SIEMENS

AB to S7 Service Technician in TIA Portal Version 20

General Information

Course Code	SCT-TIAABSV1
Global Code	NA
Length	3 Days
CEUs	2.4

Audience

This course is for experienced AB programmers interested in basic training on Siemens SIMATIC S7 TIA Portal PLC family and STEP7 engineering software.

Profile

This course acknowledges the automation experience of the students and delivers must-know, basic topics to experienced technicians / engineers interested in Siemens SIMATIC STEP 7 TIA Portal software. This course moves technicians / engineers / programmers quickly into the power of the STEP 7 TIA Portal engineering tool. Multiple STEP 7 program editors are presented demonstrating the flexibility and fully integrated features of STEP 7. The course teaches Siemens STEP7 TIA Portal Software recognizing the previous experience students have with Allen-Bradley platforms. The instructor has familiarity with AB platforms and software from which they directly relate to the questions and experiences of students in the class.

This course concentrates on STEP 7 software, program structures, System Functions, advanced block libraries and custom block design. STEP 7 engineering tools and programming instructions are demonstrated to guide the student through the development of a realistic application. The course format consists of instruction, demonstration, and hands-on exercises. Students utilize test, debug and diagnostic tools to complete extensive programming exercises.

Objectives

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

- Utilize STEP 7 TIA Portal engineering tools
- Insert an HMI device into a project
- Locate Tags using Cross-Reference tool
- Utilize System Diagnostic Functions to test and troubleshoot an application program.
- Create custom code blocks
- Create reusable program code (FB, DB, FC, etc.) and insert in Library
- Assign tags in STEP 7 TIA Portal

• Create, Store, and Retrieve Library Objects

Topics

- 1. System Overview
 - a. Organization and Management
 - b. Hardware and addressing
 - c. Tags and Symbols
 - d. Software Design and re-use
 - e. Equivalency between AB and Siemens
- 2. Overview
 - a. Control System Overview
 - b. Hardware Siemens Family
 - c. TIA Portal Software framework
- 3. Hardware installation
 - a. Hardware parts and components
 - b. Hardware installation and grounding
 - c. Replacing module procedure
 - d. Hardware indication (LEDs)
 - e. Hardware Life expectancy
 - f. Hardware addressing
- 4. TIA Portal Navigation
 - a. STEP 7 TIA Portal Project definition
 - b. Software Starting screens
 - c. Icons and screens
 - d. Window arrangement and manipulation
 - e. Software updates
- 5. Getting the PLC ready to run
 - a. Memory Management
 - b. Reset the hardware
 - c. Warm restart
 - d. Data Block Memory
 - e. Connecting the PC/PG with the PLC
- 6. Hardware Diagnostics
 - a. Hardware composition
 - b. Procedures to change IP address
 - c. Network diagnostics
 - d. Topology diagnostics
 - e. Save and Compile
 - f. Part numbers and Firmware versions
- 7. How the PLC works
 - a. I/O updating
 - b. Memory formats
 - c. Tag Tables
 - d. Arrays
 - e. Data Blocks and initialization
 - f. Watch Tables
 - g. Local Memory
 - h. Data Types (UDTs)
 - i. Password protection
- 8. Programming Blocks and knowing the Machine
 - a. FB, DB, FC, OB, STEP 7 TIA Portal
 - b. Programming Editor
 - c. Looking for tags to fix a problem / malfunctioning
 - d. Modifying the code
 - e. Function Blocks

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- f. Cross reference
- g. Comments and documentation
- h. Logic Instructions
- 9. Programming Languages
 - a. SCL editor
 - b. Reusable block handling
 - c. Monitoring a reusable Block
 - d. Fixing software issues, why are there software uses?
- 10. Troubleshooting
 - a. Hardware diagnostics
 - b. Creating a Backup
 - c. Diagnostics Buffer
 - d. Comparing Blocks
 - e. Watch table and Force table
 - f. Tracing signals
 - g. Diagnostics on the HMI