COURSE 7701

PLC Controller Maintenance Logic Developer

Overview
Learn programming for PACSystems, 90/70, 90/30, and VersaMax controllers in this Machine Edition class featuring the PACSystems RX3i Controller. This class covers programming techniques and the advanced features of the PACSystems Controller using Logic Developer PLC Machine Edition software. Starting with the controller software architecture, students are taught how to effectively develop control applications using building block concepts. This course builds upon Object-Oriented concepts with PACSystems User-Defined Function Blocks (UDFBs), as well as the development of application components using Ladder Diagram (LD), Structured Text (ST), and Function Block Diagram (FBD) programming languages. An optional PROFINET module is available.

Topics

- Control System Fundamentals
- Application components and Logic Structure
- Basic Controller Variables, Data Types, and Numbering Systems
- Controller Scan
- Operating Proficy Machine Edition
- Orientation to programming environment & tools
- Best-Kept Secrets
- Projects and Targets
- Machine Edition Options
- Working with Controllers
- Establish communications
- Project Validation
- Upload / Download / Verify
- Fault Tables
- Controller Status
- Controller Hardware Overview
- System hardware components
- Finding Information
- Configuring Controller and IO
- Configure Controller, IO, and Option Modules
- Status indicators
- Assign Reference Addresses
- Hardware Reference View
- Import/Export
- Reports
- Ladder Diagram Basics

- Ladder Diagram (LD) programming language basics
- Simple LD program with Contacts and Coils
- Assigning Variables
- Tool chest Drawer usage
- Proficy Machine Edition Tool chest
- Create and Share Tool chest Drawers
- Saving, using, and modifying Tool chest logic
- Universal Variables $
- Online Monitoring Tools
- Logic Monitoring
- Data Watches
- Reference View Tables
- Data Monitor
- Online Application Modification
- Program changes while Controller is running
- Word-for-Word, Run Mode Store, and Test Edit
- Contacts and Coils
- Series and Parallel LD logic
- System Bits
- Find Variable references
- Monitor, modify, and force Boolean Variables
- Program Flow Operations
- Controller Block Architecture

- Operation of _MAIN and Interrupt Blocks
- Create and call Program Blocks
- Including Tool chest Program Blocks
- Timers and Counters
- Timer and Counter Instance Data
- Conversion Operations
- Change data display formats in LD Editor
- Math Operations
- Typed Instructions
- Change Variable data values directly in LD Editor
- Relational Operations
- Understand the basic operation of LD Relational instructions.
- Data Operations
- Initialize application data using Data Move Functions
- Basic Shift Register operation
- Control Operations
- PID Function Block
- Service Request Function
- Display Controller ASCII String information
- Bit Operations
- Masked Compare Function
- Working with Variables
- Variable concepts

- Variable Types
- Variable Access
- Variable attributes
- FBD Programming
- Create FBD Blocks and Logic
- Logic solve order
- FBD Comments and Instructions
- Edit and wire FBD logic
- Negative Boolean flow
- Assign FBD logic variables
- Change online values
- Monitor FBD logic
- Call UDFBs
- Editor configuration options
- Print logic
- FBD programming considerations
- Programming Guidelines
- Program organization and naming conventions
- User Defined Function Blocks
- UDFB Input, Output, and Member Variables
- UDFB operation
- Create and monitor UDFB
- UDFB Tool chest considerations
- Update existing UDFB
- Introduction to PROFINET [OPTIONAL]
- PROFINET overview
- PROFINET resources

Prerequisites
Participants should be comfortable operating in a Microsoft Windows environment, and have a basic understanding of electrical/control fundamentals.

Audience
This course is intended for those who are or will be involved in the development, modification, and troubleshooting of control systems using Proficy Logic Developer PLC and PACSystems Controllers.