

## 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>	"Main Program Sweep (Cycle)"	<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:

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SP14-3 Erbia Can Tipper/Rotator Control Using S7-GRAPH with simulation

Additional internal memory:

Tag Address

Run M5.0 BOOL On while station running

Int\_Reset M5.1 BOOL Internal reset

Run\_Trans M61.0 BOOL Run has changed

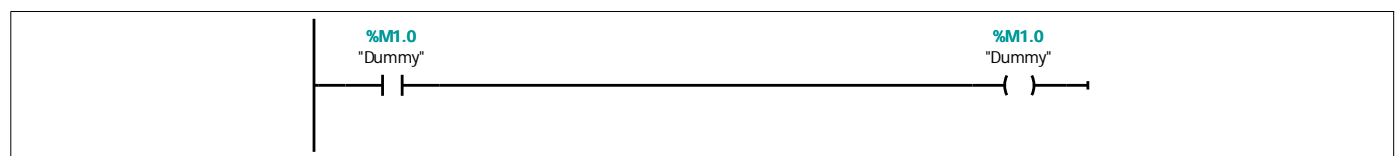
Run\_PTrans M61.1 BOOL Bit for Run neg transition

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

OP\_Zeroed M61.3 BOOL Operation paused

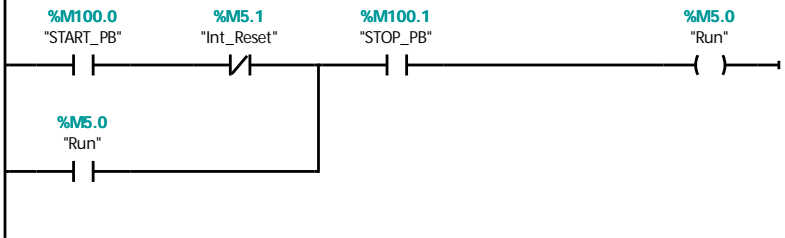
Reset\_Trans M61.4 BOOL Reset\_PB transition to start-kick SFC

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



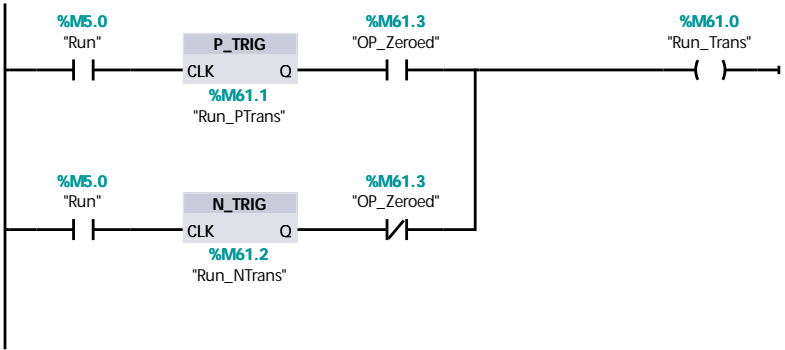
### Network 2: Start/stop

During reset prevent start

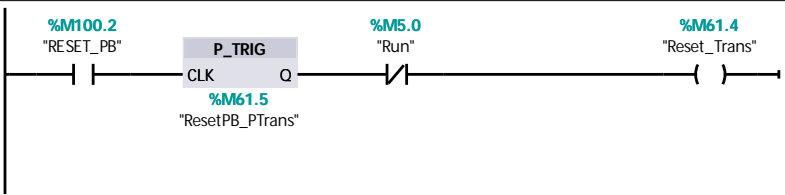


**Network 3: Generate pulse to toggle pause for SFC.**

Positive transition on Run used only when already paused. Negative transition on Run used when not paused.

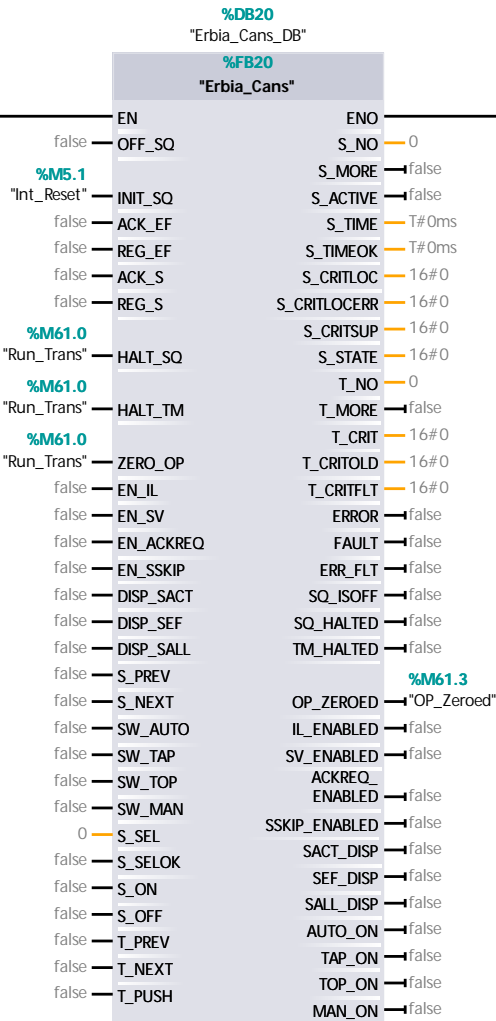


**Network 4: Positive transition for reset PB to start reset operation.**

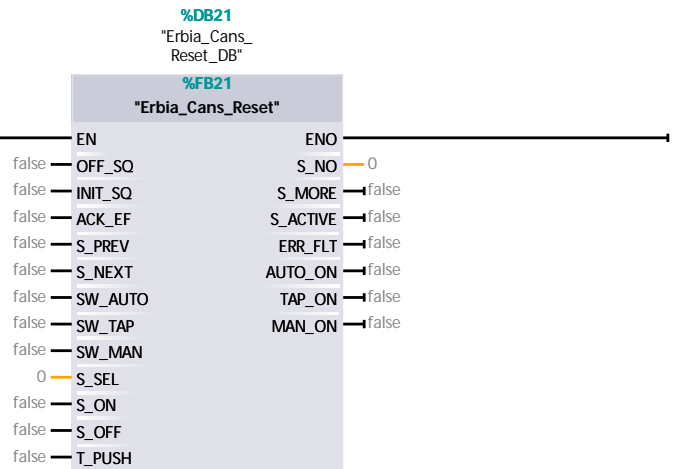


**Network 5: Erbia Cans blending SFC**

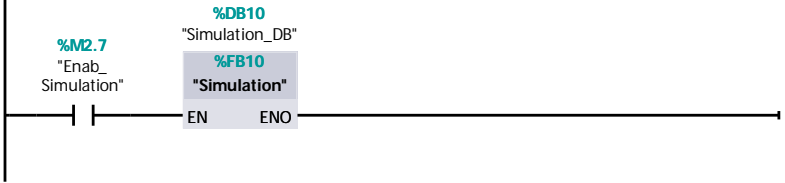
Pause timers went paused for Blend step



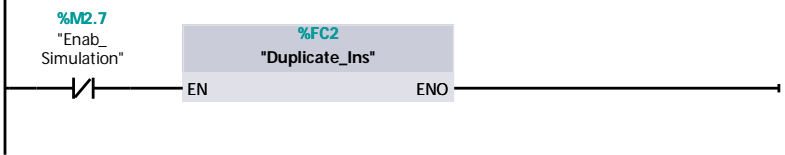
Network 6:



Network 7: Simulation



Network 8: Copy real inputs to input image if not simulating



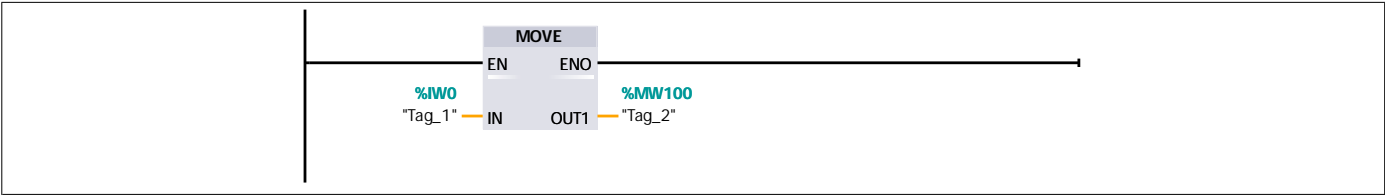
# Duplicate\_Ins [FC2]

## 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:



## Erbia\_Cans [FB20]

### Erbia\_Cans Properties

#### General

<b>Name</b>	Erbia_Cans	<b>Number</b>	20	<b>Type</b>	FB
<b>Language</b>	GRAPH	<b>Numbering</b>	Manual	<b>Network language</b>	LAD

#### Information

<b>Title</b>	S7GRAPH V5.0 FB -- SP14_03\SIMATIC 400 Station\CPU 417-4\S7 Program(2)\Sources\Er- bia_Cans	<b>Author</b>		<b>Comment</b>	Erbia Cans Blender Normal Operation  Copyright (c) 2011, 2015 Dogwood Valley Press, LLC ----- -----
<b>Family</b>		<b>Version</b>	0.1	<b>User-defined ID</b>	

Name	Data type	Default value
▼ Input		
OFF_SQ	Bool	false
INIT_SQ	Bool	false
ACK_EF	Bool	false
REG_EF	Bool	false
ACK_S	Bool	false
REG_S	Bool	false
HALT_SQ	Bool	false
HALT_TM	Bool	false
ZERO_OP	Bool	false
EN_IL	Bool	false
EN_SV	Bool	false
EN_ACKREQ	Bool	false
EN_SSKIP	Bool	false
DISP_SACT	Bool	false
DISP_SEF	Bool	false
DISP_SALL	Bool	false
S_PREV	Bool	false
S_NEXT	Bool	false
SW_AUTO	Bool	false
SW_TAP	Bool	false
SW_TOP	Bool	false
SW_MAN	Bool	false
S_SEL	Int	0
S_SELOK	Bool	false
S_ON	Bool	false
S_OFF	Bool	false
T_PREV	Bool	false
T_NEXT	Bool	false
T_PUSH	Bool	false

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Name	Data type	Default value
▼ Output		
S_NO	Int	0
S_MORE	Bool	false
S_ACTIVE	Bool	false
S_TIME	Time	T#0ms
S_TIMEOK	Time	T#0ms
S_CRITLOC	DWord	16#0
S_CRITLOCERR	DWord	16#0
S_CRITSUP	DWord	16#0
S_STATE	Word	16#0
T_NO	Int	0
T_MORE	Bool	false
T_CRIT	DWord	16#0
T_CRITOLD	DWord	16#0
T_CRITFLT	DWord	16#0
ERROR	Bool	false
FAULT	Bool	false
ERR_FLT	Bool	false
SQ_ISOFF	Bool	false
SQ_HALTED	Bool	false
TM_HALTED	Bool	false
OP_ZEROED	Bool	false
IL_ENABLED	Bool	false
SV_ENABLED	Bool	false
ACKREQ_ENABLED	Bool	false
SSKIP_ENABLED	Bool	false
SACT_DISP	Bool	false
SEF_DISP	Bool	false
SALL_DISP	Bool	false
AUTO_ON	Bool	false
TAP_ON	Bool	false
TOP_ON	Bool	false
MAN_ON	Bool	false
InOut		
▼ Static		
Trans1	GraphTransition	
Trans2	GraphTransition	
Trans3	GraphTransition	
Trans4	GraphTransition	
Trans5	GraphTransition	
Trans6	GraphTransition	
Trans7	GraphTransition	
Trans8	GraphTransition	
Trans9	GraphTransition	
Trans10	GraphTransition	
Initial	GraphStep	
Wait_For_New_Can	GraphStep	
Push_Can_Into_Tipper	GraphStep	

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Name	Data type	Default value
Retract_CYL4	GraphStep	
Clamp_Can	GraphStep	
Tip_Rotator	GraphStep	
Blend	GraphStep	
Untip	GraphStep	
Unclamp	GraphStep	
Push_Out	GraphStep	
S_DISPLAY	Int	0
S_SEL_OLD	Int	0
S_DISPIDX	Byte	16#0
T_DISPIDX	Byte	16#0
MOP	Struct	
TICKS	Struct	
SQ_FLAGS	Struct	
Temp		
Constant		

Alarms

Enable alarms	False
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Category	Category enabler	Display class
Error		0
Warning		0
Info		0
Category 4		0
Category 5		0
Category 6		0
Category 7		0
Category 8		0

Category for interlocks	Error	Subcategory 1 for interlocks		Subcategory 2 for interlocks	
Category for supervisions	Error	Subcategory 1 for supervisions		Subcategory 2 for supervisions	

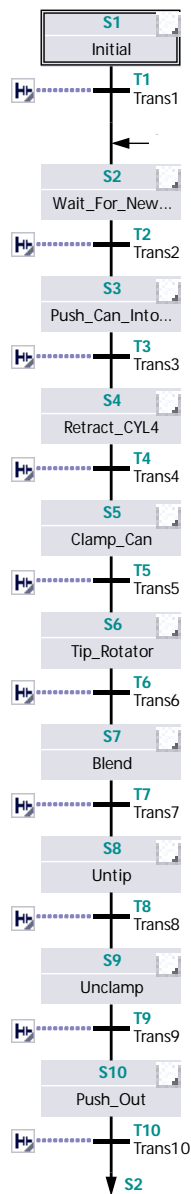
Permanent pre-instructions

Sequences (1)

1:Sequencer 1

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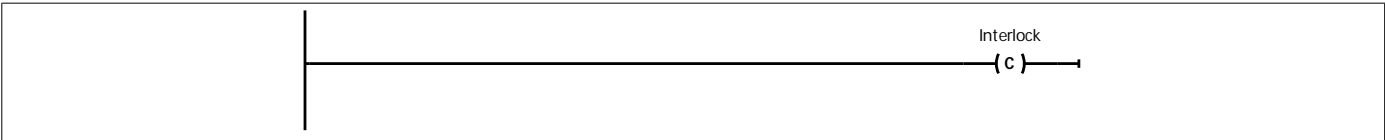
**S1 - [Initial step]:Initial**

Step comment

**Interlock -(c)-:**

**Interlock alarm**

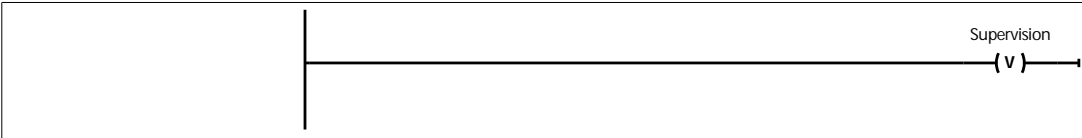
**Alarm text** Initial



**Supervision -(v)-:**

**Supervision alarm**

Alarm text Initial



**Actions:**

**Actions:**

Interlock	Event	Qualifier	Action

**T1:Trans1**



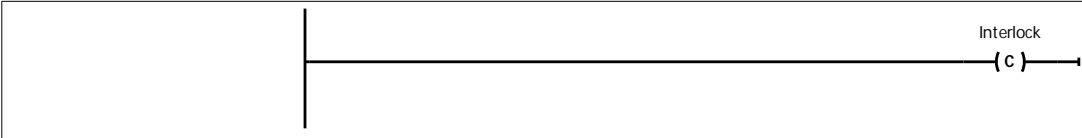
**S2:Wait\_For\_New\_Can**

Step comment

**Interlock -(c)-:**

**Interlock alarm**

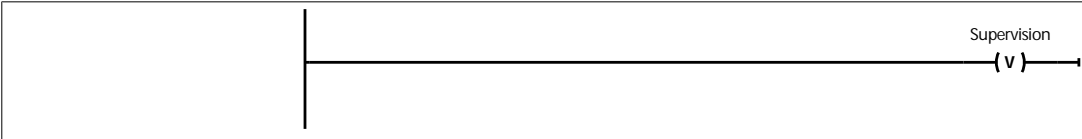
Alarm text Wait\_For\_New\_Can



**Supervision -(v)-:**

**Supervision alarm**

Alarm text Wait\_For\_New\_Can

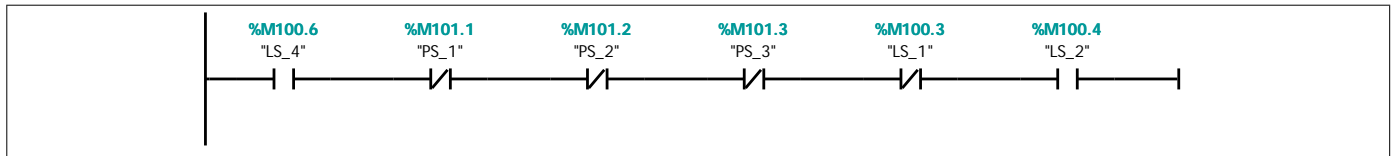


**Actions:**

**Actions:**

Interlock	Event	Qualifier	Action

## T2:Trans2



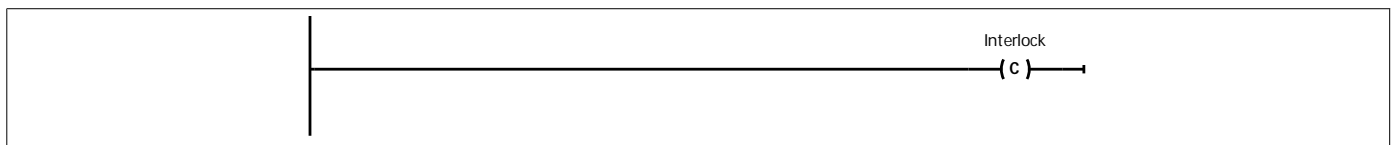
## S3:Push\_Can\_Into\_Tipper

Step comment

### Interlock -(c)-:

#### Interlock alarm

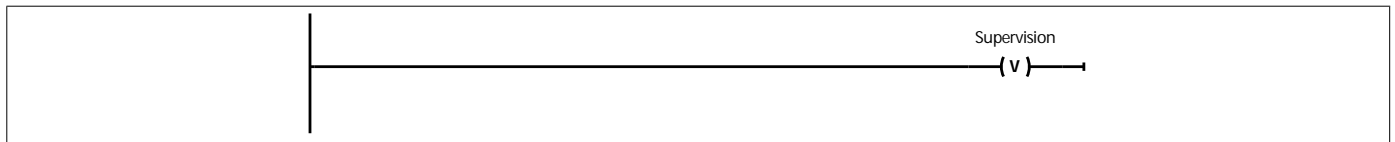
Alarm text Push\_Can\_Into\_Tipper



### Supervision -(v)-:

#### Supervision alarm

Alarm text Push\_Can\_Into\_Tipper

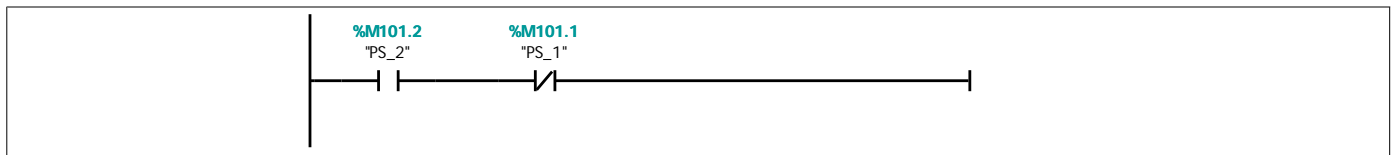


### Actions:

#### Actions:

Interlock	Event	Qualifier	Action
		S	"CYL_3"
		N	"CYL_4"

## T3:Trans3



## S4:Retract\_CYL4

Step comment

### Interlock -(c)-:

#### Interlock alarm

Alarm text Retract\_CYL4

Totally Integrated Automation Portal		
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Interlock  
( c )

Supervision -(v)-:

Supervision alarm

Alarm textRetract\_CYL4

Supervision  
( v )

Actions:

Actions:

Interlock	Event	Qualifier	Action

T4:Trans4

#Retract\_CYL4.T

>=

Time

T#2S

S5:Clamp\_Can

Step comment

Interlock -(c)-:

Interlock alarm

Alarm textClamp\_Can

Interlock  
( c )

Supervision -(v)-:

Supervision alarm

Alarm textClamp\_Can

Supervision  
( v )

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**Actions:**

Actions:			
Interlock	Event	Qualifier	Action
		S	"CYL_1"

**T5:Trans5**



**S6:Tip\_Rotator**

Step comment

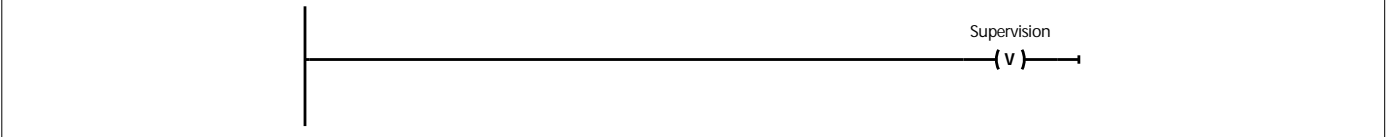
**Interlock -(c)-:**

Interlock alarm	
Alarm text	Tip_Rotator



**Supervision -(v)-:**

Supervision alarm	
Alarm text	Tip_Rotator



**Actions:**

Actions:			
Interlock	Event	Qualifier	Action
		S	"CYL_2"

**T6:Trans6**



**S7:Blend**

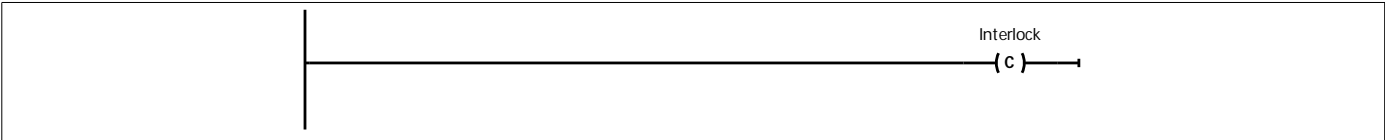
Step comment

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**Interlock -(c)-:**

**Interlock alarm**

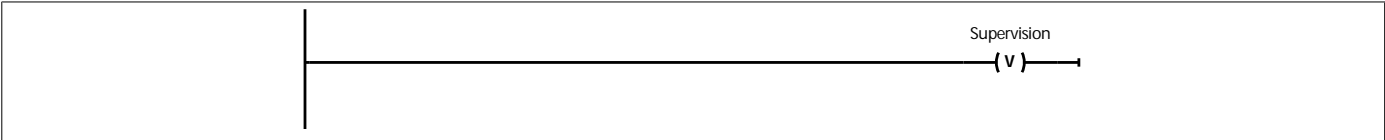
Alarm text Blend



**Supervision -(v)-:**

**Supervision alarm**

Alarm text Blend

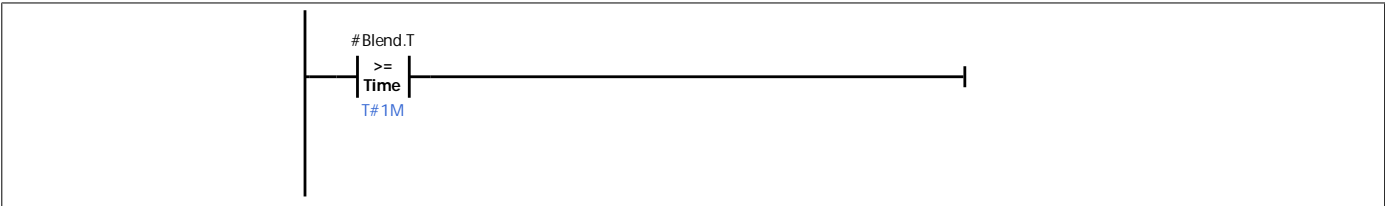


**Actions:**

**Actions:**

Interlock	Event	Qualifier	Action
		N	"MOTOR_1"

**T7:Trans7**



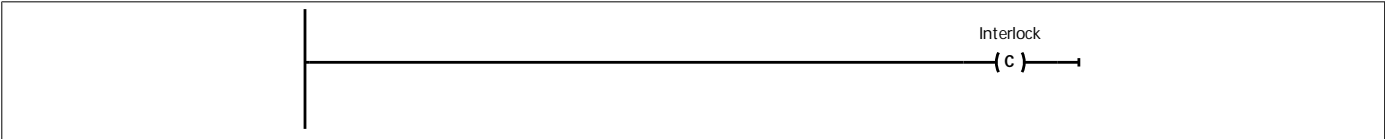
**S8:Untip**

Step comment

**Interlock -(c)-:**

**Interlock alarm**

Alarm text Untip



**Supervision -(v)-:**

**Supervision alarm**

Alarm text Untip

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Totally Integrated Automation Portal		
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Supervision  
( v )

Actions:

Actions:

Interlock	Event	Qualifier	Action
		R	"CYL_2"

T8:Trans8

%M100.7  
"LS\_5"

S9:Unclamp

Step comment

Interlock -(c)-:

Interlock alarm

Alarm text	Unclamp
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Interlock  
( c )

Supervision -(v)-:

Supervision alarm

Alarm text	Unclamp
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Supervision  
( v )

Actions:

Actions:

Interlock	Event	Qualifier	Action
		R	"CYL_1"

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**T9:Trans9**



**S10:Push\_Out**

Step comment

**Interlock -(c)-:**

**Interlock alarm**

Alarm text Push\_Out



**Supervision -(v)-:**

**Supervision alarm**

Alarm text Push\_Out

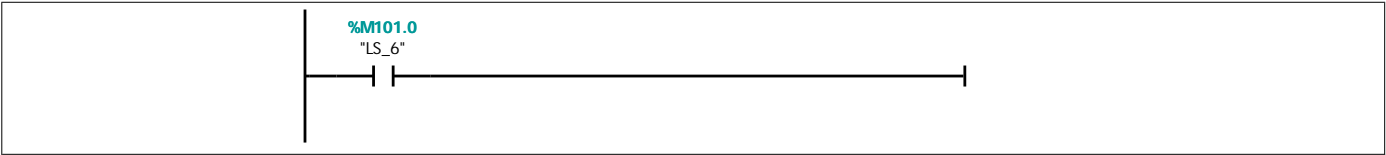


**Actions:**

**Actions:**

Interlock	Event	Qualifier	Action
		N	"CYL_4"

**T10:Trans10**



**Permanent post-instructions**



**Erbia\_Cans\_Reset [FB21]****Erbia\_Cans\_Reset Properties****General**

<b>Name</b>	Erbia_Cans_Reset	<b>Number</b>	21	<b>Type</b>	FB
<b>Language</b>	GRAPH	<b>Numbering</b>	Manual	<b>Network language</b>	LAD

**Information**

<b>Title</b>	S7GRAPH V4 FB -- SP14_03\SIMATIC 400 Station\CPU 417-4\S7 Program(2)\Sources\Er- bia_Cans_Reset	<b>Author</b>		<b>Comment</b>	Erbia Cans Blend Reset Operation  Copyright (c) 2011, 2015 Dogwood Valley Press, LLC ----- -----
<b>Family</b>		<b>Version</b>	0.1	<b>User-defined ID</b>	

Name	Data type	Default value
▼ Input		
OFF_SQ	Bool	false
INIT_SQ	Bool	false
ACK_EF	Bool	false
S_PREV	Bool	false
S_NEXT	Bool	false
SW_AUTO	Bool	false
SW_TAP	Bool	false
SW_MAN	Bool	false
S_SEL	Int	0
S_ON	Bool	false
S_OFF	Bool	false
T_PUSH	Bool	false
▼ Output		
S_NO	Int	0
S_MORE	Bool	false
S_ACTIVE	Bool	false
ERR_FLT	Bool	false
AUTO_ON	Bool	false
TAP_ON	Bool	false
MAN_ON	Bool	false
InOut		
▼ Static		
Trans1	GraphTransition	
Trans2	GraphTransition	
Trans3	GraphTransition	
Trans4	GraphTransition	
Trans5	GraphTransition	
Reset_Initial	GraphStep	
Reset_Untip	GraphStep	

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Name	Data type	Default value
Reset_Unclamp	GraphStep	
Reset_Push_Out	GraphStep	
Unlatch_Reset	GraphStep	
S_DISPLAY	Int	0
S_SEL_OLD	Int	0
S_DISPIDX	Byte	16#0
T_DISPIDX	Byte	16#0
MOP	Struct	
TICKS	Struct	
SQ_FLAGS	Struct	
Temp		
Constant		

Alarms

Enable alarms	False
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Category	Category enabler	Display class
Error		0
Warning		0
Info		0
Category 4		0
Category 5		0
Category 6		0
Category 7		0
Category 8		0

Category for interlocks	Error	Subcategory 1 for interlocks	Subcategory 2 for interlocks
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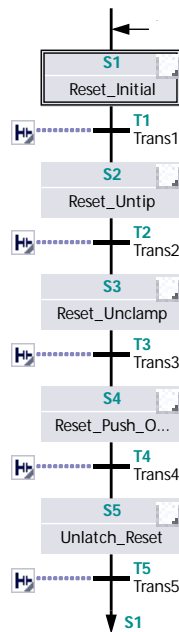
Category for supervisions	Error	Subcategory 1 for supervisions	Subcategory 2 for supervisions
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Permanent pre-instructions

Sequences (1)

1:Sequencer 1

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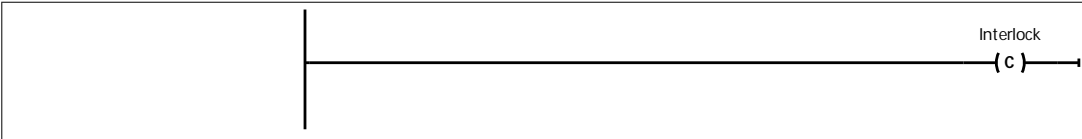
S1 - [Initial step]:Reset\_Initial

Step comment

Interlock -(c)-:

Interlock alarm

Alarm textReset\_Initial



Supervision -(v)-:

Supervision alarm

Alarm textReset\_Initial

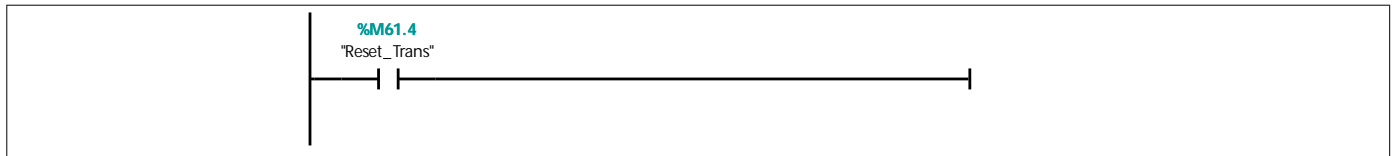


Actions:

Actions:

Interlock	Event	Qualifier	Action

## T1:Trans1



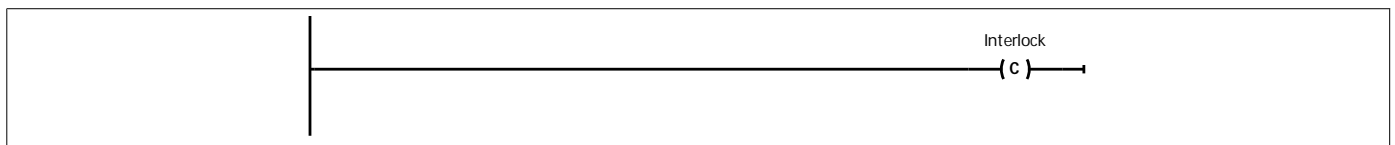
## S2:Reset\_Untip

Step comment

### Interlock -(c)-:

#### Interlock alarm

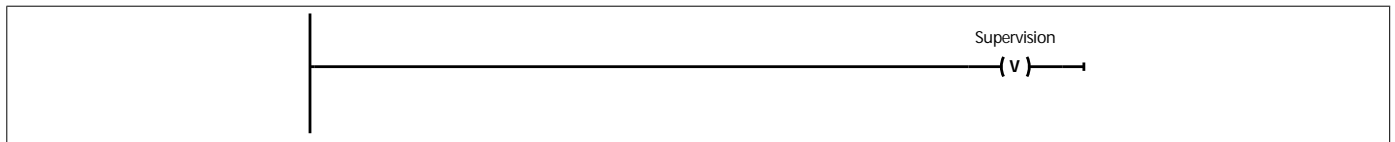
Alarm text Reset\_Untip



### Supervision -(v)-:

#### Supervision alarm

Alarm text Reset\_Untip

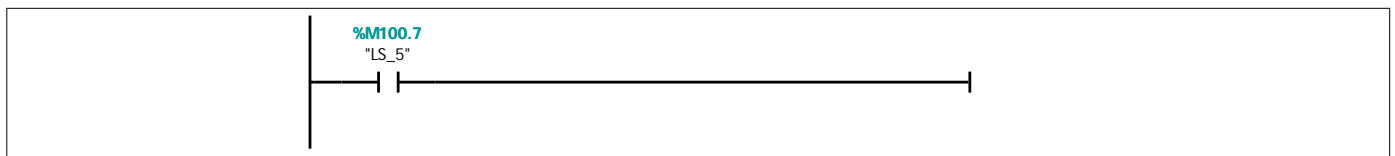


### Actions:

#### Actions:

Interlock	Event	Qualifier	Action
		S	"CYL_3"
		S	"Int_Reset"
		R	"CYL_2"
		N	"CYL_1"

## T2:Trans2



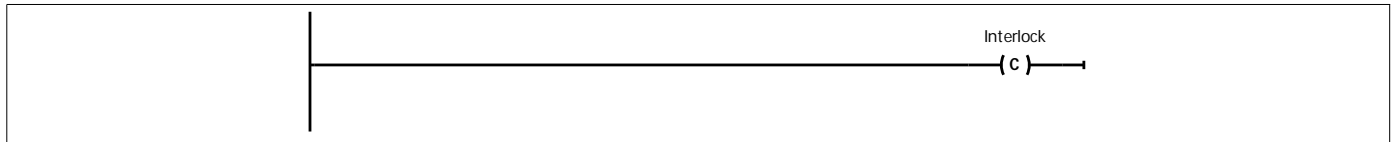
## S3:Reset\_Unclamp

Step comment

**Interlock -(c)-:**

**Interlock alarm**

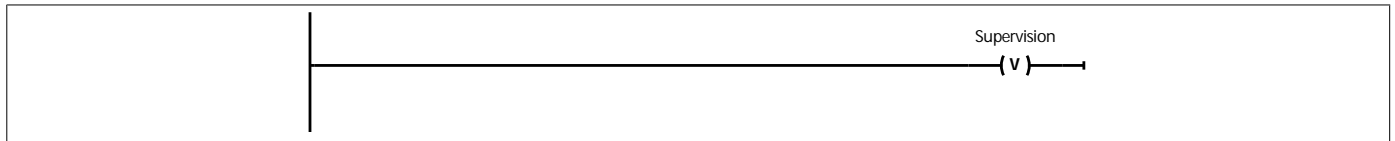
Alarm text Reset\_Unclamp



**Supervision -(v)-:**

**Supervision alarm**

Alarm text Reset\_Unclamp

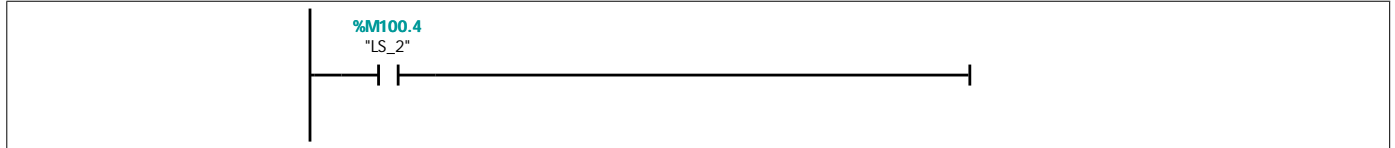


**Actions:**

**Actions:**

Interlock	Event	Qualifier	Action

**T3:Trans3**



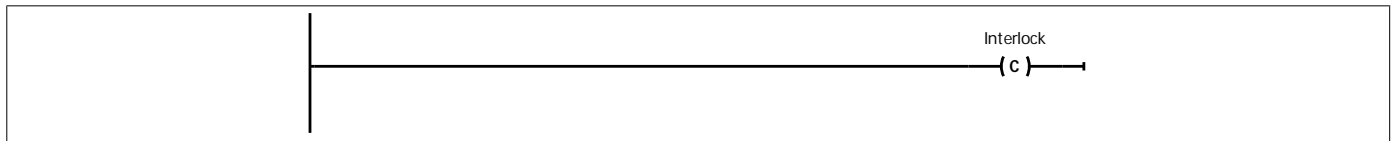
**S4:Reset\_Push\_Out**

Step comment

**Interlock -(c)-:**

**Interlock alarm**

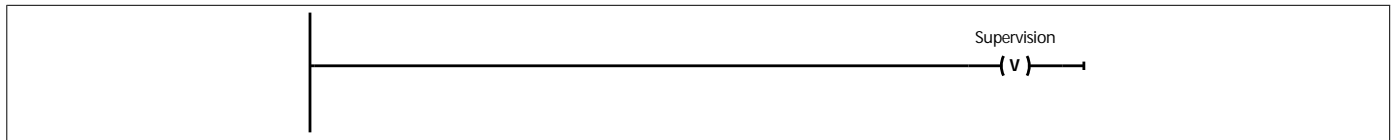
Alarm text Reset\_Push\_Out



**Supervision -(v)-:**

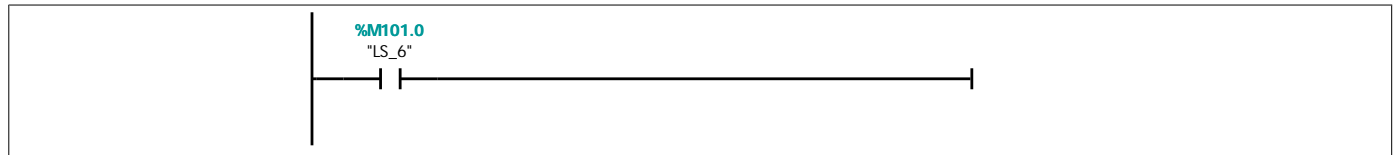
**Supervision alarm**

Alarm text Reset\_Push\_Out



**Actions:****Actions:**

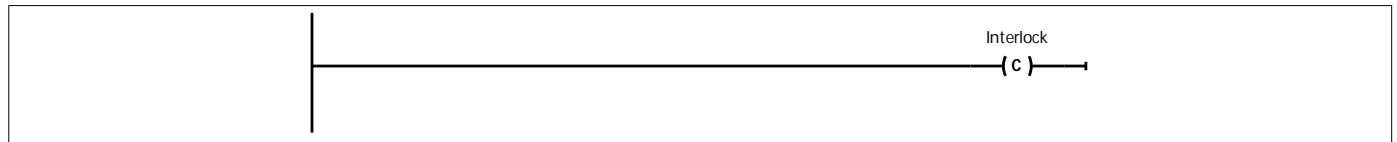
Interlock	Event	Qualifier	Action
		N	"CYL_4"

**T4:Trans4****S5:Unlatch\_Reset**

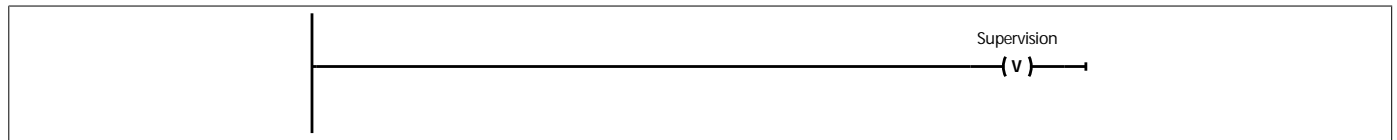
Step comment

**Interlock -(c)-:****Interlock alarm**

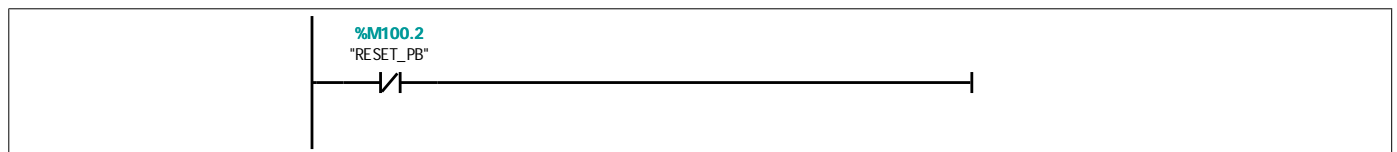
Alarm text	Unlatch_Reset
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**Supervision -(v)-:****Supervision alarm**

Alarm text	Unlatch_Reset
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**Actions:****Actions:**

Interlock	Event	Qualifier	Action
		R	"Int_Reset"
		R	"CYL_3"

**T5:Trans5**

Totally Integrated Automation Portal		
<b>Permanent post-instructions</b>		

## Simulation Properties

General	
1	General
2	General
3	General
4	General
5	General
6	General
7	General
8	General
9	General
10	General
11	General
12	General
13	General
14	General
15	General
16	General
17	General
18	General
19	General
20	General
21	General
22	General
23	General
24	General
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64	General
65	General
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100	General

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

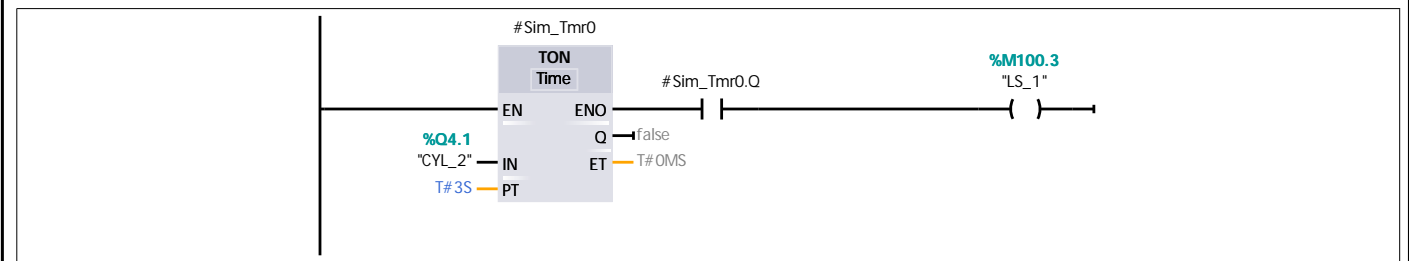
Information
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<b>Title</b>	Simulation	<b>Author</b>		<b>Comment</b>	Copyright (c) 2011 Dogwood Valley Press, LLC
					SIMULATION LOGIC
<b>Family</b>		<b>Version</b>	0.1	<b>User-defined ID</b>	

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_Tmr_4_ET	Int	0
Sim_Tmr_5_IN	Bool	false
Temp		
Constant		

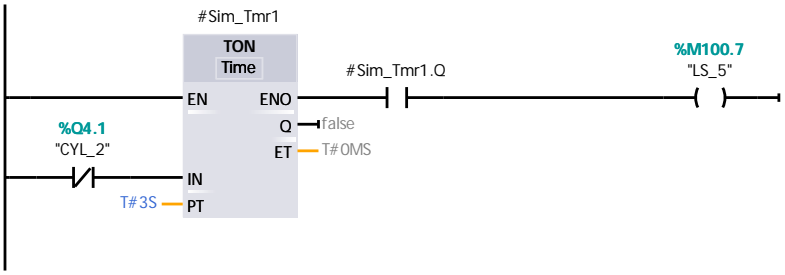
**Network 1: Limit switch that closes when feeder ram is retracted.**

Horizontal/vertical limit switch simulation: Turn on LS\_1 when CYL\_2 on for 3 secs. Turn on LS\_5 when CYL\_2 off for 3 secs.



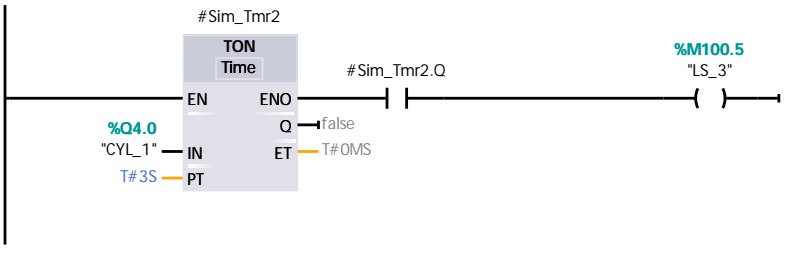
### Network 2: Vertical position limit switch



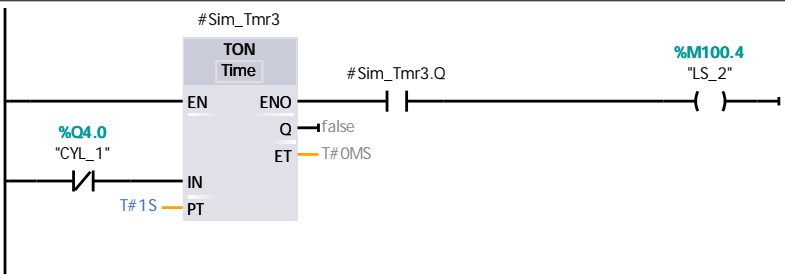


**Network 3: Holder clear limit switch**

Tieback for clamped can limit switches  
Clamped can limit switch simulation: Turn on LS\_3 when CYL\_1 on for 3 secs.  
Turn on LS\_2 when CYL\_1 off for 3 secs.

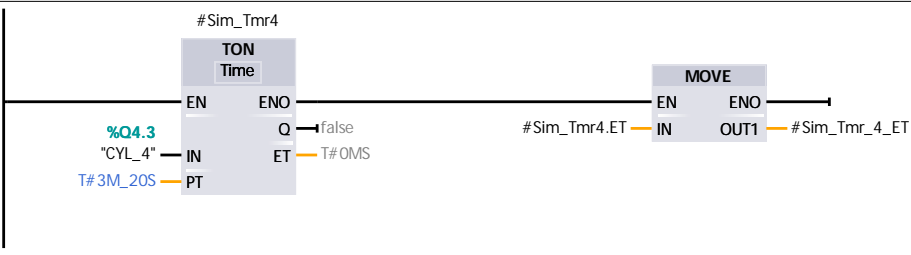


**Network 4: Holder clear limit switch**

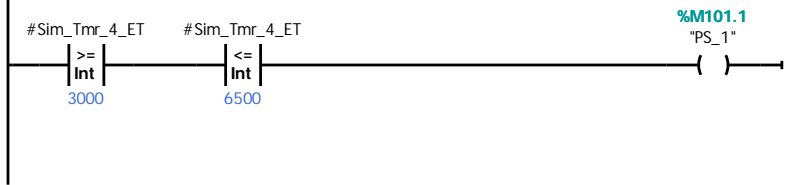


**Network 5:**

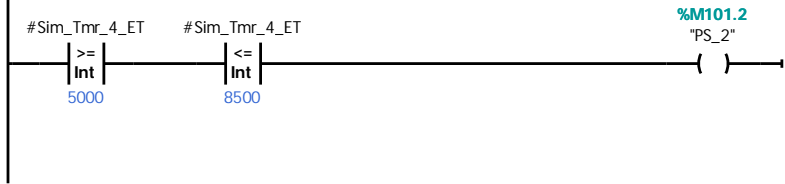
Switches that change because of CYL\_4 extension are driven based on time that  
CYL\_4 control is on.



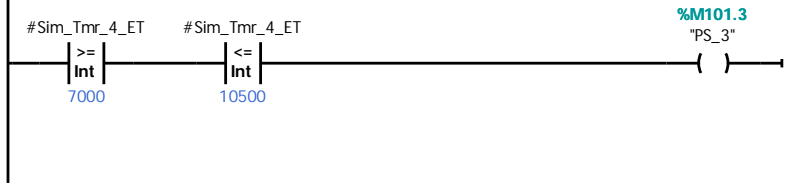
**Network 6: Left can photoelectric switch**



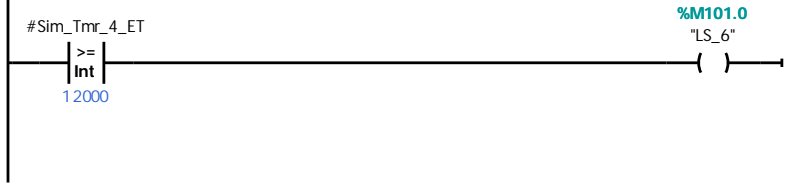
**Network 7: Middle can photoelectric switch**



**Network 8: Right can photoelectric switch**



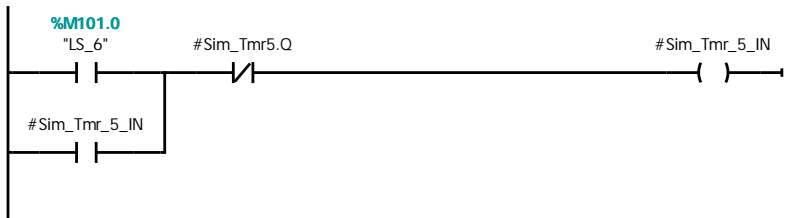
**Network 9: Cylinder CYL\_4 fully extended limit switch**



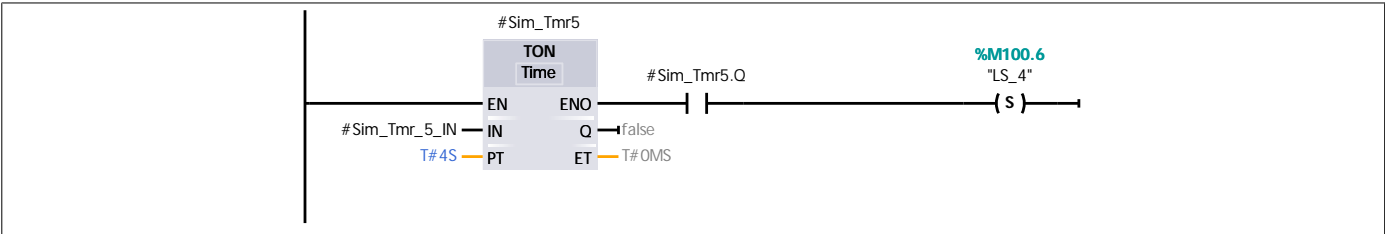
**Network 10:**

Simulate next one in 4 sec after LS\_6 is activated.  
Reset 2 seconds after CYL\_4 activated.

This will also generate first one in after reset since LS\_6 is always activated to push one out.



Network 11: Can present on input conveyor limit switch



Network 12: Can present on input conveyor limit switch

