

S7-300F Distributed Safety Engineering

General Information

Course Code SCT-S7SFTE1A
Global Code ST-PPDS
Length 2½ Days
CEUs 1.6

Audience

This course is for engineers and personnel responsible for implementing SIMATIC Distributed Safety systems, including:

- - Selecting the appropriate architecture.
- - Selecting the components and understanding their specific purposes and limitations.
- - Specifying the module and system wiring.
- - Developing the safety PLC program
- - Starting up and supporting the system

Prerequisites

- S7 TIA Programming 1 or Virtual OR
- S7 Automation Maintenance 1 or Virtual OR
- S7 System Tools and Troubleshooting 1

Profile

This course introduces the student to a Siemens Distributed Safety PLC application. Participants receive knowledge on applying the system per relevant standards, Failsafe Hardware Module details and parameterization, Safety Program structure and implementation, Safety Communications, System Diagnostics, and introduction to Drive Safety.

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 configuration, programming, and code debugging. The student take-away from this course is a USB containing all course content. The USB is used throughout the course delivery.

Objectives

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

- Locate and understand the applicability of the detailed documentation and development resources.
- Select and configure the Failsafe Hardware components and understand their application restrictions.
- Properly implement a Safety program in the PLC.
- Document, test, and troubleshoot the system.

Topics

1. Introduction to Distributed Safety
2. Standards discussion
 - a. Standards as related to selecting and configuring Distributed Safety
 - b. Risk assessment concept
 - c. Safety related control function architectures
3. Hardware introduction and safety wiring
 - a. I/O introduction
 - b. Fundamentals of Distributed Safety hardware
 - c. ET200s safety I/O
4. STEP7 quick tour
5. STEP7 Distributed Safety overview and labs
 - a. Terminology and concepts
 - b. Lab's overview
 - c. Project creation
 - d. Configuring CPU for safety functions
 - e. I/O and device configuration
 - f. Hardware download
 - g. Safety Runtime Groups
6. Reintegration
 - a. Concept and overview
 - b. Reintegration Logic
 - c. Test scenarios
7. Safety Logic
 - a. Simple relay ladder logic
 - b. Safety library
 - c. EStop library function
 - d. Feedback library function
 - e. Integrating standard control
 - f. Edit Safety Program dialog functions
 - g. Safety Active mode
 - h. Invalid operations
 - i. Safety Program defaults and options
8. System Communication overview
 - a. Via PROFIBUS
 - b. Via PROFINet (Ethernet)
9. Diagnostics
 - a. Programmed Safety Module F-DB
 - b. Programmed Report System Errors
 - c. Hardware functions
10. Cotib.xls Throughput Calculations

- a. Selecting the Processor
- b. Setting the F-I/O monitoring times
- c. Calculating the Safety Related Control Function response time
- d. Drive Safety Introduction