SIEMENS

Automation - SIMATIC S7 with STEP 7 v5

S7 System Tools & Troubleshooting 1

General Information

Course Code: SCT-S7300S1B
Length: 4½ Days

Audience

This course is designed for ``first responders`` to industry operations utilizing Siemens S7 automated control systems. Maintenance technicians, electricians, supervisors and others, who need an understanding of their Siemens control system, should attend this course to maximize line uptime. This course also provides a great platform for those new to automation systems and state-of-the-art industrial electronics.

PLEASE NOTE: If training in S7 PLC programming is required, please consider the S7 TIA Programming 1 course.

Prerequisites

- MS Windows Expertise

Profile

This Tools and Troubleshooting course teaches basic S7 system concept, hardware configuration and parameterization, S7 software (Simatic Manager) basics, and an overview of programming fundamentals. Human Machine Interface (HMI) and PROFIBUS DP basics are also included.

Numerous hands-on exercises using a Totally Integrated Automation (TIA) plant model reinforce practical experience and theoretical knowledge. The TIA plant model consists of an S7-300 automation system, ET200S distributed I/O, SIMATIC Touch Panel, and a conveyor model.

Students experience and learn TIA concepts and gain an understanding of the relationships between key industrial automation components. Upon completion of the course, students are able to utilize STEP7 tools, and techniques to accurately recognize, diagnose, and remedy control system faults, reducing costly downtimes.

Modular in design, this course is fully customizable for those interested in on-site training. Topics are designed for adjustments to meet plant specific needs. Call 1.800.241.4453 for more details

Students needing additional skills in S7 system sustaining to include basic program modifications and advanced systems diagnostics should consider the S7 System Tools and Troubleshooting 2 course. Please visit our web site for additional details.

Objectives

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

- Perform basic hardware assembly, cabling, wiring and testing.
- Establish PLC communication with multiple technologies.
- Use standard STEP7 tools and methods for testing and diagnosing hardware & software problems in an running program.
- Retrieve, Archive, and Download S7 programs.
- Address and wire signal modules
- Perform startup procedures for S7 automation system hardware and software
- Configure and parameterize S7-300 Hardware utilizing S7 Software tools
- Configure and parameterize PROFIBUS DP
- Backup and document executed program changes

Topics

1. PLC Hardware and Cabling
   a. S7 300 Hardware Components & Installation
   b. S7 400 Hardware Components & Installation
   c. Remote I/O Hardware Components & Installation
   d. PROFIBUS Cable, Connector Assembly, & Testing Procedures
   e. Signal Module Wiring, Removal, & Installation
   f. SIMATIC HMI Cabling & Wiring Procedures
2. STEP7 and the SIMATIC Manager
   a. Navigating SIMATIC Manager Tools & Menus
   b. STEP7 Project Overview
   c. Project Creation, Opening, Structure, Archiving, and Retrieving
   d. Using the Symbols Editor
   e. Addressing
   f. Filtering, Sorting, Locating, and Replacing Addresses
   g. CPU Online and Offline Views
   h. Memory Card - Project Loading & Saving Procedures
3. Configuring the Hardware
   a. Navigating the Hardware Configuration Tools
   b. Generating and Modifying a Hardware Setpoint Configuration
   c. CPU Object Properties
   d. Downloading the Setpoint Configuration
   e. Troubleshooting Hardware Configurations
   f. Configuring a PROFIBUS Network
   g. Troubleshooting a PROFIBUS Network
4. Hardware Commissioning
   a. Hardware LED Indicator Descriptions & Troubleshooting

   b. Clearing the PLC memory
   c. Testing & Troubleshooting I/O
   d. Commissioning & Troubleshooting SIMATIC HMI
5. The STEP 7 Program Editor
   a. LAD (Ladder)
   b. FBD (Function Block Diagram)
   c. STL (Statement List)
6. Binary and Digital Operations
   a. Basic binary logic program operations
   b. Basic digital logic program operations
7. Rewiring
   a. Rewire tool
   b. S7 Block Compare function
8. Documentation and Saving a Project
   a. Uploading Programs from a CPU
   b. Documenting a Block
   c. Saving & Retrieving a Program and Hardware Configuration