SIEMENS

Maintenance & Safety
S7-300F Distributed Safety Sustaining

General Information

Course Code: SCT-S7SFTS1A
Length: 2 Days

Audience

This course is for SIMATIC S7 300F PLC users who install or maintain automation safety systems and their application programs.

Prerequisites

- MS Windows Expertise
- S7 Programming 1

OR

- S7 Automation Maintenance 1

OR

- S7 System Tools and Troubleshooting 1

Profile

1.3 CEUs (Continuing Education Credits)

This course introduces the student to a Siemens Distributed Safety PLC application. Participants will build skills on commissioning, troubleshooting and upgrading an automation safety system. Failsafe Hardware Module details and parameterization, Safety Program structure and implementation, and System Diagnostics are covered.

The course format is a combination of instruction and hands-on exercises. A realistic model is used for demonstrations and student exercises. Exercises allow students to practice tasks such as testing, debugging and using diagnostic tools.

Objectives

Upon completion of this course, the student shall be able to:
- Understand the concept of the Siemens S7 safety integrated system.
- Identify S7 safety components.
- Know how to remove and replace S7-300 and ET200S safety components.
- Identify the wiring diagrams of the S7-300 and ET200S safety components.
- Understand the hardware configuration of the S7-300 safety components.
- Identify the LED diagnostics for the S7-300 safety components.
- Identify the addressing of the S7-300 safety components.
- Understand the structure of an S7-300 safety program.
- Troubleshooting using the Hardware Configuration diagnostics to identify system faults.
- Troubleshooting using the VAT to monitor the I/O modules' diagnostic bits.
- Troubleshooting using the status of program logic.

Topics

1. Safety Systems Overview
   a. Terminology and concepts associated with Safety Systems.
   b. Differences between control and safety systems.
   c. Different applications, types, and standards of safety systems.
2. Introduction to Standard & Safety Block Structure
   a. Review the Block Structure of the S7 PLC.
   b. Standard verses Safety programs.
   c. Arrangement of the S7 PLC safety integrated system.
   d. Memory areas allowed between and within the standard and safety programs.
   e. F-Call function and F-Program Block.
3. Safety Products
   a. Hardware components that are in a PLC Safety integrated system and PROFIsafe remote.
   b. PDF Siemens System Manual information on the hardware components.
4. S7 Safety CPU and ET200S Hardware
   a. S7 PLC & ET200S components' form factor and wiring diagrams.
   b. Electronic Manuals for the PLC safety system information.
   c. Address switches of the fail-safe signal modules.
5. Safety PLC Hardware Configuration
   a. F-System configuration and parameters F-System CPU and ET200S.
   b. Understand the F parameters and their function.
6. Safety Project Overview
   a. F-System project set up and execution.
   b. F-System blocks
   c. Password assignment for the F-System program.
   d. Compile and download operation for an F-System project.
7. Safety Program Code
   a. Creation of Safety program blocks.
   b. Basic F Functions
   c. Safety Program States
   d. Rules and restriction of an F-System program.
8. Testing and Diagnostics
   a. Passivation and Reintegration
   b. Diagnostics Evaluation
   c. Hardware Configuration Diagnostics
   d. Evaluation of the I/O modules' diagnostic bits