

Hydraulics & Pneumatics

Chapter 4: Programmable Logic Controller (Introduction)

by

Dr. Mohd Fadzil Faisae
Faculty of Mechanical Engineering
ffaisae@ump.edu.my

Lesson Outcome

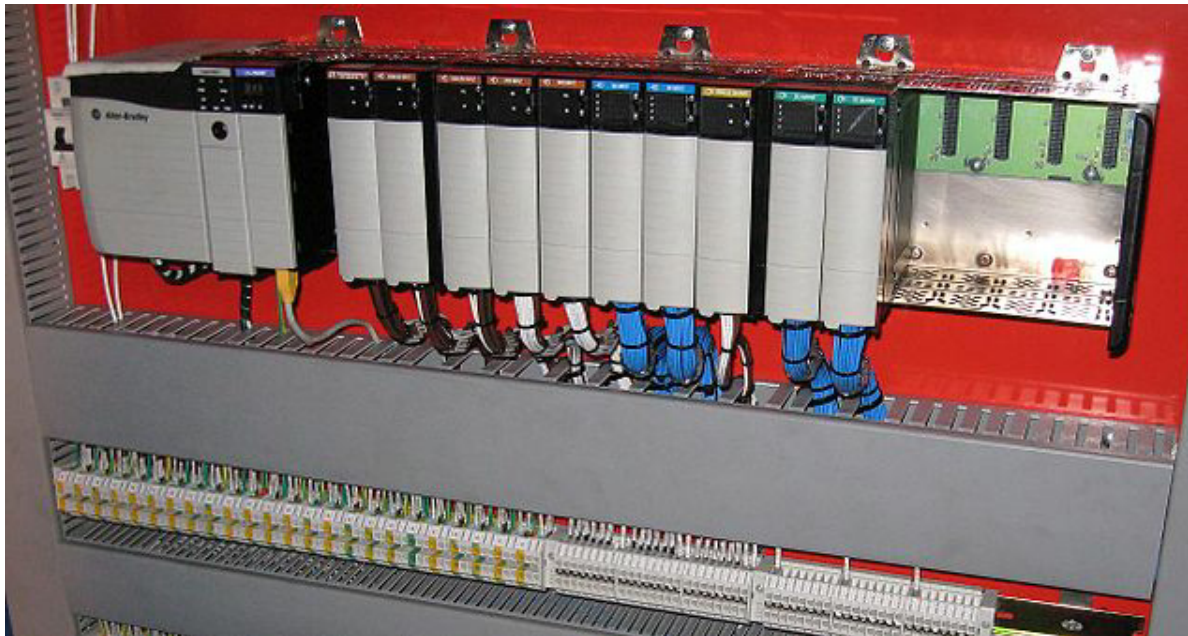
- By the end of this lecture, student should be able to:
 - Explain the functions, symbols and components of Programmable Logic Controller (PLC): i) CPU ii) memory (ROM/RAM) iii) programming device iv) power supply v) input section vi) output section.

Content

- Introduction to PLC
- Components in PLC

What is PLC?

- Industrial computer in which the hardware and software have been specifically adapted to the industrial environment

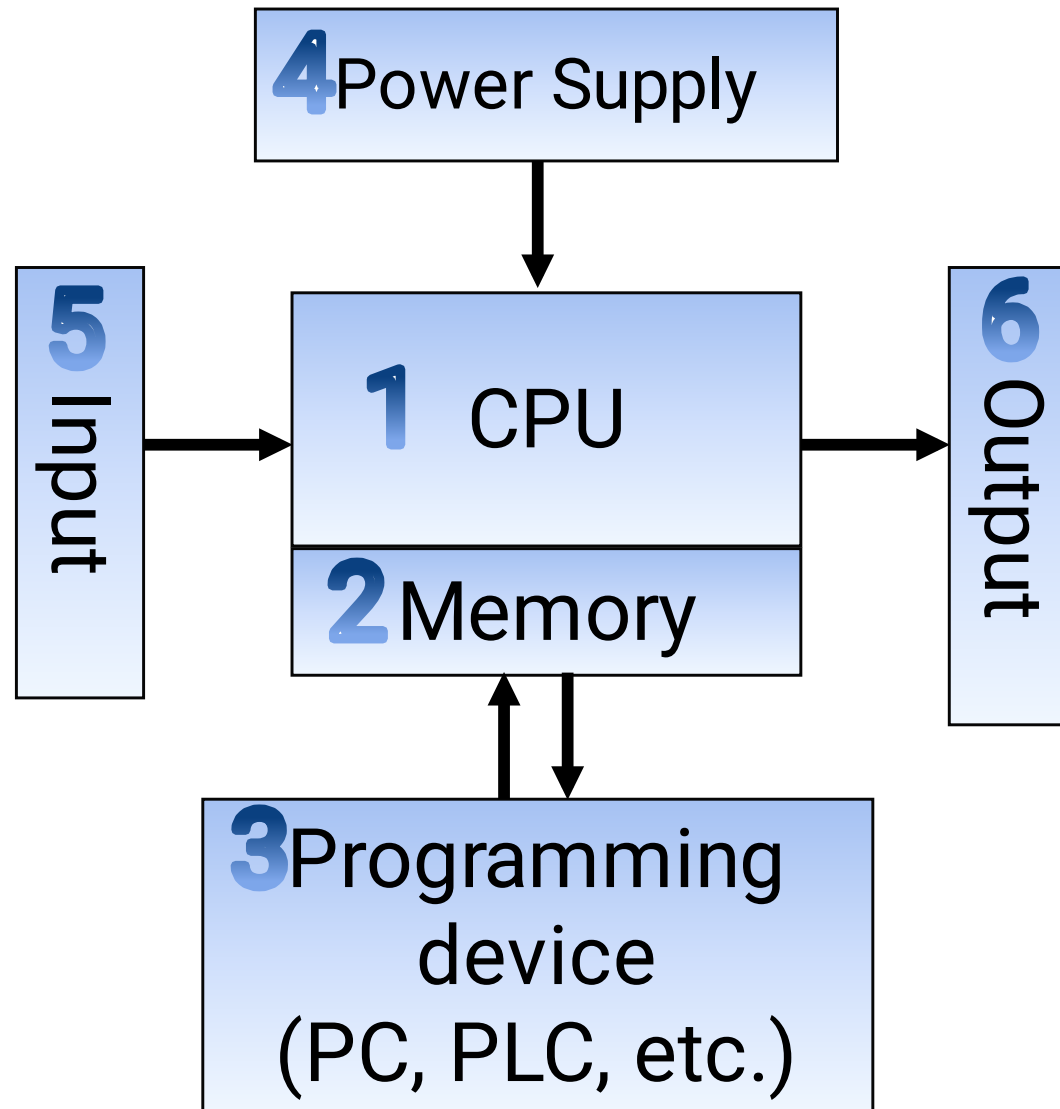


Source: [Wikimedia](#)



Cmarcante

Components of PLC



CPU (central processing unit)

- Contains one or more microprocessors – brain for PLC
- Same type of microprocessor in microcomputer -except PLC microprocessor accommodate **ladder logic** instead of other languages
- Functions – executes the tasks, manages memory, monitors input, evaluate logic (ladder diagram) & turn on appropriate output.

Memory (1)

⊠ ROM

- Operating System (OS) is burnt into ROM by manufacturer
- Contains OS control function (software..e.g. Windows in PC)
- Nonvolatile memory-when the electricity shut off, the memory is retained
- Users cannot change ROM

Memory (2)

☒ RAM

- User memory
- User can read or write program to RAM
- Volatile – when electricity shut off, the data in memory lost
- Use battery to avoid ‘memory loss’

Programming Device

- ⊠ Device that are used to write the program and trouble shoot the PLC
- ⊠ Example
 - PC, handheld programmers, microcomputers

Power Supply

- To supply power for CPU
- Most PLCs operate on 115 V AC

Input Section

- ⊠ Performs 2 tasks – taking input from outside world & protecting CPU from outside world
- ⊠ Convert real-world logic (eg. 250 V AC input module) to require logic level by CPU (eg. Low-level DC signal for CPU)
- ⊠ Input devices – switches, sensors, etc.

Output Section

- ⊠ Provide connection to real-world output
- ⊠ Eg. – motor starters, lights, coils, valves etc.

Summary

- In this lesson, we have learn the basic components and function of programmable logic controller