F855
ABB Automation Products
AC500-S Safety PLC Training

Course goal

The objective of this course is to make the participants familiar with the configuration and programing steps of AC500-S Safety PLC in its entirety.

Learning objectives

Upon completion of this course the participants will be able to:

- Understand the basic hardware modules of AC500-S Safety PLC and their features.
- Perform hardware configuration and parameterization of safety I/Os modules.
- Appreciate the functionality of PROFIsafe in Safety Communication.
- Write safety software logic using ST or LD or FBD editors.
- Deploy standard certified safety library for a given application.
- Use PLC Open safety library blocks for the most commonly used safety applications.
- Perform diagnostic functions using Automation Builder software utility.

Participant profile

Persons interested in programming and deploying AC 500-S PLC in factory automation tasks. Working knowledge with AC500 PLC and Automation Builder software is desirable but not mandatory.

Prerequisites

Good understanding of any standard PLC system deployment and familiarity with PCs with WINDOWS OS is a must.

Prior knowledge on Safety regulations like SIL/PL from TÜV etc. is expected and not taught in this course at all.

Training Kit

Topics

- Safety PLC Overview
- SM560-S CPU Features
- Safety Communication
- Hardware Configuration
- Safety I/O Configuration
- Safety I/O Modules Wiring
- Safety Programming & Libraries
- Licensing & Protection
- Safety Code Analysis Tool
- Safety Function Response Time
- Diagnostics & Debugging
- Commissioning Checklist

Course type and methods

This is an instructor led course with interactive classroom discussions and associated lab exercises. Approximately 50% of the course is hands-on lab activities.

Duration

The duration is roughly 2.75 to 3 days (last day is adjusted as per the convenience of the participants' travel arrangements).

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Course outline

Day 1	Day 2	Day 3
• **Safety PLC Overview** - Introduction to AC500-S - Safety Components - Safety Communication - Safety Function Behavior • **SM560-S CPU Features** - General Overview - System Functions - SM/PM583 interaction - Data Flow Diagram • **Safety Communication** - PROFINET - PROFIsafe - F-Parameters - i-Parameters • **Hardware Configuration** - Project Creation - Adding a Non-Safety CPU - I/O Configuration - Configuring the AI581-S - Configuring the DX581-S - Adding the Safety CPU - Configuring PROFINET - Master/Slave - Configuring the DI581-S - Non-safety CPU Program - Safety CPU Program - Start-up Procedure	• **Safety IO Configuration** - Safety Modules Behavior - AI581-S I/O Configuration - DX581-S I/O Configuration - DI581-S I/O Configuration - PROFIsafe I/O Variables • **Safety I/O Modules Wiring** - DI581-S Wiring - DX581-S Wiring - AI581-S Wiring - I/O Module States • **Safety Programming & Libraries** - Programming Guidelines - Automation Builder - Data Types/Blocks - Libraries / Expression - Bit Access / Conversions - Operators / Language - Brief Description of Libraries - Standard Library - PROFIsafe Library - Safety External Library - PLCopen Library	• **Licensing & Protection** - Software Licensing - Protection Mechanism - Firmware and or boot code - Program downloading • **Safety Code Analysis Tool** - Background of SCA - Scope of SCA - Actions in SCA - Exporting the Project Codes - Opening a Project in SCA - Error Analysis - Creating Library Definition • **Safety Function Response Time (SFRT)** - Concept of SFRT - Calculation Examples - Optimization of SFRT • **Diagnostics & debugging** - Installation and Maintenance - Troubleshooting - Error Messages of SM560-S - Error Messages of I/Os • **Commissioning checklist** - Creation of Safety appl. - Configuration and Wiring - Operation, Maint. and Repair - Safe iParameter setting

* Training PCs are provided by us if the training venue is Heidelberg/Ladenburg, Germany
* For onsite / regional training the participant's laptop will be used *

Course Bookings
http://www100.abb.com/TPOnline/NET/Public%20Courses.aspx

Contact
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Further AC500 Information
www.abb.com/PLC

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