SIEMENS

Online Instructor-led Training

Bridging STEP 7 Ver. 5.x to TIA Portal Programming

General Information

Course Code: SCT-PTOILTIAU2B
Length: 5 Days

Audience

This course “bridges” STEP 7 Version 5.x knowledge over to SIMATIC S7 TIA PORTAL. The fast-paced curriculum is designed for experienced Version 5.X users who are, or will be, involved with developing or sustaining TIA PORTAL projects. The course is designed for both Engineering and Maintenance personnel with current working knowledge using Ver. 5.x STEP 7 environment, programming tools, and troubleshooting techniques.

Prerequisites

- SIMATIC S7 Version 5.x Project Experience
- S7 Automation Maintenance 2 OR S7 Tools & Troubleshooting 2 OR S7 SIMATIC Programming 1 (face-to-face or virtual)

Profile

2.5 CEUs (Continuing Education Credits)

The course begins with an overview of the latest SIMATIC S7-1200 and S7-1500 systems. It is followed by in-depth discussions and hands-on exercises covering Engineering Software Framework, Network configuration, Distributed I/O, PLC Tagging, and Troubleshooting. The course covers using the Portal and Project tools to efficiently build a STEP7 system project.

During this course, software diagnostic tools are used for debugging. Program creation involves using various instruction sets, memory areas, program blocks, SCL, and library functionality.

This is a live, virtual instructor led course delivered in 3-hour learning modules through an innovative web application. Access to STEP 7 software will be provided through a cloud-based application. Learners are encouraged to complete assigned lab exercises during and after session to reinforce the learning modules throughout the week. Professional Siemens instructors are available to answer questions outside of scheduled class times.

Objectives

Upon completion of this course, the student shall be able to:

- Configure the components and feature functions of the S7-1500 system.
- Navigate the STEP 7 Portal software and use the basic and advanced tool set.
- Use the STEP7 tools to monitor and troubleshoot the system.
- Build, document, test and troubleshoot a structured STEP 7 Basic program using the multiple address types and data blocks.
- Use core application instructions, functions and blocks to build and test a basic control program.
- Efficiently employ the diagnostics tools of STEP 7.
- Setup and Configure Devices and Networks.
- Utilize the SCL Editor to program and test blocks.

Topics

1. SIMATIC S7 TIA Portal overview
   a. S7-1200 & S7-1500 Systems
   b. Hardware components and features
   c. HMI options
   d. StartDrive
2. Range and Depth of Engineering Framework
   a. Engineering Tools Review
   b. Navigating Portal View
   c. Navigating Project View
   d. Locating windows and toolbars
   e. Overview of Project Migration Tools
   f. TIA Portal Libraries
3. Devices and Networks Tool
   a. Using the Hardware Catalog
   b. Using Device and Network View
   c. Hardware Editor: Creating Configurations
   d. Online Connection and Loading
   e. Configuring Devices on the Network
4. PLC Tags
   a. New Designations in Portal
   b. Global and Local Tags
   c. Tags as Variables and Data Types
   d. PLC Tags as Operands
5. Program Blocks and Program Editor
   a. Adding New Blocks
   b. Block Attributes for S7-1200 & S7-1500
   c. Block Programming: Block Calls

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6. Advanced Programming Topics
    a. Programming Languages
    b. S7-1500 Independent Register Usage in STL
    c. Block Attribute - Optimized Block Access
    d. Optimized Blocks - Automatic Initialization of Temporary Variables
    e. S7-1200 and S7-1500 Indexed Array Accesses
7. Troubleshooting
    a. Overview of Portal Test Functions
    b. TRACE Analyzer Function
    c. TRACE Editor, Configuration, CPU Activation
    d. Test Functions: Errors Detected by System
    e. Displaying Diagnostic Information
    f. Using “Online Tools” Task Card
    g. Functional Errors - Using Test Functions
8. Structured Control Language (SCL)
    a. Creating Programs with SCL
    b. Creating SCL Blocks
    c. Editing SCL Blocks
    d. Creating Control Instructions
    e. Direct Addressing
    f. Indirect Addressing
    g. Calling an SCL Block