PLC Basics

Description

In this curriculum, students will be introduced to an easy-to-use briefcase PLC trainer. They will be introduced to ladder diagrams, binary, and Boolean logic. Students will also conduct various programming and wiring experiments, which stimulate proficiency in controller operation and industrial applications.

Skills

- Design and construct electrical circuits that represent Boolean equations.
- Use programming software to enter a ladder logic program into the trainer.
- Wire a PICO controller timing relay.
- Design and construct examples of series and parallel circuits.
- Create a circuit diagram.

Knowledge

- Describe the current flow in both series and parallel circuits.
- Describe applications and advantages of using PLCs instead of hardwired circuits.
- Construct input/output circuits connecting the PLC lights and switches with patch cords.
- Explain how AND, OR, and NOT circuit logic is represented in a ladder logic diagram.
- Explain the difference between AC and DC electrical power.

Activities

- Activity 1 - Introduction
- Activity 2 - Electrical Circuits
- Activity 3 - Circuit Logic
- Activity 4 - Ladder Logic
- Activity 5 - Keypad Programming
- Activity 6 - PLC Programming
- Activity 7 - Edit and Monitor Programs
- Activity 8 - Timers
- Activity 9 - Latching Relays
- Activity 10 - Post-Test
- Activity 11 - Bonus
- Activity 12 - Challenge
- Activity 13 - Open-Ended Challenge
- Activity 14 - Careers
- Activity 15 - Internet

Standards

Science, Technology, Engineering, & Mathematics

Commor Core Math standards

Module Includes:

Student Workbook, Instructor's Manual, Installation CD, DEPCO Suitcase PLC, Patch Cords, Adapter Cable, Safety Glasses (2), Headphones (2)

Computer is required and sold separately.

Requirements
Computer is required and sold separately.

Curriculum Specifications

The PLC is enclosed in a portable storage case made of impact-resistant polyethylene. The interior panel contains the micro controller (internally fused), mounted in a steel training panel. Included on the panel is a 24-volt DC power supply (grounded and fused), 4 combination lights and switches (two momentary and two maintain - normally open or closed); banana-jack terminal strips with protective shields for the lights/switches and I/O (6 digital inputs and 4 relay outputs) from the Pico Micro Controller; 0 to 10 V panel meter and potentiometer.

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