Introduction to Industrial Ethernet (Modbus TCP, EtherNet/IP, and PROFINET)

This is a great hands-on quickstart training guide to industrial ethernet.

Learn the difference between Modbus TCP, EtherNet/IP, and PROFINET and how to choose one over the other. Learn the skills you need to implement a small system, monitor operation, and how to troubleshoot a network.

Upon completion of this course, the student shall be able to:
- Setup a simple Modbus TCP, EtherNet/IP or PROFINET demo
- Know the difference between the three protocols
- Know some basic troubleshooting methods for use on an Industrial Ethernet system

Course outline
- Introduction to Industrial Ethernet
- Ethernet protocols
- Introduction to Modbus TCP
- Introduction to EtherNet/IP
- Introduction to PROFINET
- Physical layer and installation
- Hubs, switches, and routers
- Basic design
- Introduction to security
- Troubleshooting methods and tools

Hands-on Exercises:
- IP addresses and ping
- Wiring lab
- Modbus TCP lab
- EtherNet/IP lab
- PROFINET lab
- Using Wireshark and other troubleshooting tools

Training Equipment:
- Modbus TCP master, EtherNet/IP Scanner class/controller and PROFINET IO-controller: Codesys software running on a Raspbery Pi
- Turck IO block (Modbus TCP slave)
- Helmholz TB20 IO rack, Turck IO block (Ethernet IP adapter class/slave)
- Helmholz TB20 IO rack, Turck IO block (PROFINET IO-device)
- Procentec Atlas (permanent monitoring system)
- Procentec Netilities (temporary monitor)
- Wireshark (protocol analyzer)
- Ethernet cable tester

Class Day Information
- Attendees must bring a laptop or tablet which can read a USB drive.
- Attendees will receive a support USB drive with an electronic version of the materials plus key PI documents.
- Students will receive a certificate of attendance and 15 verifiable professional development hours
- Attendees will also receive a digital copy of 'Catching the process fieldbus – An introduction to PROFIBUS and PROFINET' co-written by the instructor James Powell
- Class size is limited to a maximum of 12 students (Maximum 4 students for instructor-led online training)

Course duration
This course is two days long. Each day includes 7.5 hours of instruction which includes two 15 minute breaks and one 30 minute lunch break.

Scheduled Classes
- Please check our website for scheduled clasees or contact us to arrange a training date.
- On-site or On-demand classes are available upon request

Course code and Prerequisite
- Course code: T-Ethernet-02
- There are no prerequisites for this course.

Instructor
James Powell, P.Eng., is the principal engineer and owner of JCOM Automation Inc. He has written many articles and two books: *HART Communication Protocol – a practical guide,* and *Catching the process fieldbus – An introduction to PROFIBUS and PROFINET*. James is a certified PROFIBUS DP, PA, and PROFINET network engineer, PROFIBUS System Design Engineer and has over 20 years of experience with PROFIBUS, PROFINET, EtherNet/IP, Modbus, and HART installations.

JCOM Automation is a member of PROFIBUS PROFINET North America and is a certified PROFIBUS and PROFINET training center and Competence Center.

To book this course for yourself or your team, please contact JCOM Automation at admin@jcomautomation.ca **or +1-705-868-8745.**