

## Main\_Program [OB1]

### Main\_Program Properties

#### General

<b>Name</b>	Main_Program	<b>Number</b>	1	<b>Type</b>	OB
<b>Language</b>	LAD	<b>Numbering</b>	Manual		

#### Information

<b>Title</b>	SP21-4	<b>Author</b>		<b>Comment</b>	
<b>Family</b>		<b>Version</b>	0.1	<b>User-defined ID</b>	

Name	Data type	Default value
▼ Temp		
OB1_EV_CLASS	Byte	
OB1_SCAN_1	Byte	
OB1_PRIORITY	Byte	
OB1_OB_NUMBR	Byte	
OB1_RESERVED_1	Byte	
OB1_RESERVED_2	Byte	
OB1_PREV_CYCLE	Int	
OB1_MIN_CYCLE	Int	
OB1_MAX_CYCLE	Int	
OB1_DATE_TIME	Date_And_Time	
Constant		

### Network 1: SP21-4

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SP21-4 Valve Leak Check Station Control with Simulation

Additional internal memory:

Tag Address

Int\_Reset M5.1 BOOL Internal reset

TmpDI MD120 DINT Temporary double integer

TmpR MD124 REAL Temporary real

Ret\_Val MW12 WORD Return value from SCALE block

Always\_Off M10.0 BOOL Always off bit for SCALE block

Run\_Trans M61.0 BOOL Run has changed

Run\_PTrans M61.1 BOOL Bit for Run neg transition

Run\_NTrans M61.2 BOOL Bit for Run pos transition

OP\_Zeroed M61.3 BOOL Operation paused

Reset\_Trans M61.4 BOOL Reset\_PB transition to start-kick

SFC

ResetPB\_PTrans M61.5 BOOL Bit for Reset\_PB pos trans

Conversion formulas:

$HD\_HGT = (HGT\_MEAS - 5530) / 22118.0 * (150.0 - 75.0) + 75.0$

$VLV\_PRES = (PRES - 5530) / 22118.0 * (100.0)$

%M2.0  
"Dummy"

%M2.0  
"Dummy"



Network 2: Initial Start

%M201.4  
"RUN"

%M0.1  
"Step\_1"

%M0.2  
"Step\_2"

%M0.3  
"Step\_3"

%M0.4  
"Step\_4"

%M0.5  
"Step\_5"

%M0.6  
"Step\_6"

%M0.1  
"Step\_1"



Network 3: Step 1 Wait for valve

%M0.1  
"Step\_1"

%M104.0  
"PROX"

%M201.4  
"RUN"

%M0.1  
"Step\_1"

%M0.2  
"Step\_2"



Network 4: Step 2 Head down

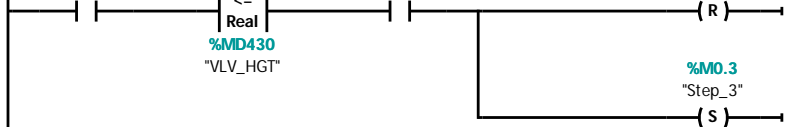
%M0.2  
"Step\_2"

%MD190  
"HD\_HGT"  
<= Real  
%MD430  
"VLV\_HGT"

%M201.4  
"RUN"

%M0.2  
"Step\_2"

%M0.3  
"Step\_3"



Network 5: Step 3 Pressurize

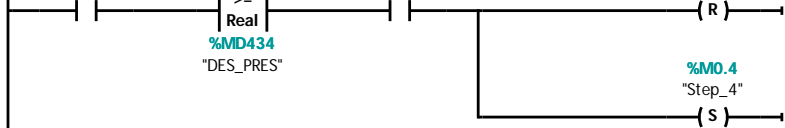
%M0.3  
"Step\_3"

%MD194  
"VLV\_PRES"  
>= Real  
%MD434  
"DES\_PRES"

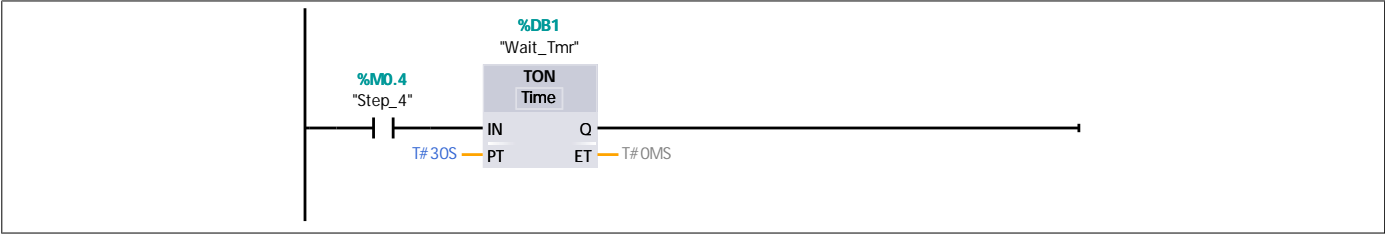
%M201.4  
"RUN"

%M0.3  
"Step\_3"

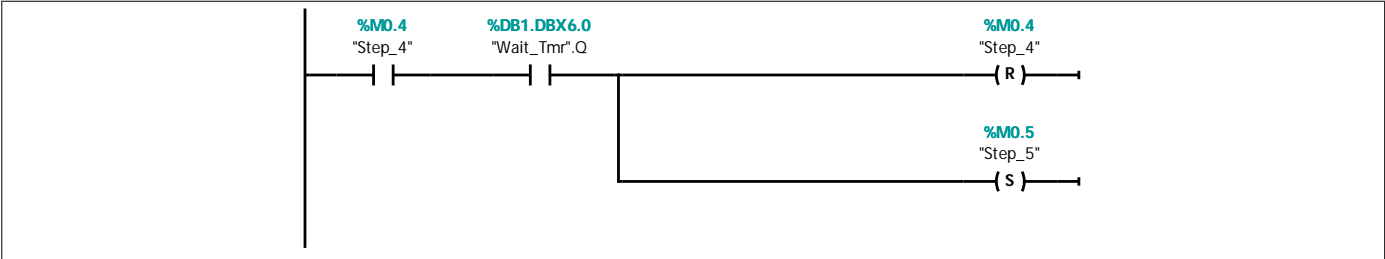
%M0.4  
"Step\_4"



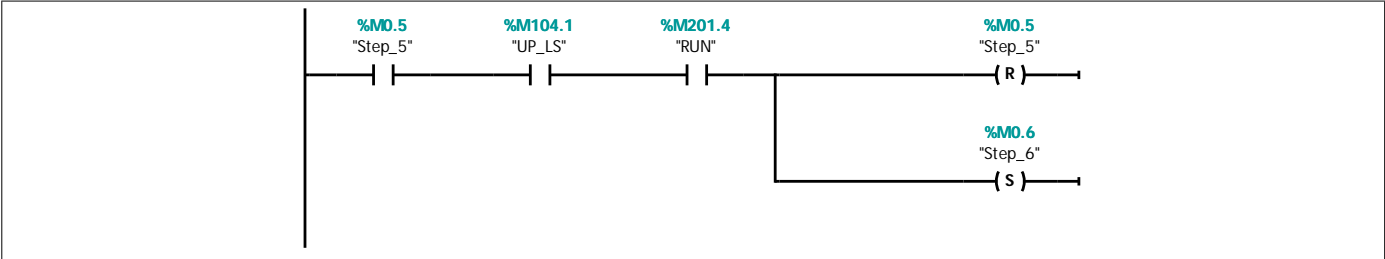
Network 6: Step 4 timer



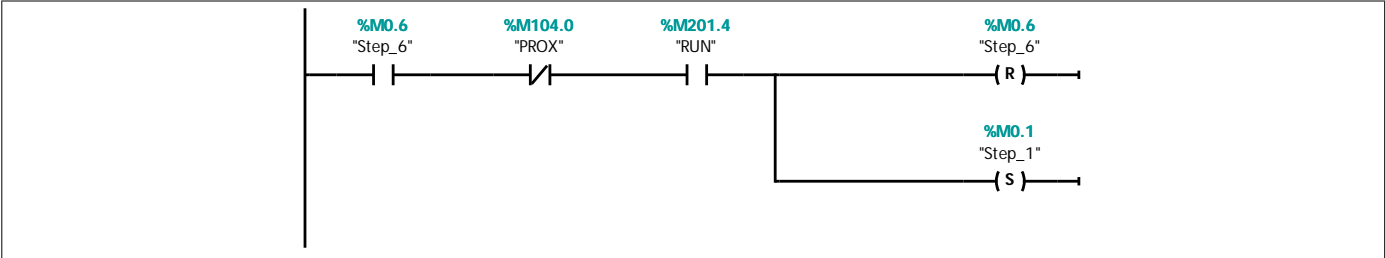
Network 7: Step 4 - Wait for pressure check



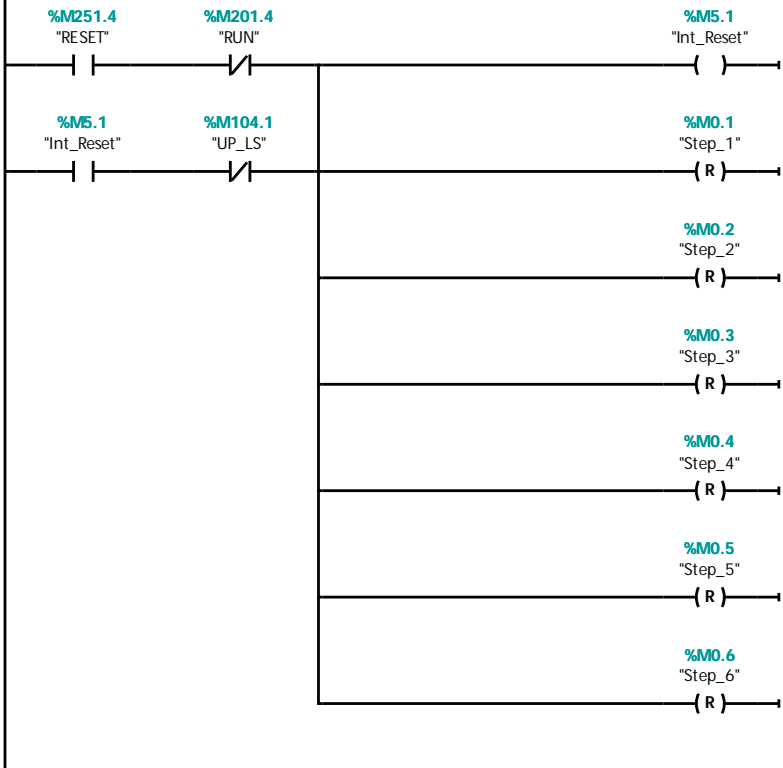
Network 8: Step 5 Head up



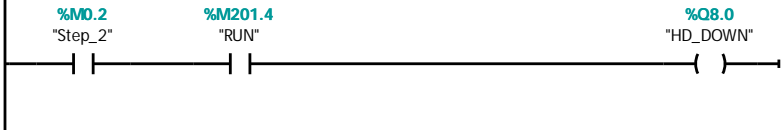
Network 9: Step 6 - Push to conveyor



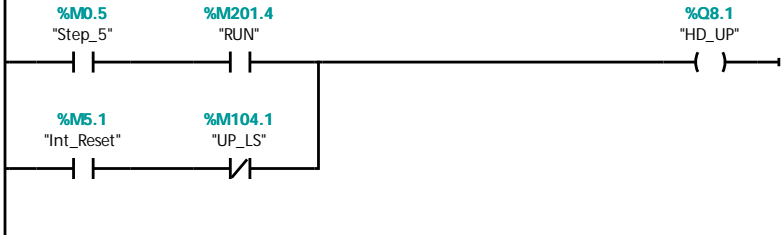
Network 10: Reset



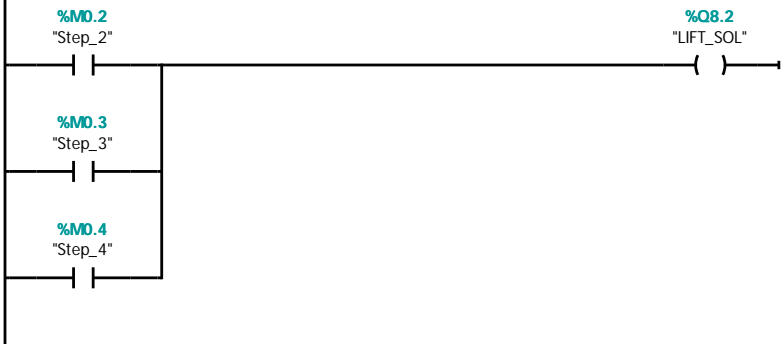
**Network 11: Head Raise/Lower**



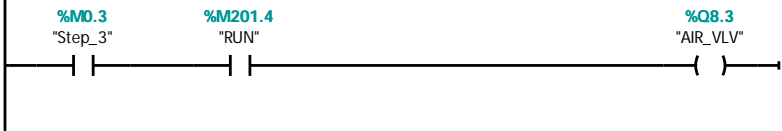
**Network 12: PCYL controls**



**Network 13: Lift Solenoid. Must remain on when paused**

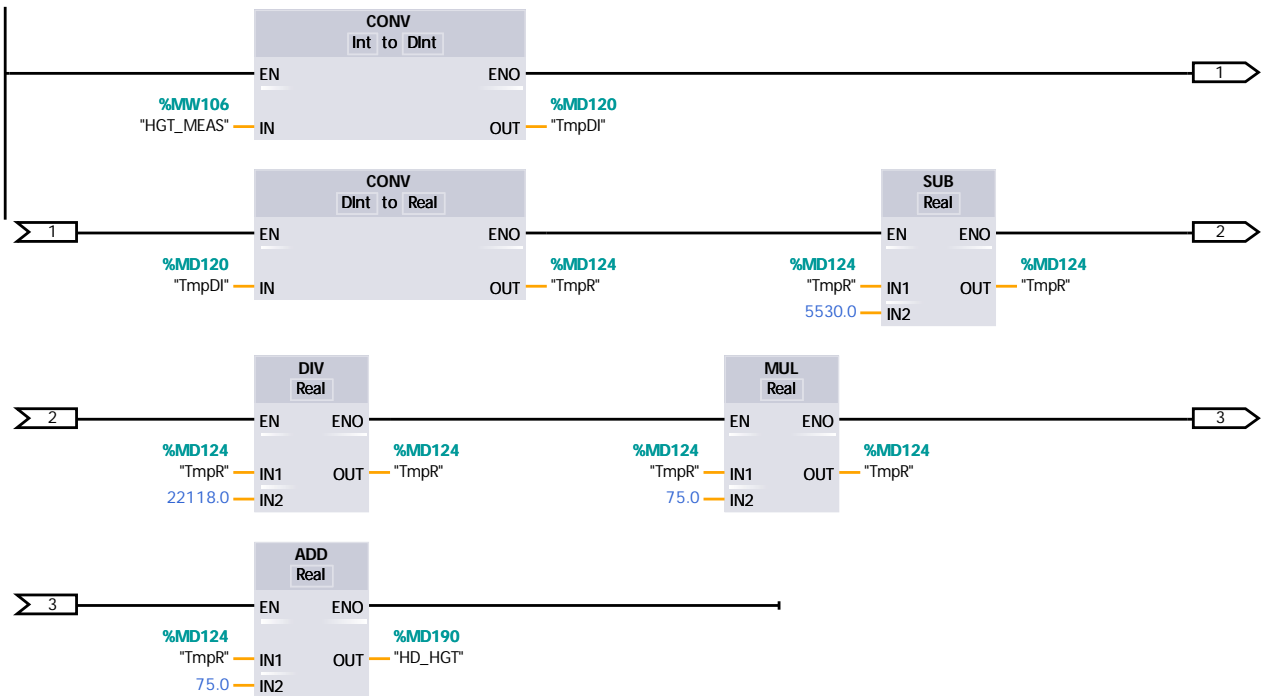


**Network 14: Air Valve**



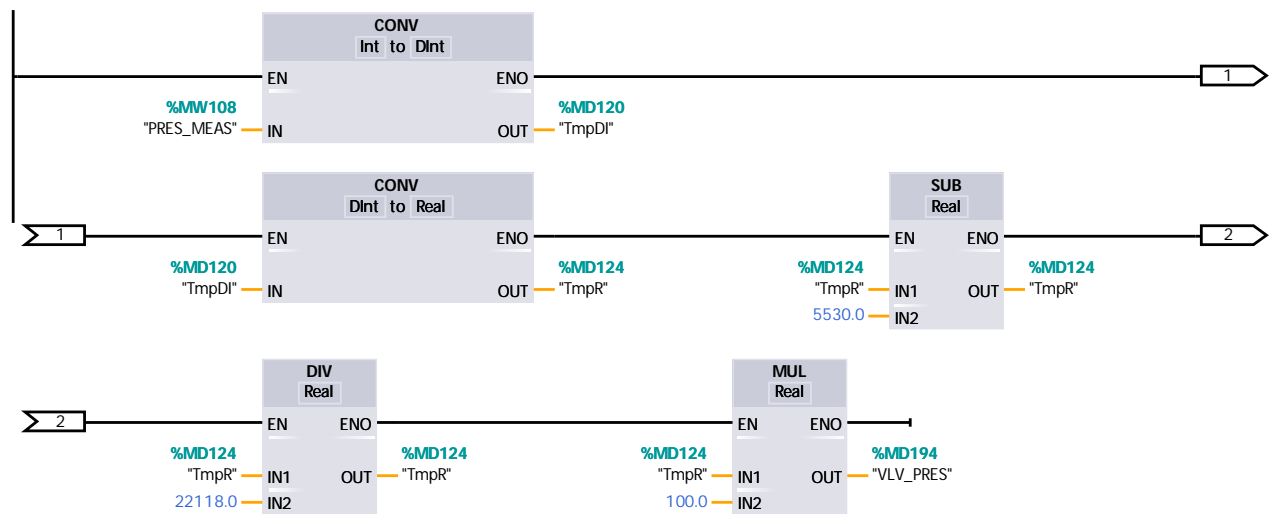
**Network 15: Convert height measurement using comp blocks**

Convert height measurement to mm.  
Uses individual computation blocks.

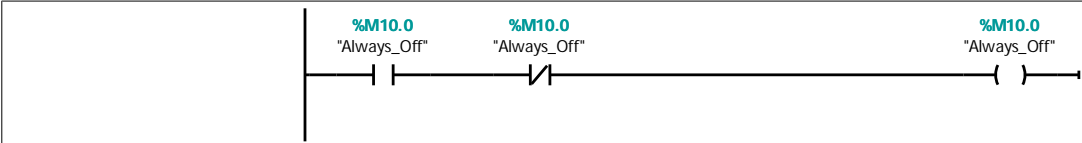


**Network 16: Convert pressure measurement using comp blocks**

Convert pressure measurement to psi.  
Uses individual computation blocks.

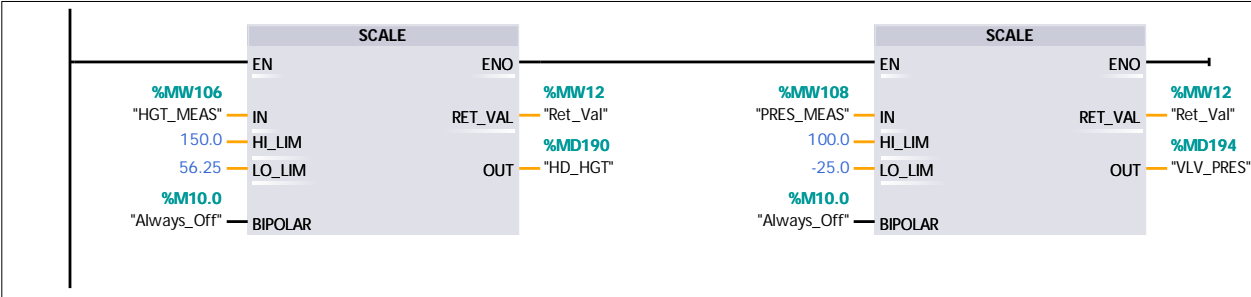


**Network 17: Always Off**



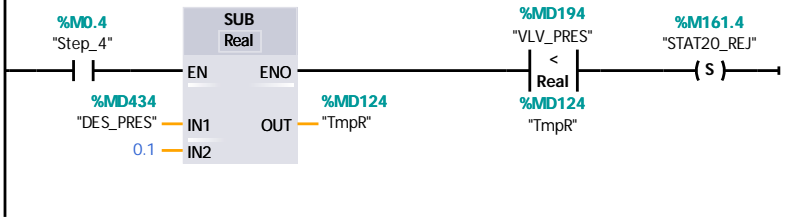
**Network 18: Convert height and pressure measurements using SCALE**

Convert height measurement to mm and pressure measurement to psi.  
Uses SCALE block. Note that the lo\_lim input is 25% lower than zero weight to account for this block assuming the minimum value of the analog in is zero rather than the 5530 (which corresponds to 4 mA).

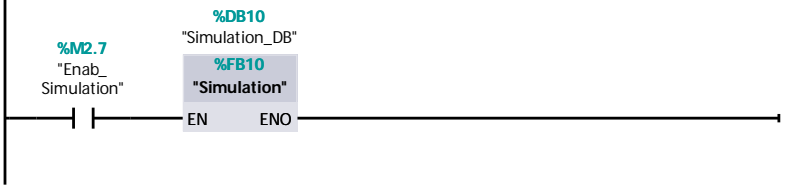


**Network 19: Set if valve is to be rejected because it will not hold pressure**

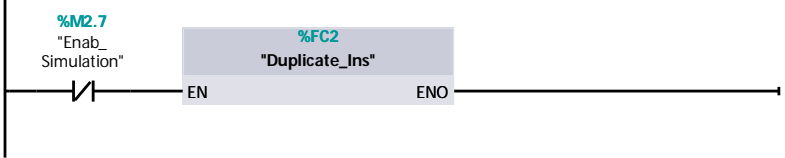
Check valve pressure during step 4. If falling, set reject bit.



Network 20: Simulation



Network 21: Copy real inputs to input image if not simulating



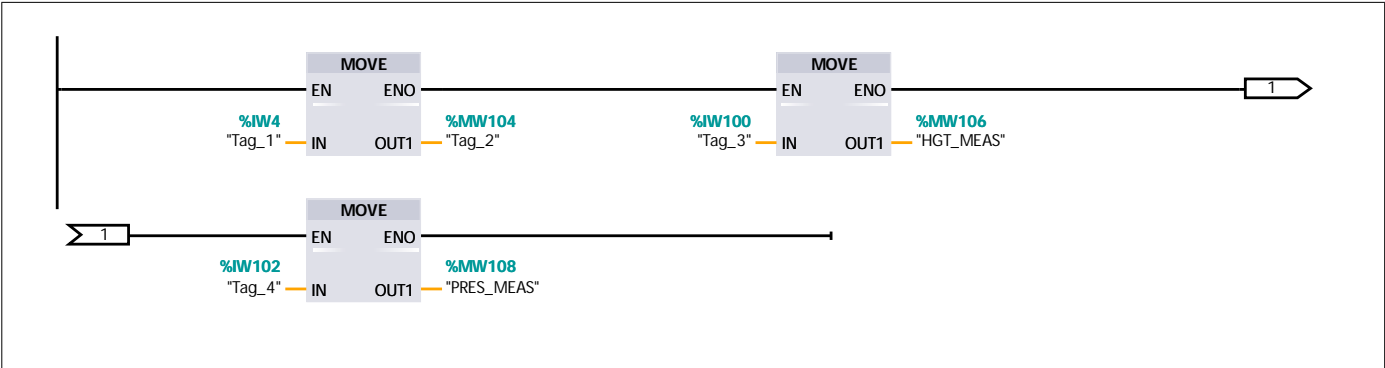
# Duplicate\_Ins [FC2]

## Duplicate\_Ins Properties

General					
Name	Duplicate_Ins	Number	2	Type	FC
Language	LAD	Numbering	Manual		
Information					
Title		Author		Comment	
Family		Version	0.1	User-defined ID	

Name	Data type	Default value
Input		
Output		
InOut		
Temp		
Constant		
▼ Return		
Duplicate_Ins	Void	

## Network 1:





## Simulation [FB10]

### Simulation Properties

#### General

<b>Name</b>	Simulation	<b>Number</b>	10	<b>Type</b>	FB
<b>Language</b>	LAD	<b>Numbering</b>	Manual		

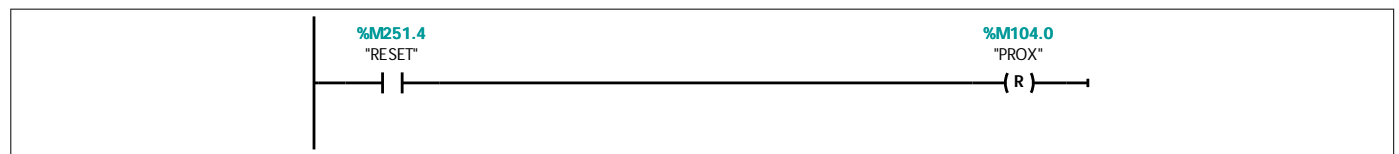
#### Information

<b>Title</b>		<b>Author</b>		<b>Comment</b>	Copyright (c) 2011 Dogwood Valley Press, LLC SIMULATION LOGIC
<b>Family</b>		<b>Version</b>	0.1	<b>User-defined ID</b>	

Name	Data type	Default value
Input		
Output		
InOut		
▼ Static		
Sim_Tmr0	TON	
Sim_Tmr1	TON	
Sim_Tmr2	TON	
Sim_Tmr3	TON	
Sim_Tmr4	TON	
Sim_Tmr5	TON	
Sim_Tmr6	TON	
Sim_Tmr7	TON	
Sim_Tmr1_IN	Bool	false
HD_Up_NTrans	Bool	false
Sim_TmpInt	Int	0
Temp		
Constant		

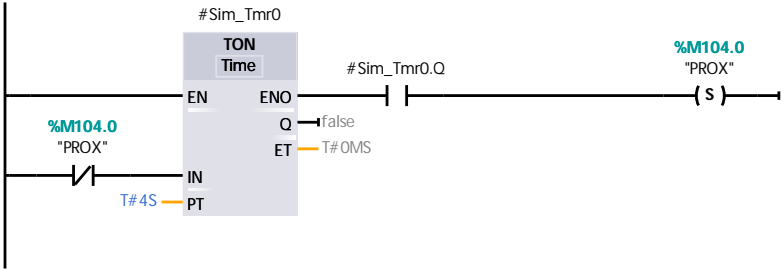
### Network 1:

On reset, reset PROX

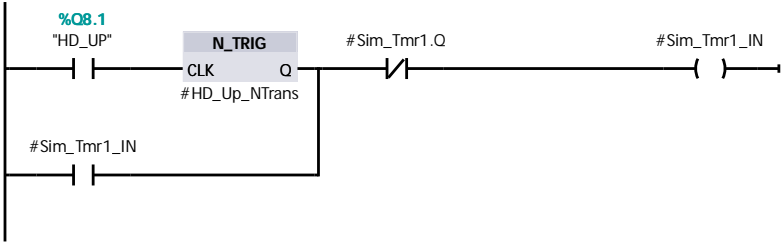


### Network 2:

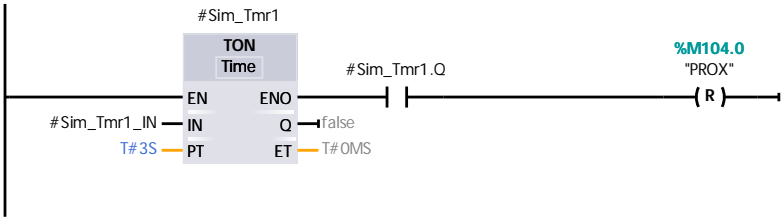
PROX simulation: Set when PROX off for 4 secs.  
Reset 3 secs after HD\_UP transitions off



**Network 3:**

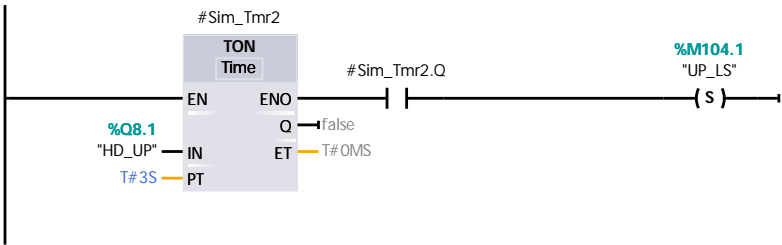


**Network 4:**

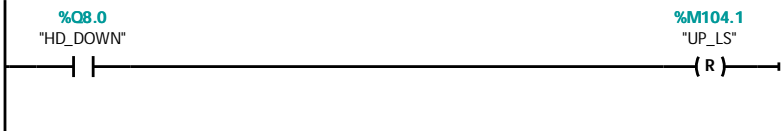


**Network 5: Limit switch that closes (on) when pressurizing head is fully up**

UP\_LS simulation: Latch when HD\_UP on for 3 sec. Unlatch when HD\_DOWN

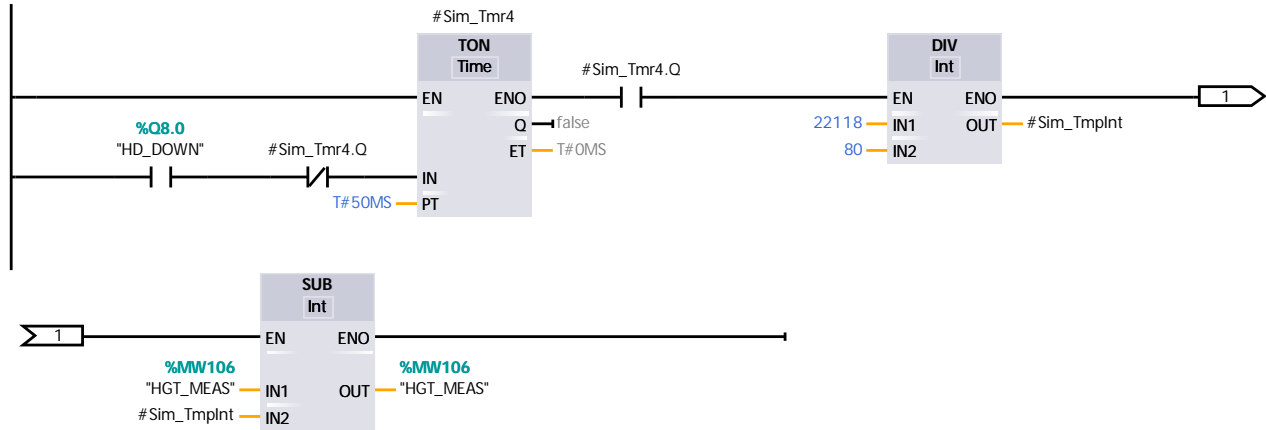


**Network 6: Limit switch that closes (on) when pressurizing head is fully up**

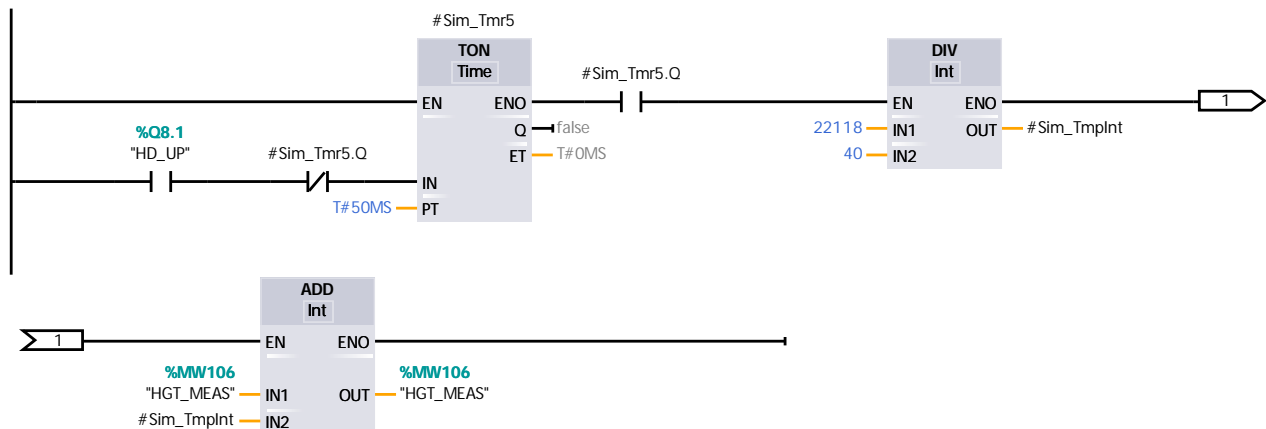


## Network 7:

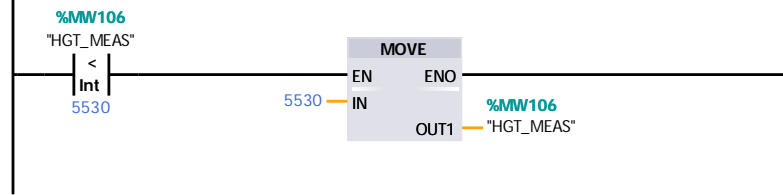
HGT\_MEAS Simulation: When HD\_DOWN, decrement every 50 ms by 22118/80, meaning it goes from high to low in 4 sec. Also make sure no less than 5530. When HD\_UP increment every 50 ms by 22118/40 meaning it goes to high in at most 2 sec, and then make sure not larger than 27648



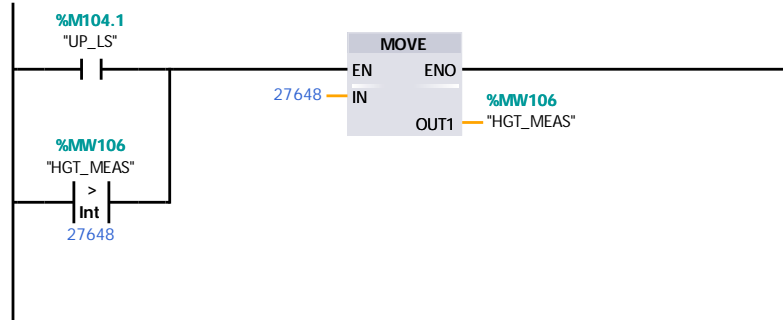
## Network 8:



## Network 9:

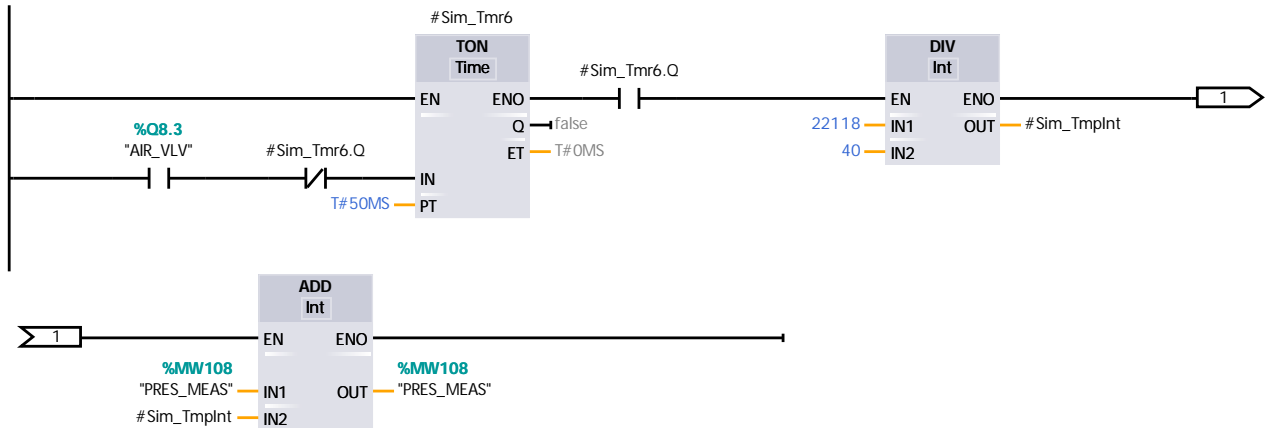


### Network 10:

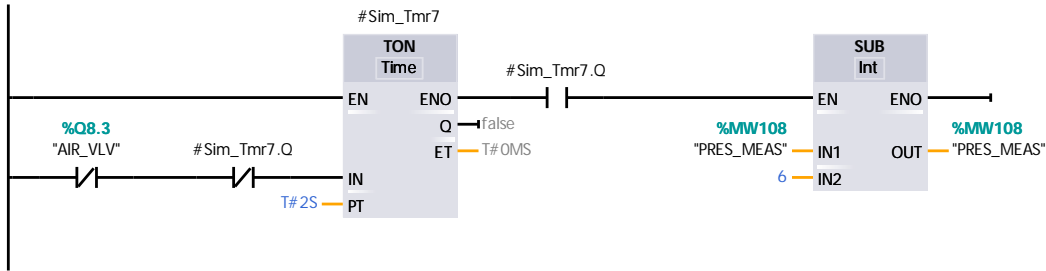


### Network 11:

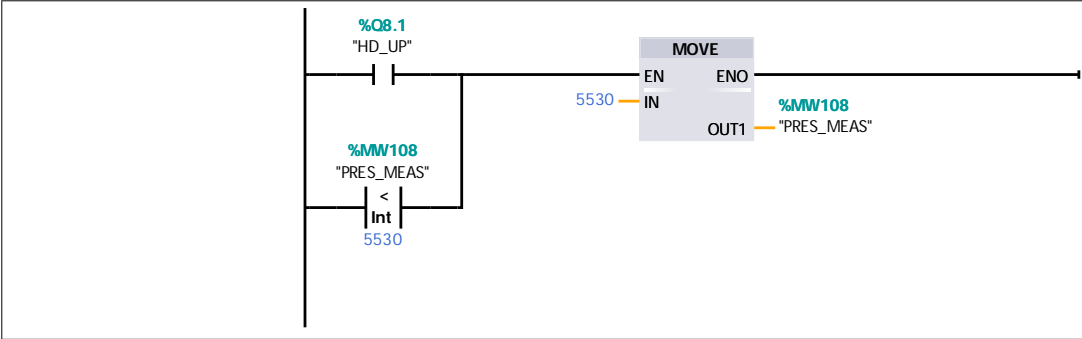
PRESS\_MEAS Simulation: When AIR\_VLV, increment every 50 ms by 22118/40, meaning it goes from low to high in 4 sec.  
When AIR\_VLV off, decrement every 2 sec by 6 meaning a slow leak, and then make sure not less than zero. HD\_UP also resets it.



### Network 12:



Network 13:



Network 14:

