Technician's Guide To Programmable Controllers

Chapter 2. Understanding the Input/Output (I/O) Section

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Basic Programmable Logic Controllers, ECONMT-142 fall
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1. Describe briefly the purpose of the I/O section.

Answer

The primary purpose of this I/O Section is 'to convert any input/output signals into signals that will be compatible with the processor. I/O modules act as the data interface between the field and the CPU and get the desired output. A PLC knows the actual status of field devices and controls them with relevant I/O cards.

2. State two reasons for employing optical isolation.

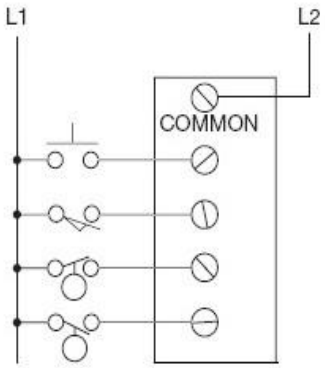
Answer

a) This eliminates any possibility of the input line voltage, i.e., 120 or 240 V AC, from coming in contact with the processor and damaging the low-voltage DC section of the processor.
b) also protects the processor from electrical noise, voltage transients, or spikes.

3. Draw an AC input module with four input devices, show all necessary electrical connections, and identify potentials L1 and L2.

Answer

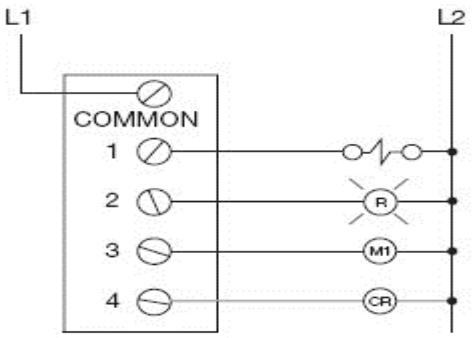
AC input Module with four inputs



4. Draw an AC output module with four output devices to show all necessary Electrical connections and identify potentials L1 and L2.

Answer

AC output Module with four outputs



5. Triacs are susceptible to "dielectric-type" breakdown if the maximum peak the voltage level is exceeded.

Answer

T X F

6. Briefly describe why a hard-wired emergency-stop circuit is recommended for PLC installations.

Answer

Programmable Logic Controllers are considered Solid state devices. These solid-state devices usually fail to shorten. This is an added hazard concerned with the safety of the equipment. So, to avoid this, a hard-wired emergency STOP circuit will be incorporated with the PLC system.

7. Briefly describe the function of an interposing relay.

Answer

When it is necessary to control loads larger than the rating of an individual output circuit, a standard control relay, which has a small inrush and sealed current value, is connected to the output module.

8. I/O modules are keyed to prevent unauthorized personnel from removing them From the I/O rack.

Answer

T **F**

9. Which of the following are *not* normally sources of electrical noise?

a.) solenoid
b.) relay
c.) indicator lamp X
d.) motor starter
e.) motor
f.) overload heaters X

10. To ensure maximum benefit of shielding, the shield of a shielded cable must be terminated and grounded at both ends.

Answer

T **F X**

11. E-Stop refers to:

Answer

a.) extra stop
b.) **emergency stop X**
c.) every stop
d.) elevator stop
e.) energy stop

12. Electromagnetic interference (EMI) can be reduced with the proper grounding Of equipment.

Answer

T X F

13. Solid-state output devices tend to:

Answer

a.) never fail
b.) fail in the *open* or *OFF* condition
c.) fail in the shorted or ON conditions
d.) not be affected by overload

14. List three environmental considerations when installing PLC equipment.

Answer

1. Temperature

2. Dust

3. Troubleshooting accessibility

15. What type of tool or object should be used to change the position of DIP switches?

Answer

Use the tip of a ballpoint pen or other nonconducting pointed object to change switch positions.