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

09/03/2023

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Basic Programmable Logic Controllers, ECONMT-142 fall

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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

1. **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.

1. **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.

**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

**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.

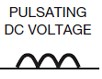
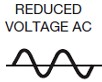
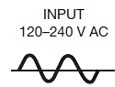
Hence, PLC replaces effective control equipment with the help of solid-state.

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**



Filter Network

Full Wave

Rectifier

Voltage Regulator

Step Down

Transformer

Step 1 Step 2 Step 3 Step 4