TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER

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TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER

TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER

Project							
Name:	TRAF-FIC_LIGHTS_BRIDGE_CROSS-ING_SCL_BASIC-AMBER	**Creation time:**	01/29/2025 07:02:13	**Last change**	04/04/2025 08:33:28	**Author:**	Admin
Last modified by:	Admin	**Version:**					
Comment:							

Operating system	
Name	**Description**
Operating system	Microsoft Windows 11 Enterprise
Version of the operating system	10.0.22000.0
Operating system service pack	
Version of the Internet Explorer	11.1.22000.0
Computer name	SIEMENS-VM
User name	SIEMENS-VM\Admin
Installation path of the TIA Portal	C:\Program Files\Siemens\Automation\Portal V19

Components		
Name	**Version**	**Release**
HelpViewer_WebApp - HelpViewer_WebApp V1.0 (HVWebApp)	V1.0	V01.00.00.00_02.00.00.58
TIA Portal Project Server V17 - TIA Portal Project Server Single SetupPackage V17.0 Upd7 (MUSERVERV17)	V17.0 + Upd7	V17.00.00.07_05.01.00.06
S7-PLCSIM - S7-PLCSIM Setup V18.0 SP2 (PLCSIM_V18)	V18.0 + SP2	V18.00.02.00_09.13.00.01
S7-PLCSIM - S7-PLCSIM Setup V19.0 Upd1 (PLCSIM_V19)	V19.0 + Upd1	V19.00.00.01_06.04.00.01
TIA Portal Project Server - TIA Portal Project Server Single SetupPackage V1.2 (ProjectServer)	V1.2	V01.02.00.00_00.00.04.16
SIMATIC S7-PLCSIM (S7_PLCSIM_V17)	V17.0	V17.00.00.00_43.02.00.01
Siemens Totally Integrated Automation Portal V17 - SIMATIC S7-PLCSIM V17.0 + SP0 + Upd1 (S7_PLCSIM_V17)	V17.0 + SP0 + Upd1	V17.00.00.01_01.00.16.01
AWB Host - TIAAdminV3 SP5 V3.0 SP5 (TIAAdminV3)	V3.0 + SP5	V03.00.05.00_01.01.00.22
AWB Host - Automation License Manager Plugin V3.0 + SP5 (TIAAdminV3)	V3.0 + SP5	V03.00.05.00_01.01.00.22
AWB Host - Software Management Plugin V3.0 + SP5 (TIAAdminV3)	V3.0 + SP5	V03.00.05.00_01.01.00.22
AWB Host - TIA Addin V3.0 + SP5 (TIAAdminV3)	V3.0 + SP5	V03.00.05.00_01.01.00.22
AWB Host - Central User Management Plugin V3.0 + SP5 (TIAAdminV3)	V3.0 + SP5	V03.00.05.00_01.01.00.22

Name	Version	Release
Totally Integrated Automation Portal V19 - TIA Portal Single SetupPackage V19.0 (TIAP19)	V19.0 UPD3	V19.00.00.03_05.01.00.01
Siemens Totally Integrated Automation Portal V19 - HelpViewer Server V19.0 UPD3 (TIAP19)	V19.0 UPD3	V19.00.00.03_05.01.00.01
Siemens Totally Integrated Automation Portal V19 - HM All Editions Single SetupPackage V19.0 UPD3 (TIAP19)	V19.0 UPD3	V19.00.00.03_05.01.00.01
Siemens Totally Integrated Automation Portal V19 - HM NoBasic Single SetupPackage V19.0 UPD3 (TIAP19)	V19.0 UPD3	V19.00.00.03_05.01.00.01
Siemens Totally Integrated Automation Portal V19 - Hardware Support Base Package 0 V19.0 (TIAP19)	V19.0	V19.00.00.00_66.01.00.07
Siemens Totally Integrated Automation Portal V19 - Multiuser Client Single SetupPackage V19.0 UPD3 (TIAP19)	V19.0 UPD3	V19.00.00.03_05.01.00.01
Siemens Totally Integrated Automation Portal V19 - Version Control Interface SetupPackage V19.0 UPD3 (TIAP19)	V19.0 UPD3	V19.00.00.03_05.01.00.01
Siemens Totally Integrated Automation Portal V19 - STEP 7 Safety Single SetupPackage V19.0 UPD1 (TIAP19)	V19.0 UPD1	V19.00.00.01_05.01.00.01
Siemens Totally Integrated Automation Portal V19 - SESSP Single SetupPackage V19.0 UPD3 (TIAP19)	V19.0 UPD3	V19.00.00.03_05.01.00.01
Siemens Totally Integrated Automation Portal V19 - STEP 7 Single SetupPackage V19.0 UPD3 (TIAP19)	V19.0 UPD3	V19.00.00.03_05.01.00.01
Siemens Totally Integrated Automation Portal V19 - Hardware Support Base Package 02 V19.0 (TIAP19)	V19.0	V19.00.00.00_66.01.00.07
Siemens Totally Integrated Automation Portal V19 - Hardware Support Base Package 03 V19.0 (TIAP19)	V19.0	V19.00.00.00_66.01.00.07
Siemens Totally Integrated Automation Portal V19 - Hardware Support Base Package 04 V19.0 (TIAP19)	V19.0	V19.00.00.00_66.01.00.07
Siemens Totally Integrated Automation Portal V19 - Support Base Package TO-01 V19.0 (TIAP19)	V19.0	V19.00.00.00_66.01.00.07
Siemens Totally Integrated Automation Portal V19 - Support Base Package TO-02 V19.0 (TIAP19)	V19.0	V19.00.00.00_66.01.00.07
Siemens Totally Integrated Automation Portal V19 - Hardware Support Base Package WCF-01 V19.0 (TIAP19)	V19.0	V19.00.00.00_66.01.00.07
Siemens Totally Integrated Automation Portal V19 - TIACOMPCHECK Single SetupPackage V19.0 + Upd3 (TIAP19)	V19.0 + Upd3	V19.00.00.03_05.01.00.01
Siemens Totally Integrated Automation Portal V19 - TIA Portal Security Audit Log Single SetupPackage V19.0 UPD3 (TIAP19)	V19.0 UPD3	V19.00.00.03_05.01.00.01
Siemens Totally Integrated Automation Portal V19 - TIA Portal Shim Single SetupPackage V19.0 (TIAP19)	V19.0	V19.00.00.00_68.01.00.03

Name	Version	Release
Siemens Totally Integrated Automation Portal V19 - Simatic Single Setup-Package V19.0 UPD3 (TIAP19)	V19.0 UPD3	V19.00.00.03_05.01.00.01
Siemens Totally Integrated Automation Portal V19 - WinCC Basic ES Single SetupPackage V19.0 UPD3 (TIAP19)	V19.0 UPD3	V19.00.00.03_05.01.00.01
Siemens Totally Integrated Automation Portal V19 - WinCC CA ES Single SetupPackage V19.0 UPD3 (TIAP19)	V19.0 UPD3	V19.00.00.03_05.01.00.01
Siemens Totally Integrated Automation Portal V19 - Openness SetupPack-age V19.0 UPD3 (TIAP19)	V19.0 UPD3	V19.00.00.03_05.01.00.01
User Management Component - UserManagementComponentx64 V2.13 SP1 (UMC64)	V2.13 + SP1	V02.13.01.00_00.00.00.01
User Management Component - umtrayiconx64 V2.13 + SP1 (UMC64)	V2.13 + SP1	V02.13.01.00_00.00.00.01
WinCC Runtime Advanced V17.0 - SIMATIC WinCC Runtime Advanced V17.0 (HMIRTM_V11)	V17.0 UPD8	V17.00.00.08_04.01.00.01
WinCC Runtime Advanced V17.0 - HMIRTM Tagging Package 01 Single SetupPackage V17.0 UPD8 (HMIRTM_V11)	V17.0 UPD8	V17.00.00.08_04.01.00.01
PLCSIM Advanced Single SetupPackage - PLCSIM Advanced Single Setup-Package V6.0 Upd1 (PLCSIMADV)	V6.0 + Upd1	V06.00.00.01_01.01.00.31
SIMATIC S7-PCT - SIMATIC S7-PCT V3.5 SP3 Upd6 (S7PCT)	V3.5 + SP3 + Upd6	V03.05.03.06_04.01.00.01
Siemens Totally Integrated Automation Portal V19 - Simatic Single Setup-Package 32 Bit V19.0 (TIAP19)	V19.0	V19.00.00.00_68.01.00.03
AddinRolloutService	19.0.0.3	V19.00.00.03_05.01.00.01
SIMATIC HMI License Manager Panel Plugin (x64)	19.0.0.0	V19.00.00.00_68.01.00.03
Automation Access Control Component x64	5.0	K05.01.01.02_90.01.00.77
SIMATIC WinCC Runtime Advanced Driver (x64)	19.0.0.0	V19.00.00.00_68.01.00.03
ETWEventCollector	19.0.0.0	V19.00.00.00_68.01.00.03
SIMATIC NCM FWL 64	5.6.0.3	K5.6.0.3_1.1.0.2
NCM GPRS 64	01.02.01.00	V1.2.1.0_1.1.0.3
SIMATIC PLCSIM 64	19.00.00	19.00.00.00_01.07.00.01
SIMATIC PLCSIM Advanced Driver64	6.0.0.1	V06.00.00.01_01.01.00.31
SIMATIC Device Drivers	9.4	09.04.00.02_01.01.00.02
TelemetryConnector	2.2.0.17	V02.02.00.17_01.00.00.00
Automation Access Control Component	5.0	K05.01.01.02_90.01.00.77
Automation Software Updater	02.05.0000	V02.05.00.00_01.03.00.02
SIEMENS OPC	3.9	03.09.12.02_01.01.00.04
SIMATIC PLCSIM Advanced SimRT	6.0.0.1	V06.00.00.01_01.01.00.31
SIMATIC HMI ProSave	19.0.0.0	V19.00.00.00_68.01.00.03
SIMATIC HMI Symbol Library	17.0.0.8	V17.00.00.08_04.01.00.01
SIMATIC HMI Touch Input	17.0.0.8	V17.00.00.08_04.01.00.01

Name	Version	Release
SIMATIC Device Drivers WoW	29.4	29.04.00.02_01.01.00.02
SIMATIC Event Database	5.7	05.07.02.02_01.01.00.01
SeCon	2.9	V02.09.00.00_01.03.00.01
WinCC Runtime Advanced Simulator	17.0.0.0	V17.00.00.00_43.02.00.01

Products		
Name	**Version**	**Release**
TIA Portal Help Viewer	V1.0	V01.00.00.00_02.00.00.43
TIA Portal Project Server	V17.0 Upd7	V17.00.00.07_05.01.00.06
S7-PLCSIM	V18 SP2	18.00.02.00_09.13.00.01
S7-PLCSIM	V19 Upd1	19.00.00.01_06.04.00.01
TIA Portal Project Server	V1.2	V01.02.00.00_00.00.04.16
SIMATIC S7-PLCSIM	V17.0 Upd1	V17.00.00.01_01.00.16.01
TIA Administrator	V3.0.5.0	V03.00.05.00_01.01.00.22
SIMATIC WinCC Panel Images	V17.0 Upd8	V17.00.00.08_04.01.00.01
SIMATIC WinCC Legacy Panel Images	V17.0	V17.00.00.00_43.02.00.01
SIMATIC STEP 7 Prof - STEP 7 Safety - WinCC Adv	V17.0 Upd8	V17.00.00.08_04.01.00.01
SIMATIC STEP 7 Prof - STEP 7 Safety - WinCC Adv	V18.0 Upd5	V18.00.01.05_04.01.00.01
SIMATIC STEP 7 Prof - STEP 7 Safety - WinCC Adv + Unified + Prof	V19.0 Upd3	V19.00.00.03_05.01.00.01
User Management Component	V2.13 Sp1 Upd0	V02.13.01.00_00.00.00.01
UMC Status Application	V2.13 Sp1 Upd0	V02.13.01.00_00.00.00.01
SIMATIC WinCC Runtime Advanced Simulation	V17.0 Upd8	V17.00.00.08_04.01.00.01
S7-PLCSIM Advanced	V6.0 Upd1	V06.00.00.01_01.01.00.31
S7-PCT	V3.5 SP3 Upd6	V03.05.03.06_04.01.00.01
Automation License Manager	V6.2 + Upd3	06.02.00.03_00.00.00.09
S7-PLCSIM	V5.4 + SP8 + Upd2	V05.04.08.02_02.40.00.01
SIMATIC ProSave	V19.0	V19.00.00.00_68.01.00.03
S7-PCT	V3.5 SP3 Upd6	K3.5.3.6_4.1.0.1

TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER

TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]

TRAFFIC_LIGHTS_PLC					
Project information					
Name	TRAFFIC_LIGHTS_PLC	**Author**	Admin	**Comment**	
Slot	1	**Rack**	0		
Catalog information					
Short designation	CPU 1215C DC/DC/DC	**Description**	Work memory 200 KB; 24VDC power supply with DI14 x 24VDC SINK/SOURCE, DQ10 x 24VDC and AI2 and AQ2 on board; 6 high-speed counters and 4 pulse outputs on-board; signal board expands on-board I/O; up to 3 communication modules for serial communication; up to 8 signal modules for I/O expansion; PROFINET IO controller, 2 ports, I-device, transport protocol TCP/IP, secure Open User Communication, S7 communication, Web server, OPC UA: Server DA	**Article number**	6ES7 215-1AG40-0XB0
Firmware version	V4.6		False		

Connection resources\				
	Station resources - Reserved - Maximum	**Station resources - Reserved - Configured**	**Station resources - Dynamic - Configured**	**Module resources - TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC] - Configured**
Maximum number of resources:		34	34	68
	Maximum	Configured	Configured	Configured
PG communication:	4	-	-	-
HMI communication:	12	0	0	0
S7 communication:	8	0	0	0
Open user communication:	8	0	0	0
Web communication:	2	-	-	-
OPC UA client/server communication:	0	-	-	-
Other communication:	-	-	0	0
Total resources used:		0	0	0
Available resources:		34	34	68

Overview of addresses\Overview of addresses\Overview of addresses					
Inputs	True	**Outputs**	True	**Address gaps**	False
Slot	True				

Type	Addr. from	Addr. to	Module	PIP	Device name	Device number	Size	Master / IO system	Rack	Slot
I	0	1	DI 14/DQ 10_1	Automatic update	TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]	-	2 Bytes	-	0	1 1
O	0	1	DI 14/DQ 10_1	Automatic update	TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]	-	2 Bytes	-	0	1 1
I	64	67	AI 2/AQ 2_1	Automatic update	TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]	-	4 Bytes	-	0	1 2
O	64	67	AI 2/AQ 2_1	Automatic update	TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]	-	4 Bytes	-	0	1 2
I	1000	1003	HSC_1	Automatic update	TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]	-	4 Bytes	-	0	1 16
I	1004	1007	HSC_2	Automatic update	TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]	-	4 Bytes	-	0	1 17
I	1008	1011	HSC_3	Automatic update	TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]	-	4 Bytes	-	0	1 18
I	1012	1015	HSC_4	Automatic update	TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]	-	4 Bytes	-	0	1 19
I	1016	1019	HSC_5	Automatic update	TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]	-	4 Bytes	-	0	1 20
I	1020	1023	HSC_6	Automatic update	TRAFFIC_LIGHTS_PLC	-	4 Bytes	-	0	1 21

Type	Addr. from	Addr. to	Module	PIP	Device name	Device number	Size	Master / IO system	Rack	Slot
					[CPU 1215C DC/DC/DC]					
O	1000	1001	Pulse_1	Automatic update	TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]	-	2 Bytes	-	0	1 32
O	1002	1003	Pulse_2	Automatic update	TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]	-	2 Bytes	-	0	1 33
O	1004	1005	Pulse_3	Automatic update	TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]	-	2 Bytes	-	0	1 34
O	1006	1007	Pulse_4	Automatic update	TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]	-	2 Bytes	-	0	1 35

TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER / TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC] / 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**		**Family**	
Version	0.1	**User-defined ID**					

Name	Data type	Default value
▼ Input		
Initial_Call	Bool	
Remanence	Bool	
Temp		
Constant		

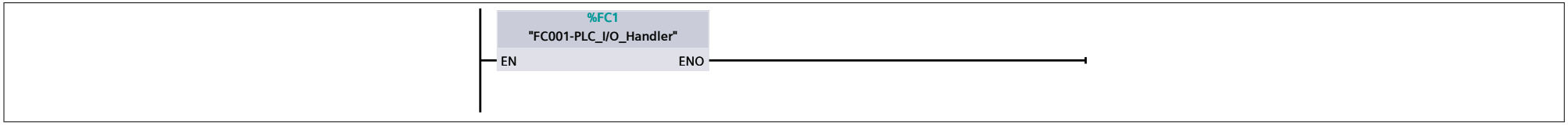
Network 1: ================= PROGRAM_INFORMATION =================

```
0001 (*
0002 ================================================================
0003 ***** TRAFFIC LIGHTS - BRIDGE CROSSING WITHOUT PUSH BUTTONS *****
0004 ================================================================
0005
0006 TVET Workstation WS01
0007 - 1215C DC/DC/DC - 6ES7215-1AG40-0XB0
0008 - IP: 192.168.0.175/24
0009 - Gateway: 192.168.0.1
0010
0011 ================================================================
0012
```

```
0013 The program has 2 main sections - I/O Handler & Traffic Control.
0014
0015 I/O Handler FC:
0016 We are directly interacting with the PLC's I/O and DB tags, therefore
0017 a FC can be used for the I/O mapping logic.
0018 - maps the physical inputs & outputs to corresponding tags in DB001
0019  (this makes code easier to read, maintain & troubleshoot).
0020
0021 Traffic Control FB:
0022 We use a FB for traffic control logic as any additional tags needed can
0023 be created in the FB interface.
0024 - sets the default state of the system at startup,
0025 - make use of SCL state machine & timers to automatically change LED
0026  states in a loop.
0027
0028 Additional Notes:
0029 PLC Tags have been grouped relating to their use/function.
0030
0031 ================================================================================
0032 *)
```

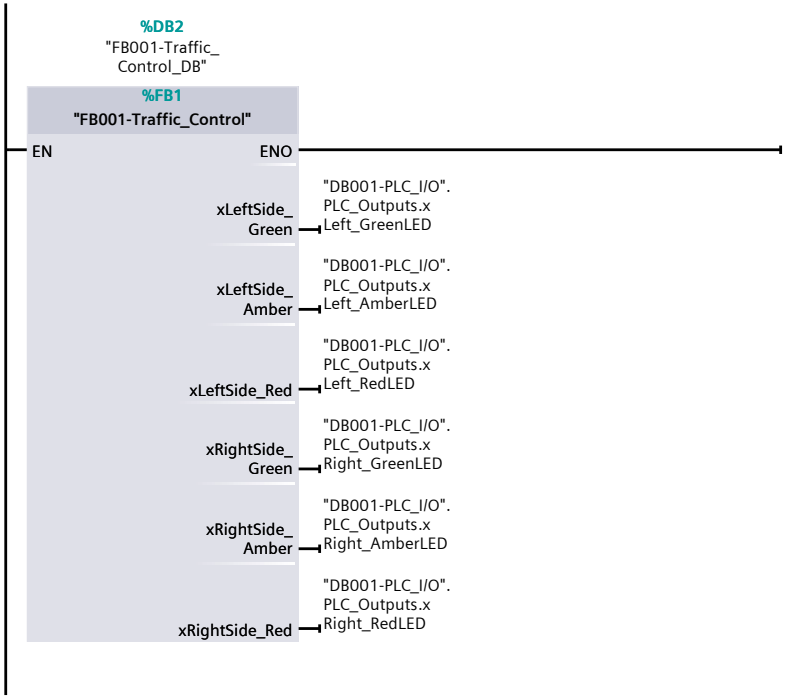
Network 2: ================= I/O_HANDLING =================

> Call the PLC I/O Handler Function



Network 3: ================= TRAFFIC_CONTROL =================

> Call the Traffic Control Function Block


%DB2
"FB001-Traffic_
Control_DB"
%FB1
"FB001-Traffic_Control"
EN
ENO
xLeftSide_
Green
"DB001-PLC_I/O".
PLC_Outputs.x
Left_GreenLED
xLeftSide_
Amber
"DB001-PLC_I/O".
PLC_Outputs.x
Left_AmberLED
xLeftSide_Red
"DB001-PLC_I/O".
PLC_Outputs.x
Left_RedLED
xRightSide_
Green
"DB001-PLC_I/O".
PLC_Outputs.x
Right_GreenLED
xRightSide_
Amber
"DB001-PLC_I/O".
PLC_Outputs.x
Right_AmberLED
xRightSide_Red
"DB001-PLC_I/O".
PLC_Outputs.x
Right_RedLED

TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER / TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC] / Program blocks / WS01_TVET_Workstation / 00-I/O_Mapping

DB001-PLC_I/O [DB1]

DB001-PLC_I/O Properties							
General							
Name	DB001-PLC_I/O	**Number**	1	**Type**	DB	**Language**	DB
Numbering	Automatic						
Information							
Title		**Author**		**Comment**		**Family**	
Version	0.1	**User-defined ID**					

Name	Data type	Start value	Retain
▼ Static			
PLC_Inputs	Struct		False
PLC_Outputs	Struct		False

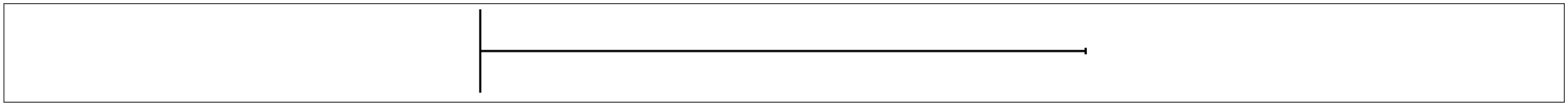
TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER / TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC] / Program blocks / WS01_TVET_Workstation / 00-I/O_Mapping

FC001-PLC_I/O_Handler [FC1]

FC001-PLC_I/O_Handler Properties							
General							
Name	FC001-PLC_I/O_Handler	**Number**	1	**Type**	FC	**Language**	LAD
Numbering	Automatic						
Information							
Title		**Author**		**Comment**		**Family**	
Version	0.1	**User-defined ID**					

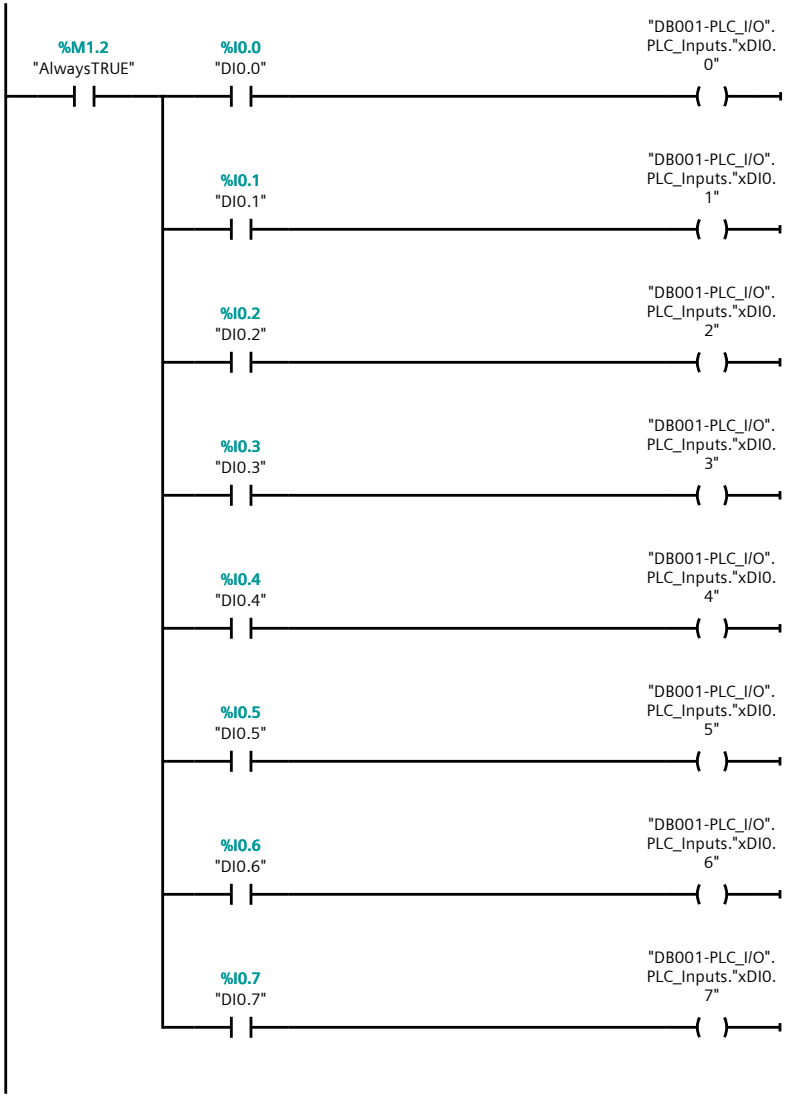
Name	Data type	Default value
Input		
Output		
InOut		
▼ Temp		
rAI0.0_Temp	Real	
rAI0.1_Temp	Real	
rAQ0.0_Temp	Real	
rAQ0.1_Temp	Real	
Constant		
▼ Return		
FC001-PLC_I/O_Handler	Void	

Network 1: ================ DIGITAL_INPUTS ================



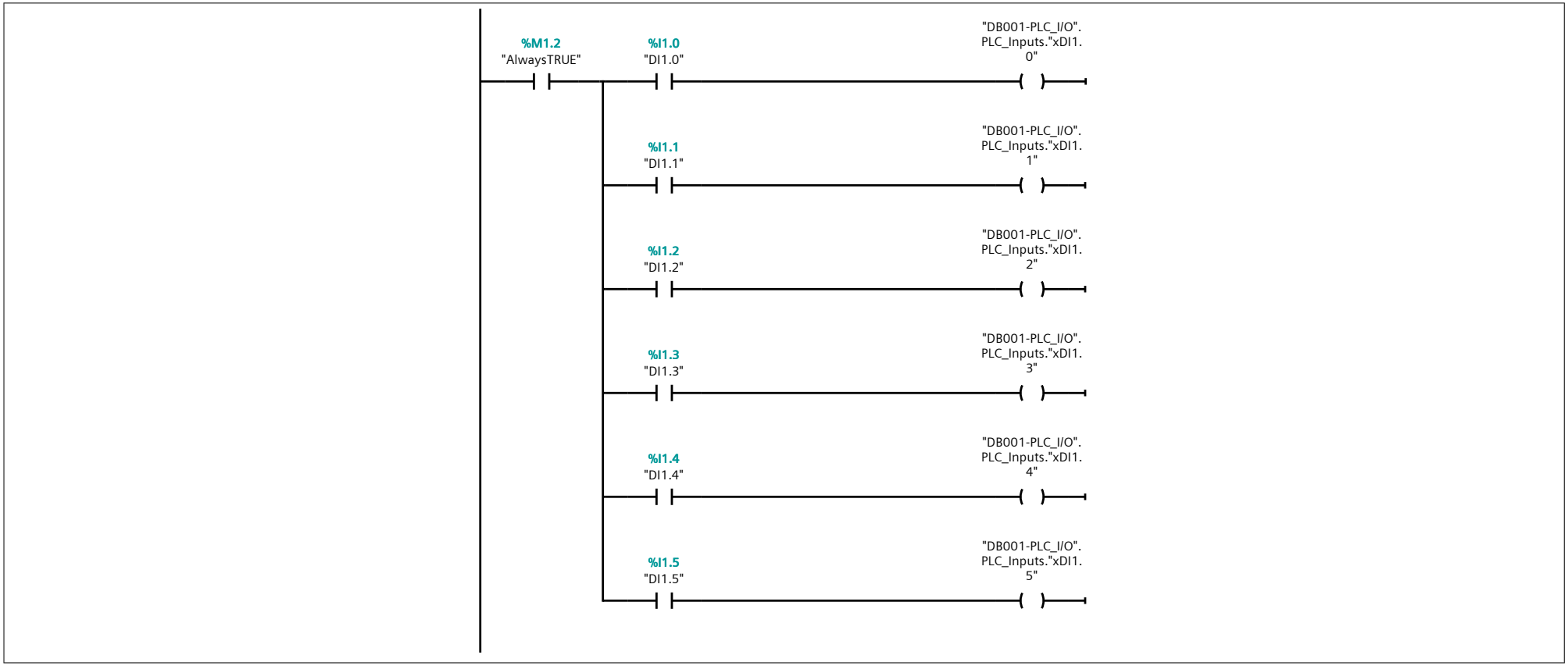
Network 2: BANK_0

> DI0.0 - DI0.7

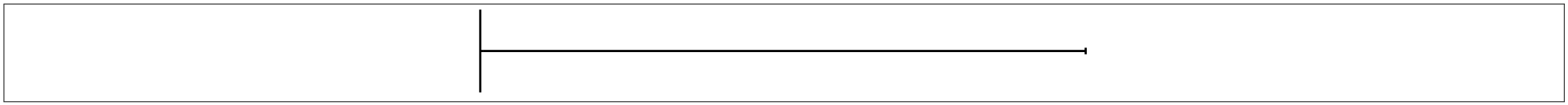


Network 3: BANK_1

> DI1.0 - DI1.5

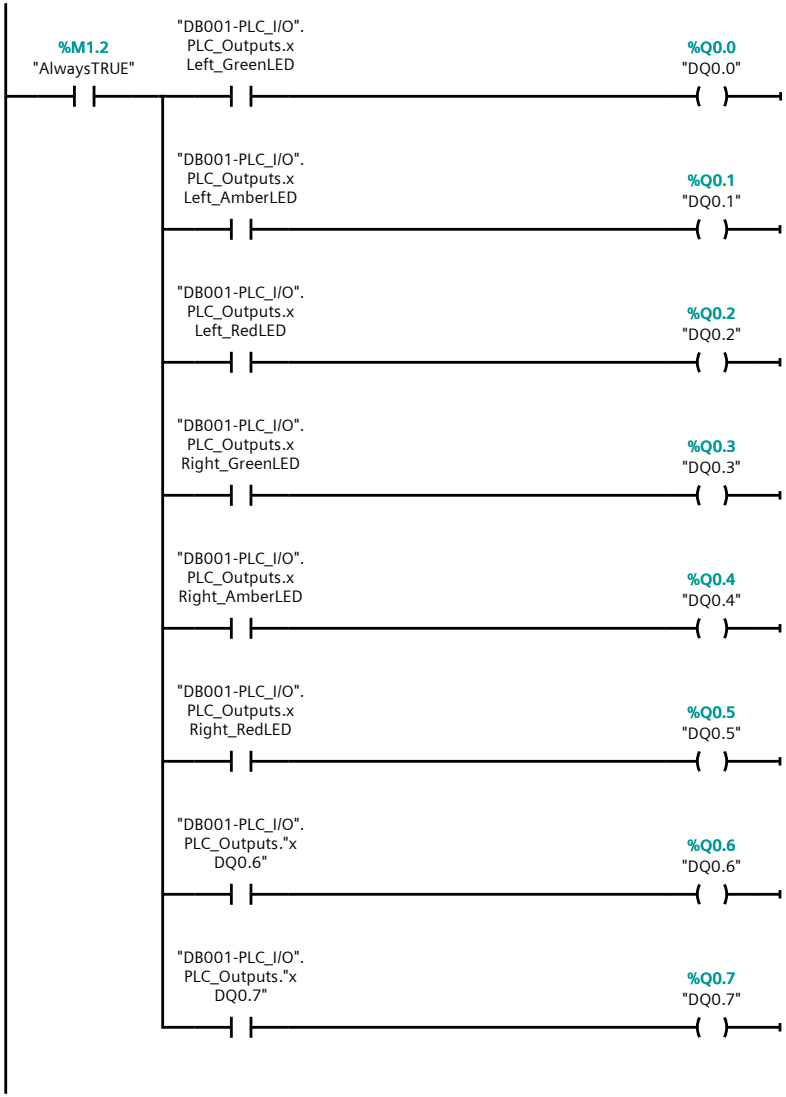


Network 4: ================= DIGITAL_OUTPUTS =================



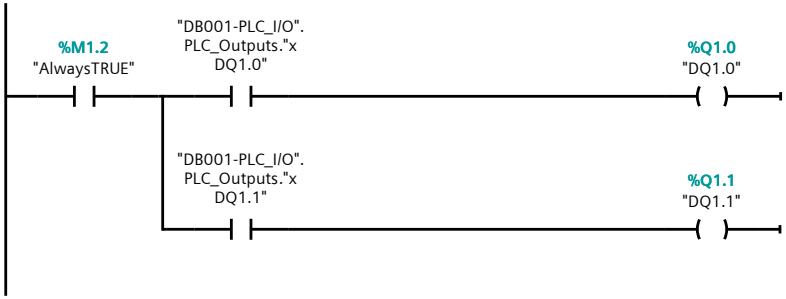
Network 5: BANK_0

> DQ0.0 - DQ0.7

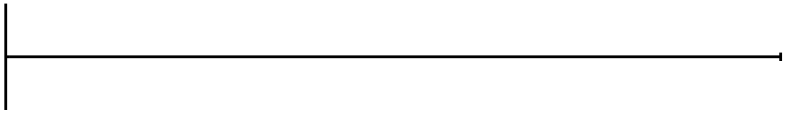


Network 6: BANK_1

> DQ1.0 - DQ1.1

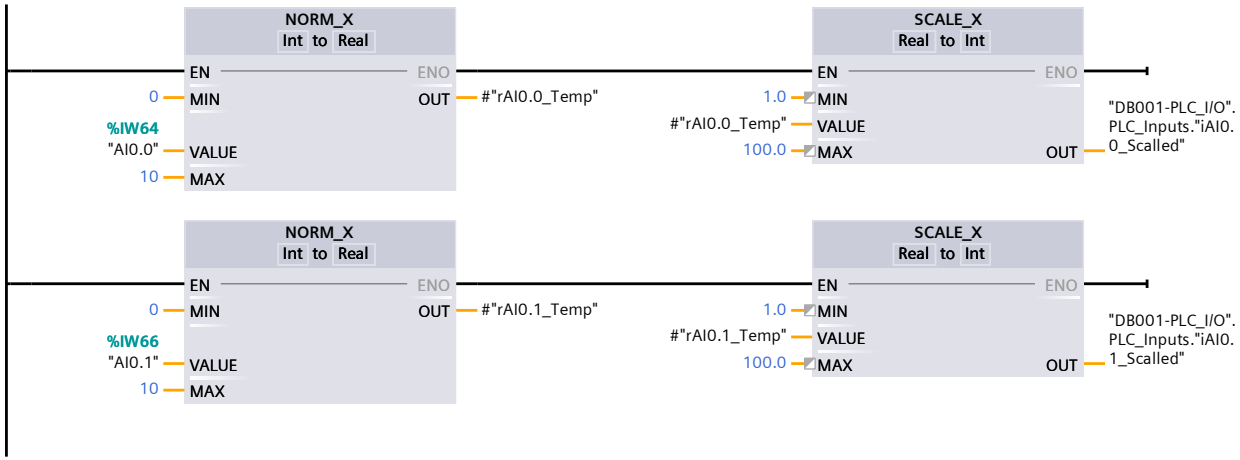


Network 7: ================= ANALOG_PROCESSING =================



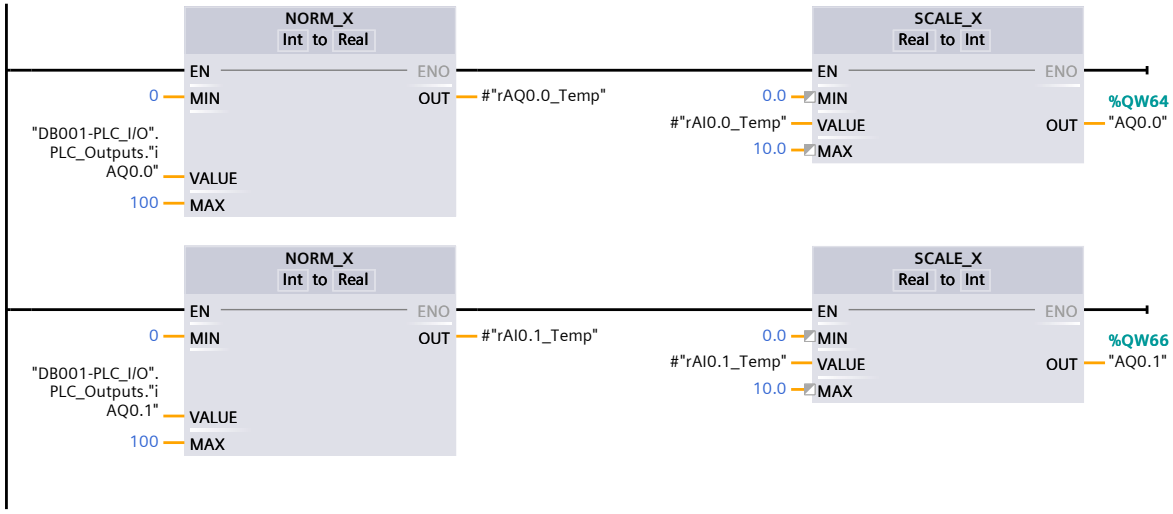
Network 8: ANALOG_INPUTS

> 0V to 10V Analog Scalling
> change MIN/MAX values accordingly



Network 9: ANALOG_OUTPUTS

> 0V to 10V Analog Scalling
> change MIN/MAX values accordingly



TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER / TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC] / Program blocks / WS01_TVET_Workstation / 01-Traffic_Logic

FB001-Traffic_Control [FB1]

FB001-Traffic_Control Properties							
General							
Name	FB001-Traffic_Control	**Number**	1	**Type**	FB	**Language**	SCL
Numbering	Manual						
Information							
Title		**Author**		**Comment**		**Family**	
Version	0.1	**User-defined ID**					

Name	Data type	Default value	Retain
Input			
▼ Output			
xLeftSide_Green	Bool	false	Non-retain
xLeftSide_Amber	Bool	false	Non-retain
xLeftSide_Red	Bool	false	Non-retain
xRightSide_Green	Bool	false	Non-retain
xRightSide_Amber	Bool	false	Non-retain
xRightSide_Red	Bool	false	Non-retain
InOut			
▼ Static			
xFirstScan	Bool	false	Non-retain
iState	Int	0	Non-retain
TONs	Struct		Non-retain
Temp			
▼ Constant			
3sec	Time	t#3s	
5sec	Time	t#5s	
10sec	Time	t#10s	

```
0001 REGION OPENING_COMMENTS
0002   (*
```

```
0003  * BASIC PROGRAM OPERATION:
0004  * On startup - both sides start with GREEN LEDs OFF and RED LEDs ON for 5sec.
0005  * After the initial 5sec has elapsed, left side switches to GREEN ON (RED OFF) for 10sec.
0006  *
0007  * After 10sec has elapsed, left side switches to AMBER ON (GREEN OFF) for 3sec.
0008  * After 3sec has elapsed, left side switches to RED ON & right side switches to GREEN ON after a 3sec transition
      delay (left AMBER & right RED OFF) for 10sec.
0009  *
0010  * After 10sec has elapsed, right side switchs to AMBER ON (right GREEN OFF) for 3sec.
0011  * After 3sec has elapsed, right side switches to RED ON & left side switches to GREEN ON after a 3sec transition
      delay (right AMBER & left RED OFF) for 10sec.
0012  *
0013  * Process repeats.
0014  *
0015  * STATES:
0016  * 0 - Both sides RED for 5sec (initial state)
0017  * 1 - Left side GREEN for 10sec (right stays RED)
0018  * 2 - Left side AMBER for 3sec
0019  * 3 - Left-to-Right 3sec transition delay (both RED)
0020  * 4 - Right side GREEN for 10sec (left stays RED)
0021  * 5 - Right side AMBER for 3sec
0022  * 6 - Right-to-Left transition delay (both RED)
0023  * Loops around to state #1.
0024 *)
0025 END_REGION
0026
0027
0028 REGION FIRST_SCAN
0029   // Catch first PLC scan
0030   IF "FirstScan" THEN
0031     #xFirstScan := TRUE;
0032   END_IF;
0033
0034   // First PLC scan caught
0035   IF #xFirstScan THEN
0036     // Start the inital delay timer & move to the next state
0037     #TONs.tInitial_Delay(IN := TRUE,      // timer input on
0038                  PT := #"5sec"); // 5sec duration
0039     #iState := 0; // initialize the state to 0
```

```
0040    END_IF;
0041  END_REGION
0042
0043
0044  REGION STATE_MACHINE
0045    // LED State Machine
0046    CASE #iState OF
0047      0:  // Initial state - both sides red for 5 sec
0048        #xLeftSide_Green := FALSE;  // left green off
0049        #xRightSide_Green := FALSE; // right green off
0050        #xLeftSide_Amber := FALSE;  // left amber off
0051        #xRightSide_Amber := FALSE; // right amber off
0052        #xLeftSide_Red := TRUE;     // left red on
0053        #xRightSide_Red := TRUE;    // right red on
0054
0055        // Reset xFirstScan flag
0056        IF #xFirstScan THEN
0057          #xFirstScan := FALSE;
0058        END_IF;
0059
0060        // Wait for Initial_Delay_TON output
0061        IF #TONs.tInitial_Delay.Q THEN
0062          // Start the amber delay timer
0063          #TONs.tLeftGreen_Delay(IN := TRUE,      // timer input on
0064                                 PT := #"10sec"); // 10sec duration
0065          // Reset initial timer & move to the next state
0066          RESET_TIMER(TIMER := #TONs.tInitial_Delay);
0067          #iState := 1;
0068        END_IF;
0069        ;
0070      1:  // Left side green for 10sec (right side stays red)
0071        #xLeftSide_Green := TRUE;   // left green on
0072        #xRightSide_Green := FALSE; // right green off
0073        #xLeftSide_Amber := FALSE;  // left amber off
0074        #xRightSide_Amber := FALSE; // right amber off
0075        #xLeftSide_Red := FALSE;    // left red off
0076        #xRightSide_Red := TRUE;    // right red on
0077
0078        // Wait for LeftGreen_Delay_TON ouput
```

```
0079        IF #TONs.tLeftGreen_Delay.Q THEN
0080          // Start the amber LED delay timer
0081          #TONs.tAmber_Delay(IN := TRUE,      // timer input on
0082                             PT := #"3sec"); //3sec duration
0083          // Reset left green delay timer & move to the next state
0084          RESET_TIMER(TIMER := #TONs.tLeftGreen_Delay);
0085          #iState := 2;
0086        END_IF;
0087        ;
0088      2:  // Left side amber for 3sec
0089        #xLeftSide_Green := FALSE;  // left green off
0090        #xRightSide_Green := FALSE; // right green off
0091        #xLeftSide_Amber := TRUE;   // left amber on
0092        #xRightSide_Amber := FALSE; // right amber off
0093        #xLeftSide_Red := FALSE;    // left red off
0094        #xRightSide_Red := TRUE;    // right red on
0095
0096        // Wait for Amber_Delay_TON output
0097        IF #TONs.tAmber_Delay.Q THEN
0098          // Start the transition delay timer (both sides red)
0099          #TONs.tTransition_Delay(IN := TRUE,      // timer input on
0100                                  PT := #"3sec"); // 3sec duration
0101          // Reset amber delay timer
0102          RESET_TIMER(TIMER := #TONs.tAmber_Delay);
0103          #iState := 3;
0104        END_IF;
0105        ;
0106      3:  // Left-to-Right transition (both red)
0107        #xLeftSide_Green := FALSE;  // left green off
0108        #xRightSide_Green := FALSE; // right green off
0109        #xLeftSide_Amber := FALSE;  // left amber off
0110        #xRightSide_Amber := FALSE; // right amber off
0111        #xLeftSide_Red := TRUE;     // left red on
0112        #xRightSide_Red := TRUE;    // right red on
0113
0114        // Wait for Transition_Delay_TON output
0115        IF #TONs.tTransition_Delay.Q THEN
0116          // Start the right green delay timer
0117          #TONs.tRightGreen_Delay(IN := TRUE,      // timer input on
```

```
0118                    PT := #"10sec"); // 10sec duration
0119          // Reset transition delay timer & move to the next state
0120          RESET_TIMER(TIMER := #TONs.tTransition_Delay);
0121          #iState := 4;
0122        END_IF;
0123        ;
0124      4:  // Right side green & left side red for 10sec
0125        #xLeftSide_Green := FALSE;  // left green off
0126        #xRightSide_Green := TRUE;  // right green on
0127        #xLeftSide_Amber := FALSE;  // left amber off
0128        #xRightSide_Amber := FALSE; // right amber off
0129        #xLeftSide_Red := TRUE;     // left red on
0130        #xRightSide_Red := FALSE;   // right red off
0131
0132        // Wait for RightGreen_Delay_TON ouput
0133        IF #TONs.tRightGreen_Delay.Q THEN
0134          // Start the amber LED delay timer
0135          #TONs.tAmber_Delay(IN := TRUE,     // timer input on
0136                     PT := #"3sec"); //3sec duration
0137          // Reset right green delay timer & move to the next state
0138          RESET_TIMER(TIMER := #TONs.tRightGreen_Delay);
0139          #iState := 5;
0140        END_IF;
0141        ;
0142      5:  // Right side AMBER for 3sec
0143        #xLeftSide_Green := FALSE;  // left green off
0144        #xRightSide_Green := FALSE; // right green off
0145        #xLeftSide_Amber := FALSE;  // left amber off
0146        #xRightSide_Amber := TRUE;  // right amber on
0147        #xLeftSide_Red := TRUE;     // left red on
0148        #xRightSide_Red := FALSE;   // right red off
0149
0150        // Wait for Amber_Delay_TON output
0151        IF #TONs.tAmber_Delay.Q THEN
0152          // Start the transition delay timer
0153          #TONs.tTransition_Delay(IN := TRUE,     // timer input on
0154                      PT := #"3sec"); // 3sec duration
0155          // Reset amber delay timer
0156          RESET_TIMER(TIMER := #TONs.tAmber_Delay);
```

```
0157          #iState := 6;
0158        END_IF;
0159        ;
0160      6:  // Right-to-Left transition (both red)
0161        #xLeftSide_Green := FALSE;  // left green off
0162        #xRightSide_Green := FALSE; // right green off
0163        #xLeftSide_Amber := FALSE;  // left amber off
0164        #xRightSide_Amber := FALSE; // right amber off
0165        #xLeftSide_Red := TRUE;     // left red on
0166        #xRightSide_Red := TRUE;    // right red on
0167
0168        // Wait for Transition_Delay_TON output
0169        IF #TONs.tTransition_Delay.Q THEN
0170          // Start the left green delay timer
0171          #TONs.tLeftGreen_Delay(IN := TRUE,      // timer input on
0172                       PT := #"10sec"); // 10sec duration
0173          // Reset transition delay timer & loop back to state 1
0174          RESET_TIMER(TIMER := #TONs.tTransition_Delay);
0175          #iState := 1;
0176        END_IF;
0177    END_CASE;
0178  END_REGION
```

TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER / TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC] / Program blocks / WS01_TVET_Workstation / 01-Traffic_Logic

FB001-Traffic_Control_DB [DB2]

FB001-Traffic_Control_DB Properties							
General							
Name	FB001-Traffic_Control_DB	**Number**	2	**Type**	DB	**Language**	DB
Numbering	Automatic						
Information							
Title		**Author**		**Comment**		**Family**	
Version	0.1	**User-defined ID**					

Name	Data type	Start value	Retain
Input			
▼ Output			
xLeftSide_Green	Bool	false	False
xLeftSide_Amber	Bool	false	False
xLeftSide_Red	Bool	false	False
xRightSide_Green	Bool	false	False
xRightSide_Amber	Bool	false	False
xRightSide_Red	Bool	false	False
InOut			
▼ Static			
xFirstScan	Bool	false	False
iState	Int	0	False
TONs	Struct		False

TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER / TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]

Technology objects

This folder is empty.

TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER / TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC] / PLC tags / Default tag table [30]

PLC tags

PLC tags				
	Name	Data type	Address	Retain

TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER / TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC] / PLC tags / Default tag table [30]

User constants

User constants			
	Name	Data type	Value

TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER / TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC] / PLC tags / PLC_Inputs [16]

PLC tags

PLC tags				
	Name	Data type	Address	Retain
	DI0.0	Bool	%I0.0	False
	DI0.1	Bool	%I0.1	False
	DI0.2	Bool	%I0.2	False
	DI0.3	Bool	%I0.3	False
	DI0.4	Bool	%I0.4	False
	DI0.5	Bool	%I0.5	False
	DI0.6	Bool	%I0.6	False
	DI0.7	Bool	%I0.7	False
	DI1.0	Bool	%I1.0	False
	DI1.1	Bool	%I1.1	False
	DI1.2	Bool	%I1.2	False
	DI1.3	Bool	%I1.3	False
	DI1.4	Bool	%I1.4	False
	DI1.5	Bool	%I1.5	False
	AI0.0	Word	%IW64	False
	AI0.1	Word	%IW66	False

TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER / TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC] / PLC tags / PLC_Inputs [16]

User constants

User constants			
	Name	Data type	Value

TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER / TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC] / PLC tags / PLC_Outputs [12]

PLC tags

PLC tags				
	Name	Data type	Address	Retain
	DQ0.0	Bool	%Q0.0	False
	DQ0.1	Bool	%Q0.1	False
	DQ0.2	Bool	%Q0.2	False
	DQ0.3	Bool	%Q0.3	False
	DQ0.4	Bool	%Q0.4	False
	DQ0.5	Bool	%Q0.5	False
	DQ0.6	Bool	%Q0.6	False
	DQ0.7	Bool	%Q0.7	False
	DQ1.0	Bool	%Q1.0	False
	DQ1.1	Bool	%Q1.1	False
	AQ0.0	Word	%QW64	False
	AQ0.1	Word	%QW66	False

TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER / TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC] / PLC tags / PLC_Outputs [12]

User constants

User constants			
	Name	Data type	Value

TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER / TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC] / PLC tags / System_Tags [14]

PLC tags

PLC tags				
	Name	Data type	Address	Retain
	Clock_Byte	Byte	%MB0	False
	Clock_10Hz	Bool	%M0.0	False
	Clock_5Hz	Bool	%M0.1	False
	Clock_2.5Hz	Bool	%M0.2	False
	Clock_2Hz	Bool	%M0.3	False
	Clock_1.25Hz	Bool	%M0.4	False
	Clock_1Hz	Bool	%M0.5	False
	Clock_0.625Hz	Bool	%M0.6	False
	Clock_0.5Hz	Bool	%M0.7	False
	System_Byte	Byte	%MB1	False
	FirstScan	Bool	%M1.0	False
	DiagStatusUpdate	Bool	%M1.1	False
	AlwaysTRUE	Bool	%M1.2	False
	AlwaysFALSE	Bool	%M1.3	False

TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER / TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC] / PLC tags / System_Tags [14]

User constants

User constants			
	Name	Data type	Value

TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER / TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC] / PLC tags / Trigger_Tags [5]

PLC tags

PLC tags				
	Name	**Data type**	**Address**	**Retain**
	xAmberTOF_Trig	Bool	%M2.0	False
	xTrig2	Bool	%M2.1	False
	xTrig3	Bool	%M2.2	False
	xTrig4	Bool	%M2.3	False
	xTrig5	Bool	%M2.4	False

TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER / TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC] / PLC tags / Trigger_Tags [5]

User constants

User constants			
	Name	Data type	Value

TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER / TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC] / PLC data types

System data types

This folder is empty.

TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER / TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC] / Watch and force tables

Force table

Name	Address	Display format	Force value

TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER / TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]

Traces

Name

TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER / TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC] / Traces

Measurements

This folder is empty.

TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER / TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC] / Traces

Combined measurements

Name

TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER / TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC] / OPC UA communication

Server interfaces

This folder is empty.

TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER / TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]

PLC alarm text lists

This folder is empty.

TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER / TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC] / Local modules

TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]

TRAFFIC_LIGHTS_PLC					
Project information					
Name	TRAFFIC_LIGHTS_PLC	**Author**	Admin	**Comment**	
Slot	1	**Rack**	0		
Catalog information					
Short designation	CPU 1215C DC/DC/DC	**Description**	Work memory 200 KB; 24VDC power supply with DI14 x 24VDC SINK/SOURCE, DQ10 x 24VDC and AI2 and AQ2 on board; 6 high-speed counters and 4 pulse outputs on-board; signal board expands on-board I/O; up to 3 communication modules for serial communication; up to 8 signal modules for I/O expansion; PROFINET IO controller, 2 ports, I-device, transport protocol TCP/IP, secure Open User Communication, S7 communication, Web server, OPC UA: Server DA	**Article number**	6ES7 215-1AG40-0XB0
Firmware version	V4.6		False		

Connection resources\				
	Station resources - Reserved - Maximum	**Station resources - Reserved - Configured**	**Station resources - Dynamic - Configured**	**Module resources - TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC] - Configured**
Maximum number of resources:		34	34	68
	Maximum	Configured	Configured	Configured
PG communication:	4	-	-	-
HMI communication:	12	0	0	0
S7 communication:	8	0	0	0
Open user communication:	8	0	0	0
Web communication:	2	-	-	-
OPC UA client/server communication:	0	-	-	-
Other communication:	-	-	0	0
Total resources used:		0	0	0
Available resources:		34	34	68

Overview of addresses\Overview of addresses\Overview of addresses					
Inputs	True	**Outputs**	True	**Address gaps**	False
Slot	True				

Type	Addr. from	Addr. to	Module	PIP	Device name	Device number	Size	Master / IO system	Rack	Slot
I	0	1	DI 14/DQ 10_1	Automatic update	TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]	-	2 Bytes	-	0	1 1
O	0	1	DI 14/DQ 10_1	Automatic update	TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]	-	2 Bytes	-	0	1 1
I	64	67	AI 2/AQ 2_1	Automatic update	TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]	-	4 Bytes	-	0	1 2
O	64	67	AI 2/AQ 2_1	Automatic update	TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]	-	4 Bytes	-	0	1 2
I	1000	1003	HSC_1	Automatic update	TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]	-	4 Bytes	-	0	1 16
I	1004	1007	HSC_2	Automatic update	TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]	-	4 Bytes	-	0	1 17
I	1008	1011	HSC_3	Automatic update	TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]	-	4 Bytes	-	0	1 18
I	1012	1015	HSC_4	Automatic update	TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]	-	4 Bytes	-	0	1 19
I	1016	1019	HSC_5	Automatic update	TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]	-	4 Bytes	-	0	1 20
I	1020	1023	HSC_6	Automatic update	TRAFFIC_LIGHTS_PLC	-	4 Bytes	-	0	1 21

Type	Addr. from	Addr. to	Module	PIP	Device name	Device number	Size	Master / IO system	Rack	Slot
					[CPU 1215C DC/DC/DC]					
O	1000	1001	Pulse_1	Automatic update	TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]	-	2 Bytes	-	0	1 32
O	1002	1003	Pulse_2	Automatic update	TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]	-	2 Bytes	-	0	1 33
O	1004	1005	Pulse_3	Automatic update	TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]	-	2 Bytes	-	0	1 34
O	1006	1007	Pulse_4	Automatic update	TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]	-	2 Bytes	-	0	1 35

TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER

Ungrouped devices

This folder is empty.

TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER

Security settings

This folder is empty.

TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER / Cross-device functions / Project traces

Measurements

This folder is empty.

TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER / Cross-device functions / Long-term project traces

Measurements

This folder is empty.

TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER / Common data / Alarm classes

Alarm classes

Alarm classes				
Name	**ID**	**Display name**	**Acknowledgment**	**Priority**
Acknowledgement	33	A	True	0
No Acknowledgement	34	NA	False	0

TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER / Common data

Logs

This folder is empty.

TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER / Languages & resources

Project languages

Languages
Reference language
English (United States)

Editing language
English (United States)

Other project languages
Empty

TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER / Languages & resources / Project texts

Project texts

Project texts		
English (United States)	**Category**	**Reference**
-	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\00-I/O_Mapping\FC001-PLC_I/O_Handler [FC1]\rAQ0.1_Temp
-	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\00-I/O_Mapping\FC001-PLC_I/O_Handler [FC1]\rAQ0.0_Temp
-	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\00-I/O_Mapping\FC001-PLC_I/O_Handler [FC1]\rAI0.1_Temp
-	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\00-I/O_Mapping\FC001-PLC_I/O_Handler [FC1]\rAI0.0_Temp
"Main Program Sweep (Cycle)"	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\Main [OB1]\Block title
========== ANALOG_PROCESSING ==========	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\00-I/O_Mapping\FC001-PLC_I/O_Handler [FC1]\Network 7\Title
========== DIGITAL_INPUTS ==========	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\00-I/O_Mapping\FC001-PLC_I/O_Handler [FC1]\Network 1\Title
========== DIGITAL_OUTPUTS ==========	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\00-I/O_Mapping\FC001-PLC_I/O_Handler [FC1]\Network 4\Title
========== I/O_HANDLING ==========	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\Main [OB1]\Network 2\Title
========== PROGRAM_INFORMA-TION ==========	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\Main [OB1]\Network 1\Title
========== TRAFFIC_CONTROL ==========	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\Main [OB1]\Network 3\Title
> 0V to 10V Analog Scalling > change MIN/MAX values accordingly	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\00-I/O_Mapping\FC001-PLC_I/O_Handler [FC1]\Network 8\Comment

English (United States)	Category	Reference
> 0V to 10V Analog Scalling > change MIN/MAX values accordingly	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\00-I/O_Mapping\FC001-PLC_I/O_Handler [FC1]\Network 9\Comment
> Call the PLC I/O Handler Function	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\Main [OB1]\Network 2\Comment
> Call the Traffic Control Function Block	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\Main [OB1]\Network 3\Comment
> DI0.0 - DI0.7	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\00-I/O_Mapping\FC001-PLC_I/O_Handler [FC1]\Network 2\Comment
> DI1.0 - DI1.5	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\00-I/O_Mapping\FC001-PLC_I/O_Handler [FC1]\Network 3\Comment
> DQ0.0 - DQ0.7	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\00-I/O_Mapping\FC001-PLC_I/O_Handler [FC1]\Network 5\Comment
> DQ1.0 - DQ1.1	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\00-I/O_Mapping\FC001-PLC_I/O_Handler [FC1]\Network 6\Comment
A	Alarm class text	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\Acknowledgement\AlarmClassData_IDisplayNaming_DisplayName
A	Alarm class text	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\Acknowledgement\ShortName
Analog Input	Text category tag comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\PLC tags\PLC_Inputs [16]\AI0.0\Comment
Analog Input	Text category tag comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\PLC tags\PLC_Inputs [16]\AI0.1\Comment
Analog Output	Text category tag comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\PLC tags\PLC_Outputs [12]\AQ0.0\Comment
Analog Output	Text category tag comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\PLC tags\PLC_Outputs [12]\AQ0.1\Comment
ANALOG_INPUTS	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\00-I/O_Mapping\FC001-PLC_I/O_Handler [FC1]\Network 8\Title
ANALOG_OUTPUTS	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\00-I/O_Mapping\FC001-PLC_I/O_Handler [FC1]\Network 9\Title
BANK_0	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\00-I/O_Mapping\FC001-PLC_I/O_Handler [FC1]\Network 2\Title

English (United States)	Category	Reference
BANK_0	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\00-I/O_Mapping\FC001-PLC_I/O_Handler [FC1]\Network 5\Title
BANK_1	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\00-I/O_Mapping\FC001-PLC_I/O_Handler [FC1]\Network 3\Title
BANK_1	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\00-I/O_Mapping\FC001-PLC_I/O_Handler [FC1]\Network 6\Title
Digital Input	Text category tag comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\PLC tags\PLC_Inputs [16]\DI0.0\Comment
Digital Input	Text category tag comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\PLC tags\PLC_Inputs [16]\DI0.1\Comment
Digital Input	Text category tag comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\PLC tags\PLC_Inputs [16]\DI0.2\Comment
Digital Input	Text category tag comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\PLC tags\PLC_Inputs [16]\DI0.3\Comment
Digital Input	Text category tag comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\PLC tags\PLC_Inputs [16]\DI0.4\Comment
Digital Input	Text category tag comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\PLC tags\PLC_Inputs [16]\DI0.5\Comment
Digital Input	Text category tag comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\PLC tags\PLC_Inputs [16]\DI0.6\Comment
Digital Input	Text category tag comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\PLC tags\PLC_Inputs [16]\DI0.7\Comment
Digital Input	Text category tag comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\PLC tags\PLC_Inputs [16]\DI1.0\Comment
Digital Input	Text category tag comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\PLC tags\PLC_Inputs [16]\DI1.1\Comment
Digital Input	Text category tag comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\PLC tags\PLC_Inputs [16]\DI1.2\Comment
Digital Input	Text category tag comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\PLC tags\PLC_Inputs [16]\DI1.3\Comment
Digital Input	Text category tag comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\PLC tags\PLC_Inputs [16]\DI1.4\Comment
Digital Input	Text category tag comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\PLC tags\PLC_Inputs [16]\DI1.5\Comment
Digital Output	Text category tag comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\PLC tags\PLC_Outputs [12]\DQ0.0\Comment

English (United States)	Category	Reference
Digital Output	Text category tag comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\PLC tags\PLC_Outputs [12]\DQ0.1\Comment
Digital Output	Text category tag comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\PLC tags\PLC_Outputs [12]\DQ0.2\Comment
Digital Output	Text category tag comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\PLC tags\PLC_Outputs [12]\DQ0.3\Comment
Digital Output	Text category tag comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\PLC tags\PLC_Outputs [12]\DQ0.4\Comment
Digital Output	Text category tag comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\PLC tags\PLC_Outputs [12]\DQ0.5\Comment
Digital Output	Text category tag comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\PLC tags\PLC_Outputs [12]\DQ0.6\Comment
Digital Output	Text category tag comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\PLC tags\PLC_Outputs [12]\DQ0.7\Comment
Digital Output	Text category tag comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\PLC tags\PLC_Outputs [12]\DQ1.0\Comment
Digital Output	Text category tag comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\PLC tags\PLC_Outputs [12]\DQ1.1\Comment
First PLC scan catch bit	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\01-Traffic_Logic\FB001-Traffic_Control [FB1]\xFirstScan
Left Side Amber LED	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\00-I/O_Mapping\DB001-PLC_I/O [DB1]\PLC_Outputs.xLeft_AmberLED
Left Side Amber LED	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\01-Traffic_Logic\FB001-Traffic_Control [FB1]\xLeftSide_Amber
Left Side Green LED	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\00-I/O_Mapping\DB001-PLC_I/O [DB1]\PLC_Outputs.xLeft_GreenLED
Left Side Green LED	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\01-Traffic_Logic\FB001-Traffic_Control [FB1]\xLeftSide_Green
Left Side Red LED	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\00-I/O_Mapping\DB001-PLC_I/O [DB1]\PLC_Outputs.xLeft_RedLED
Left Side Red LED	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\01-Traffic_Logic\FB001-Traffic_Control [FB1]\xLeftSide_Red

English (United States)	Category	Reference
NA	Alarm class text	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\No Acknowledgement\AlarmClassData_IDisplayNaming_DisplayName
NA	Alarm class text	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\No Acknowledgement\ShortName
PLC Inputs Structure	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\00-I/O_Mapping\DB001-PLC_I/O [DB1]\PLC_Inputs
PLC Outputs Structure	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\00-I/O_Mapping\DB001-PLC_I/O [DB1]\PLC_Outputs
PT time constant	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\01-Traffic_Logic\FB001-Traffic_Control [FB1]\5sec
PT time constant	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\01-Traffic_Logic\FB001-Traffic_Control [FB1]\3sec
PT time constant	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\01-Traffic_Logic\FB001-Traffic_Control [FB1]\10sec
Right Side Amber LED	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\00-I/O_Mapping\DB001-PLC_I/O [DB1]\PLC_Outputs.xRight_AmberLED
Right Side Amber LED	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\01-Traffic_Logic\FB001-Traffic_Control [FB1]\xRightSide_Amber
Right Side Green LED	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\00-I/O_Mapping\DB001-PLC_I/O [DB1]\PLC_Outputs.xRight_GreenLED
Right Side Green LED	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\01-Traffic_Logic\FB001-Traffic_Control [FB1]\xRightSide_Green
Right Side Red LED	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\00-I/O_Mapping\DB001-PLC_I/O [DB1]\PLC_Outputs.xRight_RedLED
Right Side Red LED	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\01-Traffic_Logic\FB001-Traffic_Control [FB1]\xRightSide_Red
State number	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\01-Traffic_Logic\FB001-Traffic_Control [FB1]\iState

English (United States)	Category	Reference
Timer ON Delay	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\01-Traffic_Logic\FB001-Traffic_Control [FB1]\TONs.tInitial_Delay
Timer ON Delay	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\01-Traffic_Logic\FB001-Traffic_Control [FB1]\TONs.tLeftGreen_Delay
Timer ON Delay	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\01-Traffic_Logic\FB001-Traffic_Control [FB1]\TONs.tRightGreen_Delay
Timer ON Delay	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\01-Traffic_Logic\FB001-Traffic_Control [FB1]\TONs.tAmber_Delay
Timer ON Delay	Block comment	TRAFFIC_LIGHTS_BRIDGE_CROSSING_SCL_BASIC-AMBER\TRAFFIC_LIGHTS_PLC [CPU 1215C DC/DC/DC]\Program blocks\WS01_TVET_Workstation\01-Traffic_Logic\FB001-Traffic_Control [FB1]\TONs.tTransition_Delay