

# *Technician's Guide To Programmable Controllers*

## Chapter 1. What is a programmable Logic Controller (PLC)?

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### **Chapter 1      *What is a Programmable Logic Controller (PLC)?***

1. List the four main components of a programmable logic controller.

#### **Answer**

- 1) programming device
- 2) processor unit
- 3) power supply
- 4) input/output (I/O) interface

2. Define the term *interface*.

#### **Answer**

The interface is the medium for data transmission between any two systems. or between inputs and outputs, or between the input elements, or between hardware and software.

An interface occurs when two systems come together and interact or communicate. In the case of the PLC, the communication or interaction is between the inputs (limit switches, push buttons, sensors), and outputs (coils, solenoids, lights, and so forth), and the processor.

3. Define the term *real world*.

#### **Answer**

The term real world is used to distinguish actual devices that exist and must be physical. wired from the internal functions of the PLC system that duplicate the function of relays, timers, counters, and so on, even though none physically exists.

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## 4. Define the term *discrete*.

### Answer

Discrete I/O signals are either ON or OFF, open or closed, and 0 or 1 values ; these signals are discontinuous in behavior. Discrete devices include limit switches, push buttons, motor starter coils, and indicator lamps.

## 5. Explain the following initials or acronyms:

### Answer

DC: Type of current DC means Direct Current  
CPU: Central Processing Unit Is the brain of the PLC of the computer.  
PLC: Programmable Logic Controller  
ADC: Analog to Direct Converter  
DAC Digital to Analog Converter  
NEMA: National Electrical Manufacturing Association  
AC: Altern Current  
PC Personal Computer  
I/O Refer to Input and Output in PLC

## 6. Define the term *analog*.

### Answer

Analog refers to the quantity that varies continuously with time.  
Analog devices have a range of possible values. Examples of analog devices Are: pressure sensors, temperature probes, panel meters, variable speed drive signals, and modulating valves.

## 7. List the two types or styles of programming devices.

### Answer

Programming devices are meant for programming the required task, and install the program in the PLCs (Programmable Logic controllers). There are two types of programming devices:

- a) Hand-held The dedicated hand-held programmer was once a very popular
- b) personal computers. the most common programming device used today.

## 8. RELAY LADDER LOGIC is a high-level graphic computer language.

### Answer

True

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9. What is the major advantage of a PLC system over the traditional hard-wired control system?

## Answer

The significant advantage of the PLC system over the traditionally hard-wired system is its quick response in controlling the process of the driven equipment, and provision of compact, reliable control components. Other advantages include eliminating hard wiring, which must be replaced whenever it requires a change. As Today's machinery consists of highly automated specialized and high-speed manufacturing processes require the most sophisticated rather than electromechanical relays, drum switches, and mechanical timers. Hence, PLC replaces effective control equipment with the help of solid-state devices. With the help of PLC, the place occupied will also be reduced.

10. Draw a block diagram and label the main components of a typical DC power supply.

## Answer

Block Diagram of a Typical Power Supply

