



### Module 3 – Networking for Industrial Technicians - 48 hours

This will be an interactive instructor led class. The primary learning objective of this class is for the student to learn Industrial networking basics, industrial networking applications, network installation, and network troubleshooting. The student will gain practical experience through several hands-on lab experiments including wiring and testing of networks and communication cables. Upon completion the student will have a functional understanding of how networks are used in the industrial world as well as the basics of installation and maintenance.

This class is highly recommended for technical staff responsible for the daily debug and analysis of Industrial Networks as they apply to PLC/CNC machinery and automation.

Key hardware the students will be exposed to:

Allen Bradley Micro 850 & Panel View 800

Klein Tools Scout Pro 3 Tester VDV501-852

10/100/1000BT Managed Ethernet Switch - 10/100/1000BT Unmanaged Ethernet Switch

SIM-IPE Ethernet IP Address Explorer

Fluke 683 Lan Meter & DYEDEMC Optical Multimeter / Fiber Optic Cable Tester

Key areas for Networking to be reviewed:

Types of networks – WAN, LAN, VLAN, VPN

IEEE 802.3 Ethernet Standards and the OSI Model

Network Topologies – Bus, Ring, Star, Mesh, Hybrid

Network Cabling – Create and Test Coaxial, Ethernet UTP and STP, Serial, Fiberoptic

Network Addressing – IP addresses and MAC addresses

Software analysis of networks (Netstat, Ipconfig, Tracert, Ping, Wireshark)

Bandwidth and Latency

SCADA

Subnets

Device Net, Control Net, Ether Net, Ether Cat, I/O Link, Can Bus, Profi Bus, Mod Bus and More.