

AUTM 500

INDUSTRIAL NETWORKS AND SYSTEM INTEGRATION

7 Days

This course is designed to give trainees an in –depth of industrial networks and system integration. It

includes practical demonstrations with live PLCs, HMIs, Drives and other field devices.

At the end of this training, trainees are expected to be able to



- Have a deep understanding of leading fieldbus systems such as Modbus, PROFIBUS, PROFINET, Ethernet/IP, ControlNet and DeviceNet.
- Integrate PLCs and HMIs from different manufactures in a control system.
- Configure and write programs for communication between PLCs from the same manufacturer and different manufacturers.
- Configure OPC Clients and Servers to interface with PLCs.



INTRODUCTION TO FIELD BUS SYSTEMS

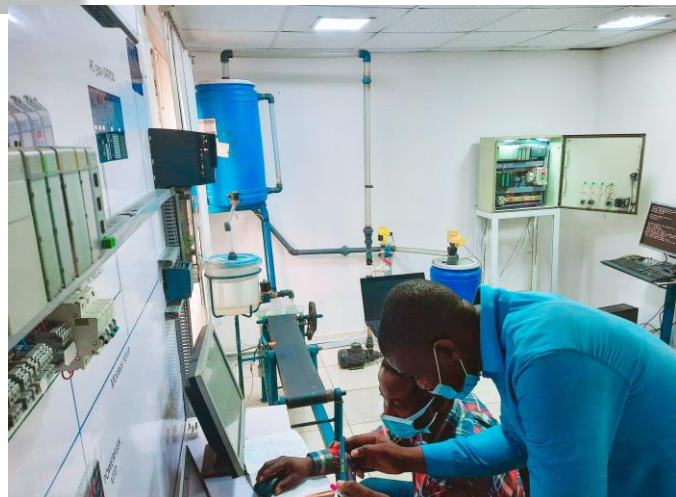
Modbus, Profibus, ControlNet, DeviceNet, Interbus etc.

MODBUS

- Introduction to MODBUS TCP and RTU.
- Physical Layer
- Register Structure
- Function Codes
- Master, Slave, Client and Server device Concepts
- Configuration of a MODBUS TCP and RTU device. (VFD, Soft starters, PLCs)
- Reading and Writing Data from a generic Modbus Device
- Controlling an AC Drive with MODBUS RTU/TCP, DeviceNET and ControlNET
- Connecting an HMI/SCADA system to a PLC with Modbus.
- Communication between PLCs using MODBUS TCP and RTU

SIEMENS FIELDBUS SYSTEMS: PROFINET and PROFIBUS

- Introduction to PROFINET and PROFIBUS DP
- Understanding the Master/Slave and Client/Server Concept
- Controlling AC Drives with PROFIBUS DP
- Communication between PLCs and remote I/Os using PROFIBUS
- Communication between Siemens PLCs (S7 300 to S7 300, S7-300 to S7 1200) using S7 Communication (PUT and GET, BSEND and BRECV) using PROFINET
- Communication between Siemens PLCs using PROFIBUS DP.



- Communication Between Siemens PLCs using Open User Communication (TSEND, T_RECV, TCON, TDISCON)
- Communication between PLCs using PROFINET- IO Controller and IO-device for remote communication
- Configuration of S7 300 Communication Processor
- Communication between Siemens and Third-Party PLCs (Allen Bradley and Schneider)
- Connecting Siemens PLCs to OPC Server Applications

ALLEN BRADLEY FIELDBUS SYSTEMS: ETHERNET/IP, CONTROLNET, DEVICENET and MODBUS

- Introduction to Common Industrial Protocol (CIP): DeviceNet, ControlNet, Ethernet/IP
- Understanding the Master/Slave and Client/Server Concept
- Controlling AC Drives with Modbus RTU
- Communication between Allen Bradley PLCs (CompactLogix to Control Logix) using Produced and Consumed Tags
- Communication Between CompactLogix and Control Logix PLCs using MSG instructions
- Communication between MicroLogix, CompactLogix and ControlLogix PLCs
- Communication between Allen Bradley and Third-Party PLCs (Siemens and Schneider)
- Connecting Allen Bradley PLCs to smartphones, Tablets and other Web-enabled devices for remote monitoring.
- Connecting Allen Bradley PLCs to OPC Server Applications

SYSTEM INTEGRATION

- Communication between PLCs from different manufacturers
- Connecting HMIs to third party PLCs
- Introduction to OPC Servers
- OPC Server Configuration to connect PLCs from different manufacturers
- Connecting OPC Clients (SCADA) to an OPC Server
- Configuring an OPC UA Server
- Connecting OPC UA Server to an OPC UA Client



Requirements

Basic Knowledge of PLC programming and Configuration