

Pluto Manager - Global Parameter Listing

File=C:\Users\joaoprod\Documents\GitHub\lsstCamProtPLCs\firmware\master_ps_01.sps

Name=<FILENAME>

File date=9/11/2018 7:18:13 PM Print date=9/11/2018 7:19:14 PM PLC CRC=A377



Project name=<FILENAME>

Project created by:

Joao Rodrigues SLAC

joaoprod@slac.stanford.edu

R1.1

System function library include=func06.fps

User function library include=

Can Baudrate=Default (400kbit/s)

Pluto 1: 46 networks

Logic: 27 networks

Communication: 19 networks

Pluto 2: 51 networks

Logic: 31 networks

Communication: 20 networks

Pluto 3: 57 networks

Logic: 33 networks

Communication: 24 networks

Pluto Manager - Parameter listing Pluto 1

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IDFIX no=000000000001

PRT-UTT-PLC1

Utility Trunk Power Interlocks

REB PS interlocks

Inputs: Utility trunk thermal switches, smoke detector, master permit, reset

Controls: Utility Trunk Power and the REB power supplies.

CanBus cycle time=Default

CanBus timeout=Default

PLC cycle time=Default

I1.0: Input, A_Pulse, Non_Inv

I1.1: Input, B_Pulse, Non_Inv

I1.2: Input, C_Pulse, Non_Inv

I1.3: Input, A_Pulse, Non_Inv

I1.4: Input, B_Pulse, Non_Inv

I1.5: Input, B_Pulse, Non_Inv

I1.6: Input, C_Pulse, Non_Inv

I1.7: Input, B_Pulse, Non_Inv

I1.10: Undefined

I1.11: Undefined

I1.12: Undefined

I1.13: Undefined

I1.14: Undefined

I1.15: Undefined

I1.16: Undefined

I1.17: Undefined

IQ1.10: Output, A_Pulse

IQ1.11: Output, B_Pulse

IQ1.12: Output, C_Pulse

IQ1.13: Output, Static

IQ1.14: Output, Static

IQ1.15: Output, Static

IQ1.16: Output, Static

IQ1.17: Output, Static

Pluto Manager - Parameter listing Pluto 2

File=C:\Users\joaoprod\Documents\GitHub\lsstCamProtPLCs\firmware\master_ps_01.sps

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IDFIX no=000000000002

PRT-UTT-PLC2

Cold Heaters and Refrigeration Interlocks

Inputs: 4 cold plate conditioned RTD analog signals plus a reset

Outputs: Cold plate heater interlock and cold plater refrigerator interlock

CanBus cycle time=Default

CanBus timeout=Default

PLC cycle time=Default

I2.0: Input

I2.1: Input

I2.2: Input

I2.3: Input

I2.4: Input, A_Pulse, Non_Inv

I2.5: Input, A_Pulse, Non_Inv

I2.6: Undefined

I2.7: Input, B_Pulse, Non_Inv

I2.10: Undefined

I2.11: Undefined

I2.12: Undefined

I2.13: Undefined

I2.14: Undefined

I2.15: Undefined

I2.16: Undefined

I2.17: Undefined

IQ2.10: Output, A_Pulse

IQ2.11: Output, B_Pulse

IQ2.12: Undefined

IQ2.13: Output, Static

IQ2.14: Output, Static

IQ2.15: Output, Static

IQ2.16: Output, Static

IQ2.17: Output, Static

Pluto Manager - Parameter listing Pluto 3

File=C:\Users\joaoprod\Documents\GitHub\lsstCamProtPLCs\firmware\master_ps_01.sps

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IDFIX no=000000000003

PRT-UTT-PLC-03

Cryo Heaters and Refrigeration Interlocks

Inputs: 4 cryo conditioned RTD analog signals plus a reset

Outputs: Cryo heater interlock and Cryo refrigerator interlock

CanBus cycle time=Default

CanBus timeout=Default

PLC cycle time=Default

I3.0: Input

I3.1: Input

I3.2: Input

I3.3: Input

I3.4: Undefined

I3.5: Input, A_Pulse, Non_Inv

I3.6: Input, B_Pulse, Non_Inv

I3.7: Undefined

I3.10: Undefined

I3.11: Undefined

I3.12: Undefined

I3.13: Undefined

I3.14: Undefined

I3.15: Undefined

I3.16: Undefined

I3.17: Undefined

IQ3.10: Output, A_Pulse

IQ3.11: Output, B_Pulse

IQ3.12: Output, Static

IQ3.13: Output, Static

IQ3.14: Output, Static

IQ3.15: Output, Static

IQ3.16: Output, Static

IQ3.17: Output, Static

Pluto Manager - Variable listing Pluto 1

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Pluto 1

I1.0=P1_Tsw0	;Thermal switch PRT-UTT-TSSW-00
I1.1=P1_Tsw1	;Thermal switch PRT-UTT-TSSW-01
I1.2=P1_Tsw2	;Thermal switch PRT-UTT-TSSW-02
I1.3=P1_Tsw3	;Thermal switch PRT-UTT-TSSW-03
I1.4=P1_NoLeak	;No Leak signal from leak detector PRT-UTT-LLD-00
I1.5=P1_Leak	;Leak signal from leak detector PRT-UTT-LLD-00
I1.6=P1_NoSmoke	;Smoke detector alarm contact PRT-UTT-SMK-00
I1.7=P1_NotLeakFault	;Leak detector fault signal PRT-UTT-LLD-00
Q1.0=P1_UtPowerPerm	;Utility Trunk High Power Permit PWR-UTT-FRB-00
Q1.1=P1_RebPowerPerm	;REB Power Supply Permit
Q1.2=P1_CoolantValve	;Coolant valve control PRT-UTT-RLY-00
Q1.3=P1_LeakPower	;Leak Detection Power PRT-UTT-DCD-00
Q1.10=P1_APower	;TSW0, TSW3, Leak Detector Fault
Q1.11=P1_BPower	;TSW1, Leak Detector Fault
Q1.12=P1_CPower	;TSW2, Smoke detector alarm
Q1.13=P1_LeakLight	;UT Coolant Leak Indicator
Q1.14=P1_HotLight	;UT Hot Indicator
Q1.15=P1_SmokeLight	;UT Smoke Indicator
Q1.16=P1_UtPowerLight	;UT Power Status
Q1.17=P1_RebPowerLight	;REB Power Status
M1.0=P1_TempOk	;3 of four temps ok
M1.1=P1_TempHighFilter	;
M1.2=P1_TempOkLatch	;
M1.3=P1_TempOkLatchStatus	;
M1.4=P1_TempOkLatchNeedsReset	;
M1.5=P1_ResetTemp	;
M1.10=P1_LeakFaultFilter	;
M1.11=P1_LeakFaultOkLatch	;
M1.12=P1_LeakFaultOkLatchStatus	;
M1.13=P1_LeakFaultOkLatchNeedsReset	;
M1.14=P1_LeakFilter	;
M1.15=P1_LeakOkLatch	;
M1.16=P1_LeakOkLatchStatus	;
M1.17=P1_LeakOkLatchNeedsReset	;
M1.18=P1_ResetLeak	;
M1.20=P1_SmokeFaultFilter	;
M1.21=P1_SmokeFaultOkLatch	;
M1.22=P1_SmokeFaultOkLatchStatus	;
M1.23=P1_SmokeFaultOkLatchNeedsReset	;
M1.24=P1_SmokeFilter	;
M1.25=P1_SmokeOkLatch	;
M1.26=P1_SmokeOkLatchStatus	;
M1.27=P1_SmokeOkLatchStatusNeedsReset	;
M1.28=P1_ResetSmoke	;
M1.30=P1_UtPowerPermBlock	;
M1.31=P1_UtPowerPermBlockSet	;
M1.32=P1_UtPowerPermBlockReset	;
M1.35=P1_RebPowerPermBlock	;
M1.36=P1_RebPowerPermBlockSet	;
M1.37=P1_RebPowerPermBlockReset	;
M1.40=P1_CoolantValveBlock	;
M1.41=P1_CoolantValveBlockSet	;
M1.42=P1_CoolantValveBlockReset	;
M1.100=P1_ToGate00	;

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M1.101=P1_ToGate01	;
M1.102=P1_ToGate02	;
M1.103=P1_ToGate03	;
M1.104=P1_ToGate04	;
M1.105=P1_ToGate05	;
M1.106=P1_ToGate06	;
M1.107=P1_ToGate07	;
M1.108=P1_ToGate08	;
M1.109=P1_ToGate09	;
SM1.3=SM_1Hz	;1Hz pulses, On during one cycle
SM1.4=SM_10Hz	;10Hz pulses, On during one cycle

Pluto Manager - Variable listing Pluto 2

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Pluto 2

I2.0=P2_ClpRtd0	;4-20 mA RTD signal from the cold plate PRT-UTT-SGC-00
I2.1=P2_ClpRtd1	;4-20 mA RTD signal from the cold plate PRT-UTT-SGC-01
I2.2=P2_ClpRtd2	;4-20 mA RTD signal from the cold plate PRT-UTT-SGC-02
I2.3=P2_ClpRtd3	;4-20 mA RTD signal from the cold plate PRT-UTT-SGC-03
I2.4=P2_NoSmokeFault	;Smoke detector fault contact PRT-UTT-SMK-00
I2.5=P2_NoSmokeWarning	;Smoke detector warning contact PRT-UTT-SMK-00
I2.7=P2_MasterResetButton	;Resets all latches for initialization purposes
Q2.0=P2_ClpHeatPerm	;Cold Plate Heater Permit
Q2.1=P2_ClpRefPerm	;Cold Plate refrigerator Permit
Q2.10=P2_APower	;Signal to Smoke Detector Warning and Fault contact
Q2.11=P2_BPower	;
Q2.13=P2_MpmActiveLight	;MPM Active Indicator
Q2.14=P2_ClpHotLight	;Cold Plate Hot Indicator
Q2.15=P2_ClpClpLight	;Cold Plate Cold Indicator
Q2.16=P2_ClpHeatLockLight	;Cold Heat Lock Indicator
Q2.17=P2_ClpFrigLockLight	;Cold Frig Lock Indicator
M2.0=P2_ClpRtd0Valid	;ClpRTD0Valid
M2.1=P2_ClpRtd1Valid	;ClpRTD1Valid
M2.2=P2_ClpRtd2Valid	;ClpRTD2Valid
M2.3=P2_ClpRtd3Valid	;ClpRTD3Valid
M2.10=P2_ClpTemp0NotHigh	;ClpTemp0NotHigh
M2.11=P2_ClpTemp1NotHigh	;ClpTemp1NotHigh
M2.12=P2_ClpTemp2NotHigh	;ClpTemp2NotHigh
M2.13=P2_ClpTemp3NotHigh	;ClpTemp3NotHigh
M2.15=P2_ClpTempNotHigh	;
M2.16=P2_ClpTempHighFilter	;
M2.17=P2_ClpTempHighOkLatch	;
M2.18=P2_ClpTempHighOkLatchStatus	;
M2.19=P2_ResetClpHigh	;
M2.20=P2_ClpTempHighOkLatchNeedsReset	;
M2.30=P2_ClpTemp0NotLow	;
M2.31=P2_ClpTemp1NotLow	;
M2.32=P2_ClpTemp2NotLow	;
M2.33=P2_ClpTemp3NotLow	;
M2.35=P2_ClpTempNotLow	;
M2.36=P2_ClpTempLowFilter	;
M2.37=P2_ClpTempLowOkLatch	;
M2.38=P2_ClpTempLowOkLatchStatus	;
M2.39=P2_ResetClpLow	;
M2.40=P2_ClpTempLowOkLatchNeedsReset	;
M2.50=P2_ClpHeatPermBlockSet	;
M2.51=P2_ClpHeatPermBlock	;
M2.52=P2_ClpHeatPermBlockReset	;
M2.55=P2_ClpRefPermBlock	;
M2.56=P2_ClpRefPermBlockSet	;
M2.57=P2_ClpRefPermBlockReset	;
M2.100=P2_ToGate00	;
M2.101=P2_ToGate01	;
M2.102=P2_ToGate02	;
M2.103=P2_ToGate03	;
M2.104=P2_ToGate04	;
M2.105=P2_ToGate05	;
M2.106=P2_ToGate06	;
M2.107=P2_ToGate07	;

Pluto Manager - Variable listing Pluto 2

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M2.108=P2_ToGate08	;
M2.109=P2_ToGate09	;
R2.0=P2_ClpRtd0Current	;
R2.1=P2_ClpRtd0Temp	;
R2.2=P2_ClpRtd1Current	;
R2.3=P2_ClpRtd1Temp	;
R2.4=P2_ClpRtd2Current	;
R2.5=P2_ClpRtd2Temp	;
R2.6=P2_ClpRtd3Current	;
R2.7=P2_ClpRtd3Temp	;
R2.10=P2_ClpHighLimit	;
R2.11=P2_ClpLowLimit	;
R2.15=P2_RtdZeroLimit	;Value below which the RTD current readout is considered invalid (open circuit)
SM2.3=SM_1Hz	;1Hz pulses, On during one cycle
SM2.4=SM_10Hz	;10Hz pulses, On during one cycle
SM2.101=SM_Pluto1_Present	;Pluto #1 is present
SM2.102=SM_Pluto2_Present	;Pluto #2 is present
SM2.103=SM_Pluto3_Present	;Pluto #3 is present

Pluto Manager - Variable listing Pluto 3

File=C:\Users\joaoprod\Documents\GitHub\lsstCamProtPLCs\firmware\master_ps_01.sps

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Pluto 3

I3.0=P3_CryRtd0	;
I3.1=P3_CryRtd1	;
I3.2=P3_CryRtd2	;
I3.3=P3_CryRtd3	;
I3.5=P3_HexVacOk	;
I3.6=P3_CryVacOk	;
Q3.0=P3_CryHeatPerm	;
Q3.1=P3_CryRefPerm	;
Q3.10=P3_APower	;Signal to Smoke Detector Warning and Fault contact
Q3.11=P3_BPower	;
Q3.12=P3_CryHotLight	;
Q3.13=P3_CryColdLight	;MPM Active Indicator
Q3.14=P3_HexVacBadLight	;Cryo Hot Indicator
Q3.15=P3_CryVacBadLight	;Cryo Cry Indicator
Q3.16=P3_CryHeatLockLight	;Cry Heat Lock Indicator
Q3.17=P3_CryFrigLockLight	;Cry Frig Lock Indicator
GM3.0=P3_HexVacOkLatch	;
GM3.1=P3_CryVacOkLatch	;
M3.0=P3_CryRtd0Valid	;CryRTD0Valid
M3.1=P3_CryRtd1Valid	;CryRTD1Valid
M3.2=P3_CryRtd2Valid	;CryRTD2Valid
M3.3=P3_CryRtd3Valid	;CryRTD3Valid
M3.10=P3_CryTemp0NotHigh	;CryTemp0NotHigh
M3.11=P3_CryTemp1NotHigh	;CryTemp1NotHigh
M3.12=P3_CryTemp2NotHigh	;CryTemp2NotHigh
M3.13=P3_CryTemp3NotHigh	;CryTemp3NotHigh
M3.15=P3_CryTempNotHigh	;
M3.16=P3_CryTempHighFilter	;
M3.17=P3_CryTempHighOkLatch	;
M3.18=P3_CryTempHighOkLatchStatus	;
M3.19=P3_ResetCryHigh	;
M3.20=P3_CryTempHighOkLatchNeedsReset	;
M3.30=P3_CryTemp0NotLow	;
M3.31=P3_CryTemp1NotLow	;
M3.32=P3_CryTemp2NotLow	;
M3.33=P3_CryTemp3NotLow	;
M3.35=P3_CryTempNotLow	;
M3.36=P3_CryTempLowFilter	;
M3.37=P3_CryTempLowOkLatch	;
M3.38=P3_CryTempLowOkLatchStatus	;
M3.39=P3_ResetCryLow	;
M3.40=P3_CryTempLowOkLatchNeedsReset	;
M3.50=P3_CryHeatPermBlockSet	;
M3.51=P3_CryHeatPermBlock	;
M3.52=P3_CryHeatPermBlockReset	;
M3.55=P3_CryRefPermBlock	;
M3.56=P3_CryRefPermBlockSet	;
M3.57=P3_CryRefPermBlockReset	;
M3.62=P3_HexVacOkLatchStatus	;
M3.63=P3_ResetHexVac	;
M3.64=P3_HexVacOkLatchNeedsReset	;
M3.67=P3_CryVacOkLatchStatus	;
M3.68=P3_ResetCryVac	;
M3.69=P3_CryVacOkLatchNeedsReset	;

Pluto Manager - Variable listing Pluto 3

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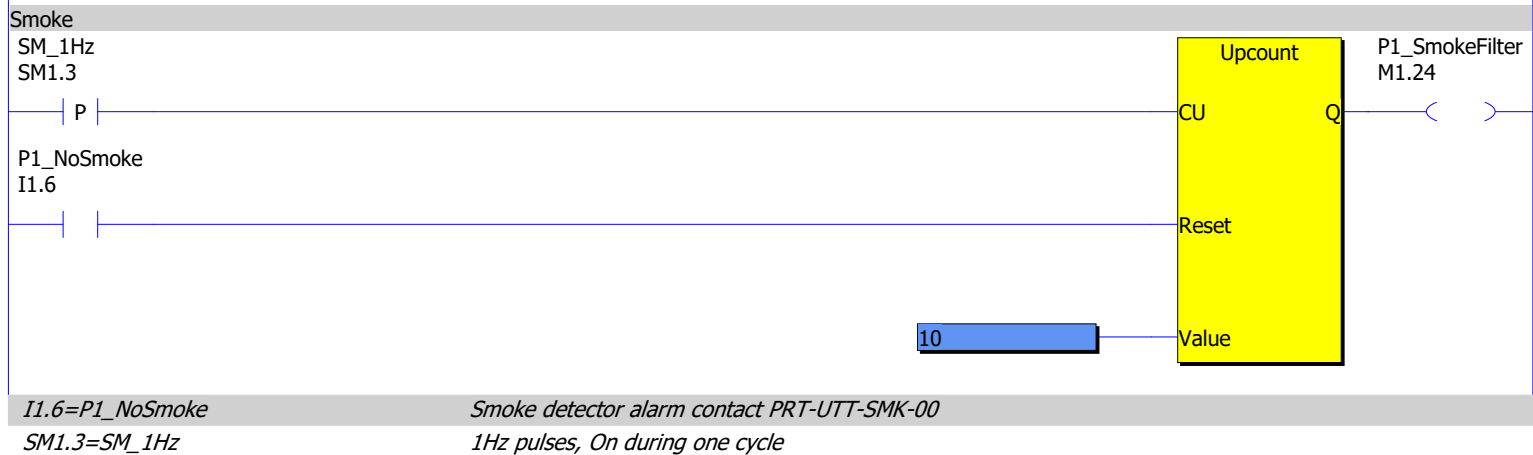
M3.100=P3_ToGate00	;
M3.101=P3_ToGate01	;
M3.102=P3_ToGate02	;
M3.103=P3_ToGate03	;
M3.104=P3_ToGate04	;
M3.105=P3_ToGate05	;
M3.106=P3_ToGate06	;
M3.107=P3_ToGate07	;
M3.108=P3_ToGate08	;
M3.109=P3_ToGate09	;
R3.0=P3_CryRtd0Current	;
R3.1=P3_CryRtd0Temp	;
R3.2=P3_CryRtd1Current	;
R3.3=P3_CryRtd1Temp	;
R3.4=P3_CryRtd2Current	;
R3.5=P3_CryRtd2Temp	;
R3.6=P3_CryRtd3Current	;
R3.7=P3_CryRtd3Temp	;
R3.10=P3_CryHighLimit	;
R3.11=P3_CryLowLimit	;
R3.15=P3_RtdZeroLimit	;Value below which the RTD current readout is considered invalid (open circuit)
SM3.3=SM_1Hz	;1Hz pulses, On during one cycle
SM3.4=SM_10Hz	;10Hz pulses, On during one cycle
SM3.101=SM_Pluto1_Present	;Pluto #1 is present
SM3.102=SM_Pluto2_Present	;Pluto #2 is present
SM3.103=SM_Pluto3_Present	;Pluto #3 is present

Pluto 1 Logic

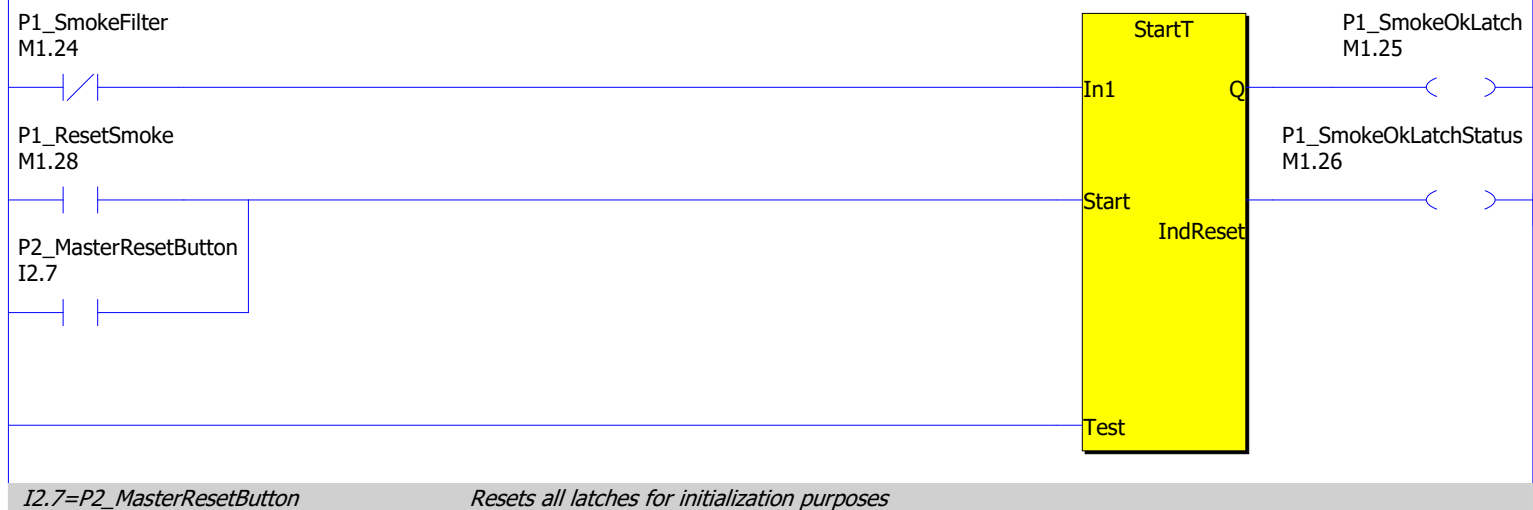
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Start

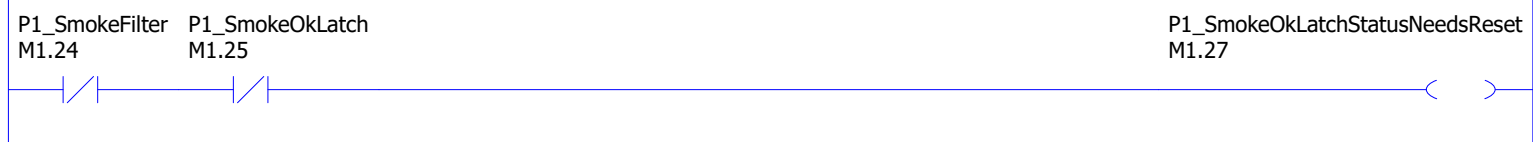
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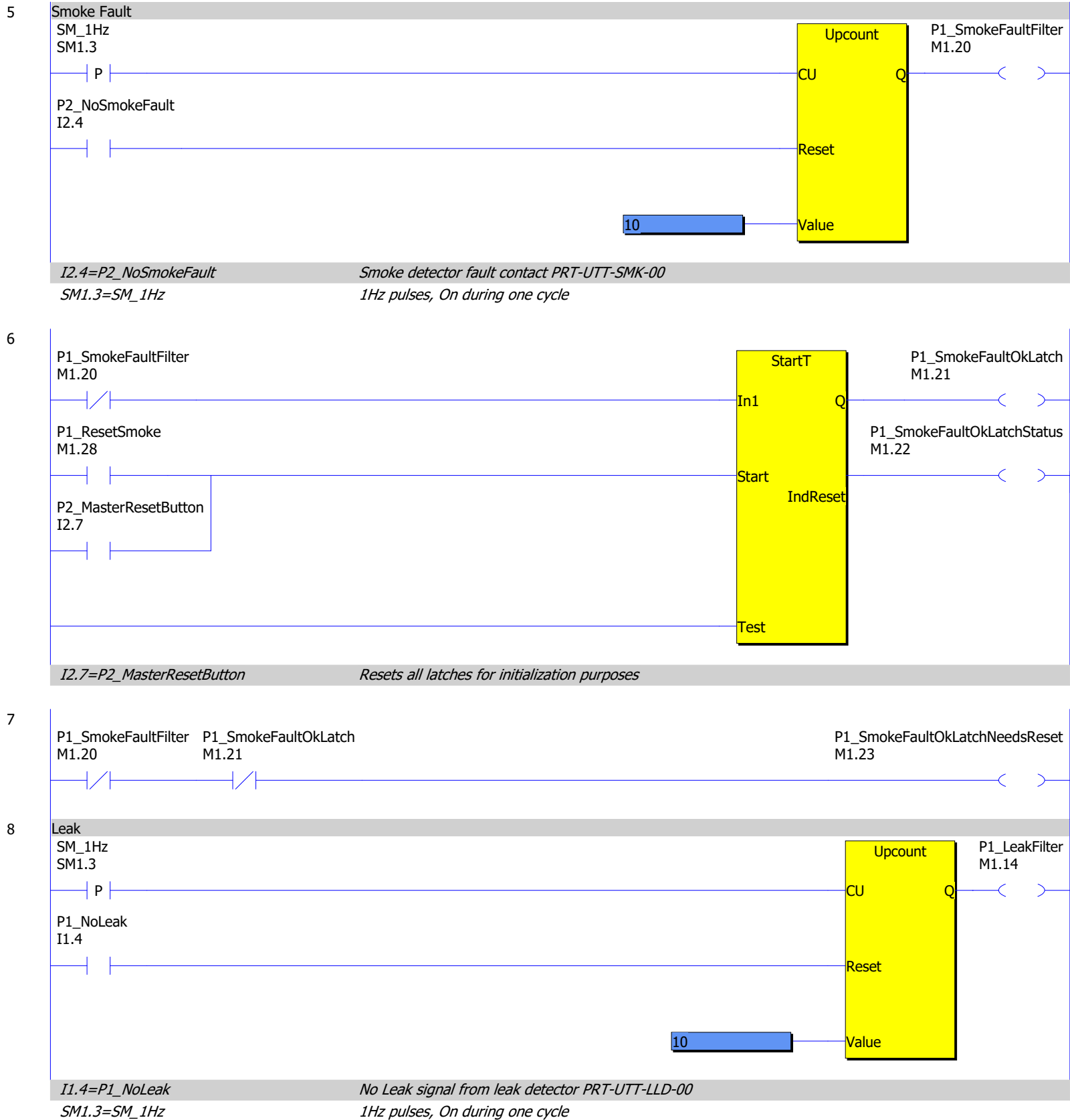


3



4





Pluto Manager - Program listing Pluto 1 Logic

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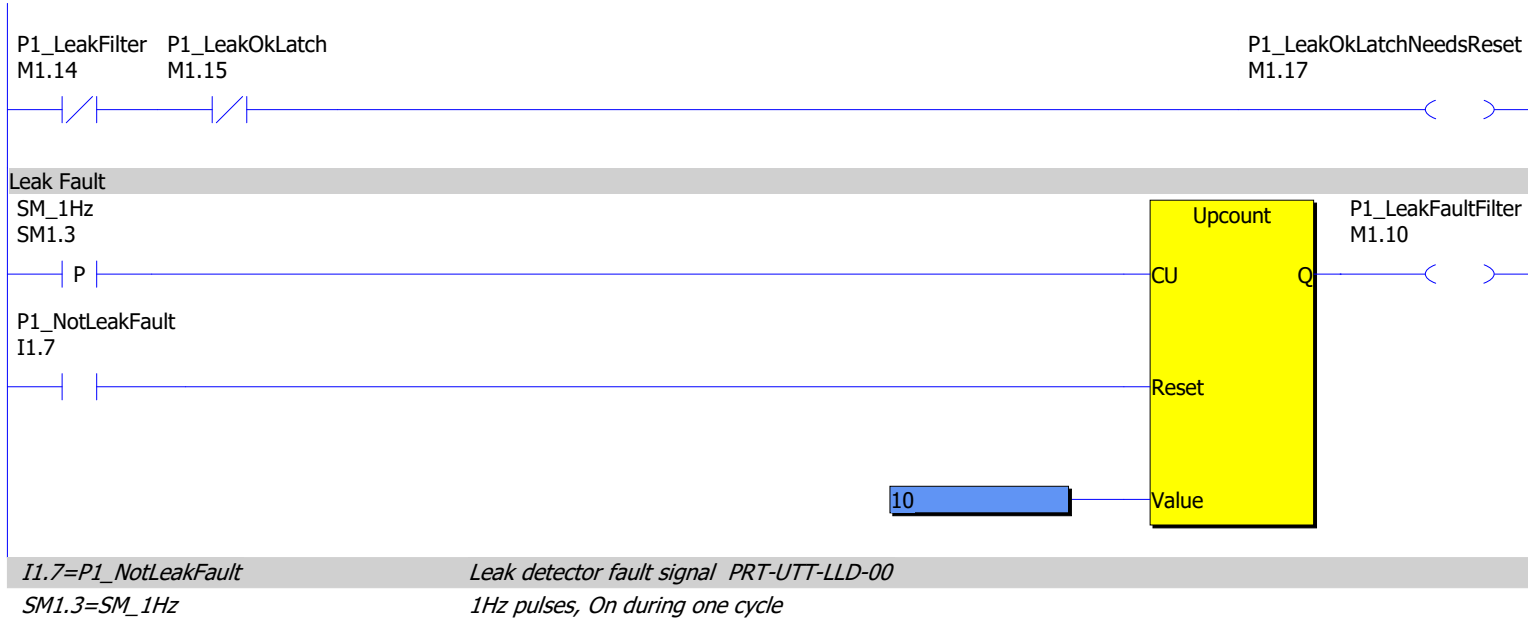
File date=9/11/2018 7:18:13 PM Print date=9/11/2018 7:19:14 PM PLC CRC=A377



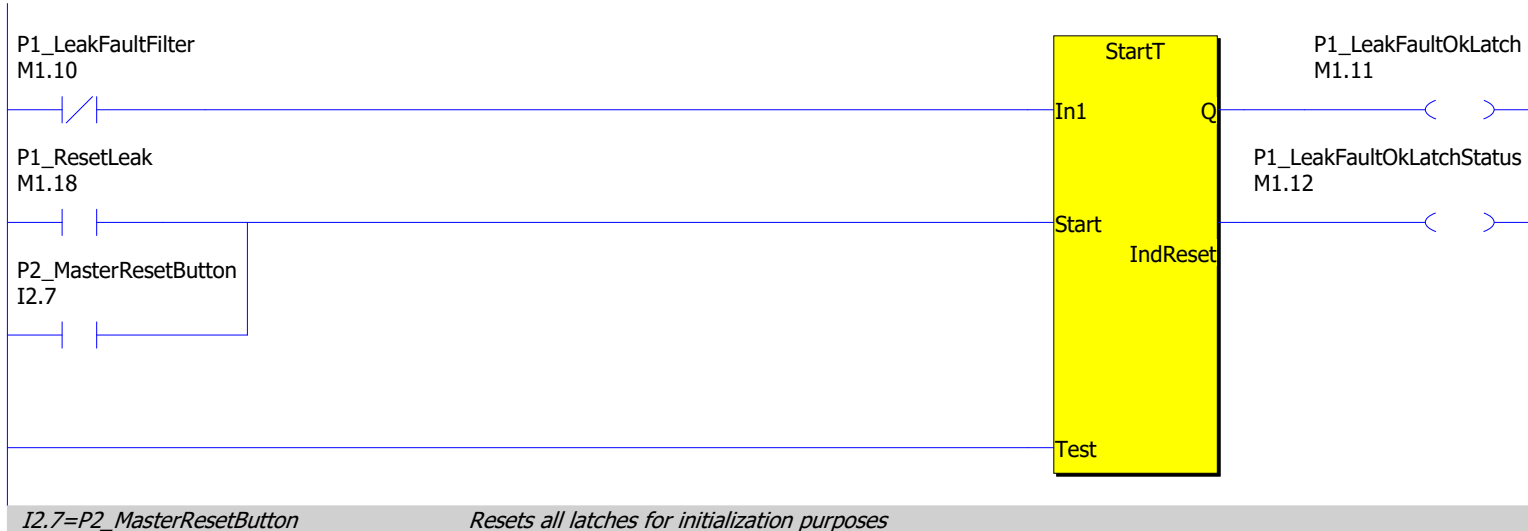
9



10



12



Pluto Manager - Program listing Pluto 1 Logic

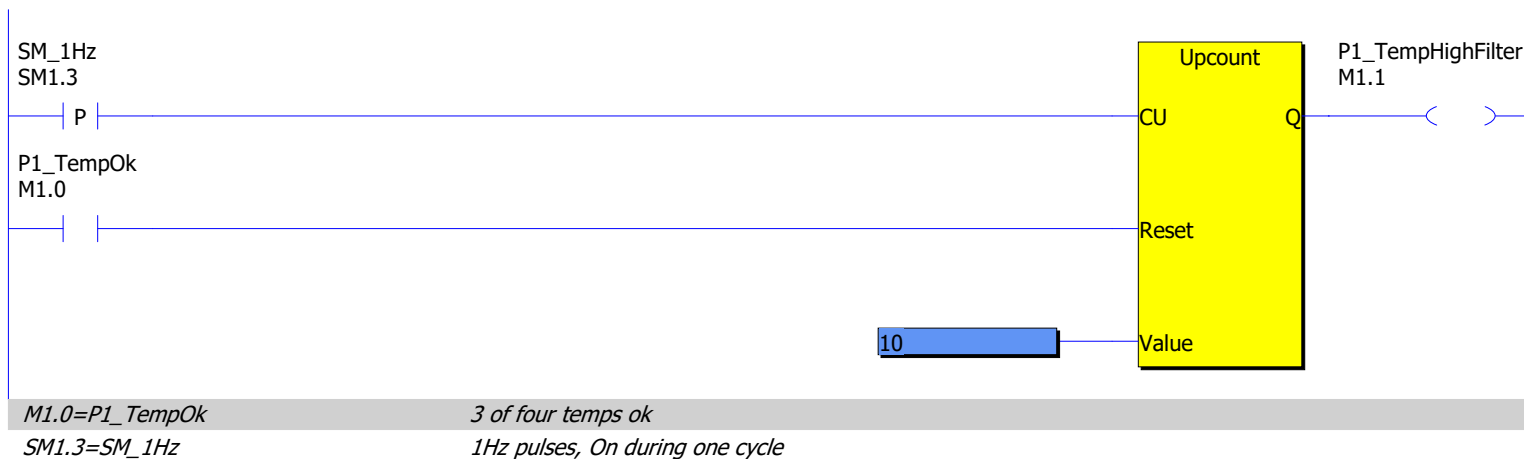
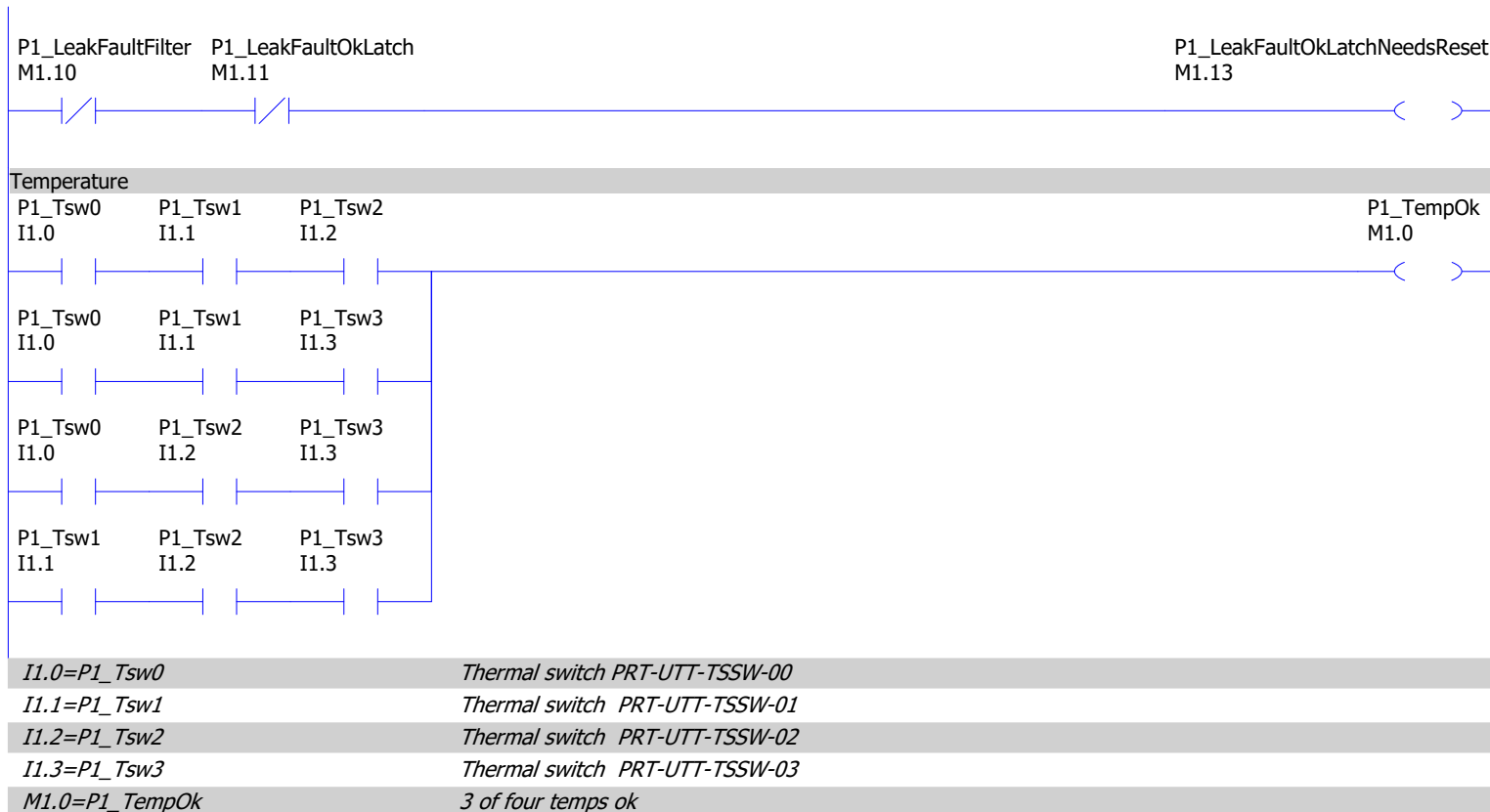
File=C:\Users\joaoprod\Documents\GitHub\lsstCamProtPLCs\firmware\master_ps_01.sps

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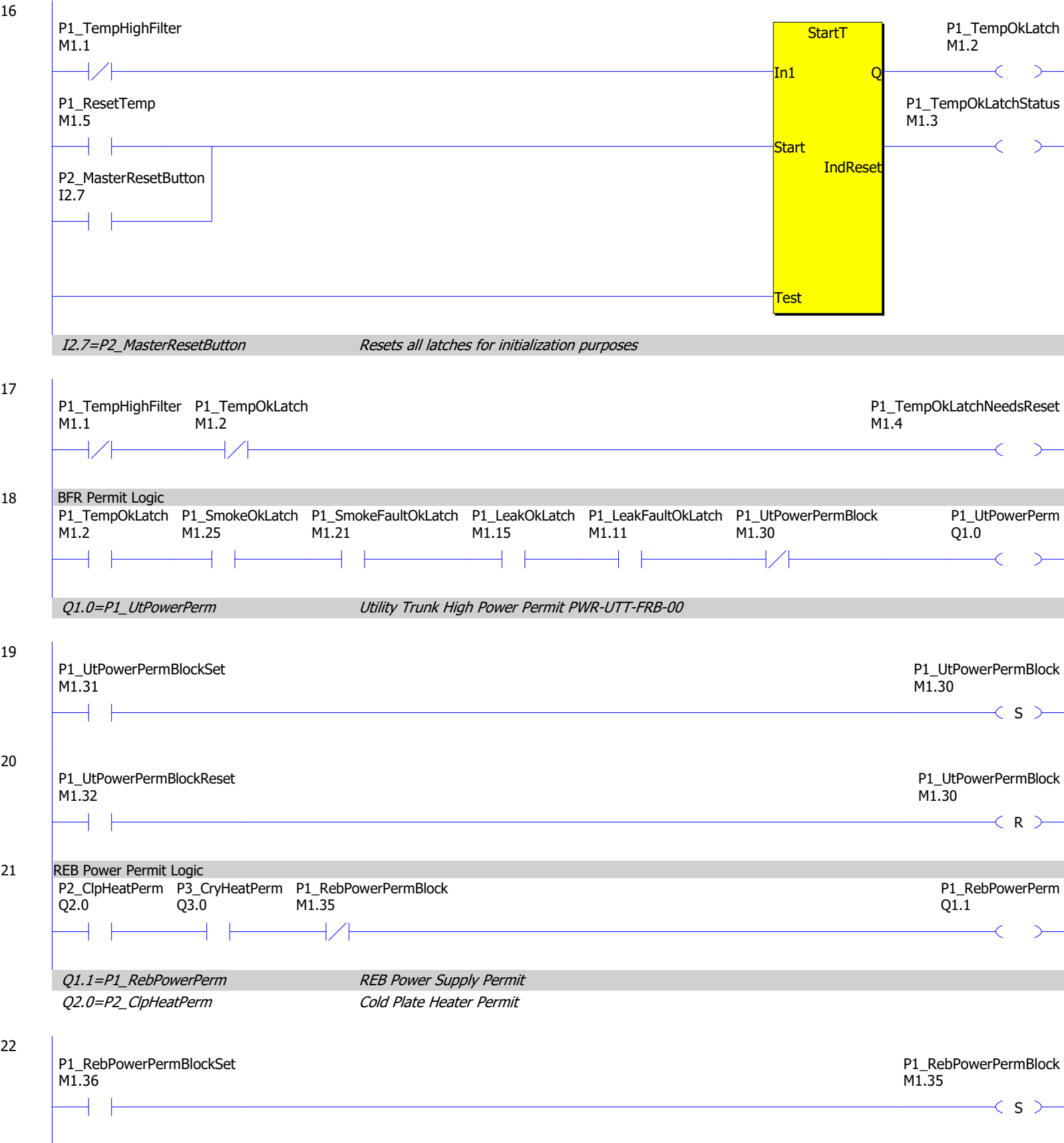


Pluto Manager - Program listing Pluto 1 Logic

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Pluto Manager - Program listing Pluto 1 Logic

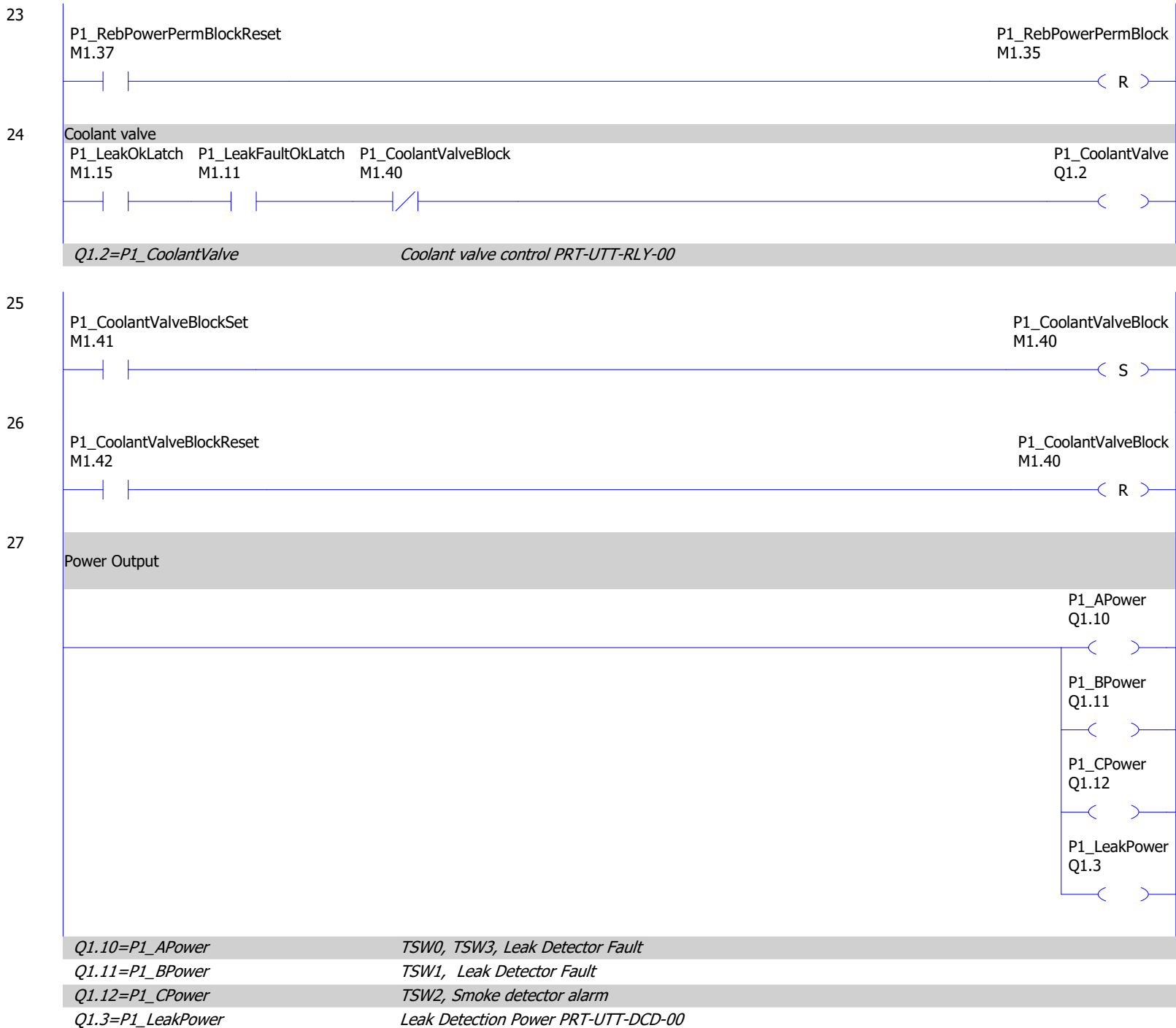
File=C:\Users\joaoprod\Documents\GitHub\lsstCamProtPLCs\firmware\master_ps_01.sps

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Pluto 1 Communication

1

Start

2

Get external signals from CCS

3

4

5

6

0

Ext_Sig
NonSafe

VarNo

Q

P1_ResetSmoke
M1.28

PostClear

1

Ext_Sig
NonSafe

VarNo

Q

P1_ResetLeak
M1.18

PostClear

2

Ext_Sig
NonSafe

VarNo

Q

P1_ResetTemp
M1.5

PostClear

3

Ext_Sig
NonSafe

VarNo

Q

P1_RebPowerPermBlockSet
M1.36

PostClear

4

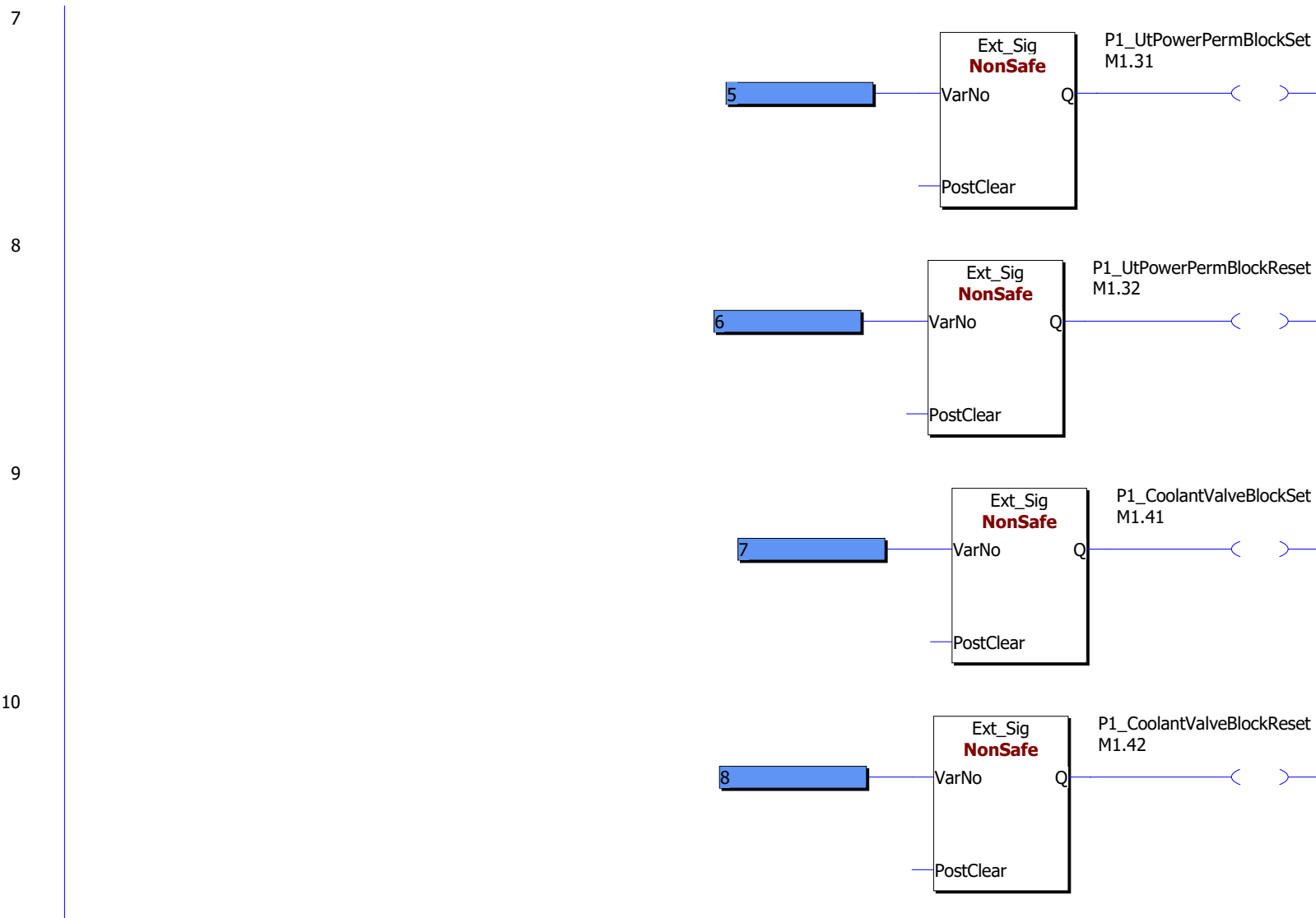
Ext_Sig
NonSafe

VarNo

Q

P1_RebPowerPermBlockReset
M1.37

PostClear



Modbus outputs

SM_10Hz

SM1.4

ToGateway_User_C

NonSafe

P1_ToGate01

M1.101

Send

Q

No

P1_Tsw0

I1.0

Bit_0

P1_Tsw1

I1.1

Bit_1

P1_Tsw2

I1.2

Bit_2

P1_Tsw3

I1.3

Bit_3

P1_TempOk

M1.0

Bit_4

P1_TempHighFilter

M1.1

Bit_5

P1_TempOkLatch

M1.2

Bit_6

P1_TempOkLatchStatus

M1.3

Bit_7

P1_ResetTemp

M1.5

Bit_8

P1_TempOkLatchNeedsReset

M1.4

Bit_9

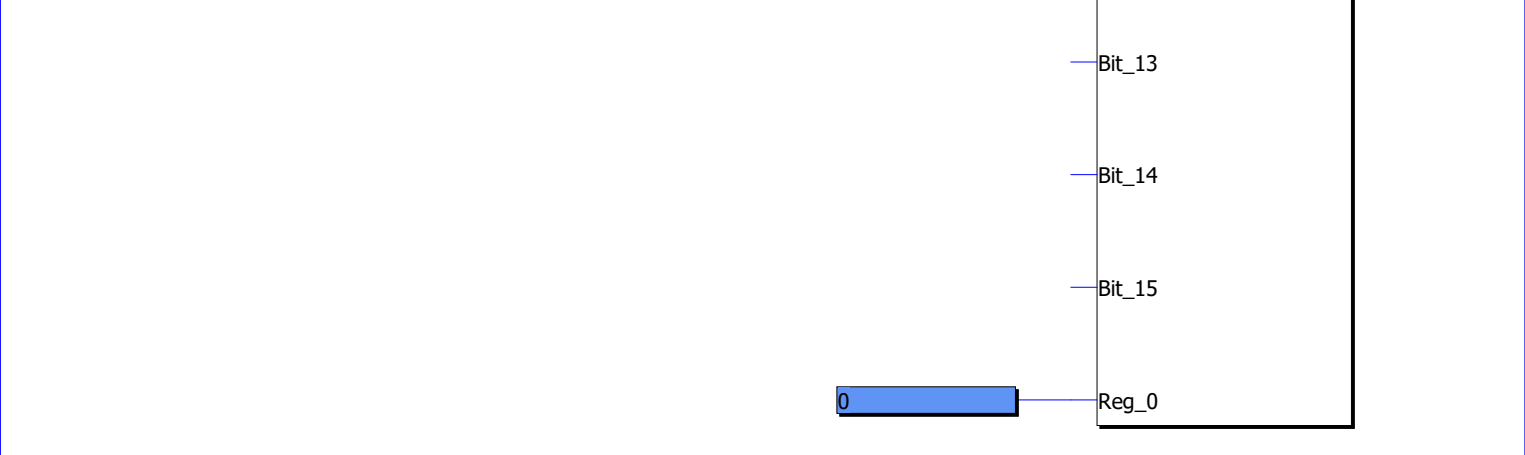
Bit_10

Bit_11

Bit_12



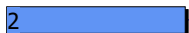















Network 11 continued / 2A



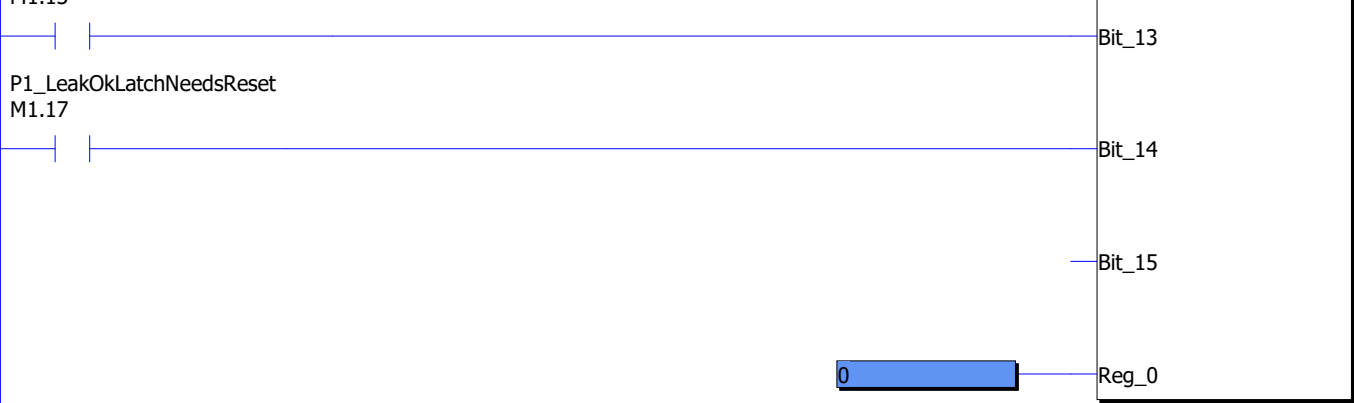
I1.0=P1_ Tsw0	Thermal switch PRT-UTT-TSSW-00
I1.1=P1_ Tsw1	Thermal switch PRT-UTT-TSSW-01
I1.2=P1_ Tsw2	Thermal switch PRT-UTT-TSSW-02
I1.3=P1_ Tsw3	Thermal switch PRT-UTT-TSSW-03
M1.0=P1_ TempOk	3 of four temps ok
SM1.4=SM_ 10Hz	10Hz pulses, On during one cycle

Modbus outputs

		ToGateway_User_C NonSafe	P1_ToGate02 M1.102
P1_ToGate01 M1.101		Send	Q 
		No	
P1_NoLeak I1.4		Bit_0	
P1_Leak I1.5		Bit_1	
P1_NotLeakFault I1.7		Bit_2	
P1_LeakPower Q1.3		Bit_3	
P1_LeakFaultFilter M1.10		Bit_4	
P1_LeakFaultOkLatch M1.11		Bit_5	
P1_LeakFaultOkLatchStatus M1.12		Bit_6	
P1_LeakFilter M1.14		Bit_7	
P1_LeakOkLatch M1.15		Bit_8	
P1_LeakOkLatchStatus M1.16		Bit_9	
P1_ResetLeak M1.18		Bit_10	
P1_LeakLight Q1.13		Bit_11	
		Bit_12	
P1_LeakFaultOkLatchNeedsReset M1.13		Bit_13	

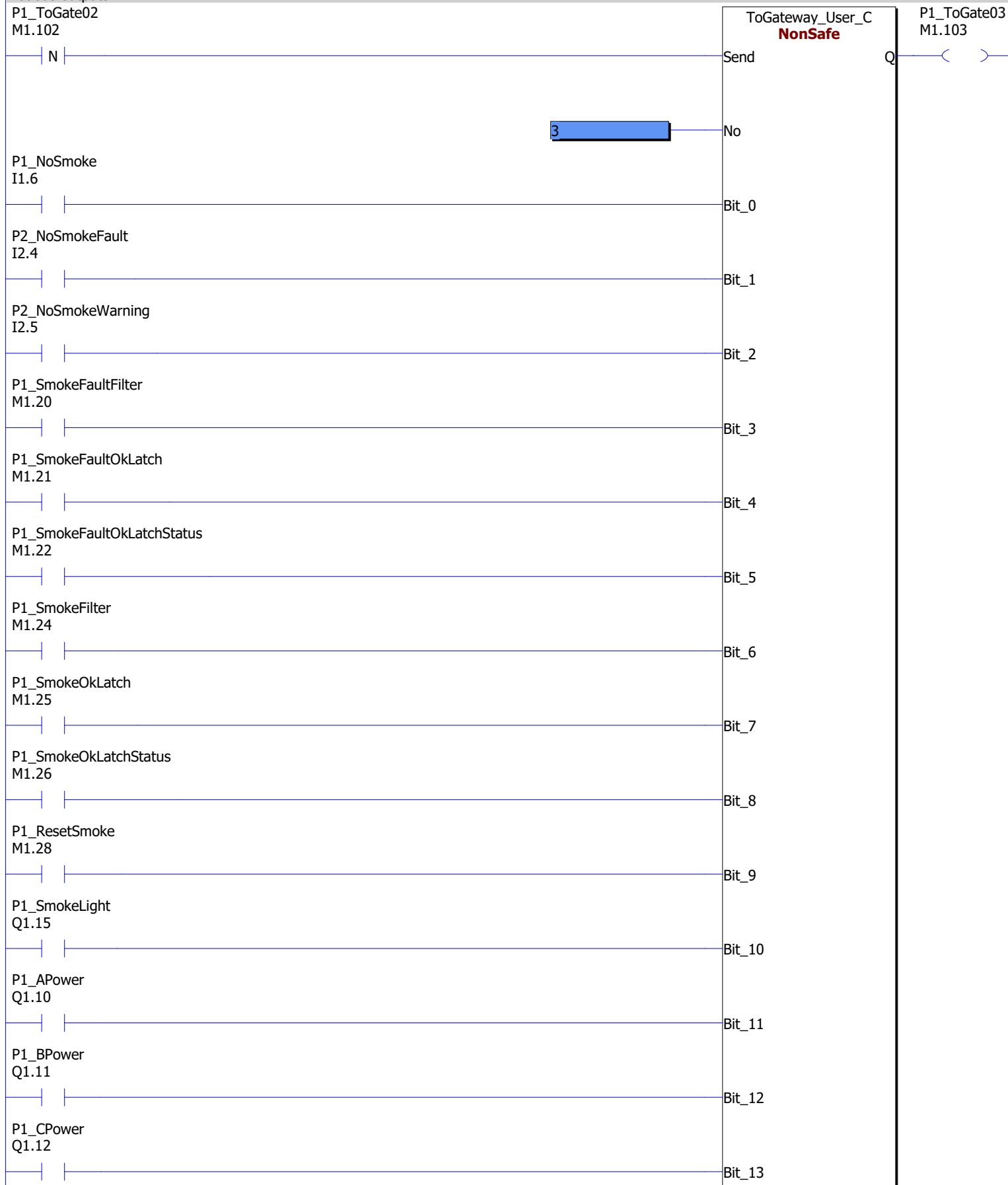


Network 12 continued / 2A



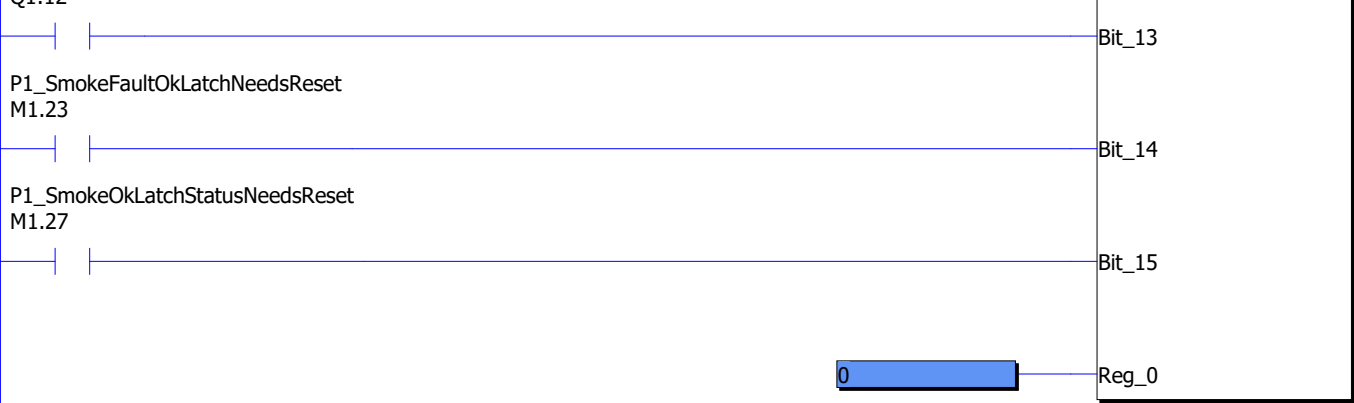
<i>I1.4=P1_NoLeak</i>	<i>No Leak signal from leak detector PRT-UTT-LLD-00</i>
<i>I1.5=P1_Leak</i>	<i>Leak signal from leak detector PRT-UTT-LLD-00</i>
<i>I1.7=P1_NotLeakFault</i>	<i>Leak detector fault signal PRT-UTT-LLD-00</i>
<i>Q1.13=P1_LeakLight</i>	<i>UT Coolant Leak Indicator</i>
<i>Q1.3=P1_LeakPower</i>	<i>Leak Detection Power PRT-UTT-DCD-00</i>

Modbus outputs



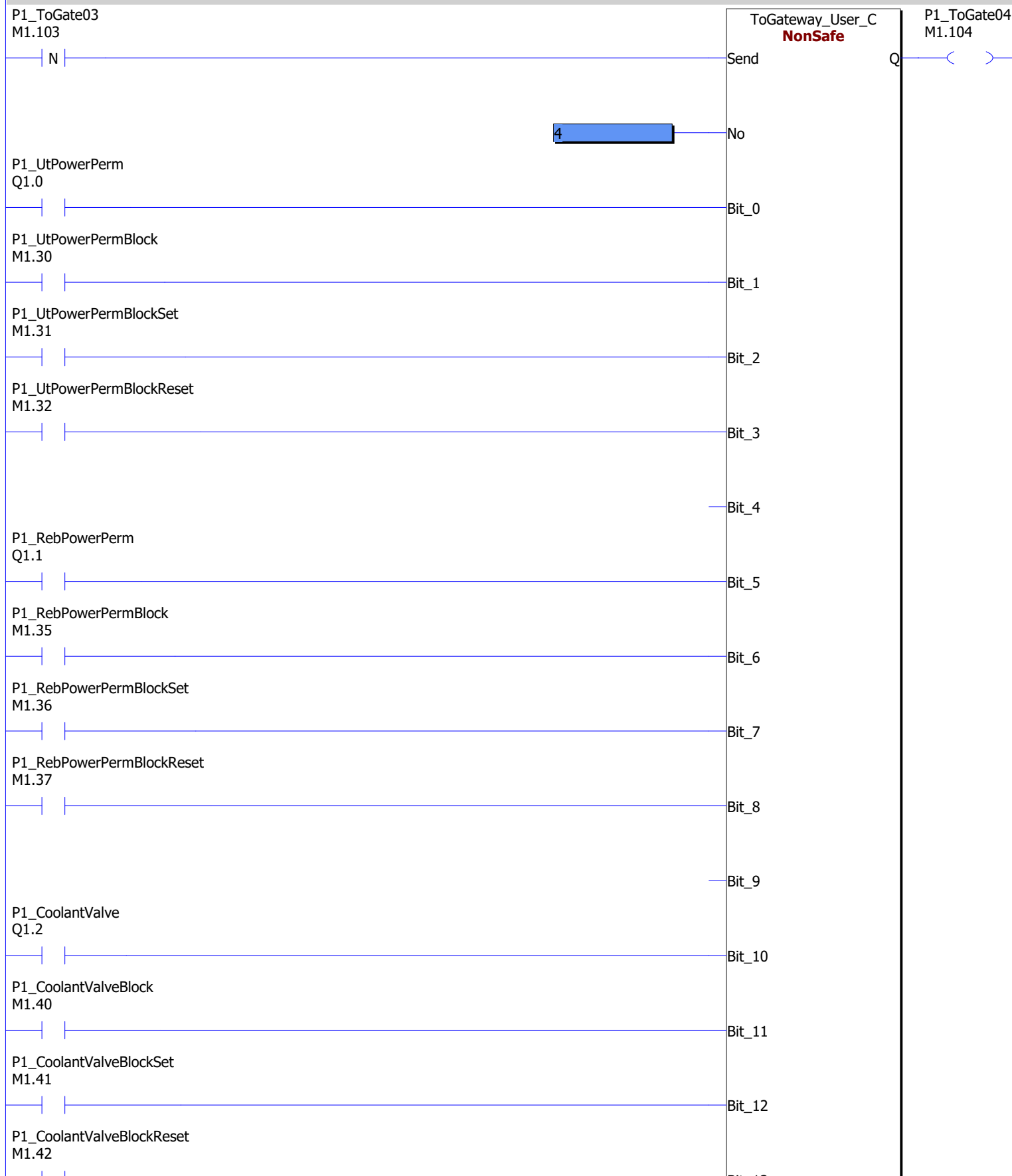


Network 13 continued / 2A

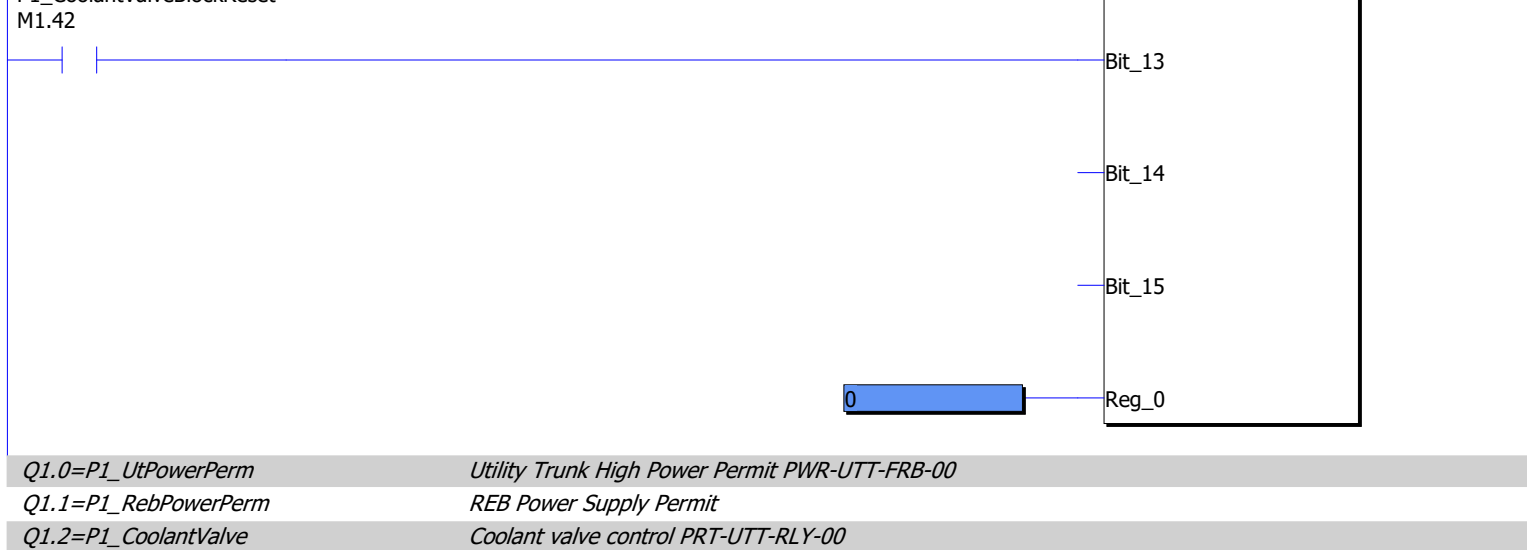


I1.6=P1_NoSmoke	Smoke detector alarm contact PRT-UTT-SMK-00
I2.4=P2_NoSmokeFault	Smoke detector fault contact PRT-UTT-SMK-00
I2.5=P2_NoSmokeWarning	Smoke detector warning contact PRT-UTT-SMK-00
Q1.10=P1_APower	TSW0, TSW3, Leak Detector Fault
Q1.11=P1_BPower	TSW1, Leak Detector Fault
Q1.12=P1_CPower	TSW2, Smoke detector alarm
Q1.15=P1_SmokeLight	UT Smoke Indicator

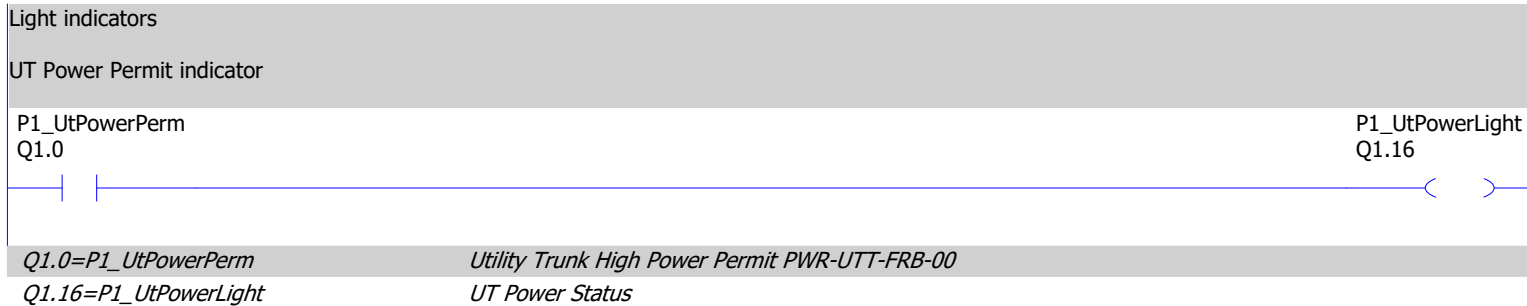
Modbus outputs



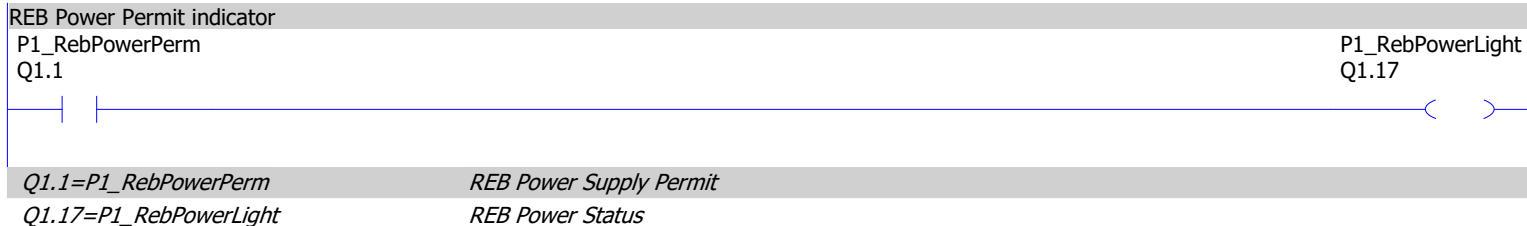
Network 14 continued / 2A



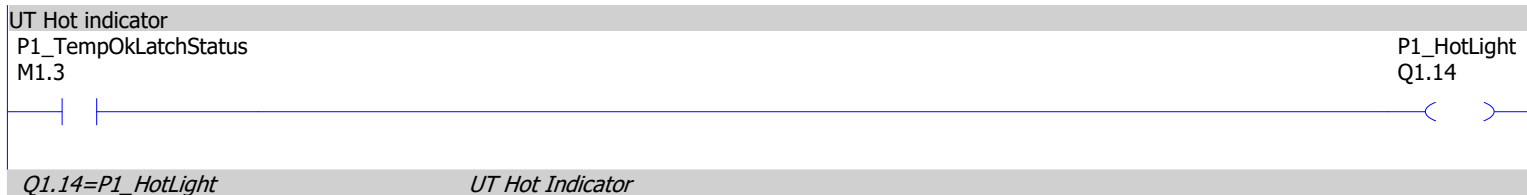
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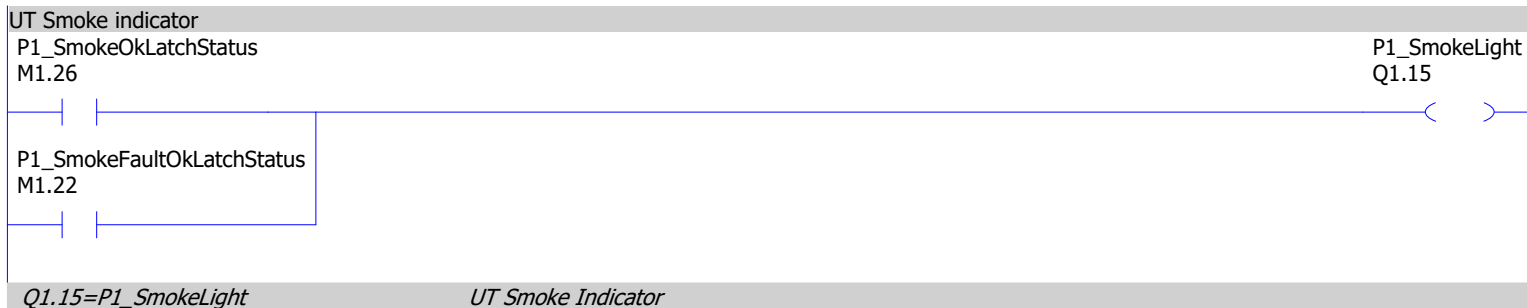
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17

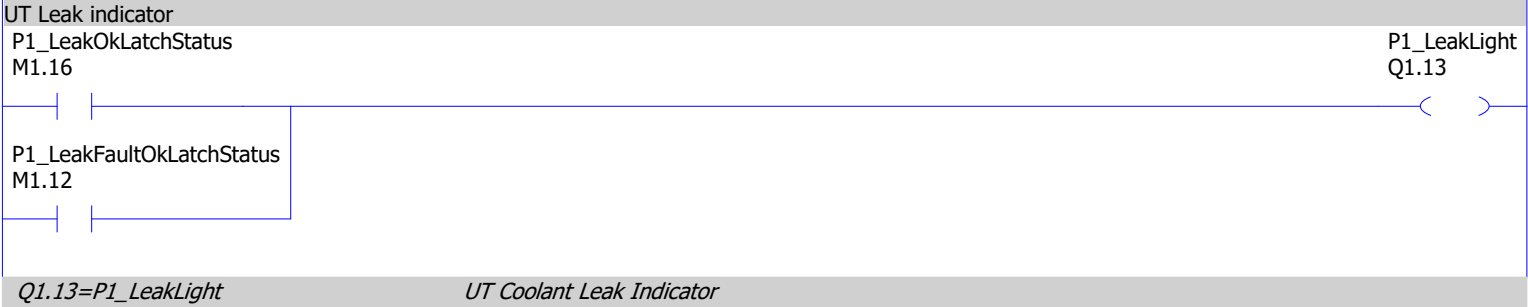


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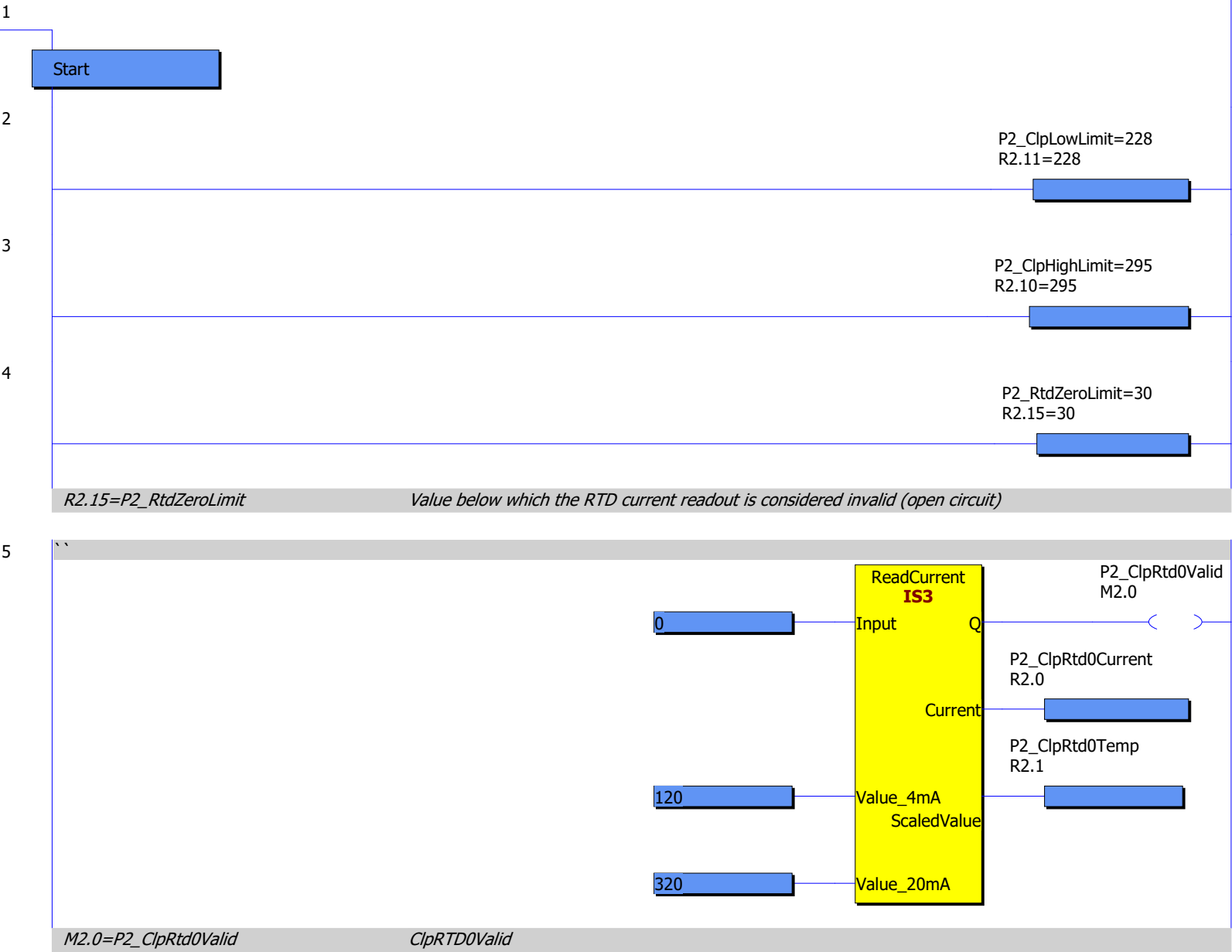




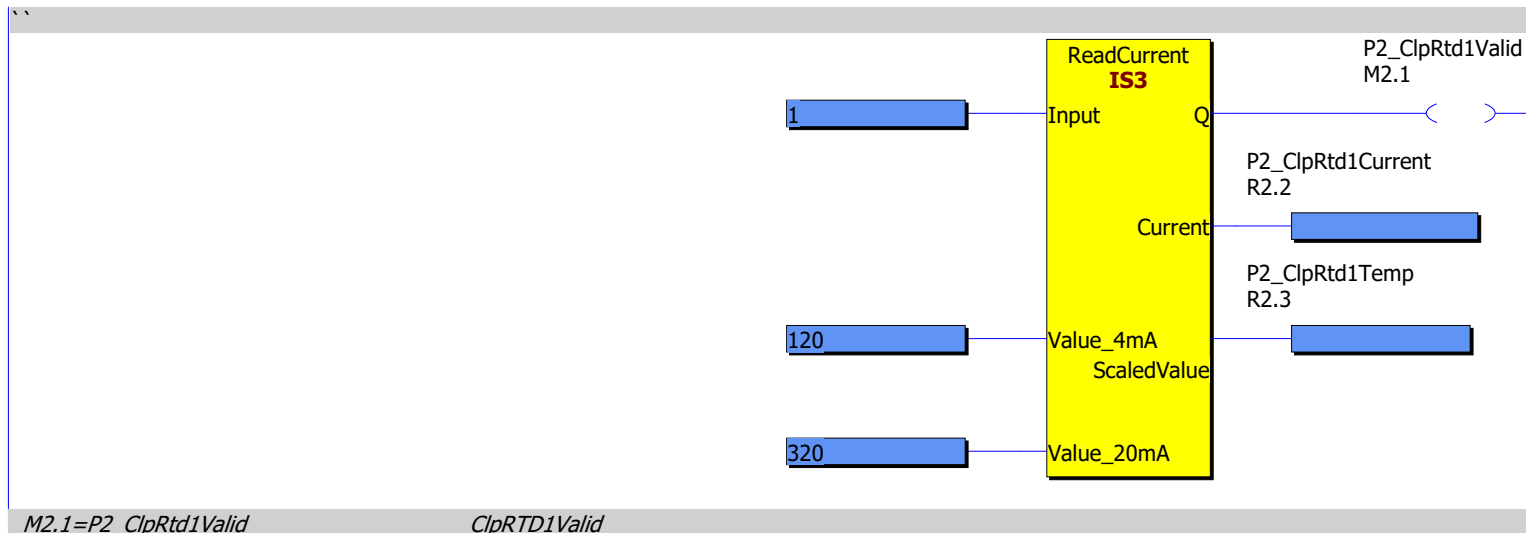
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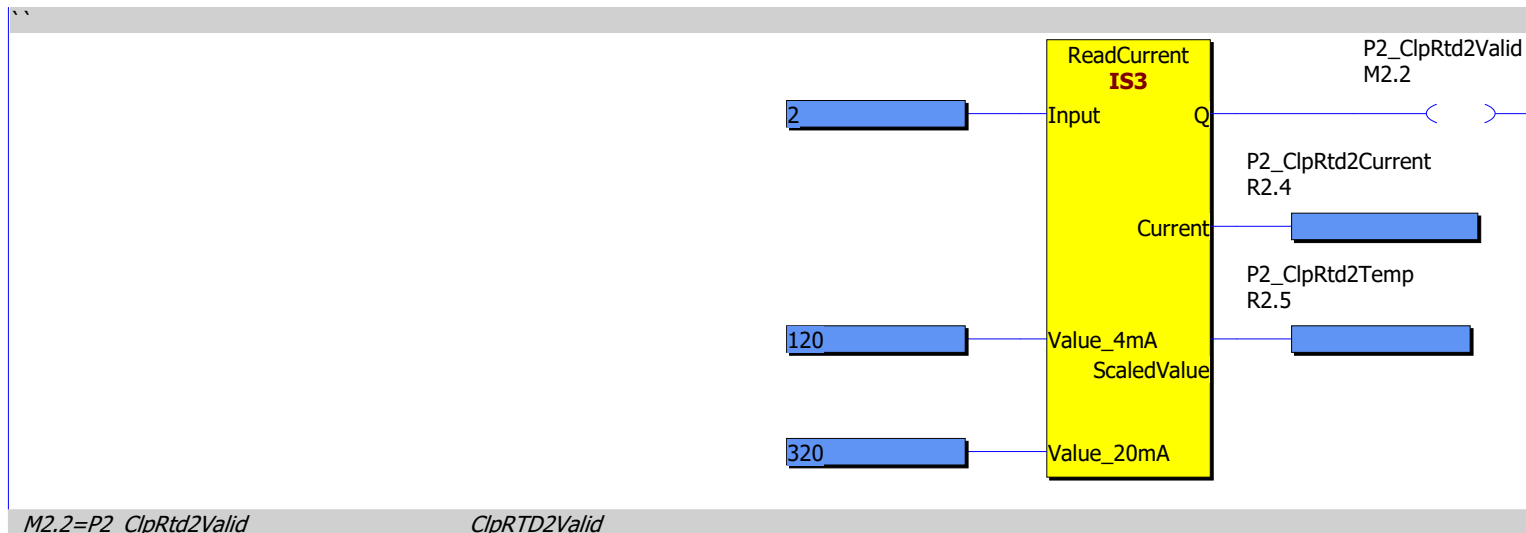
Pluto 2 Logic



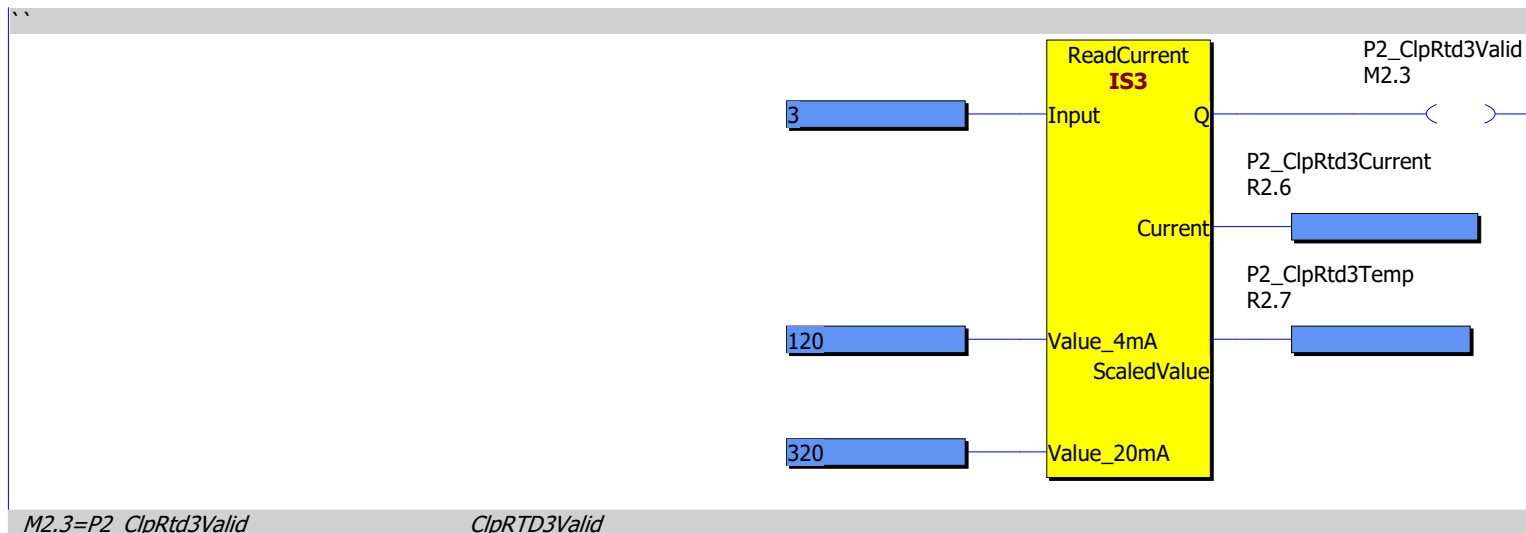
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7

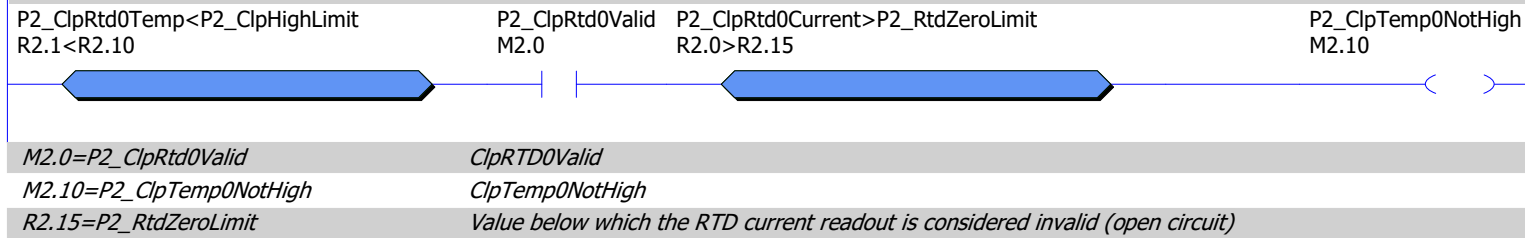


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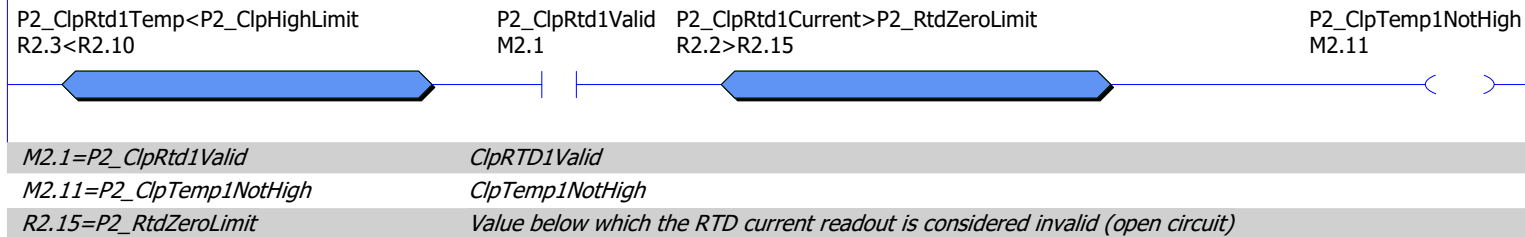


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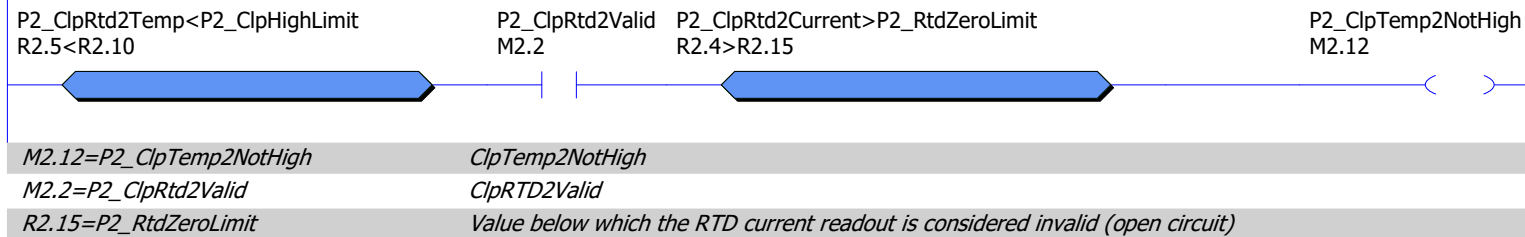
< LH to Heaters



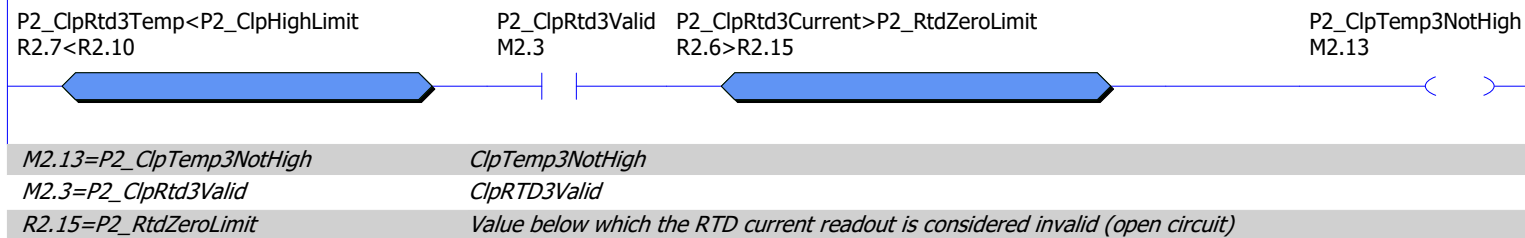
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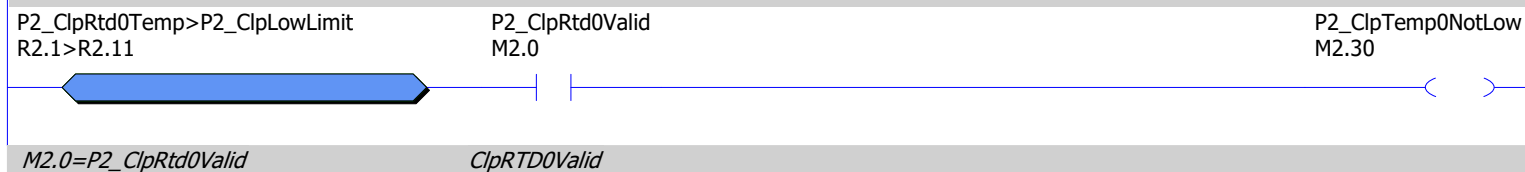


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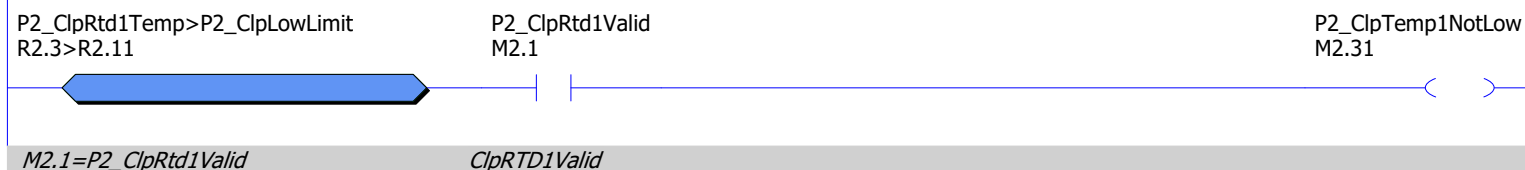


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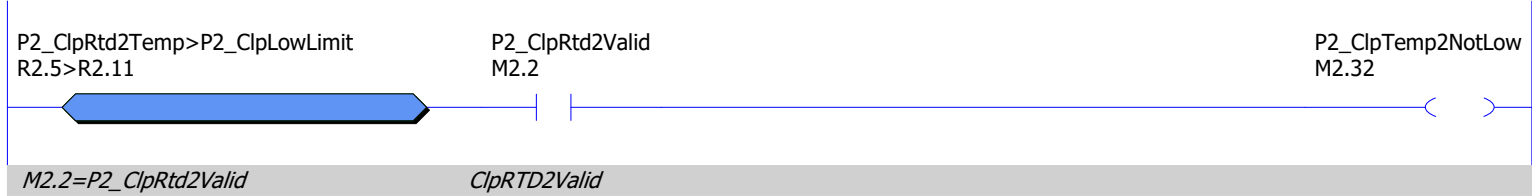
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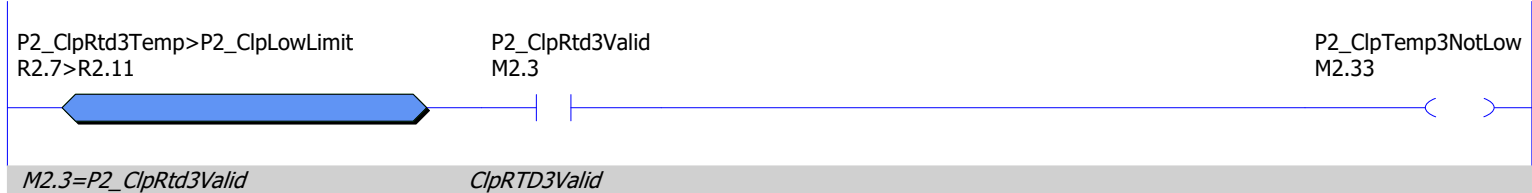
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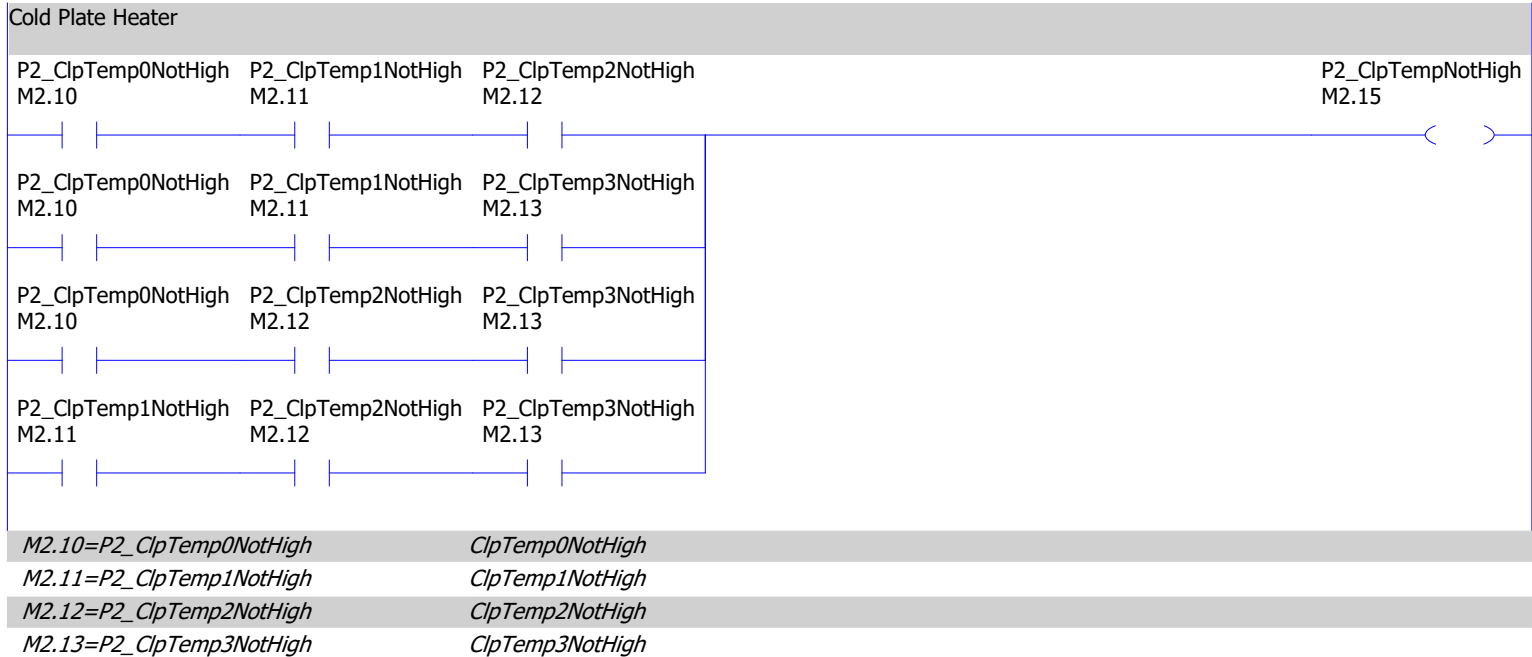
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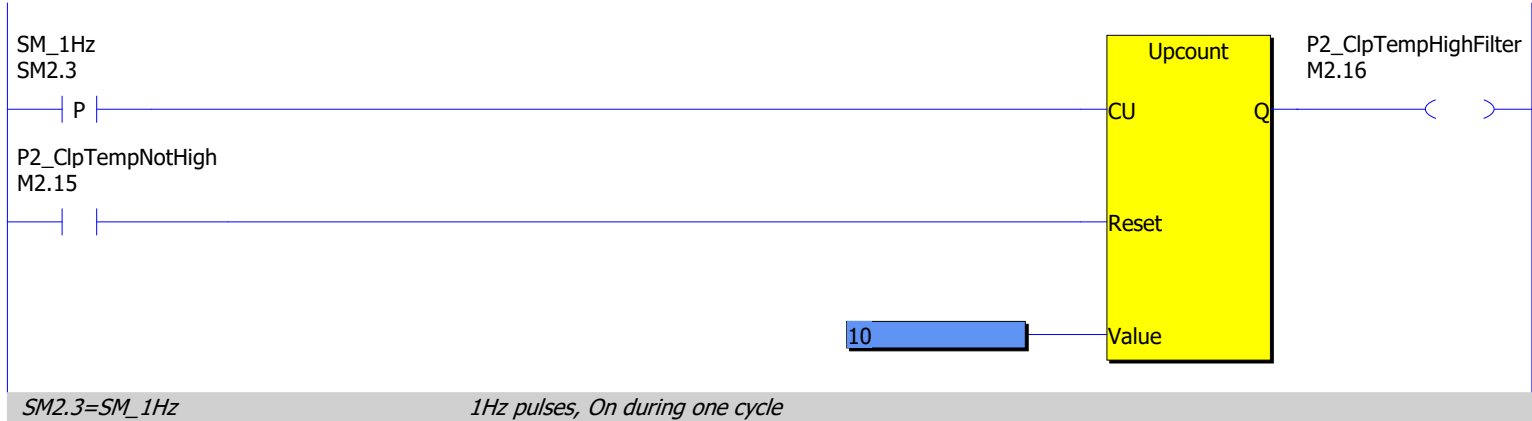
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17



18



Pluto Manager - Program listing Pluto 2 Logic

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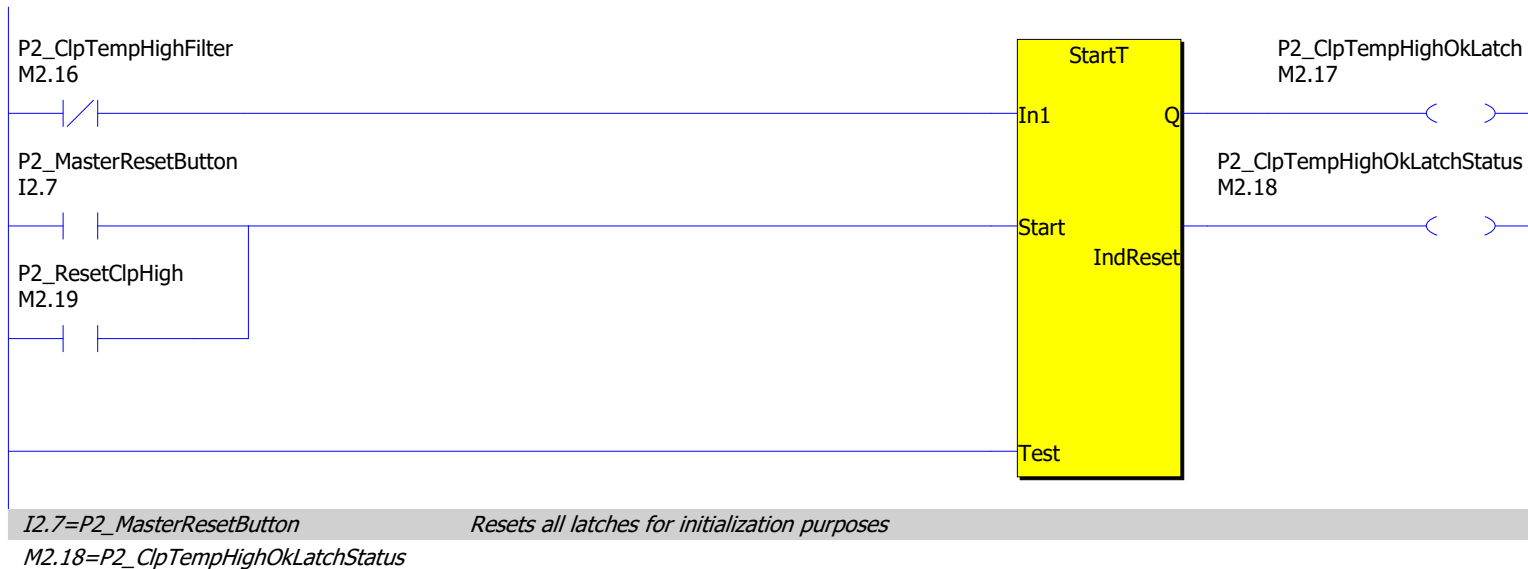
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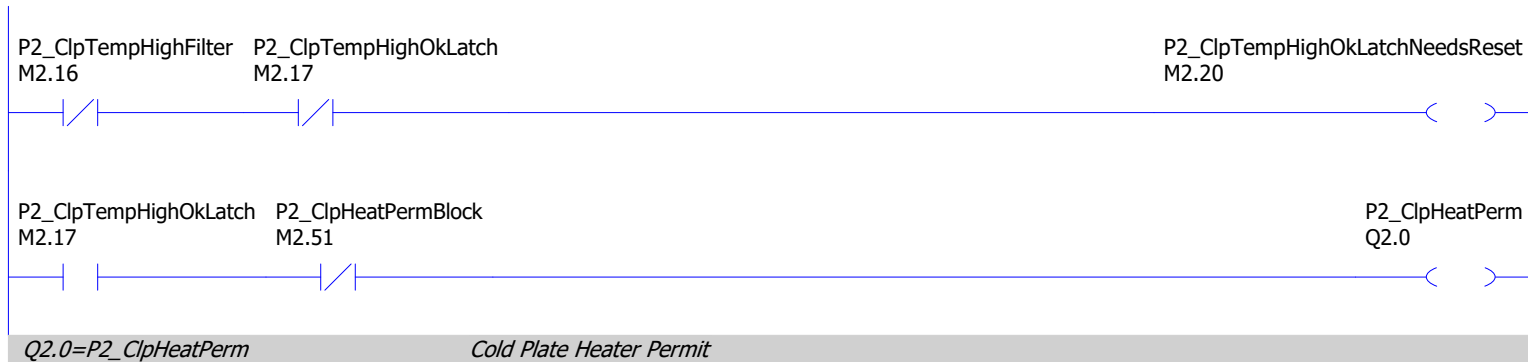


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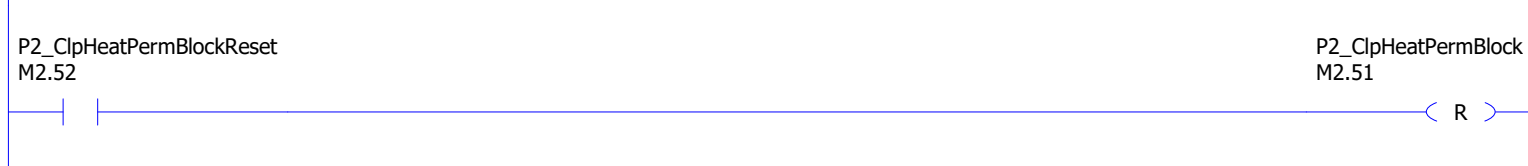
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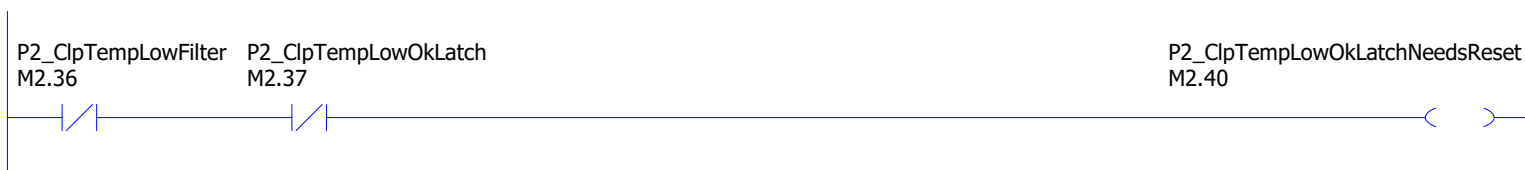
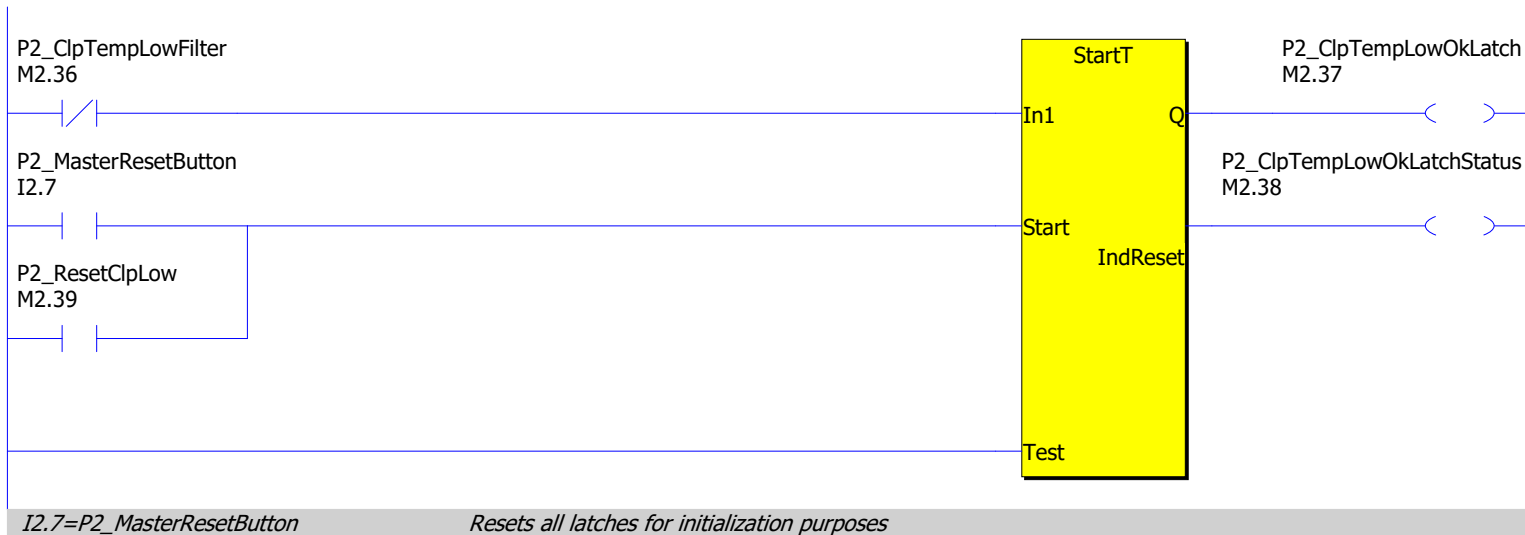
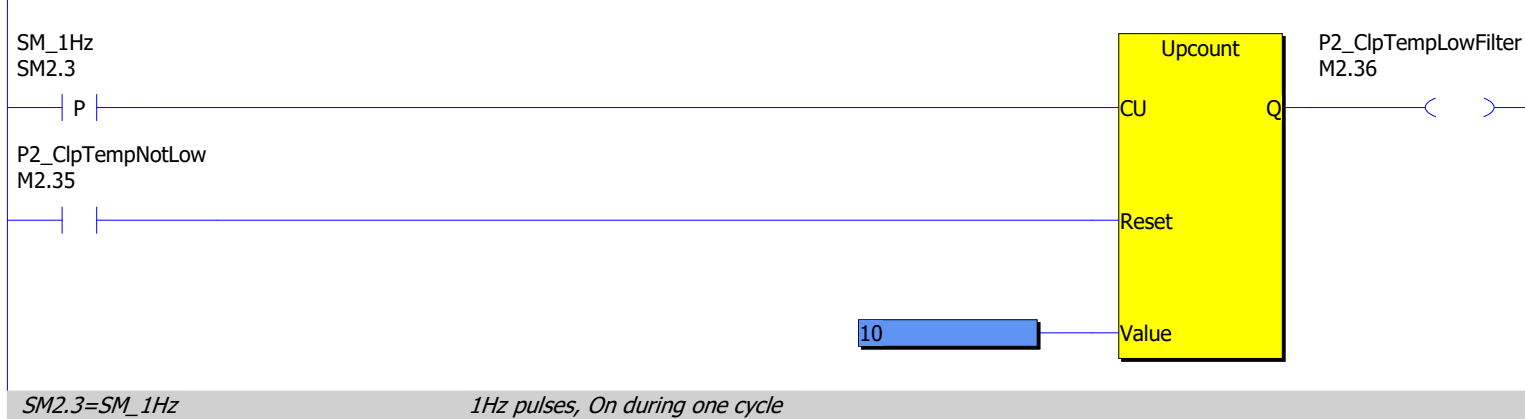
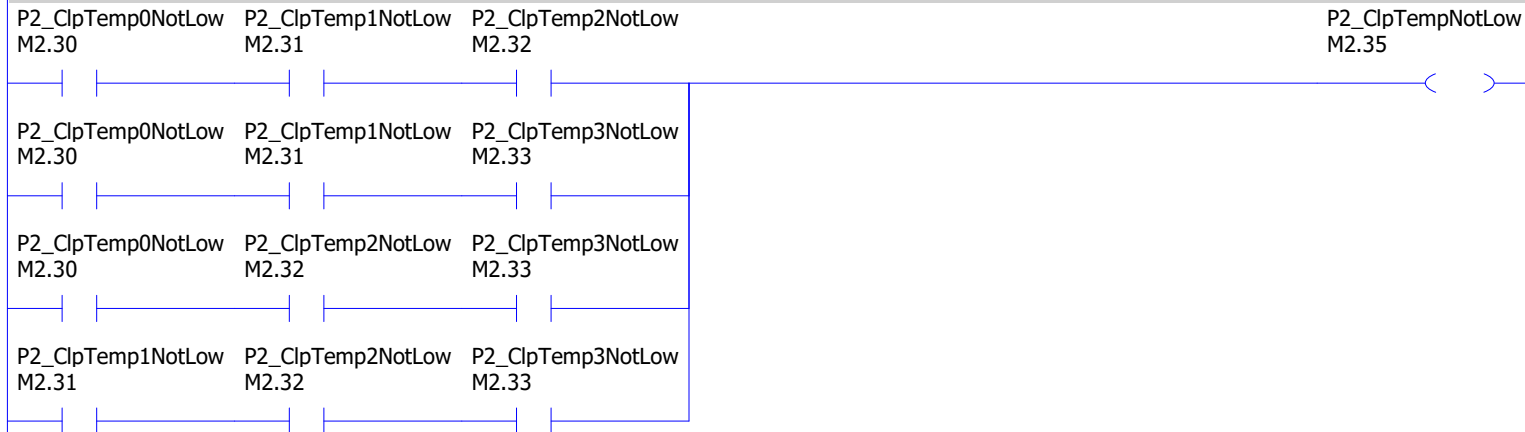
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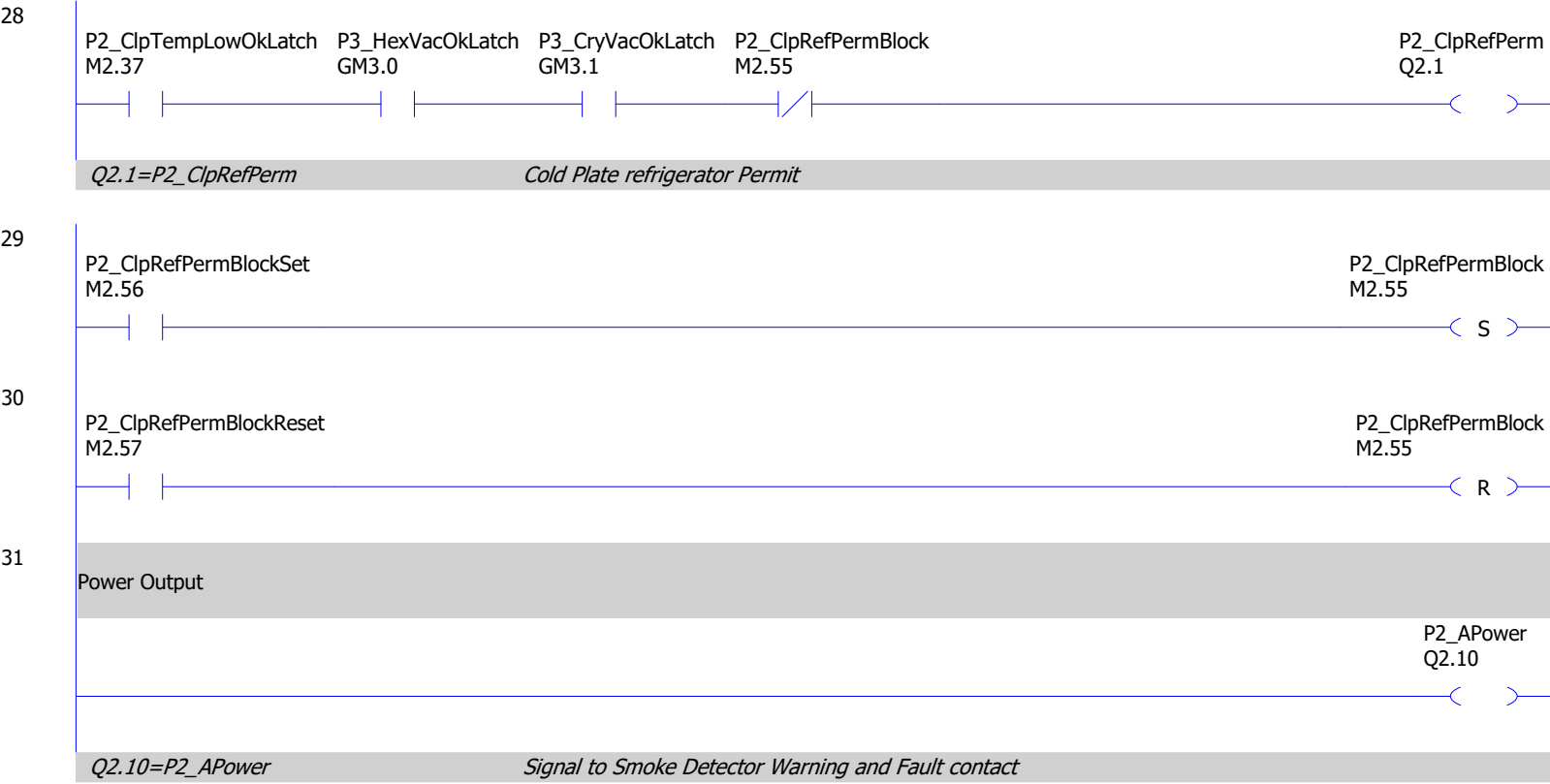


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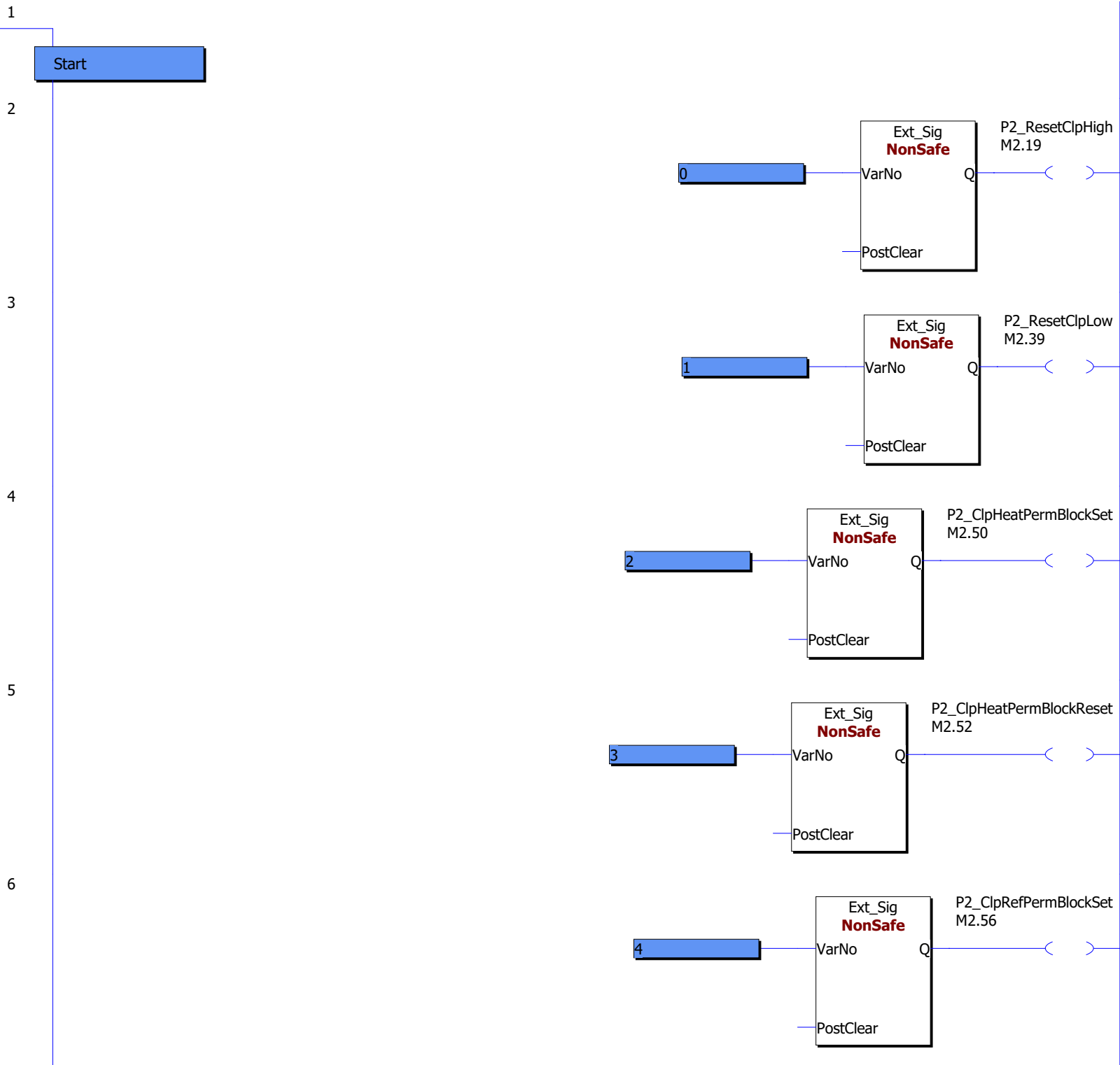


24 Cold Plate refrigerator

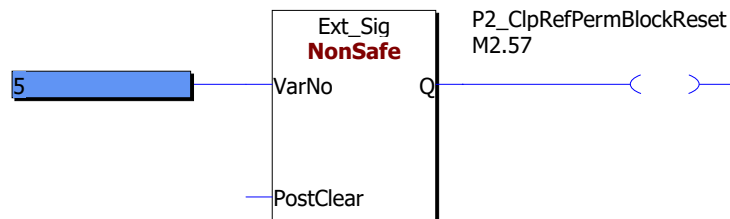




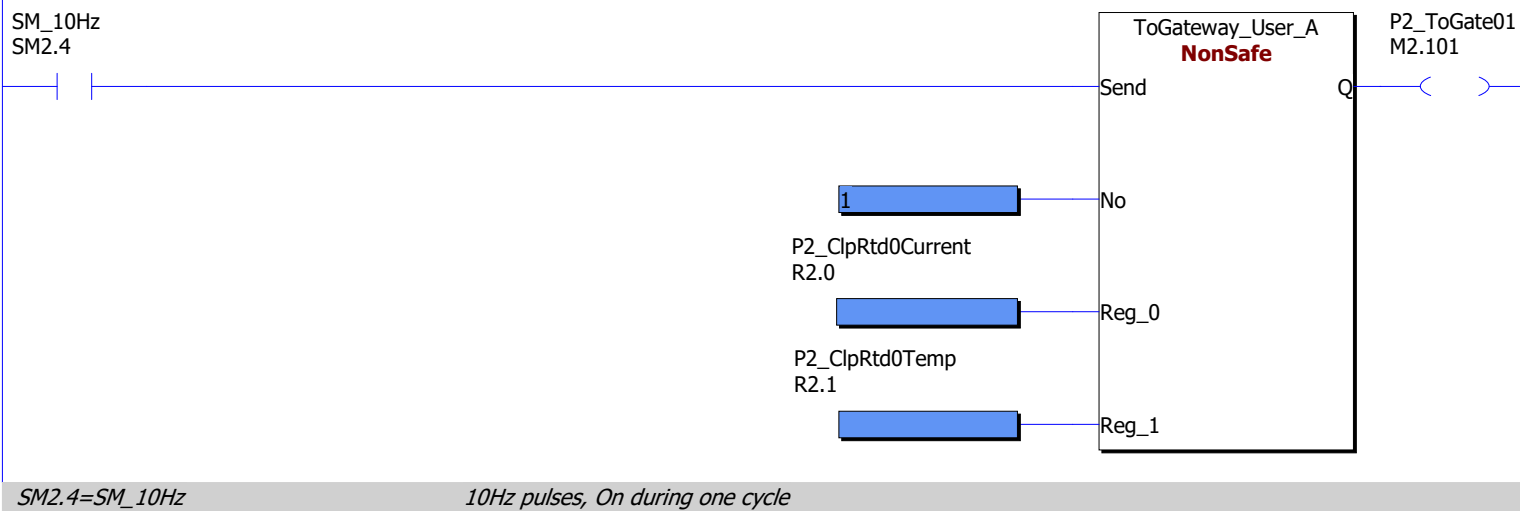
Pluto 2 Communication



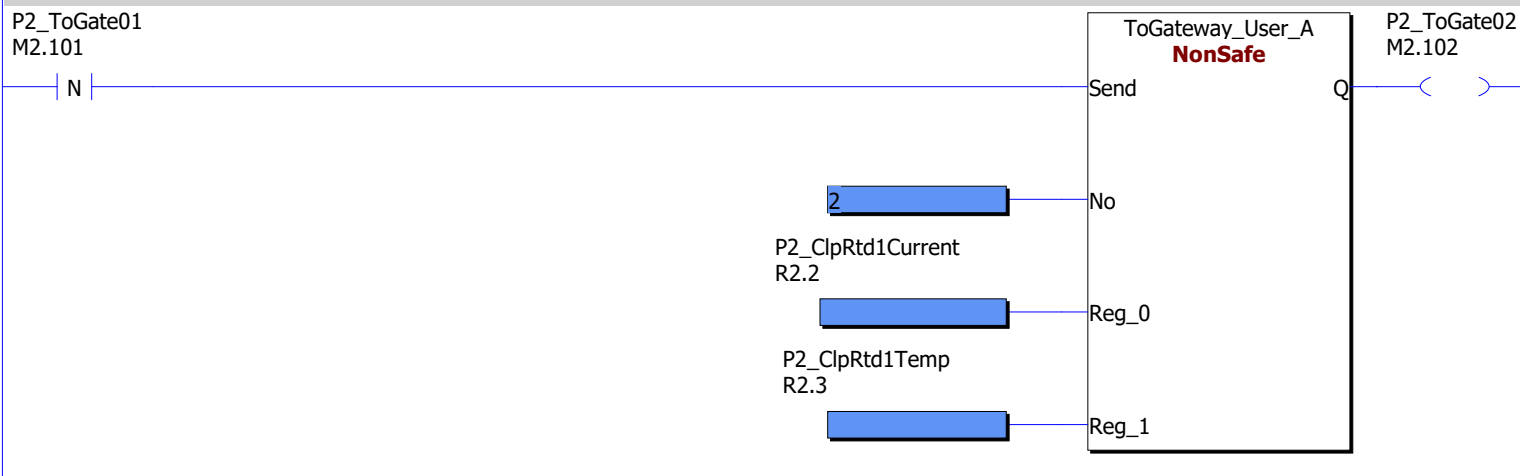
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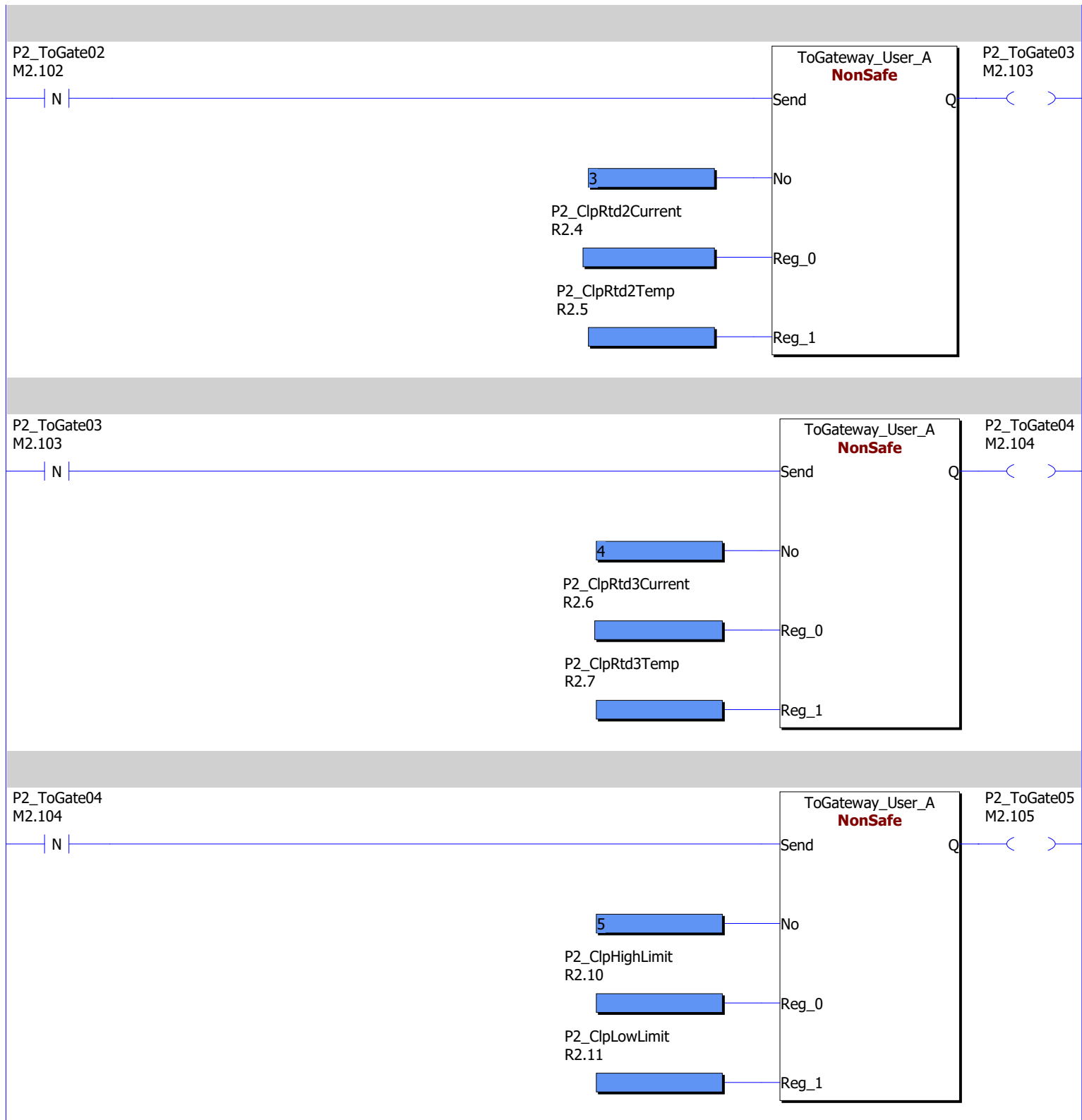


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Pluto Manager - Program listing Pluto 2 Communication

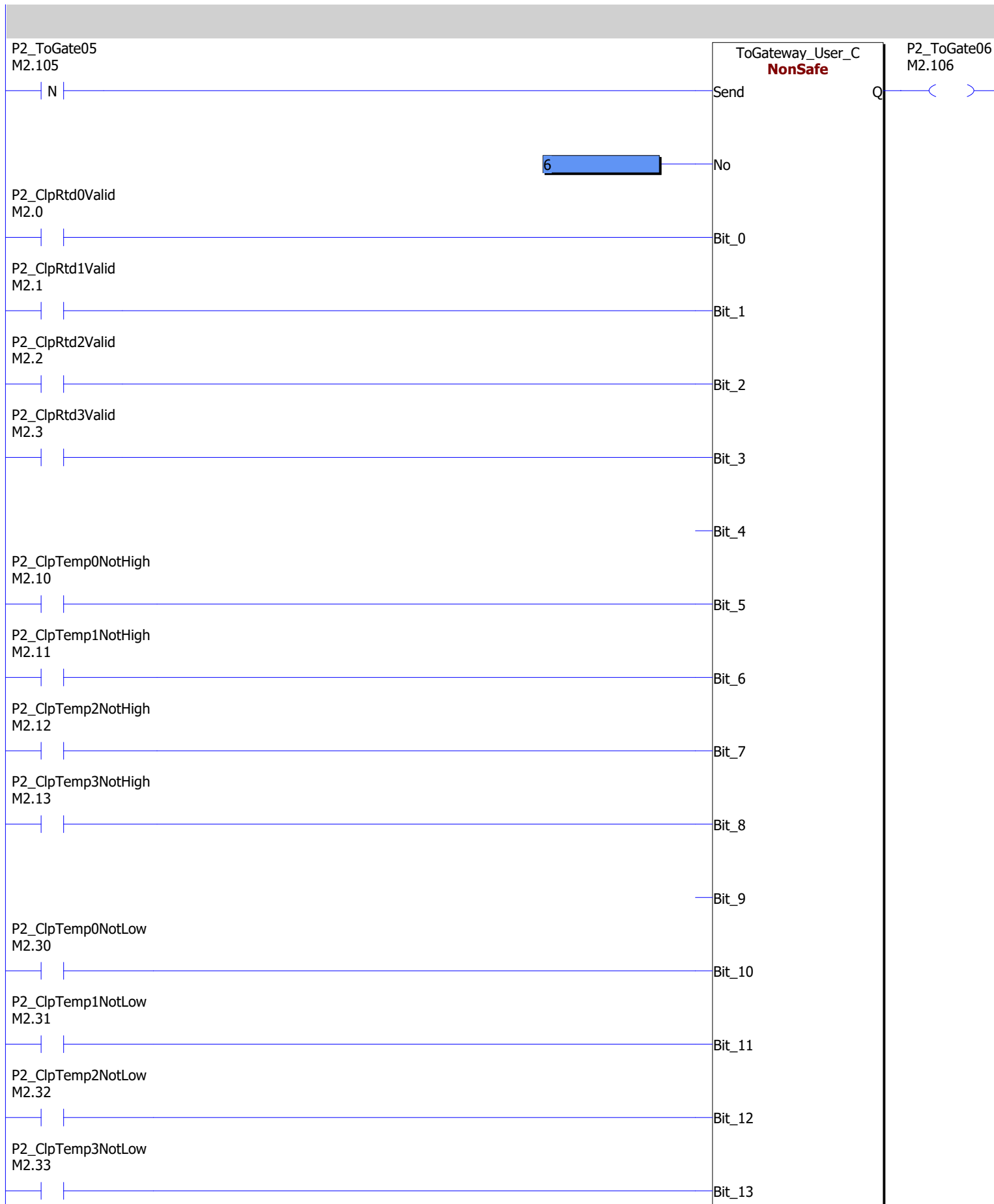
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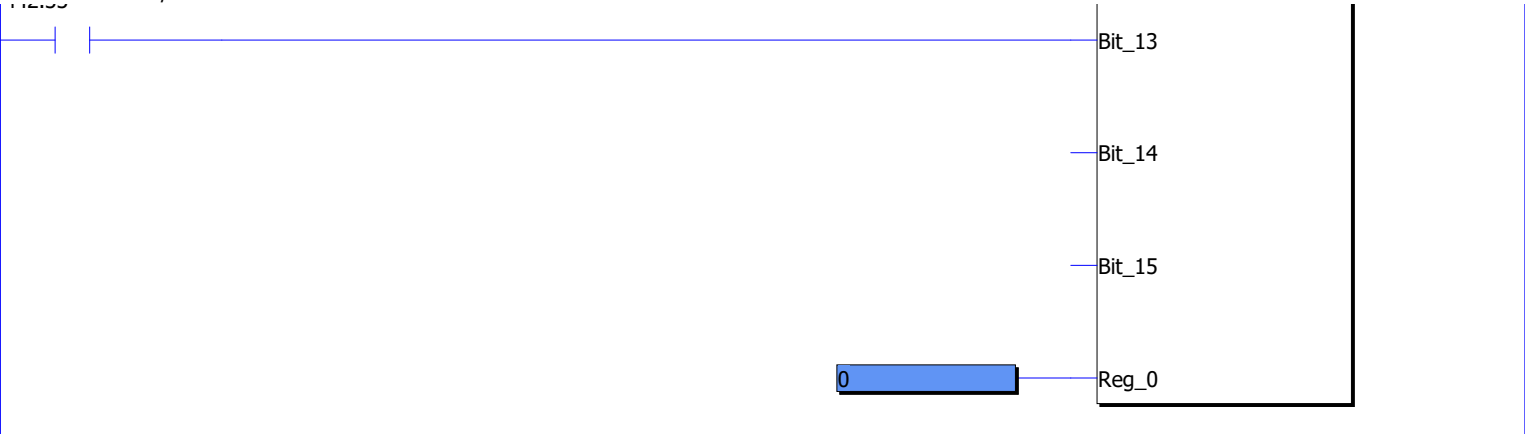


13





Network 13 continued / 2A



M2.0=P2_ClpRtd0Valid	ClpRTD0Valid
M2.1=P2_ClpRtd1Valid	ClpRTD1Valid
M2.10=P2_ClpTemp0NotHigh	ClpTemp0NotHigh
M2.11=P2_ClpTemp1NotHigh	ClpTemp1NotHigh
M2.12=P2_ClpTemp2NotHigh	ClpTemp2NotHigh
M2.13=P2_ClpTemp3NotHigh	ClpTemp3NotHigh
M2.2=P2_ClpRtd2Valid	ClpRTD2Valid
M2.3=P2_ClpRtd3Valid	ClpRTD3Valid

Pluto Manager - Program listing Pluto 2 Communication

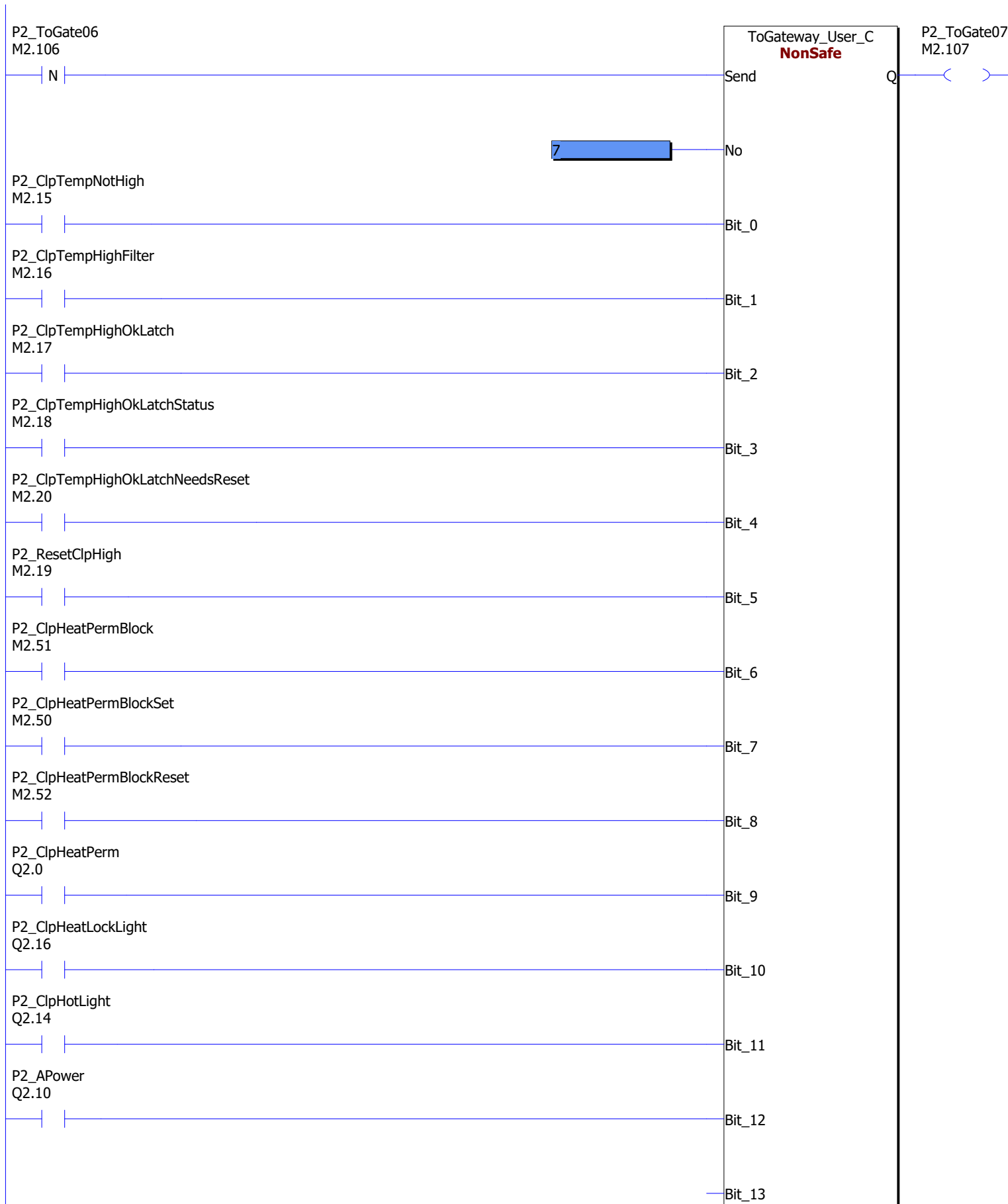
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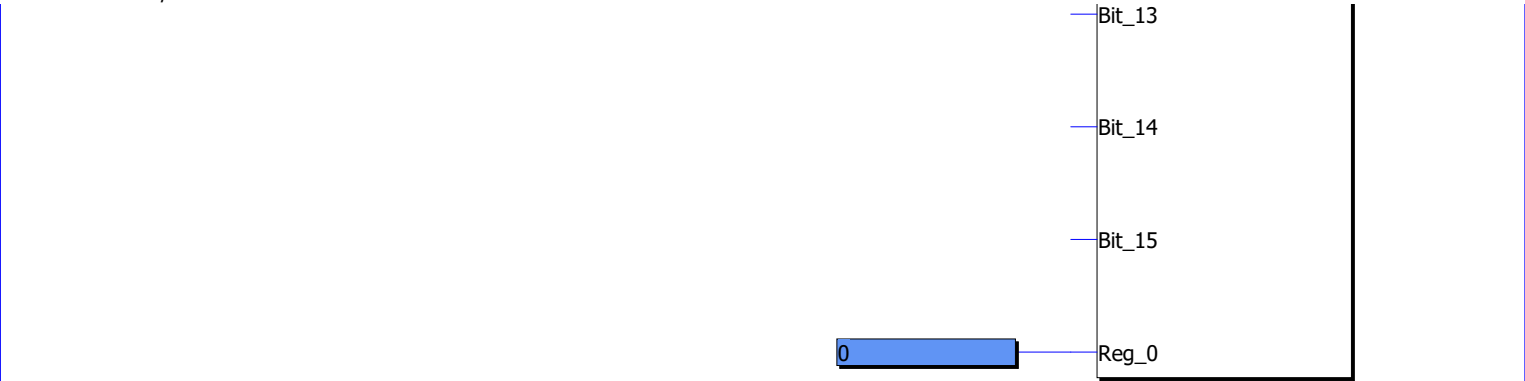


14





Network 14 continued / 2A



<i>M2.18=P2_ClpTempHighOkLatchStatus</i>	
<i>Q2.0=P2_ClpHeatPerm</i>	<i>Cold Plate Heater Permit</i>
<i>Q2.10=P2_APower</i>	<i>Signal to Smoke Detector Warning and Fault contact</i>
<i>Q2.14=P2_ClpHotLight</i>	<i>Cold Plate Hot Indicator</i>
<i>Q2.16=P2_ClpHeatLockLight</i>	<i>Cold Heat Lock Indicator</i>

Pluto Manager - Program listing Pluto 2 Communication

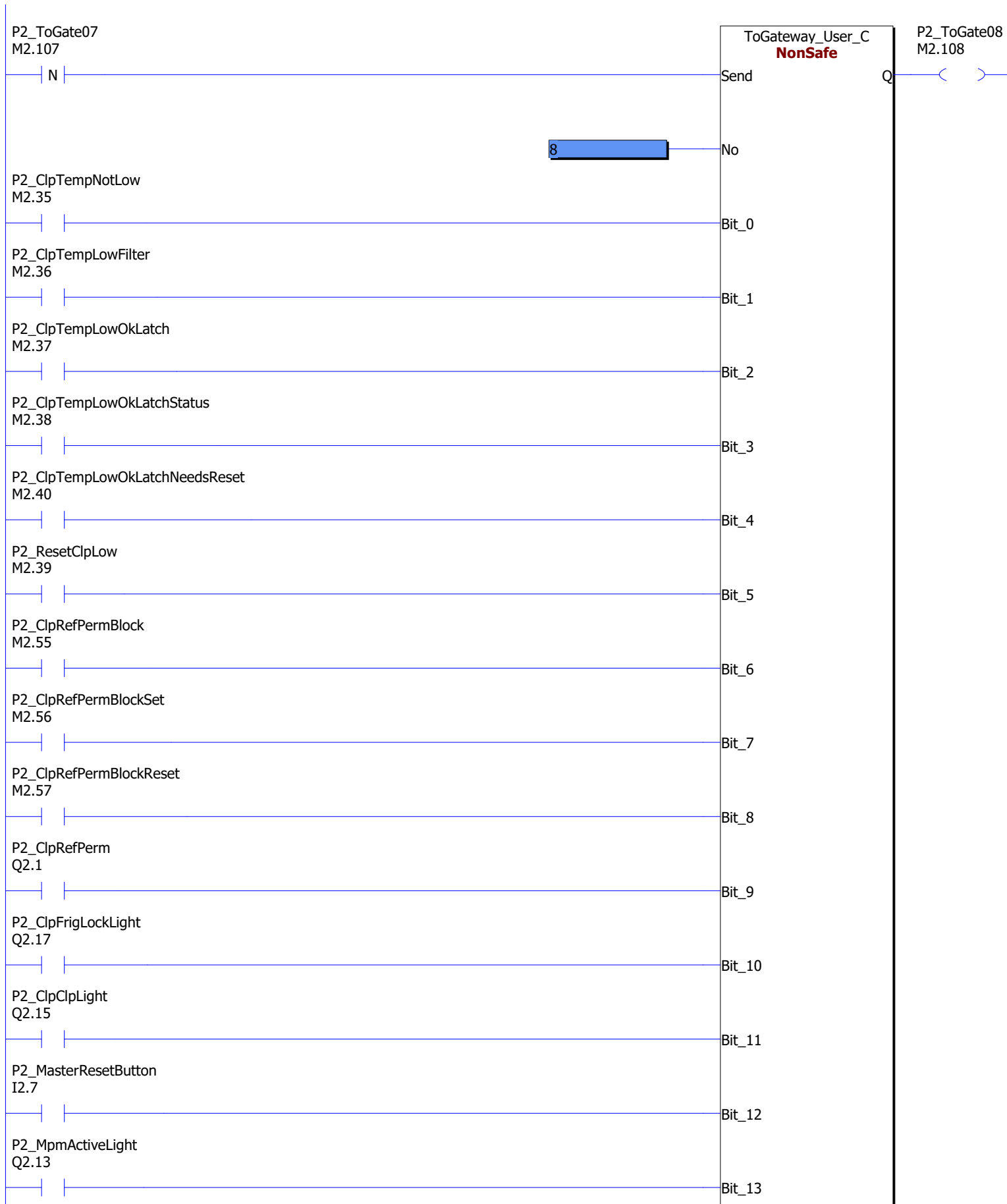
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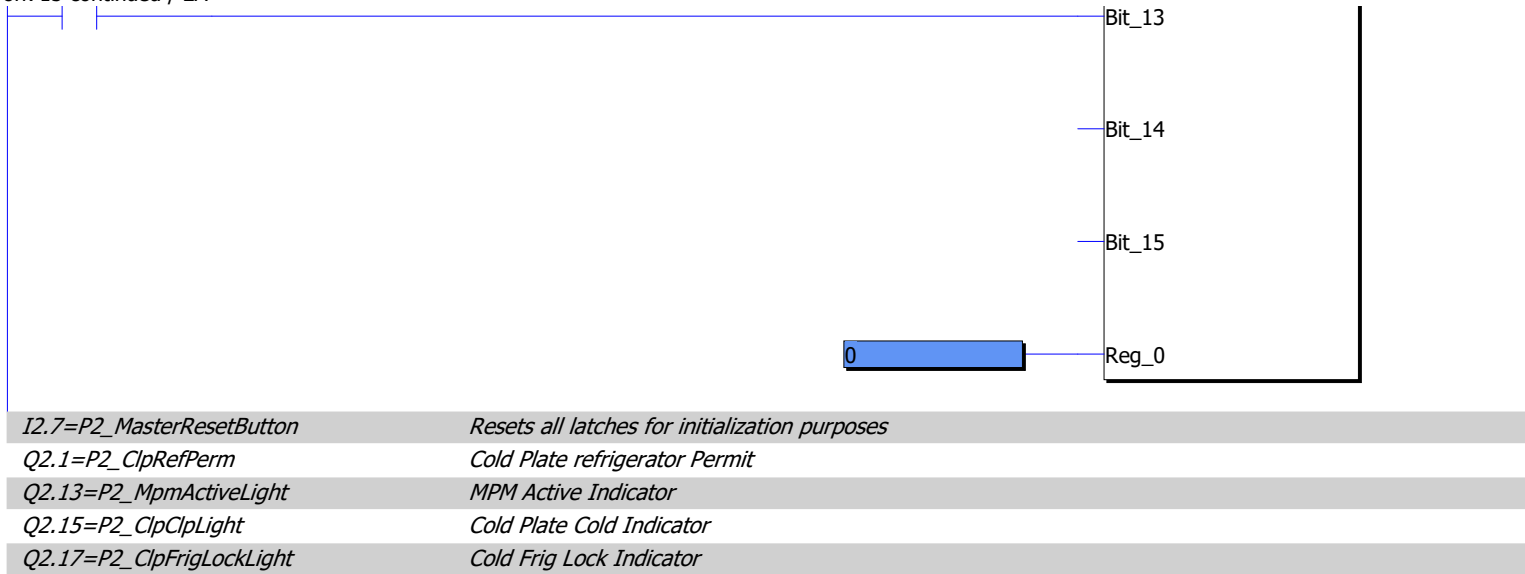
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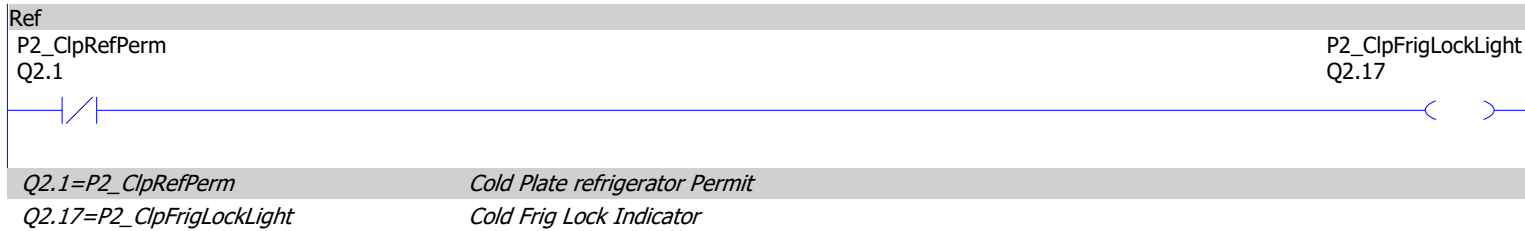
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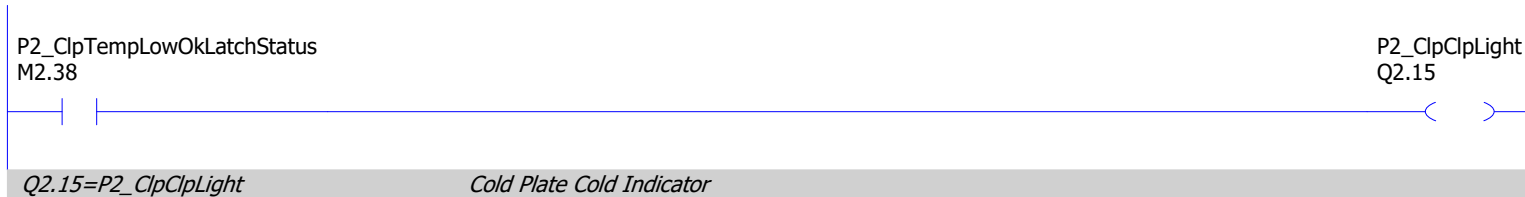
Network 15 continued / 2A



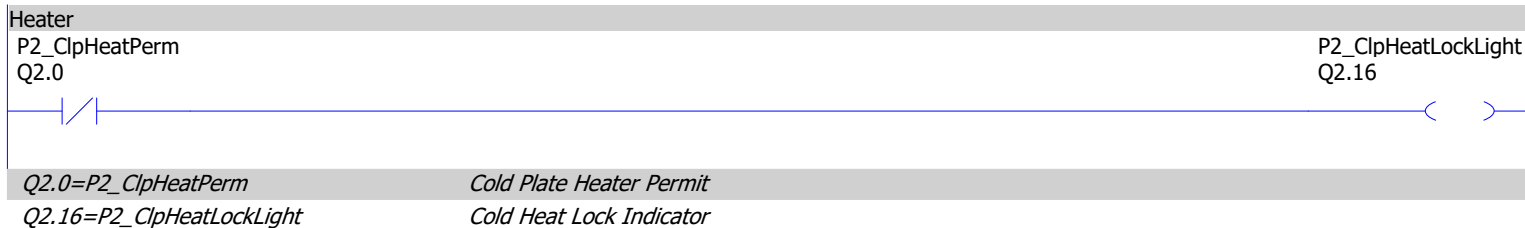
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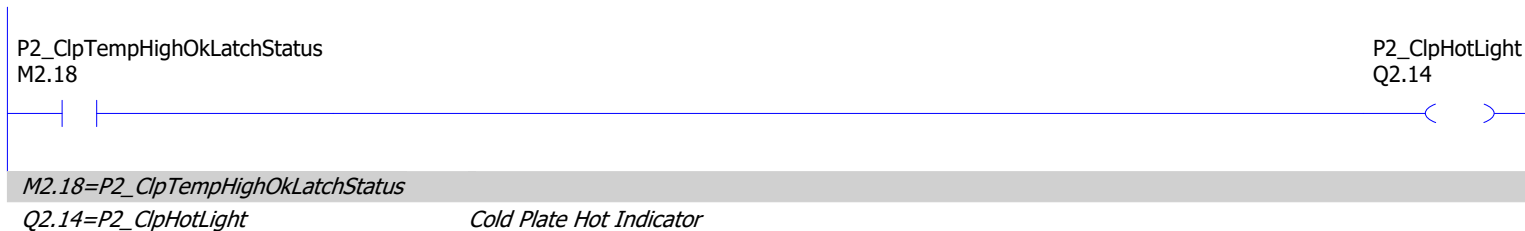
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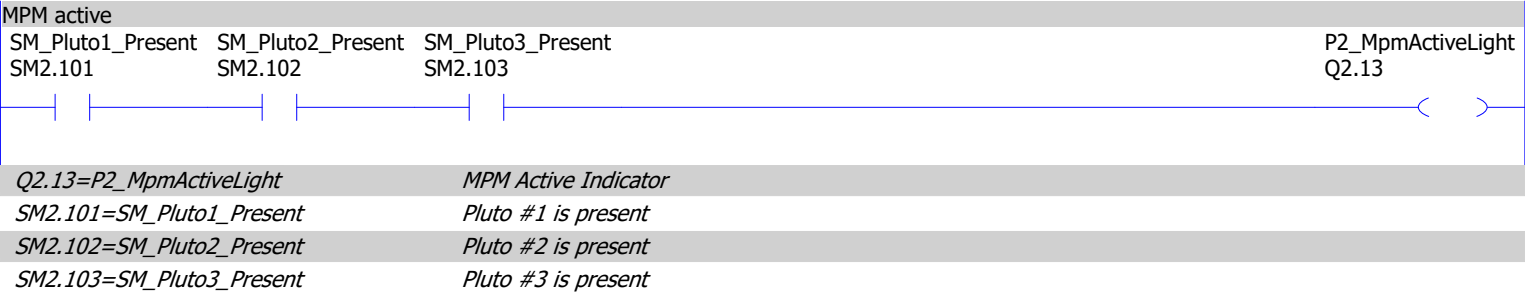
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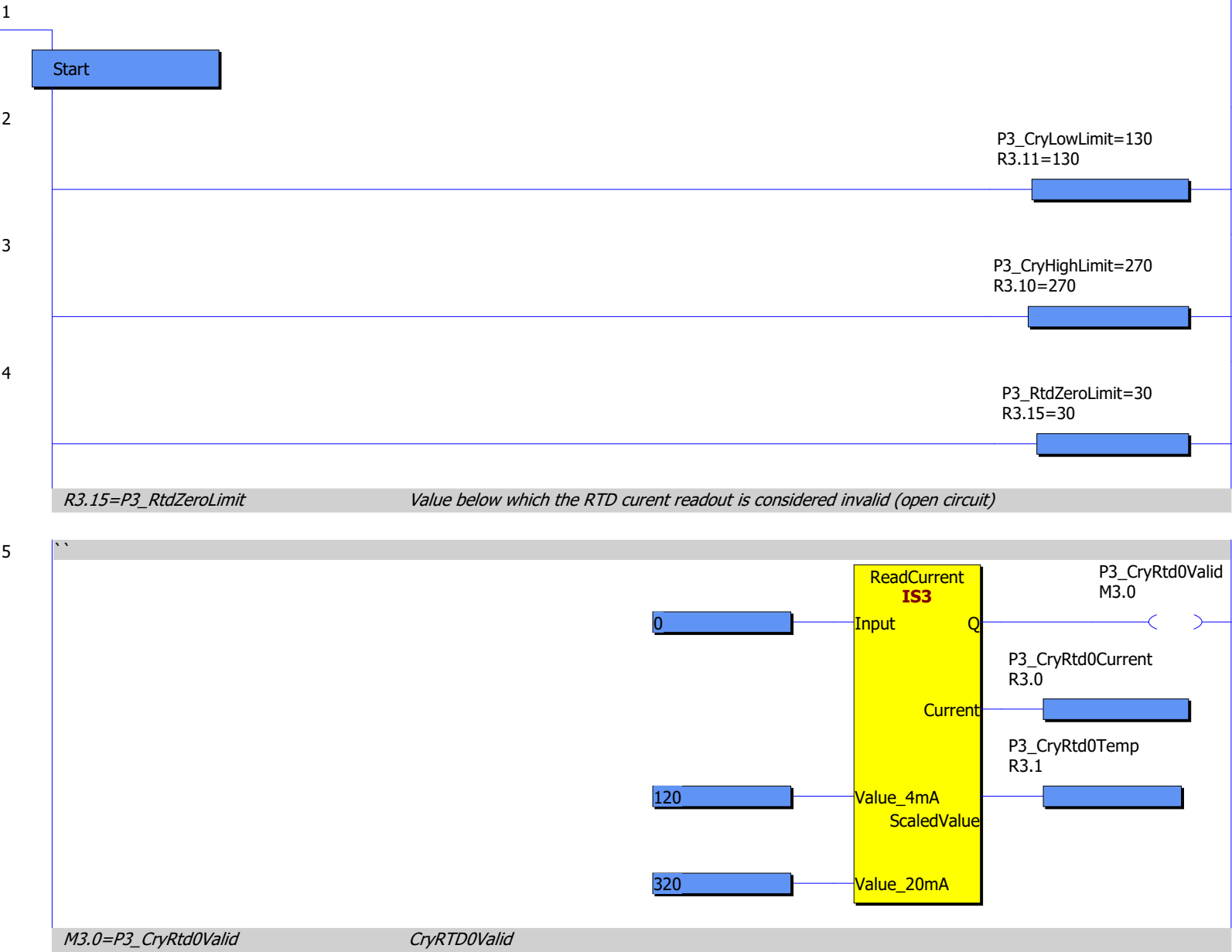
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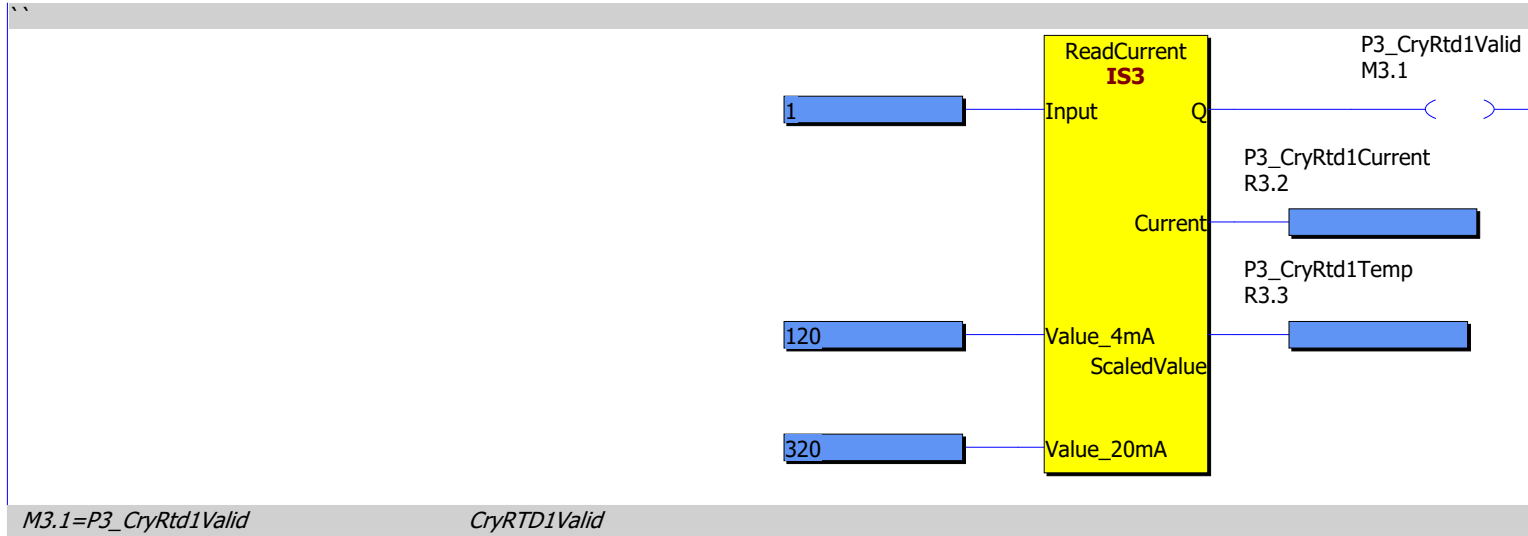
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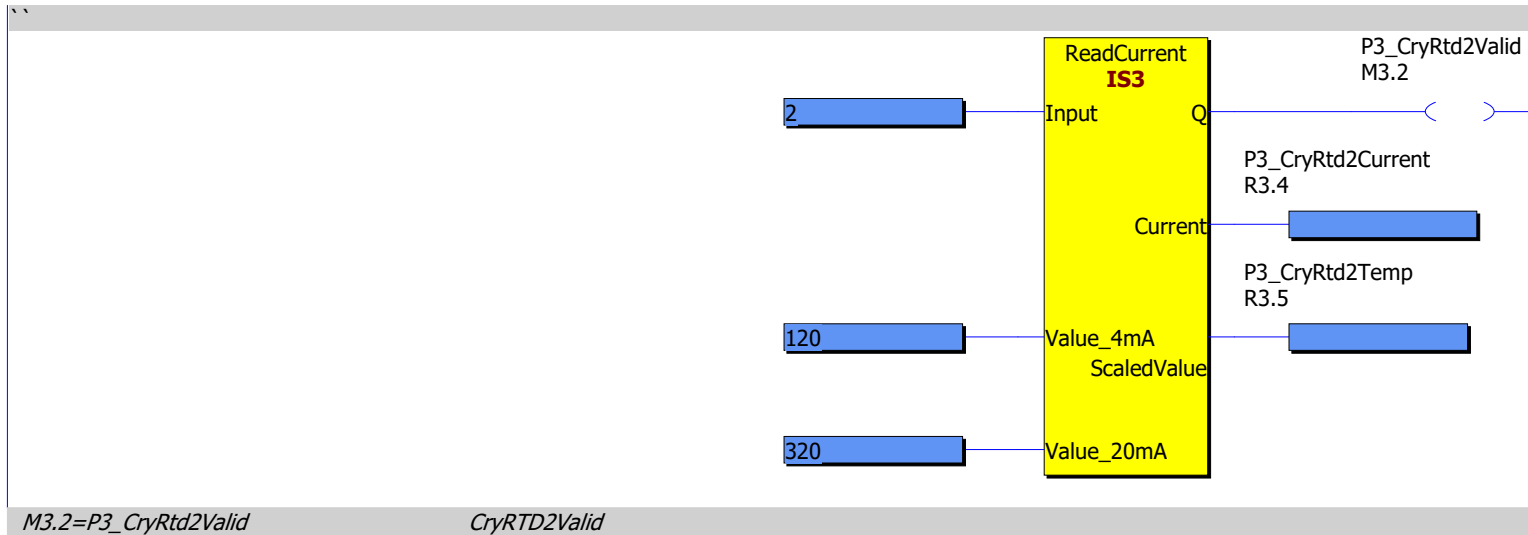
Pluto 3 Logic



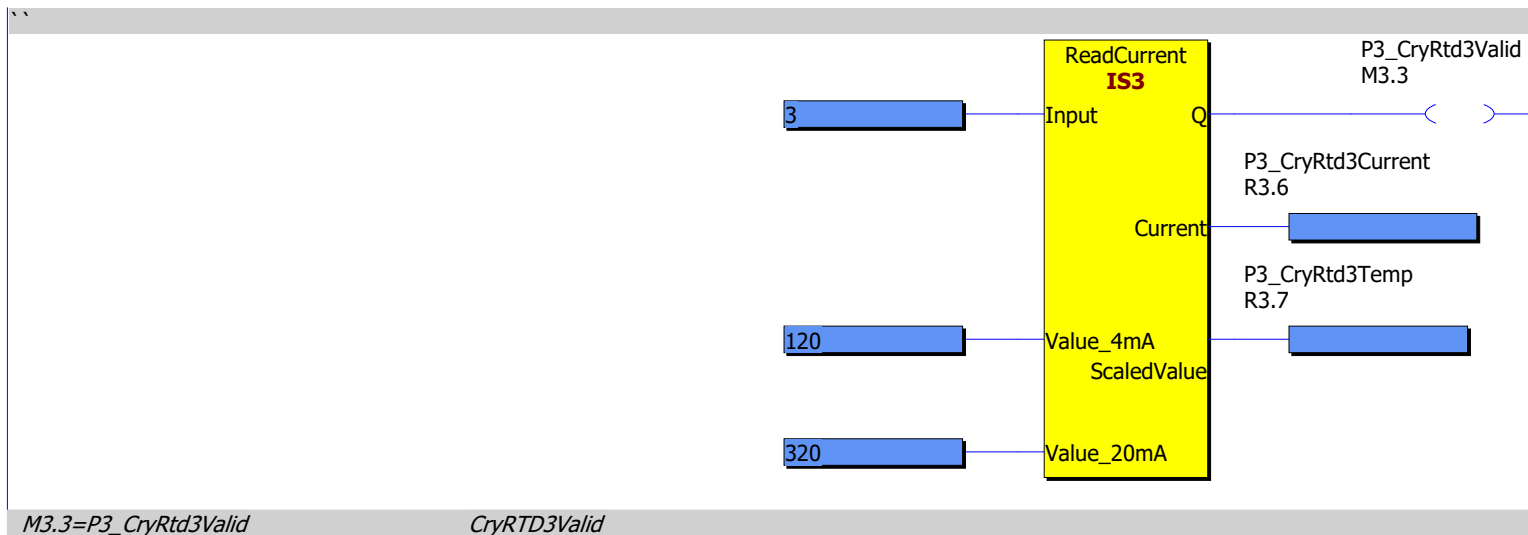
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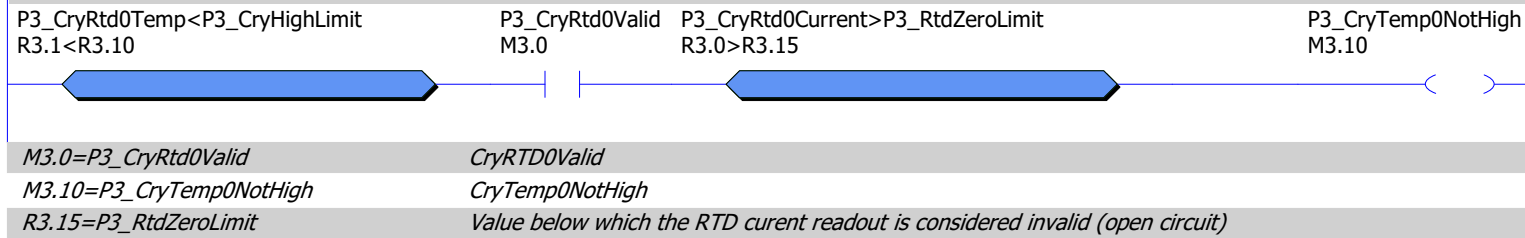


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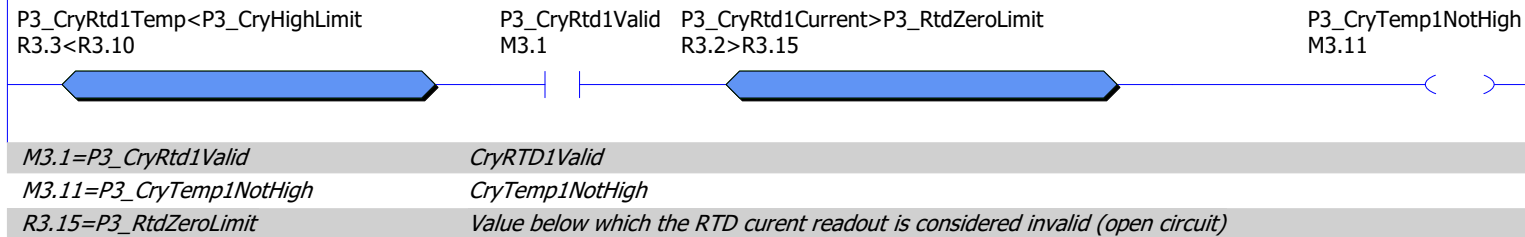


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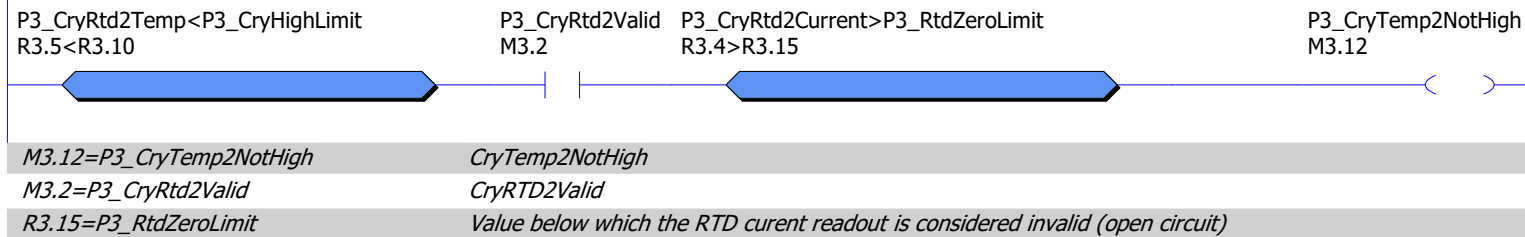
< LH to Heaters



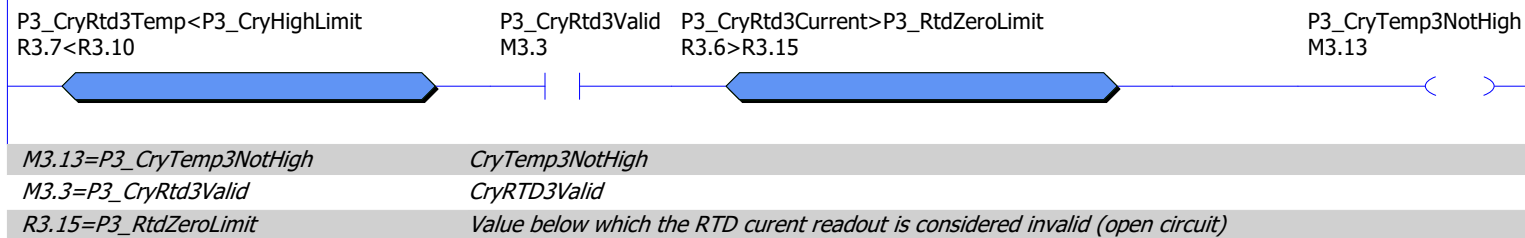
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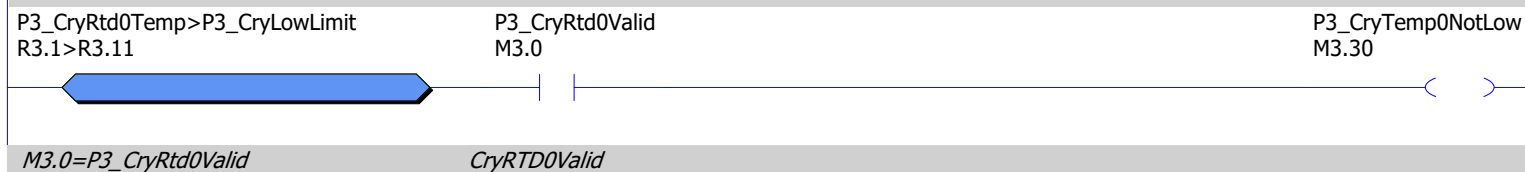


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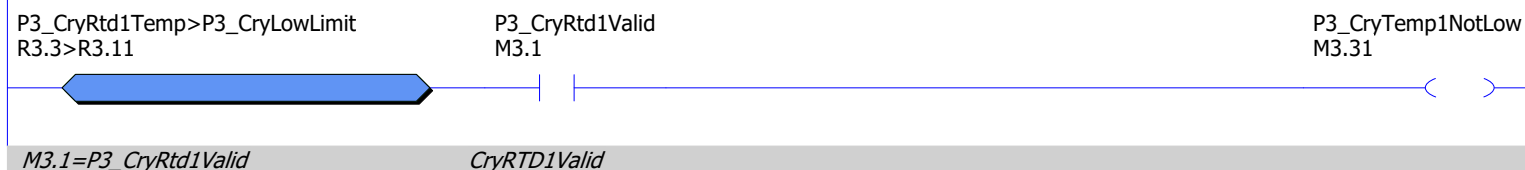


13

> LLOW to Ref



14



Pluto Manager - Program listing Pluto 3 Logic

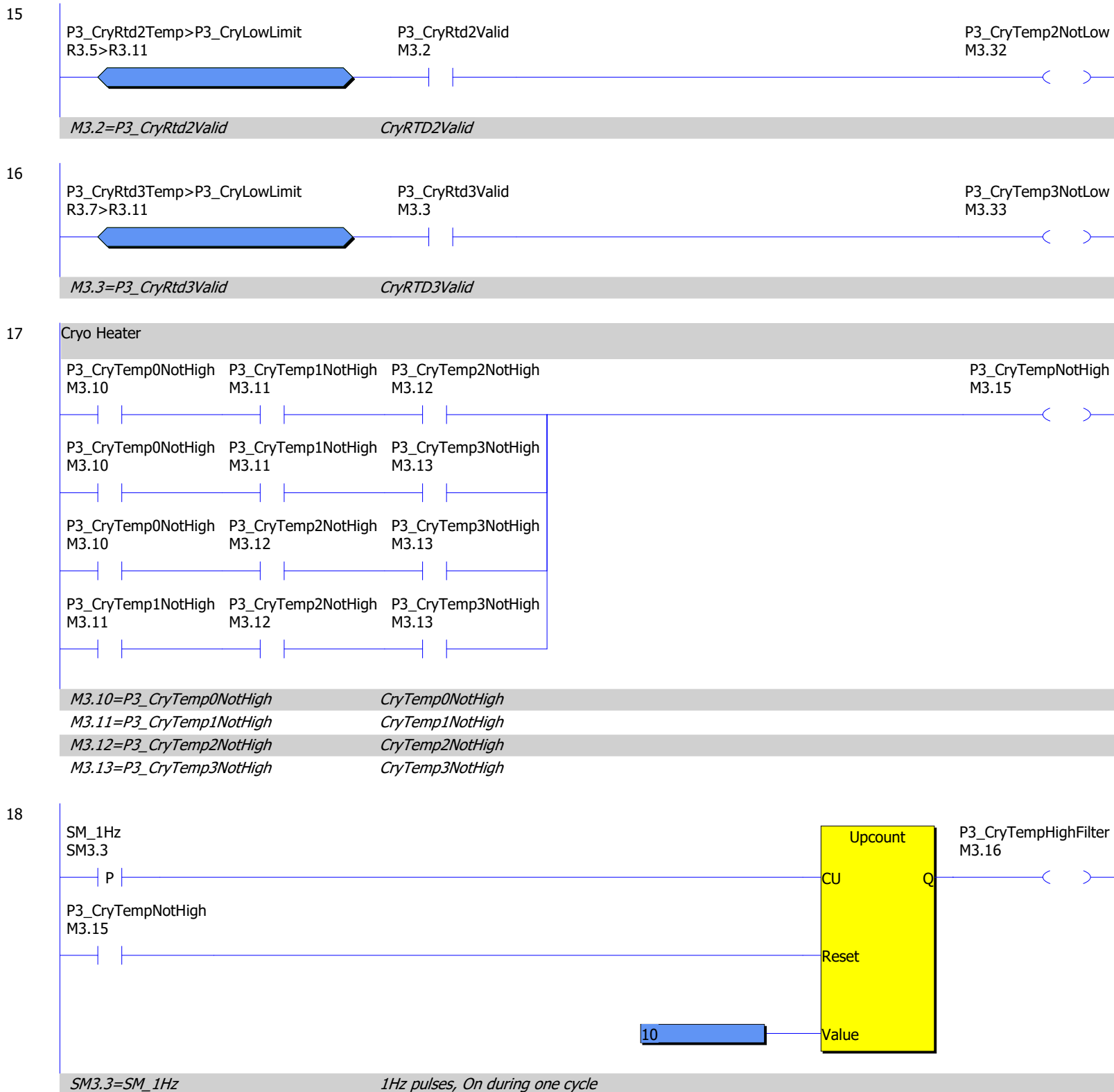
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Pluto Manager - Program listing Pluto 3 Logic

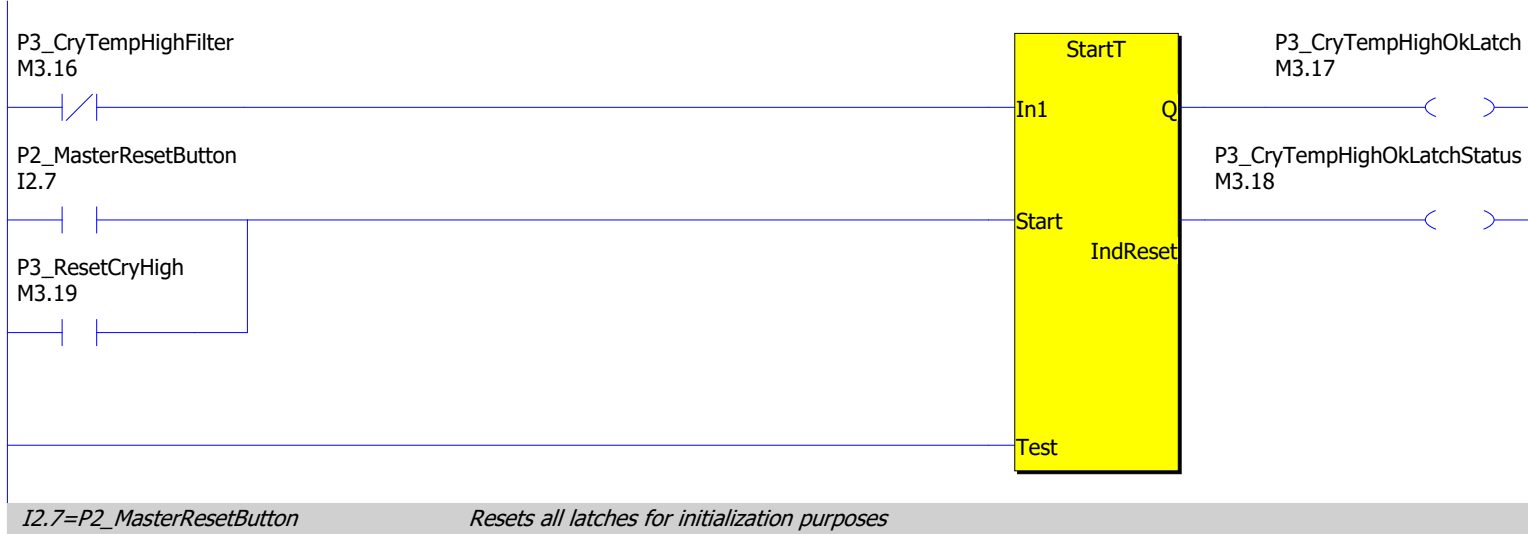
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19



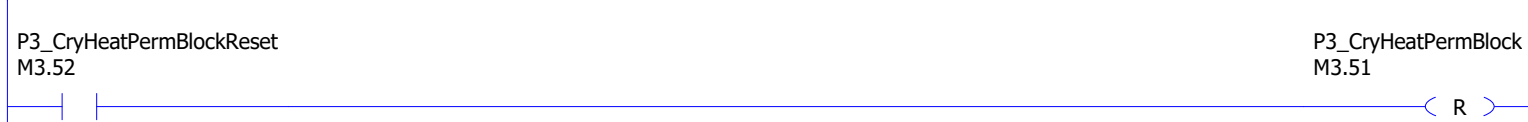
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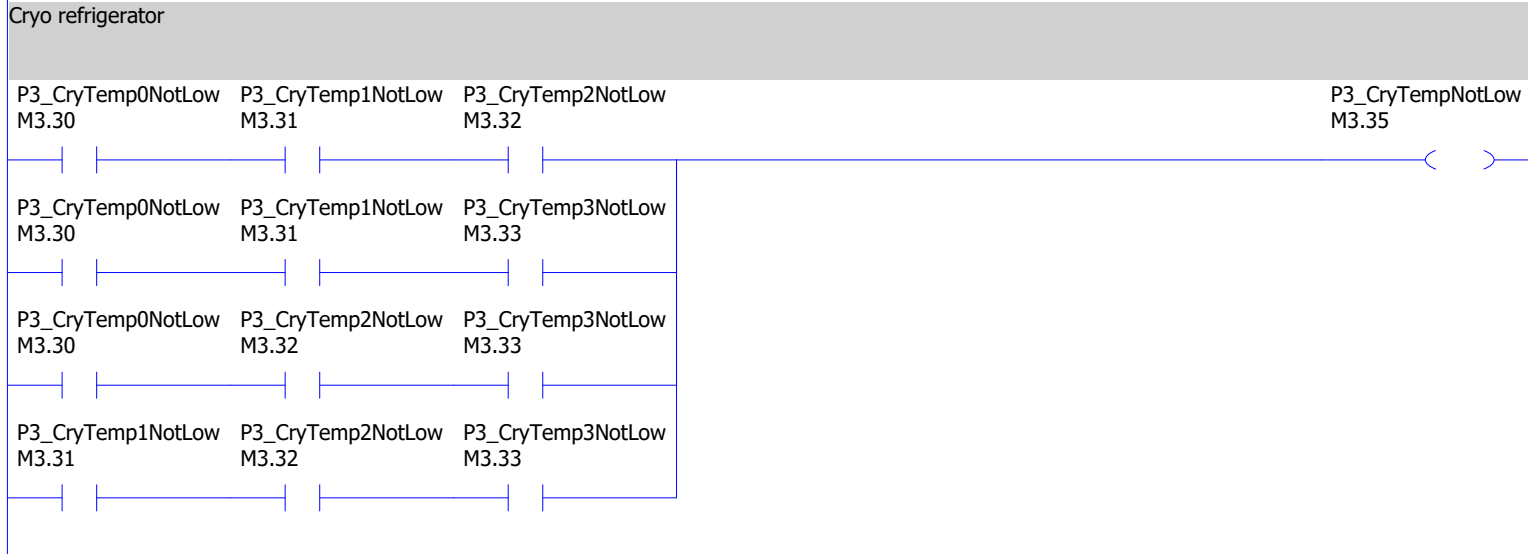
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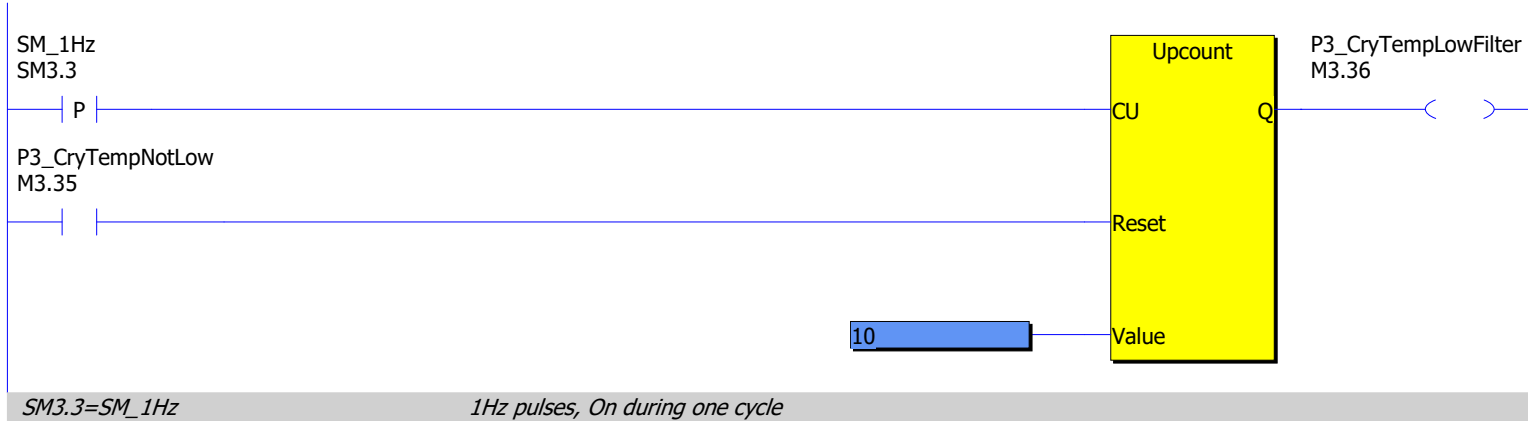
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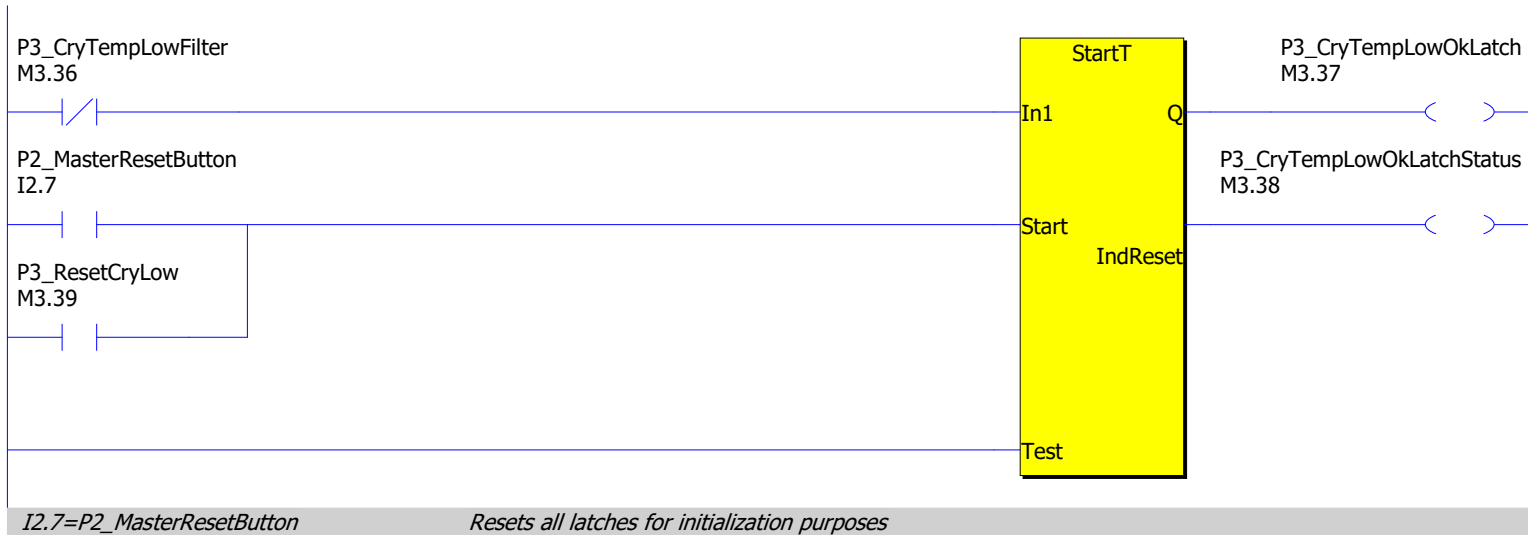
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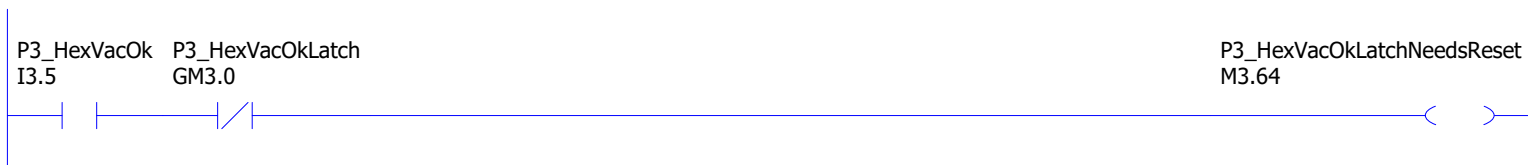
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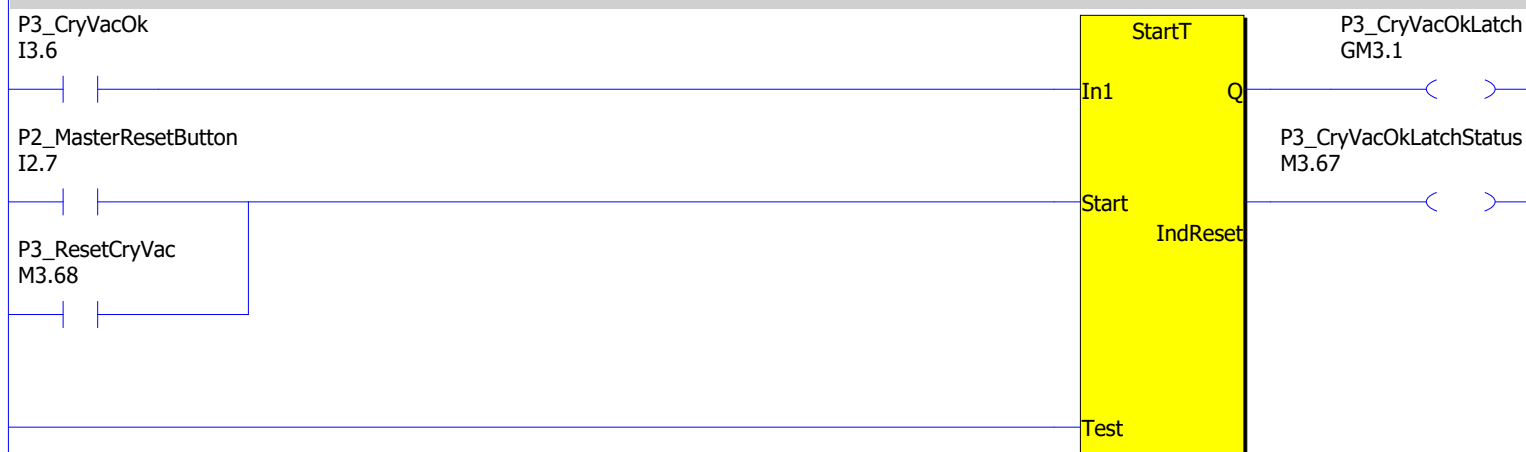
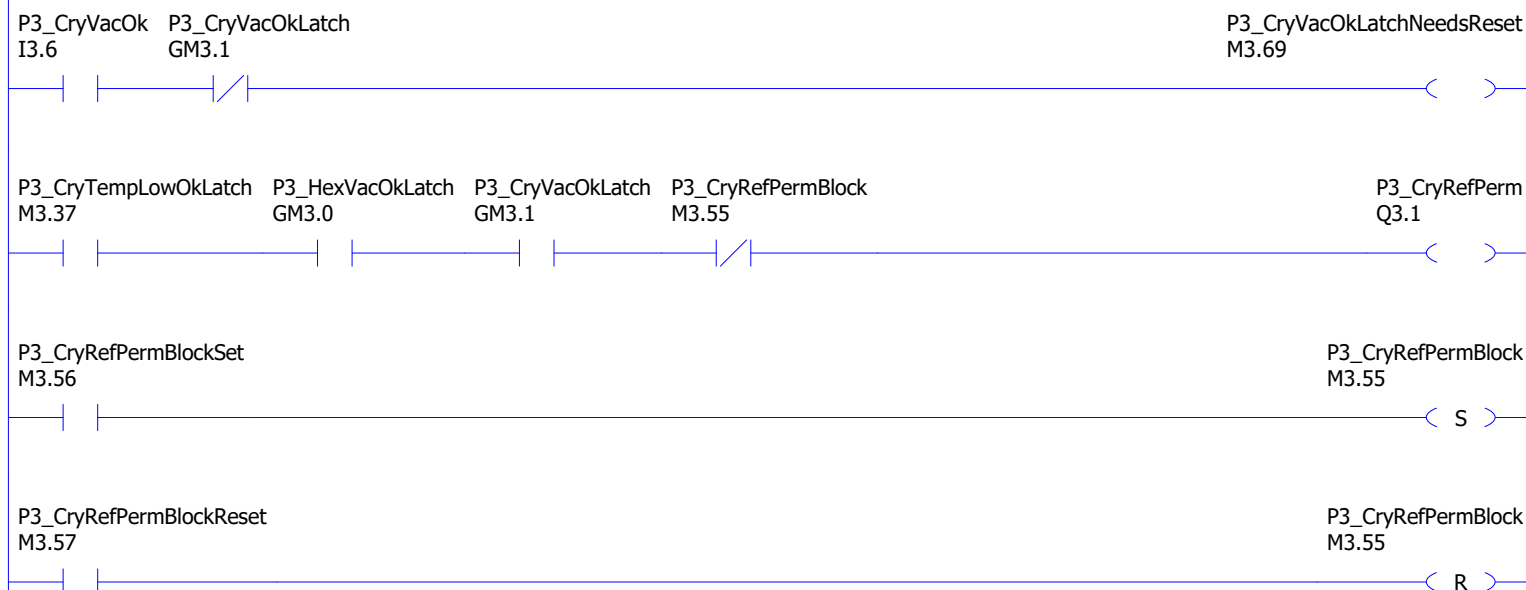
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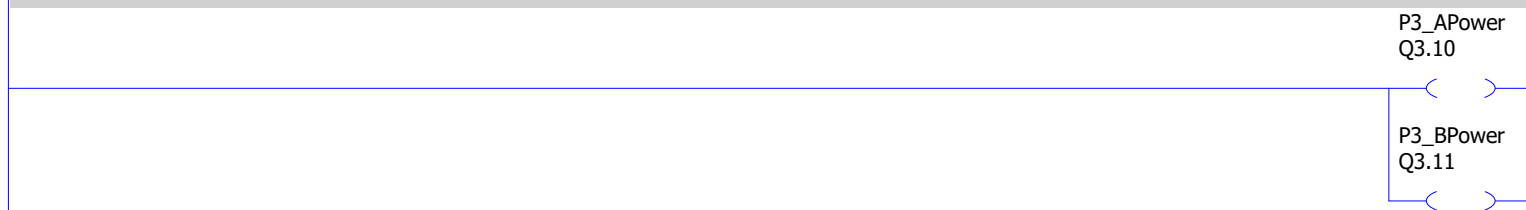
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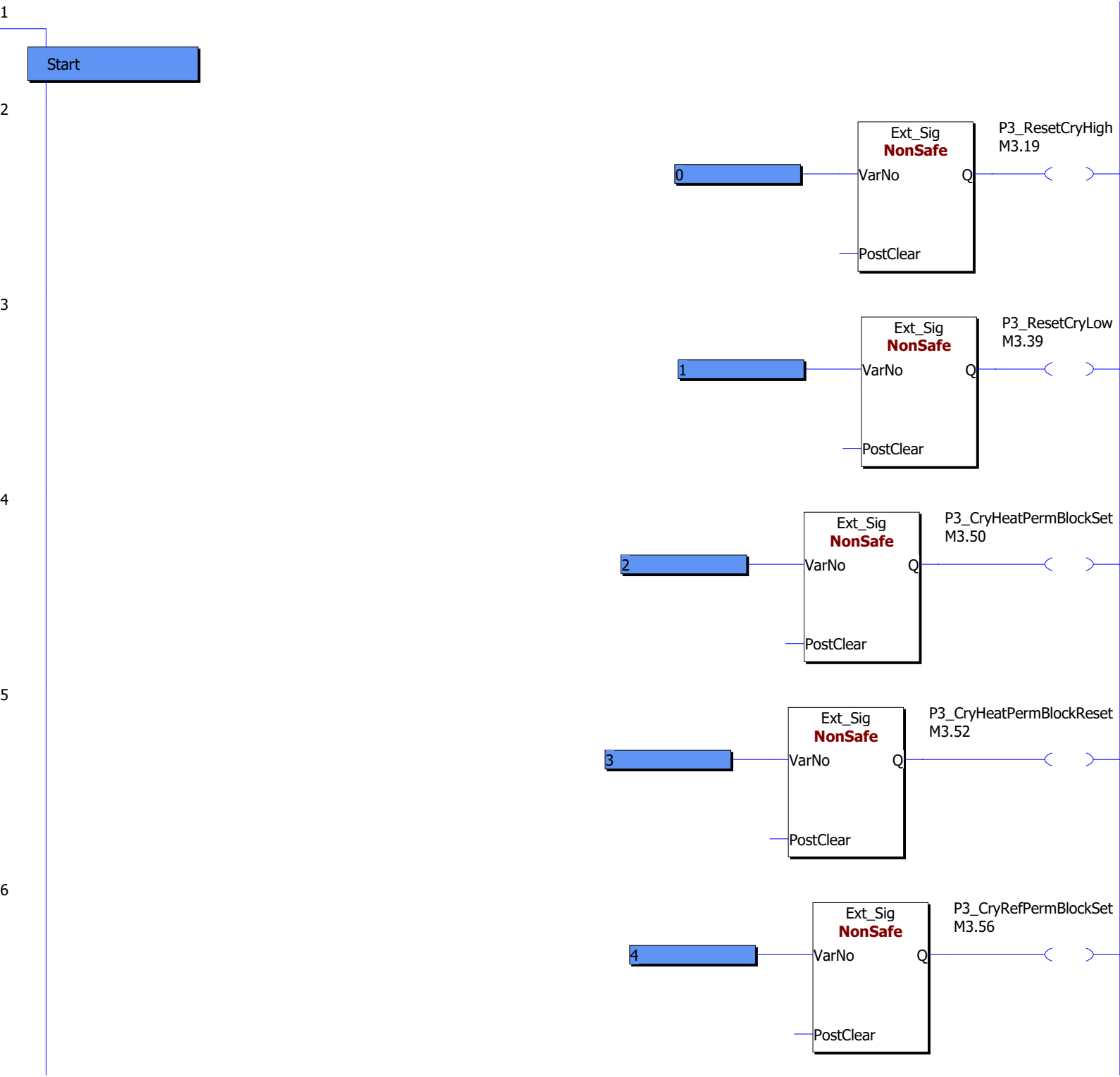
28 CryoVac Status

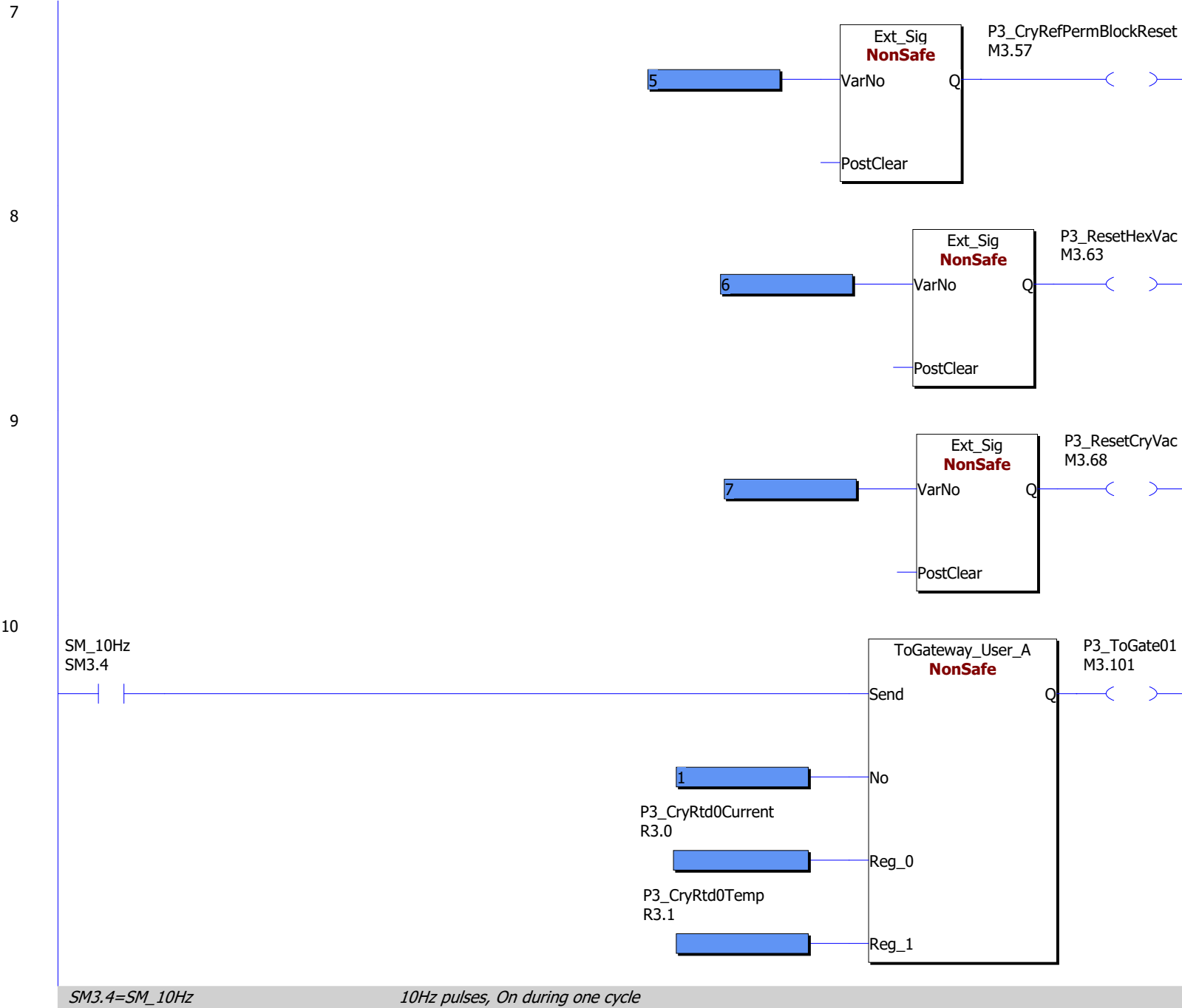
*I2.7=P2_MasterResetButton**Resets all latches for initialization purposes*

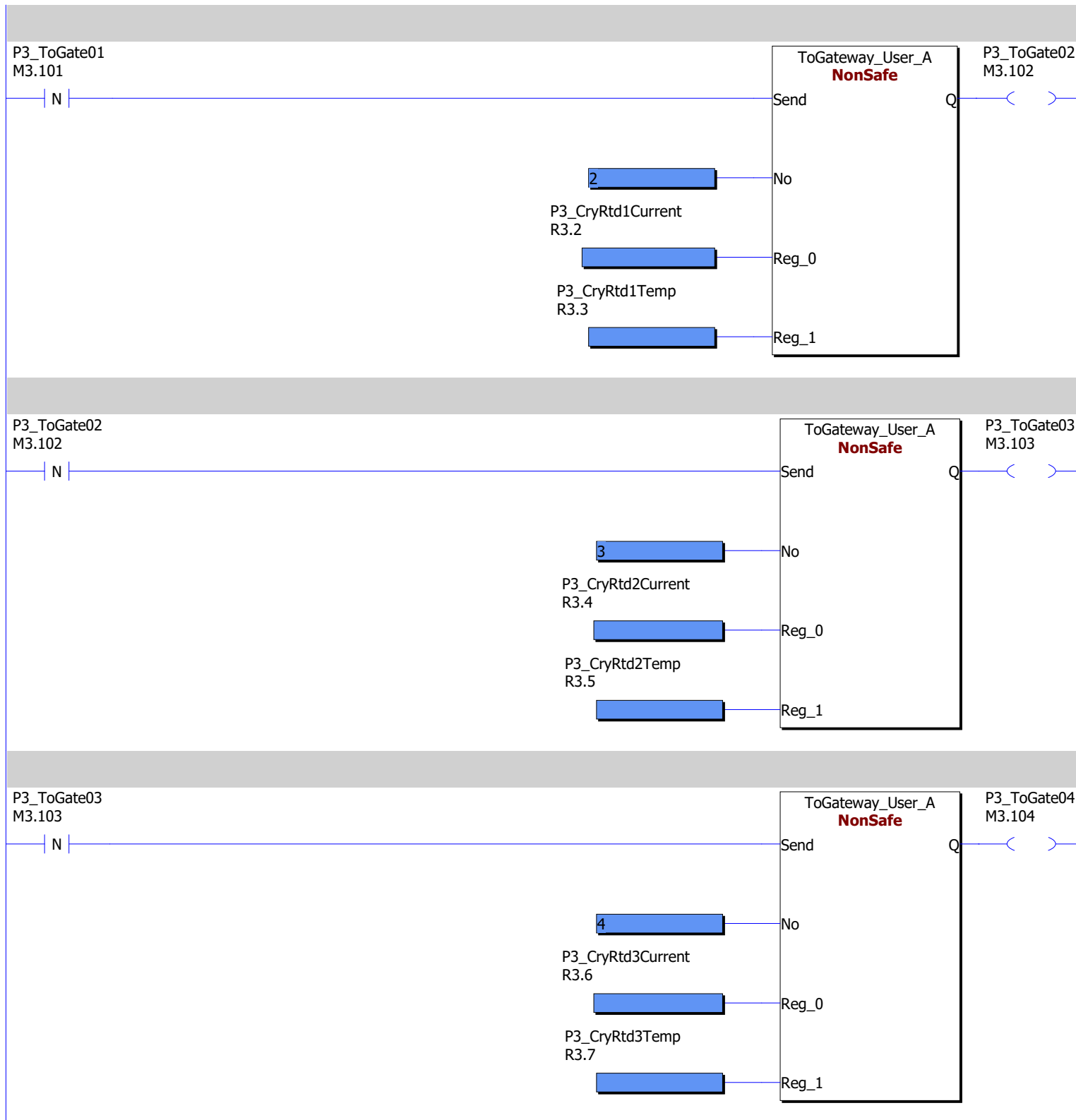
33 Power Output

*Q3.10=P3_APower**Signal to Smoke Detector Warning and Fault contact*

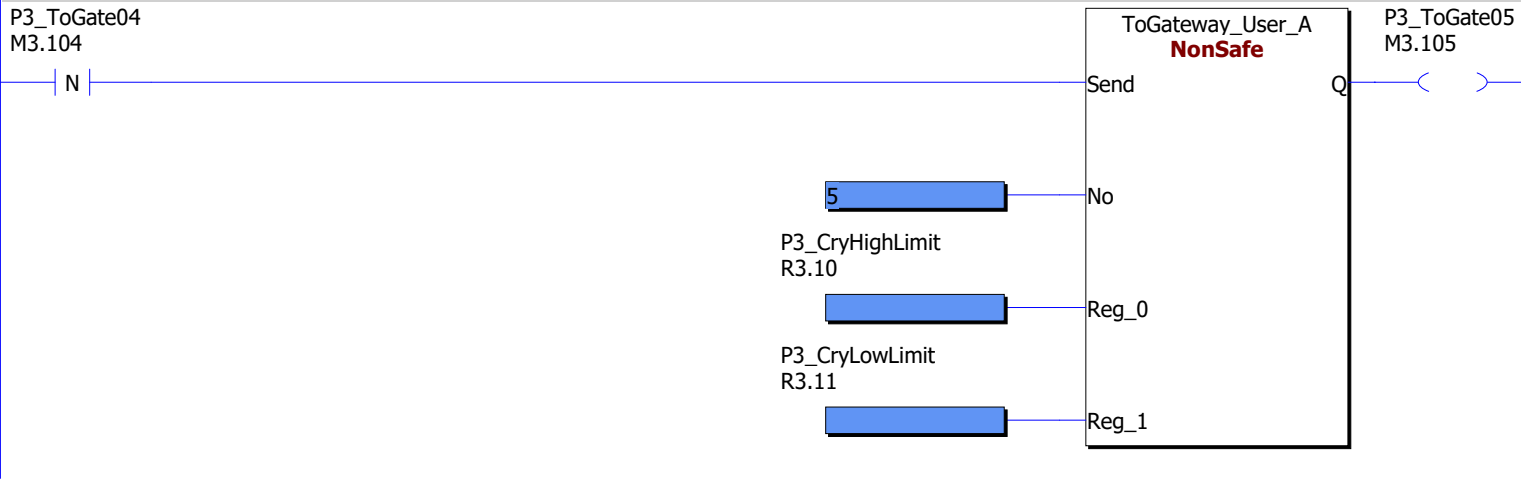
Pluto 3 Communication







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Pluto Manager - Program listing Pluto 3 Communication

File=C:\Users\joaoprod\Documents\GitHub\IstCamProtPLCs\firmware\master_ps_01.sps

Name=<FILENAME>

File date=9/11/2018 7:18:13 PM Print date=9/11/2018 7:19:14 PM PLC CRC=A377

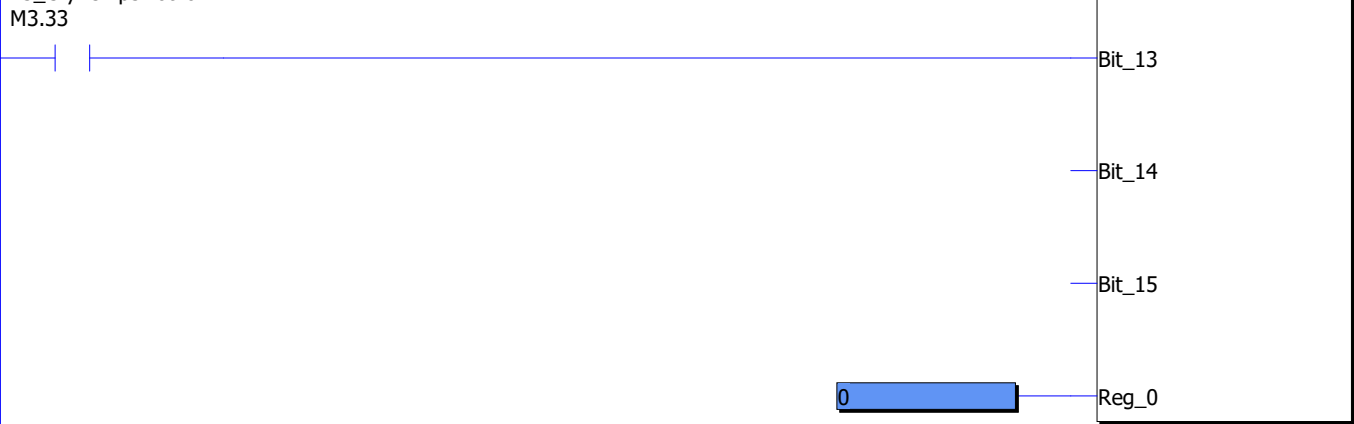


15





Network 15 continued / 2A



M3.0=P3_CryRtd0Valid	CryRTD0Valid
M3.1=P3_CryRtd1Valid	CryRTD1Valid
M3.10=P3_CryTemp0NotHigh	CryTemp0NotHigh
M3.11=P3_CryTemp1NotHigh	CryTemp1NotHigh
M3.12=P3_CryTemp2NotHigh	CryTemp2NotHigh
M3.13=P3_CryTemp3NotHigh	CryTemp3NotHigh
M3.2=P3_CryRtd2Valid	CryRTD2Valid
M3.3=P3_CryRtd3Valid	CryRTD3Valid

Pluto Manager - Program listing Pluto 3 Communication

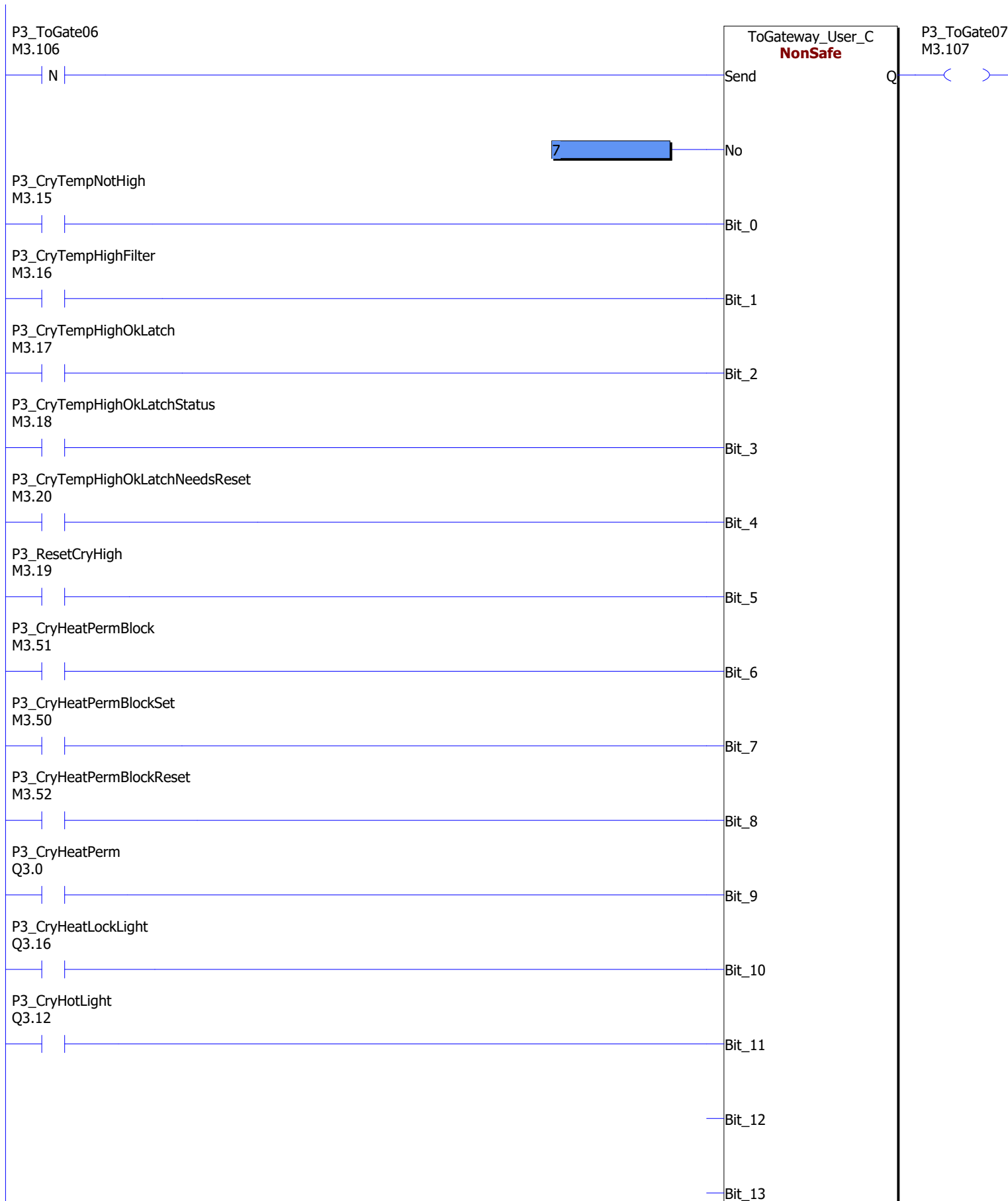
File=C:\Users\joaoprod\Documents\GitHub\IstCamProtPLCs\firmware\master_ps_01.sps

Name=<FILENAME>

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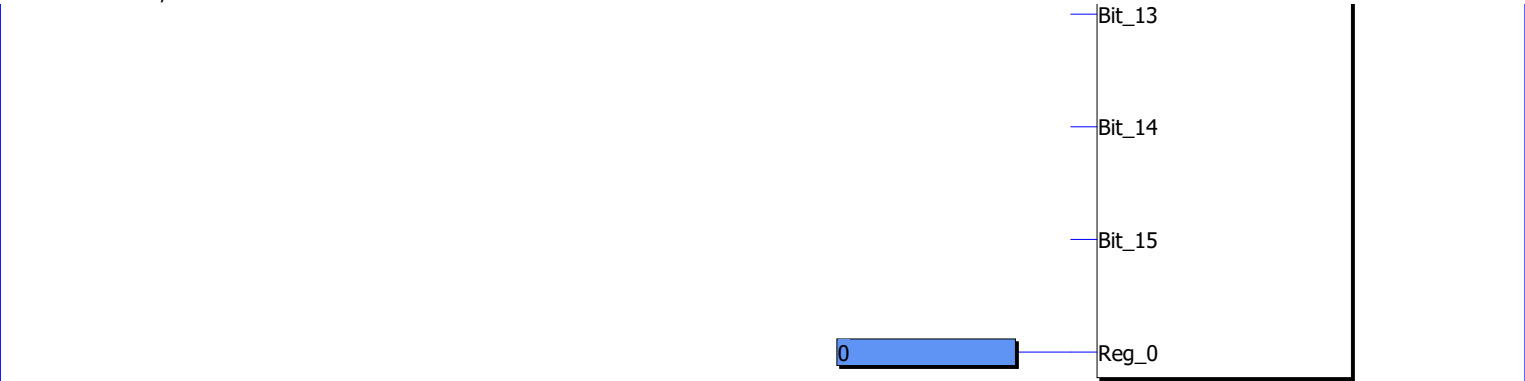


16





Network 16 continued / 2A



Q3.16=P3_CryHeatLockLight

Cry Heat Lock Indicator

Pluto Manager - Program listing Pluto 3 Communication

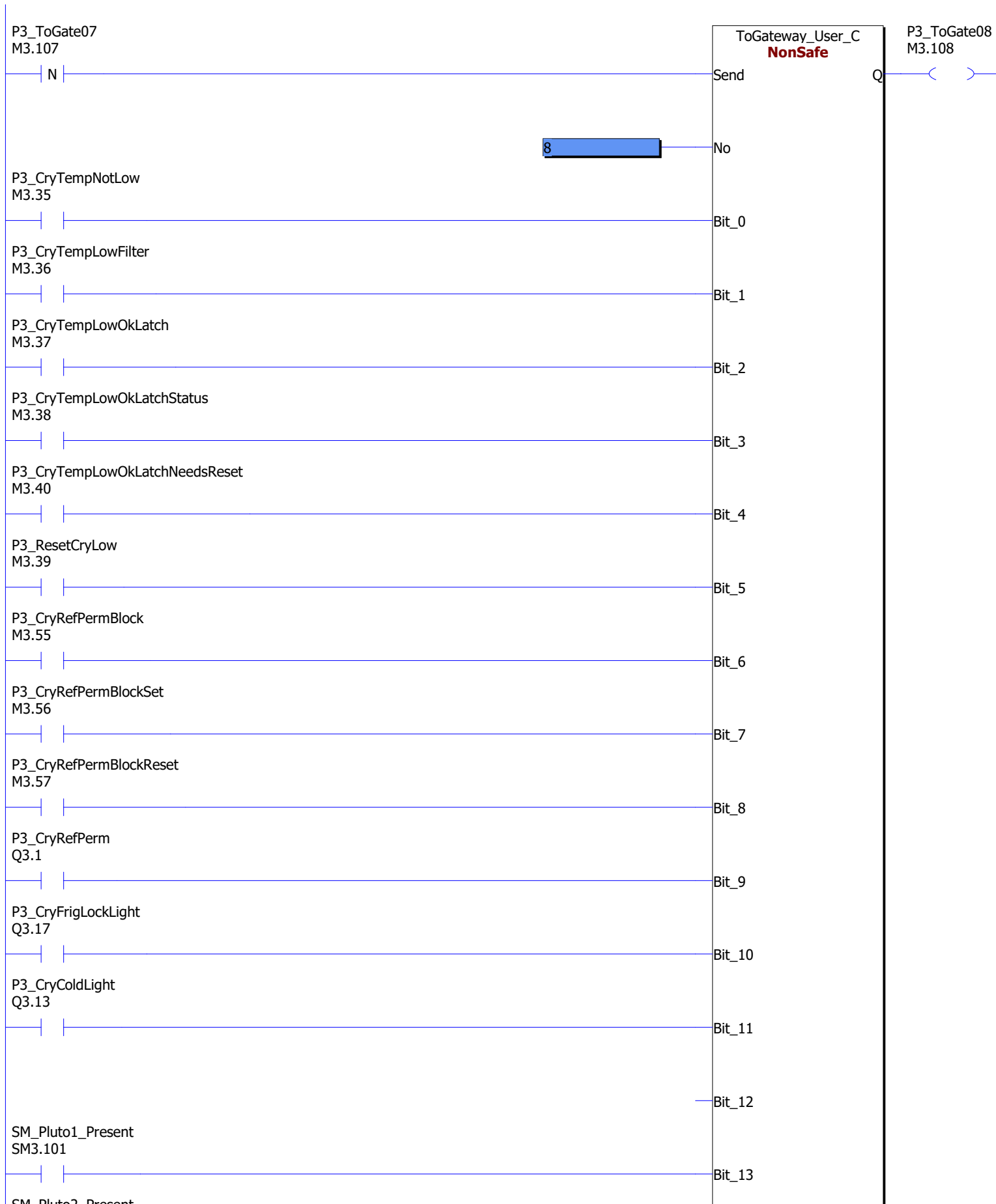
File=C:\Users\joaoprod\Documents\GitHub\IstCamProtPLCs\firmware\master_ps_01.sps

Name=<FILENAME>

File date=9/11/2018 7:18:13 PM Print date=9/11/2018 7:19:14 PM PLC CRC=A377

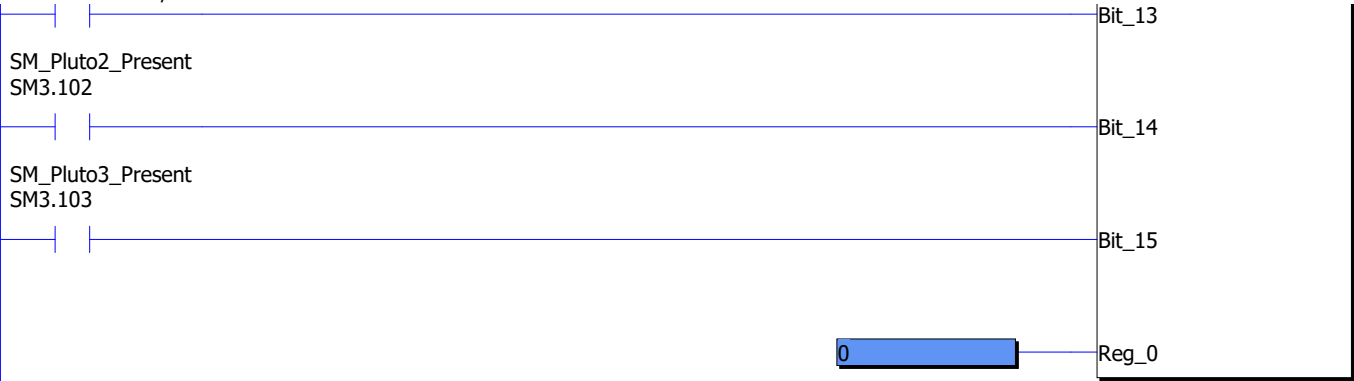


17





Network 17 continued / 2A



<i>Q3.13=P3_CryColdLight</i>	<i>MPM Active Indicator</i>
<i>Q3.17=P3_CryFrigLockLight</i>	<i>Cry Frig Lock Indicator</i>
<i>SM3.101=SM_Pluto1_Present</i>	<i>Pluto #1 is present</i>
<i>SM3.102=SM_Pluto2_Present</i>	<i>Pluto #2 is present</i>
<i>SM3.103=SM_Pluto3_Present</i>	<i>Pluto #3 is present</i>

Pluto Manager - Program listing Pluto 3 Communication

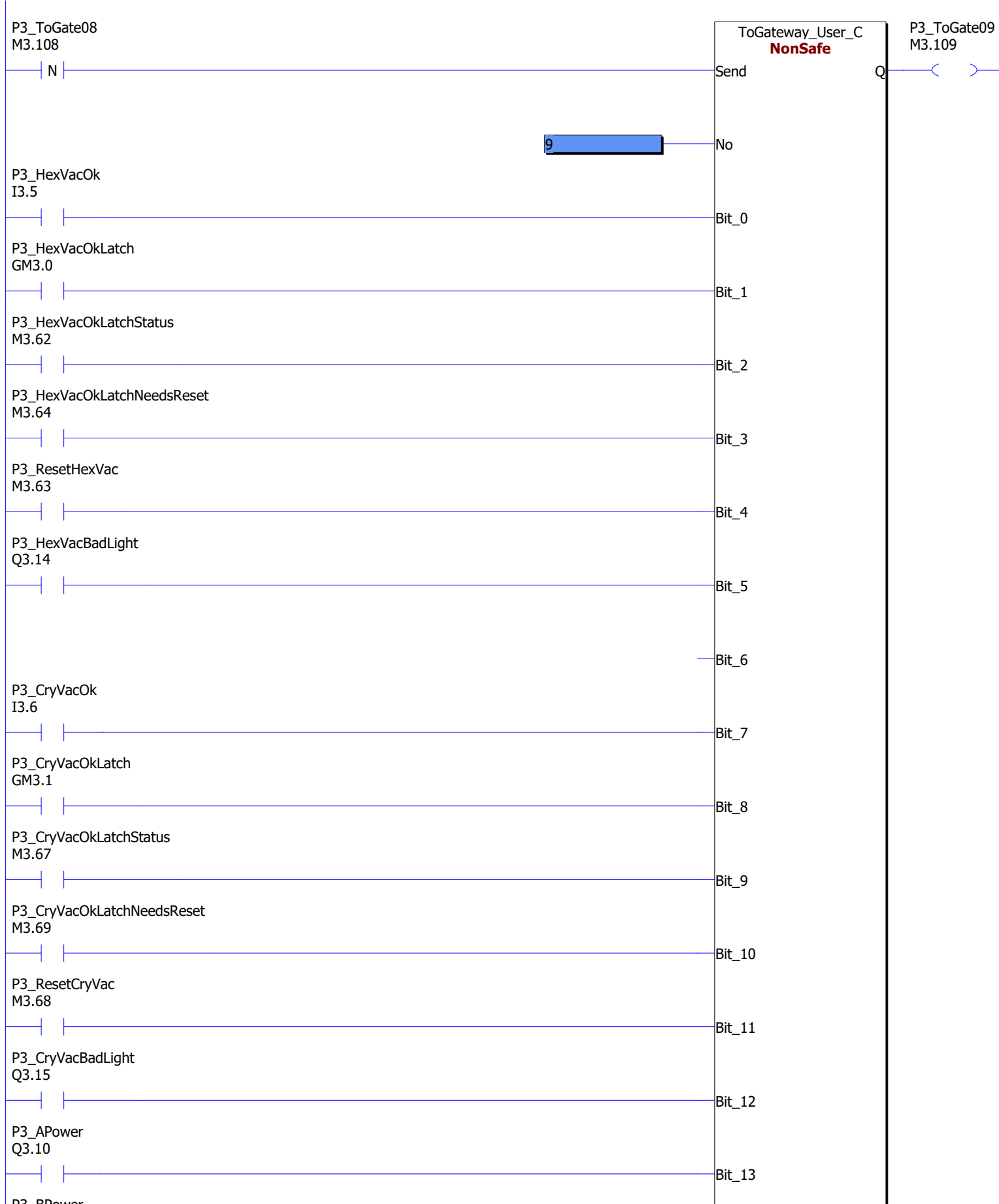
File=C:\Users\joaoprod\Documents\GitHub\IstCamProtPLCs\firmware\master_ps_01.sps

Name=<FILENAME>

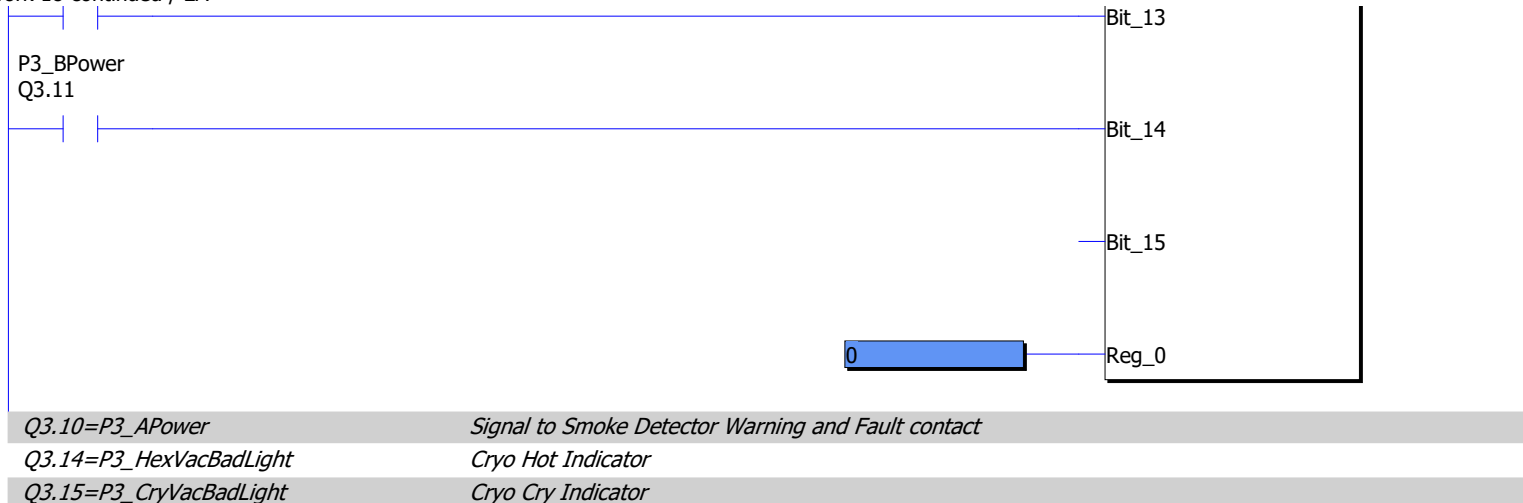
File date=9/11/2018 7:18:13 PM Print date=9/11/2018 7:19:14 PM PLC CRC=A377



18



Network 18 continued / 2A



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