

[Siemens S7 300/400 PLC Level 1](#)

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Software	Simatic Manager
Duration	5 Days
PLC-Type	Siemens S7 300 / 400 PLC
Pre-Requisites	No prerequisites this is a beginners course
Maximum Delegates	8

Brief Description

- * Be able to recognise S7 hardware and be able to replace modules when a fault occurs.
- * Be able to operate the Step 7 software to make it perform certain tasks.
- * Understand basic S7 instruction set and be able to make minor modifications to software.
- * Be able to backup and restore a PLC program when required.
- * Be able to perform basic system diagnostics when a problem occurs.

Course Documentation

- * Training Log
- * Pre Course Exercises
- * Course Exercises
- * Post Course Exercises
- * Filofax Pocket Reference Guides

Course Content

To fault find a system you need to know EXACTLY how it works HOW EXACTLY DOES A PLC WORK?

- * The Led on the output card means i am getting voltage out right? does it?
 - * What exactly happens in between? ,theres more than just a program in the CPU
 - * How exactly does it scan the program?
 - * What is this Watchdog Timer? Is it that important?
 - * Can I use the same output twice? That's bad programming isn't it?
 - * A PLC is a logic controller, so use a logical approach to fault find it.
 - * What are the 8 simple test points to check?
 - * The PLC is in RUN, that means theres a program right? does it?
 - * FORCING a bit and toggling a bit is pretty much the same yeah? depends on which PLC
- Then you need to Know the specifics HOW DO I DO THE FOLLOWING? (some straight forward some not so)
- * How do I check power is ON and PLC is in right mode (RUN or Program)
 - * Check for a fault condition (is SF LED ON)
 - * Establish a link to the PLC (accessible nodes)
 - * If comms problem check PG/PC interface
 - * Create a blank project and take a backup (just in case I mess up)
 - * Open project for PLC and go OnLine
 - * Interrogate Diagnostics Buffer

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- * Identify if it is a hardware or software fault?
- * Change the battery
- * Change modules if necessary, (with spares and without spares)
- * Identify if it is a PLC or Comms fault (Profibus or MPI)
- * Check all settings against a template, Node Address etc.
- * Check Hardware Configuration
- * Clear Memory and Download program
- * Check software against latest copy (Compare function)
- * Monitor program
- * Searching for specific operands and instructions
- * Changing timer, counter values On Line
- * Making minor mods Off Line and On line
- * Check or create a VAT table to establish parameter status
- * Force a parameter if required
- * Call up reference data to assist with software diagnostics
- * Archive and Retrieve project
- * Display Documentation (Symbols, Comments)
- * Reassign an I/O address and change software addresses (Rewire Function)
- * Printing Cross Reference / Program Listings etc. Background information also covered

Understanding of the following:

- * Number formats, bits, bytes, words, double words
- * Binary, HEX, octal, floating point, integer
- * Data types and parameter types, Bool etc.
- * Block types
- * Variable types (local and global)
- * How to monitor various blocks (FBs in particular)
- * Ladder, STL programs
- * Basic Instructions, contacts, Set, reset etc.
- * Timers, Counters
- * Comparators, Maths
- * How to make minor mods
- * Altering values in a VAT table
- * Back tracking through a program to establish where power flow stops
- * Overall reset procedure
- * Fault finding tips

Equipment

- * S7 300 or 400 PLC
- * PC or Laptop
- * Simulator

Solutions, Not Courses.