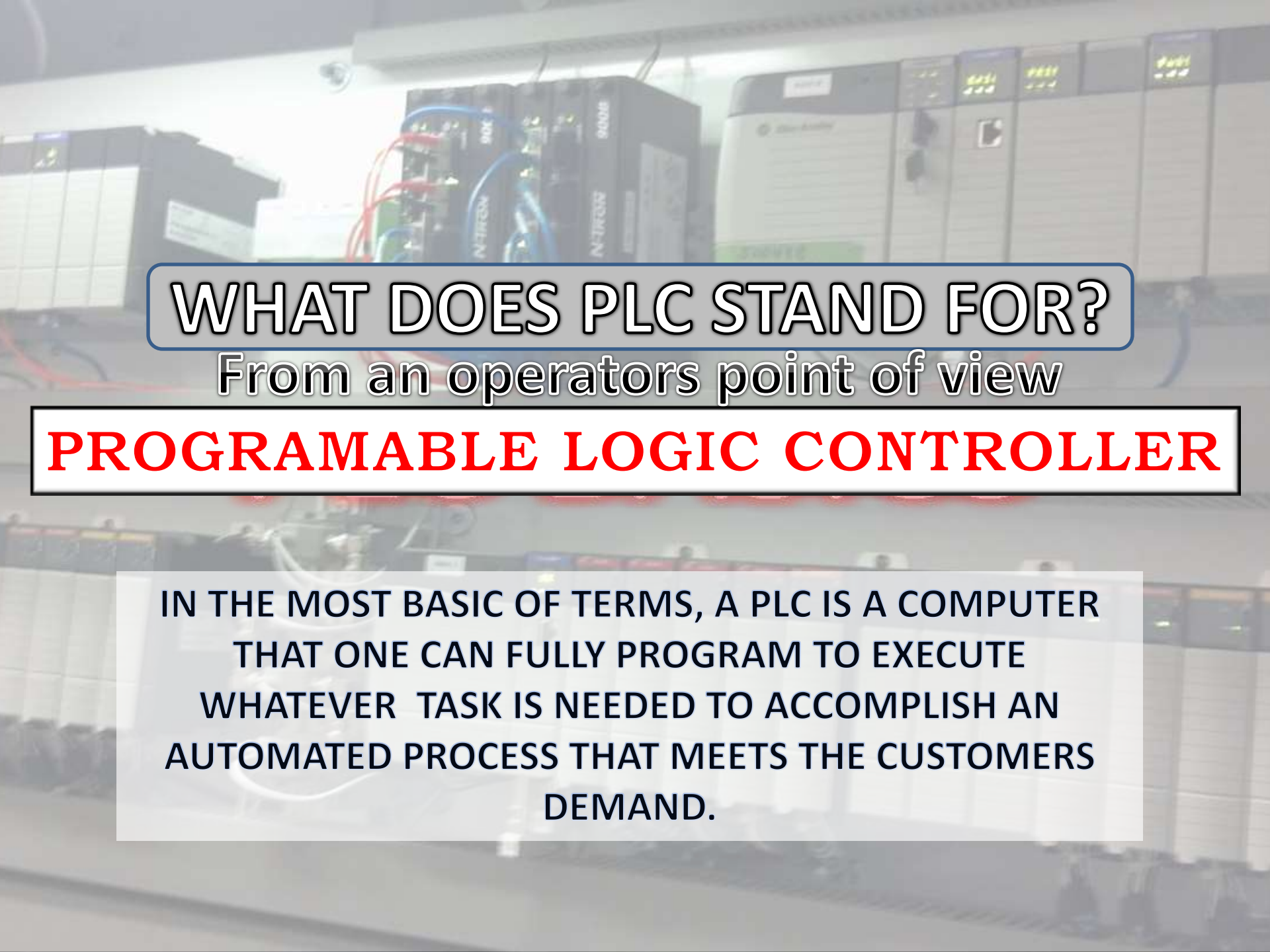


WHAT DOES PLC STAND FOR?

From an operators point of view

PROGRAMABLE LOGIC CONTROLLER

IN THE MOST BASIC OF TERMS, A PLC IS A COMPUTER THAT ONE CAN FULLY PROGRAM TO EXECUTE WHATEVER TASK IS NEEDED TO ACCOMPLISH AN AUTOMATED PROCESS THAT MEETS THE CUSTOMERS DEMAND.

PLC'S PERFORM 3 TASKS:

- Interrogate the Inputs
- Execute the program
- Update Outputs

Functionality

Quick Animation

So with this animation we see basically what takes place in order, with our output as the FINAL CONTROL ELEMENT.

PLC LAYOUT

POWER SUPPLY

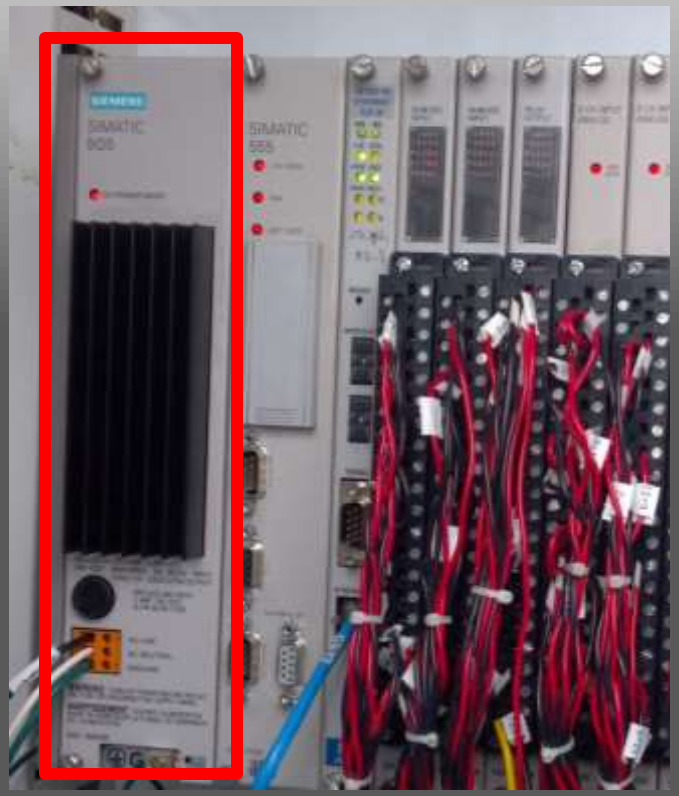
CPU

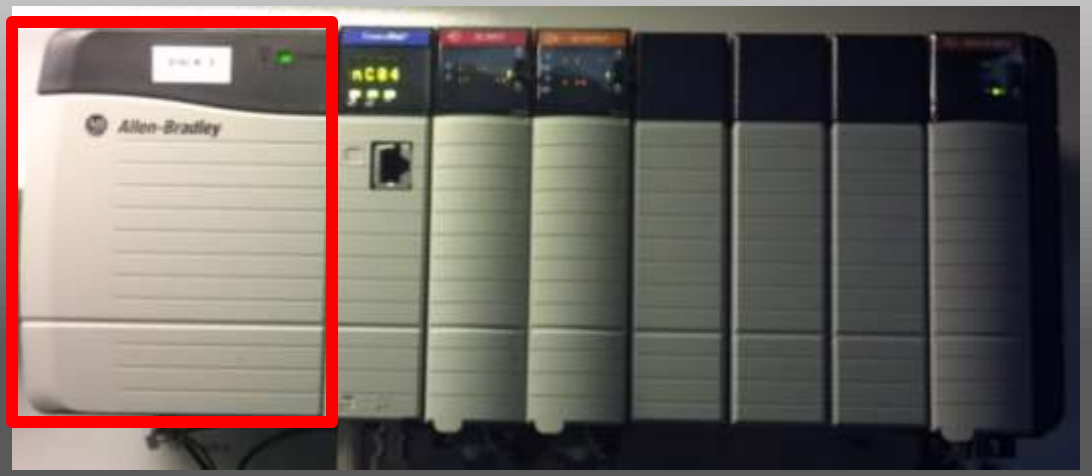
INPUTS/OUTPUTS

COMPONENTS

Fixed vs. Modular

POWER SUPPLY

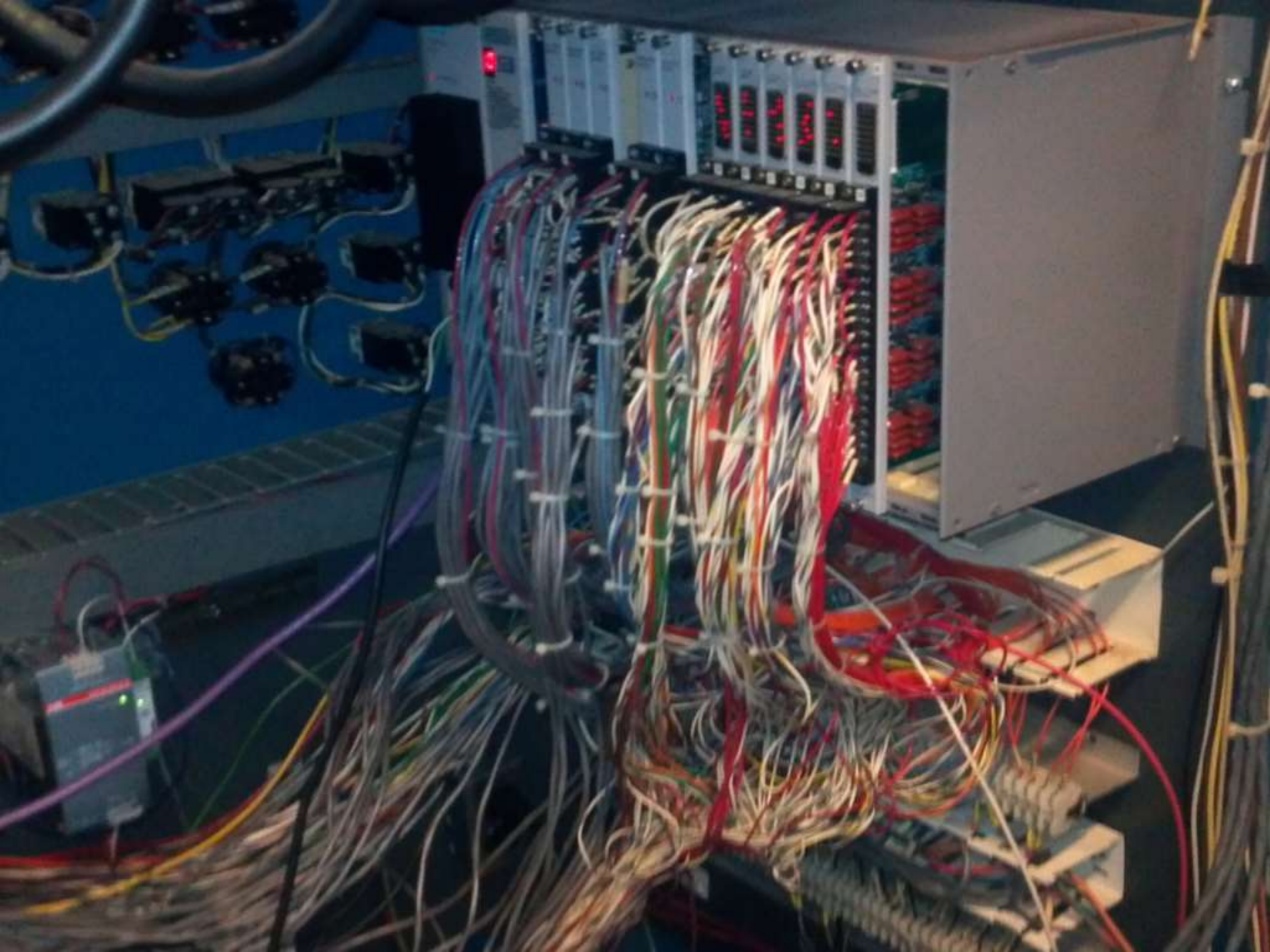




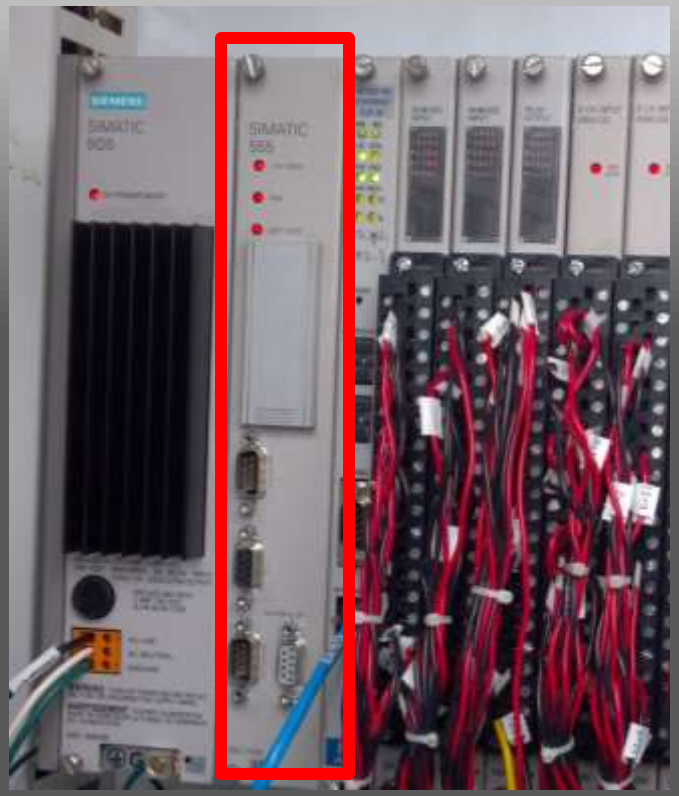
These power supplies are typically used to power the function of the CPU and the Input/Output cards.

External Power Supplies

These power supplies are used to power the components in the field. It is separate from the power supply dedicated to the PLC.

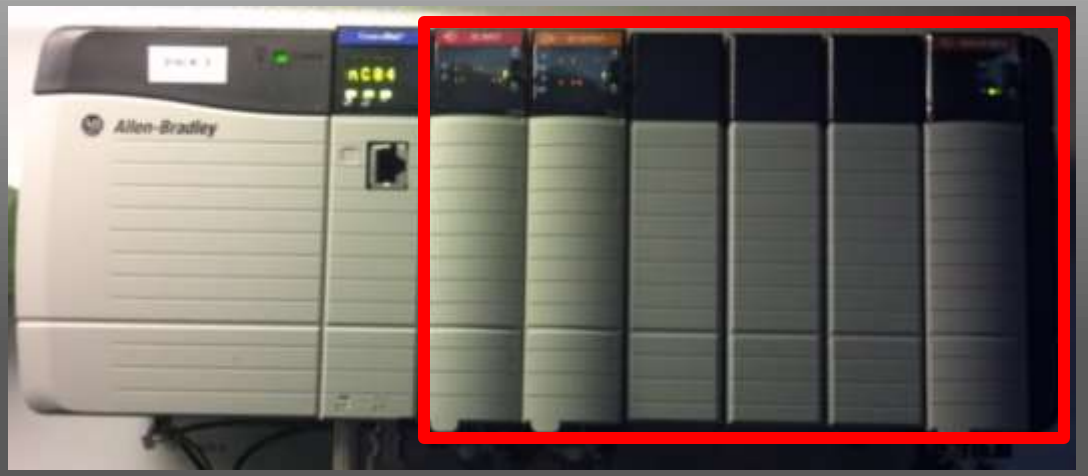


CPU (computer)



The CPU (central processing unit) is the brains of the operation. The program is stored here. All the functions of the PLC are executed from here.

Input and Output Modules

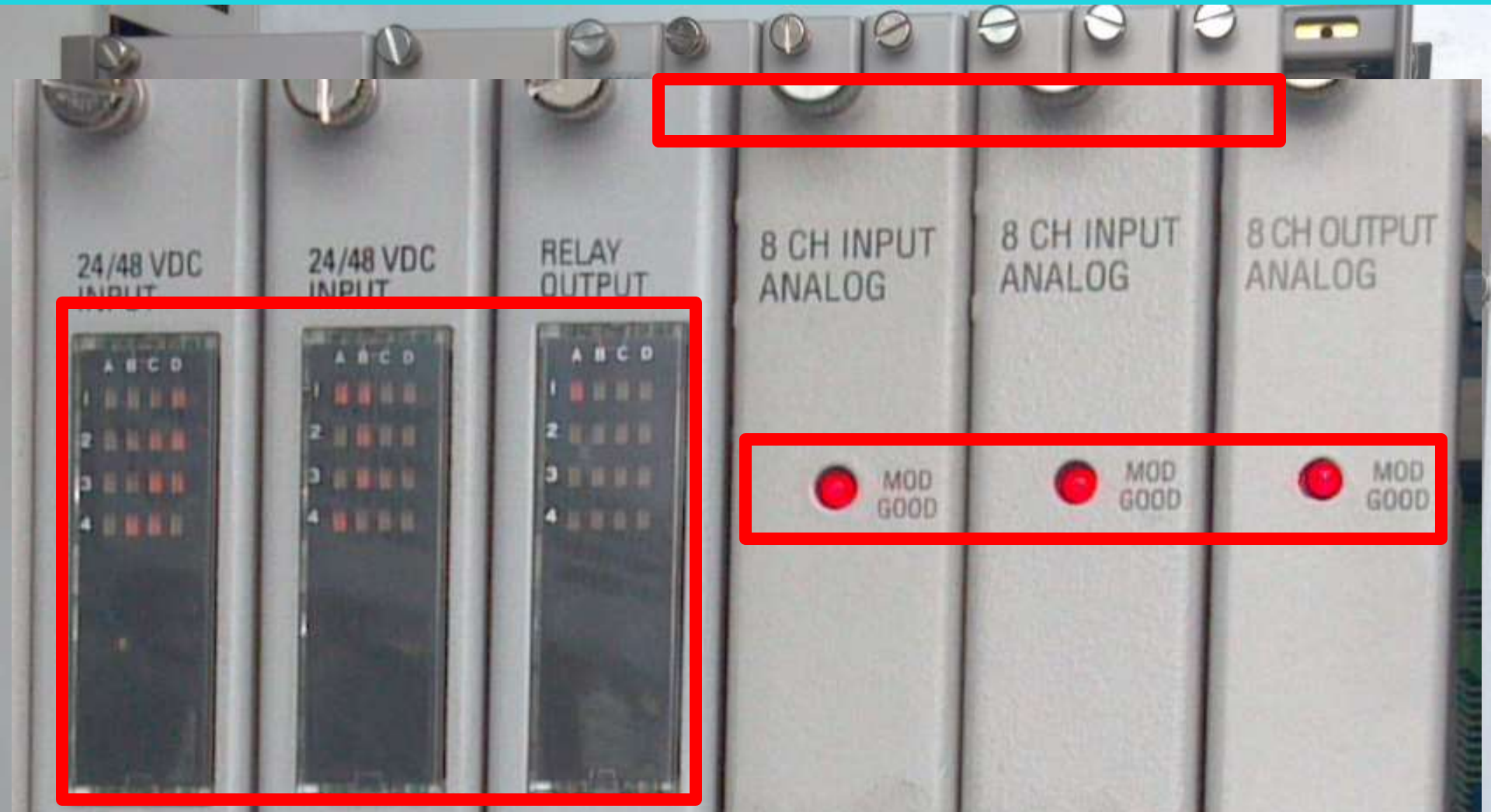


Input cards receive information from the field. Output cards cause action to take place in the field.

I/O CARD IDENTIFICATION

The Analog Modules on this particular PLC only have status lights. If these lights are out your Module may have an issue.

For our discrete Modules here the array of lights you see under the Module identifier indicates which Input/Output is ON/OFF.

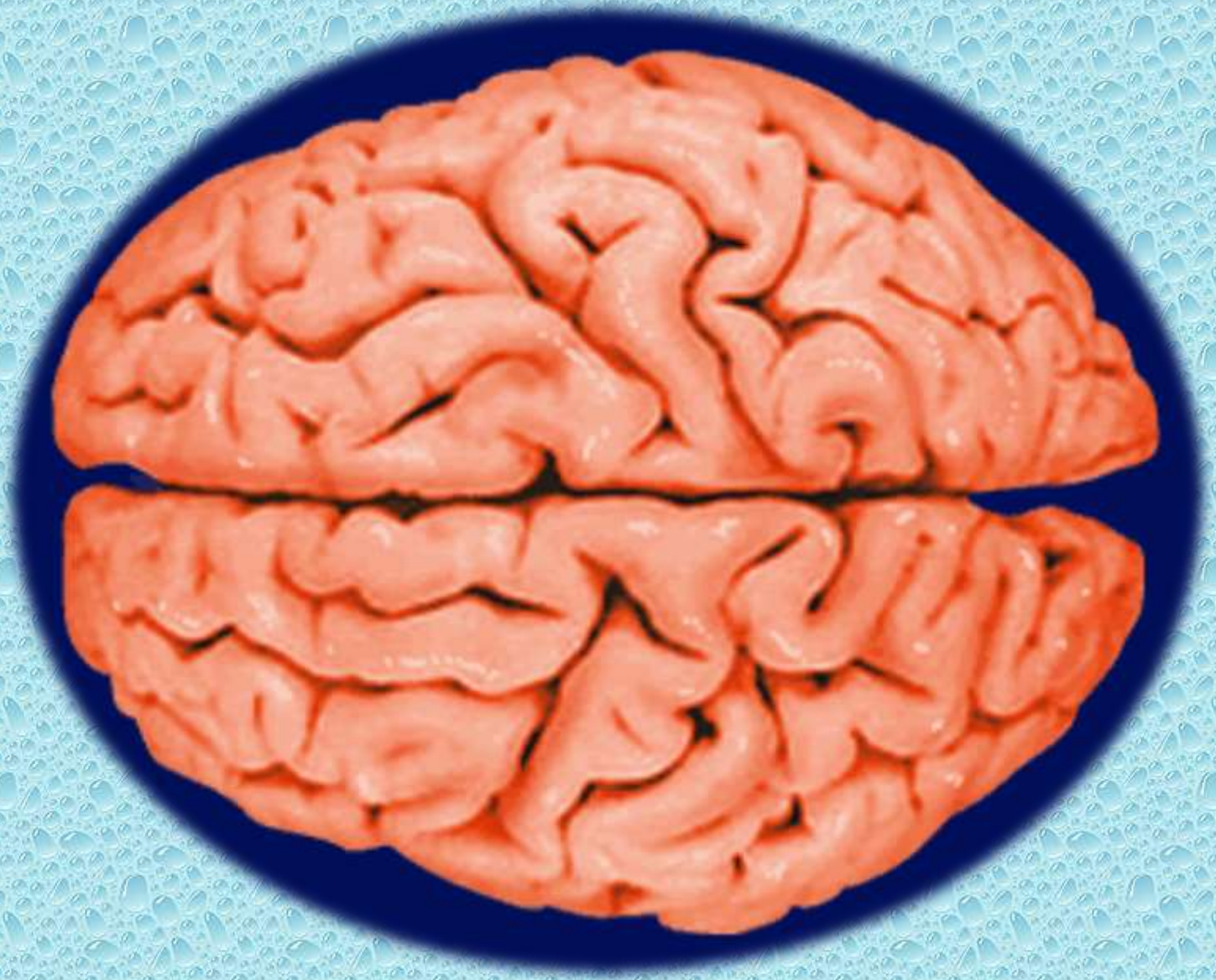


Remote I/O

PLC BRANDS

ASSOCIATED SOFTWARE

MEMORY AND STORAGE



MEMORY AND STORAGE

Batteries allow for memory retention during power cycles. If a battery has little or now charge the "volatile" memory will be lost if power is interrupted.


SIEMENS
SIMATIC
S5
SIMATIC
S4S
SIEMENS
SIMATIC
S5
SIMATIC
S4S

MEMORY CARDS

Memory cards usually negate the need for batteries. Programs are stored in the memory card. So in the event that an expected or unexpected power cycle occurs or the CPU itself fails, your program is stored on the card. It can then be removed from the failed device and placed into a new PLC and returned to service quick and easy.

PROGRAM BACKUPS

UPDATED

I/O (INPUT/OUTPUT)

Inputs

Discrete


RUNNING
OFF
HAND
AUTO
RUNNING
OFF
HAND
AUTO
LOW

OTHER COMMON TYPES OF DISCTRETE INPUTS ARE:

FLOAT SWITCHES

LIMIT SWITCHES

HOA SWITCHES

PRESSURE SWITCHES

TEMPERATURE SWITCHES

THE SECOND TYPE OF INPUTS ARE:

ANALOG

ALSO KNOWN AS CONTINUOUS

EXAMPLES OF ANALOG INPUTS ARE:

Pressure transmitters can send a continuous 4-20 milliamp signal corresponding to a level or pressure.

Flow transmitters can send a continuous 4-20 milliamp signal corresponding to a flow rate (example: 0-50 feet or 0-22 psi)

Temperature transmitters can send a continuous 4-20 milliamp signal corresponding to a process temperature.

(example: 0-100 degrees)

OUTPUTS

The same basic idea applies here as with our INPUTS.
The ANALOG signal is continuous and the DISCRETE is ON/OFF.

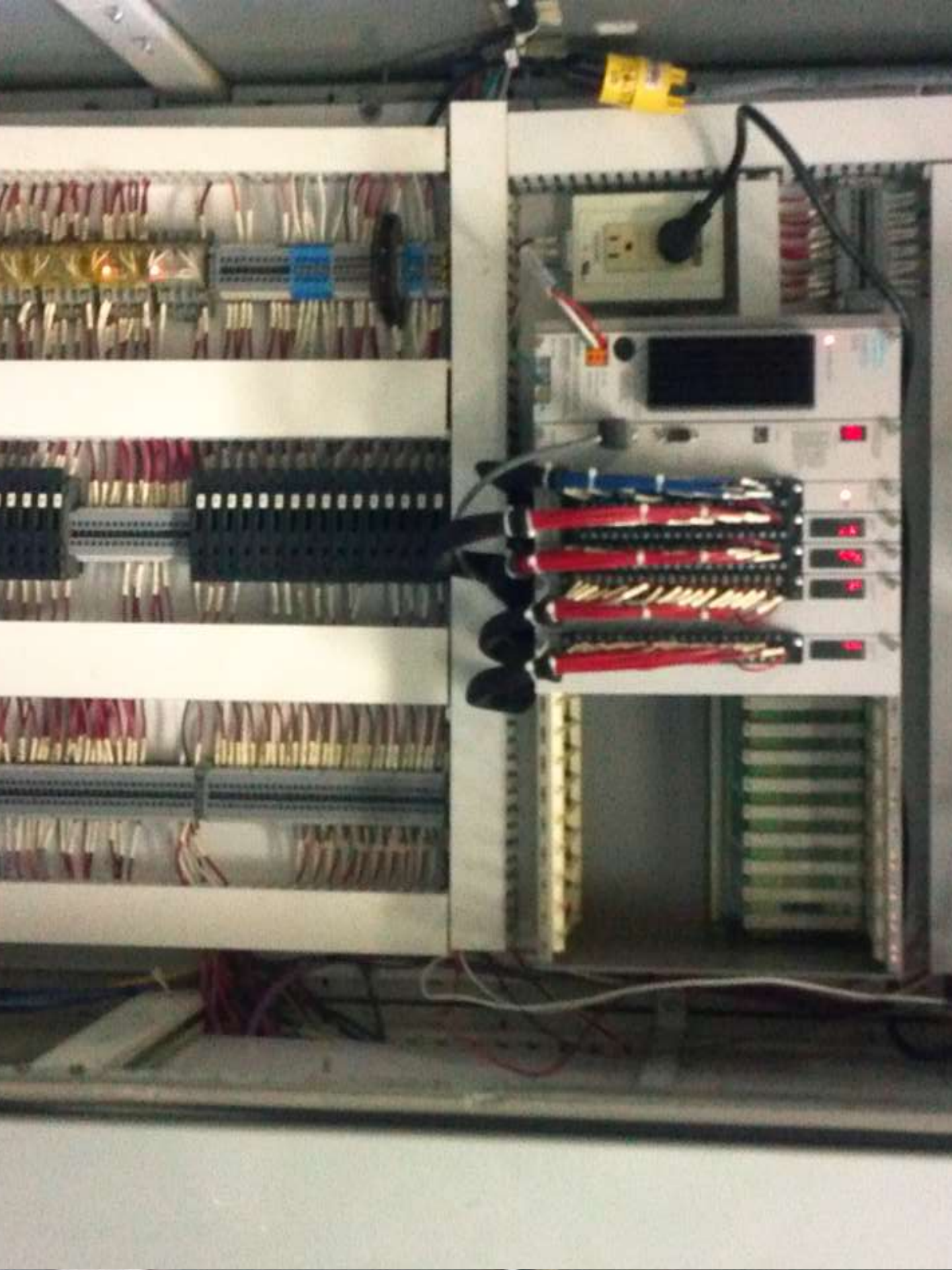
Examples of Discrete Outputs

- Alarm Lights
- Strobes
- Pumps without VFD's
- Solenoid Valves
- Sirens

Examples of Analog Outputs

I/P (current to pressure):
These devices, known as Frequency Drives).
predetermined location.

PANEL ORGANIZATION




Also, The Panduit
Covers neatly in place
Notice the wire Labels

Class Recap