

SESSION PLAN

TC061

Step7 – Introduction to Hardware

Module 1 – Introduction and CPUs

Module 2 – Inputs and Outputs

Module 3 – Communications

Module 4 – Hardware Configuration

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Course Summary and Equipment Requirements

This is a Knowledge session.

At the end of this course the participants will be able to describe the most commonly used Step7 hardware items and be able to interpret available indications for fault-finding purposes..

It is broken up into the following modules

- | | |
|----------|--|
| Module 1 | - Introduction and basic PLC types |
| Duration | - 30 minutes |
| Module 2 | - Inputs and Outputs – Local and remote. |
| Duration | - 30 minutes |
| Module 3 | - Communications – Serial, Ethernet and Profibus. |
| Duration | - 30 minutes |
| Module 4 | - Hardware Configuration Software – Use for fault finding. |

The following equipment is required

- Item 1 – laptop for each participant with Step7 V5.3 + SP2 installed.
- Item 2 – data projector.

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1 Purpose Statement

At the end of this session the participants will be able to identify the most commonly used Step7 hardware and interpret the indication lights that may be present on the equipment.

The participants will be able to use the Step7 Manager component Hardware Configurator to obtain live information regarding the module status for fault-finding.

2 Introduction

The Siemens Step7 300/400 PLC family is widely used within the Water Corporation.

The equipment used is modular in nature with each module having a specific purpose and configuration.

Each module usually has status/fault indication lights on the front panel to allow the immediate status of the module to be determined. The more complex modules can also indicate fault states via these lights.

The Siemens Step7 Manager software is able to provide additional, detailed information regarding each module if communication is established between a computer and the module. The methods of doing this are also described.

2.1 Why the Participants have been Chosen

The participants of this course have been chosen because of their need to maintain and replace Step7 hardware.

2.2 Where This Course Fits in

This course sits alongside the Step7 - Introduction to Siemens Software course. Participants are required to have a basic competency with a computer and the Windows XP environment.

2.3 Objectives of the Course

The objectives of this course are that the participants learn to

- Describe the commonly used Step7 CPU ranges.
- Describe the Step7 modules used for I/O and communications.
- Use the Hardware Manager software to extract module status and fault information.

2.4 How the Session Will Run

This session is fully described in the training notes "TC061 - Searching a Configuration.ppt".

This training will run as four Knowledge Sessions.

Module 1

Explanation – Introduction of the Step7 system. Description of S7-300 and S7-400 modules. Details on clearing the memory of CPUs

Activity - Discussion

Revise

Module 2

Explanation – Description of S7-300 and S7-400 local and remote I/O. Description of the I/O addressing system used in both the S7-300 and S7-400 range.

Activity - Discussion

Revise

Module 3

Explanation – Description of S7-300 and S7-400 serial, Ethernet and Profibus communications modules.

Activity - Discussion

Revise

Module 4

Explanation – Introduction to the Siemens Step7 Hardware Configuration tool. Demonstration of it's use in interrogating modules.

Activity – Discussion and use of the software by the participants to individually interrogate a locally available hardware system.

Revise

2.5 Motivation for the Participants

This session will enable the participants to confidently identify the status of Siemens hardware and to more extensively interrogate it using software where necessary.

2.6 Prior Experience

Determine who has had prior experience.

Do they want to proceed directly to the test?

Would they be willing to demonstrate what they know as it is addressed in the course?

3 Test

The test for this session is

1. Determine the status of a CPU showing fault lights.
2. Demonstrate knowledge of addressing I/O.
3. Demonstrate knowledge of network components.
4. Use the Hardware Configuration software to interrogate and monitor hardware .

Note: test must be

- Valid to the material covered
- Quick to set and take
- Reliable – clear answers
- Cover a good sample of the course
- Discriminate between attendees who now know the material and those who don't.

4 Summary

Help is available from the trainers at the Process Control Training Centre or from others who have done this course.

It is suggested that the participants first talk amongst themselves, then the nearest DC5/DC6, then the PCTC trainers and finally the Technical Consultant Process Control as they begin to apply the knowledge gained today.

Participants are welcome to book an appointment at the PCTC to refresh their skills and clarify or discuss any issues arising from field experiences. The PCTC is available at any time when it is not being used for a training session.