SIEMENS

TIA Portal Safety

General Information

Course Code	SCT-PTSFTE1A
Global Code	TIA-SAFETY
Length	3 Days
CEUs	2.1

Audience

This course is for engineers and personnel responsible for implementing and maintaining SIMATIC S7 TIA Portal 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, supporting, and troubleshooting the system.

Prerequisites

- TIA Portal Programming 1

OR

- TIA Portal Service 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.

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. ET 200SP distributed I/O system
   a. Base Unit Selection
   b. ET 200SP with fail-safe and non-fail-safe modules
   c. Mounting and addressing ET 200SP F-I/O
   d. 1oo1 evaluation for SIL1 or PLC (Cat.1)
   e. Wiring examples for ET200SP / F-DO
   f. Emergency Stop and Position Devices
4. Hardware Configuration
   a. Configuring an S7-1500F
   b. CPU Safety Parameters
   c. Configuring the F-I/O & Parameters
   d. F-DO parameters
   e. F-PM parameters: Potential group
   f. ET-200SP - Assign device name/address
5. Safety Advanced: Programming
   a. User Program of an F-CPU
   b. Blocks of the Safety Program
   c. Structure and Editing of the safety program
   d. Main Safety Block of the S7-1500
   e. Creating F-FC / F-FB
   f. Safety Administration Editor
   g. Compiling & Downloading the Safety Program
6. Fail-safe Communication
   a. Communication with PROFIBUS DP
   b. Communication with PROFINET IO
   c. Fail-safe CPU-CPU communication
   d. PROFINET: Intelligent device (I-device)
   e. Fail-safe communication with S7 F-systems
7. F-system Response Times
   a. Response time under fault-free conditions
   b. Excel sheet "S7Safety_RTT" (Reaction Time Table)
   c. RTT - SIMATIC S7-1500F
   d. Parameter "F-monitoring time"