

Automation - SIMATIC NET

SIMATIC Net Profibus, Ethernet, Profinet

General Information

Course Code: SCT-S7NETS1A

Length: 4½ Days

Audience

This course is for engineering and maintenance personnel involved with the sustaining or commissioning of S7 industrial networks.

Prerequisites

- S7 Programming 1
- OR
- S7 Automation Maintenance 1

Profile

2.9 CEUs (Continuing Education Credits)

This course provides a working knowledge of Industrial Ethernet, PROFIBUS and Actuator-Sensor Interface (AS-i) networks within an S7 PLC automation system. Students will build skills with the basics of network installations, configuration and troubleshooting. This course covers sensor, field and enterprise level networks including hardware and software requirements, topologies and installation rules. Specific network protocols are discussed and working lab exercises are used to learn configuration and parameterization requirements with SIMATIC Net. Specific SIMATIC Communication Processors (CPs) and their functions are reviewed, including project and subnet creations with the SIMATIC manager. The course concludes with discussions on network troubleshooting and repair.

The course format is a combination of instruction and hands-on exercises.

Objectives

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

- Describe the various Industrial Networking options and terminology in the S7 environment.
- Install and configure simple networks including, interface modules, software and cables
- Configure and troubleshoot SEND/RECEIVE connections
- Use the OSI and IP protocols.
- Install and address various sensor and field devices including 3rd party devices.
- Configure Softnet software.
- Troubleshoot and repair basic industrial networks including MPI, Ethernet, PROFIBUS and AS-i.

Topics

1. Introduction to SIMATIC NET
 - a. MPI,ASI, PROFIBUS, Ethernet
 - b. 7 Layer Model
 - c. Protocols and terminology
 - d. NetPro
2. Network components and installation guidelines
 - a. Cable options
 - b. Couplers
 - c. Transceivers
 - d. OLMs / ELMS
 - e. Hardware diagnostics
3. ISO Transport Protocol (IE and FDL)
 - a. SEND / RECEIVE
4. TCP/IP Protocol
 - a. IP features
 - b. Headers & addresses
 - c. TCP/UDP Protocols
5. Communication Processor (CPs) Options
 - a. CP343-1 / CP342-5
 - b. Configuration options
6. NCM software overview
7. S7 Communication functions
 - a. Global Data
 - b. SFC/SFB Communication Blocks
 - c. SIMATIC Net Library Blocks
 - d. PC / PG communications
8. SIMATIC Manager network projects
 - a. Single Projects / Multiple Projects
 - b. Single Subnet / Multiple Subnets
9. Network Configurations
 - a. Cable options
 - b. Couplers
 - c. Project creation & hardware configuration
 - d. Network properties
10. Error trapping diagnostics for PROFIBUS DP
 - a. Troubleshooting Cabling problems
 - b. Interpretation of Error codes
 - c. Using the BT200
11. Network performance
 - a. Overview of bus parameters
 - b. Overview of Token ring concepts
12. AS-I Network Overview
 - a. Cabling, connections and topologies
 - b. Addressing & diagnostics unit
 - c. Power requirements
 - d. Repeaters and extenders
 - e. PLC Interfaces
 - f. Data management
13. Introduction to OPC Server
 - a. OPC Foundation
 - b. OPC Scout