

AUTOMATION ACADEMY

A u t o m a t i o n S y s t e m s T r a i n i n g S p e c i a l i s t s

Course Title: Siemens S7 300/400 Maintenance Using TIA Portal

The Siemens S7 Controller maintenance training course has been designed to familiarise Electricians, Technicians and Maintenance Engineers with little or no experience of S7 systems to the different aspects associated with the operation and maintenance of Siemens S7 controllers using the new Siemens TIA Portal programming software.

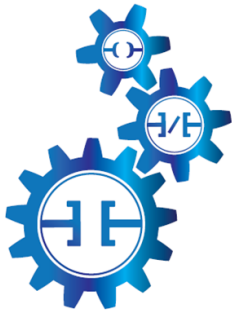
Where possible, application specific exercises, actual drawings and plant programs will be used to allow the students to gain the greatest possible benefit from the course.

Course Objectives:

- ☒ To introduce students to the concepts and operation of Siemens S7 300/400 Controllers.
- ☒ To recognise and understand the hardware associated with a Siemens S7 300/400 controller.
- ☒ To be able to understand the structure of the Step 7 project in TIA and to have the confidence to implement minor changes to the program.
- ☒ To be able to use the TIA programming software to connect online to monitor and use the cross reference to search through the Siemens S7 300/400 program to determine problems on plant.
- ☒ To be able to locate and replace faulty modules by understanding and using the TIA system diagnostics available when an error is present.
- ☒ To be able to create a backup copy of the Siemens S7 controllers program. To be able to restore a program back into the controller from a backup copy.

Course Content:

The hardware architecture of the Siemens S7 300/400 range of controllers.
Understanding Siemens S7 300/400 I/O modules, their plant wiring and LED indicators.
Addresses used in the Siemens S7 300/400 range of controllers.
An overview of the Siemens S7 program block types.
First steps using Siemens TIA Portal programming software.
Creating a training project to demonstrate plant programming examples.
Getting an online connection to the Siemens S7 300/400 controllers.
Downloading individual blocks and full programs to the Siemens S7 300/400 controllers.
Online monitoring and the Cross Reference search facility within TIA Portal.
Creating and using watch tables to monitor the PLC status.
An overview of the programming methods (LAD, FBD and STL) used on plant programs.



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A demonstration of simple program editing and modifying plant programs.
Reading the Siemens S7 300/400 controllers instruction set.
Programming examples including relay, timers, maths, move, compare and logic functions.
Binary, Decimal and Hex numbering systems and their use in an S7 program.
Data sizes and types including floating point values.
Creating and using Data Blocks (DB's) in the program.
Using and creating program tags and documentation.
Using program documentation for fault finding purposes.
Analogue modules and analogue signal processing.
Understanding and using TIA Portal Diagnostic Buffer information for fault finding.
Comparing offline and online programs, what the TIA icons mean.
Forcing and toggling operations on the S7 300/400 controllers.
Profibus and or Profinet configuration, operation and fault finding within TIA.
If released to us two weeks before the scheduled course start date then we will include application exercises on your plant Siemens S7 300/400 controller programs.

Customised training included in the course cost.

As part of this training course we will include custom application exercises for your own plant and processes, this value added option creates immediate payback for students on plant. It will have the benefit of the students becoming familiar with key areas of your PLC project(s) during the training course. This option does require the supply of your plant drawing and program listings at least 2 weeks prior to the course start date.

Course Duration: 4 Days

Documentation: Siemens S7 300/400 TIA Maintenance Training Manual.

Equipment per student: Siemens S7 300/400 controller

Programming laptop

Plant simulator

Web link: [Siemens S7 300/400 Maintenance Using TIA Portal](#)