PLC SCADA

MODULE: PLC PROGRAMMING

Unit 1: Introduction to Automation

- Hardware classification of automation
- Brief description of a control system
- Pneumatic controller
- PID controller
- PLC controller
- History & need of industrial automation
- Application of industrial automation
- Basic components of automation
- Communication through DDE/OPC/direct driver

Unit 2: Introduction to PLC

- PLC (Programmable Logic Controller)
- The PLC'S purpose in life
- History of PLCS
- Recent developments
- Basic concepts
- Nine main PLC types
- PLC hardware & architecture functionality
- Industry and application experience
- Sinking and sourcing
- Programming languages of a PLC
- Brief description of a logic gates
- Communication with PLC
- Wiring different field device to PLC
- Uploading, downloading & monitoring programs
- Introduction to SFC
- Instruction list programming
- Introduction to ladder logic

Unit 3: Programming in PLC

- Comparison b/w gates, relay logic& ladder logic
- Description of using memory bit in a programming
- Mathematical concept ADD, SUB, MUL, DIV and etc
- Logical concept AND, ANI, OR, ORI, EXOR, NOT etc
- Special function MOV, SET, RST, CMP, INC, DEC
- Programming based on timer and counter
- Introduction to jump and label instruction
- Forcing of I/O
- Monitoring/modifying data table values
- Hands on experience on real time applications
- Fault finding/troubleshooting and documentation
- Interfacing proximity sensor with PLC
- Interfacing with relay

- Control circuit designing with feedback concept

Unit 4: Relay Based Control Designing

- Introduction
- Types of control relays and limit switches
- Timer interfacing
- Neutral switching—fully rated fourth pole (switched neutral)
- DOL starter
- Star delta starter
- What is open or closed transition starting
- Size of each part of star-delta starter

Unit 5: Relay and Contractor Based Control Design

- Basic principle of relay working
- Making AND, OR, Not gate logic circuit
- Interfacing relay with sensor
- Forward and reverse DOL
- Circuit with delay generation by using timer
- Star delta starter (including timer)
- How to get a time for changeover of star delta starter?
- Inching process

MODULE: SCADA IN INDUSTRY APPLICATION

Unit 1: Introduction to SCADA Software

- The fundamentals of SCADA
- Components of a SCADA system
- SCADA communications availability and protocols
- Common communications media
- The central host computer
- Operator workstation communications system
- Levels of control
- Handling of data during SCADA failures
- Errors and accuracy issues
- Creating new SCADA project
- Software architecture
- Application development
- Device configuration
- Tag substitutions
- Introduction to graphic properties like sizing, blinking, filling, analog entry, movement of objects, visibility etc
- Dynamic process mimic
- Communication methods
- Online PLC-data processing in pc
- Net DDE communication
- Application of scripts
- Case studies

Unit 2: Sensor and Process Instrumentation

- Introduction to various sensors/instrumentation used in an industry
- Temperature sensing
- Proximity and limit switches
- Photoelectric sensor
- Vibrating point
- Flow measurement and its working principle
- Gear meter
- Pressure measurement
- The linear variable differential transformer (LVDT)
- Solenoid valve

Unit 3: HMI (Human Machine Interface)

- Getting started with HMI
- Creating applications
- Creating GUI screen on the HMI
- Creating simple objects gor GUI
- Tagname dictionary
- Alarms/events
- Fault diagnosis and troubleshooting
- Case study

LIST OF PRACTICLES

1. Traffic Light Control Using SCADA using plc.

2. Lift Logic Development using SCADA Software.

3. Controlling of Connected load Using SCADA via Excel sheet.

4. Water Supply Controlling and monitoring Using SCADA Software AND using PLC.

5. Bottling Filling Station Implementation Using SCADA.