

Soda_Ash

Totally Integrated Automation Portal		
Table of contents		
Soda_Ash [CPU 1516-3 PN/DP]		3 - 1
Software units		4 - 1
Program blocks		
Main [OB1]		5 - 1
STARTUP [OB100]		6 - 1
Duplicate_Ins [FC40]		7 - 1
Simulate [FB40]		8 - 1
Comms_DB [DB30]		9 - 1
Simulate_DB [DB40]		10 - 1
Soda_Ash_Export_Data [DB1]		11 - 1
Comms [FB30]		12 - 1
Soda_Ash_Import_Data [DB2]		13 - 1
System blocks		
Program resources		
CIP_1_Send_Conn_DB [DB4]		14 - 1
CIP_1_Rcv_Conn_DB [DB3]		15 - 1
TRCV_C [FB1031]		16 - 1
TSEND_C [FB1030]		17 - 1
CONT_C_1 [FB0]		18 - 1
SCALE [FC105]		19 - 1
Soda_Ash		
Soda_Ash_000Main [FB100]		20 - 1
Soda_Ash_Gates [FB121]		21 - 1
Soda_Ash_Motors [FB122]		22 - 1
Soda_Ash_PIDLoops [FB123]		23 - 1
Soda_Ash_Valves [FB124]		24 - 1
Soda_Ash_990Misc [FB115]		25 - 1
Soda_Ash_991Abnormal [FB116]		26 - 1
Soda_Ash_000StrtTrans [FB101]		27 - 1
Soda_Ash_020Hold [FB112]		28 - 1
Soda_Ash_040Shutdown [FB113]		29 - 1
Soda_Ash_060EShutdown [FB114]		30 - 1
Soda_Ash_DB [DB100]		31 - 1
Soda_Ash [DB101]		32 - 1
Soda_AshG [DB103]		33 - 1
Soda_AshM [DB104]		34 - 1
Soda_AshS [DB102]		35 - 1
Soda_AshV [DB106]		36 - 1
Soda_AshP [DB105]		37 - 1
zzDevice_Control		
Gate_Flop [FB1099]		38 - 1
Gate_Slide [FB1098]		39 - 1
Valve_Disc [FB1097]		40 - 1
Motor_Std [FB1095]		41 - 1
Motor_Conv [FB1096]		42 - 1
Technology objects		43 - 1
PLC tags		
Default tag table [64]		
PLC tags		44 - 1
User constants		45 - 1
Devices [31]		
PLC tags		46 - 1
User constants		47 - 1
PIDLoops [4]		
PLC tags		48 - 1
User constants		49 - 1
PLC data types		
Gate_Flop_Type		50 - 1
Gate_Slide_Type		51 - 1
Motor_Conv_Type		52 - 1
Motor_Std_Type		53 - 1
PIDData_Type		54 - 1
Seq_Type		55 - 1
Unit_Type		56 - 1
Valve_Disc_Type		57 - 1
System data types		58 - 1
Watch and force tables		

Totally Integrated Automation Portal																																														
<table><tr><td>Force table</td><td>59 - 1</td></tr><tr><td>Watch table_1</td><td>60 - 1</td></tr><tr><td>Traces</td><td>61 - 1</td></tr><tr><td>Measurements</td><td>62 - 1</td></tr><tr><td>Combined measurements</td><td>63 - 1</td></tr><tr><td>Long-term traces</td><td></td></tr><tr><td>Measurements</td><td>64 - 1</td></tr><tr><td>OPC UA communication</td><td></td></tr><tr><td>Server interfaces</td><td>65 - 1</td></tr><tr><td>Client interfaces</td><td>66 - 1</td></tr><tr><td>PLC supervisions & alarms</td><td></td></tr><tr><td>Supervisions</td><td>67 - 1</td></tr><tr><td>PLC alarms</td><td>68 - 1</td></tr><tr><td>System alarms</td><td>69 - 1</td></tr><tr><td>PLC alarm text lists</td><td>70 - 1</td></tr><tr><td>Local modules</td><td></td></tr><tr><td>PM 190W 120/230VAC</td><td>71 - 1</td></tr><tr><td>Soda_Ash [CPU 1516-3 PN/DP]</td><td>72 - 1</td></tr><tr><td>DI 32x24VDC HF_1</td><td>73 - 1</td></tr><tr><td>DQ 32x24VDC/0.5A ST_1</td><td>74 - 1</td></tr><tr><td>AI 8xU/I/RTD/TC ST_1</td><td>75 - 1</td></tr><tr><td>AQ 4xU/I ST_1</td><td>76 - 1</td></tr></table>			Force table	59 - 1	Watch table_1	60 - 1	Traces	61 - 1	Measurements	62 - 1	Combined measurements	63 - 1	Long-term traces		Measurements	64 - 1	OPC UA communication		Server interfaces	65 - 1	Client interfaces	66 - 1	PLC supervisions & alarms		Supervisions	67 - 1	PLC alarms	68 - 1	System alarms	69 - 1	PLC alarm text lists	70 - 1	Local modules		PM 190W 120/230VAC	71 - 1	Soda_Ash [CPU 1516-3 PN/DP]	72 - 1	DI 32x24VDC HF_1	73 - 1	DQ 32x24VDC/0.5A ST_1	74 - 1	AI 8xU/I/RTD/TC ST_1	75 - 1	AQ 4xU/I ST_1	76 - 1
Force table	59 - 1																																													
Watch table_1	60 - 1																																													
Traces	61 - 1																																													
Measurements	62 - 1																																													
Combined measurements	63 - 1																																													
Long-term traces																																														
Measurements	64 - 1																																													
OPC UA communication																																														
Server interfaces	65 - 1																																													
Client interfaces	66 - 1																																													
PLC supervisions & alarms																																														
Supervisions	67 - 1																																													
PLC alarms	68 - 1																																													
System alarms	69 - 1																																													
PLC alarm text lists	70 - 1																																													
Local modules																																														
PM 190W 120/230VAC	71 - 1																																													
Soda_Ash [CPU 1516-3 PN/DP]	72 - 1																																													
DI 32x24VDC HF_1	73 - 1																																													
DQ 32x24VDC/0.5A ST_1	74 - 1																																													
AI 8xU/I/RTD/TC ST_1	75 - 1																																													
AQ 4xU/I ST_1	76 - 1																																													

Totally Integrated Automation Portal

Soda_Ash [CPU 1516-3 PN/DP]

Soda_Ash

General\Project information

Name	Soda_Ash	Author	kte	Comment	
Rack	0	Slot	1		

General\Catalog information

Short designation	CPU 1516-3 PN/DP	Description	CPU with display; work memory 1 MB code and 5 MB data; 10 ns bit operation time; 4-stage protection concept, technology functions: motion control, closed-loop control, counting and measuring; tracing; Runtime options; isochronous mode (central); for all PROFINET interfaces: transport protocol TCP/IP, secure Open User Communication, S7 communication, S7 routing, IP forwarding, Web server, DNS client, OPC UA: Server DA, Client DA, methods, companion specifications; 1st interface: PROFINET IO controller, supports RT/IRT, performance upgrade PROFINET V2.3, 2 ports, I-Device, MRP, MRPD, isochronous mode; 2nd interface: PROFINET IO controller, supports RT, I-Device; 3rd interface: PROFIBUS DP Master, S7 communication, isochronous mode, S7 routing; firmware V2.8			Article number	6ES7 516-3AN01-0AB0
Firmware version	V2.8		False				

General\Identification & Maintenance

Plant designation		Location identifier		Installation date	2023-01-01 02:00:09.233
Additional information					

General\Checksums

Text lists	FA 70 E8 75 1D 5A 8E 29	Software	67 FB 83 22 CD D3 DF 7D	
------------	-------------------------	----------	-------------------------	--

Connection resources\

	Station resources - Reserved - Maximum	Station resources - Reserved - Configured	Station resources - Dynamic - Configured	Module resources - Soda_Ash [CPU 1516-3 PN/DP] - Configured
Maximum number of resources:		10	118	128
	Maximum	Configured	Configured	Configured
PG communication:	4	-	-	-
HMI communication:	4	0	0	0
S7 communication:	0	-	0	0
Open user communication:	0	-	0	0
Web communication:	2	-	-	-
OPC UA client/server communication:	0	-	-	-
Other communication:	-	-	0	0
Total resources used:		0	0	0
Available resources:		10	118	128

Overview of addresses\Overview of addresses\Overview of addresses

Inputs	True	Outputs	True	Address gaps	False						
Slot	True										
Type	Addr. from	Addr. to	Module	PIP	OB	Device name	Device number	Size	Master / IO system	Rack	Slot
I	0	3	DI 32x24VDC HF_1	Automatic update	-	Soda_Ash [CPU 1516-3 PN/DP]	-	4 Bytes	-	0	2
I	100	115	AI 8xU/I/RTD/TC ST_1	Automatic update	-	Soda_Ash [CPU 1516-3 PN/DP]	-	16 Bytes	-	0	4
O	100	107	AQ 4xU/I ST_1	Automatic update	-	Soda_Ash [CPU 1516-3 PN/DP]	-	8 Bytes	-	0	5
O	4	7	DQ 32x24VDC/0.5A ST_1	Automatic update	-	Soda_Ash [CPU 1516-3 PN/DP]	-	4 Bytes	-	0	3

Totally Integrated Automation Portal		
<div>Soda_Ash [CPU 1516-3 PN/DP]</div> <div>Software units</div> <div>This folder is empty.</div>		

Totally Integrated Automation Portal

Soda_Ash [CPU 1516-3 PN/DP] / Program blocks

Main [OB1]

Main Properties

General

Name	Main	Number	1	Type	OB	Language	LAD
Numbering	Manual						

Information

Title	K Process Soda Ash Unit	Author		Comment	SodaAsh Unit Control Copyright (c) 2023 Dog-wood Valley Press, LLC	Family	
Version	0.1	User-defined ID					

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	
Temp1	Bool	
Temp2	Bool	
Constant		

Network 1: Soda Ash Unit

%DB100
"Soda_Ash_DB"

%FB100
"Soda_Ash_000Main"

EN

ENO

Network 2: Communications

%DB30
"Comms_DB"

%FB30
"Comms"

EN

ENO

Network 3: If not simulation, transfer inputs to proper location

%M0.4
"Enab_Simulation"

%FC40
"Duplicate_Ins"

EN

ENO

Network 4:

%M0.4
"Enab_Simulation"

%DB40
"Simulate_DB"

%FB40
"Simulate"

EN

ENO

Network 5: On for first scan of OB1

Reset first scan bit. MUST BE LAST RUNG IN OB1!!

%M1.0
"First_Cycle"

%M1.0
"First_Cycle"

{ R }

Soda_Ash [CPU 1516-3 PN/DP] / Program blocks

STARTUP [OB100]

STARTUP Properties							
General							
Name	STARTUP	Number	100	Type	OB	Language	LAD
Numbering	Manual						
Information							
Title	"Complete Restart"	Author		Comment	Copyright (c) 2011, Dogwood Valley Press, LLC	Family	
Version	0.1	User-defined ID					

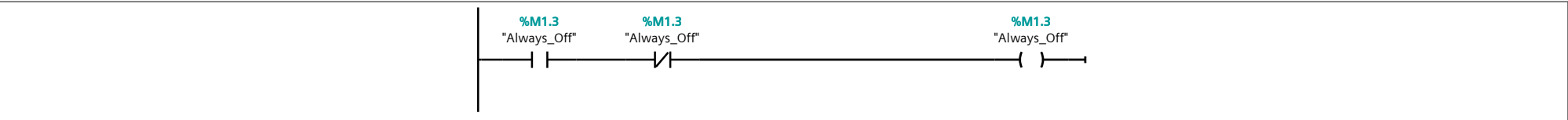
Name	Data type	Default value
▼ Temp		
OB100_EV_CLASS	Byte	
OB100_STRTUP	Byte	
OB100_PRIORITY	Byte	
OB100_OB_NUMBR	Byte	
OB100_RESERVED_1	Byte	
OB100_RESERVED_2	Byte	
OB100_STOP	Word	
OB100_STRT_INFO	DWord	
OB100_DATE_TIME	Date_And_Time	
Constant		

Network 1: On for first scan of OB1

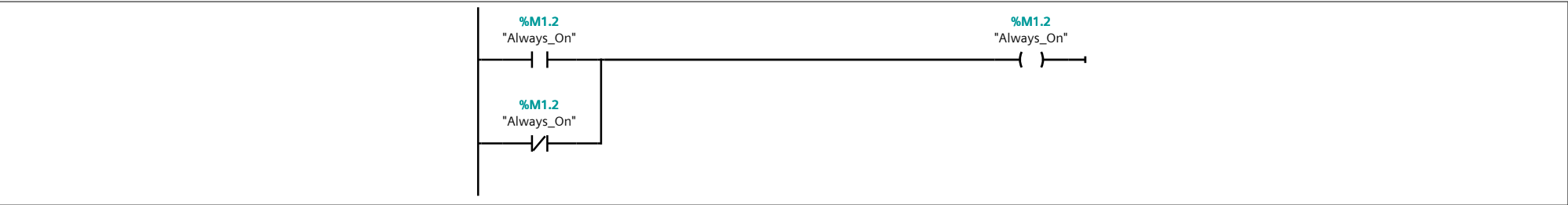
Indicates when program executing for first time



Network 2: Always off



Network 3: Always on

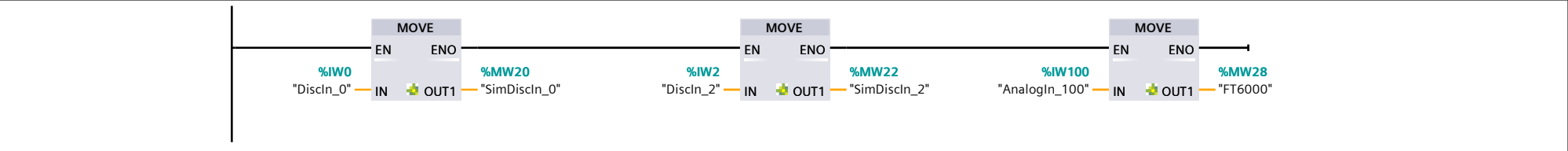


Soda_Ash [CPU 1516-3 PN/DP] / Program blocks

Duplicate_Ins [FC40]

Duplicate_Ins Properties							
General							
Name	Duplicate_Ins	Number	40	Type	FC	Language	LAD
Numbering	Manual						
Information							
Title	Copy inputs from modules into duplicate image	Author		Comment	Copyright (c) 2011, Dogwood Valley Press, LLC	Family	
Version	0.1	User-defined ID					
Name				Data type		Default value	
Input							
Output							
InOut							
Temp							
Constant							
▼ Return							
Duplicate_Ins				Void			

Network 1:



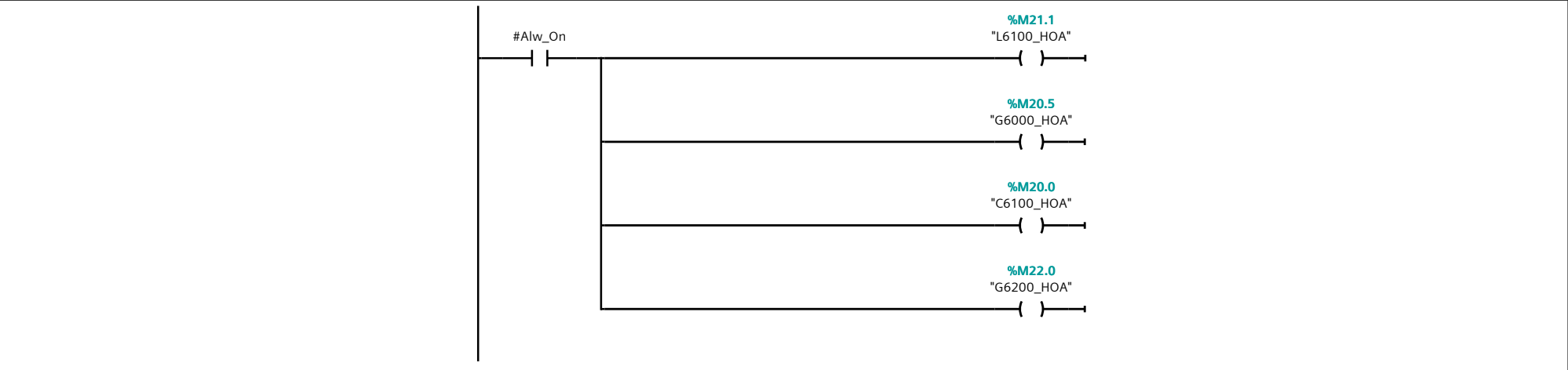
Soda_Ash [CPU 1516-3 PN/DP] / Program blocks

Simulate [FB40]

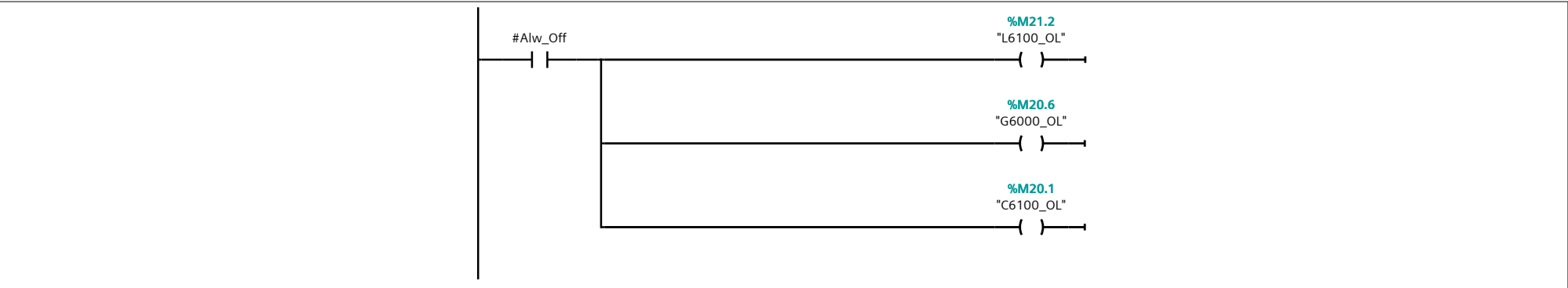
Simulate Properties							
General							
Name	Simulate	Number	40	Type	FB	Language	LAD
Numbering	Manual						
Information							
Title	Simulation Logic	Author		Comment	Copyright (c) 2023, Dogwood Valley Press, LLC	Family	
Version	0.1	User-defined ID					

Name	Data type	Default value
Input		
Output		
InOut		
▼ Static		
Alw_On	Bool	True
Alw_Off	Bool	false
Sim_Tmr_C6100_Start	TON_TIME	
Sim_Tmr_C6100_Stop	TON_TIME	
Sim_Tmr_L6100_Start	TON_TIME	
Sim_Tmr_L6100_Stop	TON_TIME	
Sim_Tmr_G6000_Open	TON_TIME	
Sim_Tmr_G6000_Close	TON_TIME	
Sim_Tmr_XV6001_Open	TON_TIME	
Sim_Tmr_XV6001_Close	TON_TIME	
Sim_Tmr_G6200_Left	TON_TIME	
Sim_Tmr_G6200_Right	TON_TIME	
Temp		
Constant		

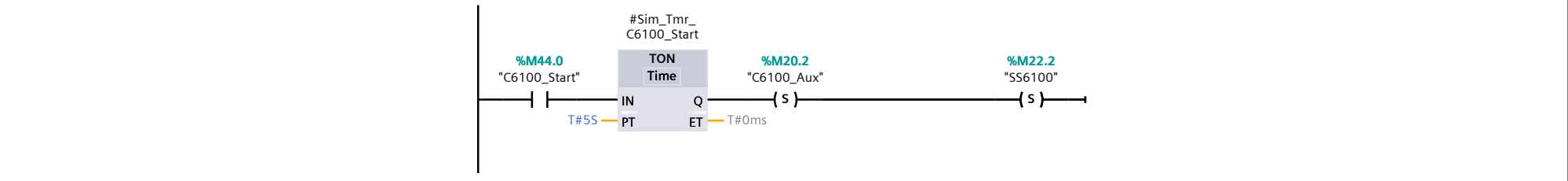
Network 1: Turn all HOA's on



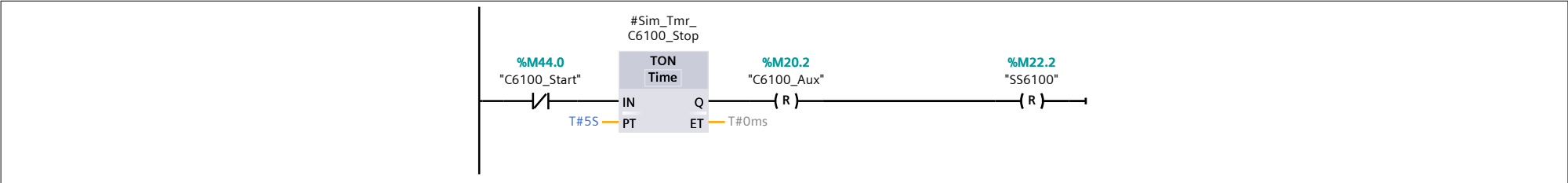
Network 2: Turn all overloads off.



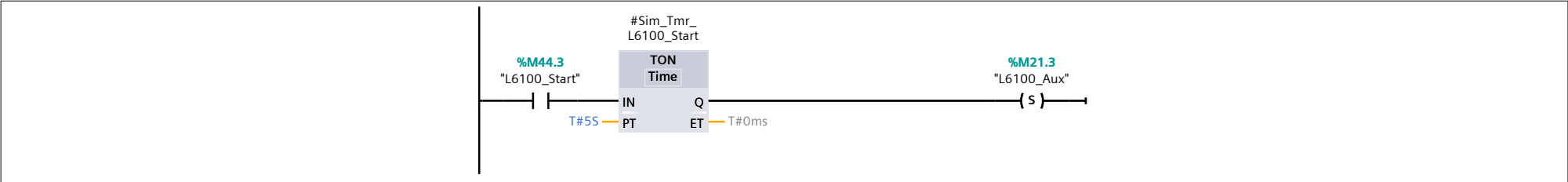
Network 3: Simulate C6100. Also simulate speed switch.



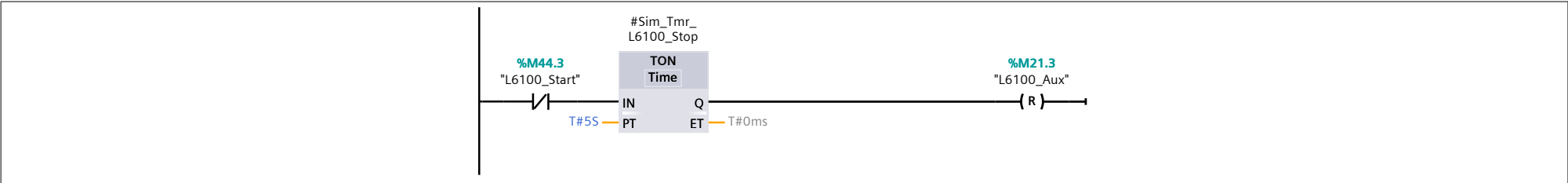
Network 4: When control off, reset aux and speed switch after delay



Network 5: Simulate L-6100

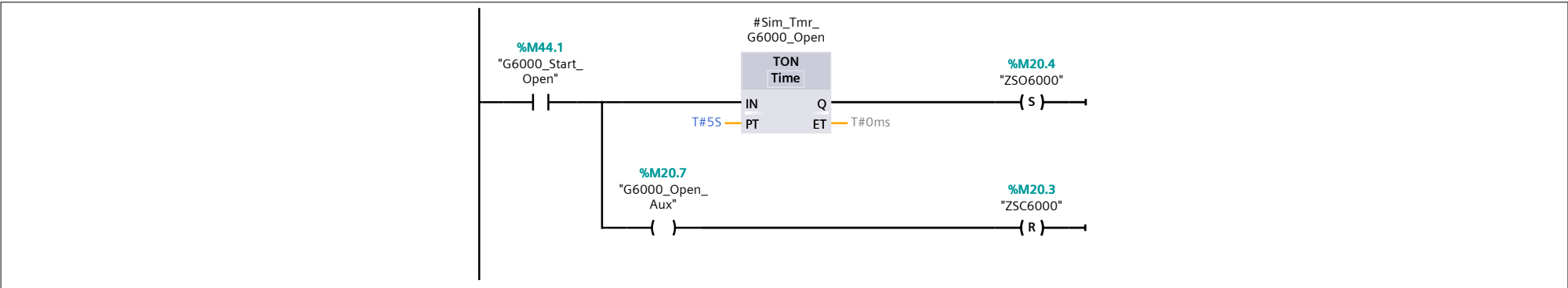


Network 6: When control off, reset aux after delay



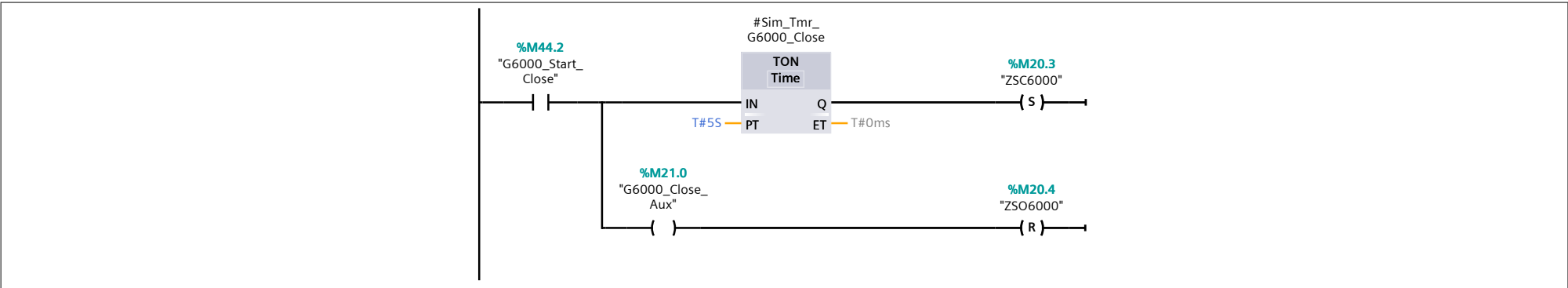
Network 7: Simulate G-6000 slide gate opening.

Also handle limit switches. Aux is on immediately and close LS opened immediately.



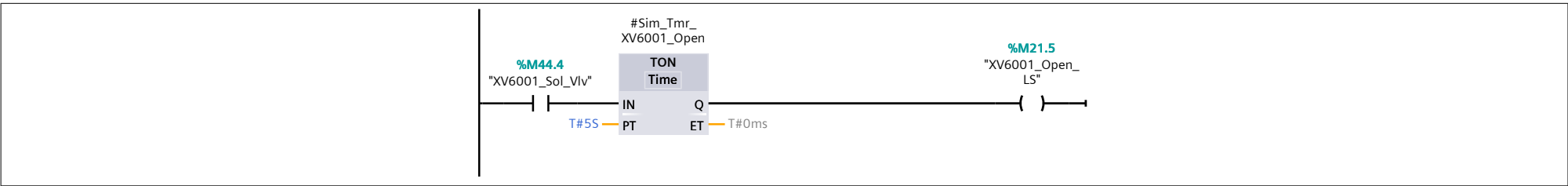
Network 8: G-6000 Soda Ash CIP Slide Gate closing; Close Aux contact

Also handle limit switches. Aux is on immediately and open LS opened immediately.



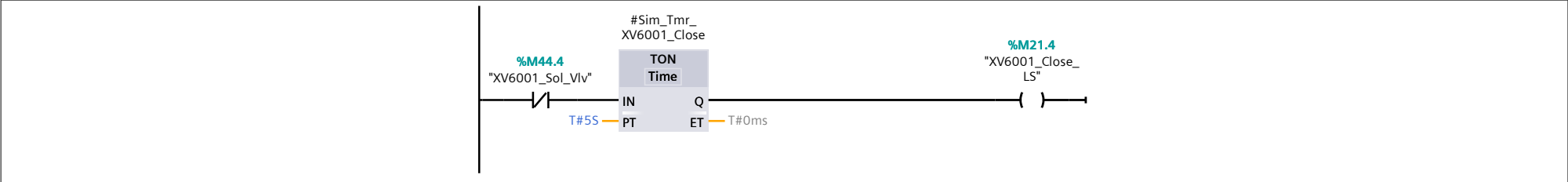
Network 9: XV6001 Soda Ash Sample Valve open

Open Limit Switch after delay



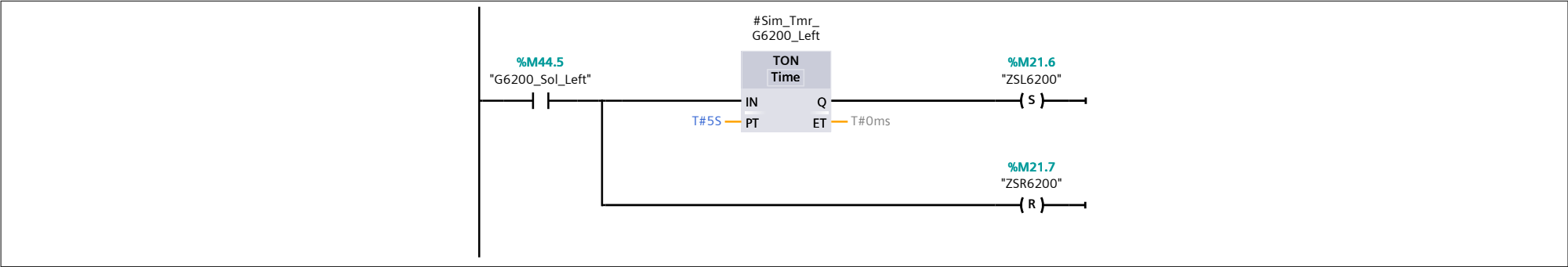
Network 10: XV6001 Soda Ash Sample Valve close

Close Limit Switch after delay



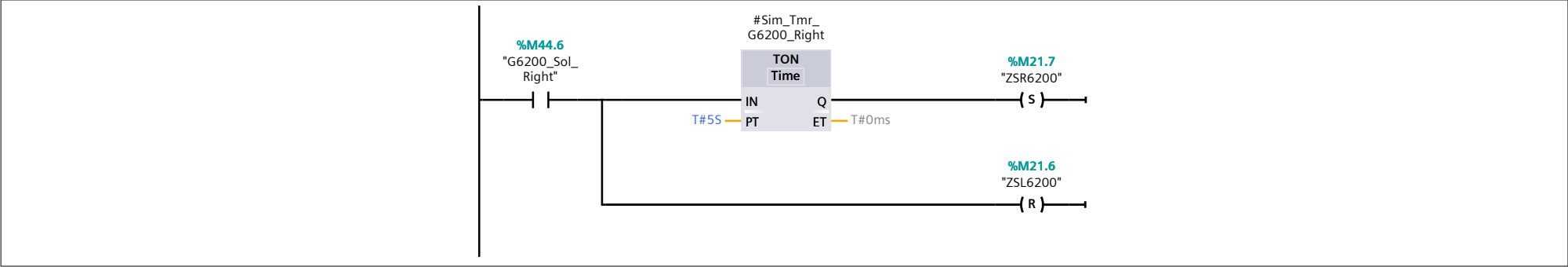
Network 11: Simulate G-6200 Sample flop gate left.

Left LS set after delay. Right LS reset immediately



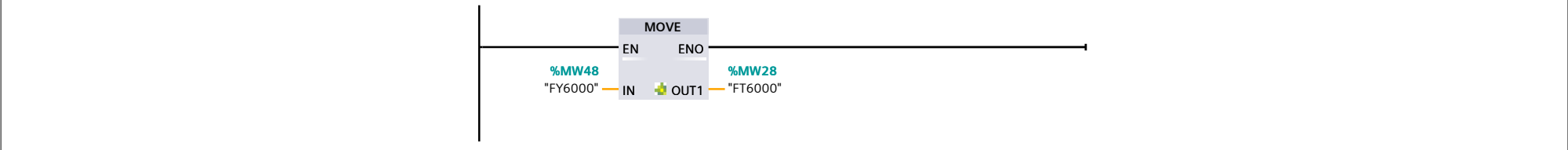
Network 12: Simulate G-6200 Sample flop gate right.

Right LS set after delay. Left LS reset immediately



Network 13: Simulation for flow loop

Copy controller output to PV measurement



Totally Integrated Automation Portal

Soda_Ash [CPU 1516-3 PN/DP] / Program blocks

Comms_DB [DB30]

Comms_DB Properties

General

Name	Comms_DB	Number	30	Type	DB	Language	DB
Numbering	Manual						

Information

Title		Author		Comment		Family	
Version	0.1	User-defined ID					

Name	Data type	Start value	Retain
Input			
Output			
InOut			
▼ Static			
Tic_Tmr	TON_TIME		True
Send_Err_Tmr	TON_TIME		True
Act_Send	Bool	false	True
Conn_Error	Bool	false	True
Send_Busy	Bool	false	True
Send_Done	Bool	false	True
Send_Err	Bool	false	True
Recv_NewData	Bool	false	True
Recv_Err	Bool	false	True
Send_Stat	Word	16#0	True
Send_Stat_Save	Word	16#0	True
Recv_Stat	Word	16#0	True
Recv_Stat_Save	Word	16#0	True
Recv_Len	Int	0	True
Recv_Len_Save	Int	0	True
Tic_Tmr_Q	Bool	false	True
Send_Connect_Cmd	Bool	false	True
Send_Conn_Est	Bool	false	True
TSend	TSEND_C		True
Send_Conn_Trans	Bool	false	True
TSend_Stat_Save	Word	16#0	True
Recv_Comm_Est	Bool	false	True
TRcv	TRCV_C		True
TRcv_Stat_Save	Word	16#0	True
TRcv_Len_Save	UDInt	0	True

Totally Integrated Automation Portal

Soda_Ash [CPU 1516-3 PN/DP] / Program blocks

Simulate_DB [DB40]

Simulate_DB Properties

General

Name	Simulate_DB	Number	40	Type	DB	Language	DB
Numbering	Manual						

Information

Title		Author		Comment		Family	
Version	0.1	User-defined ID					

Name	Data type	Start value	Retain
Input			
Output			
InOut			
▼ Static			
Alw_On	Bool	True	False
Alw_Off	Bool	false	False
Sim_Tmr_C6100_Start	TON_TIME		False
Sim_Tmr_C6100_Stop	TON_TIME		False
Sim_Tmr_L6100_Start	TON_TIME		False
Sim_Tmr_L6100_Stop	TON_TIME		False
Sim_Tmr_G6000_Open	TON_TIME		False
Sim_Tmr_G6000_Close	TON_TIME		False
Sim_Tmr_XV6001_Open	TON_TIME		False
Sim_Tmr_XV6001_Close	TON_TIME		False
Sim_Tmr_G6200_Left	TON_TIME		False
Sim_Tmr_G6200_Right	TON_TIME		False

Totally Integrated Automation Portal

Soda_Ash [CPU 1516-3 PN/DP] / Program blocks

Soda_Ash_Export_Data [DB1]

Soda_Ash_Export_Data Properties

General

Name	Soda_Ash_Export_Data	Number	1	Type	DB	Language	DB
Numbering	Manual						

Information

Title		Author		Comment		Family	
Version	0.1	User-defined ID					

Name	Data type	Start value	Retain
▼ Static			
Export_Info	DInt	0	False

Soda_Ash [CPU 1516-3 PN/DP] / Program blocks

Comms [FB30]

Comms Properties

General

Name	Comms	Number	30	Type	FB	Language	LAD
Numbering	Manual						

Information

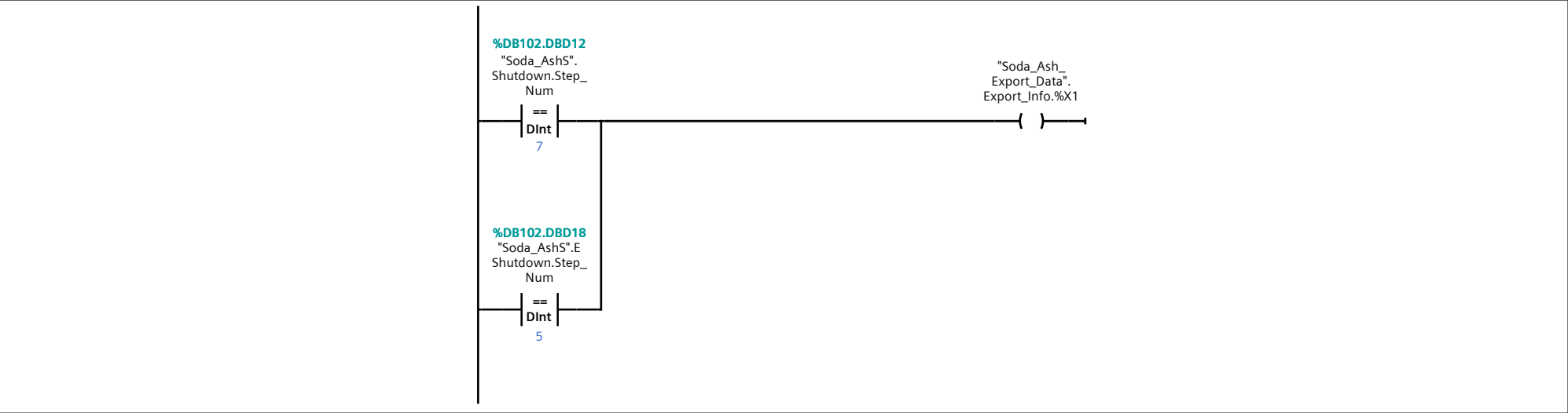
Title		Author		Comment		Family	
Version	0.1	User-defined ID					

Name	Data type	Default value
Input		
Output		
InOut		
▼ Static		
Tic_Tmr	TON_TIME	
Send_Err_Tmr	TON_TIME	
Act_Send	Bool	false
Conn_Error	Bool	false
Send_Busy	Bool	false
Send_Done	Bool	false
Send_Err	Bool	false
Recv_NewData	Bool	false
Recv_Err	Bool	false
Send_Stat	Word	16#0
Send_Stat_Save	Word	16#0
Recv_Stat	Word	16#0
Recv_Stat_Save	Word	16#0
Recv_Len	Int	0
Recv_Len_Save	Int	0
Tic_Tmr_Q	Bool	false
Send_Connect_Cmd	Bool	false
Send_Conn_Est	Bool	false
TSend	TSEND_C	
Send_Conn_Trans	Bool	false
TSend_Stat_Save	Word	16#0
Recv_Comm_Est	Bool	false
TRcv	TRCV_C	
TRcv_Stat_Save	Word	16#0
TRcv_Len_Save	UDInt	0
Temp		
Constant		

Network 1: Information for CIP



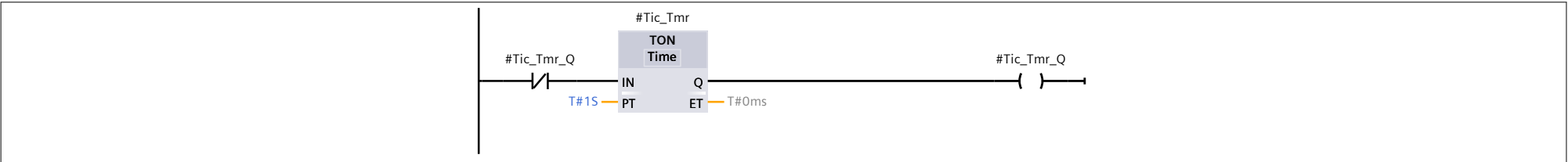
Network 2:



Network 3: Heartbeat with CIP_1



Network 4: Timer for send message to CIP

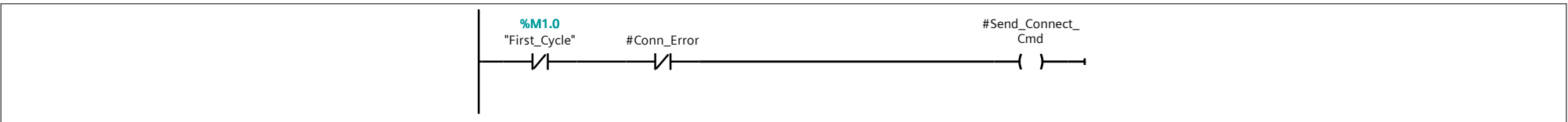


Network 5: Clear Send_Busy bit to start initial communication



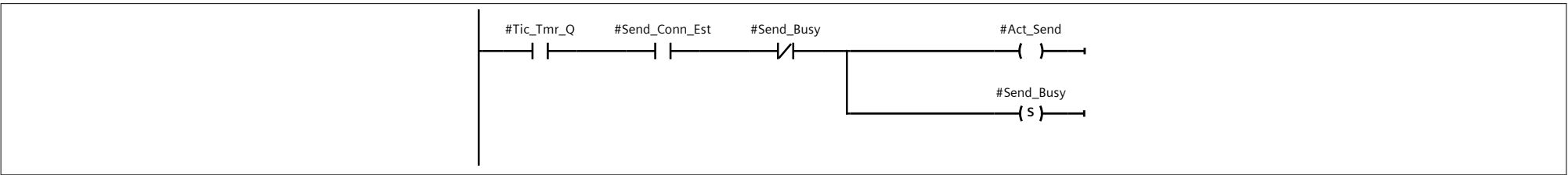
Network 6: Connect comand for TSEND_C

Not during first scan and as long as no connection error

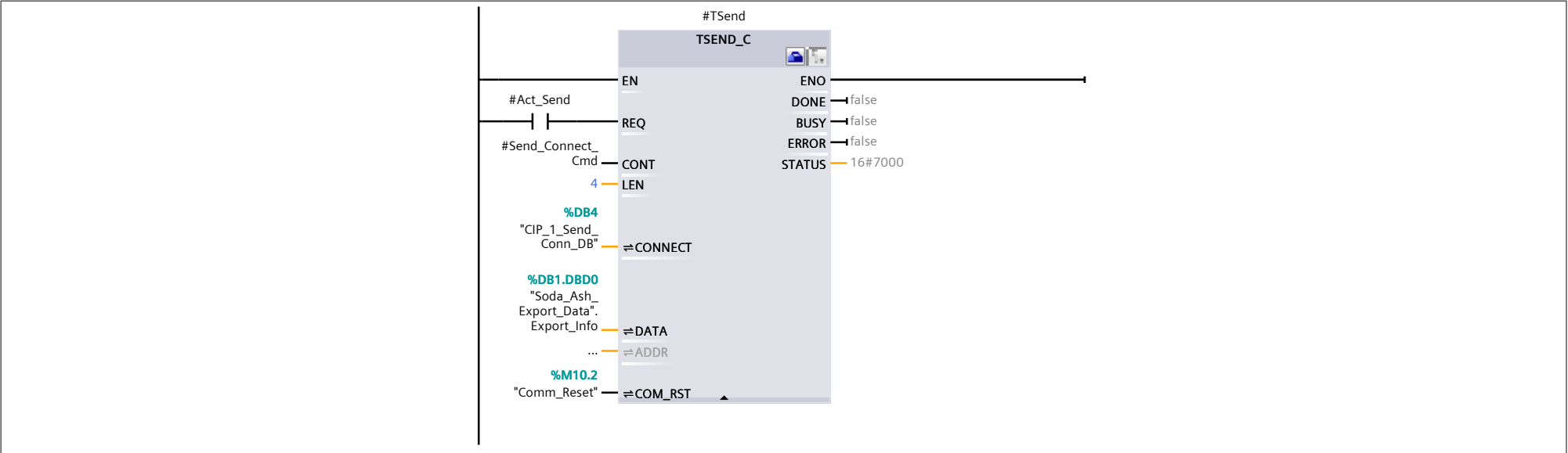


Network 7: Start TSEND_C with communication tic

If connection established and send not in progress. The REQ input of TSEND_C is triggered with a pulse and Send_Busy is set as long as the TSend_C has not completed.

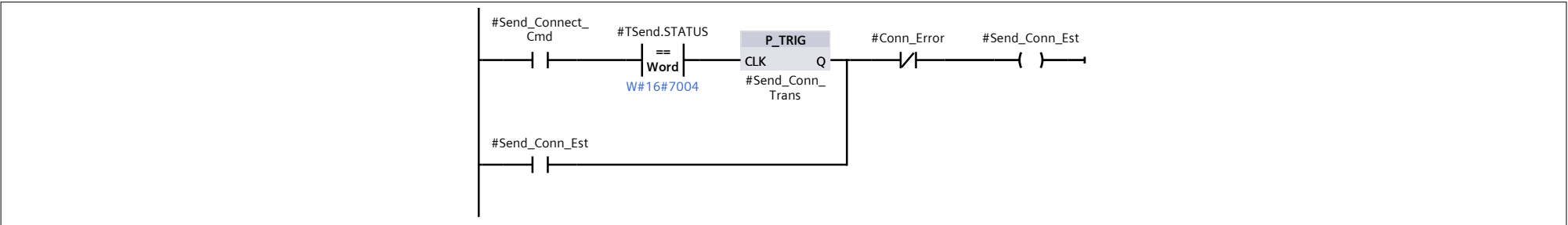


Network 8: Invoke TSEND_C function



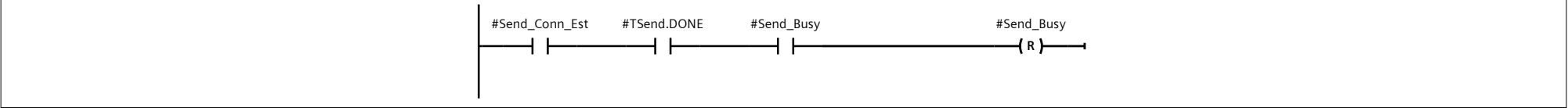
Network 9: Connection established

If status becomes 0x7004, connection is established. Maintain until connection error detected



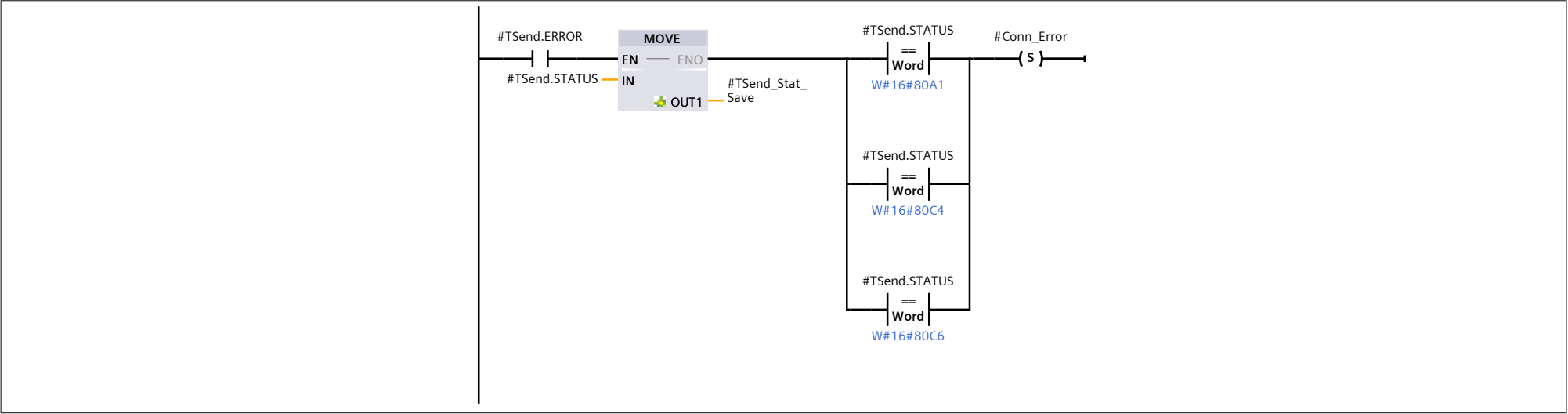
Network 10: Send complete

If connection established, sending complete, and send in progress, reset Send_Busy.
TSend_Done on for things other than send complete.



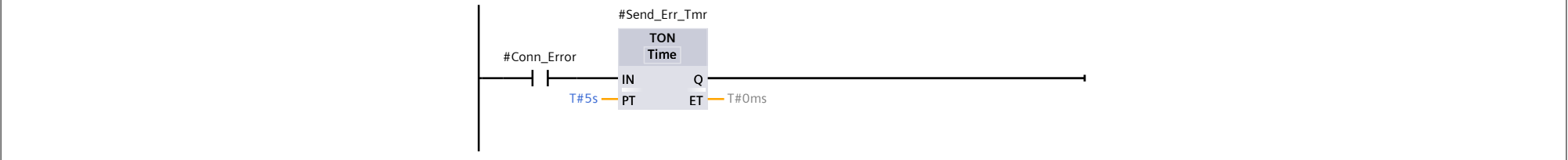
Network 11: Error tracking and check for connection error

Save error status. If connection-related error, set Conn_Error so maintained for timer.



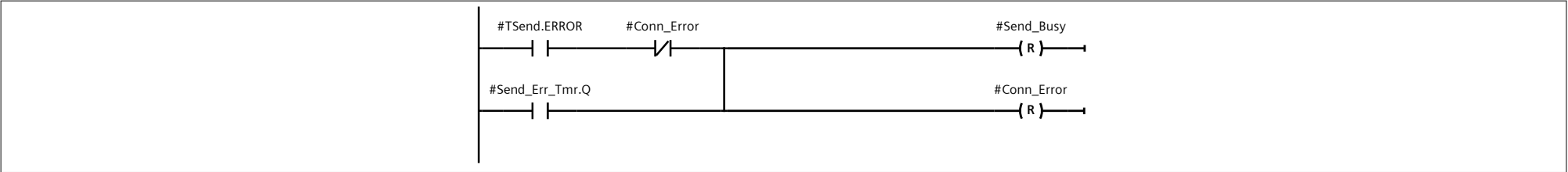
Network 12: Connection error timer

If connection error, wait 5 secs before reinitiating TSEND_C



Network 13: Resets due to error

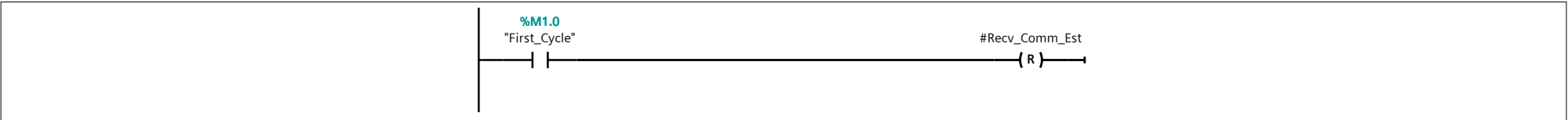
If error and not connection error, reset Send_Busy and Conn_Error immediately. If connection error, reset them after 5 seconds.



Network 14: Receiving CIP Export information

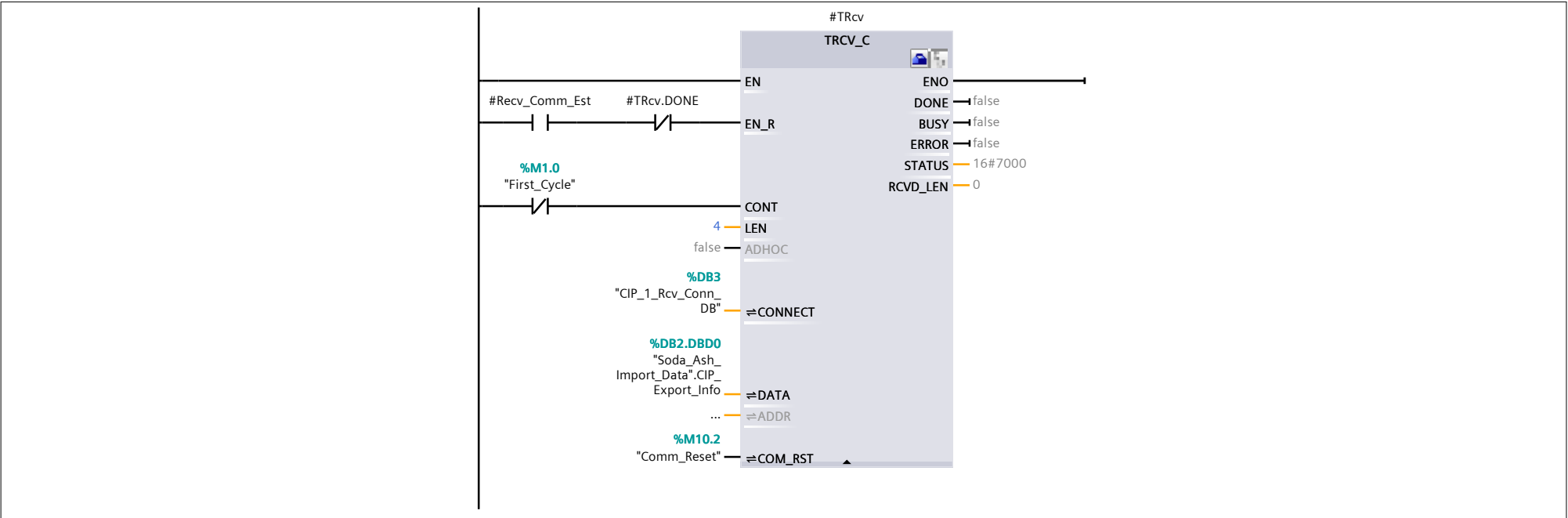
Network 15: First scan initialization

Reset communication established indication



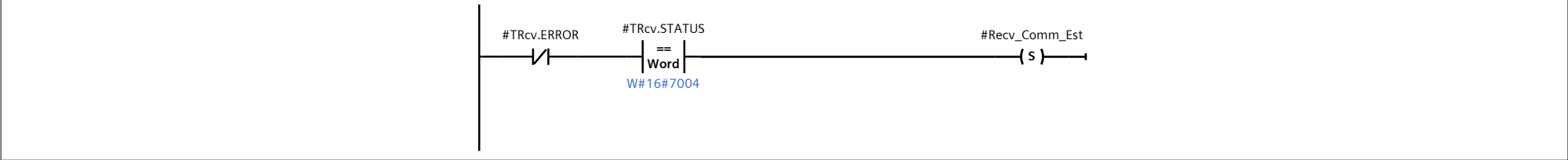
Network 16: Invoke TRCV_C function to receive data from other PLC

Note that CONT must not be on during first scan so that communications will recover after a change to run mode



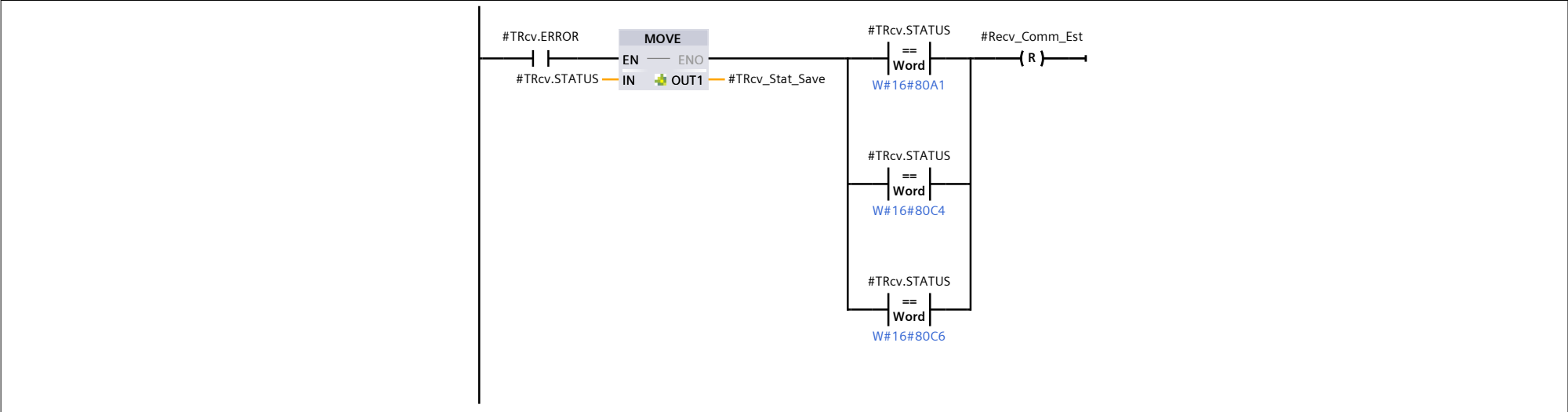
Network 17: Communication established

When no error and status is 0x7004, connection has been established.



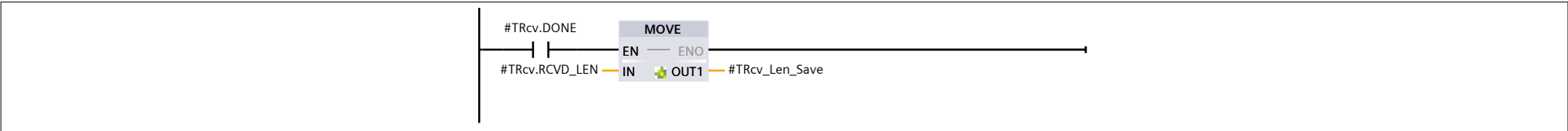
Network 18: Error tracking and check for connection error

Save error status. If connection-related error, reset Comm_Est so will start over.



Network 19: New data received

If new data received, save its length.



Soda_Ash [CPU 1516-3 PN/DP] / Program blocks

Soda_Ash_Import_Data [DB2]

Soda_Ash_Import_Data Properties

General

Name	Soda_Ash_Import_Data	Number	2	Type	DB	Language	DB
Numbering	Automatic						

Information

Title		Author		Comment		Family	
Version	0.1	User-defined ID					

Name	Data type	Start value	Retain
▼ Static			
CIP_Export_Info	DInt	0	False

Totally Integrated Automation Portal

Soda_Ash [CPU 1516-3 PN/DP] / Program blocks / System blocks / Program resources

CIP_1_Send_Conn_DB [DB4]

CIP_1_Send_Conn_DB Properties

General

Name	CIP_1_Send_Conn_DB	Number	4	Type	DB	Language	DB
Numbering	Automatic						

Information

Title		Author	SIMATIC	Comment		Family	MC7Plus
Version	1.0	User-defined ID	IP_RFC				

Name	Data type	Start value	Retain
▼ Static			
Interfaceld	HW_ANY	72	False
ID	CONN_OUC	2	False
ConnectionType	Byte	16#0C	False
ActiveEstablished	Bool	true	False
RemoteAddress	IP_V4		False
RemoteTSelector	TSelector		False
LocalTSelector	TSelector		False

Totally Integrated Automation Portal

Soda_Ash [CPU 1516-3 PN/DP] / Program blocks / System blocks / Program resources

CIP_1_Rcv_Conn_DB [DB3]

CIP_1_Rcv_Conn_DB Properties

General

Name	CIP_1_Rcv_Conn_DB	Number	3	Type	DB	Language	DB
Numbering	Automatic						

Information

Title		Author	SIMATIC	Comment		Family	MC7Plus
Version	1.0	User-defined ID	TC_IP_v4				

Name	Data type	Start value	Retain
▼ Static			
Interfaceld	HW_ANY	72	False
ID	CONN_OUC	1	False
ConnectionType	Byte	16#0B	False
ActiveEstablished	Bool	true	False
RemoteAddress	IP_V4		False
RemotePort	UInt	2000	False
LocalPort	UInt	0	False

Totally Integrated Automation Portal

Soda_Ash [CPU 1516-3 PN/DP] / Program blocks / System blocks / Program resources

TRCV_C [FB1031]

TRCV_C Properties

General

Name	TRCV_C	Number	1031	Type	FB	Language	SCL
Numbering	Automatic						

Information

Title	Reading data over Ethernet (native TCP or UDP)	Author	Simatic	Comment		Family	COMM
Version	2.1	User-defined ID					

Name	Data type	Default value	Retain
▼ Input			
EN_R	Bool	false	Non-retain
CONT	Bool	false	Non-retain
LEN	UDInt	0	Non-retain
ADHOC	Bool	false	Non-retain
▼ Output			
DONE	Bool	false	Non-retain
BUSY	Bool	false	Non-retain
ERROR	Bool	false	Non-retain
STATUS	Word	16#7000	Non-retain
RCVD_LEN	UDInt	0	Non-retain
▼ InOut			
CONNECT	Variant		
DATA	Variant		
ADDR	Variant		
COM_RST	Bool	false	Non-retain
▼ Static			
s_state	Int	0	Non-retain
s_locked	Bool	false	Non-retain
s_udp	Bool	false	Non-retain
s_configured	Bool	false	Non-retain
s_tcon_80A3	Bool	false	Non-retain
s_ConID	CONN_OUC	16#0	Non-retain
s_TCON	TCON		
s_TDIAG	T_DIAG		
s_TDIAG_Status	TDiag_Status		Non-retain
s_TRCV	TRCV		
s_TURCV	TURCV		
s_TDISCON	TDISCON		
s_TRESET	T_RESET		

Totally Integrated Automation Portal

Soda_Ash [CPU 1516-3 PN/DP] / Program blocks / System blocks / Program resources

TSEND_C [FB1030]

TSEND_C Properties

General

Name	TSEND_C	Number	1030	Type	FB	Language	SCL
Numbering	Automatic						

Information

Title	Sending data over Ethernet (native TCP or UDT)	Author	Simatic	Comment		Family	COMM
Version	2.2	User-defined ID					

Name	Data type	Default value	Retain
▼ Input			
REQ	Bool	false	Non-retain
CONT	Bool	false	Non-retain
LEN	UDInt	0	Non-retain
▼ Output			
DONE	Bool	false	Non-retain
BUSY	Bool	false	Non-retain
ERROR	Bool	false	Non-retain
STATUS	Word	16#7000	Non-retain
▼ InOut			
CONNECT	Variant		
DATA	Variant		
ADDR	Variant		
COM_RST	Bool	false	Non-retain
▼ Static			
s_state	Int	0	Non-retain
s_locked	Bool	false	Non-retain
s_udp	Bool	false	Non-retain
s_configured	Bool	false	Non-retain
s_tcon_80A3	Bool	false	Non-retain
s_REQ	Bool	false	Non-retain
s_ConID	CONN_OUC	16#0	Non-retain
s_TCON	TCON		
s_TDIAG	T_DIAG		
s_TDIAG_Status	TDiag_Status		Non-retain
s_TDISCON	TDISCON		
s_TSEND	TSEND		
s_TUSEND	TUSEND		
s_TRESET	T_RESET		

Totally Integrated Automation Portal

Soda_Ash [CPU 1516-3 PN/DP] / Program blocks / System blocks / Program resources

CONT_C_1 [FB0]

CONT_C_1 Properties

General

Name	CONT_C_1	Number	0	Type	FB	Language	SCL
Numbering	Automatic						

Information

Title	continuous PID controller	Author	SIMATIC	Comment		Family	ICONT
Version	1.5	User-defined ID	CONT_C				

Name	Data type	Default value	Retain
▼ Input			
COM_RST	Bool	false	Retain
MAN_ON	Bool	true	Retain
PVPER_ON	Bool	false	Retain
P_SEL	Bool	true	Retain
I_SEL	Bool	true	Retain
INT_HOLD	Bool	false	Retain
I_ITL_ON	Bool	false	Retain
D_SEL	Bool	false	Retain
CYCLE	Time	T#1S	Retain
SP_INT	Real	0.0	Retain
PV_IN	Real	0.0	Retain
PV_PER	Word	16#0	Retain
MAN	Real	0.0	Retain
GAIN	Real	2.0	Retain
TI	Time	T#20S	Retain
TD	Time	T#10S	Retain
TM_LAG	Time	T#2S	Retain
DEADB_W	Real	0.0	Retain
LMN_HLM	Real	100.0	Retain
LMN_LLM	Real	0.0	Retain
PV_FAC	Real	1.0	Retain
PV_OFF	Real	0.0	Retain
LMN_FAC	Real	1.0	Retain
LMN_OFF	Real	0.0	Retain
I_ITLVAL	Real	0.0	Retain
DISV	Real	0.0	Retain
▼ Output			
LMN	Real	0.0	Retain
LMN_PER	Word	16#0	Retain
QLMN_HLM	Bool	false	Retain
QLMN_LLM	Bool	false	Retain
LMN_P	Real	0.0	Retain
LMN_I	Real	0.0	Retain
LMN_D	Real	0.0	Retain
PV	Real	0.0	Retain
ER	Real	0.0	Retain
InOut			
▼ Static			
sInvAlt	Real	0.0	Retain
slanteilAlt	Real	0.0	Retain
sRestInt	Real	0.0	Retain
sRestDif	Real	0.0	Retain
sRueck	Real	0.0	Retain
sLmn	Real	0.0	Retain
sbArwHLmOn	Bool	false	Retain
sbArwLLmOn	Bool	false	Retain
sbILimOn	Bool	true	Retain

Totally Integrated Automation Portal

Soda_Ash [CPU 1516-3 PN/DP] / Program blocks / System blocks / Program resources

SCALE [FC105]

SCALE Properties

General

Name	SCALE	Number	105	Type	FC	Language	SCL
Numbering	Automatic						

Information

Title		Author	SIMATIC	Comment		Family	CONVERT
Version	1.0	User-defined ID	SCALE				

Name	Data type	Default value
▼ Input		
IN	Int	
HI_LIM	Real	
LO_LIM	Real	
BIPOLAR	Bool	
▼ Output		
OUT	Real	
InOut		
▼ Return		
Ret_Val	Word	

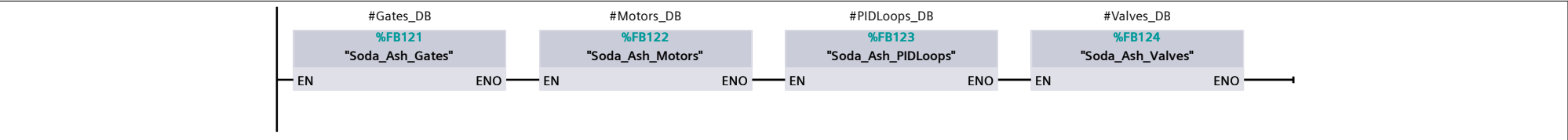
Soda_Ash [CPU 1516-3 PN/DP] / Program blocks / Soda_Ash

Soda_Ash_000Main [FB100]

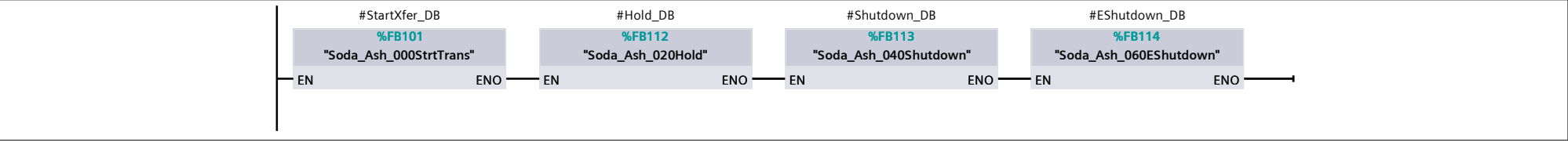
Soda_Ash_000Main Properties							
General							
Name	Soda_Ash_000Main	Number	100	Type	FB	Language	LAD
Numbering	Manual						
Information							
Title	SodaAsh Unit Main Block	Author		Comment		Family	
Version	0.1	User-defined ID					

Name	Data type	Default value	Retain
Input			
Output			
InOut			
▼ Static			
Gates_DB	"Soda_Ash_Gates"		
Motors_DB	"Soda_Ash_Motors"		
Valves_DB	"Soda_Ash_Valves"		
StartXfer_DB	"Soda_Ash_000StrtTrans"		
Hold_DB	"Soda_Ash_020Hold"		
Shutdown_DB	"Soda_Ash_040Shutdown"		
EShutdown_DB	"Soda_Ash_060EShutdown"		
PIDLoops_DB	"Soda_Ash_PIDLoops"		
Abnormal_DB	"Soda_Ash_991Abnormal"		
Misc_DB	"Soda_Ash_990Misc"		
Temp			
Constant			

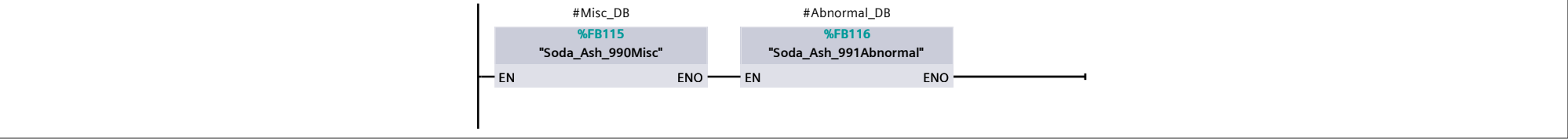
Network 2: Device Controls



Network 3: Sequences



Network 4:



Soda_Ash [CPU 1516-3 PN/DP] / Program blocks / Soda_Ash

Soda_Ash_Gates [FB121]

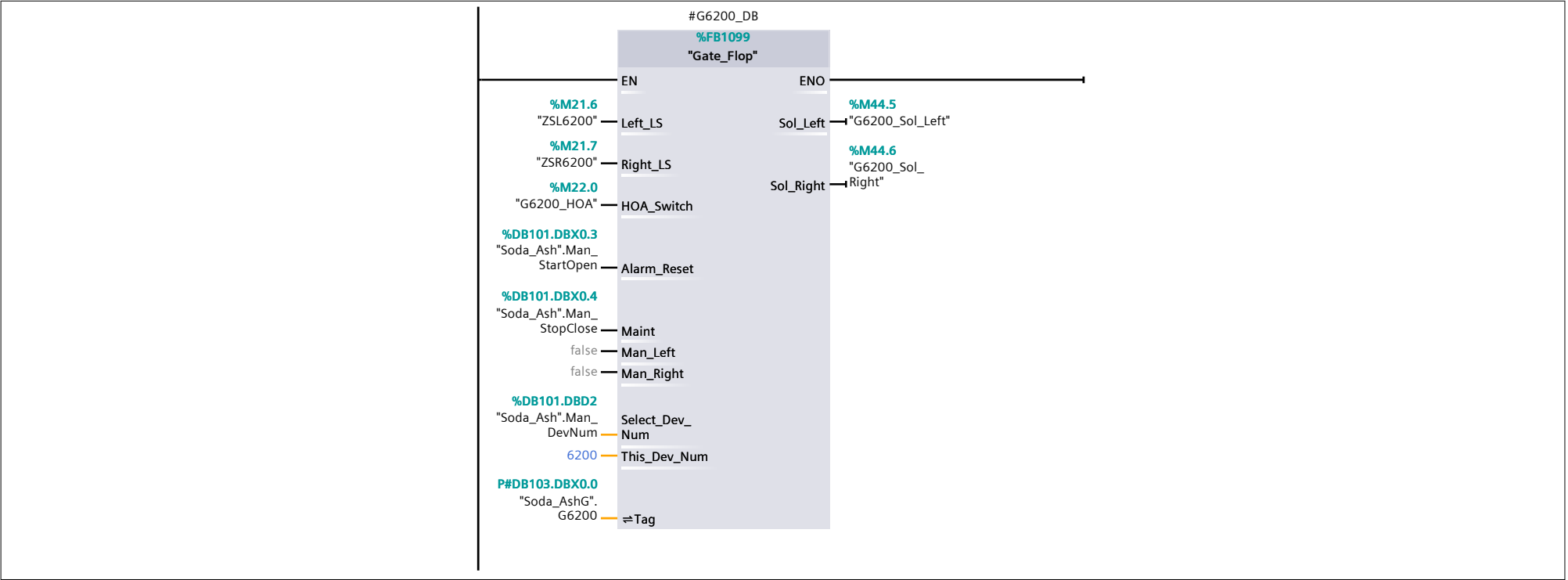
Soda_Ash_Gates Properties							
General							
Name	Soda_Ash_Gates	Number	121	Type	FB	Language	LAD
Numbering	Manual						
Information							
Title	Flop and Slide Gates	Author		Comment	Copyright (c) 2011, Dogwood Valley Press, LLC	Family	
Version	0.1	User-defined ID					

Name	Data type	Default value
Input		
Output		
InOut		
▼ Static		
G102_DB	"Gate_Slide"	
G6200_DB	"Gate_Flop"	
Temp		
Constant		

Network 1: G-102 Slide Gate Control



Network 2: G-6200 Soda Ash Flop Gate

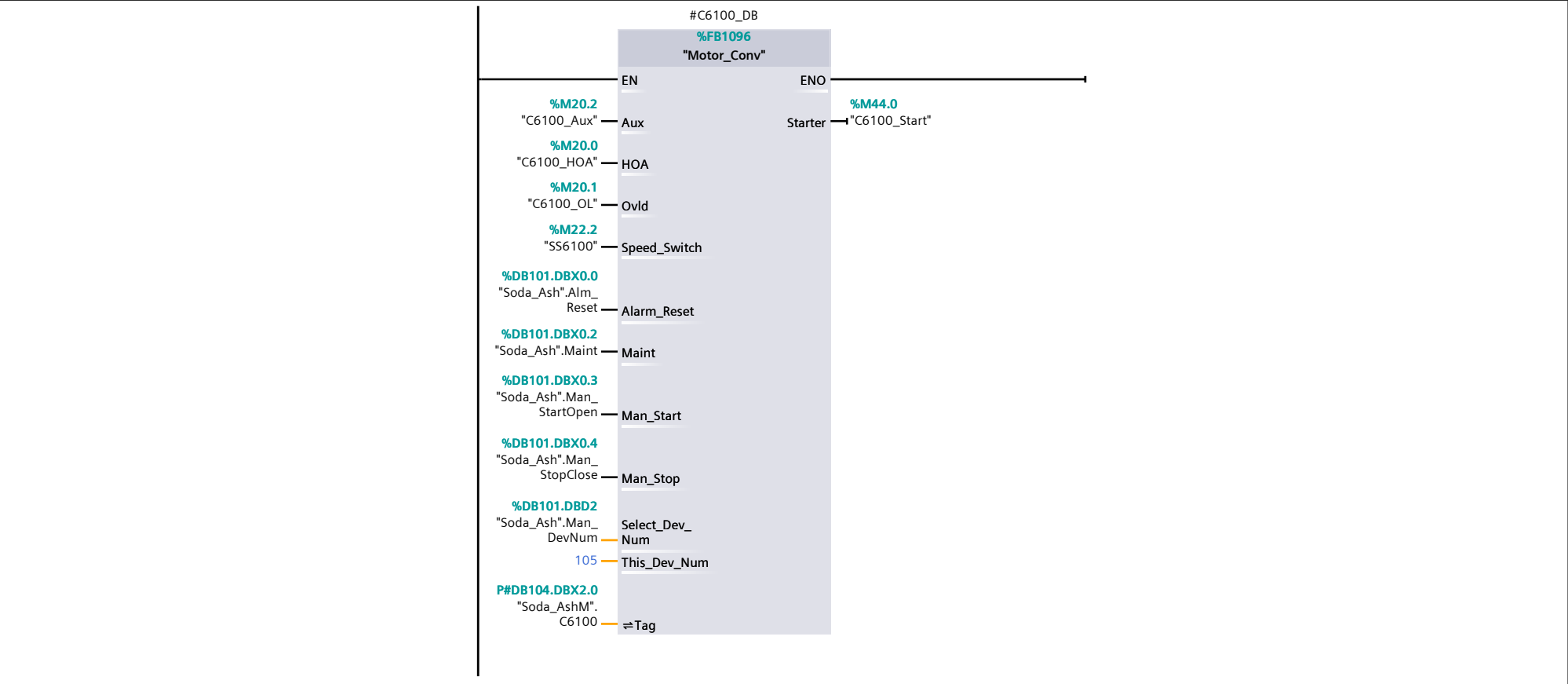


Soda_Ash [CPU 1516-3 PN/DP] / Program blocks / Soda_Ash

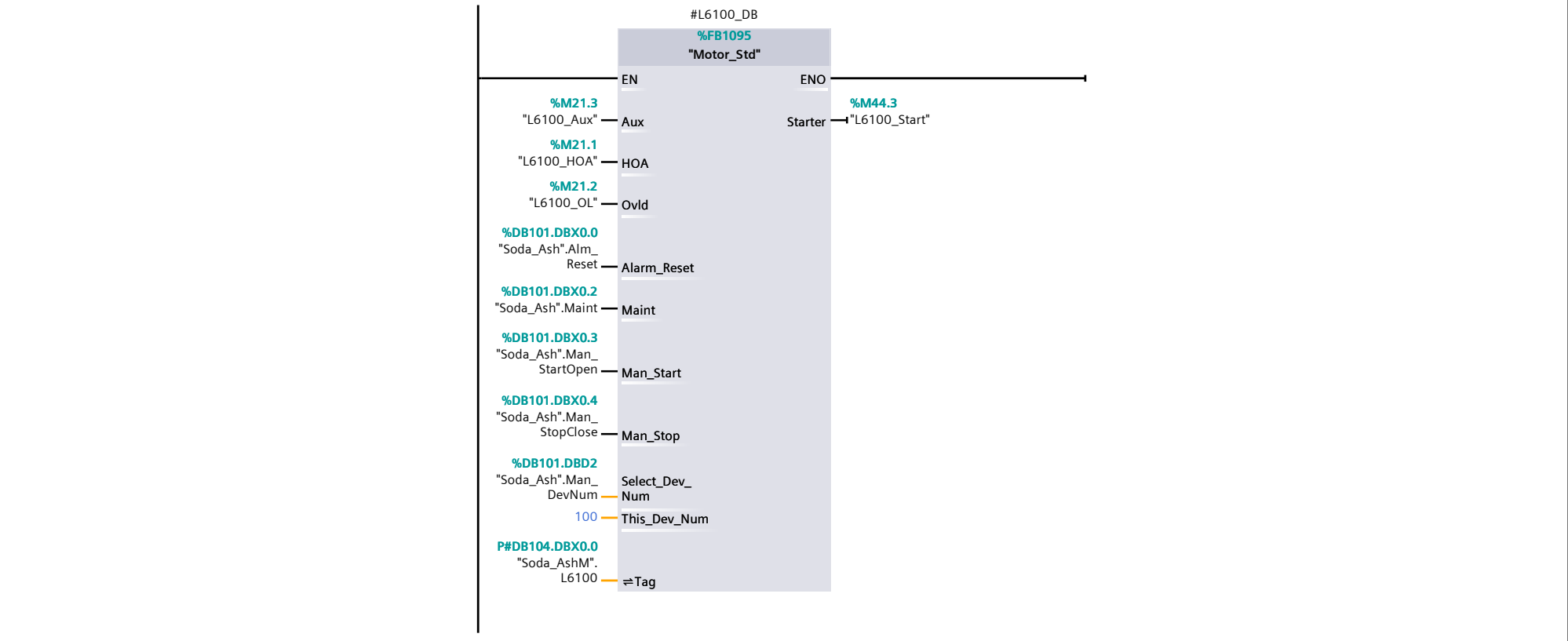
Soda_Ash_Motors [FB122]

Soda_Ash_Motors Properties							
General							
Name	Soda_Ash_Motors	Number	122	Type	FB	Language	LAD
Numbering	Manual						
Information							
Title	Motor Devices	Author		Comment	Copyright (c) 2023, Dogwood Valley Press, LLC	Family	
Version	0.1	User-defined ID					
Name				Data type		Default value	
Input							
Output							
InOut							
▼ Static							
C6100_DB				"Motor_Conv"			
L6100_DB				"Motor_Std"			
G6000_DB				"Gate_Slide"			
Temp							
Constant							

Network 1: C-6100 Conveyor Device Control



Network 2: L6100 Airlock Control





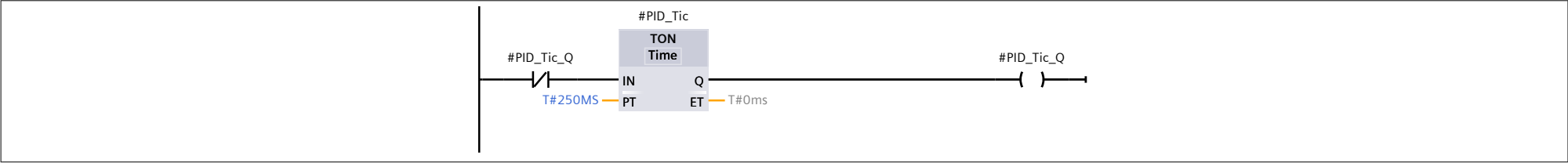
Soda_Ash [CPU 1516-3 PN/DP] / Program blocks / Soda_Ash

Soda_Ash_PIDLoops [FB123]

Soda_Ash_PIDLoops Properties							
General							
Name	Soda_Ash_PIDLoops	Number	123	Type	FB	Language	LAD
Numbering	Manual						
Information							
Title	PID Loops	Author		Comment		Family	
Version	0.1	User-defined ID					

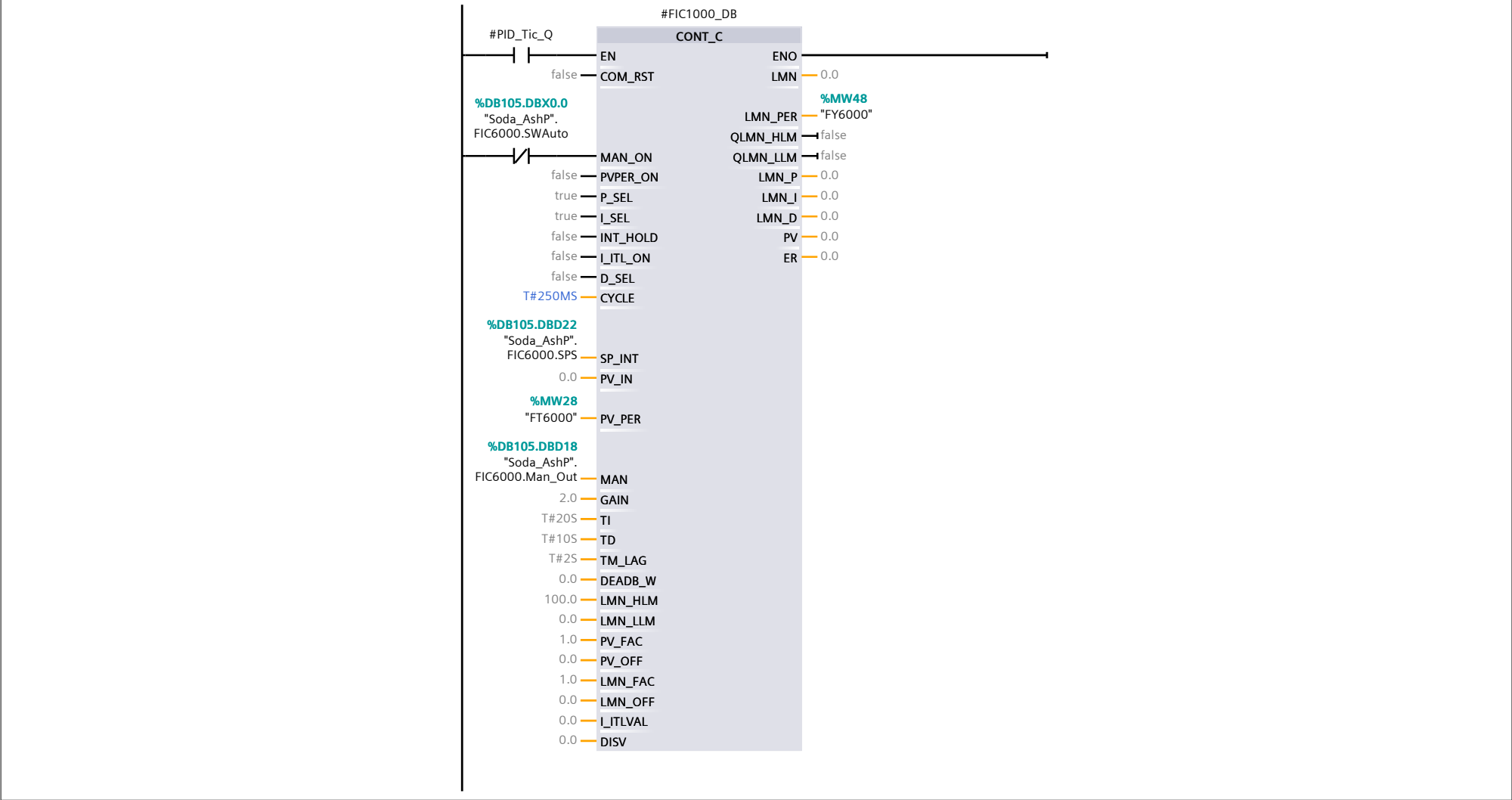
Name	Data type	Default value
Input		
Output		
InOut		
▼ Static		
PID_Tic	TON_TIME	
PID_Tic_Q	Bool	false
Ret_Val	Word	16#0
Tmpl	Int	0
TmpR	Real	0.0
TmpR2	Real	0.0
FIC1000_DB	CONT_C	
FQI6000_Tmr_Q	Bool	false
FQI6000_Tmr	TON_TIME	
Temp		
Constant		

Network 1: Sample time timer

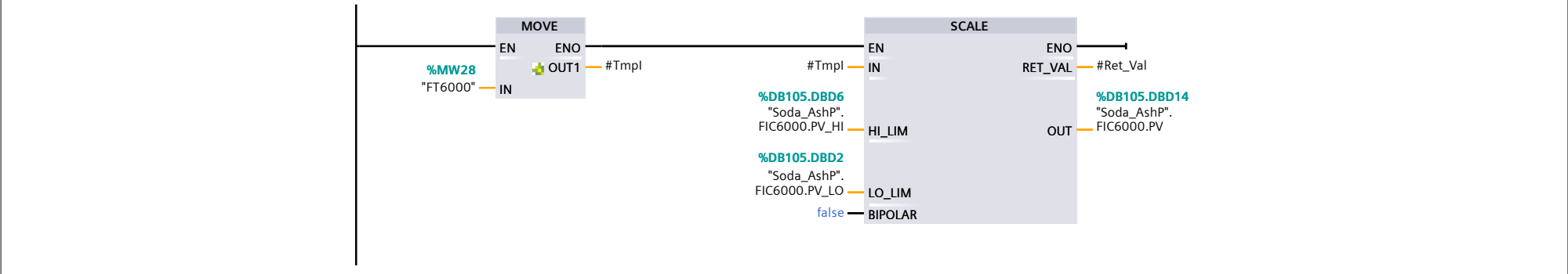


Network 2: FIC1000 Sample Flow loop.

This loop has no operator manual station.



Network 3: Scale FIC1000 measurement for operator interface.



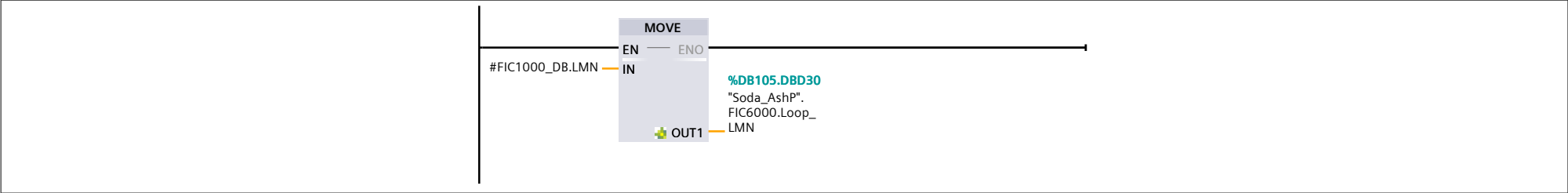
Network 4: Set FIC1000 Operator Setpoint to 0-100 range required by CONT_C

```
0001 "Soda_AshP".FIC6000.SPS := (("Soda_AshP".FIC6000.SP - "Soda_AshP".FIC6000.PV_LO) / ("Soda_AshP".FIC6000.PV_HI - "Soda_AshP".FIC6000.PV_LO)) *100.0;
```

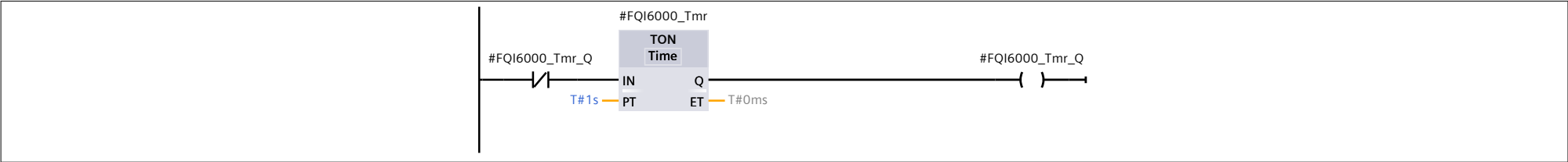
Network 5: Status to operator interface



Network 6:



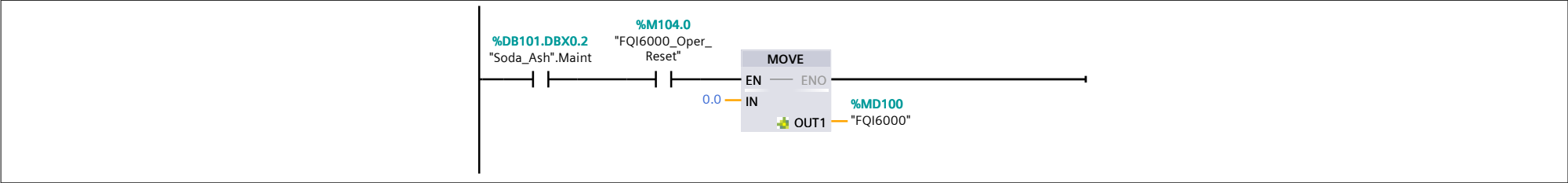
Network 7: FQI6000 flow totalizer



Network 8:

```
0001 IF #FQI6000_Tmr_Q THEN
0002     "FQI6000" := "FQI6000" + ("Soda_AshP".FIC6000.PV / 60.0);
0003 END_IF;
```

Network 9:



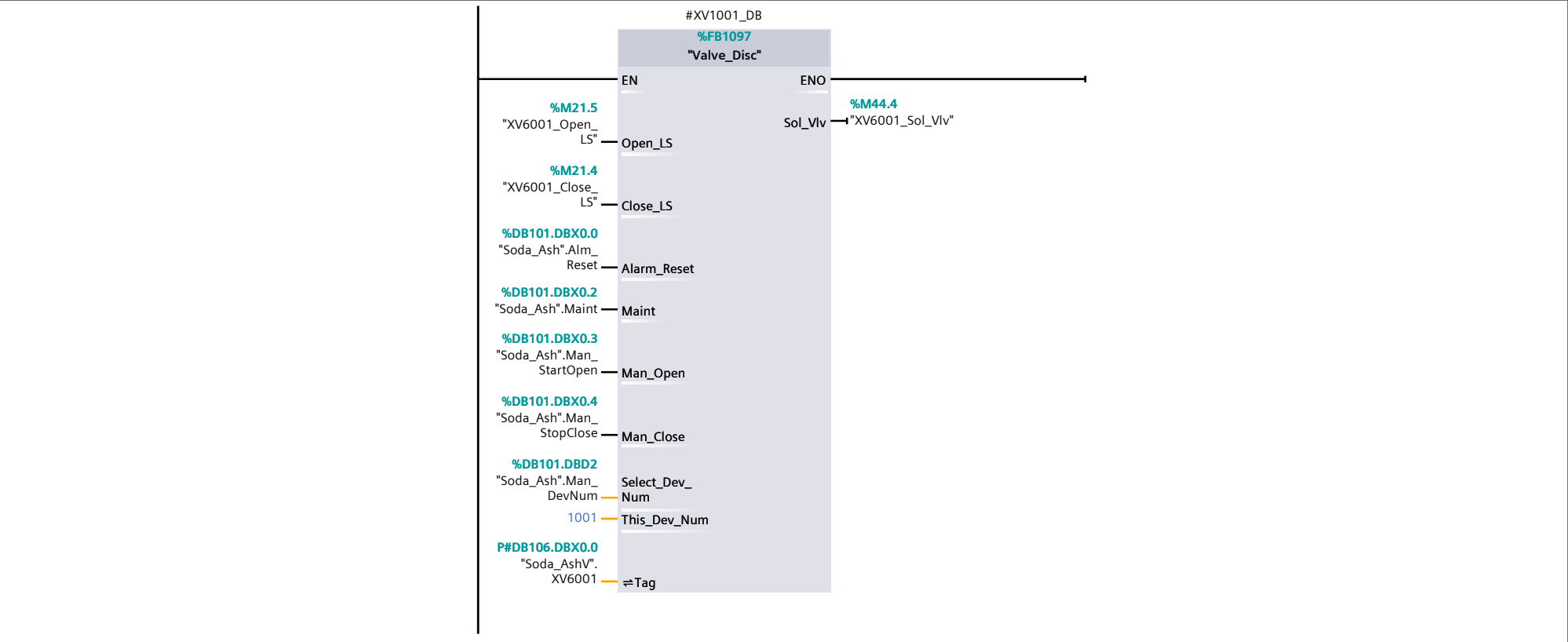
Soda_Ash [CPU 1516-3 PN/DP] / Program blocks / Soda_Ash

Soda_Ash_Valves [FB124]

Soda_Ash_Valves Properties							
General							
Name	Soda_Ash_Valves	Number	124	Type	FB	Language	LAD
Numbering	Manual						
Information							
Title	Valve Devices	Author		Comment	Copyright (c) 2022, Dogwood Valley Press, LLC	Family	
Version	0.1	User-defined ID					

Name	Data type	Default value
Input		
Output		
InOut		
▼ Static		
XV1001_DB	"Valve_Disc"	
Temp		
Constant		

Network 1: XV1001 Sample Valve



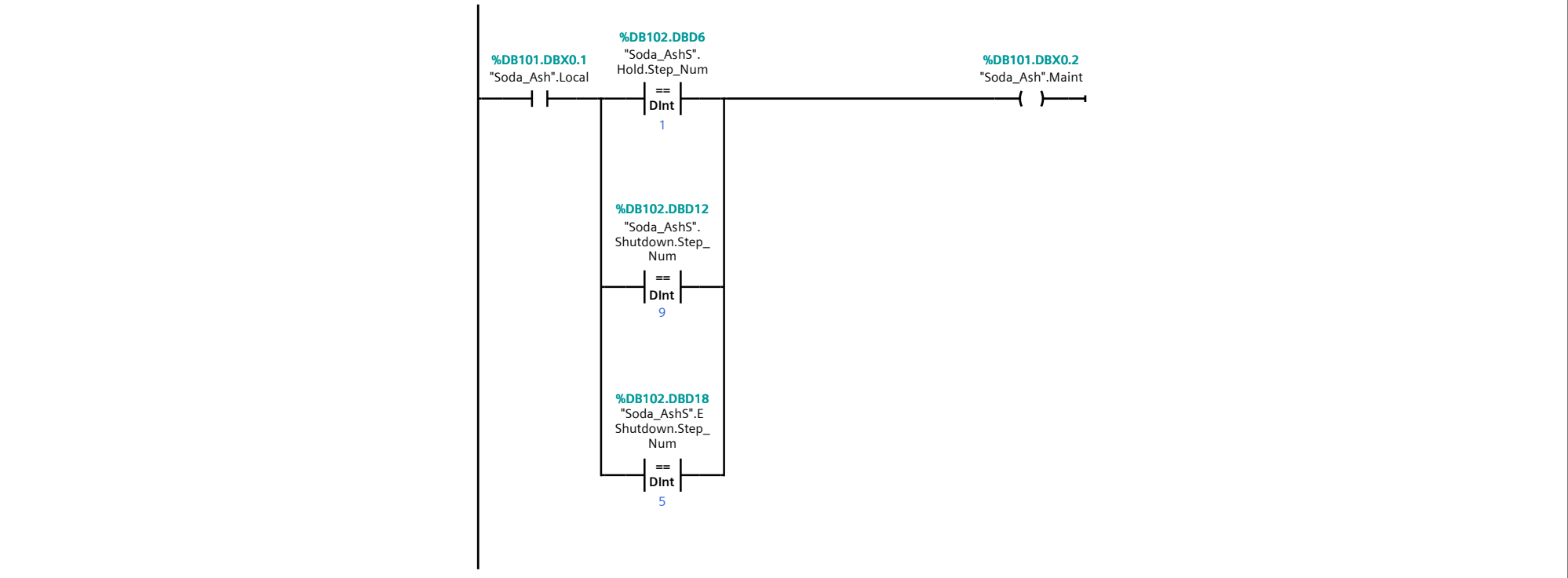
Soda_Ash [CPU 1516-3 PN/DP] / Program blocks / Soda_Ash

Soda_Ash_990Misc [FB115]

Soda_Ash_990Misc Properties							
General							
Name	Soda_Ash_990Misc	Number	115	Type	FB	Language	LAD
Numbering	Manual						
Information							
Title	Soda Ash Miscellaneous	Author		Comment		Family	
Version	0.1	User-defined ID					
Name			Data type	Default value		Retain	
Input							
Output							
InOut							
▼ Static							
Dummy			Bool	false		Non-retain	
Temp							
Constant							

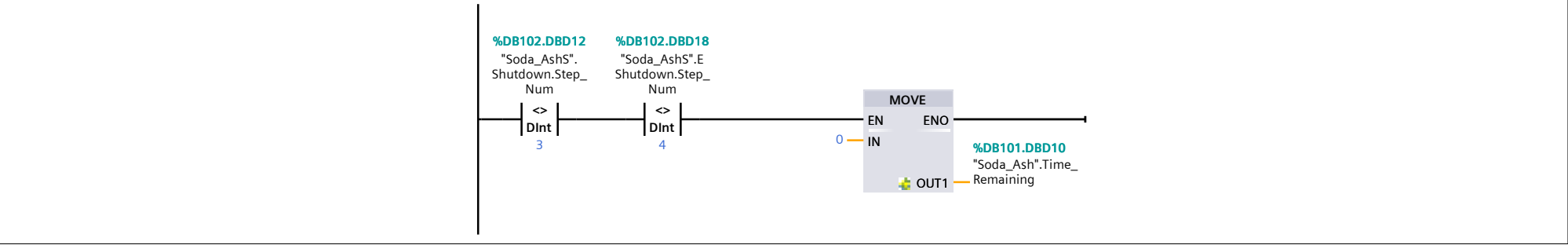
Network 1: Maintenance privilege for device control

Unit device manual control allowed when local control granted and in safe state.



Network 2: Clear time remaining to OI

If not in conveyor cleaning step or next-to-last step in E-shutdown

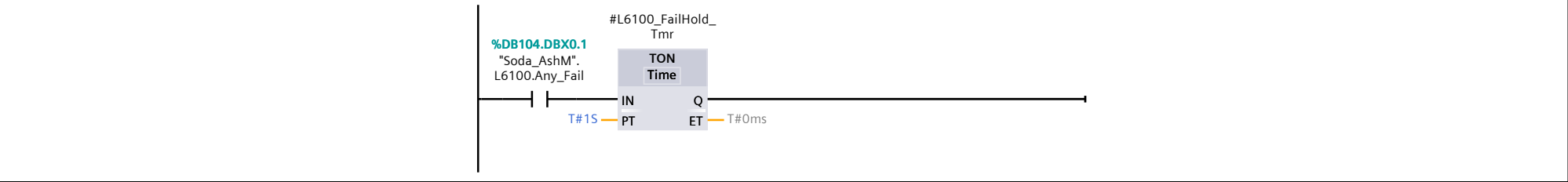


Soda_Ash [CPU 1516-3 PN/DP] / Program blocks / Soda_Ash

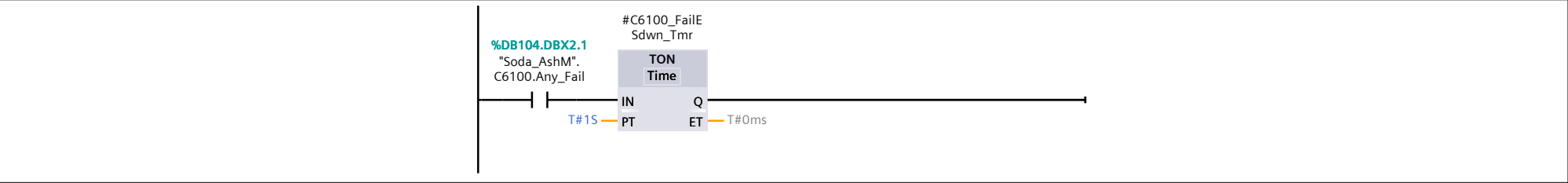
Soda_Ash_991Abnormal [FB116]

Soda_Ash_991Abnormal Properties							
General							
Name	Soda_Ash_991Abnormal	Number	116	Type	FB	Language	LAD
Numbering	Manual						
Information							
Title	Soda Ash Abnormal Condi-tions	Author		Comment		Family	
Version	0.1	User-defined ID					
Name		Data type		Default value		Retain	
Input							
Output							
InOut							
▼ Static							
L6100_FailHold_Tmr		TON_TIME				Non-retain	
C6100_FailESdwn_Tmr		TON_TIME				Non-retain	
G6000_FailESdwn_Tmr		TON_TIME				Non-retain	
L6100_Level_Sdwn_Tmr		TON_TIME				Non-retain	
L6100_Level_Alarm_Tmr		TON_TIME				Non-retain	
SS6100_Off_ESdwn_Tmr		TON_TIME				Non-retain	
Temp							
Constant							

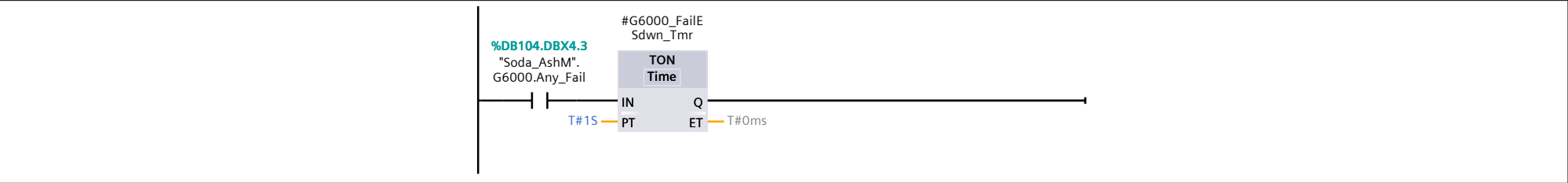
Network 1: L-6100 Fail to Hold



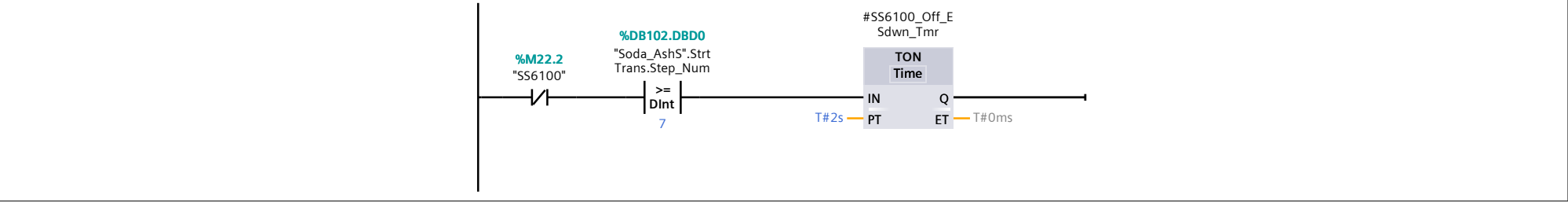
Network 2: C-6100 Fail to E-Shutdown



Network 3: G-6000 Fail to E-Shutdown

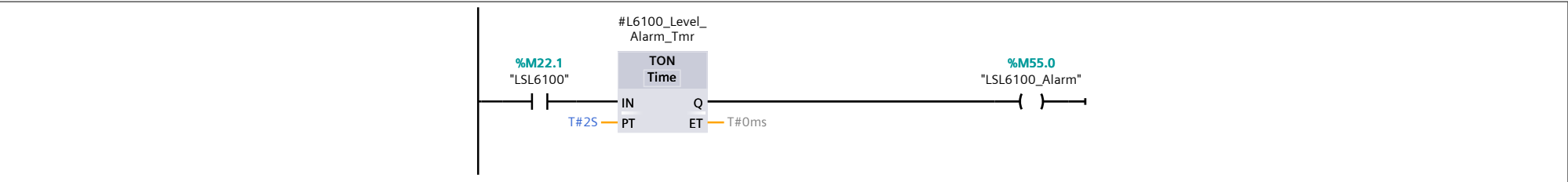


Network 4: SS6100 indicates conveyor off while transfer running

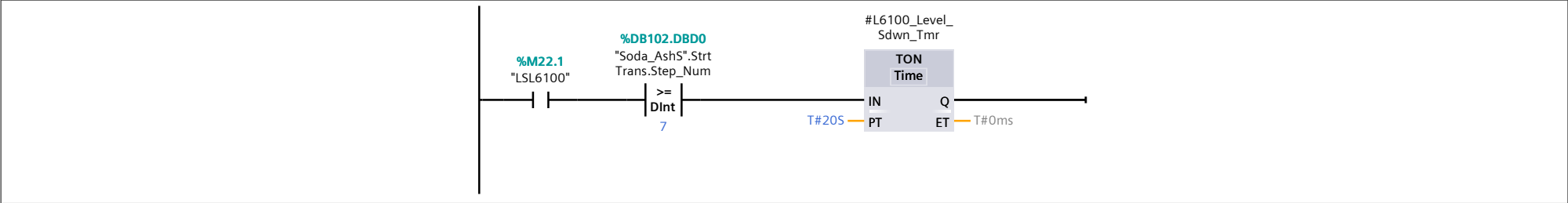


Network 5: Bin Low Level Alarm

Low bin for 2 seconds generates alarm.



Network 6: Low bin for 20 secs while transfer in progress goes to Shutdown



Soda_Ash_000StrtTrans [FB101]

Network 1: Start Transfer Sequence

The diagram illustrates the ladder logic for the Soda_AshS system, organized into two main sections. The top section shows the initial setup and the main processing loop, while the bottom section shows a specific step in the process.

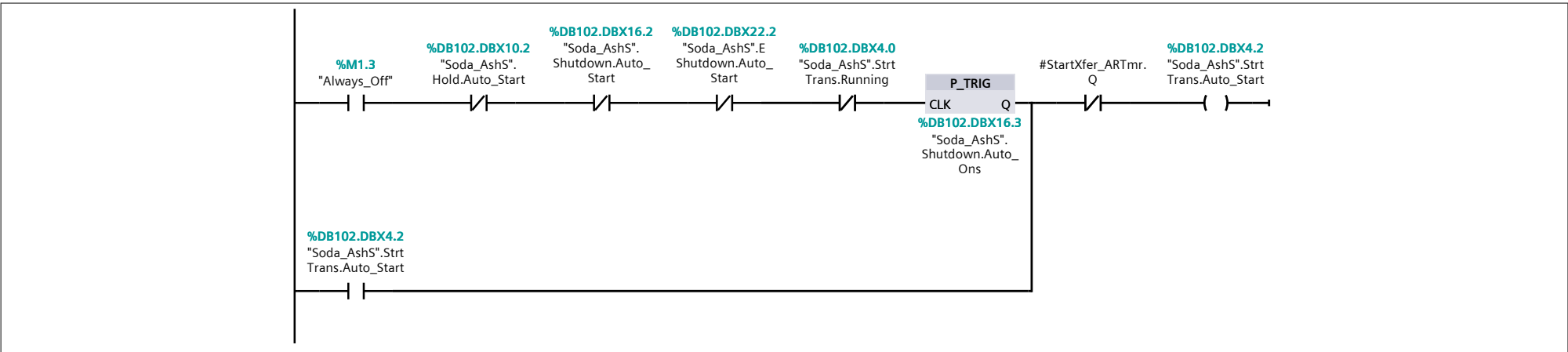
Top Section: Initial Setup and Main Processing Loop

- Initial Setup:**
 - Step 1: Set initial values for `%DB101.DBX0.1` (Soda_AshS.Local) and `%DB102.DBX4.4` (Soda_AshS.Strt Trans.PC_Start).
 - Step 2: Set initial values for `%DB102.DBX4.5` (Soda_AshS.Strt Trans.LTP_Start) and `%DB102.DBX4.2` (Soda_AshS.Strt Trans.Auto_Start).
 - Step 3: Set initial values for `%DB102.DBX4.2` (Soda_AshS.Strt Trans.Auto_Start) and `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Step_Num).
- Main Processing Loop:**
 - Step 4: Set initial values for `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Step_Num) and `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running).
 - Step 5: Set initial values for `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running) and `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running).
 - Step 6: Set initial values for `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running) and `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running).
 - Step 7: Set initial values for `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running) and `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running).
 - Step 8: Set initial values for `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running) and `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running).
 - Step 9: Set initial values for `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running) and `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running).
 - Step 10: Set initial values for `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running) and `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running).
 - Step 11: Set initial values for `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running) and `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running).
 - Step 12: Set initial values for `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running) and `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running).
 - Step 13: Set initial values for `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running) and `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running).
 - Step 14: Set initial values for `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running) and `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running).
 - Step 15: Set initial values for `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running) and `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running).
 - Step 16: Set initial values for `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running) and `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running).
 - Step 17: Set initial values for `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running) and `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running).
 - Step 18: Set initial values for `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running) and `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running).
 - Step 19: Set initial values for `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running) and `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running).
 - Step 20: Set initial values for `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running) and `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running).

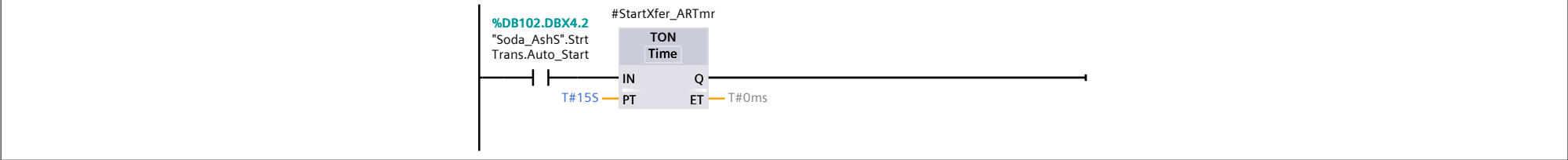
Bottom Section: Specific Step in the Process

- Step 21: Set initial values for `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running) and `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running).
- Step 22: Set initial values for `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running) and `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running).
- Step 23: Set initial values for `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running) and `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running).
- Step 24: Set initial values for `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running) and `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running).
- Step 25: Set initial values for `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running) and `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running).
- Step 26: Set initial values for `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running) and `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running).
- Step 27: Set initial values for `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running) and `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running).
- Step 28: Set initial values for `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running) and `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running).
- Step 29: Set initial values for `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running) and `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running).
- Step 30: Set initial values for `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running) and `%DB102.DBX4.0` (Soda_AshS.Strt Trans.Running).

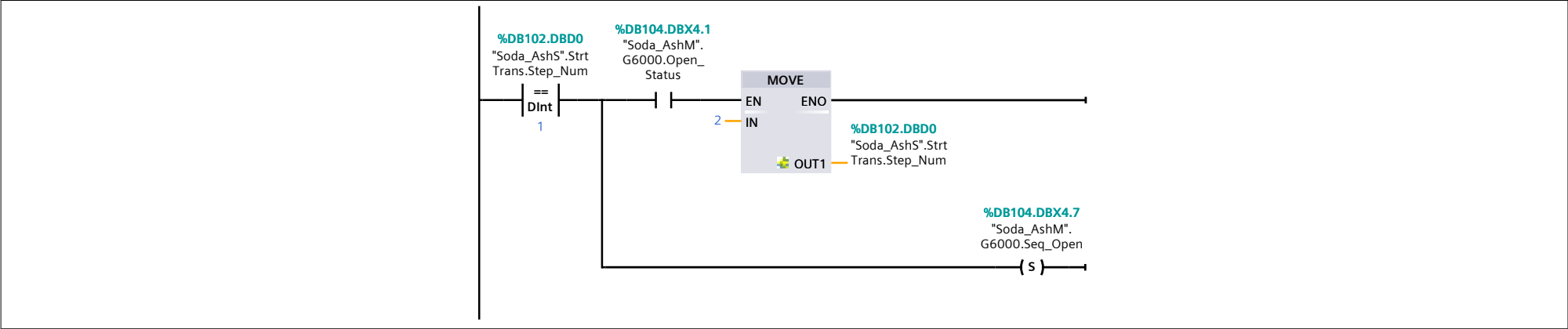
Auto-start for Startup - Not Used



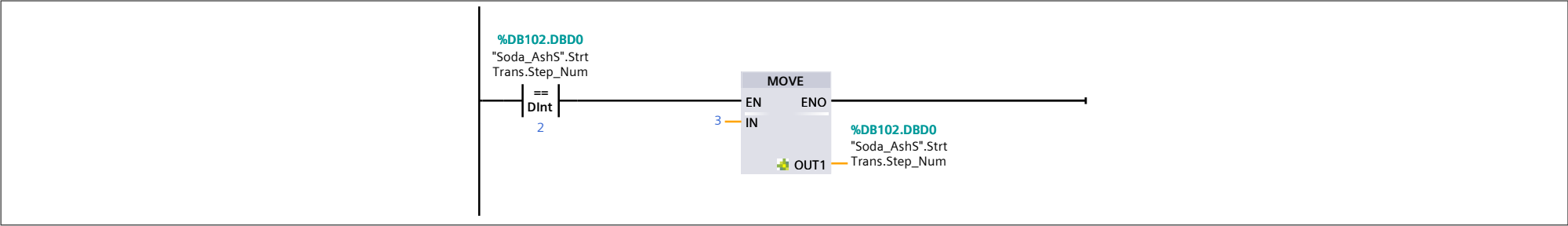
--	--	--



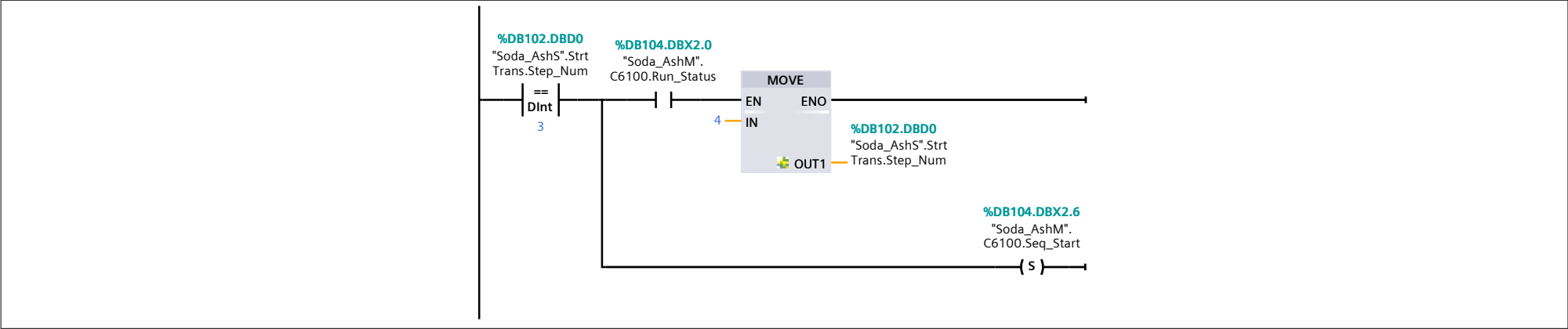
Network 4: Start Transfer step 1 - Open CIP Tank slide gate G-102



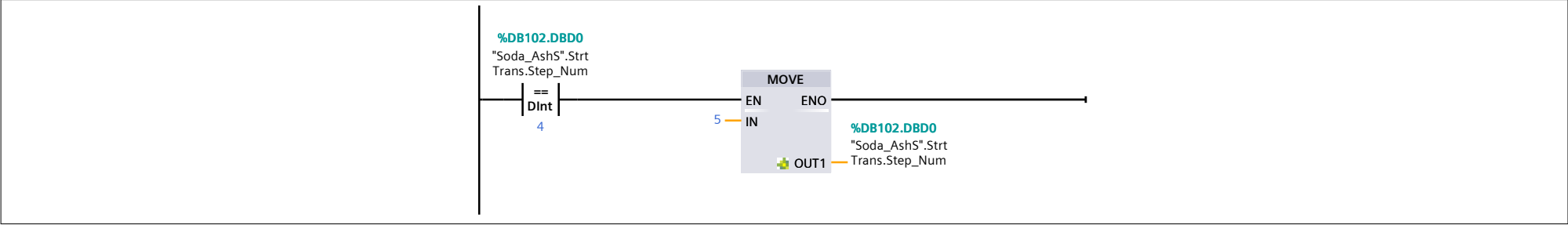
Network 5: Start Transfer step 2 - Spare



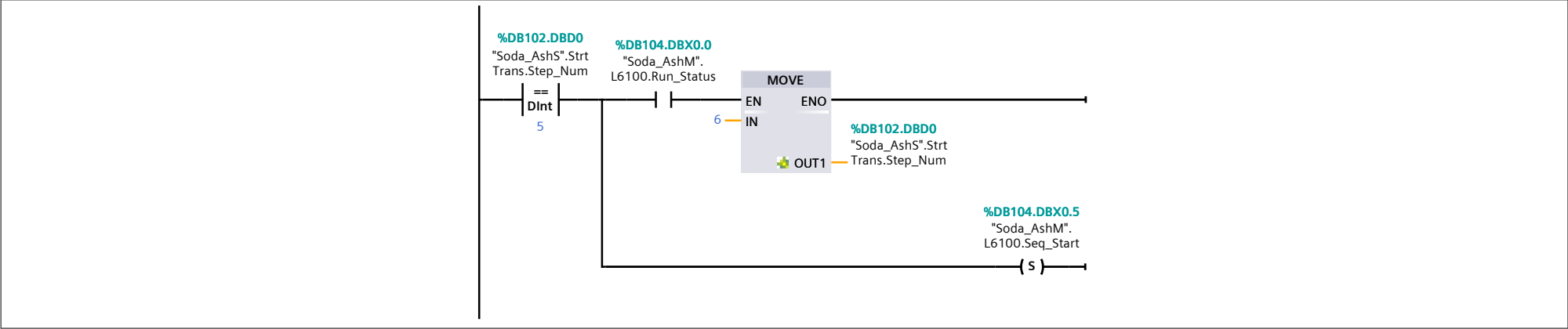
Network 6: Start Transfer step 3 - Start conveyor C-6100



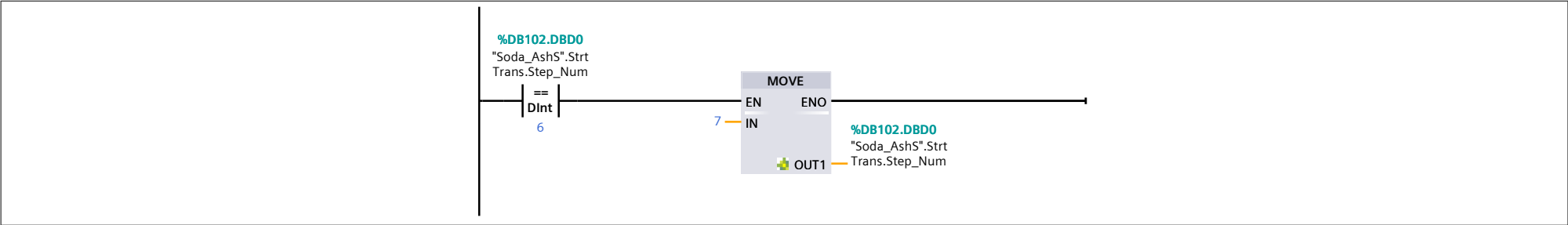
Network 7: Start Transfer step 4 - Spare



Network 8: Start Transfer step 5 - Start airlock L-6100



Network 9: Start Transfer step 6 - Spare



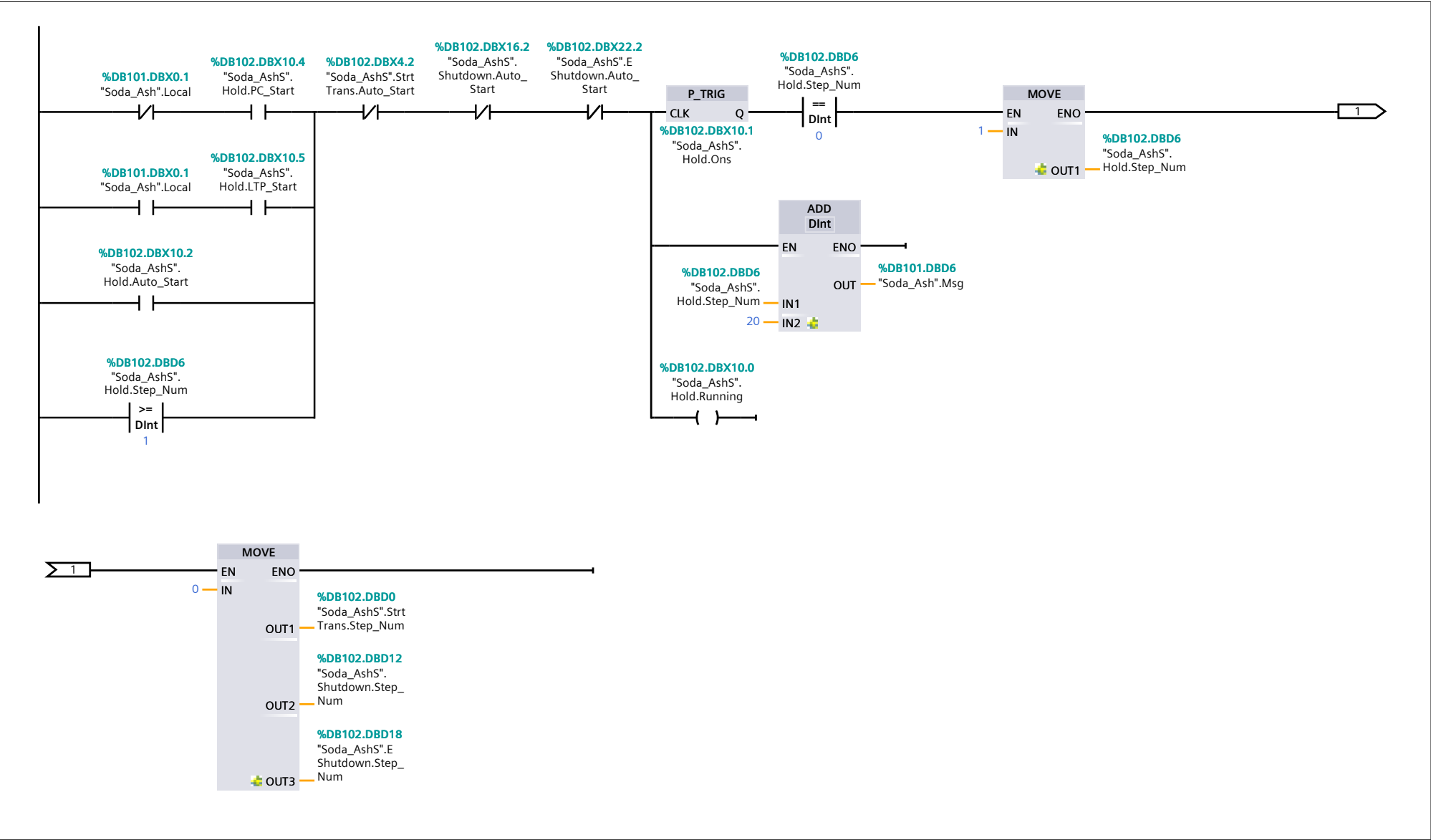
Soda_Ash [CPU 1516-3 PN/DP] / Program blocks / Soda_Ash

Soda_Ash_020Hold [FB112]

Soda_Ash_020Hold Properties							
General							
Name	Soda_Ash_020Hold	Number	112	Type	FB	Language	LAD
Numbering	Manual						
Information							
Title	Soda Ash Hold Sequence	Author		Comment		Family	
Version	0.1	User-defined ID					
Name			Data type	Default value		Retain	
Input							
Output							
InOut							
▼ Static							
Hold_ARTmr			TON_TIME			Non-retain	
Temp							
Constant							

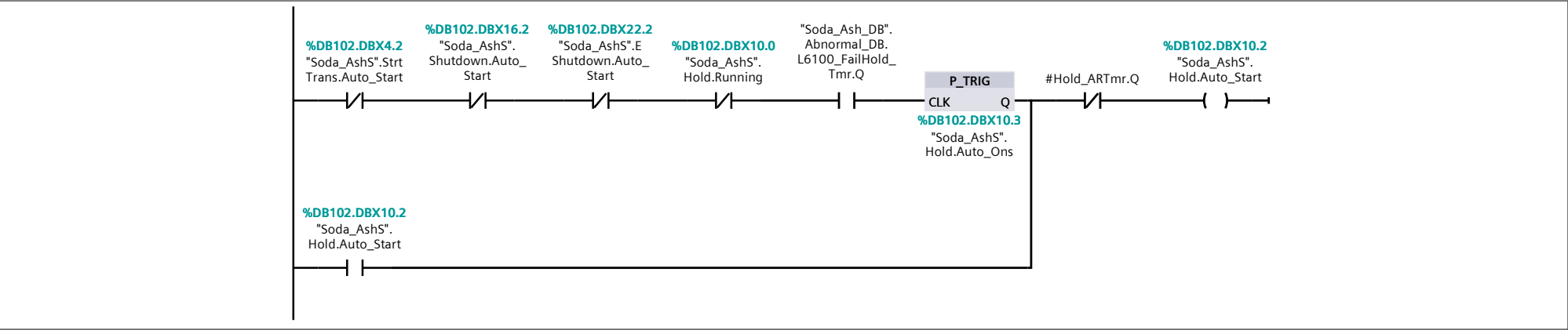
Network 1: Hold Sequence

Hold - Operator requests and auto sequence starts. Maintain message number for OI

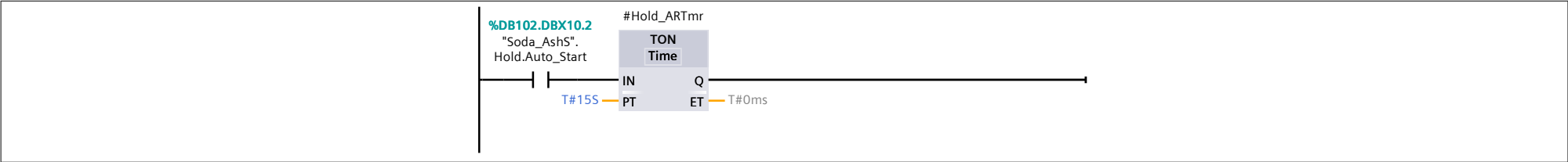


Network 2: Auto start request

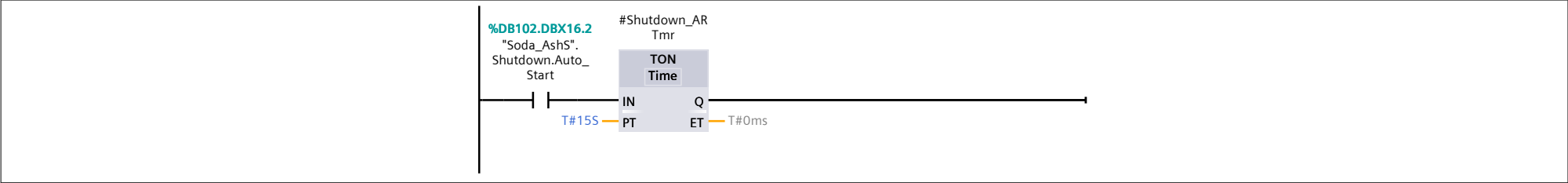
Auto-start for Hold



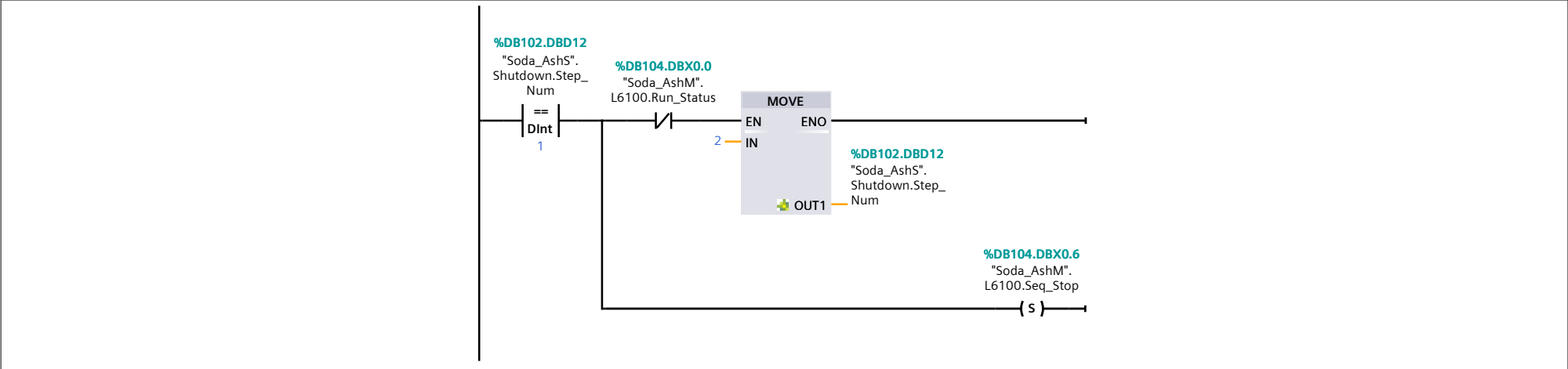
Network 3: Auto Start Timer



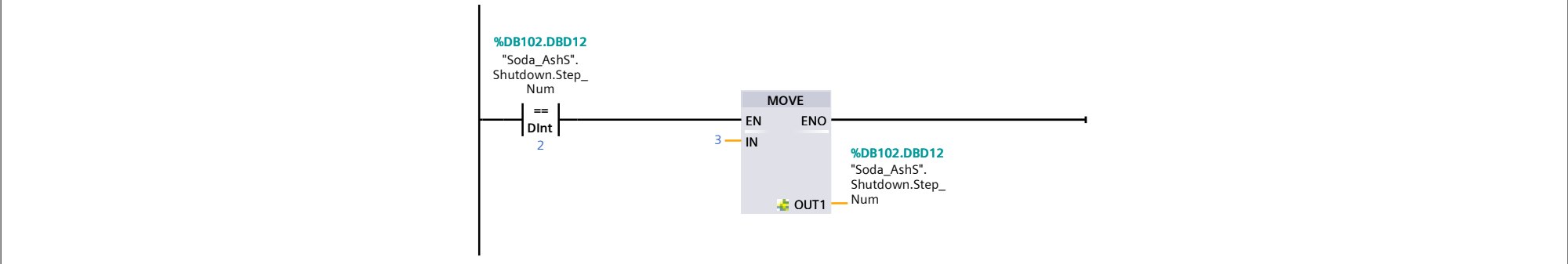
Network 3: Auto Start Timer



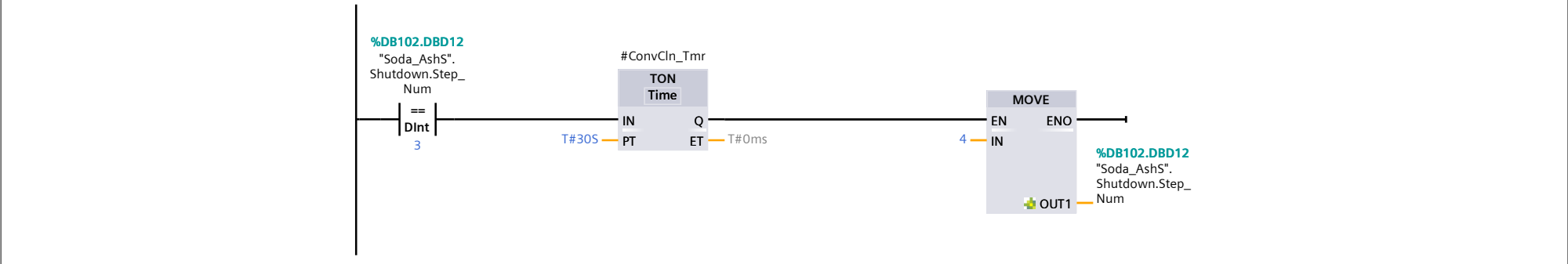
Network 4: Shutdown step 1 - Stop airlock



Network 5: Shutdown step 2 - Spare



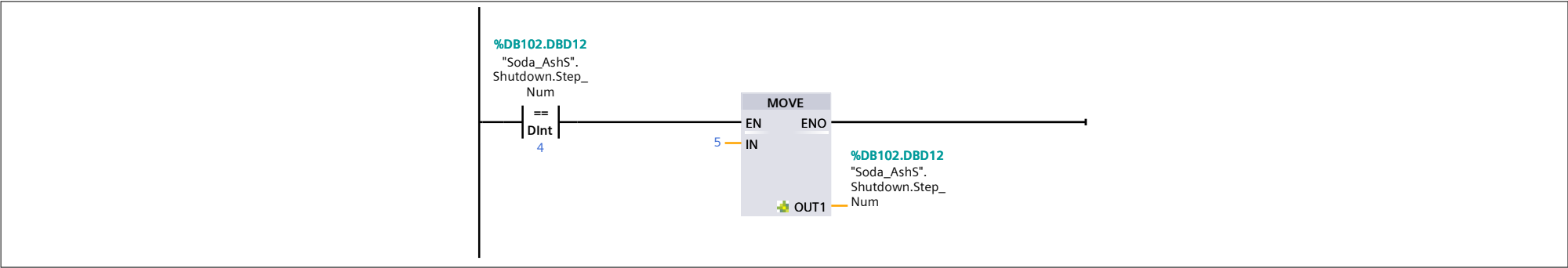
Network 6: Shutdown step 3 - Wait 30 seconds for C-6100 to clear.



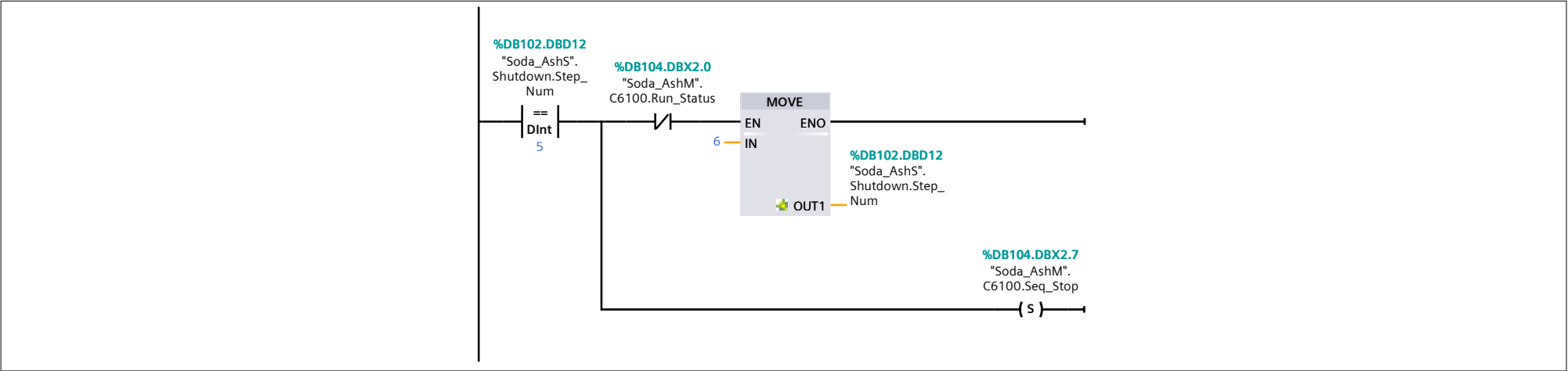
Network 7: Calculation of time remaining for step 2

```
0001 IF "Soda_AshS".Shutdown.Step_Num = 3 THEN
0002     "Soda_Ash".Time_Remaining := ((#ConvCln_Tmr.PT - #ConvCln_Tmr.ET) / 1000);
0003 END_IF;
0004
```

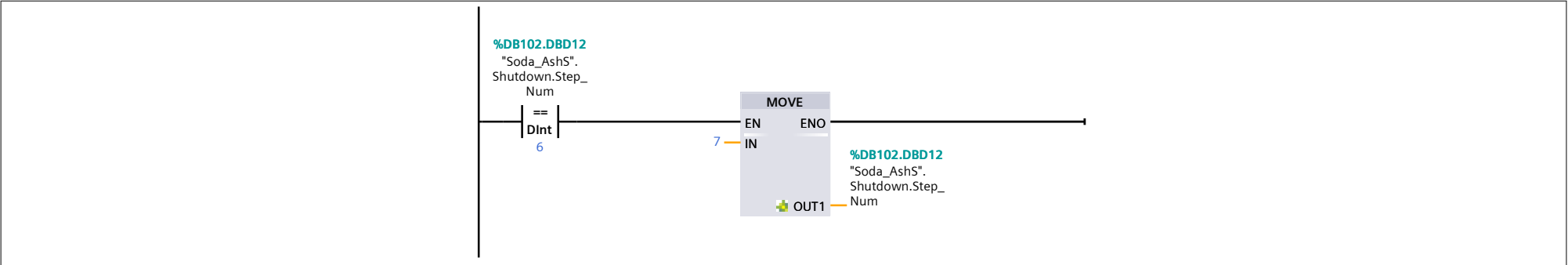
Network 8: Shutdown step 4 - Spare step



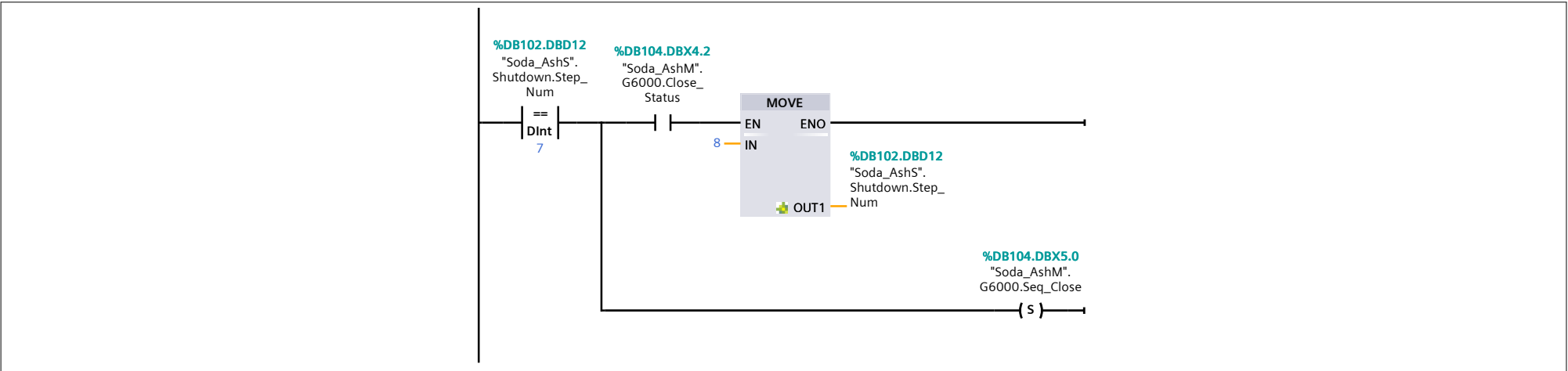
Network 9: Shutdown step 5 - Stop C-6100 soda ash screw conveyor.



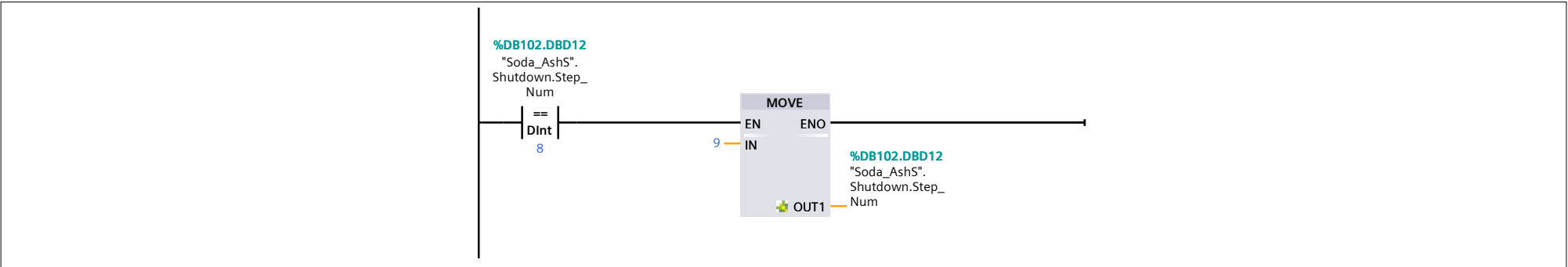
Network 10: Shutdown step 6 - Spare step



Network 11: Shutdown step 7 - Close slide gate



Network 12: Shutdown step 8 - Spare step



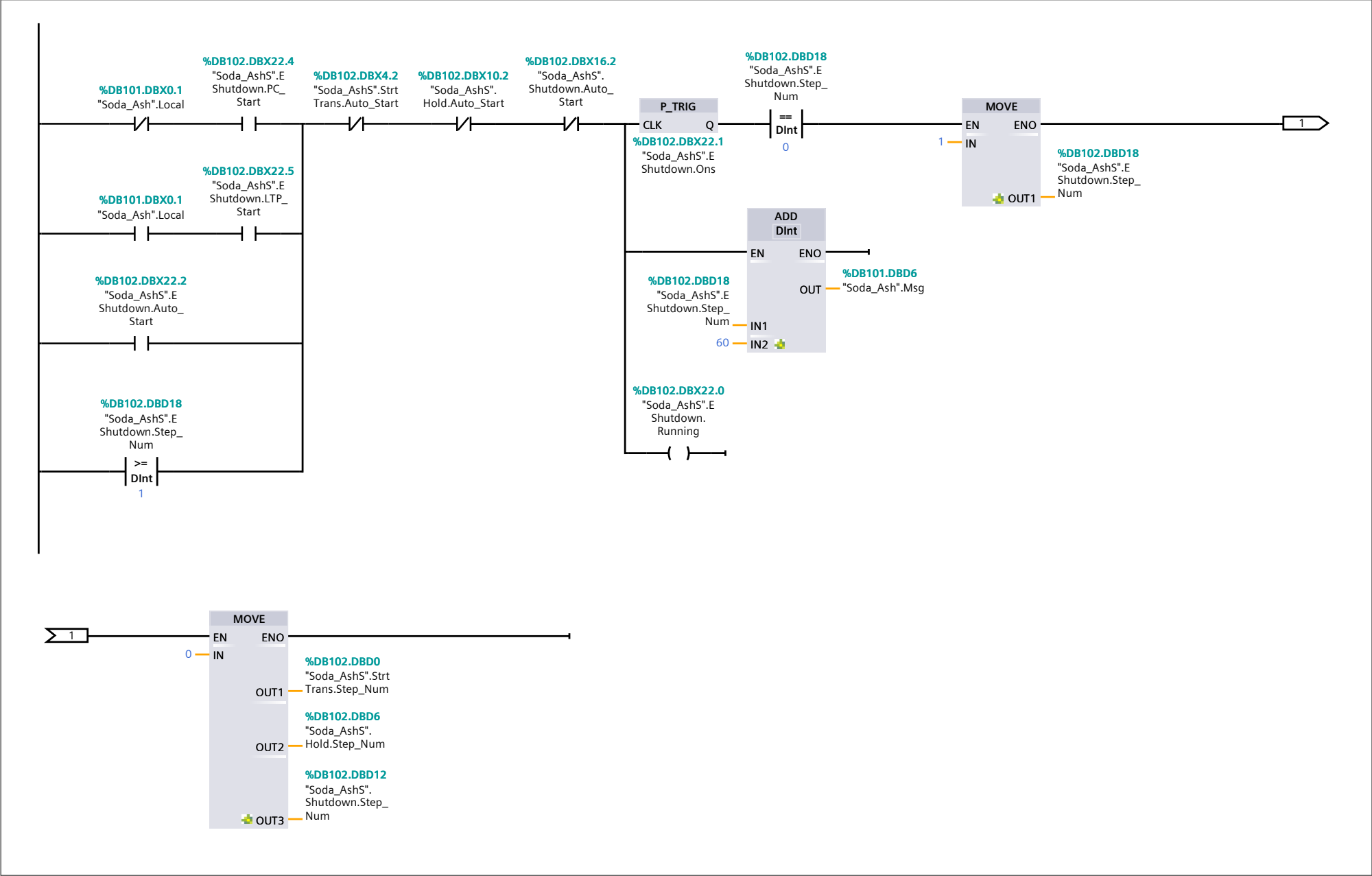
Soda_Ash [CPU 1516-3 PN/DP] / Program blocks / Soda_Ash

Soda_Ash_060EShutdown [FB114]

Soda_Ash_060EShutdown Properties							
General							
Name	Soda_Ash_060EShutdown	Number	114	Type	FB	Language	LAD
Numbering	Manual						
Information							
Title	Soda Ash E-Shutdown Sequence	Author		Comment		Family	
Version	0.1	User-defined ID					
Name			Data type	Default value		Retain	
Input							
Output							
InOut							
▼ Static							
EShutdown_ARTmr			TON_TIME			Non-retain	
EShutdown_Tmr			TON_TIME			Non-retain	
Temp							
Constant							

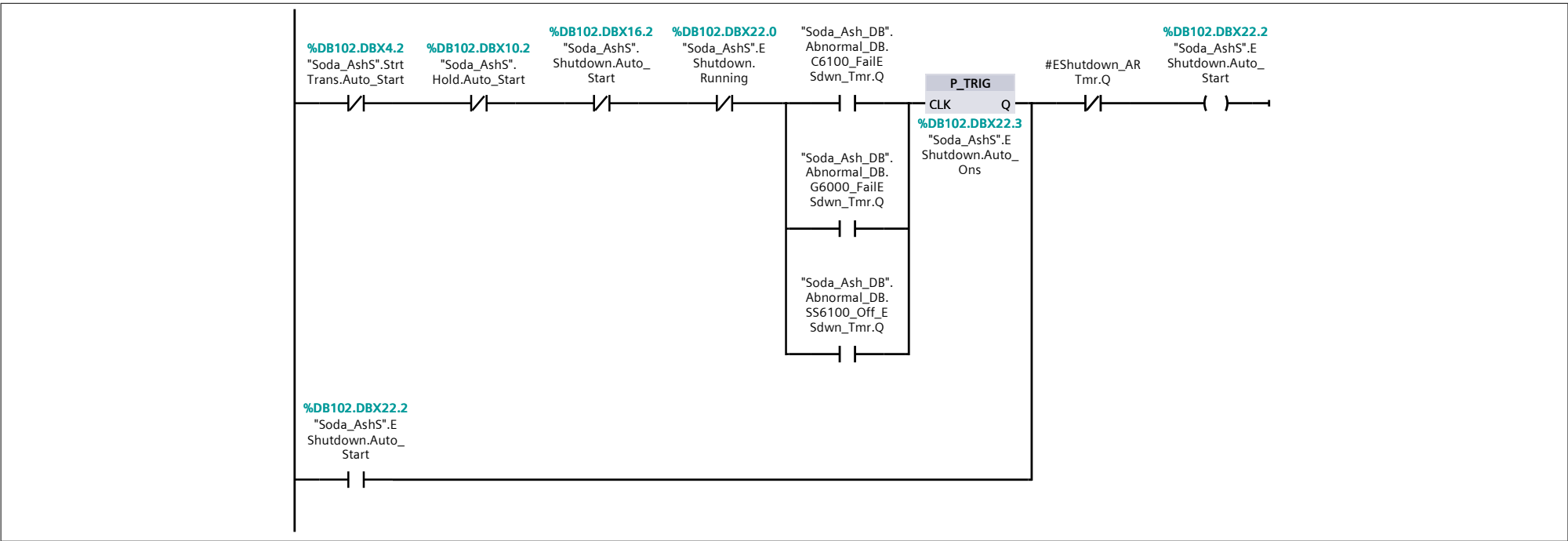
Network 1: E-Shutdown Sequence

EShutdown - Operator requests and auto sequence starts. Maintain message number for OI

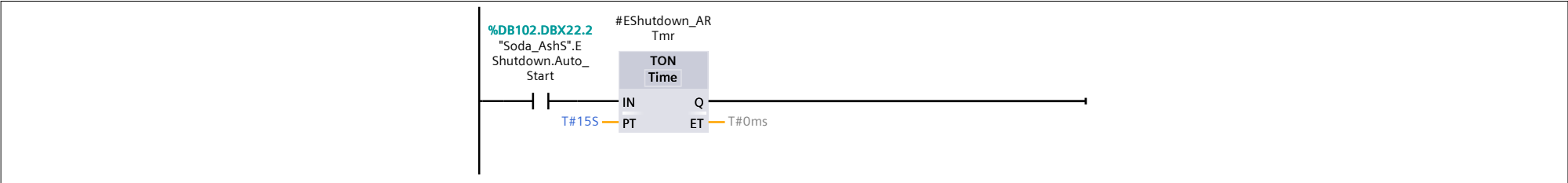


Network 2: Auto start request

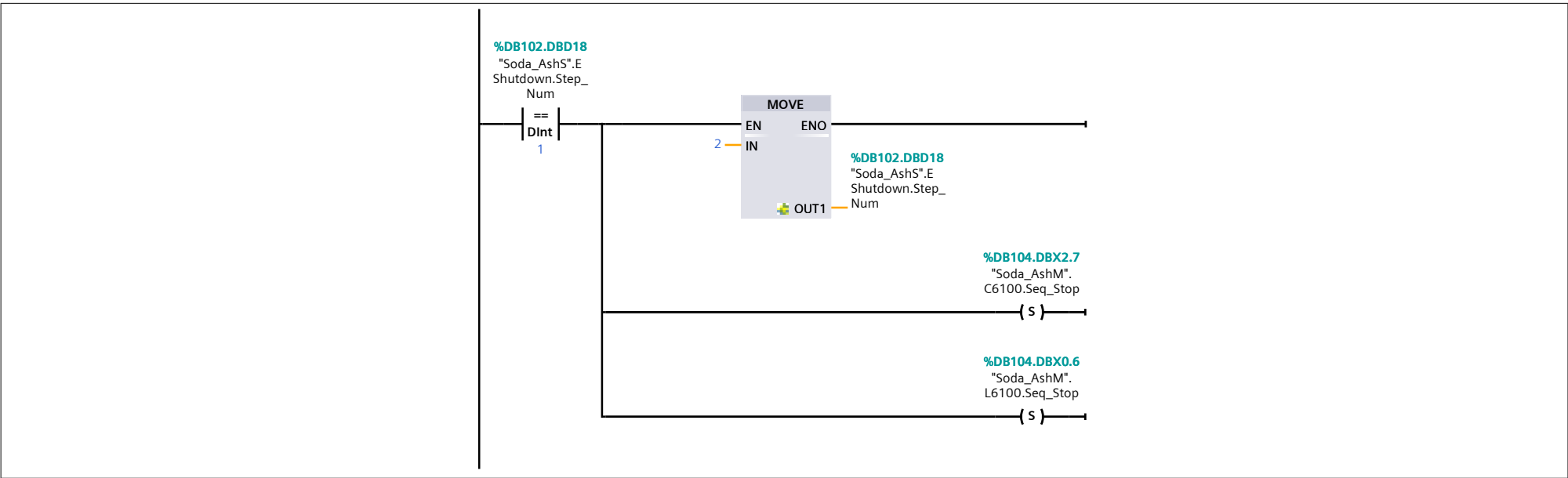
Auto-start for E-Shutdown



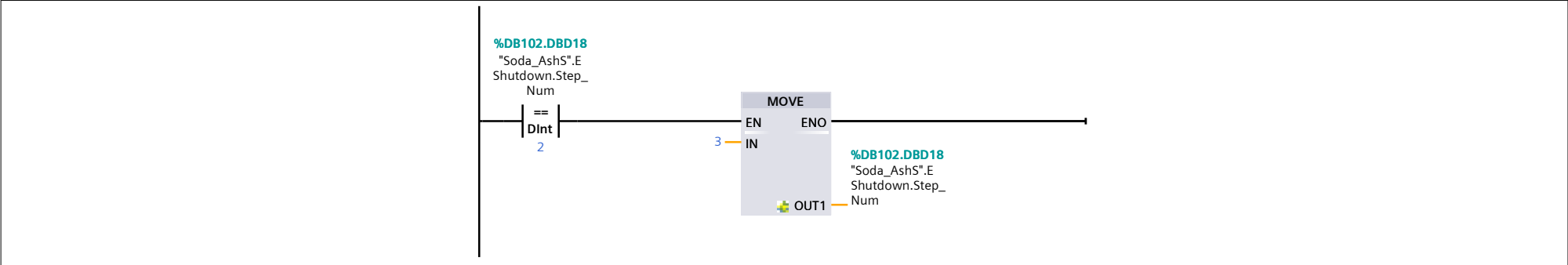
Network 3: Auto Start Timer



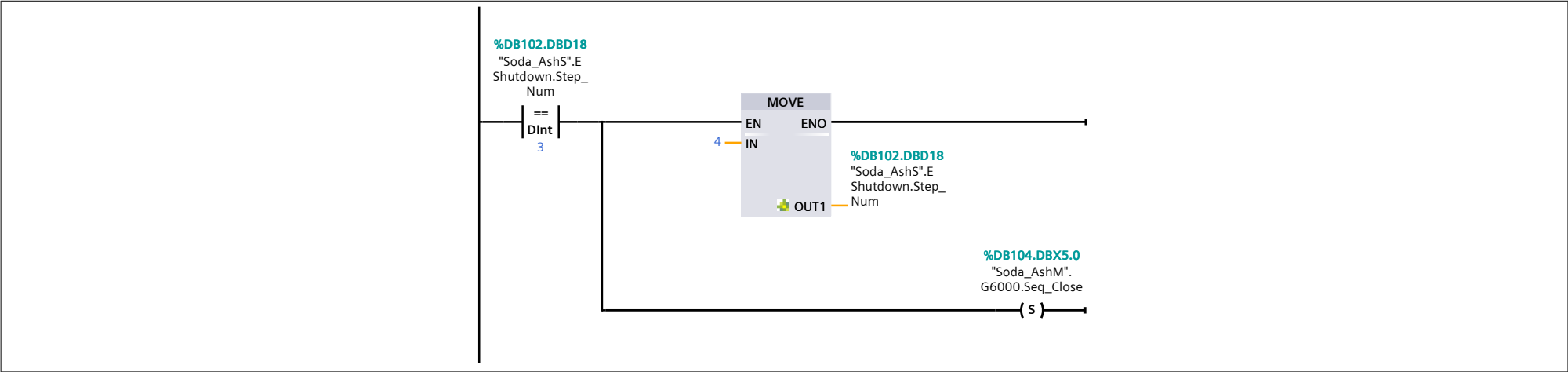
Network 4: E-Shutdown step 1 - Stop airlock and conveyor



Network 5: E-Shutdown step 2 - Spare

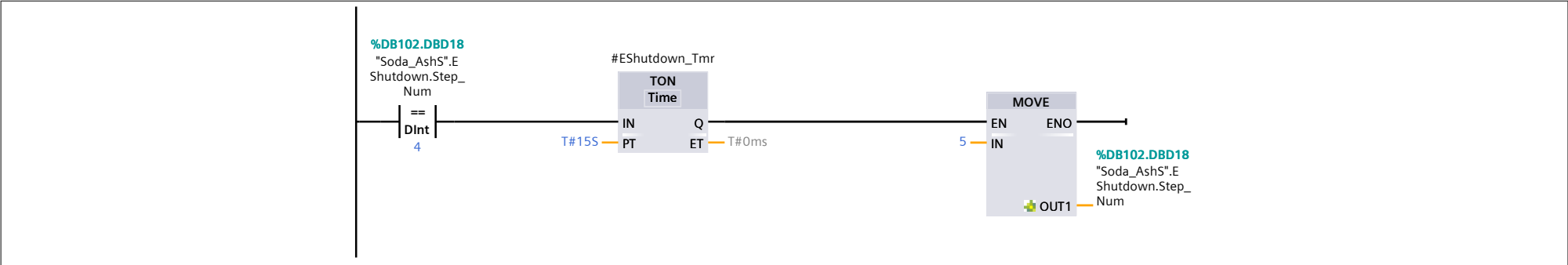


Network 6: E-Shutdown step 3 - Close slide gate



Network 7: E-Shutdown step 4 - Wait 15 seconds

for equipment to shut down before allowing maintenance mode.



Network 8: Calculation of time remaining for step 4

```
0001 IF "Soda_AshS".EShutdown.Step_Num = 4 THEN
0002     "Soda_Ash".Time_Remaining := ((#EShutdown_Tmr.PT - #EShutdown_Tmr.ET) / 1000);
0003 END_IF;
0004
```

Totally Integrated Automation Portal

Soda_Ash [CPU 1516-3 PN/DP] / Program blocks / Soda_Ash

Soda_Ash_DB [DB100]

Soda_Ash_DB Properties

General

Name	Soda_Ash_DB	Number	100	Type	DB	Language	DB
Numbering	Manual						

Information

Title		Author		Comment		Family	
Version	0.1	User-defined ID					

Name	Data type	Start value	Retain
Input			
Output			
InOut			
▼ Static			
Gates_DB	"Soda_Ash_Gates"		False
Motors_DB	"Soda_Ash_Motors"		False
Valves_DB	"Soda_Ash_Valves"		False
StartXfer_DB	"Soda_Ash_000StrtTrans"		False
Hold_DB	"Soda_Ash_020Hold"		False
Shutdown_DB	"Soda_Ash_040Shutdown"		False
EShutdown_DB	"Soda_Ash_060EShutdown"		False
PIDLoops_DB	"Soda_Ash_PIDLoops"		False
Abnormal_DB	"Soda_Ash_991Abnormal"		False
Misc_DB	"Soda_Ash_990Misc"		False

Totally Integrated Automation Portal

Soda_Ash [CPU 1516-3 PN/DP] / Program blocks / Soda_Ash

Soda_Ash [DB101]

Soda_Ash Properties

General

Name	Soda_Ash	Number	101	Type	DB	Language	DB
Numbering	Manual						

Information

Title		Author		Comment		Family	
Version	0.1	User-defined ID					

Name	Data type	Start value	Retain
▼ Static			
Alm_Reset	Bool	false	False
Local	Bool	false	False
Maint	Bool	false	False
Man_StartOpen	Bool	false	False
Man_StopClose	Bool	false	False
Man_DevNum	DInt	0	False
Msg	DInt	0	False
Time_Remaining	DInt	0	False

Totally Integrated Automation Portal

Soda_Ash [CPU 1516-3 PN/DP] / Program blocks / Soda_Ash

Soda_AshG [DB103]

Soda_AshG Properties

General

Name	Soda_AshG	Number	103	Type	DB	Language	DB
Numbering	Manual						

Information

Title		Author		Comment		Family	
Version	0.1	User-defined ID					

Name	Data type	Start value	Retain
▼ Static			
G6200	"Gate_Flop_Type"		False

Totally Integrated Automation Portal

Soda_Ash [CPU 1516-3 PN/DP] / Program blocks / Soda_Ash

Soda_AshM [DB104]

Soda_AshM Properties

General

Name	Soda_AshM	Number	104	Type	DB	Language	DB
Numbering	Manual						

Information

Title		Author		Comment		Family	
Version	0.1	User-defined ID					

Name	Data type	Start value	Retain
▼ Static			
L6100	"Motor_Std_Type"		False
C6100	"Motor_Conv_Type"		False
G6000	"Gate_Slide_Type"		False

Totally Integrated Automation Portal

Soda_Ash [CPU 1516-3 PN/DP] / Program blocks / Soda_Ash

Soda_AshS [DB102]

Soda_AshS Properties

General

Name	Soda_AshS	Number	102	Type	DB	Language	DB
Numbering	Manual						

Information

Title		Author		Comment		Family	
Version	0.1	User-defined ID					

Name	Data type	Start value	Retain
▼ Static			
StrtTrans	"Seq_Type"		False
Hold	"Seq_Type"		False
Shutdown	"Seq_Type"		False
EShutdown	"Seq_Type"		False

Totally Integrated Automation Portal

Soda_Ash [CPU 1516-3 PN/DP] / Program blocks / Soda_Ash

Soda_AshV [DB106]

Soda_AshV Properties

General

Name	Soda_AshV	Number	106	Type	DB	Language	DB
Numbering	Manual						

Information

Title		Author		Comment		Family	
Version	0.1	User-defined ID					

Name	Data type	Start value	Retain
▼ Static			
XV6001	"Valve_Disc_Type"		False

Totally Integrated Automation Portal

Soda_Ash [CPU 1516-3 PN/DP] / Program blocks / Soda_Ash

Soda_AshP [DB105]

Soda_AshP Properties

General

Name	Soda_AshP	Number	105	Type	DB	Language	DB
Numbering	Manual						

Information

Title		Author		Comment		Family	
Version	0.1	User-defined ID					

Name	Data type	Start value	Retain
▼ Static			
FIC6000	"PIDData_Type"		False

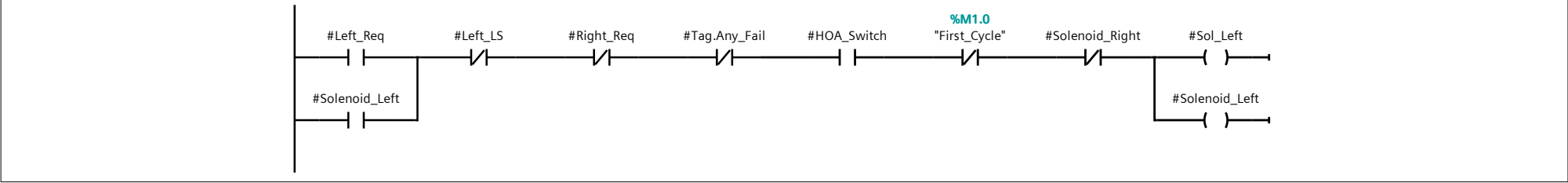
Soda_Ash [CPU 1516-3 PN/DP] / Program blocks / zzDevice_Control

Gate_Flop [FB1099]

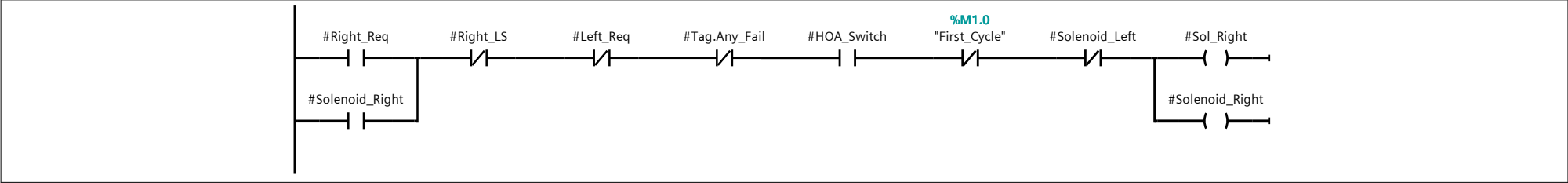
Gate_Flop Properties							
General							
Name	Gate_Flop	Number	1099	Type	FB	Language	LAD
Numbering	Manual						
Information							
Title	Flop Gate Control	Author		Comment	Copyright (c) 2011, Dog-wood Valley Press, LLC	Family	
Version	0.1	User-defined ID					

Name	Data type	Default value
▼ Input		
Left_LS	Bool	false
Right_LS	Bool	false
HOA_Switch	Bool	false
Alarm_Reset	Bool	false
Maint	Bool	false
Man_Left	Bool	false
Man_Right	Bool	false
Select_Dev_Num	DInt	0
This_Dev_Num	DInt	0
▼ Output		
Sol_Left	Bool	false
Sol_Right	Bool	false
▼ InOut		
Tag	"Gate_Flop_Type"	
▼ Static		
Left_Req	Bool	false
Right_Req	Bool	false
Alw_On	Bool	true
Solenoid_Left	Bool	false
Solenoid_Right	Bool	false
Fail_Tmr	TON_TIME	
Temp		
Constant		

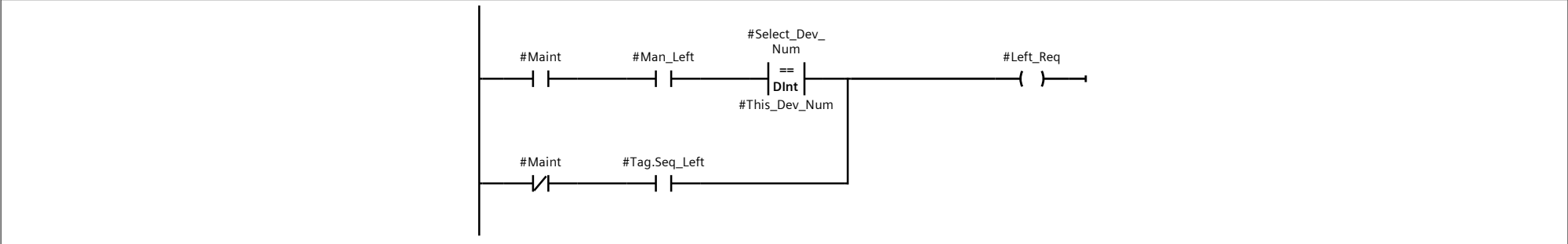
Network 1: Energize the left coil.



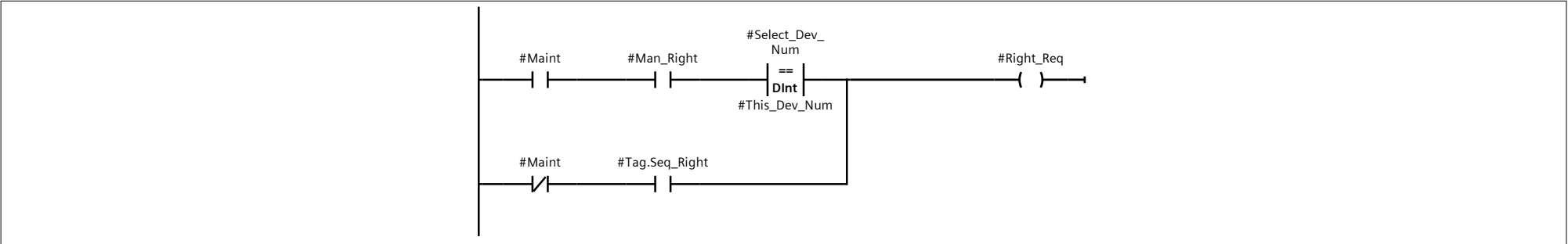
Network 2: Energize the right coil.



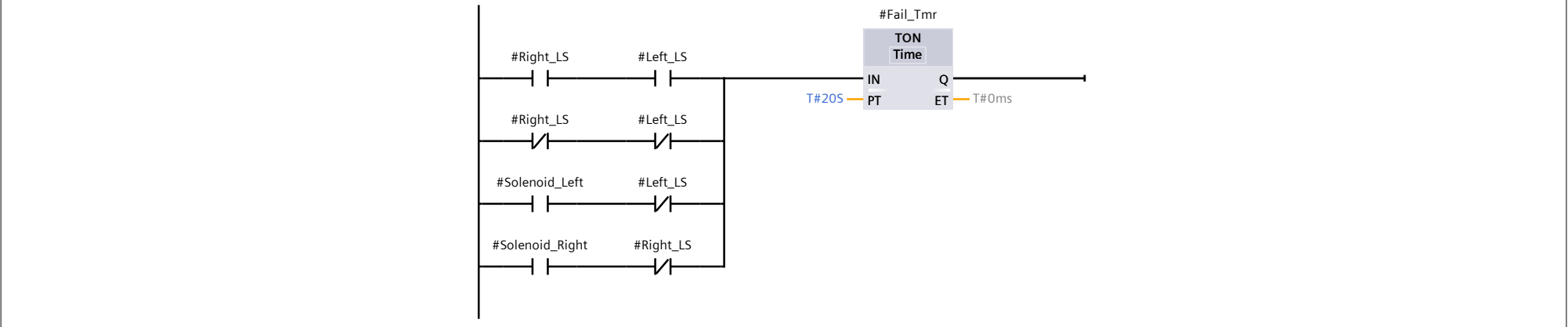
Network 3: Handle manual and sequence left requests.



Network 4: Handle manual and sequence right requests.

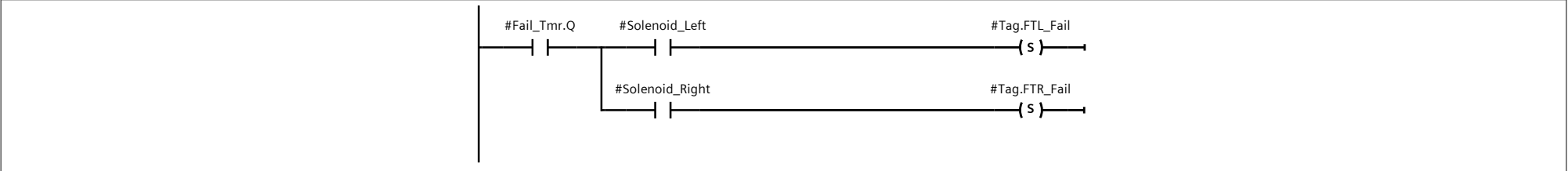


Network 5: Failure timer for any illegal condition.



Network 6: Failure Check: If any illegal condition persists for 20 sec., set failure bit

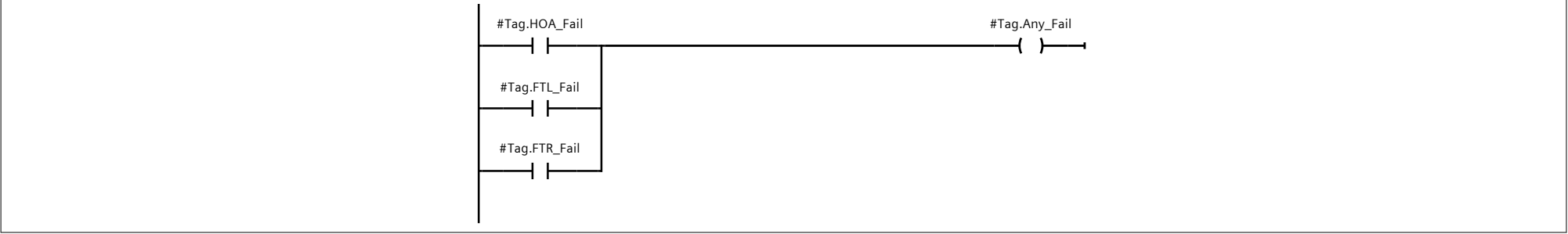
bit.



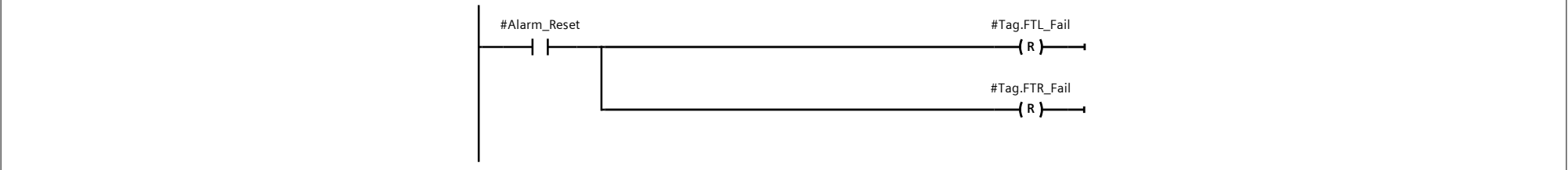
Network 7: Generate HOA failure indication



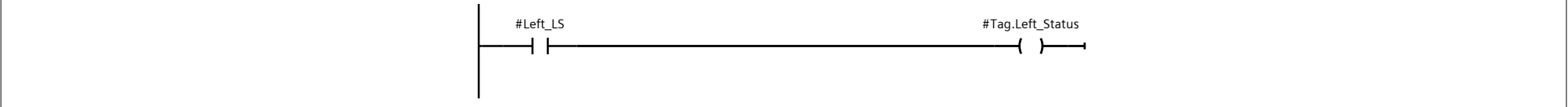
Network 8: Any failure indication



Network 9: Reset alarm indications.



Network 10: Gate status for OI



Network 11:

Totally Integrated Automation Portal		
<div><div></div><div><div>#Right_LS</div><div>#Tag.Right_Status</div></div></div>		
Network 12:		
<div><div></div><div><div>#Solenoid_Left</div><div>#Solenoid_Right</div></div><div>#Tag.Run_Status</div></div>		
Network 13: Reset sequence commands.		
<div><div></div><div><div>#Alw_On</div><div>#Tag.Seq_Left</div><div>#Tag.Seq_Right</div></div></div>		
Network 14: Set ENO on.		
<div><div></div><div><div>#Alw_On</div><div>RLO</div></div></div>		

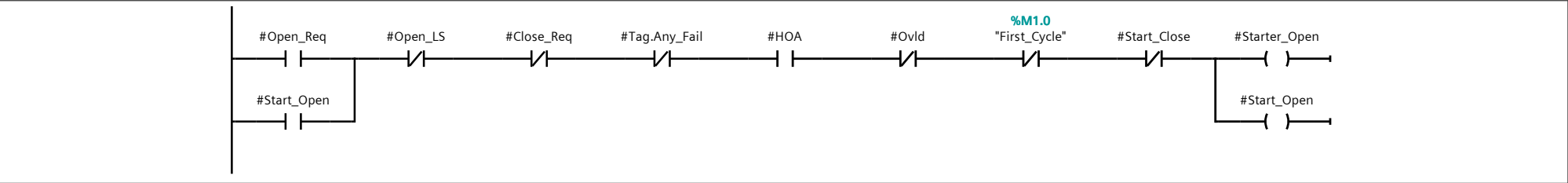
Soda_Ash [CPU 1516-3 PN/DP] / Program blocks / zzDevice_Control

Gate_Slide [FB1098]

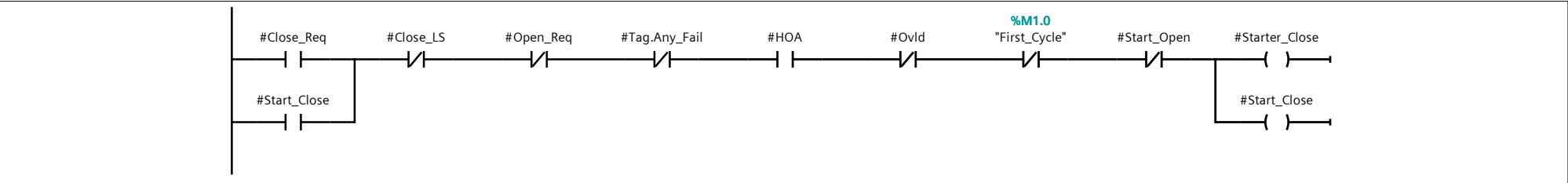
Gate_Slide Properties							
General							
Name	Gate_Slide	Number	1098	Type	FB	Language	LAD
Numbering	Manual						
Information							
Title	Slide Gate Control	Author		Comment	Copyright (c) 2011, Dogwood Valley Press, LLC	Family	
Version	0.1	User-defined ID					

Name	Data type	Default value
▼ Input		
Open_Aux	Bool	false
Close_Aux	Bool	false
HOA	Bool	false
Ovld	Bool	false
Open_LS	Bool	false
Close_LS	Bool	false
Alarm_Reset	Bool	false
Maint	Bool	false
Man_Open	Bool	false
Man_Close	Bool	false
Select_Dev_Num	DInt	0
This_Dev_Num	DInt	0
▼ Output		
Starter_Open	Bool	false
Starter_Close	Bool	false
▼ InOut		
Tag	"Gate_Slide_Type"	
▼ Static		
Open_Req	Bool	false
Close_Req	Bool	false
Alw_On	Bool	true
Start_Open	Bool	false
Start_Close	Bool	false
Fail_Tmr	TON_TIME	
Temp		
Constant		

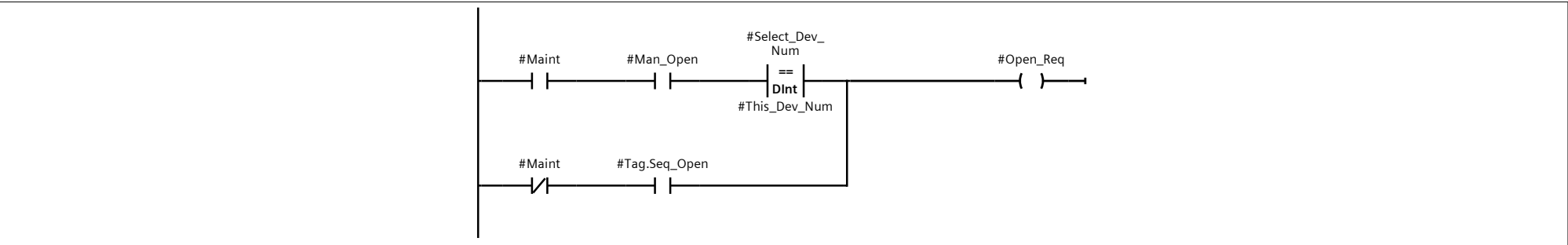
Network 1: Energize the open coil.



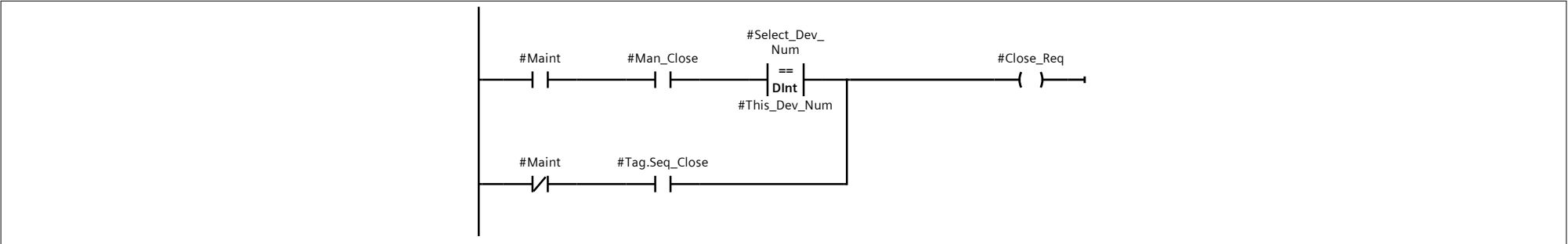
Network 2: Energize the close coil.



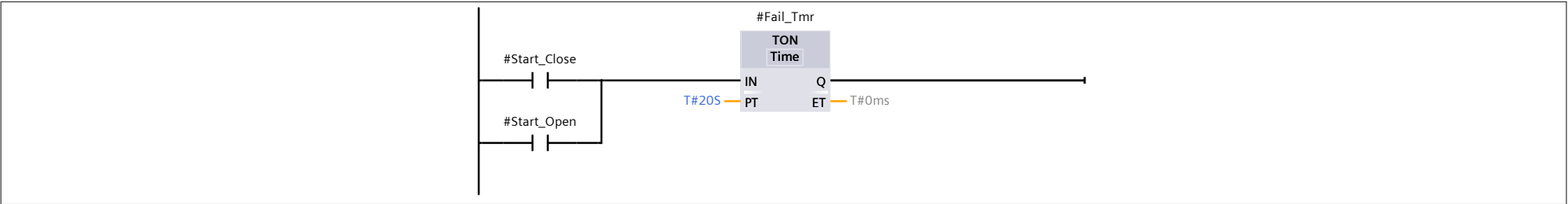
Network 3: Handle manual and sequence open requests.



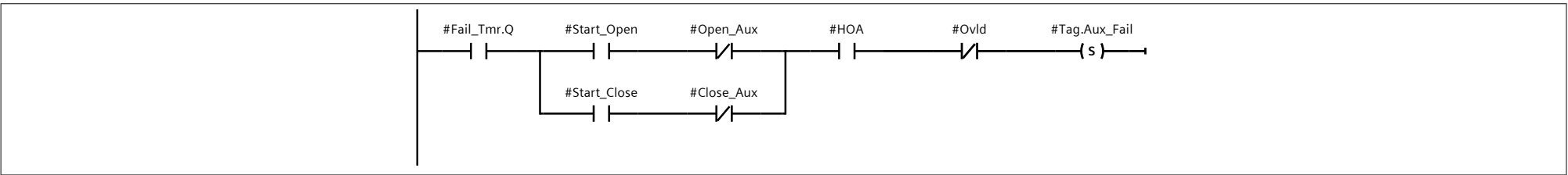
Network 4: Handle manual and sequence close requests.



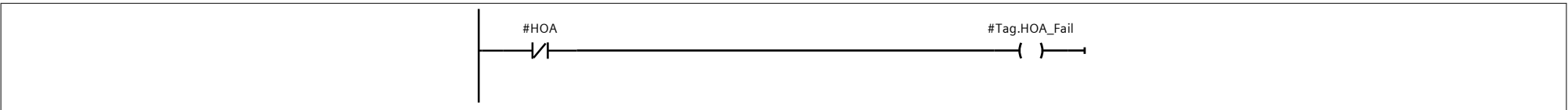
Network 5: Fail timer



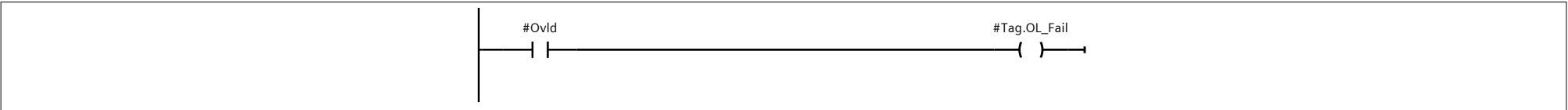
Network 6: Aux failure: No aux after first 20 seconds HOA switch auto and not overload.



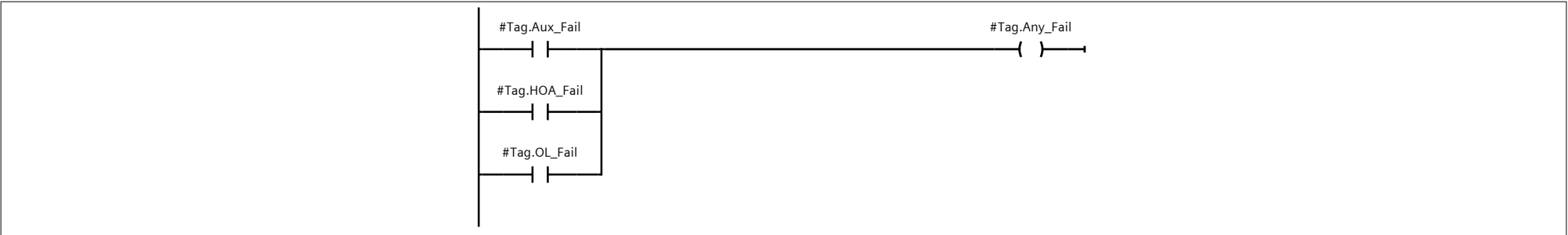
Network 7: HOA failure



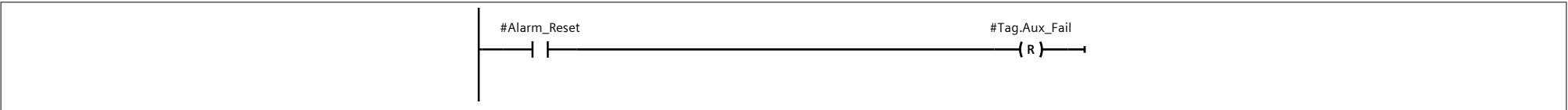
Network 8: Overload failure



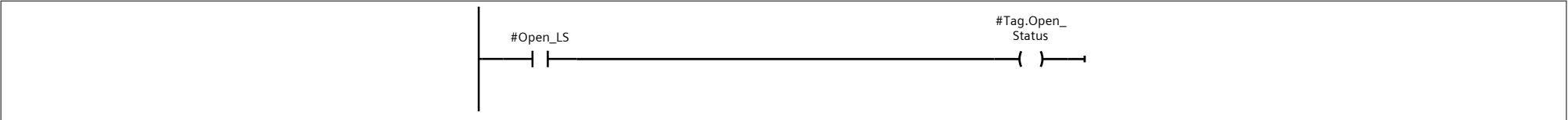
Network 9: Any failure indication.



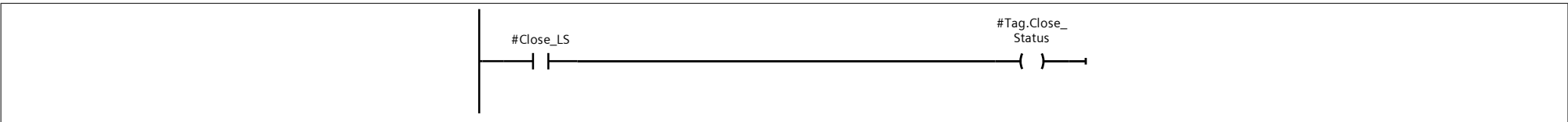
Network 10: Reset alarm indication.



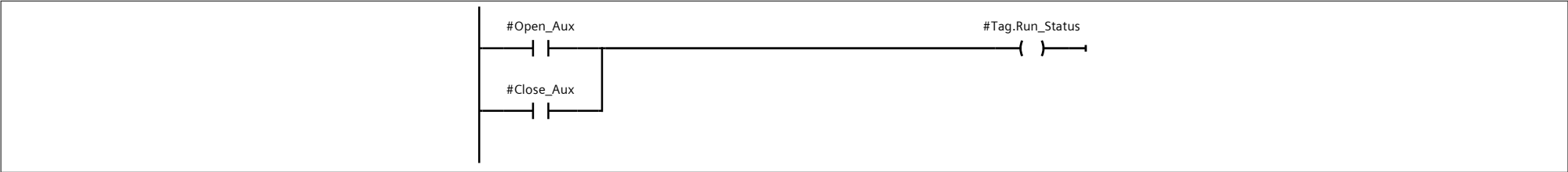
Network 11: Open status for OI



Network 12: Close status for OI



Network 13: Running status for OI



Network 14: Reset sequence commands.



Network 15: Set ENO on.



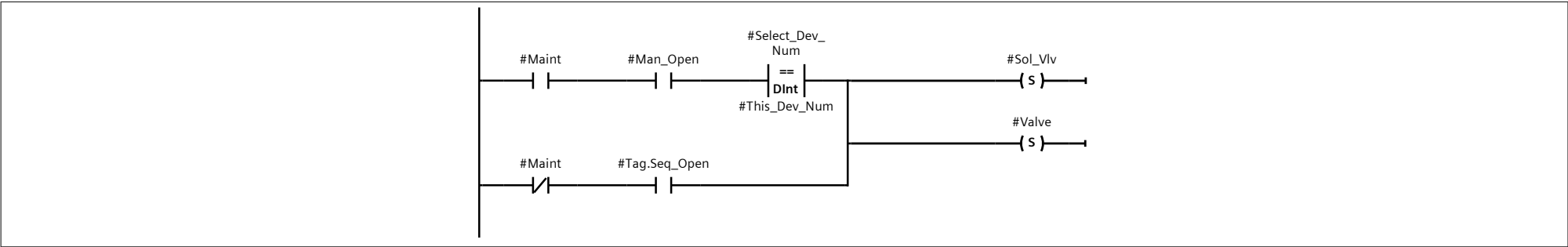
Soda_Ash [CPU 1516-3 PN/DP] / Program blocks / zzDevice_Control

Valve_Disc [FB1097]

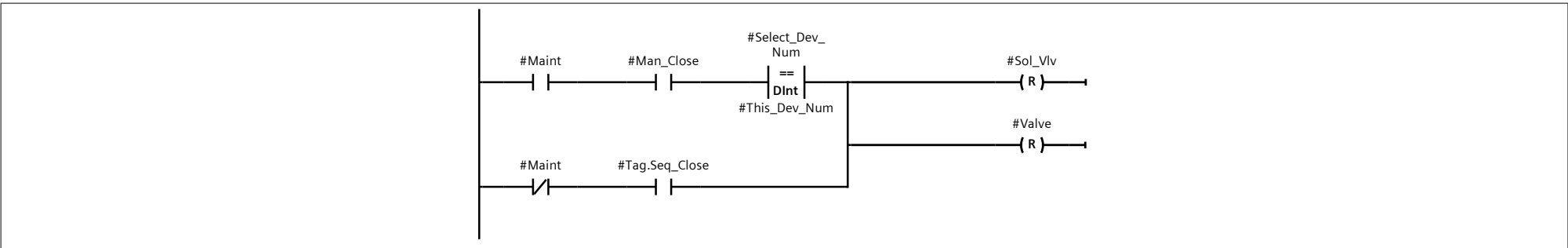
Valve_Disc Properties							
General							
Name	Valve_Disc	Number	1097	Type	FB	Language	LAD
Numbering	Manual						
Information							
Title	Discrete Valve Device Control	Author		Comment	Copyright (c) 2011, Dogwood Valley Press, LLC	Family	
Version	0.1	User-defined ID					

Name	Data type	Default value
▼ Input		
Open_LS	Bool	false
Close_LS	Bool	false
Alarm_Reset	Bool	false
Maint	Bool	false
Man_Open	Bool	false
Man_Close	Bool	false
Select_Dev_Num	DInt	0
This_Dev_Num	DInt	0
▼ Output		
Sol_Vlv	Bool	false
▼ InOut		
Tag	"Valve_Disc_Type"	
▼ Static		
Alw_On	Bool	true
Valve	Bool	false
Fail_Tmr	TON_TIME	
Temp		
Constant		

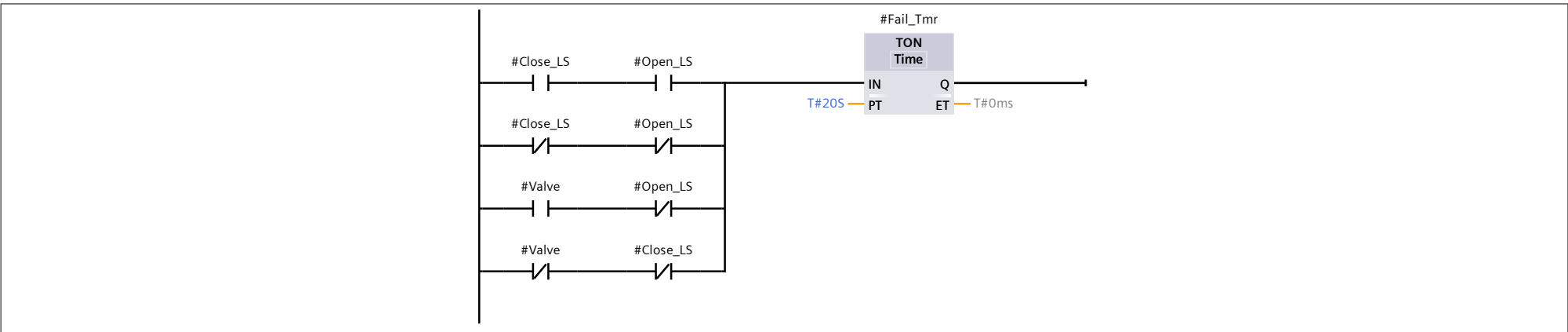
Network 1: Handle manual and sequence open requests



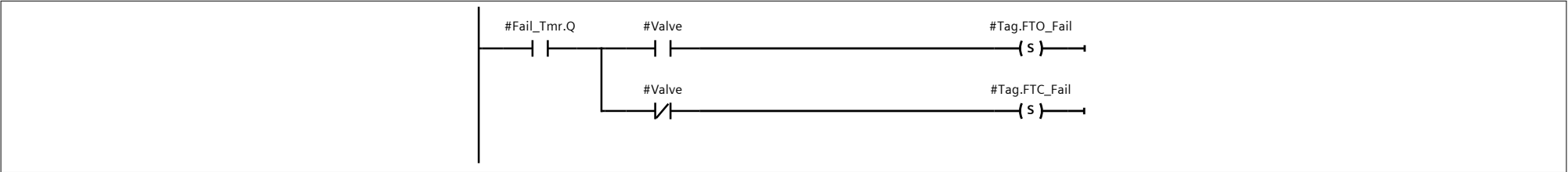
Network 2: Handle manual and sequence close requests.



Network 3: Failure timer for any illegal condition.



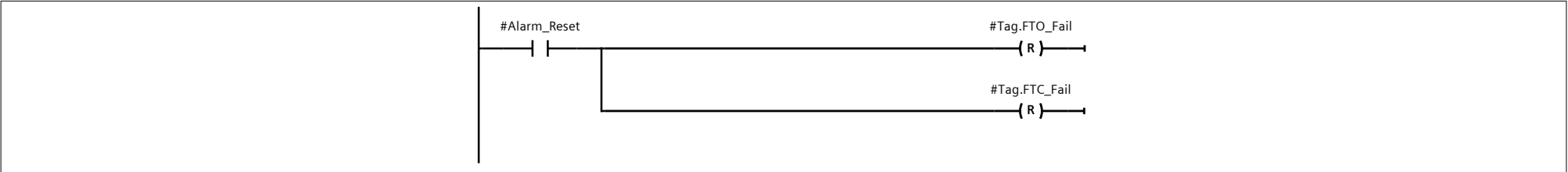
Network 4: Failure check. If any illegal condition persists for 20 sec., set failure bit.



Network 5: Any failure indication



Network 6: Reset alarm indications



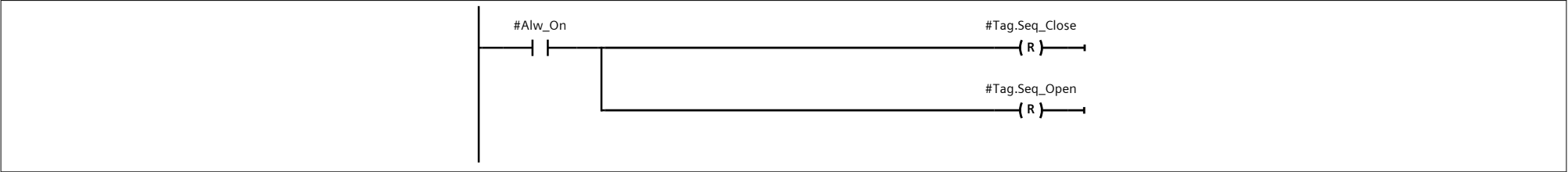
Network 7: Valve Status for OI



Network 8:



Network 9: Reset sequence open/close commands



Network 10: Set ENO on.



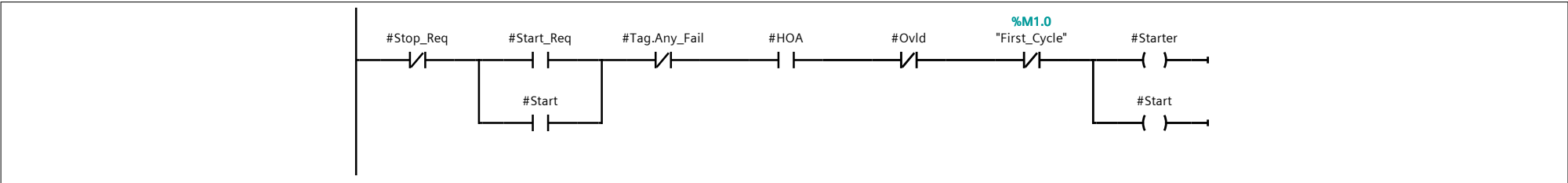
Soda_Ash [CPU 1516-3 PN/DP] / Program blocks / zzDevice_Control

Motor_Std [FB1095]

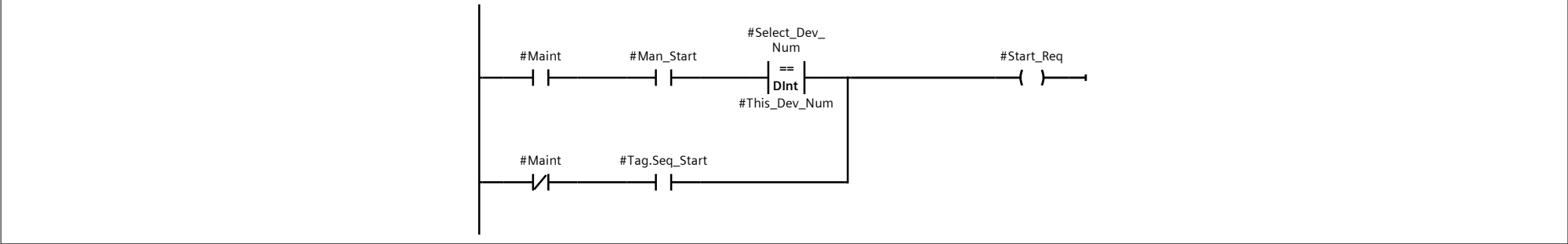
Motor_Std Properties							
General							
Name	Motor_Std	Number	1095	Type	FB	Language	LAD
Numbering	Manual						
Information							
Title	Standard Motor Device Control	Author		Comment	Copyright (c) 2011, Dogwood Valley Press, LLC	Family	
Version	0.1	User-defined ID					

Name	Data type	Default value
▼ Input		
Aux	Bool	false
HOA	Bool	false
Ovld	Bool	false
Alarm_Reset	Bool	false
Maint	Bool	false
Man_Start	Bool	false
Man_Stop	Bool	false
Select_Dev_Num	DInt	0
This_Dev_Num	DInt	0
▼ Output		
Starter	Bool	false
▼ InOut		
Tag	"Motor_Std_Type"	
▼ Static		
Start_Req	Bool	false
Stop_Req	Bool	false
Alw_On	Bool	true
Start	Bool	false
Fail_Tmr	TON_TIME	
Fail_Tmr_Q	Bool	false
Temp		
Constant		

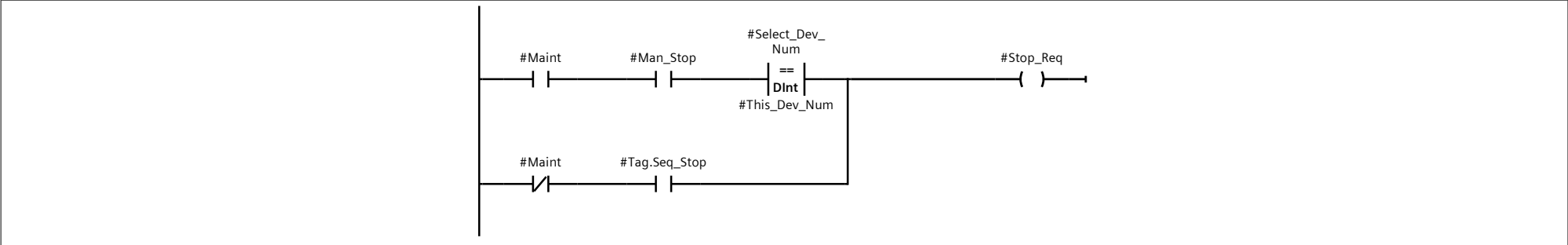
Network 1: Main control that drives motor starter contact.



Network 2: Handle manual and sequence start requests.



Network 3: Handle manual and sequence stop requests.



Network 4: Aux fail timer

Totally Integrated Automation Portal		
	<div><div></div><div><div></div><div><div>#Fail_Tmr</div><div>TON Time</div><div><div>#Start</div><div>IN</div><div>Q</div><div><div>#Fail_Tmr_Q</div><div></div></div></div><div><div>T#20S</div><div>PT</div><div>ET</div><div>T#0ms</div></div></div></div></div>	
Network 5: If aux not on in 20 seconds and HOA in auto and not overload, set failure.		
Failures:		
	<div><div></div><div><div>#Fail_Tmr_Q</div><div>#Aux</div><div>#HOA</div><div>#Ovld</div><div>#Tag.Aux_Fail</div><div>{ S }</div></div></div>	
Network 6: HOA failure indication		
	<div><div></div><div><div>#HOA</div><div>#Tag.HOA_Fail</div><div>{ }</div></div></div>	
Network 7: Overload failure indication		
	<div><div></div><div><div>#Ovld</div><div>#Tag.OL_Fail</div><div>{ }</div></div></div>	
Network 8: Any failure indication		
	<div><div></div><div><div>#Tag.Aux_Fail</div><div>#Tag.HOA_Fail</div><div>#Tag.OL_Fail</div><div>#Tag.Any_Fail</div><div>{ }</div></div></div>	
Network 9: Running status for OI		
Comment		
	<div><div></div><div><div>#Aux</div><div>#Tag.Run_Status</div><div>{ }</div></div></div>	
Network 10:		
Reset alarm indication		
	<div><div></div><div><div>#Alarm_Reset</div><div>#Tag.Aux_Fail</div><div>{ R }</div></div></div>	
Network 11: Reset sequence commands		
	<div><div></div><div><div>#Alw_On</div><div>#Tag.Seq_Start</div><div>{ R }</div><div>#Tag.Seq_Stop</div><div>{ R }</div></div></div>	
Network 12: Always set ENO true		
	<div><div></div><div><div>#Alw_On</div><div>RLO</div><div>{ RET }</div></div></div>	

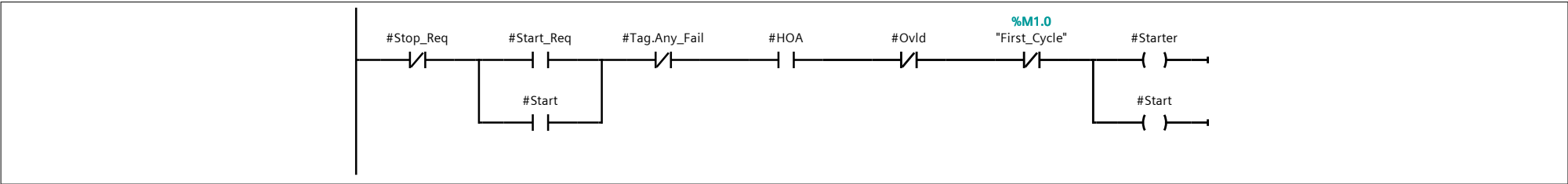
Soda_Ash [CPU 1516-3 PN/DP] / Program blocks / zzDevice_Control

Motor_Conv [FB1096]

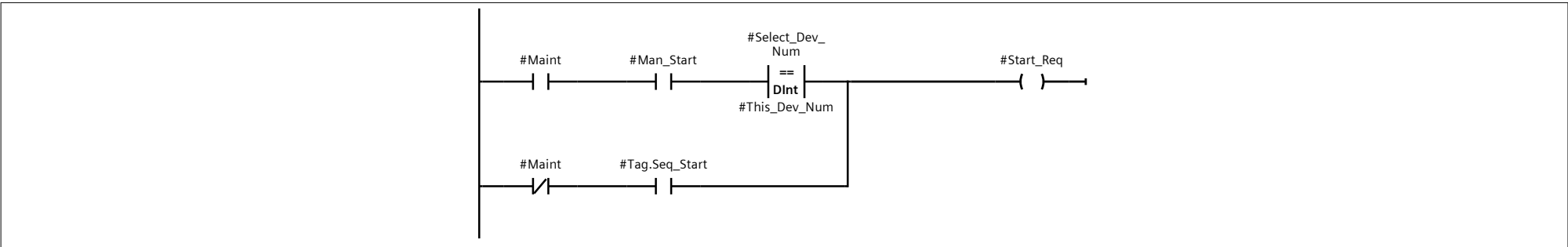
Motor_Conv Properties							
General							
Name	Motor_Conv	Number	1096	Type	FB	Language	LAD
Numbering	Manual						
Information							
Title	Conveyor Motor Control	Author		Comment	Copyright (c) 2011, Dogwood Valley Press, LLC	Family	
Version	0.1	User-defined ID					

Name	Data type	Default value
▼ Input		
Aux	Bool	false
HOA	Bool	false
Ovld	Bool	false
Speed_Switch	Bool	false
Alarm_Reset	Bool	false
Maint	Bool	false
Man_Start	Bool	false
Man_Stop	Bool	false
Select_Dev_Num	DInt	0
This_Dev_Num	DInt	0
▼ Output		
Starter	Bool	false
▼ InOut		
Tag	"Motor_Conv_Type"	
▼ Static		
Start_Req	Bool	false
Stop_Req	Bool	false
Alw_On	Bool	true
Start	Bool	false
Fail_Tmr	TON_TIME	
Fail_Tmr_ET	Time	T#0ms
Fail_Tmr_Q	Bool	false
Temp		
Constant		

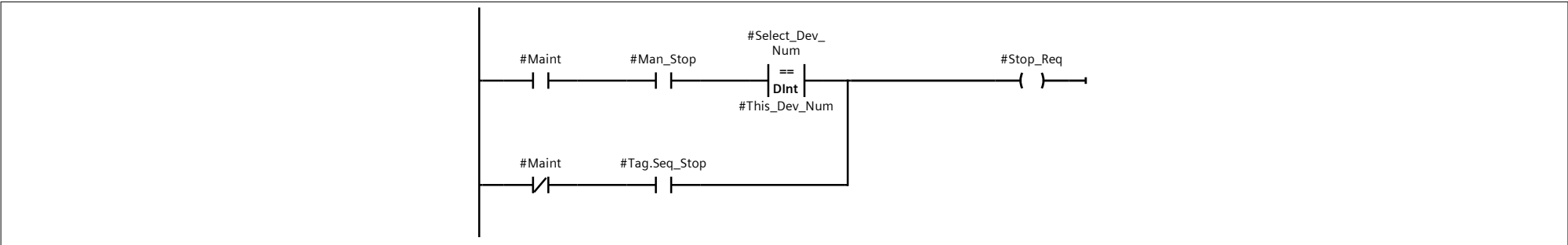
Network 1: Main control that drives motor starter contact.



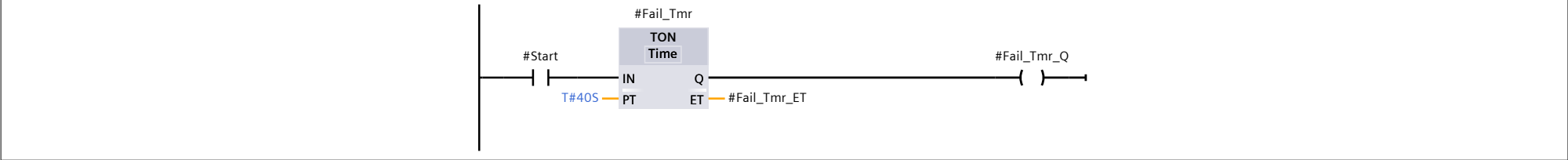
Network 2: Handle manual and sequence start requests.



Network 3: Handle manual and sequence stop requests.

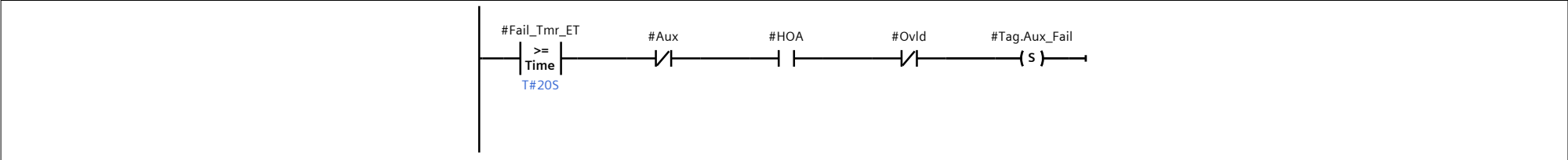


Network 4: Timer for aux and speed switch failures.



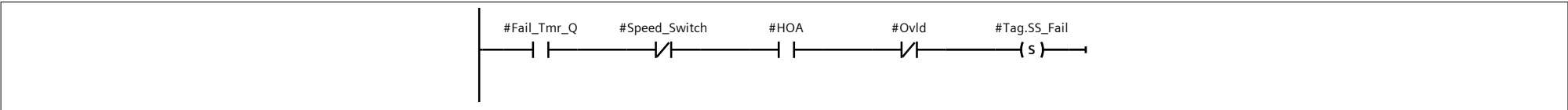
Network 5: Aux failure

No aux after first 20 seconds and HOA auto and not overload.

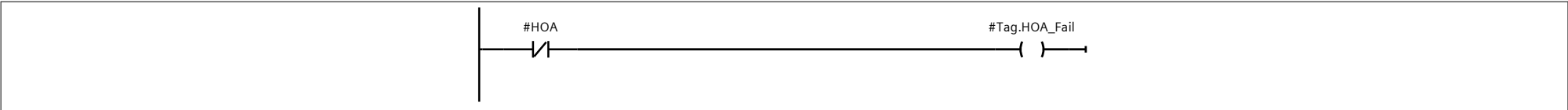


Network 6: Speed switch failure

No speed switch after 40 secs and HOA auto and not overload.



Network 7: HOA failure



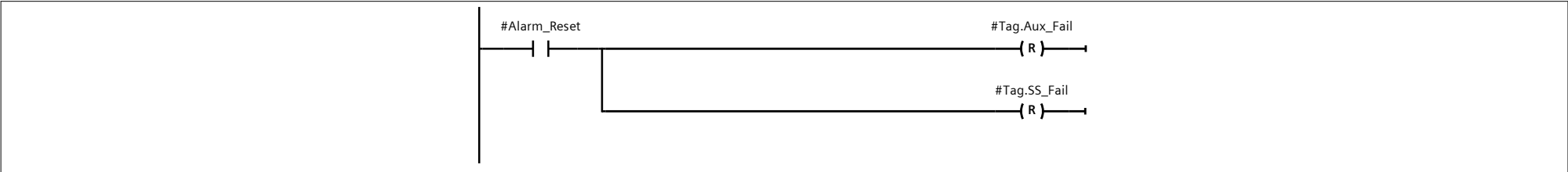
Network 8: Overload failure



Network 9: Any failure indication



Network 10: Reset alarm indication



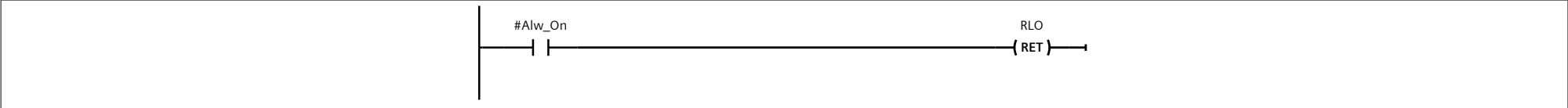
Network 11: Running status for OI






























Network 12: Reset sequence commands



Network 13: Always set ENO true



Totally Integrated Automation Portal		
<div>Soda_Ash [CPU 1516-3 PN/DP]</div> <div>Technology objects</div> <div>This folder is empty.</div>		

Totally Integrated Automation Portal																																																									
<div>Soda_Ash [CPU 1516-3 PN/DP] / PLC tags / Default tag table [64]</div> <div>PLC tags</div> <table><tr><th colspan="5">PLC tags</th></tr><tr><th></th><th>Name</th><th>Data type</th><th>Address</th><th>Retain</th></tr><tr><td></td><td>Enab_Simulation</td><td>Bool</td><td>%M0.4</td><td>False</td></tr><tr><td></td><td>MSG_TIC</td><td>Bool</td><td>%M0.6</td><td>False</td></tr><tr><td></td><td>First_Cycle</td><td>Bool</td><td>%M1.0</td><td>False</td></tr><tr><td></td><td>Always_On</td><td>Bool</td><td>%M1.2</td><td>False</td></tr><tr><td></td><td>Always_Off</td><td>Bool</td><td>%M1.3</td><td>False</td></tr><tr><td></td><td>CIP_Busy</td><td>Bool</td><td>%M4.0</td><td>False</td></tr><tr><td></td><td>Comm_Reset</td><td>Bool</td><td>%M10.2</td><td>False</td></tr><tr><td></td><td>LSL6100_Alarm</td><td>Bool</td><td>%M55.0</td><td>False</td></tr><tr><td></td><td>SS6100_Alarm</td><td>Bool</td><td>%M55.4</td><td>False</td></tr></table>			PLC tags						Name	Data type	Address	Retain		Enab_Simulation	Bool	%M0.4	False		MSG_TIC	Bool	%M0.6	False		First_Cycle	Bool	%M1.0	False		Always_On	Bool	%M1.2	False		Always_Off	Bool	%M1.3	False		CIP_Busy	Bool	%M4.0	False		Comm_Reset	Bool	%M10.2	False		LSL6100_Alarm	Bool	%M55.0	False		SS6100_Alarm	Bool	%M55.4	False
PLC tags																																																									
	Name	Data type	Address	Retain																																																					
	Enab_Simulation	Bool	%M0.4	False																																																					
	MSG_TIC	Bool	%M0.6	False																																																					
	First_Cycle	Bool	%M1.0	False																																																					
	Always_On	Bool	%M1.2	False																																																					
	Always_Off	Bool	%M1.3	False																																																					
	CIP_Busy	Bool	%M4.0	False																																																					
	Comm_Reset	Bool	%M10.2	False																																																					
	LSL6100_Alarm	Bool	%M55.0	False																																																					
	SS6100_Alarm	Bool	%M55.4	False																																																					
































Soda_Ash [CPU 1516-3 PN/DP] / PLC tags / Default tag table [64]

User constants




User constants		
Name	Data type	Value

Soda_Ash [CPU 1516-3 PN/DP] / PLC tags / Devices [31]

PLC tags

PLC tags				
	Name	Data type	Address	Retain
	C6100_HOA	Bool	%M20.0	False
	C6100_OL	Bool	%M20.1	False
	C6100_Aux	Bool	%M20.2	False
	ZSC6000	Bool	%M20.3	False
	ZSO6000	Bool	%M20.4	False
	G6000_HOA	Bool	%M20.5	False
	G6000_OL	Bool	%M20.6	False
	G6000_Open_Aux	Bool	%M20.7	False
	G6000_Close_Aux	Bool	%M21.0	False
	L6100_HOA	Bool	%M21.1	False
	L6100_OL	Bool	%M21.2	False
	L6100_Aux	Bool	%M21.3	False
	XV6001_Close_LS	Bool	%M21.4	False
	XV6001_Open_LS	Bool	%M21.5	False
	ZSL6200	Bool	%M21.6	False
	ZSR6200	Bool	%M21.7	False
	SimDiscln_0	Word	%MW20	False
	SimDiscln_2	Word	%MW22	False
	G6200_HOA	Bool	%M22.0	False
	LSL6100	Bool	%M22.1	False
	SS6100	Bool	%M22.2	False
	C6100_Start	Bool	%M44.0	False
	G6000_Start_Open	Bool	%M44.1	False
	G6000_Start_Close	Bool	%M44.2	False
	L6100_Start	Bool	%M44.3	False
	XV6001_Sol_Vlv	Bool	%M44.4	False
	G6200_Sol_Left	Bool	%M44.5	False
	G6200_Sol_Right	Bool	%M44.6	False
	Discln_0	Word	%IW0	False
	Discln_2	Word	%IW2	False
	AnalogIn_100	Word	%IW100	False

Totally Integrated Automation Portal											
<div>Soda_Ash [CPU 1516-3 PN/DP] / PLC tags / Devices [31]</div> <div>User constants</div> <table><tr><th colspan="3">User constants</th></tr><tr><th>Name</th><th>Data type</th><th>Value</th></tr><tr><td colspan="3"></td></tr></table>			User constants			Name	Data type	Value			
User constants											
Name	Data type	Value									

Totally Integrated Automation Portal																																
<div>Soda_Ash [CPU 1516-3 PN/DP] / PLC tags / PIDLoops [4]</div> <div>PLC tags</div> <table><tr><th colspan="5">PLC tags</th></tr><tr><th></th><th>Name</th><th>Data type</th><th>Address</th><th>Retain</th></tr><tr><td></td><td>FY6000</td><td>Word</td><td>%MW48</td><td>False</td></tr><tr><td></td><td>FT6000</td><td>Word</td><td>%MW28</td><td>False</td></tr><tr><td></td><td>FQI6000</td><td>Real</td><td>%MD100</td><td>False</td></tr><tr><td></td><td>FQI6000_Oper_Reset</td><td>Bool</td><td>%M104.0</td><td>False</td></tr></table>			PLC tags						Name	Data type	Address	Retain		FY6000	Word	%MW48	False		FT6000	Word	%MW28	False		FQI6000	Real	%MD100	False		FQI6000_Oper_Reset	Bool	%M104.0	False
PLC tags																																
	Name	Data type	Address	Retain																												
	FY6000	Word	%MW48	False																												
	FT6000	Word	%MW28	False																												
	FQI6000	Real	%MD100	False																												
	FQI6000_Oper_Reset	Bool	%M104.0	False																												

Soda_Ash [CPU 1516-3 PN/DP] / PLC tags / PIDLoops [4]

User constants

User constants		
Name	Data type	Value

Totally Integrated Automation Portal

Soda_Ash [CPU 1516-3 PN/DP] / PLC data types

Gate_Flop_Type

Gate_Flop_Type Properties

General

Name	Gate_Flop_Type	Number	99	Type	UDT	Language	
Numbering							

Information

Title		Author		Comment		Family	
Version		User-defined ID					

Name	Data type	Default value
Run_Status	Bool	false
Left_Status	Bool	false
Right_Status	Bool	false
Any_Fail	Bool	false
HOA_Fail	Bool	false
FTL_Fail	Bool	false
FTR_Fail	Bool	false
Seq_Left	Bool	false
Seq_Right	Bool	false

Totally Integrated Automation Portal

Soda_Ash [CPU 1516-3 PN/DP] / PLC data types

Gate_Slide_Type

Gate_Slide_Type Properties

General

Name	Gate_Slide_Type	Number	98	Type	UDT	Language	
Numbering							

Information

Title		Author		Comment		Family	
Version		User-defined ID					

Name	Data type	Default value
Run_Status	Bool	false
Open_Status	Bool	false
Close_Status	Bool	false
Any_Fail	Bool	false
Aux_Fail	Bool	false
OL_Fail	Bool	false
HOA_Fail	Bool	false
Seq_Open	Bool	false
Seq_Close	Bool	false

Totally Integrated Automation Portal		
--------------------------------------	--	--

Soda_Ash [CPU 1516-3 PN/DP] / PLC data types

Motor_Conv_Type

Motor_Conv_Type Properties

General

Name	Motor_Conv_Type	Number	96	Type	UDT	Language	
Numbering							

Information

Title		Author		Comment		Family	
Version		User-defined ID					

Name	Data type	Default value
Run_Status	Bool	false
Any_Fail	Bool	false
Aux_Fail	Bool	false
SS_Fail	Bool	false
OL_Fail	Bool	false
HOA_Fail	Bool	false
Seq_Start	Bool	false
Seq_Stop	Bool	false

Totally Integrated Automation Portal		
--------------------------------------	--	--

Soda_Ash [CPU 1516-3 PN/DP] / PLC data types

Motor_Std_Type

Motor_Std_Type Properties

General

Name	Motor_Std_Type	Number	95	Type	UDT	Language	
Numbering							

Information

Title		Author		Comment		Family	
Version		User-defined ID					

Name	Data type	Default value
Run_Status	Bool	false
Any_Fail	Bool	false
Aux_Fail	Bool	false
OL_Fail	Bool	false
HOA_Fail	Bool	false
Seq_Start	Bool	false
Seq_Stop	Bool	false

Totally Integrated Automation Portal

Soda_Ash [CPU 1516-3 PN/DP] / PLC data types

PIDData_Type

PIDData_Type Properties

General

Name	PIDData_Type	Number	94	Type	UDT	Language	
Numbering							

Information

Title		Author		Comment		Family	
Version		User-defined ID					

Name	Data type	Default value
SWAuto	Bool	false
Loop_Auto	Bool	false
PV_LO	Real	0.0
PV_HI	Real	0.0
SP	Real	0.0
PV	Real	0.0
Man_Out	Real	0.0
SPS	Real	0.0
ManO	Real	0.0
Loop_LMN	Real	0.0

Totally Integrated Automation Portal		
--------------------------------------	--	--

Soda_Ash [CPU 1516-3 PN/DP] / PLC data types

Seq_Type

Seq_Type Properties

General

Name	Seq_Type	Number	91	Type	UDT	Language	
Numbering							

Information

Title		Author		Comment		Family	
Version		User-defined ID					

Name	Data type	Default value
Step_Num	DInt	0
Running	Bool	false
Ons	Bool	false
Auto_Start	Bool	false
Auto_Ons	Bool	false
PC_Start	Bool	false
LTP_Start	Bool	false

Totally Integrated Automation Portal		
--------------------------------------	--	--

Soda_Ash [CPU 1516-3 PN/DP] / PLC data types

Unit_Type

Unit_Type Properties

General

Name	Unit_Type	Number	90	Type	UDT	Language	
Numbering							

Information

Title		Author		Comment		Family	
Version		User-defined ID					

Name	Data type	Default value
Alm_Reset	Bool	false
Local	Bool	false
Maint	Bool	false
Man_StartOpen	Bool	false
Man_StopClose	Bool	false
Man_DevNum	DInt	0
Msg	DInt	0
Time_Remaining	DInt	0

--	--	--

Totally Integrated Automation Portal		
--------------------------------------	--	--

Soda_Ash [CPU 1516-3 PN/DP] / PLC data types

Valve_Disc_Type

Valve_Disc_Type Properties

General

Name	Valve_Disc_Type	Number	97	Type	UDT	Language	
Numbering							

Information

Title		Author		Comment		Family	
Version		User-defined ID					

Name	Data type	Default value
Open_Status	Bool	false
Close_Status	Bool	false
Any_Fail	Bool	false
FTO_Fail	Bool	false
FTC_Fail	Bool	false
Seq_Open	Bool	false
Seq_Close	Bool	false

--	--	--

Totally Integrated Automation Portal		
<div>Soda_Ash [CPU 1516-3 PN/DP] / PLC data types</div> <div>System data types</div> <div>This folder is empty.</div>		

Totally Integrated Automation Portal																																										
<div>Soda_Ash [CPU 1516-3 PN/DP] / Watch and force tables</div> <div>Watch table_1</div> <table><tr><th>Name</th><th>Address</th><th>Display format</th><th>Modify value</th></tr><tr><td>"Soda_Ash".Alm_Reset</td><td>%DB101.DBX0.0</td><td>Bool</td><td>FALSE</td></tr><tr><td>"Soda_Ash".Local</td><td>%DB101.DBX0.1</td><td>Bool</td><td></td></tr><tr><td>"Soda_Ash".Maint</td><td>%DB101.DBX0.2</td><td>Bool</td><td></td></tr><tr><td>"Soda_Ash".Msg</td><td>%DB101.DBD6</td><td>DEC+/-</td><td></td></tr><tr><td>"Soda_Ash".Time_Remaining</td><td>%DB101.DBD10</td><td>DEC+/-</td><td></td></tr><tr><td>"Soda_AshS".StrtTrans.LTP_Start</td><td>%DB102.DBX4.5</td><td>Bool</td><td>FALSE</td></tr><tr><td>"Soda_AshS".Hold.LTP_Start</td><td>%DB102.DBX10.5</td><td>Bool</td><td>FALSE</td></tr><tr><td>"Soda_AshS".Shutdown.LTP_Start</td><td>%DB102.DBX16.5</td><td>Bool</td><td>FALSE</td></tr><tr><td>"Soda_AshS".EShutdown.LTP_Start</td><td>%DB102.DBX22.5</td><td>Bool</td><td>FALSE</td></tr></table>			Name	Address	Display format	Modify value	"Soda_Ash".Alm_Reset	%DB101.DBX0.0	Bool	FALSE	"Soda_Ash".Local	%DB101.DBX0.1	Bool		"Soda_Ash".Maint	%DB101.DBX0.2	Bool		"Soda_Ash".Msg	%DB101.DBD6	DEC+/-		"Soda_Ash".Time_Remaining	%DB101.DBD10	DEC+/-		"Soda_AshS".StrtTrans.LTP_Start	%DB102.DBX4.5	Bool	FALSE	"Soda_AshS".Hold.LTP_Start	%DB102.DBX10.5	Bool	FALSE	"Soda_AshS".Shutdown.LTP_Start	%DB102.DBX16.5	Bool	FALSE	"Soda_AshS".EShutdown.LTP_Start	%DB102.DBX22.5	Bool	FALSE
Name	Address	Display format	Modify value																																							
"Soda_Ash".Alm_Reset	%DB101.DBX0.0	Bool	FALSE																																							
"Soda_Ash".Local	%DB101.DBX0.1	Bool																																								
"Soda_Ash".Maint	%DB101.DBX0.2	Bool																																								
"Soda_Ash".Msg	%DB101.DBD6	DEC+/-																																								
"Soda_Ash".Time_Remaining	%DB101.DBD10	DEC+/-																																								
"Soda_AshS".StrtTrans.LTP_Start	%DB102.DBX4.5	Bool	FALSE																																							
"Soda_AshS".Hold.LTP_Start	%DB102.DBX10.5	Bool	FALSE																																							
"Soda_AshS".Shutdown.LTP_Start	%DB102.DBX16.5	Bool	FALSE																																							
"Soda_AshS".EShutdown.LTP_Start	%DB102.DBX22.5	Bool	FALSE																																							

Totally Integrated Automation Portal			
<div>Soda_Ash [CPU 1516-3 PN/DP]</div> <div>Traces</div> <table><tr><th>Name</th></tr></table>			Name
Name			

Totally Integrated Automation Portal		
<div>Soda_Ash [CPU 1516-3 PN/DP] / Traces</div> <div>Measurements</div> <div>This folder is empty.</div>		

Totally Integrated Automation Portal		
<div>Soda_Ash [CPU 1516-3 PN/DP] / Traces</div> <div>Combined measurements</div> <div><div>Name</div></div>		

Totally Integrated Automation Portal		
<div>Soda_Ash [CPU 1516-3 PN/DP] / Traces / Long-term traces</div> <div>Measurements</div> <div>This folder is empty.</div>		

Totally Integrated Automation Portal		
<div>Soda_Ash [CPU 1516-3 PN/DP] / OPC UA communication</div> <div>Server interfaces</div> <div>This folder is empty.</div>		

Totally Integrated Automation Portal		
<div>Soda_Ash [CPU 1516-3 PN/DP] / OPC UA communication</div> <div>Client interfaces</div> <div>This folder is empty.</div>		

Totally Integrated Automation Portal		
<div>Soda_Ash [CPU 1516-3 PN/DP] / PLC supervisions & alarms</div> <div>Supervisions</div> <div>This folder is empty.</div>		

Soda_Ash [CPU 1516-3 PN/DP] / PLC supervisions & alarms

PLC alarms

PLC alarms					
Name	Type	ID	Alarm text	Info text	Information only

Totally Integrated Automation Portal					
Soda_Ash [CPU 1516-3 PN/DP] / PLC supervisions & alarms					
System alarms					
System alarms					
Name	Type	ID	Alarm text	Info text	Information only
SDIAG_ALCAT_SUB-MODUL_MSG_0002	PLC alarm	1	Error: @1W%t#7W@ @5W%t#7W@ @6W%t#257K@ / @6W%t#258K@.@6W%t#259K@ @6W%t#262K@ @6W%t#263K@	Short name: @6W%t#260K@ Order number: @6W%t#265K@	True
SDIAG_AL-CAT_MOD-UL_MSG_0003	PLC alarm	2	Error: @1W%t#7W@ @5W%t#7W@ @6W%t#257K@ / @6W%t#258K@ @6W%t#262K@ @6W%t#263K@	Short name: @6W%t#260K@ Order number: @6W%t#265K@	True
SDIAG_AL-CAT_RACK_MSG_0004	PLC alarm	3	Error: @1W%t#7W@ @5W%t#7W@ @6W%t#257K@ @6W%t#262K@ @6W%t#263K@	Short name: @6W%t#260K@ Order number: @6W%t#265K@	True
SDIAG_ALCAT_DE-VICE_MSG_0005	PLC alarm	4	Error: @1W%t#7W@ @5W%t#7W@ @6W%t#257K@ @6W%t#262K@ @6W%t#263K@ @8W%t#7W@	Short name: @6W%t#260K@ Order number: @6W%t#265K@	True
SDIAG_ALCAT_IO-SYSTEM_MSG_0006	PLC alarm	5	Error: @1W%t#7W@ @5W%t#7W@ @6W%t#276K@ @6W%t#262K@ @6W%t#263K@ @8W%t#7W@	Short name: @6W%t#260K@ Order number: @6W%t#265K@	True
SDIAG_AL-CAT_CPU_OST_MSG_000D	PLC alarm	6	CPU status message: @1W%t#7W@ @5W%t#7W@ @6W%t#257K@ / @6W%t#258K@ @6W%t#262K@ @6W%t#263K@ @8W%t#7W@	Short name: @6W%t#260K@ Order number: @6W%t#265K@	True
SDIAG_AL-CAT_CPU_IN-FO_MSG_000F	PLC alarm	7	CPU info: @1W%t#7W@ @5W%t#7W@ @6W%t#257K@ / @6W%t#258K@ @6W%t#262K@ @6W%t#263K@ @8W%t#7W@	Short name: @6W%t#260K@ Order number: @6W%t#265K@	True
SDIAG_AL-CAT_CPU_ERR_MSG_0010	PLC alarm	8	CPU error: @1W%t#7W@ @5W%t#7W@ @6W%t#257K@ / @6W%t#258K@ @6W%t#262K@ @6W%t#263K@ @8W%t#7W@	Short name: @6W%t#260K@ Order number: @6W%t#265K@	True
SDIAG_AL-CAT_CPU_MD_MSG_0011	PLC alarm	9	CPU maintenance demanded: @1W%t#7W@ @6W%t#257K@ / @5W%t#7W@ @6W%t#258K@ @6W%t#262K@ @6W%t#263K@ @8W%t#7W@	Short name: @6W%t#260K@ Order number: @6W%t#265K@	True
SDIAG_AL-CAT_CPU_MR_MSG_1_0012	PLC alarm	10	CPU maintenance required: @1W%t#7W@ @6W%t#257K@ / @5W%t#7W@ @6W%t#258K@ @6W%t#262K@ @6W%t#263K@ @8W%t#7W@	Short name: @6W%t#260K@ Order number: @6W%t#265K@	True
SDIAG_AL-CAT_CPU_TMPERR_MSG_0013	PLC alarm	11	Temporary CPU error: @1W%t#7W@ @5W%t#7W@ @6W%t#257K@ / @6W%t#258K@ @6W%t#262K@ @6W%t#263K@ @8W%t#7W@	Short name: @6W%t#260K@ Order number: @6W%t#265K@	True
SDIAG_AL-CAT_CH_ERR_MSG_0015	PLC alarm	12	Error: @1W%t#7W@ on @8W%t#280K@ @6W%t#257K@ / @6W%t#258K@.@6W%t#259K@ @6W%t#262K@ @6W%t#263K@	Short name: @6W%t#260K@ Order number: @6W%t#265K@	True
SDIAG_AL-CAT_ECH_ERR_MSG_0016	PLC alarm	13	Error: @1W%t#7W@ - @5W%t#7W@ on @8W%t#280K@ @6W%t#257K@ / @6W%t#258K@.@6W%t#259K@ @6W%t#262K@ @6W%t#263K@	Short name: @6W%t#260K@ Order number: @6W%t#265K@	True
SDIAG_AL-CAT_CH_MD_MSG_0018	PLC alarm	14	Maintenance demanded:@1W%t#7W@ on @8W%t#280K@ @6W%t#257K@ / @6W%t#258K@.@6W%t#259K@ @6W%t#262K@ @6W%t#263K@	Short name: @6W%t#260K@ Order number: @6W%t#265K@	True
SDIAG_AL-CAT_ECH_MD_MSG_0019	PLC alarm	15	Maintenance demanded:@1W%t#7W@ - @5W%t#7W@ on @8W%t#280K@ @6W%t#257K@ / @6W%t#258K@.@6W%t#259K@ @6W%t#262K@ @6W%t#263K@	Short name: @6W%t#260K@ Order number: @6W%t#265K@	True
SDIAG_AL-CAT_CH_MR_MSG_001B	PLC alarm	16	Maintenance required:@1W%t#7W@ on @8W%t#280K@ @6W%t#257K@ / @6W%t#258K@.@6W%t#259K@ @6W%t#262K@ @6W%t#263K@	Short name: @6W%t#260K@ Order number: @6W%t#265K@	True
SDIAG_AL-CAT_ECH_MR_MSG_001C	PLC alarm	17	Maintenance required:@1W%t#7W@ - @5W%t#7W@ on @8W%t#280K@ @6W%t#257K@ / @6W%t#258K@.@6W%t#259K@ @6W%t#262K@ @6W%t#263K@	Short name: @6W%t#260K@ Order number: @6W%t#265K@	True
SDIAG_AL-CAT_SUB_ERR_MSG_001E	PLC alarm	18	Error: @1W%t#7W@ @6W%t#257K@ / @6W%t#258K@.@6W%t#259K@ @6W%t#262K@ @6W%t#263K@	Short name: @6W%t#260K@ Order number: @6W%t#265K@	True
SDIAG_AL-CAT_ESUB_ERR_MS_G_001F	PLC alarm	19	Error: @1W%t#7W@ - @5W%t#7W@ @6W%t#257K@ / @6W%t#258K@.@6W%t#259K@ @6W%t#262K@ @6W%t#263K@	Short name: @6W%t#260K@ Order number: @6W%t#265K@	True
SDIAG_AL-CAT_SUB_MD_MSG_0021	PLC alarm	20	Maintenance demanded: @1W%t#7W@ @6W%t#257K@ / @6W%t#258K@.@6W%t#259K@ @6W%t#262K@ @6W%t#263K@	Short name: @6W%t#260K@ Order number: @6W%t#265K@	True
SDIAG_AL-CAT_ESUB_MD_MS_G_0022	PLC alarm	21	Maintenance demanded: @1W%t#7W@ - @5W%t#7W@ @6W%t#257K@ / @6W%t#258K@.@6W%t#259K@ @6W%t#262K@ @6W%t#263K@	Short name: @6W%t#260K@ Order number: @6W%t#265K@	True
SDIAG_AL-CAT_SUB_MR_MSG_0024	PLC alarm	22	Maintenance required: @1W%t#7W@ @6W%t#257K@ / @6W%t#258K@.@6W%t#259K@ @6W%t#262K@ @6W%t#263K@	Short name: @6W%t#260K@ Order number: @6W%t#265K@	True
SDIAG_AL-CAT_ESUB_MR_MS_G_0025	PLC alarm	23	Maintenance required: @1W%t#7W@ - @5W%t#7W@ @6W%t#257K@ / @6W%t#258K@.@6W%t#259K@ @6W%t#262K@ @6W%t#263K@	Short name: @6W%t#260K@ Order number: @6W%t#265K@	True
SDIAG_ALCAT_CONFIG_INFO_0028	PLC alarm	24	Info: @1W%t#7W@ - @5W%t#7W@ @6W%t#257K@ @6W%t#262K@ @6W%t#263K@ @8W%t#7W@	Short name: @6W%t#260K@ Order number: @6W%t#265K@	True
SDIAG_ALCAT_CONFIG_REPORT_0029	PLC alarm	25	Info: @1W%t#7W@ - @5W%t#7W@ @6W%t#257K@ / @6W%t#258K@ @6W%t#262K@ @6W%t#263K@	Short name: @6W%t#260K@ Order number: @6W%t#265K@	True
SDIAG_ALCAT_SECURITY_EV_MSG_005E	PLC alarm	26	Security event: @1W%t#7W@ @5W%t#7W@ @6W%t#258K@ @6W%t#262K@ @6W%t#263K@ @8W%t#7W@	Short name: @6W%t#260K@ Order number: @6W%t#265K@	True
SDIAG_ALCAT_SECURITY_EV_INFO_005F	PLC alarm	27	Security information: @1W%t#7W@ @5W%t#7W@ @6W%t#258K@ @6W%t#262K@ @6W%t#263K@ @8W%t#7W@	Short name: @6W%t#260K@ Order number: @6W%t#265K@	True
SDIAG_AL-CAT_USER_MSG_0080	PLC alarm	28	User message: @1W%t#2W@	Short name: @6W%t#260K@ Order number: @6W%t#265K@	True

Totally Integrated Automation Portal		
<div>Soda_Ash [CPU 1516-3 PN/DP]</div> <div>PLC alarm text lists</div> <div>This folder is empty.</div>		

Totally Integrated Automation Portal		
<div>Soda_Ash [CPU 1516-3 PN/DP] / Local modules</div> <div>PM 190W 120/230VAC</div> <div>This folder is empty.</div>		

Totally Integrated Automation Portal

Soda_Ash [CPU 1516-3 PN/DP] / Local modules

Soda_Ash [CPU 1516-3 PN/DP]

Soda_Ash

General\Project information

Name	Soda_Ash	Author	kte	Comment	
Rack	0	Slot	1		

General\Catalog information

Short designation	CPU 1516-3 PN/DP	Description	CPU with display; work memory 1 MB code and 5 MB data; 10 ns bit operation time; 4-stage protection concept, technology functions: motion control, closed-loop control, counting and measuring; tracing; Runtime options; isochronous mode (central); for all PROFINET interfaces: transport protocol TCP/IP, secure Open User Communication, S7 communication, S7 routing, IP forwarding, Web server, DNS client, OPC UA: Server DA, Client DA, methods, companion specifications; 1st interface: PROFINET IO controller, supports RT/IRT, performance upgrade PROFINET V2.3, 2 ports, I-Device, MRP, MRPD, isochronous mode; 2nd interface: PROFINET IO controller, supports RT, I-Device; 3rd interface: PROFIBUS DP Master, S7 communication, isochronous mode, S7 routing; firmware V2.8			Article number	6ES7 516-3AN01-0AB0
Firmware version	V2.8		False				

General\Identification & Maintenance

Plant designation		Location identifier		Installation date	2023-01-01 02:00:09.233
Additional information					

General\Checksums

Text lists	FA 70 E8 75 1D 5A 8E 29	Software	67 FB 83 22 CD D3 DF 7D	
------------	-------------------------	----------	-------------------------	--

Connection resources\

	Station resources - Reserved - Maximum	Station resources - Reserved - Configured	Station resources - Dynamic - Configured	Module resources - Soda_Ash [CPU 1516-3 PN/DP] - Configured
Maximum number of resources:		10	118	128
	Maximum	Configured	Configured	Configured
PG communication:	4	-	-	-
HMI communication:	4	0	0	0
S7 communication:	0	-	0	0
Open user communication:	0	-	0	0
Web communication:	2	-	-	-
OPC UA client/server communication:	0	-	-	-
Other communication:	-	-	0	0
Total resources used:		0	0	0
Available resources:		10	118	128

Overview of addresses\Overview of addresses\Overview of addresses

Inputs	True	Outputs	True	Address gaps	False						
Slot	True										
Type	Addr. from	Addr. to	Module	PIP	OB	Device name	Device number	Size	Master / IO system	Rack	Slot
I	0	3	DI 32x24VDC HF_1	Automatic update	-	Soda_Ash [CPU 1516-3 PN/DP]	-	4 Bytes	-	0	2
I	100	115	AI 8xU/I/RTD/TC ST_1	Automatic update	-	Soda_Ash [CPU 1516-3 PN/DP]	-	16 Bytes	-	0	4
O	100	107	AQ 4xU/I ST_1	Automatic update	-	Soda_Ash [CPU 1516-3 PN/DP]	-	8 Bytes	-	0	5
O	4	7	DQ 32x24VDC/0.5A ST_1	Automatic update	-	Soda_Ash [CPU 1516-3 PN/DP]	-	4 Bytes	-	0	3

Totally Integrated Automation Portal																				
<div>Soda_Ash [CPU 1516-3 PN/DP] / Local modules</div> <div>DI 32x24VDC HF_1</div> <table><tr><td colspan="6">DI 32x24VDC HF_1</td></tr><tr><td>Name</td><td>DI 32x24VDC HF_1</td><td>Rack</td><td>0</td><td>Slot</td><td>2</td></tr><tr><td>Article number</td><td>6ES7 521-1BL00-0AB0</td><td>Short designation</td><td>DI 32x24VDC HF</td><td>Firmware version</td><td>V2.2</td></tr></table>			DI 32x24VDC HF_1						Name	DI 32x24VDC HF_1	Rack	0	Slot	2	Article number	6ES7 521-1BL00-0AB0	Short designation	DI 32x24VDC HF	Firmware version	V2.2
DI 32x24VDC HF_1																				
Name	DI 32x24VDC HF_1	Rack	0	Slot	2															
Article number	6ES7 521-1BL00-0AB0	Short designation	DI 32x24VDC HF	Firmware version	V2.2															

Totally Integrated Automation Portal																				
<div>Soda_Ash [CPU 1516-3 PN/DP] / Local modules</div> <div>DQ 32x24VDC/0.5A ST_1</div> <table><tr><td colspan="6">DQ 32x24VDC/0.5A ST_1</td></tr><tr><td>Name</td><td>DQ 32x24VDC/0.5A ST_1</td><td>Rack</td><td>0</td><td>Slot</td><td>3</td></tr><tr><td>Article number</td><td>6ES7 522-1BL00-0AB0</td><td>Short designation</td><td>DQ 32x24VDC/0.5A ST</td><td>Firmware version</td><td>V2.0</td></tr></table>			DQ 32x24VDC/0.5A ST_1						Name	DQ 32x24VDC/0.5A ST_1	Rack	0	Slot	3	Article number	6ES7 522-1BL00-0AB0	Short designation	DQ 32x24VDC/0.5A ST	Firmware version	V2.0
DQ 32x24VDC/0.5A ST_1																				
Name	DQ 32x24VDC/0.5A ST_1	Rack	0	Slot	3															
Article number	6ES7 522-1BL00-0AB0	Short designation	DQ 32x24VDC/0.5A ST	Firmware version	V2.0															

Totally Integrated Automation Portal																				
<div>Soda_Ash [CPU 1516-3 PN/DP] / Local modules</div> <div>AI 8xU//RTD/TC ST_1</div> <div><table><tr><td colspan="6">AI 8xU//RTD/TC ST_1</td></tr><tr><td>Name</td><td>AI 8xU//RTD/TC ST_1</td><td>Rack</td><td>0</td><td>Slot</td><td>4</td></tr><tr><td>Article number</td><td>6ES7 531-7KF00-0AB0</td><td>Short designation</td><td>AI 8xU//RTD/TC ST</td><td>Firmware version</td><td>V2.2</td></tr></table></div>			AI 8xU//RTD/TC ST_1						Name	AI 8xU//RTD/TC ST_1	Rack	0	Slot	4	Article number	6ES7 531-7KF00-0AB0	Short designation	AI 8xU//RTD/TC ST	Firmware version	V2.2
AI 8xU//RTD/TC ST_1																				
Name	AI 8xU//RTD/TC ST_1	Rack	0	Slot	4															
Article number	6ES7 531-7KF00-0AB0	Short designation	AI 8xU//RTD/TC ST	Firmware version	V2.2															

Totally Integrated Automation Portal																				
<div>Soda_Ash [CPU 1516-3 PN/DP] / Local modules</div> <div>AQ 4xU/I ST_1</div> <table><tr><td colspan="6">AQ 4xU/I ST_1</td></tr><tr><td>Name</td><td>AQ 4xU/I ST_1</td><td>Rack</td><td>0</td><td>Slot</td><td>5</td></tr><tr><td>Article number</td><td>6ES7 532-5HD00-0AB0</td><td>Short designation</td><td>AQ 4xU/I ST</td><td>Firmware version</td><td>V2.2</td></tr></table>			AQ 4xU/I ST_1						Name	AQ 4xU/I ST_1	Rack	0	Slot	5	Article number	6ES7 532-5HD00-0AB0	Short designation	AQ 4xU/I ST	Firmware version	V2.2
AQ 4xU/I ST_1																				
Name	AQ 4xU/I ST_1	Rack	0	Slot	5															
Article number	6ES7 532-5HD00-0AB0	Short designation	AQ 4xU/I ST	Firmware version	V2.2															