

Automation - SIMATIC S7 with STEP 7 v5 S7 Programming 2

General Information

Course Code: SCT-S7TIAP2B
Length: 4½ Days

Audience

This course is for SIMATIC S7-300/400 PLC users with basic engineering experience in the design and sustaining of SIMATIC automation systems and their application programs.

Prerequisites

- S7 Automation Maintenance 1 & S7 Automation Maintenance 2

OR

- S7 Programming 1

Profile

2.9 CEUs (Continuing Education Credits)

This course is the second in a three part series which increases skills with Siemens STEP7 Totally Integrated Automation. Students will learn to leverage the power of Simatic software with advanced structured programming techniques. A systems approach to the integration of efficiently programming the S7300/400 PLCs, plus connectivity and functionality of an HMI and Micro Master Drive are the central focus of this course. Emphasis on Statement List (STL) programming for both direct and indirect addressing is an integral part of the course.

The core issues of efficient use of CPU resources, establishing communications, passing information, and managing integrated diagnostics are included. Skills in error management and extended diagnostics are reinforced throughout this agenda. This course includes classroom instruction, demonstration and considerable hands-on lab work.

Objectives

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

- Leverage the power of Block and Function libraries.
- Use STL for advanced program development.
- Employ indirect addressing in a program.
- Incorporate System Functions (SFC) in a program.
- Integrate an HMI and Drive system with the PLC.
- Use Instance and Multi-Instance data Blocks.
- Use interrupt-driven and error processing program execution blocks.
- Leverage STEP7 advanced diagnostics.

Topics

1. Programming review
 - a. Key Topics review from P1
2. Data Blocks and complex variables
 - a. Data Blocks and complex variables
3. HMI event and alarm messages
 - a. HMI event and alarm messages with WinCC Flexible
4. Introduction to Micro Master 4 Drives
 - a. Introduction to Micro Master 4 Drives
5. Program control
 - a. STL and managing the accumulators for S7300/400
 - b. Status word and jump instructions
 - c. Loop command and breakpoints
6. Organization Blocks
 - a. Organization Blocks
7. Parameter Passing with FC, FB, SFB, SFC
 - a. Parameter passing: Local variables
 - b. Library blocks: SFC's SFB's
 - c. Parameter passing with user designed FC's
 - d. Parameter passing with user designed FB's
 - e. Multi-Instance FB
8. Indirect Addressing
 - a. Memory indirect addressing
 - b. Register indirect addressing
9. Troubleshooting the automation system
 - a. Troubleshooting with module information tool
 - b. Troubleshooting with hardware configuration tool
 - c. Troubleshooting with CPU messages
 - d. Troubleshooting with HMI diagnostics.