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TEC 2020 training catalog

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Training catalog 2020



S7-300 / S7-400 automation systems

Parameter setting, maintenance and programming of programmable logic controllers Simatic S7-



Industrial Networks

Configuration and maintenance of communication networks.



Human Machine Interface (HMI) and Supervision

Development and maintenance of HMI and SCADA supervision.

Training catalog 2020



Process control system

Development and programming of Siemens DCS under PCS7.



Variable speed training

Configuration and parameterization of drives.



The new SIMATIC TIA PORTAL range

Parameter setting, maintenance and programming of programmable logic controllers Simatic S7-

S7-300 / S7-400 Automation Systems

SIMATIC training



Module: ST-BAS-S7
Getting started with SIMATIC S7
Basic course



Module: ST-MA1
SIMATIC Step7 classic
maintenance Level 1



Module: ST-MA2
SIMATIC Step7 classic
maintenance Level 2



Module: ST-PROG
Classic SIMATIC Step7
programming



Module: ST-PROG-P1
Advanced programming
SIMATIC Step7 Part 1



Module: ST-PROG-P2
Advanced programming
SIMATIC Step7 Part 2



Introduction to SIMATIC S7 / Basic Course

Presentation

This course is an introduction to programmable logic controllers.

It allows you to acquire the essential bases to approach the field of logical automation.

Non-automation technicians will be more efficient in their maintenance interventions.

Course objective

Applicants will be able to:

- Understand the basic principles of a programmed automation.
- Program and test a basic automated system on Logo type PLCs! and S7-300.
- Diagnose a simple hardware failure.

Course content

- Understanding of the materials used for training
- Installation / maintenance of the S7-300 automation system
- General on Programmable Logic Controllers
- Master the SIMATIC Manager software
- Hardware commissioning
- Understanding the Reference Data
- Reassigning a user program
- Visualization of the forcing of variables
- Documentation, backup and archiving

Prerequisites

Using the WINDOWS environment with ease.

Educational resources

- Programming console (Step7 Professional 5.5)
- S7-300 PLC
- Conveyor belt
- I / O simulator

Practice: 60% **Theory:** 40%

Duration: 5 days



Maintenance SIMATIC Step7 Classic Level 1

Presentation

This course is intended for operators, maintenance and assembly personnel who install, commission and maintain SIMATIC S7 or SINUMERIK (numerical control) automation systems.

Course objective

At the end of the course, the participant will be able to:

- Assemble a SIMATIC Step7 controller.
- Address and wire input / output modules.
- Carry out the commissioning and maintenance of an automation system.

Course content

- The SIMATIC S7 range.
- Training material.
- Assembly and maintenance of an automation system.
- The SIMATIC manager.
- Hardware commissioning.
- Documentation, backup, archiving.
- Hardware configuration / memory concept.
- Symbolic.
- Editing blocks.
- Binary operations.
- Digital operations.
- Reassignment of a user program.

Prerequisites

- The Windows environment.
- Experience in traditional electrical maintenance.

Educational resources

- Programming console (Step7 Professional 5.5)
- S7-300 PLC
- Conveyor belt
- I / O simulator

Practice: 70% **Theory:** 30%

Duration: 5 days



Maintenance SIMATIC Step7 Classic Level 2

Presentation

This course is intended for operators, maintenance and assembly personnel who install, commission and maintain SIMATIC S7 or SINUMERIK (numerical control) automation systems.

Course objective

At the end of the course, the participant will be able to:

- Implement and use testing and error finding tools.
- Check the hardware and software of a PLC.
- Identify and fix program errors causing API shutdown.
- Identify and correct logical errors in programs.

Course content

- Introduction and reminder of the S7-Maintenance level 1 training.
- Data storage in data blocks.
- Functions and functional blocks.
- Software commissioning.
- Finding errors.
- System information.
- Organization blocks.
- Processing of analog values.
- Documentation and archiving.
- Communication via MPI interface.
- Solutions.

Prerequisites

Have participated in the training Simatic S7-Maintenance level 1 and 2 or have an equivalent level.

Educational resources

- Programming console (Step7 Professional 5.5)
- S7-300 PLC
- Conveyor belt
- I / O simulator

Practice: 70% **Theory:** 30%

Duration: 5 days



Programming SIMATIC Step7 Classic

Presentation

This course is aimed at engineers, planners, commissioners who want to develop an application and implement the SIMATIC S7 and / or SINUMERIK 840d / 840di / 810d.

Course objective

At the end of the course, the participant will be able to use all the functions of the Step7 software:

- Documentation programming
- Dynamic visualization of programs and variables
- Finding and diagnosing errors
- Analog values
- Setting
- Online tests
- Use the project / program archiving function.

Course content

- Introduction and reminder.
- Data storage in data blocks.
- Functions and functional blocks.
- Software commissioning.
- Finding errors.
- System information.
- Organization blocks.
- Processing of analog values.
- Documentation and archiving.
- Communication via MPI interface.
- Solutions.

Prerequisites

Using the WINDOWS environment with ease.

Educational resources

- Programming console (Step7 Professional 5.5)
- S7-300 PLC
- Conveyor belt
- I / O simulator

Practice: 70% **Theory:** 30%

Duration: 5 days



Advanced programming SIMATIC Step7 Part 1

Presentation

This course is aimed at engineers and designers who want to develop an application and implement the SIMATIC S7 and / or the SINUMERIK 840D / 840Di / 810D.

Course objective

At the end of this internship, the participant will be able to understand, structure and develop complex programs

Course content

- Processing of status bits.
- Accumulator operations.
- Floating point instructions.
- Parameterization of complex blocks.
- Address register operations.
- Indirect addressing, pointers.
- Use of complex data structures.
- Presentation of SCL.

Prerequisites

Have participated in the S7-Programming training or have an equivalent level.

Educational resources

- Console programming (Step7 Professional 5.5)
- S7-300 PLC or S7-400

Practice: 70% **Theory:** 30%

Duration: 5 days



Advanced programming SIMATIC Step7 Part 2

Presentation

This course is aimed at engineers and designers who want to develop an application and implement the SIMATIC S7 and / or the SINUMERIK 840D / 840Di / 810D.

Course objective

At the end of this course, the participant will have completed the knowledge acquired in the S7-Programming part 1 module and will thus have reached a high level in advanced programming.

Course content

- Use of standard system functions.
- Evaluation of system error messages.
- Use of IEC functions of the S7 library.
- Program design with text editor.
- Homogeneous SIMATIC S7 communication via MPI network.
- Specificities of the S7-400.
- Calling multi-instance blocks.

Practice: 70% **Theory:** 30%

Duration: 5 days

Prerequisites

Have participated in the S7-Programming training or have an equivalent level.

Educational resources

- Console programming (Step7 Professional 5.5)
- S7-300 PLC or S7-400
- Carpet conveyor
- Simulator I / O

Networks Industrial SIMATIC-NET training



Module: IK-PBSYS
Profibus DP network maintenance



Module: IK-ETHER-PN
**SIMATIC network Industrial
Ethernet & PROFINET**



Module: IK-OPC SERVER
Communication via an OPC server



Maintenance network Profibus DP

Presentation

This course is devoted to commissioning the Profibus network of SIMATIC S7 PLCs and is aimed at technical personnel who have to design, implement or repair such a configuration.

Course objective

At the end of this course, the participant will know:

- Profibus hardware configuration rules.
- The hardware and software resources required in each case.
- The use of configuration and diagnostic tools.
- The structure of the application program.

Course content

- Profibus DP presentation.
- Diagnosis of a Profibus network using the BT200 tool.
- Advanced diagnostics of a Profibus network via the diagnostic repeater.
- Implementation and installation of a DP-DP gateway.
- CPU-CPU communication via integrated 2DP interface.
- CPU-CPU communication via CP342-5.
- Implementation of PG Console routing.

Prerequisites

Have taken part in the S7-Maintenance level 2 training, in the S7-Programming training or have an equivalent level.

Educational resources

- Programming console (Step7 Professional 5.4)
- S7-300 or S7-400 controller
- Coupler 342-5
- Decentralized I / O and 200s
- Bridge dp-dp
- Diagnostic repeater
- Pocket BT200

Practice: 70% **Theory:** 30%

Duration: 5 days



SIMATIC network Industrial Ethernet & PROFINET

Presentation

This course is aimed at technical personnel wishing to study the operating modes of the Ethernet network to ensure more efficiently the maintenance and the implementation of an architecture. Industrial-ETHERNET as well as the inputs / outputs on PROFINET IO.

Course objective

At the end of this course, the participant will be able to:

- Commission a subnet Industrial Ethernet in an S7 project
- Establish inter-machine exchanges
- Operate and put in ??work reporting SFM diagnostic alarms to Supervisor (operator panel)
- Make diagnostic information and process data available via http pages

Course content

- Standardization of industrial networks
- Physical and logical characteristics of Industrial Ethernet
- Data transport with ISO, TCP / IP and UDP protocols via communication coupler
- Setting ??artwork controlling inputs / outputs on PROFINET IO
- IP addressing
- Assigning device names
- Setting ??artwork new features
- Periphery sharing (Shared Devices)
- Communication Profinet IO inetr-CPU (iDevice)
- Ring manager via MRP method

All these points are deepened by exercises.

Prerequisites

Have participated in the ST-PROG training and be completely autonomous on STEP 7 v5.x

Educational resources

- STEP 7 software
- S7-300 PLC
- Decentralized I / O type ET200 PN
- CP343-1 couplers

Practice: 70% **Theory:** 30%

Duration: 5 days



Communication via an OPC server

Presentation

This course is intended for technical personnel wishing to study the operating principle of communication via an OPC server.

Course objective

At the end of this course, the participant will be able to operate and implement communication between a PLC and any supervision system of another brand.

Course content

- Presentation of OPC
- Configuration of a PC station
- Configuration of an OPC server

Prerequisites

Have participated in the ST-PROG training and be completely autonomous on STEP 7 v5.x

Educational resources

- Software STEP 7
- S7-300 PLC
- PC station
- Software SIMATIC NET
- Software WinCC Flexible

Practice: 60% **Theory:** 40%

Duration: 5 days

Human Machine and Supervision Interfaces

SIMATIC HMI trainings



Module: ST-WinCCF SYS
**WinCC flexible for the design of
operator panels**



Module: ST-BWinCCS
**WinCC V7 for the design of SCADA
monitoring systems**



WinCC Flexible for design operator consoles

Presentation

This course is aimed at technical personnel who have to design or commission applications designed with the HMI WinCC-Flexible software on Siemens operator panels.

Course objective

At the end of the course, the participant will be able to:

- Manage a library of user objects.
- Manage recipes.
- Manage curves.
- Simulate an HMI application on a PC.
- Save and restore the HMI application and the operating system of the console.

Course content

- Creation of projects.
- Messaging system, alarms and events.
- User and password management.
- Data archiving.
- Curves management.
- Revenue management.
- Management of an object library.
- Communication management profibus
- Integration of the HMI project into the Step7 project.
- Backup and restore of the HMI application and the console operating system.

Prerequisites

Have taken part in the S7-Maintenance level 2 training, in the S7-Programming training or have an equivalent level.

Educational resources

- Programming console (Step7 Professional 5.5 + WinCC Flexible 2008)
- S7-300 or S7-400 controller
- TP177B console

Practice: 60% **Theory:** 40%

Duration: 5 days



WinCC V7 for system planning SCADA supervision

Presentation

This course is aimed at designers, programmers and commissioning and maintenance personnel who have to implement supervisory applications in WinCC.

Course objective

At the end of the course, the participant will be able to:

- Develop and implement a monitoring application on a WinCC station
- Design views using the graphical editor
- Maintain a WinCC graphic object library
- Manage recipes
- Implement message logging
- Configure the different communication modes (API-S7, OPC, third-party API)

Course content

- System overview
- Project management
- Access to project data for standard GUI interfaces
- Representation and archiving of messages
- Representation of curves and archiving
- User Archives
- Newspaper systems
- Background task
- Overview of WinCC options (web navigator, client / server, redundancy, etc.)
- Presentation of user objects

Prerequisites

Having participated in the ST-SERV1 training with supervisory experience is a plus.

Educational resources

- Console programming (Step7 Professional 5.5 + WinCC V7.0)
- S7-300 PLC or S7-400
- Simulator I / O

Practice: 70% **Theory:** 30%

Duration: 5 days



System of Control of Processes

SIMATIC PCS7 training courses



Module: PCS7-SR1
SIMATIC PCS7 system
Service 1



Module: ST-PCS7-BAP1
SIMATIC PCS7 Basic Part 1



Module: ST-PCS7-BAP2
SIMATIC PCS7 Basic Part 2



SIMATIC PCS7 system Service 1

Presentation

The course is aimed at personnel whose main area of activity is the maintenance of existing plants with SIMATIC PCS 7 control systems. The emphasis is on typical maintenance skills such as the replacement of wearing parts and obtaining diagnostic data. The course provides you with basic knowledge of the SIMATIC PCS 7 process control system and an introduction to the processes of SIMATIC PCS 7 Asset Management.

Course content

- Introduction to training
- SIMATIC PCS 7 - Documentation and online support
- Requirements and functional description of the process
- overview of the process control system
- Project specific parameters
- Project specific architecture and configuration
- Methods of problem analysis
- Diagnostic options with PCS7
- Procedure to eliminate the problem
- Exercises

Practice: 70% **Theory:** 30%

Duration: 5 days

Educational resources

- Programming console (PCS7 V8.x software)
- S7-412H PLC
- I / O simulator
- ET 200M decentralized I / O

Prerequisites

- Have participated in the S7-Programming training or have an equivalent level.
- Have knowledge of the customer process.
- Basic knowledge of process control
- Open and closed loop control technology Windows environment

Course objective

At the end of the course, the participant will be able to:

- Determine the origin of a simple failure
- Exchange a peripheral piece of hardware
- Restart the system
- Save and restore a project.



SIMATIC PCS7 Basic

Part 1

Presentation

This course is intended for technical staff responsible for carrying out a PCS 7 project.

It enables you to get started with the PCS 7 system and its configuration tools such as: SIMATIC Manager, CFC and SFC configuration languages, SCL programming and WinCC operator station configuration.

Course objective

At the end of the course, the participant will be able to:

- Configure development workstations and operator workstations.
- Design, build and commission an automated application controlled by SIMATIC PCS 7.
- Design and develop simple user blocks.

Course content

- Introduction to SIMATIC PCS 7 Training - Documentation and Online Support
- Requirements and functional description of the process
- System configuration and component specifications
- Creation of a multiproject
- Configuration of stations and networks
- Connection to process
- Basic automation with APL
- Basic functions for instrumentation and control

Prerequisites

Have participated in ST-PROG training as well as WinCC SCADA V7.

Educational resources

- PCS 7 v8 Workstation
- S7-400 distributed I / O controller type ET 200M
- I / O simulator

Practice: 60% **Theory:** 40%

Duration: 5 days



SIMATIC PCS7 Basic Part 2

Presentation

This course is intended for technical staff responsible for carrying out a PCS 7 project.

It enables you to get started with the PCS 7 system and its configuration tools such as: SIMATIC Manager, CFC and SFC configuration languages, SCL programming and WinCC operator station configuration.

Course objective

At the end of the course, the participant will be able to:

- Configure development workstations and operator workstations.
- Design, build and commission an automated application controlled by SIMATIC PCS 7.
- Design and develop simple user blocks.

Course content

- Implementation of manual and automatic modes
- Adaptations in the OS operator station
- Archiving system
- Lock functions and operating modes
- Mass data engineering
- Final configuration steps
- User functional blocks: attributes and visualization
- Demonstration: Client-Server System
- Syntax rules

Prerequisites

Have participated in the training Simatic PCS7 Basic Part 1.

Educational resources

- PCS 7 v8 Workstation
- S7-400 distributed I / O controller type ET 200M
- I / O simulator

Practice: 60% **Theory:** 40%

Duration: 5 days



SINAMICS G120

Configuration and Maintenance

Presentation

This course is intended for maintenance and commissioning personnel.

It allows to acquire the technical knowledge for the maintenance and programming of a device including a SINAMICS G120 with a CU240 S / PN.

Course objective

At the end of the course, the participant will be able to:

- Carry out simple commissioning of a three-phase drive supplied by this type of converter.
- Diagnose, locate and eliminate faults.

Practice: 60% **Theory:** 40%

Duration: 5 days

Course content

- Presentation of the SINAMICS range
- Principle of asynchronous motors
- Principle of SINAMICS G120 converters and hardware
- Communication
- Parameter setting by Bi-Co technique
- Command Word and Sources of Instructions
- Commissioning
- Regulation mode
- SINAMICS functions and parameterization
- Data management
- Diagnosis and treatment of faults
- PROFIBUS communication and Integration in STEP7
- PROFINET communication and Integration in STEP7
- Setting up Free Functions
- Exercises
- Functional Diagram

Prerequisites

Have participated in the S7-PROG training or have an equivalent level.

Basic notions are desirable on:

- Asynchronous motors (principle)
- Bridge rectifiers and inverters (principle)
- Speed variation (settings)
- Regulation (principles, characteristics)

Educational resources

- SINAMICS G120 benches (CU 240S / PN)
- S7-300 benches (PROFINET CPU)
- Console type PG
- Lsoftware : SIMATIC Manager, SINAMICS STARTER



Drive configuration / maintenance

SINAMICS G150

Presentation

This training is intended for technical personnel responsible for commissioning or maintaining a drive system based on the SINAMICS G150 / 130 or S150 range.

Course objective

At the end of the course, the participant will be able to:

- Commission a three-phase drive, supplied by this type of cabinet.
- Locate and eliminate faults.

Course content

- General overview of the SINAMICS G150 cabinet solution
- Use of the CU320 central unit and its flash card, the AOP 30 operator panel and the STARTER software.
- Connections, Simple and technical setting Bi-Co.
- Monitoring, diagnostics and fault handling.
- PROFIBUS-DP communication concepts.
- Cabinet connections.
- Internal wiring and replacement of cabinet elements.
- Practical exercises on the SINAMICS G150 training cabinet.

Prerequisites

Have participated in the SM-G120 training.

Educational resources

- Programming console (Step7 V5.5, STARTER).
- Cabinet G150.
- Asynchronous motor.

Practice: 70% **Theory:** 30%

Duration: 5 days



Presentation

This training is intended for technical personnel who have to commission a device incorporating a SINAMICS S120 type drive.

Course objective

At the end of the course, the participant will be able to:

- Carry out commissioning of a three-phase drive supplied by a SINAMICS S120
- Parameterize movement blocks in relative or absolute mode of the integrated simple positioner
- Control the drive with a PLC from the S7 range via the PROFINET link
- Locate and eliminate faults

Course content

- Overview of SINAMICS systems
- Central unit and system components
- Topology, interconnection of TIA components, Drive-Cliq
- Commissioning with the Starter software
- Diagnostics, Service and alarms
- Reference channel (specifications of speed reference)
- Regulation (types, V / f control, vector control)
- Simple positioner and position controller
- Optimization of regulators
- Basic integrated safety in drives
- Communication via PROFIBUS / PROFINET with a PLC
- Presentation Drive Control Chart: DCC
- Functions (selections of functions in "servo" and "servo" mode vector "
- Examples of applications

Prerequisites

Have participated in the SM-G120-PM training.

Educational resources

- Programming console (STEP7, STARTER)
- SINAMIC S120 DC / AC benches Multi-axis

Practice: 70% **Theory:** 30%

Duration: 5 days



SIMATIC TIA PORTAL training courses



**Module: TIA-MICRO PROG
S7-1200 Programming and
Configuration**



**Module: TIA-MICRO1
SIMATIC S7-1200 Basic Course**



**Module: TIA-MICRO2
SIMATIC S7-1200 Advanced
Course**



**Module: TIA-SERV1
SIMATIC S7 TIA PORTAL
Service 1**



**Module: TIA-SERV2
SIMATIC S7 TIA PORTAL
Service 2**



**Module: TIA-PRO1
TIA PORTAL Programming
Level 1**



SIMATIC TIA PORTAL training courses



Module: TIA-PRO2
**SIMATIC TIA Portal Programming -
Level 2**



Module: TIA-SYSUP
**SIMATIC TIA Portal Upgrade
from classic S7 to S7-1500**



Module: TIA-SCL
**Programming with SCL
language in TIA Portal**



Module: TIA-WCCM
**SIMATIC TIA Portal WinCC
Operation and supervision at the
foot of the machine**



Module: TIA-WCCS
**SIMATIC TIA Portal WinCC
SCADA**



S7-1200 Programming and Configuration

Presentation

This training allows you to quickly get started with the Micro Automation S7-1200 range.

It is intended for technical personnel responsible for commissioning and maintaining an automated system based on an S7-1200 PLC and a console. KTPxxx.

It is based on the TIA-PORTAL Basic development platform.

Course objective

At the end of the course, the participant will be able to:

- Configure an automated system consisting of a PLC and a console
- Create a program based on LAD / FBD / SCL languages
- Create the structure of the program blocks

Course content

- General / S7-1200 configuration
- Program structure
- Creation of a project, programming, documentation, testing and troubleshooting
- Binary operations, timer, counter, comparator, calculation operations
- Processing of data blocks by addressing and symbolic
- Exploitation of symbols with their interests
- Integration of a type console KTPxxx
- Creation of a basic imagery with field of view of variables
- Online operation of the project

All these points are deepened by exercises

Prerequisites

- Experience in the maintenance or design of automated systems
- Have participated in TIA-MICRO2 training

Educational resources

- Programming console (TIA PORTAL V15)
- S7-1200 programmable controller
- KTP600 Operator Panel

Practice: 70% **Theory:** 30%

Duration: 5 days



SIMATIC S7-1200 Basic Course

Presentation

This course is intended for automation engineers, electrical technicians and electronics service personnel who commission and maintain automation systems under the SIMATIC TIA Portal

Course objective

At the end of the course, the participant will be able to:

- Assemble and install a SIMATIC S7-1200 controller.
- Address and wire input / output modules.
- Carry out the commissioning and maintenance of an automation system.

Course content

- Overview
- Training material
- TIA Portal - Introduction
- Devices and Networks
- PLC variables
- Programming Blocks
- Binary operations
- Digital Operations
- Functions and Function Blocks
- Introduction to HMI
- Suggested Solutions
- Training and Support

Prerequisites

- Windows environment.
- Knowledge of Boolean algebra
- Experience in traditional electrical maintenance.

Educational resources

- Programming console (TIA PORTAL V15)
- S7-1200 programmable controller
- KTP600 Operator Panel

Practice: 70% **Theory:** 30%

Duration: 5 days



SIMATIC S7-1200 Advanced Course

Presentation

This course is a continuation of the TIA-MICRO1 course and is intended for automation engineers, electrical engineers and electronics service personnel who commission and maintain automation systems under the SIMATIC TIA Portal.

Course objective

At the end of the course, the participant will be able to:

- Implement and use testing and error finding tools.
- Check the hardware and software of an S7-1200 PLC.
- Identify and fix program errors causing API shutdown.

Course content

- Training material
- Hardware and software commissioning
- Processing of analog values
- Data blocks
- Introduction to industrial communication
- Introduction to PROFINET
- Variables and messages in HMI
- Technological objects
- Diagnosis of errors and anomalies
- SCL
- Training and support

Prerequisites

- Have participated in the TIA-MICRO1 training.

Educational resources

- Programming console (TIA PORTAL V15)
- S7-1200 programmable controller
- KTP600 Operator Panel

Practice: 70% **Theory:** 30%

Duration: 5 days



SIMATIC S7 TIA PORTAL Service 1

Presentation

This course is a continuation of the TIA-MICRO1 course and is intended for automation engineers, electrical engineers and electronics service personnel who commission and maintain automation systems under the SIMATIC TIA Portal.

Course objective

At the end of the course, the participant will be able to:

- Implement and use testing and error finding tools.
- Check the hardware and software of an S7-1200 PLC.
- Identify and fix program errors causing API shutdown.

Course content

- Introduction to the TIA Portal
- Assembly and maintenance of the automation system
- Training material
- Devices & Networks (hardware configuration and online tools)
- API Variables
- Hardware commissioning
- Architecture and block editor
- Binary operations
- Digital operations
- Introduction to instrumentation and control (HMI)
- Adaptation of the user program to the operator panel by reassignment
- PROFINET and PROFIBUS distributed I / O
- Commissioning and integration of a G120 with Startdrive
- Final exercise
- Commissioning and extension of the program
- Solutions to exercises
- Training and support

Prerequisites

- Have participated in the TIA-MICRO1 training.

Educational resources

- Programming console (TIA PORTAL V15)
- S7-1500 programmable controller
- TP700 Operator Panel

Practice: 70% **Theory:** 30%

Duration: 5 days



SIMATIC S7 TIA PORTAL Service 2

Presentation

This course is intended for automation engineers, electrical technicians and electronics service personnel who commission and maintain S7-1500 automation systems under the SIMATIC TIA Portal.

Prerequisites

- Have participated in the TIA-SERV1 training as well as a practice in environment TIA Portal

Educational resources

- Programming console (TIA PORTAL V15)
- S7-1500 programmable controller
- TP700 Operator Panel

Course content

- TIA Portal platform and S7-1500 controller
- Training material and addressing
- Hardware and software commissioning
- Data blocks
- Functions and Function Blocks
- Error finding and test functions
- Organization blocks and error handling
- Processing of analog values
- HMI device sign-of-life bit and time transfer from the CPU
- Alarm system on the operator panel
- Diagnosis using the trace function
- Web service for CPUs and operator panels
- System diagnostics of the CPU and display on HMI devices
- Introduction to GRAPH and SCL
- Data exchange with the G120

Course objective:

- Carry out modifications to structured programs on parameterized blocks (FB, FC), optimized / non-optimized Data Blocks (DB) with elementary and complex data types, interrupt programs (OB).
- Know how to use analog values and the associated conversion blocks.
- Use the error search tools made available through the operator panel and the programming console (processing of alarm messages).
- Raise alarms on operator panel, synchronize time Desk with API, define the API / Console life bit.
- Exploit a block in language Structured Control Language (SCL).

Practice: 70% **Theory:** 30%

Duration: 5 days



TIA PORTAL Level 1 Programming

Presentation

This training is intended for automation specialists, electronic technicians or electrical engineers responsible for the development or commissioning of automated equipment under S7-1500.

Course objective

At the end of the course, the participant will be able to:

- Efficiently operate the TIA Portal platform.
- Configure a TIA architecture based on a programmable controller, decentralized peripherals (I / O, operator panel, drive) connected to the PROFINET network.
- Structure a program with blocks (OB, FB, FC, DB)
- Know the basics of logic diagram (LOG) and contact language (LAD) programming.
- Carry out commissioning of TIA components.

Course content

- System overview
- Engineering software
- Material used for training and addressing
- Workstation equipped with an S7-1500
- Devices & Networks
- API Variables
- Program blocks and editor
- Binary operations
- Digital operations
- Data blocks
- Decentralized periphery
- HMI link
- Functions and Function Blocks
- Organization blocks
- Error finding and testing tools
- Integration of a drive with Startdrive

Prerequisites

Automation training and proven experience in programming S7-1500 products

Educational resources

- Programming console (TIA PORTAL V15)
- S7-1500 programmable controller
- TP700 Operator Panel

Practice: 70% **Theory:** 30%

Duration: 5 days



TIA PORTAL Level 2 Programming

Presentation

This training is aimed at automation engineers who have to design a high-performance application in the new TIA Portal working environment. Integrating (Step7-Professional, WinCC-Advanced, and StartDrive)

Course content

- Materials used for training
- Devices and networks
- Programming methods
- Jump functions and battery operation
- Analog values and arithmetic operations
- FC, FB and multi-instances
- Complex data and possible addressing
- Optimized blocks and their access
- HMI and alarm messages
- System diagnostics and troubleshooting
- Introduction to the structured language SCL
- Graph
- Integration of a drive with Startdrive

Course objective

At the end of the course, the participant will be able to:

- Structure and design an advanced S7 program using the advantages of the different programming languages of the STEP7-PRO software workshop (Contact, Logigramme, List and possibly SCL, Grafcet).
- Know how to use analog values and the associated conversion blocks
- Structure programs and memory areas using multi-instantiation
- Use programming instructions by indirect and indexed addressing in STL / LAD / FBD and SCL
- Set up hardware error management for an automated TIA system, as well as the reporting of process alarm messages
- Developed a simple program for communication between an S7 CPU and a variable speed drive.

Prerequisites

Have participated in the TIA Portal level 1 training (TIA-PRO1) and know the equivalent industrial environment

Educational resources

- Programming console (TIA PORTAL V15)
- S7-1500 programmable controller
- TP700 Operator Panel

Practice: 70% **Theory:** 30%

Duration: 5 days



SIMATIC TIA Portal Gateway upgrade from S7 classic to S7-1500

Presentation

This training is intended for experienced automation engineers on STEP7 Classic responsible for the development and commissioning on TIA-PORTAL of automated equipment based on the S7-1500 API.

This course presents the major differences between SIMATIC Manager and TIA Portal, and between the S7-300 / 400 and S7-1500 series.

You will learn how to transfer your STEP7 knowledge to the new TIA-Portal platform.

Course objective

At the end of the course, the participant will be able to:

- Efficient use of the TIA Portal platform
- Configure and program a SIMATIC S7 hardware configuration with the TIA Portal
- Use the TIA component commissioning tools
- Migrate an application a STEP7 application Classic to TIA Portal
- Migrate an S7-300 / 400 application to an S7-1500
- Using the new S7-1500 instruction set
- Use the basics of IEC / GRAFCET programming

Course content

- SIMATIC S7 range
- Introduction to the TIA Portal
- Materials used for training
- Migration of STEP 7 projects
- Devices & Networks
- Introduction to PROFINET IO and PROFIBUS DP
- API Variables
- S7 blocks and block editor
- Connection to an HMI operator panel
- Advanced programming
- Finding errors
- Introduction to the structured language SCL
- Introduction to Grafcet
- Integration of a drive with Startdrive

Prerequisites

Have participated in the ST-PRO2 Training and in-depth experience acquired through projects carried out with STEP7 v5.x

Educational resources

- Programming console (TIA PORTAL V14)
- S7-1500 programmable controller
- TP700 Operator Panel

Practice: 70% **Theory:** 30%

Duration: 5 days



Programming with SCL language under TIA PORTAL

Presentation

This course is intended for programmers, planners and developers who wish to program SIMATIC S7 PLCs with the advanced language SCL with the development platform TIA Portal.

Course objective

At the end of the course, the participant will be able to:

- Implement an SCL program in a SIMATIC S7 controller.
- Exploit the advantages offered by this programming language.
- Know the standard instructions.
- Perform tests and troubleshooting with the integrated debugger.

Course content

- Program development
- Types of data and instructions
- Definition of program blocks OB, FB, FC, DB in SCL
- Using Variables and Symbolic Block Names
- Instructions: IF, WHILE, REPEAT
- Commissioning programs
- Testing and error finding
- Using the built-in debugger

Prerequisites

Have participated in the TIA-SERV1, TIA-PRO1 training and have a good experience in programming

Educational resources

- Programming console (TIA PORTAL V15)
- S7-1500 programmable controller
- TP700 Operator Panel

Practice: 70% **Theory:** 30%

Duration: 5 days



SIMATIC TIA PORTAL WinCC Control And supervision at the foot of the machine

Presentation

This training is intended for automation specialists who have to design a high-performance machine-mounted supervision application in the new TIA Portal work environment. Integrating (Step7-Professional, WinCC-Advanced, and StartDrive).

Course objective

At the end of the internship, You will be familiar with the basic software and understand the advantages of WinCC Advanced. You will recognize the interaction between WinCC and other SIMATIC components and will be able to ensure the availability of your plant.

Course content

- System overview
- Configuration interface
- The project
- Project loading
- Configuration principles
- Extensive configuration functionality
- Alarm system
- User Management
- Archiving of variables
- Revenue management

Prerequisites

Have participated in the TIA-SERV1, TIA-PRO1 training and have a good experience in programming.

Educational resources

- Programming console (TIA PORTAL V15)
- S7-1500 programmable controller
- TP700 Operator Panel

Practice: 70% **Theory:** 30%

Duration: 5 days



SIMATIC TIA PORTAL WinCC SCADA

Presentation

This Training is intended for automation specialists who have to design a high-performance SCADA supervision application in the new TIA Portal work environment. Integrating (Step7-Professional, WinCC-Professional)

Course objective

At the end of the internship you will be familiar with the basic software and understand the advantages of WinCC Professional in the TIA Portal. You will recognize the interaction between WinCC and other SIMATIC components and will be able to ensure the availability of your plant.

Course content

- System overview
- Configuration interface
- The project
- Configuration principles
- Runtime Scripting
- Extensive configuration functionality
- Alarm system
- User Management
- Archiving of variables
- Recipes
- Migration

Prerequisites

Have participated in the TIA-SERV1, TIA-PRO1 training and have a good experience in programming.

Educational resources

- Programming console (TIA PORTAL V15)
- S7-1500 programmable controller
- TP700 Operator Panel

Practice: 70% **Theory:** 30%

Duration: 5 days