

## 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: SP14-1

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SP14-1 Part Oiler Station 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

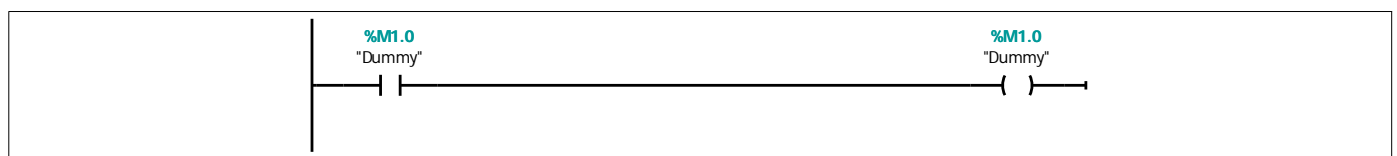
Run\_NTrans M61.2 BOOL Bit for Run pos transition

OP\_Zeroed M61.3 BOOL Operation paused

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

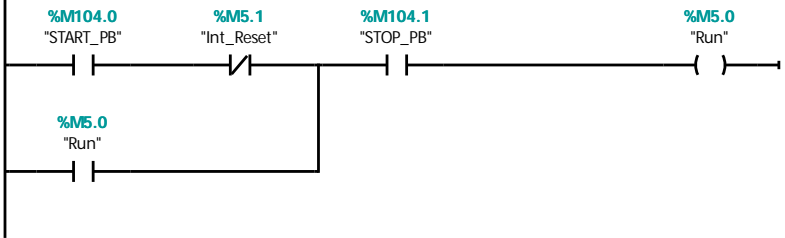
SFC

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



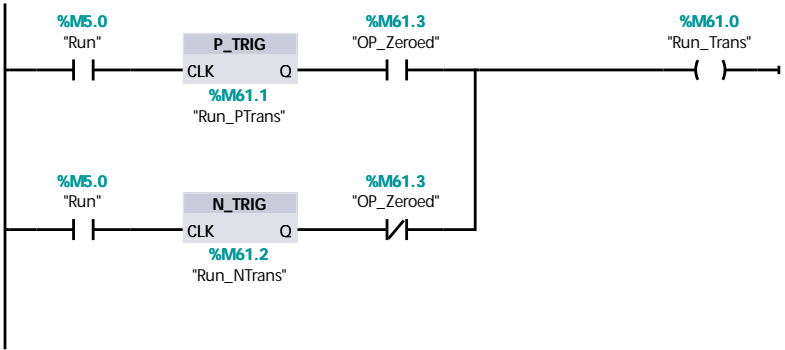
### Network 2: Start/stop

During reset prevent start



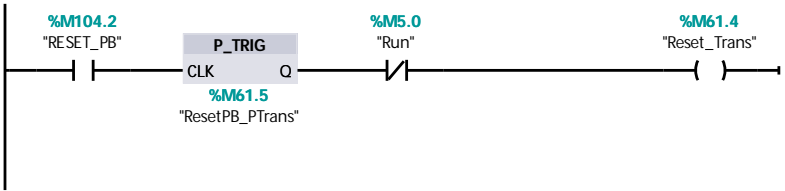
**Network 3: Generate pulse to toggle pause for SFC.**

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

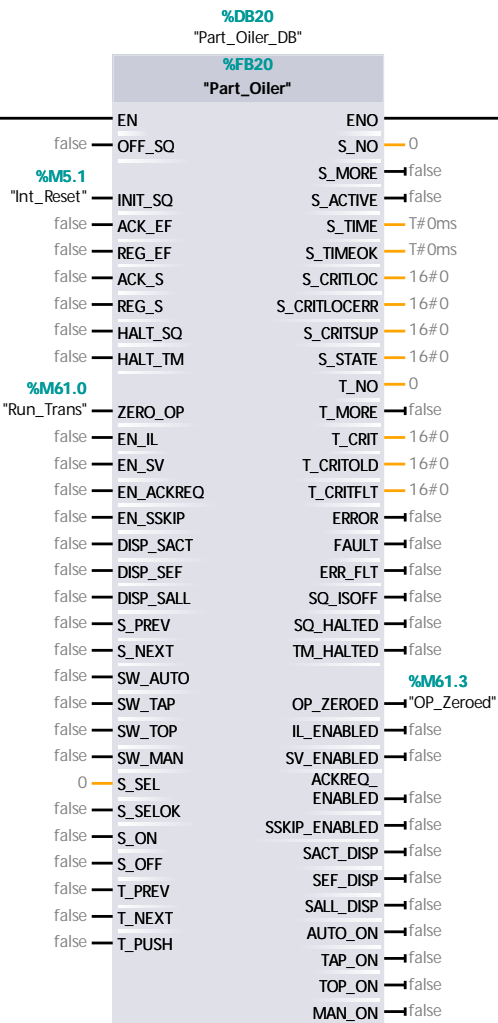


**Network 4:**

Positive transition for reset PB to start reset operation.



**Network 5: Part Oiler S7-GRAPH**



Network 6:



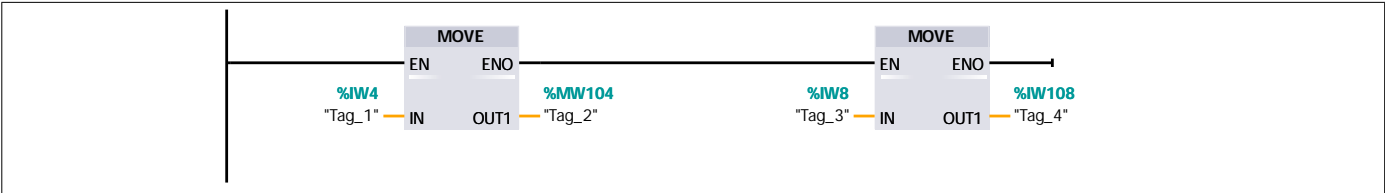
# Duplicate\_Ins [FC2]

## 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:



## Part\_Oiler [FB20]

### Part\_Oiler Properties

#### General

<b>Name</b>	Part_Oiler	<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_01\SIMATIC 400 Station\CPU 417-4\S7 Program(2)\Sources\Part_Oiler	<b>Author</b>		<b>Comment</b>	Part Oiler 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

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	
Initial	GraphStep	
Wait_For_Part	GraphStep	
Wait_To_Engage	GraphStep	
Lower_Oiler	GraphStep	
Squirt_Oil	GraphStep	
Raise_Oiler	GraphStep	

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Name	Data type	Default value
Part_Leaves	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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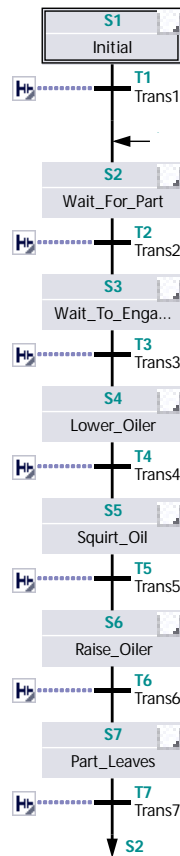
Permanent pre-instructions

Sequences (1)

1:Sequencer 1

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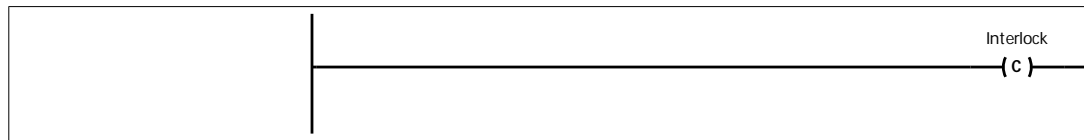
## S1 - [Initial step]:Initial

Step comment

### Interlock -(c)-:

#### Interlock alarm

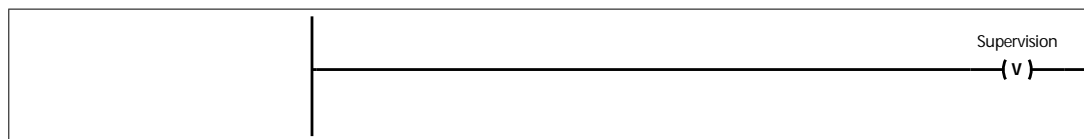
Alarm text Initial



### Supervision -(v)-:

#### Supervision alarm

Alarm text Initial

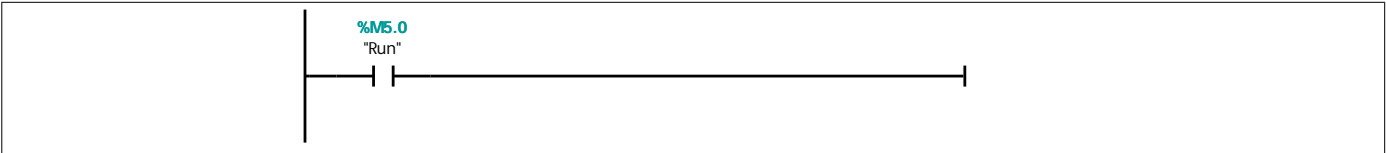


**Actions:**

**Actions:**

Interlock	Event	Qualifier	Action

**T1:Trans1**



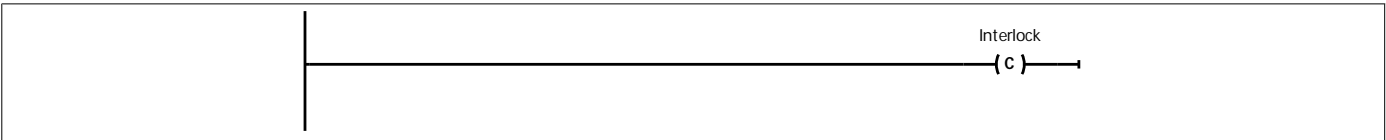
**S2:Wait\_For\_Part**

Step comment

**Interlock -(c)-:**

**Interlock alarm**

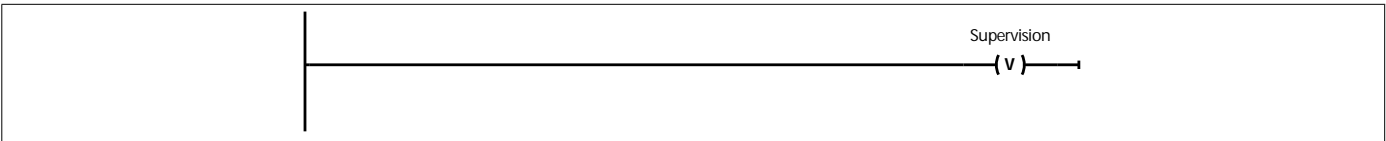
Alarm text	Wait_For_Part
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**Supervision -(v)-:**

**Supervision alarm**

Alarm text	Wait_For_Part
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**Actions:**

**Actions:**

Interlock	Event	Qualifier	Action

**T2:Trans2**



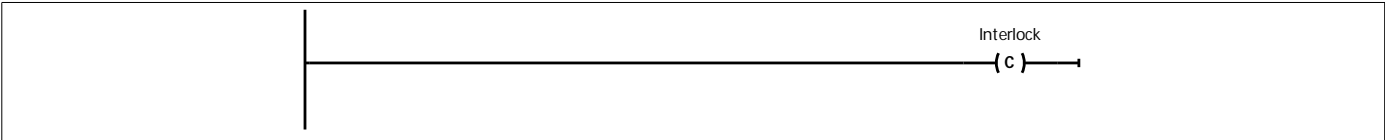
**S3:Wait\_To\_Engage**

Step comment

**Interlock -(c)-:**

**Interlock alarm**

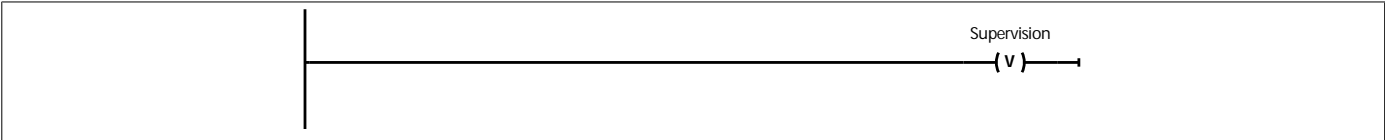
Alarm text Wait\_To\_Engage



**Supervision -(v)-:**

**Supervision alarm**

Alarm text Wait\_To\_Engage

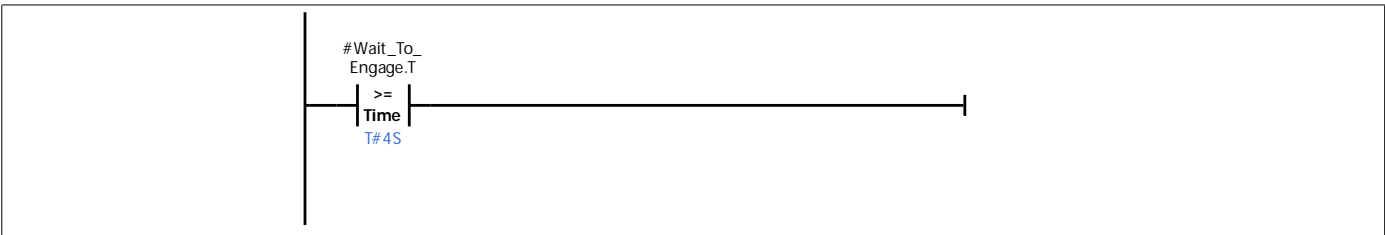


**Actions:**

**Actions:**

Interlock	Event	Qualifier	Action
		S	"ENGAGE_SOL"

**T3:Trans3**



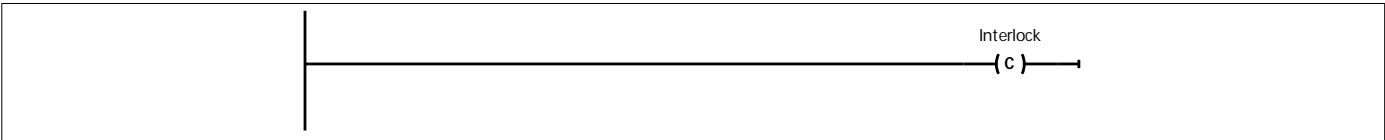
**S4:Lower\_Oiler**

Step comment

**Interlock -(c)-:**

**Interlock alarm**

Alarm text Lower\_Oiler



**Supervision -(v)-:**

**Supervision alarm**

Alarm text Lower\_Oiler

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Supervision

( v )

**Actions:**

**Actions:**

Interlock	Event	Qualifier	Action
		N	"OILER_DOWN"

**T4:Trans4**

%M108.2  
"LS2"

%M5.0  
"Run"

**S5:Squirt\_Oil**

Step comment

**Interlock -(c)-:**

**Interlock alarm**

Alarm text	Squirt_Oil
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Interlock

( c )

**Supervision -(v)-:**

**Supervision alarm**

Alarm text	Squirt_Oil
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Supervision

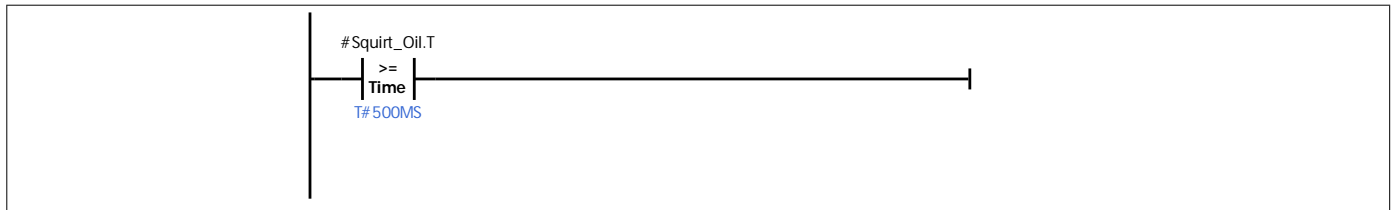
( v )

**Actions:**

**Actions:**

Interlock	Event	Qualifier	Action
		S	"OIL_VALVE"

### T5:Trans5



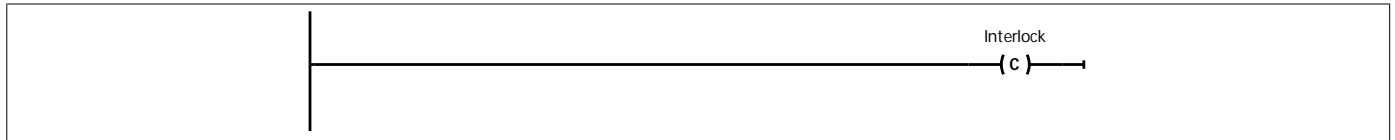
### S6:Raise\_Oiler

Step comment

#### Interlock -(c)-:

##### Interlock alarm

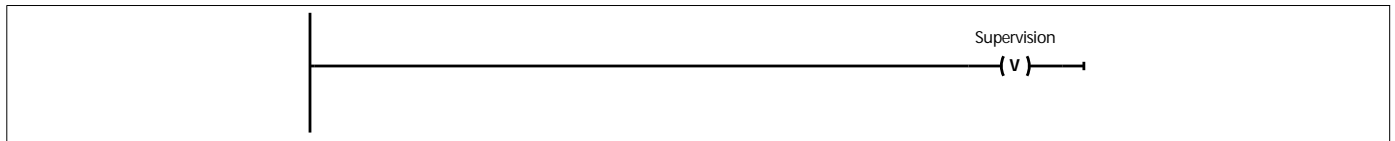
Alarm text	Raise_Oiler
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#### Supervision -(v)-:

##### Supervision alarm

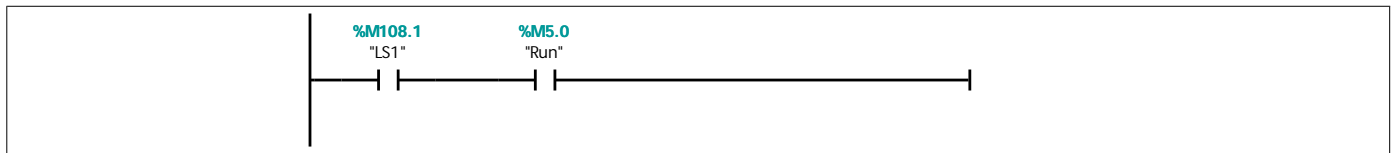
Alarm text	Raise_Oiler
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#### Actions:

Actions:			
Interlock	Event	Qualifier	Action
		R	"OIL_VALVE"
		N	"OILER_UP"

### T6:Trans6



### S7:Part\_Leaves

Step comment

Totally Integrated Automation Portal			
<b>Interlock -(c)-:</b>			
<b>Interlock alarm</b>			
Alarm text	Part_Leaves		
<div><div></div><div>Interlock ( c )</div></div>			
<b>Supervision -(v)-:</b>			
<b>Supervision alarm</b>			
Alarm text	Part_Leaves		
<div><div></div><div>Supervision ( v )</div></div>			
<b>Actions:</b>			
<b>Actions:</b>			
Interlock	Event	Qualifier	Action
		R	"ENGAGE_SOL"
<b>T7:Trans7</b>			
<div><div></div><div><div>%M108.0 "PROX"</div><div></div></div></div>			
<b>Permanent post-instructions</b>			

## Part\_Oiler\_Reset [FB21]

### Part\_Oiler\_Reset Properties

#### General

<b>Name</b>	Part_Oiler_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_01\SIMATIC 400 Station\CPU 417-4\S7 Program(2)\Sources\Part_Oiler_Reset	<b>Author</b>		<b>Comment</b>	Part Oiler 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	
Reset_wait	GraphStep	
Reset_Head_Up	GraphStep	
Unlatch_Reset	GraphStep	
S_DISPLAY	Int	0

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Name	Data type	Default value
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

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

S1 - [Initial step]:Reset\_wait

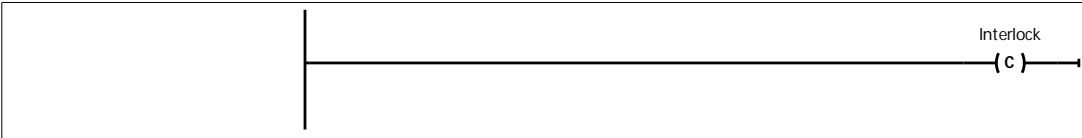
Step comment



**Interlock -(c)-:**

**Interlock alarm**

Alarm text Reset\_wait



**Supervision -(v)-:**

**Supervision alarm**

Alarm text Reset\_wait

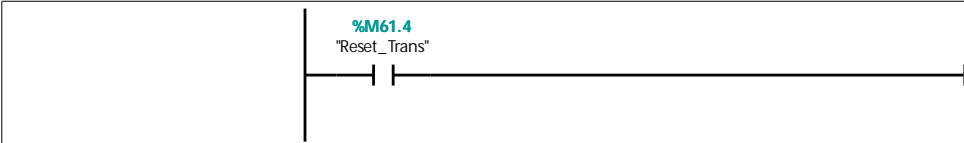


**Actions:**

**Actions:**

Interlock	Event	Qualifier	Action
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**T1:Trans1**



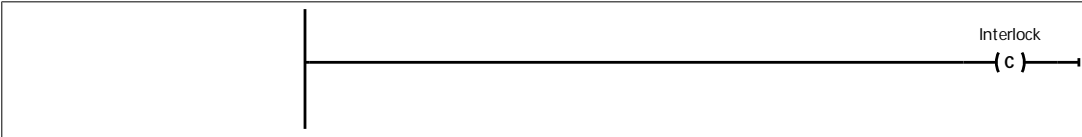
**S2:Reset\_Head\_Up**

Step comment

**Interlock -(c)-:**

**Interlock alarm**

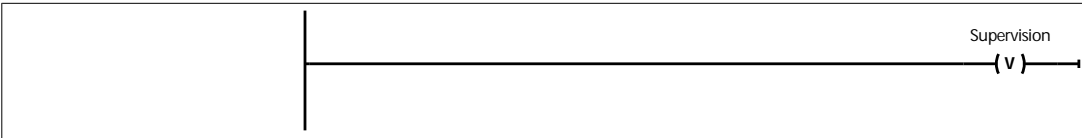
Alarm text Reset\_Head\_Up



**Supervision -(v)-:**

**Supervision alarm**

Alarm text Reset\_Head\_Up



**Actions:**

**Actions:**

Interlock	Event	Qualifier	Action
		N	"OILER_UP"
		S	"Int_Reset"

**T2:Trans2**



**S3: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"

**T3:Trans3**



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<b>Permanent post-instructions</b>		

## Simulation [FB10]

## Simulation Properties

## General

Name	Simulation	Number	10	Type	FB
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Language	LAD	Numbering	Manual
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## Information

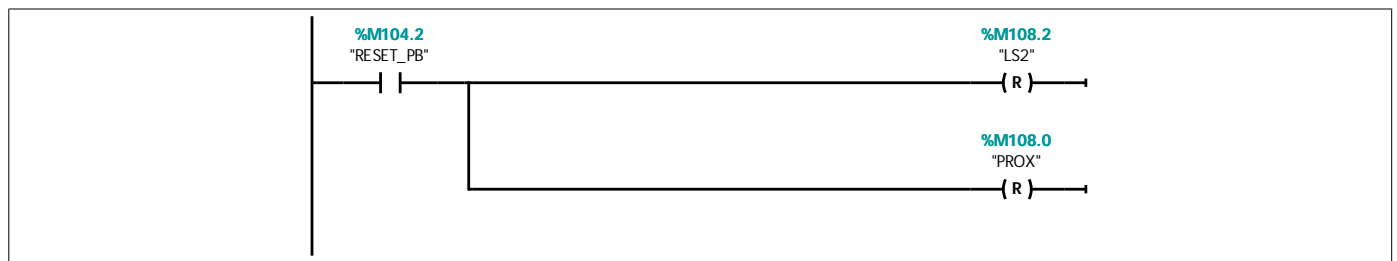
Title		Author		Comment	
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Family		Version	0.1	User-defined ID	
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Name	Data type	Default value
Input		
Output		
InOut		
▼ Static		
Prox_On_Tmr	TON	
Prox_Off_Tmr	TON	
LS1_Tmr	TON	
LS2_Tmr	TON	
Prox_Off_Tmr_IN	Bool	false
Oiler_Up_NTrans	Bool	false
Temp		
Constant		

## Network 1: Limit switch, on (closed) when oiler tip is in lowered position

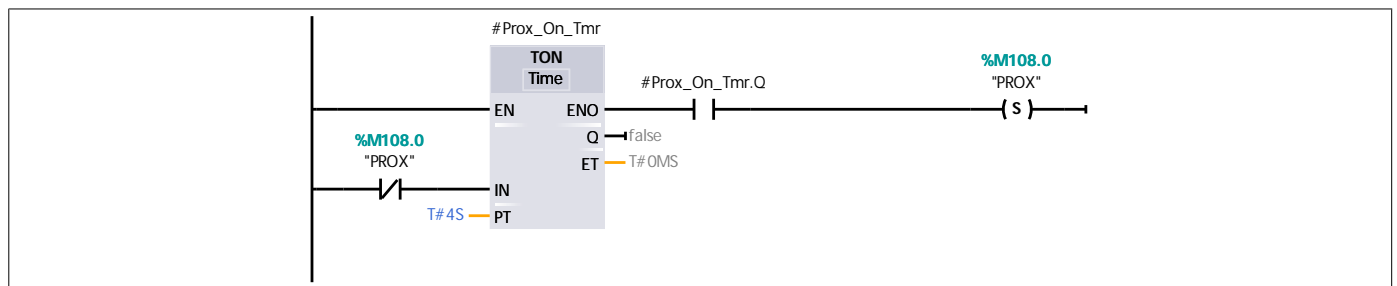
On reset, reset PROX and LS2



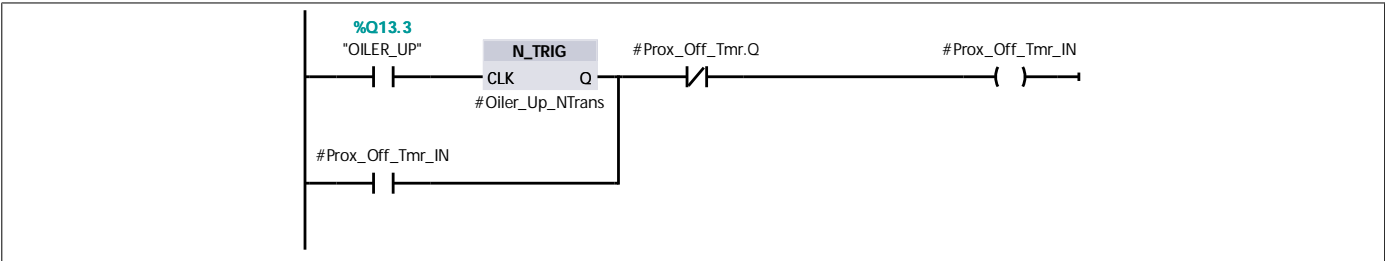
## Network 2: Proximity sensor, on when platform is in station

PROX simulation: Set when PROX off and for 4 secs.

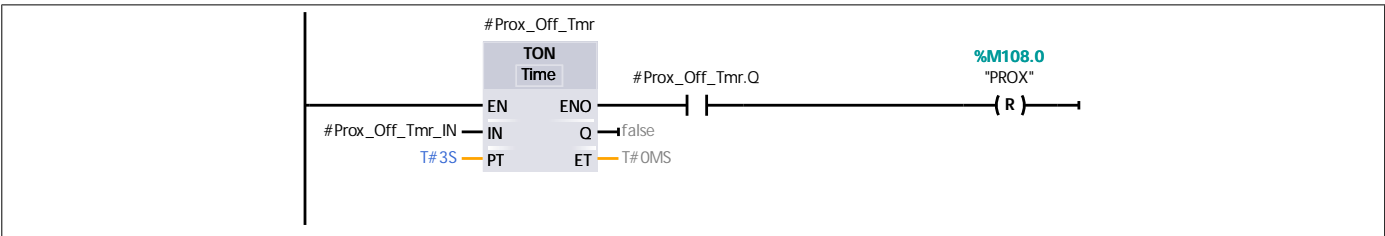
Reset 3 secs after OILER\_UP transitions off



**Network 3:**



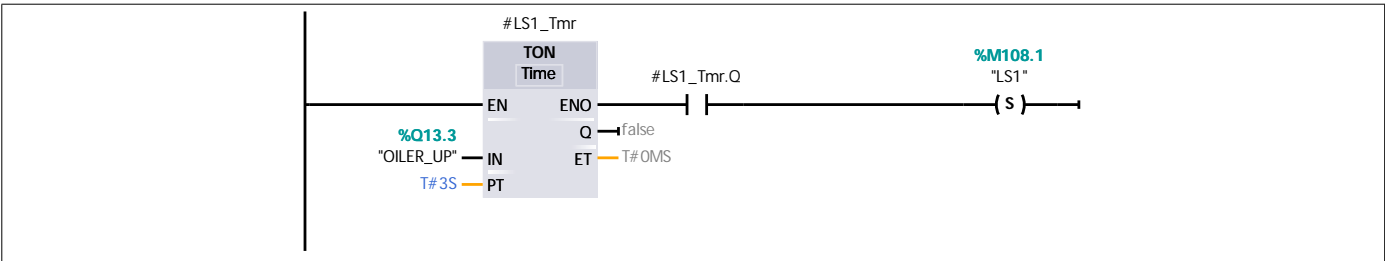
**Network 4: Proximity sensor, on when platform is in station**



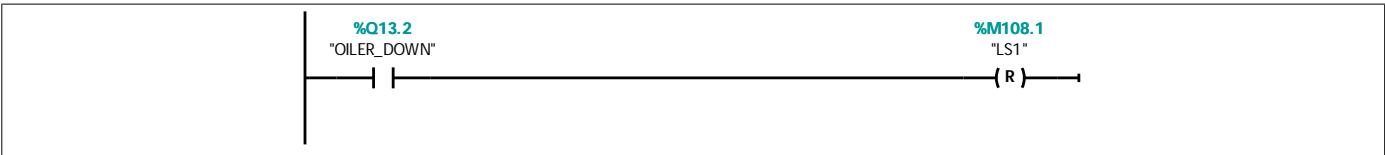
**Network 5: Limit switch, on (closed) when oiler tip is in raised position**

LS1 and LS2 simulation: Set LS1 when OILER\_UP on for 3 sec. Reset when OILER\_DOWN

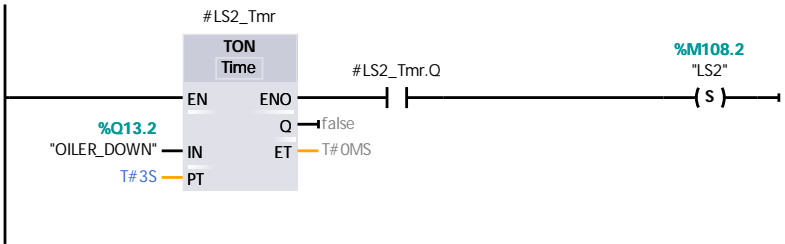
Set LS2 when OILER\_DOWN on for 3 sec. Reset when OILER\_UP



**Network 6: Limit switch, on (closed) when oiler tip is in raised position**



**Network 7: Proximity sensor, on when 40-foot rail piece in feeder area**



**Network 8: Limit switch, on (closed) when oiler tip is in lowered position**

