites

Basic training in electricity and electrical safety

AC/DC Motors and Drives Fundamentals

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCA101
2 Days CEUs 1.4

Course Purpose

This skill-building course provides students with a basic understanding of AC and DC motor and drive concepts and terminology. At the completion of this course, students will have the necessary fundamental knowledge and skills required to attend other Rockwell Automation AC and DC drives courses. Students will gain the hands-on skills required to build a miniature DC motor and investigate how a variable-speed drive controls the speed and direction of an attached motor. Students will become familiar with the drive Human Interface Module (HIM), which allows programmers, maintainers, and troubleshooters access to information stored within the drive.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identify electromechanical system components and concepts
- Recognize AC/DC motor drive hardware and operation
- Select a replacement motor
- Recognize line protection and filtering device hardware and functions
- Prevent electrostatic damage
- Recognize AC/DC drive hardware and functions
- Recognize AC/DC motor braking methods
- Test a drive using electrical measuring tools
- Preform pre-power and power-on checks
- Monitor and control a drive using the HIM
- Select a drive for basic applications

Who Should Attend?

Individuals who need to gain a fundamental understanding of motor and drive concepts before they learn to program, maintain, and troubleshoot AC and DC drives

Prerequisites

- Experience operating a computer within a Microsoft® Windows® environment
- General knowledge of electricity and electrical/industrial safety
- Familiarity with electrical measuring tools is helpful, but not required

Job Aids Included	Catalog #
AC and DC Motor and Drive Glossary	ABT-D100-TSG10

PowerFlex® 700 Vector Control Maintenance and Troubleshooting

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCA163
1 Days CEUs 0.7

Course Purpose

This skill-building course introduces concepts and techniques that will assist students in successfully maintaining and troubleshooting a PowerFlex 700 vector control drive. Students will learn how to recognize PowerFlex 700 drive hardware and properly wire the drive. Students will learn to diagnose specific load-related, environmental, and equipment faults. Throughout the course, students will use the LCD HIM, DriveExplorer™, and DriveExecutive™ software to clear faults and alarms.

Objectives

After completing this course, students should be able to perform the following tasks:

- Replace and rewire drive hardware
- Configure drive parameters using LCD HIM, DriveExplorer, and DriveExecutive software
- Upload and download drive data
- Troubleshoot and clear drive alarms
- Clear drive faults
- Troubleshoot drive load and environmental faults
- Troubleshoot drive equipment malfunctions

This course is intended for maintainers. Some topics may be similar to topics covered in course CCA161.

Who Should Attend?

Individuals responsible for maintaining and troubleshooting PowerFlex 700 vector control drives

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Working knowledge of electricity and electrical/industrial safety
- Completion of the *Fundamentals of AC and DC Motors and Drives* web-based training (ePass/WBT1PACK), or equivalent experience

Job Aids Included	Catalog #
PowerFlex 700 Standard and Vector Control Troubleshooting Guide	ABT-20B-TSJ20
PowerFlex 700 Standard and Vector Control Procedures Guide	ABT-20B-TSJ50
PowerFlex 700 Standard and Vector Control Quick Reference Guide	ABT-20AB-TQR90
PowerFlex 700 Standard and Vector Control Documentation Reference Guide CD	ABT-20B-DRG70

PowerFlex DC Drive Troubleshooting (available on-site only)

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CDD163
2 Days CEUs 1.4

Course Purpose

This skill-building course is delivered at your facility and requires 230V, 3-phase power to operate the workstations. This course introduces concepts and techniques that will assist students in successfully troubleshooting a PowerFlex DC drive. Students will learn how to recognize PowerFlex DC drive hardware and properly rewire the drive. Students will learn to diagnose and correct specific faults. Throughout this course, students will have the chance to use a variety of troubleshooting tools, including: LCD HIM, DriveExplorer software, and DriveExecutive software. After each demonstration, students will be given exercises that offer extensive hands-on practice using the PowerFlex DC drive. This course can be taken as a stand-alone course, or it can be taken in conjunction with other courses in the PowerFlex AC and DC drives curriculum for further skills development.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identify PowerFlex DC drive hardware
- Locate and modify PowerFlex DC drive parameters using the A3 LCD HIM, the A6 LCD HIM (optional), and DriveExplorer software
- Clear PowerFlex DC drive alarms and faults
- Troubleshoot PowerFlex DC load, environmental faults, and drive equipment malfunctions
- Troubleshoot a PowerFlex DC drive
- Apply DC drive and motor fundamentals (optional review)
- Prepare for PowerFlex DC drive troubleshooting

Who Should Attend?

Individuals responsible for troubleshooting PowerFlex DC drives

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Knowledge of basic DC motor and drive fundamentals through the completion of the *AC/DC Motors and Drives Fundamentals* course (CCA101), *Fundamentals of AC and DC Motors and Drives* web-based training (ePass/WBT1PACK), or equivalent experience

Job Aids Included	Catalog #
PowerFlex DC Drives Documentation Reference Guide CD	*ABT-20P-DRG70*

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AutoMax Maintenance and Troubleshooting

RE0520
4 Days

Course Purpose

This course is designed to provide students with a general understanding of AutoMax hardware and to acquire the necessary skills to interrogate the AutoMax processors for information needed to troubleshoot the system. Students will be provided an opportunity to monitor and load an AutoMax processor and to locate the necessary points for voltage measurements. After completing this course, students will understand AutoMax hardware in order to perform basic troubleshooting.

Objectives

After completing this course, students should understand the following topics:

- AutoMax concepts
- Hardware discussion
- AutoMax executive
- Configuration
- PC task
- Basic language
- Control block language

Who Should Attend?

Individuals who are responsible for the installation, maintenance, and repair of AutoMax systems

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Familiarity with test equipment and drive systems
- Working knowledge of electricity and knowledge of electrical/industrial safety (including PPE requirements and safe practices)
- Knowledge of basic DC motor and drive fundamentals through the completion of the *AC/DC Motors and Drives Fundamentals* course (CCA101), *Fundamentals of AC and DC Motors and Drives* web-based training (ePass/WBT1PACK), or equivalent experience

PowerFlex 700S Phase II Maintenance and Troubleshooting

PFX700S2-LD
3 Days

Course Purpose

This skill-building course introduces concepts and techniques that will assist students in successfully maintaining and troubleshooting a PowerFlex 700S Phase II AC drive. Students will learn how to recognize PowerFlex 700S Phase II drive hardware and properly wire the drive. Students will learn to diagnose specific load-related, environmental, and equipment faults. Throughout the course, students will use the LCD HIM, DriveExplorer software, and DriveExecutive software to clear faults and alarms. After each demonstration, students will be given an application-based exercise that offers extensive hands-on practice using the PowerFlex 700S drive.

Objectives

After completing this course, students should be able to perform the following tasks:

- Understand PowerFlex 700S Phase II high-performance AC drive hardware
- Configure parameters using the LCD HIM
- Configure drive parameters using DriveExecutive and DriveExplorer software
- Configure motor control options
- Select speed feedback options
- Upgrade communications module firmware
- Configure a gear-in application
- Configure Synchlink™ communications
- Troubleshoot a PowerFlex 700S Phase II high-performance AC drive
- Install and configure a ControlNet communications adapter
- Install and configure an EtherNet communications adapter

Who Should Attend?

Individuals responsible for starting up, configuring, maintaining, and troubleshooting PowerFlex 700S Phase II drives

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Working knowledge of electricity and knowledge of electrical/industrial safety
- Completion of the *AC/DC Motors and Drives Fundamentals* course (CCA101) *Fundamentals of AC and DC Motors and Drives* web-based training (ePass/WBT1PACK) or equivalent experience

Job Aids Included	Catalog #
PowerFlex 700S Phase II Documentation Reference Guide CD	ABT-20D-DRG71

PowerFlex 750-Series Maintenance and Troubleshooting

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCA183
2 Days CEUs 1.4

Course Purpose

This skill-building course introduces concepts and techniques that will assist students in successfully maintaining and troubleshooting a PowerFlex 750-Series (PowerFlex 753 or PowerFlex 755) drive. Students will learn how to recognize PowerFlex 750-Series drive hardware and properly wire the drive. Students will learn to diagnose specific faults. Throughout the course, students will have the chance to use a variety of maintenance and troubleshooting tools, including the A6 LCD HIM, DriveExplorer software, and DriveExecutive software. After each demonstration, students will be given exercises that offer extensive hands-on practice using a PowerFlex 753 or PowerFlex 755 drive.

Objectives

After completing this course, students should be able to perform the following tasks:
- Locate PowerFlex 750-Series drive hardware
- Locate and modify PowerFlex 750-Series drive data using the A6 HIM and drive software
- Clear PowerFlex 750-Series drive alarms and faults
- Perform predictive maintenance using PowerFlex 750-Series parameters
- Troubleshoot PowerFlex 750-Series load/environmental faults and equipment malfunctions

Who Should Attend?

Individuals responsible for maintaining and troubleshooting PowerFlex 750-Series drives

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Working knowledge of electricity and safety practices
- Completion of the *AC/DC Motors and Drives Fundamentals* course (CCA101), *Fundamentals of AC and DC Motors and Drives* web-based training (ePass/WBT1PACK), or equivalent experience

Job Aids Included	Catalog #
PowerFlex 750-Series AC Drives Documentation Reference Guide CD	ABT-20G-DRG70

1336 PLUS™ II Maintenance and Troubleshooting

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCA137
3 Days CEUs 2.1

Course Purpose

This course prepares students to re-install 1336 PLUS II drive hardware components, make changes to the setup, and troubleshoot drive malfunctions. Students will troubleshoot and repair a 1336 PLUS II drive, learning how to help decrease the downtime of equipment. Students will have the opportunity to maximize 1336 PLUS II drive investments by taking advantage of the vast networking options and learning how to configure a 1336 PLUS II drive to communicate on various networks.

Objectives

After completing this course, students should be able to perform the following tasks:
- Prevent electrostatic damage to drive components
- Replace and wire drive hardware
- Test a drive using electrical measuring tools
- Perform drive pre-power and power-on checks
- Modify drive parameters using the Human Interface Module (HIM)
- Locate, monitor, and modify drive parameters using DriveTools and DriveExplorer software
- Startup, troubleshoot, and repair a drive
- Configure communications
- Identify and monitor drive malfunctions

Job Aids Included	Catalog #
DriveTools32 Software Procedures Guide	ABT-D500-TSJ50
DriveExplorer Software Procedures Guide	ABT-D500-TSJ51
1336 PLUS II AC Drive Troubleshooting Guide	ABT-1336F-TSJ20
1336 PLUS and PLUS II AC Drive Parameters Quick Reference Guide	ABT-1336SF-TQR90
1336 PLUS and PLUS II AC Drive Documentation Reference Guide CD	ABT-1336SF-DRG70

Who Should Attend?

Individuals who need to replace, startup, maintain, and troubleshoot a 1336 PLUS II drive

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- General knowledge of electrical principles, circuits, and safety practices
- Experience using electrical measuring tools (e.g., multimeter, megger, oscilloscope, etc.)
- Completion of the *AC/DC Motors and Drives Fundamentals* course (CCA101), *Fundamentals of AC and DC Motors and Drives* web-based training course (ePass/WBT1PACK), or equivalent experience

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ArmorStart® Distributed Motor Controller Maintenance and Troubleshooting

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCA190
1 Day — CEUs 0.7

Course Purpose

This course introduces techniques and instructions that will assist students in successfully maintaining and troubleshooting an ArmorStart distributed motor controller for communications on an existing DeviceNet network. Throughout the course, the instructor will demonstrate how to use RSNetWorx for DeviceNet software to perform tasks such as browsing the network, commissioning the ArmorStart node, and configuring parameters. Students will gain experience commissioning the node and configuring parameters using the 193-DNCT HIM (Human Interface Module). After each demonstration, students will be given an application-based exercise that offers extensive hands-on practice using the ArmorStart distributed motor controller, RSNetWorx for DeviceNet software, and the 193-DNCT HIM.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identify ArmorStart distributed motor controller components
- Connect to the ArmorStart distributed motor controller using RSNetWorx for DeviceNet software
- Edit and monitor ArmorStart parameters using RSNetWorx for DeviceNet software
- Map ArmorStart distributed motor controller inputs and outputs
- Edit and monitor ArmorStart parameters using the 193-DNCT HIM
- Troubleshoot the ArmorStart distributed motor controller

Who Should Attend?

Individuals who need to maintain and troubleshoot an ArmorStart distributed motor controller for communications on a DeviceNet network

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Working knowledge of electricity and safety practices

Job Aids Included

DeviceNet and RSNetWorx Procedures Guide

Catalog

ABT-N100-TSJ50

AutoMax Programming Fundamentals

RE0523
4 Days

Course Purpose

This course is designed to present students with the elementary details of the AutoMax programming languages. Students will be provided an opportunity to become oriented with and use both the online and offline AutoMax Executive screens. After completing this course, students will be able to use the AutoMax Executive Program, distinguish the differences in AutoMax languages, and use a variety of AutoMax programming features.

Objectives

After completing this course, students should understand the following topics:

- Hardware review
- Tasking
- AutoMax variables
- Configuration
- PC tasks
- Control block
- Reliance basics
- Network

Who Should Attend?

Individuals who are responsible for modifying and/or adding functionality to their AutoMax system

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Familiarity with drive systems, AutoMax hardware, and AutoMax Executive
- Working knowledge of electricity and knowledge of electrical/industrial safety
- Completion of the *AutoMax Maintenance and Troubleshooting* course (RE0520)

PowerFlex 700 Vector Control Configuration and Startup

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCA161
1 Day — CEUs 0.7

Course Purpose

This skill-building course introduces techniques and instructions that will assist students in successfully configuring and starting up a PowerFlex 700 vector control drive. Throughout the course, the instructor will demonstrate how to configure PowerFlex 700 drive parameters. The instructor will demonstrate how to install and commission one or more of the following communications adapters: remote I/O, DeviceNet, EtherNet/IP, and ControlNet. Then, students will practice these tasks during hands-on exercises using the LCD HIM, DriveExplorer software, and DriveExecutive software. This course is designed as a stand-alone course, or it can be taken in conjunction with other PowerFlex 700 courses for further skill development.

Objectives

After completing this course, students should be able to perform the following tasks:

- Configure drive parameters using DriveExplorer and DriveExecutive software
- Configure drive parameters using an LCD HIM
- Startup a drive, upload and download drive data
- Control drive operation
- Install and configure a EtherNet/IP communications adapter
- *Optional:* Install and configure a DeviceNet, ControlNet, and remote I/O communications adapter

Job Aids Included	Catalog #
PowerFlex 700 Standard and Vector Control Procedures Guide	ABT-20B-TSJ50
PowerFlex 700 Standard and Vector Control Quick Reference Guide	ABT-20AB-TQR90
PowerFlex 700 Standard and Vector Control Documentation Reference Guide CD	ABT-20B-DRG70

Who Should Attend?

Individuals responsible for configuring parameters and starting up PowerFlex 700 vector control drives

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Working knowledge of electricity and safety practices
- Completion of the *AC/DC Motor and Drive Fundamentals* course (CCA101), *Fundamentals of AC and DC Motors and Drives* web-based training course (ePass/WBT1PACK), or equivalent experience

PowerFlex 700 Vector Control Communications on ControlNet

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCA164
2 Days — CEUs 1.4

Course Purpose

This course introduces students to techniques and instructions that will assist them in starting up a PowerFlex 700 AC drive and commissioning it on a ControlNet network. Students will learn how to configure PowerFlex 700 drive parameters and install and commission a ControlNet communications adapter. Students will learn to configure a ControlNet network and create network connections for Logix5000 controllers.

Objectives

After completing this course, students should be able to perform the following tasks:

- Configure Vector Control drive parameters using an LCD HIM
- Configure Vector Control drive parameters using DriveExplorer and DriveExecutive software
- Upload and download PowerFlex 700 Vector Control drive data
- Startup a PowerFlex 700 Vector Control drive
- Install and configure a PowerFlex 700 Vector Control drive ControlNet communications adapter
- Configure an offline ControlNet network
- Go online to a ControlNet network
- Enter scheduled ControlNet I/O data connections for Logix5000 controllers
- Enter ControlNet messages for Logix5000 controllers
- Control PowerFlex 700 Vector Control drive operation

This course is intended for programmers. Some topics may be similar to topics covered in course CCP173.

Who Should Attend?

Individuals responsible for configuring parameters and starting up PowerFlex 700 Vector Control drives

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Working knowledge of electricity and safety practices
- Completion of the *AC/DC Motors and Drives Fundamentals* course (CCA101), *Fundamentals of AC and DC Motors and Drives* web-based training course (ePass/WBT1PACK), or equivalent experience

Job Aids Included	Catalog #
PowerFlex 700 Standard and Vector Control Quick Reference Guide	*ABT-20AB-TQR90*
PowerFlex 700 Standard and Vector Control Procedures Guide	*ABT-20B-TSJ50*
PowerFlex 700 Standard and Vector Control Documentation Reference Guide CD	*ABT-20B-DRG70*
ControlNet and RSNetWorx Procedures Guide	*ABT-N200-TSJ50*

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PowerFlex 750-Series Configuration and Startup

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCA182
2 Days CEUs 1.4

Course Purpose

Upon completion of this course, given a wired PowerFlex 750-Series drive (PowerFlex 753 or PowerFlex 755) and AC motor, students will be able to startup the drive and configure drive parameters to meet application needs. Throughout the course, students will have the chance to use a variety of hardware and software tools, including the A6 LCD HIM, DriveExecutive software, and DriveExplorer software. After each demonstration, students will be given exercises that offer extensive hands-on practice using a PowerFlex 753 or PowerFlex 755 drive.

Objectives

After completing this course, students should be able to perform the following tasks:

- Verify PowerFlex 750-Series drive installation
- Locate and modify PowerFlex 750-Series drive data using the A6 HIM and drive software
- Configure EtherNet/IP communications adapter for a PowerFlex 750-Series drive
- Startup a PowerFlex 750-Series drive
- Interpret PowerFlex 750-Series control block diagrams
- Control PowerFlex 750-Series drive operation
- Create a DeviceLogix program in a PowerFlex 750-Series drive

This course is intended for programmers. Some topics may be similar to topics covered in course CCA183.

Who Should Attend?

Individuals who need to configure and startup PowerFlex 750-Series drives

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Working knowledge of electricity and safety practices
- Completion of the *AC/DC Motors and Drives Fundamentals* course (CCA101), *Fundamentals of AC and DC Motors and Drives* web-based training (ePass/WBT1PACK), or equivalent experience

Job Aids Included	Catalog #
PowerFlex 750-Series AC Drives Documentation Reference Guide CD	ABT-20G-DRG70

PowerFlex 750-Series Configuration for an Integrated Architecture System

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCA184
1 Day CEUs 0.7

Course Purpose

Upon completion of this course, given a PowerFlex 750-Series drive (PowerFlex 753 or PowerFlex 755) that has been successfully started up, students will be able to integrate their drive into a system that includes Logix5000 controllers and PanelView Plus terminals running FactoryTalk View ME software. Throughout the course, students will have the chance to use a variety of hardware and software tools, including the A6 LCD HIM, Logix Designer software, and FactoryTalk View ME software. After each demonstration, students will be given exercises that offer extensive hands-on practice using a PowerFlex 753 or PowerFlex 755 drive.

Objectives

After completing this course, students should be able to perform the following tasks:

- Add a PowerFlex 750-Series drive to a Logix Designer project
- Locate and modify PowerFlex 750-Series data using Logix Designer software
- Integrate a PowerFlex 750-Series drive with a Logix5000 controller
- Add PowerFlex 750-Series faceplates to a FactoryTalk View ME application
- Operate a PowerFlex 750-Series drive in an Integrated Architecture system

Job Aids Included	Catalog #
PowerFlex 750-Series AC Drives Documentation Reference Guide CD	ABT-20G-DRG70
PowerFlex Accelerator Toolkit for Drive Systems Quick Start	N/A
Studio 5000 Logix Designer and Logix5000 Procedures Guide	ABT-1756-TSJ50

Who Should Attend?

Individuals who need to add PowerFlex 750-Series drives to an Integrated Architecture system

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- General knowledge of electricity and electrical/industrial safety
- ControlLogix controller experience
- Completion of the *PowerFlex 750-Series Startup and Configuration* course (CCA182)
- Completion of one of the following methods: *Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals* course (CCP146), RSLogix 5000 software computer-based and/or web-based training or equivalent experience
- Previous experience with FactoryTalk View ME software is suggested, but not required

PowerFlex 700 Vector Control Communications on DeviceNet

International Association for Continuing Education and Training

CCA162

1 Day — CEUs 0.7

Course Purpose

This skill-building course introduces techniques and instructions that will assist students in successfully configuring a PowerFlex 700 vector control drive to communicate on an existing DeviceNet network. Throughout the course, the instructor will demonstrate how to use RSNetWorx for DeviceNet software to perform tasks, such as browsing the network, commissioning the PowerFlex 700 node, and configuring drive parameters. Students will learn about scanner module configuration and input and output mapping. This course is designed as a stand-alone course or it can be taken in conjunction with other PowerFlex 700 courses for further skill development.

Objectives

After completing this course, students should be able to perform the following tasks:

- Connect a drive to a DeviceNet network
- Commission a node on a DeviceNet network
- Configure drive and adapter parameters using RSNetWorx for DeviceNet software
- Manage DeviceNet EDS files for the PowerFlex 700 vector control drive
- Configure a 1756-DNB module to communicate with a PowerFlex 700 vector control drive using RSNetWorx for DeviceNet software
- Map PowerFlex 700 vector control drive inputs and outputs to a 1756-DNB module using RSNetWorx for DeviceNet software

Job Aids Included	Catalog #
PowerFlex 700 Standard and Vector Control Procedures Guide	ABT-20B-TSJ50
DeviceNet and RSNetWorx Procedures Guide	ABT-N100-TSJ50
PowerFlex 700 Standard and Vector Control Documentation Reference Guide CD	ABT-20B-DRG70

Who Should Attend?

Individuals responsible for configuring PowerFlex 700 vector control drives to communicate on a DeviceNet network

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Working knowledge of electricity and safety practices
- Completion of the *AC/DC Motors and Drives Fundamentals* course (CCA101), *Fundamentals of AC and DC Motors and Drives* web-based training course (ePass/WBT1PACK), or equivalent experience
- Completion of the *PowerFlex 700 Vector Control Configuration and Startup* course (CCA161) is recommended, but not required

PowerFlex DC Drive Configuration and Startup (available on-site only)

International Association for Continuing Education and Training

CDD161

2 Days — CEUs 1.4

Course Purpose

This skill-building course is delivered at your facility and requires 230V, 3-phase power to operate the workstations. This course introduces concepts and techniques that will assist students in successfully starting up and configuring a PowerFlex DC drive. Students will learn how to recognize PowerFlex DC drive hardware and verify proper drive wiring. Students will learn to perform startup tasks. Throughout this course, students will have the chance to use a variety of startup and configuration tools, including: LCD HIM, DriveExplorer software, and DriveExecutive software. After each demonstration, students will be given exercises that offer extensive hands-on practice using the PowerFlex DC drive. This course can be taken as a stand-alone course, or it can be taken in conjunction with other courses in the PowerFlex AC and DC drives curriculum for further skills development.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identify PowerFlex DC drive hardware
- Configure PowerFlex DC drive parameters using the A3 LCD HIM, the A6 LCD HIM (optional), and DriveExplorer and DriveExecutive software
- Prepare for a PowerFlex DC drive startup
- Apply power to a PowerFlex DC drive
- Tune the PowerFlex DC drive current regulator and speed regulator
- Commission a PowerFlex DC drive using drive software
- Install and Commission an EtherNet/IP adapter
- Control PowerFlex DC drive operation
- Apply DC drive and motor fundamentals (optional)

Who Should Attend?

Individuals responsible for starting up and configuring PowerFlex DC drives

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Working knowledge of electricity and knowledge of electrical/industrial safety
- Knowledge of basic DC motor and drive fundamentals through the completion of the *AC/DC Motors and Drives Fundamentals* course (CCA101), *Fundamentals of AC and DC Motors and Drives* web-based training (ePass/WBT1PACK), or equivalent experience

Job Aids Included	Catalog #
PowerFlex DC Drives Documentation Reference Guide CD	ABT-20P-DRG70

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IntelliCENTER® and DeviceNet™ Configuration

CCI106-LD
2 Days

Course Purpose

This course provides the concepts, knowledge, and tools necessary to design, specify, install, troubleshoot, and use an IntelliCENTER MCC or DeviceNet MCC. During the course, students will employ control and communication architectures by solving sample architecture problems presented in class. Students will learn to use various software tools associated with DeviceNet MCCs, such as RSLinx and RSNetWorx for DeviceNet software in addition to MCC start-up, maintenance, and replacement. The last day focuses on network configuration, mapping of scanners, and PLC programming in a DeviceNet MCC system.

Objectives

After completing this course, students should be able to perform the following tasks:

- Understand basics of DeviceNet and NetLinx
- RSLinx and RSNetWorx for DeviceNet, EDS files
- Search for EDS files
- DeviceNet media in CENTERLINE MCCs
- Add MCC units and sections to IntelliCENTER software
- Replace a device/auto-device and node recovery options
- IntelliCENTER support services
- Setup a ControlLogix chassis with DeviceNet and Ethernet
- Map devices to a DeviceNet scanner
- PLC Programs for IntelliCENTER

Who Should Attend?

Control engineers, electrical technicians, and system integrators who will be involved in designing, installing, and using IntelliCENTER/DeviceNet MCCs

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Familiarity with PLC programming software
- Working knowledge of electricity and knowledge of electrical/industrial safety

PowerFlex 400 AC Drive Field Startup for HVAC Applications

CCA171-LD
1 Day

Course Purpose

This course provides fundamental concepts of AC/DC drive and motor operation to enable effective startup of PowerFlex 400 drives within the HVAC market. This course provides students with information related to applications, proper drive selection, and sizing as well as various installation considerations. Students will learn how to recognize PowerFlex 400 drive hardware and properly program and troubleshoot the drive as part of a typical startup service. Throughout this course, students will use the LCD HIM and DriveExplorer software to program and monitor various drive parameters. After each demonstration, students will be given an application-based exercise that offers extensive hands-on practice using the PowerFlex 400 drive.

Objectives

After completing this course, students should be knowledgeable about the following topics and tasks:

- Basic drive and motor technology
- PowerFlex 400 and configured product overview
- General programming and bypass lab
- Application specific features overview and labs
- Installation and application considerations
- DriveExplorer software overview
- Network communications overview
- Start up registration procedure
- Relate product features to application needs
- Verify proper installation of the drive
- Effectively program the drive

Who Should Attend?

Individuals who will be conducting startup of PowerFlex 400 drives for HVAC applications

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Previous experience working with AC Drive technology
- Working knowledge of electricity, and knowledge of electrical/industrial safety
- Completion of the *AC/DC Motors and Drives Fundamentals* course (CCA101) or *Fundamentals of AC and DC Motors and Drives* web-based training (ePass/WBT1PACK) or equivalent experience

PowerFlex 400/70/700/753 AC Drive Field Startup for Water Wastewater Applications

CCA177
2 Days

Course Purpose

This skill-building course provides students with fundamental concepts of AC drive and motor operation to enable effective startup of PowerFlex 400, PowerFlex 70 EC (enhanced control), PowerFlex 700 VC (vector control), and PowerFlex 753 drives for Water Wastewater applications. The course provides information related to applications, proper drive selection, and sizing as well as various installation considerations and troubleshooting practices. Students will learn how to recognize PowerFlex 400, 70, 700, and 753 drive hardware and properly program and troubleshoot the drive as part of a typical startup. Throughout the course, students will use the various LCD HIMs, DriveExplorer software, DriveExecutive software, and DriveObserver™ software to program and monitor various drive parameters. After each demonstration, students will be given an exercise that offers hands-on practice using PowerFlex 400, PowerFlex 700 VC, and/or PowerFlex 753 drives.

Objectives

After completing this course, students should understand the following topics:
- Basics of drive and motor control theory (review)
- PowerFlex 400/70/700/753 product overview

Students should also be able to perform the following tasks:
- Apply drive installation best practices
- Monitor and modify PowerFlex drive parameters using the HIM and software
- Program PowerFlex drives
- Set up a PowerFlex drive to communicate over Ethernet
- Troubleshoot a PowerFlex drive over Ethernet

Who Should Attend?

Individuals responsible for starting up PowerFlex drives in Water Wastewater applications

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Working knowledge of electricity, and knowledge of electrical/industrial safety
- Completion of the *AC/DC Motors and Drives Fundamentals* course (CCA101) or *Fundamentals of AC and DC Motors and Drives* web-based training (ePass/WBT1PACK) or equivalent experience

PowerFlex 700S Phase II HiHP Maintenance and Troubleshooting (available on-site only)

PFX700S2-HIHP-LD
3 Days

Course Purpose

This skill-building course introduces concepts and techniques that will assist students in successfully maintaining and troubleshooting a PowerFlex 700S Phase II HiHP AC drive. Students will learn installation, start-up, maintenance and troubleshooting skills as well as how to recognize PowerFlex 700S Phase II HiHP drive hardware for frame sizes 9. . . 12, and the concepts of HiHP drives. Students will completely disassemble and then reassemble a Frame 9 and Frame 10 drive.

Objectives

After completing this course, students should be able to perform the following tasks:
- Understand
  - AC motors
  - Drive basics
  - Types of motor control
  - AC characteristics & rectification
- Invert DC to AC power
- Identify PowerFlex 700S phase II HiHP AC drive hardware
- Configure parameters using the LCD HIM
- Understand high horsepower drive concepts
- Recognize Frame 9, Frame 10, Frame 11, and Frame 12 power structures
- Disassemble and reassemble PowerFlex 700S Phase II HiHP Frame 9 and Frame 10 AC drives
- Install and start a PowerFlex 700S Phase II HiHP AC drive
- Maintain and troubleshoot the PowerFlex 700S Phase II HiHP AC drive

Who Should Attend?

Individuals responsible for starting up, configuring, maintaining, and troubleshooting PowerFlex 700S Phase II HiHP drives

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *AC and DC Motors and Drives Fundamentals* course (CCA101) or equivalent experience

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PowerFlex 70 Maintenance and Troubleshooting

CCA159-LD
1 Day

Course Purpose

This skill-building course introduces concepts and techniques that will assist students in successfully maintaining and troubleshooting a PowerFlex 70 AC drive. Students will learn how to recognize PowerFlex 70 drive hardware and properly wire the drive. Students will learn to diagnose specific load-related, environmental, and equipment faults. Throughout the course, students will use the LCD HIM, DriveExplorer™ software, and DriveExecutive™ software to clear faults and alarms. After each demonstration, students will be given an application-based exercise that offers extensive hands-on practice using a PowerFlex 70 drive.

Objectives

After completing this course, students should be able to perform the following tasks:
- Replace and rewire drive hardware
- Configure drive parameters using the LCD HIM, DriveExplorer & DriveExecutive software
- Upload and download drive data
- Troubleshoot and clear drive alarms
- Clear drive faults
- Troubleshoot drive load and environmental faults
- Troubleshoot drive equipment malfunctions
- Maintain and troubleshooting a PowerFlex 70 drive

Who Should Attend?

Individuals responsible for maintaining and troubleshooting PowerFlex 70 drives

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Working knowledge of electricity and knowledge of electrical/industrial safety
- Completion of the *AC/DC Motors and Drives Fundamentals* course (CCA101) or *Fundamentals of AC and DC Motors and Drives* web-based training (ePass/WBT1PACK) or equivalent experience

Job Aids Included	Catalog #
PowerFlex 70 Enhanced Control Documentation Reference Guide CD	ABT-20A-DRG70

PowerFlex 700 Vector Control Communications over EtherNet/IP™

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCA165
1 Day CEUs 0.7

Course Purpose

After completing this course, given a PowerFlex 700 vector control drive that has been successfully started up and configured, students should be able to add their drive to an EtherNet/IP network that includes Logix5000™ controllers or PanelView™ Plus terminals running FactoryTalk® View ME software. Throughout the course, students will have the chance to use a variety of hardware and software tools, including: A3 LCD HIM; Studio 5000 Logix Designer™ application; and drive configuration software (DriveExecutive™, Connected Components Workbench™). After each demonstration, students will be given exercises that offer extensive hands-on practice using a PowerFlex 700 vector control drive in tandem with a CompactLogix™ controller and/or PanelView Plus terminal.

Objectives

After completing this course, students should be able to perform the following tasks:
- Add a PowerFlex 700 vector control drive to a Studio 5000 Logix Designer project
- Import PowerFlex 700 vector control drive control code into a Studio 5000 Logix Designer project
- Create new PowerFlex 700 vector control drive control code in a Studio 5000 Logix Designer project
- Synchronize data and test PowerFlex 700 vector control drive operating modes
- Configure PowerFlex 700 vector control drive peer-to-peer communications

Job Aids Included	Catalog #
PowerFlex 700 Standard and Vector Control Procedures Guide	ABT-20B-TSJ50
PowerFlex 700 Standard and Vector Control Documentation Reference Guide CD	ABT-20B-DRG70
Studio 5000 Logix Designer and Logix5000 Procedures Guide	ABT-1756-TSJ50

Who Should Attend?

Individuals responsible for commissioning PowerFlex 700 vector control drives on an EtherNet/IP network

Prerequisites

- Working knowledge of electricity, and knowledge of electrical/industrial safety
- Completion of the *PowerFlex 700 Vector Control Configuration and Startup* course (CCA161) or equivalent experience
- Knowledge of Logix5000 system fundamentals and basic programming skills through one of the following methods:
  - Completion of the *Studio 5000 Logix Designer Level 2: Basic Ladder Logic Programming* course (CCP151)
  - Completion of available RSLogix 5000/Studio 5000 software computer-based and/or web-based training
  - Equivalent on-the-job experience

PowerFlex 755 Floor Mounted Drives: Pre-Installation Planning

Virtual Classroom

AUTHORIZED IACET PROVIDER International Association for Continuing Education and Training

VC-PF755H-01

120 Minutes CEUs 0.2

Course Purpose

This course will help students plan for the successful installation of PowerFlex 755 floor-mounted, frame 8 and larger (300 Hp (200 kW) and above) drives. Students will explore common drive pre-installation topics including specific wiring, mounting, fusing, and option card installation considerations for floor-mounted PowerFlex 755 units. During this course, students will use a variety of available technical documents and tools to help them prepare for installation situations unique to these drives.

Objectives

After completing this course, students should be able to perform the following tasks:

- Interpret and verify floor mounted drive catalog numbers
- Prepare for frame 8 and larger drive mounting
- Verify drive option card locations
- Plan for floor mounted drive
- Fusing and wiring
- Plan floor mounted drive integration with a motor control center

Who Should Attend?

Individuals responsible for installing Frame 8 and larger PowerFlex 755 drives

Prerequisites

- Knowledge of safe electrical practices
- Prior experience working with AC drives
- Experience with wall-mounted (frame 1. . .7) PowerFlex 750-series drives is helpful, but not required

Technical Requirements

A computer and phone

PowerFlex 523/525 Drive Programming with PowerFlex 525 Drive Kit

Virtual Classroom

AUTHORIZED IACET PROVIDER International Association for Continuing Education and Training

VC-PF523P

120 Minutes CEUs 0.2

Course Purpose

After completing this course, students should be able to program drive parameters for a drive application. This course will teach students how to create a custom parameter group based upon drive applications. Throughout this course, the instructor will cover a range of topics from establishing communications with a PowerFlex 523/525 drive via an EtherNet/IP network to testing parameters of a PowerFlex 523/525 drive using the HIM.

Objectives

After completing this course, students should be able to perform the following tasks:

- Establish communications with a PowerFlex 523/525 drive
- Configure a PowerFlex 523/525 drive using the Startup Wizard in Connected Components Workbench software
- Create a CustomView parameter group
- Edit and test parameter using the HIM

Who Should Attend?

Individuals who have drive programming experience but are new to PowerFlex component-class drives

Prerequisites

- Knowledge of AC/DC drive fundamentals and drives programming experience
- Basic working knowledge of safe electrical practices including, but not limited to:
  - Understanding electricity, how it works, and the dangers involved in working with electricity
  - Identifying hazardous conditions
  - Adhering to all safety regulations

Technical Requirements

- PowerFlex 525 drive kit (shipped prior to class)
- A computer and phone
- Connected Components Workbench software must be installed and activated. The virtual classroom invitation will provide details on how to obtain a temporary installation of the software if students do not have it.

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Rockwell Automation

RSTrainer® CD-ROM Courses

Computer-Based Training

Benefits

- Eliminate travel costs
- Lower overall training costs
- Better knowledge retention
- Improved performance
- Ongoing access to instruction

Training is offered for the following products:

- RSLogix™ 5, RSLogix 500, and RSLogix 5000
- SLC™ 500
- RSLinx®
- Hydraulics
- ControlLogix®
- FactoryTalk® View Machine Edition
- EtherNet/IP

Minimum System Requirements RSTrainer on a PC:

- Pentium® III-processor (or better)
- Windows 98SE, NT4, 2000, XP, Vista, or 7 operating system
- 20 MB of available hard drive space
- 800 x 600 video resolution
- CD-ROM drive
- Windows compatible pointing device
- Sound card with speakers

Note: *RSTrainer is not operable on a MAC system*

Saving Time and Money with Computer-Based Training

Self-paced, self-directed, computer-based training courses will help employees acquire and retain new skills at an accelerated rate, giving them more time on the plant floor and less time in a classroom.

Two purchasing options are available with RSTrainer computer-based training:

Single-User Option
RSTrainer offers a single-user license and a single software activation. This computer-based training product is designed so that one person can use the program on one computer at one time. With this option, the RSTrainer software can be installed and activated on only one computer and not on a network.

Multi-User Option
Referred to as RSTrainer Enterprise Edition, this version can be installed on a network and shared concurrently with multiple users. RSTrainer Enterprise Edition ships with five user licenses and software activation that permits five users to concurrently access and use the RSTrainer software at any given time. This computer-based training product is meant to be installed and activated on a network server and it is designed to provide greater flexibility with managing multiple users over a network. RSTrainer Enterprise Edition is ideal for companies with a large number of people to train.

Process Control

Process Control Curriculum Map

PlantPAx
Process Automation System

UNDERSTAND

START

Process Control Fundamentals
EM-403 • 5 Days
On-Site Only Course

Instrumentation I
EM-400A • 1 Day
On-Site Only Course

Instrumentation II
EM-400B • 2 Days
On-Site Only Course

PID Loop Development and Tuning
PRS010 • 1 Day

Vibration Analysis Fundamentals
EK-ICM101 • 3 Days

Vibration Analysis: Level I
EK-ICM201 • 3.5 Days

INTEGRATE OR DESIGN

PlantPAx Process System Integration
PRS018 • 5 Days

Fuzzy Logic Design and Development
PRS012 • 2 Days

PROGRAM OR DESIGN

PlantPAx System Configuration Fundamentals
PRS013 • 4.5 Days

Life Sciences Application Suite Configuration
PRS016 • 2 Days

Studio 5000 Logix Designer Level 4: Function Block Programming
CCP152 • 2 Days

Pulp and Paper Application Suite Configuration
PRS017 • 2 Days

Studio 5000 Logix Designer Level 3: Project Development
CCP143 • 4 Days

MAINTAIN OR TROUBLESHOOT

PlantPAx Process System Troubleshooting
PRS015 • 4 Days

FactoryTalk View SE Maintenance and Troubleshooting
CCV206-LD • 2 Days

Studio 5000 Logix Designer Level 1: ControlLogix Fundamentals and Troubleshooting
CCP299 • 4.5 Days

Note: Consult course description for prerequisites

AADvance Comprehensive System Training
PRST9063LD • 3 Days

Stratix 5700 Switch Configuration for an EtherNet/IP Network
CCP179 • 2 Days

Pavilion8 Modeling and Analysis
PRS802 • 2 Days

Pavilion8 Integration
PRS803 • 2 Days

Pavilion8 Control and Visualization
PRS804 • 4 Days

FactoryTalk View SE Programming
CCV207 • 4.5 Days

FactoryTalk View SE Architecture
CCV205-LD • 2 Days

FactoryTalk Historian Site Edition Configuration and Data Collection
RS-FTHSEC • 3.5 Days

FactoryTalk AssetCentre Configuration
RS-FTACC • 2 Days

FactoryTalk VantagePoint Configuration and Reporting
FTVP • 3 Days

FOUNDATION Fieldbus Basics
PRS005-LD • 2 Days

Studio 5000 Logix Designer Level 4: Structured Text/ Sequential Function Chart Programming
CCP154 • 2 Days

Studio 5000 Logix Designer Level 4: PhaseManager Project Design
CCP711 • 1 Day

FactoryTalk Batch Project Design and Implementation
PRS101-LD • 5 Days

Pavilion8 Basic Model Predictive Control Operations
PRS801 • 2 Days

AADvance Operation, Maintenance, and Troubleshooting
PRST9064LD • 2 Days

EtherNet/IP Fundamentals and Troubleshooting
CCP180 • 1 Day

NetLinx System Maintenance and Troubleshooting
CCP177 • 4 Days

Combination of DeviceNet, ControlNet and EtherNet/IP Maintenance Topics

On-Site Only Course

Analytical Measurement
EM-402 • 1 Day

Combination Understand and Maintain or Troubleshoot Level Course

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PID Loop Development and Tuning

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

PRS010
1 Day — CEUs 0.7

Course Purpose

This course enables students to develop an understanding of process control by allowing them to practice PID control methods. This course prepares students for further process control classes with more specialized applications and design involvement. This course provides students with the skills needed to obtain a tuned process control loop for typical applications. Students will create and develop a process model; calculate proportional, integral, and derivative gains; verify gains using ladder diagram; practice PID programming in function block diagram and learn how to autotune typical PID loops.

Objectives

After completing this course, students should be able to perform the following tasks:

- Create a process reaction curve
- Develop a process model
- Determine the control action
- Configure program timing
- Program simple PID loop using function block diagram
- Calculate and verify PID gains
- Autotune a PID loop

Job Aids Included	Catalog #
Studio 5000 Logix Designer and Logix5000™ Procedures Guide	ABT-1756-TSJ50

Who Should Attend?

Individuals who need to learn:

- How to make basic PID design decisions
- How to program and configure PIDE instructions using function block diagram
- How to tune basic PID loops using manual methods and ladder diagram
- How to autotune

Prerequisites

- Completion of the *Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals* course (CCP146) or equivalent experience
- ISA Process Control Fundamentals training or equivalent experience is recommended but not required
- Knowledge of automation systems and experience using function block diagram programming language or attending training (CCP152) is helpful but not required

PlantPAx® Process System Troubleshooting

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

PRS015
4 Days — CEUs 2.8

Course Purpose

In this course, students will learn to troubleshoot equipment problems and failures in a PlantPAx process control system. Students will focus on these core areas: controller applications and associated PlantPAx add-on instructions; HMI applications and associated PlantPAx faceplates. During the course, students will use the PlantPAx library of add-on instructions and faceplates to isolate and diagnose problems with field devices, such as valves and motors, 4 . . . 20 mA analog instruments, HART and EtherNet/IP networks, drives, motor control centers, redundant controller chassis, and client-server communication.

Objectives

After completing this course, students should be able to perform the following tasks:

- Prepare equipment for restart
- Isolate an HMI problem, a problem with a server, an I/O fault, a problem with a field device, an alarm condition, or a non-alarm problem
- Find Logix data online and I/O channel data
- Trace through function blocks
- Find I/O terminals for a device
- Diagnose a discrete output or input problem
- Diagnose a problem with permissives, interlocks, and a device mode problem
- Bypass a device
- Diagnose an analog input or output problem
- Diagnose a module or EtherNet/IP problem
- Diagnose cause of a controller switchover
- Check the server status
- Ping a server or workstation

Who Should Attend?

Technicians who have a background in process control but are new to PlantPAx

Prerequisites

- Basic knowledge of common process industry terms and components
- Hands-on experience with other process control systems

Job Aids Included	Catalog #
PlantPAx Process System Troubleshooting Guide	ABT-P100-TSJ20

Studio 5000 Logix Designer Level 4: Function Block Programming

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCP152
2 Days CEUs 1.4

Course Purpose

This course provides students with an understanding of Logix Designer function block diagrams and terminology. Resources and hands-on practice are provided to program a Logix5000 controller using function block diagrams. Students will perform parameter modifications to function block instructions and create and develop function block diagram programs and routines.

Objectives

After completing this course, students should be able to perform the following tasks:
- Create a function block diagram
- Program logical function block instructions
- Program timer and counter function block instructions
- Program analog function block instructions
- Program device driver function block instructions
- Select timing modes in a function block instruction
- Program and monitor an RMPS (ramp/soak) function block instruction
- Control program flow using function block instructions
- Program a PID loop using function block diagram
- Develop an add-on instruction in function block diagram
- Program a totalizer function block instruction
- Tune a PID loop using ActiveX controls

Who Should Attend?

Individuals who:
- Are responsible for developing, debugging, and programming Logix5000 controllers using function block diagrams
- Use ActiveX controls in an operator interface, such as FactoryTalk View ME software

Prerequisites

- Experience operating a computer within a Microsoft® Windows® environment
- Understanding of basic measurement and control theory, including basic loop control
- Completion of the *Studio 5000 Logix Designer Level 3: Project Development* course (CCP143)or equivalent experience

Job Aids Included	Catalog #
Studio 5000 Logix Designer and Logix5000™ Procedures Guide	ABT-1756-TSJ50

Fuzzy Logic Design and Development

PRS012
2 Days

Course Purpose

This course provides students with the skills to produce a fuzzy control system for a continuous process application. It introduces the range of options for fuzzy systems but focuses on using fuzzy logic to adjust the gains of a PID loop to meet specific control requirements. Starting with a description of a process, students will decide if fuzzy logic is the best control method. Students will design the fuzzy system, develop it in FuzzyDesigner software, and implement it in a Logix5000 controller. Students will use FuzzyDesigner's simulation, graphing, and online monitoring tools to validate the system against control requirements.

Objectives

After completing this course, students should be able to perform the following tasks:
- Decide when to use fuzzy logic
- Choose a fuzzy control scheme
- Identify input and output variables, terms, and membership parameters
- Write rules
- Choose a defuzzification method
- Create a FuzzyDesigner project
- Create ports and variables
- Enter terms and rules
- Chain rules
- Simulate execution of a fuzzy system
- Graph inputs and outputs
- Create, import, monitor, and change a fuzzy add-on instruction

Who Should Attend?

Individuals who need to design, develop, or implement advanced process control applications

Prerequisites

Ability to perform these Studio 5000 Logix Designer software skills:
- Entering and editing logic
- Downloading and going online
- Monitoring and editing data
- Prospective students can complete the *Studio 5000 Logix Designer Level 1: ControlLogix Systems Fundamentals* course (CCP146) to acquire the prerequisite skills.

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FOUNDATION™ Fieldbus Basics

PRS005-LD
2 Days

Course Purpose

This advanced skill and knowledge building course provides students with the necessary foundations to configure the 1757-FFLD, using the Rockwell Automation RSFieldbus Configuration Software; and the 1788-CN2FF, using the National Instruments Configuration Software. During this course students will be presented with FOUNDATION Fieldbus technologies incorporating Rockwell Automation 1757-FFLD (HSE to H1 linking device) and 1788-CN2FF (ControlNet to H1 linking device). In addition, students will learn how to pass the Fieldbus information into and from RSLogix. Additional material on Device Descriptions, advanced function block theory, and troubleshooting techniques will be covered in this class.

Objectives

After completing this course, students should understand the following topics:

- Introduction to FOUNDATION Fieldbus
- Fieldbus basics
- Fieldbus function blocks
- Fieldbus Device Description (DD) files
- Scheduling
- Wiring and installation
- Media components
- Test equipment for Fieldbus
- Introduction to 1757-FFLD
- FFLD and CAS initialization
- FFLD-CLX troubleshooting exercises
- Introduction to 1788-CN2FF
- CN2FF Fieldbus in ControlLogix
- CN2FF communications
- NIFBUS configurator

Who Should Attend?

Individuals who have little or no working experience with Smart instrumentation or FOUNDATION Fieldbus

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *Studio 5000 Logix Designer Level 2: Basic Ladder Logic Programming* course (CCP151) and/or
- Completion of the *Studio 5000 Logix Designer Level 3: Project Development* course (CCP143)
- A basic understanding of process instruments and function block programming is helpful, but not required

Studio 5000 Logix Designer Level 4: PhaseManager™ Project Design

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

CCP711
1 Day CEUs 0.7

Course Purpose

This course is intended to provide students with the skills to configure and program Logix5000 applications in accordance with the S88 state model using the PhaseManager feature. This course presents a tool that will help students effectively organize and structure batch applications. Students will organize a Logix Designer project by identifying control and equipment modules within application code.

Objectives

After completing this course, students should be able to perform the following tasks:

- Define equipment phases and state models in a Logix Designer project
- Separate equipment phase code from equipment phase code
- Test an equipment phase
- Configure a sequential function chart as an internal sequencer

Who Should Attend?

Individuals who need to apply the S88 state model to Logix Designer projects for any Logix5000 controller

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *Studio 5000 Logix Designer Level 3: Project Development* course (CCP143) or advanced programming experience using Logix Designer software
- Familiarity with sequential function chart programming language

FactoryTalk® Batch Project Design and Implementation

PRS101-LD
5 Days

Course Purpose

This course is designed to provide students with a complete overview of the design and implementation of a batch project using FactoryTalk Batch software. This includes an introduction to batch processing and to the ANSI/ISA S88.01 Standard. FactoryTalk Batch system architecture, system operation, and system configuration are covered in detail.

Objectives

After completing this course, students should be able to perform the following tasks:

- Define batching and the S88 Standard
- Work in FactoryTalk Batch and FactoryTalk View
- Define an area model from a P&ID
- Use FactoryTalk Equipment Editor
- Translate a product definition into a recipe
- Configure the Factory Talk Recipe Editor including the basic mechanics, divergent flow, class-based recipes, and enhanced unit binding
- Configure Batch Archiver and enhanced batch reporting
- Interface with the FactoryTalk Batch API and ActiveX controls
- Perform system administration tasks related to file structure, project folder, and security
- Equipment Phase – FactoryTalk Batch Communications (phase design and equipment phase instructions)
- Integrate manual phases and FactoryTalk Batch eProcedure
- Integrate material-based phases and the FactoryTalk Batch Material Manager

Who Should Attend?

Supervisors, operators, formulators, and engineers who will be involved with the installation, setup, and operation of a FactoryTalk Batch system

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Familiarity with S88 Batch Standard is helpful

PlantPAx System Configuration Fundamentals

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

PRS013
4.5 Days CEUs 3.2

Course Purpose

This course is intended for control engineers who have a background in process control – but are new to Rockwell Automation. This course introduces new students to the core components of a PlantPAx process control system, including controllers, HMI, networks, and instrumentation devices. Students will look at the individual components and see their relationships to the complete system.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identify a PlantPAx system
- Locate ControlLogix components and organize ControlLogix data
- Create and organize a new project
- Configure device-level ring
- Program a function block diagram
- Configure PlantPAx AOI and devices using HART
- Use tag placeholders
- Configure global objects and PlantPAx faceplates
- Create a graphic display, tag database, alarm, data log model, and trend
- Set up reporting
- Configure security
- Program and tune a PID loop
- Program considerations for applications and structured text
- Design an SFC
- Determine workstation layout
- Configure redundancy

Who Should Attend?

Individuals who have a background in process control applications who are new to Rockwell Automation

Prerequisites

Basic knowledge of process control

Job Aids Included	Catalog #
Studio 5000 Logix Designer and Logix5000 Procedures Guide	ABT-1756-TSJ50
FactoryTalk View SE Procedures Guide	ABT-9701SE-TSJ50

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Life Sciences Application Suite Configuration

PRS016
2 Days

Course Purpose

Upon completion of this course, students will be able to use a Rockwell Automation application suite to develop effective control applications for a PlantPAx process automation system. The focus of this course will be on the life science industry and applications, including topics such as electronic signatures, alarming, audit logs, and GAMP documentation. In this course, students will have the opportunity to create, configure, and develop working code to address a variety of application scenarios. Students will experience the benefits of using a Rockwell Automation application suite through a combination of instruction and hands-on experience, which emphasize concepts, common features, and functions.

Objectives

After completing this course, students should be able to perform the following tasks:

- Locate components of the application suite
- Recognize common functions/configuration options in the application suite
- Program and configure Logix Designer and FactoryTalk View SE systems
- Recognize industry-specific functions
- Select functions through configuration
- Operate and troubleshoot
- Locate reference material and access ongoing support
- Analyze and interpret application requirements
- Identify the repeatable portions of an application
- Determine the optimum use of the application suite for control applications
- Modify an application
- Coordinate, sequence, and manage equipment

Who Should Attend?

Individuals who need to maintain and/or troubleshoot a system which utilizes a Rockwell Automation application suite

Prerequisites

- Completion of the *PlantPAx Process System Configuration* course (PRS013) or
- Personal experience with process applications, ControlLogix systems and programming, including basic ladder logic instructions, and FactoryTalk View SE applications

Pulp and Paper Application Suite Configuration

PRS017
2 Days

Course Purpose

Upon completion of this course, students will be able to use a Rockwell Automation application suite to develop effective control applications for a PlantPAx process automation system. The focus of this course will be on the pulp and paper industry and applications. In this course, students will have the opportunity to create, configure, and develop working code to address a variety of application scenarios. Students will realize the benefits of using a Rockwell Automation application suite through a combination of instruction and hands-on experience, which emphasize concepts, common features, and functions.

Objectives

After completing this course, students should be able to perform the following tasks:

- Locate components of the application suite
- Recognize common functions and configuration options in the application suite
- Program and configure Logix Designer and FactoryTalk View SE systems
- Recognize industry-specific functions
- Select functions through configuration
- Operate and troubleshoot
- Locate reference material and access ongoing support
- Analyze and interpret application requirements
- Identify the repeatable portions of an application
- Determine the optimum use of the application suite for control applications
- Modifying an application
- Coordinate, sequence, and manage equipment

Who Should Attend?

Individuals who need to maintain and/or troubleshoot a system which utilizes a Rockwell Automation application suite

Prerequisites

- Completion of the *PlantPAx Process System Configuration* course (PRS013) or
- Personal experience with process applications, ControlLogix systems and programming, including basic ladder logic instructions, and FactoryTalk View SE applications

PlantPAx Process System Integration

PRS018
5 Days

Course Purpose

This course introduces students to the core components of a PlantPAx process control system, including system sizing, process automation controllers, engineering and operator workstations and process communication networks. During this course, students will focus on designing a PlantPAx system and learn to: architect and size a PlantPAx system, develop standard process control and advanced process control strategies, create process control applications with the PlantPAx library of add-on instructions and faceplates, and create new interactive displays for operator workstations including configuring alarming and security. This course includes the basic concepts of the following components: software (Studio 5000 Logix Designer, Process System Estimator, FactoryTalk View SE, FactoryTalk AssetCentre, FactoryTalk Historian SE, FactoryTalk VantagePoint, and Fuzzy Designer), networks (EtherNet/IP, HART, foundation Fieldbus, and Profibus PA), and modules (Controller, EtherNet, and Analog HART).

Objectives

After completing this course, students should be able to perform the following tasks:
- Define system size with PlantPAx tools
- Monitor system loading
- Configure PlantPAx process objects, Logix batch sequence manager, advanced process control blocks, fuzzy logic, HART messaging, and HART faceplates
- Manage and configure process devices
- Record and report process information

Who Should Attend?

System Integrators who have a background in automated process control and Rockwell Automation products

Prerequisites

- Completion of the *PlantPAx Process System Configuration* course (PRS013) or
- Personal experience with process applications, ControlLogix systems and programming, including basic ladder logic instructions, and FactoryTalk View SE applications

Pavilion8® Basic Model Predictive Control Operations

PRS801
2 Days

Course Purpose

Upon completion of this course, students will be able to interact, use, and maintain their process control projects using the Pavilion8 Model Predictive Control (MPC) system. Topics covered in this course are: managing MPC system applications; creating, modifying, and using Pavilion8 console views; interacting with Pavilion8 controllers (adjusting objectives and tuning); maintaining and troubleshooting Pavilion8 controllers; interacting with and troubleshooting Pavilion8 RAE applications; and administering the Pavilion8 console system.

Objectives

After completing this course, students should be able to perform the following tasks:
- Introduce Pavilion8 MPC projects and solutions
- Use views
- Tune and troubleshoot a controller
- Review maintenance
- Introduce and troubleshoot Runtime Application Engine (RAE)
- Edit and build views
- Configure Key Performance Indicators (KPIs) and their views
- Administer the console
- Manage applications

Who Should Attend?

Operators, supervisors, plant managers, and engineers who are frequent users of an installed Pavilion8 MPC system

Prerequisites

Exposure to the Pavilion8 MPC system through an existing MPC project, and experience in process control is beneficial

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Pavilion8 Modeling and Analysis

PRS802
2 Days

Course Purpose

Upon completion of this course, students should be able to develop inferential models and perform unit optimization using neural-network models. This course is usually attended in conjunction with the *Pavilion8 Integration* course (PRS803). Topics covered in this course are: planning the project; collecting an appropriate set of historical data; preconditioning the data (cut down times, filter, and create new variables); modeling physical systems using neural-networks; building a property predictor; optimizing unit operations; and building sensor validation models.

Objectives

After completing this course, students should be able to perform the following tasks:

- Outline modeling techniques and environment
- Process raw data
- Analyze data
- Create the dataset
- Build a nonlinear model
- Analyze and improve models
- Use the setpoints and what-ifs feature
- Build a sensor validation model and virtual online analyzer (VOA)

Who Should Attend?

Process engineers who are responsible for running steady-state VOA applications online or modifying and extending existing models in online applications

Prerequisites

Completion of the *Pavilion8 Basic Model Predictive Control Operations* course (PRS801)

Pavilion8 Integration

PRS803
2 Days

Course Purpose

Upon completion of this course, students should be able to deploy Pavilion8-based models and supporting calculations on-line. This course is usually attended in conjunction with the *Pavilion8 Modeling and Analysis* course (PRS802). Topics covered in this course are: overview of the Runtime Application Engine (RAE); creating an on-line application; configuring a project with the RAE project builder; implementing the RAE client-server architecture; performing detailed testing of communication links; and connecting a RAE to a Distributed Control System (DCS).

Objectives

After completing this course, students should be able to perform the following tasks:

- Outline Runtime Application Environment (RAE)
- Understand the Pavilion Data Interface (PDI)
- Use the application launcher
- Edit taglists
- Develop an online dataset
- Create an RAE project
- Configure and testing the project
- Run the project online
- Implement a Virtual Online Analyzer (VOA)

Who Should Attend?

Process engineers who are responsible for developing new steady-state VOA applications or modifying and extending existing steady-state VOA applications

Prerequisites

- Completion of the *Pavilion8 Modeling and Analysis* course (PRS802)
- Basic knowledge of data historians and distributed control systems

Pavilion8 Control and Visualization

PRS804
4 Days

Course Purpose

Upon completion of this course, students should be able to develop and deploy model predictive control projects using the Pavilion8 Controller. Topics covered in this course are: planning the Model Predictive Control (MPC) project; building a Virtual Online Analyzer (VOA) for control variable prediction; creating steady-state models for optimization; planning and executing plant tests; conducting SISO and MIMO dynamic identification; tuning a non-linear dynamic controller; deploying the Pavilion8 controller using client-server architecture; performing detailed testing of communication links; and commissioning the MPC project.

Objectives

After completing this course, students should be able to perform the following tasks:

- Outline model predictive control
- Review data requirements
- Get and evaluate step test data
- Identify linear dynamics
- Build nonlinear control models
- Combine steady state and dynamic models
- Assemble the controller model
- Handle integrating models
- Examine the objective function
- Tune the controller
- Use the simulator
- Prepare the controller for online deployment
- Run the controller online
- Put an example application online
- Overview of visualizing controller data and trends
- Review Pavilion8 engine and console architecture
- Configure an application in the console
- Troubleshoot an existing application

Who Should Attend?

Engineers who are responsible for developing MPC applications or modifying and extending existing MPC applications

Prerequisites

Completion of the *Pavilion8 Integration* course (PRS803)

AADvance Operation, Maintenance, and Troubleshooting

PRST9064LD
2 Days

Course Purpose

This course provides students with an overview of AADvance hardware, software, and troubleshooting. The course consists of a mixture of lecture and hands-on lessons. Upon successful completion of this course, students should be able to: understand how AADvance operates as a fail-safe or fault tolerant controller; understand the configuration limits of the system; navigate the workbench; monitor programs; lock/force I/O points; isolate faults to the module level by interpreting automatic fault indications; and hot-replace failed modules without disrupting the systems or process.

Objectives

After completing this course, students should understand the following topics:

- Failsafe and fault-tolerant designs
- System hardware overview
- Baseplates, processor, I/O modules, termination assemblies, and cables
- LED diagnostics
- Wire interfaces
- Projects
- Dictionary and I/O configuration
- Application programs
- Diagnostics variables
- Cross references
- Monitor programs
- Lock/force
- Troubleshoot
- Diagnostics collection
- Replace modules

Who Should Attend?

Individuals who are responsible for maintaining and troubleshooting an AADvance system

Prerequisites

- General knowledge of programmable logic controllers (PLCs)
- Background in industrial electronic control principles and practices

Do not take both PRST9063LD and PRST9064LD because they share similar content. If you are responsible for designing, building, or programming an AADvance system, take this course instead: AADvance Comprehensive System Training (PRST9063LD)

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AADvance Comprehensive System Training

PRST9063LD

3 Days

Course Purpose

This course provides students with a comprehensive overview of AADvance hardware, software, and troubleshooting. Upon successful completion of this course, students should be able to: understand how AADvance operates as a fail-safe or fault tolerant controller; understand the configuration limits of the system; examine process I/O requirements and select the appropriate hardware; design and assemble a complete system; use the Workbench to configure and program the system, including communication with external devices; develop functions, function blocks and programs using standard IEC 61131 programming languages; make hardware expansions to an existing system; isolate faults to the module level by interpreting automatic fault indications; and hot-replace failed modules without disrupting the systems or process.

Objectives

After completing this course, students should understand the following topics:

- Failsafe and fault-tolerant designs
- System hardware overview
- Assembling a system
- Create a project
- Dictionary and I/O configuration
- Application programs and editors
- Generating runtime code
- Offline simulation
- Load and monitor applications
- Create functions and function blocks
- Bindings between resources
- Lock/force
- Online changes
- Cross references
- Version control
- Printing
- Passwords
- Sequence of events
- OPC server
- Application exercise
- Troubleshoot
- Replace modules
- Diagnostics collection

Who Should Attend?

Individuals who are responsible for designing, building, programming, and troubleshooting an AADvance system

Prerequisites

- General knowledge of programmable logic controllers (PLCs)
- Background in industrial electronic control principles and practices

Do not take both PRST9063LD and PRST9064LD because they share similar content. If your responsibilities are limited to maintaining and troubleshooting the AADvance system, take this course instead: AADvance Operation, Maintenance, & Troubleshooting (PRST9064LD)

Savings and Flexibility - Training Savings Account

Do you have diverse employee development needs and want to maximize your training budget?

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For more information, call 440-646-3434 (option 4), contact your local Rockwell Automation sales office or Allen-Bradley distributor, or visit:

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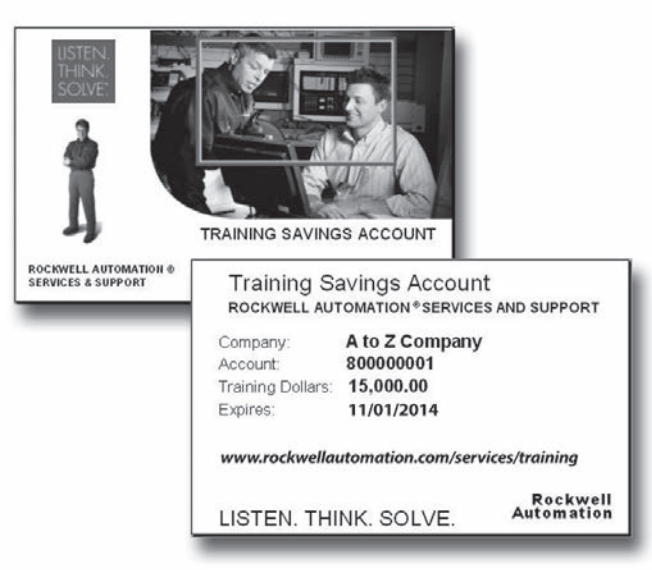

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Instructor-Led Training

In a World of Technology, Your People Make the Difference

Improving human performance and overall profitability begins with your investment in instructor-led training

Achieving your peak manufacturing performance requires a blend of technologies and processes driven by highly trained employees. Rockwell Automation instructor-led training delivers just that. Factory-trained instructors understand your production issues and bring a broad range of hands-on experience and product expertise from a variety of industries and manufacturing environments. Because our instructors are well-versed in implementing products across various environments, you can be certain that crucial knowledge will transfer to your plant floor.

Rockwell Automation ensures that your employees receive training that is job task relevant for your needs — students are trained on what they need to accomplish and perform. Task based training requires active participation in the classroom because tasks build upon each other and increase in complexity, resulting in practice that guarantees effective job performance after the training is completed.

Take Advantage of the Rockwell Automation Difference

- Subject-Matter Expertise – our technologies, our curriculum
- Experienced Technical Instructors – real-world experience and product expertise
- Course Materials – award-winning, student materials for classroom use and ongoing review
- Pre- and Posttesting – testing to quantify knowledge transfer and to demonstrate a return on investment
- Workstations – factory simulation tools for experiential learning
- Job Aids – procedures and troubleshooting guides for quick and accurate performance and problem-resolution of the plant floor
- International Association for Continuing Education and Training – authorized provider status offers valuable CEUs for professional development

Condition Monitoring

Condition Monitoring Curriculum Map

UNDERSTAND

Vibration Analysis Fundamentals
EK-ICM101 • 3 Days

Time Waveform Analysis
EK-ICM281 • 2 Days

XM System Fundamentals
EK-ICM165 • 2 Days

CERTIFICATIONS

Vibration Analysis: Level I
EK-ICM201 • 3.5 Days
Optional Exam
Last Half Day of Class

Vibration Analysis: Level II
EK-ICM261 • 3.5 Days
Optional Exam
Last Half Day of Class

Vibration Analysis: Level III
EK-ICM301 • 3.5 Days
Optional Exam
Last Half Day of Class

PROGRAM OR DESIGN

Emonitor Basic
EK-ICM141 • 4 Days

Enpac Applications
EK-ICM162 • 3 Days

Emonitor Advanced
EK-ICM221 • 4 Days

Note: Consult course description for prerequisites

Dynamic Balancing

EK-ICM121 • 3 Days

Optional Exam
Last Half Day of Class

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Vibration Analysis Fundamentals

EK-ICM101
3 Days

Course Purpose

This course is designed for the new user of vibration analysis or predictive maintenance instrumentation or for the individual that desires to become more familiar with the basics of vibration. The relationship between the mechanical condition of machinery and vibration is presented. This background helps show how vibration detection and analysis can be used in a cost-effective program to identify machinery problems and schedule repairs to avoid costly machine downtime.

Objectives

After completing this course, students should understand the following topics and tasks:

- Introduction to vibration technology, vibration analysis, and dynamic balancing
- Characteristics of vibration
- Relate vibration frequency, amplitude, and phase to machine condition
- Review of severity charts
- Differences between displacement, velocity, and acceleration
- Instruments for vibration detection and analysis
- Transducer selection and mounting methods
- Calculate trial and correction weights
- Identify the most common machinery problems
- Implement a predictive maintenance program

Who Should Attend?

Maintenance supervisors, mechanics, technicians, engineers or analysts involved in the maintenance or operation of plant machinery

Prerequisites

There are no prerequisites for this course

Vibration Analysis: Level I

EK-ICM201
3.5 Days

Course Purpose

The fundamental information necessary to implement and operate a successful predictive maintenance program is presented in this seminar. Vibration basics and the relationship between vibration and machinery condition are reviewed. Proven techniques for specifying meaningful overall and spectrum band alarm limits for a wide variety of machinery are presented. The material in this course is applicable to all vendors' vibration data collection or analysis equipment. Case histories are used extensively throughout the course to emphasize the practical application of the material. An optional certification test is administered during the last half day of this course.

Objectives

After completing this course, students should understand the following topics:

- Characteristics of vibration and review of severity charts
- Relate time waveform and vibration frequency
- Digital vs. analog overall vibration measurement
- Vibration transducer overview and selection criteria
- Role of spike energy, HFD, and shock pulse and alarm levels
- Vibration signature analysis to diagnose machine problems
- How to track rolling element bearing health
- Methods for specifying spectral alarm band levels and frequencies
- Common pitfalls in vibration measurements

Who Should Attend?

Mechanics, technicians, engineers, or analysts involved in the maintenance or operation of plant machinery

Prerequisites

- 6 months or more of field experience
- Completion of the *Vibration Analysis Fundamentals* (EK-ICM101), or similar, course

Vibration Analysis: Level II

EK-ICM261
3.5 Days

Course Purpose

This course is designed to advance the knowledge base of vibration analysts having one to three years of experience. The course begins with a brief review of *Vibration Analysis: Level I* course (EK-ICM201) topics and then moves to more in-depth applications of the illustrated vibration diagnostic chart. Advanced alarm setting techniques based on statistical analysis are explained for both overall and band alarms. Advanced measurement techniques including natural frequency testing and high frequency envelope signal analysis are covered. An optional certification test is administered during the last half day of this course. The material in this course is applicable to all vendors' vibration data collection or analysis equipment.

Objectives

After completing this course, students should understand the following topics:

- Data acquisition and FFT processing for reliable spectral analysis
- Introduction to natural frequency test methods
- Vibration diagnostics using phase analysis and cascade diagrams
- Vibration signature analysis using the illustrated vibration diagnostic chart
- Introduction to Narrowband Envelope (statistical) alarms
- Introduction to isolation and damping
- Refine overall and band alarm levels using proven statistical methods

Who Should Attend?

Mechanics, technicians, engineers, or analysts involved in the maintenance or operation of plant machinery

Prerequisites

- 12 months or more of field experience
- Completion of the *Vibration Analysis: Level 1* (EK-ICM201), or similar, course

Vibration Analysis: Level III

EK-ICM301
3.5 Days

Course Purpose

More in depth coverage and focused demonstration of many of the techniques presented in the *Vibration Analysis: Levels I and II* courses (EK-ICM201 & EK-ICM261) are presented in this advanced course. In this advanced course, several powerful techniques, including high frequency envelope signal analysis, time waveform, and deflection shape analysis, are presented to increase the effectiveness of experienced vibration analysts. The analysis of high speed, low speed, and variable speed machinery is presented with consideration of the special transducer and instrumentation requirements of these applications. An optional certification test is administered during the last half day of this course. The material in this course is applicable to all vendors' vibration data collection or analysis equipment.

Objectives

After completing this course, students should understand the following topics:

- Introduction to motor current spectral analysis
- Time waveform analysis
- How to analyze low, high, and variable speed machines
- How to evaluate and communicate the achievements of your plant's condition monitoring program
- How to, and how not to, create effective narrow-band spectral alarm envelopes
- Proper use of high-frequency demodulated and enveloped spectra
- Analysis of DC motors and Operating Deflection Shape (ODS)

Who Should Attend?

Mechanics, technicians, engineers, or analysts involved in the maintenance or operation of plant machinery

Prerequisites

- 18 months or more of field experience
- Completion of the *Vibration Analysis: Level II* (EK-ICM261), or similar, course is recommended

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Dynamic Balancing

EK-ICM121
3 Days

Course Purpose

Identifying and effectively correcting balance problems are the focus of this course. The course begins by defining unbalance and explaining the benefits of properly balanced rotating machinery. Various methods of solving unbalance problems including single-plane, two-plane, and multi-plane techniques are presented. Each of these solution methods is taught for both in place field balancing and balancing machine applications. Balancing tolerances and setting specifications for rotor balance are also presented. An optional certification test is administered during the last half day of this course.

Objectives

After completing this course, students should understand the following topics:

- Introduction to dynamic balancing
- Use of phase to determine the difference between unbalance and problems that resemble unbalance
- Rigid vs. flexible rotors
- Critical speed/resonance
- Single-plane balancing
- Two-plane and multi-plane balancing techniques
- Dividing and combining correction weights
- Balancing overhung rotors
- Factors affecting field balancing
- Recommended tolerances
- Use balancing machines
- Weight removal and flat stock conversion charts

Who Should Attend?

Individuals who:

- Have involvement in balancing and machine reliability
- Need to learn how to balance or currently do balancing work either on a balancing stand or in the field
- Specify balancing tolerances or design machines
- Are involved in any way with the maintenance of machinery

Prerequisites

There are no prerequisites for this course, but previous balancing experience is helpful and completion of the *Vibration Analysis Fundamentals* (EK-ICM101), or similar, course is recommended

Time Waveform Analysis

EK-ICM281
2 Days

Course Purpose

This course emphasizes the use of time waveform data to accurately identify a wide range of vibration phenomena not easily detected using spectral data. Real-world case histories are used to demonstrate how time waveform analysis can identify problems likely missed by standard spectral analysis, as well as to confirm results of spectral analysis. The material in this course is applicable to all vendors' vibration data collection or analysis equipment.

Objectives

After completing this course, students should understand the following topics:

- Introduction to Time Waveform Analysis (TWA)
- Time Waveform benefits and fundamentals
- Setup parameters for TWA
- Interpretation of Time Waveform data
- Natural frequency testing
- Time synchronous averaging
- Case histories utilizing Time Waveform Analysis

Who Should Attend?

Experienced analysts who have a thorough understanding of vibration fundamentals and want to better use this important diagnostic tool

Prerequisites

- Completion of the *Vibration Analysis: Level II* (EK-ICM261), or similar, course
- 9 to 12 months of experience with vibration spectral analysis is recommended

XM® System Fundamentals

EK-ICM165
2 Days

Course Purpose

This course is a skill-building course that provides students with a basic understanding of XM systems and terminology. This course introduces students to XM system components and functionality. Students will have an opportunity to use the XM Serial Configuration Utility and RSMACC™ software to perform various software tasks. In addition, students will be introduced to vibration fundamentals and will have an opportunity to configure proximity probes and accelerometers connected to XM modules. Connecting non-vibration measurement devices to the appropriate XM module will be discussed.

Objectives

After completing this course, students should understand the following topics and tasks:

- Introduction to vibration technology
- Characteristics of vibration
- Overview of RSLinx
- Introduction to RSMACC
- Configure XM modules through RSMACC and XM serial configuration utility
- Set-up measurements and alarms for XM systems
- Overview of each XM module
- Use of the XM440 master relay module
- Communicate through the XM500

Who Should Attend?

Individuals who have little or no working experience with XM systems

Prerequisites

- Experience operating a computer within a Microsoft® Windows® environment
- Completion of the *Vibration Analysis Fundamentals* course (EK-ICM101) is recommended

Emonitor® Basic

EK-ICM141
4 Days

Course Purpose

This course is geared towards those users of Emonitor who have been using it for less than one year and is designed to put students on the fast track to success using Emonitor. Students will become familiar with the features and operation of Microsoft Windows and Emonitor. Instruction on the basics of installation, database set-up, and loading/unloading data collectors guide students through the process of gathering machinery information. Interpreting this information using a variety of plots and reports is then covered, helping students put their system to work solving machinery problems.

Objectives

After completing this course, students should be able to perform the following tasks:

- Building a database
- Adding machines, locations, and measurements
- Creating, saving, and using lists
- Using templates and editing existing databases
- Loading and unloading
- Importing data
- Creating custom plots
- Using plots and reports with word processors
- Overview of Windows and Emonitor
- Plot overview and options
- Create reports
- Alarm setup and options
- Overview of frequency items

Who Should Attend?

Anyone who is new to Emonitor and must use it either daily to complete their duties or only occasionally to look up data, run reports, or act as a system administrator

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *Vibration Analysis Fundamentals* (EK-ICM101), or similar, course

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Emonitor Advanced

EK-ICM221
4 Days

Course Purpose

This course helps the established user increase their efficiency and their overall program effectiveness using Emonitor Odyssey/Enshare. In-depth coverage of the program provides students with the information they need to customize operations for specific machine applications. Set-up of advanced measurements and custom templates tailor the database to fit difficult machine applications. Customized reporting and plotting allows students to design program output that is most readily understood within their plant. The statistical alarming capabilities are covered thoroughly in this course, providing students with the most powerful tool for efficient use of overall, band, and narrow-band spectral alarms.

Objectives

After completing this course, students should understand the following topics:

- Measurement options and advanced list options
- Special measurements
- Load/unload and data import review
- Detailed plotting
- Custom reports and plots
- Overlay, linking and locking
- Statistical alarms and outlier detection
- Spectral band and narrow-band alarming
- Configuration and use frequency items

Who Should Attend?

Established users of Emonitor Odyssey/Enshare who have one or more years of experience using the product

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- One year or more experience with Emonitor Odyssey/Enshare
- Completion of the *Vibration Analysis: Level 1* (EK-ICM201), or similar, course

Enpac® Applications

EK-ICM162
3 Days

Course Purpose

This course covers the full range of operations of the Enpac 1200 and Enpac 2500, from basic to advanced, providing excellent information for beginning or experienced Enpac users. Basic operations including loading, unloading, and collecting overall and spectrum data are presented, as well as advanced measurement techniques, such as time waveform collection, time synchronous averaging, phase measurement, and spike energy spectrum collection. The Enpac two-plane balancing and two-channel applications are covered in this course.

Objectives

After completing this course, students should understand the following topics:

- Enpac operating program and setup options
- Route configuration and data collection options
- Transfer of data between the Enpac and Emonitor
- Off route data collection and transfer to Emonitor
- Time Synchronous measurements
- Cross channel phase
- Two-channel measurements
- ESP and spike energy overview
- Phase measurements
- Balancing with the Enpac

Who Should Attend?

Individuals who use the Enpac and would like to learn more about the instrument's data collection and vibration analysis capabilities

Prerequisites

- Completion of the *Vibration Analysis Fundamentals* (EK-ICM101), or similar, course
- Completion of the *Emonitor Basic* course (EK-ICM141) is recommended
- 3 to 6 months of experience with the Enpac 1200 or Enpac 2500 is recommended

Software

My Company | Site A | Filling_A | Line 1
12Filler
Current Shift Start:
Shift Name:
Shift 2
OEE (%)
Availability (%)
Performance (%)
Quality (%)
91.3
93.3
90.2
Current Shift Counts
Current Shift Time
Total
Good
Scrap
Ideal
Part ID
Current State
Description
Running
Scheduled
Available
Downtime
State Time

LISTEN.
THINK.
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Software

Rockwell Automation software courses address today's diverse plant information needs, such as:

- Production management – real-time coordination across plant-wide production processes
- Data management – tools and methods used for collecting, transforming, and integrating production information
- Asset management – optimizing maintenance and plant operations to improve resource availability
- Performance and visibility – offering a window into the process so plant personnel can make better decisions

Real-time exchange of information between manufacturing and the rest of your company is critical for making business decisions that improve responsiveness, increase productivity, and reduce costs. With Rockwell Automation software courses, you can learn how to integrate your factory floor.

Course Number	Course Name	Course Length
RS-FTACC	FactoryTalk® AssetCentre Configuration	2 Days
RS-MSSQLB	Microsoft® SQL Server for FactoryTalk Introduction	2 Days
RS-FTMHCC	FactoryTalk Metrics with Historian Classic Configuration	4 Days
RS-RSMACC	RSMACC Installation and Configuration	3 Days
RS-FTTM	FactoryTalk Transaction Manager	3 Days
RS-RSTS101-LD	RSTestStand™ Enterprise Project Development	2 Days
RS-FTHSEC	FactoryTalk Historian Site Edition Configuration and Data Collection	3.5 Days
FTVP	FactoryTalk VantagePoint Configuration and Reporting	3 Days
VBAFTVSE	Microsoft VBA Configuration with FactoryTalk View SE Applications	4 Days
RS-EMPM	Power Monitor Installation and RSEnergyMetrix® Software Configuration in an Energy Monitoring System	2.5 Days

FactoryTalk® AssetCentre Configuration

RS-FTACC
2 Days

Course Purpose

This course provides students with a set of asset-centric focused tools to securely and centrally manage factory and process automation production environments. FactoryTalk AssetCentre will help students secure access to the control system, track users' actions, manage asset configuration files, configure process instruments and provide backup and recovery of operating asset configurations. In this course, students will have the opportunity to load the software and practice many critical tasks, such as implementing disaster recovery (continuation planning), tracking user actions, improving plant-floor security, and protecting intellectual property.

Objectives

After completing this course, students should be able to perform the following tasks:

- Install FactoryTalk AssetCentre software
- Install the FactoryTalk AssetCentre client remotely
- Configure FactoryTalk AssetCentre audits
- Configure FactoryTalk AssetCentre disaster recovery
- Configure FactoryTalk AssetCentre archive
- Understand FactoryTalk AssetCentre searches
- Understand FactoryTalk AssetCentre address book and e-mail notification

Who Should Attend?

Individuals who need to securely and centrally manage factory and process automation production environments

Prerequisites

- Experience operating a computer within a Microsoft® Windows® environment
- Knowledge of your production environment is recommended

Microsoft® SQL Server for FactoryTalk Introduction

RS-MSSQLB
2 Days

Course Purpose

This course provides students with the technical skills required to implement a database solution with Microsoft SQL Server client/server database management system.

Objectives

After completing this course, students should be able to perform the following tasks:

- Describe the elements of Microsoft SQL server and the Transact-SQL language
- Describe and configure the data storage architecture of SQL server
- Create and manage files, file groups, databases, tables, and transaction logs
- Enforce data integrity using constraints, defaults, and rules
- Create and maintain indexes
- Write queries that retrieve and modify data using joins and subqueries
- Create views of data

Who Should Attend?

Individuals who will use FactoryTalk software as the database solution for projects used in conjunction with Microsoft SQL Server client/server database management system

Prerequisites

- Experience using the Microsoft Windows NT® server network operating system
- Completion of a basic programmable controller course

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FactoryTalk Metrics with Historian Classic Configuration

RS-FTMHCC
4 Days

Course Purpose

In this course, students will learn to use Historian's data collection and data analysis functions to perform logging, reporting, and viewing of data. Students will learn to use the reporting, graphing, and querying functionality that make FactoryTalk a complete and very easy-to-use solution for data collection and analysis.

Objectives

After completing this course, students should be able to perform the following tasks:

- Create a FactoryTalk metrics database and user
- Create system DSN
- Install FactoryTalk Metrics software and RSLinx Enterprise
- Administrate FactoryTalk Metrics with the service console
- Create a FactoryTalk application
- Create FactoryTalk Metrics plant model
- Configure FactoryTalk Metrics workcell and user defined events
- Create OEE box and detail reports
- Configure FactoryTalk Metrics machine states
- Create FactoryTalk Metrics report data source
- Create text and chart reports
- Install and configure the FactoryTalk Metrics Report Expert
- Collect time series data, trend chart, compressed data, and storage options
- Configure an external data source
- Configure an Excel add-in

Who Should Attend?

Individuals who need to collect PLC data, as well as analyze and report that data

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Basic understanding of Allen-Bradley PLC processors
- Knowledge of basic client/server database concepts is recommended, but not required
- Familiarity with basic networking concepts is strongly recommended, but not required
- Knowledge or experience with Microsoft SQL Server is helpful

RSMACC Installation and Configuration

RS-RSMACC
3 Days

Course Purpose

The purpose of this course is to provide students with fundamental information on the RSMACC software package, to include planning an RSMACC system, installation, configuration, and change management. This course provides information on installation and configuration of network health server components and network health diagnostic scheduler components. Students will receive hands-on practice using the various RSMACC components in live lab networked environments.

Objectives

After completing this course, students should be able to perform the following tasks:

- Plan an RSMACC system
- Install RSMACC server components on server machine
- Configure RSMACC server
- Start and complete RSMACC server configuration
- Install RSMACC client components on client machine
- Configure RSMACC client machine
- Plan, install, and configure RSMACC change management
- Plan, install, and configure RSMACC network health components
- Install and configure network health diagnostic scheduler components

Who Should Attend?

Individuals who:

- Have recently purchased an RSMACC system
- Have systems installed and wish to upgrade their knowledge of Change Management, Network Health, Condition Monitoring, or AAM Components

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Basic understanding of databases

FactoryTalk Transaction Manager

RS-FTTM
3 Days

Course Purpose

In this course, students will learn about configuring FactoryTalk Transaction Manager in a Microsoft SQL Server environment. Students will also work with FactoryTalk Services Platform and Transaction Manager components. Students will bind processor datapoints to SQL database fields using the FactoryTalk graphic interface. Upon completion of this course, students will be able to: create, modify, save, restore, and delete single-computer and distributed FactoryTalk configurations; edit a running transaction that use the bind transaction result option; understand the concepts for creating transactions; understand the reasons for handshaking with the control system; and configure and use the update object.

Objectives

After completing this course, students should be able to perform the following tasks:

- Edit a running FactoryTalk Transaction Manager application
- Configure a unidirectional transaction with bind transaction result
- Understand handshaking errors and data/loss results
- Recognize FactoryTalk Transaction Manager built-in functions
- Configure math functions minimum maximum and average
- Configure advance functions
- Configure FactoryTalk Transaction Manager
  - Update object
  - Trigger and storage options
  - On high scan trigger
  - Stored procedures
  - Insert stored procedures
  - XML import/export
  - Error logging
- Move a FactoryTalk Transaction Manager application

Who Should Attend?

Engineers, plant managers, and maintenance personnel who use PLC data to manage or maintain plant processes

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Experience with SQL database software

RSTestStand™ Enterprise Project Development

RS-RSTS101-LD
2 Days

Course Purpose

This course provides students with a working knowledge of the RSTestStand Enterprise control systems simulation software. Upon completion of this course, students will gain the skills to create, validate, troubleshoot, and tune RSTestStand Enterprise Projects using RSTestStand simulation software. This course provides hands-on practices to reinforce the tasks involved in designing, testing, and implementing an effective simulation model of a machine and/or process. From creating and running project models and run-time scenarios to animating scenes and binding actions to resources, students will have the opportunity to fully understand the capabilities of RSTestStand Enterprise simulations and the benefits of this virtual modeling process with regard to start-up time, design flaw identification, problem resolution, and end-user training.

Objectives

After completing this course, students should be able to perform the following tasks:

- Create a project model
- Create and modify resources
- Build operator consoles and create a connection diagram
- Simulate and validate a project model
- Create run-time scenarios
- Create, animate, and control scenes
- Create and run a Part Flow Model and bind actions to resources
- Build logical views
- Troubleshoot and tune RSTestStand Enterprise projects using productivity tools

Who Should Attend?

Individuals who are responsible for designing, starting up, installing, and troubleshooting automation control systems and equipment

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Basic understanding of PLC processors or completion of the *PLC-5/SLC 500 and RSLogix Fundamentals* course (CCP122)
- Knowledge of basic VB scripting concepts
- Familiarity with basic OPC and detailed understanding of RSLinx software is recommended

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FactoryTalk Historian Site Edition Configuration and Data Collection

RS-FTHSEC

3.5 Days

Course Purpose

This course will provide students with an overview of the various FactoryTalk Historian tools for collecting data. Students will learn how to install and configure a FactoryTalk Historian Site Edition system and how to use Microsoft Excel to create and modify FactoryTalk Historian tags. During the course, students will learn how to apply exception and compression to filter data to be archived. Students will be given an opportunity to compare the use of Polled versus Advised data collection modes and learn about data buffering, layers/methods of redundancy, archive management and backup. Upon completion of the course, students will have gained exposure to the many aspects of the FactoryTalk Historian system and be able to install and configure FactoryTalk Historian to collect data.

Objectives

After completing this course, students should be able to perform the following tasks:

- Install FactoryTalk Historian
- Use Discover Historian points, data collection with handshaking, FTLD Health Points and Archive Management Tools, and audit information
- Understand Historian tags and use Excel tag configurator, exception & compression and basic alarms
- Use data collection modes of polled vs. advised
- Buffer disturbed FTLD interface data
- Configure event trigger reads/basic output points, event framing-BaGen, performance equations/totalizers, and interface redundancy/collectives
- Use BatchView
- Work with digital states
- Use and display audit information
- Schedule backups of Historian data

Who Should Attend?

Field engineers, MPS, pre-sales consultants, and support individuals who need to install and configure FactoryTalk Historian Site Edition for data collection

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals* course (CCP146) or knowledge of common ControlLogix terminology and the ability to program and interpret basic ladder logic instructions in Logix Designer software

FactoryTalk VantagePoint Configuration and Reporting

FTVP

3 Days

Course Purpose

In this course, students will learn various tools to analyze and display data using FactoryTalk VantagePoint and/or VantagePoint EMI. The course covers how to use the analysis and reporting tools to create trends, XY Plots, Excel reports, and dashboards. Students will have an opportunity to use the Portal and configure it to display content in various ways. The course also focuses on extending the model in the product and configuring security. Upon completion of the course, students will be able to utilize many tools and techniques for the display, analysis and reporting of data using FactoryTalk VantagePoint EMI.

Objectives

After completing this course, students should be able to perform the following tasks:

- Create a FactoryTalk connector
- Extend the logical model
- Create and publish trends and VantagePoint Excel reports
- Create and use types and type reports in VantagePoint
- Pass parameters to reports using hyperlinks
- Create composite and dashboard reports
- Use incuity tags for data entry, calculated tags, XY Plotter, and status indicators
- Customize the VantagePoint portal
- Create and use a Microsoft SQL server database connector
- Use VantagePoint security

Who Should Attend?

Developers or engineers who will work with FactoryTalk VantagePoint and/or VantagePoint EMI applications and need to view, analyze, and create reports

Prerequisites

Experience with:

- Microsoft SQL Server 2008
- Microsoft Office Excel 2010
- ControlLogix and FactoryTalk products and terminology

Microsoft VBA Configuration with FactoryTalk View SE Applications

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

VBAFTVSE
4 Days CEUs 2.8

Course Purpose

In this course, students will learn to develop and implement Visual Basic for Applications (VBA) procedures or subroutines within a FactoryTalk View SE project. The course covers VBA concepts, an overview of the VBA language, the FactoryTalk View SE software object model, and the creation, modification, and execution of VBA procedures from within FactoryTalk View SE software. Students will learn the fundamentals of Microsoft Excel, Word, and Access object models. Interacting with these object models from within the FactoryTalk View SE VBA procedures will allow students to create applications that perform such tasks as creating and printing Word documents or Excel spreadsheets with charts, and reading and writing to Access database files.

Objectives

After completing this course, students should be able to perform the following tasks:
- Configure VBA within a FactoryTalk View SE project
- Configure UserForms and events in FactoryTalk View SE VBA
- Debug tools and error handling in VBA
- Trigger a command on a client from an HMI server
- Access the FactoryTalk View SE object model from an external automation controller
- Control Microsoft Excel, Word, and Access with VBA
- Configure OPC automation with VBA
- Configure a trend object

Who Should Attend?

Engineers who wish to implement VBA procedures within their FactoryTalk View SE projects to meet application requirements

Prerequisites

- Familiarity with the Windows XP user interface and FactoryTalk View SE software
- Familiarity with processors

Power Monitor Installation and RSEnergyMetrix® Software Configuration in an Energy Monitoring System

RS-EMPM
2.5 Days

Course Purpose

With RSEnergyMetrix, students can capture, analyze, store, and share energy data across their entire enterprise using a simple Web browser. This makes it simple to distribute the knowledge students need to optimize energy consumption, which can help improve productivity while lowering energy costs. This course provides students with an understanding of 3-phase power fundamentals and how energy is paid for.

Objectives

After completing this course, students should be able to perform the following tasks:
- Understand AC power and PEM products power monitors
- Install and configure RSEnergyMetrix software
- Understand the basics of RSEnergyMetrix software
- Create RSEnergyMetrix custom reports

Who Should Attend?

Solution providers, managers, engineers, and technical specialists who need to configure Allen-Bradley power monitors and RSEnergyMetrix software in order to solve on-going, energy-related challenges

Prerequisites

- Basic understanding of 3-phase electric power
- Basic understanding of Rockwell Automation Integrated Architecture products, networks, and software
- Basic understanding of internet server applications, Microsoft SQL Server, and Microsoft Visual Basic scripting

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Savings and Flexibility - Training Savings Account

Do you have diverse employee development needs and want to maximize your training budget?

Our Training Savings Account maximizes your training budget by allowing you to deposit dollars into a dedicated account for future training expenditures. Use this account to purchase Rockwell Automation training products, courses, and e-learning at a discount (20%). You can make withdrawals from your account as needed without any administrative hassle at the time that best meets the individual needs and schedule of each employee.

For more information, call 440-646-3434 (option 4), contact your local Rockwell Automation sales office or Allen-Bradley distributor, or visit:

www.rockwellautomation.com/services/training

Virtual Classroom

Virtual Classroom Curriculum Map

UNDERSTAND

Also Available in Spanish

Ladder Logic Basics with CompactLogix Starter Workstation

VC-LLB
(5) 90-Min. Sessions

SAFETY STANDARDS

Machine Functional Safety and ISO 13849 System Design: Risk Assessment

VC-MFSISO-01
120-Min. Session

NFPA 70E 2012 - Arc Flash Awareness

VC-SFT106
(4) 90-Min. Sessions

PROGRAM OR DESIGN

Also Available in Spanish

FactoryTalk ViewPoint Implementation

VC-FTVIEW-01
90-Min. Session

Machine-Level Design Optimization: Drive and Motor Selection

VC-MLDO-01
90-Min. Session

Machine-Level Design Optimization: Networks, Controller, and I/O Selection

VC-MLDO-02
120-Min. Session

Machine Level Design Optimization Bundle: VC-MLDO

MAINTAIN OR TROUBLESHOOT

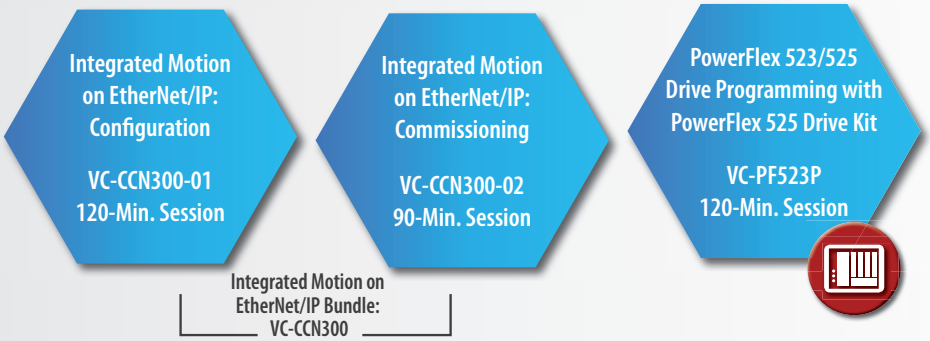
PowerFlex 755 Floor Mounted Drives: Pre-Installation Planning

VC-PF755H-01
120-Min. Session

Micro850 Installation, Wiring, and Troubleshooting with Micro850 Workstation

VC-M850
(5) 120-Min. Sessions

Note: Consult course description for prerequisites



Includes Hardware Kit

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Ladder Logic Basics with CompactLogix™ Starter Workstation

Virtual Classroom

AUTHORIZED IACET PROVIDER International Association for Continuing Education and Training

VC-LLB

(5) 90-Min. Sessions CEUs 0.75

Course Purpose

This course will teach students how to write and test basic ladder logic code and how to employ common programming strategies and best practices. Students will learn how to select and program bit, timer, counter, compare, and move instructions. Examples and labs will use a Logix Designer Application and a CompactLogix L31 controller; however, the general ladder logic concepts covered in this course are applicable to most common programmable controllers.

Objectives

After completing this course, students should be able to perform the following tasks:

- Review basic logic flow
- Convert scenarios to if – then statements
- Convert if – then statements to simple rungs
- Enter ladder logic into software
- Download a project
- Monitor the ladder logic
- Tie the alias to an existing address
- Apply bit instructions and common ladder logic strategies
- Select a class of instruction categories
- Select and integrate timers and counters
- Select and integrate compare and move instructions
- Combine compare with move instructions

Who Should Attend?

Beginning programmers or individuals who are required to edit ladder logic

Prerequisites

A general knowledge of automation, including the general purpose of a controller, data, and I/O; and the purpose of common devices like push buttons, pilot lights, limit switches, relays, contractors, and solenoids is required

Technical Requirements

- A computer and phone
- A Logix Designer Application must be installed and activated. The virtual classroom invitation will provide details on how to obtain a temporary installation of the software if students do not have it.
- CompactLogix Starter Workstation (shipped prior to class)

Machine Functional Safety and ISO 13849 System Design: Risk Assessment

Virtual Classroom

AUTHORIZED IACET PROVIDER International Association for Continuing Education and Training

VC-MFSISO-01

120 Min. Session CEUs 0.2

Course Purpose

This course teaches students to use a structured risk assessment process based on ISO 13849. Students will learn how to identify the hazards of a machine, estimate the level of risk, and choose risk reduction techniques. During the exercises, students will make their decisions using the terms and rating system from ISO 13849. As students work through the process, they will build documentation that they can use throughout the lifecycle of their machines.

Objectives

After completing this course, students should be able to perform the following tasks:

- Define the scope of the risk assessment
- Identify the hazards
- Determine the risk level of each hazard
- Identify potential risk reduction techniques
- Choose risk reduction techniques
- Write a risk assessment report

Who Should Attend?

Design engineers, maintenance managers, or people in health and safety roles

Prerequisites

Experience with the design, development, maintenance, or supervision of industrial automation systems is required

Technology Requirements

A computer and phone

NFPA 70E 2012– Arc Flash Awareness

Virtual Classroom

AUTHORIZED IACET PROVIDER International Association for Continuing Education and Training

VC-SFT106

(4) 90 Min. Sessions CEUs 0.15 each

Course Purpose

This course will teach students to assess arc flash hazards and act to mitigate them by selecting appropriate PPE and determining protection boundaries. Students will learn how to use NFPA 70E 2012 and calculation methods to determine protection boundaries. This course provides some of the key requirements necessary to become a "qualified" person as defined in OSHA 1910.269, 332, 333, and NFPA 70E, such as: determining minimum approach distances; being capable of using special precautionary techniques, PPE, insulating and shielding materials, and insulated tools; receiving safety training to recognize and avoid hazards.

Objectives

After completing this course, students should be able to perform the following tasks:

- Determine appropriate PPE
- Determine thermal and shock boundaries
- Perform bolted fault arc flash calculations
- Perform arc fault/arc flash calculations

Technology Requirements

- A computer and phone
- A calculator must be available for Session 2
- A scientific calculator must be available for Session 3 and Session 4

Students can use the calculator found in Microsoft Windows>Programs>Accessories for all three sessions.

Who Should Attend?

Individuals required to work in accordance with NFPA 70E or who will be exposed to work areas designated by a flash protection boundary

Prerequisites

- Experience distinguishing exposed live parts from other parts of electrical equipment
- Determining nominal system voltage of exposed live parts
- Skills and knowledge related to the construction and operation of electrical equipment and installations

Machine-Level Design Optimization: Drive and Motor Selection

Virtual Classroom

AUTHORIZED IACET PROVIDER International Association for Continuing Education and Training

VC-MLDO-01

90 Minutes CEUs 0.15

Course Purpose

This course covers best practices for architecting control solutions for machines. The instructor will show students how to size and select drives and motors and then they will practice these tasks with an example application. The design tools and best practices covered in the course aim to optimize and reduce build time with machine-level design.

Objectives

After completing this course, students should be able to perform the following tasks:

- Configure a motion profile, a mechanism, and transmissions
- Select a motor and drive

Who Should Attend?

Control engineers and OEMs who design machine-level control applications

Prerequisites

There are no prerequisites for this course; however, experience with designing machine-level control applications is helpful

Technical Requirements

- A computer and phone
- Motion Analyzer software, version 6.1, must be installed and activated. The virtual classroom invitation will provide details on how to obtain a temporary installation of the software if students do not have it.

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Machine-Level Design Optimization: Networks, Controller, and I/O Selection

Virtual Classroom

AUTHORIZED IACET PROVIDER
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VC-MLDO-02

120 Minutes CEUs 0.2

Course Purpose

This course covers best practices for architecting control solutions for machines. The instructor will show students how to size and select control platforms and machine-level networks and then they will practice these tasks with an example application. The design tools and best practices covered in the course aim to optimize and reduce build time with machine-level design.

Objectives

After completing this course, students should be able to perform the following tasks:

- Select network topology/components and a controller and I/O
- Add devices to the network
- Verify network loading

Who Should Attend?

Control engineers and OEMs who design machine-level control applications

Prerequisites

There are no prerequisites for this course; however, experience with designing machine-level control applications is helpful

Technical Requirements

- A computer and phone
- Integrated Architecture Builder software, version 9.1, must be installed and activated. The virtual classroom invitation will provide details on how to obtain a temporary installation of the software if students do not have it.

FactoryTalk ViewPoint Implementation

Virtual Classroom

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

VC-FTVIEW-01

90 Minutes CEUs 0.15

Course Purpose

This course will teach students how to monitor their FactoryTalk View ME projects in a web browser. This course will also show students how to create a new FactoryTalk View ME web application and connect to an existing FactoryTalk View ME web application via Ethernet from a PanelView Plus.

Objectives

After completing this course, students should be able to perform the following tasks:

- Verify client requirements
- Verify server requirements
- Create a new ME web application
- Connect to an existing ME web application
- Troubleshoot common integration problems

Who Should Attend?

Individuals who need to monitor installations from any remote location with Internet access, but without FactoryTalk View ME software

Prerequisites

Experience using FactoryTalk View ME software and PanelView Plus programming is required. Specifically, students must know how to create .apa files and download files to PanelView Plus terminals

Technology Requirements

A computer and phone

Integrated Motion on EtherNet/IP: Configuration

Virtual Classroom

AUTHORIZED IACET PROVIDER International Association for Continuing Education and Training

VC-CCN300-01

120 Minutes CEUs 0.2

Course Purpose

This course will teach students how to choose topology and components, configure controllers and axes, and add drives to their configuration.

Objectives

After completing this course, students should be able to perform the following tasks:

- Choose topology and components
- Configure a controller for the network
- Add drives
- Configure axes

Who Should Attend?

Individuals who design and develop motion control applications and who will be working with Integrated Motion on EtherNet/IP networks

Prerequisites

Experience developing motion control applications and working with RSLogix 5000 software

Technology Requirements

- A computer and phone
- RSLogix 5000 software must be installed and activated. The virtual classroom invitation will provide details on how to obtain a temporary installation of the software if students do not have it.

Integrated Motion on EtherNet/IP: Commissioning

Virtual Classroom

AUTHORIZED IACET PROVIDER International Association for Continuing Education and Training

VC-CCN300-02

90 Minutes CEUs 0.15

Course Purpose

This course will show students how to start up the network, test axes with motion direct commands, run hookup tests, and autotune axes.

Objectives

After completing this course, students should be able to perform the following tasks:

- Start up the network
- Test axes with motion direct commands
- Run hookup tests
- Autotune axes

Who Should Attend?

Individuals who design and develop motion control applications and who will be working with Integrated Motion on EtherNet/IP networks

Prerequisites

Experience developing motion control applications and working with RSLogix 5000 software

Technology Requirements

- A computer and phone
- RSLogix 5000 software must be installed and activated. The virtual classroom invitation will provide details on how to obtain a temporary installation of the software if students do not have it.

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PowerFlex 523/525 Drive Programming with PowerFlex 525 Drive Kit

Virtual Classroom

AUTHORIZED IACET PROVIDER International Association for Continuing Education and Training

VC-PF523P

120 Minutes CEUs 0.2

Course Purpose

After completing this course, students should be able to program drive parameters for a drive application. This course will teach students how to create a custom parameter group based upon drive applications. Throughout this course, the instructor will cover a range of topics from establishing communications with a PowerFlex 523/525 drive via an EtherNet/IP network to testing parameters of a PowerFlex 523/525 drive using the HIM.

Objectives

After completing this course, students should be able to perform the following tasks:

- Establish communications with a PowerFlex 523/525 drive
- Edit parameters using Connected Components Workbench software
- Create a CustomView parameter group
- Test a PowerFlex 523/525 drive using the HIM

Who Should Attend?

Individuals who have drive programming experience but are new to PowerFlex component-class drives

Prerequisites

- Knowledge of AC/DC drive fundamentals and drives programming experience
- Basic working knowledge of safe electrical practices including, but not limited to:
  - Understanding electricity, how it works, and the dangers involved in working with electricity
  - Identifying hazardous conditions
  - Adhering to all safety regulations

Technical Requirements

- PowerFlex 525 drive kit (shipped prior to class)
- A computer and phone
- Connected Components Workbench software must be installed and activated. The virtual classroom invitation will provide details on how to obtain a temporary installation of the software if students do not have it.

PowerFlex 755 Floor Mounted Drives: Pre-Installation Planning

Virtual Classroom

AUTHORIZED IACET PROVIDER International Association for Continuing Education and Training

VC-PF755H-01

120 Minutes CEUs 0.2

Course Purpose

This course will help students plan for the successful installation of PowerFlex 755 floor-mounted, frame 8 and larger (300 Hp (200 kW) and above) drives. Students will explore common drive pre-installation topics including specific wiring, mounting, fusing, and option card installation considerations for floor-mounted PowerFlex 755 units. During this course, students will use a variety of available technical documents and tools to help them prepare for installation situations unique to these drives.

Objectives

After completing this course, students should be able to perform the following tasks:

- Interpret and verify floor mounted drive catalog numbers
- Prepare for frame 8 and larger drive mounting
- Verify drive option card locations
- Plan for floor mounted drive
- Fuse and wire
- Plan floor mounted drive integration with a motor control center

Who Should Attend?

Individuals responsible for installing Frame 8 and larger PowerFlex 755 drives

Prerequisites

- Knowledge of safe electrical practices
- Prior experience working with AC drives
- Experience with wall-mounted (frame 1. . .7) PowerFlex 750-series drives is helpful, but not required

Technical Requirements

A computer and phone

Micro850 Installation, Wiring, and Troubleshooting with Micro850 Workstation

Virtual Classroom

AUTHORIZED IACET PROVIDER
International Association for Continuing Education and Training

VC-M850

(5) 120-Min. Sessions CEUs 1.0

Course Purpose

After completing this course, students should be able to install and wire Micro850 controllers, plug-in and expansion I/O modules, power supplies, and I/O devices. This course will teach students how to troubleshoot basic controller and power supply problems. Throughout this course, the instructor will cover a range of topics from understanding the basics of control systems and wiring, to installing I/O devices and identifying common Micro850 problems.

Objectives

After completing this course, students should be able to perform the following tasks:

- Install a Micro850 controller, a power supply, I/O devices, and plug-in and expansion I/O modules
- Wire a Micro850 controller and a power supply
- Wire I/O devices to a Micro850 controller
- Ensure proper electrical connection of I/O devices
- Isolate the cause of a fault or failure condition
- Troubleshoot a Micro850 controller and power supply
- Resolve common controller and power supply faults

Who Should Attend?

Individuals who are new to controllers and need to install and wire Micro850 system components

Prerequisites

Basic working knowledge of safe electrical practices including but not limited to:

- Understanding electricity, how it works, and the dangers involved in working with electricity
- Identifying hazardous conditions
- Adhering to all safety regulations

Technical Requirements

- A computer and phone
- Micro850 workstation (shipped unassembled, prior to class)

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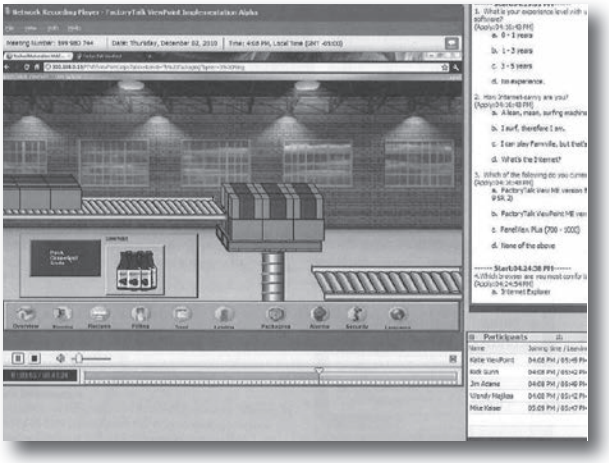
Deploy Expert Training Without Travel Expenses

Instructor-Led and Web-Delivered Virtual Classes



Rockwell Automation offers interactive Virtual Classroom training sessions, which are short, one or two-hour training sessions conducted by a knowledgeable instructor via the Internet.

What is it?

- Travel-free alternative to traditional classroom courses
- "Blended" learning mode, combining instructor presentations, demonstrations, exercises, check knowledge and white board interactivity
- Dynamic question and answer sessions
- Desktop sharing between instructor and student
- Global solution for customer participants worldwide
- Modular – Allowing the student to concentrate on the content they need

What it is not?

- Not a conference call, webinar or webcast
- Not a second-rate substitute for traditional classroom training
- Not a click-through PowerPoint presentation

For more information

Contact your local authorized Allen-Bradley distributor, Rockwell Automation sales office, or call 440-646-3434 (option 4).

Course Number For Enrollment	Course Name	Description
VC-LLB	Ladder Logic Basics with CompactLogix Starter Workstation	Session 1: 90 min. Session 2: 90 min. Session 3: 90 min. Session 4: 90 min. Session 5: 90 min. Bundled with a CompactLogix Starter Workstation
VC-SFT106	NFPA 70E 2012 - Arc Flash Awareness	Session 1: 90 min. Session 2: 90 min. Session 3: 90 min. Session 4: 90 min.
VC-MFSISO-01	Machine Functional Safety & ISO 13849 System Design: Risk Assessment	Session 1: 120 min.
VC-FTVIEW-01	FactoryTalk® ViewPoint Implementation	Session 1: 90 min.
VC-CCN300	Integrated Motion on EtherNet/IP: Configuration & Commissioning	Session 1: 120 min. Session 2: 90 min.
VC-MLDO	Machine-Level Design Optimization: Drive and Motor Selection & Networks, Controller, and I/O Selection	Session 1: 90 min. Session 2: 120 min.
VC-PF755H-01	PowerFlex 755 Floor Mounted Drives: Pre-Installation Planning	Session 1: 120 min.
VC-M850	Micro850 Installation, Wiring, and Troubleshooting with Micro850 Workstation	Session 1: 120 min. Session 2: 120 min. Session 3: 120 min. Session 4: 120 min. Session 5: 90 min. Bundled with an unassembled Micro850 Workstation
VC-PF523P	PowerFlex 523/525 Drive Programming with PowerFlex 525 Drive Kit	Session 1: 120 min. Bundled with a PowerFlex 525 Drive Kit

Craft Skills and Mechanical Concepts

Craft Skills and Mechanical Concepts

Craft skills and mechanical courses are available only as private, on-site classes.

Air and Fluid Power

Course	Course Code
Fans, Blowers and Compressors	MM-209
Hydraulics and Pneumatics	MM-400

Bearings and Lubrication

Course	Course Code
Introduction to Bearings and Lubrication	MM-103
Lubrication	MM-206
Bearings	MM-207

Bending and Fittings

Course	Course Code
Conduit Bending	EM-108
Pipefitting	MM-302

Combustion

Course	Course Code
Combustion	MM-106

Electrical and Electronics

Course	Course Code
Basic Electricity - DC	EM-101
Basic AC/DC Power Concepts	EM-101A
Basic Electricity – AC	EM-102
Electrical Print Reading	EM-103
Wiring	EM-105
Batteries	EM-106
Industrial Electronics	EM-200
Electrical Troubleshooting	EM-206
Basic Digital Circuits	EM-303
Industrial Electricity and Electronics for Mechanics	MM-403
Industrial Electrical Controls Fundamentals	MFG-213
Fundamentals of Electricity	MFG-244

Generators

Course	Course Code
AC and DC Generator Theory	EM-203

Instrumentation and Process Control

Course	Course Code
Instrumentation I	EM-400A
Instrumentation II	EM-400B
Test Equipment	EM-104
Process Control Fundamentals	EM-403

Measurements and Mathematics

Course	Course Code
Analytical Measurement	EM-402
Basic Mathematics	GEN-001
System Problem Solving and Troubleshooting	GEN-003
Measurement and Tools	MM-101

Mechanical Concepts

Course	Course Code
Mechanical Print Reading	MM-105
Mechanical Crane Inspections	MM-208
Mechanical Concepts	MM-500
Seals and Packing	MM-303

Motors and Controls

Course	Course Code
Motor Theory	EM-202
Motor Controls	EM-204
DC Cranes and Controls	EM-205

Power Transmissions

Course	Course Code
Clutches	MM-201
Belt Drives	MM-202
Chain Drives	MM-204
Gears	MM-205

Pumps

Course	Course Code
Pumps and Pump Repair	MM-304

Rigging and Scaffolding

Course	Course Code
Rigging	MM-102
Scaffolding	GEN-002

Shaft and Couplings

Course	Course Code
Shaft and Coupling Alignment	MM-301

Transformers

Course	Course Code
Transformers	EM-201

Valves

Course	Course Code
Valves and Valve Actuators	EM-401

Welding

Course	Course Code
Structural Welding	WE-101
Pipe Welding	WE-103

LISTEN. THINK. SOLVE.®

Rockwell Automation

Industrial Electrical Controls Fundamentals

MFG-213

4 Days

Course Purpose

This course provides students with the knowledge and skills required to install, maintain and troubleshoot machine controls. At the completion of this course, students will be able to: define the safety considerations that must be observed when installing, checking, or locking out electrical equipment; define uses and functions of input and output devices, relays, and motors; demonstrate the reading of schematic diagrams and logic; define an open and short condition and perform voltage and current measurements; demonstrate the proper use of the following test equipment in lab to measure voltage, current, resistance and continuity: VOM, DVM, Multi-meters, continuity tester, and amp probe; approximate secondary voltage, secondary current, and primary current of a transformer when given its turns ratio, primary voltage and secondary load; identify the proper wiring configurations of a control transformer's primary current for 240V and 480V operation; and approximate a transformer's maximum primary current for 480V operation, using the nameplate information.

Objectives

After completing this course, students should understand the following topics:

- Electrical fundamentals and safety
- Input and output devices
- Disconnect devices
- Contactors
- Multimeter use
- Logic devices
- Schematic, logic and ladder diagrams
- Basic machine control systems and build circuits
- Distribution
- Circuit troubleshooting
- Grounded and ungrounded control circuits

Who Should Attend?

Individuals who are responsible for installing, maintaining, and troubleshooting of electromechanical machine controls

Prerequisites

Familiarity with basic electricity

Basic Electricity — DC

(Available On-Site Only)

EM-101

5 Days

Course Purpose

This course provides information on the basic concepts of DC electricity and magnetism, including electrostatics, basic circuit concepts, and measurement of electrical quantities and associated numerical concepts, Ohm's Law, practical circuits, electromagnetism, and electrical measurements. There are hands-on exercises for device operation and simple circuit construction and analysis.

Objectives

After completing this course, students should be able to perform the following tasks:

- Define electrical terms and basic circuit constructs (resistance, voltage, and current)
- List electrical safety requirements
- Distinguish conductors and insulators
- Explain electrical energy production and how electricity is derived from atoms
- Construct simple circuits
- State, define, and apply Ohm's Law to electrical circuits
- Calculate and measure electrical quantities in simple circuits and electrical power in series and parallel resistive circuits
- Apply Kirchhoff's Law to electrical circuits and scientific notation and prefixes to electrical quantities
- Construct series and parallel circuits, and measure applicable electrical quantities
- Apply the properties of magnetism and electromagnetism to electrical components
- Calculate voltage, current, resistance, and power in voltage dividers
- Describe the properties of conduction in liquids and gasses

Who Should Attend?

Electrical maintenance technicians

Prerequisites

There are no prerequisites for this course

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Basic AC/DC Power Concepts
(Available On-Site Only)

EM-101A
5 Days

Course Purpose
This course provides information on the basic concepts of electricity and magnetism, including basic circuit concepts, and measurement of electrical quantities and associated numerical concepts, Ohm's Law, practical circuits,electromagnetism, and electrical measurements. There are hands-on exercises for device operation and simple circuit construction and analysis.

Objectives
After completing this course, students should be able to perform the following tasks:
- Distinguish conductors and insulators
- Observe electrical safety precautions
- Define electromotive force/voltage, basic electrical laws, frequency, period, and wavelength
- Explain current flow
- Describe the properties of resistance
- Construct series circuits, parallel circuits, and resistive circuits
- Generate sine waves
- Calculate sine wave voltage, current values, and power/resistance in AC circuits
- Observe AC phase relationships
- Use inductance and capacitance in AC circuits

Who Should Attend?
I&C technicians, electricians, and electrical technicians

Prerequisites
There are no prerequisites for this course

Basic Electricity — AC
(Available On-Site Only)

EM-102
10 Days

Course Purpose
This course provides information on the basic concepts of AC electricity, including AC waveforms, electrical measurements, resistance, inductance, capacitance, impedance, multi-phase circuits, and transformer action. There are extensive hands-on exercises to construct, evaluate, and troubleshoot AC circuits.

Objectives
After completing this course, students should be able to perform the following tasks:
- Differentiate AC components
- Generate sine waves and power for distribution
- Determine peak, average, and RMS values
- Locate peak, average, and RMS values on waveforms
- Apply resistors to AC circuits
- Determine voltage and current relationships in AC circuits and complex reactive circuits
- Determine characteristics of inductors, inductive circuits, capacitors, and capacitive circuits
- Explain voltage and current transients in inductive and capacitive circuits
- Apply transformers to circuits
- Transmit power
- Distribute power
- Determine Delta and Wye transformer and electrical systems

Who Should Attend?
Electrical maintenance technicians

Prerequisites
There are no prerequisites for this course

Electrical Print Reading
(Available On-Site Only)

EM-103
3 Days

Course Purpose
This course provides students with the basic understanding of electrical prints and components associated with electrical print reading, and the ability to interpret simple ladder logic diagrams used for PLC programming. There are hands-on exercises for print reading.

Objectives
After completing this course, students should be able to perform the following tasks:
- Distinguish electrical print types and uses
- Recognize print organization and layout
- Interpret print symbology and conventions, block diagrams, loop diagrams, and ladder logic layout
- Outline one-line diagrams
- Analyze circuits and logic circuits
- Read P&ID drawings
- Recognize and diagram ladder logic symbols

Who Should Attend?
Electrical maintenance technicians, but is also used for cross-training of mechanical maintenance technicians

Prerequisites
There are no prerequisites for this course

Test Equipment
(Available On-Site Only)

EM-104
3 Days

Course Purpose
This course provides students with information on the four categories of testing, safety precautions associated with testing, and the use and care of different test equipment to include Doble test sets, megohmmeter function and operation, and various applications for thermography and infrared scanning. There are hands-on exercises for inspection and use of given test equipment.

Objectives
After completing this course, students should be able to perform the following tasks:
- Categorize electrical tests
- Recognize test equipment types
- Interpret ammeter readings
- Use oscilloscopes, megohmmeters, and Doble testers
- Evaluate waveforms with an oscilloscope and infrared images
- Measure insulation resistance
- Perform high potential tests, thermography, and infrared testing
- Apply predictive maintenance basics

Who Should Attend?
Electrical maintenance technicians

Prerequisites
There are no prerequisites for this course

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Wiring
(Available On-Site Only)

EM-105
3 Days

Course Purpose
This course provides students with information on the wiring requirements, material identification, and the installation and splicing of wiring. There are hands-on exercises for wiring installation.

Objectives
After completing this course, students should be able to perform the following tasks:
- Describe the electrical characteristics of conductors, semiconductors, and insulators
- Differentiate construction material characteristics
- Select cable jackets
- Recognize cable types and characteristics
- Utilize proper installation methods
- Pull wire and cable
- Splice low and medium voltage wires
- Apply cable and wire terminations
- Install and connect terminal board

Who Should Attend?
Electrical maintenance technicians

Prerequisites
There are no prerequisites for this course

Batteries
(Available On-Site Only)

EM-106
1 Day

Course Purpose
This course provides students with information on the concepts associated with industrial batteries, Universal Power Supplies (UPS), battery and UPS function, battery and UPS design, battery maintenance, storage and transportation, installation and removal, and potential faults.

Objectives
After completing this course, students should be able to perform the following tasks:
- Define battery characteristics
- Distinguish primary and secondary batteries
- List types of lead-acid batteries and battery applications
- Interpret battery system terminology
- Follow standards and code requirements
- Apply charging and discharging methods
- Use "maintenance-free" batteries
- Recognize overcharging
- Prevent thermal runaway

Who Should Attend?
Electrical maintenance technicians

Prerequisites
There are no prerequisites for this course

Conduit Bending
(Available On-Site Only)

EM-108
3 Days

Course Purpose
This course provides students with information on the calculating and making conduit bends. There are hands-on exercises for bending and installing conduit.

Objectives
After completing this course, students should be able to perform the following tasks:
- Distinguish conduit types and functions
- Recognize materials and their uses in conduit application
- Interpret conduit data
- Bend rigid conduit (IMC)
- Use liquid tight flexible metal conduit
- Follow fill and spacing requirements
- Apply conduit cutting methods
- Ream and thread conduit
- Calculate bend radius
- Follow support requirements
- Offset bending

Who Should Attend?
Electrical maintenance technicians

Prerequisites
There are no prerequisites for this course

Industrial Electronics
(Available On-Site Only)

EM-200
5 Days

Course Purpose
This course provides students with information on the function and circuit analysis of power supplies, amplifiers, integrators, comparators, and oscillators. There are hands-on exercises for wiring, and analyzing the various circuits.

Objectives
After completing this course, students should be able to perform the following tasks:
- Explain diode operations and LED operation methods
- Use diodes in circuits
- Compare diode types
- Differentiate NPN and PNP bipolar transistors and rectifier types
- Filter rectified waveforms using capacitive, choke, multiple section, pi, and RC input filters
- Divide voltage using series and parallel voltage dividers
- Use Zener diodes as regulators, current dividers, and opto-electronic devices
- Regulate and multiply voltage
- Apply SCRs to circuits, varistors, and integrated circuits
- Bias and test transistors
- Wire transistor circuits for amplification

Who Should Attend?
Electrical maintenance technicians, electronic technicians, and I&C technicians

Prerequisites
There are no prerequisites for this course

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Transformers
(Available On-Site Only)

EM-201
3 Days

Course Purpose
This course provides students with information on the concepts associated with transformers (transformer function, design, maintenance, faults, and inspecting/testing). There are hands-on exercises for transformer wiring and installation.

Objectives
After completing this course, students should be able to perform the following tasks:
- Explain induction and transformer action
- Distinguish transformer types
- Describe transformer components
- Detail three-phase circuits
- Wire single-phase and three-phase configurations
- Interpret nameplate data
- Follow safety precautions
- Change taps
- Size transformers
- Perform maintenance and inspections
- Identify transformer malfunctions
- Troubleshoot and repair transformers

Who Should Attend?
Electrical maintenance technicians

Prerequisites
There are no prerequisites for this course

Motor Theory
(Available On-Site Only)

EM-202
3 Days

Course Purpose
This course provides students with information on the principles of operation associated with motors and motor components, including AC/DC theory of operation (torque, pullout torque, and slip).

Objectives
After completing this course, students should be able to perform the following tasks:
- Explain motor theory
- Define motor terminology
- Wire motor connections
- Apply motor control methods
- Test direction and speed controls
- Identify replacement considerations
- Recognize special maintenance requirements
- Perform rotating machinery maintenance and testing
- Troubleshoot and repair

Who Should Attend?
Electrical maintenance technicians

Prerequisites
There are no prerequisites for this course

AC and DC Generator Theory
(Available On-Site Only)

EM-203
2 Days

Course Purpose
This course provides students with information on the concepts associated with generators, generator function, generator design, three phase voltage, and load sharing.

Objectives
After completing this course, students should be able to perform the following tasks:
- Define generator terms
- Explain generator theory
- Describe AC and DC generator construction and operation
- Apply the effects of armature reaction to generator operation
- Share loads between generators
- Differentiate between stationary and rotating armature generators
- Perform generator maintenance

Who Should Attend?
Electrical maintenance technicians

Prerequisites
There are no prerequisites for this course

Motor Controls
(Available On-Site Only)

EM-204
5 Days

Course Purpose
This course provides students with information on the concepts associated with AC and DC motor fundamentals, motor control fundamentals, control of motor starting, and motors and motor controllers. The lessons cover a wide range of topics such as motor enclosures, nameplate data, AC motors, DC motors, magnetic contactors, control circuits, Wye-Delta starters, speed controllers, AC/ DC machine maintenance, and motor control circuit maintenance.

Objectives
After completing this course, students should be able to perform the following tasks:
- Explain AC motor theory
- Describe contacts
- Distinguish relays, contactors, and motor starters
- Identify pilot devices
- Interpret motor control device symbols
- Construct basic, reversing, and advanced motor control circuits
- Troubleshoot acceleration circuits and basic, reversing, time delay, soft-start, and advanced motor control circuits
- Accelerate motors using motor controllers
- Perform maintenance inspections
- Use time delays in motor control circuits

Who Should Attend?
Electrical maintenance technicians

Prerequisites
Understanding of electrical theory and electrical systems

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DC Cranes and Controls
(Available On-Site Only)

EM-205
3 Days

Course Purpose
This course provides students with information on the function and troubleshooting of DC crane controls.

Objectives
After completing this course, students should be able to perform the following tasks:
- Detail power circuits
- Trace control circuits and reversing-plugging control
- Operate series and shunt motors
- List crane hoist controls
- Describe hoist points 1-5 and off-position dynamic braking
- Troubleshoot hoist direction
- Explain crane lowering and limit switch controls, time limit acceleration, and condenser timing
- Define lowering principles and dynamic lowering
- Identify collector bars and shoes
- Troubleshoot lowering direction and bridge control, trolley control, and bridge/trolley circuits
- Utilize knife switches
- Use voltage drop acceleration

Who Should Attend?
Electrical maintenance technicians

Prerequisites
Understanding of electrical theory and electrical systems

Electrical Troubleshooting
(Available On-Site Only)

EM-206
5 Days

Course Purpose
This course provides students with information on the concepts associated with systematic troubleshooting of instrumentation systems. Students will use practical application of troubleshooting techniques in exercise scenarios.

Objectives
After completing this course, students should be able to perform the following tasks:
- Explain troubleshooting philosophy
- Apply basic troubleshooting methods, motor controls fundamentals, and root cause analysis
- Use the 7 step troubleshooting method
- Distinguish contactors, switches, and contacts
- Determine motor controls diagnosis and repair
- Control AC motors
- Inspect rotating AC machinery
- Use customized troubleshooting techniques
- Troubleshoot motor control circuits and intermittent failures

Who Should Attend?
Electrical maintenance technicians

Prerequisites
Understanding of electrical theory and electrical systems

Basic Digital Circuits
(Available On-Site Only)

EM-303
5 Days

Course Purpose
This course provides students with information on basic digital electronics concepts, gates, circuits, flip-flop based circuits, and troubleshooting techniques. There are hands-on exercises for circuit construction.

Objectives
After completing this course, students should understand the following topics:
- Use alternative number systems, integrated circuit families, and counters
- Interpret boolean expressions
- Read digital signal diagrams
- Express binary data
- Apply logic gates
- Create truth tables
- Derive logic equations
- Detail flip-flop circuits
- Wire encoders and decoders
- Address registers
- Explain RAM characteristics
- Troubleshoot digital circuits

Who Should Attend?
Electrical maintenance technicians, electronic technicians, or I&C technicians

Prerequisites
Understanding of electrical theory and electrical systems

Instrumentation I
(Available On-Site Only)

EM-400A
1 Day

Course Purpose
This course serves as introductory to provide students with a basic understanding of the fundamentals of measurement. The course will explain the various methods used to measure: pressure, temperature, flow, and pH. Upon completion of this course, students will be able to explain these functions and how they can be used in process control.

Objectives
After completing this course, students should be able to perform the following tasks:
- Explain the characteristics of a process
- Define measurement
- Differentiate direct and inferred measurements
- Determine accuracy and calibration
- Apply pressure, temperature, flow, and pH measurement methods
- Use consistency measurement methods

Who Should Attend?
Electrical maintenance technicians, electronic technicians, or I&C technicians

Prerequisites
Understanding of electrical theory and electrical systems

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Instrumentation II
(Available On-Site Only)

EM-400B
2 Days

Course Purpose
This course provides students with fundamental information on the concepts associated with the various measurement instruments used in process control. The lessons cover a wide range of topics such as measurement methods, pressure measurement devices, temperature measurement devices, flow measurement devices, level measurement devices. Upon completion of this course, the participants will be able to explain the function, design, and operation of these instruments and they function in process control.

Objectives
After completing this course, students should be able to perform the following tasks:
- Explain instrument loop basics
- Use temperature, level, flow, pressure, weight and force, and conductivity and pH Devices
- Apply actuators

Who Should Attend?
Instrument technicians

Prerequisites
Understanding of electrical theory and electrical systems

Valves and Valve Actuators
(Available On-Site Only)

EM-401
5 Days

Course Purpose
This course provides students with information on the types of valves and actuator used as control elements, valve components, and valve applications. There are hands-on exercises for equipment setup and evaluation.

Objectives
After completing this course, students should be able to perform the following tasks:
- Describe valve functions and actuator construction
- List valve parts and positioner types and construction
- Explain valve construction
- Differentiate valve types
- List advantages and disadvantages of valve types
- Discuss valve actuators
- Troubleshoot actuators and positioners
- Use position feedback
- Perform process troubleshooting

Who Should Attend?
Electrical maintenance technicians, electronic technicians, or I&C technicians

Prerequisites
Understanding of electrical theory and electrical systems

Analytical Measurement
(Available On-Site Only)

EM-402
1 Day

Course Purpose
This course provides students with information on the concepts associated the operation and calibration of analytical sensors. Upon completion of this course, students will be able to explain the function, and calibration of sensors and instruments for conductivity, pH, ORP (Oxidation Reduction Potential), and selected optical and combustion product measuring equipment.

Objectives
After completing this course, students should understand the following topics:
- Describe properties of matter and electrodes
- Define electrolytes
- Explain pH definition and properties
- Use pH measurement methods
- Differentiate acids and bases
- Make ORB measurements
- Perform conductivity measurements
- List factors affecting fluid chemistry

Who Should Attend?
Electrical maintenance technicians, electronic technicians, or I&C technicians

Prerequisites
Understanding of electrical theory and electrical systems

Process Control Fundamentals
(Available On-Site Only)

EM-403
5 Days

Course Purpose
This course provides students with information on the fundamentals of process control and PID loop tuning. Lessons include characteristics of process, criteria for loop response, and controller tuning methods. This course introduces advanced control methods including cascade and feed forward control methods. There are extensive hands-on exercises for process measurements, controller setup, and process tuning.

Objectives
After completing this course, students should be able to perform the following tasks:
- Define characteristics of the process
- Differentiate manual versus automatic control
- Use two position control
- Apply proportional control
- Explain integral (reset) control
- Use derivative (rate) control
- Apply proportional plus integral plus derivative control schemes
- Use controller tuning methods
- Apply advanced control methods

Who Should Attend?
Electrical maintenance technicians, electronic technicians, or I&C technicians

Prerequisites
Understanding of electrical theory and electrical systems

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Basic Mathematics
(Available On-Site Only)

GEN-001
5 Days

Course Purpose
This course provides students with information on the concepts associated with basic algebra, basic geometry, measurements, and basic trigonometry.

Objectives
After completing this course, students should be able to perform the following tasks:
- Explain numbers and number systems
- Perform whole number operations and algebraic operations
- Calculate fractions and mixed numbers
- Use polynomials, percentages, measurements and conversions, trigonometry functions, and square roots
- Calculate with exponents and bases
- Measure angles and polygons
- Calculate perimeter, area, and volume
- Apply geometry

Who Should Attend?
Mechanical and electrical maintenance technicians

Prerequisites
There are no prerequisites for this course

Scaffolding
(Available On-Site Only)

GEN-002
2 Days

Course Purpose
This course provides students with information on the concepts associated with procedures, precautions, and limitations for safely erecting and/or dismantling fabricated frame scaffolding. There are hands-on exercises for erecting scaffolding.

Objectives
After completing this course, students should be able to perform the following tasks:
- Setup base section
- Build support structure
- Utilize access
- Use fall protection
- Install platform
- Use falling object protection
- Keep it upright
- Avoid electrical hazards
- Discuss case reports

Who Should Attend?
Mechanical maintenance technicians

Prerequisites
There are no prerequisites for this course

System Problem Solving and Troubleshooting
(Available On-Site Only)

GEN-003
1 Day

Course Purpose
This course provides students with information on the concepts associated with systematic troubleshooting.

Objectives
After completing this course, students should understand the following topics:
- Explain troubleshooting philosophy
- Use documentation
- Apply the 7 step and 5 step method
- Use, modify, and create, flowcharts
- Effect diagnosis and repair
- List common I&C problems
- Shop and field testing
- Create customized troubleshooting
- Troubleshoot intermittent failures
- Perform root cause analysis
- Utilize cause and effect diagrams
- Explore troubleshooting scenarios

Who Should Attend?
Maintenance technicians

Prerequisites
There are no prerequisites for this course

Measurement and Tools
(Available On-Site Only)

MM-101
3 Days

Course Purpose
This course provides students with information on the proper use of measuring tools to make basic linear and angular measurements, hand tools, and power tools.

Objectives
After completing this course, students should be able to perform the following tasks:
- Define applicable terminology
- Specify accuracy and tolerances
- Utilize standards
- Apply proper vernier scale use and torque techniques
- Use sensors and transducers , dial calipers, micrometers, mechanical indicators, torque wrenches and extensions, hand tools, and portable power tools
- Explain torque theory
- Identify proper torque values

Who Should Attend?
Mechanical technicians

Prerequisites
There are no prerequisites for this course

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Rigging
(Available On-Site Only)

MM-102
2 Days

Course Purpose
This course provides students with information on the concepts and principles associated with rigging equipment, its use, inspection, planning and proper selection of rigging equipment. There are hands-on exercises used to familiarize students with equipment selection and safety when tasked with rigging a given load.

Objectives
After completing this course, students should be able to perform the following tasks:
- Define rigging terms
- Recognize rigging hazards
- Use wire rope
- Proper sling usage
- Perform sling inspections
- Use hoists properly
- Utilize beans and clamps
- Apply lightning protection
- Use rigging hardware, winches, jacks, rollers, and skids
- Plan and inspect rigging equipment
- Interpret and using hand signals
- Estimate weight

Who Should Attend?
Mechanical technicians

Prerequisites
There are no prerequisites for this course

Introduction to Bearings and Lubrication
(Available On-Site Only)

MM-103
2 Days

Course Purpose
This course provides students with information on the concepts associated with bearings, bearing function, bearing design, bearing maintenance, installation and removal, expected load and wear patterns, bearing faults, and lubrication. There are hands-on exercises for bearing removal and installation.

Objectives
After completing this course, students should be able to perform the following tasks:
- Explain the basic principles of lubrication and concepts behind forces and stress
- Understand bearing design
- List the basic requirements of any bearing
- Perform various clearance checks on anti-friction and friction bearings
- Check interference fits
- Heat bearings
- Cold mount roller bearings
- Describe the basic lubricant and the makeup of lubricants
- Define viscosity and use of viscosity terms
- Use boundary/thin film lubrication
- Apply bearing grease
- Recognize lubricant contaminants

Who Should Attend?
Mechanical technicians

Prerequisites
There are no prerequisites for this course

Mechanical Print Reading
(Available On-Site Only)

MM-105
3 Days

Course Purpose
This course provides students with an understanding of information found on mechanical drawings and prints, provides the participant with the ability to understand and identify components, and how to identify dimensions of tapered and machined surfaces. There are hands-on exercises for print reading.

Objectives
After completing this course, students should be able to perform the following tasks:
- Interpret title block information, drawing properties, and dimensions
- Recognize line types
- Read screw heads and fastener information
- Identify surface types
- Use numbering systems
- Check revision control
- Locate drawings

Who Should Attend?
Mechanical technicians

Prerequisites
There are no prerequisites for this course

Combustion
(Available On-Site Only)

MM-106
3 Days

Course Purpose
This course provides students with information on the theory of combustion, associated equipment applied to combustion, safety, and related safety issues associated with combustion. There are hands-on exercises for inspection and identification of equipment.

Objectives
After completing this course, students should be able to perform the following tasks:
- Explain the theory of combustion and coal preheating
- Break down flame structure
- Correlate the relationship between heat, temperature, and specific heat
- Apply the concept of fuel/air ratio
- Measure percent CO_2, O_2, and combustibles
- List general types of burners and the various control valves, blowers, regulators, and switches associated with various burners
- Differentiate the three modes of heat transfer
- State the heat transfer rates

Who Should Attend?
Mechanical technicians

Prerequisites
There are no prerequisites for this course

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Power Transmission — Clutches
(Available On-Site Only)

MM-201
1 Day

Course Purpose
This course provides students with information on the concepts associated with clutches, clutch function, clutch design, clutch maintenance, installation and removal, and basic clutch faults.

Objectives
After completing this course, students should be able to perform the following tasks:
- Describe clutch functions
- Explain torque transfer
- List clutch types
- Identify overrunning clutches
- Understand centrifugal clutches
- Install and inspect clutches
- Perform clutch maintenance
- Apply repair and replacement considerations

Who Should Attend?
Mechanical technicians

Prerequisites
There are no prerequisites for this course

Power Transmission — Belt Drives
(Available On-Site Only)

MM-202
1 Day

Course Purpose
This course provides students with information on the concepts associated with belt drives, belt drive function, belt drive design, belt drive maintenance, installation and removal, and belt drive faults.

Objectives
After completing this course, students should be able to perform the following tasks:
- Explain pulley functions and positive drives
- Describe torque transfer, flat belts, and v-belts
- List pulley types
- Compare belt drives
- Distinguish variable speed methods
- List advantages and disadvantages of different types of belt arrangements
- Apply belt inspection methods
- Demonstrate alignment checks
- Perform pulley maintenance and belt installation and setup

Who Should Attend?
Mechanical technicians

Prerequisites
There are no prerequisites for this course

Power Transmission — Chain Drives
(Available On-Site Only)

MM-204
1 Day

Course Purpose
This course provides students with information on the concepts associated with chain drives, chain drive function, chain drive design, chain drive maintenance, installation and removal, and chain drive faults.

Objectives
After completing this course, students should be able to perform the following tasks:
- List chain drive functions
- Describe power transfer
- Distinguish chain drive types
- Perform chain drive alignment and inspection
- Install and setup chain drives

Who Should Attend?
Mechanical technicians

Prerequisites
There are no prerequisites for this course

Power Transmission — Gearing
(Available On-Site Only)

MM-205
1 Day

Course Purpose
This course provides students with information on the concepts associated with gears, gear function, gear backlash, gear lubrication, and gear ratios.

Objectives
After completing this course, students should be able to perform the following tasks:
- List gear functions
- Define gear terminology
- Describe gear arrangements and gear backlash
- List gear arrangement advantages and disadvantages
- Explain shaft orientation and power transfer
- Demonstrate inspection methods
- Calculate gear ratios
- Perform lubrication of gears and gear setup and measurement

Who Should Attend?
Mechanical technicians

Prerequisites
There are no prerequisites for this course

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Lubrication
(Available On-Site Only)

MM-206
3 Days

Course Purpose
This course provides students with information on the concepts associated with lubrication, lubrication properties, lubrication testing, lubricant contaminants, and gear lubrication.

Objectives
After completing this course, students should be able to perform the following tasks:
- Describe the principle of lubrication
- Explain lubricant characteristics
- Lubricate transmissions, engines, gears, and gearboxes
- Select bearing lubricants
- Apply lubricant application methods
- Perform coupling lubrication and lubricant testing
- Identify equivalent lubricants
- Handle new and used lubricants
- Follow lubrication analysis programs

Who Should Attend?
Mechanical technicians

Prerequisites
There are no prerequisites for this course

Bearings
(Available On-Site Only)

MM-207
3 Days

Course Purpose
This course provides students with information on the concepts associated with bearings, bearing function, bearing design, bearing maintenance, installation and removal, expected load and wear patterns, and bearing faults. There are hands-on exercises for bearing removal and installation.

Objectives
After completing this course, students should be able to perform the following tasks:
- Define force, stress, and friction
- Explain bearing terminology and bearing design
- Describe bearing materials
- Distinguish friction and anti-friction bearings
- Apply lubrication methods and preload considerations
- Perform clearance checks, wear analysis, and failure analysis
- Demonstrate bearing mounting
- Set tapered roller bearings
- Use fixed and float bearings
- Remove roller bearings
- Reduce bearing failures

Who Should Attend?
Mechanical technicians

Prerequisites
There are no prerequisites for this course

Mechanical Crane Inspections
(Available On-Site Only)

MM-208
2 Days

Course Purpose
This course provides students with information on the mechanical inspection of Electrical Overhead Travel (EOT) Cranes.

Objectives
After completing this course, students should be able to perform the following tasks:
- Define EOT crane terms
- List EOT crane hazards
- Operate cranes safely
- Determine inspection frequency
- Perform daily, monthly, and new crane inspections
- Repair EOT crane
- Use remote control cranes

Who Should Attend?
Mechanical technicians

Prerequisites
Knowledge of Electrical Overhead Travel (EOT) crane operations

Fans, Blowers, and Compressors
(Available On-Site Only)

MM-209
3 Days

Course Purpose
This course provides students with information on the concepts associated with air systems, air system functions, air system design, air system maintenance, installation and removal, and air system faults.

Objectives
After completing this course, students should be able to perform the following tasks:
- List the principles of operation
- Apply fan laws and routine maintenance practices
- Differentiate fan types and operation
- Describe the design of blowers
- Use positive displacement and axial flow blowers
- Perform blower inspection and maintenance
- Define compressibility
- Distinguish compressor types and operating characteristics
- Perform compressor inspection and maintenance

Who Should Attend?
Mechanical technicians

Prerequisites
There are no prerequisites for this course

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Shaft and Coupling Alignment
(Available On-Site Only)

MM-301
5 Days

Course Purpose
This course provides students with information on the importance of proper alignment and alignment methods, cause of misalignment and how to correct for error such as soft foot and thermal growth using dial indicators, and coupling alignment using dial indicators and lasers where applicable. There are hands-on exercises for shaft and equipment alignments.

Objectives
After completing this course, students should be able to perform the following tasks:
- Recognize symptoms of misalignment
- Identify causes of misalignment
- List effects of misalignment and advantages/disadvantages of alignment methods
- Use alignment tools, alignment methods, dial indicators, and jackshafts
- Identify and correct soft foot
- Perform elevation and horizontal moves
- Recognize and compensate for thermal growth
- Align with multiple feet and couplings

Who Should Attend?
Mechanical technicians

Prerequisites
There are no prerequisites for this course

Pipefitting
(Available On-Site Only)

MM-302
5 Days

Course Purpose
This course provides students with information on the codes and standards, types of piping and associated components, specifications, and fitting and supporting techniques. There are hands-on exercises for bending fitting and installing pipe.

Objectives
After completing this course, students should be able to perform the following tasks:
- Interpret codes and standards
- Define terminology
- Use safe work practices, basic pipefitting tools, welded connections, flanges, and pipe hangers
- Read piping drawings
- Apply bending techniques and tubing joints
- Distinguish metal piping types and tubing versus piping
- Recognize non-metallic piping
- Bend tube
- Make threaded connections
- Prepare and fit joints

Who Should Attend?
Mechanical technicians

Prerequisites
There are no prerequisites for this course

Seals and Packing
(Available On-Site Only)

MM-303
1 Day

Course Purpose
This course provides students with information on identification and installation of packing and mechanical seals and their applications. There are hands-on exercises for removing and installing packing and mechanical seals.

Objectives
After completing this course, students should be able to perform the following tasks:
- Explain the functions of packing
- Describe packing glands
- Perform packing replacement
- Distinguish mechanical seal types
- List advantages and disadvantages of mechanical seals
- Inspect seals and packing
- Troubleshoot causes of seal and packing failure

Who Should Attend?
Mechanical technicians

Prerequisites
Understanding of mechanical theory and mechanical systems

Pumps and Pump Repair
(Available On-Site Only)

MM-304
3 Days

Course Purpose
This course provides students with information on the concepts associated with pumps and pump application, operation, hazards, troubleshooting and repair common problems, and explains how to draw and label simple pump curves. There are hands-on exercises for inspection and repair of pumps and its associated equipment.

Objectives
After completing this course, students should be able to perform the following tasks:
- Define pump terminology
- Explain centrifugal pump laws
- List rotating equipment and pump hazards
- Explain centrifugal pump and positive displacement pump operation
- Describe centrifugal pump components
- Distinguish pump classifications
- Recognize cavitation and net positive suction head
- Troubleshoot a centrifugal and positive displacement pump
- Perform a pump inspection

Who Should Attend?
Mechanical technicians

Prerequisites
Understanding of mechanical theory and mechanical systems

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Hydraulics and Pneumatics
(Available On-Site Only)

MM-400
5 Days

Course Purpose
This course provides students with information on the concepts associated with pneumatics and hydraulic systems, fluid principles, system design, and schematic symbology.

Objectives
After completing this course, students should be able to perform the following tasks:
- List the advantages of hydraulics and pneumatics
- Discuss hydraulic and pneumatic components
- Disassemble, clean, inspect, and reassemble a hydraulic and/or pneumatic control valve
- Operate a hydraulic and/or pneumatic cylinder using a given medium
- Operate multiple hydraulic cylinders using a hydraulic medium
- Operate a pneumatic cylinder or multiple pneumatic cylinders using a pneumatic medium

Who Should Attend?
Mechanical technicians

Prerequisites
Understanding of mechanical theory and mechanical systems

Industrial Electricity and Electronics for Mechanics
(Available On-Site Only)

MM-403
5 Days

Course Purpose
This course provides students with information on basic electricity and electronic concepts and devices. There are hands-on exercises for component and circuit operation.

Objectives
After completing this course, students should be able to perform the following tasks:
- Describe electrical basics and 3-phase systems
- Distinguish conductors and insulators
- Explain the properties of magnetism
- Define electromotive force
- Calculate current, resistance and voltage
- Describe the effects of capacitors and inductors on circuits
- Calculate values for resistors, capacitors, and inductors in AC and DC circuits
- Construct AC and DC circuits
- Describe the effects of diodes, transistors, and SCRs on solid-state circuitry
- Connect PLC inputs and outputs
- Interpret PLC program instructions

Who Should Attend?
Mechanical technicians

Prerequisites
There are no prerequisites for this course

Mechanical Concepts
(Available On-Site Only)

MM-500
5 Days

Course Purpose
This course provides students with information on the concepts associated with plant maintenance, operation, hazards, troubleshooting and repair common problems. There are hands-on exercises for inspection and repair of equipment associated with this program.

Objectives
After completing this course, students should be able to perform the following tasks:
- List safety precautions
- Use precision measurement tools
- Fasten and torque
- Explain the proper use and maintenance of bearings
- Describe power transmission and Hyd/Pne systems
- Perform belt and chain drive, gear/gearbox, and pump maintenance
- Describe pump construction and operation
- Describe conveyor system maintenance
- Explain fan and blower maintenance
- Perform shaft and coupling alignments

Who Should Attend?
Mechanical technicians

Prerequisites
Understanding of mechanical theory and mechanical systems

Structural Welding
(Available On-Site Only)

WE-101
25 Days

Course Purpose
This course provides students with information on basic welding and welding techniques. There are hands-on exercises and bend test to verify competency.

Objectives
After completing this course, students should be able to perform the following tasks:
- Use fusion welding, resistance welding, filler rods, and electrodes
- Use oxyfuel and arc welding processes, SMAW, GMAW, and GTAW
- Perform different kinds of welds: groove, fillet, plug, slot, spot, and seam
- Use two methods of protecting yourself against the fumes and gases associated with welding
- List personal protective equipment required when welding
- Prep for bend test

Who Should Attend?
Mechanical technicians

Prerequisites
Understanding of mechanical theory and mechanical systems

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Pipe Welding
(Available On-Site Only)

WE-103
25 Days

Course Purpose
This course provides students with information on SMAW pipe welding. There are extensive hands-on exercises for welding.

Objectives
After completing this course, students should be able to perform the following tasks:
- Use fusion welding, resistance welding, filler rods, and electrodes
- Detail oxyfuel and arc welding processes: SMAW, GMAW, and GTAW
- Use different kinds of welds: groove, fillet, plug, slot, spot, and seam
- Apply two methods of protecting yourself against the fumes and gases associated with welding
- Use the personal protective equipment required when welding
- List advantages of welded pipe joints to bolted or screwed connections
- Discuss examples of the uses of preheating and post-heating in pipe welding
- Prep for bend test

Who Should Attend?
Mechanical maintenance technicians

Prerequisites
There are no prerequisites for this course

Fundamentals of Electricity

MFG-244
1 Day

Course Purpose
This course provides basic electricity knowledge to the novice. Basic electricity theory is explored identifying component operations in energized and de-energized states. The course includes safety fundamentals and safe operation awareness.

Objectives
After completing this course, students should understand the following topics:
- Fundamental concepts and terms
  - Atoms, charge, valence electrons
  - What is electrical current?
  - Voltage, resistance/impedance
  - Ohm's & Kirchoff's laws
  - Conductors, insulators
  - Semi-conductors
- Sources of electricity
  - DC & AC electricity
  - AC power generations & distribution
  - Electrical power consumption costs
  - Transformers & power supplies
- Wiring devices
  - Switches
  - Terminal strips
  - Connectors
  - Circuit breakers
  - Fuses
  - GFCIs
- Input Devices
  - Sensors
  - Switches
  - Mechanical operators
  - Electronic operators
- Output devices
  - Lamps, pilot lights
  - Solenoids
  - Electromechanical relays
  - Electric motors
  - Disconnect devices
- Use of multimeter
- Arc flash hazards
- Government regulations
  - OSHA
  - NEC
- Personal protective equipment (PPE)

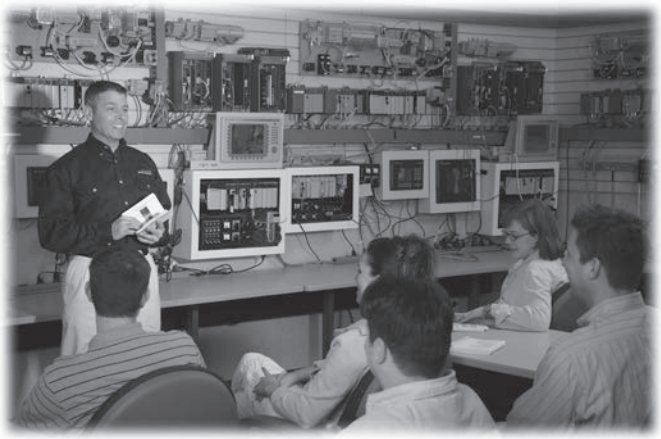
Who Should Attend?
All personnel needing to know basic electricity theory

Prerequisites
There are no prerequisites for this course

Silver Courses

Silver Courses

Rockwell Automation silver courses provide training for legacy or specialized automation products that are not typically included in the Rockwell Automation Training Services national course schedule. As private classes held either at a Rockwell Automation training facility or on-site at your own facility, you can schedule these courses by contacting your local Rockwell Automation sales office or Allen-Bradley distributor. Minimum class size is eight students and the maximum is twelve students.



Course Number	Course Name	Course Length
CCA124	1336 FORCE™ Maintenance & Troubleshooting	3 Days
CCA132	1336 IMPACT™ Troubleshooting	1 Day
CCA133	1336 IMPACT Start-Up	1 Day
CCA134	1336 FORCE Start-Up	3 Days
CCA135	1336 IMPACT Communications	1 Day
CCA138	1336 IMPACT Programming	1 Day
CDD131	1395 Drive Maintenance and Troubleshooting	3 Days
CCN183	1394 and GML Commander Maintenance and Troubleshooting	4 Days
CCN184	1394 and GML Commander Programming	4.5 Days
CCP710	1394 and GML Commander Programming	2 Days
CCPS66	SLC 500 to PanelView 550/600 Terminal Communications	2 Days
CCV202	FactoryTalk View ME and PanelView Plus Conversion	1 Day
CCN191-LD	Ultra™ 3000 Programming	1 Day
EK-ICM161	Datapac® Applications	3 Days
RE0521	AutoMax DC Drive Distributed Power System	4 Days
RS-FTHMEC	FactoryTalk Historian ME Configuration and Data Collection	2 Days
SAF-SEM	Machine Safety Seminar	1 Day

Computer-Based Training

Computer-Based Training Curriculum

CONTROLLOGIX/RSLOGIX 5000

RSTrainer for RSLogix 5000 Software - Project Configuration
9393-RSTLX5KPRJ
9393-RSTLKPRJENF

RSTrainer for RSLogix 5000 Software - Offline Programming
9393-RSTLX5KOFF
9393-RSTLKOFFENF

RSTrainer for RSLogix 5000 Software - Online Monitoring
9393-RSTLX5KON
9393-RSTLKONENF

RSTrainer for RSLogix 5000 Software - Bundle
9393-RSTL5KENE / 9393-RSTL5KENF
Project Configuration
Offline Programming
Online Monitoring

RSTrainer for RSLogix 5000 Software - Motion
9393-RSTLX5KMOT
9393-RSTLKMOTENF

RSTrainer for ControlLogix Fundamentals
9393-RSTCLX
9393-RSTCLXENF

NETWORKS

RSTrainer for EtherNet/IP - Hardware and IP Addressing
9393-RSTENET1ENE
9393-RSTENET1ENF

RSTrainer for EtherNet/IP - Communications and Diagnostics
9393-RSTENET2ENE
9393-RSTENET2ENF

RSTrainer for EtherNet/IP Bundle
9393-RSTENETAENE / 9393-RSTENETAENF
Hardware and IP Addressing
Communications and Diagnostics

RSTrainer for RSLinx Software
9393-RSTLINX
9393-RSTLINXENF

VISUALIZATION

RSTrainer for FactoryTalk View Machine Edition - Applications and Displays
9393-RSTVMEPT1
9393-RSTMEPT1ENF

RSTrainer for FactoryTalk View Machine Edition - Drawing Objects
9393-RSTVMEPT2
9393-RSTMEPT2ENF

RSTrainer for FactoryTalk View Machine Edition - Interactive Objects
9393-RSTVMEPT3
9393-RSTMEPT3ENF

RSTrainer for FactoryTalk View Machine Edition Bundle
9393-RSTVMEALL / 9393-RSTMEALLENF
Applications and Displays
Drawing Objects
Interactive Objects

Note: Consult course description for prerequisites

SLC/RSLOGIX 500

RSTrainer for SLC 500 - Hardware Fundamentals
9393-RSTSLCHENE
9393-RSTSLCHENF

RSTrainer for SLC 500 - Programming Fundamentals
9393-RSTSLCPENE
9393-RSTSLCPENF

SLC 500 Fundamentals Bundle
9393-RSTSLCALENE / 9393-RSTSLCALENF
Hardware Fundamentals
Programming Fundamentals

Also Available in Spanish *FESE/*FESF

RSTrainer for RSLogix 500 Software - Offline Programming
9393-RST5000FENE
9393-RST5000FENF

RSTrainer for RSLogix 500 Software - Online Monitoring
9393-RST5000NENE
9393-RST5000NENF

RSTrainer for RSLogix 500 Software - Documenting and Searching
9393-RST500DSENE
9393-RST500DSENF

RSTrainer for RSLogix 500 Software Bundle
9393-RST500ALENE / 9393-RST500ALENF
Offline Programming
Online Monitoring
Documenting and Searching

PLC/RSLOGIX 5

RSTrainer for RSLogix 5 Software
9393-RSTLX5
9393-RSTLX5ENF

HYDRAULICS

RSTrainer for Hydraulics
9393-RSTHYD
9393-RSTHYDENF

ADDITIONAL PRODUCTS

RSTrainer for Enterprise Edition for Student Manager
9393-RSTSMGRENF

Modular Programming for Machine Applications
Self-Study Training Kit
9393-MODPROG

RSTrainer licensing options:
- Single license (node-locked)
- 5 concurrent licenses (Enterprise Edition)

Self-Study Training Kit

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RSTrainer® for EtherNet/IP – Hardware and IP Addressing

9393-RSTENET1ENE
9393-RSTENET1ENF*
5 Hours

Course Purpose

This computer-based training course covers the fundamentals of Ethernet Industrial Protocol (EtherNet/IP) hardware and IP addressing. During this course, students will learn how to design and optimize an EtherNet/IP network and configure an EtherNet/IP driver and IP addresses for EtherNet/IP devices. Helpful animations, background information, answers to frequently asked questions, and links to other reference materials provide students with a variety of knowledge and learning tools.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following tasks:

- Design EtherNet/IP networks
- Configure an EtherNet/IP communications driver using RSLinx
- Ping an IP address
- Configure and modify EtherNet/IP addresses using BOOTP-DHCP server and RSLinx software
- Configure and modify EtherNet/IP addresses using RSLogix 5000 software

** RSTrainer Enterprise Edition product*

Intended Audience

Individuals who:

- Are responsible for designing EtherNet/IP networks
- Are interested in optimizing EtherNet/IP networks, configuring communications, and configuring EtherNet/IP addresses

Prerequisites

Experience operating a computer within a Microsoft® Windows® environment

Related Job Aids Available for Purchase	Catalog #
EtherNet/IP Procedures Guide	ABT-N300-TSJ50
EtherNet/IP Documentation Reference Guide CD	ABT-N300-DRG70

RSTrainer for EtherNet/IP – Communications and Diagnostics

9393-RSTENET2ENE
9393-RSTENET2ENF*
5 Hours

Course Purpose

This computer-based training course explains the concepts of Ethernet Industrial Protocol (EtherNet/IP) communications and diagnostics. During this course, students will learn how to establish EtherNet/IP connections, send messages, and perform basic networking diagnostics. Helpful animations, background information, answers to frequently asked questions, and links to other reference materials provide students with a variety of knowledge and learning tools.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following tasks:

- Configure an Ethernet/IP module in a local and remote chassis
- Configure digital and analog I/O modules in a chassis
- Modify module parameters
- Add a controller to an I/O configuration
- Produce and consume data over an Ethernet/IP network
- Communicate between multiple controllers on an Ethernet/IP network using an MSG instruction
- Configure the 9300-8EDM Ethernet diagnostic module
- Obtain computer IP addresses
- Access diagnostic information using a web browser

** RSTrainer Enterprise Edition product*

Intended Audience

Individuals who:

- Are responsible for setting up communications over an EtherNet/IP network
- Are interested in understanding how to send messages over an EtherNet/IP network, and perform basic networking diagnostics

Prerequisites

Experience operating a computer within a Microsoft Windows environment

Related Job Aids Available for Purchase	Catalog #
EtherNet/IP Procedures Guide	ABT-N300-TSJ50
EtherNet/IP Documentation Reference Guide CD	ABT-N300-DRG70

RSTrainer for FactoryTalk® View Machine Edition (ME) – Applications and Displays

9393-RSTVMEPT1
9393-RSTMEPT1ENF*
5 Hours

Course Purpose

This interactive, self-paced training course provides information about creating FactoryTalk View Machine Edition applications and displays. This course is part of a series of e-Learning courses designed to teach FactoryTalk View ME. Students will learn how to work with default graphic displays, configure application-wide settings, configure RSLinx Enterprise, and work with tags in an application. Helpful animations, background information, answers to frequently asked questions, and links to other reference materials provide students with a variety of knowledge and learning tools.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following tasks:

- Work with applications
- Identify main window components
- Use the application explorer and default graphic displays
- Create a new display
- Use the startup editor
- Define project settings
- Configure security and language options
- Use direct-reference tags in an application
- Create new HMI tags
- Use HMI tags

** RSTrainer Enterprise Edition product*

Intended Audience

Individuals who:

- Are responsible for designing FactoryTalk View ME applications
- Are interested in configuring application-wide settings, configuring RSLinx Enterprise software, and working with tags in an application

Prerequisites

Experience operating a computer within a Microsoft Windows environment

Related Job Aids Available for Purchase	Catalog #
FactoryTalk View ME and PanelView Plus Procedures Guide	ABT-2711P-TSJ50

RSTrainer for FactoryTalk View Machine Edition (ME) – Drawing Objects

9393-RSTVMEPT2
9393-RSTMEPT2ENF*
5 Hours

Course Purpose

This interactive, self-paced training course provides information about creating FactoryTalk View Machine Edition drawing objects in graphic displays. This course is part of a series of e-Learning courses designed to teach FactoryTalk View ME. Students will be introduced to a variety of basic graphic objects and learn how to modify their properties, animate them, and arrange them on the displays. Students will learn how to use objects from the Graphic Library. Helpful animations, background information, answers to frequently asked questions, and links to other reference materials provide students with a variety of knowledge and learning tools.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following tasks:

- Understand drawing objects
- Understand object properties
- Arrange objects
- Add objects from the graphic library
- Use the object explorer
- Animate drawing objects

** RSTrainer Enterprise Edition product*

Intended Audience

Individuals who:

- Are responsible for designing FactoryTalk View ME applications
- Are interested in learning about basic drawing objects

Prerequisites

Experience operating a computer within a Microsoft Windows environment

Related Job Aids Available for Purchase	Catalog #
FactoryTalk View ME and PanelView Plus Procedures Guide	ABT-2711P-TSJ50

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RSTrainer for FactoryTalk View Machine Edition (ME) – Interactive Objects

9393-RSTVMEPT3
9393-RSTMEPT3ENF*
5 Hours

Course Purpose

This interactive training course provides information about creating FactoryTalk View Machine Edition interactive objects. This course is part of a series of e-Learning courses designed to teach FactoryTalk View ME. Students will learn how to work interactive and advanced objects in graphic displays as well as create and configure data logs, trends, and alarms. Helpful animations, background information, answers to frequently asked questions, and links to other reference materials provide students with a variety of knowledge and learning tools.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following tasks:

- Create and configure:
  - Push buttons
  - Indicators
  - Display objects
  - Control list selectors, gauges, and graph objects
  - Display navigation objects
  - Local message displays
  - Data logs
  - Trends
  - Alarms
- Add advanced features to interactive objects
- Create parameter files and tag placeholders
- Test displays and applications
- Use faceplates in an application

** RSTrainer Enterprise Edition product*

Intended Audience

Individuals who:

- Are responsible for designing FactoryTalk View ME applications
- Are interested in learning about interactive objects

Prerequisites

Experience operating a computer within a Microsoft Windows environment

Related Job Aids Available for Purchase	Catalog #
FactoryTalk View ME and PanelView Plus Procedures Guide	ABT-2711P-TSJ50

RSTrainer for ControlLogix® Fundamentals

9393-RSTCLX
9393-RSTCLXENF*
20 Hours

Course Purpose

This interactive computer-based training course teaches students the core tasks required when working with a ControlLogix control system. This course provides an overview of the Logix5550®, Logix5555®, and Logix5563® controllers, I/O modules, communications modules, and motion modules. Students will learn how to navigate through RSLogix 5000 software and learn about the four RSLogix 5000 programming languages. Through demonstrations, students will learn about the various settings and options in the software and see how to perform the required tasks for example control applications.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following topics:

- ControlLogix overview
- RSLogix 5000 software overview
- Chassis and power supplies
- Controllers
- I/O, communications, and motion modules
- Module configuration (connections, module configuration)
- Tag structures (digital, analog, DeviceNet, DH/RIO)
- Programming (languages, project file, numbering systems)

** RSTrainer Enterprise Edition product*

Intended Audience

Individuals who:

- Are users of the Rockwell Automation ControlLogix family of programmable controllers who need refresher training
- Are interested in the features and capabilities of the Rockwell Automation ControlLogix family of programmable controllers and RSLogix 5000 software

Prerequisites

Experience operating a computer within a Microsoft Windows environment

Related Job Aids Available for Purchase	Catalog #
Logix5000 System Glossary	ABT-1756-TSG10
Logix5000 Documentation Reference Guide CD	ABT-1756-DRG70

RSTrainer for RSLogix™ 5000 Software – Project Configuration

9393-RSTLX5KPRJ
9393-RSTLKPRJENF*
5 Hours

Course Purpose

This interactive, self-paced training course teaches the core tasks required to effectively create and configure automation control projects. This course is part of a series of e-Learning courses designed to teach RSLogix 5000 software. Students will learn how to install and navigate through the software, create and configure a new project, and produce and consume tags through step-by-step demonstrations. Students will learn about the various settings and options in the software and see how to perform the required tasks for example automation control applications.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following tasks:

- Identify main window components
- Configure the display
- Navigate through the software
- Create and manage project files
- Configure a controller
- Organize tasks, programs, and routines
- Configure a local I/O module
- Produce and consume tags
- Export and import tags

** RSTrainer Enterprise Edition product*

Intended Audience

Individuals who:

- Are users of Rockwell Automation RSLogix 5000 control systems who need refresher training
- Are interested in the features and capabilities of RSLogix 5000 software

Prerequisites

Experience operating a computer within a Microsoft Windows environment

Related Job Aids Available for Purchase	Catalog #
Logix5000 System Glossary	ABT-1756-TSG10
Studio 5000 and Logix5000 Procedures Guide	ABT-1756-TSJ50
Logix5000 Documentation Reference Guide CD	ABT-1756-DRG70

RSTrainer for RSLogix 5000 Software – Offline Programming

9393-RSTLX5KOFF
9393-RSTLKOFFENF*
5 Hours

Course Purpose

This interactive, self-paced training course teaches the core tasks required to effectively create and configure automation control projects. This course is part of a series of e-Learning courses designed to teach RSLogix 5000 software. Students will learn how to install and navigate through the software, create and configure a new project, and produce and consume tags through step-by-step demonstrations. Through the demonstrations, students will learn about the various settings and options in the software and see how to perform the required tasks for example automation control applications.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following tasks:

- Enter and edit ladder logic elements
- Configure ladder logic display options
- Enter and edit function block diagrams
- Configure function block diagram display options
- Enter and edit structured text
- Configure the structured text display
- Create, deploy, and manage an add-on instruction
- Verify project components
- Search and replace text
- Create a cross reference list

** RSTrainer Enterprise Edition product*

Intended Audience

Individuals who:

- Are users of Rockwell Automation RSLogix 5000 control systems who need refresher training
- Are interested in the features and capabilities of RSLogix 5000 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *RSTrainer for RSLogix 5000 Software – Project Configuration* (9393-RSTLX5KPRJ/9393-RSTLKPRJENF or WBT1PACK) e-Learning training course or equivalent experience with RSLogix 5000 software is recommended

Related Job Aids Available for Purchase	Catalog #
Logix5000 System Glossary	ABT-1756-TSG10
Studio 5000 Logix Designer and Logix5000 Procedures Guide	ABT-1756-TSJ50
Logix5000 Documentation Reference Guide CD	ABT-1756-DRG70

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RSTrainer for RSLogix 5000 Software – Online Monitoring

9393-RSTLX5KON
9393-RSTLKONENF*
5 Hours

Course Purpose

This interactive, self-paced training course teaches the core tasks required to effectively monitor and edit industrial control projects. This course is part of a series of e-Learning courses designed to teach RSLogix 5000 software. Students will learn how to establish communications, monitor the status of a project, program ladder logic online, and identify and correct faults through step-by-step demonstrations. Students will learn about the various settings and options in the software and see how to perform the required tasks for example automation control applications.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following tasks:

- Establish communications
- Monitor status
- Identify and correct faults
- Program ladder logic online

Related Job Aids Available for Purchase	Catalog #
Logix5000 System Glossary	ABT-1756-TSG10
Studio 5000 Logix Designer and Logix5000 Procedures Guide	ABT-1756-TSJ50
ControlLogix Troubleshooting Guide	ABT-1756-TSJ20
Logix5000 Documentation Reference Guide CD	ABT-1756-DRG70

Intended Audience

Individuals who:

- Are users of Rockwell Automation RSLogix 5000 control systems who need refresher training
- Are interested in the features and capabilities of RSLogix 5000 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the following e-Learning training courses or equivalent experience with RSLogix 5000 software is recommended:
  - *RSTrainer for RSLogix 5000 Software – Project Configuration* (9393-RSTLX5KPRJ/9393-RSTLKPRJENF or WBT1PACK)
  - *RSTrainer for RSLogix 5000 Software – Offline Programming* (9393-RSTLX5KOFF/9393-RSTLKOFFENF or WBT1PACK)

** RSTrainer Enterprise Edition product*

RSTrainer for RSLogix 5000 Software – Motion

9393-RSTLX5KMOT
9393-RSTLKMOTENF*
5 Hours

Course Purpose

This interactive, self-paced training course teaches the core tasks required to effectively program motion control applications. This course is part of a series of e-Learning courses designed to teach RSLogix 5000 software. Students will learn how to configure servo modules, program motion instructions, and test and tune axes through step-by-step demonstrations. Students will learn about the various settings and options in the software and see how to perform the required tasks for example motion applications.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following tasks:

- Define a typical RSLogix 5000 motion control system
- Compare axis control modules
- Configure the servo modules
- Configure the controller
- Add and configure a SERCOS servo drive axis
- Add and configure an analog servo drive axis
- Understand the motion instruction tag structure
- Compare immediate and synchronous instructions
- Test and tune an axis
- Use motion direct commands

Related Job Aids Available for Purchase	Catalog #
Logix5000 System Glossary	ABT-1756-TSG10
Studio 5000 Logix Designer and Logix5000 Motion Control Procedures Guide	ABT-1756-TSJ52

Intended Audience

Individuals who:

- Are users of Rockwell Automation RSLogix 5000 control systems who need refresher training
- Are interested in the features and capabilities of RSLogix 5000 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the following e-Learning training courses or equivalent experience with RSLogix 5000 software is recommended:
  - *RSTrainer for RSLogix 5000 Software – Project Configuration* (9393-RSTLX5KPRJ/9393-RSTLKPRJENF or WBT1PACK)
  - *RSTrainer for RSLogix 5000 Software – Offline Programming* (9393-RSTLX5KOFF/9393-RSTLKOFFENF or WBT1PACK)
  - *RSTrainer for RSLogix 5000 Software – Online Monitoring* (9393-RSTLX5KON/9393-RSTLKONENF or WBT1PACK)

** RSTrainer Enterprise Edition product*

RSTrainer for RSLogix 5 Software

9393-RSTLX5
9393-RSTLX5ENF*
20 Hours

Course Purpose

This interactive, self-paced training course teaches the core tasks required for programming an RSLogix 5 project. This course provides information on how to install, configure, and navigate through RSLogix 5 software. Students will learn how to transfer an RSLogix 5 project from a computer to the processor, document ladder logic, and monitor data. Students will learn about the various settings and options in the software and see how to perform the required tasks for example automation control applications.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following topics and tasks:

- Work with RSTrainer software
- Install RSLogix 5 software
- Screen layout, navigation, and help
- Offline programming (new project, ladder logic editing, database documentation, reports, backup utilities)
- Online programming (communications, diagnostics: searching and data table monitoring)
- Upload/download and go online

** RSTrainer Enterprise Edition product*

Intended Audience

Individuals who:

- Are users of Rockwell Automation RSLogix 5 Software who need refresher training
- Are interested in the features and capabilities of RSLogix 5 software

Prerequisites

Experience operating a computer within a Microsoft Windows environment

Related Job Aids Available for Purchase	Catalog #
RSLogix 5 and PLC-5 Procedures Guide	ABT-1785-TSJ53
PLC-5 and RSLogix 5 Troubleshooting Guide	ABT-1785-TSJ22
PLC-5 Documentation Reference Guide CD	ABT-1785-DRG70

RSTrainer for SLC™ 500 - Hardware Fundamentals

9393-RSTSLCHENE
9393-RSTSLCHENF*
5 Hours

Course Purpose

This interactive, self-paced training course teaches the core hardware of SLC 500 control systems. The course provides an overview of the SLC 5/01, SLC 5/02, SLC 5/03, and SLC 5/04 programmable controllers, concepts, and terminology. Students will learn about chassis, power supplies, and processors. This course presents information about the SLC 500 communication options, discrete and analog I/O modules, and hardware configuration.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following topics:

- SLC 500 family
- Chassis
- Power supplies
- Processor overview
- Status indicators
- Keyswitch
- Channel 1
- Channel 0
- Battery
- Memory module
- Communication options
- Discrete and analog I/O modules
- Hardware configuration

** RSTrainer Enterprise Edition product*

Intended Audience

Individuals who:

- Are users of Rockwell Automation SLC 500 processors who need refresher training
- Are interested in the features and capabilities of the SLC family of processors and RSLogix 500 software

Prerequisites

Experience operating a computer within a Microsoft Windows environment

Related Job Aids Available for Purchase	Catalog #
SLC 500 Documentation Reference Guide CD	ABT-1747-DRG70

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RSTrainer for SLC 500 - Programming Fundamentals

9393-RSTSLCPENE
9393-RSTSLCPENF*
7 Hours

Course Purpose

This interactive, self-paced training course teaches students the core programming concepts of SLC 500 control systems. Students will learn about memory organization, addressing, ladder logic concepts, and the SLC 500 operating cycle. Students will learn about memory organization, addressing, ladder logic concepts, and the SLC 500 operating cycle. This course provides an overview of RSLogix 500 software. This course is available in both computer-based and web-based delivery formats.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following topics:

- Memory organization
- Addressing (address types, indexed and indirect addressing)
- RSLogix 500 software overview
- Numbering systems
- Ladder logic programs
- Operating cycles
- Status file

** RSTrainer Enterprise Edition product*

Intended Audience

Individuals who:

- Are users of Rockwell Automation SLC 500 processors who need refresher training
- Are interested in the features and capabilities of the SLC family of processors and RSLogix 500 software

Prerequisites

Experience operating a computer within a Microsoft Windows environment

Related Job Aids Available for Purchase	Catalog #
RSLogix 500 and SLC 500 Procedures Guide	ABT-1747-TSJ52
SLC 500 Documentation Reference Guide CD	ABT-1747-DRG70

RSTrainer for RSLogix 500 Software – Offline Programming (also available in Spanish)

9393-RST500OFENE
9393-RST500OFENF*
5 Hours

Course Purpose

This interactive, self-paced training course teaches students the core tasks required for programming an RSLogix 500 project offline. Students will learn how to create and navigate through an RSLogix 500 project, configure I/O modules, and create program and data files. Students will learn how to enter ladder logic using a variety of methods and verify a project so it will be ready to download. Helpful animations, background information, and links to other reference materials provide students with a variety of knowledge and learning tools. Students will have the opportunity to practice performing software tasks through interactive simulations.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following tasks:

- Configure the display
- Navigate through the menus, ladder view, and project view
- Create a new project
- Configure I/O modules in a project
- Create program and data files
- Enter ladder logic
- Assign addresses to ladder logic
- Verify a project
- Copy, paste, and move rungs
- Edit with .SLC library files

** RSTrainer Enterprise Edition product*

Intended Audience

Individuals who:

- Are users of Rockwell Automation RSLogix 500 Software who need refresher training
- Need to configure and navigate through RSLogix 500 software
- Are interested in the features and capabilities of RSLogix 500 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Knowledge of common processor and ladder logic terms and operation is suggested

Related Job Aids Available for Purchase	Catalog #
RSLogix 500 and SLC 500 Procedures Guide	ABT-1747-TSJ52
SLC 500 Documentation Reference Guide CD	ABT-1747-DRG70

RSTrainer for RSLogix 500 Software – Online Monitoring

9393-RST500ONENE
9393-RST500ONENF*
5 Hours

Course Purpose

This interactive, self-paced training course teaches students the core tasks required for communicating with and monitoring an online RSLogix 500 project. Students will learn how to configure communication drivers and upload, download, and go online with an RSLogix 500 project. Students will learn how to go online and use RSLogix Emulator 500 software, which will allow students to test their project in a non-production environment. This course covers how to enter ladder logic online and use a variety of data monitoring tools, such as histograms and trends. Helpful animations, background information, and links to other reference materials provide students with a variety of knowledge and learning tools. Students will have the opportunity to practice performing software tasks through interactive simulations.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following tasks:

- Configure communications software
- Transfer an RSLogix 500 project file between a computer and a processor
- Use RSLogix Emulator 500 software
- Edit ladder logic while online with an RSLogix 500 project
- Create and interpret data table monitors
- Create and configure trends and histograms
- Use workspace manager
- Force inputs and outputs

Related Job Aids Available for Purchase	Catalog #
RSLogix 500 and SLC 500 Procedures Guide	ABT-1747-TSJ52
SLC 500 Documentation Reference Guide CD	ABT-1747-DRG70

Intended Audience

Individuals who:

- Are users of Rockwell Automation RSLogix 500 Software who need refresher training
- Need to configure and navigate through RSLogix 500 software
- Are interested in the features and capabilities of RSLogix 500 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Knowledge of common processor and ladder logic terms and operation is suggested

** RSTrainer Enterprise Edition product*

RSTrainer for RSLogix 500 Software – Documenting and Searching

9393-RST500DSENE
9393-RST500DSENF*
5 Hours

Course Purpose

This interactive, computer-based training course teaches the core tasks required for documenting and searching an RSLogix 500 project. Students will learn to enter a variety of project documentation, such as rung comments and page titles, that students can use to improve their own RSLogix 500 projects. Students will learn how to import and export RSLogix 500 databases and how to backup their RSLogix 500 projects. Helpful animations, background information, and links to other reference materials provide students with a variety of knowledge and learning tools. Students will have the opportunity to practice performing software tasks through interactive simulations.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following tasks:

- Use RSLogix 500 backup utilities
- Add symbols, address descriptions, instruction, rung comments, and page titles
- Use database tools and import/export a database
- Reporting
- Search an RSLogix 500 project

Related Job Aids Available for Purchase	Catalog #
RSLogix 500 and SLC 500 Procedures Guide	ABT-1747-TSJ52
SLC 500 Documentation Reference Guide CD	ABT-1747-DRG70

Intended Audience

Individuals who:

- Are users of Rockwell Automation RSLogix 500 Software who need refresher training
- Need to configure and navigate through RSLogix 500 software
- Are interested in the features and capabilities of RSLogix 500 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Knowledge of common processor and ladder logic terms and operation is suggested

** RSTrainer Enterprise Edition product*

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RSTrainer for Hydraulics

9393-RSTHYD
9393-RSTHYDENF*
20 Hours

Course Purpose

This computer-based training course is designed to teach students the fundamental concepts, principles, and equipment used in hydraulic systems. Students gain knowledge about pumps, valves, actuators, and fluids that comprise hydraulic systems through example hydraulic simulations. Problem-solving simulations and troubleshooting situations help students learn about the operation and characteristics of various types of hydraulic equipment.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following topics:

- Basic functions and principles of hydraulic systems
- Pumps (gear, vane, piston)
- Valves (pressure control, flow control, check, directional control)
- Actuators (linear, rotary, hydraulic motors)
- Fluids (hydraulic fluid oil additives, auxiliary equipment, contaminants and filtration, conductors and fittings)

Intended Audience

Individuals who:

- Are users of hydraulic systems who need refresher training
- Need to know components, functions, and basic operation of hydraulic systems that include pumping, conducting, filtering, controlling, and actuating

Prerequisites

Experience operating a computer within a Microsoft Windows environment

** RSTrainer Enterprise Edition product*

RSTrainer for RSLinx® Software

9393-RSTLINX
9393-RSTLINXENF*
20 Hours

Course Purpose

This interactive, self-paced training course provides students with a basic understanding of the powerful monitoring, configuration, communication, and diagnostic capabilities of RSLinx software. The skills students will learn will enable them to use RSLinx software for the acquisition of PLC data and to integrate the display, archiving, and management of critical data. Students will learn to use RSLinx software to exchange data between Rockwell Automation hardware and software and commercial software applications.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following topics:

- Driver configuration
- Diagnostic tools and utilities (network monitoring tools, configuration tools and security, utilities: backup, restore, EDS hardware installation tools, etc.)
- Client application communications (DDE/OPC topics, Alias topics, DDE/OPC diagnostics)

Intended Audience

Individuals who:

- Are users of RSLinx software who need refresher training
- Are interested in RSLinx software
- Have a fundamental knowledge of programmable controllers

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Working knowledge of programmable controllers

** RSTrainer Enterprise Edition product*

RSTrainer Enterprise Edition for Student Manager

9393-RSTSMGRENF*

Purpose

This software is a student tracking and reporting utility for use with the RSTrainer series of computer-based training courses. It provides similar functionality to a learning management system by maintaining, recording, and managing student information for the RSTrainer computer-based training courses. This advanced system maintains every student's progress, scores, and personal information in an easy-to-use interface and database system that eliminates the burden of manually documenting employee training information.

Objectives

This software will allow the following information to be tracked for each student completing the RSTrainer computer-based training courses:

- Passwords and log-on information
- Account and program access
- Progress
- Scores

Intended Audience

Training professionals, managers, or supervisors who maintain several students' records and progress in a training program

Prerequisites

Experience operating a computer within a Microsoft Windows environment

Related Products

All RSTrainer series of computer-based training courses

** RSTrainer Enterprise Edition product*

Modular Programming for Machine Applications

9393-MODPROG

Course Purpose

This computer-based training course provides students with the skills and knowledge to produce a software design specification for a machine or line of machines. The modular programming concepts in this course are derived from the ISA-88.01 industry standard and include the OMAC PackML state and data models as defined in the ISA-TR88.00.02 technical report. The specification will follow modular programming guidelines and describe: equipment and control modules for controlling the machine's I/O devices, procedures for supervising and coordinating the modules, data structures for interfacing procedures with modules, state model for machine's overall operation, and naming conventions for software components. By using a modular approach to software design, software becomes much easier to reuse from project to project. As the base of modular code increases, development time decreases. Additionally, the quality of the code increases because students will be able to refine it each time they reuse it.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following tasks:

- Introduce modular programming
- Select modes and states
- Break down states and equipment modules into steps
- Identify equipment and control modules
- Organize unit procedures
- Define interfaces for procedures and modules
- Implement modular programming tools and modular programming into RSLogix 5000 software

Who Should Attend?

- Control engineers who want to improve the efficiency of their software development process
- Plant engineers who need to integrate and maintain lines of machines
- Technicians and other maintenance individuals who need to interpret and maintain modular software programs

Prerequisites

- First-hand knowledge of how your machines operate
- Able to organize data into programs and routines and create user-defined data types in RSLogix 5000 software
- Able to write and program ladder diagrams in RSLogix 5000 software
- Students can use these courses to get the prerequisite RSLogix 5000 skills:
  - *RSLogix 5000 Level 2: Basic Ladder Logic Programming* (CCP151)
  - *RSLogix 5000 Level 3: Project Development* (CCP143)

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Personal Trainer

Create automation expertise with one-on-one training

This highly-focused, on-the-job training lays the foundation for successful skill and knowledge transfer. Use the Personal Trainer to provide in-depth technical experience or to mentor newly hired employees.

The Personal Trainer is an experienced Rockwell Automation instructor and technical expert who develops and implements an individualized training plan for one to two individuals on-site at your facility. The Personal Trainer mentors the individual(s) throughout the hands-on experience to improve skills and knowledge.

Training Deliverables

- A dedicated on-site instructor for one-on-one or two-on-one training for a pre-determined time period
- Training materials to facilitate learning and knowledge transfer
- Hands-on activity and experience performing job tasks with installed equipment
- Identification and implementation of best practices including troubleshooting and/or programming techniques that use critical-thinking skills and job aids
- Improved confidence in job skills as a result of the training occurring in the real-world environment

For more information

Contact your local authorized Allen-Bradley distributor, Rockwell Automation sales office, or call 440-646-3434 (option 4).

Catalog #: PTRAINER

Benefits

- Access to an automation expert
- Job-relevant training adjusted according to the individual's needs and skill levels
- Documented best practices to minimize production errors
- Increased employee competency through extensive training, hands-on practice and experience with your installed equipment, systems and applications
- Reduced training expenses associated with off-site training
- Flexible schedule – daily and weekly options available

Automation Expertise

Software/Hardware
- Installation and configuration
- "Quick Start" assistance
- Communication setup
- Reporting

Integrated Architecture
- Integration
- Communication setup
- Programming languages and power programming techniques

Legacy Products
- Migration paths
- Configuration
- Communications

Application
- Various uses and integration of Rockwell Automation products
- Conversions

Web-Based Training

Web-Based Training Curriculum

AUTOMATION FUNDAMENTALS

- Fundamentals of AC/DC Motors and Drives
- PLC Fundamentals

VISUALIZATION

- FactoryTalk View Machine Edition - Applications and Displays
- FactoryTalk View Machine Edition - Drawing Objects
- FactoryTalk View Machine Edition - Interactive Objects

CONTROLLOGIX/RSLOGIX 5000

- RSLogix 5000 Software - Project Configuration
- RSLogix 5000 Software - Offline Programming
- RSLogix 5000 Software - Online Monitoring
- RSLogix 5000 Software - Motion

NETWORKS

- EtherNet/IP - Hardware and IP Addressing
- EtherNet/IP - Communications and Diagnostics

Note: Consult course description for prerequisites

SLC 500/RSLOGIX 500

- SLC 500 - Hardware Fundamentals
- SLC 500 - Programming Fundamentals
- RSLogix 500 Software - Offline Programming (Also Available in Spanish)
- RSLogix 500 Software - Online Monitoring
- RSLogix 500 Software - Documenting and Searching

GENERAL INDUSTRIAL

- Electrical Theory
- Industrial Electrical
- Industrial Safety
- Industrial Mechanical
- Industrial Hydraulics
- Industrial Pneumatics
- Mobile Hydraulics (Also Available in Spanish)
- Mobile Electrical (Also Available in Spanish)

Web-based training is accessed via Rockwell Automation University Online. One ePass is needed to activate a single web-based training course. ePasses are valid one year from the date of purchase.

Product Description	Product ID
Web-Based Training Single ePass	WBT-1PACK
Web-Based Training ePass 5 Pack	WBT-5PACK
Web-Based Training ePass 20 Pack	WBT-20PACK
Web-Based Training ePass 50 Pack	WBT-50PACK
Web-Based Training ePass 100 Pack	WBT-100PACK

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Fundamentals of AC/DC Motors and Drives

ePass/WBT1PACK
20 Hours

Course Purpose

This interactive, self-paced, training course is a knowledge-building course that provides students with a basic understanding of AC and DC motor and drive concepts and terminology. Through animated simulations, students will learn the various components and functions of drives and motors. Students will learn to recognize AC and DC drive and motor hardware and functions through example drive applications.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Recognize AC and DC motor hardware and operation
- Select a replacement motor
- Recognize line protection and filtering device hardware and functions
- Prevent electrostatic damage to drive components
- Recognize AC and DC drive hardware and functions
- Recognize AC and DC motor braking methods
- Test a drive using electrical measuring tools
- Preform pre-power and power-on checks
- Monitor and control a drive using a HIM
- Select a drive for basic applications

Who Should Attend?

Individuals who:

- Are users of Rockwell Automation AC and DC drives or drive software who need refresher training
- Are interested in the capabilities of AC and DC drive hardware and software

Prerequisites

- Experience operating a computer within a Microsoft® Windows® environment
- Understanding of basic electrical and electronic concepts

Related Job Aids Available for Purchase	Catalog #
AC and DC Motor and Drive Glossary	ABT-D100-TSG10

PLC Fundamentals

ePass/WBT1PACK
20 Hours

Course Purpose

This interactive, self-paced, training course delivers a broad-based understanding of important PLC principles and concepts. Students will understand how to connect to PLC hardware and how they function in various control systems. Students will study the various programming conventions, as well as practical issues about automation controls and components.

Objectives

After completing this web-based training course, students should be knowledgeable about the following topics:

- What is a PLC?
- PLC hardware
- PLC numbering systems
- How is a PLC structured
- How to program a PLC
- Devices connected to a PLC
- How to use timers
- How to use counters
- Data handling instructions
- Comparison instructions
- Math instructions
- Sequencing instructions
- Specialty instructions
- Practical issues
- Product support

Who Should Attend?

Individuals who need to understand the basics of programmable logic controllers

Prerequisites

There are no prerequisites for this web-based training course

Related Job Aids Available for Purchase	Catalog #
RSLogix 5 and PLC-5 Procedures Guide	ABT-1785-TSJ53
PLC-5 Documentation Reference Guide CD	ABT-1785-DRG70

EtherNet/IP – Hardware and IP Addressing

ePass/WBT1PACK
5 Hours

Course Purpose

This interactive, self-paced training course covers the fundamentals of Ethernet Industrial Protocol (EtherNet/IP) hardware and IP addressing. During this course, students will learn how to design and optimize an EtherNet/IP network and configure an EtherNet/IP driver and IP addresses for EtherNet/IP devices. Helpful animations, background information, answers to frequently asked questions, and links to other reference materials provide students with a variety of knowledge and learning tools.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Design and optimize EtherNet/IP networks
- Configure an EtherNet/IP communications driver using RSLinx
- Ping an IP address
- Configure and modify EtherNet/IP addresses using:
  - BOOTP-DHCP server software
  - RSLinx software
  - RSLogix 5000 software

Who Should Attend?

Individuals who:

- Are responsible for designing EtherNet/IP networks
- Are interested in optimizing EtherNet/IP networks, configuring communications, and configuring EtherNet/IP addresses

Prerequisites

Experience operating a computer within a Microsoft Windows environment

Related Job Aids Available for Purchase	Catalog #
EtherNet/IP Procedures Guide	ABT-N300-TSJ50
EtherNet/IP Documentation Reference Guide CD	ABT-N300-DRG70

EtherNet/IP – Communications and Diagnostics

ePass/WBT1PACK
5 Hours

Course Purpose

This interactive, self-paced training course teaches the concepts of Ethernet Industrial Protocol (EtherNet/IP) communications and diagnostics. During this course, students will learn how to establish EtherNet/IP connections, send messages, and perform basic networking diagnostics. Helpful animations, background information, answers to frequently asked questions, and links to other reference materials provide students with a variety of knowledge and learning tools.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Configure an Ethernet/IP module in a local and remote chassis
- Configure a digital and analog I/O module in a chassis
- Modify EtherNet/IP module parameters
- Add a controller to an I/O configuration
- Produce and consume data over an EtherNet/IP network
- Communicate between multiple controllers on an EtherNet/IP network using an MSG instruction
- Configure the 9300-8EDM Ethernet diagnostic module
- Obtain computer IP addresses
- Access diagnostic information using a web browser

Who Should Attend?

Individuals who:

- Are responsible for setting up communications over an EtherNet/IP network
- Are interested in understanding how to send messages over an EtherNet/IP network, and perform basic networking diagnostics

Prerequisites

Experience operating a computer within a Microsoft Windows environment

Related Job Aids Available for Purchase	Catalog #
EtherNet/IP Procedures Guide	ABT-N300-TSJ50
EtherNet/IP Documentation Reference Guide CD	ABT-N300-DRG70

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FactoryTalk® View Machine Edition – Applications and Displays

ePass/WBT1PACK
5 Hours

Course Purpose

This interactive, self-paced training course provides information about creating FactoryTalk View Machine Edition (ME) applications and displays. This course is part of a series of e-Learning courses designed to teach FactoryTalk View ME software. During this course, students will learn how to work with default graphic displays, configure application-wide settings, configure RSLinx Enterprise, and work with tags in an application.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Use the application explorer
- Use default graphic displays
- Create a new display
- Use the startup editor
- Define project settings
- Configure security and language options
- Use direct-reference tags in an application
- Create and use new HMI tags

Who Should Attend?

Individuals who:

- Are responsible for designing FactoryTalk View ME applications
- Are interested in configuring application-wide settings, configuring RSLinx Enterprise software, and working with tags in an application

Prerequisites

Experience operating a computer within a Microsoft Windows environment

Related Job Aids Available for Purchase	Catalog #
FactoryTalk View ME & PanelView Plus Procedures Guide	ABT-2711P-TSJ50

FactoryTalk View Machine Edition – Drawing Objects

ePass/WBT1PACK
5 Hours

Course Purpose

This interactive, self-paced training course provides information about creating FactoryTalk View Machine Edition (ME) drawing objects in graphic displays. This course is part of a series of e-Learning courses designed to teach FactoryTalk View ME software. During this course, students will be introduced to a variety of basic graphic objects and learn how to modify their properties, animate them, and arrange them on the displays. Students will learn how to use objects from the graphic library.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Understand drawing objects
- Understand object properties
- Arrange objects
- Add objects from the graphic library
- Use the object explorer
- Animate drawing objects

Who Should Attend?

Individuals who:

- Are responsible for designing FactoryTalk View ME displays
- Are interested in learning about basic drawing objects

Prerequisites

Experience operating a computer within a Microsoft Windows environment

Related Job Aids Available for Purchase	Catalog #
FactoryTalk View ME & PanelView Plus Procedures Guide	ABT-2711P-TSJ50

FactoryTalk View Machine Edition – Interactive Objects

ePass/WBT1PACK
5 Hours

Course Purpose

This interactive, self-paced, training course provides information about creating FactoryTalk View Machine Edition (ME) interactive objects. This course is part of a series of e-Learning courses designed to teach FactoryTalk View ME software. During this course, students will learn how to work interactive and advanced objects in graphic displays as well as create and configure data logs, trends, and alarms.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Create and configure:
  - Push buttons
  - Indicators
  - Display objects
  - Control list selectors
  - Gauges
  - Graph objects
  - Display navigation objects
  - Local message displays
  - Data logs
  - Trends
  - Alarms
- Add advanced features to interactive objects
- Create parameter files and tag placeholders

Who Should Attend?

Individuals who:

- Are responsible for designing FactoryTalk View ME displays
- Are interested in learning about interactive objects

Prerequisites

Experience operating a computer within a Microsoft Windows environment

Related Job Aids Available for Purchase	Catalog #
FactoryTalk View ME & PanelView Plus Procedures Guide	ABT-2711P-TSJ50

Web-Based Training

SLC™ 500 – Hardware Fundamentals

ePass/WBT1PACK
5 Hours

Course Purpose

This web-based training course teaches students the core hardware of SLC 500 control systems. This course provides an overview of the SLC 5/01, SLC 5/02, SLC 5/03, and SLC 5/04 programmable controllers, concepts, and terminology. During this course, students will learn about chassis, power supplies, and processors. This course presents information about the SLC 500 communication options, discrete and analog I/O modules, and hardware configuration.

Objectives

After completing this web-based training course, students should be knowledgeable about the following topics:

- SLC 500 family
- Chassis
- Power supplies
- Processors (status indicators, keyswitch, channel 1, channel 0, battery, and memory module)
- Communication options
- Discrete and analog I/O modules
- Hardware configuration

Who Should Attend?

Individuals who:

- Are users of Rockwell Automation SLC 500 processors who need refresher training
- Are interested in the features and capabilities of the SLC family of processors and RSLogix 500 software

Prerequisites

Experience operating a computer within a Microsoft Windows environment

Related Job Aids Available for Purchase	Catalog #
SLC 500 Documentation Reference Guide CD	ABT-1747-DRG70

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SLC 500 – Programming Fundamentals

ePass/WBT1PACK
7 Hours

Course Purpose

This web-based training course teaches students the core programming concepts of SLC 500 control systems. During this course, students will learn about memory organization, addressing, ladder logic concepts, and the SLC 500 operating cycle. Students will be provided with an overview of RSLogix 500 software.

Objectives

After completing this web-based training course, students should be knowledgeable about the following topics:

- Memory organization
- Addressing (address types, indexed and indirect addressing)
- RSLogix 500 software overview
- Numbering systems
- Ladder programs
- Operating cycle
- Status file

Who Should Attend?

Individuals who:

- Are users of Rockwell Automation SLC 500 processors who need refresher training
- Are interested in the features and capabilities of the SLC family of processors and RSLogix 500 software

Prerequisites

Experience operating a computer within a Microsoft Windows environment

Related Job Aids Available for Purchase	Catalog #
RSLogix 500 and SLC 500 Procedures Guide	ABT-1747-TSJ52
SLC 500 Documentation Reference Guide CD	ABT-1747-DRG70

RSLogix 500 Software – Offline Programming

(also available in Spanish)

ePass/WBT1PACK
5 Hours

Course Purpose

This interactive, self-paced, training course teaches the core tasks required for programming an RSLogix 500 project. During this course, students will learn how to create and navigate through an RSLogix 500 project, configure I/O modules, and create program and data files. Students will learn how to enter ladder logic using a variety of methods and verify a project so it will be ready to download. Helpful animations, background information, and links to other reference materials provide students with a variety of knowledge and learning tools. Students will have the opportunity to practice performing software tasks through interactive simulations.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Navigate through the RSLogix 500 software
- Configure the display
- Create a new project
- Configure I/O modules in a project
- Create program and data files
- Enter ladder logic
- Assign addresses to ladder logic
- Verify a project
- Copy, paste, and move rungs
- Edit with .SLC library files

Who Should Attend?

Individuals who:

- Are users of Rockwell Automation RSLogix 500 Software who need refresher training
- Need to configure and navigate through RSLogix 500 software
- Are interested in the features and capabilities of RSLogix 500 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Knowledge of common processor and ladder logic terms and operation is suggested

Related Job Aids Available for Purchase	Catalog #
RSLogix 500 and SLC 500 Procedures Guide	ABT-1747-TSJ52
SLC 500 Documentation Reference Guide CD	ABT-1747-DRG70

RSLogix 500 Software – Online Monitoring

ePass/WBT1PACK
5 Hours

Course Purpose

This interactive, self-paced, training course teaches the core tasks required for communicating with and monitoring an RSLogix 500 project online. During this course, students will learn how to configure communication drivers and upload, download, and go online with an RSLogix 500 project. Students will learn how to go online and use RSLogix Emulator 500 software, which will allow students to test their project in a non-production environment. This course covers how to enter ladder logic online and use a variety of data monitoring tools, such as histograms and trends.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Configure communications
- Transfer an RSLogix 500 project file
- Edit ladder logic online
- Monitor data
- Force inputs and outputs

Related Job Aids Available for Purchase	Catalog #
RSLogix 500 and SLC 500 Procedures Guide	ABT-1747-TSJ52
SLC 500 Documentation Reference Guide CD	ABT-1747-DRG70

Who Should Attend?

Individuals who:

- Are users of Rockwell Automation RSLogix 500 Software who need refresher training
- Need to configure and navigate through RSLogix 500 software
- Are interested in the features and capabilities of RSLogix 500 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Knowledge of common processor and ladder logic terms and operation is suggested

RSLogix 500 Software – Documenting and Searching

ePass/WBT1PACK
5 Hours

Course Purpose

This interactive, self-paced, training course teaches the core tasks required for documenting and searching an RSLogix 500 project. Students will learn to enter a variety of project documentation, such as rung comments and page titles, that students can use to improve their own RSLogix 500 projects. Students will learn how to import and export RSLogix 500 databases and how to backup their RSLogix 500 projects.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Use RSLogix 500 backup utilities
- Add symbols and address descriptions
- Add instruction comments, rung comments, and page titles
- Use database tools
- Import and export a database
- Print reports
- Search an RSLogix 500 project

Related Job Aids Available for Purchase	Catalog #
RSLogix 500 and SLC 500 Procedures Guide	ABT-1747-TSJ52
SLC 500 Documentation Reference Guide CD	ABT-1747-DRG70

Who Should Attend?

Individuals who:

- Are users of Rockwell Automation RSLogix 500 software who need refresher training
- Need to configure and navigate through RSLogix 500 software
- Are interested in the features and capabilities of RSLogix 500 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Knowledge of common processor and ladder logic terms and operation is suggested

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RSLogix 5000 Software – Project Configuration

ePass/WBT1PACK
5 Hours

Course Purpose

This interactive, self-paced, training course teaches the core tasks required to effectively create and configure automation control projects. This course is part of a series of e-Learning courses designed to teach RSLogix 5000 software. Students will learn how to install and navigate through the software, create and configure a new project, and produce and consume tags through step-by-step demonstrations. Students will learn about the various settings and options in the software and see how to perform the required tasks for example automation control applications.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Install RSLogix 5000 software
- Identify main window components
- Configure the display
- Navigate through the software
- Create and manage project files
- Configure a controller
- Organize tasks, programs, and routines
- Configure a local I/O module
- Organize data
- Produce and consume tags
- Export and import tags

Who Should Attend?

Individuals who:

- Are users of RSLogix 5000 control systems who need refresher training
- Are interested in the features and capabilities of RSLogix 5000 software

Prerequisites

Experience operating a computer within a Microsoft Windows environment

Related Job Aids Available for Purchase	Catalog #
Logix5000 System Glossary	ABT-1756-TSG10
Studio 5000 Logix Designer and Logix5000 Procedures Guide	ABT-1756-TSJ50
Logix5000 Documentation Reference Guide CD	ABT-1756-DRG70

RSLogix 5000 Software – Offline Programming

ePass/WBT1PACK
5 Hours

Course Purpose

This interactive, self-paced, training course teaches the core tasks required to effectively create and configure automation control projects. This course is part of a series of e-Learning courses designed to teach RSLogix 5000 software. Students will learn how to install and navigate through the software, create and configure a new project, and produce and consume tags through step-by-step demonstrations. Through the demonstrations, students will learn about the various settings and options in the software and see how to perform the required tasks for example automation control applications.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Enter and edit ladder logic elements
- Configure ladder logic display options
- Print a ladder logic routine
- Enter and edit function block diagrams
- Configure function block diagram display options
- Print a function block diagram
- Enter and edit structured text
- Configure the structured text display
- Print a structured text routine
- Verify project components
- Search and replace text
- Create a cross reference list

Who Should Attend?

Individuals who:

- Are users of RSLogix 5000 software who need refresher training
- Are interested in the features and capabilities of RSLogix 5000 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *RSLogix 5000 Software – Project Configuration* web-based training course (ePass/WBT1PACK) or equivalent experience with RSLogix 5000 software is recommended

Related Job Aids Available for Purchase	Catalog #
Logix5000 System Glossary	ABT-1756-TSG10
Studio 5000 Logix Designer and Logix5000 Procedures Guide	ABT-1756-TSJ50
Logix5000 Documentation Reference Guide CD	ABT-1756-DRG70

RSLogix 5000 Software – Online Monitoring

ePass/WBT1PACK
5 Hours

Course Purpose

This interactive, self-paced, training course teaches the core tasks required to effectively monitor and edit industrial control projects. This course is part of a series of e-Learning courses designed to teach RSLogix 5000 software. Students will learn how to establish communications, monitor the status of a project, program ladder logic online, and identify and correct faults through step-by-step demonstrations. Students will learn about the various settings and options in the software and see how to perform the required tasks for example automation control applications.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Establish communications
- Monitor status
- Print a ladder logic routine
- Identify and correct faults
- Program ladder logic online
- Print a function block diagram

Who Should Attend?

Individuals who:

- Are users of RSLogix 5000 software who need refresher training
- Are interested in the features and capabilities of RSLogix 5000 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the following web-based training courses or equivalent experience with RSLogix 5000 software is recommended:
  - *RSLogix 5000 Software – Project Configuration*
  - *RSLogix 5000 Software – Offline Programming*

Related Job Aids Available for Purchase	Catalog #
Logix5000 System Glossary	ABT-1756-TSG10
Studio 5000 Logix Designer and Logix5000 Procedures Guide	ABT-1756-TSJ50
ControlLogix Troubleshooting Guide	ABT-1756-TSJ20
Logix5000 Documentation Reference Guide CD	ABT-1756-DRG70

RSLogix 5000 Software – Motion

ePass/WBT1PACK
5 Hours

Course Purpose

This interactive, self-paced, training course teaches the core tasks required to effectively program motion control applications. This course is part of a series of e-Learning courses designed to teach RSLogix 5000 software. Students will learn how to configure servo modules, program motion instructions, and test and tune axes through step-by-step demonstrations. Students will learn the various settings and options in the software and see how to perform the required tasks for example motion applications.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Define a typical RSLogix 5000 motion control system
- Compare axis control modules
- Configure the servo modules
- Configure the controller
- Add and configure a SERCOS servo drive axis
- Add and configure an analog servo drive axis
- Understand the motion instruction tag structure
- Compare immediate and synchronous instructions
- Test and tune an axis
- Use motion direct commands

Who Should Attend?

Individuals who:

- Are users of RSLogix 5000 motion control systems who need refresher training
- Are interested in the features and capabilities of RSLogix 5000 motion control software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the following web-based training courses or equivalent experience with RSLogix 5000 software is recommended:
  - *RSLogix 5000 Software – Project Configuration*
  - *RSLogix 5000 Software – Offline Programming*
  - *RSLogix 5000 Software – Online Monitoring*

Related Job Aids Available for Purchase	Catalog #
Logix5000 System Glossary	ABT-1756-TSG10
Studio 5000 Logix Designer and Logix5000 Motion Control Procedures Guide	ABT-1756-TSJ52

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Electrical Theory

ePass/WBT1PACK
15 Hours

Course Purpose

This interactive, self-paced, training course begins with the basics — the atom, electrical charge, voltage, current, and more. The basics are followed by an in-depth, theoretical approach to circuit analysis, basic magnetism, magnetic induction, and single- and poly-phase AC circuits.

Objectives

After completing this web-based training course, students should be knowledgeable about the following topics:

- Electrical fundamentals
- Basic physics
- Circuit fundamentals
- Circuit analysis
- Basic magnetism
- Magnetic circuits
- Single-pass AC circuits
- Magnetic induction
- Poly-phase AC circuits

Who Should Attend?

Individuals who need to understand electrical theory systems

Prerequisites

There are no prerequisites for this web-based training course

Industrial Electrical

ePass/WBT1PACK
5 Hours

Course Purpose

This interactive, self-paced, training course delivers a broad-based understanding of the most important electrical concepts. Students will understand basic physics laws as they apply to electricity and basic electrical circuits. Students will study the various components of electrical systems and how they function and interact with each other.

Objectives

After completing this web-based training course, students should be knowledgeable about the following topics:

- Electrical fundamentals
- Circuit fundamentals
- Circuit analysis
- Basic magnetism
- Circuit components
- Electrical testers
- Schematics

Who Should Attend?

Individuals who need to understand basic electrical concepts

Prerequisites

There are no prerequisites for this web-based training course

Industrial Safety

ePass/WBT1PACK
15 Hours

Course Purpose

This interactive, self-paced, training course covers the ten common safety concerns in industrial, manufacturing, and construction environments. It delivers an interactive training experience focused on safety from an employee perspective.

Objectives

After completing this web-based training course, students should be knowledgeable about the following topics:

- Introduction to safety
- Walking and working surfaces
- Prevention and protection plans
- Personal protective equipment
- Electrical safety
- Machine guarding
- Chemical safety
- Powered industrial trucks
- Industrial hygiene
- Ergonomics

Who Should Attend?

Individuals who need to understand basic industrial safety standards and procedures

Prerequisites

There are no prerequisites for this web-based training course

Industrial Mechanical

ePass/WBT1PACK
5 Hours

Course Purpose

This interactive, self-paced, training course delivers a broad-based understanding of the most important mechanical concepts. Students will understand basic physics laws as they apply to mechanical power and the systems in which they can be used. Students will study the various components of mechanical systems and how they function and interact with each other.

Objectives

After completing this web-based training course, students should be knowledgeable about the following topics:

- Basic physics
- Linear actuators
- Clutches
- Brakes
- Clutch/brake combinations
- Bearings
- Gears
- Drives
- Couplings

Who Should Attend?

Individuals who need to understand basic mechanical concepts

Prerequisites

There are no prerequisites for this web-based training course

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Industrial Hydraulics

ePass/WBT1PACK
5 Hours

Course Purpose

This interactive, self-paced, training course delivers a broad-based understanding of the most important hydraulic concepts. Students will understand basic physics laws as they apply to hydraulic power and the systems in which they can be used. Students will study the various components of hydraulic systems and how they function and interact with each other.

Objectives

After completing this web-based training course, students should be knowledgeable about the following topics:

- Basic hydraulic physics
- Pumps
- Actuators
- Pressure control
- Directional control
- Flow control valves
- Modular control valves
- Fluid conditioning
- Check valves
- Accessory components
- Fluid conductors
- Schematics
- Basic system design

Who Should Attend?

Individuals who need to understand basic hydraulic concepts

Prerequisites

There are no prerequisites for this web-based training course

Industrial Pneumatics

ePass/WBT1PACK
5 Hours

Course Purpose

This interactive, self-paced, training course delivers a broad-based understanding of the most important pneumatic concepts. Students will understand basic physics laws as they apply to pneumatics, as well as understand schematics and system design. Students will study the various components of pneumatic systems and how they function and interact with each other.

Objectives

After completing this web-based training course, students should be knowledgeable about the following topics:

- Electrical physics
- Compressors
- Air dryers
- Air preparation
- Air distribution
- Actuators
- Directional control valves
- Accessories
- Air line conductors
- Vacuum
- Schematics

Who Should Attend?

Individuals who need to understand basic pneumatic concepts

Prerequisites

There are no prerequisites for this web-based training course

Mobile Hydraulics (also available in Spanish)

ePass/WBT1PACK
5 Hours

Course Purpose

This course delivers an interactive training experience covering the concepts needed to understand and work with the hydraulic systems of mobile equipment. Students will learn various physics laws related to hydraulic power, as well as the hydraulic components and circuits associated with these systems. Students will study the basics of hydrostatic transmissions, as well as valves and maintenance systems common to almost all combustion engine vehicles. Students will study the symbols and language of hydraulic schematics, helping them better understand their systems.

Objectives

After completing this web-based training course, students should be knowledgeable about the following topics:

- Fluid power physics
- Pumps
- Actuators
- Hydraulic transmissions
- Pressure control
- Directional control valves
- Flow control valves
- Modular control valves
- Fluid conditioning
- Check valves
- Accessory components
- Fluid conductors
- Schematics

Who Should Attend?

Individuals who need a better understanding of mobile hydraulics equipment

Prerequisites

There are no prerequisites for this web-based training course

Mobile Electrical (also available in Spanish)

ePass/WBT1PACK
5 Hours

Course Purpose

This course delivers an interactive training experience to assist students in working with electrical systems of mobile equipment. Students will learn the various physics laws related to electric power, as well as the electric components and circuits associated with these systems.

Objectives

After completing this web-based training course, students should be knowledgeable about the following topics:

- Electrical fundamentals
- Circuit fundamentals
- Circuit analysis
- Basic magnetism
- Circuit components
- Electrical testers
- Charging and starting systems

Who Should Attend?

Individuals who need a better understanding of mobile electrical equipment

Prerequisites

There are no prerequisites for this web-based training course

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Job Aids

Your Training is Over. Back on the Job. Now What?

Job Aids Provide Convenient On-the-Job Performance Support

Inevitably, no matter how effective training is, as more time passes, information that's not used frequently will be forgotten. Yet, as industrial technologies continue to increase in complexity, recalling each critical piece of information becomes essential to your company's success.

Rockwell Automation job aids provide on-the-job support at a glance. Our extensive selection of job aids, including procedures guides, troubleshooting guides, and reference guides, cover a diverse range of technologies and job functions. Available in a variety of languages and complemented by a compact, easy-to-use design, job aids are ready to go to work with you for the long haul.

Procedures Guides
Procedures guides help ensure that your employees always follow best practices and perform within established guidelines. Covering the gamut of pertinent software related tasks in programming and troubleshooting, our procedures guides provide easy-to-follow, step-by-step instructions that result in more productive employees. First time, every time.

Troubleshooting Guides
Put away those cumbersome technical manuals! Rockwell Automation troubleshooting guides provide an essential "just-in-time" resource when you need it most. With quick access to product-specific, best-practice information, users can quickly navigate through a series of flow chart questions, checks, and actions to help identify equipment problems and their appropriate resolutions.

Reference Guides
Reference guides provide users the information they need, the moment they need it by organizing critical, frequently used information in a straightforward, intuitive format. Reference guides come in four different types:

- Document Reference Guides provide the most frequently used information found in a full technical manual.
- Quick Reference Guides define parameters for a specific device or system.
- Quick Reference Cards are the ultimate in portability.
- Glossaries organize and define standard terminology.

Custom Job Aids
Custom job aids from Rockwell Automation provide you with a proven source for technical documentation customized for your specific facility and application. Not only can you get a cost-effective, tailored solution covering the ins and outs of our extensive product lines, but we can cover non-Rockwell Automation equipment.

From step-by-step troubleshooting procedures, to quality-inspection sheets, recipe setup sheets and more; you'll find maintenance and systems engineers spending more time doing what they do best.

Rockwell Automation custom job aids: Your specific information when and where you need it most.

For More Information
For more information about Rockwell Automation Training Services go to:
www.rockwellautomation.com/services/training

When Should You Consider Job Aids

- Employees need refresher training.
- Complex routines are not performed frequently enough to commit to memory.
- Your manufacturing environment demands straightforward access to a large knowledge base.
- Current documentation is unorganized, inaccessible, and is not circulated.
- Employees perform similar job functions, but have widely varying skills.
- Employee turnover creates need for on-the-job support.

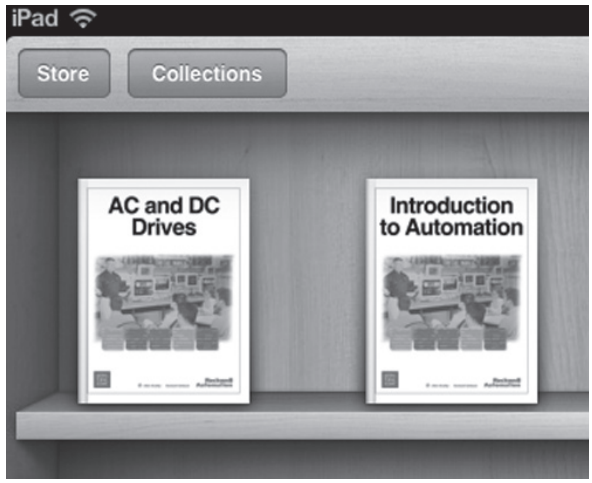
Mobile

Rockwell Automation Interactive iBooks!

Not just a textbook but a new and exciting way to read and learn about industrial automation concepts straight from your iPad.

Rockwell Automation iBooks are highly engaging and include diverse learning activities:

- Videos/Animations – a wide variety of videos and animations to enhance concepts and provide real-world examples
- Podcasts – listen to interviews with automation workers that offer unique perspectives of various jobs and industries
- Web links – access to supplemental information instantly
- Check Knowledge – relevant questions will test your understanding of concepts



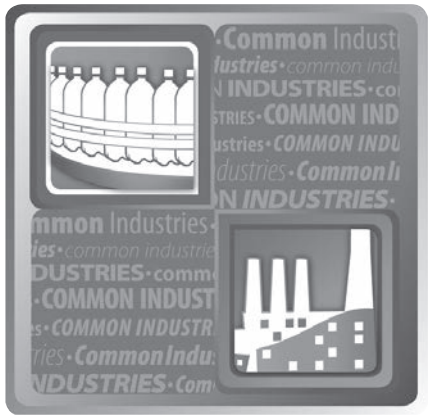
Availability
To purchase Rockwell Automation iBooks, visit the iTunes® Store.

Introduction to Automation iBook®

The *Introduction to Automation iBook* will provide you with a broad and fundamental understanding of industrial automation. Topics range from an overview of common automation industries to an introduction of basic automated system components, such as controllers, I/O, drives, and HMI (Human Machine Interface). In addition, you will learn common automation terminology and what tools are used with industrial automation. The variety of learning resources integrated in this iBook will give you a solid foundation with automated systems and prepare you for more advanced automation-related topics.

Introduction to Automation Chapters:

- Identifying Common Industries and Applications in Industrial Automation
- Identifying Industrial Automation Standards and Regulations
- Understanding Basic Mechanical Components
- Understanding Automation Control Systems
- Understanding Controllers
- Identifying I/O Devices and Modules
- Understanding Networks
- Recognizing Logic
- Recognizing Basic Programming Concepts
- Identifying System Documentation
- Identifying Human Machine Interfaces
- Identifying AC and DC Motors and Drives
- Understanding Safety in Automation
- Understanding Process Control

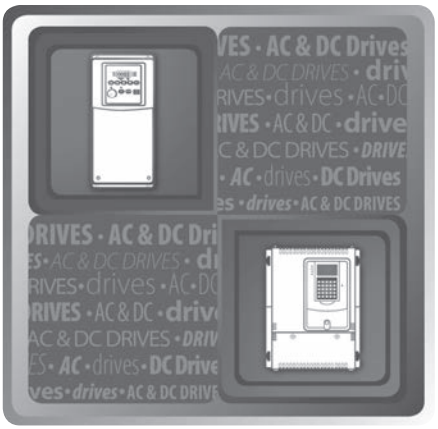


Audience
This book is intended for individuals who have little or no experience with automation systems.

AC and DC Drives iBook

The *AC and DC Drives iBook* will provide you with an understanding of AC and DC drives, including basic configuring, operating, maintaining, and troubleshooting using a HIM or HMI. You will identify basic components common to industrial drive applications. You will also learn the characteristics of AC and DC drives in various examples of real-world applications. This book includes key concepts, definitions, links to multimedia examples and more to give you an interactive learning experience.

AC and DC Drives Chapters:



- Identifying Drive System Components and Concepts
- Identifying Line Protection and Filtering Methods for AC and DC Drive Systems
- Recognizing DC Motor Functions Controlled by DC Drives
- Identifying DC Drive Hardware and Functions
- Recognizing AC Motor Functions Controlled by AC Drives
- Identifying AC Drive Hardware and Functions
- Identifying Braking Methods for AC and DC Drive Systems
- Comparing AC and DC Drive Systems for Basic Applications
- Preventing Electrostatic Damage to Drive Components
- Identifying Electrical Measuring Tools and Functions
- Identifying Basic Startup Procedures for AC and DC Drives
- Using a HIM to Configure, Control, and Monitor a Drive
- Performing Preventative Maintenance and Basic Troubleshooting for Drives

Audience

This book is intended for individuals who have some experience with electric motors and are interested in understanding AC and DC drives.

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ControlLogix Troubleshooting With a New Mobile Learning App

Troubleshooting on-demand when and where you need it

The ControlLogix Troubleshooting Guide mobile app contains electronic paths that walk you through faults that can occur on a system.
This interactive mobile app is specifically designed for use on the plant floor. The troubleshooting guide is filled with procedures, error code information, and status indicator listings with recommended actions, reference charts, and hardware/software diagrams.

Mobile App Features:

- Detailed illustrations with pertinent troubleshooting information
- Consistent starting point from which to logically begin troubleshooting
- Important safety considerations, precautions, and general warnings
- Logical progression of questions, causes, and actions to determine the problem
- Easy and fast navigation from screen to screen
- Bookmark functionality
- Animations of LED lights, hardware views, software procedures
- Embedded videos, user manuals, diagrams, PDF documents
- Definition hot-spots, links to embedded glossary, and ability to look up terms via web
- Ability to add, access, and delete user notes
- User-friendly, high-resolution interface

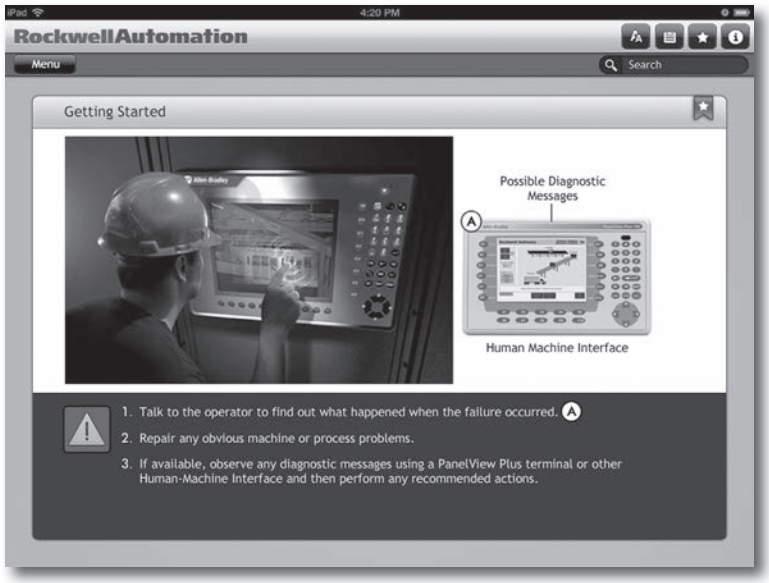
Mobile

Compatibility

- Apple iOS 5.0 and above iPhone® and iPad®
- Android 3.1 and above smartphone and tablet
- Windows XP
- Windows 7
- Mac® 10.7

Availability

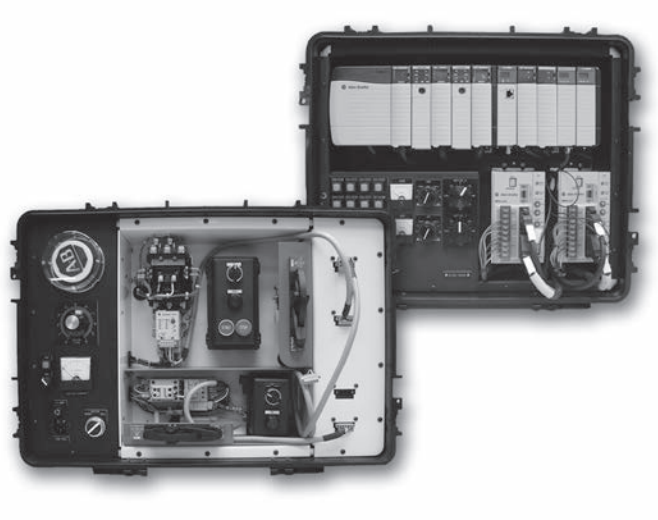
The ControlLogix Troubleshooting App can be found in iTunes and the Google Play Store.



Workstations

Training Workstations

Practice and Reinforce Your Job Skills



Superior tools and technology are the most obvious building blocks of success in today's manufacturing operations. Those with the best tools coupled with strategic innovation tend to get the best results. But this isn't the whole equation because even automated tools are essentially "enablers"… extensions of a machine user whose knowledge, skill, and productivity are the ultimate drivers of your success. Rockwell Automation understands this, which is why we build training workstations to optimize the productivity of both your manufacturing and human assets.

Built from the same proven Rockwell Automation technologies you use every day, our training workstations precisely mirror your manufacturing processes for the most realistic experience possible. Whether you're introducing new skills, bringing skills up-to-date or conducting pre-deployment testing on a new process before going "live," our training workstations effectively get employees up-to-speed, while supporting manufacturing's human dimension for the best results.

Hands-on Training

Workstations provide ideal practice for:

- New hires
- New technologies
- System upgrades
- New production processes
- Transitioning employees
- Competency Assessments

Training workstations can now be added to Rockwell Automation Parts Management Agreements, thereby giving you greater flexibility and value. Ask your local Rockwell Automation sales office or Allen-Bradley distributor for more details.

Top 10 Workstations

Workstation	Part Number
Automation Ferris Wheel Workstation	ABT-TDFW100
PowerFlex 755 Workstation	ABT-TDPF755
ControlLogix Workstation – No Motion and No Controller (7-slot chassis)	ABT-TDCLX2NP
CompactLogix Workstation	ABT-TDIALITE-A
Kinetix® 6500 Workstation	ABT-TDK6500
Kinetix® 6000 Servo Drive Workstation	ABT-TD20941
ControlLogix Workstation – No Motion (10-slot chassis)	ABT-TDCLX3-B
ControlLogix Workstation – No Motion and No Controller (10-slot chassis)	ABT-TDCLX3NP
SLC 500 Workstation - SLC 5/03 Processor (7-Slot Chassis)	ABT-TDSLCN2
PlantPAx Process System Workstation	ABT-TDPAX

Lab Books

For practice exercises related to training workstations, these self-paced lab books are available with a workstation purchase.

Note: Lab books must be purchased in conjunction with a workstation. Previously purchased workstations apply.

Workstation	Lab Books	Part Number
Integrated Architecture Workstation (ABT-TDIA-A)	Introduction to Automation and Integrated Architecture	ABT-CIA101TLB
PowerFlex® 700 AC Drive Workstation (ABT-TDPF700)	PowerFlex 700 Vector Control Configuration and Startup	ABT-CCA161TLB
	PowerFlex 700 Vector Control Communications on DeviceNet	ABT-CCA162TLB
	PowerFlex 700 Vector Control Maintenance and Troubleshooting	ABT-CCA163TLB
Kinetix 6000 Servo Drive Workstation (ABT-TD20941)	Motion Programming Using Ladder Logic	ABT-CCN142TLB
ControlLogix 10-Slot Workstations (ABT-TDCLX3-B, ABT-TDCLX3NP, ABT-TDCLX3K-A)	Studio 5000 Logix Designer: ControlLogix System Fundamentals (requires a 10-slot ControlLogix chassis)	ABT-CCP146TLB
	Studio 5000 Logix Designer: Basic Ladder Logic Programming (requires a 10-slot ControlLogix chassis)	ABT-CCP151TLB
	Studio 5000 Logix Designer: Maintenance and Troubleshooting (requires a 10-slot ControlLogix chassis)	ABT-CCP153TLB
DeviceNet Workstation (ABT-TDDNET2-A)	DeviceNet and RSNetWorx Configuration and Troubleshooting	ABT-CCP164TLB
EtherNet/IP Workstation (ABT-TDENET5700)	EtherNet/IP Design and Troubleshooting	ABT-CCP180TLB
CompactLogix Workstation (ABT-TDIALITE-A)	CompactLogix Fundamentals and Troubleshooting	ABT-CCP298TLB
ControlLogix 10-Slot Workstations (ABT-TDCLX3-B, ABT-TDCLX3NP, ABT-TDCLX3K-A)	Studio 5000 Logix Designer: ControlLogix Fundamentals and Troubleshooting (requires a 10-slot ControlLogix chassis) (Note: This lab book combines information from both the ABT-CCP153TLB and ABT-CCP146TLB lab books.)	ABT-CCP299TLB
ControlLogix Workstation – No Motion (10-slot) (ABT-TDCLX3-B)	PhaseManager Project Design (requires a 10-slot ControlLogix chassis)	ABT-CCP711TLB
SLC 500 Workstation (10 Slot Chassis) (ABT-TDSLC1 120V AC)	SLC 500 and RSLogix 5000 Maintenance and Troubleshooting	ABT-CCPS43TLB
PanelView Plus 6 Workstation	FactoryTalk View ME and PanelView Plus Programming	ABT-CCV204TLB
_____	FactoryTalk View SE Maintenance and Troubleshooting	ABT-CCV206TLB
GuardLogix Controller Workstation (ABT-TDGRDLX1-B)	GuardLogix Application Development	ABT-SAFLOG101TLB
	GuardLogix Fundamentals and Maintenance	ABT-SAFLOG103TLB

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Automation Ferris Wheel Workstation

Catalog #: ABT-TDFW100
Catalog #: ABT-TDFW100C (with case)

Major Components

- Control hardware:
  - (1) 24V power supply
  - (1) 1769-PA2 power supply
  - 1 CompactLogix™ controller
  - (1) 1769-IQ16 DC input module
  - (1) 1769 OB16 DC output module
  - 1 PowerFlex® 40P AC drive with remote HIM
- Network hardware:
  - (1) 1783-US08T 8-port unmanaged Ethernet switch
  - 5 Ethernet cables
- Operator interface panel:
  - 1 illuminated E-stop
  - 7 push buttons
  - 5 pilot lights
  - 1 dual push button / pilot light
  - (1) 3-position switch
  - (2) 2-position switches (1 with key)
  - PanelView Plus 600 color terminal
- Ferris wheel assembly:
  - 1 plastic Ferris wheel with 6 seats
  - (1) 230V motor
  - 1 encoder
  - 1 photo-eye
  - (1) 2-color stack light
  - 1 plastic safety cube to cover the Ferris wheel assembly

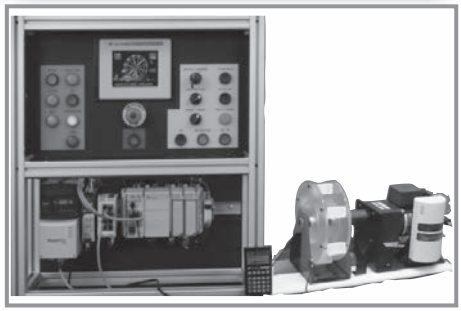
Dimensions

Automation Workstation

- Width: 25 in. (64 cm)
- Height: 28 in. (71 cm)
- Depth: 18 in. (46 cm)
- Weight: 90 lb (41 kg)

Ferris Wheel Assembly

- Width: 20 in. (51 cm)
- Height: 9.5 in. (24 cm)
- Depth: 8 in. (20 cm)
- Weight: 20 lb (9 kg)



*Lead Time = 9 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

Note: For the size with an optional shipping case, add 3 in. (8 cm) to the width and depth, and 8 in. (20 cm) to the height.

Integrated Architecture Workstation

Catalog #: ABT-TDIA-A

Major Components

- 0.5 Hp PowerFlex 40 AC drive
- Network hardware:
  - 1 ControlNet-to-DeviceNet linking device
  - 1 ControlNet Flex™ I/O adapter
  - 1 NETGEAR 5-port Ethernet switch
  - 1 RightSight™ photoeye
  - 1 tower light
- ControlLogix® hardware:
  - (1) 10-slot I/O chassis
  - (1) 1756 system power supply
  - 1 ControlLogix controller
  - 1 DC input module
  - 1 DC output module
  - 1 analog input module
  - 1 analog output module
  - 1 ControlNet bridge module
  - 1 EtherNet/IP bridge module
  - 1 DeviceNet scanner module
- Flex I/O hardware:
  - 1 DC input/output combo module
  - 1 analog input/output combo module
- Motion control hardware
  - 1 M08SE SERCOS interface module
  - 1 Kinetix® Integrated IAM Drive
- PanelView™ Plus 600 terminal

Dimensions

Box 1

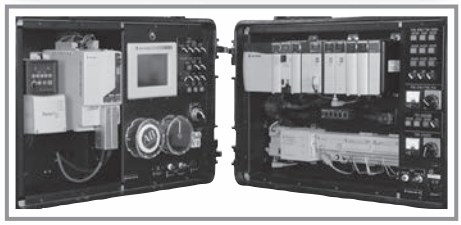
- Width: 31 in. (79 cm)
- Height: 22 in. (56 cm)
- Depth: 12 in. (30 cm)
- Weight: 70 lb (32 kg)

Box 2

- Width: 29 in. (74 cm)
- Height: 21 in. (53 cm)
- Depth: 12 in. (30 cm)
- Weight: 35 lb (16 kg)

Related Products

Introduction to Automation and Integrated Architecture Lab Book (ABT-CIA101TLB)



*Lead Time = 7 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

CompactLogix Workstation

Catalog #: ABT-TDIALITE-A

Major Components

- 0.5 Hp PowerFlex 40 AC drive
- Operator interface panel:
  - 2 dual input and output push buttons
  - 4 digital output pilot lights
  - 1 analog input
  - 1 analog meter
- CompactLogix® hardware:
  - 1 DIN Rail
  - 1 system power supply
  - 1 CompactLogix controller
  - 1 digital output module
  - 1 analog output module
- Point I/O® hardware:
  - 1 Ethernet adapter
  - 1 digital input/output module
  - 1 digital input/output module
  - 2 dual input and output push buttons
- PanelView™ Plus 600 terminal
- Stratix™ 8-port switch

Dimensions

- Height: 24 in. (61 cm)
- Width: 20 in. (51 cm)
- Depth: 13 in. (33 cm)
- Weight: 40 lb (18 kg)

Related Products

CompactLogix System Fundamentals & Troubleshooting Lab Book (ABT-CCP298TLB)

*Lead Time = 7 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

Integrated Architecture Basic Workstation

Catalog #: ABT-TDCMPX

*Lead Time = 7 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

Major Components

- 0.5 Hp PowerFlex 40 AC drive
- CompactLogix® hardware:
  - 1 DIN Rail
  - 1 system power supply
  - 1 CompactLogix controller
- 1 PanelView™ Plus 6, 600 terminal
- 1 Stratix 8-port switch

Dimensions

- Width: 15 in. (38 cm)
- Height: 18 in. (46 cm)
- Depth: 12 in. (31 cm)

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Connected Components Workstation

Catalog #: ABT-TDCONNCOMP

Major Components

- 1 MicroLogix 1400
- 1 PowerFlex 4M AC drive
- 1 PanelView™ C600 terminal
- 1 Stratix Ethernet switch
- Dual discrete inputs/outputs
- 3 selector switches
- 4 push buttons
- 1 analog output meter
- 2 photo eyes
- Ethernet cables

Dimensions

- Width: 20 in. (51 cm)
- Height: 29 in. (74 cm)

*Lead Time = 7 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

ControlLogix Workstation – No Motion

Catalog #: ABT-TDCLX2-A

Major Components

- Network hardware:
  - 1 ControlNet™ bridge module
  - 2 ControlNet taps
  - 2 terminators
- Control hardware:
  - (1) 7-slot I/O chassis
  - (1) 1756 system power supply
  - 1 ControlLogix controller
  - 1 DC input module
  - 1 DC output module
  - 1 analog input module
  - 1 analog output module
- Operator interface panel:
  - 12 illuminated push buttons
  - 2 potentiometers
  - 2 analog voltmeters

Dimensions

- Width: 20 in. (51 cm)
- Height: 16 in. (41 cm)
- Depth: 9 in. (23 cm)
- Weight: 90 lb (41 kg)

Related Products

- All Studio 5000 Logix Designer software procedures guides
- *ControlLogix Troubleshooting Guide* (ABT-1756-TSJ20)
- *Logix5000™ Systems Glossary* (ABT-1756-TSG10)
- *Logix5000 Documentation Reference Guide CD* (ABT-1756-DRG70)

*Lead Time = 7 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

ControlLogix Workstation – No Motion and No Controller (7-slot chassis)

Catalog #: ABT-TDCLX2NP

Major Components

- Network hardware:
  - 1 ControlNet bridge module
  - 2 ControlNet taps
  - 2 terminators
- Control hardware:
  - (1) 7-slot I/O chassis
  - (1) 1756 system power supply
  - 1 DC input module
  - 1 DC output module
  - 1 analog input module
  - 1 analog output module
- Programming cable
- Operator interface panel:
  - 12 illuminated push buttons
  - 2 potentiometers
  - 2 analog voltmeters

Dimensions

- Width: 20 in. (51 cm)
- Height: 16 in. (41 cm)
- Depth: 9 in. (23 cm)
- Weight: 90 lb (41 kg)

Related Products

- All Studio 5000 Logix Designer software procedures guides
- *ControlLogix Troubleshooting Guide* (ABT-1756-TSJ20)
- *Logix5000™ Systems Glossary* (ABT-1756-TSG10)
- *Logix5000 Documentation Reference Guide CD* (ABT-1756-DRG70)

*Lead Time = 7 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

ControlLogix Workstation – No Motion (10-slot chassis)

Catalog #: ABT-TDCLX3-B

Major Components

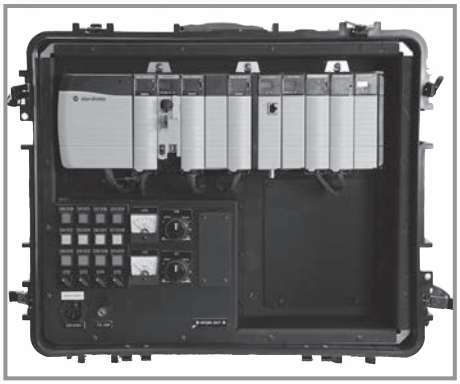
- Network hardware:
  - 1 EtherNet module
  - 1 ControlNet bridge module
  - 2 ControlNet taps
  - 2 terminators
- Control hardware:
  - (1) 10-slot I/O chassis
  - (1) 1756 system power supply
  - 1 ControlLogix controller
  - 1 DC input module
  - 2 DC output module
  - 1 analog input module
  - 1 analog output module
- Operator interface panel:
  - 12 illuminated push buttons
  - 2 potentiometers
  - 2 analog voltmeters

Dimensions

- Width: 20 in. (51 cm)
- Height: 16 in. (41 cm)
- Depth: 9 in. (23 cm)
- Weight: 70 lb (33 kg)

Related Products

- All Studio 5000 Logix Designer software procedures guides
- *ControlLogix Troubleshooting Guide* (ABT-1756-TSJ20)
- *Logix5000™ Systems Glossary* (ABT-1756-TSG10)
- *Logix5000 Documentation Reference Guide CD* (ABT-1756-DRG70)
- Labs books associated with the ControlLogix/Studio 5000 curriculum.



*Lead Time = 7 weeks**

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ControlLogix Workstation – No Motion and No Controller (10-slot chassis)

Catalog #: ABT-TDCLX3NP

Major Components

- Network hardware:
  - 1 EtherNet module
  - 1 ControlNet bridge module
  - 2 ControlNet taps
  - 2 terminators
- Control hardware:
  - (1) 10-slot I/O chassis
  - (1) 1756 system power supply
  - 1 DC input module
  - 2 DC output modules
  - 1 analog input module
  - 1 analog output module
- Programming cable
- Operator interface panel:
  - 12 illuminated push buttons
  - 2 potentiometers
  - 2 analog voltmeters

Dimensions

- Width: 20 in. (51 cm)
- Height: 16 in. (41 cm)
- Depth: 9 in. (23 cm)
- Weight: 70 lb (33 kg)

Related Products

- All Studio 5000 Logix Designer software procedures guides
- *ControlLogix Troubleshooting Guide* (ABT-1756-TSJ20)
- *Logix5000™ Systems Glossary* (ABT-1756-TSG10)
- *Logix5000 Documentation Reference Guide CD* (ABT-1756-DRG70)

*Lead Time = 7 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

ControlLogix Workstation (10-slot chassis with Ultra 3000)

Catalog #: ABT-TDCLX3K-A

Major Components

- Network hardware:
  - 1 ControlNet™ bridge module
  - 1 EtherNet™ bridge module
  - 2 ControlNet taps
  - 2 terminators
- Control hardware:
  - (1) 10-slot I/O chassis
  - (1) 1756 system power supply
  - 1 ControlLogix controller
  - 1 DC input module
  - 2 DC output modules
  - 1 analog input module
  - 1 analog output module
- Motion control hardware:
  - 1 SERCOS motion module
  - 2 Ultra 3000 servo drives
  - 2 TLY-series motors
- Operator interface panel:
  - 12 illuminated push buttons
  - 2 potentiometers
  - 2 analog voltmeters

Dimensions

- Width: 20 in. (51 cm)
- Height: 16 in. (41 cm)
- Depth: 9 in. (23 cm)
- Weight: 90 lb (41 kg)

Related Products

- All Studio 5000 Logix Designer software procedures guides
- *ControlLogix Troubleshooting Guide* (ABT-1756-TSJ20)
- *Logix5000™ Systems Glossary* (ABT-1756-TSG10)
- *Logix5000 Documentation Reference Guide CD* (ABT-1756-DRG70)

*Lead Time = 7 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

AADvance™ Control Systems Workstation

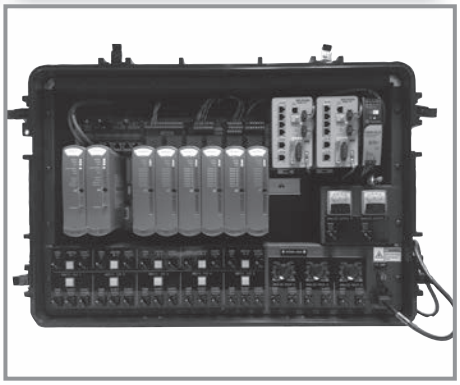
Catalog #: ABT-TDAADV **

Major Components

- Network hardware:
  - 2 Stratix 5700™ industrial Ethernet switches
- Control hardware:
  - 2 controllers
  - 2 digital input modules
  - 2 digital output modules
  - 1 analog input module
  - 1 analog output module
- Operator interface panel:
  - 5 digital inputs
  - 5 digital outputs
  - 3 analog inputs
  - 2 analog outputs
  - 33 wire off or short simulation switches

Dimensions

- Width: 29 in. (74 cm)
- Height: 21 in. (54 cm)
- Depth: 10 in. (26 cm)



*Lead Time = 12 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

** AADvance Controls Systems workstations are available for order by qualified System Integrators and customers. Please call to ensure you meet this requirement.

GuardLogix™ Controller Workstation

Catalog #: ABT-TDGRDLX1-B

Major Components

- GuardLogix primary controller
- GuardLogix safety partner
- 7-slot ControlLogix chassis
- ControlLogix power supply
- 8 dual discrete inputs/outputs
- 1 selector switch
- CompactBlock™ I/O safety modules:
  - 1791ES-IB16 EtherNet/IP module with 16 safety inputs and 16 pulse test outputs
  - 1791DS-IB8XOB8 DeviceNet module with 8 safety inputs, 8 safety solid-state outputs
- Communication modules:
  - EtherNet/IP bridge module
  - DeviceNet bridge module
- Light curtain
- E-stop push button
- Patch connectors
- Stratix 2000™ 5-port Ethernet switch
- MatGuard™ safety mat

Dimensions

- Width: 24 in. (61 cm)
- Height: 20 in. (51 cm)
- Depth: 12 in. (30 cm)
- Weight: 58 lb (27 kg)

Related Products

- *GuardLogix Documentation Reference Guide CD* (ABT-GRDLX-DRG70)
- *GuardLogix Fundamentals and Maintenance Lab Book* (ABT-SAF-LOG101TLB)
- *GuardLogix Application Development Lab Book* (ABT-SAF-LOG103TLB)

*Lead Time = 7 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

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GuardPLC™ Workstation

Catalog #: ABT-TDGRDPLC1

Major Components

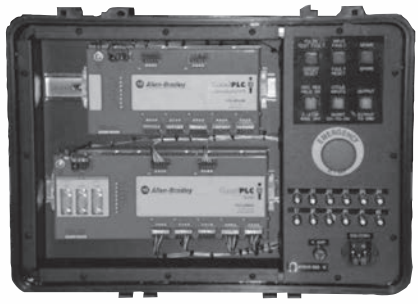
- GuardPLC 1600 controller
- Distributed I/O expansion module
- Power switch
- 120V / 220V plug receptacle
- E-stop push button
- 6 dual discrete inputs/outputs
- Patch connectors

Dimensions

- Width: 19 in. (48 cm)
- Height: 15 in. (38 cm)
- Depth: 8 in. (20 cm)
- Weight: 20 lb (9 kg)

Related Products

- *RSLogix Guard PLUS and GuardPLC Procedures Guide* (ABT-1753-TSJ50)
- *GuardPLC Documentation Reference Guide CD* (ABT-1753-DRG70)



*Lead Time = 7 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

PowerFlex® DC Drive Workstation

Catalog #: ABT-TDPFDC

Major Components

- 3 Hp PowerFlex Digital DC drive
- EtherNet/IP communications
- 230V 3-phase AC operation
- Drive operator panel that includes:
  - Emergency stop button
  - Programmable digital outputs
  - User-configurable digital inputs
  - 0…10V speed reference
  - 0…10V analog output
- Digital programming keypad
- *Optional:* Enhanced digital programming keypad
- 3 Hp DC motor with encoder feedback and speed switch
- User-accessible wiring terminals
- Hinged covers for drive access

Dimensions (Drive Unit)

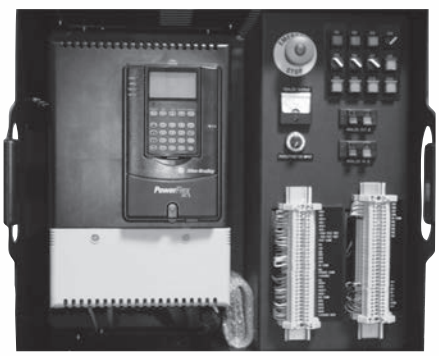
- Width: 23 in. (59 cm)
- Height: 20 in. (51 cm)
- Depth: 16 in. (41 cm)
- Weight: 65 lb (30 kg)

Dimensions (Motor)

- Width: 38 in. (96 cm)
- Height: 20 in. (51 cm)
- Depth: 24 in. (60 cm)
- Weight: 100 lb (45 kg)

Related Products

PowerFlex DC Documentation Reference Guide CD (ABT-20P-DRG70)



*Lead Time = 7 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

PowerFlex 700 AC Drive Workstation

Catalog #: ABT-TDPF700

Major Components

- 1 Hp PowerFlex 700 AC drive
- EtherNet communications
- 120V AC operation
- Drive operator panel that includes:
  - Programmable digital output
  - User-configurable digital inputs
  - 0…10V speed reference
  - 0…10V analog output
- Human interface module
- 1 Hp AC motor with encoder feedback
- Fault simulation switches
- User-accessible wiring terminals

Compatibility

The PowerFlex 700 workstation can be used with the Fan Demo Unit (ABT-TDPF700FAN).

Dimensions (Drive Unit)

- Width: 25 in. (64 cm)
- Height: 20 in. (51 cm)
- Depth: 17 in. (43 cm)
- Weight: 57 lb(26 kg)

Dimensions (Motor)

- Width: 25 in. (64 cm)
- Height: 20 in. (51 cm)
- Depth: 12 in. (30 cm)
- Weight: 67 lb (30 kg)

Related Products

- *PowerFlex 700 Standard and Vector Control Troubleshooting Guide* (ABT-20B-TSJ20)
- *PowerFlex 700 Standard and Vector Control Procedures Guide* (ABT-20B-TSJ50)
- *PowerFlex 700 Standard and Vector Control Documentation Reference Guide CD* (ABT-20B-DRG70)
- Lab books associated with the PowerFlex 700 curriculum

*Lead Time = 7 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

Note: For the size with an optional shipping case, add 3 in. (8 cm) to the width and depth, and 8 in. (20 cm) to the height.

PowerFlex 700S Phase II AC Drive Workstation

Catalog #: ABT-TDPF700S

Major Components

- Digital inputs:
  - (4) 24V DC inputs
  - 3 programmable
  - 1 enable input
- Digital outputs:
  - 2 open collector, max load 25 mA
  - 1 relay, 24V DC
- (2) ±10V DC / ±1V DC differential analog input, 13 bit + sign
- (2) ±10V DC differential analog outputs, 11 bit + sign
- (2) 5V/12V encoder inputs quadrature/differential
- DriveLogix™ compact I/O up to 1 rack (8) modules
- 1 Hp motor, 230V/460V
- 1 PowerFlex 700S Phase II drive, 115V/23V 3-phase input

Dimensions (Drive Unit)

- Width: 28 in. (71 cm)
- Height: 20 in. (52 cm)
- Depth: 17 in. (43 cm)
- Weight: 98 lb (45 kg)

Dimensions (Motor)

- Width: 26 in. (66 cm)
- Height: 20 in. (51 cm)
- Depth: 12 in. (30 cm)
- Weight: 68 lb (31 kg)

Related Products

PowerFlex 750-Series AC Drives Documentation Reference Guide CD (ABT-20G-DRG70)

*Lead Time = 7 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

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PowerFlex 753/755 Combo Workstation

Catalog #: ABT-TDPF750COMBO

Major Components

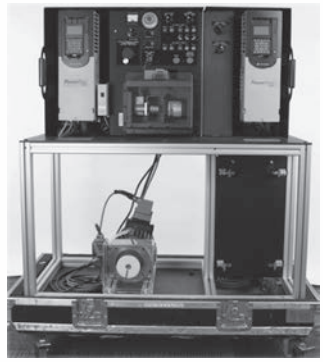
- 1 Hp PowerFlex 753 AC drive:
  - EtherNet/IP comms via carrier card
  - Encoder card
- 1 Hp PowerFlex 755 AC drive:
  - Embedded EtherNet/IP
  - Safe speed monitor card
  - Dual encoder card
  - Universal feedback card
  - Auxiliary power supply
- I/O cards
- 120V AC operation
- 1/30 Hp 230V induction motor with optical incremental encoder (for the PowerFlex 755 drive only)
- 1 Hp motor with encoder
- Human interface modules
- Drive selector switch
- Drive operator panel:
  - Digital inputs and outputs
  - 0. . . 10V speed reference
  - 0. . . 10V analog output
  - User-configurable analog input
  - User-configurable analog output
  - Safe-speed relay with switch
  - Safe-off 24V LED module

Dimensions

- Width: 48 in. (122 cm)
- Height: 55 in. (140 cm)
- Depth: 26 in. (66 cm)
- Weight: 400 lb (181 kg)

Related Products

PowerFlex 750-Series AC Drives Documentation Reference Guide CD (ABT-20G-DRG70)



*Lead Time = 9 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

PowerFlex 753 Workstation

Catalog #: ABT-TDPF753

Major Components

- 1 Hp PowerFlex 753 AC drive
- Communications carrier card with EtherNet/IP adapter
- 120V AC operation
- Drive operator panel that includes:
  - Programmable digital outputs
  - Programmable digital inputs
  - 0. . . 10V speed references
  - 0. . . 10V analog outputs
  - User-configurable analog inputs
  - User-configurable analog outputs
- Human interface module
- 1 Hp AC motor with encoder feedback

Dimensions (Drive Unit)

- Width: 25 in. (64 cm)
- Height: 20 in. (51 cm)
- Depth: 16.9 in. (43 cm)
- Weight: 150 lb (26 kg)

Dimensions (Motor with Case)

- Width: 25 in. (64 cm)
- Height: 20 in. (51 cm)
- Depth: 14 in. (36 cm)
- Weight: 67 lb (30 kg)

Note: For the size with shipping case, add 3 in. (8 cm) to the width and depth, and 8 in. (20 cm) to the height.

Related Products

PowerFlex 750-Series AC Drives Documentation Reference Guide CD (ABT-20G-DRG70)

*Lead Time = 7 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

PowerFlex 755 Workstation

Catalog #: ABT-TDPF755

Major Components

- 1 Hp PowerFlex 755 AC drive:
  - Embedded EtherNet/IP communications
  - Communications carrier card
- 120V AC operation
- 1/30 Hp 230V induction motor with optical incremental encoder
- Human interface module
- Drive operator panel that includes:
  - Programmable digital outputs
  - Programmable digital inputs
  - 0…10V speed reference
  - 0…10V analog output
  - User-configurable analog input
  - User-configurable analog output
  - Safe-speed relay with switch
  - Safe-off 24V LED module

Compatibility

The PowerFlex 700 workstation can be used with the Fan Demo Unit (ABT-TDPF700FAN).

Dimensions

- Width: 25 in. (61 cm)
- Height: 20 in. (51 cm)
- Depth: 13 in. (41 cm)
- Weight: 70 lb (32 kg)

Note: This unit comes with a case. For the size with shipping case, add 3 in. (8 cm) to the width and depth, and 8 in. (20 cm) to the height.

*Lead Time = 7 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

Fan Demo Unit Workstation

Catalog #: ABT-TDPF700FAN

Major Components

- Vertical-mounted fan
- 230V AC motor
- Manual pressure damper
- Upstream air pressure transducer
- Motor connector and cable
- I/O connector and cable
- AC power cord
- 2 A fuse
- 4…20 mA output

Compatibility

The Fan Demo can be used with the PowerFlex 700 (ABT-TDPF700) and PowerFlex 755 (ABT-TDPF755) workstations.

Dimensions

- Width: 14 in. (36 cm)
- Height: 20 in. (51 cm)
- Depth: 15 in. (38 cm)
- Weight: 25 lb (11 kg)

*Lead Time = 7 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

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Kinetix® 6000 Servo Drive Workstation

Catalog #: ABT-TD20941 (120V AC),
Catalog #: ABT-TD20942 (230V AC, 20 A)

Major Components

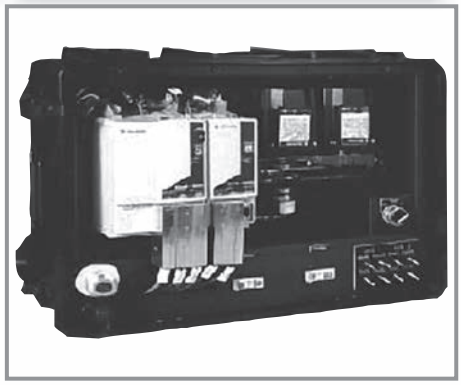
- 2-axis power rail
- 120V AC operation
- Integrated axis module
- MP-series motors
- SERCOS communication card
- Illuminated mushroom E-stop push button
- Integral surge suppression
- Auxiliary encoder
- Cable package:
  - Universal feedback cable
  - Universal motor power cable
  - Lo-profile I/O connector kit
  - Lo-profile feedback connector kit
  - Lo-profile auxiliary feedback connector kit

Dimensions

- Width: 25 in. (64 cm)
- Height: 19 in. (48 cm)
- Depth: 10 in. (25 cm)
- Weight: 70 lb (32 kg)

Related Products

- *Studio 5000™ Logix Designer and Logix5000™ Motion Control Procedures Guide* (ABT-1756-TSJ52)
- *Motion Programming Using Ladder Logic Lab Book* (ABT-CCN142TLB)



*Lead Time = 7 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

Kinetix 6000 Servo Drive with Safe Off Workstation

Catalog #: ABT-TD2094SO

Major Components

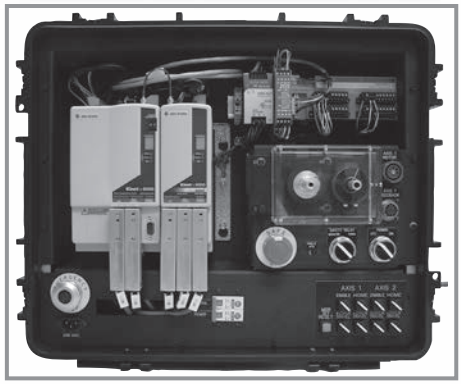
- 2-axis power rail
- 120V AC operation
- Integrated axis module
- TLY motor
- SERCOS card
- Safety I/O card
- Fiber optic communication option
- Illuminated mushroom E-stop push button
- Integral surge suppression
- Auxiliary encoder
- Cable package:
  - Universal feedback cable
  - Universal motor power cable
  - Lo-profile I/O connector kit
  - Lo-profile feedback connector kit
  - Lo-profile auxiliary feedback connector kit

Dimensions

- Width: 25 in. (64 cm)
- Height: 19 in. (48 cm)
- Depth: 10 in. (25 cm)
- Weight: 80 lb (32 kg)

Related Products

- *Motion Control Glossary* (ABT-M100-TSG10)
- *Studio 5000 Logix Designer and Logix5000™ Motion Control Procedures Guide* (ABT-1756-TSJ52)



*Lead Time = 7 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

Kinetix 6500 Workstation

Catalog #: ABT-TDK6500 **
Catalog #: ABT-TDK6500EN2TR (with EN2TR) **

Major Components

- Kinetix 6500 integrated axis module (460V AC)
- Kinetix 6500 axis module (460V AC)
- 2 Ethernet safe speed monitoring control modules
- 2 MPL motors
- 5-port Stratix Ethernet switch
- 1783- ETAP
- TLS-3-GD2 guard locking switch
- Power supply 24V, 5 A
- Safe-off button
- 2-position selector switch
- 2 photo switches

IMPORTANT:

This unit requires a controller and connecting modules. Please see the Important Ordering Information.

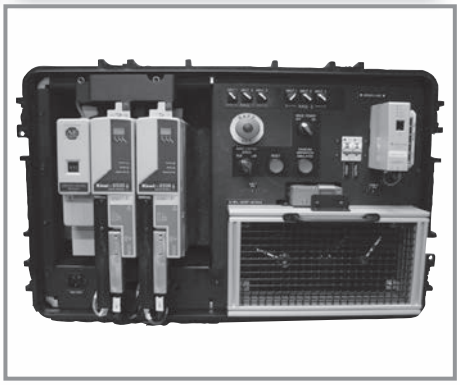
Dimensions

- Width: 28 in. (71 cm)
- Height: 20 in. (51 cm)
- Depth: 17 in. (43 cm)
- Weight: 113 lb (51 kg)

** Important Ordering Information

This unit must have the following additional equipment to operate:

- A 10/100 Mbps Ethernet bridge:
  - Order ABT-TDK6500EN2TR for a unit with a bridge
  - Order ABT-TDK6500 for a unit without a bridge (provide your own)
- A ControlLogix controller to
  - Order ABT-TDCLX3-B (complete ControlLogix workstation)
  - If you chose to buy the Kinetix unit without the ControlLogix workstation, you will need your own controller, I/O, and interface.



*Lead Time = 7 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

Ultra™ 3000 Servo Drive Workstation

Catalog #: ABT-TD20981 (120V AC),
Catalog #: ABT-TD20982 (230V AC, 20 A)

Major Components

- Ultra 3000 drive
- MPL-A310P-MK22AA drive motor
- External encoder
- 120V AC operation
- UltraWare programming software
- DeviceNet communications
- Complete cable package:
  - Drive cable
  - Feedback cable
  - Power cable
  - Serial cable

Dimensions

- Width: 22 in. (56 cm)
- Height:14 in. (36 cm)
- Depth: 9 in. (23 cm)
- Weight: 33 lb (15 kg)

Related Products

- *Motion Control Glossary* (ABT-M100-TSG10)
- *Studio 5000 Logix Designer and Logix5000™ Motion Control Procedures Guide* (ABT-1756-TSJ52)

*Lead Time = 7 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

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ArmorStart® Distributed Motor Controller Workstation

Catalog #: ABT-TDARMORDMC

Major Components

- VFD ArmorStart distributed motor controller:
  - DeviceNet communications and 24V control
- Local CB disconnect
- DeviceNet configuration terminal
- I/O capabilities:
  - 4 DC inputs (sourced from DeviceNet power 24V DC)
  - 2 relay outputs (sourced from control power)

Dimensions

- Width: 23 in. (58 cm)
- Height: 19 in. (48 cm)
- Depth: 15 in. (38 cm)
- Weight: 89 lb (40 kg)

Related Products

DeviceNet and RSNetWorx Procedures Guide (ABT-N100-TSJ50)

*Lead Time = 7 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

SLC 500 Workstation - SLC 5/04 Processor (10 Slot Chassis)

Catalog #: ABT-TDSLC1 (120V AC) **
Catalog #: ABT-TDSLC2 (220V AC) **

Major Components

- SLC 5/04 processor
- 10-slot I/O chassis
- Power supply (5 A)
- Digital I/O modules:
  - 3 DC input modules (16 pt.) - sink 10. . .30V DC
  - 3 DC output modules (16 pt.) - source 10. . .50V DC
- Intelligent I/O modules:
  - 2 analog combo modules
- Advanced interface converter
- Bulletin 800T E-stop push button
- Covered empty chassis slot

Accessories (Optional –Sold Separately)

- 1746 PID Simulation Kit:
  - Catalog number ABT-TDSLCPID
- Universal I/O Simulator Workstation:
  - Catalog number ABT-TDUIO or ABT-TDUIO2

Dimensions

- Width: 24 in. (61 cm)
- Height: 19 in. (41 cm)
- Depth: 13 in. (32 cm)
- Weight: 50 lb (23 kg)

Related Products

- All SLC 500 processors, procedures, troubleshooting, and documentation reference guides
- *SLC 500 & RSLogix 5000 Maintenance & Troubleshooting Lab Book* (ABT-CCPS43TLB)
- Lab books associated with the SLC 500/RSLogix 500 curriculum

** Important Ordering Information

This unit does not contain onboard I/O simulation. The Universal I/O Simulator workstation (ABT-TDUIO1 or ABT-TDUIO2) is sold separately.

*Lead Time = 7 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

SLC 500 Workstation - SLC 5/05 Processor (7 Slot Chassis)

Catalog #: ABT-TDSLCN

Major Components

- SLC 5/05 processor
- 7-slot I/O chassis
- Power supply (5 A)
- Discrete modules
  - (2) 32-point input modules (24V DC)
  - (2) 32-point output modules (24V DC)
- Analog modules
  - 1 input module
  - 1 output module
- 1 AIC isolated link coupler
- 2 remote BCD displays with 12V DC input
- 2 DC volt meters (0. . . 10V DC)
- 2 bar graph meters (Texmate)
- 4 Potentiometers (10K Ohm)
- (8) 3-series thumbwheel switches (BCD/Hexadecimal)
- 1 volt regulator (12V)
- Hard-shell enclosure

Dimensions

- Width: 28 in. (71 cm)
- Height: 20 in. (51 cm)
- Depth: 9 in. (23 cm)
- Weight: 50 lb (23 kg)

Related Products

All SLC 500 processors, procedures, troubleshooting, and documentation reference guides

*Lead Time = 7 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

SLC 500 Workstation - SLC 5/03 Processor (7 Slot Chassis)

Catalog #: ABT-TDSLCN2

Major Components

- SLC 5/03 processor
- 7-slot I/O chassis
- Power supply (rack mount)
- Digital I/O
  - 1 DC input module (16 pt.)
  - 1 DC output module (16 pt.)
- Analog I/O
  - 1 analog input/output combo module
- 2 panel meters (0. . . 10V)
- (2) 1K pots
- 4 selector switches

Dimensions

- Width: 19 in. (48 cm)
- Height: 14 in. (36 cm)
- Depth: 7 in. (18 cm)
- Weight: 32 lb (15 kg)

Related Products

All SLC 500 processors, procedures, troubleshooting, and documentation reference guides

*Lead Time = 7 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

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Universal I/O Simulator Workstation

Catalog #: ABT-TDUIO1 (120V AC) **
Catalog #: ABT-TDUIO2 (220V AC) **

Major Components

- Digital Inputs:
  - 12 Bul. 800B NO/NC maintained push buttons
  - 3 Bul. 800B NO/NC momentary push buttons
  - 1 Bul. 800B NO/NC momentary push button
- Digital outputs:
  - 16 Bul. 800B push-to-test pilot lights
- Bul. 800T E-stop push button
- Intelligent inputs:
  - 4 Bul. 800T 10KW potentiometers
- Intelligent outputs:
  - 2 DC analog meters (0. . .10V)
  - 2 DC digital bar graph meters (0. . .5V)
- BCD inputs:
  - 1 four-digit BCD thumbwheel input switch (0. . .9)
  - 1 four-digit BCD thumbwheel input switch (0. . .F)
- BCD outputs:
  - 2 four-digit BCD LED output displays
- 4 Interface cables

Dimensions

- Width: 25 in. (64 cm)
- Height: 21 in. (53 cm)
- Depth: 10 in. (25 cm)
- Weight: 70 lb (32 kg)

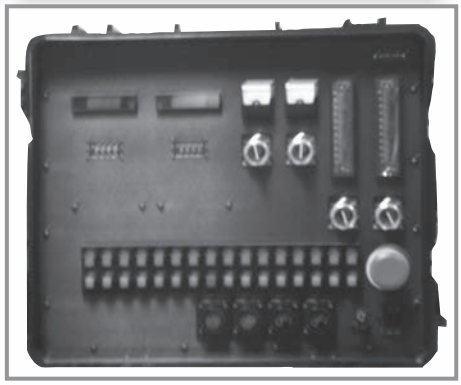
Related Products

- All available PLC-5/RSLogix5 job aids
- All available SLC 500/RSLogix 500 job aids
- Lab books associated with the SLC 500/RSLogix 500 curriculum (when used with a processor rack system)

** Important Ordering Information

These units are sold separate from the processor rack systems:

- 1746 I/O Rack System (ABT-TDSLC1 or ABT-TDSLC2)



*Lead Time = 7 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

DeviceNet™ Workstation

Catalog #: ABT-TDDNET2-A

Major Components

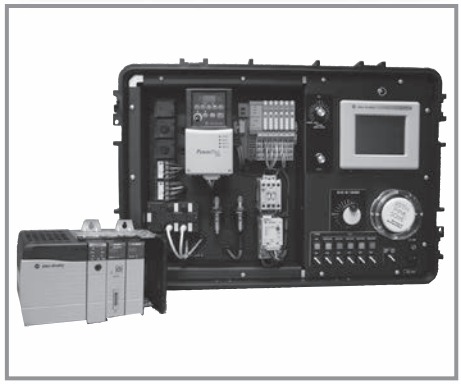
- Drive system:
  - 1 PowerFlex 40 drive
  - 1 PowerFlex 40 DeviceNet adapter
  - 1 AC motor
- ControlLogix system:
  - 4-slot chassis
  - 1 power supply
  - ControlLogix® controller
  - EtherNet I/P bridge module
  - DeviceNet bridge scanner module
- Absolute multi-turn encoder
- 1734-ADN Point I/O DeviceNet adapter:
  - 3 Point I/O 4-pt. input modules
  - 3 Point I/O 4-pt. output modules
- PanelView™ terminal
- 2 terminators
- 2 open QuikLink taps
- 2 micro QuikLink taps
- 4 DeviceNet drop lines
- DeviceNet flat media
- ArmorBlock® MaXum™ input module
- ArmorBlock MaXum base
- 2 DeviceNet proximity sensors
- E3 overload relay:
  - Phase and load simulators

Dimensions

- Width: 29 in. (74 cm)
- Height: 20 in. (51 cm)
- Depth: 10 in. (25 cm)
- Weight: 45 lb (20 kg)

Related Products

- *DeviceNet and RSNetWorx Troubleshooting Guide* (ABT-N100-TSJ20)
- *DeviceNet and RSNetWorx Procedures Guide* (ABT-N100-TSJ50)
- *DeviceNet and RSNetWorx Configuration and Troubleshooting Lab Book* (ABT-CCP164TLB)



*Lead Time = 7 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

EtherNet/IP™ Workstation

Catalog #: ABT-TDENET5700 **

Major Components

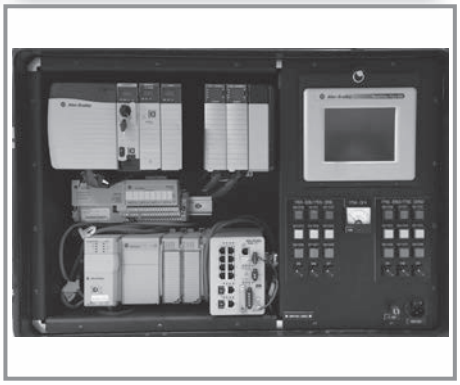
- 7-slot ControlLogix chassis with the following modules:
  - ControlLogix Controller
  - EtherNet/IP bridge module
  - EtherNet/IP web server module
  - Digital input module
  - Digital output module
- ControlLogix power supply
- CompactLogix™ chassis with the following modules:
  - CompactLogix controller
  - 1769 digital input module
  - 1769 digital output module
- 1794-AENT EtherNet/IP adapter module with a four channel non-isolated analog output module
- PanelView Plus 600 terminal
- Stratix Switch (select 6000 or 5700)
- 18 dual discrete inputs/outputs
- 6 selector switches
- 1 analog output meter
- 1 photoeye

Dimensions

- Width: 30 in. (76 cm)
- Height: 21 in. (53 cm)
- Depth: 13 in. (33 cm)
- Weight: 45 lb (20 kg)

Related Products

- *EtherNet/IP Procedures Guide* (ABT-N300-TSJ50)
- *EtherNet/IP Documentation Reference Guide CD* (ABT-N300-DRG70)
- *EtherNet/IP Design and Troubleshooting Lab Book* (ABT-CCP178TLB)



*Lead Time = 7 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

** Important Ordering Information

This unit is available with different switches:

- For a unit with a Stratix 5700 switch, order ABT-TDENET5700.
- For a unit with a Stratix 8000 switch, DeviceNet™ scanner, and DeviceNet photo-eye, order ABT-TDENETS8K-A.
- For a unit with a Stratix 6000 switch, DeviceNet™ scanner, and DeviceNet photo-eye, order ABT-TDENETIP-A

Intelligent Motor Control Workstation

Catalog #: ABT-TDIMC

Major Components (Control and I/O Workstation)

- 4-slot ControlLogix® chassis with the following modules:
  - ControlLogix controller
  - DeviceNet bridge module
  - EtherNet/IP module
  - Slot filler
- PanelView Plus 700 terminal
- Stratix 2000 Ethernet switch
- DeviceNet analog limit switch and limit switch lever
- 24V DeviceNet I/O block, 8-input
- N.O. selector switch, 2-position

Major Components (Motor Control/Drive Workstation)

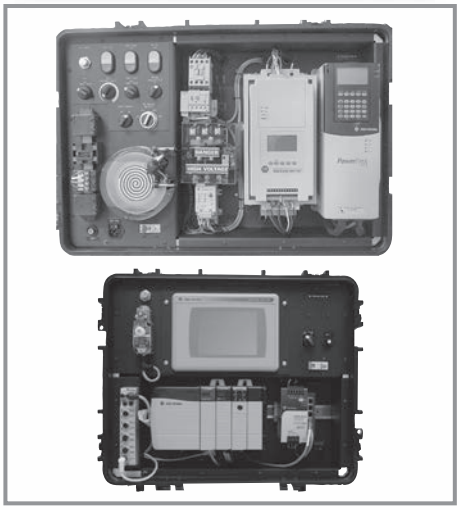
- E1 Plus DeviceNet module
- PowerFlex 700 Vector Control AC drive with LCD HIM
- 24V AC/DC SMC Flex controller
- SMC Flex DeviceNet module
- 2 N.O. selector switches, 2-position
- 3 multi-function LEDs, 2-position

Dimensions (Control and I/O Workstation)

- Width: 24 in. (61 cm)
- Height: 20 in. (51 cm)
- Depth: 13 in. (33 cm)
- Weight: 44 lb (20 kg)

Dimensions (Motor Control/Drive Workstation)

- Width: 28 in. (71 cm)
- Height: 20 in. (51 cm)
- Depth: 15 in. (38 cm)
- Weight: 104 lb (47 kg)



*Lead Time = 7 weeks**

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IntelliCENTER Workstation

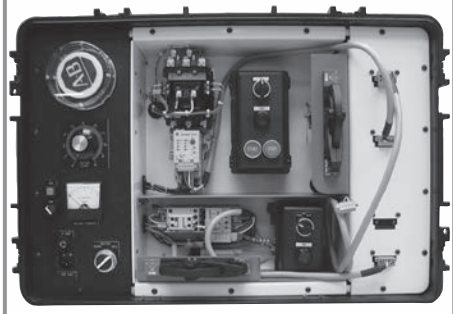
Catalog #: ABT-TDINTCENTER

Major Components

- Flywheel and protective cover
- Load rheostat with knob
- Simpson 1257 analog load meter
- 2-position selector, NEMA/MCS
- NEMA starter with E3 overload relay
- MCC operator station with Hand/Off/Auto selector, red RUN lamp and Start/Stop push buttons
- MCC disconnect handle simulator with 802A-C33P4-S7 limit switch
- IEC contactor with 193 overload relay
- DeviceNet contactor interface
- 3-position Hand/Off/Auto selector
- Red run lamp
- Surface mount DeviceNet connectors

Dimensions

- Width: 30 in. (76 cm)
- Height: 20 in. (51 cm)
- Depth: 13 in. (41 cm)
- Weight: 70 lb (33 kg)



*Lead Time = 7 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

Process Workstation (FOUNDATION FieldBus and HART Units)

Catalog #: ABT-TDPROCESS-A

Major Components (HART Workstation)

- 4-slot ControlLogix chassis:
  - ControlLogix controller
  - EtherNet/IP bridge module
  - HART module
  - ControlNet redundant module
- Endress & Hauser temperature transmitter
- Stratix Ethernet switch, 5-port
- Flex I/O
  - Flex I/O adapter
  - Flex I/O digital combo module
  - Flex I/O analog combo module

Major Components (Fieldbus Workstation)

- Endress & Hauser pressure transmitter
- FOUNDATION Fieldbus linking device

Dimensions (HART Workstation)

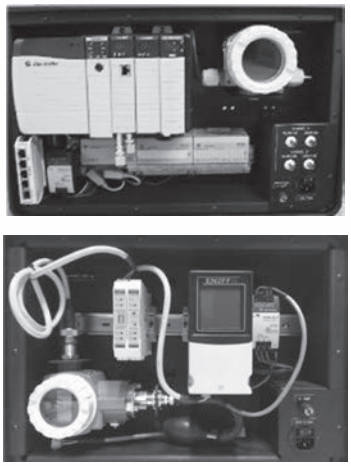
- Width: 32 in. (81 cm)
- Height: 26 in. (66 cm)
- Depth: 16 in. (41 cm)
- Weight: 35 lb (156 kg)

Dimensions (Fieldbus Workstation)

- Width: 19 in. (48 cm)
- Height: 14 in. (36 cm)
- Depth: 7 in. (18 cm)
- Weight: 31 lb (14 kg)

Related Products

Studio 5000 Logix Designer and Logix5000 Procedures Guide (ABT-1756-TSJ50)



*Lead Time = 7 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

PlantPAx™ Process System Workstation

Catalog #: ABT-TDPAX

Major Components (Control Workstation)

- Redundant controller chassis
- Redundant Stratix 8000 switches
- 15 in. VersaView with touch screen

Major Components (I/O Workstation)

- Remote ControlLogix digital and HART I/O modules
- 3 simulated valves with open and closed feedback
- 7 hand switches
- 2 HART potentiometers
- 4. . .20 mA potentiometer
- 4. . .20 mA digital ammeter
- 24V DC motor with HOA switch
- 3-color stack light
- Fluke 87 multimeter

Major Components (MCC Workstation)

- PowerFlex 40 drive
- E1 Plus overload relay with EtherNet/IP module
- Stratix 6000 switch
- 220V AC motor with hand brake
- 115V AC motor with hand brake and Hand/Off/Auto switch

Dimensions (Control Workstation)

- Width: 39 in. (97 cm)
- Height: 22 in. (56 cm)
- Depth: 14 in. (36 cm)
- Weight: 177 lb (80 kg)

Dimensions (I/O Workstation)

- Width: 29 in. (73 cm)
- Height: 22 in. (56 cm)
- Depth: 14 in. (36 cm)
- Weight: 139 lb (63 kg)

Dimensions (MCC Workstation)

- Width: 22 in. (55 cm)
- Height: 22 in. (56 cm)
- Depth: 14 in. (36 cm)
- Weight: 124 lb (56 kg)

Related Products

PlantPAx Process System Troubleshooting Guide (ABT-P100-TSJ20)

*Lead Time = 9 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

Note: Units come with shipping cases which add 3 in. (8 cm) to width/depth and 8 in. (20 cm) to height for the given dimensions.

PanelView™ Plus 6 Workstation

Catalog #: ABT-TDPV61000 (1000 terminal)

Catalog #: ABT-TDPV6700 (700 terminal)

Major Components

- PanelView Plus 6 terminal with touch screen operation
- Ethernet cable
- Swing stand
- Hard-shell enclosure

Compatibility

The PanelView Plus 6 workstation can be used with the ControlLogix Workstation – No Motion (ABT-TDCLX3-B).

Dimensions

- Width: 13 in. (33 cm)
- Height: 10 in. (25 cm)
- Depth: 3 in. (6 cm)
- Weight: 6 lb (3 kg)

Related Products

- *FactoryTalk View ME and PanelView Plus Procedures Guide* (ABT-2711P-TSJ50)
- *FactoryTalk View ME & PanelView Plus Programming Lab Book* (ABT-CCV204TLB)

*Lead Time = 7 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

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Pump and Power Transmission Workstation

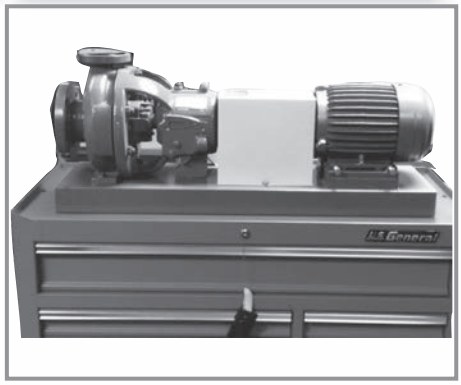
Catalog #: ABT-TDMET

Major Components

- Centrifugal pump
- Mechanical seal
- Coupling
- Drive motor
- Component hardware:
  - 2 sets of Starrett dial indicators with bases
  - 2 sets of Starrett universal clamps
  - 1 dial caliper
  - Drive socket sets (3/8 in. and 1/2 in.)
  - 1 set of belt sheaves (1 at 7 in. with bushings and 1 at 4 in. with bushings)
  - 1 set of chain sprockets (1 at 6 in. and 1 at 3 in. with bushings)
  - 1 sheave gauge
  - 1 belt tension gauge
  - 1 V-belt B47
  - 1 set of open end wrenches
  - 1 set of crow's feet wrenches (3/8. . .7/8 in.)
  - 1 torque wrench
  - 10 foot #40 single roller chain
  - 1 box of stainless shims
  - 1 spanner wrench
  - 2 stub shafts with withdrawal sleeves
  - 2 bearings (6210, 22213EK)

Dimensions

- Width: 45 in. (114.3 cm)
- Height: 55 in. (139.7 cm)
- Depth: 18 in. (45.7 cm)
- Weight: 600 lb (272 kg)



*Lead Time = 12 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

Power Transmission Workstation

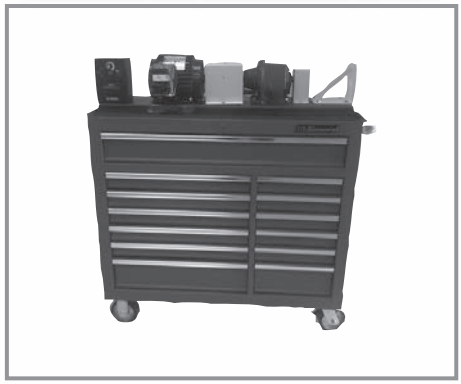
Catalog #: ABT-TDMET2

Major Components

- Gear box
- Coupling
- Drive motor
- Component hardware:
- 2 sets of Starrett dial indicators with bases
- 2 sets of Starrett universal clamps
- 1 dial caliper
- Drive socket sets (3/8 in. and 1/2 in.)
- 1 set of belt sheaves (1 at 7 in. with bushings and 1 at 4 in. with bushings)
- 1 set of chain sprockets (1 at 6 in. and 1 at 3 in. with bushings)
- 1 sheave gauge
- 1 belt tension gauge
- 1 V-belt B47
- 1 set of open end wrenches
- 1 set of crow's feet wrenches (3/8. . .7/8 in.)
- 1 torque wrench
- 10 foot #40 single roller chain
- 1 box of stainless shims
- 1 spanner wrench
- 2 stub shafts with withdrawal sleeves
- 2 bearings (6210, 22213EK)

Dimensions

- Width: 45 in. (114.3 cm)
- Height: 55 in. (139.7 cm)
- Depth: 18 in. (45.7 cm)
- Weight: 600 lb (272 kg)



*Lead Time = 12 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

Package Sorting Simulator Workstation

Catalog #: ABT-TDSORTERCLX **
Catalog #: ABT-TDSORTERCMPX **
Catalog #: ABT-TDSORTER **

Major Components

- 8 proximity switches
- 2 E-stop push buttons
- 2 start/stop push buttons
- 20 contacts for push buttons
- 1 encoder
- 1 encoder cable
- 1 encoder coupling
- (1) 2-hole push button enclosures
- (1) 3-hole push button enclosures
- 3 photo-eyes
- 1 selector switch

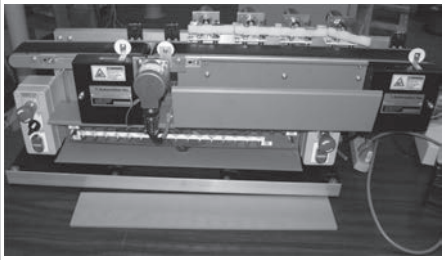
Dimensions

- Width: 40 in. (102 cm)
- Height: 18 in. (46 cm)
- Depth: 16 in. (41 cm)
- Weight: 125 lb (57 kg)

Note: For the size with an optional shipping case, add 3 in. (8 cm) to width/depth and 8 in. (20 cm) to height for the given dimensions.

** Important Ordering Information

For a complete workstation inside a shipping case, add a C to the end of the catalog number.
Example: ABT-TDSORTER becomes ABT-TDSORTERC.



*Lead Time = 9 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

Conveyor Assembly Simulator Workstation

Catalog #: ABT-TDAST **

Major Components

- 2200 Series drive flat belt end drive
- Power supply 24. . .28V DC
- Push buttons:
  - 1 push-pull illuminated
  - (1) 2-position momentary multifunction
- Switch and photo eye hardware:
  - 3 proximity sensors
  - 7 toggle switches, round actuator
  - 9 photo eyes
  - (1) 2-position selector switch

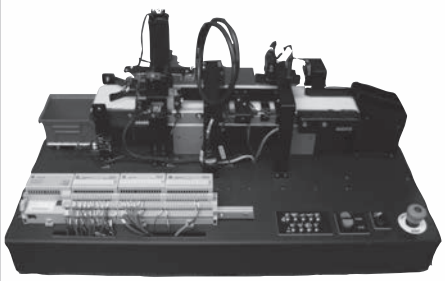
Dimensions

- Width: 35 in. (88.9 cm)
- Height: 16 in. (41 cm)
- Depth: 20 in. (52 cm)
- Weight: 92 lb (42 kg)

** Important Ordering Information

This unit can be ordered in a variety of controller and conveyor configurations detailed below. To order any unit with a case, please add C to the end of the part number:

- 2 conveyors
  - No controller: ABT-TDAST
  - ControlLogix controller: ABT-TDASTCLX
  - CompactLogix controller: ABT-TDASTCMPX
- 1 conveyor
  - No controller: ABT-TDASTLITE
  - ControlLogix controller: ABT-TDASTLITECLX
  - CompactLogix controller: ABT-TDASTLITECMPX



*Lead Time = 9 weeks**

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

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Positioning Fault Simulator Workstation

Catalog #: ABT-TDPOSITION **

Major Components

- 2 Kinetix 300 drives
- Flex I/O hardware:
  - 1 Ethernet adapter
  - 2 digital input module
  - 1 digital output module
- Switch and photo eye hardware:
  - 6 proximity sensors
  - 5 photo sensors
  - 2 color sensors
- 1 vacuum pressure pump
- 1 encoder cable
- 20 fault simulations
- 2 actuators
- 4 puzzle graphics
- Plexiglass enclosed case

Dimensions

- Width: 44 in. (112 cm)
- Height: 24 in. (61 cm)
- Depth: 28 in. (71 cm)
- Weight: 213 lb (97 kg)

For the size of each shipping case, add 3 in. (8 cm) to width and depth, and 8 in. (20 cm) to height.

** Important Ordering Information

The simulator contains the mechanical pieces only. To control the unit you must combine it with a CompactLogix workstation, catalog number: ABT-TDIALITE or a CompactLogix Basic workstation, catalog number: ABT-TDCMPX. If you chose to buy the simulator without one of these workstations you will need your own controller, HMI, drive, and network. You will also need to complete your own setup, configuration, and programming.

For a complete workstation with a shipping case, order ABT-TDPOSITIONC.

*Lead Time = 9 weeks**

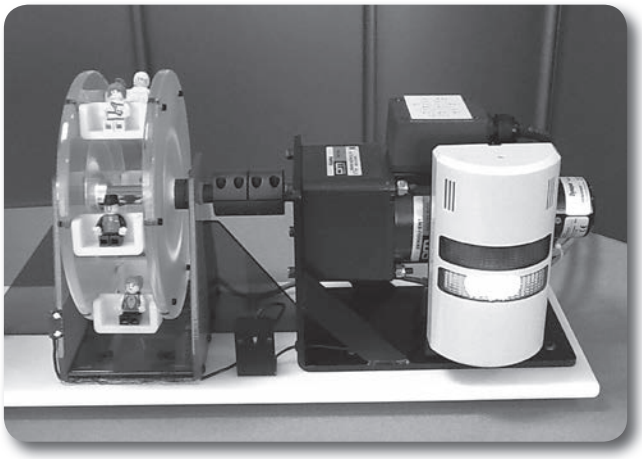
* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

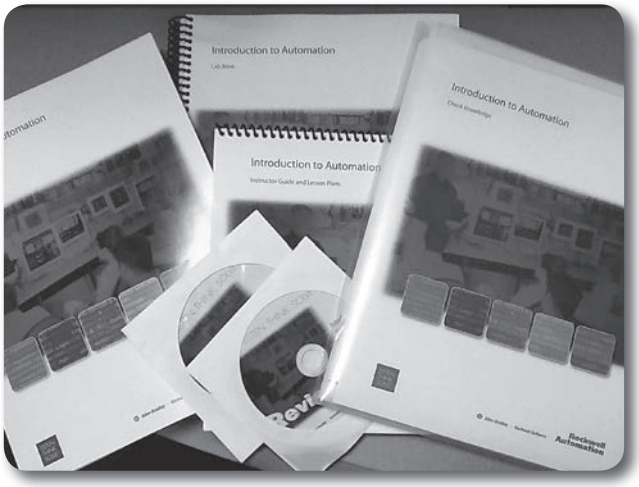
New Industrial Automation Curriculum and Workstation for Educational Institutions

Do you need an industry-recognized curriculum with cutting-edge lab equipment to build a foundation to help students succeed in technical industrial, engineering, or automation-related educational programs? Do your students have little or no experience with automation systems?

Rockwell Automation Training Services offers a new Industrial Automation curriculum package with a real-world and application-relevant lab workstation to help you achieve industry standards. These resources will help you stay ahead of the technology curve.

- **Automation Ferris Wheel Workstation** (ABT-TDFW100)
- **Introduction to Automation curriculum kit** (TCT-IA-TIP and TCT-IA-TSP)
- **AC and DC Drives curriculum kit** (TCT-ADD-TIP and TCT-ADD-TSP)





Engaging, Multimedia, Learning Environment

The new Industrial Automation curriculum and workstation offers a unique way to combine hands-on skills with interactive, media-rich technical content for an outstanding learning experience. The curriculum offers an introductory level of study, starting with basics of industrial automation, and builds to more advanced topics like AC and DC drives technology. Comprehensive student and instructor kits include engaging videos, animations, podcasts, and more.

Interactive and Hands-On

The programmed workstation has a small, fully-functional Ferris wheel that allows students to operate and maintain an example automated system, yet also offers expanded capabilities to program your own operations and faults. The workstation is equipped with the latest Rockwell Automation and industry standard technologies, including a CompactLogix™ controller, PowerFlex® drive, HMI touchscreen and more.

To inquire about other Rockwell Automation college training kits and workstations contact your local Allen-Bradley Distributor or Rockwell Automation sales office, or call 440-646-3434, select option 4.

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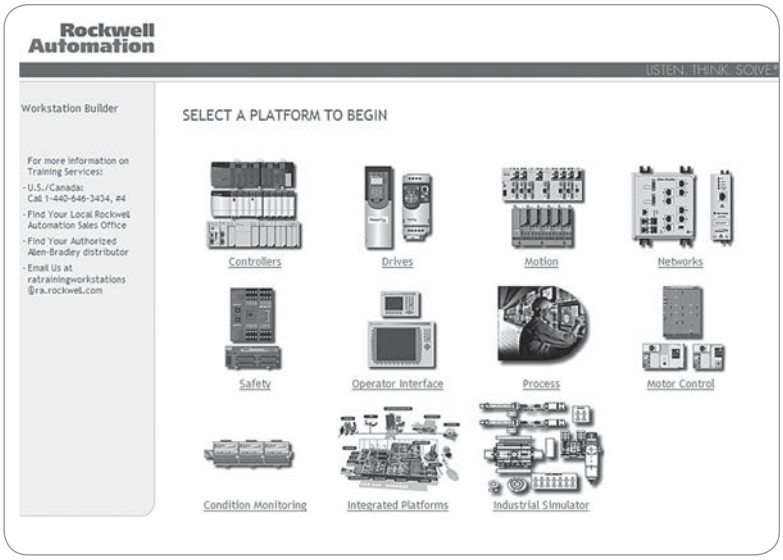
LISTEN.
THINK.
SOLVE.®

Workstation Builder

An easy way to design a workstation

Use the Rockwell Automation online Workstation Builder to customize a training workstation by selecting your own components, simulation, and accessories, and then submit the configuration to Rockwell Automation for a quote.



Features and capabilities with Workstation Builder:

- Graphical, step-by-step, component selection process
- Icon-driven navigation throughout the tool for ease of use
- Viewable progress summary of your selections
- Live chat, phone, and "contact us" links to obtain answers to your questions
- Online Help providing explanations on components and a link to technical product documentation in the Rockwell Automation Literature Library
- Links to special promotions, standard workstation offerings, and other training products and services
- Workstation recommendations and add-ons based on your configuration
- Printable summary of the configured workstation

Configure your ideal training workstation in 4 easy steps:

1. Select a platform
2. Select a model
3. Customize it
4. Print and submit for quote

Workstation Builder logically leads you step-by-step through several categories of components to customize your workstation. However, default selections are provided to identify Rockwell Automation standard recommendations. The graphical interface helps you easily identify workstation components.

Scan this code to visit Rockwell Automation Training Services and access Workstation Builder workstationbuilder.rockwellautomation.com

Job Aids

Job Aids

Rockwell Automation recognizes that one of the keys to superior performance on-the-job is the ability to become efficient and highly effective using support resources. Rockwell Automation award-winning job aids provide essential job task information, thereby minimizing errors that can occur at the most inopportune moments. Job aids provide immediate hardware and software information when it is needed so production is not impacted. Our job aids are written at a level of detail to ensure that you are consistently using best practices. The right job aid can make the difference between productive time and downtime and between maximum performance and minimum operation.

Standard Guides

Standard job aids are designed to assist individuals with software and hardware job tasks. While these tools are very good at covering tasks associated with Rockwell Automation hardware components, they are not designed to take into consideration every possible custom system configuration or state.

Custom Guides

Custom guides are designed and developed to work with plant-specific systems and applications. Common operator-related hardware and software errors can be eliminated by using custom designed procedures and guides. Rockwell Automation can assist you with the design and creation of the guides you need to achieve maximum efficiency and minimize operator-related errors. Contact your local Rockwell Automation sales office or Allen-Bradley distributor to discuss creating custom guides for your needs.

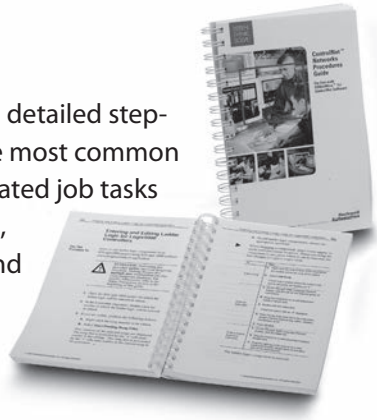
Glossaries

Glossaries provide an alphabetized listing of common terminology and definitions as it relates to a specific technology. Glossaries help users become more familiar with technical terms and concepts needed to understand a technology.

Job Aid	Catalog Number
AC and DC Motor and Drive Glossary	ABT-D100-TSG10
Logix5000™ Systems Glossary	ABT-1756-TSG10
Motion Control Glossary	ABT-M100-TSG10

Procedures Guides

Procedures guides provide detailed step-by-step instructions on the most common software and hardware-related job tasks that help users to program, configure, troubleshoot, and test Rockwell Automation control equipment.



Features

- Step-by-step procedures for job-specific tasks
- Best practices and standard guidelines
- Tips on software-related shortcuts and special features
- Safety reminders and warnings
- Glossary of key software and hardware terms
- Appendices of basic Microsoft Windows operations

Job Aid	Catalog Number
1395 Drive Installation Guide	ABT-1395-TSH50
ControlNet™ and RSNetWorx™ Procedures Guide	ABT-N200-TSJ50
ControlNet and RSNetWorx Procedures Guide - Spanish	ABT-N200-TSJ50ES
DeviceNet™ and RSNetWorx Procedures Guide	ABT-N100-TSJ50
DriveExplorer™ Software Procedures Guide	ABT-D500-TSJ51
DriveTools™32 Software Procedures Guide	ABT-D500-TSJ50
EtherNet/IP Procedures Guide	ABT-N300-TSJ50
FactoryTalk® View ME and PanelView™ Plus Procedures Guide	ABT-2711P-TSJ50
FactoryTalk View ME and PanelView Plus Procedures Guide - Spanish	ABT-2711P-TSJ50ES
FactoryTalk View SE Procedures Guide	ABT-9701SE-TSJ50
FactoryTalk View SE Procedures Guide - Spanish	ABT-9701SE-TSJ50ES
GML™ Commander and 1394 Procedures Guide	ABT-4100-TSJ51
PanelView 300/550/600/900/1000/1400 and PanelBuilder™32 Procedures Guide	ABT-2711-TSJ50

Job Aid	Catalog Number
PanelView 1000e/1200e/1400e and PanelBuilder 1400e Configuration Procedures Guide	ABT-2711E-TSJ50
PowerFlex® 700 Standard and Vector Control Procedures Guide	ABT-20B-TSJ50
RSLogix™ 5 and PLC-5® Procedures Guide	ABT-1785-TSJ53
RSLogix 5 and PLC-5 Procedures Guide - Spanish	ABT-1785-TSJ53ES
RSLogix 500 and SLC™ 500 Procedures Guide	ABT-1747-TSJ52
RSLogix 500 and SLC 500 Procedures Guide - Spanish	ABT-1747-TSJ52ES
Studio 5000 Logix Designer™ and Logix5000 Motion Control Procedures Guide	ABT-1756-TSJ52
Studio 5000 Logix Designer and Logix5000 Procedures Guide	ABT-1756-TSJ50
Studio 5000 Logix Designer and Logix5000 Procedures Guide - Spanish	ABT-1756-TSJ50ES
RSLogix Guard PLUS and GuardPLC™ Procedures Guide	ABT-1753-TSJ50
RSView®32 Procedures Guide	ABT-9301-TSJ50

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Troubleshooting Guides

Rockwell Automation troubleshooting guides contain flowcharts that walk you through faults that can occur on a system. These guides are specifically designed for use on the plant floor and their pocket-size design allows for easy portability. Troubleshooting guides are filled with procedures, error code information, and status indicator listings with recommended actions, reference charts, and hardware/software diagrams.

Features

- Detailed illustrations with pertinent troubleshooting information
- Location indicators where action is needed or where possible problems exist
- Consistent starting point from which to logically begin troubleshooting
- Logical progression of questions, causes, and actions to determine the problem
- Important safety considerations, precautions, and general warnings

Job Aid	Catalog Number
1336 PLUS™ II AC Drive Troubleshooting Guide	ABT-1336F-TSJ20
1394 and GML Commander Troubleshooting Guide	ABT-1394-TSJ21
ControlLogix® Troubleshooting Guide	ABT-1756-TSJ20
ControlLogix Troubleshooting Guide - Spanish	ABT-1756-TSJ20ES
ControlNet and RSNetWorx Troubleshooting Guide	ABT-N200-TSJ20
ControlNet and RSNetWorx Troubleshooting Guide - Spanish	ABT-N200-TSJ20ES

Job Aid	Catalog Number
DeviceNet and RSNetWorx Troubleshooting Guide	ABT-N100-TSJ20
PlantPAx Process System Troubleshooting Guide	ABT-P100-TSJ20
PLC-5 and RSLogix 5 Troubleshooting Guide	ABT-1785-TSJ22
PowerFlex 700 Standard and Vector Control Troubleshooting Guide	ABT-20B-TSJ20
SLC 500 and RSLogix 500 Troubleshooting Guide	ABT-1747-TSJ22
SLC 500 and RSLogix 500 Troubleshooting Guide - Spanish	ABT-1747-TSJ22ES

Documentation Reference Guide CDs

Documentation reference guide CDs contain excerpts of the most frequently used product information from several technical manuals. By consolidating technical product content on one CD, users can find important information faster.

Job Aid	Catalog Number
1336 IMPACT™ Documentation Reference Guide CD	ABT-1336E-DRG70
1336 PLUS and PLUS II AC Drive Documentation Reference Guide CD	ABT-1336SF-DRG70
1397 Drive Documentation Reference Guide CD	ABT-1397-DRG70
ControlNet Documentation Reference Guide CD	ABT-N200-DRG70
DeviceNet Documentation Reference Guide CD	ABT-N100-DRG70
EtherNet/IP Documentation Reference Guide CD	ABT-N300-DRG70
GuardLogix® Documentation Reference Guide CD	ABT-GRDLX-DRG70
GuardPLC™ Documentation Reference Guide CD	ABT-1753-DRG70
Logix5000™ Documentation Reference Guide CD	ABT-1756-DRG70
PLC-5 Documentation Reference Guide CD	ABT-1785-DRG70
PowerFlex DC Drives Documentation Reference Guide CD	ABT-20P-DRG70
PowerFlex 700S Documentation Reference Guide CD	ABT-20D-DRG70
PowerFlex 700S Phase II Documentation Reference Guide CD	ABT-20D-DRG71
PowerFlex 70 Standard and Vector Control Documentation Reference Guide CD	ABT-20A-DRG70
PowerFlex 700 Standard and Vector Control Documentation Reference Guide CD	ABT-20B-DRG70
PowerFlex 750-Series AC Drives Documentation Reference Guide CD	ABT-20G-DRG70
SLC 500 Documentation Reference Guide CD	ABT-1747-DRG70

Quick Reference Guides

Quick reference guides provide hardware and software specific information that users can quickly reference when configuring Rockwell Automation equipment. Parameter-specific information can typically be found in a quick reference guide.

Job Aid	Catalog Number
1336 IMPACT Quick Reference Guide	ABT-1336E-TQR90
1336 PLUS and PLUS II AC Drive Parameters Quick Reference Guide	ABT-1336SF-TQR90
PowerFlex 700 Standard and Vector Control Quick Reference Guide	ABT-20AB-TQR90

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Refresh

Improve Job Skills Through Self-Study

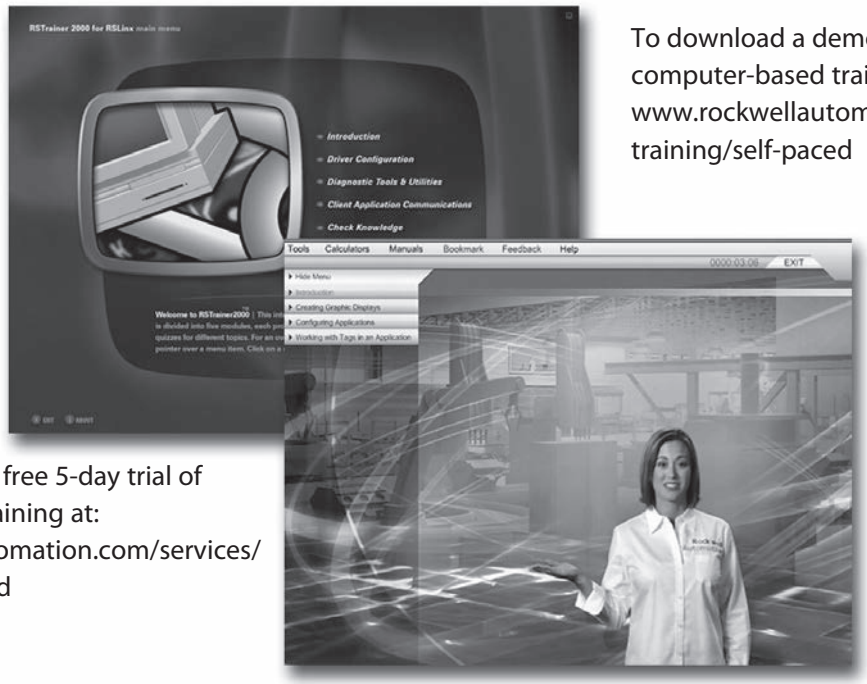
Self-Paced Learning

Do you find it difficult to schedule training for your staff? Are you trying to cut down on the additional expenses associated with training?

Delivered via the Web or CD-ROM, we have the e-learning course for your needs. From basic industrial to Rockwell Automation specific content, the RSTrainer and Rockwell Automation University Online courses provide introductory and refresher training.

Courses are available in these areas:

- General Industrial
- Automation Fundamentals
- Controllers - ControlLogix, SLC and PLC
- Communications
- Motion
- Visualization (Human Machine Interface)



To download a demo of computer-based training, go to: www.rockwellautomation.com/services/training/self-paced

Sign up now for a free 5-day trial of our web-based training at: www.rockwellautomation.com/services/training/self-paced

Savings Program

Training Savings Account

Maximize Your Training Budget

The award-winning Rockwell Automation training portfolio provides a wide-range of performance-based products and services that can be purchased using your Training Savings Account. As a program participant, you receive a Training Savings Card with information on your total training dollars and account number. You can use your training dollars at any time within one year up to the expiration date on your account to purchase a variety of Rockwell Automation training courses, products, and services at a discount. Any amount can be deposited in a Training Savings Account; however, the higher the account deposit level, the greater the savings.

Catalog Number	Deposit Requirement	Savings	Buying Power
	< $9,998	0%	Equal to Deposit
TrngSavings	$9,998 < 29,999	14%	$11,626 - $34,883
	$30,000 +	20%	$37,500+

Benefits:

- A single purchase for all your training needs
- Savings up to 20% off your purchase
- Monthly statements
- Easy budgeting and purchasing
- Redeemable for one year on any training offering

A Single Investment Redeemable For:

Instructor-Led Training

- **Standard Courses** - over 250 open-enrollment classes from our schedule
- **Tailored Courses** - combined lessons on job tasks from over 1600 learning modules
- **Custom Courses** - specifically designed to meet your training needs
- **On-site Courses** - private courses at your facility or another convenient location
- **Virtual Classroom** - instructor-led training via your computer
- **Certification Program** - curriculum to demonstrate mastery of Rockwell Automation technologies

Self-Paced Training: e-Learning

- **Computer-Based Training** - RSTrainer Series
- **Web-Based Training** - Rockwell Automation University Online

Workstations

- Skill-building learning units for many Rockwell Automation technologies

Job Aids

- Troubleshooting Guides
- Procedure Guides
- Quick Reference Guides
- Documentation Reference Guide CDs

Assessment Services

- **Training Advisor** - online knowledge assessment tool
- **Assessment** - gap analysis, reporting, integrated performance assessment and employee development recommendations

Note: Special rules apply for volume discounts, sales promotions, previously discounted items, and custom/negotiated training.

Fundamentals Training + One

Attend a Rockwell Automation Fundamentals class and receive a discount on your next training class!

Fundamentals Training + One is a great way to extend your learning experience beyond just the basics and reduce the cost of training in the process. Enroll in any Rockwell Automation Fundamentals class and receive a discount on your second class.

After attending a Fundamentals class, you have 30 days to enroll in a second class to receive the discount. Rockwell Automation will automatically reduce your second class tuition by 20% off the list price.

Create a Complete Training Plan with Rockwell Automation Curriculum Maps

While Fundamentals + One provides a great foundation to obtain the latest technical knowledge, you need a comprehensive training plan to achieve true domain expertise.

Rockwell Automation curriculum maps will help you determine the best overall training path for a specific technology or industry. A sample curriculum map for ControlLogix/Studio 5000 Logix Designer is shown below.

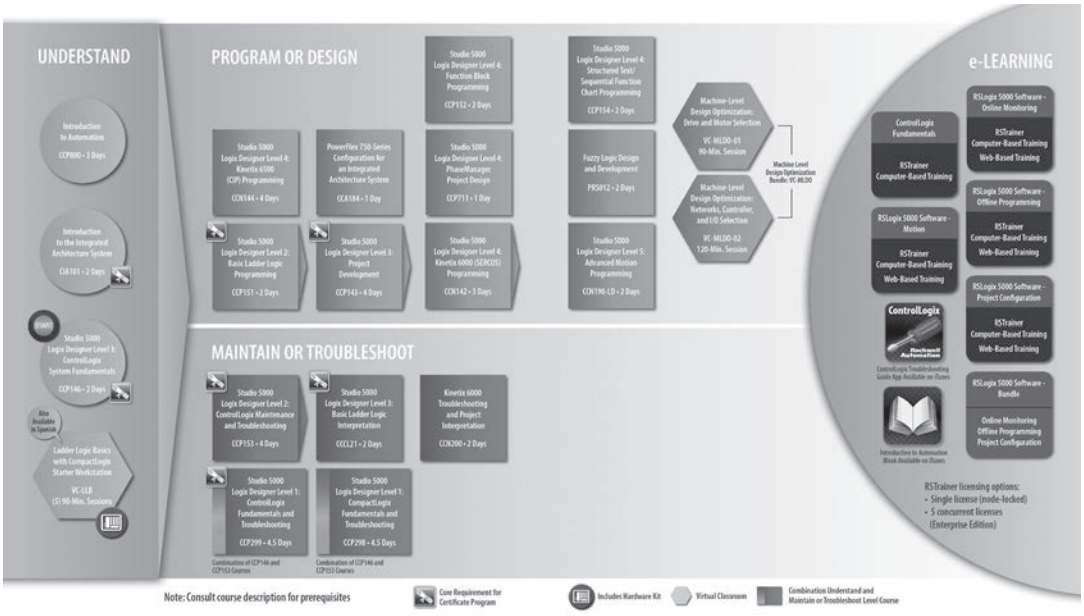
To view all curriculum maps online, see the Rockwell Automation Training Services website: www.rockwellautomation.com/services/training

How to Enroll

To Enroll in a Rockwell Automation training class, contact an authorized Allen-Bradley Distributor, a Rockwell Automation local Sales/Support office, or call (440) 646-3434, select option 4 and mention Promotion Code TAS0702.

This offer is not valid with other promotions.

ControlLogix/Studio 5000 Logix Designer Curriculum Map



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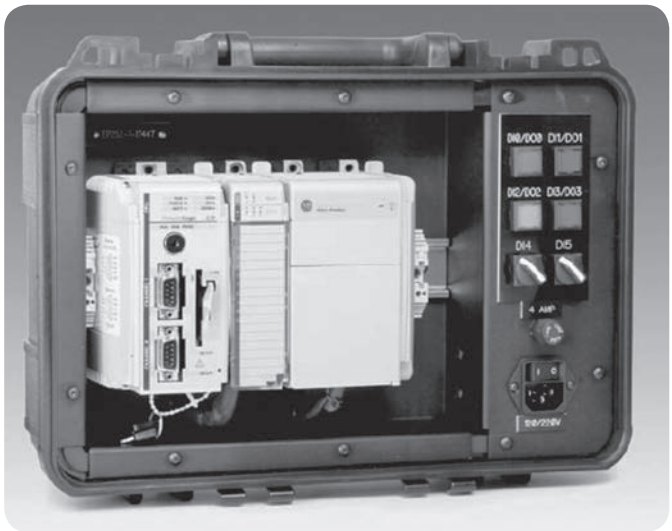
LISTEN.
THINK.
SOLVE.®

Training + Starter Workstation with "Build Your Own" workstation option

Attend ControlLogix courses and maintain your skills with our Starter Workstation



Take Your Classroom Training Back to Your Job

Six Rockwell Automation ControlLogix courses are bundled with a CompactLogix Starter Workstation to provide an opportunity for ongoing practice. The CompactLogix Starter Workstation allows you to reinforce the skills acquired from any of the ControlLogix training classes. With this offer you can elect to "build your own" starter workstation or receive a pre-assembled workstation.

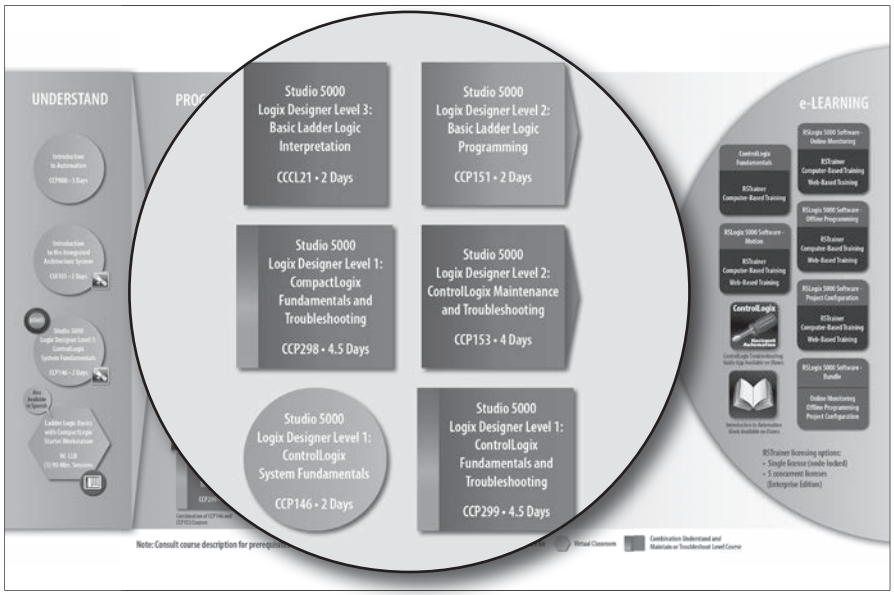
The workstation can be used for:
- Providing opportunities for realistic and safe practice
- Refreshing skills
- Reinforcing and practicing maintenance and troubleshooting skills

CompactLogix Starter Workstation
Your CompactLogix Starter Workstation will include the following:
- Assembled workstation or a "build your own" workstation that includes a kit and an instruction guide
- 1 CompactLogix L30ER processor
- 1 CompactLogix AC power supply
- 1 digital combo, 6 digital in/4 digital out
- 4 momentary push buttons
- 2 selector switches
- 1 Compactbus end cap
- AmeriPak shipping case

Note: *Software is not included with the starter workstation.*

Dimensions
- Width - 14 in. (36 cm)
- Height - 10 in. (25 cm)
- Depth - 6 in. (15 cm)
- Weight - 15 lb (7 kg)

ControlLogix/Studio 5000 Curriculum Map



For a schedule of ControlLogix classes in your area and detailed course descriptions, go to: www.rockwellautomation.com/services/training

Savings Program

ControlLogix Courses		Starter Workstation		Catalog Number
Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals 2 Days	Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals	CompactLogix Starter Workstation with Ethernet	Assembled Build Your Own	CCP146ER CCP146ERB
Studio 5000 Logix Designer Level 1: ControlLogix Fundamentals and Troubleshooting 4.5 Days	Studio 5000 Logix Designer Level 1: ControlLogix Fundamentals and Troubleshooting	CompactLogix Starter Workstation with Ethernet	Assembled Build Your Own	CCP299ER CCP299ERB
Studio 5000 Logix Designer Level 1: CompactLogix Fundamentals and Troubleshooting 4.5 Days	Studio 5000 Logix Designer Level 1: CompactLogix Fundamentals and Troubleshooting	CompactLogix Starter Workstation with Ethernet	Assembled Build Your Own	CCP298ER CCP298ERB
Studio 5000 Logix Designer Level 3: Basic Ladder Logic Interpretation 2 Days	Studio 5000 Logix Designer Level 3: Basic Ladder Logic Interpretation	CompactLogix Starter Workstation with Ethernet	Assembled Build Your Own	CCCL21ER CCCL21ERB
Studio 5000 Logix Designer Level 2: Basic Ladder Logic Programming 2 Days	Studio 5000 Logix Designer Level 2: Basic Ladder Logic Programming	CompactLogix Starter Workstation with Ethernet	Assembled Build Your Own	CCP151ER CCP151ERB
Studio 5000 Logix Designer Level 2: ControlLogix Maintenance and Troubleshooting 4 Days	Studio 5000 Logix Designer Level 2: ControlLogix Maintenance and Troubleshooting	CompactLogix Starter Workstation with Ethernet	Assembled Build Your Own	CCP153ER CCP153ERB

To enroll in a Rockwell Automation training class: Contact an authorized Allen-Bradley Distributor, a Rockwell Automation local Sales/Support office or call (440) 646-3434, select option 4. For more information about ControlLogix courses and other training products and services, visit www.rockwellautomation.com/services/training.

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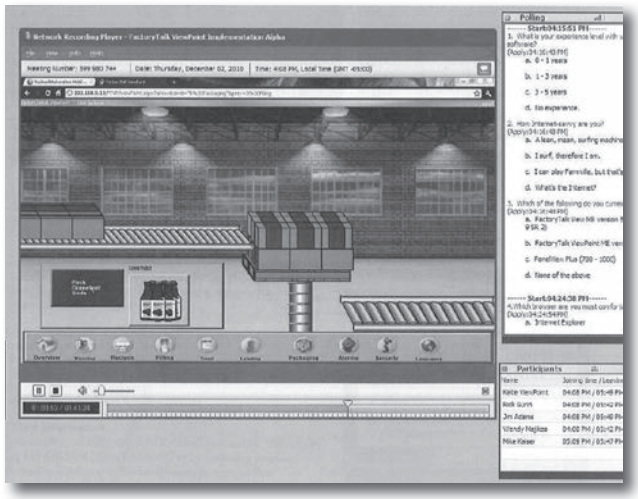
Take Advantage of Rockwell Automation Self-Paced Training with these Special Offers

Web-based Training

With the purchase of Web-based Training ePasses, your benefits include:

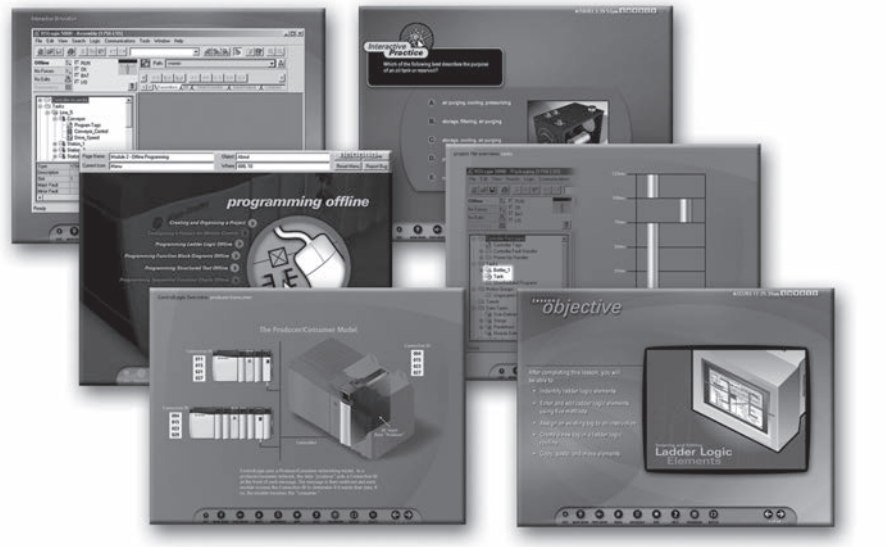
- Significant cost savings when purchasing a 20, 50, or 100 pack of ePasses
- Easy budgeting and purchasing with package offerings
- Easy redemption because only one ePass is needed to activate a single course - every course is priced the same
- Unlimited refresher training opportunities for one year from the time of purchase — you can repeat courses as many times as needed without using additional ePasses!



Pricing Information

One ePass is needed to activate a single web-based training course from Rockwell Automation University Online. ePasses are valid for one year from the date of purchase.

Product Description	Catalog #	Approximate Savings
Web-based Training Single ePass	WBT-1PACK	–
Web-Based Training 5 Pack	WBT-5PACK	–
Web-Based Training 20 Pack	WBT-20PACK	22%
Web-Based Training 50 Pack	WBT-50PACK	34%
Web-Based Training 100 Pack	WBT-100PACK	42%



Computer-Based Training

Two ways to save!

Web-only Offer
Save 25% on two or more RSTrainer computer-based training courses. To qualify, your order must be submitted online.
This offer excludes RSTrainer bundles.

Computer-based Bundles
Save with the purchase of a series of CBT courses:

Computer-based Training	Catalog #
RSTrainer for EtherNet/IP Bundle (Includes 2 EtherNet/IP CBTs)	9393-RSTENETAENE
RSTrainer Enterprise Edition for EtherNet/IP Bundle (Includes 2 EtherNet/IP CBTs)	9393-RSTENETAENF
RSTrainer for RSLogix 5000 Software Bundle (Includes 3 RSLogix 5000 CBTs)	9393-RSTL5KENE
RSTrainer Enterprise Edition for RSLogix 5000 Bundle (Includes 3 RSLogix 5000 CBTs)	9393-RSTL5KENF
RSTrainer for SLC 500 Fundamentals Bundle (Includes 2 SLC 500 CBTs)	9393-RSTSLCALENE
RSTrainer Enterprise Edition for SLC 500 Fundamentals Bundle (Includes 2 SLC 500 CBTs)	9393-RSTSLCALENF
RSTrainer for RSLogix 500 Software Bundle (Includes 3 RSLogix 500 CBTs)	9393-RST500ALENE
RSTrainer Enterprise Edition for RSLogix 500 Software Bundle (Includes 3 RSLogix 500 CBTs)	9393-RST500ALENF
RSTrainer for FactoryTalk View Machine Edition Bundle (Includes 3 FactoryTalk View ME CBTs)	9393-RSTVMEALL
RSTrainer Enterprise Edition for FactoryTalk View Machine Edition Bundle (Includes 3 FactoryTalk View ME CBTs)	9393-RSTMEALLENF

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Training Services

Don't Delay Getting the Training You Need. Enroll Now!

Call 440-646-3434
(option 4)

E-mail training requests to:
trainingservices@ra.rockwell.com

To view course schedules, go to:
www.rockwellautomation.com/services/training

Certificate Program

Certificate Program

ControlLogix and Drives Certificate Programs

Apply ControlLogix and Drives technology to help improve the quality, efficiency, and productivity of your plant systems.

The ControlLogix and Drives Certificate Programs are intended for maintenance and programming professionals who want to develop their knowledge and skills using the latest technology. This program combines a number of up-to-date training courses.

You can choose to complete one or both of the Certificate Programs. As a certificate candidate, you will follow a series of Rockwell Automation training courses offering practical, hands-on exercises and take a final assessment. Participants will be trained on ControlLogix or Drives skills and competencies, they will understand theoretical concepts, and learn to maintain and/or program ControlLogix or Drives equipment. Depending on the combination of training courses followed, it will lead you to the desired level and type of certificate.

Upon completion of the program requirements, please contact your local Rockwell Automation training coordinator to review your training record. Once approved, you can enroll for the assessment through your local Allen-Bradley distributor or Rockwell Automation training coordinator. You will be given access to the online, web-based assessment (fee requirement), the final step leading to your Certificate of Achievement. A passing score on the assessment will entitle you to the rewards and benefits of the Certificate Program you completed.

Program Rewards

- Recognition Award - Certificate of Achievement
- Custom Rockwell Automation polo shirt with certificate logo

Program Value-Add

- Job aids
- Continuing education units
- Tools to maintain skills and knowledge:
  - CompactLogix starter workstation (available with specific ControlLogix courses)
  - e-Learning discount coupon (available with ControlLogix certificate program course only)
  - ControlLogix or Drives training discount coupon

Benefits

- Competency
- Recognition
- Knowledge assessment
- Competitive edge
- Education credits
- Improved on-the-job skills

Declare yourself a certificate candidate at our Training Services website and receive a schedule of courses in your area and a Rockwell Automation hat. You will also receive a study guide at the time you enroll for the final assessment.

www.rockwellautomation.com/training

Rockwell Automation

ControlLogix Maintainer Certificate Curriculum

Option 1 Core Courses	Option 2 Core Courses	Elective Courses (Choose 1 Course)
Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals CCP146 • 2 Days 1.4 CEUs	Introduction to the Integrated Architecture System CIA101 • 2 Days 1.4 CEUs	Introduction to the Integrated Architecture System CIA101 • 2 Days 1.4 CEUs
Studio 5000 Logix Designer Level 2: ControlLogix Maintenance and Troubleshooting CCP153 • 4 Days 2.8 CEUs	Studio 5000 Logix Designer Level 1: ControlLogix Fundamentals and Troubleshooting CCP299 • 4.5 Days 3.2 CEUs	Motion Control Fundamentals CCN130 • 3 Days 1.4 CEUs
Studio 5000 Logix Designer Level 3: Basic Ladder Logic Interpretation CCCL21 • 2 Days 1.4 CEUs	Studio 5000 Logix Designer Level 3: Basic Ladder Logic Interpretation CCCL21 • 2 Days 1.4 CEUs	Kinetix 6000 Troubleshooting and Project Interpretation CCN200 • 2 Days 1.4 CEUs
Choose 1 ControlLogix Elective Course	Choose 1 ControlLogix Elective Course	GuardLogix Fundamentals and Maintenance SAF-LOG103 • 1 Day 0.7 CEUs
Assessment	Assessment	

Note: CCP146 or CCP299 may be replaced with CIA101 if you have already completed the Fundamentals course. No other substitutions are permitted.

Core Courses (Option 1 or 2)

Elective Courses

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ControlLogix Programmer Certificate Curriculum

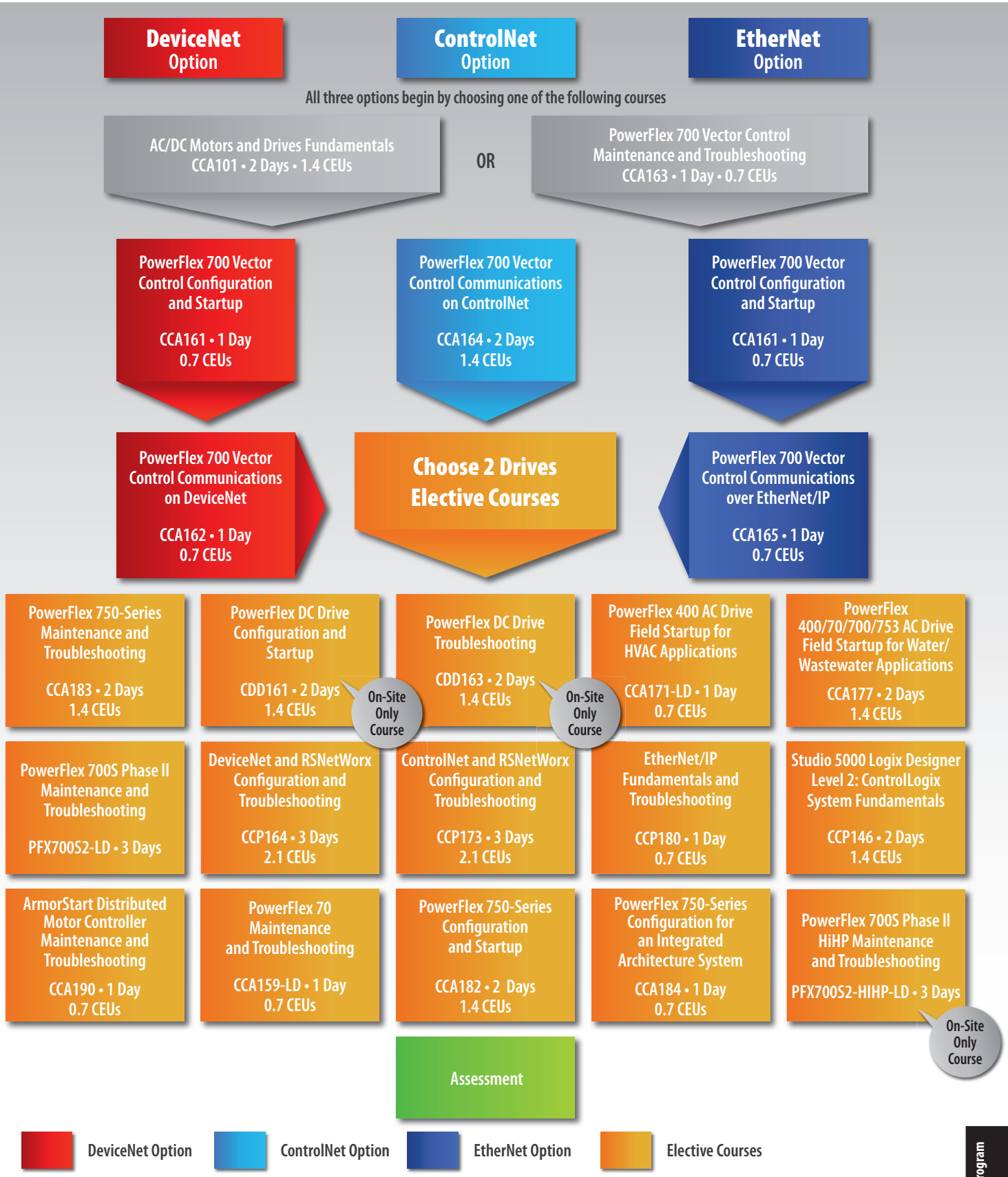
Core Courses	Elective Courses (Choose 1 Course)	
Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals CCP146 • 2 Days 1.4 CEUs	Studio 5000 Logix Designer Level 1: ControlLogix Fundamentals and Troubleshooting CCP299 • 4.5 Days 3.2 CEUs	Introduction to the Integrated Architecture System CIA101 • 2 Days 1.4 CEUs
Studio 5000 Logix Designer Level 2: Basic Ladder Logic Programming CCP151 • 2 Days 1.4 CEUs	Studio 5000 Logix Designer Level 4: PhaseManager Project Design CCP711 • 1 Day 0.7 CEUs	GuardLogix Application Development SAF-LOG101 • 2 Days 1.4 CEUs
Studio 5000 Logix Designer Level 3: Project Development CCP143 • 4 Days 2.8 CEUs	Motion Control Fundamentals CCN130 • 2 Days 1.4 CEUs	Studio 5000 Logix Designer Level 4: Function Block Programming CCP152 • 2 Days 1.4 CEUs
Choose 1 ControlLogix Elective Course	Studio 5000 Logix Designer Level 4: Kinetix 6000 (SERCOS) Programming CCN142 • 3 Days 2.1 CEUs	Studio 5000 Logix Designer Level 4: Structured Text/ Sequential Function Chart Programming CCP154 • 2 Days 1.4 CEUs
Assessment	Studio 5000 Logix Designer Level 5: Advanced Motion Programming CCN190-LD • 2 Days 1.4 CEUs	Studio 5000 Logix Designer Level 4: Kinetix 6500 (CIP) Programming CCN144 • 4 Days 2.8 CEUs

Note: CCP146 or CCP299 may be replaced with CIA101 if you have already completed the Fundamentals course. No other substitutions are permitted.

Core Courses Elective Courses

Rockwell Automation

PowerFlex Drives Certification Curriculum



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Certificate Program

Vibration Analysis Certification Options

Vibration analysis courses provide professional education and certification to help you implement and operate a successful predictive maintenance program. Courses are intended for mechanics, technicians, engineers or analysts involved in the maintenance or operation of plant machinery. Course completion and the certification exam procedure allow individuals to receive certified recognition for the expertise achieved in either Vibration Analysis Level I, Level II, Level III, or Dynamic Balancing areas.

To obtain certification in Vibration Analysis or Dynamic Balancing, call your local Allen-Bradley distributor to enroll in one of the following courses. The certification test is administered during the last half day of the course (fee requirement).

Benefits

- Competency
- Recognition
- Knowledge assessment
- Competitive edge
- Improved on-the-job skills

Vibration Analysis Certification Curriculum

Certificate Programs

TÜV Functional Safety Certification

Rockwell Automation offers this certification program in cooperation with TÜV Rheinland.

The standards regarding functional safety and relevant laws and directives demand that people and organizations performing responsible and accountable tasks during all life cycle phases of a machine must achieve and prove required competencies. This program details the standards for functional safety of machinery and provides practical examples to demonstrate application of the standards.

Functional Safety Technician Certification (TÜV Rheinland) Requirements

- Minimum of 1 to 2 years of experience working on industrial machinery
- Experience in machinery maintenance and operation, verified by employer
- Completion of Functional Safety Technician Eligibility Form and approval from TÜV Rheinland
- Completion of the Functional Safety for Machinery Technician Certification (TÜV Rheinland) course (SAF-TUV3)
- A passing grade on the Functional Safety for Machinery Technician Certification (TÜV Rheinland) (SAF-TUVT3) exam

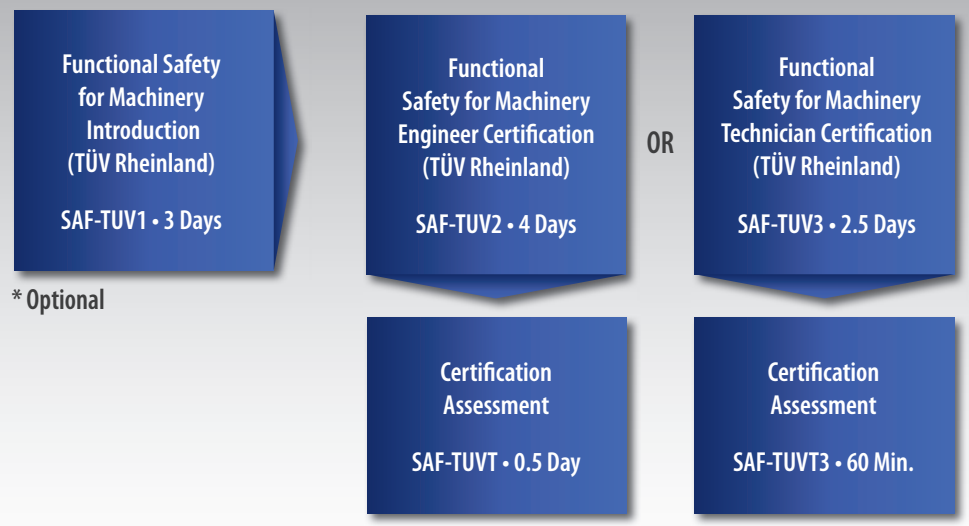
Functional Safety Engineer Certification (TÜV Rheinland) Requirements

- Minimum 3 to 5 years of professional experience in the field of Functional Safety
- University engineering degree or equivalent engineer level responsibilities status verified by employer
- Completion of Functional Safety Engineer Eligibility Form and approval from TÜV Rheinland
- Recommended completion of the Functional Safety for Machinery Introduction (TÜV Rheinland) (SAF-TUV1). Refer to the Safety section of this catalog for course description information.
- Completion of the Functional Safety for Machinery Engineer Certification (TÜV Rheinland) course (SAF-TUV2). Refer to the Safety section of this catalog for course description information.
- Successful completion of the certification exam (SAF-TUVT) with a passing score

Enrollment

Call your local Allen-Bradley distributor to enroll. The certification exam is administered during the last day of the course. This training can be completed, however, without the exam.

TÜV Functional Safety for Machinery Certification Curriculum



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Assessment Services

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Integrated Performance Assessment

How do you determine workforce readiness for new technology?

What refresher training does your workforce need?

How can you determine and address skill gaps?

When you schedule an on-site assessment, a Rockwell Automation training analyst visits your facility to evaluate your employees' skills and knowledge of automation and control equipment for specific jobs and tasks (maintenance, programming, etc.). Rockwell Automation provides you with supporting information and recommendations to improve employee performance while remaining closely aligned to your company's business goals.

Deliverables

Rockwell Automation provides a written report that offers these specific deliverables:

- Detailed job task analysis
- Skill gap identification
- In-depth assessment of employee training needs
- Customized curriculum map and course descriptions (for your group of employees)
- Training implementation recommendations
- Training prioritization and rankings
- Job performance support tools
- ROI forecasts

To start an Integrated Performance Assessment, contact your local Rockwell Automation sales office or Allen-Bradley distributor.

Value Where It Counts

Rockwell Automation Integrated Performance Assessments can help boost plant productivity, positively impact plant metrics, and reduce total training time and cost by focusing your workforce training investment where it counts – on specific performance improvement and job requirements. It is the most systematic and comprehensive consulting service available in the industry.

Our process is comprehensive:

1. Your employees participate in one-on-one interviews with the training analyst to discuss training needs.
2. Your employees complete a skills assessment related to their specific job tasks.
3. The Rockwell Automation training analyst interviews direct supervisors and managers to clarify and enhance data collected during the assessment.
4. Rockwell Automation analyst presents the results and submits a written report summarizing the findings and recommendations for training.

Rockwell Automation

Training Advisor

Unlock improved job performance potential with the Rockwell Automation online knowledge assessment tool.

Training Advisor helps you determine a custom training path for your workforce to obtain the knowledge required to successfully improve on-the-job performance.

Training Advisor helps you identify skill and knowledge gaps hindering production performance and develop a training strategy that will maximize job performance and effectiveness.

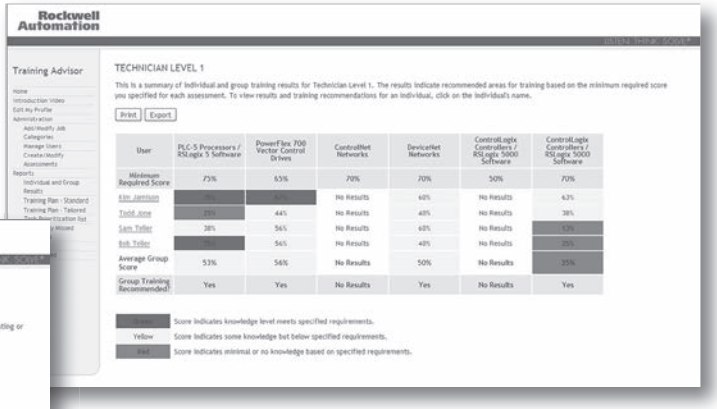
Training Advisor offers you the ability to customize online assessments in the following areas based on job tasks that your workforce performs:

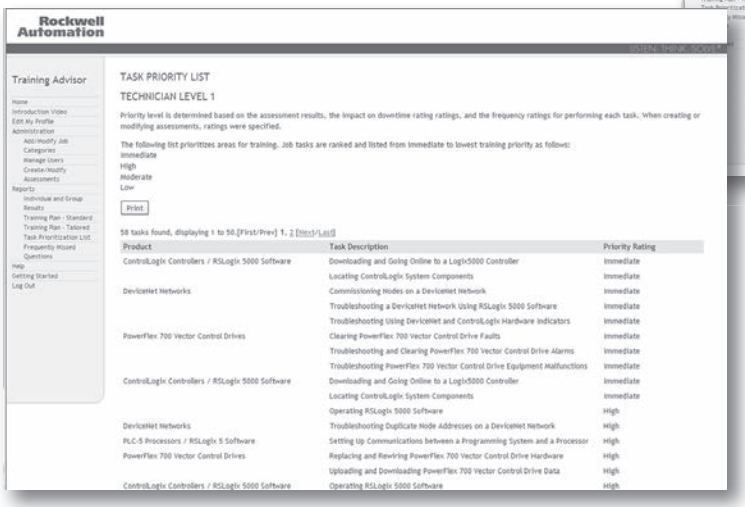
- Controllers
- Networks
- Motion Control
- Drives Control
- Safety
- Visualization
- Process Control
- General Industrial (Electrical and Pneumatic) Control

Benefits

Experience the many benefits of Training Advisor:

- Language switching capabilities (English and Chinese)
- Customize knowledge assessments based on specific equipment and job tasks
- Capture a snapshot of current knowledge levels prior to investing in training
- Create individual and group training plans
- Prioritize training based on your installed equipment, job tasks, and the training needs identified from knowledge assessment(s)
- Eliminate unnecessary expenses of training your workforce
- Justify training costs that will help improve production performance





View a demo of Training Advisor by visiting www.rockwellautomation.com/services/training, or scan this code.

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Pre- and Posttest

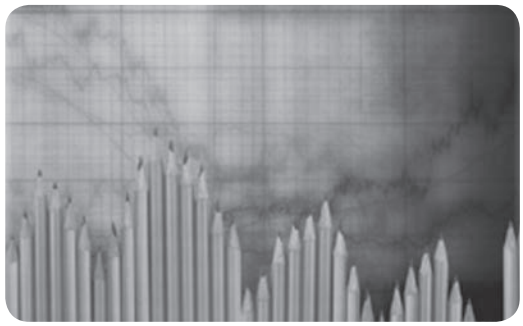
Allow us to demonstrate the value of our Training Solutions!

Free Service with On-Site Training

Rockwell Automation offers pre- and posttest assessments with all standard, on-site, training courses. Pre- and posttests are value-added assessments used to measure students' knowledge at the beginning and end of training.

Measurable Value

Our pre- and posttest services provide you with a measurable return on your training investment by capturing data that quantifies students' knowledge increase as a result of completing Rockwell Automation training.



Training Justification

If you are not certain your employees need a particular course, allow Rockwell Automation to administer a pretest assessment. The results can help you determine whether your employees will benefit from the training.

Benefits

- Measures students' knowledge
- Provides quantitative training data
- Offers students constructive feedback on technical skills and knowledge at the beginning and end of class
- Offers a benchmark against which to measure growth and training value-add

Course Selection Tool

Not sure if a course is right for you?

The Rockwell Automation Course Selection Tool helps you answer this question and make confident decisions about enrolling in Rockwell Automation training courses.

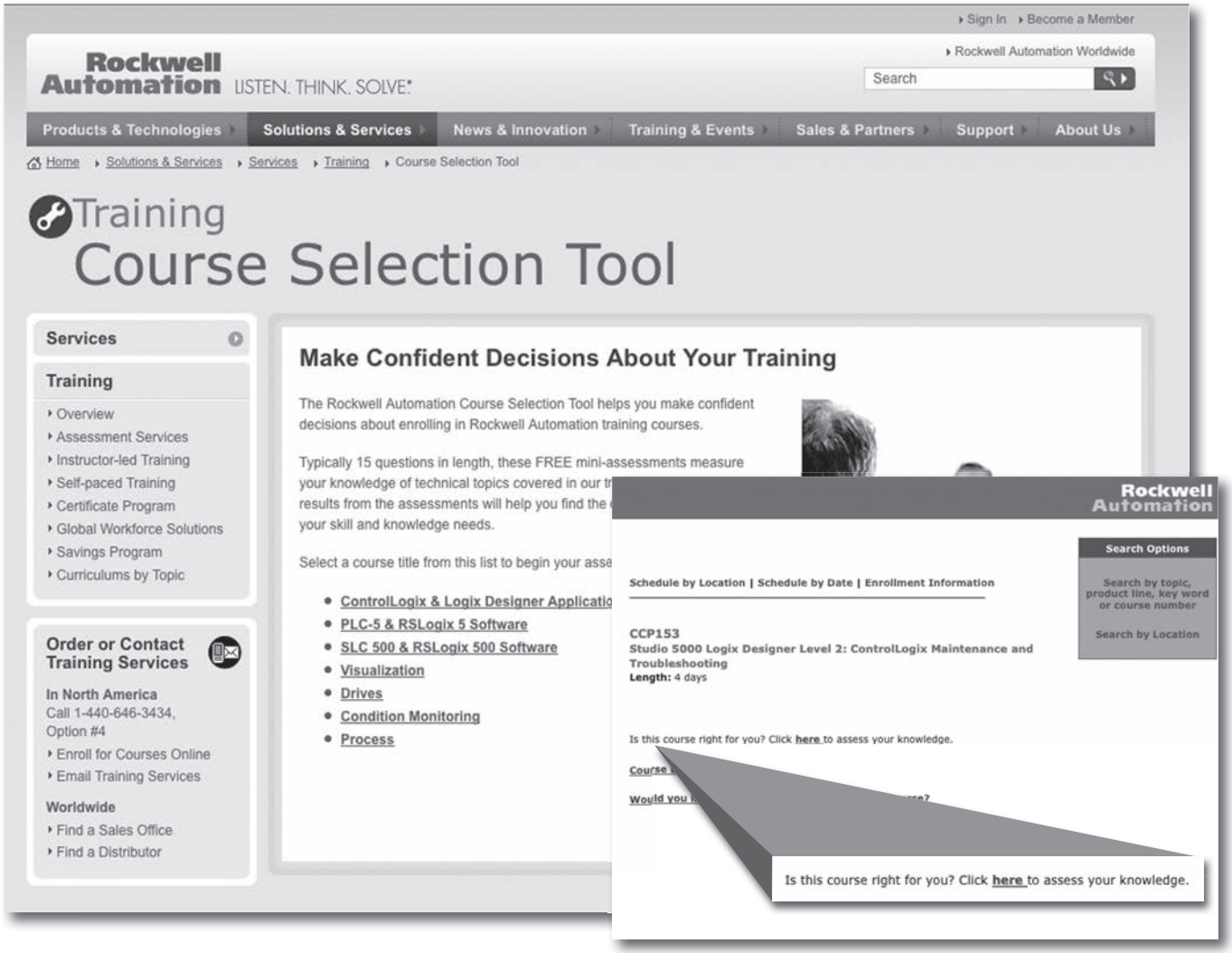
The Course Selection Tool offers you **free** short course assessments used to measure your knowledge of technical topics covered in Rockwell Automation training courses. Results from the assessments help you determine whether you should enroll in a course or consider enrolling in another course that will better meet your skill and knowledge needs. All course assessments are **free** and results are kept confidential.

If you are looking for justification or confirmation that Rockwell Automation training is necessary, then the Course Selection Tool is an invaluable resource.

Access the Course Selection Tool at:
www.rockwellautomation.com/services/training

Assessments are available for courses in these technologies:

- Programmable controllers
- Drives
- Visualization
- Condition monitoring
- Process



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The Rockwell Automation Difference

Award-Winning, Performance-Based Training

Your employees are your greatest asset. To achieve peak manufacturing performance, you need technologies and processes driven by highly trained employees. Ongoing training is an important component of a strategic approach to maintenance, and constantly improving human and process performance consistently translates into increased job productivity and overall plant profitability. Skilled operators, maintenance personnel, and engineers, who maximize machinery and processes, should increase the availability, rate, and quality of your production environment and boost your Overall Equipment Effectiveness (OEE).

Rockwell Automation Offers the Following Instructor-Led Training Options:

Standard Open Enrollment Courses
Over 250 are available to help you utilize all capabilities of Rockwell Automation technologies. Classes are designed for specific job functions and focus on the tasks to be performed to do a particular job. Found on the national schedule, these classes are conducted at Rockwell Automation and partner locations.

Tailored Training Courses
Developed in a modular format you can build a specific course based on job tasks pertinent to your products and job functions. Select lessons from our standard courses to create a unique course for your training needs. Tailored Training creates a course tailored to your hardware or software requirements. Whether introductory, prerequisite, refresher or mastery level courses, you can select from more than 1,600 job task related lessons.

Custom Courses
Often, customers have a unique need and require custom training courses. Rockwell Automation is expert in delivering custom training that meets your specifications and uses your applications throughout the content. A Rockwell Automation specialized course can be designed to meet your employees' needs and delivered with your automation equipment, software, and system configuration incorporated into the course. This highly effective training solution is often required for your critical plant areas or applications.

On-site and Private Training Courses
Any instructor-led course can be conducted on-site, at your plant or private location, with the convenience and savings of not having to travel. In addition, our free pre- and posttest services are only available with on-site courses. They benchmark an incoming student's knowledge and measure the knowledge transfer after training. The data captured from pre- and posttests enables you to examine your ROI and justify your investment. Classes, with a minimum of eight attendees, can be made private and include only the students you want to train.

Embedded Instructors
In large production environments with ongoing and diverse professional development needs, special arrangements can be made for an embedded Rockwell Automation instructor to meet continuous on-site employee development needs. These professionals deliver standard and tailored courses, as well as develop custom materials for courses. The level of immediacy and responsiveness associated with your own in-house trainer is unparalleled.

Virtual Classroom
Rockwell Automation now offers interactive Virtual Classroom training, which are short, one- or two-hour training sessions conducted by a knowledgeable instructor via the Internet.

Enrollment

Fax: Send Training Enrollment Form to your local Allen-Bradley distributor or Rockwell Automation Training office

Email: Send Training Enrollment Form to: trainingservices@ra.rockwell.com

Rockwell Automation

Training Enrollment Form

Customer Information - Print Clearly!

Payment Option (Circle One): Purchase Order | Check | Training Savings Account

Payment Reference Number: (corresponds to the Payment Option selected)

Date:

First Name: Last Name: Middle Initial:

Title/Position:

Company:

Company Address:

City: State/Province: Zip Code:

Telephone Number: Fax Number: E-Mail Address:

(Please complete, if other than course attendee)

Contact Name: Telephone Number: Fax Number:

Course Information

Course Code	Course Title	Course Date	Course Location/City

Distributor Information

For Distributor Use Only

Distributor's Purchase Order Number: Contact Name:

Distributor Name & Address:

Distributor Telephone Number: Distributor Fax Number:

Distributor Business Partner ID Number: Customer Business Partner ID Number:

Terms and Conditions For Rockwell Automation Training Services:

- Payment must be secured by one of the above methods before enrollment can be confirmed.
- If paying by purchase order, credit card, or check, please register through your local A-B distributor.
- Registration cancellation less than 14 days prior to the course start date is subject to a fee equal to 50% of the course tuition.
- Rockwell Automation strongly suggests that you only make "refundable" travel & lodging arrangements.
- Rockwell Automation reserves the right to alter course schedules, content, limit class size, reschedule, discontinue, or cancel courses.

E-mail or fax this form to your local authorized distributor to register. Call (440) 646-3434 (option 4) or email trainingservices@ra.rockwell.com with questions.

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