BASICS OF PLC

Course contents

MAIN HARDWARE AND SOFTWARE

❖ SIEMENS Make S7-1200 / S7-300 PLC

❖ SIEMENS Programming Software TIA Portal (STEP7

❖ Different Connection of DI, DDO on PLC

❖ For Virtual PLC we need PLCSIM (S7-300)

❖ Communication Cable (Profinet or ProfiBus)

MAIN Learning Course Points

- Concept of Automation
- Block Diagram of PLC
- PLC IO's Concept
- Different Types of S7-Controller
- Addressing of I/O's on PLC
- Different PLC Programming Languages
- Set Reset, Clock Memory, Timer Application
- NO & NC Concept with Examples

Contents of Training on BASICS OF PLC – Total 20Hrs

1st Session (2Hrs)

- What is automation?
- Different types of control systems
- Details of Closed Loop Control System
- Basic Introduction about PLC Controller
- Units of PLC
- Advantage & Disadvantage of PLC
- Different Application of PLC

2nd Session (2Hrs)

- Block diagram of PLC
- Different Input modules
- Different Output modules
- Power Supply modules
- Main PLC CPU details
- PLC general Architecture
- PLC Capability

3rd Session (2Hrs)

- DIFFERENT TYPES OF S-7 CONTROLLERS
- Details of S7-300- Series PLC
- ADDRESSING OF DIGITAL I/O's
- SIEMENS COMMUNICATION PROTOCOLS
- ProfiBus Different Protocol
- SINK AND SOURCE CONCEPT
- SCAN CYCLE OF CPU

4th Session (2Hrs)

- PROGRAMMING LANGUAGES FOR PLC
- How to reset memory
- Examples (Series Circuit, Parallel Circuit, Series & Parallel circuit)

5th Session (2Hrs)

- Need of DI Module
- SEQUENCE OF CYCLIC PROGRAM PROCESSING
- PLC Selection Criteria
- Stating of TIA portal
- Steps : Hardware Configuration , create Project view, Add New Devise, click on OB 1, start programming, properties of all Hardware,
- Communication Between PLC & PG/PC
- Clock memory application

6th Session (2Hrs)

- Procedure for "Memory Reset"
- Different Programming Language
- How to convert LDA/FBD/STL
- Writing of Instruction
- Different operation (And, OR, NOR, NAND, Ex-or, Ex-NOR)
- "Online & Diagnostics" for the project
- Data Types & details of Elementary data types (BIT, Byte, Word, Double Word)
- Understanding of RLO & STATUS
- Different types of memory: load memory, work memory and system memory

7th Session (2Hrs)

- Example of 2NO , 1NO+1NC & 2NC Switch,
- Use of "SET-RESET" instructions
- Overall graph of Set reset functions
- Positive & Negative Edge
- Concept of "load and transfer operation"
- Binary / BCD Converter
- Basic Instruction

8th Session (2Hrs)

- Properties of Set & Reset functions
- Use of "Add and Watch table"
- Example for use of "set-reset" function
- Example on usage of "clock memory"

9th Session (2Hrs)

- Different Type of Blocks
- Application of comparator blocks
- Easy to Design your program
- Different types of Timers
- Pulse Timer

10th Session (2Hrs)

- Warm restart, cold restart and hot restart
- Extended Pulse timer
- On – Off Delay Timer
- Counters Operation
- Comparison Functions
- Examples on use of timers and comparators and counters