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Basic Programmable Logic Controller

PLC Hardware Configuration

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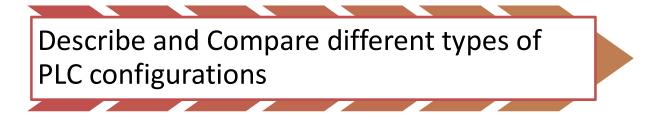
Chapter Overview

- PLC Configuration
- Power Supply Unit
- CPU Module
- I/O Units
- Point Addressing
- Expanded PLC Systems
- Power Consumptions



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Learning Outcomes



Identify and describe the function of the hardware components in Omron CQM1H



PLC Configuration - Size

Micro (Fixed)

- The smallest configuration (as small as a deck of card), with very limited capabilities.
- I/O Count: up to 32

Shoebox (Fixed)

- Compact, all-in-one unit with limited expansion capabilities.
- I/O Count: 32 up to 128



PLC Configuration - Size

Mini (Modular)

- Half the size of rack.
- Can hold multiple modules, but limited.
- I/O Count: 128 to 2048

Rack (Modular)

- The largest configuration, as large as 18"x30"x10".
- Multiple racks can be connected together using expansion module.
- I/O Count: 1024 and above.





- For building distributed control system with high speed and capacity Controller Link System.
- Flexible system configurations using advanced inner boards.
- Up to 512 I/O points, 15.2k-word program, 12kword Data Memory (DM).
- Program execution time around 0.375us for basic instructions and 17.7us for special instructions.



Power Supply

• To convert line voltage to low-voltage DC and then isolate it for the use to operate the CPU and any other associated modules.



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CPU Module

- Comprises the controller and memory system to direct all other modules, execute program, and store program and data.
- Contains 16 built-in DC input points and one Controller Link Unit.
- Can mount 2 inner boards.
- Can connect up to maximum 11 I/O and Dedicated I/O modules.



Input Modules

- Serve as the link between field devices and the PLC's CPU.
- It converts the input signal to a signal that CPU can work with, electrically isolate it and send to input memory area in CPU.
- Each module has terminals for attaching input wiring.
- Can either have 8, 16 or 32 input terminals.



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Output Modules

- Serve as the link between PLC's CPU and output devices.
- After the CPU updates the output signal, it will be stored inside output memory area. Output module will take the signal, electrically isolate it, and energize or de-energize the output device.
- Each module has output terminals (8, 16 or 32) for attaching output wiring.



Point Addressing

Refer to the class/<u>video illustration</u> and explanation.



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