

Target Audience

This course is for SIMATIC S7-200 PLC users involved in developing or sustaining automation systems and their application programs.

Prerequisites

- MS Windows Expertise

Profile

This course begins with an introduction to the S7 product family followed by a detailed SIMATIC S7-200 system review. This discussion includes hardware and software components plus system configuration issues.

The course concentrates on the STEP 7 Micro/WIN software, program structuring and the instruction set. STEP 7 software tools and programming instructions are introduced to guide the student through the development of a realistic application. Focus will be given to Ethernet connectivity and the use of web server technology as a means of monitoring the machine or process. The use of test, debug and diagnostic tools complete the program. The goal of this course is to help the student understand the powerful features of the S7-200 and their application.

The course format is a combination of instruction and hands-on exercises.

Goals

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

- Understand basic PLC theory including primary elements, signal processing, scan time and throughput.
- Identify the components and performance characteristics of the SIMATIC S7-200 PLC.
- Use binary operations, timers, counters, comparators, and arithmetic operations.
- Create, document, test and troubleshoot a simple application program.
- Use the key features of the S7-200 including the analog pots, communications, interrupts, high-speed counters, pulse outputs, and the memory cartridge.

Experience the use of HTML and OPC as communication strategies

Topics

1. PLC Basics
 - Primary elements / signal types
 - Scan time and throughput
 - Typical applications
2. SIMATIC S7 System Family Overview
 - S7-200 components
 - Programming and communication devices
 - Networking possibilities
3. STEP 7 Micro/WIN Programming Software
 - Hardware and software requirements
 - Installation procedure
 - Using the Help and Tutorial files
 - Using the Menus and Toolbars
 - Understanding the STEP 7 file structure
4. Principles of STEP 7 Programming
 - Linear program structure
 - I/O addressing and registers
 - Program editing (Ladder Logic - LAD; Statement List - STL)
5. Using the S7-200 Instruction Set
 - Basic logic elements
 - Standard logic instructions
 - Using the instruction set to solve an application program
 - Passwords
6. S7-200 Special Features
 - Analog potentiometers



- Interrupts
- High Speed counter
- High Speed pulse outputs
- Real Time clock (214 only)
- Direct I/O Access (Immediate I/O)
- Memory Cartridge usage
- Freeport Communications
- PPI Communications
- 7. Program Documentation and Storage
 - Documentation
 - Printing programs & documentation
 - Storing programs on a memory card or disk
- 8. Debug and Test Tools
 - Using S7 Status Chart monitoring feature
 - Monitoring and modifying variables
 - Error codes
 - Force functions
 - Single / Multiple scan feature
- 9. What's new? Future Product & Features
 - OPC Connection
 - SIWAREX
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