



SIEMENS Certified PLC Service Technician

(ST-SERV1&2) – 5 Days

Course Contents

Requirements

This course is designed for industry "first responders" to operations controlled with Siemens STEP 7 automated control systems. Participants not requiring programming skills, such as maintenance technicians, electricians, supervisors and others, who need an understanding of their Siemens control system to maximize line uptime, should attend this course. This course also makes a great platform for those new to automation systems and industrial electronics.

Objectives

This course provides Participants with a solid base of STEP 7 PLC tools and skills necessary for successful system diagnostics and repair. This course is ideal for environments with high uptime requirements and stable control system programs. Fully functional application programs are used as a baseline for the participant to understand key process flow information, diagnostics tools and repair techniques. Build skills and reduce downtime with this focused automation system troubleshooting course.

Topics

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

- Identify and maintain the components of a typical automation system.
- Understand the basic steps in hardware assembly, cabling, wiring and testing.
- Establish communications with the PLC with multiple technologies.
- Retrieve, Archive, and Download programs.
- Use the hardware configuration editor to inspect and troubleshoot hardware problems.
- Use SIMATIC Manager tools for basic program administration tasks.
- Establish connections to an HMI & Drive system.
- Follow program power/logic flow and interpret/modify basic program elements.

Course Certificate

Certificate of participation will be awarded after the training.



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Course Outline

The major topics to be covered are:

- Simatic Manager
- Symbols
- Hardware Configuration
- Hardware Commissioning
- Block Architecture and Block Editor
- Binary Operations
- Digital Operations
- Data Storage in Data Blocks
- Functions and Function Blocks
- Organization Blocks
- Analog Value Processing
- Intro to HMI and Profibus/ Profinet
- Rewire a User Program
- Troubleshooting
- System Information
- Tags and Messages in HMI



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Daywise Schedule

Day 1

1. SIMATIC Manager
 - Project Structures
 - Creating a Project
 - SIMATIC Manager tools
 - CPU memory reset
 - Retrieving a project
 - Memory Card operations
2. Symbols
 - Symbolic Addressing
 - Editor Tools
 - Importing & Exporting
3. Hardware Configuration
 - CPU Properties and Parameterization
 - Hardware Configuration methods
 - Remote I/O Connections
 - CPU Clock Memory
4. Hardware Commissioning
 - Check list
 - Module indicators
 - Variable table
 - I/O wiring testing

Day 2

5. Block Architecture and Block Editor
 - Program Structures & Execution
 - Program Blocks
 - LAD / STL / FBD Editors
6. Binary Operations
 - AND, OR, XOR
 - NO/NC Contacts
 - CPU Clock Memory
7. Digital Operations
 - Data Types - Integer, Real, BCD
 - Timers & Counters
 - Accumulators
 - Data Management & Conversions
8. Data Storage in Blocks
 - Elementary data types
 - Complex data types
 - Addressing data elements
 - Accessing data elements

Day 3

9. Functions and function blocks
 - Temporary variables
 - Formal parameters
 - Editing and calling a reusable block

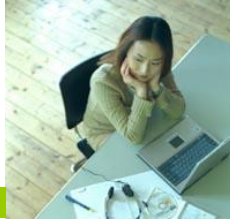
10. Organization Blocks
 - OB types and library
 - OBs for cold and warm restarts
 - Cyclic and hardware interrupts
 - Error OBs
 - Diagnostics OBs
11. Analog processing and programming
 - Analog module addressing
 - Analog input signal conversion
 - Analog output signal conversion
 - Scaling of analog to engineering values
12. Introduction to HMI and Profibus DP
 - Downloading projects
 - Establishing communications
 - Editing tags
 - Control & monitoring

Day 4

13. Rewire a User Program
 - Leading Symbols
 - Block Consistency
 - Comparing blocks
14. Troubleshooting
 - Error categories
 - Debugging tools
 - System diagnostics
 - Diagnostics buffer
15. System information
 - Module Information
 - Scan cycle time
 - Performance characteristics

Day 5

16. Tags and Messages in HMI
 - Establishing communications
 - Assigning and editing tags
 - Pointers for alarms and messages
17. Closing Exercise



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Time-wise Schedule

Day	Time	Topics
Day – 1	09:00 Hrs – 10:15 Hrs 10:15 Hrs – 12:00 Hrs 13:00 Hrs – 15:00 Hrs 15:15 Hrs – 17:00 Hrs	Simatic Manager Symbols Hardware Configuration Hardware Commissioning
Day – 2	09:00 Hrs – 10:00 Hrs 10:15 Hrs – 12:00 Hrs 13:00 Hrs – 15:00 Hrs 15:15 Hrs – 17:00 Hrs	Block Architecture and Block Editor Binary Operations Digital Operations Data Storage in Data Blocks
Day – 3	09:00 Hrs – 10:00 Hrs 10:15 Hrs – 12:00 Hrs 13:00 Hrs – 15:00 Hrs 15:15 Hrs – 17:00 Hrs	Functions and Function Blocks Organization Blocks Analog Value Processing Intro to HMI and Profibus DP
Day – 4	09:00 Hrs – 10:00 Hrs 10:15 Hrs – 12:00 Hrs 13:00 Hrs – 15:00 Hrs 15:15 Hrs – 17:00 Hrs	Rewire a User Program Troubleshooting System Information Practical on the above
Day – 5	09:00 Hrs – 10:00 Hrs 10:15 Hrs – 12:00 Hrs	Tags and Messages in HMI Closing Exercise

Break Timings:

10:00 Hrs – 10:15 Hrs	Morning Tea Break
12:00 Hrs – 13:00 Hrs	Lunch Break
15:00 Hrs – 15:15 Hrs	Afternoon Tea Break
17:00 Hrs – 17:15 Hrs	Recess & End of Day