Industrial Ethernet I - the technical fundamentals (CB1)

Today all manufacturers consider Ethernet essential as a future-proof protocol for communication between various hardware and software platforms - both inside and outside industrial environments.

Ethernet makes it possible to connect many different PLCs and PC-based systems, in a seamless transparent network, which stretches from the factory floor to the boardroom. For industrial networking, Ethernet is becoming the standard of choice.

Target Group

System Engineers, Network Designers, and Support Technicians who are building, supporting, or migrating an Industrial Ethernet network.

Prerequisities

No previous knowledge of the subject is required.

If available, the participant should bring a laptop with Ethernet connection and an operating system CD. Administrator rights are required.

Objective

In this Industrial Ethernet course the participants will learn details of the technical fundamentals and deployment objectives of the world's most widely used LAN communication protocol. At the end of the course the participants will have a good understanding of Ethernet, as well as its role in industrial networking, both now and in the future.

For more in-depth tuition on the subjects in this course, in addition to a range of other topics related to Industrial Ethernet, the participant should attend the "Industrial Ethernet II - the technology in detail" (CB2) training course.

Languages:

CB1e	English
CB1f	French
CB1d	German
CB1n	Dutch
CB1p	Portuguese
CB1s	Spanish

Duration:

2 Days
09:00 - 16:00

Price:

£675 ex. VAT

Schedule / Location:

http://www.hirschmann.co.uk

HiES

Recommended for certification as Hirschmann Industrial Ethernet Specialist

Seminar Content

What is Ethernet?

- The birth of Ethernet
- Standardisation bodies
- What does Ethernet offer?

OSI 7 Layer Model

- Overview
- Basics of Internetworking
- Structured communication
- Layer independence

Layer 1: the physical layer

- Topologies
- Copper-based networks
- Fibre-based networks
- Hubs
- Collision domains
- The 5-4-3 rule and Chapter 13

Layer 2: Data Link Layer

- Understanding MAC addresses
- Broadcast and multicast addresses
- Ethernet packets
- Switches and their function
- VLANs

Layer 3: the Network Layer

- IP packets
- IP addresses
- MAC address resolution with ARP
- IP routing
- IP routing protocols RIP, OSPF
- ICMP Control Messages

Layer 4: the Transport Layer

- TCP/UDP datagrams
- TCP/IP stack
- Transport mechanisms
- Determinism
- Guaranteed vs. fast communication: TCP vs. UDP

Application Protocols

- File Transfer with FTP and TFTP
- Virtual terminal with Telnet

Managing TCP/IP Networks

- SNMP
- RMON