

CLICK
Koyo

C0-00DD1-D

PWR

RUN

ERR

RUN

STOP

PORT1

TX1

RX1

TX2

RX2

PORT2

C1

X1

X2

X3

X4

C2

X5

X6

X7

X8

C3

Y1

Y2

Y3

Y4

C4

Y5

Y6

+V



GND	LG+	N.C.	Y0	Y2	C1	Y5	Y7	Y10	Y12	C3	Y15	Y17	
+	-	N.C.	C0	Y1	Y3	Y4	Y6	C2	Y11	Y13	Y14	Y16	+V

OUTPUT-Sinking Output 6-27V = 1.0A PWR:12-24V = 20W

Y 0 1 2 3 4 5 6 7 10 11 12 13 14 15 16 17 20 21 22 23

X INPUT:12-24V = 3-15mA

D0-06DD1-D

PWR
RUN
CPU
TX1
RX1
TX2
RX2

Direct06
LOGIC
Koyo

C0	X1	X3	X4	X6	C2	X11	X13	X14	X16	C4	X21	X23	N.C.
X0	X2	C1	X5	X7	X10	X12	C3	X15	X17	X20	X22	N.C.	



PORT2

TERM

RUN STOP

115VAC
INPUT

0

1

2

3

4

5

6

7

10

11

12

13

14

115V
COM

15

CNT__RST__COM

16

24V

RUN



BATT



CPU



PWR



GENERAL  ELECTRIC

SERIES ONE JUNIOR

PROGRAMMABLE CONTROLLER

PROM



115VAC
OUTPUT

C1

17

C2

20

21

22

23

C3

24

25

26

27

C

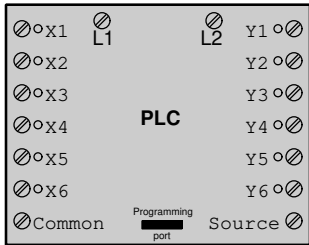
G

H

N

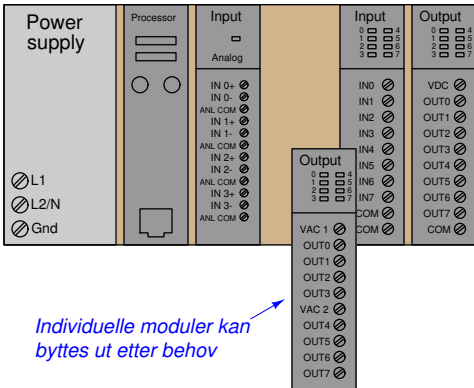
N

Kompakt PLS

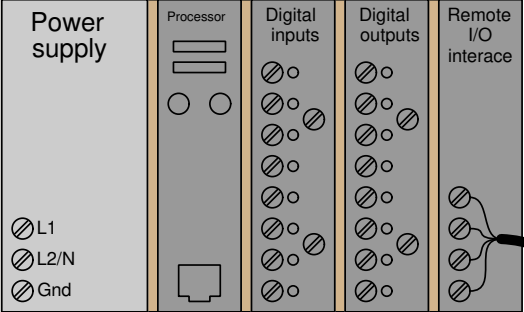


Alle IO-er finnes på en enhet

Modulbasert PLS

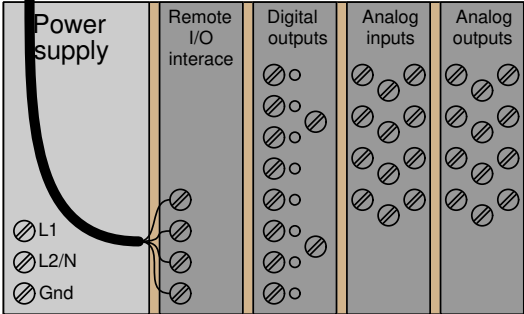


Individuelle moduler kan byttes ut etter behov



Hoved PLS

Nettverks
kabel



Remote IO

PLS

Håndbryter

Trykkbryter

DC power supply

Power supply

Processor

Digital inngangsmodul (DC sinking)

Optocoupler

Ch1

Ch2

Ch3

Com

L1

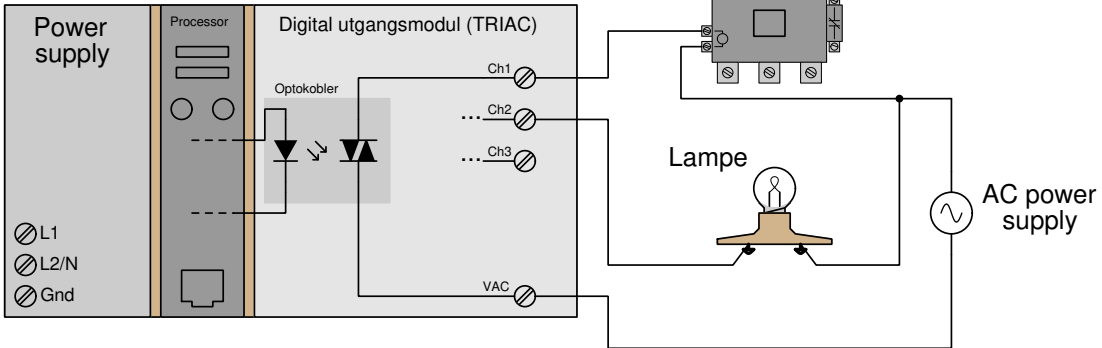
L2/N

Gnd

NO NC Com

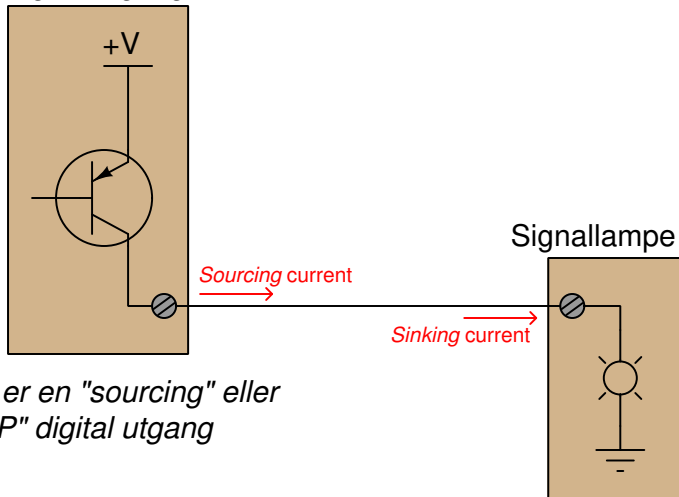
Aktivering av en digital inngang får en LED til å lyse på fototransistoren i en optokobler, denne sender så et TRUE signal til PLC-ens microprosessor som igjen setter et bit som tilhører inngang til TRUE.

PLS



Ved å sette et bit TRUE i PLS-ens utangsregister, sendes et signal om å aktivere en LED i optokobleren. Dette gjør at foto-triacen leder og kontaktoren aktiveres.

PLS
digital utgang



Signallampe

*Dette er en "sourcing" eller
"PNP" digital utgang*

PLS digital
inngangsmodul
(sinking)

Endebryter

DC
strømforsyning

AC power

L1

L2

Gnd

Ch 0

Ch 1

Ch 2

Ch 3

Com

*Sinking
current*

*Sourcing
current*

+

-

PLS digital
inngangsmodul
(sourcing)

Endebryter

DC power
supply

AC power

L1

L2

Gnd

Ch 0

Ch 1

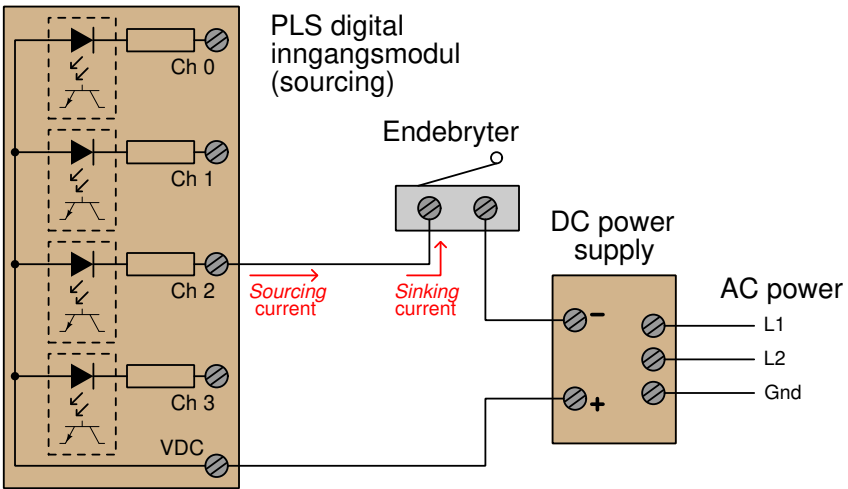
Ch 2

Ch 3

VDC

*Sourcing
current*

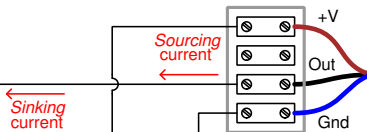
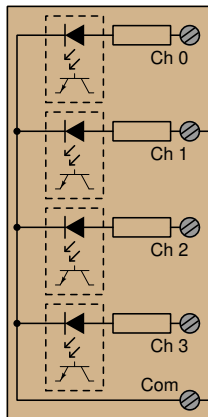
*Sinking
current*



Current-sourcing (PNP) N rhetsbryter

PLS digital
inngangsmodul
(sinking)

Bryteren aktiveres
n r et objekt \rightarrow
n rmer seg denne
enden



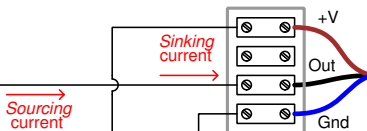
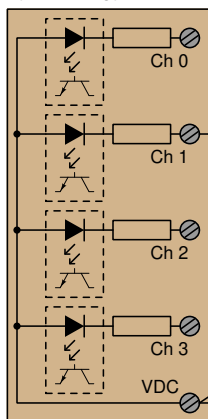
AC power

L1
L2
Gnd

Current-sinking (NPN) N rhetsbryter

PLS digital
input card
(sourcing)

Bryteren aktiveres
n r et objekt \rightarrow
n rmer seg denne
enden



AC power

L1
L2
Gnd



G \oplus LG \overline{m} N.C. Y0 Y2 C1 Y5 Y7 Y10 Y12 C3 Y15 Y17

3 4 5 6 7 10 11 12 13 14 15 16 17 20 21 22 23
3-15mA D0-06DD1-D

OUTPUT

0 4
1 5
2 6
3 7

TRIAC

VAC 1

OUT 0

OUT 1

OUT 2

OUT 3

VAC 2

OUT 4

OUT 5

OUT 6

OUT 7

1746-OA8









Kontakt type

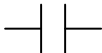


Normalt åpen



Normalt lukket

0



(åpen)



(lukket)

(Normal)

Bit state

1

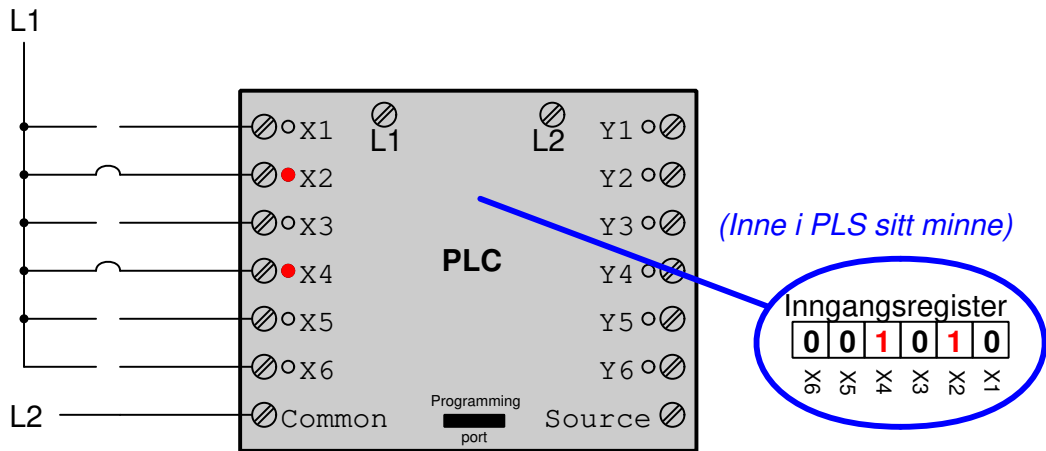


(lukket)

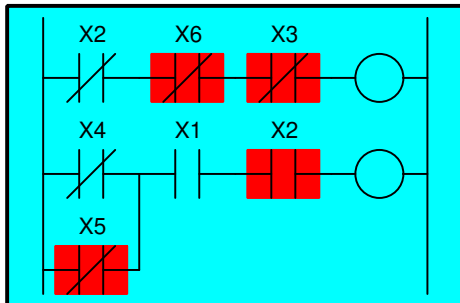


(åpen)

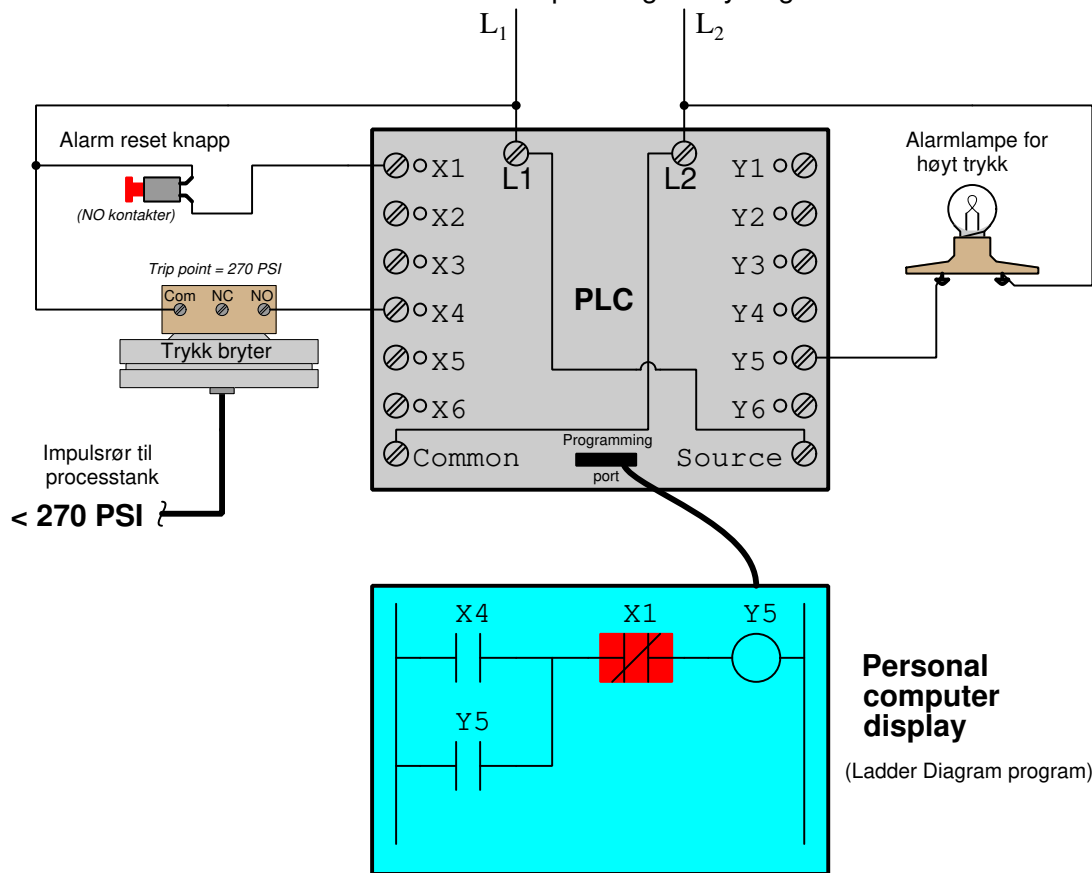
(Aktivert)



(Dette vises i programmeringsværktøyet)

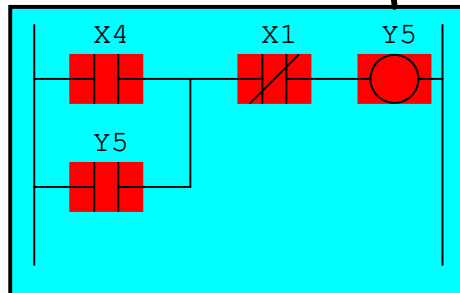
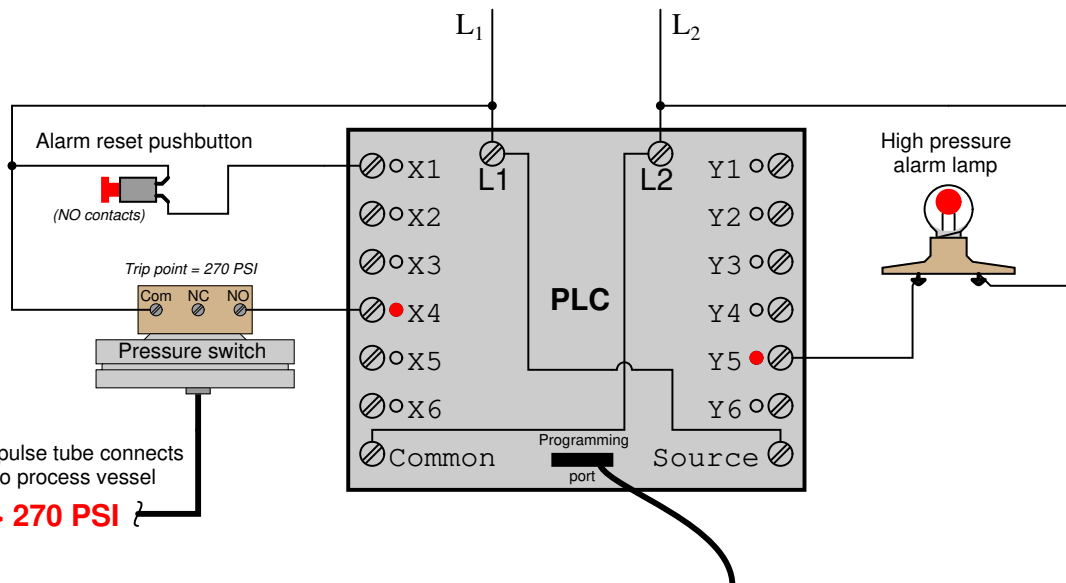


230 VAC spenningsforsyning



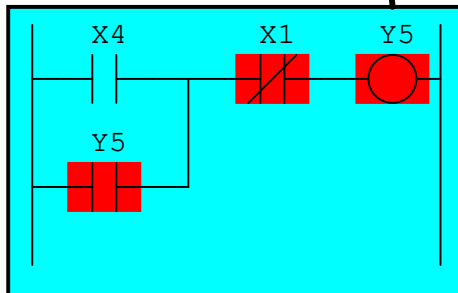
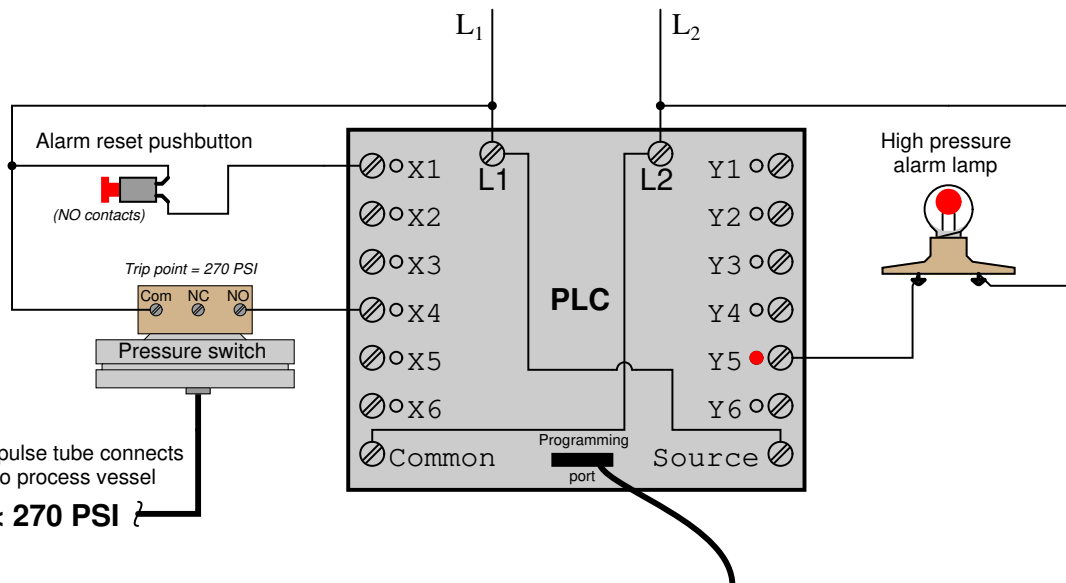


120 VAC "line" power



**Personal
computer
display**
(Ladder Diagram program)

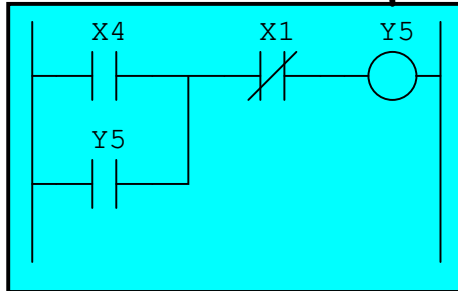
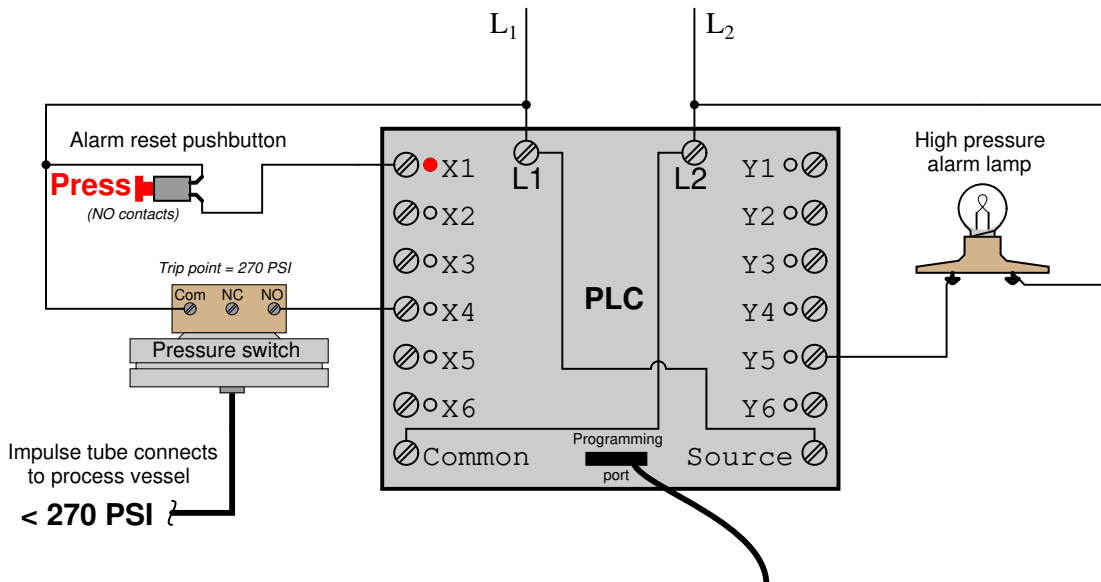
120 VAC "line" power



**Personal
computer
display**

(Ladder Diagram program)

120 VAC "line" power



**Personal
computer
display**

(Ladder Diagram program)

File number	File type	Logical address range
0	Output image	0:0 to 0:30
1	Input image	I:0 to I:30
2	Status	S:0 to S: n
3	Binary	B3:0 to B3:255
4	Timers	T4:0 to T4:255
5	Counters	C5:0 to C5:255
6	Control	R6:0 to R6:255
7	Integer	N7:0 to N7:255
8	Floating-point	F8:0 to F8:255
9	Network	x9:0 to x9:255
10 through 255	User defined	x10:0 to x255:255

File separator
(colon)

Bit separator
(slash)

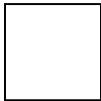
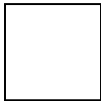
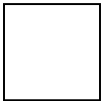
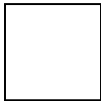
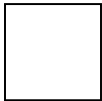
File type
(letter)

File
number

Element
number

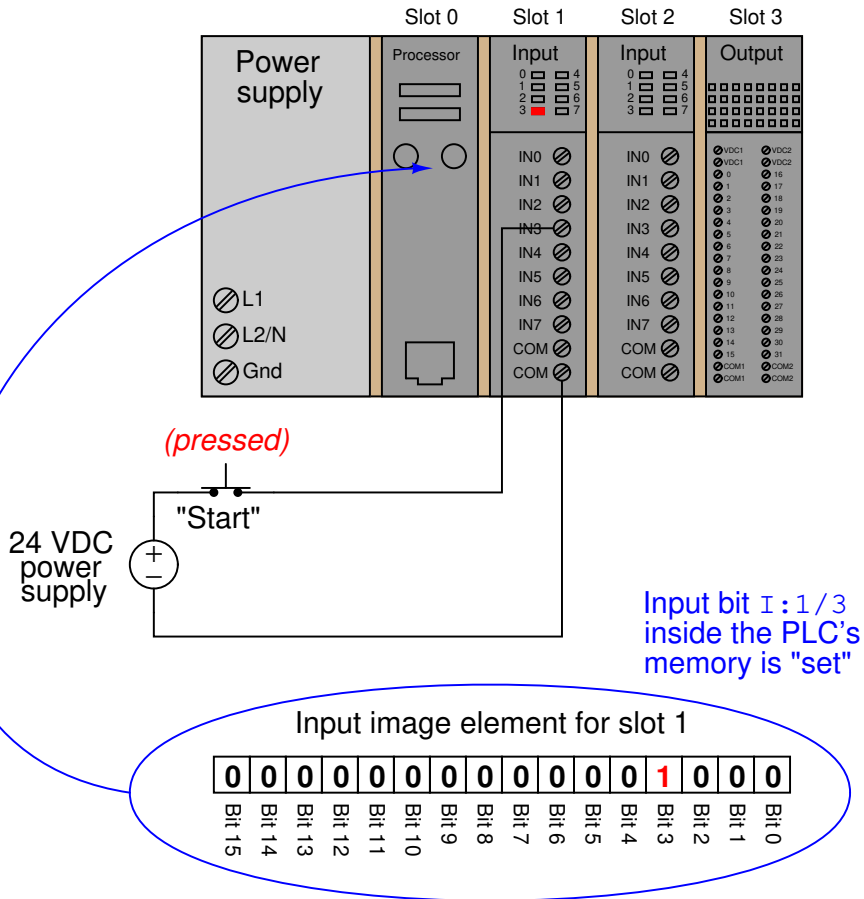
Word
number

Bit
number

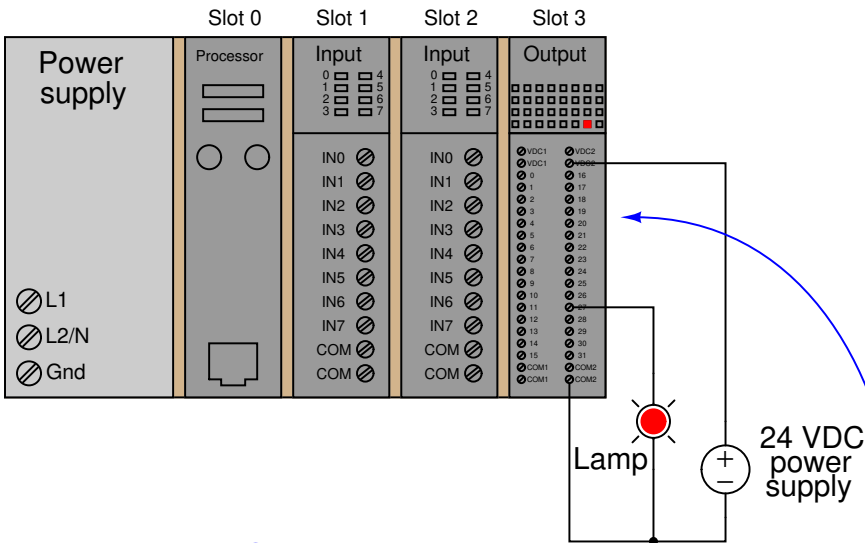


Word separator
(point)

SLC 500 4-slot chassis



SLC 500 4-slot chassis



Output bit 0: 3.1/11
inside the PLC's
memory is "set"

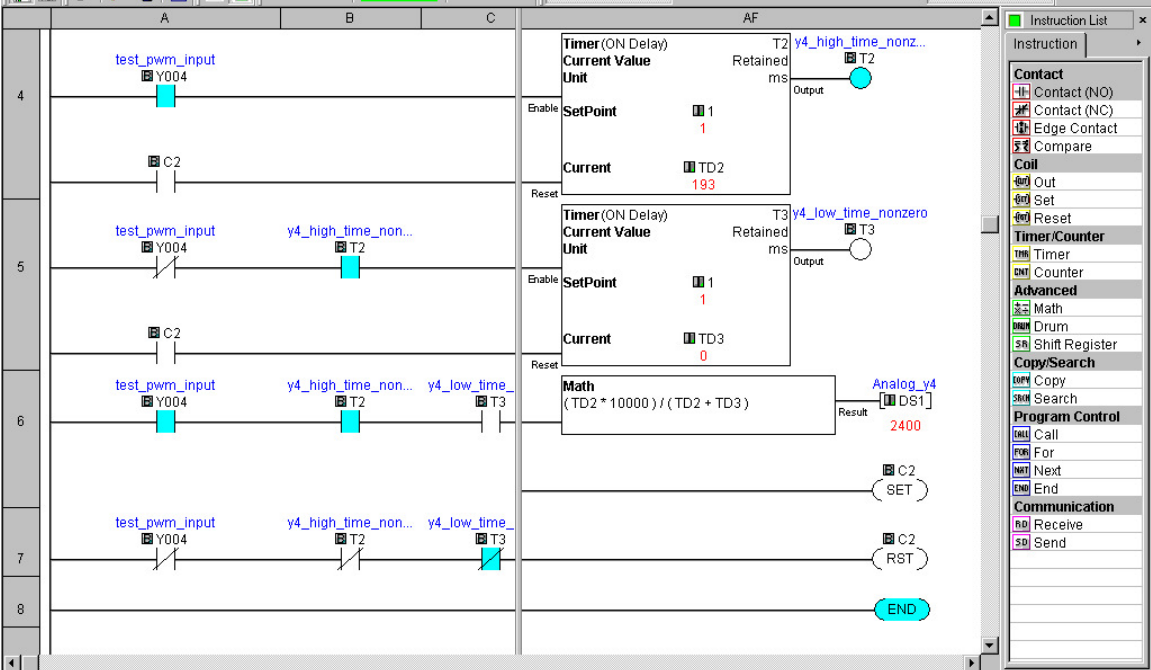
Output image element for slot 3

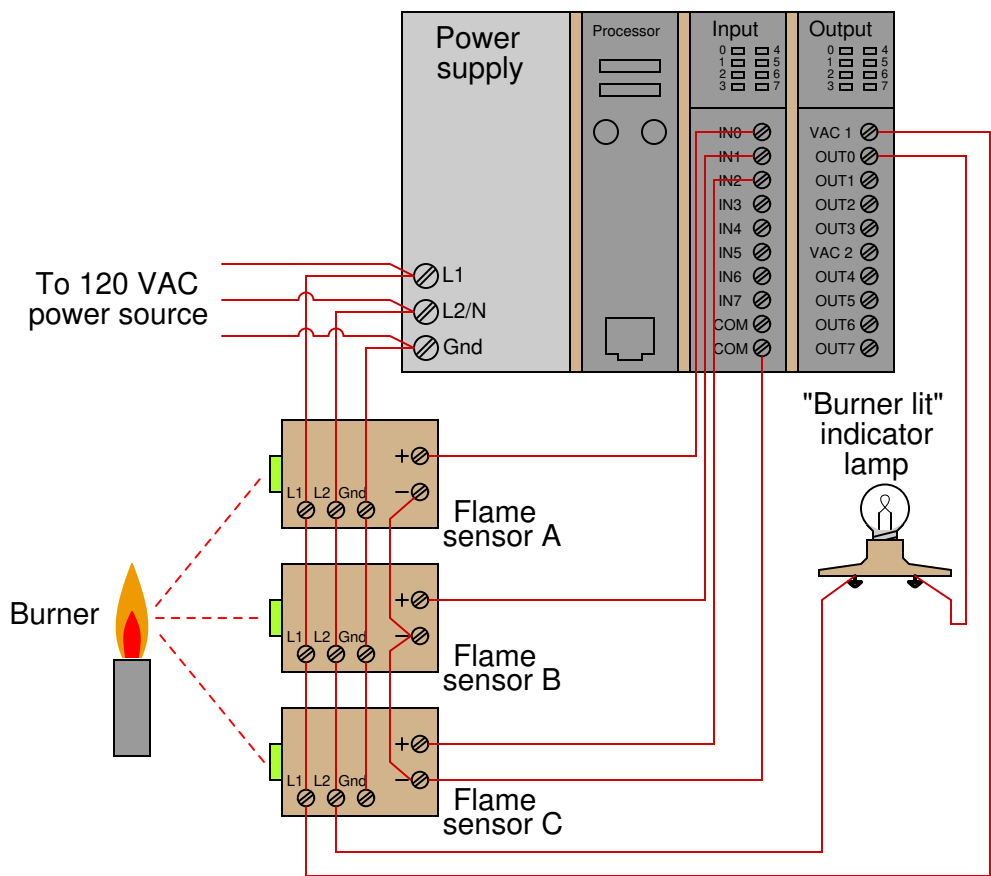
Word 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Word 1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	
	Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0

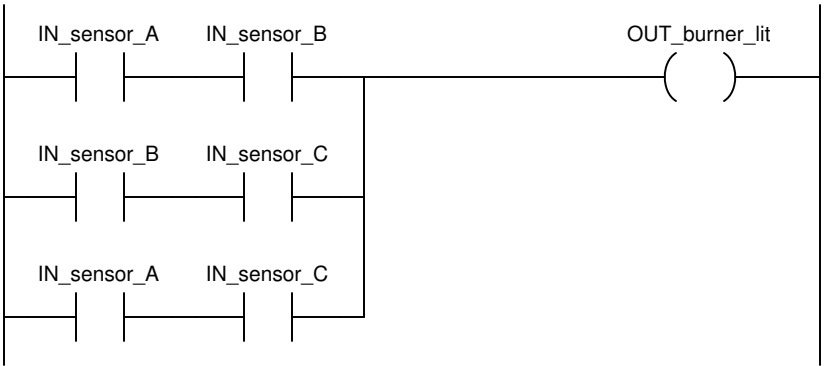
INPUT

.0/0 to 15)				.1/0 to 15)			
0	4	8	12	16	20	24	28
1	5	9	13	17	21	25	29
2	6	10	14	18	22	26	30
3	7	11	15	19	23	27	31

DC-SINK

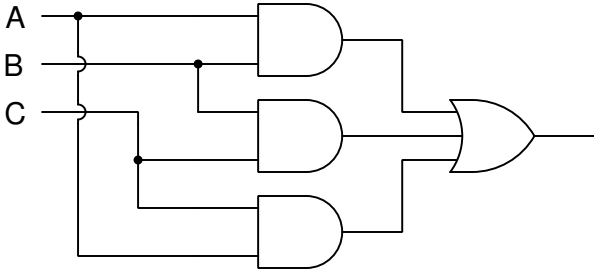


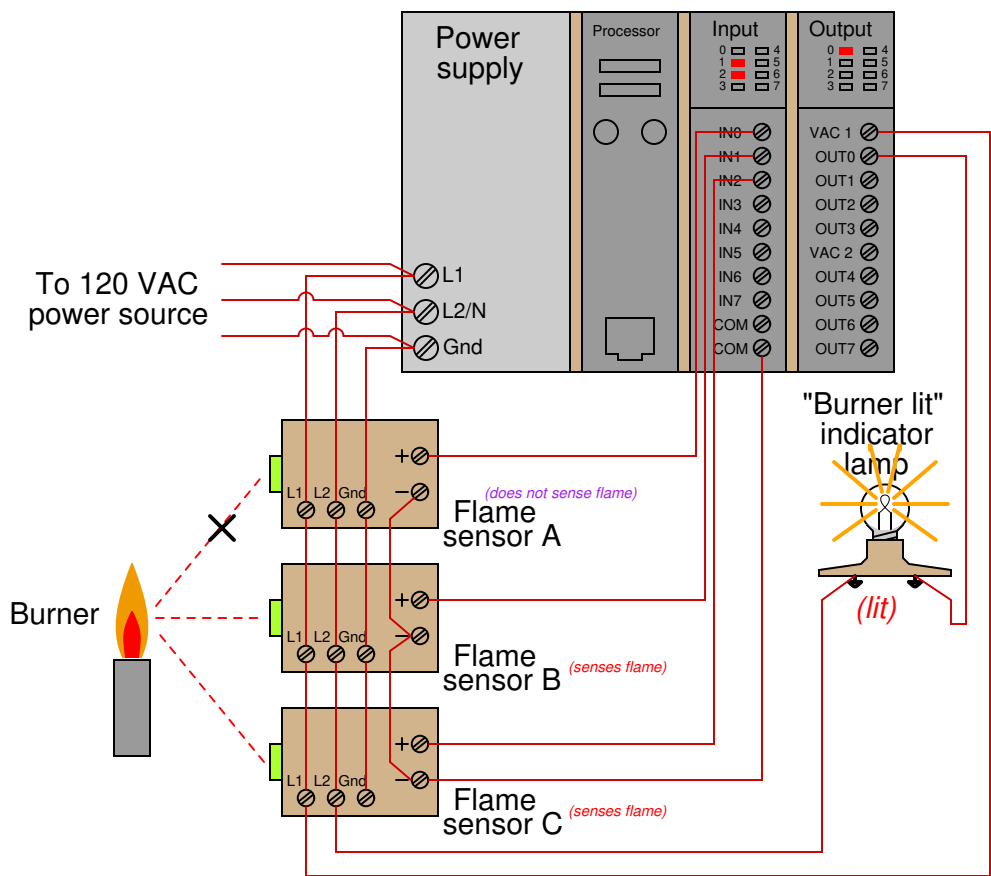




'B' is lit if either A and B, or either B and C, or either A and C.

Brainiac + BOB





Input register

0	0	0	0	0	1	1	0
---	---	---	---	---	---	---	---

IN7
IN6
IN5
IN4
IN3
IN2
IN1
IN0

Output register

0	0	0	0	0	0	0	1
---	---	---	---	---	---	---	---

OUT7
OUT6
OUT5
OUT4
OUT3
OUT2
OUT1
OUT0

Contacts *read* bit status
in the PLC's memory

Coils *write* bit status
in the PLC's memory

IN_sensor_A

IN_sensor_B

IN_sensor_B

IN_sensor_C

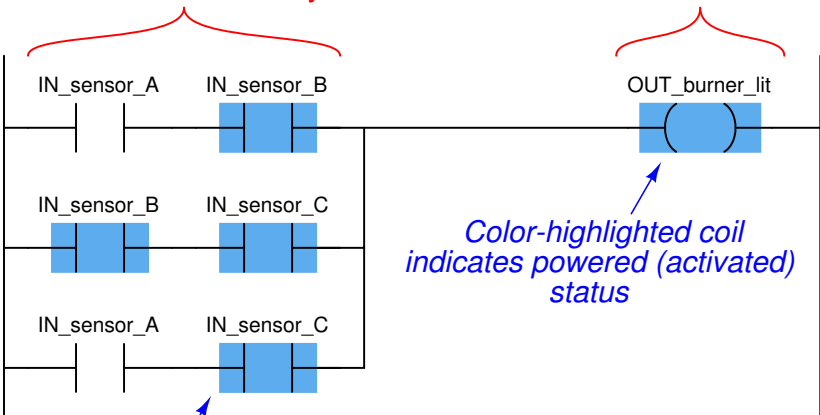
IN_sensor_A

IN_sensor_C

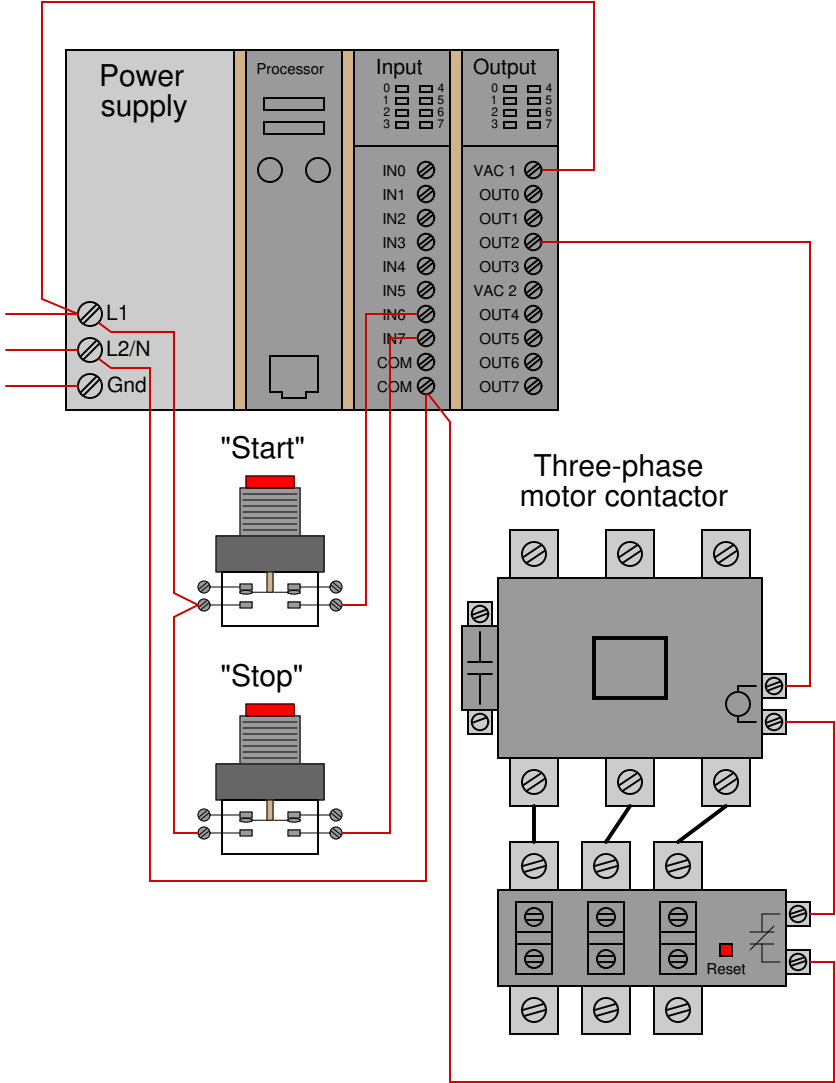
OUT_burner_lit

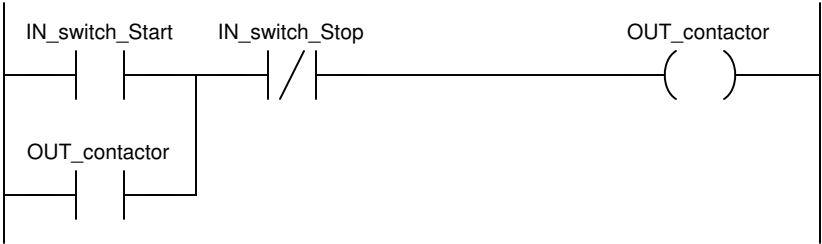
*Color-highlighted coil
indicates powered (activated)
status*

*Color-highlighted contacts
indicate "closed" (conductive)
status*



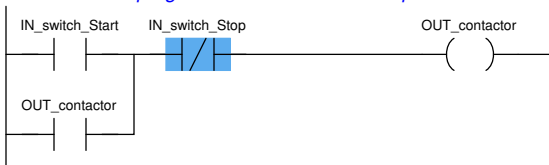
To 120 VAC
power source





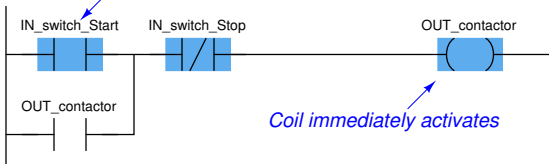
Status of program before "Start" switch pressed

Step 1



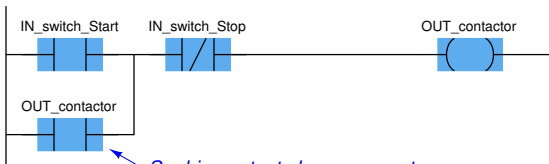
Operator pushes "Start" switch

Step 2



Coil immediately activates

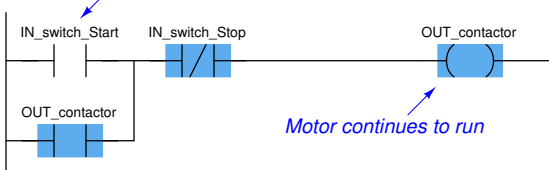
Step 3



Seal-in contact closes on next scan

Operator releases "Start" switch

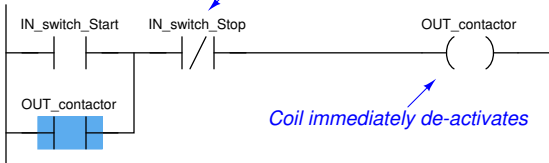
Step 4



Motor continues to run

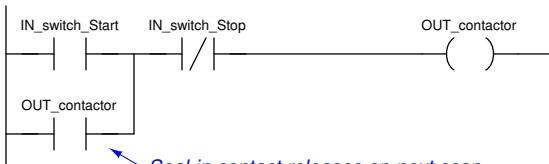
Operator presses "Stop" switch

Step 5



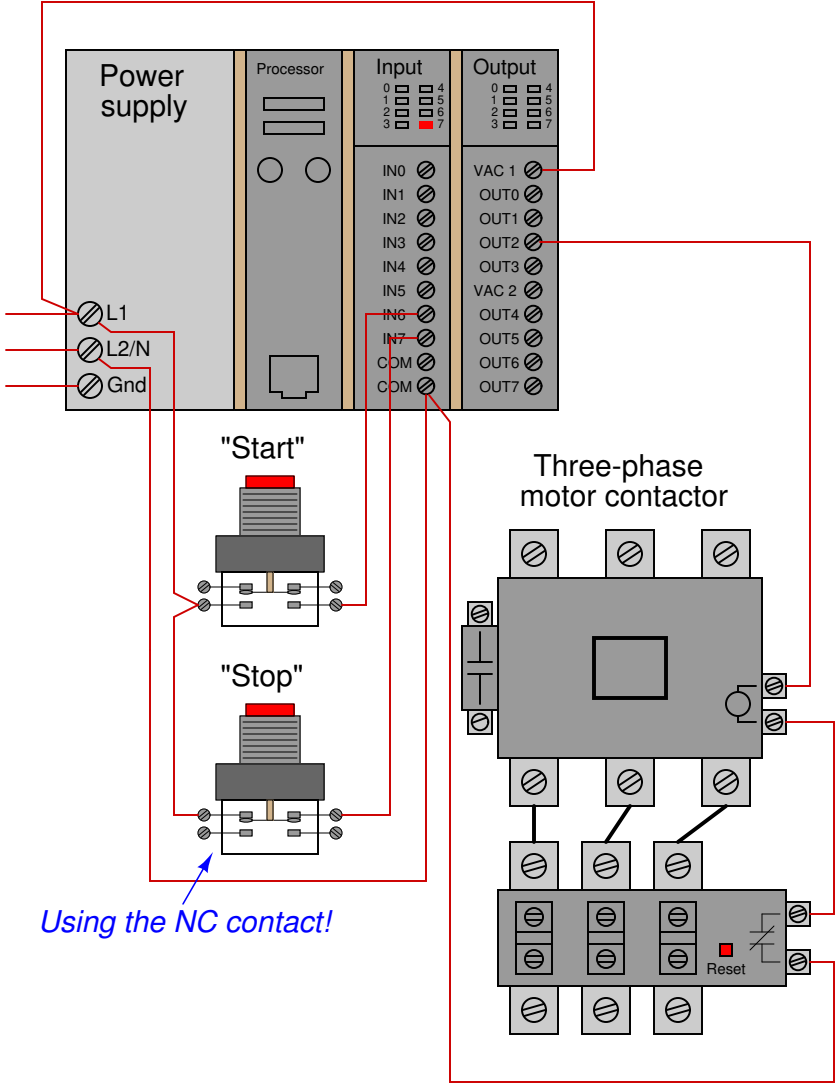
Coil immediately de-activates

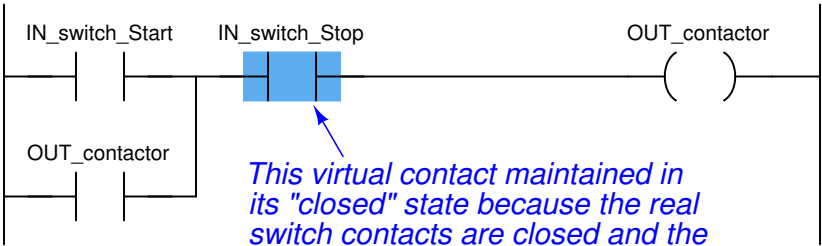
Step 6



Seal-in contact releases on next scan

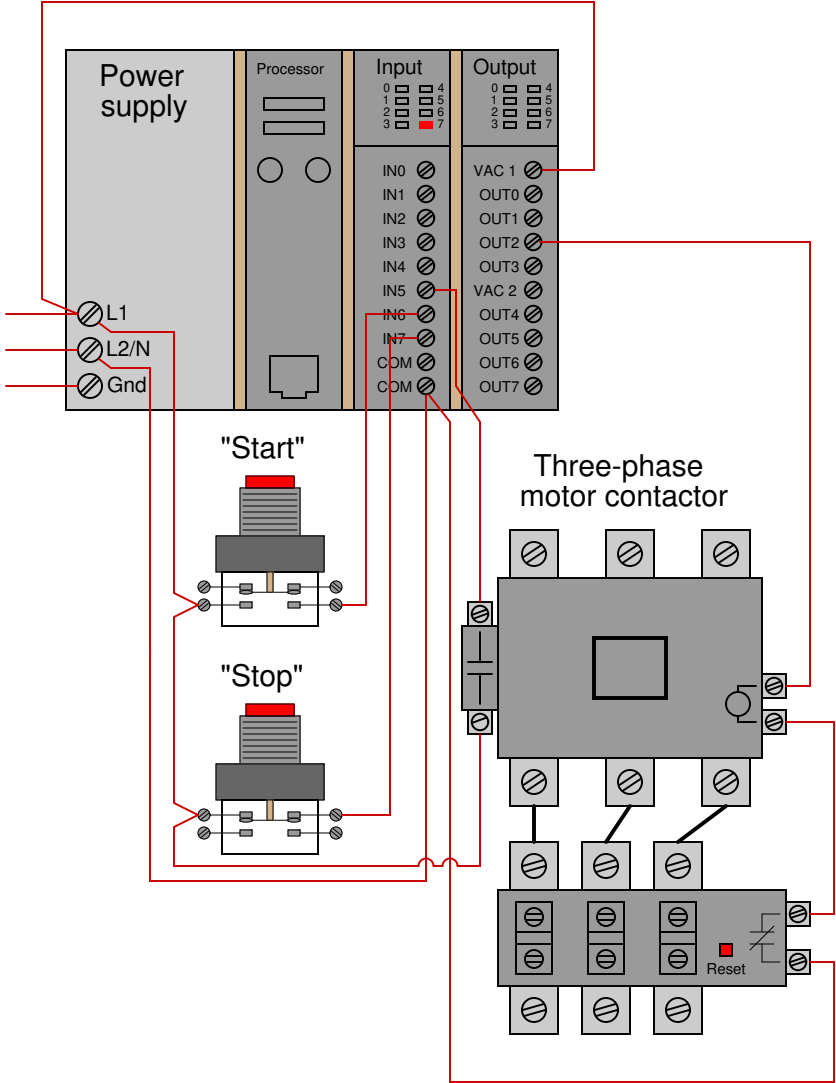
To 120 VAC
power source

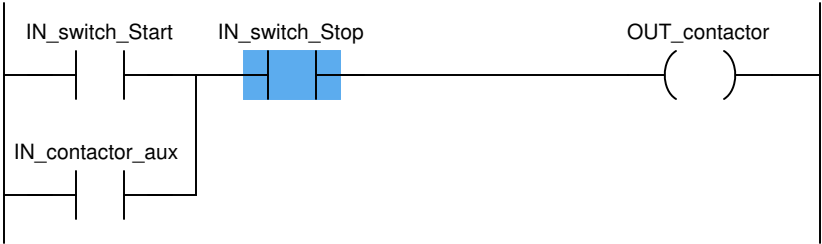




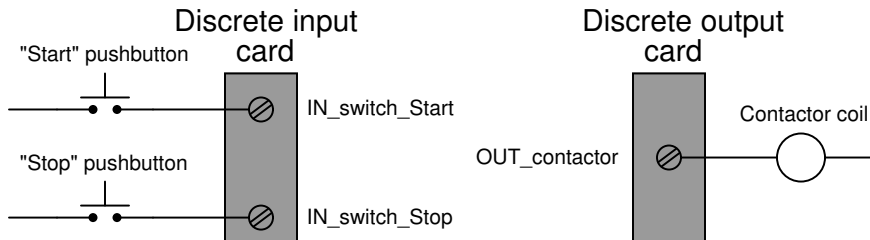
This virtual contact maintained in its "closed" state because the real switch contacts are closed and the real input channel is energized with no one pushing the "Stop" button

To 120 VAC
power source





Real-world I/O wiring



PLC program



"Start" and "Stop" pushbuttons simultaneously pressed!

IN_switch_Start



OUT_contactor



OUT_contactor



...this rung sees OUT_contactor set!

IN_switch_Stop



OUT_contactor

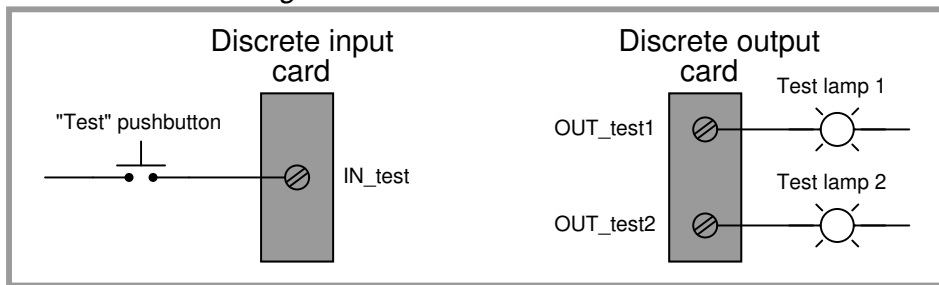


OUT_contactor

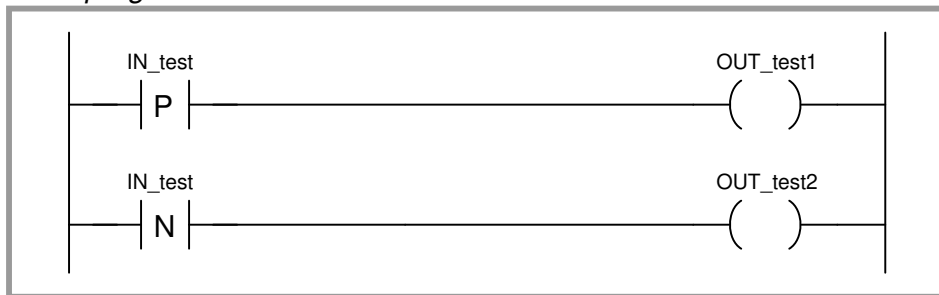


...this rung sees OUT_contactor reset!

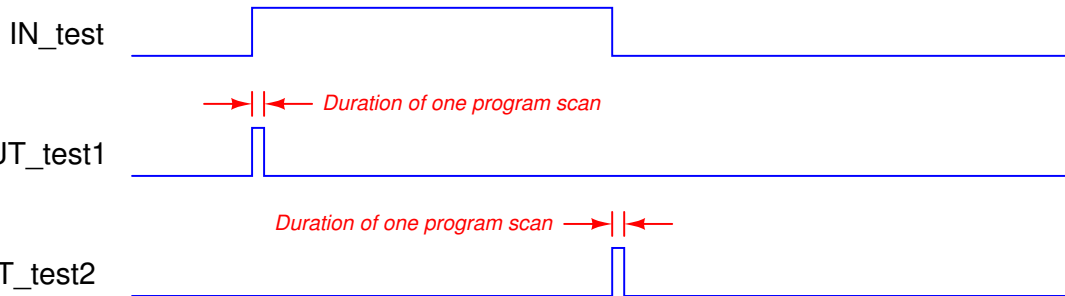
Real-world I/O wiring



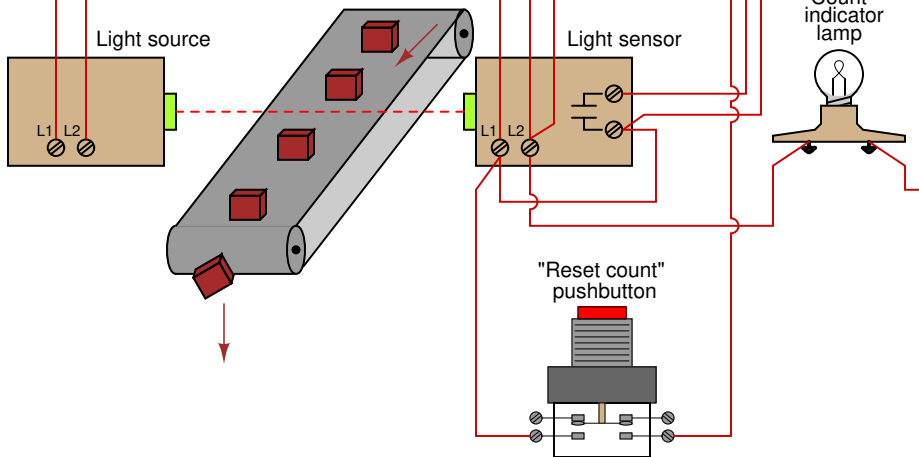
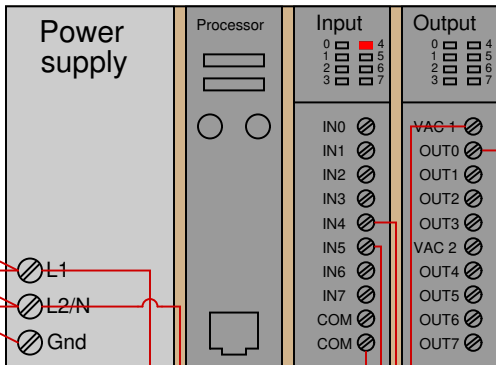
PLC program



Timing diagram



To 120 VAC
power source



IN_sensor_object

CU

CTU

IN_switch_reset

R

Q

OUT_counts_reached

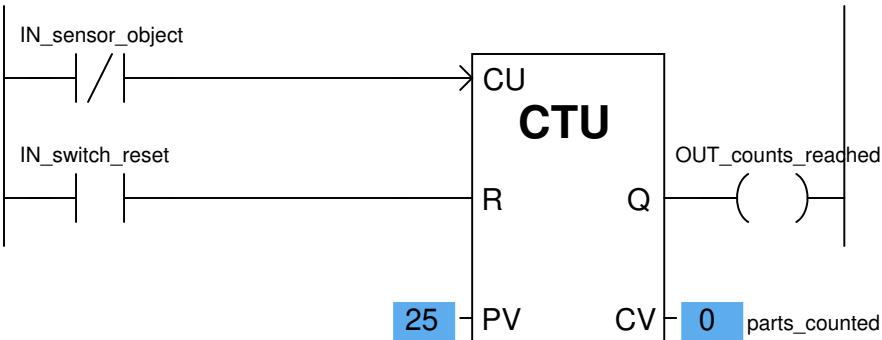
25

PV

CV

0

parts_counted





IN_sensor_object

IN_switch_reset

CU

CTU

R

Q

OUT_counts_reached

25

PV

CV

30

parts_counted



IN_sensor_object

IN_switch_load

CU

CTD

LD

Q

OUT_counts_reached

25

PV

CV

0

parts_counted



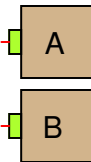
Sources



*Reverse
travel*
(B breaks before A)

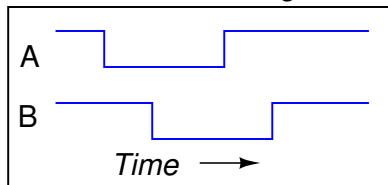


Sensors

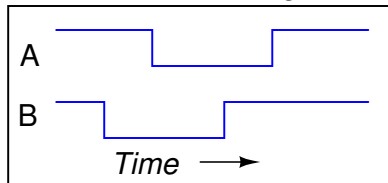


*Forward
travel*
(A breaks before B)

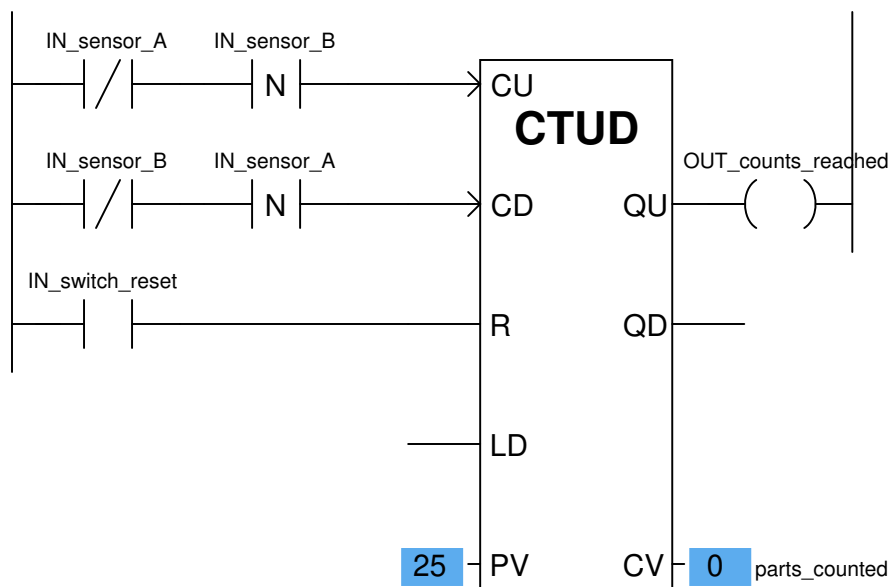
Forward travel timing



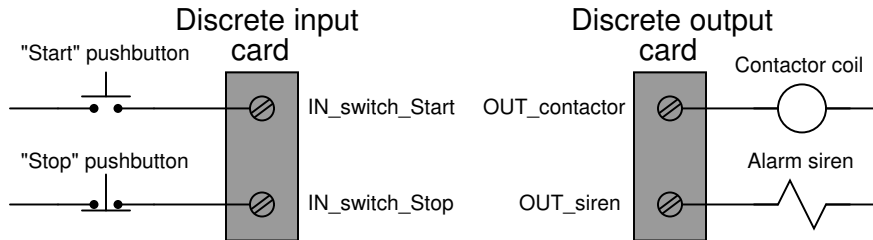
Reverse travel timing



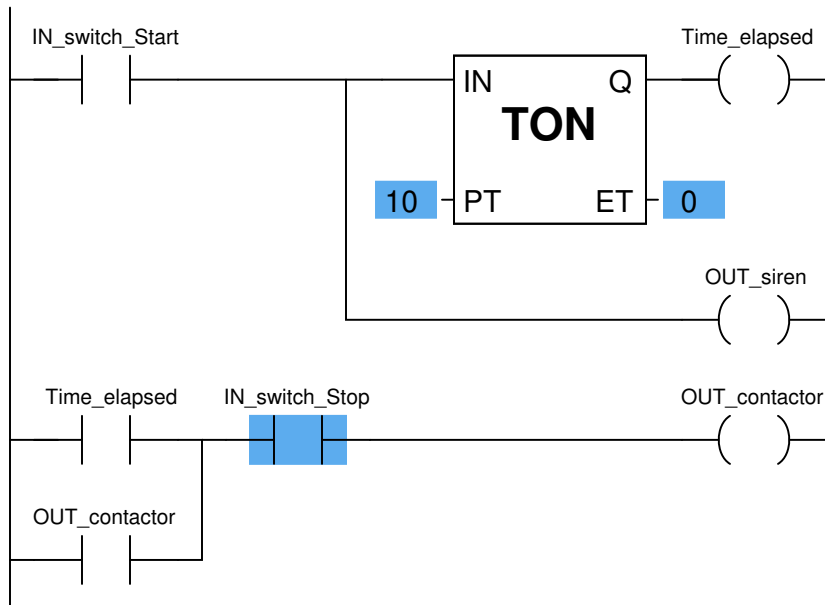




Real-world I/O wiring



PLC program



OUT_contactor

timer_enabled

EN

ENO

TON

OUT_contactor

IN

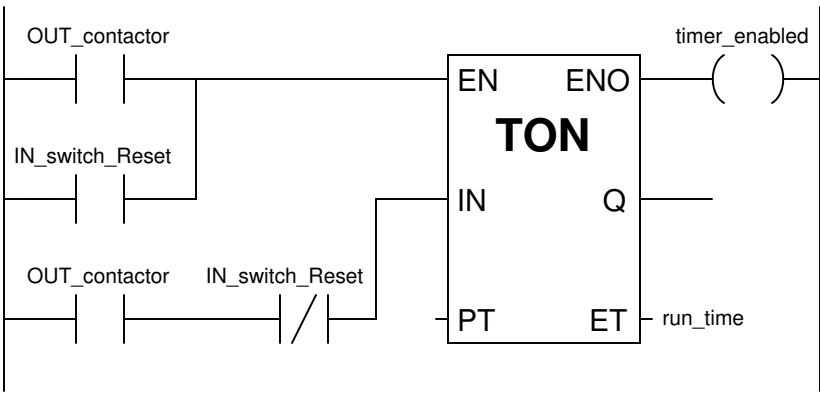
Q

PT

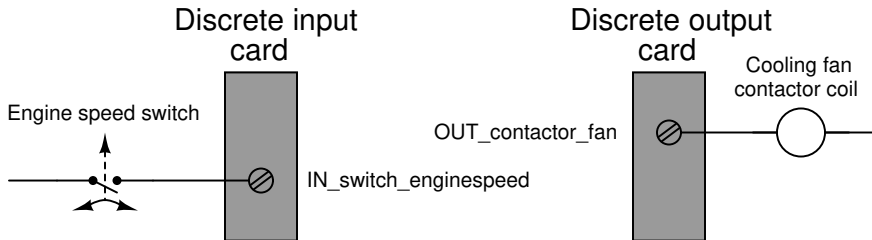
ET

run_time

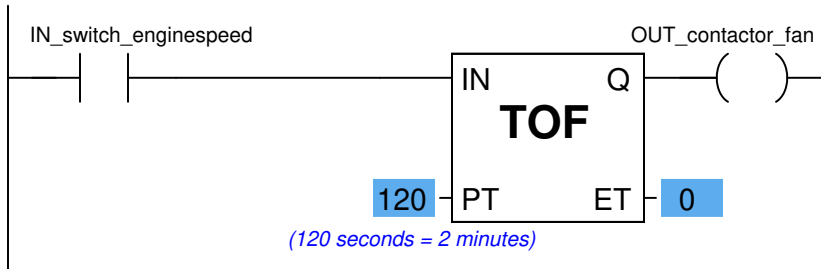




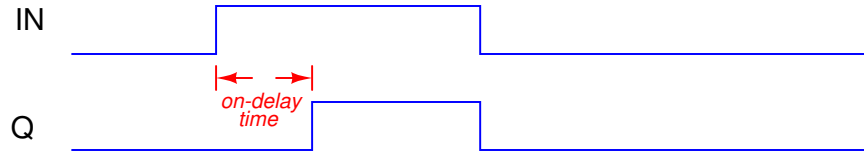
Real-world I/O wiring



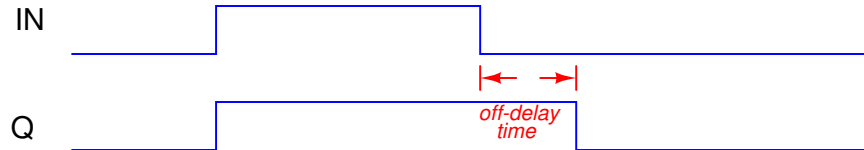
PLC program



On-delay timer (TON)



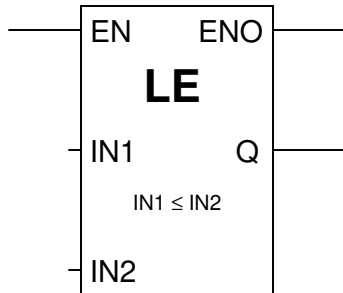
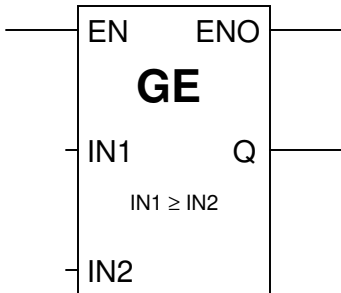
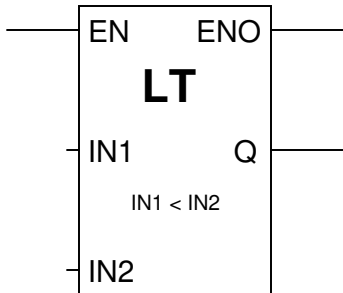
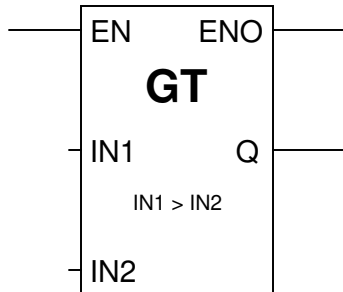
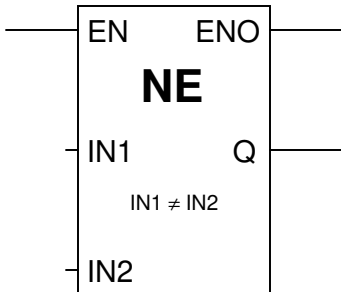
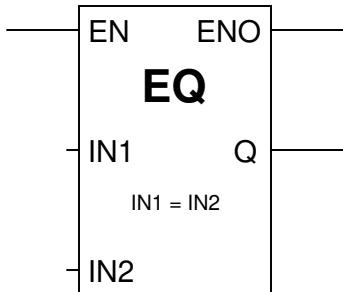
Off-delay timer (TOF)



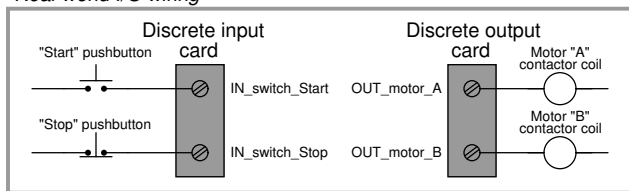




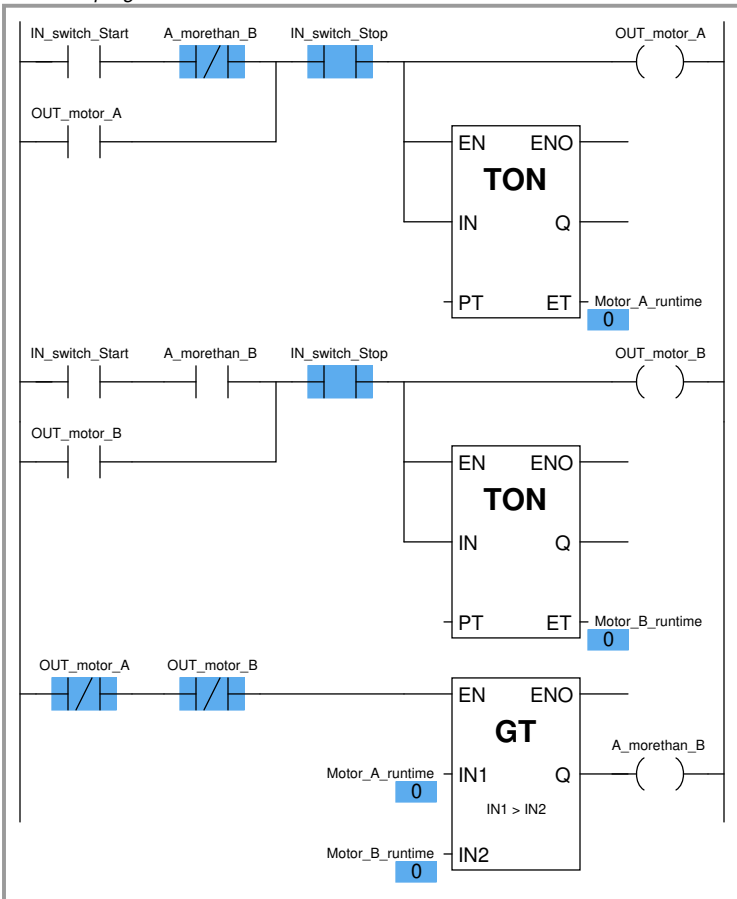


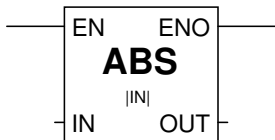
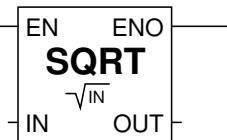
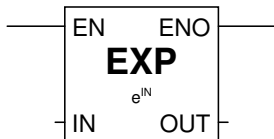
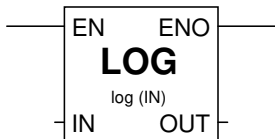
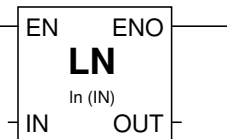
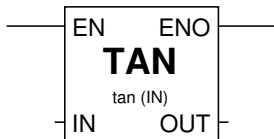
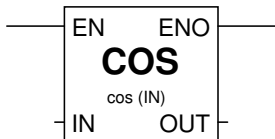
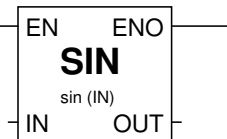
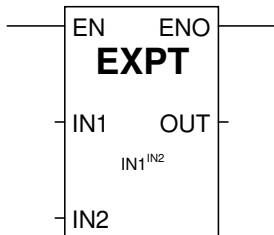
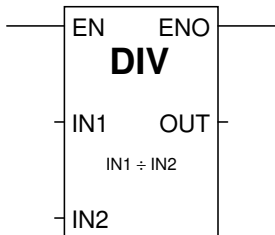
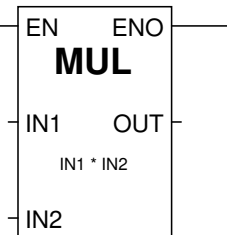
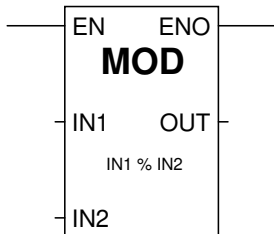
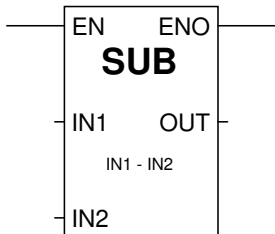
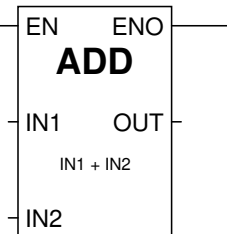


Real-world I/O wiring

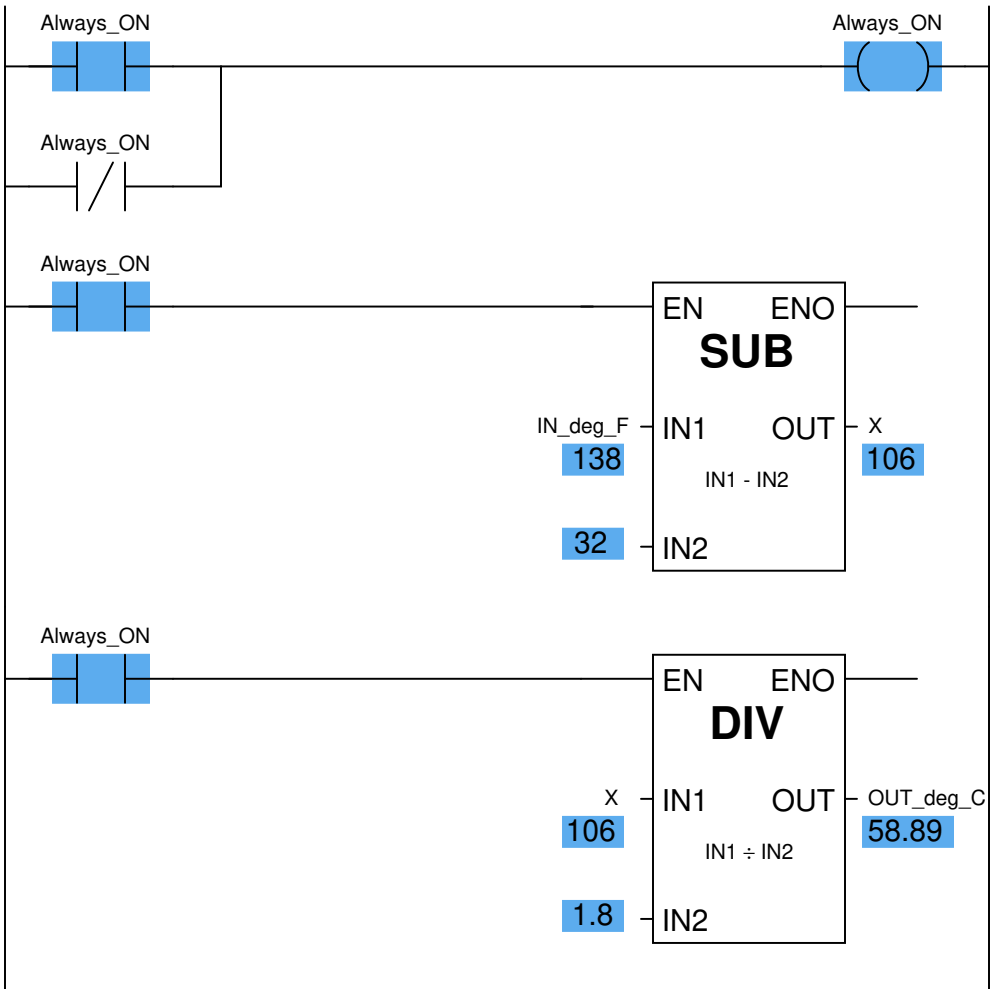


PLC program

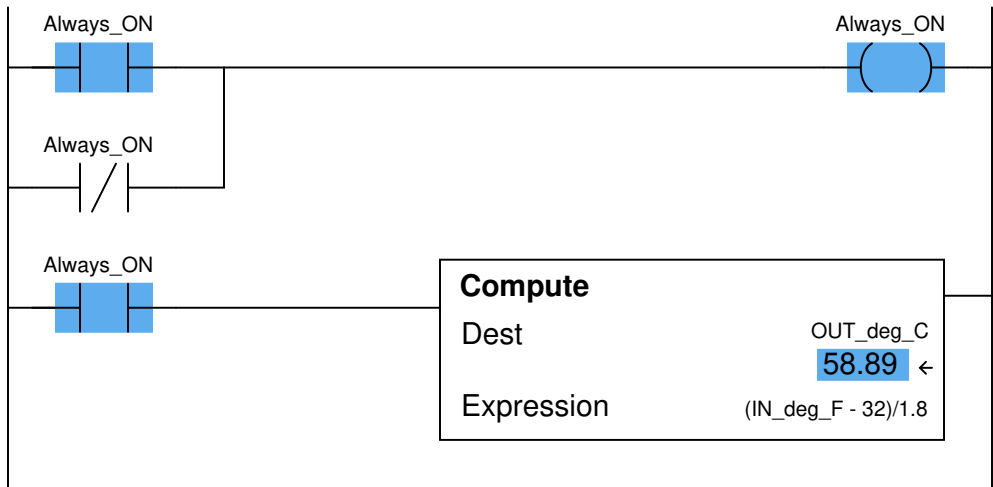


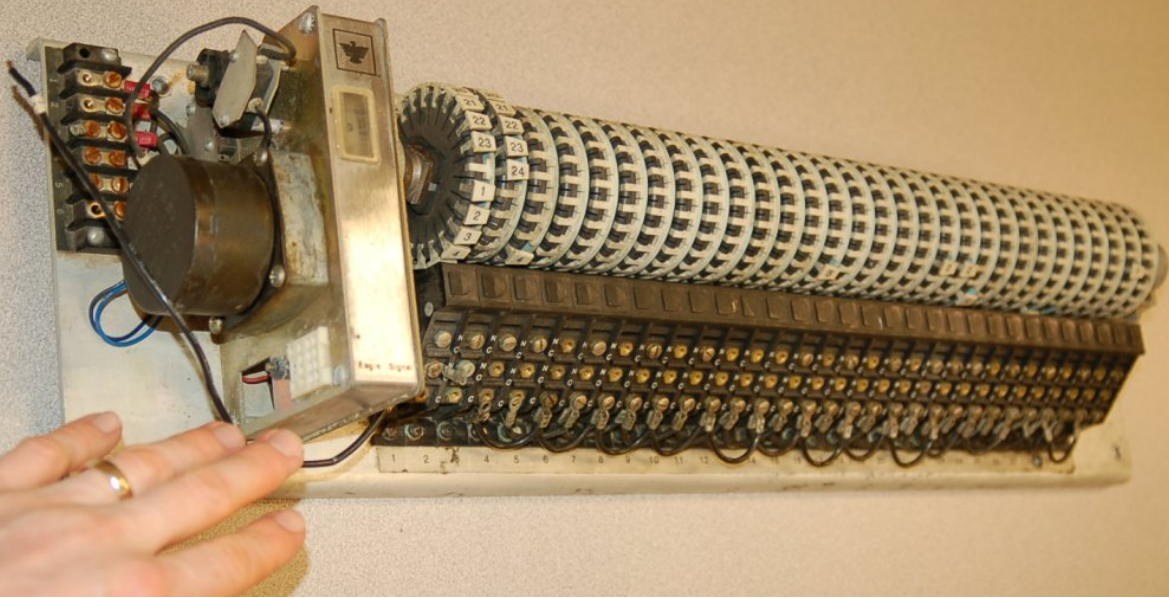


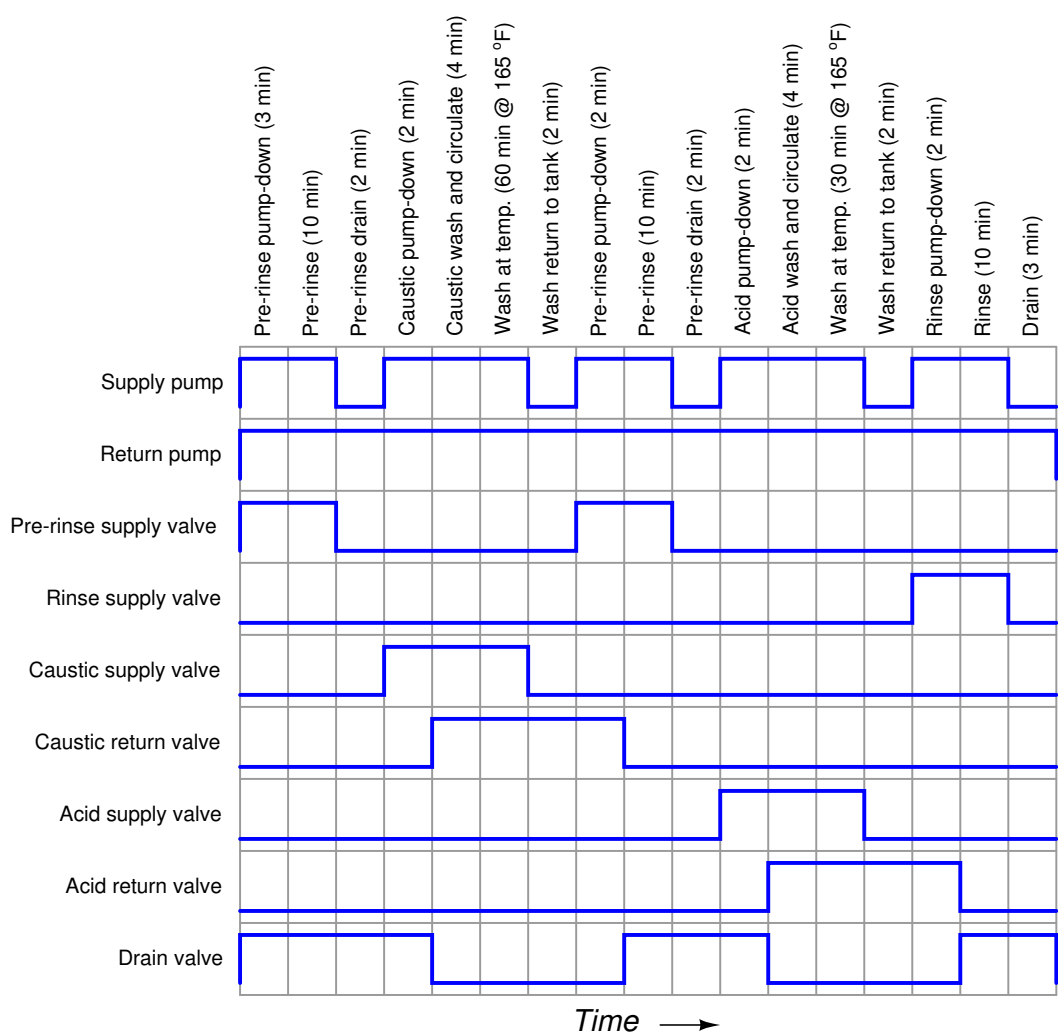
PLC program



Rockwell Logix5000 PLC program







Koyo CLICK PLC program

X001

Complete

Drum (TimeBase:sec)

Step	Duration	1	2	3
1	10	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	15	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	18	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Output 1=Y001
2=Y002
3=Y003

New Step

Current Step DS1

Elapsed Time TD1

Koyo CLICK PLC program

X001

Drum (EventBase)

Step	Event	1	2	3
1	X002	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	X003	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	X004	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Output 1=Y001
 2=Y002
 3=Y003

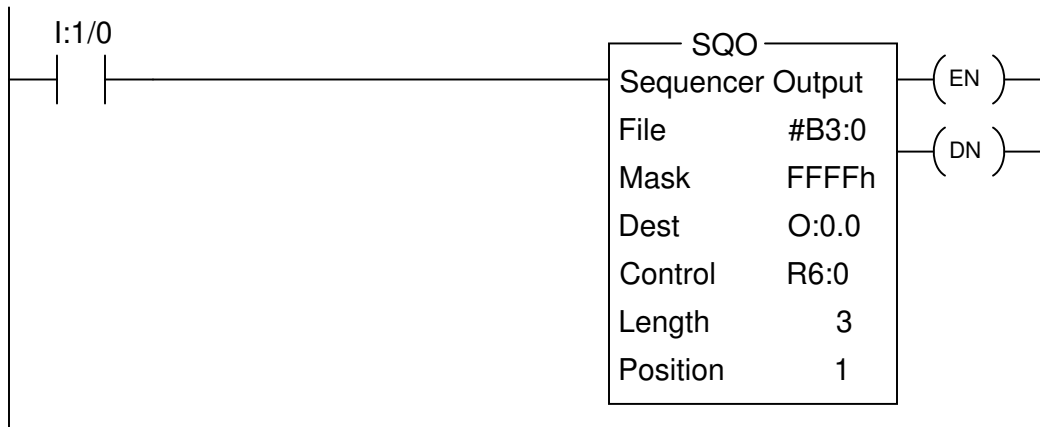
New Step

Current Step DS1

Complete



Rockwell SLC 500 PLC program



Data File B3 (bin) -- BINARY

B3:0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
B3:1	0	1	1	1	1	0	0	0	0	0	0	0	0	0	1	
B3:2	1	0	0	0	0	0	1	1	0	0	0	0	0	1	0	
B3:3	0	0	0	1	0	0	0	0	0	1	0	1	0	1	0	
	Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0

If File = #B3:0, then . . .

← Read at position = 1

← Read at position = 2

← Read at position = 3

B3:0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B3:1	0	1	1	1	1	0	0	0	0	0	0	0	0	0	1
B3:2	1	0	0	0	0	0	1	1	0	0	0	0	0	1	0
B3:3	0	0	0	1	0	0	0	0	0	1	0	1	0	1	1
	Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1

← *Read at position = 2*

Mask	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

000Fh

O:0.0	X	X	X	X	X	X	X	X	X	X	X	X	0	0	1	0
-------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Output register as written at sequencer position = 2

Data File B3 (bin) -- BINARY

Offset	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
B3:1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
B3:2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
B3:3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0

B3:0/0 Radix: Binary
 Symbol: Columns: 16
 Desc:

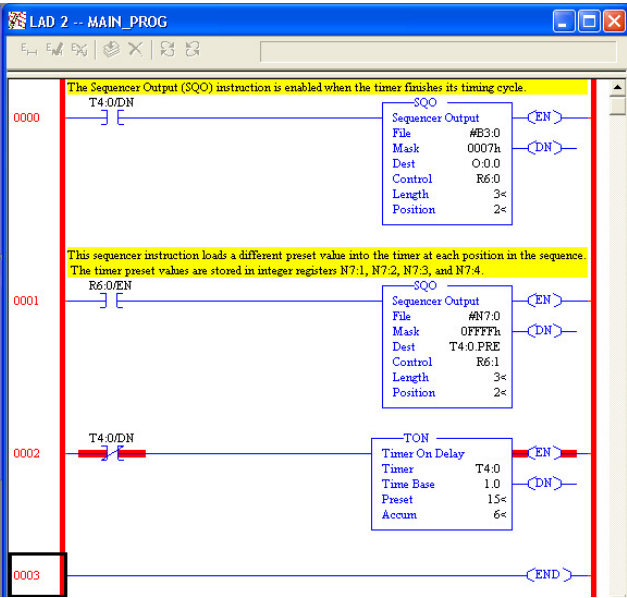
B3 Properties Usage Help

Data File N7 (dec) -- INTEGER

Offset	0	1	2	3	4	5	6
N7:0	0	10	15	18	0	0	0
N7:10	1	0	0	0	0	0	0

N7:0 Radix: Decimal
 Symbol: Columns: 10
 Desc:

N7 Properties Usage Help



The Sequencer Output (SQO) instruction is enabled when the SQC instruction detects a match between the source and the reference data.

R6:1/FD

SQO

Sequencer Output

File #B3:0

Mask 000Fh

Dest O:0.0

Control R6:0

Length 3<

Position 1<

EN

DN

This SQC instruction compares the source bits against those bits referenced from the data file in each position, then sets a "found" bit (FD) when the two match.

R6:1/FD

SQC

Sequencer Compare

File #B3:5

Mask 000Fh

Source I:0.0

Control R6:1

Length 3<

Position 1<

EN

DN

FD

END

0000

0001

0002

$$Y = K_P \cdot \left(e + \frac{1}{T_N} \int e dt + T_V \frac{\delta e}{\delta t} \right) + Y_{OFFSET}$$

GENERATION OXYGEN VACUUM SWING ADSORPTION #2



PLANT ON/OFF	PLANT H/O	PLANT T/O	PLANT V/O	PLANT W/O	PLANT X/O	PLANT Y/O	PLANT Z/O
PLANT ON/OFF	PLANT H/O	PLANT T/O	PLANT V/O	PLANT W/O	PLANT X/O	PLANT Y/O	PLANT Z/O

PANEL VIEW

Allen-Bradley

PanelView Plus 1000

01 Plant Alarm Control

High Gas Pressure
Low Gas Pressure
High Temperature
Low Temperature
Exhaust Temperature

Stop

Restart

Reset

Alarm

011 Main Page

011 Start/Stop

011 Alarm Control

011 Plant Status

011 Alarm History

011 Main Page

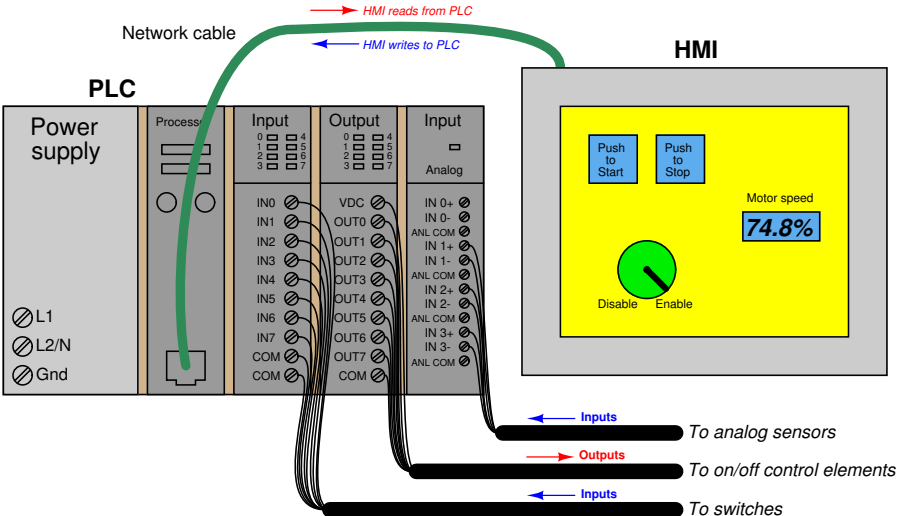
011 Start/Stop

011 Alarm Control

011 Plant Status

011 Alarm History

179.19.99.195



Device Name:

PLC_01

Fill Down

☒ Display System Tags

☐ Highlight

☒ Display Internal Tags

☐ Highlight

☐ Highlight Unused Tags

No.	Tag Name	Data Type	PLC Address	Device Name	Attribute	
1	START_PUSHBUTTON	Discrete	10024	PLC_01	R	
2	STOP_PUSHBUTTON	Discrete	10031	PLC_01	R	
3	MOTOR_RUN	Discrete	00005	PLC_01	R/W	
4	MOTOR_RUN_TIMER	Unsigned int 32	40010	PLC_01	R/W	
5	START_COUNTER	Unsigned int 16	40242	PLC_01	R/W	
6	MOTOR_TEMPERATURE	Floating PT 32	30008	PLC_01	R	
7	ERROR_MESSAGE	Ascii String	40560	PLC_01	R/W	
8	MOTOR_SPEED	Floating PT 32	30017	PLC_01	R	

