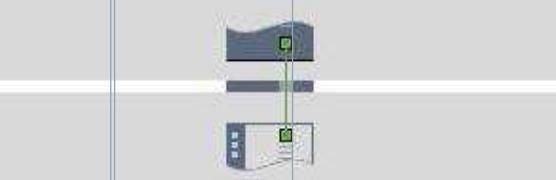
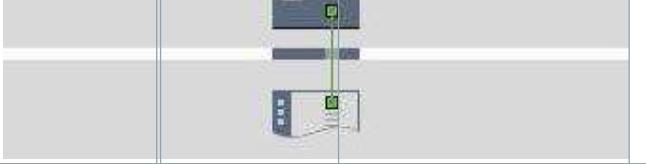


Totally Integrated Automation Portal					
PLC_1 [CPU 1511-1 PN]					
PLC_1					
General\Project information					
Name	PLC_1	Author	open	Comment	
Rack	0	Slot	1		
General\Catalog information					
Short designation	CPU 1511-1 PN	Description	CPU with display; work memory 150 KB code and 1 MB data; 60 ns bit instruction time; 4-stage protection concept, integrated technology functions: Motion Control, closed-loop control, counting&measuring; integrated tracking; PROFINET IO controller, supports RT/IRT, 2 ports, MRP, transport protocol TCP/IP, S7 communication, Web server, constant bus cycle time, routing; firmware V1.8	Article number	6ES7 511-1AK00-0AB0
Firmware version	V1.8				
General\Identification & Maintenance					
Plant designation		Location identifier		Installation date	2018-10-25 01:16:43.500
Additional information					
PROFINET interface [X1]\General					
Name	PROFINET interface_1	Author	open	Comment	
PROFINET interface [X1]\Ethernet addresses\Interface networked with					
Subnet:	PN/E_1				
PROFINET interface [X1]\Ethernet addresses\IP protocol					
IP configuration	Set IP address in the project	IP address:	192.168.0.2	Subnet mask:	255.255.255.0
Use router	False				
PROFINET interface [X1]\Ethernet addresses\PROFINET					
PROFINET device name is set directly at the device	False	Generate PROFINET device name automatically	True	PROFINET device name:	plc_1
Converted name:	plcxb1d0ed	Device number:	0		
PROFINET interface [X1]\Time synchronization\NTP mode					
Note	Time synchronization for all PROFINET interfaces take place within the settings for time synchronization of the PROFINET interface [X1].	Enable time synchronization via NTP server	False		IP addresses
Server 1	0.0.0.0	Server 2	0.0.0.0	Server 3	0.0.0.0
Server 4	0.0.0.0	Update interval	10s		
PROFINET interface [X1]\Operating mode					
IO controller	True	IO system		Device number	0
IO device	False				
PROFINET interface [X1]\Advanced options\Interface options					
Call the user program if communication errors occur	False	Support device replacement without exchangeable medium	True	Permit overwriting of device names of all assigned IO devices	False
Use IEC V2.2 LLDP mode	False	Keep-Alive connection monitoring	30s		
PROFINET interface [X1]\Advanced options\Media redundancy					
MRP domain	mrpdomain-1	Media redundancy role:	Not device in the ring		
PROFINET interface [X1]\Advanced options\Real time settings\IO communication					
Send clock:	1.000ms				
PROFINET interface [X1]\Advanced options\Real time settings\Synchronization					
Sync domain:	Sync-Domain_1	Synchronization role:	Unsynchronized	RT class:	RT,IRT
PROFINET interface [X1]\Advanced options\Real time settings\Real time options					
Calculated bandwidth for cyclic IO data:	0.000ms	Calculated bandwidth for cyclic IO data:	0.000%		
PROFINET interface [X1]\Advanced options\Port [X1 P1 R]\General					
Name	Port_1	Author	open	Comment	
PROFINET interface [X1]\Advanced options\Port [X1 P1 R]\Port interconnection\Local port:					
Local port:	PLC_1PROFINET interface_1 [X1]\Port_1 [X1 P1 R]	Medium:	Copper	Cable name:	---
					
PROFINET interface [X1]\Advanced options\Port [X1 P1 R]\Port interconnection\Partner port:					
Monitoring of partner port is not possible	Alternative partners	False		Partner port:	Any partner
PROFINET interface [X1]\Advanced options\Port [X1 P1 R]\Port options\Activate					
Activate this port for use	True				
PROFINET interface [X1]\Advanced options\Port [X1 P1 R]\Port options\Connection					
Transmission rate / duplex:	Automatic	Monitor	False	Enable autonegotiation	True
PROFINET interface [X1]\Advanced options\Port [X1 P1 R]\Port options\Boundaries					
End of detection of accessible devices	False	End of topology discovery	False	End of the sync domain	False

Totally Integrated Automation Portal					
PROFINET interface [X1]\Advanced options\Port [X1 P2 R]\General					
Name	Port_2	Author	open	Comment	
PROFINET interface [X1]\Advanced options\Port [X1 P2 R]\Port interconnection\Local port:					
Local port:	PLC_1\PROFINET interface_1 [X1]\Port_2 [X1 P2 R]	Medium:	Copper	Cable name: ---	
					
PROFINET interface [X1]\Advanced options\Port [X1 P2 R]\Port interconnection\Partner port:					
Monitoring of partner port is not pos- sible	Alternative partners	False	Partner port:	Any partner	
PROFINET interface [X1]\Advanced options\Port [X1 P2 R]\Port options\Activate					
Activate this port for use	True				
PROFINET interface [X1]\Advanced options\Port [X1 P2 R]\Port options\Connection					
Transmission rate / duplex:	Automatic	Monitor	False	Enable autonegotia- tion True	
PROFINET interface [X1]\Advanced options\Port [X1 P2 R]\Port options\Boundaries					
End of detection of accessible devices	False	End of topology dis- covery	False	End of the sync do- main False	
PROFINET interface [X1]\Web server access					
Note	The Web server must also be activated in the properties of the PLC.	Enable Web server us- ing this interface	False		
Startup					
Startup after POWER ON	Warm restart - Operating mode before POWER OFF	Comparison preset to actual configuration	Startup CPU even if mismatch	Configuration time 60000ms	
Cycle					
Maximum cycle time	150ms			Enable minimum cy- cle time for cyclic OBs True	
Minimum cycle time	1ms				
Communication load					
Cycle load due to communication	50%				
System and clock memory\System memory bits					
Enable the use of sys- tem memory byte	False	Address of system memory byte (MBx)	1	First cycle	
Diagnostic status changed		Always 1 (high)		Always 0 (low)	
System and clock memory\Clock memory bits					
Enable the use of clock memory byte	False	Address of clock memory byte (MBx)	0	10 Hz clock	
5 Hz clock		2.5 Hz clock		2 Hz clock	
1.25 Hz clock		1 Hz clock		0.625 Hz clock	
0.5 Hz clock					
System diagnostics\General					
Activate system diag- nostics for this device	True				
Web server\General					
Activate web server on this module	False	Permit access only with HTTPS	False		
Web server\Automatic update					
Enable automatic up- date	True	Update interval	0s		
Web server\User management					
User name	Everybody	User rights			
Web server\User defined web pages					
Application name	HTML source path	Default HTML page	Files with dynamic content	Web DB number	Fragment DB number
		index.htm	.htm;.html	333	334
Web server\Overview of interfaces					
Device	Interface		Enabled web server access		
PLC_1	PROFINET interface_1		False		
Display\General\Display standby mode					
Time to standby mode	30 minutes				
Display\General\Energy saving mode					
Time to energy sav- ing mode	15 minutes				
Display\General\Display language					
Default language on display	English				
Display\Automatic update					
Time until update	5 seconds				
Display\Password\Display protection					
Enable display protec- tion	False				
Display\User-defined logo\					
User logo activated	False	Adapt logo	False	Resolution 128x120	
Company logo	---				

Totally Integrated Automation Portal				
User interface languages				
Assign project language		User interface languages		
English (United States)		German		
English (United States)		English		
English (United States)		French		
English (United States)		Spanish		
English (United States)		Italian		
English (United States)		Japanese		
English (United States)		Chinese (simplified)		
English (United States)		Korean		
English (United States)		Russian		
English (United States)		Turkish		
English (United States)		Portuguese (Brazil)		
Time of day\Local time				
Time zone	(UTC) Dublin, Edinburgh, Lisbon, London			
Time of day\Daylight saving time				
Activate daylight saving time	True	Difference between standard and daylight saving time	60mins	
Selection of the week	Last	Selection of the weekday	Sunday	
at	01:00 a.m.		of	
Selection of the week	Last	Selection of the weekday	Sunday	
at	02:00 a.m.		of	
March			October	
Protection				
Level of protection	Full access (no protection)			
Protection\Connection mechanisms				
Permit access with PUT/GET communication from remote partner	False			
Protection\Security event				
Summarize security events in case of high message volume	True	Length of an interval	20	
		Unit	seconds	
System power supply\General				
General	Connection to supply voltage L+			
System power supply\Power segment overview				
Module	Slot	Supply/consumption		
PLC_1	1	10.00W		
	Summary	10.00W		
Configuration control\Configuration control for central configuration				
Allow to reconfigure the device via the user program	False			
Connection resources\				
	Station resources - Reserved - Maximum	Station resources - Reserved - Configured	Station resources - Dynamic - Configured	Module resources - PLC_1 [CPU 1511-1 PN] - Configured
Maximum number of resources:		10	54	64
	Maximum	Configured	Configured	Configured
PG communication:	4	-	-	-
HMI communication:	4	3	0	3
S7 communication:	0	-	0	0
Open user communication:	0	-	0	0
Web communication:	2	-	-	-
Other communication:	-	-	0	0
Total resources used:		3	0	3
Available resources:		7	54	61
Overview of addresses\Overview of addresses\Overview of addresses				
Inputs	True	Outputs	True	Address gaps
Slot	True			False

Totally Integrated Automation Portal	
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PLC_1 [CPU 1511-1 PN] / Program blocks

Main [OB1]

Main Properties

General							
Name	Main	Number	1	Type	OB	Language	LAD
Numbering	Automatic						

Information

Title	"Main Program Sweep (Cycle)"	Author		Comment	Main block of PLC code. All the other code subsections are called here.	Family	
Version	0.1	User-defined ID					

Name	Data type	Default value	Comment
▼ Input			
Initial_Call	Bool		Initial call of this OB
Remanence	Bool		=True, if remanent data are available
▼ Temp			
SequenceInit	Bool		
InitSequence	Bool		
Init_seq	Bool		
Constant			

Network 1:
Base program to simulate a dynamic environment and Initialization block call

```

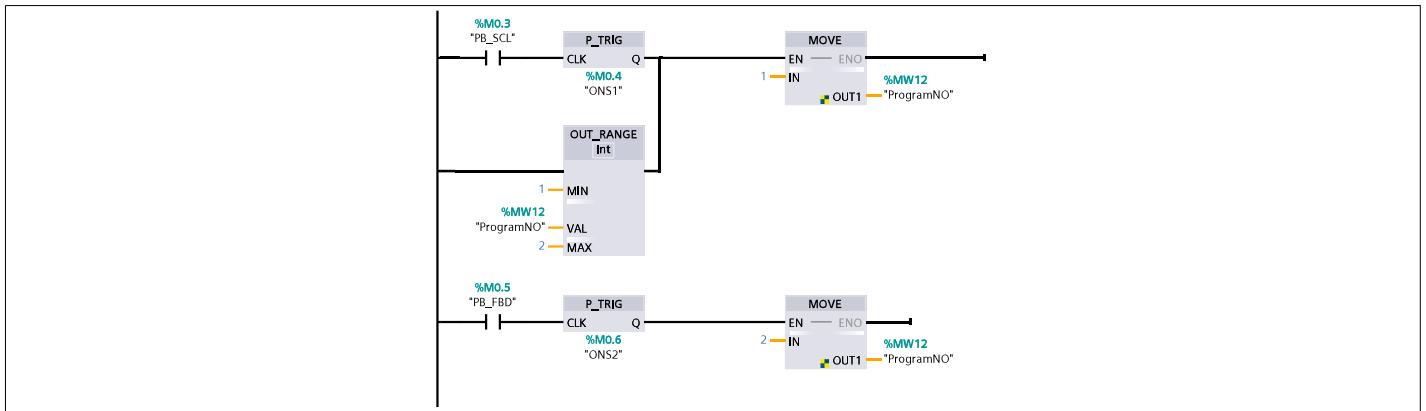
graph LR
    M1.1["%M1.1  
\"StartUP\""] --> FB1["%FB1  
\"SimLogic\""]
    FB1 -- EN --> P_TRIG["P_TRIG  
%M153.4  
\"ONS15\""]
    P_TRIG -- Q --> FB13["%FB13  
\"INITIALIZATION\""]
    FB13 -- ENO --> End[ ]
    
```

Network 2:
Program Sequence is set as GRAPH (this section lets us know if the sequence is running)

```

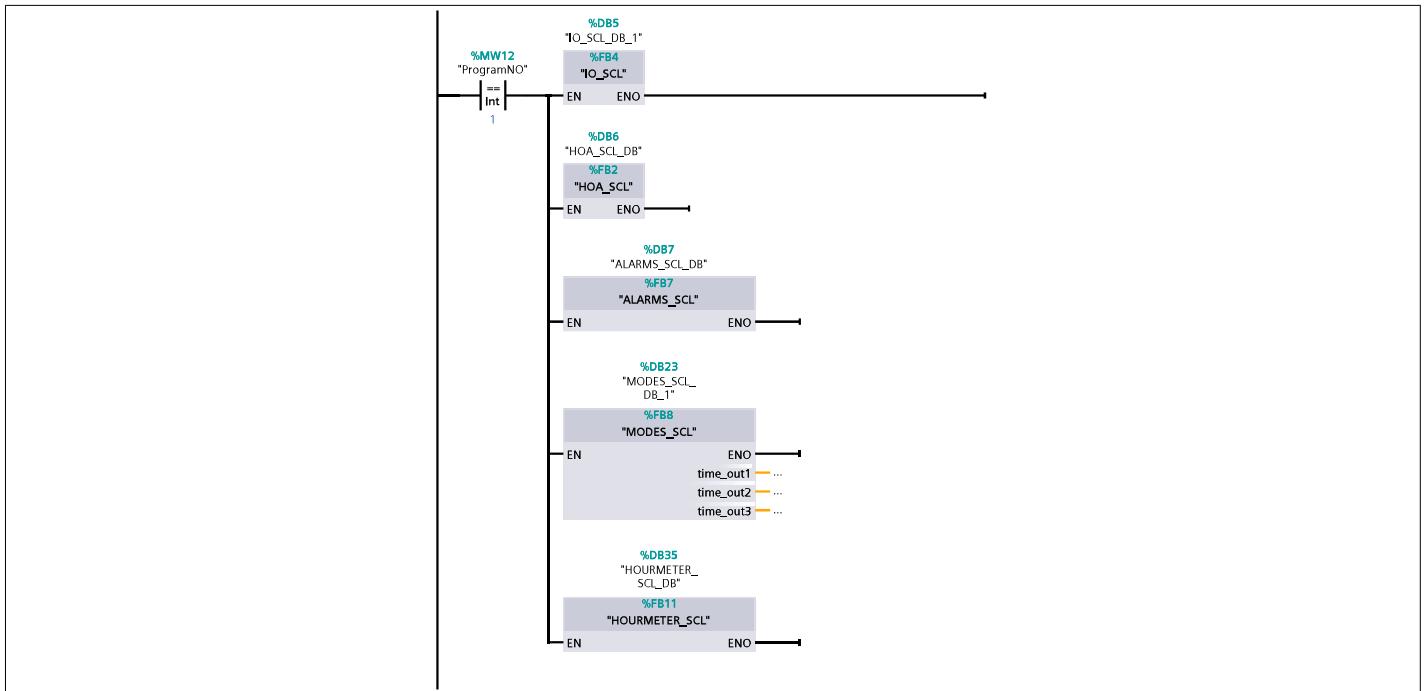
graph LR
    M70.6["%M70.6  
\"StartSystem_PB\""] --> P_TRIG["P_TRIG  
%M115.0  
\"ONS3\""]
    P_TRIG -- Q --> FB10_1["%FB10  
\"SEQUENCE\""]
    FB10_1 -- EN --> FB10_2["%FB10  
\"SEQUENCE\""]
    FB10_2 -- EN --> M114.7["%M114.7  
\"Sequence_Run\""]
    
```

Network 3:
Choose between the programming languages || 1 = SCL and 2 = FBD



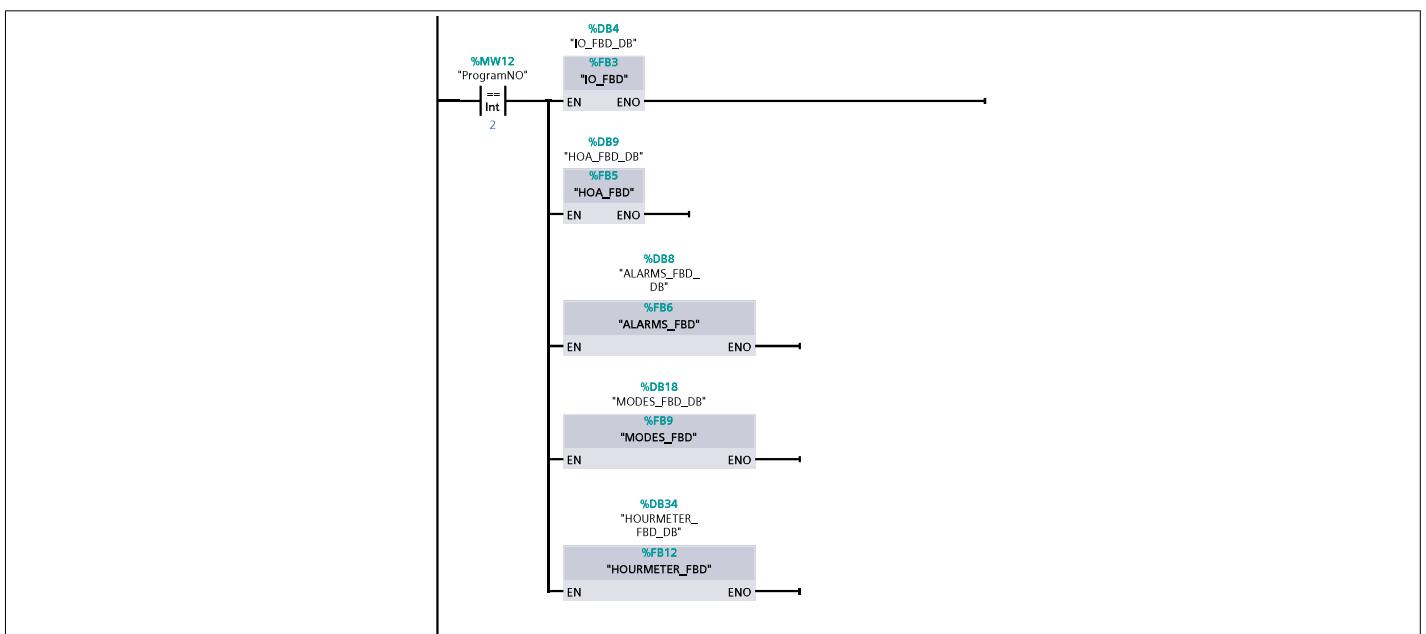
Network 4:

Calling the respective program blocks for SCL (Structured Control Language or Structured Text)



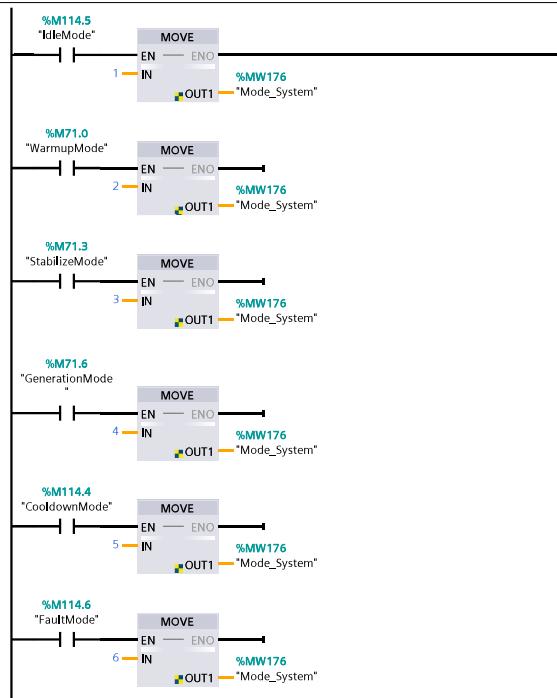
Network 5:

Calling the respective program blocks for STL (Statement List)

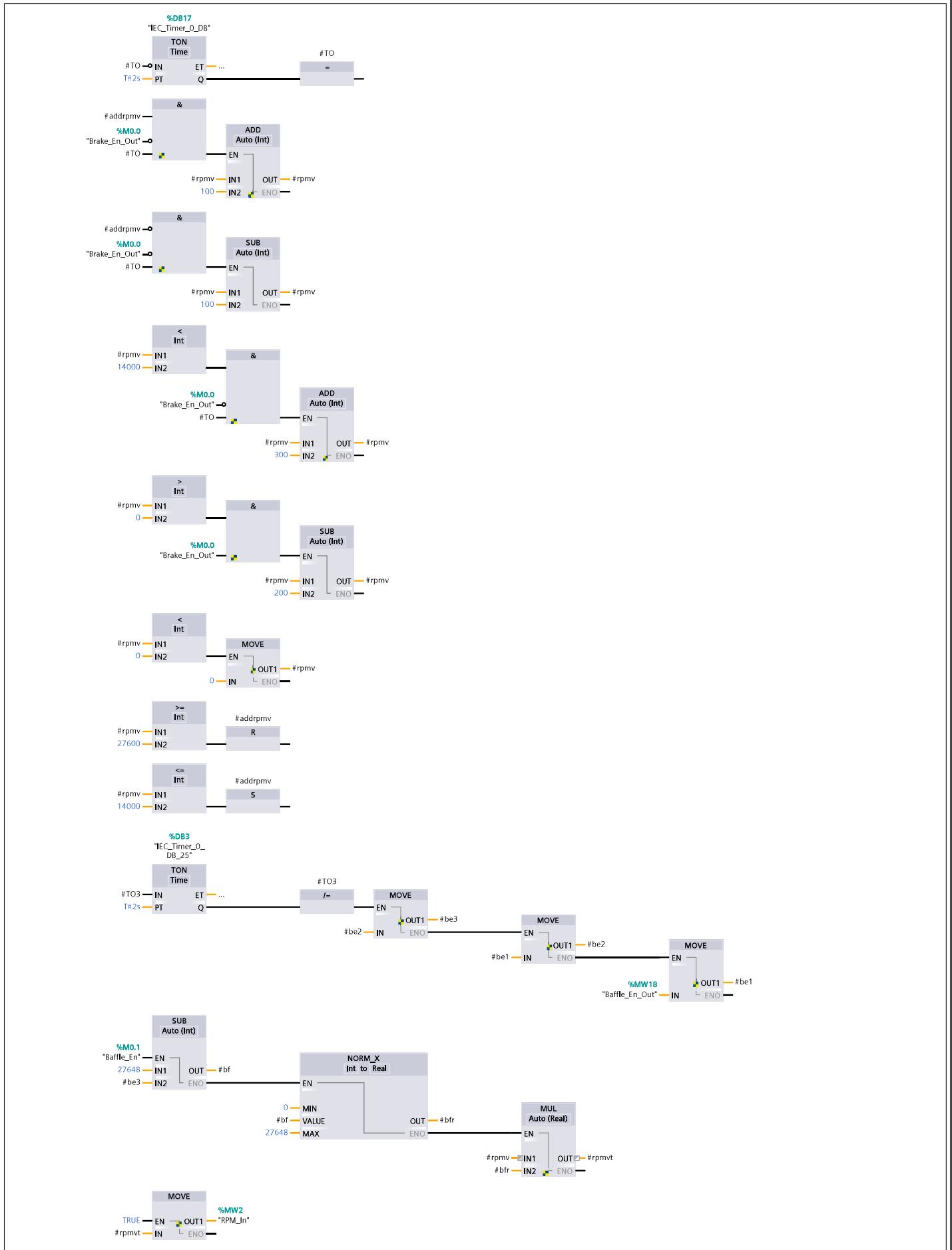


Network 6:

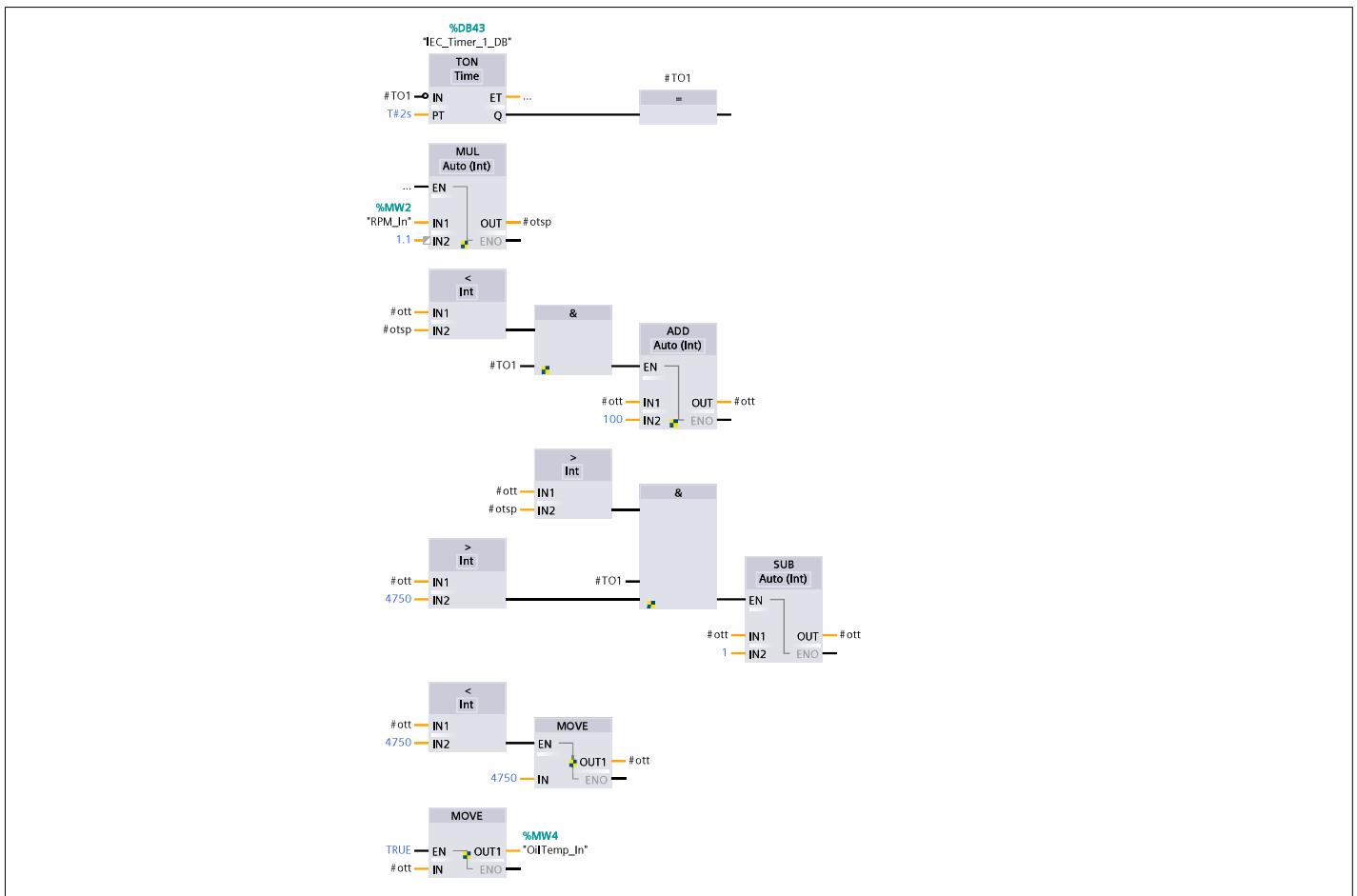
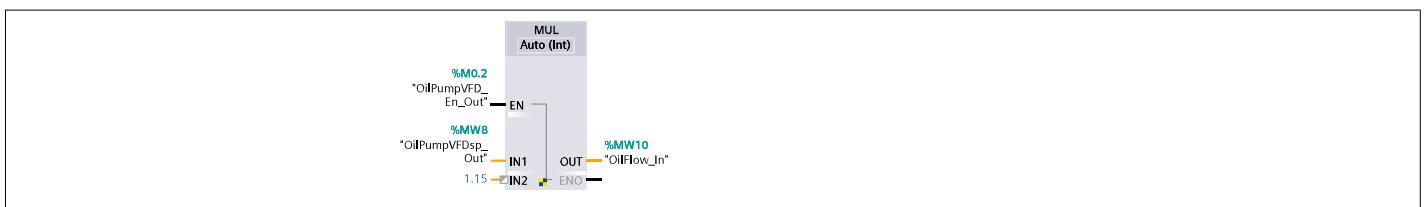
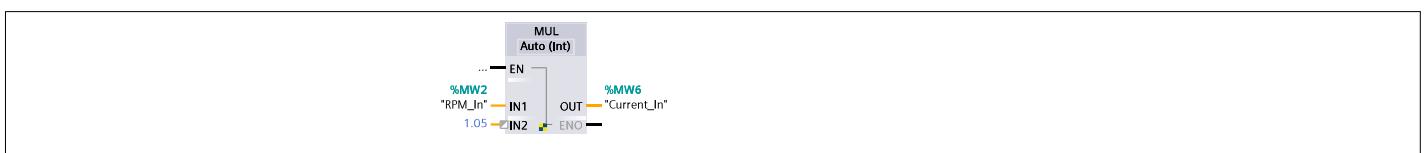
System modes for display on the HMI



Totally Integrated Automation Portal																																																																																																																																																																																																																			
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Network 2:

**Network 3:****Network 4:**

Totally Integrated Automation Portal																																																																																																																																																																	
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<pre> 0001 //***** 0002 0003 // Defining Input-Output signals of the system. 0004 0005 //***** 0006 0007 //Digital Outputs 0008 IF "Baffle_HOA" = 0 OR ("Baffle_HOA" = 2 AND NOT "Baffle_Ctrl") THEN 0009 "Baffle_En" := 0; 0010 ELSIF "Baffle_HOA" = 1 OR ("Baffle_HOA" = 2 AND "Baffle_Ctrl") THEN 0011 "Baffle_En" := 1; 0012 END_IF; 0013 0014 IF "Alarm_EmerStop" OR "Alarm_OilFlowLow" OR "OilPumpVFD_HOA" = 0 OR ("OilPumpVFD_HOA" = 2 0015 AND NOT "OilPumpVFD_Ctrl") THEN 0016 "OilPumpVFD_En_Out" := 0; 0017 ELSIF ("OilPumpVFD_HOA" = 1 OR ("OilPumpVFD_HOA" = 2 AND "OilPumpVFD_Ctrl")) AND NOT "Alarm_EmerStop" 0018 AND NOT "Alarm_OilFlowLow" THEN 0019 "OilPumpVFD_En_Out" := 1; 0020 END_IF; 0021 0022 IF "AlarmHorn_HOA" = 0 OR ("AlarmHorn_HOA" = 2 AND NOT "AlarmHorn_Ctrl") THEN 0023 "AlarmHorn_En_Out" := 0; 0024 ELSIF "AlarmHorn_HOA" = 1 OR ("AlarmHorn_HOA" = 2 AND "AlarmHorn_Ctrl") THEN 0025 "AlarmHorn_En_Out" := 1; 0026 END_IF; 0027 0028 IF "Alarm_EmerStop" OR "StationInterlock_HOA" = 0 OR ("StationInterlock_HOA" = 2 0029 AND NOT "StationInterlock_Ctrl") THEN 0030 "StationInterlock_En_Out" := 0; 0031 ELSIF ("StationInterlock_HOA" = 1 OR ("StationInterlock_HOA" = 2 AND "StationInterlock_Ctrl")) 0032 AND NOT "Alarm_EmerStop" THEN 0033 "StationInterlock_En_Out" := 1; 0034 END_IF; 0035 0036 IF "Brake_HOA" = 0 OR ("Brake_HOA" = 2 AND NOT "Brake_Ctrl") THEN 0037 "Brake_En_Out" := 0; 0038 ELSIF "Brake_HOA" = 1 OR ("Brake_HOA" = 2 AND "Brake_Ctrl") THEN 0039 "Brake_En_Out" := 1; 0040 END_IF; 0041 0042 //Analog Inputs 0043 "Scaling"(Inp_MIN := 0, 0044 Inp_SIGNAL := "OilFlow_In", 0045 Out_MIN := 0, 0046 Out_MAX := 30, 0047 Inp_MAX := 27648, 0048 Scal_OUT => "OilFlow"); 0049 0050 "Scaling"(Inp_MIN := 0, 0051 Inp_SIGNAL := "OilTemp_In", 0052 Out_MIN := 0, 0053 Out_MAX := 500, 0054 Inp_MAX := 27648, 0055 Scal_OUT => "OilTemp"); 0056 0057 "Scaling"(Inp_MIN := 0, 0058 Inp_SIGNAL := "RPM_In", 0059 Out_MIN := 0, 0060 Out_MAX := 200, 0061 Inp_MAX := 27648, 0062 Scal_OUT => "RPM"); </pre>																																																																								

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0063
0064 "Scaling"(Inp_MIN := 0,
0065     Inp_SIGNAL := "Current_In",
0066     Out_MIN := 0,
0067     Out_MAX := 700,
0068     Inp_MAX := 27648,
0069     Scal_OUT => "Current");
0070
0071 "Power_KW" := "Current" * 0.8;
0072
0073 //Analog Outputs
0074 "Scaling"(Inp_MIN := 0,
0075     Inp_SIGNAL := "Baffle_Pct",
0076     Out_MIN := 0,
0077     Out_MAX := 27648,
0078     Inp_MAX := 100,
0079     Scal_OUT => "Baffle_En_Out");      // Baffle_En is of type "BOOL"
0080
0081 "Scaling"(Inp_MIN := 0,
0082     Inp_SIGNAL := "OilPumpVFD_Pct",
0083     Out_MIN := 0,
0084     Out_MAX := 27648,
0085     Inp_MAX := 100,
0086     Scal_OUT => "OilPumpVFDsp_Out");
0087
0088
0089 //Full Auto Bit
0090 IF "Baffle_HOA" = 2 AND "OilPumpVFD_HOA" = 2 AND "StationInterlock_HOA" = 2 AND "Brake_HOA" = 2
0091 AND "AlarmHorn_HOA" = 2 THEN
0092   "FullAutoBit" := 1;
0093 ELSE
0094   "FullAutoBit" := 0;
0095 END_IF;
0096

```

Symbol	Address	Type	Comment
"Alarm_EmerStop"	%M70.4	Bool	
"Alarm_OilFlowLow"	%M60.5	Bool	
"AlarmHorn_Ctrl"	%M37.6	Bool	
"AlarmHorn_En_Out"	%M0.7	Bool	
"AlarmHorn_HOA"	%MW38	Int	
"Baffle_Ctrl"	%M37.2	Bool	
"Baffle_En"	%M0.1	Bool	
"Baffle_En_Out"	%MW18	Int	
"Baffle_HOA"	%MW32	Int	
"Baffle_Pct"	%MW28	Int	
"Brake_Ctrl"	%M37.4	Bool	
"Brake_En_Out"	%M0.0	Bool	
"Brake_HOA"	%MW42	Int	
"Current"	%MD158	Real	
"Current_In"	%MW6	Int	
"FullAutoBit"	%M153.3	Bool	
"OilFlow"	%MD14	Real	
"OilFlow_In"	%MW10	Int	
"OilPumpVFD_Ctrl"	%M37.3	Bool	
"OilPumpVFD_En_Out"	%M0.2	Bool	
"OilPumpVFD_HOA"	%MW34	Int	
"OilPumpVFD_Pct"	%MW30	Int	
"OilPumpVFDsp_Out"	%MW8	Int	
"OilTemp"	%MD20	Real	
"OilTemp_In"	%MW4	Int	
"Power_KW"	%MD178	Real	
"RPM"	%MD24	Real	
"RPM_In"	%MW2	Int	
"StationInterlock_Ctrl"	%M37.5	Bool	
"StationInterlock_En_Out"	%M1.0	Bool	
"StationInterlock_HOA"	%MW40	Int	

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<pre> 0001 //***** 0002 0003 // Hand-Off-Auto / Local-Off-Remote pushbuttons defined for some devices (Intake house gates servo motor, 0004 // Oil pump VFD, Alarm horn, Power station interlock, Turbine brake) 0005 0006 //***** 0007 0008 // Baffle or Intake house gates servo motor 0009 IF "Baffle_Off_PB" AND "Baffle_HOA" <> 0 THEN // P_Trig equivalent 0010 "Baffle_HOA" := 0; 0011 ELSIF "Baffle_Local_PB" AND "Baffle_HOA" <> 1 THEN 0012 "Baffle_HOA" := 1; 0013 ELSIF "Baffle_Remote_PB" AND "Baffle_HOA" <> 2 THEN 0014 "Baffle_HOA" := 2; 0015 END_IF; 0016 0017 IF "Baffle_HOA" < 0 OR "Baffle_HOA" > 2 THEN 0018 "Baffle_HOA" := 0; 0019 END_IF; 0020 0021 // OilPumpVFD_En_Out 0022 IF "OilPumpVFD_Off_PB" AND "OilPumpVFD_HOA" <> 0 THEN 0023 "OilPumpVFD_HOA" := 0; 0024 ELSIF "OilPumpVFD_Local_PB" AND "OilPumpVFD_HOA" <> 1 THEN 0025 "OilPumpVFD_HOA" := 1; 0026 ELSIF "OilPumpVFD_Remote_PB" AND "OilPumpVFD_HOA" <> 2 THEN 0027 "OilPumpVFD_HOA" := 2; 0028 END_IF; 0029 0030 IF "OilPumpVFD_HOA" < 0 OR "OilPumpVFD_HOA" > 2 THEN 0031 "OilPumpVFD_HOA" := 0; 0032 END_IF; 0033 0034 // AlarmHorn_En_Out 0035 IF "AlarmHorn_Off_PB" AND "AlarmHorn_HOA" <> 0 THEN 0036 "AlarmHorn_HOA" := 0; 0037 ELSIF "AlarmHorn_Local_PB" AND "AlarmHorn_HOA" <> 1 THEN 0038 "AlarmHorn_HOA" := 1; 0039 ELSIF "AlarmHorn_Remote_PB" AND "AlarmHorn_HOA" <> 2 THEN 0040 "AlarmHorn_HOA" := 2; 0041 END_IF; 0042 0043 IF "AlarmHorn_HOA" < 0 OR "AlarmHorn_HOA" > 2 THEN 0044 "AlarmHorn_HOA" := 0; 0045 END_IF; 0046 0047 // StationInterlock_En_Out 0048 IF "StationInterlock_Off_PB" AND "StationInterlock_HOA" <> 0 THEN 0049 "StationInterlock_HOA" := 0; 0050 ELSIF "StationInterlock_Local_PB" AND "StationInterlock_HOA" <> 1 THEN 0051 "StationInterlock_HOA" := 1; 0052 ELSIF "StationInterlock_Remote_PB" AND "StationInterlock_HOA" <> 2 THEN 0053 "StationInterlock_HOA" := 2; 0054 END_IF; 0055 0056 IF "StationInterlock_HOA" < 0 OR "StationInterlock_HOA" > 2 THEN 0057 "StationInterlock_HOA" := 0; 0058 END_IF; 0059 0060 // Brake_En_Out 0061 IF "Brake_Off_PB" AND "Brake_HOA" <> 0 THEN 0062 "Brake_HOA" := 0; </pre>																																																																							

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<pre> 0001 //***** 0002 0003 // Alarms are set to turn on when process parameters exceed certain limits. They are for: 0004 // Low oil flow, High oil flow, High oil temperature, Turbine overspeed, Turbine brake failure 0005 // and Emergency stop. 0006 0007 //***** 0008 0009 // Oil Low Flow Alarm 0010 IF "OilFlow" < "OilFlowLow_SP" AND "OilPumpVFD_En_Out" AND NOT "Brake_En_Out" AND NOT "Alarm_OilFlowLow" 0011 AND NOT "AlarmReset" THEN 0012 0013 "TIME_CONV"(INP1 := "OilFlowLow_DT", 0014 OUT => "TV1", 0015 Time2 => #OilLowFlow_Time); 0016 0017 "IEC_Timer_0_DB_1".TON(IN := TRUE, 0018 PT := #OilLowFlow_Time, 0019 Q => "AlarmTrig_OilFlowLow", 0020 ET => "t11"); 0021 ELSE 0022 RESET_TIMER("IEC_Timer_0_DB_1"); 0023 "AlarmTrig_OilFlowLow" := 0; // New piece 0024 END_IF; 0025 0026 IF "AlarmTrig_OilFlowLow" THEN 0027 "Alarm_OilFlowLow" := 1; 0028 "Notify_OilFlowLow" := 1; 0029 END_IF; 0030 0031 IF "Alarm_OilFlowLow" AND "AlarmReset" THEN 0032 "Alarm_OilFlowLow" := 0; 0033 "Notify_OilFlowLow" := 0; 0034 END_IF; 0035 0036 IF "Notify_OilFlowLow" AND "AlarmSilence" THEN 0037 "Notify_OilFlowLow" := 0; 0038 END_IF; 0039 0040 // Oil High Flow Alarm 0041 IF "OilFlow" > "OilFlowHigh_SP" AND NOT "Alarm_OilFlowHigh" AND NOT "AlarmReset" THEN 0042 0043 "TIME_CONV"(INP1 := "OilFlowHigh_DT", 0044 OUT => "TV2", 0045 Time2 => #OilHighFlow_Time); </pre>																																																																																																																																																																																																																													

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<pre> 0046 0047 "IEC_Timer_0_DB_2".TON(IN:=TRUE, 0048 PT:=#OilHighFlow_Time, 0049 Q=>"AlarmTrig_OilFlowHigh", 0050 ET=>#T2); 0051 0052 ELSE 0053 RESET_TIMER("IEC_Timer_0_DB_2"); 0054 "AlarmTrig_OilFlowHigh" := 0; // New piece 0055 END_IF; 0056 0057 IF "AlarmTrig_OilFlowHigh" THEN 0058 "Alarm_OilFlowHigh" := 1; 0059 "Notify_OilFlowHigh" := 1; 0060 END_IF; 0061 0062 IF "Alarm_OilFlowHigh" AND "AlarmReset" THEN 0063 "Alarm_OilFlowHigh" := 0; 0064 "Notify_OilFlowHigh" := 0; 0065 END_IF; 0066 0067 IF "Notify_OilFlowHigh" AND "AlarmSilence" THEN 0068 "Notify_OilFlowHigh" := 0; 0069 END_IF; 0070 0071 // Oil High Temperature Alarm 0072 IF "OilTemp" > "OilTempHigh_SP" AND NOT "Alarm_OilTempHigh" AND NOT "AlarmReset" THEN 0073 0074 "TIME_CONV"(INP1 := "OilTempHigh_DT", 0075 OUT => "TV3", 0076 Time2 => #OilTempHigh_Time); 0077 0078 "IEC_Timer_0_DB_3".TON(IN:=TRUE, 0079 PT:=#OilTempHigh_Time, 0080 Q=>"AlarmTrig_OilTempHigh", 0081 ET=>"t33"); 0082 0083 ELSE 0084 RESET_TIMER("IEC_Timer_0_DB_3"); 0085 "AlarmTrig_OilTempHigh" := 0; // New piece 0086 END_IF; 0087 0088 IF "AlarmTrig_OilTempHigh" THEN 0089 "Alarm_OilTempHigh" := 1; 0090 "Notify_OilTempHigh" := 1; 0091 END_IF; 0092 0093 IF "Alarm_OilTempHigh" AND "AlarmReset" THEN 0094 "Alarm_OilTempHigh" := 0; 0095 "Notify_OilTempHigh" := 0; 0096 END_IF; 0097 0098 IF "Notify_OilTempHigh" AND "AlarmSilence" THEN 0099 "Notify_OilTempHigh" := 0; 0100 END_IF; 0101 0102 // Over Current Alarm 0103 IF "Current" > "OverCur_SPP" AND NOT "Alarm_OverCur" AND NOT "AlarmReset" THEN 0104 0105 "TIME_CONV"(INP1 := "OverCur_DTT", 0106 OUT => "TV4", 0107 Time2 => #OverCur_Time); 0108 0109 "IEC_Timer_0_DB_4".TON(IN := TRUE, 0110 PT := #OverCur_Time, 0111 Q => "AlarmTrig_OverCur", 0112 ET => "t44"); 0113 0114 ELSE 0115 RESET_TIMER("IEC_Timer_0_DB_4"); 0116 "AlarmTrig_OverCur" := 0; 0117 END_IF; 0118 0119 IF "AlarmTrig_OverCur" THEN 0120 "Alarm_OverCur" := 1; 0121 "Notify_OverCur" := 1; 0122 END_IF; 0123 0124 IF "Alarm_OverCur" AND "AlarmReset" THEN 0125 "Alarm_OverCur" := 0; 0126 "Notify_OverCur" := 0; 0127 END_IF; 0128 0129 IF "Notify_OverCur" AND "AlarmSilence" THEN 0130 "Notify_OverCur" := 0; 0131 END_IF; 0132 0133 // Rotor Overspeed Alarm </pre>	

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	<pre> 0134 IF "RPM" > "RotorOverSpeed_SP" AND NOT "Alarm_RotorOverSpeed" AND NOT "AlarmReset" THEN 0135 0136 "TIME_CONV"(INP1 := "RotorOverSpeed_DT", 0137 OUT => "TV5", 0138 Time2 => #RotorOS_Time); 0139 0140 "IEC_Timer_0_DB_5".TON(IN:=TRUE, 0141 PT:=#RotorOS_Time, 0142 Q=>"AlarmTrig_RotorOverSpeed", 0143 ET=>#T5); 0144 0145 ELSE 0146 RESET_TIMER("IEC_Timer_0_DB_5"); 0147 "AlarmTrig_RotorOverSpeed" := 0; // New piece 0148 END_IF; 0149 0150 IF "AlarmTrig_RotorOverSpeed" THEN 0151 "Alarm_RotorOverSpeed" := 1; 0152 "Notify_RotorOverSpeed" := 1; 0153 END_IF; 0154 0155 IF "Alarm_RotorOverSpeed" AND "AlarmReset" THEN 0156 "Alarm_RotorOverSpeed" := 0; 0157 "Notify_RotorOverSpeed" := 0; 0158 END_IF; 0159 0160 IF "Notify_RotorOverSpeed" AND "AlarmSilence" THEN 0161 "Notify_RotorOverSpeed" := 0; 0162 END_IF; 0163 0164 // Brake Failure Alarm 0165 IF "Brake_En_Out" AND "RPM" > 0 AND NOT "Alarm_BrakeFailure" AND NOT "AlarmReset" THEN 0166 0167 "TIME_CONV"(INP1 := "BrakeFailure_DT", 0168 OUT => "TV6", 0169 Time2 => #BrakeFailure_Time); 0170 0171 "IEC_Timer_0_DB_6".TON(IN:=TRUE, 0172 PT:=#BrakeFailure_Time, 0173 Q=>"AlarmTrig_BrakeFailure", 0174 ET=>#T6); 0175 0176 ELSE 0177 RESET_TIMER("IEC_Timer_0_DB_6"); 0178 "AlarmTrig_BrakeFailure" := 0; // New piece 0179 END_IF; 0180 0181 IF "AlarmTrig_BrakeFailure" THEN 0182 "Alarm_BrakeFailure" := 1; 0183 "Notify_BrakeFailure" := 1; 0184 END_IF; 0185 0186 IF "Alarm_BrakeFailure" AND "AlarmReset" THEN 0187 "Alarm_BrakeFailure" := 0; 0188 "Notify_BrakeFailure" := 0; 0189 END_IF; 0190 0191 IF "Notify_BrakeFailure" AND "AlarmSilence" THEN 0192 "Notify_BrakeFailure" := 0; 0193 END_IF; 0194 0195 // Emergency Stop 0196 IF NOT "EmerStop" AND NOT "Alarm_EmerStop" THEN // Reverse Polarity 0197 "Alarm_EmerStop" := 1; 0198 "Notify_EmerStop" := 1; 0199 END_IF; 0200 0201 IF "Alarm_EmerStop" AND "AlarmReset" THEN 0202 "Alarm_EmerStop" := 0; 0203 "Notify_EmerStop" := 0; 0204 END_IF; 0205 0206 IF "Notify_EmerStop" AND "AlarmSilence" THEN 0207 "Notify_EmerStop" := 0; 0208 END_IF; 0209 0210 // Alarm Horn 0211 IF "FaultMode" AND NOT "AlarmHorn_Ctrl" THEN 0212 "AlarmHorn_Ctrl" := 1; 0213 END_IF; 0214 0215 IF "AlarmHorn_Ctrl" AND ("AlarmReset" OR "AlarmSilence") THEN 0216 "AlarmHorn_Ctrl" := 0; 0217 END_IF; 0218 0219 0220 0221 </pre>	

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0222			
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Symbol	Address	Type	Comment
"Alarm_BrakeFailure"	%M70.1	Bool	
"Alarm_EmerStop"	%M70.4	Bool	
"Alarm_OilFlowHigh"	%M60.6	Bool	
"Alarm_OilFlowLow"	%M60.5	Bool	
"Alarm_OilTempHigh"	%M60.3	Bool	
"Alarm_OverCur"	%M60.2	Bool	
"Alarm_RotorOverSpeed"	%M60.4	Bool	
"AlarmHorn_Ctrl"	%M37.6	Bool	
"AlarmReset"	%M60.0	Bool	
"AlarmSilence"	%M60.1	Bool	
"AlarmTrig_BrakeFailure"	%M70.2	Bool	
"AlarmTrig_OilFlowHigh"	%M61.5	Bool	
"AlarmTrig_OilFlowLow"	%M61.4	Bool	
"AlarmTrig_OilTempHigh"	%M61.6	Bool	
"AlarmTrig_OverCur"	%M61.7	Bool	
"AlarmTrig_RotorOverSpeed"	%M70.0	Bool	
"Brake_En_Out"	%M0.0	Bool	
"BrakeFailure_DT"	%MW76	Int	
"Current"	%MD158	Real	
"EmerStop"	%M1.2	Bool	
"FaultMode"	%M114.6	Bool	
"Notify_BrakeFailure"	%M70.3	Bool	
"Notify_EmerStop"	%M70.5	Bool	
"Notify_OilFlowHigh"	%M60.7	Bool	
"Notify_OilFlowLow"	%M61.3	Bool	
"Notify_OilTempHigh"	%M61.1	Bool	
"Notify_OverCur"	%M61.0	Bool	
"Notify_RotorOverSpeed"	%M61.2	Bool	
"OilFlow"	%MD14	Real	
"OilFlowHigh_DT"	%MW58	Int	
"OilFlowHigh_SP"	%MW56	Int	
"OilFlowLow_DT"	%MW54	Int	
"OilFlowLow_SP"	%MW52	Int	
"OilPumpVFD_En_Out"	%M0.2	Bool	
"OilTemp"	%MD20	Real	
"OilTempHigh_DT"	%MW46	Int	
"OilTempHigh_SP"	%MW44	Int	
"OverCur_DTT"	%MW142	Int	
"OverCur_SPP"	%MW140	Int	
"RotorOverSpeed_DT"	%MW50	Int	
"RotorOverSpeed_SP"	%MW48	Int	
"RPM"	%MD24	Real	
"t11"	%MD78	Time	
"t33"	%MD132	Time	
"t44"	%MD136	Time	
"TV1"	%MW62	Int	
"TV2"	%MW64	Int	
"TV3"	%MW66	Int	
"TV4"	%MW68	Int	
"TV5"	%MW72	Int	
"TV6"	%MW74	Int	
#BrakeFailure_Time		Time	
#OilHighFlow_Time		Time	
#OilLowFlow_Time		Time	
#OilTempHigh_Time		Time	
#OverCur_Time		Time	
#RotorOS_Time		Time	
#T2		Time	
#T5		Time	
#T6		Time	

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TIME_CONV [FC2]

TIME_CONV Properties

General

Name	TIME_CONV	Number	2	Type	FC	Language	FBD
Numbering	Automatic						

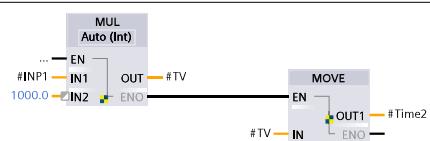
Information

Title		Author		Comment		Family	
Version	0.1	User-defined ID					

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INP1	Int		
▼ Output			
OUT	Int		
Time2	Time		
InOut			
▼ Temp			
TV	Int		
Time1	Time		
Constant			
▼ Return			
TIME_CONV	Void		

Network 1:

Conversion of type INT to TIME



Totally Integrated Automation Portal																																																																																																																																																								
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<pre> 0001 //***** 0002 0003 // The different modes of the system is defined here. 0004 0005 //***** 0006 0007 IF "Alarm_EmerStop" OR "Alarm_BrakeFailure" THEN 0008 "WarmupTransition" := 1; 0009 "StabilizeTransition" := 1; 0010 "GenTransition" := 1; 0011 "CooldownTransition" := 1; 0012 ELSE 0013 // "WarmupTransition" := 0; 0014 // "StabilizeTransition" := 0; 0015 // "GenTransition" := 0; 0016 // "CooldownTransition" := 0; 0017 0018 IF "StartSystem_PB" AND "IdleMode" AND "FullAutoBit" THEN 0019 "StartSequence" := 1; 0020 ELSE 0021 "StartSequence" := 0; 0022 END_IF; 0023 0024 // Warmup Mode 0025 IF "WarmupMode" THEN 0026 0027 "Brake_Ctrl" := 0; 0028 "Baffle_PID_Inp" := "RPM"; 0029 "Baffle_PID_SP" := "RPMWarmup_SP"; 0030 // "OilPumpVFDWarmup_PID_SP" := "OilPumpVFDWarmup_SP"; 0031 "OilPumpVFDWarmup_SP" := "OilPumpVFD_Pct"; 0032 0033 IF "OilTemp" > "OilTempWarmup_SP" THEN 0034 0035 "TIME_CONV"(IN1 := "OilTempWarmup_DT", 0036 OUT => #int_out1, 0037 Time2 => #time_out1); 0038 0039 "IEC_Timer_0_DB_7".TON(IN := TRUE, 0040 PT := #time_out1, 0041 Q => "WarmupTransition_Trig", 0042 ET => "OilTempWarmup_ET"); 0043 ELSE 0044 RESET_TIMER("IEC_Timer_0_DB_7"); 0045 "WarmupTransition_Trig" := 0; // New Piece 0046 END_IF; 0047 0048 IF "WarmupTransition_Trig" THEN 0049 RESET_TIMER("IEC_Timer_0_DB_7"); 0050 "WarmupTransition" := 1; 0051 END_IF; 0052 0053 ELSE </pre>																																																																																																																																																								

Totally Integrated Automation Portal		
<pre> 0054 "WarmupTransition" := 0; 0055 END_IF; 0056 0057 IF "Alarm_RotorOverSpeed" OR "Alarm_OilTempHigh" THEN 0058 "WarmupTransition" := 1; 0059 END_IF; 0060 0061 // Stabilize Mode 0062 IF "StabilizeMode" THEN 0063 0064 "Baffle_PID_Inp" := "Current"; 0065 "Baffle_PID_SP" := "CurrentStable_SP"; 0066 0067 #temp1 := "CurrentStable_SP" - 50; 0068 #temp2 := "CurrentStable_SP" + 50; 0069 0070 IF "Current" > #temp1 AND "Current" < #temp2 THEN 0071 0072 "TIME_CONV"(INP1 := "StablePower_DT", 0073 OUT => #int_out2, 0074 Time2 => #time_out2); 0075 0076 "IEC_Timer_0_DB_8".TON(IN := TRUE, 0077 PT := #time_out2, 0078 Q => "StabilizeTransition_Trig", 0079 ET => "StablePower_ET"); 0080 0081 ELSE 0082 RESET_TIMER("IEC_Timer_0_DB_8"); 0083 "StabilizeTransition_Trig" := 0; 0084 END_IF; 0085 0086 IF "StabilizeTransition_Trig" OR "Alarm_OilTempHigh" THEN 0087 RESET_TIMER("IEC_Timer_0_DB_8"); 0088 "StabilizeTransition" := 1; 0089 END_IF; 0090 0091 ELSE 0092 "StabilizeTransition" := 0; 0093 END_IF; 0094 0095 IF "Alarm_RotorOverSpeed" THEN 0096 "StabilizeTransition" := 1; 0097 END_IF; 0098 0099 // Generation Mode 0100 IF "GenerationMode" AND NOT "Alarm_OverCur" THEN 0101 0102 "StationInterlock_Ctrl" := 1; // Tag 0103 0104 IF "StopSystem_PB" THEN 0105 "GenTransition" := 1; 0106 END_IF; 0107 0108 ELSE 0109 "GenTransition" := 0; 0110 END_IF; 0111 0112 IF "Alarm_RotorOverSpeed" OR "Alarm_OilTempHigh" OR "Alarm_OverCur" THEN 0113 "GenTransition" := 1; 0114 END_IF; 0115 0116 // Cooldown Mode 0117 IF "CooldownMode" THEN 0118 0119 "GridInterlock" := 0; // Check Tag 0120 "Baffle_PID_Inp" := "RPM"; 0121 "Baffle_PID_SP" := "RPMCooldown_SP"; 0122 //OilPumpVFDCooldown_PID_SP" := "OilPumpVFDCooldown_SP"; 0123 "OilPumpVFDCooldown_SP" := "OilPumpVFD_Pct"; // Check requirement 0124 0125 IF "OilTemp" < "OilTempCooldown_SP" THEN 0126 0127 "TIME_CONV"(INP1 := "oilTempCooldown_DT", 0128 OUT => #int_out3, 0129 Time2 => #time_out3); 0130 0131 "IEC_Timer_0_DB_9".TON(IN := TRUE, 0132 PT := #time_out3, 0133 Q => "CooldownTransition_Trig", 0134 ET => "OilTempCooldown_ET"); 0135 0136 ELSE 0137 RESET_TIMER("IEC_Timer_0_DB_9"); 0138 "CooldownTransition_Trig" := 0; 0139 END_IF; 0140 0141 IF "CooldownTransition_Trig" THEN </pre>		

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<pre>0142 RESET_TIMER("IEC_Timer_0_DB_9"); 0143 "CooldownTransition" := 1; 0144 END_IF; 0145 0146 ELSE 0147 "CooldownTransition" := 0; 0148 END_IF; 0149 0150 END_IF; 0151 0152 // Idle Mode 0153 IF "IdleMode" THEN 0154 0155 "StationInterlock_Ctrl" := 0; // Below tags 0156 "OilPumpVFD_Ctrl" := 0; 0157 "Brake_Ctrl" := 1; 0158 "Baffle_Ctrl" := 0; 0159 END_IF; 0160 0161 // Fault Mode 0162 IF "Alarm_EmerStop" OR "Alarm_BrakeFailure" OR "Alarm_OverCur" OR "Alarm_RotorOverSpeed" 0163 OR "Alarm_OilTempHigh" OR "Alarm_OilFlowHigh" OR "Alarm_OilFlowLow" THEN 0164 0165 "FaultMode" := 1; 0166 ELSE 0167 "FaultMode" := 0; 0168 END_IF;</pre>			
Symbol	Address	Type	Comment
"Alarm_BrakeFailure"	%M70.1	Bool	
"Alarm_EmerStop"	%M70.4	Bool	
"Alarm_OilFlowHigh"	%M60.6	Bool	
"Alarm_OilFlowLow"	%M60.5	Bool	
"Alarm_OilTempHigh"	%M60.3	Bool	
"Alarm_OverCur"	%M60.2	Bool	
"Alarm_RotorOverSpeed"	%M60.4	Bool	
"Baffle_Ctrl"	%M37.2	Bool	
"Baffle_PID_Inp"	%MD84	Real	
"Baffle_PID_SP"	%MD88	Real	
"Brake_Ctrl"	%M37.4	Bool	
"CooldownMode"	%M114.4	Bool	
"CooldownTransition"	%M114.2	Bool	
"CooldownTransition_Trig"	%M114.3	Bool	
"Current"	%MD158	Real	
"CurrentStable_SP"	%MD104	Real	
"FaultMode"	%M114.6	Bool	
"FullAutoBit"	%M153.3	Bool	
"GenerationMode"	%M71.6	Bool	
"GenTransition"	%M114.1	Bool	
"GridInterlock"	%M71.7	Bool	
"IdleMode"	%M114.5	Bool	
"OilPumpVFD_Ctrl"	%M37.3	Bool	
"OilPumpVFD_Pct"	%MW30	Int	
"OilPumpVFDCooldown_SP"	%MW128	Int	
"OilPumpVFDWarmup_SP"	%MW82	Int	
"OilTemp"	%MD20	Real	
"OilTempCooldown_DT"	%MW118	Int	
"OilTempCooldown_ET"	%MD120	Time	
"OilTempCooldown_SP"	%MW116	Int	
"OilTempWarmup_DT"	%MW98	Int	
"OilTempWarmup_ET"	%MD100	Time	
"OilTempWarmup_SP"	%MW96	Int	
"RPM"	%MD24	Real	
"RPMCooldown_SP"	%MD124	Real	
"RPMWarmup_SP"	%MD92	Real	
"StabilizeMode"	%M71.3	Bool	
"StabilizeTransition"	%M71.5	Bool	
"StabilizeTransition_Trig"	%M71.4	Bool	
"StablePower_DT"	%MW108	Int	
"StablePower_ET"	%MD110	Time	
"StartSequence"	%M70.7	Bool	
"StartSystem_PB"	%M70.6	Bool	
"StationInterlock_Ctrl"	%M37.5	Bool	
"StopSystem_PB"	%M114.0	Bool	
"WarmupMode"	%M71.0	Bool	
"WarmupTransition"	%M71.2	Bool	
"WarmupTransition_Trig"	%M71.1	Bool	
#int_out1		Int	
#int_out2		Int	
#int_out3		Int	
#temp1		Real	
#temp2		Real	
#time_out1		Time	
#time_out2		Time	
#time_out3		Time	

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▼ Input																																																													
OFF_SQ	Bool	false	Non-retain	False	False	False	False		Turn sequence off																																																				
INIT_SQ	Bool	false	Non-retain	False	False	False	False		Set sequence to initial state																																																				
ACK_EF	Bool	false	Non-retain	False	False	False	False		Acknowledge all errors and faults																																																				
S_PREV	Bool	false	Non-retain	False	False	False	False		Output previous step in parameter S_NO																																																				
S_NEXT	Bool	false	Non-retain	False	False	False	False		Indicate next step in parameter S_NO																																																				
SW_AUTO	Bool	false	Non-retain	False	False	False	False		Automatic mode																																																				
SW_TAP	Bool	false	Non-retain	False	False	False	False		Semiautomatic/switch with transition																																																				
SW_TOP	Bool	false	Non-retain	False	False	False	False		Semiautomatic/ignore transition																																																				
SW_MAN	Bool	false	Non-retain	False	False	False	False		Manual mode																																																				
S_SEL	Int	0	Non-retain	False	False	False	False		Select step to be output to S_NO																																																				
S_ON	Bool	false	Non-retain	False	False	False	False		Activate step indicated in S_NO																																																				
S_OFF	Bool	false	Non-retain	False	False	False	False		Deactivate step indicated S_NO																																																				
T_PUSH	Bool	false	Non-retain	False	False	False	False		Enable transition to switch in semi automatic mode																																																				
▼ Output																																																													
S_NO	Int	0	Non-retain	False	False	False	False		Step number																																																				
S_MORE	Bool	false	Non-retain	False	False	False	False		More steps are available and can be shown in S_NO																																																				
S_ACTIVE	Bool	false	Non-retain	False	False	False	False		Step indicated in S_NO is active																																																				
ERR_FLT	Bool	false	Non-retain	False	False	False	False		Interlock or supervision group error																																																				
AUTO_ON	Bool	false	Non-retain	False	False	False	False		Automatic mode is active																																																				
TAP_ON	Bool	false	Non-retain	False	False	False	False		Semiautomatic mode/step with transition enabled																																																				
TOP_ON	Bool	false	Non-retain	False	False	False	False		Semiautomatic mode/ignore transition enabled																																																				
MAN_ON	Bool	false	Non-retain	False	False	False	False		Manual mode is active																																																				
InOut																																																													
▼ Static																																																													
▼ RT_DATA		G7_RTData-Plus_V2		Non-retain	False	False	False		Internal data area																																																				
S_DISPLAY		Int	0	Non-retain	False	False	False		Internal display of output parameter S_NO																																																				
S_SEL_OLD		Int	0	Non-retain	False	False	False		Previous value in S_SEL																																																				
S_DISPIDX		USInt	255	Non-retain	False	False	False		Index of the step in S_NO																																																				
T_DISPIDX		USInt	255	Non-retain	False	False	False		Index of the transition displayed in T_NO																																																				
▼ MOP_EDGE		G7_MOP-Plus_V2		Non-retain	False	False	False		Mode in last cycle																																																				
AUTO		Bool	false	Non-retain	False	False	False		Status: automatic mode																																																				
MAN		Bool	false	Non-retain	False	False	False		Status: manual mode																																																				
TAP		Bool	false	Non-retain	False	False	False		Status: semi automatic/switch with transition																																																				
TOP		Bool	false	Non-retain	False	False	False		Status: semi automatic/ignore transition																																																				
ACK_S		Bool	false	Non-retain	False	False	False		Request: acknowledge step at parameter S_NO																																																				
REG_S		Bool	false	Non-retain	False	False	False		Request: register step indicated in S_NO																																																				
T_PREV		Bool	false	Non-retain	False	False	False		Request: output previous valid transition in T_NO																																																				
T_NEXT		Bool	false	Non-retain	False	False	False		Request: output next valid transition in T_NO																																																				
LOCK		Bool	false	Non-retain	False	False	False		Status: interlocks activated																																																				
SUP		Bool	false	Non-retain	False	False	False		Status: supervisions activated																																																				
ACKREQ		Bool	false	Non-retain	False	False	False		Status: acknowledgment required																																																				

Totally Integrated Automation Portal									
Name	Data type	Default value	Retain	Accessible from HMI/OPC UA	Writable from HMI/OPC UA	Visible in HMI engineering	Setpoint	Supervision	Comment
SSKIP	Bool	false	Non-retain	False	False	False	False		Status: "Skip steps" enabled
OFF	Bool	false	Non-retain	False	False	False	False		Request: deactivate all steps
INIT	Bool	false	Non-retain	False	False	False	False		Request: set sequence to initial state
HALT	Bool	false	Non-retain	False	False	False	False		Status: sequence halted
TMS_HALTED	Bool	false	Non-retain	False	False	False	False		Status: all internal timers held
OPS_ZERO	Bool	false	Non-retain	False	False	False	False		Status: set all operands processed with N, L, D instructions to 0
SACT_DISP	Bool	false	Non-retain	False	False	False	False		Status: display active steps only
SEF_DISP	Bool	false	Non-retain	False	False	False	False		Status: display only steps with errors and disrupted steps
SALL_DISP	Bool	false	Non-retain	False	False	False	False		Status: display all steps
S_PREV	Bool	false	Non-retain	False	False	False	False		Request: output previous step to S_NO
S_NEXT	Bool	false	Non-retain	False	False	False	False		Request: Output next step at S_NO parameter
S_SELOK	Bool	false	Non-retain	False	False	False	False		Request: output step number from S_SEL to S_NO
S_ON	Bool	false	Non-retain	False	False	False	False		Request: activate step indicated in S_NO
S_OFF	Bool	false	Non-retain	False	False	False	False		Request: deactivate step at parameter S_NO
T_PUSH	Bool	false	Non-retain	False	False	False	False		Request: transition switching enabled
REG	Bool	false	Non-retain	False	False	False	False		Request: register all interlock and supervision errors
ACK	Bool	false	Non-retain	False	False	False	False		Request: acknowledge all interlock and supervision errors
IL_PERM	Bool	false	Non-retain	False	False	False	False		Status: permanent processing of all interlocks
T_PERM	Bool	false	Non-retain	False	False	False	False		Status: permanent processing of all transitions
ILP_MAN	Bool	false	Non-retain	False	False	False	False		Status: permanent processing of all interlocks in manual mode
LMODE	Bool	false	Non-retain	False	False	False	False		Status: learning mode is active
▼ MOP	G7_MOP-Plus_V2		Non-retain	False	False	False	False		Mode
AUTO	Bool	true	Non-retain	False	False	False	False		Status: automatic mode
MAN	Bool	false	Non-retain	False	False	False	False		Status: manual mode
TAP	Bool	false	Non-retain	False	False	False	False		Status: semi automatic/switch with transition
TOP	Bool	false	Non-retain	False	False	False	False		Status: semi automatic/ignore transition
ACK_S	Bool	false	Non-retain	False	False	False	False		Request: acknowledge step at parameter S_NO
REG_S	Bool	false	Non-retain	False	False	False	False		Request: register step indicated in S_NO
T_PREV	Bool	false	Non-retain	False	False	False	False		Request: output previous valid transition in T_NO
T_NEXT	Bool	false	Non-retain	False	False	False	False		Request: output next valid transition in T_NO
LOCK	Bool	true	Non-retain	False	False	False	False		Status: interlocks activated
SUP	Bool	true	Non-retain	False	False	False	False		Status: supervisions activated
ACKREQ	Bool	true	Non-retain	False	False	False	False		Status: acknowledgment required
SSKIP	Bool	false	Non-retain	False	False	False	False		Status: "Skip steps" enabled
OFF	Bool	false	Non-retain	False	False	False	False		Request: deactivate all steps
INIT	Bool	true	Non-retain	False	False	False	False		Request: set sequence to initial state
HALT	Bool	false	Non-retain	False	False	False	False		Status: sequence halted
TMS_HALTED	Bool	false	Non-retain	False	False	False	False		Status: all internal timers held
OPS_ZERO	Bool	false	Non-retain	False	False	False	False		Status: set all operands processed with N, L, D instructions to 0
SACT_DISP	Bool	true	Non-retain	False	False	False	False		Status: display active steps only
SEF_DISP	Bool	false	Non-retain	False	False	False	False		Status: display only steps with errors and disrupted steps
SALL_DISP	Bool	false	Non-retain	False	False	False	False		Status: display all steps
S_PREV	Bool	false	Non-retain	False	False	False	False		Request: output previous step to S_NO
S_NEXT	Bool	false	Non-retain	False	False	False	False		Request: Output next step at S_NO parameter
S_SELOK	Bool	false	Non-retain	False	False	False	False		Request: output step number from S_SEL to S_NO

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Name	Data type	Default value	Retain	Accessible from HMI/OPC UA	Writable from HMI/OPC UA	Visible in HMI engineering	Setpoint	Supervision	Comment
S_ON	Bool	false	Non-retain	False	False	False	False		Request: activate step indicated in S_NO
S_OFF	Bool	false	Non-retain	False	False	False	False		Request: deactivate step at parameter S_NO
T_PUSH	Bool	false	Non-retain	False	False	False	False		Request: transition switching enabled
REG	Bool	false	Non-retain	False	False	False	False		Request: register all interlock and supervision errors
ACK	Bool	false	Non-retain	False	False	False	False		Request: acknowledge all interlock and supervision errors
IL_PERM	Bool	false	Non-retain	False	False	False	False		Status: permanent processing of all interlocks
T_PERM	Bool	false	Non-retain	False	False	False	False		Status: permanent processing of all transitions
ILP_MAN	Bool	false	Non-retain	False	False	False	False		Status: permanent processing of all interlocks in manual mode
LMODE	Bool	false	Non-retain	False	False	False	False		Status: learning mode is active
TIME_DELTA	Time	T#0ms	Non-retain	False	False	False	False		Cycle time
▼ SQ_FLAGS	G7_SQFlags-Plus_V2		Non-retain	False	False	False	False		Sequence bit memory
ERR_FLT	Bool	false	Non-retain	False	False	False	False		Interlock and supervision group error
ERROR	Bool	false	Non-retain	False	False	False	False		Interlock group error
FAULT	Bool	false	Non-retain	False	False	False	False		Supervision group error
RT_FAULT	Bool	false	Non-retain	False	False	False	False		Runtime error
NO_SNO	Bool	false	Non-retain	False	False	False	False		Requested step number not found
NF_OFL	Bool	false	Non-retain	False	False	False	False		Overflow: too many ON or OFF requests
SA_OFL	Bool	false	Non-retain	False	False	False	False		Overflow: too many steps active
TV_OFL	Bool	false	Non-retain	False	False	False	False		Overflow: too many valid transitions
MSG_OFL	Bool	false	Non-retain	False	False	False	False		Overflow: not enough system resources for ALARM_S
NO_SWI	Bool	false	Non-retain	False	False	False	False		Do not switch in this cycle
CYC_OP	Bool	false	Non-retain	False	False	False	False		Cyclic execution of the sequence after initialization
AS_MSG	Bool	true	Non-retain	False	False	False	False		Alarms during runtime enabled or disabled by instruction
AS_SEND	Bool	false	Non-retain	False	False	False	False		Send alarms from WR_USMSG or only enter in diagnostics buffer
SQ_BUSY	Bool	false	Non-retain	False	False	False	False		Internal edge memory bit for sequence processing
SA_BUSY	Bool	false	Non-retain	False	False	False	False		Internal edge memory bit for sequence processing
AS_SIG	Bool	false	Non-retain	False	False	False	False		Edge memory bit for alarms from Alarm_S and Alarm_SO
PRE_CNT	USInt	1	Non-retain	False	False	False	False		Number of permanent instructions preceding the sequencer
POST_CNT	USInt	1	Non-retain	False	False	False	False		Number of permanent instructions after the sequencer
SQ_CNT	USInt	1	Non-retain	False	False	False	False		Number of branch paths
S_CNT	USInt	5	Non-retain	False	False	False	False		Number of steps
LOCK_CNT	USInt	0	Non-retain	False	False	False	False		Number of interlocks
SUP_CNT	USInt	0	Non-retain	False	False	False	False		Number of supervisions
T_CNT	USInt	5	Non-retain	False	False	False	False		Number of transitions
SQ_PART_CNT	USInt	1	Non-retain	False	False	False	False		Number of branches
MAX_TVAL	USInt	1	Non-retain	False	False	False	False		Max. number of simultaneously valid transitions
MAX_SACT	USInt	1	Non-retain	False	False	False	False		Max. number of simultaneously active steps
AS_MSG	Byte	16#65	Non-retain	False	False	False	False		Alarm flags
▼ EXEC_BITS	Array[0..249] of Bool		Non-retain	False	False	False	False		System-internal
EXEC_BITS[0]	Bool	false	Non-retain	False	False	False	False		System-internal
EXEC_BITS[1]	Bool	false	Non-retain	False	False	False	False		System-internal
EXEC_BITS[2]	Bool	false	Non-retain	False	False	False	False		System-internal
EXEC_BITS[3]	Bool	false	Non-retain	False	False	False	False		System-internal
EXEC_BITS[4]	Bool	false	Non-retain	False	False	False	False		System-internal
EXEC_BITS[5]	Bool	false	Non-retain	False	False	False	False		System-internal
EXEC_BITS[6]	Bool	false	Non-retain	False	False	False	False		System-internal
EXEC_BITS[7]	Bool	false	Non-retain	False	False	False	False		System-internal
EXEC_BITS[8]	Bool	false	Non-retain	False	False	False	False		System-internal
EXEC_BITS[9]	Bool	false	Non-retain	False	False	False	False		System-internal
EXEC_BITS[10]	Bool	false	Non-retain	False	False	False	False		System-internal

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Name	Data type	Default value	Retain	Accessible from HMI/OPC UA	Writable from HMI/OPC UA	Visible in HMI engineering	Setpoint	Supervision	Comment
EXEC_BITS[236]	Bool	false	Non-retain	False	False	False	False		System-internal
EXEC_BITS[237]	Bool	false	Non-retain	False	False	False	False		System-internal
EXEC_BITS[238]	Bool	false	Non-retain	False	False	False	False		System-internal
EXEC_BITS[239]	Bool	false	Non-retain	False	False	False	False		System-internal
EXEC_BITS[240]	Bool	false	Non-retain	False	False	False	False		System-internal
EXEC_BITS[241]	Bool	false	Non-retain	False	False	False	False		System-internal
EXEC_BITS[242]	Bool	false	Non-retain	False	False	False	False		System-internal
EXEC_BITS[243]	Bool	false	Non-retain	False	False	False	False		System-internal
EXEC_BITS[244]	Bool	false	Non-retain	False	False	False	False		System-internal
EXEC_BITS[245]	Bool	false	Non-retain	False	False	False	False		System-internal
EXEC_BITS[246]	Bool	false	Non-retain	False	False	False	False		System-internal
EXEC_BITS[247]	Bool	false	Non-retain	False	False	False	False		System-internal
EXEC_BITS[248]	Bool	false	Non-retain	False	False	False	False		System-internal
EXEC_BITS[249]	Bool	false	Non-retain	False	False	False	False		System-internal
▼ OFFSETS	G7_Offsets-Plus_V2		Non-retain	False	False	False	False		Internal offsets
SINI_OFFSET	UInt	0	Non-retain	False	False	False	False		Offset of internal array SINI[]
LSTT_OFFSET	UInt	2	Non-retain	False	False	False	False		Offset of internal array LSTT[]
ATAJ_OFFSET	UInt	7	Non-retain	False	False	False	False		Offset of internal array ATAJ[]
ATAB_OFFSET	UInt	12	Non-retain	False	False	False	False		Offset of internal array ATAB[]
PSTT_OFFSET	UInt	17	Non-retain	False	False	False	False		Offset of internal array PSTT[]
NSTT_OFFSET	UInt	22	Non-retain	False	False	False	False		Offset of internal array NSTT[]
ASSJ_OFFSET	UInt	27	Non-retain	False	False	False	False		Offset of internal array ASSJ[]
ASSB_OFFSET	UInt	32	Non-retain	False	False	False	False		Offset of internal array ASSB[]
PTTS_OFFSET	UInt	37	Non-retain	False	False	False	False		Offset of internal array PTTS[]
NTTS_OFFSET	UInt	42	Non-retain	False	False	False	False		Offset of internal array NTTS[]
SW_SQTS_OFFSET	UInt	47	Non-retain	False	False	False	False		Offset of internal array SW_SQTS[]
SWITCH_OFFSET	UInt	52	Non-retain	False	False	False	False		Offset of internal array SWITCH[]
TVX_OFFSET	UInt	53	Non-retain	False	False	False	False		Offset of internal array TVX[]
TTX_OFFSET	UInt	55	Non-retain	False	False	False	False		Offset of internal array TTX[]
TSX_OFFSET	UInt	57	Non-retain	False	False	False	False		Offset of internal array TSX[]
SOOX_OFFSET	UInt	59	Non-retain	False	False	False	False		Offset of internal array SOOX[]
SOFFX_OFFSET	UInt	61	Non-retain	False	False	False	False		Offset of internal array SOFFX[]
SONX_OFFSET	UInt	63	Non-retain	False	False	False	False		Offset of internal array SONX[]
SAX_OFFSET	UInt	65	Non-retain	False	False	False	False		Offset of internal array SAX[]
SERRX_OFFSET	UInt	67	Non-retain	False	False	False	False		Offset of internal array SERRX[]
SMX_OFFSET	UInt	73	Non-retain	False	False	False	False		Offset of internal array SMX[]
SOX_OFFSET	UInt	79	Non-retain	False	False	False	False		Offset of internal array SOX[]
S1X_OFFSET	UInt	85	Non-retain	False	False	False	False		Offset of internal array S1X[]
THRESHOLD_SUP	USInt	0	Non-retain	False	False	False	False		Threshold for step activation time
THRESHOLD_WARN	USInt	0	Non-retain	False	False	False	False		Threshold for step activation time (warning only)
▼ Trans1	G7_Transition-Plus_V2		Non-retain	False	False	False	False		Transition structure
TV	Bool	false	Non-retain	False	False	False	False		Transition is valid
TT	Bool	false	Non-retain	False	False	False	False		Transition is satisfied
TS	Bool	false	Non-retain	False	False	False	False		Transition switches
TNO	Int	1	Non-retain	False	False	False	False		Indicates the user-defined transition number
▼ Trans2	G7_Transition-Plus_V2		Non-retain	False	False	False	False		Transition structure
TV	Bool	false	Non-retain	False	False	False	False		Transition is valid
TT	Bool	false	Non-retain	False	False	False	False		Transition is satisfied
TS	Bool	false	Non-retain	False	False	False	False		Transition switches
TNO	Int	2	Non-retain	False	False	False	False		Indicates the user-defined transition number
▼ Trans3	G7_Transition-Plus_V2		Non-retain	False	False	False	False		Transition structure
TV	Bool	false	Non-retain	False	False	False	False		Transition is valid
TT	Bool	false	Non-retain	False	False	False	False		Transition is satisfied
TS	Bool	false	Non-retain	False	False	False	False		Transition switches
TNO	Int	3	Non-retain	False	False	False	False		Indicates the user-defined transition number

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Name	Data type	Default value	Retain	Accessible from HMI/OPC UA	Writable from HMI/OPC UA	Visible in HMI engineering	Setpoint	Supervision	Comment
▼ Trans4	G7_Transition-Plus_V2		Non-retain	False	False	False	False		Transition structure
TV	Bool	false	Non-retain	False	False	False	False		Transition is valid
TT	Bool	false	Non-retain	False	False	False	False		Transition is satisfied
TS	Bool	false	Non-retain	False	False	False	False		Transition switches
TNO	Int	4	Non-retain	False	False	False	False		Indicates the user-defined transition number
▼ Trans5	G7_Transition-Plus_V2		Non-retain	False	False	False	False		Transition structure
TV	Bool	false	Non-retain	False	False	False	False		Transition is valid
TT	Bool	false	Non-retain	False	False	False	False		Transition is satisfied
TS	Bool	false	Non-retain	False	False	False	False		Transition switches
TNO	Int	5	Non-retain	False	False	False	False		Indicates the user-defined transition number
▼ Idle	G7_StepPlus_V2		Non-retain	False	False	False	False		Step structure
S1	Bool	false	Non-retain	False	False	False	False		Step is activated
L1	Bool	false	Non-retain	False	False	False	False		interlock leaving state
V1	Bool	false	Non-retain	False	False	False	False		Supervision entering state
R1	Bool	false	Non-retain	False	False	False	False		Reserved
A1	Bool	false	Non-retain	False	False	False	False		Error is acknowledged
S0	Bool	false	Non-retain	False	False	False	False		Step is deactivated
LO	Bool	false	Non-retain	False	False	False	False		Interlock entering state
VO	Bool	false	Non-retain	False	False	False	False		Supervision leaving state
X	Bool	false	Non-retain	False	False	False	False		Step is active
LA	Bool	false	Non-retain	False	False	False	False		Interlock is not satisfied
VA	Bool	false	Non-retain	False	False	False	False		Supervision active
RA	Bool	false	Non-retain	False	False	False	False		Reserved
AA	Bool	false	Non-retain	False	False	False	False		Reserved
SS	Bool	false	Non-retain	False	False	False	False		System-internal
LS	Bool	false	Non-retain	False	False	False	False		Direct result of the programmed interlock
VS	Bool	false	Non-retain	False	False	False	False		Direct result of the programmed supervision
SNO	Int	1	Non-retain	False	False	False	False		User step number
T	Time	T#0ms	Non-retain	False	False	False	False		Total step activation time
U	Time	T#0ms	Non-retain	False	False	False	False		Step activation time without disturbance
T_MAX	Time	T#10S	Non-retain	False	False	False	False		Maximal step activation time
T_WARN	Time	T#7S	Non-retain	False	False	False	False		Warning time
SM	Bool	false	Non-retain	False	False	False	False		System-internal
H_IL_ERR	Byte	16#0	Non-retain	False	False	False	False		System-internal
H_SV_FLT	Byte	16#04	Non-retain	False	False	False	False		System-internal
▼ Warmup	G7_StepPlus_V2		Non-retain	False	False	False	False		Step structure
S1	Bool	false	Non-retain	False	False	False	False		Step is activated
L1	Bool	false	Non-retain	False	False	False	False		interlock leaving state
V1	Bool	false	Non-retain	False	False	False	False		Supervision entering state
R1	Bool	false	Non-retain	False	False	False	False		Reserved
A1	Bool	false	Non-retain	False	False	False	False		Error is acknowledged
S0	Bool	false	Non-retain	False	False	False	False		Step is deactivated
LO	Bool	false	Non-retain	False	False	False	False		Interlock entering state
VO	Bool	false	Non-retain	False	False	False	False		Supervision leaving state
X	Bool	false	Non-retain	False	False	False	False		Step is active
LA	Bool	false	Non-retain	False	False	False	False		Interlock is not satisfied
VA	Bool	false	Non-retain	False	False	False	False		Supervision active
RA	Bool	false	Non-retain	False	False	False	False		Reserved
AA	Bool	false	Non-retain	False	False	False	False		Reserved
SS	Bool	false	Non-retain	False	False	False	False		System-internal
LS	Bool	false	Non-retain	False	False	False	False		Direct result of the programmed interlock
VS	Bool	false	Non-retain	False	False	False	False		Direct result of the programmed supervision
SNO	Int	2	Non-retain	False	False	False	False		User step number
T	Time	T#0ms	Non-retain	False	False	False	False		Total step activation time
U	Time	T#0ms	Non-retain	False	False	False	False		Step activation time without disturbance
T_MAX	Time	T#10S	Non-retain	False	False	False	False		Maximal step activation time
T_WARN	Time	T#7S	Non-retain	False	False	False	False		Warning time
SM	Bool	false	Non-retain	False	False	False	False		System-internal
H_IL_ERR	Byte	16#0	Non-retain	False	False	False	False		System-internal
H_SV_FLT	Byte	16#04	Non-retain	False	False	False	False		System-internal
▼ Stabilize	G7_StepPlus_V2		Non-retain	False	False	False	False		Step structure
S1	Bool	false	Non-retain	False	False	False	False		Step is activated
L1	Bool	false	Non-retain	False	False	False	False		interlock leaving state
V1	Bool	false	Non-retain	False	False	False	False		Supervision entering state
R1	Bool	false	Non-retain	False	False	False	False		Reserved
A1	Bool	false	Non-retain	False	False	False	False		Error is acknowledged
S0	Bool	false	Non-retain	False	False	False	False		Step is deactivated

Totally Integrated Automation Portal									
Name	Data type	Default value	Retain	Accessible from HMI/OPC UA	Writable from HMI/OPC UA	Visible in HMI engineering	Setpoint	Supervision	Comment
L0	Bool	false	Non-retain	False	False	False	False		Interlock entering state
V0	Bool	false	Non-retain	False	False	False	False		Supervision leaving state
X	Bool	false	Non-retain	False	False	False	False		Step is active
LA	Bool	false	Non-retain	False	False	False	False		Interlock is not satisfied
VA	Bool	false	Non-retain	False	False	False	False		Supervision active
RA	Bool	false	Non-retain	False	False	False	False		Reserved
AA	Bool	false	Non-retain	False	False	False	False		Reserved
SS	Bool	false	Non-retain	False	False	False	False		System-internal
LS	Bool	false	Non-retain	False	False	False	False		Direct result of the programmed interlock
VS	Bool	false	Non-retain	False	False	False	False		Direct result of the programmed supervision
SNO	Int	3	Non-retain	False	False	False	False		User step number
T	Time	T#0ms	Non-retain	False	False	False	False		Total step activation time
U	Time	T#0ms	Non-retain	False	False	False	False		Step activation time without disturbance
T_MAX	Time	T#10S	Non-retain	False	False	False	False		Maximal step activation time
T_WARN	Time	T#7S	Non-retain	False	False	False	False		Warning time
SM	Bool	false	Non-retain	False	False	False	False		System-internal
H_IL_ERR	Byte	16#0	Non-retain	False	False	False	False		System-internal
H_SV_FLT	Byte	16#04	Non-retain	False	False	False	False		System-internal
▼ Generation	G7_StepPlus_V2		Non-retain	False	False	False	False		Step structure
S1	Bool	false	Non-retain	False	False	False	False		Step is activated
L1	Bool	false	Non-retain	False	False	False	False		interlock leaving state
V1	Bool	false	Non-retain	False	False	False	False		Supervision entering state
R1	Bool	false	Non-retain	False	False	False	False		Reserved
A1	Bool	false	Non-retain	False	False	False	False		Error is acknowledged
SO	Bool	false	Non-retain	False	False	False	False		Step is deactivated
LO	Bool	false	Non-retain	False	False	False	False		Interlock entering state
V0	Bool	false	Non-retain	False	False	False	False		Supervision leaving state
X	Bool	false	Non-retain	False	False	False	False		Step is active
LA	Bool	false	Non-retain	False	False	False	False		Interlock is not satisfied
VA	Bool	false	Non-retain	False	False	False	False		Supervision active
RA	Bool	false	Non-retain	False	False	False	False		Reserved
AA	Bool	false	Non-retain	False	False	False	False		Reserved
SS	Bool	false	Non-retain	False	False	False	False		System-internal
LS	Bool	false	Non-retain	False	False	False	False		Direct result of the programmed interlock
VS	Bool	false	Non-retain	False	False	False	False		Direct result of the programmed supervision
SNO	Int	4	Non-retain	False	False	False	False		User step number
T	Time	T#0ms	Non-retain	False	False	False	False		Total step activation time
U	Time	T#0ms	Non-retain	False	False	False	False		Step activation time without disturbance
T_MAX	Time	T#10S	Non-retain	False	False	False	False		Maximal step activation time
T_WARN	Time	T#7S	Non-retain	False	False	False	False		Warning time
SM	Bool	false	Non-retain	False	False	False	False		System-internal
H_IL_ERR	Byte	16#0	Non-retain	False	False	False	False		System-internal
H_SV_FLT	Byte	16#04	Non-retain	False	False	False	False		System-internal
▼ Cooldown	G7_StepPlus_V2		Non-retain	False	False	False	False		Step structure
S1	Bool	false	Non-retain	False	False	False	False		Step is activated
L1	Bool	false	Non-retain	False	False	False	False		interlock leaving state
V1	Bool	false	Non-retain	False	False	False	False		Supervision entering state
R1	Bool	false	Non-retain	False	False	False	False		Reserved
A1	Bool	false	Non-retain	False	False	False	False		Error is acknowledged
SO	Bool	false	Non-retain	False	False	False	False		Step is deactivated
LO	Bool	false	Non-retain	False	False	False	False		Interlock entering state
V0	Bool	false	Non-retain	False	False	False	False		Supervision leaving state
X	Bool	false	Non-retain	False	False	False	False		Step is active
LA	Bool	false	Non-retain	False	False	False	False		Interlock is not satisfied
VA	Bool	false	Non-retain	False	False	False	False		Supervision active
RA	Bool	false	Non-retain	False	False	False	False		Reserved
AA	Bool	false	Non-retain	False	False	False	False		Reserved
SS	Bool	false	Non-retain	False	False	False	False		System-internal
LS	Bool	false	Non-retain	False	False	False	False		Direct result of the programmed interlock
VS	Bool	false	Non-retain	False	False	False	False		Direct result of the programmed supervision
SNO	Int	5	Non-retain	False	False	False	False		User step number
T	Time	T#0ms	Non-retain	False	False	False	False		Total step activation time
U	Time	T#0ms	Non-retain	False	False	False	False		Step activation time without disturbance
T_MAX	Time	T#10S	Non-retain	False	False	False	False		Maximal step activation time
T_WARN	Time	T#7S	Non-retain	False	False	False	False		Warning time
SM	Bool	false	Non-retain	False	False	False	False		System-internal
H_IL_ERR	Byte	16#0	Non-retain	False	False	False	False		System-internal
H_SV_FLT	Byte	16#04	Non-retain	False	False	False	False		System-internal

Totally Integrated Automation Portal								
Name	Data type	Default value	Retain	Accessible from HMI/OPC UA	Writable from HMI/OPC UA	Visible in HMI engineering	Setpoint	Supervision
Temp								
Constant								

Alarms

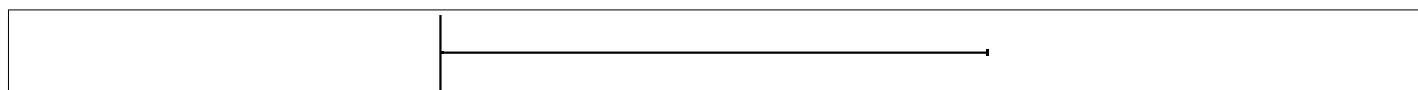
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Warning	0
Info	0
Category 4	0
Category 5	0
Category 6	0
Category 7	0
Category 8	0

Category for interlocks and supervisions	Error	Category for GRAPH warnings:	Warning
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Symbol	Address	Type	Comment
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Permanent pre-instructions

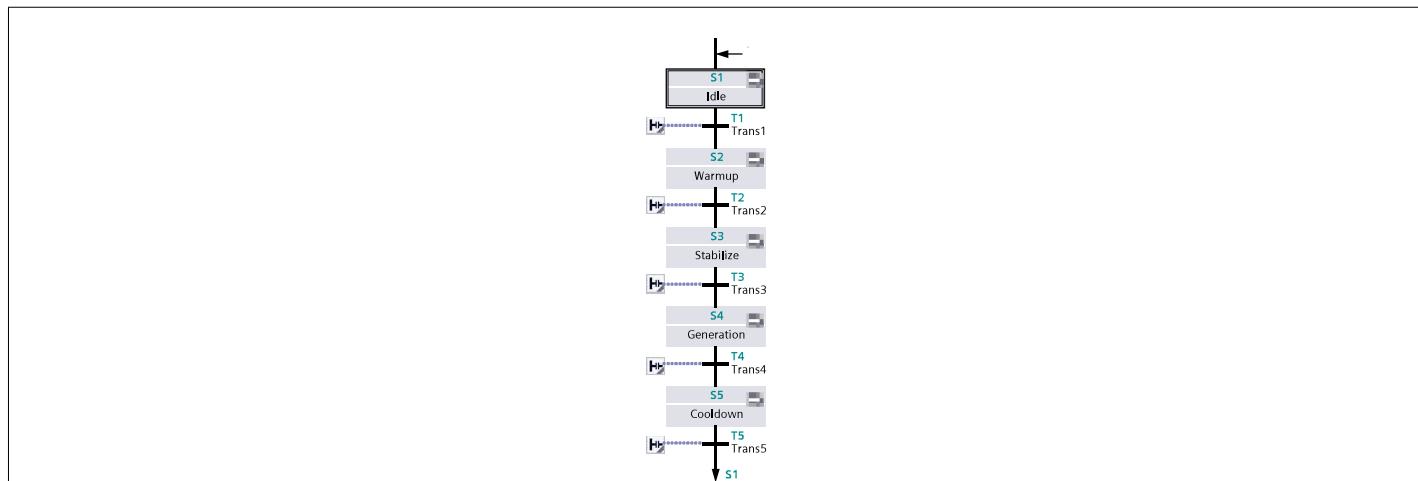
1:



Sequences (1)

1:

Sequence of the system modes.



S1 - [Initial step]:Idle

Interlock -(c)-:

Interlock alarm	
Alarm text	
	Interlock (c)

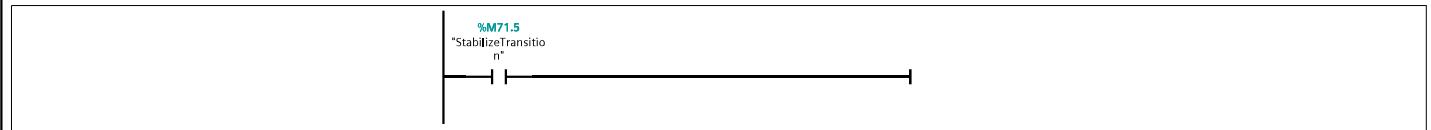
Supervision -(v)-:

Supervision alarm	
Alarm text	
	Supervision (v)

Totally Integrated Automation Portal																		
Actions:																		
Actions: <table border="1"> <thead> <tr> <th>Interlock</th><th>Event</th><th>Qualifier</th><th>Action</th></tr> </thead> <tbody> <tr> <td></td><td></td><td>N</td><td>"IdleMode"</td></tr> <tr> <td></td><td></td><td></td><td></td></tr> <tr> <td></td><td></td><td></td><td></td></tr> </tbody> </table>			Interlock	Event	Qualifier	Action			N	"IdleMode"								
Interlock	Event	Qualifier	Action															
		N	"IdleMode"															
T1:Trans1																		
S2:Warmup																		
Interlock -(c)-:																		
Interlock alarm <table border="1"> <thead> <tr> <th>Alarm text</th></tr> </thead> <tbody> <tr> <td></td></tr> </tbody> </table>			Alarm text															
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Supervision -(v)-:																		
Supervision alarm <table border="1"> <thead> <tr> <th>Alarm text</th></tr> </thead> <tbody> <tr> <td></td></tr> </tbody> </table>			Alarm text															
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Actions:																		
Actions: <table border="1"> <thead> <tr> <th>Interlock</th><th>Event</th><th>Qualifier</th><th>Action</th></tr> </thead> <tbody> <tr> <td></td><td></td><td>N</td><td>"WarmupMode"</td></tr> <tr> <td></td><td></td><td></td><td></td></tr> <tr> <td></td><td></td><td></td><td></td></tr> </tbody> </table>			Interlock	Event	Qualifier	Action			N	"WarmupMode"								
Interlock	Event	Qualifier	Action															
		N	"WarmupMode"															
T2:Trans2																		
S3:Stabilize																		
Interlock -(c)-:																		
Interlock alarm <table border="1"> <thead> <tr> <th>Alarm text</th></tr> </thead> <tbody> <tr> <td></td></tr> </tbody> </table>			Alarm text															
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Supervision -(v)-:																		
Supervision alarm <table border="1"> <thead> <tr> <th>Alarm text</th></tr> </thead> <tbody> <tr> <td></td></tr> </tbody> </table>			Alarm text															
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Actions:																		
Actions: <table border="1"> <thead> <tr> <th>Interlock</th><th>Event</th><th>Qualifier</th><th>Action</th></tr> </thead> <tbody> <tr> <td></td><td></td><td>N</td><td>"StabilizeMode"</td></tr> <tr> <td></td><td></td><td></td><td></td></tr> <tr> <td></td><td></td><td></td><td></td></tr> </tbody> </table>			Interlock	Event	Qualifier	Action			N	"StabilizeMode"								
Interlock	Event	Qualifier	Action															
		N	"StabilizeMode"															

Totally Integrated Automation Portal	
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T3:Trans3

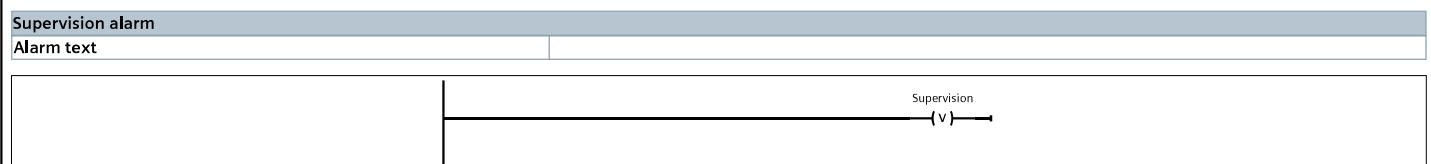


S4:Generation

Interlock -(c)-:



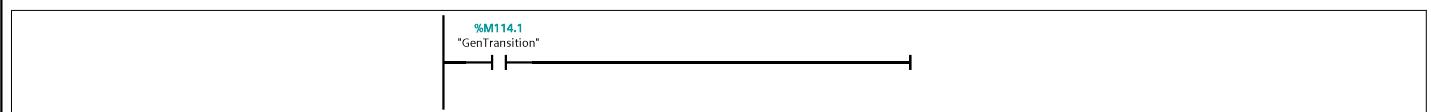
Supervision -(v)-:



Actions:

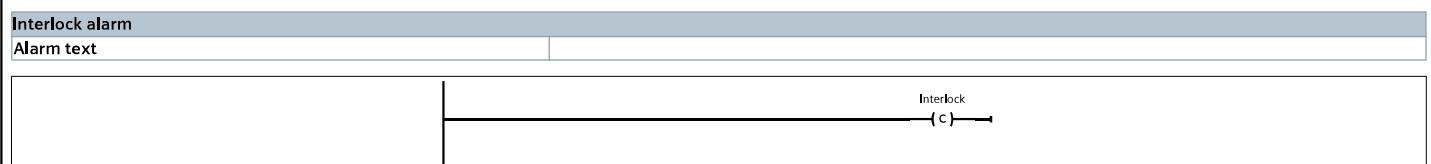
Actions:			
Interlock	Event	Qualifier	Action
		N	"GenerationMode"

T4:Trans4

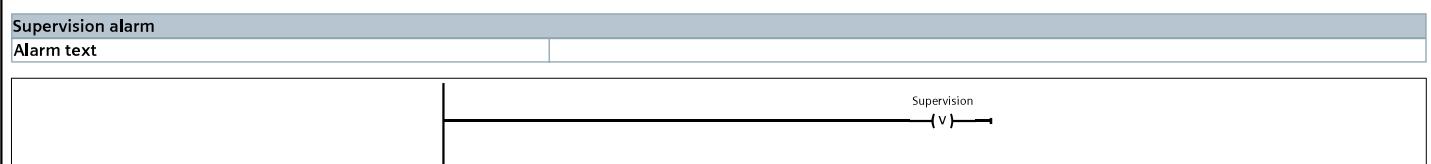


S5:Cooldown

Interlock -(c)-:



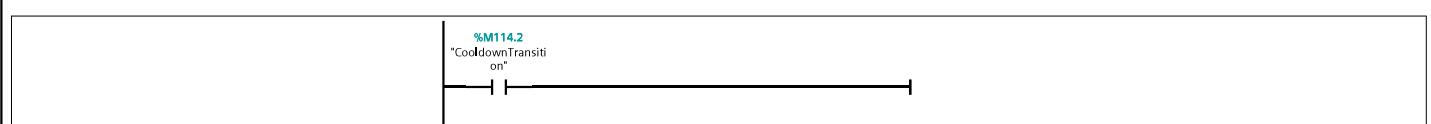
Supervision -(v)-:



Actions:

Actions:			
Interlock	Event	Qualifier	Action
		N	"CooldownMode"

T5:Trans5



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Permanent post-instructions

1:

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Totally Integrated Automation Portal																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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<tr> <td>S_NEXT</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Indicate next step in parameter S_NO</td></tr> <tr> <td>SW_AUTO</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Automatic mode</td></tr> <tr> <td>SW_TAP</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Semiautomatic/switch with transition</td></tr> <tr> <td>SW_TOP</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Semiautomatic/ignore transition</td></tr> <tr> <td>SW_MAN</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Manual mode</td></tr> <tr> <td>S_SEL</td><td>Int</td><td>0</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Select step to be output to S_NO</td></tr> <tr> <td>S_ON</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Activate step indicated in S_NO</td></tr> <tr> <td>S_OFF</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Deactivate step indicated S_NO</td></tr> <tr> <td>T_PUSH</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Enable transition to switch in semi automatic mode</td></tr> <tr> <td colspan="10">▼ Output</td></tr> <tr> <td>S_NO</td><td>Int</td><td>0</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Step number</td></tr> <tr> <td>S_MORE</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>More steps are available and can be shown in S_NO</td></tr> <tr> <td>S_ACTIVE</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Step indicated in S_NO is active</td></tr> <tr> <td>ERR_FLT</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Interlock or supervision group error</td></tr> <tr> <td>AUTO_ON</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Automatic mode is active</td></tr> <tr> <td>TAP_ON</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Semiautomatic mode/step with transition enabled</td></tr> <tr> <td>TOP_ON</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Semiautomatic mode/ignore transition enabled</td></tr> <tr> <td>MAN_ON</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Manual mode is active</td></tr> <tr> <td colspan="10">InOut</td></tr> <tr> <td colspan="10">▼ Static</td></tr> <tr> <td colspan="2">▼ RT_DATA</td><td>G7_RTData-Plus_V2</td><td></td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Internal data area</td></tr> <tr> <td colspan="2">S_DISPLAY</td><td>Int</td><td>0</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Internal display of output parameter S_NO</td></tr> <tr> <td colspan="2">S_SEL_OLD</td><td>Int</td><td>0</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Previous value in S_SEL</td></tr> <tr> <td colspan="2">S_DISPIDX</td><td>USInt</td><td>255</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Index of the step in S_NO</td></tr> <tr> <td colspan="2">T_DISPIDX</td><td>USInt</td><td>255</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Index of the transition displayed in T_NO</td></tr> <tr> <td colspan="2">▼ MOP_EDGE</td><td>G7_MOPPlus_V2</td><td></td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Mode in last cycle</td></tr> <tr> <td colspan="2">AUTO</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: automatic mode</td></tr> <tr> <td colspan="2">MAN</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: manual mode</td></tr> <tr> <td colspan="2">TAP</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: semi automatic/switch with transition</td></tr> <tr> <td colspan="2">TOP</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: semi automatic/ignore transition</td></tr> <tr> <td colspan="2">ACK_S</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Request: acknowledge step at parameter S_NO</td></tr> <tr> <td colspan="2">REG_S</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Request: register step indicated in S_NO</td></tr> <tr> <td colspan="2">T_PREV</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Request: output previous valid transition in T_NO</td></tr> <tr> <td colspan="2">T_NEXT</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Request: output next valid transition in T_NO</td></tr> <tr> <td colspan="2">LOCK</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: interlocks activated</td></tr> <tr> <td colspan="2">SUP</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: supervisions activated</td></tr> <tr> <td colspan="2">ACKREQ</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: acknowledgment required</td></tr> <tr> <td colspan="2">SSKIP</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: "Skip steps" enabled</td></tr> <tr> <td colspan="2">OFF</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Request: deactivate all steps</td></tr> <tr> <td colspan="2">INIT</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Request: set sequence to initial state</td></tr> <tr> <td colspan="2">HALT</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: sequence halted</td></tr> <tr> <td colspan="2">TMS_HALT</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: all internal timers held</td></tr> <tr> <td colspan="2">OPS_ZERO</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: set all operands processed with N, L, D instructions to 0</td></tr> <tr> <td colspan="2">SACT_DISP</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: display active steps only</td></tr> <tr> <td colspan="2">SEF_DISP</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: display only steps with errors and disrupted steps</td></tr> </tbody> </table>			Name	Data type	Start value	Retain	Accessible from HMI/OPC UA	Writable from HMI/OPC UA	Visible in HMI engineering	Setpoint	Supervision	Comment	▼ Input										OFF_SQ	Bool	false	False	False	False	False	False		Turn sequence off	INIT_SQ	Bool	false	False	False	False	False	False		Set sequence to initial state	ACK_EF	Bool	false	False	False	False	False	False		Acknowledge all errors and faults	S_PREV	Bool	false	False	False	False	False	False		Output previous step in parameter S_NO	S_NEXT	Bool	false	False	False	False	False	False		Indicate next step in parameter S_NO	SW_AUTO	Bool	false	False	False	False	False	False		Automatic mode	SW_TAP	Bool	false	False	False	False	False	False		Semiautomatic/switch with transition	SW_TOP	Bool	false	False	False	False	False	False		Semiautomatic/ignore transition	SW_MAN	Bool	false	False	False	False	False	False		Manual mode	S_SEL	Int	0	False	False	False	False	False		Select step to be output to S_NO	S_ON	Bool	false	False	False	False	False	False		Activate step indicated in S_NO	S_OFF	Bool	false	False	False	False	False	False		Deactivate step indicated S_NO	T_PUSH	Bool	false	False	False	False	False	False		Enable transition to switch in semi automatic mode	▼ Output										S_NO	Int	0	False	False	False	False	False		Step number	S_MORE	Bool	false	False	False	False	False	False		More steps are available and can be shown in S_NO	S_ACTIVE	Bool	false	False	False	False	False	False		Step indicated in S_NO is active	ERR_FLT	Bool	false	False	False	False	False	False		Interlock or supervision group error	AUTO_ON	Bool	false	False	False	False	False	False		Automatic mode is active	TAP_ON	Bool	false	False	False	False	False	False		Semiautomatic mode/step with transition enabled	TOP_ON	Bool	false	False	False	False	False	False		Semiautomatic mode/ignore transition enabled	MAN_ON	Bool	false	False	False	False	False	False		Manual mode is active	InOut										▼ Static										▼ RT_DATA		G7_RTData-Plus_V2		False	False	False	False		Internal data area	S_DISPLAY		Int	0	False	False	False	False		Internal display of output parameter S_NO	S_SEL_OLD		Int	0	False	False	False	False		Previous value in S_SEL	S_DISPIDX		USInt	255	False	False	False	False		Index of the step in S_NO	T_DISPIDX		USInt	255	False	False	False	False		Index of the transition displayed in T_NO	▼ MOP_EDGE		G7_MOPPlus_V2		False	False	False	False		Mode in last cycle	AUTO		Bool	false	False	False	False	False		Status: automatic mode	MAN		Bool	false	False	False	False	False		Status: manual mode	TAP		Bool	false	False	False	False	False		Status: semi automatic/switch with transition	TOP		Bool	false	False	False	False	False		Status: semi automatic/ignore transition	ACK_S		Bool	false	False	False	False	False		Request: acknowledge step at parameter S_NO	REG_S		Bool	false	False	False	False	False		Request: register step indicated in S_NO	T_PREV		Bool	false	False	False	False	False		Request: output previous valid transition in T_NO	T_NEXT		Bool	false	False	False	False	False		Request: output next valid transition in T_NO	LOCK		Bool	false	False	False	False	False		Status: interlocks activated	SUP		Bool	false	False	False	False	False		Status: supervisions activated	ACKREQ		Bool	false	False	False	False	False		Status: acknowledgment required	SSKIP		Bool	false	False	False	False	False		Status: "Skip steps" enabled	OFF		Bool	false	False	False	False	False		Request: deactivate all steps	INIT		Bool	false	False	False	False	False		Request: set sequence to initial state	HALT		Bool	false	False	False	False	False		Status: sequence halted	TMS_HALT		Bool	false	False	False	False	False		Status: all internal timers held	OPS_ZERO		Bool	false	False	False	False	False		Status: set all operands processed with N, L, D instructions to 0	SACT_DISP		Bool	false	False	False	False	False		Status: display active steps only	SEF_DISP		Bool	false	False	False	False	False		Status: display only steps with errors and disrupted steps
Name	Data type	Start value	Retain	Accessible from HMI/OPC UA	Writable from HMI/OPC UA	Visible in HMI engineering	Setpoint	Supervision	Comment																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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SW_AUTO	Bool	false	False	False	False	False	False		Automatic mode																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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S_SEL	Int	0	False	False	False	False	False		Select step to be output to S_NO																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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T_PUSH	Bool	false	False	False	False	False	False		Enable transition to switch in semi automatic mode																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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S_ACTIVE	Bool	false	False	False	False	False	False		Step indicated in S_NO is active																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
ERR_FLT	Bool	false	False	False	False	False	False		Interlock or supervision group error																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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Totally Integrated Automation Portal										
Name	Data type	Start value	Retain	Accessible from HMI/OPC UA	Writable from HMI/OPC UA	Visible in HMI engineering	Setpoint	Supervision	Comment	
SALL_DISP	Bool	false	False	False	False	False	False		Status: display all steps	
S_PREV	Bool	false	False	False	False	False	False		Request: output previous step to S_NO	
S_NEXT	Bool	false	False	False	False	False	False		Request: Output next step at S_NO parameter	
S_SELOK	Bool	false	False	False	False	False	False		Request: output step number from S_SEL to S_NO	
S_ON	Bool	false	False	False	False	False	False		Request: activate step indicated in S_NO	
S_OFF	Bool	false	False	False	False	False	False		Request: deactivate step at parameter S_NO	
T_PUSH	Bool	false	False	False	False	False	False		Request: transition switching enabled	
REG	Bool	false	False	False	False	False	False		Request: register all interlock and supervision errors	
ACK	Bool	false	False	False	False	False	False		Request: acknowledge all interlock and supervision errors	
IL_PERM	Bool	false	False	False	False	False	False		Status: permanent processing of all interlocks	
T_PERM	Bool	false	False	False	False	False	False		Status: permanent processing of all transitions	
ILP_MAN	Bool	false	False	False	False	False	False		Status: permanent processing of all interlocks in manual mode	
LMODE	Bool	false	False	False	False	False	False		Status: learning mode is active	
▼ MOP	G7_MOPPlus_V2		False	False	False	False	False		Mode	
AUTO	Bool	true	False	False	False	False	False		Status: automatic mode	
MAN	Bool	false	False	False	False	False	False		Status: manual mode	
TAP	Bool	false	False	False	False	False	False		Status: semi automatic/switch with transition	
TOP	Bool	false	False	False	False	False	False		Status: semi automatic/ignore transition	
ACK_S	Bool	false	False	False	False	False	False		Request: acknowledge step at parameter S_NO	
REG_S	Bool	false	False	False	False	False	False		Request: register step indicated in S_NO	
T_PREV	Bool	false	False	False	False	False	False		Request: output previous valid transition in T_NO	
T_NEXT	Bool	false	False	False	False	False	False		Request: output next valid transition in T_NO	
LOCK	Bool	true	False	False	False	False	False		Status: interlocks activated	
SUP	Bool	true	False	False	False	False	False		Status: supervisions activated	
ACKREQ	Bool	true	False	False	False	False	False		Status: acknowledgment required	
SSKIP	Bool	false	False	False	False	False	False		Status: "Skip steps" enabled	
OFF	Bool	false	False	False	False	False	False		Request: deactivate all steps	
INIT	Bool	true	False	False	False	False	False		Request: set sequence to initial state	
HALT	Bool	false	False	False	False	False	False		Status: sequence halted	
TMS_HALT	Bool	false	False	False	False	False	False		Status: all internal timers held	
OPS_ZERO	Bool	false	False	False	False	False	False		Status: set all operands processed with N, L, D instructions to 0	
SACT_DISP	Bool	true	False	False	False	False	False		Status: display active steps only	
SEF_DISP	Bool	false	False	False	False	False	False		Status: display only steps with errors and disrupted steps	
SALL_DISP	Bool	false	False	False	False	False	False		Status: display all steps	
S_PREV	Bool	false	False	False	False	False	False		Request: output previous step to S_NO	
S_NEXT	Bool	false	False	False	False	False	False		Request: Output next step at S_NO parameter	
S_SELOK	Bool	false	False	False	False	False	False		Request: output step number from S_SEL to S_NO	
S_ON	Bool	false	False	False	False	False	False		Request: activate step indicated in S_NO	
S_OFF	Bool	false	False	False	False	False	False		Request: deactivate step at parameter S_NO	
T_PUSH	Bool	false	False	False	False	False	False		Request: transition switching enabled	
REG	Bool	false	False	False	False	False	False		Request: register all interlock and supervision errors	
ACK	Bool	false	False	False	False	False	False		Request: acknowledge all interlock and supervision errors	
IL_PERM	Bool	false	False	False	False	False	False		Status: permanent processing of all interlocks	
T_PERM	Bool	false	False	False	False	False	False		Status: permanent processing of all transitions	
ILP_MAN	Bool	false	False	False	False	False	False		Status: permanent processing of all interlocks in manual mode	
LMODE	Bool	false	False	False	False	False	False		Status: learning mode is active	
TIME_DELTA	Time	T#0ms	False	False	False	False	False		Cycle time	
▼ SQ_FLAGS	G7_SQFlags-Plus_V2		False	False	False	False	False		Sequence bit memory	
ERR_FLT	Bool	false	False	False	False	False	False		Interlock and supervision group error	
ERROR	Bool	false	False	False	False	False	False		Interlock group error	
FAULT	Bool	false	False	False	False	False	False		Supervision group error	
RT_FAIL	Bool	false	False	False	False	False	False		Runtime error	
NO_SNO	Bool	false	False	False	False	False	False		Requested step number not found	

Totally Integrated Automation Portal										
Name	Data type	Start value	Retain	Accessible from HMI/OPC UA	Writable from HMI/OPC UA	Visible in HMI engineering	Setpoint	Supervision	Comment	
NF_OFL	Bool	false	False	False	False	False	False		Overflow: too many ON or OFF requests	
SA_OFL	Bool	false	False	False	False	False	False		Overflow: too many steps active	
TV_OFL	Bool	false	False	False	False	False	False		Overflow: too many valid transitions	
MSG_OFL	Bool	false	False	False	False	False	False		Overflow: not enough system resources for ALARM_S	
NO_SWI	Bool	false	False	False	False	False	False		Do not switch in this cycle	
CYC_OP	Bool	false	False	False	False	False	False		Cyclic execution of the sequence after initialization	
AS_MSG	Bool	true	False	False	False	False	False		Alarms during runtime enabled or disabled by instruction	
AS_SEND	Bool	false	False	False	False	False	False		Send alarms from WR_USMSG or only enter in diagnostics buffer	
SQ_BUSY	Bool	false	False	False	False	False	False		Internal edge memory bit for sequence processing	
SA_BUSY	Bool	false	False	False	False	False	False		Internal edge memory bit for sequence processing	
AS_SIG	Bool	false	False	False	False	False	False		Edge memory bit for alarms from Alarm_S and Alarm_SQ	
PRE_CNT	USInt	1	False	False	False	False	False		Number of permanent instructions preceding the sequencer	
POST_CNT	USInt	1	False	False	False	False	False		Number of permanent instructions after the sequencer	
SQ_CNT	USInt	1	False	False	False	False	False		Number of branch paths	
S_CNT	USInt	5	False	False	False	False	False		Number of steps	
LOCK_CNT	USInt	0	False	False	False	False	False		Number of interlocks	
SUP_CNT	USInt	0	False	False	False	False	False		Number of supervisions	
T_CNT	USInt	5	False	False	False	False	False		Number of transitions	
SQ_PART_CNT	USInt	1	False	False	False	False	False		Number of branches	
MAX_TVAL	USInt	1	False	False	False	False	False		Max. number of simultaneously valid transitions	
MAX_SACT	USInt	1	False	False	False	False	False		Max. number of simultaneously active steps	
AS_MSG	Byte	16#65	False	False	False	False	False		Alarm flags	
▼ EXEC_BITS	Array[0..249] of Bool		False	False	False	False	False		System-internal	
EXEC_BITS[0]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[1]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[2]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[3]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[4]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[5]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[6]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[7]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[8]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[9]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[10]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[11]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[12]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[13]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[14]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[15]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[16]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[17]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[18]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[19]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[20]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[21]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[22]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[23]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[24]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[25]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[26]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[27]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[28]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[29]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[30]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[31]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[32]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[33]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[34]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[35]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[36]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[37]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[38]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[39]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[40]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[41]	Bool	false	False	False	False	False	False		System-internal	

Totally Integrated Automation Portal										
Name	Data type	Start value	Retain	Accessible from HMI/OPC UA	Writable from HMI/OPC UA	Visible in HMI engineering	Setpoint	Supervision	Comment	
SO0X_OFFSET	UInt	59	False	False	False	False	False		Offset of internal array SO0X[]	
SOFFX_OFFSET	UInt	61	False	False	False	False	False		Offset of internal array SOFFX[]	
SONX_OFFSET	UInt	63	False	False	False	False	False		Offset of internal array SONX[]	
SAX_OFFSET	UInt	65	False	False	False	False	False		Offset of internal array SAX[]	
SERRX_OFFSET	UInt	67	False	False	False	False	False		Offset of internal array SERRX[]	
SMX_OFFSET	UInt	73	False	False	False	False	False		Offset of internal array SMX[]	
SOX_OFFSET	UInt	79	False	False	False	False	False		Offset of internal array SOX[]	
S1X_OFFSET	UInt	85	False	False	False	False	False		Offset of internal array S1X[]	
THRESHOLD_SUP	USInt	0	False	False	False	False	False		Threshold for step activation time	
THRESHOLD_WARN	USInt	0	False	False	False	False	False		Threshold for step activation time (warning only)	
▼ Trans1	G7_Transition-Plus_V2		False	False	False	False	False		Transition structure	
TV	Bool	false	False	False	False	False	False		Transition is valid	
TT	Bool	false	False	False	False	False	False		Transition is satisfied	
TS	Bool	false	False	False	False	False	False		Transition switches	
TNO	Int	1	False	False	False	False	False		Indicates the user-defined transition number	
▼ Trans2	G7_Transition-Plus_V2		False	False	False	False	False		Transition structure	
TV	Bool	false	False	False	False	False	False		Transition is valid	
TT	Bool	false	False	False	False	False	False		Transition is satisfied	
TS	Bool	false	False	False	False	False	False		Transition switches	
TNO	Int	2	False	False	False	False	False		Indicates the user-defined transition number	
▼ Trans3	G7_Transition-Plus_V2		False	False	False	False	False		Transition structure	
TV	Bool	false	False	False	False	False	False		Transition is valid	
TT	Bool	false	False	False	False	False	False		Transition is satisfied	
TS	Bool	false	False	False	False	False	False		Transition switches	
TNO	Int	3	False	False	False	False	False		Indicates the user-defined transition number	
▼ Trans4	G7_Transition-Plus_V2		False	False	False	False	False		Transition structure	
TV	Bool	false	False	False	False	False	False		Transition is valid	
TT	Bool	false	False	False	False	False	False		Transition is satisfied	
TS	Bool	false	False	False	False	False	False		Transition switches	
TNO	Int	4	False	False	False	False	False		Indicates the user-defined transition number	
▼ Trans5	G7_Transition-Plus_V2		False	False	False	False	False		Transition structure	
TV	Bool	false	False	False	False	False	False		Transition is valid	
TT	Bool	false	False	False	False	False	False		Transition is satisfied	
TS	Bool	false	False	False	False	False	False		Transition switches	
TNO	Int	5	False	False	False	False	False		Indicates the user-defined transition number	
▼ Idle	G7_StepPlus_V2		False	False	False	False	False		Step structure	
S1	Bool	false	False	False	False	False	False		Step is activated	
L1	Bool	false	False	False	False	False	False		interlock leaving state	
V1	Bool	false	False	False	False	False	False		Supervision entering state	
R1	Bool	false	False	False	False	False	False		Reserved	
A1	Bool	false	False	False	False	False	False		Error is acknowledged	
SO	Bool	false	False	False	False	False	False		Step is deactivated	
LO	Bool	false	False	False	False	False	False		Interlock entering state	
VO	Bool	false	False	False	False	False	False		Supervision leaving state	
X	Bool	false	False	False	False	False	False		Step is active	
LA	Bool	false	False	False	False	False	False		Interlock is not satisfied	
VA	Bool	false	False	False	False	False	False		Supervision active	
RA	Bool	false	False	False	False	False	False		Reserved	
AA	Bool	false	False	False	False	False	False		Reserved	
SS	Bool	false	False	False	False	False	False		System-internal	
LS	Bool	false	False	False	False	False	False		Direct result of the programmed interlock	
VS	Bool	false	False	False	False	False	False		Direct result of the programmed supervision	
SNO	Int	1	False	False	False	False	False		User step number	
T	Time	T#0ms	False	False	False	False	False		Total step activation time	
U	Time	T#0ms	False	False	False	False	False		Step activation time without disturbance	
T_MAX	Time	T#10S	False	False	False	False	False		Maximal step activation time	
T_WARN	Time	T#7S	False	False	False	False	False		Warning time	
SM	Bool	false	False	False	False	False	False		System-internal	
H_IL_ERR	Byte	16#0	False	False	False	False	False		System-internal	
H_SV_FLT	Byte	16#04	False	False	False	False	False		System-internal	
▼ Warmup	G7_StepPlus_V2		False	False	False	False	False		Step structure	
S1	Bool	false	False	False	False	False	False		Step is activated	
L1	Bool	false	False	False	False	False	False		interlock leaving state	
V1	Bool	false	False	False	False	False	False		Supervision entering state	

Totally Integrated Automation Portal										
Name	Data type	Start value	Retain	Accessible from HMI/OPC UA	Writable from HMI/OPC UA	Visible in HMI engineering	Setpoint	Supervision	Comment	
R1	Bool	false	False	False	False	False	False		Reserved	
A1	Bool	false	False	False	False	False	False		Error is acknowledged	
S0	Bool	false	False	False	False	False	False		Step is deactivated	
LO	Bool	false	False	False	False	False	False		Interlock entering state	
VO	Bool	false	False	False	False	False	False		Supervision leaving state	
X	Bool	false	False	False	False	False	False		Step is active	
LA	Bool	false	False	False	False	False	False		Interlock is not satisfied	
VA	Bool	false	False	False	False	False	False		Supervision active	
RA	Bool	false	False	False	False	False	False		Reserved	
AA	Bool	false	False	False	False	False	False		Reserved	
SS	Bool	false	False	False	False	False	False		System-internal	
LS	Bool	false	False	False	False	False	False		Direct result of the programmed interlock	
VS	Bool	false	False	False	False	False	False		Direct result of the programmed supervision	
SNO	Int	2	False	False	False	False	False		User step number	
T	Time	T#0ms	False	False	False	False	False		Total step activation time	
U	Time	T#0ms	False	False	False	False	False		Step activation time without disturbance	
T_MAX	Time	T#10S	False	False	False	False	False		Maximal step activation time	
T_WARN	Time	T#7S	False	False	False	False	False		Warning time	
SM	Bool	false	False	False	False	False	False		System-internal	
H_IL_ERR	Byte	16#0	False	False	False	False	False		System-internal	
H_SV_FLT	Byte	16#04	False	False	False	False	False		System-internal	
▼ Stabilize	G7_StepPlus_V2		False	False	False	False	False		Step structure	
S1	Bool	false	False	False	False	False	False		Step is activated	
L1	Bool	false	False	False	False	False	False		interlock leaving state	
V1	Bool	false	False	False	False	False	False		Supervision entering state	
R1	Bool	false	False	False	False	False	False		Reserved	
A1	Bool	false	False	False	False	False	False		Error is acknowledged	
S0	Bool	false	False	False	False	False	False		Step is deactivated	
LO	Bool	false	False	False	False	False	False		Interlock entering state	
VO	Bool	false	False	False	False	False	False		Supervision leaving state	
X	Bool	false	False	False	False	False	False		Step is active	
LA	Bool	false	False	False	False	False	False		Interlock is not satisfied	
VA	Bool	false	False	False	False	False	False		Supervision active	
RA	Bool	false	False	False	False	False	False		Reserved	
AA	Bool	false	False	False	False	False	False		Reserved	
SS	Bool	false	False	False	False	False	False		System-internal	
LS	Bool	false	False	False	False	False	False		Direct result of the programmed interlock	
VS	Bool	false	False	False	False	False	False		Direct result of the programmed supervision	
SNO	Int	3	False	False	False	False	False		User step number	
T	Time	T#0ms	False	False	False	False	False		Total step activation time	
U	Time	T#0ms	False	False	False	False	False		Step activation time without disturbance	
T_MAX	Time	T#10S	False	False	False	False	False		Maximal step activation time	
T_WARN	Time	T#7S	False	False	False	False	False		Warning time	
SM	Bool	false	False	False	False	False	False		System-internal	
H_IL_ERR	Byte	16#0	False	False	False	False	False		System-internal	
H_SV_FLT	Byte	16#04	False	False	False	False	False		System-internal	
▼ Generation	G7_StepPlus_V2		False	False	False	False	False		Step structure	
S1	Bool	false	False	False	False	False	False		Step is activated	
L1	Bool	false	False	False	False	False	False		interlock leaving state	
V1	Bool	false	False	False	False	False	False		Supervision entering state	
R1	Bool	false	False	False	False	False	False		Reserved	
A1	Bool	false	False	False	False	False	False		Error is acknowledged	
S0	Bool	false	False	False	False	False	False		Step is deactivated	
LO	Bool	false	False	False	False	False	False		Interlock entering state	
VO	Bool	false	False	False	False	False	False		Supervision leaving state	
X	Bool	false	False	False	False	False	False		Step is active	
LA	Bool	false	False	False	False	False	False		Interlock is not satisfied	
VA	Bool	false	False	False	False	False	False		Supervision active	
RA	Bool	false	False	False	False	False	False		Reserved	
AA	Bool	false	False	False	False	False	False		Reserved	
SS	Bool	false	False	False	False	False	False		System-internal	
LS	Bool	false	False	False	False	False	False		Direct result of the programmed interlock	
VS	Bool	false	False	False	False	False	False		Direct result of the programmed supervision	
SNO	Int	4	False	False	False	False	False		User step number	
T	Time	T#0ms	False	False	False	False	False		Total step activation time	
U	Time	T#0ms	False	False	False	False	False		Step activation time without disturbance	
T_MAX	Time	T#10S	False	False	False	False	False		Maximal step activation time	
T_WARN	Time	T#7S	False	False	False	False	False		Warning time	

Totally Integrated Automation Portal										
Name	Data type	Start value	Retain	Accessible from HMI/OPC UA	Writable from HMI/OPC UA	Visible in HMI engineering	Setpoint	Supervision	Comment	
SM	Bool	false	False	False	False	False	False		System-internal	
H_IL_ERR	Byte	16#0	False	False	False	False	False		System-internal	
H_SV_FLT	Byte	16#04	False	False	False	False	False		System-internal	
▼ Cooldown	G7_StepPlus_V2		False	False	False	False	False		Step structure	
S1	Bool	false	False	False	False	False	False		Step is activated	
L1	Bool	false	False	False	False	False	False		interlock leaving state	
V1	Bool	false	False	False	False	False	False		Supervision entering state	
R1	Bool	false	False	False	False	False	False		Reserved	
A1	Bool	false	False	False	False	False	False		Error is acknowledged	
S0	Bool	false	False	False	False	False	False		Step is deactivated	
LO	Bool	false	False	False	False	False	False		Interlock entering state	
VO	Bool	false	False	False	False	False	False		Supervision leaving state	
X	Bool	false	False	False	False	False	False		Step is active	
LA	Bool	false	False	False	False	False	False		Interlock is not satisfied	
VA	Bool	false	False	False	False	False	False		Supervision active	
RA	Bool	false	False	False	False	False	False		Reserved	
AA	Bool	false	False	False	False	False	False		Reserved	
SS	Bool	false	False	False	False	False	False		System-internal	
LS	Bool	false	False	False	False	False	False		Direct result of the programmed interlock	
VS	Bool	false	False	False	False	False	False		Direct result of the programmed supervision	
SNO	Int	5	False	False	False	False	False		User step number	
T	Time	T#0ms	False	False	False	False	False		Total step activation time	
U	Time	T#0ms	False	False	False	False	False		Step activation time without disturbance	
T_MAX	Time	T#10S	False	False	False	False	False		Maximal step activation time	
T_WARN	Time	T#7S	False	False	False	False	False		Warning time	
SM	Bool	false	False	False	False	False	False		System-internal	
H_IL_ERR	Byte	16#0	False	False	False	False	False		System-internal	
H_SV_FLT	Byte	16#04	False	False	False	False	False		System-internal	

Totally Integrated Automation Portal																																																																																	
PLC_1 [CPU 1511-1 PN] / Program blocks																																																																																	
MODES_SCL_DB_1 [DB23]																																																																																	
MODES_SCL_DB_1 Properties																																																																																	
General																																																																																	
Name	MODES_SCL_DB_1	Number	23	Type	DB	Language	DB																																																																										
Numbering	Automatic																																																																																
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Title		Author		Comment		Family																																																																											
Version	0.1	User-defined ID																																																																															
<table border="1"> <thead> <tr> <th>Name</th><th>Data type</th><th>Start value</th><th>Retain</th><th>Accessible from HMI/OPC UA</th><th>Writable from HMI/OPC UA</th><th>Visible in HMI engineering</th><th>Setpoint</th><th>Supervision</th><th>Comment</th></tr> </thead> <tbody> <tr> <td>Input</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>Output</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>time_out1</td><td>Time</td><td>T#0ms</td><td>False</td><td>True</td><td>True</td><td>True</td><td>False</td><td></td><td></td></tr> <tr> <td>time_out2</td><td>Time</td><td>T#0ms</td><td>False</td><td>True</td><td>True</td><td>True</td><td>False</td><td></td><td></td></tr> <tr> <td>time_out3</td><td>Time</td><td>T#0ms</td><td>False</td><td>True</td><td>True</td><td>True</td><td>False</td><td></td><td></td></tr> <tr> <td>InOut</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>Static</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table>		Name	Data type	Start value	Retain	Accessible from HMI/OPC UA	Writable from HMI/OPC UA	Visible in HMI engineering	Setpoint	Supervision	Comment	Input										Output										time_out1	Time	T#0ms	False	True	True	True	False			time_out2	Time	T#0ms	False	True	True	True	False			time_out3	Time	T#0ms	False	True	True	True	False			InOut										Static									
Name	Data type	Start value	Retain	Accessible from HMI/OPC UA	Writable from HMI/OPC UA	Visible in HMI engineering	Setpoint	Supervision	Comment																																																																								
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time_out1	Time	T#0ms	False	True	True	True	False																																																																										
time_out2	Time	T#0ms	False	True	True	True	False																																																																										
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<tr> <td>S_NEXT</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Indicate next step in parameter S_NO</td></tr> <tr> <td>SW_AUTO</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Automatic mode</td></tr> <tr> <td>SW_TAP</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Semiautomatic/switch with transition</td></tr> <tr> <td>SW_TOP</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Semiautomatic/ignore transition</td></tr> <tr> <td>SW_MAN</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Manual mode</td></tr> <tr> <td>S_SEL</td><td>Int</td><td>0</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Select step to be output to S_NO</td></tr> <tr> <td>S_ON</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Activate step indicated in S_NO</td></tr> <tr> <td>S_OFF</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Deactivate step indicated S_NO</td></tr> <tr> <td>T_PUSH</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Enable transition to switch in semi automatic mode</td></tr> <tr> <td colspan="10">▼ Output</td></tr> <tr> <td>S_NO</td><td>Int</td><td>0</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Step number</td></tr> <tr> <td>S_MORE</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>More steps are available and can be shown in S_NO</td></tr> <tr> <td>S_ACTIVE</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Step indicated in S_NO is active</td></tr> <tr> <td>ERR_FLT</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Interlock or supervision group error</td></tr> <tr> <td>AUTO_ON</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Automatic mode is active</td></tr> <tr> <td>TAP_ON</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Semiautomatic mode/step with transition enabled</td></tr> <tr> <td>TOP_ON</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Semiautomatic mode/ignore transition enabled</td></tr> <tr> <td>MAN_ON</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Manual mode is active</td></tr> <tr> <td colspan="10">InOut</td></tr> <tr> <td colspan="10">▼ Static</td></tr> <tr> <td colspan="2">▼ RT_DATA</td><td>G7_RTData-Plus_V2</td><td></td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Internal data area</td></tr> <tr> <td colspan="2">S_DISPLAY</td><td>Int</td><td>0</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Internal display of output parameter S_NO</td></tr> <tr> <td colspan="2">S_SEL_OLD</td><td>Int</td><td>0</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Previous value in S_SEL</td></tr> <tr> <td colspan="2">S_DISPIDX</td><td>USInt</td><td>255</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Index of the step in S_NO</td></tr> <tr> <td colspan="2">T_DISPIDX</td><td>USInt</td><td>255</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Index of the transition displayed in T_NO</td></tr> <tr> <td colspan="2">▼ MOP_EDGE</td><td>G7_MOPPlus_V2</td><td></td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Mode in last cycle</td></tr> <tr> <td colspan="2">AUTO</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: automatic mode</td></tr> <tr> <td colspan="2">MAN</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: manual mode</td></tr> <tr> <td colspan="2">TAP</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: semi automatic/switch with transition</td></tr> <tr> <td colspan="2">TOP</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: semi automatic/ignore transition</td></tr> <tr> <td colspan="2">ACK_S</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Request: acknowledge step at parameter S_NO</td></tr> <tr> <td colspan="2">REG_S</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Request: register step indicated in S_NO</td></tr> <tr> <td colspan="2">T_PREV</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Request: output previous valid transition in T_NO</td></tr> <tr> <td colspan="2">T_NEXT</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Request: output next valid transition in T_NO</td></tr> <tr> <td colspan="2">LOCK</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: interlocks activated</td></tr> <tr> <td colspan="2">SUP</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: supervisions activated</td></tr> <tr> <td colspan="2">ACKREQ</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: acknowledgment required</td></tr> <tr> <td colspan="2">SSKIP</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: "Skip steps" enabled</td></tr> <tr> <td colspan="2">OFF</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Request: deactivate all steps</td></tr> <tr> <td colspan="2">INIT</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Request: set sequence to initial state</td></tr> <tr> <td colspan="2">HALT</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: sequence halted</td></tr> <tr> <td colspan="2">TMS_HALT</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: all internal timers held</td></tr> <tr> <td colspan="2">OPS_ZERO</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: set all operands processed with N, L, D instructions to 0</td></tr> <tr> <td colspan="2">SACT_DISP</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: display active steps only</td></tr> <tr> <td colspan="2">SEF_DISP</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: display only steps with errors and disrupted steps</td></tr> </tbody> </table>			Name	Data type	Start value	Retain	Accessible from HMI/OPC UA	Writable from HMI/OPC UA	Visible in HMI engineering	Setpoint	Supervision	Comment	▼ Input										OFF_SQ	Bool	false	False	False	False	False	False		Turn sequence off	INIT_SQ	Bool	false	False	False	False	False	False		Set sequence to initial state	ACK_EF	Bool	false	False	False	False	False	False		Acknowledge all errors and faults	S_PREV	Bool	false	False	False	False	False	False		Output previous step in parameter S_NO	S_NEXT	Bool	false	False	False	False	False	False		Indicate next step in parameter S_NO	SW_AUTO	Bool	false	False	False	False	False	False		Automatic mode	SW_TAP	Bool	false	False	False	False	False	False		Semiautomatic/switch with transition	SW_TOP	Bool	false	False	False	False	False	False		Semiautomatic/ignore transition	SW_MAN	Bool	false	False	False	False	False	False		Manual mode	S_SEL	Int	0	False	False	False	False	False		Select step to be output to S_NO	S_ON	Bool	false	False	False	False	False	False		Activate step indicated in S_NO	S_OFF	Bool	false	False	False	False	False	False		Deactivate step indicated S_NO	T_PUSH	Bool	false	False	False	False	False	False		Enable transition to switch in semi automatic mode	▼ Output										S_NO	Int	0	False	False	False	False	False		Step number	S_MORE	Bool	false	False	False	False	False	False		More steps are available and can be shown in S_NO	S_ACTIVE	Bool	false	False	False	False	False	False		Step indicated in S_NO is active	ERR_FLT	Bool	false	False	False	False	False	False		Interlock or supervision group error	AUTO_ON	Bool	false	False	False	False	False	False		Automatic mode is active	TAP_ON	Bool	false	False	False	False	False	False		Semiautomatic mode/step with transition enabled	TOP_ON	Bool	false	False	False	False	False	False		Semiautomatic mode/ignore transition enabled	MAN_ON	Bool	false	False	False	False	False	False		Manual mode is active	InOut										▼ Static										▼ RT_DATA		G7_RTData-Plus_V2		False	False	False	False		Internal data area	S_DISPLAY		Int	0	False	False	False	False		Internal display of output parameter S_NO	S_SEL_OLD		Int	0	False	False	False	False		Previous value in S_SEL	S_DISPIDX		USInt	255	False	False	False	False		Index of the step in S_NO	T_DISPIDX		USInt	255	False	False	False	False		Index of the transition displayed in T_NO	▼ MOP_EDGE		G7_MOPPlus_V2		False	False	False	False		Mode in last cycle	AUTO		Bool	false	False	False	False	False		Status: automatic mode	MAN		Bool	false	False	False	False	False		Status: manual mode	TAP		Bool	false	False	False	False	False		Status: semi automatic/switch with transition	TOP		Bool	false	False	False	False	False		Status: semi automatic/ignore transition	ACK_S		Bool	false	False	False	False	False		Request: acknowledge step at parameter S_NO	REG_S		Bool	false	False	False	False	False		Request: register step indicated in S_NO	T_PREV		Bool	false	False	False	False	False		Request: output previous valid transition in T_NO	T_NEXT		Bool	false	False	False	False	False		Request: output next valid transition in T_NO	LOCK		Bool	false	False	False	False	False		Status: interlocks activated	SUP		Bool	false	False	False	False	False		Status: supervisions activated	ACKREQ		Bool	false	False	False	False	False		Status: acknowledgment required	SSKIP		Bool	false	False	False	False	False		Status: "Skip steps" enabled	OFF		Bool	false	False	False	False	False		Request: deactivate all steps	INIT		Bool	false	False	False	False	False		Request: set sequence to initial state	HALT		Bool	false	False	False	False	False		Status: sequence halted	TMS_HALT		Bool	false	False	False	False	False		Status: all internal timers held	OPS_ZERO		Bool	false	False	False	False	False		Status: set all operands processed with N, L, D instructions to 0	SACT_DISP		Bool	false	False	False	False	False		Status: display active steps only	SEF_DISP		Bool	false	False	False	False	False		Status: display only steps with errors and disrupted steps
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TOP_ON	Bool	false	False	False	False	False	False		Semiautomatic mode/ignore transition enabled																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
MAN_ON	Bool	false	False	False	False	False	False		Manual mode is active																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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▼ RT_DATA		G7_RTData-Plus_V2		False	False	False	False		Internal data area																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
S_DISPLAY		Int	0	False	False	False	False		Internal display of output parameter S_NO																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
S_SEL_OLD		Int	0	False	False	False	False		Previous value in S_SEL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
S_DISPIDX		USInt	255	False	False	False	False		Index of the step in S_NO																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
T_DISPIDX		USInt	255	False	False	False	False		Index of the transition displayed in T_NO																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
▼ MOP_EDGE		G7_MOPPlus_V2		False	False	False	False		Mode in last cycle																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
AUTO		Bool	false	False	False	False	False		Status: automatic mode																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
MAN		Bool	false	False	False	False	False		Status: manual mode																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
TAP		Bool	false	False	False	False	False		Status: semi automatic/switch with transition																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
TOP		Bool	false	False	False	False	False		Status: semi automatic/ignore transition																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
ACK_S		Bool	false	False	False	False	False		Request: acknowledge step at parameter S_NO																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
REG_S		Bool	false	False	False	False	False		Request: register step indicated in S_NO																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
T_PREV		Bool	false	False	False	False	False		Request: output previous valid transition in T_NO																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
T_NEXT		Bool	false	False	False	False	False		Request: output next valid transition in T_NO																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
LOCK		Bool	false	False	False	False	False		Status: interlocks activated																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
SUP		Bool	false	False	False	False	False		Status: supervisions activated																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
ACKREQ		Bool	false	False	False	False	False		Status: acknowledgment required																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
SSKIP		Bool	false	False	False	False	False		Status: "Skip steps" enabled																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
OFF		Bool	false	False	False	False	False		Request: deactivate all steps																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
INIT		Bool	false	False	False	False	False		Request: set sequence to initial state																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
HALT		Bool	false	False	False	False	False		Status: sequence halted																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
TMS_HALT		Bool	false	False	False	False	False		Status: all internal timers held																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
OPS_ZERO		Bool	false	False	False	False	False		Status: set all operands processed with N, L, D instructions to 0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
SACT_DISP		Bool	false	False	False	False	False		Status: display active steps only																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
SEF_DISP		Bool	false	False	False	False	False		Status: display only steps with errors and disrupted steps																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							

Totally Integrated Automation Portal										
Name	Data type	Start value	Retain	Accessible from HMI/OPC UA	Writable from HMI/OPC UA	Visible in HMI engineering	Setpoint	Supervision	Comment	
SALL_DISP	Bool	false	False	False	False	False	False		Status: display all steps	
S_PREV	Bool	false	False	False	False	False	False		Request: output previous step to S_NO	
S_NEXT	Bool	false	False	False	False	False	False		Request: Output next step at S_NO parameter	
S_SELOK	Bool	false	False	False	False	False	False		Request: output step number from S_SEL to S_NO	
S_ON	Bool	false	False	False	False	False	False		Request: activate step indicated in S_NO	
S_OFF	Bool	false	False	False	False	False	False		Request: deactivate step at parameter S_NO	
T_PUSH	Bool	false	False	False	False	False	False		Request: transition switching enabled	
REG	Bool	false	False	False	False	False	False		Request: register all interlock and supervision errors	
ACK	Bool	false	False	False	False	False	False		Request: acknowledge all interlock and supervision errors	
IL_PERM	Bool	false	False	False	False	False	False		Status: permanent processing of all interlocks	
T_PERM	Bool	false	False	False	False	False	False		Status: permanent processing of all transitions	
ILP_MAN	Bool	false	False	False	False	False	False		Status: permanent processing of all interlocks in manual mode	
LMODE	Bool	false	False	False	False	False	False		Status: learning mode is active	
▼ MOP	G7_MOPPlus_V2		False	False	False	False	False		Mode	
AUTO	Bool	true	False	False	False	False	False		Status: automatic mode	
MAN	Bool	false	False	False	False	False	False		Status: manual mode	
TAP	Bool	false	False	False	False	False	False		Status: semi automatic/switch with transition	
TOP	Bool	false	False	False	False	False	False		Status: semi automatic/ignore transition	
ACK_S	Bool	false	False	False	False	False	False		Request: acknowledge step at parameter S_NO	
REG_S	Bool	false	False	False	False	False	False		Request: register step indicated in S_NO	
T_PREV	Bool	false	False	False	False	False	False		Request: output previous valid transition in T_NO	
T_NEXT	Bool	false	False	False	False	False	False		Request: output next valid transition in T_NO	
LOCK	Bool	true	False	False	False	False	False		Status: interlocks activated	
SUP	Bool	true	False	False	False	False	False		Status: supervisions activated	
ACKREQ	Bool	true	False	False	False	False	False		Status: acknowledgment required	
SSKIP	Bool	false	False	False	False	False	False		Status: "Skip steps" enabled	
OFF	Bool	false	False	False	False	False	False		Request: deactivate all steps	
INIT	Bool	true	False	False	False	False	False		Request: set sequence to initial state	
HALT	Bool	false	False	False	False	False	False		Status: sequence halted	
TMS_HALT	Bool	false	False	False	False	False	False		Status: all internal timers held	
OPS_ZERO	Bool	false	False	False	False	False	False		Status: set all operands processed with N, L, D instructions to 0	
SACT_DISP	Bool	true	False	False	False	False	False		Status: display active steps only	
SEF_DISP	Bool	false	False	False	False	False	False		Status: display only steps with errors and disrupted steps	
SALL_DISP	Bool	false	False	False	False	False	False		Status: display all steps	
S_PREV	Bool	false	False	False	False	False	False		Request: output previous step to S_NO	
S_NEXT	Bool	false	False	False	False	False	False		Request: Output next step at S_NO parameter	
S_SELOK	Bool	false	False	False	False	False	False		Request: output step number from S_SEL to S_NO	
S_ON	Bool	false	False	False	False	False	False		Request: activate step indicated in S_NO	
S_OFF	Bool	false	False	False	False	False	False		Request: deactivate step at parameter S_NO	
T_PUSH	Bool	false	False	False	False	False	False		Request: transition switching enabled	
REG	Bool	false	False	False	False	False	False		Request: register all interlock and supervision errors	
ACK	Bool	false	False	False	False	False	False		Request: acknowledge all interlock and supervision errors	
IL_PERM	Bool	false	False	False	False	False	False		Status: permanent processing of all interlocks	
T_PERM	Bool	false	False	False	False	False	False		Status: permanent processing of all transitions	
ILP_MAN	Bool	false	False	False	False	False	False		Status: permanent processing of all interlocks in manual mode	
LMODE	Bool	false	False	False	False	False	False		Status: learning mode is active	
TIME_DELTA	Time	T#0ms	False	False	False	False	False		Cycle time	
▼ SQ_FLAGS	G7_SQFlags-Plus_V2		False	False	False	False	False		Sequence bit memory	
ERR_FLT	Bool	false	False	False	False	False	False		Interlock and supervision group error	
ERROR	Bool	false	False	False	False	False	False		Interlock group error	
FAULT	Bool	false	False	False	False	False	False		Supervision group error	
RT_FAIL	Bool	false	False	False	False	False	False		Runtime error	
NO_SNO	Bool	false	False	False	False	False	False		Requested step number not found	

Totally Integrated Automation Portal										
Name	Data type	Start value	Retain	Accessible from HMI/OPC UA	Writable from HMI/OPC UA	Visible in HMI engineering	Setpoint	Supervision	Comment	
NF_OFL	Bool	false	False	False	False	False	False		Overflow: too many ON or OFF requests	
SA_OFL	Bool	false	False	False	False	False	False		Overflow: too many steps active	
TV_OFL	Bool	false	False	False	False	False	False		Overflow: too many valid transitions	
MSG_OFL	Bool	false	False	False	False	False	False		Overflow: not enough system resources for ALARM_S	
NO_SWI	Bool	false	False	False	False	False	False		Do not switch in this cycle	
CYC_OP	Bool	false	False	False	False	False	False		Cyclic execution of the sequence after initialization	
AS_MSG	Bool	true	False	False	False	False	False		Alarms during runtime enabled or disabled by instruction	
AS_SEND	Bool	false	False	False	False	False	False		Send alarms from WR_USMSG or only enter in diagnostics buffer	
SQ_BUSY	Bool	false	False	False	False	False	False		Internal edge memory bit for sequence processing	
SA_BUSY	Bool	false	False	False	False	False	False		Internal edge memory bit for sequence processing	
AS_SIG	Bool	false	False	False	False	False	False		Edge memory bit for alarms from Alarm_S and Alarm_SQ	
PRE_CNT	USInt	1	False	False	False	False	False		Number of permanent instructions preceding the sequencer	
POST_CNT	USInt	1	False	False	False	False	False		Number of permanent instructions after the sequencer	
SQ_CNT	USInt	1	False	False	False	False	False		Number of branch paths	
S_CNT	USInt	5	False	False	False	False	False		Number of steps	
LOCK_CNT	USInt	0	False	False	False	False	False		Number of interlocks	
SUP_CNT	USInt	0	False	False	False	False	False		Number of supervisions	
T_CNT	USInt	5	False	False	False	False	False		Number of transitions	
SQ_PART_CNT	USInt	1	False	False	False	False	False		Number of branches	
MAX_TVAL	USInt	1	False	False	False	False	False		Max. number of simultaneously valid transitions	
MAX_SACT	USInt	1	False	False	False	False	False		Max. number of simultaneously active steps	
AS_MSG	Byte	16#65	False	False	False	False	False		Alarm flags	
▼ EXEC_BITS	Array[0..249] of Bool		False	False	False	False	False		System-internal	
EXEC_BITS[0]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[1]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[2]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[3]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[4]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[5]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[6]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[7]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[8]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[9]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[10]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[11]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[12]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[13]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[14]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[15]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[16]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[17]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[18]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[19]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[20]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[21]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[22]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[23]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[24]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[25]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[26]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[27]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[28]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[29]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[30]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[31]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[32]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[33]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[34]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[35]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[36]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[37]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[38]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[39]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[40]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[41]	Bool	false	False	False	False	False	False		System-internal	

Totally Integrated Automation Portal										
Name	Data type	Start value	Retain	Accessible from HMI/OPC UA	Writable from HMI/OPC UA	Visible in HMI engineering	Setpoint	Supervision	Comment	
SO0X_OFFSET	UInt	59	False	False	False	False	False		Offset of internal array SO0X[]	
SOFFX_OFFSET	UInt	61	False	False	False	False	False		Offset of internal array SOFFX[]	
SONX_OFFSET	UInt	63	False	False	False	False	False		Offset of internal array SONX[]	
SAX_OFFSET	UInt	65	False	False	False	False	False		Offset of internal array SAX[]	
SERRX_OFFSET	UInt	67	False	False	False	False	False		Offset of internal array SERRX[]	
SMX_OFFSET	UInt	73	False	False	False	False	False		Offset of internal array SMX[]	
SOX_OFFSET	UInt	79	False	False	False	False	False		Offset of internal array SOX[]	
S1X_OFFSET	UInt	85	False	False	False	False	False		Offset of internal array S1X[]	
THRESHOLD_SUP	USInt	0	False	False	False	False	False		Threshold for step activation time	
THRESHOLD_WARN	USInt	0	False	False	False	False	False		Threshold for step activation time (warning only)	
▼ Trans1	G7_Transition-Plus_V2		False	False	False	False	False		Transition structure	
TV	Bool	false	False	False	False	False	False		Transition is valid	
TT	Bool	false	False	False	False	False	False		Transition is satisfied	
TS	Bool	false	False	False	False	False	False		Transition switches	
TNO	Int	1	False	False	False	False	False		Indicates the user-defined transition number	
▼ Trans2	G7_Transition-Plus_V2		False	False	False	False	False		Transition structure	
TV	Bool	false	False	False	False	False	False		Transition is valid	
TT	Bool	false	False	False	False	False	False		Transition is satisfied	
TS	Bool	false	False	False	False	False	False		Transition switches	
TNO	Int	2	False	False	False	False	False		Indicates the user-defined transition number	
▼ Trans3	G7_Transition-Plus_V2		False	False	False	False	False		Transition structure	
TV	Bool	false	False	False	False	False	False		Transition is valid	
TT	Bool	false	False	False	False	False	False		Transition is satisfied	
TS	Bool	false	False	False	False	False	False		Transition switches	
TNO	Int	3	False	False	False	False	False		Indicates the user-defined transition number	
▼ Trans4	G7_Transition-Plus_V2		False	False	False	False	False		Transition structure	
TV	Bool	false	False	False	False	False	False		Transition is valid	
TT	Bool	false	False	False	False	False	False		Transition is satisfied	
TS	Bool	false	False	False	False	False	False		Transition switches	
TNO	Int	4	False	False	False	False	False		Indicates the user-defined transition number	
▼ Trans5	G7_Transition-Plus_V2		False	False	False	False	False		Transition structure	
TV	Bool	false	False	False	False	False	False		Transition is valid	
TT	Bool	false	False	False	False	False	False		Transition is satisfied	
TS	Bool	false	False	False	False	False	False		Transition switches	
TNO	Int	5	False	False	False	False	False		Indicates the user-defined transition number	
▼ Idle	G7_StepPlus_V2		False	False	False	False	False		Step structure	
S1	Bool	false	False	False	False	False	False		Step is activated	
L1	Bool	false	False	False	False	False	False		interlock leaving state	
V1	Bool	false	False	False	False	False	False		Supervision entering state	
R1	Bool	false	False	False	False	False	False		Reserved	
A1	Bool	false	False	False	False	False	False		Error is acknowledged	
SO	Bool	false	False	False	False	False	False		Step is deactivated	
LO	Bool	false	False	False	False	False	False		Interlock entering state	
VO	Bool	false	False	False	False	False	False		Supervision leaving state	
X	Bool	false	False	False	False	False	False		Step is active	
LA	Bool	false	False	False	False	False	False		Interlock is not satisfied	
VA	Bool	false	False	False	False	False	False		Supervision active	
RA	Bool	false	False	False	False	False	False		Reserved	
AA	Bool	false	False	False	False	False	False		Reserved	
SS	Bool	false	False	False	False	False	False		System-internal	
LS	Bool	false	False	False	False	False	False		Direct result of the programmed interlock	
VS	Bool	false	False	False	False	False	False		Direct result of the programmed supervision	
SNO	Int	1	False	False	False	False	False		User step number	
T	Time	T#0ms	False	False	False	False	False		Total step activation time	
U	Time	T#0ms	False	False	False	False	False		Step activation time without disturbance	
T_MAX	Time	T#10S	False	False	False	False	False		Maximal step activation time	
T_WARN	Time	T#7S	False	False	False	False	False		Warning time	
SM	Bool	false	False	False	False	False	False		System-internal	
H_IL_ERR	Byte	16#0	False	False	False	False	False		System-internal	
H_SV_FLT	Byte	16#04	False	False	False	False	False		System-internal	
▼ Warmup	G7_StepPlus_V2		False	False	False	False	False		Step structure	
S1	Bool	false	False	False	False	False	False		Step is activated	
L1	Bool	false	False	False	False	False	False		interlock leaving state	
V1	Bool	false	False	False	False	False	False		Supervision entering state	

Totally Integrated Automation Portal										
Name	Data type	Start value	Retain	Accessible from HMI/OPC UA	Writable from HMI/OPC UA	Visible in HMI engineering	Setpoint	Supervision	Comment	
R1	Bool	false	False	False	False	False	False		Reserved	
A1	Bool	false	False	False	False	False	False		Error is acknowledged	
S0	Bool	false	False	False	False	False	False		Step is deactivated	
LO	Bool	false	False	False	False	False	False		Interlock entering state	
VO	Bool	false	False	False	False	False	False		Supervision leaving state	
X	Bool	false	False	False	False	False	False		Step is active	
LA	Bool	false	False	False	False	False	False		Interlock is not satisfied	
VA	Bool	false	False	False	False	False	False		Supervision active	
RA	Bool	false	False	False	False	False	False		Reserved	
AA	Bool	false	False	False	False	False	False		Reserved	
SS	Bool	false	False	False	False	False	False		System-internal	
LS	Bool	false	False	False	False	False	False		Direct result of the programmed interlock	
VS	Bool	false	False	False	False	False	False		Direct result of the programmed supervision	
SNO	Int	2	False	False	False	False	False		User step number	
T	Time	T#0ms	False	False	False	False	False		Total step activation time	
U	Time	T#0ms	False	False	False	False	False		Step activation time without disturbance	
T_MAX	Time	T#10S	False	False	False	False	False		Maximal step activation time	
T_WARN	Time	T#7S	False	False	False	False	False		Warning time	
SM	Bool	false	False	False	False	False	False		System-internal	
H_IL_ERR	Byte	16#0	False	False	False	False	False		System-internal	
H_SV_FLT	Byte	16#04	False	False	False	False	False		System-internal	
▼ Stabilize	G7_StepPlus_V2		False	False	False	False	False		Step structure	
S1	Bool	false	False	False	False	False	False		Step is activated	
L1	Bool	false	False	False	False	False	False		interlock leaving state	
V1	Bool	false	False	False	False	False	False		Supervision entering state	
R1	Bool	false	False	False	False	False	False		Reserved	
A1	Bool	false	False	False	False	False	False		Error is acknowledged	
S0	Bool	false	False	False	False	False	False		Step is deactivated	
LO	Bool	false	False	False	False	False	False		Interlock entering state	
VO	Bool	false	False	False	False	False	False		Supervision leaving state	
X	Bool	false	False	False	False	False	False		Step is active	
LA	Bool	false	False	False	False	False	False		Interlock is not satisfied	
VA	Bool	false	False	False	False	False	False		Supervision active	
RA	Bool	false	False	False	False	False	False		Reserved	
AA	Bool	false	False	False	False	False	False		Reserved	
SS	Bool	false	False	False	False	False	False		System-internal	
LS	Bool	false	False	False	False	False	False		Direct result of the programmed interlock	
VS	Bool	false	False	False	False	False	False		Direct result of the programmed supervision	
SNO	Int	3	False	False	False	False	False		User step number	
T	Time	T#0ms	False	False	False	False	False		Total step activation time	
U	Time	T#0ms	False	False	False	False	False		Step activation time without disturbance	
T_MAX	Time	T#10S	False	False	False	False	False		Maximal step activation time	
T_WARN	Time	T#7S	False	False	False	False	False		Warning time	
SM	Bool	false	False	False	False	False	False		System-internal	
H_IL_ERR	Byte	16#0	False	False	False	False	False		System-internal	
H_SV_FLT	Byte	16#04	False	False	False	False	False		System-internal	
▼ Generation	G7_StepPlus_V2		False	False	False	False	False		Step structure	
S1	Bool	false	False	False	False	False	False		Step is activated	
L1	Bool	false	False	False	False	False	False		interlock leaving state	
V1	Bool	false	False	False	False	False	False		Supervision entering state	
R1	Bool	false	False	False	False	False	False		Reserved	
A1	Bool	false	False	False	False	False	False		Error is acknowledged	
S0	Bool	false	False	False	False	False	False		Step is deactivated	
LO	Bool	false	False	False	False	False	False		Interlock entering state	
VO	Bool	false	False	False	False	False	False		Supervision leaving state	
X	Bool	false	False	False	False	False	False		Step is active	
LA	Bool	false	False	False	False	False	False		Interlock is not satisfied	
VA	Bool	false	False	False	False	False	False		Supervision active	
RA	Bool	false	False	False	False	False	False		Reserved	
AA	Bool	false	False	False	False	False	False		Reserved	
SS	Bool	false	False	False	False	False	False		System-internal	
LS	Bool	false	False	False	False	False	False		Direct result of the programmed interlock	
VS	Bool	false	False	False	False	False	False		Direct result of the programmed supervision	
SNO	Int	4	False	False	False	False	False		User step number	
T	Time	T#0ms	False	False	False	False	False		Total step activation time	
U	Time	T#0ms	False	False	False	False	False		Step activation time without disturbance	
T_MAX	Time	T#10S	False	False	False	False	False		Maximal step activation time	
T_WARN	Time	T#7S	False	False	False	False	False		Warning time	

Totally Integrated Automation Portal										
Name	Data type	Start value	Retain	Accessible from HMI/OPC UA	Writable from HMI/OPC UA	Visible in HMI engineering	Setpoint	Supervision	Comment	
SM	Bool	false	False	False	False	False	False		System-internal	
H_IL_ERR	Byte	16#0	False	False	False	False	False		System-internal	
H_SV_FLT	Byte	16#04	False	False	False	False	False		System-internal	
▼ Cooldown	G7_StepPlus_V2		False	False	False	False	False		Step structure	
S1	Bool	false	False	False	False	False	False		Step is activated	
L1	Bool	false	False	False	False	False	False		interlock leaving state	
V1	Bool	false	False	False	False	False	False		Supervision entering state	
R1	Bool	false	False	False	False	False	False		Reserved	
A1	Bool	false	False	False	False	False	False		Error is acknowledged	
S0	Bool	false	False	False	False	False	False		Step is deactivated	
LO	Bool	false	False	False	False	False	False		Interlock entering state	
VO	Bool	false	False	False	False	False	False		Supervision leaving state	
X	Bool	false	False	False	False	False	False		Step is active	
LA	Bool	false	False	False	False	False	False		Interlock is not satisfied	
VA	Bool	false	False	False	False	False	False		Supervision active	
RA	Bool	false	False	False	False	False	False		Reserved	
AA	Bool	false	False	False	False	False	False		Reserved	
SS	Bool	false	False	False	False	False	False		System-internal	
LS	Bool	false	False	False	False	False	False		Direct result of the programmed interlock	
VS	Bool	false	False	False	False	False	False		Direct result of the programmed supervision	
SNO	Int	5	False	False	False	False	False		User step number	
T	Time	T#0ms	False	False	False	False	False		Total step activation time	
U	Time	T#0ms	False	False	False	False	False		Step activation time without disturbance	
T_MAX	Time	T#10S	False	False	False	False	False		Maximal step activation time	
T_WARN	Time	T#7S	False	False	False	False	False		Warning time	
SM	Bool	false	False	False	False	False	False		System-internal	
H_IL_ERR	Byte	16#0	False	False	False	False	False		System-internal	
H_SV_FLT	Byte	16#04	False	False	False	False	False		System-internal	

Totally Integrated Automation Portal																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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SEQUENCE_DB_2 Properties <table border="1"> <tr> <td colspan="2">General</td> </tr> <tr> <td>Name</td><td>SEQUENCE_DB_2</td> <td>Number</td><td>25</td> <td>Type</td><td>DB</td> <td>Language</td><td>DB</td> </tr> <tr> <td>Numbering</td><td>Automatic</td> <td colspan="6"></td> </tr> <tr> <td colspan="8">Information</td> </tr> <tr> <td>Title</td><td></td> <td>Author</td><td></td> <td>Comment</td><td></td> <td>Family</td><td></td> </tr> <tr> <td>Version</td><td>0.1</td> <td>User-defined ID</td><td></td> <td colspan="4"></td> </tr> </table>			General		Name	SEQUENCE_DB_2	Number	25	Type	DB	Language	DB	Numbering	Automatic							Information								Title		Author		Comment		Family		Version	0.1	User-defined ID																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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<tr> <td>S_NEXT</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Indicate next step in parameter S_NO</td></tr> <tr> <td>SW_AUTO</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Automatic mode</td></tr> <tr> <td>SW_TAP</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Semiautomatic/switch with transition</td></tr> <tr> <td>SW_TOP</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Semiautomatic/ignore transition</td></tr> <tr> <td>SW_MAN</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Manual mode</td></tr> <tr> <td>S_SEL</td><td>Int</td><td>0</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Select step to be output to S_NO</td></tr> <tr> <td>S_ON</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Activate step indicated in S_NO</td></tr> <tr> <td>S_OFF</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Deactivate step indicated S_NO</td></tr> <tr> <td>T_PUSH</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Enable transition to switch in semi automatic mode</td></tr> <tr> <td colspan="10">▼ Output</td></tr> <tr> <td>S_NO</td><td>Int</td><td>0</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Step number</td></tr> <tr> <td>S_MORE</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>More steps are available and can be shown in S_NO</td></tr> <tr> <td>S_ACTIVE</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Step indicated in S_NO is active</td></tr> <tr> <td>ERR_FLT</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Interlock or supervision group error</td></tr> <tr> <td>AUTO_ON</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Automatic mode is active</td></tr> <tr> <td>TAP_ON</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Semiautomatic mode/step with transition enabled</td></tr> <tr> <td>TOP_ON</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Semiautomatic mode/ignore transition enabled</td></tr> <tr> <td>MAN_ON</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Manual mode is active</td></tr> <tr> <td colspan="10">InOut</td></tr> <tr> <td colspan="10">▼ Static</td></tr> <tr> <td colspan="2">▼ RT_DATA</td><td>G7_RTData-Plus_V2</td><td></td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Internal data area</td></tr> <tr> <td colspan="2">S_DISPLAY</td><td>Int</td><td>0</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Internal display of output parameter S_NO</td></tr> <tr> <td colspan="2">S_SEL_OLD</td><td>Int</td><td>0</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Previous value in S_SEL</td></tr> <tr> <td colspan="2">S_DISPIDX</td><td>USInt</td><td>255</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Index of the step in S_NO</td></tr> <tr> <td colspan="2">T_DISPIDX</td><td>USInt</td><td>255</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Index of the transition displayed in T_NO</td></tr> <tr> <td colspan="2">▼ MOP_EDGE</td><td>G7_MOPPlus_V2</td><td></td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Mode in last cycle</td></tr> <tr> <td colspan="2">AUTO</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: automatic mode</td></tr> <tr> <td colspan="2">MAN</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: manual mode</td></tr> <tr> <td colspan="2">TAP</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: semi automatic/switch with transition</td></tr> <tr> <td colspan="2">TOP</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: semi automatic/ignore transition</td></tr> <tr> <td colspan="2">ACK_S</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Request: acknowledge step at parameter S_NO</td></tr> <tr> <td colspan="2">REG_S</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Request: register step indicated in S_NO</td></tr> <tr> <td colspan="2">T_PREV</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Request: output previous valid transition in T_NO</td></tr> <tr> <td colspan="2">T_NEXT</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Request: output next valid transition in T_NO</td></tr> <tr> <td colspan="2">LOCK</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: interlocks activated</td></tr> <tr> <td 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<td colspan="2">TMS_HALT</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: all internal timers held</td></tr> <tr> <td colspan="2">OPS_ZERO</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: set all operands processed with N, L, D instructions to 0</td></tr> <tr> <td colspan="2">SACT_DISP</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: display active steps only</td></tr> <tr> <td colspan="2">SEF_DISP</td><td>Bool</td><td>false</td><td>False</td><td>False</td><td>False</td><td>False</td><td></td><td>Status: display only steps with errors and disrupted steps</td></tr> </tbody> </table>			Name	Data type	Start value	Retain	Accessible from HMI/OPC UA	Writable from HMI/OPC UA	Visible in HMI engineering	Setpoint	Supervision	Comment	▼ Input										OFF_SQ	Bool	false	False	False	False	False	False		Turn sequence off	INIT_SQ	Bool	false	False	False	False	False	False		Set sequence to initial state	ACK_EF	Bool	false	False	False	False	False	False		Acknowledge all errors and faults	S_PREV	Bool	false	False	False	False	False	False		Output previous step in parameter S_NO	S_NEXT	Bool	false	False	False	False	False	False		Indicate next step in parameter S_NO	SW_AUTO	Bool	false	False	False	False	False	False		Automatic mode	SW_TAP	Bool	false	False	False	False	False	False		Semiautomatic/switch with transition	SW_TOP	Bool	false	False	False	False	False	False		Semiautomatic/ignore transition	SW_MAN	Bool	false	False	False	False	False	False		Manual mode	S_SEL	Int	0	False	False	False	False	False		Select step to be output to S_NO	S_ON	Bool	false	False	False	False	False	False		Activate step indicated in S_NO	S_OFF	Bool	false	False	False	False	False	False		Deactivate step indicated S_NO	T_PUSH	Bool	false	False	False	False	False	False		Enable transition to switch in semi automatic mode	▼ Output										S_NO	Int	0	False	False	False	False	False		Step number	S_MORE	Bool	false	False	False	False	False	False		More steps are available and can be shown in S_NO	S_ACTIVE	Bool	false	False	False	False	False	False		Step indicated in S_NO is active	ERR_FLT	Bool	false	False	False	False	False	False		Interlock or supervision group error	AUTO_ON	Bool	false	False	False	False	False	False		Automatic mode is active	TAP_ON	Bool	false	False	False	False	False	False		Semiautomatic mode/step with transition enabled	TOP_ON	Bool	false	False	False	False	False	False		Semiautomatic mode/ignore transition enabled	MAN_ON	Bool	false	False	False	False	False	False		Manual mode is active	InOut										▼ Static										▼ RT_DATA		G7_RTData-Plus_V2		False	False	False	False		Internal data area	S_DISPLAY		Int	0	False	False	False	False		Internal display of output parameter S_NO	S_SEL_OLD		Int	0	False	False	False	False		Previous value in S_SEL	S_DISPIDX		USInt	255	False	False	False	False		Index of the step in S_NO	T_DISPIDX		USInt	255	False	False	False	False		Index of the transition displayed in T_NO	▼ MOP_EDGE		G7_MOPPlus_V2		False	False	False	False		Mode in last cycle	AUTO		Bool	false	False	False	False	False		Status: automatic mode	MAN		Bool	false	False	False	False	False		Status: manual mode	TAP		Bool	false	False	False	False	False		Status: semi automatic/switch with transition	TOP		Bool	false	False	False	False	False		Status: semi automatic/ignore transition	ACK_S		Bool	false	False	False	False	False		Request: acknowledge step at parameter S_NO	REG_S		Bool	false	False	False	False	False		Request: register step indicated in S_NO	T_PREV		Bool	false	False	False	False	False		Request: output previous valid transition in T_NO	T_NEXT		Bool	false	False	False	False	False		Request: output next valid transition in T_NO	LOCK		Bool	false	False	False	False	False		Status: interlocks activated	SUP		Bool	false	False	False	False	False		Status: supervisions activated	ACKREQ		Bool	false	False	False	False	False		Status: acknowledgment required	SSKIP		Bool	false	False	False	False	False		Status: "Skip steps" enabled	OFF		Bool	false	False	False	False	False		Request: deactivate all steps	INIT		Bool	false	False	False	False	False		Request: set sequence to initial state	HALT		Bool	false	False	False	False	False		Status: sequence halted	TMS_HALT		Bool	false	False	False	False	False		Status: all internal timers held	OPS_ZERO		Bool	false	False	False	False	False		Status: set all operands processed with N, L, D instructions to 0	SACT_DISP		Bool	false	False	False	False	False		Status: display active steps only	SEF_DISP		Bool	false	False	False	False	False		Status: display only steps with errors and disrupted steps
Name	Data type	Start value	Retain	Accessible from HMI/OPC UA	Writable from HMI/OPC UA	Visible in HMI engineering	Setpoint	Supervision	Comment																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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OFF_SQ	Bool	false	False	False	False	False	False		Turn sequence off																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
INIT_SQ	Bool	false	False	False	False	False	False		Set sequence to initial state																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
ACK_EF	Bool	false	False	False	False	False	False		Acknowledge all errors and faults																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
S_PREV	Bool	false	False	False	False	False	False		Output previous step in parameter S_NO																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
S_NEXT	Bool	false	False	False	False	False	False		Indicate next step in parameter S_NO																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
SW_AUTO	Bool	false	False	False	False	False	False		Automatic mode																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
SW_TAP	Bool	false	False	False	False	False	False		Semiautomatic/switch with transition																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
SW_TOP	Bool	false	False	False	False	False	False		Semiautomatic/ignore transition																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
SW_MAN	Bool	false	False	False	False	False	False		Manual mode																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
S_SEL	Int	0	False	False	False	False	False		Select step to be output to S_NO																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
S_ON	Bool	false	False	False	False	False	False		Activate step indicated in S_NO																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
S_OFF	Bool	false	False	False	False	False	False		Deactivate step indicated S_NO																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
T_PUSH	Bool	false	False	False	False	False	False		Enable transition to switch in semi automatic mode																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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S_NO	Int	0	False	False	False	False	False		Step number																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
S_MORE	Bool	false	False	False	False	False	False		More steps are available and can be shown in S_NO																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
S_ACTIVE	Bool	false	False	False	False	False	False		Step indicated in S_NO is active																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
ERR_FLT	Bool	false	False	False	False	False	False		Interlock or supervision group error																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
AUTO_ON	Bool	false	False	False	False	False	False		Automatic mode is active																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
TAP_ON	Bool	false	False	False	False	False	False		Semiautomatic mode/step with transition enabled																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
TOP_ON	Bool	false	False	False	False	False	False		Semiautomatic mode/ignore transition enabled																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
MAN_ON	Bool	false	False	False	False	False	False		Manual mode is active																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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▼ RT_DATA		G7_RTData-Plus_V2		False	False	False	False		Internal data area																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
S_DISPLAY		Int	0	False	False	False	False		Internal display of output parameter S_NO																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
S_SEL_OLD		Int	0	False	False	False	False		Previous value in S_SEL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
S_DISPIDX		USInt	255	False	False	False	False		Index of the step in S_NO																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
T_DISPIDX		USInt	255	False	False	False	False		Index of the transition displayed in T_NO																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
▼ MOP_EDGE		G7_MOPPlus_V2		False	False	False	False		Mode in last cycle																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
AUTO		Bool	false	False	False	False	False		Status: automatic mode																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
MAN		Bool	false	False	False	False	False		Status: manual mode																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
TAP		Bool	false	False	False	False	False		Status: semi automatic/switch with transition																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
TOP		Bool	false	False	False	False	False		Status: semi automatic/ignore transition																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
ACK_S		Bool	false	False	False	False	False		Request: acknowledge step at parameter S_NO																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
REG_S		Bool	false	False	False	False	False		Request: register step indicated in S_NO																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
T_PREV		Bool	false	False	False	False	False		Request: output previous valid transition in T_NO																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
T_NEXT		Bool	false	False	False	False	False		Request: output next valid transition in T_NO																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
LOCK		Bool	false	False	False	False	False		Status: interlocks activated																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
SUP		Bool	false	False	False	False	False		Status: supervisions activated																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
ACKREQ		Bool	false	False	False	False	False		Status: acknowledgment required																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
SSKIP		Bool	false	False	False	False	False		Status: "Skip steps" enabled																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
OFF		Bool	false	False	False	False	False		Request: deactivate all steps																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
INIT		Bool	false	False	False	False	False		Request: set sequence to initial state																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
HALT		Bool	false	False	False	False	False		Status: sequence halted																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
TMS_HALT		Bool	false	False	False	False	False		Status: all internal timers held																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
OPS_ZERO		Bool	false	False	False	False	False		Status: set all operands processed with N, L, D instructions to 0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
SACT_DISP		Bool	false	False	False	False	False		Status: display active steps only																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
SEF_DISP		Bool	false	False	False	False	False		Status: display only steps with errors and disrupted steps																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							

Totally Integrated Automation Portal										
Name	Data type	Start value	Retain	Accessible from HMI/OPC UA	Writable from HMI/OPC UA	Visible in HMI engineering	Setpoint	Supervision	Comment	
SALL_DISP	Bool	false	False	False	False	False	False		Status: display all steps	
S_PREV	Bool	false	False	False	False	False	False		Request: output previous step to S_NO	
S_NEXT	Bool	false	False	False	False	False	False		Request: Output next step at S_NO parameter	
S_SELOK	Bool	false	False	False	False	False	False		Request: output step number from S_SEL to S_NO	
S_ON	Bool	false	False	False	False	False	False		Request: activate step indicated in S_NO	
S_OFF	Bool	false	False	False	False	False	False		Request: deactivate step at parameter S_NO	
T_PUSH	Bool	false	False	False	False	False	False		Request: transition switching enabled	
REG	Bool	false	False	False	False	False	False		Request: register all interlock and supervision errors	
ACK	Bool	false	False	False	False	False	False		Request: acknowledge all interlock and supervision errors	
IL_PERM	Bool	false	False	False	False	False	False		Status: permanent processing of all interlocks	
T_PERM	Bool	false	False	False	False	False	False		Status: permanent processing of all transitions	
ILP_MAN	Bool	false	False	False	False	False	False		Status: permanent processing of all interlocks in manual mode	
LMODE	Bool	false	False	False	False	False	False		Status: learning mode is active	
▼ MOP	G7_MOPPlus_V2		False	False	False	False	False		Mode	
AUTO	Bool	true	False	False	False	False	False		Status: automatic mode	
MAN	Bool	false	False	False	False	False	False		Status: manual mode	
TAP	Bool	false	False	False	False	False	False		Status: semi automatic/switch with transition	
TOP	Bool	false	False	False	False	False	False		Status: semi automatic/ignore transition	
ACK_S	Bool	false	False	False	False	False	False		Request: acknowledge step at parameter S_NO	
REG_S	Bool	false	False	False	False	False	False		Request: register step indicated in S_NO	
T_PREV	Bool	false	False	False	False	False	False		Request: output previous valid transition in T_NO	
T_NEXT	Bool	false	False	False	False	False	False		Request: output next valid transition in T_NO	
LOCK	Bool	true	False	False	False	False	False		Status: interlocks activated	
SUP	Bool	true	False	False	False	False	False		Status: supervisions activated	
ACKREQ	Bool	true	False	False	False	False	False		Status: acknowledgment required	
SSKIP	Bool	false	False	False	False	False	False		Status: "Skip steps" enabled	
OFF	Bool	false	False	False	False	False	False		Request: deactivate all steps	
INIT	Bool	true	False	False	False	False	False		Request: set sequence to initial state	
HALT	Bool	false	False	False	False	False	False		Status: sequence halted	
TMS_HALT	Bool	false	False	False	False	False	False		Status: all internal timers held	
OPS_ZERO	Bool	false	False	False	False	False	False		Status: set all operands processed with N, L, D instructions to 0	
SACT_DISP	Bool	true	False	False	False	False	False		Status: display active steps only	
SEF_DISP	Bool	false	False	False	False	False	False		Status: display only steps with errors and disrupted steps	
SALL_DISP	Bool	false	False	False	False	False	False		Status: display all steps	
S_PREV	Bool	false	False	False	False	False	False		Request: output previous step to S_NO	
S_NEXT	Bool	false	False	False	False	False	False		Request: Output next step at S_NO parameter	
S_SELOK	Bool	false	False	False	False	False	False		Request: output step number from S_SEL to S_NO	
S_ON	Bool	false	False	False	False	False	False		Request: activate step indicated in S_NO	
S_OFF	Bool	false	False	False	False	False	False		Request: deactivate step at parameter S_NO	
T_PUSH	Bool	false	False	False	False	False	False		Request: transition switching enabled	
REG	Bool	false	False	False	False	False	False		Request: register all interlock and supervision errors	
ACK	Bool	false	False	False	False	False	False		Request: acknowledge all interlock and supervision errors	
IL_PERM	Bool	false	False	False	False	False	False		Status: permanent processing of all interlocks	
T_PERM	Bool	false	False	False	False	False	False		Status: permanent processing of all transitions	
ILP_MAN	Bool	false	False	False	False	False	False		Status: permanent processing of all interlocks in manual mode	
LMODE	Bool	false	False	False	False	False	False		Status: learning mode is active	
TIME_DELTA	Time	T#0ms	False	False	False	False	False		Cycle time	
▼ SQ_FLAGS	G7_SQFlags-Plus_V2		False	False	False	False	False		Sequence bit memory	
ERR_FLT	Bool	false	False	False	False	False	False		Interlock and supervision group error	
ERROR	Bool	false	False	False	False	False	False		Interlock group error	
FAULT	Bool	false	False	False	False	False	False		Supervision group error	
RT_FAIL	Bool	false	False	False	False	False	False		Runtime error	
NO_SNO	Bool	false	False	False	False	False	False		Requested step number not found	

Totally Integrated Automation Portal										
Name	Data type	Start value	Retain	Accessible from HMI/OPC UA	Writable from HMI/OPC UA	Visible in HMI engineering	Setpoint	Supervision	Comment	
NF_OFL	Bool	false	False	False	False	False	False		Overflow: too many ON or OFF requests	
SA_OFL	Bool	false	False	False	False	False	False		Overflow: too many steps active	
TV_OFL	Bool	false	False	False	False	False	False		Overflow: too many valid transitions	
MSG_OFL	Bool	false	False	False	False	False	False		Overflow: not enough system resources for ALARM_S	
NO_SWI	Bool	false	False	False	False	False	False		Do not switch in this cycle	
CYC_OP	Bool	false	False	False	False	False	False		Cyclic execution of the sequence after initialization	
AS_MSG	Bool	true	False	False	False	False	False		Alarms during runtime enabled or disabled by instruction	
AS_SEND	Bool	false	False	False	False	False	False		Send alarms from WR_USMSG or only enter in diagnostics buffer	
SQ_BUSY	Bool	false	False	False	False	False	False		Internal edge memory bit for sequence processing	
SA_BUSY	Bool	false	False	False	False	False	False		Internal edge memory bit for sequence processing	
AS_SIG	Bool	false	False	False	False	False	False		Edge memory bit for alarms from Alarm_S and Alarm_SQ	
PRE_CNT	USInt	1	False	False	False	False	False		Number of permanent instructions preceding the sequencer	
POST_CNT	USInt	1	False	False	False	False	False		Number of permanent instructions after the sequencer	
SQ_CNT	USInt	1	False	False	False	False	False		Number of branch paths	
S_CNT	USInt	5	False	False	False	False	False		Number of steps	
LOCK_CNT	USInt	0	False	False	False	False	False		Number of interlocks	
SUP_CNT	USInt	0	False	False	False	False	False		Number of supervisions	
T_CNT	USInt	5	False	False	False	False	False		Number of transitions	
SQ_PART_CNT	USInt	1	False	False	False	False	False		Number of branches	
MAX_TVAL	USInt	1	False	False	False	False	False		Max. number of simultaneously valid transitions	
MAX_SACT	USInt	1	False	False	False	False	False		Max. number of simultaneously active steps	
AS_MSG	Byte	16#65	False	False	False	False	False		Alarm flags	
▼ EXEC_BITS	Array[0..249] of Bool		False	False	False	False	False		System-internal	
EXEC_BITS[0]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[1]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[2]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[3]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[4]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[5]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[6]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[7]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[8]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[9]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[10]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[11]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[12]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[13]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[14]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[15]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[16]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[17]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[18]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[19]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[20]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[21]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[22]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[23]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[24]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[25]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[26]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[27]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[28]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[29]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[30]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[31]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[32]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[33]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[34]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[35]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[36]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[37]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[38]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[39]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[40]	Bool	false	False	False	False	False	False		System-internal	
EXEC_BITS[41]	Bool	false	False	False	False	False	False		System-internal	

Totally Integrated Automation Portal										
Name	Data type	Start value	Retain	Accessible from HMI/OPC UA	Writable from HMI/OPC UA	Visible in HMI engineering	Setpoint	Supervision	Comment	
SO0X_OFFSET	UInt	59	False	False	False	False	False		Offset of internal array SO0X[]	
SOFFX_OFFSET	UInt	61	False	False	False	False	False		Offset of internal array SOFFX[]	
SONX_OFFSET	UInt	63	False	False	False	False	False		Offset of internal array SONX[]	
SAX_OFFSET	UInt	65	False	False	False	False	False		Offset of internal array SAX[]	
SERRX_OFFSET	UInt	67	False	False	False	False	False		Offset of internal array SERRX[]	
SMX_OFFSET	UInt	73	False	False	False	False	False		Offset of internal array SMX[]	
SOX_OFFSET	UInt	79	False	False	False	False	False		Offset of internal array SOX[]	
S1X_OFFSET	UInt	85	False	False	False	False	False		Offset of internal array S1X[]	
THRESHOLD_SUP	USInt	0	False	False	False	False	False		Threshold for step activation time	
THRESHOLD_WARN	USInt	0	False	False	False	False	False		Threshold for step activation time (warning only)	
▼ Trans1	G7_Transition-Plus_V2		False	False	False	False	False		Transition structure	
TV	Bool	false	False	False	False	False	False		Transition is valid	
TT	Bool	false	False	False	False	False	False		Transition is satisfied	
TS	Bool	false	False	False	False	False	False		Transition switches	
TNO	Int	1	False	False	False	False	False		Indicates the user-defined transition number	
▼ Trans2	G7_Transition-Plus_V2		False	False	False	False	False		Transition structure	
TV	Bool	false	False	False	False	False	False		Transition is valid	
TT	Bool	false	False	False	False	False	False		Transition is satisfied	
TS	Bool	false	False	False	False	False	False		Transition switches	
TNO	Int	2	False	False	False	False	False		Indicates the user-defined transition number	
▼ Trans3	G7_Transition-Plus_V2		False	False	False	False	False		Transition structure	
TV	Bool	false	False	False	False	False	False		Transition is valid	
TT	Bool	false	False	False	False	False	False		Transition is satisfied	
TS	Bool	false	False	False	False	False	False		Transition switches	
TNO	Int	3	False	False	False	False	False		Indicates the user-defined transition number	
▼ Trans4	G7_Transition-Plus_V2		False	False	False	False	False		Transition structure	
TV	Bool	false	False	False	False	False	False		Transition is valid	
TT	Bool	false	False	False	False	False	False		Transition is satisfied	
TS	Bool	false	False	False	False	False	False		Transition switches	
TNO	Int	4	False	False	False	False	False		Indicates the user-defined transition number	
▼ Trans5	G7_Transition-Plus_V2		False	False	False	False	False		Transition structure	
TV	Bool	false	False	False	False	False	False		Transition is valid	
TT	Bool	false	False	False	False	False	False		Transition is satisfied	
TS	Bool	false	False	False	False	False	False		Transition switches	
TNO	Int	5	False	False	False	False	False		Indicates the user-defined transition number	
▼ Idle	G7_StepPlus_V2		False	False	False	False	False		Step structure	
S1	Bool	false	False	False	False	False	False		Step is activated	
L1	Bool	false	False	False	False	False	False		interlock leaving state	
V1	Bool	false	False	False	False	False	False		Supervision entering state	
R1	Bool	false	False	False	False	False	False		Reserved	
A1	Bool	false	False	False	False	False	False		Error is acknowledged	
SO	Bool	false	False	False	False	False	False		Step is deactivated	
LO	Bool	false	False	False	False	False	False		Interlock entering state	
VO	Bool	false	False	False	False	False	False		Supervision leaving state	
X	Bool	false	False	False	False	False	False		Step is active	
LA	Bool	false	False	False	False	False	False		Interlock is not satisfied	
VA	Bool	false	False	False	False	False	False		Supervision active	
RA	Bool	false	False	False	False	False	False		Reserved	
AA	Bool	false	False	False	False	False	False		Reserved	
SS	Bool	false	False	False	False	False	False		System-internal	
LS	Bool	false	False	False	False	False	False		Direct result of the programmed interlock	
VS	Bool	false	False	False	False	False	False		Direct result of the programmed supervision	
SNO	Int	1	False	False	False	False	False		User step number	
T	Time	T#0ms	False	False	False	False	False		Total step activation time	
U	Time	T#0ms	False	False	False	False	False		Step activation time without disturbance	
T_MAX	Time	T#10S	False	False	False	False	False		Maximal step activation time	
T_WARN	Time	T#7S	False	False	False	False	False		Warning time	
SM	Bool	false	False	False	False	False	False		System-internal	
H_IL_ERR	Byte	16#0	False	False	False	False	False		System-internal	
H_SV_FLT	Byte	16#04	False	False	False	False	False		System-internal	
▼ Warmup	G7_StepPlus_V2		False	False	False	False	False		Step structure	
S1	Bool	false	False	False	False	False	False		Step is activated	
L1	Bool	false	False	False	False	False	False		interlock leaving state	
V1	Bool	false	False	False	False	False	False		Supervision entering state	

Totally Integrated Automation Portal										
Name	Data type	Start value	Retain	Accessible from HMI/OPC UA	Writable from HMI/OPC UA	Visible in HMI engineering	Setpoint	Supervision	Comment	
R1	Bool	false	False	False	False	False	False		Reserved	
A1	Bool	false	False	False	False	False	False		Error is acknowledged	
S0	Bool	false	False	False	False	False	False		Step is deactivated	
LO	Bool	false	False	False	False	False	False		Interlock entering state	
VO	Bool	false	False	False	False	False	False		Supervision leaving state	
X	Bool	false	False	False	False	False	False		Step is active	
LA	Bool	false	False	False	False	False	False		Interlock is not satisfied	
VA	Bool	false	False	False	False	False	False		Supervision active	
RA	Bool	false	False	False	False	False	False		Reserved	
AA	Bool	false	False	False	False	False	False		Reserved	
SS	Bool	false	False	False	False	False	False		System-internal	
LS	Bool	false	False	False	False	False	False		Direct result of the programmed interlock	
VS	Bool	false	False	False	False	False	False		Direct result of the programmed supervision	
SNO	Int	2	False	False	False	False	False		User step number	
T	Time	T#0ms	False	False	False	False	False		Total step activation time	
U	Time	T#0ms	False	False	False	False	False		Step activation time without disturbance	
T_MAX	Time	T#10S	False	False	False	False	False		Maximal step activation time	
T_WARN	Time	T#7S	False	False	False	False	False		Warning time	
SM	Bool	false	False	False	False	False	False		System-internal	
H_IL_ERR	Byte	16#0	False	False	False	False	False		System-internal	
H_SV_FLT	Byte	16#04	False	False	False	False	False		System-internal	
▼ Stabilize	G7_StepPlus_V2		False	False	False	False	False		Step structure	
S1	Bool	false	False	False	False	False	False		Step is activated	
L1	Bool	false	False	False	False	False	False		interlock leaving state	
V1	Bool	false	False	False	False	False	False		Supervision entering state	
R1	Bool	false	False	False	False	False	False		Reserved	
A1	Bool	false	False	False	False	False	False		Error is acknowledged	
S0	Bool	false	False	False	False	False	False		Step is deactivated	
LO	Bool	false	False	False	False	False	False		Interlock entering state	
VO	Bool	false	False	False	False	False	False		Supervision leaving state	
X	Bool	false	False	False	False	False	False		Step is active	
LA	Bool	false	False	False	False	False	False		Interlock is not satisfied	
VA	Bool	false	False	False	False	False	False		Supervision active	
RA	Bool	false	False	False	False	False	False		Reserved	
AA	Bool	false	False	False	False	False	False		Reserved	
SS	Bool	false	False	False	False	False	False		System-internal	
LS	Bool	false	False	False	False	False	False		Direct result of the programmed interlock	
VS	Bool	false	False	False	False	False	False		Direct result of the programmed supervision	
SNO	Int	3	False	False	False	False	False		User step number	
T	Time	T#0ms	False	False	False	False	False		Total step activation time	
U	Time	T#0ms	False	False	False	False	False		Step activation time without disturbance	
T_MAX	Time	T#10S	False	False	False	False	False		Maximal step activation time	
T_WARN	Time	T#7S	False	False	False	False	False		Warning time	
SM	Bool	false	False	False	False	False	False		System-internal	
H_IL_ERR	Byte	16#0	False	False	False	False	False		System-internal	
H_SV_FLT	Byte	16#04	False	False	False	False	False		System-internal	
▼ Generation	G7_StepPlus_V2		False	False	False	False	False		Step structure	
S1	Bool	false	False	False	False	False	False		Step is activated	
L1	Bool	false	False	False	False	False	False		interlock leaving state	
V1	Bool	false	False	False	False	False	False		Supervision entering state	
R1	Bool	false	False	False	False	False	False		Reserved	
A1	Bool	false	False	False	False	False	False		Error is acknowledged	
S0	Bool	false	False	False	False	False	False		Step is deactivated	
LO	Bool	false	False	False	False	False	False		Interlock entering state	
VO	Bool	false	False	False	False	False	False		Supervision leaving state	
X	Bool	false	False	False	False	False	False		Step is active	
LA	Bool	false	False	False	False	False	False		Interlock is not satisfied	
VA	Bool	false	False	False	False	False	False		Supervision active	
RA	Bool	false	False	False	False	False	False		Reserved	
AA	Bool	false	False	False	False	False	False		Reserved	
SS	Bool	false	False	False	False	False	False		System-internal	
LS	Bool	false	False	False	False	False	False		Direct result of the programmed interlock	
VS	Bool	false	False	False	False	False	False		Direct result of the programmed supervision	
SNO	Int	4	False	False	False	False	False		User step number	
T	Time	T#0ms	False	False	False	False	False		Total step activation time	
U	Time	T#0ms	False	False	False	False	False		Step activation time without disturbance	
T_MAX	Time	T#10S	False	False	False	False	False		Maximal step activation time	
T_WARN	Time	T#7S	False	False	False	False	False		Warning time	

Totally Integrated Automation Portal										
Name	Data type	Start value	Retain	Accessible from HMI/OPC UA	Writable from HMI/OPC UA	Visible in HMI engineering	Setpoint	Supervision	Comment	
SM	Bool	false	False	False	False	False	False		System-internal	
H_IL_ERR	Byte	16#0	False	False	False	False	False		System-internal	
H_SV_FLT	Byte	16#04	False	False	False	False	False		System-internal	
▼ Cooldown	G7_StepPlus_V2		False	False	False	False	False		Step structure	
S1	Bool	false	False	False	False	False	False		Step is activated	
L1	Bool	false	False	False	False	False	False		interlock leaving state	
V1	Bool	false	False	False	False	False	False		Supervision entering state	
R1	Bool	false	False	False	False	False	False		Reserved	
A1	Bool	false	False	False	False	False	False		Error is acknowledged	
S0	Bool	false	False	False	False	False	False		Step is deactivated	
LO	Bool	false	False	False	False	False	False		Interlock entering state	
VO	Bool	false	False	False	False	False	False		Supervision leaving state	
X	Bool	false	False	False	False	False	False		Step is active	
LA	Bool	false	False	False	False	False	False		Interlock is not satisfied	
VA	Bool	false	False	False	False	False	False		Supervision active	
RA	Bool	false	False	False	False	False	False		Reserved	
AA	Bool	false	False	False	False	False	False		Reserved	
SS	Bool	false	False	False	False	False	False		System-internal	
LS	Bool	false	False	False	False	False	False		Direct result of the programmed interlock	
VS	Bool	false	False	False	False	False	False		Direct result of the programmed supervision	
SNO	Int	5	False	False	False	False	False		User step number	
T	Time	T#0ms	False	False	False	False	False		Total step activation time	
U	Time	T#0ms	False	False	False	False	False		Step activation time without disturbance	
T_MAX	Time	T#10S	False	False	False	False	False		Maximal step activation time	
T_WARN	Time	T#7S	False	False	False	False	False		Warning time	
SM	Bool	false	False	False	False	False	False		System-internal	
H_IL_ERR	Byte	16#0	False	False	False	False	False		System-internal	
H_SV_FLT	Byte	16#04	False	False	False	False	False		System-internal	

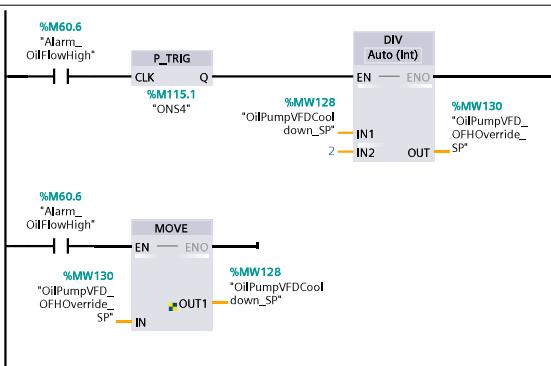
PLC_1 [CPU 1511-1 PN] / Program blocks

PID [OB30]

PID Properties							
General							
Name	PID	Number	30	Type	OB	Language	LAD
Numbering	Automatic						
Information							
Title		Author		Comment	Implementation of PID control logic.	Family	
Version	0.1	User-defined ID					
Name	Data type	Default value	Comment				
▼ Input							
Initial_Call	Bool		Initial call of this OB				
Event_Count	Int		Events discarded				
Temp							
Constant							

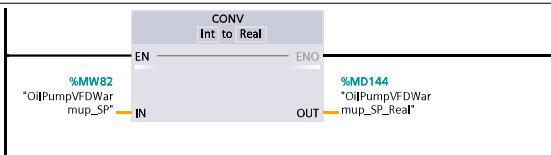
Network 1:

Oil Flow High Alarm Handling (Override VFD output to 50% of previous output)



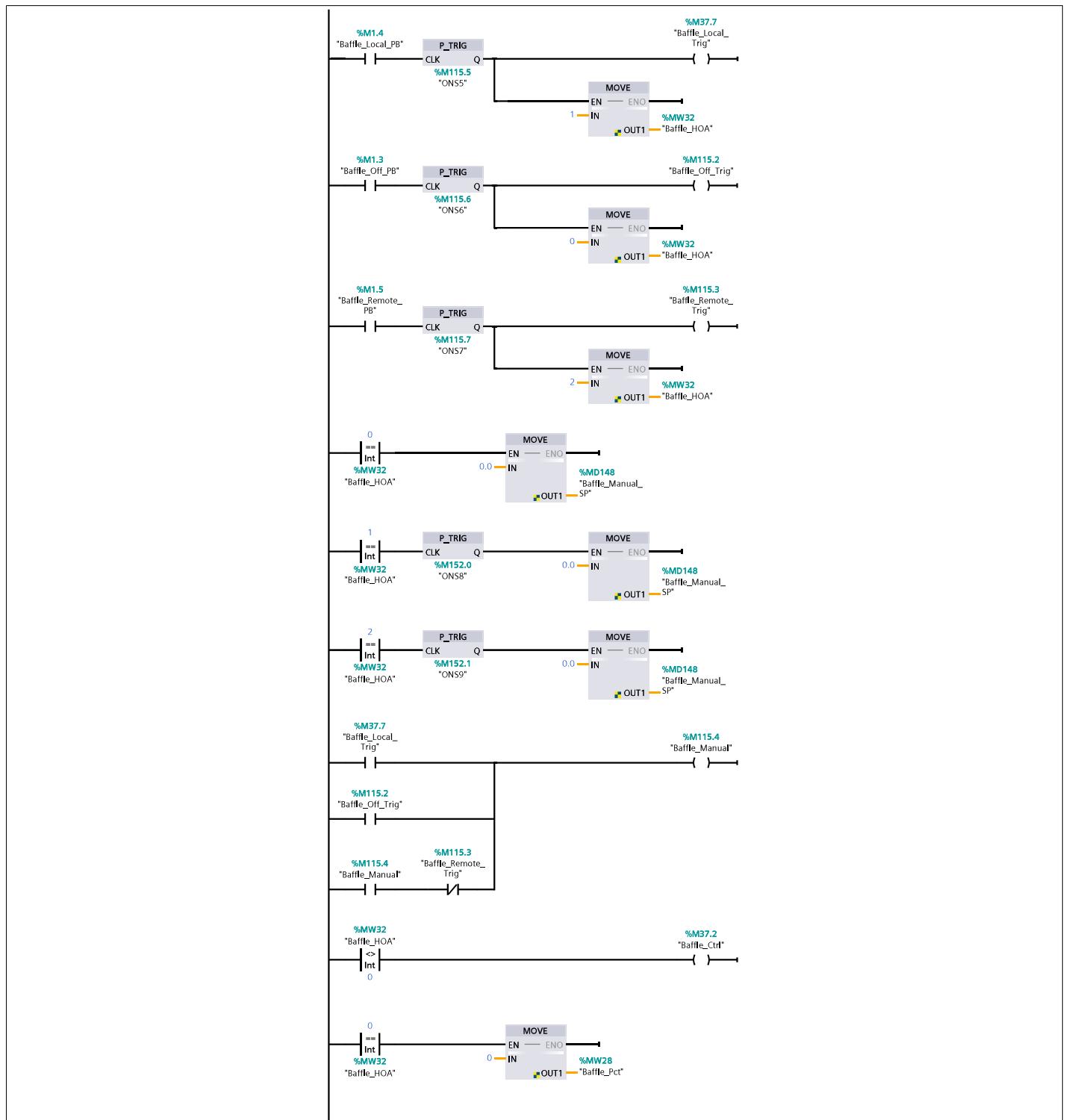
Network 2:

Conversion of Setpoint

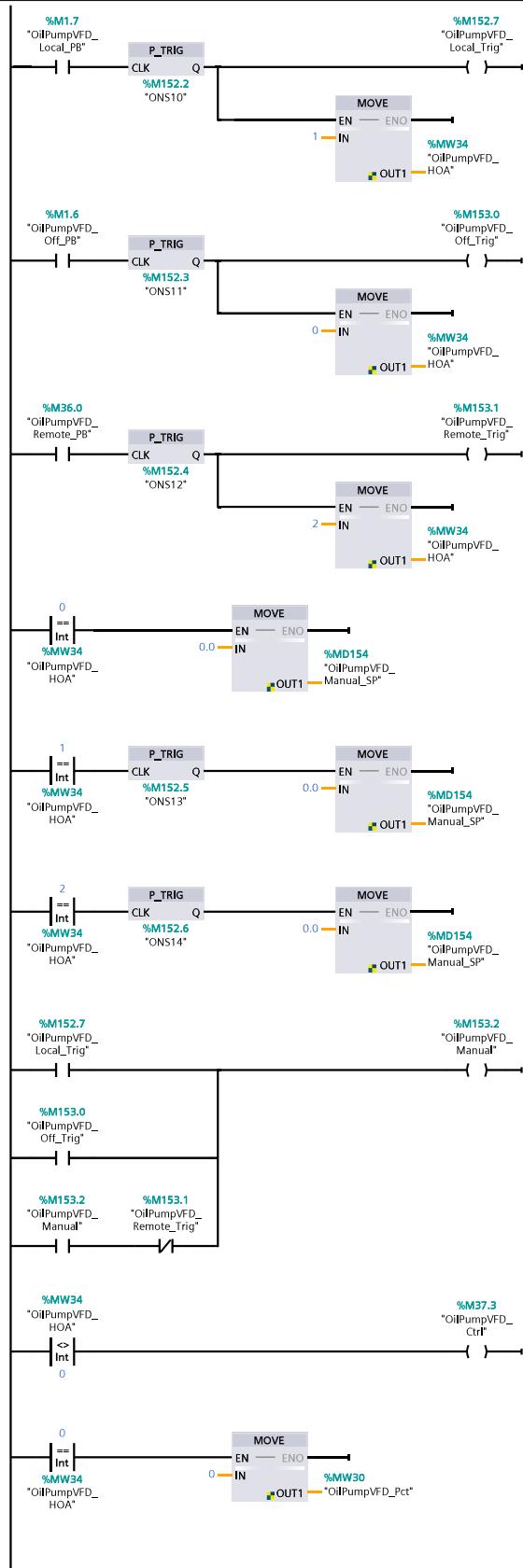


Network 3:

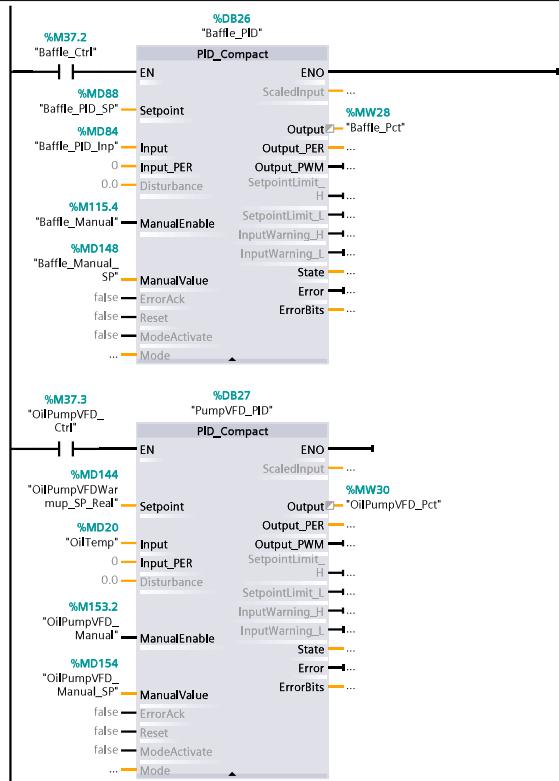
Baffle HOA / PID Manual Setpoints

**Network 4:**

Oil Pump VFD HOA / PID Manual Setpoints

**Network 5:**

PID blocks



Totally Integrated Automation Portal																																																																																																																																																								
PLC_1 [CPU 1511-1 PN] / Program blocks																																																																																																																																																								
HOURMETER_SCL [FB11]																																																																																																																																																								
HOURMETER_SCL Properties <table border="1"> <tr> <td colspan="2">General</td> </tr> <tr> <td>Name</td><td>HOURMETER_SCL</td> <td>Number</td><td>11</td> <td>Type</td><td>FB</td> <td>Language</td><td>SCL</td> </tr> <tr> <td>Numbering</td><td>Automatic</td> <td colspan="6"></td> </tr> <tr> <td colspan="2">Information</td> <td colspan="6"></td> </tr> <tr> <td>Title</td><td></td> <td>Author</td><td></td> <td>Comment</td><td></td> <td>Family</td><td></td> </tr> <tr> <td>Version</td><td>0.1</td> <td>User-defined ID</td><td></td> <td></td><td></td> <td></td><td></td> </tr> </table>			General		Name	HOURMETER_SCL	Number	11	Type	FB	Language	SCL	Numbering	Automatic							Information								Title		Author		Comment		Family		Version	0.1	User-defined ID																																																																																																																	
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<pre> 0001 //***** 0002 0003 // When system enters Generation Mode, the hourmeter starts to keep track of power supplied to energy grid. 0004 0005 //***** 0006 0007 IF "GenerationMode" THEN 0008 "IEC_Timer_0_DB_10".TONR(IN := TRUE, 0009 R := #TimerReset, 0010 PT := T#60s, 0011 Q => #MinuteTrig, 0012 ET => "Seconds_ET"); 0013 END_IF; 0014 0015 // Timer Reset ? 0016 0017 0018 "IEC_Counter_0_DB_1".CTU(CU:=#MinuteTrig, 0019 R:=#Counter_Min_Reset, 0020 PV:=60, 0021 Q=>#HourTrig, 0022 CV=>"Minutes_ET"); 0023 0024 "IEC_Counter_0_DB_2".CTU(CU:=#HourTrig, 0025 R:=#Counter_Hour_Reset, 0026 PV:=24, 0027 Q=>#DayTrig, 0028 CV=>"Hours_ET"); 0029 0030 "IEC_Counter_0_DB_3".CTU(CU := #DayTrig, 0031 R := #Counter_Day_Reset, 0032 PV := 365, 0033 Q => #TenYearsTrig, 0034 CV => "Days_ET"); 0035 0036 // Hourmeter Reset 0037 IF "Hourmeter_Reset_PB" THEN 0038 "IEC_Timer_0_DB_11".TON(IN := TRUE, 0039 PT := T#5s, 0040 Q => "Hourmeter_Reset_Trig", 0041 ET => "ResetTime"); 0042 ELSE 0043 RESET_TIMER("IEC_Timer_0_DB_11"); 0044 "Hourmeter_Reset_Trig" := 0; 0045 END_IF; 0046 0047 IF "Hourmeter_Reset_Trig" OR #MinuteTrig THEN 0048 #TimerReset := 1; 0049 ELSE 0050 #TimerReset := 0; 0051 END_IF; 0052 0053 IF "Hourmeter_Reset_Trig" OR #HourTrig THEN </pre>																																																																																																																																																								

```

0054  #Counter_Min_Reset := 1;
0055  ELSE
0056  #Counter_Min_Reset := 0;
0057 END_IF;
0058
0059 IF "Hourmeter_Reset_Trig" OR #DayTrig THEN
0060  #Counter_Hour_Reset := 1;
0061 ELSE
0062  #Counter_Hour_Reset := 0;
0063 END_IF;
0064
0065 IF "Hourmeter_Reset_Trig" OR #TenYearsTrig THEN
0066  #Counter_Day_Reset := 1;
0067 ELSE
0068  #Counter_Day_Reset := 0;
0069 END_IF;
0070
0071
0072
0073
0074

```

Symbol	Address	Type	Comment
"Days_ET"	%MW170	Int	
"GenerationMode"	%M71.6	Bool	
"Hourmeter_Reset_PB"	%M153.5	Bool	
"Hourmeter_Reset_Trig"	%M153.6	Bool	
"Hours_ET"	%MW168	Int	
"Minutes_ET"	%MW162	Int	
"ResetTime"	%MD172	Time	
"Seconds_ET"	%MD164	Time	
#Counter_Day_Reset		Bool	
#Counter_Hour_Reset		Bool	
#Counter_Min_Reset		Bool	
#DayTrig		Bool	
#HourTrig		Bool	
#MinuteTrig		Bool	
#TenYearsTrig		Bool	
#TimerReset		Bool	

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Totally Integrated Automation Portal			
Symbol	Address	Type	Comment
"OilFlowHigh_SP"	%MW56	Int	
"OilFlowLow_DT"	%MW54	Int	
"OilFlowLow_SP"	%MW52	Int	
"OilPumpVFD_HOA"	%MW34	Int	
"OilPumpVFDCooldown_SP"	%MW128	Int	
"OilPumpVFDWarmup_SP"	%MW82	Int	
"OilTempCooldown_DT"	%MW118	Int	
"OilTempCooldown_SP"	%MW116	Int	
"OilTempHigh_DT"	%MW46	Int	
"OilTempHigh_SP"	%MW44	Int	
"OilTempWarmup_DT"	%MW98	Int	
"OilTempWarmup_SP"	%MW96	Int	
"OverCur_DTT"	%MW142	Int	
"OverCur_SPP"	%MW140	Int	
"RotorOverSpeed_DT"	%MW50	Int	
"RotorOverSpeed_SP"	%MW48	Int	
"RPMCooldown_SP"	%MD124	Real	
"RPMWarmup_SP"	%MD92	Real	
"StablePower_DT"	%MW108	Int	
"StationInterlock_HOA"	%MW40	Int	

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INITIALIZATION_DB Properties																																																			
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PID_Compact [FB1130]																
PID_Compact Properties																
Name	PID_Compact	Number	1130	Type	FB	Language	SCL									
Numbering	Automatic															
Information																
Title	Compact PID_Controller with self-tuning	Author	SIMATIC	Comment		Family	COMPPID									
Version	2.2	User-defined ID	PID_Cmpt													
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▼ Input																
Setpoint	Real	0.0	Non-retain	True	True	True	False		controller setpoint input							
Input	Real	0.0	Non-retain	True	True	True	False		actual value of process as REAL							
Input_PER	Int	0	Non-retain	True	True	True	False		actual value of process from periphery							
Disturbance	Real	0.0	Non-retain	True	True	True	False		disturbance intrusion							
ManualEnable	Bool	false	Non-retain	True	True	True	False		activate manual input to overwrite output							
ManualValue	Real	0.0	Non-retain	True	True	True	False		input for manual value							
ErrorAck	Bool	false	Non-retain	True	True	True	False		reset error message							
Reset	Bool	false	Non-retain	True	True	True	False		reset the controller							
ModeActivate	Bool	false	Non-retain	True	True	True	False		enable mode							
▼ Output																
ScaledInput	Real	0.0	Non-retain	True	True	True	False		scaled peripheral input value from process							
Output	Real	0.0	Non-retain	True	True	True	False		output value in REAL format							
Output_PER	Int	0	Non-retain	True	True	True	False		output value in peripheral format							
Output_PWM	Bool	false	Non-retain	True	True	True	False		pulse width modulated output value							
SetpointLimit_H	Bool	false	Non-retain	True	True	True	False		setpoint is limited at highest level							
SetpointLimit_L	Bool	false	Non-retain	True	True	True	False		setpoint is limited at lowest level							
InputWarning_H	Bool	false	Non-retain	True	True	True	False		input value exceeded high warning level							
InputWarning_L	Bool	false	Non-retain	True	True	True	False		input value exceeded low warning level							
State	Int	0	Non-retain	True	True	True	False		status of controller (0=INACTIVE, 1=SUT, 2=TIR, 3=AUTOMATIC, 4=HAND)							
Error	Bool	false	Non-retain	True	True	True	False		error flag							
ErrorBits	DWord	16#0	Retain	True	True	True	False		error message							
▼ InOut																
Mode	Int	4	Retain	True	True	True	False		mode selection							
▼ Static																
InternalDiagnostic	DWord	0	Non-retain	False	False	False	False		internal diagnostic and version handling							
InternalVersion	DWord	DW#16#02020001	Non-retain	True	True	True	False		version of controller							
InternalRTVersion	DWord	0	Non-retain	False	False	False	False		version of runtime							
IntegralResetMode	Int	1	Non-retain	True	True	True	True		0 smooth, 1 clear, 2 keep, 3 overwrite initial output							
OverwriteInitialOutputValue	Real	0.0	Non-retain	True	True	True	False		initialisation output value for override control							
RunModeByStartup	Bool	true	Non-retain	True	True	True	True		go to last active state before reset or power cycle							
LoadBackUp	Bool	false	Non-retain	True	True	True	False		restore last parameter set							
SetSubstituteOutput	Bool	true	Non-retain	True	True	True	True		set output to last valid output value in Replacement Output state							
PhysicalUnit	Int	0	Non-retain	True	True	True	True		unit of input and setpoint							
PhysicalQuantity	Int	0	Non-retain	True	True	True	True		physical entity of input and setpoint							
ActivateRecoverMode	Bool	true	Non-retain	True	True	True	True		FALSE - go to inactive by error, TRUE - activate error treatment							
Warning	DWord	16#0	Retain	True	True	True	False		warning message							
WarningInternal	DWord	16#0	Retain	True	True	True	False		warning message							
Progress	Real	0.0	Non-retain	True	True	True	False		current progress in percent							
CurrentSetpoint	Real	0.0	Non-retain	True	True	True	False		current active setpoint value							
CancelTuningLevel	Real	10.0	Non-retain	True	True	True	True		cancel level for setpoint change during tuning							
SubstituteOutput	Real	0.0	Non-retain	True	True	True	True		substitute output value in case of error							
▼ Config	PID_Compact-Config		Non-retain	True	True	True	False		configuration data set							

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InputPerOn	Bool	true	Non-retain	True	True	True	True		activate peripheral input
InvertControl	Bool	false	Non-retain	True	True	True	True		invert control direction
InputUpperLimit	Real	120.0	Non-retain	True	True	True	True		input (Process Value) upper limit
InputLowerLimit	Real	0.0	Non-retain	True	True	True	True		input (Process Value) lower limit
InputUpperWarning	Real	3.402822e+38	Non-retain	True	True	True	True		input (Process Value) upper level warning
InputLowerWarning	Real	-3.402822e+38	Non-retain	True	True	True	True		input (Process Value) lower level warning
OutputUpperLimit	Real	100.0	Non-retain	True	True	True	True		output value upper limit
OutputLowerLimit	Real	0.0	Non-retain	True	True	True	True		output value lower limit
SetpointUpperLimit	Real	3.402822e+38	Non-retain	True	True	True	True		setpoint upper limit value
SetpointLowerLimit	Real	-3.402822e+38	Non-retain	True	True	True	True		setpoint lower limit value
MinimumOnTime	Real	0.0	Non-retain	True	True	True	True		PWM minimum on time
MinimumOffTime	Real	0.0	Non-retain	True	True	True	True		PWM minimum off time
▼ InputScaling	PID_Scaling		Non-retain	True	True	True	False		input scaling
UpperPointIn	Real	27648.0	Non-retain	True	True	True	True		high value (input range of scaling)
LowerPointIn	Real	0.0	Non-retain	True	True	True	True		low value (input range of scaling)
UpperPointOut	Real	100.0	Non-retain	True	True	True	True		high value (output range of scaling)
LowerPointOut	Real	0.0	Non-retain	True	True	True	True		low value (output range of scaling)
▼ CycleTime	PID_CycleTime		Non-retain	True	True	True	False		data set for cycle time estimation
StartEstimation	Bool	true	Non-retain	True	True	True	False		start automatic estimation of call cycle time
EnEstimation	Bool	true	Non-retain	True	True	True	True		enable estimation of call cycle time
EnMonitoring	Bool	true	Non-retain	True	True	True	True		enable monitoring of call cycle time
Value	Real	0.1	Non-retain	True	True	True	True		call cycle time
▼ CtrlParamsBackUp	PID_Compact-ControlParams		Non-retain	True	True	True	False		saved parameter set
Gain	Real	1.0	Non-retain	True	True	True	True		proportional gain
Ti	Real	20.0	Non-retain	True	True	True	True		reset time
Td	Real	0.0	Non-retain	True	True	True	True		derivative time
TdFiltRatio	Real	0.2	Non-retain	True	True	True	True		filter coefficient for derivative part
PWeighting	Real	1.0	Non-retain	True	True	True	True		weighting of proportional part in direct, feedback path
DWeighting	Real	1.0	Non-retain	True	True	True	True		weighting of derivative part in direct, feedback path
Cycle	Real	1.0	Non-retain	True	True	True	True		PID Controller cycle time
▼ PIDSelfTune	PID_Compact-SelfTune		Non-retain	True	True	True	False		data set for self tuning
▼ SUT	PID_Compact_SUT		Non-retain	True	True	True	False		data set for start up tuning
CalculateParams	Bool	false	Non-retain	True	True	True	False		recalculate control parameters with parameters of startup tuning
TuneRule	Int	0	Non-retain	True	True	True	True		tuning rule for SUT (0-CHR PID,1-CHR PI)
State	Int	0	Non-retain	True	True	True	False		current phase of start up tuning
▼ TIR	PID_Compact_TIR		Non-retain	True	True	True	False		data set for tuning in run
RunIn	Bool	false	Non-retain	True	True	True	False		activate run in setpoint without controlling
CalculateParams	Bool	false	Non-retain	True	True	True	False		recalculate control parameters with parameters of tuning in run
TuneRule	Int	0	Non-retain	True	True	True	True		tuning rule for TIR (0-2-A PID auto,fast,slow;3-ZN PID;4-ZN PI;5-ZN P)
State	Int	0	Non-retain	True	True	True	False		current phase of tuning in run
▼ PIDCtrl	PID_Compact-Control		Non-retain	True	True	True	False		data for controlling part
IntegralSum	Real	0.0	Non-retain	True	True	True	False		signal of integral part
▼ Retain	PID_Compact_Retain		Retain	True	True	True	False		retain data
▼ CtrlParams	PID_Compact-ControlParams		Retain	True	True	True	False		actual parameter set
Gain	Real	1.0	Retain	True	True	True	True		proportional gain
Ti	Real	20.0	Retain	True	True	True	True		reset time
Td	Real	0.0	Retain	True	True	True	True		derivative time
TdFiltRatio	Real	0.2	Retain	True	True	True	True		filter coefficient for derivative part
PWeighting	Real	1.0	Retain	True	True	True	True		weighting of proportional part in direct, feedback path

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DWeighting	Real	1.0	Retain	True	True	True	True		weighting of derivative part in direct, feedback path	
Cycle	Real	1.0	Retain	True	True	True	True		PID Controller cycle time	