

Distributed Control System Training Curriculum

PlantPAX
Distributed Control System

Improve Performance with a Complete Workforce Training Solution



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Introduction

System-level introduction to the core PlantPAx® Distributed Control System for Students familiar with fundamentals of process control but may not be current on the Rockwell Automation PlantPAx System.

PlantPAx System Introduction			
Title	Course	Duration	Description
PlantPAx System Configuration Fundamentals	PRS013	4.5 Days	This course is intended for students familiar with fundamentals of process control but may not be current on the Rockwell Automation PlantPAx System. This course introduces new students to the core components of a PlantPAx® distributed control system, including controllers, HMI, networks, and instrumentation devices. Students will configure the individual components and gain understanding of their relationship to a complete PlantPAx system.

Engineering

System-level introduction focusing on the major components and how to Design, Configure and Integrate a PlantPAx Distributed Control System.

Recommended PlantPAx Systems Curriculum			
Title	Course	Duration	Description
Studio 5000 Logix Designer Level 1: ControlLogix Fundamentals and Troubleshooting	CCP299	4.5 Days	Studio 5000 Logix Designer is the software used for developing control strategies for the control system and to configure everything from I/O modules to intelligent motor control devices. Upon completion of this course, you should be able to troubleshoot a previously operational ControlLogix® system and restore normal operation. You will have the opportunity to develop and practice these skills by learning basic concepts and terminology used with ControlLogix system hardware and the Studio 5000 Logix Designer® application. You will also learn how to apply a systematic strategy for diagnosing and troubleshooting problems including, configuration issues, electrical noise, faulty/malfunctioning field devices, controller I/O, or other hardware issues. All Logix5000™ systems use the same control engine; therefore, tasks are similar. You will see applicable references for other systems.
FactoryTalk View SE Programming	CCV207	4.5 Days	FactoryTalk® View SE is the suite used to design and configure the HMIs for your PlantPAx Distributed Control System. Practice the skills used to create an application and build graphic displays and learn how to configure alarms and security, trend data, and test your application using FactoryTalk View SE Client.
EtherNet/IP Configuration and Troubleshooting	CCP183	3 Days	This course should prepare you to effectively configure a switch using both the Device Manager Web Interface and Studio 5000 Logix Designer® software and set up one-to-one IP address translation (NAT) for segmenting, machine-level network devices from the plant network, secure and limit access to a switch. In this course you will monitor diagnostic information using web-based technologies and modify a web server module's data views and tag values once the EtherNet/IP network is up and running. Finally, you will learn to resolve issues with communication between devices on a network, troubleshoot an EtherNet/IP network's media and components (including the Stratix 5700 switch) and how to run diagnostic tests to resolve system and port issues.
Essentials of Industrial Ethernet Networks for an OT Professional	CCP182	2 Days	In this course, you will learn how to verify communications between devices, recognize data transmission types, and differentiate between OSI Model Layer 2 and Layer 3 switching functions. Upon completion, you should be able to demonstrate an understanding of basic Ethernet networking skills, terminology, and concepts and apply these skills when performing advanced network specification, configuration, and troubleshooting tasks.
PlantPAx System Design and Configuration	PRS019	5 Days	During this course, you will focus on designing and configuring a PlantPAx system and learn how to: <ul style="list-style-type: none"> • Architect a PlantPAx Distributed Control System. • Create process control applications with the Library of Process Objects which includes add-on instructions, faceplates, and process strategies. • Create interactive displays for operator workstations, including alarms. • Apply best practices to help secure a PlantPAx System.

Optional Curriculum			
Title	Course	Duration	Description
Studio 5000 Logix Designer Level 4: Function Block Programming	CCP152	2 Days	A skill-building programming course that provides you with an understanding of Studio 5000 Logix Designer function block diagrams and terminology.
Studio 5000 Logix Designer Level 4: Structured Text/ Sequential Function Chart Programming	CCP154	2 Days	Learn how to select instructions, select expressions, select constructs and then enter these elements and more into a routine. You will also learn how to test sequential function chart logic using forces and step throughs. Includes opportunities to create and test their individual projects using a real workstation.
PID Loop Development & Tuning	PRS010	1 Day	This basic-level course will help provide you with the skills needed to obtain a tuned process control loop for typical applications. You 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.

Application Code Manager and Library Object Development	CCP157	3 Days	Application Code Manager is a tool that enables more efficient project development with libraries of re-usable code. You can create modular objects with customizable configuration parameters using the re-usable content, allowing you to specify the pertinent information on how the object should be used in a project. Application Code Manager creates not only the coding for the modular object but also the associated visualization, historical and alarming elements. After completing this course, you should be able to identify and register pre-configured Application Code Manager (ACM) library objects and create and decorate Studio 5000 Library Objects. You will also be able to create Application Code Manager (ACM) Library Objects from Studio 5000 Library Objects and add FactoryTalk® Alarms and Events, FactoryTalk View and Historian SE content to the Library Object.
Managing Industrial Networks with Cisco Networking Technologies	IMINS	5 Days	This course is job-role specific and enables you to achieve competency and skills to configure, maintain, and troubleshoot industrial network systems while helping to ensure network availability, reliability, and Internet security throughout your company. Students will be exposed to multiple industrial network technologies as well as products from Cisco and other industrial suppliers including Rockwell Automation.
Managing Industrial Networks for Manufacturing with Cisco Technologies	IMINS2	5 Days	This course is job and role-specific, enabling students to achieve competency and skills to configure, maintain, and troubleshoot industry standard network protocols as well as wireless and security technologies. Learn how to make full use of current infrastructures while developing a converged platform for flexibility to support future business outcomes. IMINS2 exposes students to multiple industrial network technologies in addition to products from Cisco and other industrial suppliers, including Rockwell Automation.
Essentials of Industrial Automation for an IT Professional	CCP810	2 Days	This course will assist you in building a solid foundation of Industrial Automation and Control Systems (IACS) knowledge. You will learn about and interact with a variety of automation hardware. You will also have an opportunity to use Rockwell Automation software to perform basic system and network tasks. While performing these tasks, you will gain an understanding of how controllers, I/O and HMI products function together on an EtherNet/IP network.
FactoryTalk View ME and PanelView Plus Programming	CCV204	5 Days	FactoryTalk View Machine Edition (ME) software is a versatile HMI application that provides a dedicated and powerful solution for machine-level operator interface devices. This course provides opportunities to work with both the software and hardware. During class, you will gain the hands-on skills required to prepare a PanelView™ Plus terminal for operation. You will also work with FactoryTalk® View ME software and will practice downloading FactoryTalk View ME applications to a PanelView Plus terminal.

Data Collection, Analysis and Reporting

Title	Course	Duration	Description
FactoryTalk Historian SE Configuration and Data Collection	RS-FTHSEC	3.5 Days	FactoryTalk® Historian Site Edition (SE) is the Historian for the PlantPAx Distributed Control System. In this course students will be exposed to an overview of the various tools for collecting data, installation and configuration of a FactoryTalk Historian SE system. Learn how to use Microsoft Excel to create and modify 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.
FactoryTalk VantagePoint Configuration and Reporting	FTVP	3 Days	FactoryTalk® VantagePoint® is the reporting and dashboards engine for the PlantPAx Distributed Control System. In this course students will learn various tools to analyze and display data using VantagePoint and 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.

Asset Management

Title	Course	Duration	Description
FactoryTalk AssetCentre System Design and Implementation	FTAC	3 Days	FactoryTalk® AssetCentre is the automation asset management suite for the PlantPAx Distributed Control System. It is used to archive, audit, secure, your system plus configuring and calibrating your assets. In this course students will learn to 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. 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.

Batch

Title	Course	Duration	Description
FactoryTalk Batch Project Design and Implementation	PRS101-LD	5 Days	FactoryTalk® Batch is the batch management suite in the PlantPAx Distributed Control System. In this course students will be exposed to a complete overview of the FactoryTalk Batch system, including an introduction to batch processing and the ISA S88.01 Standard. FactoryTalk Batch system architecture, system operation, and system configuration are covered in detail.

Advanced Process Control

Title	Course	Duration	Description
Pavilion8 Control and Visualization	9529-MPCVISTRN	4 Days	The Rockwell Software Pavilion8 Model Predictive Control software provides the tools to improve the agility of your operation, giving you the capability to more quickly adapt to changing business priorities and customer demands. Leveraging a powerful modeling engine, Pavilion8 software includes modules to control, analyze, monitor, visualize, warehouse, and integrate, and combine them into high-value applications and work together to support three classes of applications: Model Predictive Control, Environmental Management, and Production Performance Management. Upon completion of this course, you should be able to develop and deploy model predictive control projects using the Pavilion8® Controller.
Pavilion8 Integration	9529-MPCINTTRN	3 Days	Process engineers who are responsible for developing new or modifying and extending existing Pavilion8 applications should attend this course.

Pavilion8 Modeling and Analysis	9529-MODLTRN	2 Days	Upon completion of this course, you should be able to develop inferential models and perform unit optimization using neural-network models.
Pavilion Real-Time Optimization	9529-RTOTRN	2 Days	Upon completion of this course, you should be able to design, develop and deploy Pavilion® Real-Time Optimization™ on energy or utility systems and review and manage a running optimization system.
PlantPax MPC	9529-PPMPCTRN	3 Days	Model Predictive Control (MPC) is an advanced method of process control historically conducted on a server through our Pavilion8 offering. PlantPax MPC is a module for the ControlLogix platform designed to control the most challenging advanced control problems using MPC. It is easy to set-up, easy to understand, and integrates easily with the rest of your PlantPax distributed control system. Upon completion of this course, you should be able to design, develop and deploy PlantPax® (i.e. Logix-based) MPC models and supporting calculations on-line. This course is intended to introduce students to embedded Model Predictive Control Applications and Architectures.
Pavilion8 Software CEMS	9529-SWCENTRN	4 Days	Upon completion of this course, the user will be able to develop, deploy and maintain a Predictive Emission Monitor (PEMS) using the Pavilion8 Software CEM® system. This course is intended to introduce students to the Pavilion8 Software CEM solution. Ideal for Environmental Engineers, Integrators, Process Engineers, and Operators.

Process Safety

Title	Course	Duration	Description
AADvance Comprehensive System Training	PRST9063LD	3 Days	The AADvance solution is a truly distributed, scalable architecture which comprises of both a hardware controller and a software environment that allows the user to apply different levels of module redundancy as required by specific parts of their application. AADvance offers a high level of flexibility from small quantity I/O to large systems; non-safety to SIL 3, and fail-safe to multiple fault tolerant. This course provides a comprehensive overview of AADvance™ hardware, software, and troubleshooting. Upon successful completion of this course, you should be able to: <ul style="list-style-type: none"> • 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

Maintenance

System-level introduction focusing on the major components and how to troubleshoot a PlantPax Distributed Control system.

Optional Curriculum

Title	Course	Duration	Description
Studio 5000 Logix Designer Level 1: ControlLogix Fundamentals and Troubleshooting	CCP299	4.5 Days	Studio 5000 Logix Designer is the software used for developing control strategies for the control system and to configure everything from I/O modules to intelligent motor control devices. Upon completion of this course, you should be able to troubleshoot a previously operational ControlLogix system and restore normal operation. You will have the opportunity to develop and practice these skills by learning basic concepts and terminology used with ControlLogix system hardware and the Studio 5000 Logix Designer application. You will also learn how to apply a systematic strategy for diagnosing and troubleshooting problems including, configuration issues, electrical noise, faulty/malfunctioning field devices, controller I/O, or other hardware issues. All Logix5000™ systems use the same control engine; therefore, tasks are similar. You will see applicable references for other systems.
FactoryTalk View SE Maintenance and Troubleshooting	CCV206-LD	2 Days	Intended to provide you with the skills required to diagnose common problems on a FactoryTalk View SE system. Practice operating and troubleshooting the system through hands-on exercises. Practice troubleshooting methods such as alarming, diagnostics logging, data logging, and trending. Learn how to configure communications with a processor and the functions of redundancy.
NetLinx System Maintenance and Troubleshooting	CCP177	4 Days	This course is designed to provide you with the necessary skills to effectively troubleshoot EtherNet/IP, ControlNet, and DeviceNet hardware and software. You will build your skills by using troubleshooting best practices and network troubleshooting tools in order to safely and efficiently return a network to operation.
Studio 5000 Logix Designer Level 1: CompactLogix Fundamentals and Troubleshooting	CCP298	4.5 Days	Upon completion of this course, you should be able to troubleshoot a previously operational CompactLogix™ system and restore normal operation. In this course you will learn basic concepts and terminology used with the CompactLogix™ system hardware and Studio 5000 Logix Designer application. You will also practice a systematic strategy for diagnosing and troubleshooting system problems including, faulty/malfunctioning field devices, hardware issues, electrical noise and configuration issues.

Advanced Process Control

Title	Course	Duration	Description
Pavilion8 Basic Model Predictive Control Operations	9529-MPCUSRTRN	2 Days	Upon completion of this course, the user will be able to interact, use, and maintain their process control projects using the Pavilion8 MPC system.

Process Safety

Title	Course	Duration	Description
AADvance Operation Maintenance and Troubleshooting	PRST9064LD	2 Days	<p>This course provides an overview of AADvance™ hardware, software, and troubleshooting. The course consists of a mixture of lecture and hands-on lessons.</p> <p>Upon successful completion of this course, you should be able to:</p> <ul style="list-style-type: none">• 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• Hot-replace failed modules without disrupting the systems or process

Registration

Rockwell Automation provides focused, hands-on training courses for customers to learn the day-to-day operations of its applications, so our customers can more quickly begin benefiting from the solutions we provide.

Each course is designed to target specific usage and features of the PlantPAx Distributed Control System, and may not be suitable for all students.

Distributed Control, including Process Safety Training

For more information please visit:

<https://rockwell.csod.com/default.aspx?c=global>

Advanced Process Control

For more Information please visit:

<https://rockwell-pavilion.custhelp.com/app/training>

PlantPAx
Distributed Control System





For more information about our Training Services solutions, please visit:

<http://www.rockwellautomation.com/services/training>

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