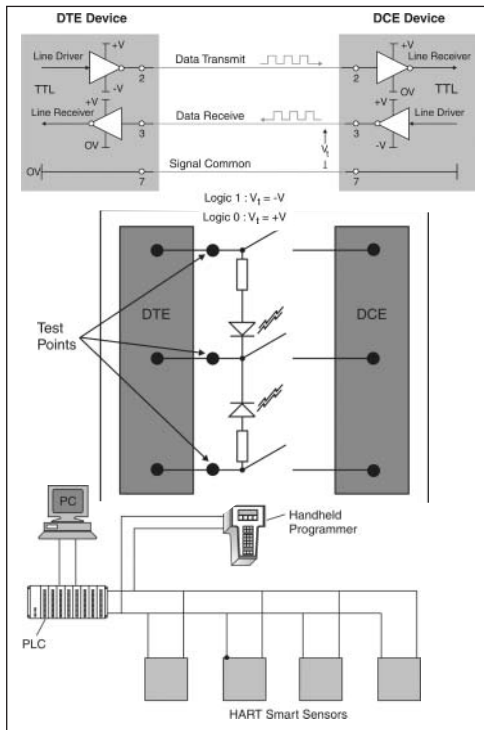


Practical

DATA COMMUNICATIONS & NETWORKING

for Engineers & Technicians



YOU WILL LEARN:

- The fundamentals of data communications
- How to troubleshoot RS-232 & RS-485 links
- How to install communications cables
- The essentials of industrial Ethernet & Local Area Networks
- How to troubleshoot protocols such as Modbus
- The fundamentals of FieldBus & DeviceNet standards

WHO SHOULD ATTEND:

Anyone with a need to understand the techniques required to use and apply industrial communications technology as productively and economically as possible. Including:

- Instrumentation & Control Engineers
- Process Control Engineers
- Process Development Engineers
- Control Systems Sales Engineers
- Maintenance Supervisors
- Control Systems Applications Engineers
- Electrical Engineers
- Design Engineers
- Consulting Engineers



Technology Training that Works

THE WORKSHOP

Practical Data Communications and Networking for engineers and technicians is a comprehensive 2-day workshop covering Industrial Data Communications including RS-232, RS-422, RS-485, industrial protocols, industrial networks and the communications requirements for "Smart" instrumentation.

This unique workshop equips you with the tools to analyse, specify and debug Data Communications and Networking systems in the instrumentation and control environment, with much of the material presented being derived from many years of experience gained by the workshop instructors.

WORKSHOP OBJECTIVES

In modern manufacturing and process industries, the challenge for engineers and technicians is to make more effective use of modern control systems and "Smart" instruments by linking them together with Data Communication systems that are correctly designed and implemented to fully utilise the available technology.

This Practical Data Communication and Networking workshop is designed to benefit instrumentation engineers, scientists and technicians who are involved in specifying, commissioning and debugging Data Communications and Networking systems for instrumentation and control in the industrial environment, and who have little previous experience in Data Communications.

This workshop has been structured to cover the main concepts of Data Communications, to clarify their meaning and to describe their applications in a modern process and control system.

When you leave this workshop you will:

- be able to competently configure your own network
- know how to effectively and systematically troubleshoot FieldBus and DeviceNet systems
- understand the essential rules in designing and installing these complex networks

PRACTICAL SESSIONS

The workshop includes three practical sessions;

- Hardware communication troubleshooting
- Testing of protocols
- Protocol troubleshooting

THE PROGRAM

DAY ONE

BACKGROUND TO DATA COMMUNICATIONS

Includes overview of:

- "Smart" instrumentation
- Modern instrumentation
- Control systems

BASIC PRINCIPLES

Includes:

- Sources, receivers & communication interface
- Transmission modes
- Analog & digital signals
- Parallel & serial communications
- Coding of messages e.g. ASCII
- Data transmission speeds
- Asynchronous & synchronous modes
- Universal receiver/transmitter

THE DATA COMMUNICATIONS INTERFACE

Includes:

- Standards
- Principles of RS-232
- Handshaking
- RS-422 and RS-485
- Hardware & software testing

SELECTION & INSTALLATION OF CABLES

Includes:

- Copper conductors & optic fibers
- Interference & noise
- Cable selection
- Installation recommendations

MODEMS & INTERFACE CONVERTERS

Includes:

- Modem control
- Modulation techniques
- Data compression techniques

DAY TWO

OSI - OPEN SYSTEM INSTRUMENTATION MODEL

Includes:

- Importance and application of OSI
- Interoperability
- Industrial systems

INDUSTRIAL NETWORKING (LANs)

Includes:

- Introduction and different philosophies of LANs
- Industrial Ethernet
- Token ring and bus systems
- Importance of TCP/IP
- Selection, application and troubleshooting Industrial Ethernet

STANDARD PROTOCOLS

Includes:

- Concepts
- Error detection
- Industry standard protocols
- ASCII, Modbus & Allen Bradley Data Highway Plus

"SMART" INSTRUMENTATION SYSTEMS

Includes:

- Actuator Sensor Interface (ASI)
- Seriplex
- Device Net
- Interbus-S
- Profibus-DP/FMS & PA
- Foundation FieldBus

SELECTION OF STANDARDS & PROTOCOLS

Includes:

- Field & instrument level
- PLC/PC level: practical case study

“

Very instructive and well presented workshop.

Peet du Plessis

”

ON-SITE TRAINING

- ✓ **SAVE** over 50% by having an IDC workshop presented at your premises.
- ✓ Customise the training to **YOUR** workplace.
- ✓ Have the training delivered when and where you need it.

Contact us for a **FREE** proposal.