



MAINTENANCE TROUBLESHOOTING INTERNATIONAL LLC

PLC-304

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PLC-304 INTRODUCTION TO PROGRAMMABLE LOGIC CONTROLLERS

Programmable logic controllers (PLCs) are increasing in use, and technicians in all fields must be familiar with the fundamentals of installing and programming digital and analog PLCs. This course focuses on understanding PLCs; how they work, terminology, and the hardware and software elements that make up a programmable logic controller. Students will learn to use various techniques to specify inputs & outputs; how to understand program and data table file organization, number systems and processor information flow; and how basic relay type instructions, timers and counters, & data manipulation instructions can be used to achieve PLC solutions. Based on Studio 5000 Logix.



Review the operation and wiring of control devices. Using the concepts of basic undervoltage circuit design, design and draw a Master Undervoltage Circuit.

Draw the basic symbols and be able to relate them to the physical components.

The difference between a N.O. pushbutton and a N.C. pushbutton.

Draw a pilot lamp pushbutton and be able to identify them on wiring diagrams.

Draw the power rails and rungs of a ladder diagram.

Operation and function of a Maser Undervoltage Circuit.

Establish the knowledge base of the components of a PLC system. Distinguish between elements of hardware and of software.

Distinguish the difference between a PLC and a Computer.

Distinguish between analog and digital inputs to a PLC

Change a relay wiring diagram into a PLC wiring diagram.

Develop a comprehensive understanding of the what makes a PLC.

Distinguish between a synchronous and asynchronous scanner

Simulate an operation of a PLC controlling a

cylinder and several valves.

Understand the memory aspects of a PLC.

Inputs and outputs to the Data Tables in the PLC

A) Recognizing the input table and output table of a PLC.

B) Bits, bytes and words and apply that knowledge to input and output tables.

Specifying the input and output cards for a PLC system and design a wiring diagram implementing the inputs and outputs required for the design and operation a machine.

A) Read diagrams for input and output PLC modules

B) How the inputs and outputs are isolated from noise and interference.

C) Select the proper hardware and design a PLC wiring diagram for an industrial application of a PLC system.

Build a knowledge base of communication between PLC and the programming software.

Set up communications using either a basic ethernet setup or a RS-232 connection.

Use Who Active to find the proper PLC.

Download, upload, and go online with a program students will make.

Navigation & instructions for Studio 5000.

Navigate through the 5000 software to find

the desired instruction.

Learn basic instructions such as: XIO, XIC, OTE, Timers, and counters.

Troubleshooting techniques and used them to solve 2 troubleshooting problems on a PLC water pump system.

A) Logical problem solving techniques and shown how they can be use to find problems quickly.

B) Properly use a voltmeter to find input and output problems on PLC systems.

C) Use PLC indicator lights, relay status, and the voltmeter to solve simulated problems.

D) D) The student will be given a panel to wire and will have to troubleshoot 2 problems on the system within 15 minutes.

Prerequisites

All students must have the following

Basic understanding of electrical theory.

Basic understanding of electrical controls. This includes switches, push buttons, relays, contacts, starters, etc.

Use a multimeter to test components & read electrical schematics.

CLASS FORMATS AVAILABLE

✓ MTI Hands-On Center \$995/person

✓ On-Site (Your Location) Ask for Quote
Quick Quote Available in 48 hrs.

CLASS DURATION

4-days, 30 hours of instruction

Class Details: Each student will receive class books, work activity sheets, self-test progress evaluations, as well as questions from the instructor to make sure they understand the material presented. It is expected that an attendee will leave the class with the basic knowledge of the subject and possess new found skills to better equip them when they return to their job. A certificate suitable for framing will be issued to each attendee who successfully completes the course. Call, email or check the website for the next time this course is scheduled at the MTI training center. On-site sessions? Request a quick 48-hour turnaround quote. Revised: 07.02.2024