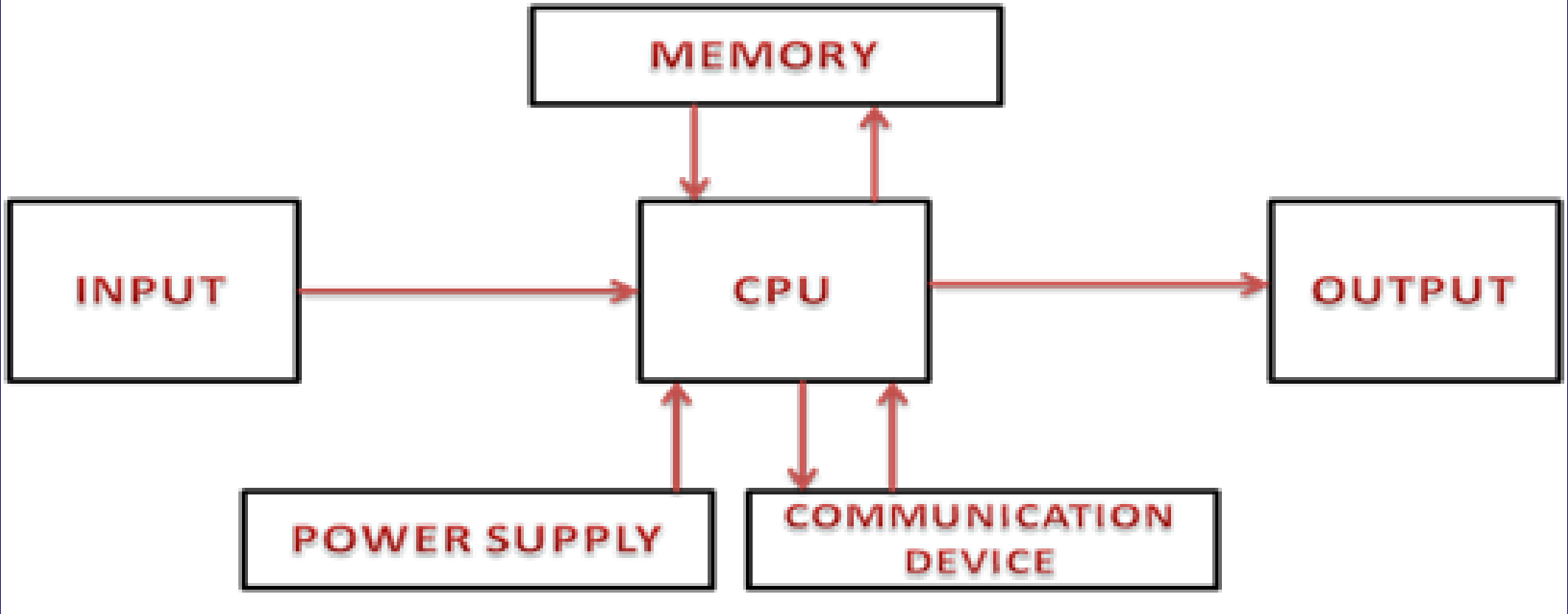
Programmable Logic Controllers

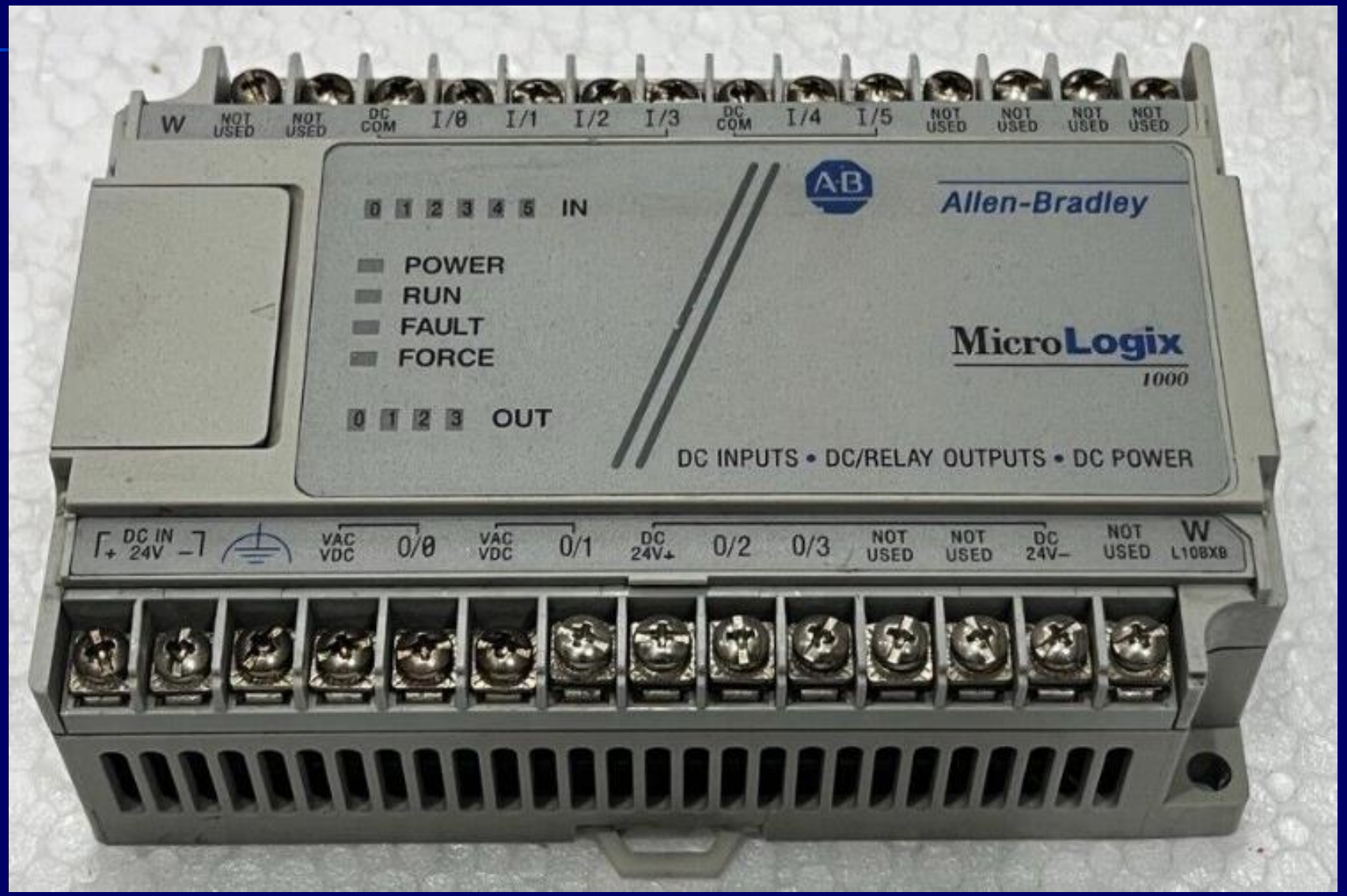
GEM 80

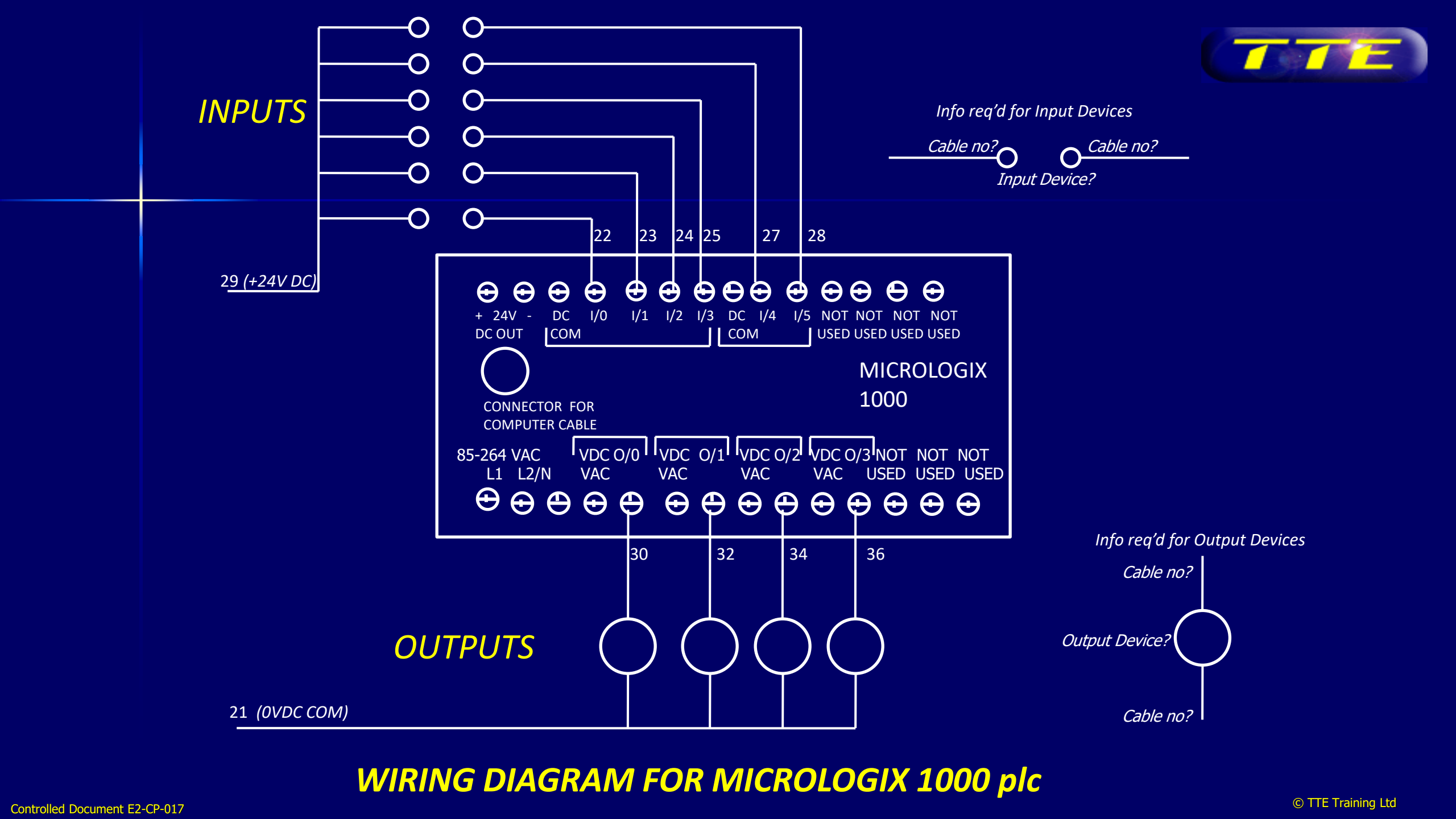
PLC Block Diagram



ALAN BRADLEY MicroLogix 1000 (Compact)
20 Inputs / 10 Outputs

ALAN BRADLEY MicroLogix 1000 (Compact)
6 Inputs / 4 Outputs

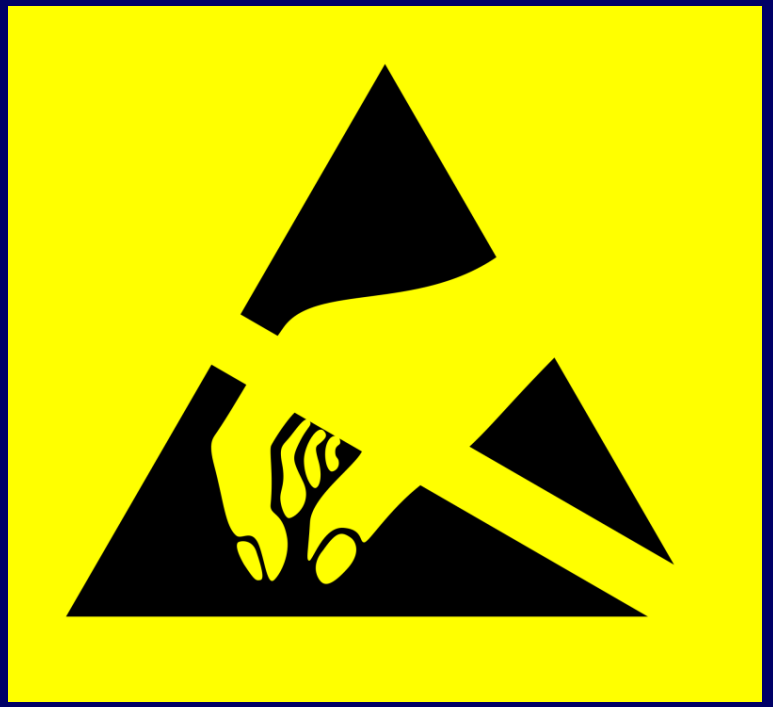




WIRING DIAGRAM FOR MICROLOGIX 1000 plc

ALAN BRADLEY SLC500 (Modular Expandable)

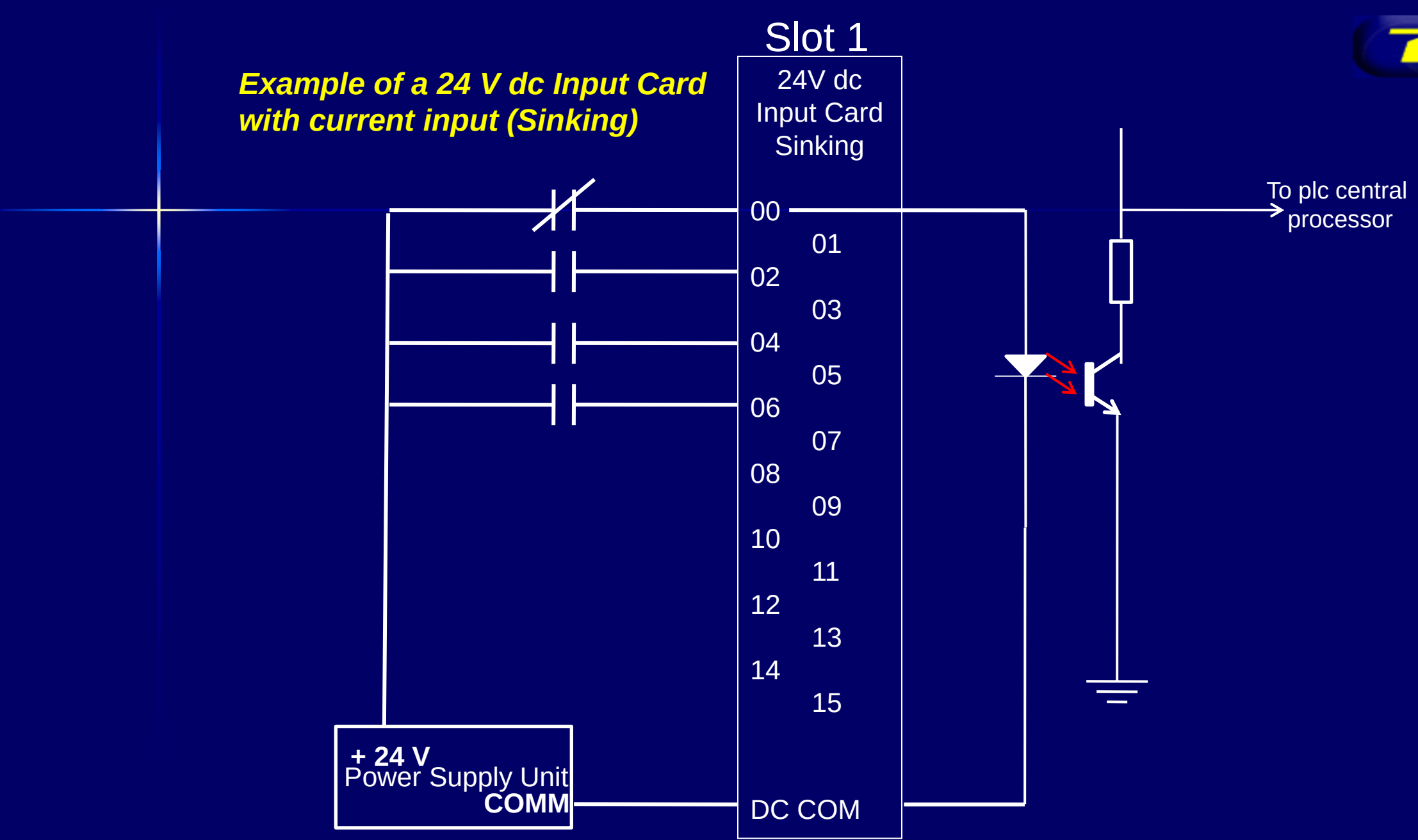
Input Card SLC500
DC Sink



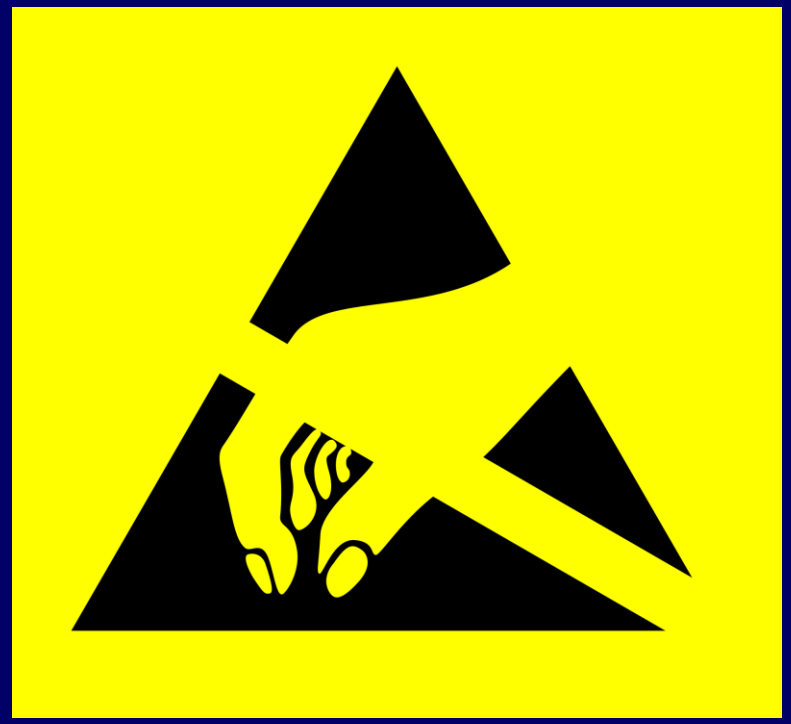
TYPICAL INPUT DEVICES:

Push Button	
Micro Switch	
Thumbwheel SW	
Level SW	
Flow SW	

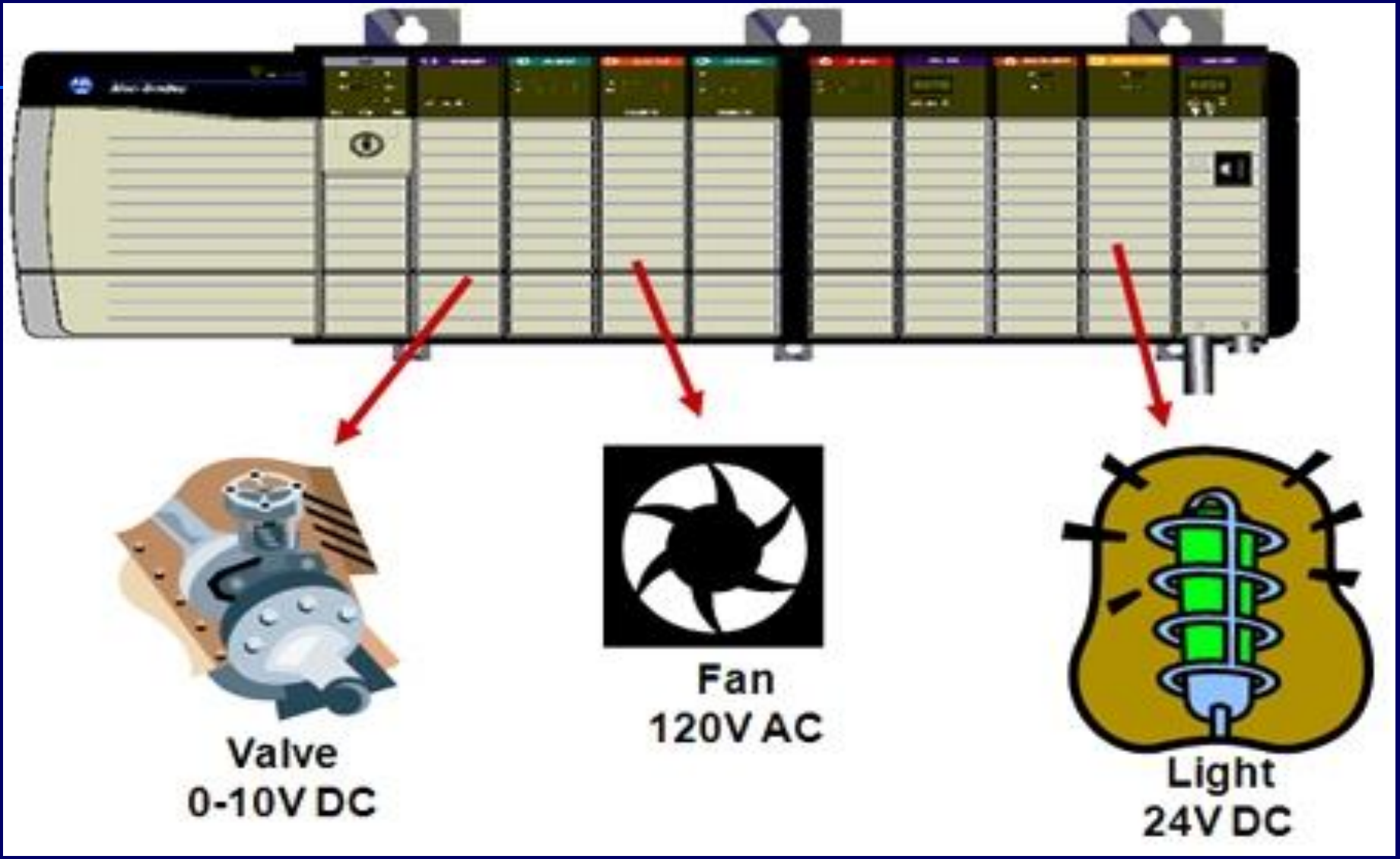
Example of a 24 V dc Input Card with current input (Sinking)

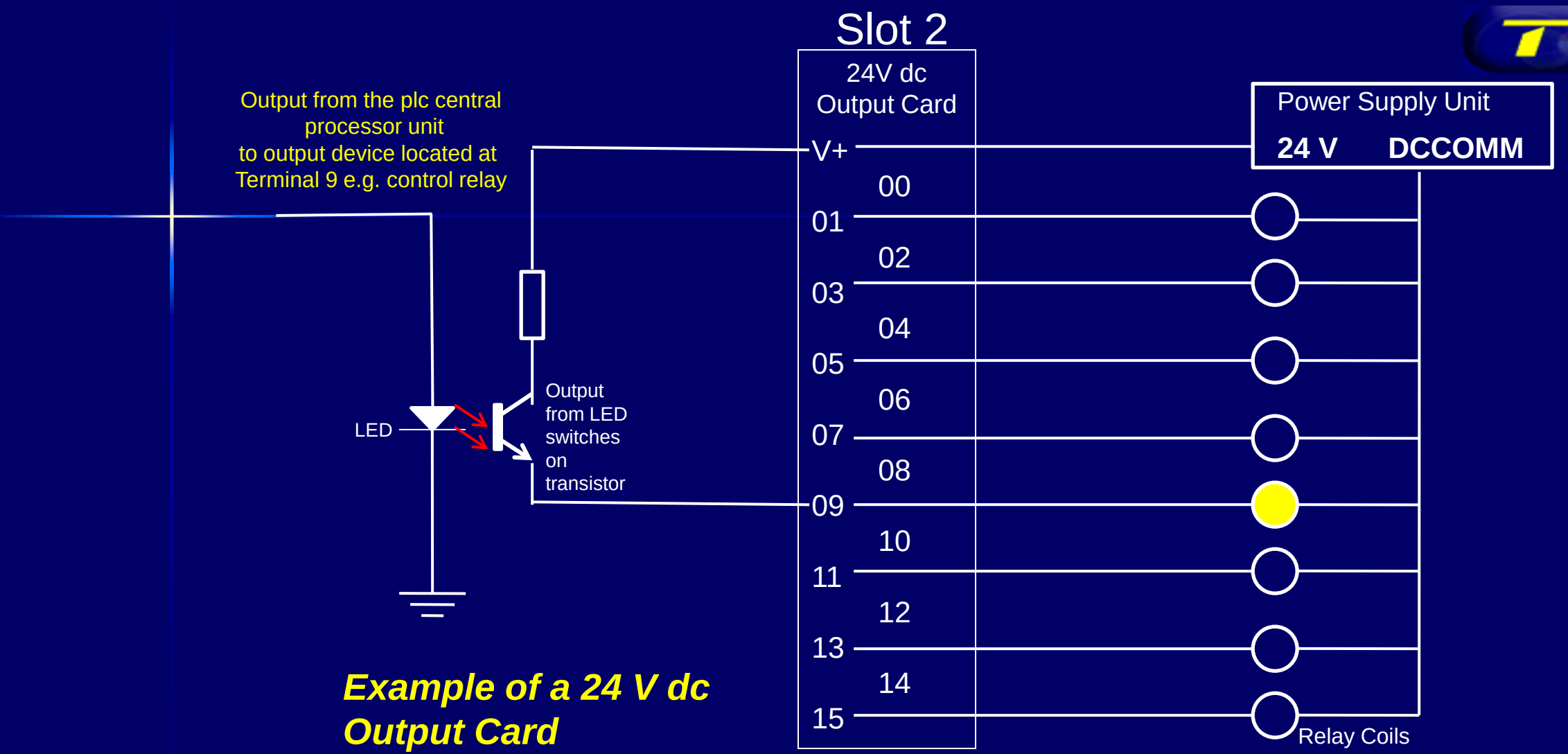


Output Card SLC500
DC Source



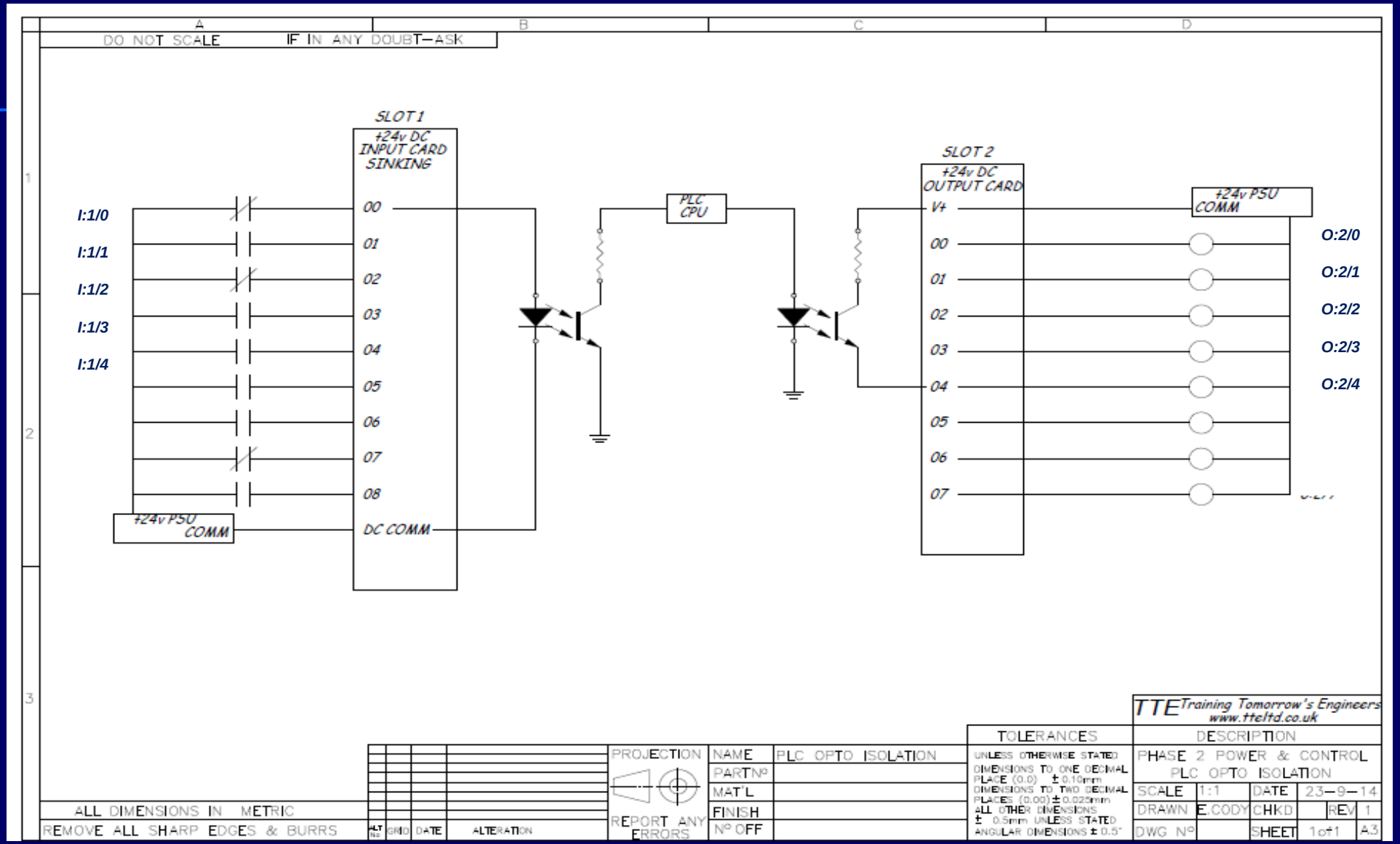
TYPICAL OUTPUT DEVICES:





Example of a 24 V dc Output Card with current output (Sourcing)

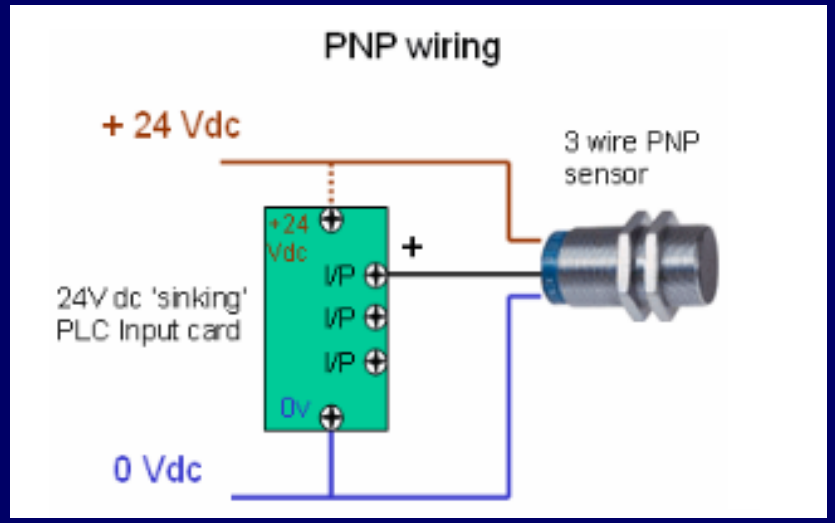
OPTICAL ISOLATION:

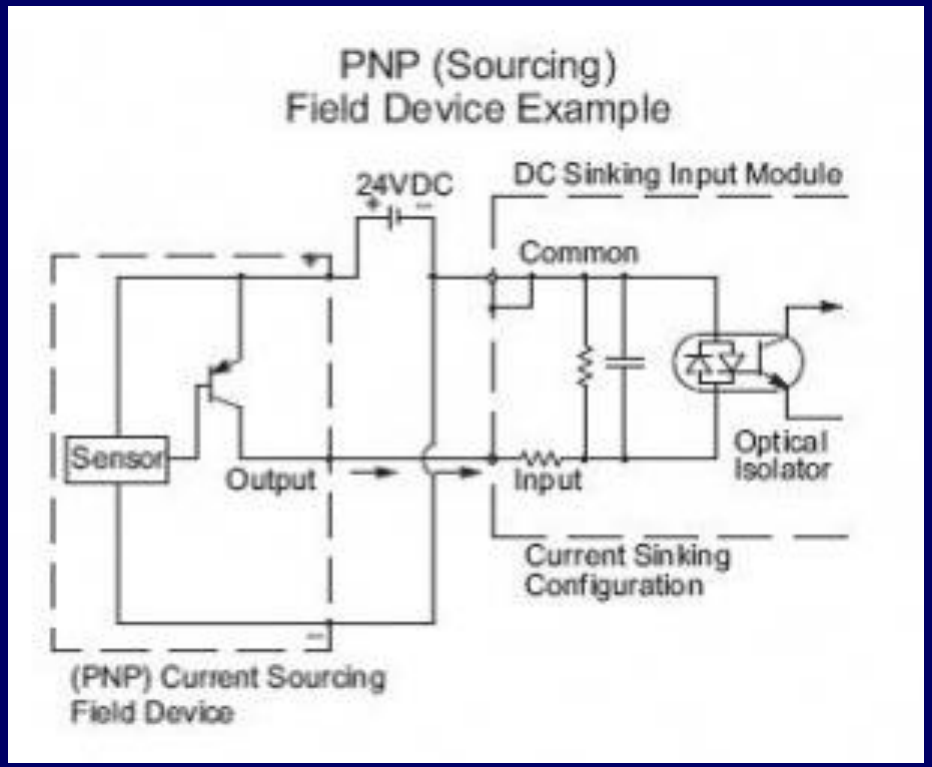


Input Sensors:

Input Sensors:

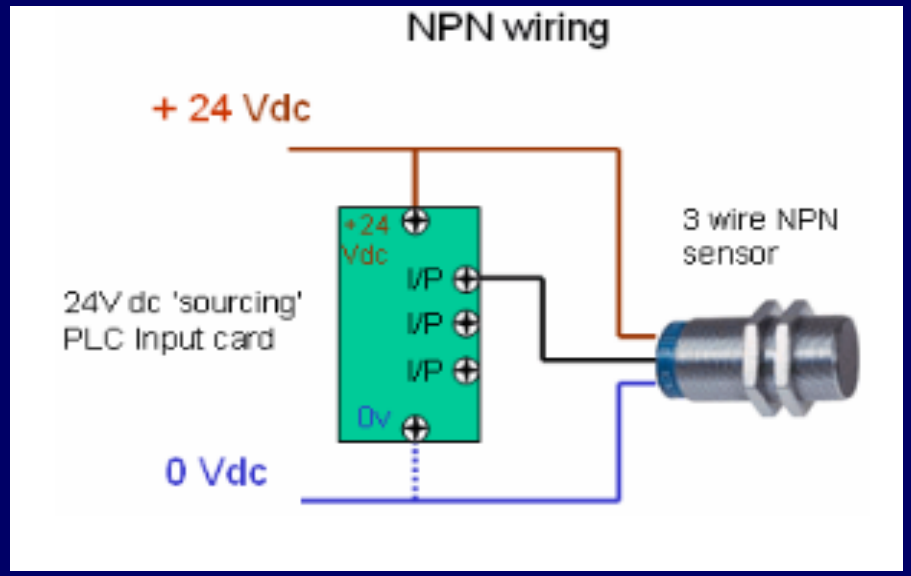
Input sensors can also be Sourcing

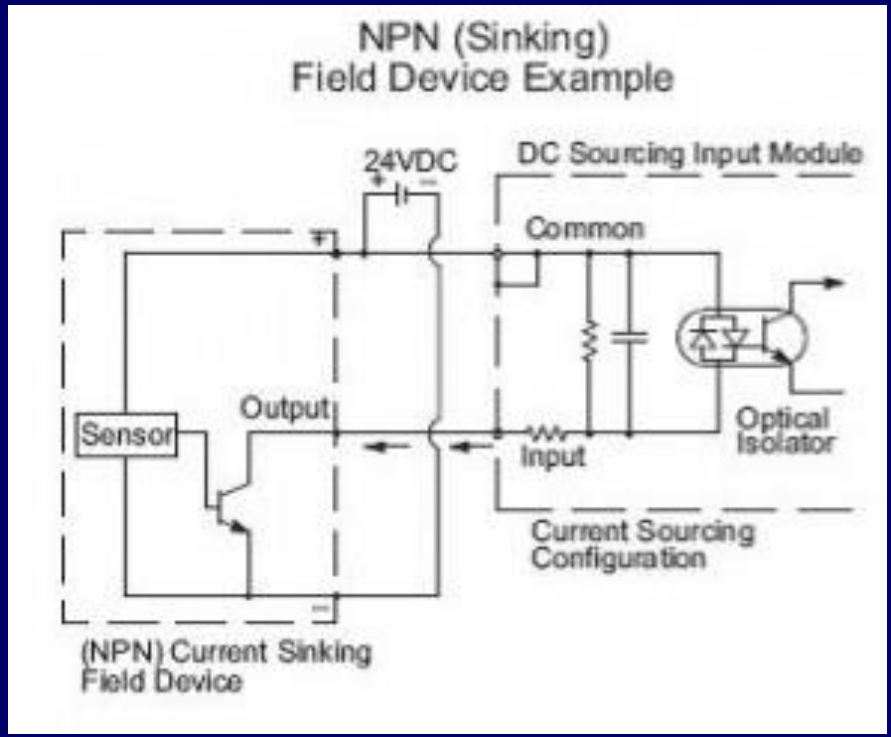




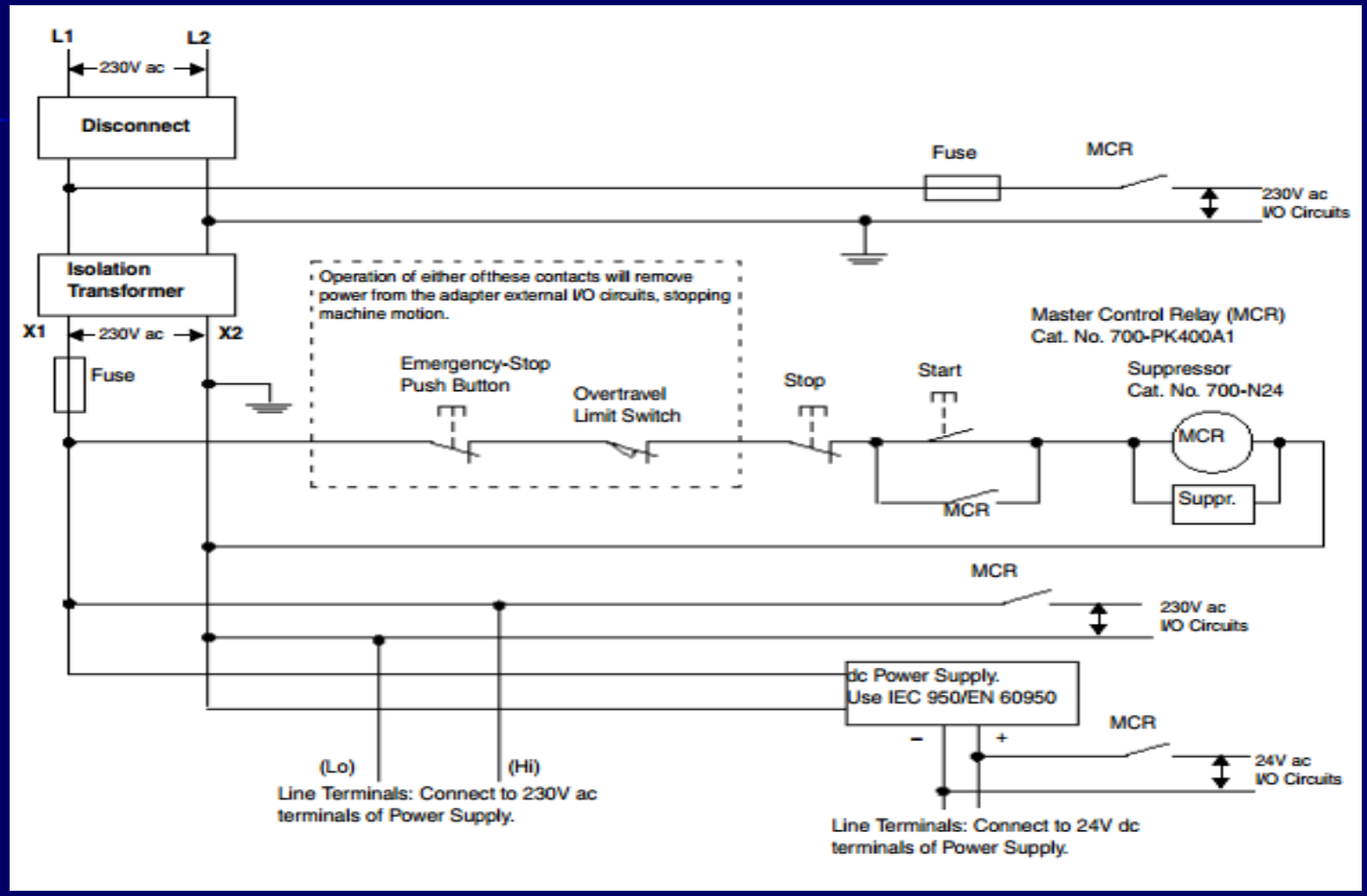
Input Sensors:

Or Sinking

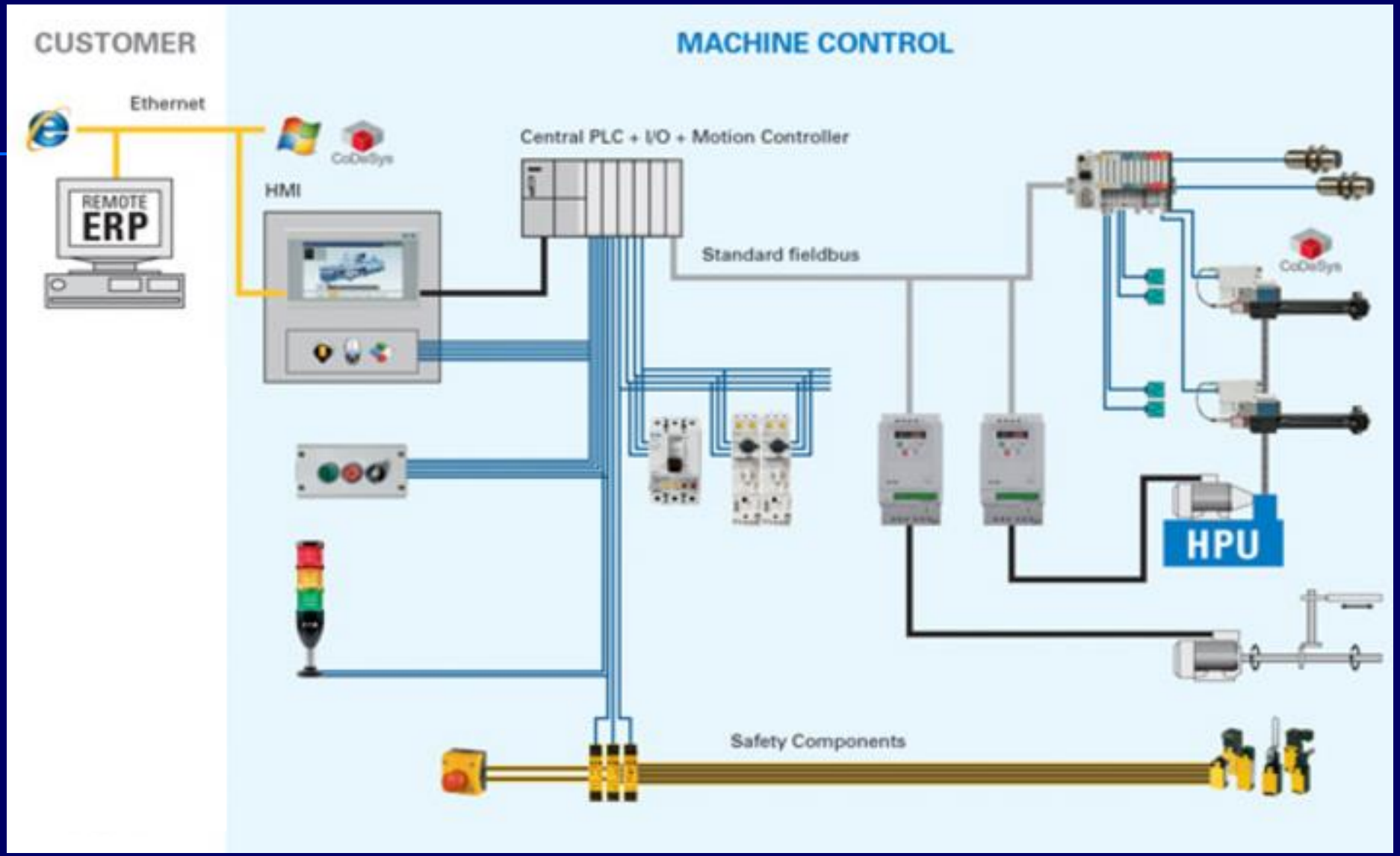




Using Emergency-Stop Switches.



Do not program emergency-stop switches in the controller program only. Any emergency-stop switch should turn off all machine power by turning off the master control relay.



Communications

Before any ladder programs can be investigated, modified or written into the PLC's CPU, we must first establish a Comms link between our User Interface - (HMI, T-Bar, PC or a Laptop) and the PLC's CPU.

With the Allen Bradley SLC 500 or Micrologix 1000 PLC's this communication link is set up using:

Rockwell Automation software program RSLINX

Comms Cables.

Various connection types and cables can be used, but in TTE the common PLC connector is RS232

laptops may have RS232 and or RJ45 ethernet, even HDMI but common is USB A so we need adaptors

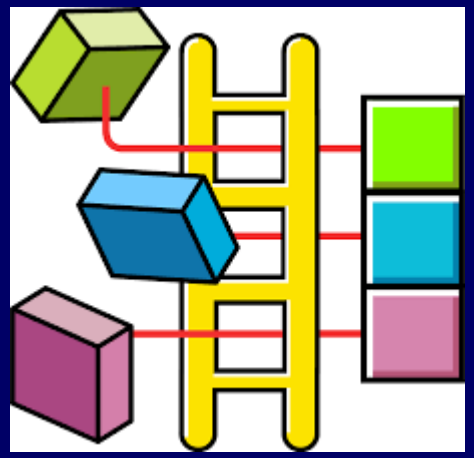
All connector adaptors and cables will need setting up in the communications driver settings as required by each PLC type.

Setting up Comms

Once a cable connection has been established between the PLC and the User Interface, we can use RSLINKS software to establish communications.

Setting up Comms

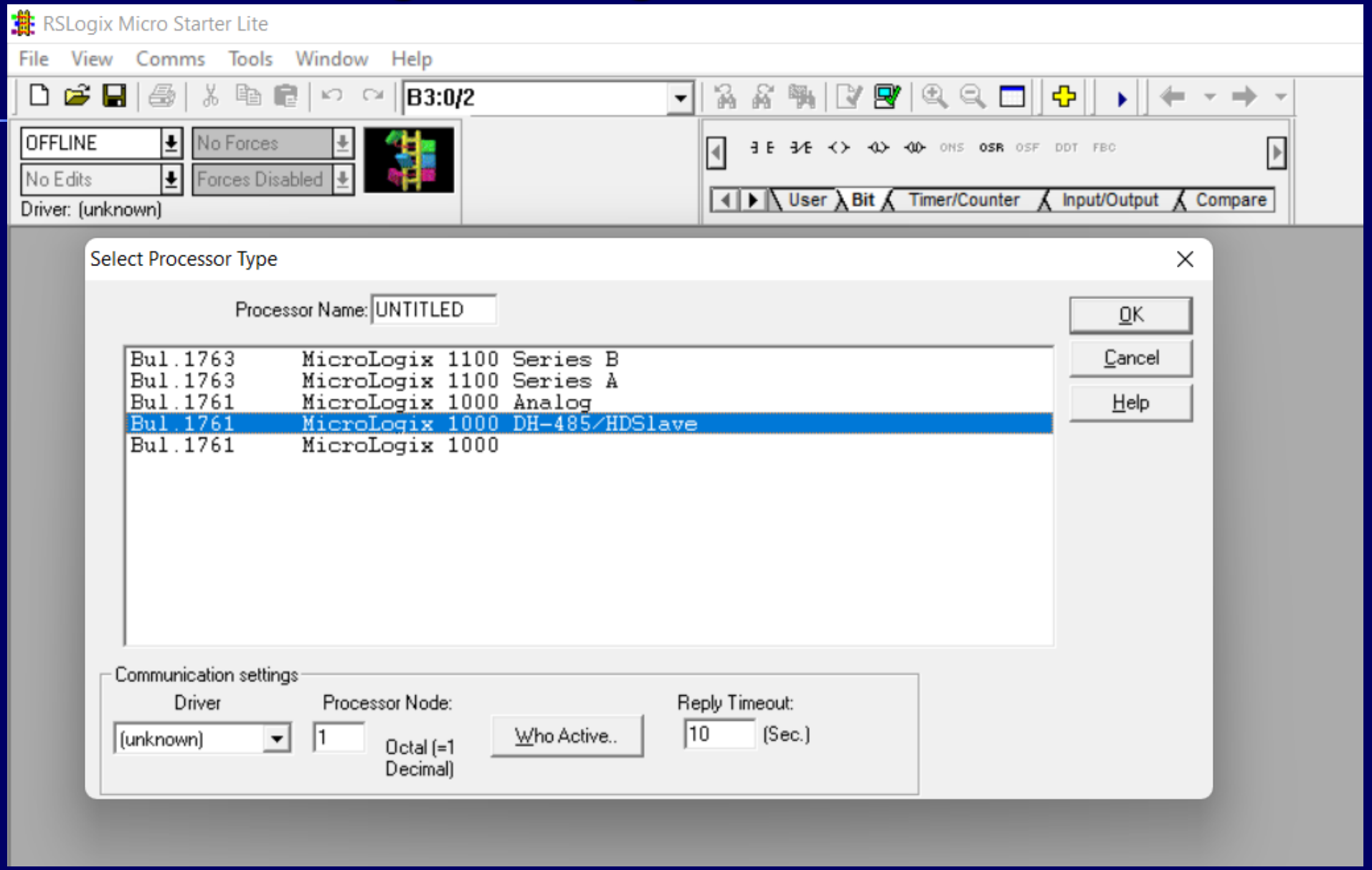
Then using the PLC programming software tool (Rs Logix 500) we can configure the software to match our hardware build.



Frame Layout Micrologix 1000

CPU and all Inputs and Outputs Slot → 0

Software Config Micrologix 1000



RSLogix Micro Starter Lite - UNTITLED

File Edit View Search Comms Tools Window Help

B3:0/2

OFFLINE | No Forces | No Edits | Forces Enabled | Driver: (unknown) | Node : 1d

User | Bit | Timer/Counter | Input/Output | Compare

UNTITLED

- Project
  - Help
  - Controller
    - Controller Properties
    - Processor Status
    - IO Configuration
    - Channel Configuration
  - Multipoint Monitor
  - Program Files
    - SYS 0 -
    - SYS 1 -
    - LAD 2 - MAIN_PROG
    - LAD 3 - USER_FAULT
    - LAD 4 - HSC_INT
    - LAD 5 - STI_INT
    - LAD 6 -
    - LAD 7 -
    - LAD 8 -
    - LAD 9 -
    - LAD 10 -
    - LAD 11 -
    - LAD 12 -
    - LAD 13 -
    - LAD 14 -
    - LAD 15 -
    - LAD 16 -
  - Data Files
    - Cross Reference
    - O0 - OUTPUT
    - I1 - INPUT
    - S2 - STATUS
    - B3 - BINARY
    - T4 - TIMER

LAD 2 -- MAIN_PROG

0000 (END)

MAIN_PROG

For Help, press F1

000:0000 | 2:00 | READ | Disabled

Search

ENG UK

09:48 19/07/2023

RSLogix Micro Starter Lite - UNTITLED

File Edit View Search Comms Tools Window Help

B3:0/2

OFFLINE | No Forces | No Edits | Forces Enabled | Driver: (unknown) | Node : 1d

User | Bit | Timer/Counter | Input/Output | Compare

UNTITLED

- Project
  - Help
  - Controller
    - Controller Properties
    - Processor Status
    - IO Configuration
    - Channel Configuration
  - Multipoint Monitor
  - Program Files
    - SYS 0 -
    - SYS 1 -
    - LAD 2 - MAIN_PROG
    - LAD 3 - USER_FAULT
    - LAD 4 - HSC_INT
    - LAD 5 - STI_INT
    - LAD 6 -
    - LAD 7 -
    - LAD 8 -
    - LAD 9 -
    - LAD 10 -
    - LAD 11 -
    - LAD 12 -
    - LAD 13 -
    - LAD 14 -
    - LAD 15 -
    - LAD 16 -
  - Data Files
    - Cross Reference
    - O0 - OUTPUT
    - I1 - INPUT
    - S2 - STATUS
    - B3 - BINARY
    - T4 - TIMER

LAD 2 -- MAIN_PROG

0000 (END)

I/O Configuration

Racks

1 I/O Rack Not Installed

2

3

Read IO Config.

PowerSupply.....

Filter Adjust

#	Part #	Description
0	Bul.1761	MicroLogix 1000 DH-485/HDSlave

Adv Config | Help | Show All Cards

MAIN_PROG

For Help, press F1

000:0000 | 2:00 | READ | Disabled

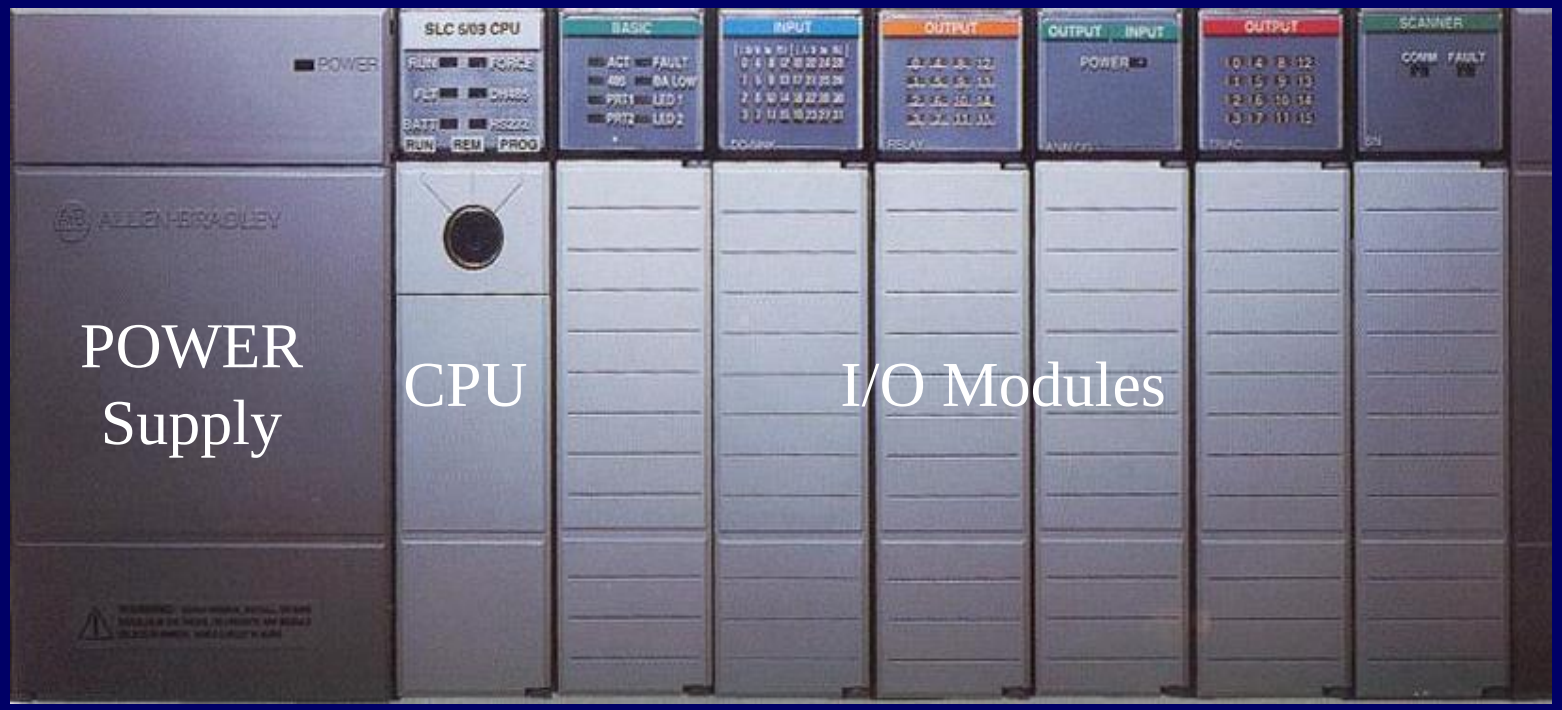
Search

ENG UK

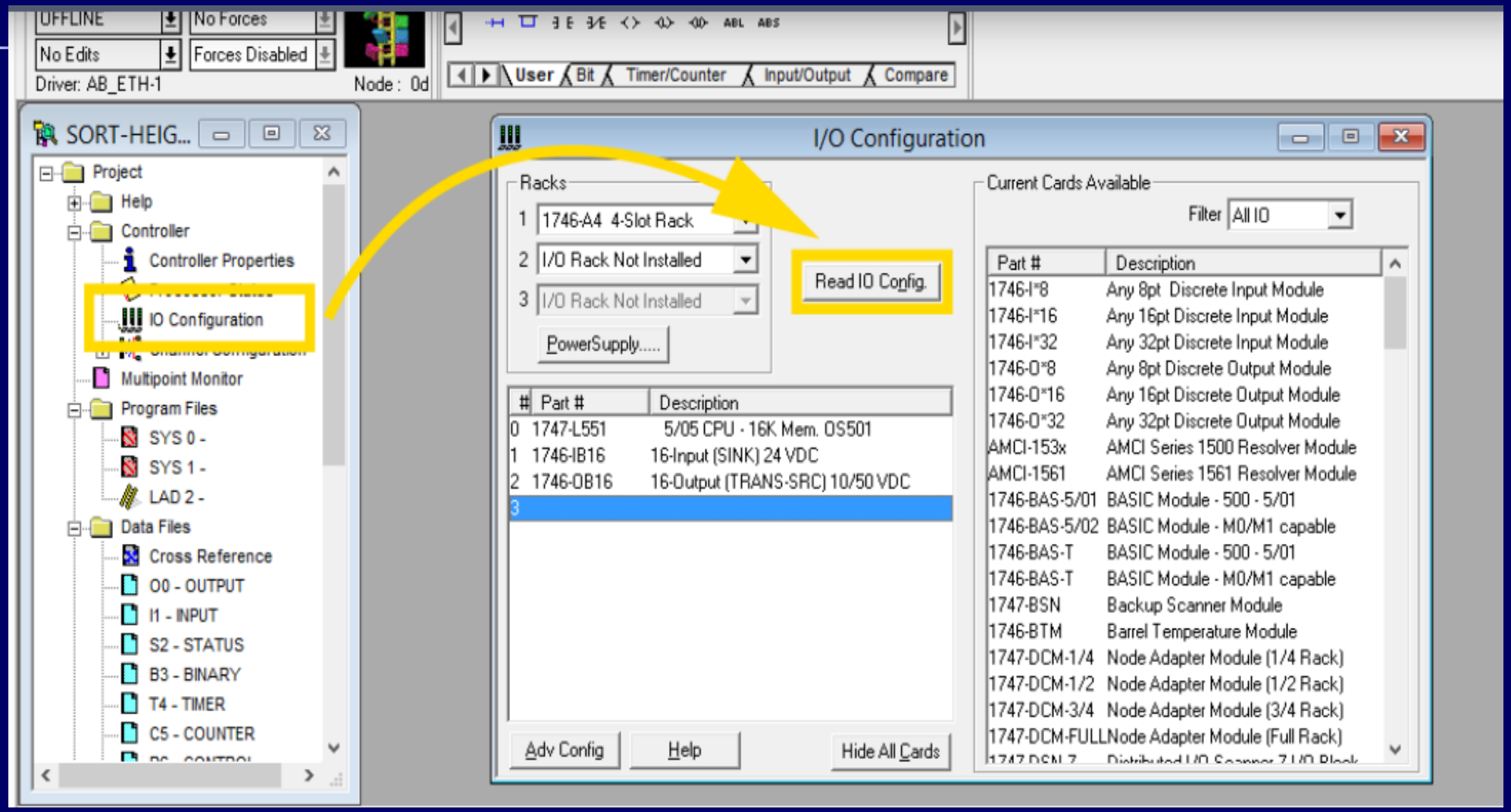
09:49 19/07/2023

Frame Layout SLC500

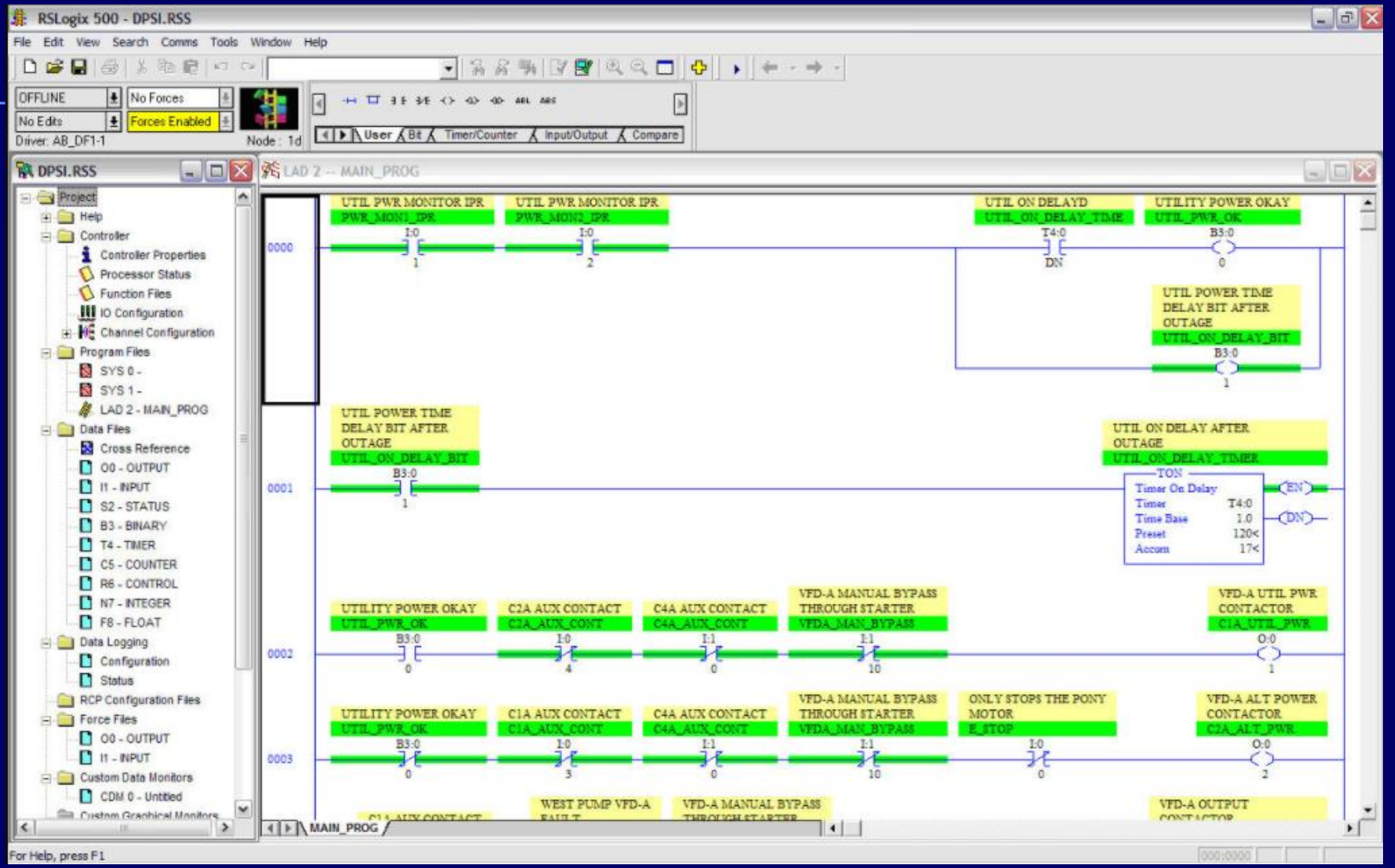
Slots → 0 1 2 3 4 5 6

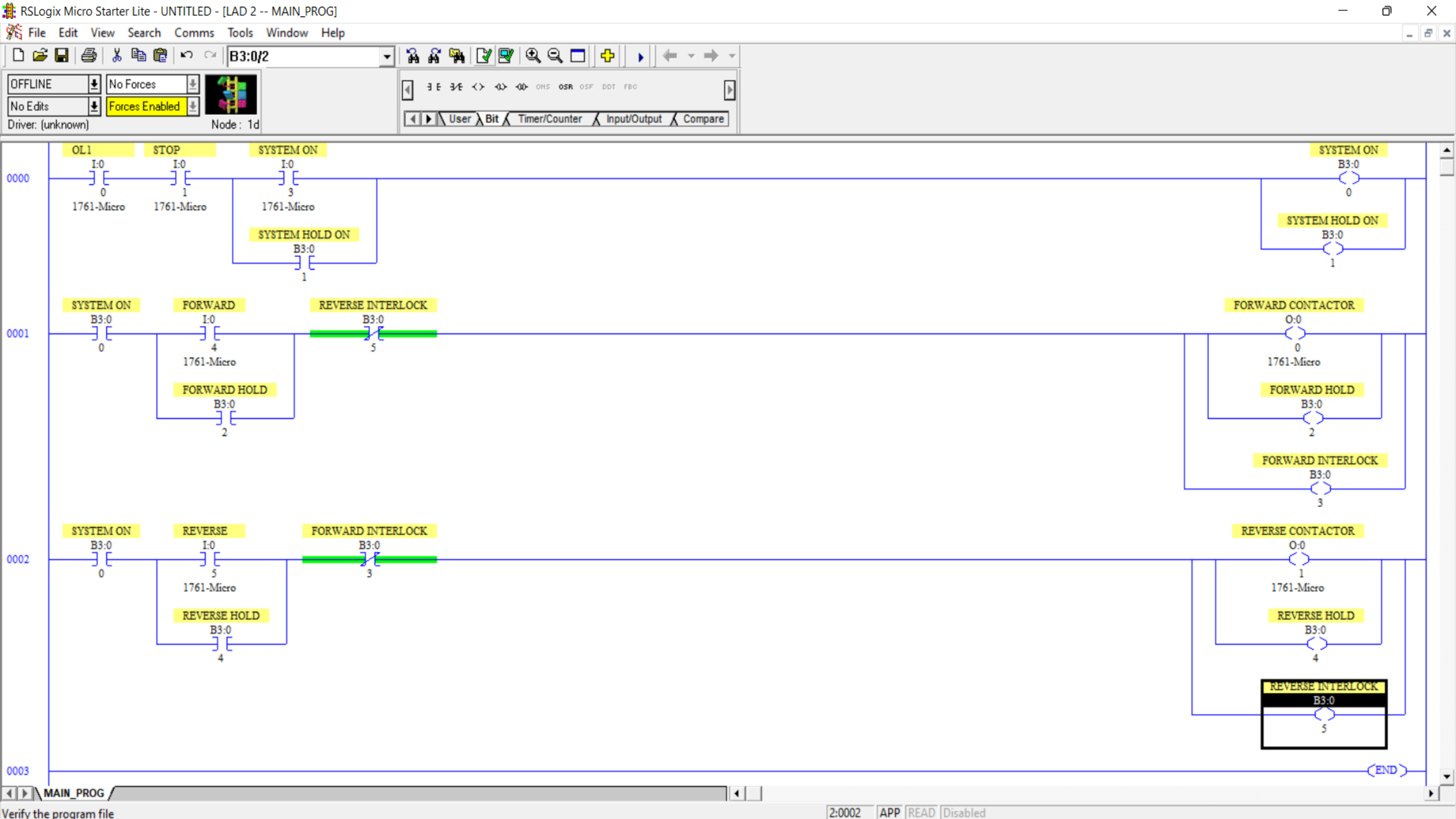


Software and Hardware Config SLC 500



Ladder Programming




RSLogix Micro Starter Lite - UNTITLED - [LAD 2 -- MAIN_PROG]
File Edit View Search Comms Tools Window Help
B3:0/2
OFFLINE
No Forces
No Edits
Forces Enabled
Driver: (unknown)
Node : 1d
User Bit Timer/Counter Input/Output Compare
OL1
I:0
0
1761-Micro
STOP
I:0
1
1761-Micro
SYSTEM ON
I:0
3
1761-Micro
SYSTEM HOLD ON
B3:0
1
0000
SYSTEM ON
B3:0
0
SYSTEM HOLD ON
B3:0
1
SYSTEM ON
B3:0
0
FORWARD
I:0
4
1761-Micro
FORWARD HOLD
B3:0
2
REVERSE INTERLOCK
B3:0
5
0001
FORWARD CONTACTOR
O:0
0
1761-Micro
FORWARD HOLD
B3:0
2
FORWARD INTERLOCK
B3:0
3
SYSTEM ON
B3:0
0
REVERSE
I:0
5
1761-Micro
REVERSE HOLD
B3:0
4
FORWARD INTERLOCK
B3:0
3
0002
REVERSE CONTACTOR
O:0
1
1761-Micro
REVERSE HOLD
B3:0
4
REVERSE INTERLOCK
B3:0
5
0003
END
MAIN_PROG
Verify the program file
2:0002
APP
READ
Disabled