

Distinguish, differentiate, compare and explain what is the difference between PLC and Computer. Comparison and Differences.

## Differences between PLC and PC / Computer

| S.No.                 | PLC   | PC / Computer   |
|-----------------------|---|---|
| Environment           | The PLC was specifically designed for harsh conditions with electrical noise, magnetic fields, vibration, extreme temperatures or humidity. | Common PCs are not designed for harsh environments. Industrial PCs are available but cost more.                               |
| Ease of Use           | By design PLCs are friendlier to technicians since they are in ladder logic and have easy connections.                                      | Operating systems like Windows are common. Connecting I/O to the PC is not always as easy.                                    |
| Flexibility           | PLCs in rack form are easy to exchange and add parts. They are designed for modularity and expansion.                                       | Typical PCs are limited by the number of cards they can accommodate and are not easily expandable.                            |
| Speed                 | PLCs execute a single program in sequential order. They have better ability to handle events in real time.                                  | PCs, by design, are meant to handle simultaneous tasks. They have difficulty handling real time events.                       |
| Reliability           | A PLC never crashes over long periods of time. ("Never" may not be the right word but its close enough to be true.)                         | A PC locking up and crashing is frequent.   |
| Programming languages | Languages are typically fixed to ladder logic, function block or structured text.   | A PC is very flexible and powerful in what to use for programming.  |
| Data management       | Memory is limited in its ability to store a lot of data   | This is where the PC excels because of its hard drive. Any long term data storage, history and trending is best done on a PC. |

### About Programmable Logic Controllers (PLCs)

A Programmable Logic Controller (PLC) is a specialized computer like device used to replace banks of electromagnetic relays in industrial process control. The PLC is also known as a programmable controller (PC). The title "PC" for programmable controller could be confused in common usage with "PC" used to mean personal computer. To avoid this confusion, we shall refer to the programmable controller as a programmable logic controller or PLC.

You can think of the programmable logic controller as a heavy-duty computer system designed for machine control. Like a general-purpose computer, the PLC is based on digital logic and can be field-programmed. The programming language is a bit different because the purpose of the PLC is to control machines. The PLC is used to time and sequence functions that might be required in assembly lines, robots, and chemical processing. It is designed to deal with the harsh conditions of the industrial environment. Some of the physical environment problems could include vibration and shock, dirt and vapors, and temperature extremes. The PLC commonly has to interface with a wide variety of both input and output devices. Some input devices include limit and pressure switches, temperature and optical sensors, and analog-to-digital converters (ADCs). Some output devices include valves, motors and cylinders, and Digital-to-Analog converters (DAC).