Documentation for Solution

2021_VM-KFI-1.1.1

Safety_CNC45

Project CRC: 0x5199

Programmer:

Print Name	Signature	Date

Customer

Print Name	Signature	Date

Date	2023-09-13
Editor	zavori.zsolt
Plot	2023-09-13

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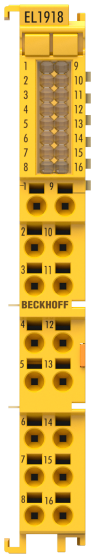
Target System



Safe Address: **1**

Switch Setting:

Platform: EL1918

Parameters

Version number: 1
Serial Number: 2104865
Type:
Product/Revision:
Auto Inc Addr:
EtherCAT Addr:
Previous Port:

Safety Project

Project CRC: 0x5199
Safe Logic Data CRC: 0x2E87
Mapping Data CRC: 0x54DA
Parameter Data CRC: 0xEE32
Info Data CRC: 0x8500

Notes

Alias Devices Overview

TwinSAFE Group: TwinSafeGroup1	6
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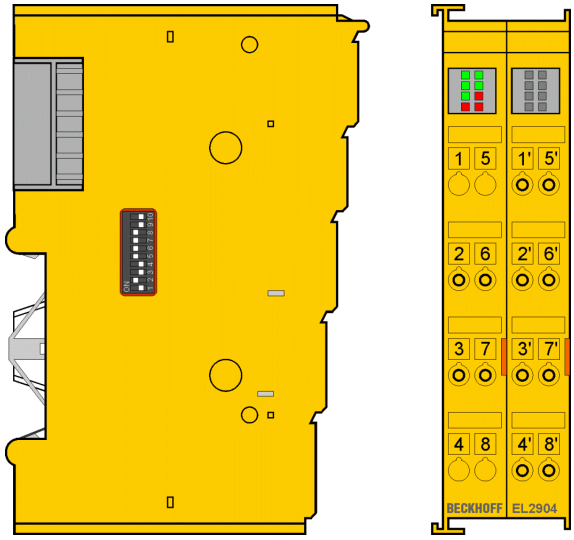
TwinSAFE Group: TwinSafeGroup1

Term 80 (EL2904) - Module 1 (FSOES)

Type: EL2904, 4 digital outputs

EtherCAT Parameter

Type: EL2904, 4 Ch. Safety Output 24V, 0.5A, TwinSAFE
Product/Revision: EL2904-0000-0019
Auto Inc Addr: 65531
EtherCAT Addr: 1006
Identification Value:
Previous Port: B1005
Physical Device:



TwinSAFE Connection Parameter

Name: **Message_24**
Conn-No: **1**
Conn-Id: **24**
FSoE Watchdog: **100**
Mode: **FSoE_master**
FSoE Address: 4
Switch Setting:

Safe Parameters

8000:01 Standard outputs active: FALSE (0)
8000:02 Current measurement active: TRUE (1)
8000:03 Testing of outputs active: TRUE (1)
8000:04 Error acknowledge active: FALSE (0)

Term 80 (EL2904) - Module 1 (FSOES)

Type: EL2904, 4 digital outputs

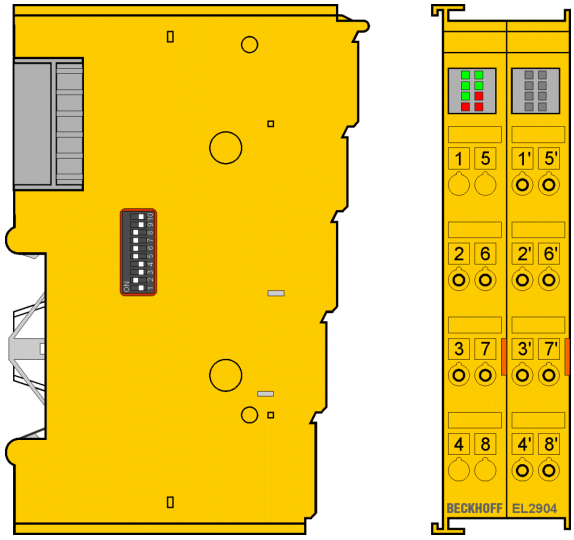
Channel	Connection Name
OutputChannel1	LO1 (TwinSafeGroup1)
OutputChannel2	LO1 (TwinSafeGroup1)
OutputChannel3	LO2 (TwinSafeGroup1)
OutputChannel4	LO2 (TwinSafeGroup1)

Term 81 (EL2904) - Module 1 (FSOES)

Type: EL2904, 4 digital outputs

EtherCAT Parameter

Type:	EL2904, 4 Ch. Safety Output 24V, 0.5A, TwinSAFE
Product/Revision:	EL2904-0000-0018
Auto Inc Addr:	65530
EtherCAT Addr:	1007
Identification Value:	
Previous Port:	B1006
Physical Device:	



TwinSAFE Connection Parameter

Name:	**Message_29**
Conn-No:	**2**
Conn-Id:	**29**
FSoE Watchdog:	**100**
Mode:	**FSoE_master**
FSoE Address:	5
Switch Setting:	

Safe Parameters

8000:01 Standard outputs active:	FALSE (0)
8000:02 Current measurement active:	TRUE (1)
8000:03 Testing of outputs active:	TRUE (1)
8000:04 Error acknowledge active:	FALSE (0)

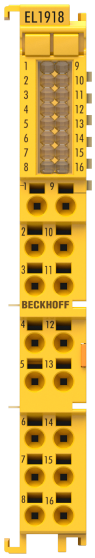
Term 81 (EL2904) - Module 1 (FSOES)

Type: EL2904, 4 digital outputs

Channel	Connection Name
OutputChannel1	WarningSignal (TwinSafeGroup1)

EL1918, 8 digital inputs_1 (Local)

Type: EL1918, 8 digital inputs (Local)



Safe Parameters

8000:01 ModuloDiagTestPulse:	0x00 (0)
8000:02 MultiplierDiagTestPulse:	0x01 (1)
8000:04 Diag TestPulse active:	FALSE (0)
8000:05 Module Fault Link active:	TRUE (1)
8001:01 InputFilterTime:	0x000A (10)
8001:02 DiagTestPulseFilterTime:	0x0002 (2)
8010:01 ModuloDiagTestPulse:	0x00 (0)
8010:02 MultiplierDiagTestPulse:	0x01 (1)
8010:04 Diag TestPulse active:	FALSE (0)
8010:05 Module Fault Link active:	TRUE (1)
8011:01 InputFilterTime:	0x000A (10)
8011:02 DiagTestPulseFilterTime:	0x0002 (2)
8020:01 ModuloDiagTestPulse:	0x00 (0)
8020:02 MultiplierDiagTestPulse:	0x01 (1)
8020:04 Diag TestPulse active:	FALSE (0)
8020:05 Module Fault Link active:	TRUE (1)
8021:01 InputFilterTime:	0x000A (10)
8021:02 DiagTestPulseFilterTime:	0x0002 (2)
8030:01 ModuloDiagTestPulse:	0x00 (0)
8030:02 MultiplierDiagTestPulse:	0x01 (1)
8030:04 Diag TestPulse active:	FALSE (0)
8030:05 Module Fault Link active:	TRUE (1)
8031:01 InputFilterTime:	0x000A (10)
8031:02 DiagTestPulseFilterTime:	0x0002 (2)
8040:01 ModuloDiagTestPulse:	0x00 (0)
8040:02 MultiplierDiagTestPulse:	0x01 (1)
8040:04 Diag TestPulse active:	FALSE (0)
8040:05 Module Fault Link active:	TRUE (1)
8041:01 InputFilterTime:	0x000A (10)
8041:02 DiagTestPulseFilterTime:	0x0002 (2)
8050:01 ModuloDiagTestPulse:	0x00 (0)
8050:02 MultiplierDiagTestPulse:	0x01 (1)
8050:04 Diag TestPulse active:	FALSE (0)
8050:05 Module Fault Link active:	TRUE (1)
8051:01 InputFilterTime:	0x000A (10)
8051:02 DiagTestPulseFilterTime:	0x0002 (2)

8060:01 ModuloDiagTestPulse:	0x00 (0)
8060:02 MultiplierDiagTestPulse:	0x01 (1)
8060:04 Diag TestPulse active:	FALSE (0)
8060:05 Module Fault Link active:	TRUE (1)
8061:01 InputFilterTime:	0x000A (10)
8061:02 DiagTestPulseFilterTime:	0x0002 (2)
8070:01 ModuloDiagTestPulse:	0x00 (0)
8070:02 MultiplierDiagTestPulse:	0x01 (1)
8070:04 Diag TestPulse active:	FALSE (0)
8070:05 Module Fault Link active:	TRUE (1)
8071:01 InputFilterTime:	0x000A (10)
8071:02 DiagTestPulseFilterTime:	0x0002 (2)

EL1918, 8 digital inputs_1 (Local)

Type: EL1918, 8 digital inputs (Local)

Channel	Connection Name
FSIN Module 1.Input	DoorCh1 (TwinSafeGroup1)
FSIN Module 2.Input	DoorCh2 (TwinSafeGroup1)
FSIN Module 3.Input	EStopCh1 (TwinSafeGroup1)
FSIN Module 4.Input	EStopCh2 (TwinSafeGroup1)
FSIN Module 5.Input	RobotEStopCh1 (TwinSafeGroup1)
FSIN Module 6.Input	RobotEStopCh2 (TwinSafeGroup1)
FSIN Module 7.Input	LO1EDM (TwinSafeGroup1)
FSIN Module 8.Input	LO2EDM (TwinSafeGroup1)

Standard Alias Devices Table

Alias Device	From	to
Blink	TIPC^PLC^PLC Instance^PlcTask Outputs^GVL_Safety.q_bBlink (Type: BIT)	BlinkSignal (TwinSafeGroup1)
CellEmptyAck	TIPC^PLC^PLC Instance^PlcTask Outputs^GVL_Safety.q_bCellEmptyAck_CNC45 (Type: BIT)	CEA (TwinSafeGroup1)
ErrorAcknowledgement	TIPC^PLC^PLC Instance^PlcTask Outputs^GVL_Safety.q_bSafetyErrorAck_CNC45 (Type: BIT)	GroupPort_ErrAck (TwinSafeGroup1)
GroupComErr	GroupComErr (TwinSafeGroup1)	TIPC^PLC^PLC Instance^PlcTask Inputs^GVL_Safety.i_bSafetyGroupComErr_CNC45 (Type: BIT)
GroupFBErr	GroupFBErr (TwinSafeGroup1)	TIPC^PLC^PLC Instance^PlcTask Inputs^GVL_Safety.i_bSafetyGroupFBErr_CNC45 (Type: BIT)
GroupOtherErr	GroupOtherErr (TwinSafeGroup1)	TIPC^PLC^PLC Instance^PlcTask Inputs^GVL_Safety.i_bSafetyGroupOtherErr_CNC45 (Type: BIT)
LO1	LO1 (TwinSafeGroup1)	TIPC^PLC^PLC Instance^PlcTask Inputs^GVL_Safety.i_bLO1_CNC45 (Type: BIT)
LO1EDMErr	LO1EDMErr (TwinSafeGroup1)	TIPC^PLC^PLC Instance^PlcTask Inputs^GVL_Safety.i_bLO1EDMErr_CNC45 (Type: BIT)
LO2	LO2 (TwinSafeGroup1)	TIPC^PLC^PLC Instance^PlcTask

Standard Alias Devices Table

Alias Device	From	to
		Inputs^GVL_Safety.i_bLO2_CNC45 (Type: BIT)
LO2EDMErr	LO2EDMErr (TwinSafeGroup1)	TIPC^PLC^PLC Instance^PlcTask Inputs^GVL_Safety.i_bLO2EDMErr_CNC45 (Type: BIT)
MasterOn	TIPC^PLC^PLC Instance^PlcTask Outputs^GVL_Safety.q_bSafetyMasterOn_CNC45 (Type: BIT)	MasterOn (TwinSafeGroup1)
Run	TIPC^PLC^PLC Instance^PlcTask Outputs^GVL_Safety.q_bSafetyRun (Type: BIT)	GroupPort_RunStop (TwinSafeGroup1)
WaitLock	WaitLock (TwinSafeGroup1)	TIPC^PLC^PLC Instance^PlcTask Inputs^GVL_Safety.i_bWaitClose_CNC45 (Type: BIT)

Variables Overview

TwinSAFE Group: TwinSafeGroup1 17

Local Variables Table 18

TwinSAFE Group: TwinSafeGroup1

Local Variables Table

Variable	Assignment	Usages
GroupPort_ErrAck	ErrorAcknowledgement.In (TwinSafeGroup1)	TwinSafeGroup1.Err Ack (GroupPort)
GroupPort_RunStop	Run.In (TwinSafeGroup1)	TwinSafeGroup1.Run/Stop (GroupPort)
MasterOn	MasterOn.In (TwinSafeGroup1)	TwinSafeGroup1.Network1.FBEstop1.Restart
LO1EDMErr	TwinSafeGroup1.Network1.FBEdm1.Error	LO1EDMErr.Out (TwinSafeGroup1)
LO1EDM	EL1918, 8 digital inputs_1.FSIN Module 7.Input (TwinSafeGroup1)	TwinSafeGroup1.Network1.FBEdm1.Mon2
DoorCh1	EL1918, 8 digital inputs_1.FSIN Module 1.Input (TwinSafeGroup1)	TwinSafeGroup1.Network1.FBMon1.MonIn1 TwinSafeGroup1.WaitWarningTime.FBAnd2.AndIn1 TwinSafeGroup1.WaitDoorClose.FBAnd1.AndIn3 TwinSafeGroup1.WaitWarningTime.FBOr1.OrIn1 TwinSafeGroup1.WaitDoorClose.FBOr2.OrIn2
DoorCh2	EL1918, 8 digital inputs_1.FSIN Module 2.Input (TwinSafeGroup1)	TwinSafeGroup1.Network1.FBMon1.MonIn2 TwinSafeGroup1.WaitWarningTime.FBAnd2.AndIn2 TwinSafeGroup1.WaitDoorClose.FBAnd1.AndIn4 TwinSafeGroup1.WaitWarningTime.FBOr1.OrIn2 TwinSafeGroup1.WaitDoorClose.FBOr2.OrIn3
LO2EDM	EL1918, 8 digital inputs_1.FSIN Module 8.Input (TwinSafeGroup1)	TwinSafeGroup1.Network1.FBEdm2.Mon2
LO2EDMErr	TwinSafeGroup1.Network1.FBEdm2.Error	LO2EDMErr.Out (TwinSafeGroup1)

Local Variables Table

Variable	Assignment	Usages
EStopCh1	EL1918, 8 digital inputs_1.FSIN Module 3.Input (TwinSafeGroup1)	TwinSafeGroup1.Network1.FBEstop1.EStopIn1
EStopCh2	EL1918, 8 digital inputs_1.FSIN Module 4.Input (TwinSafeGroup1)	TwinSafeGroup1.Network1.FBEstop1.EStopIn2
LO1	TwinSafeGroup1.Network1.FBEstop1.EStopOut	LO1.Out (TwinSafeGroup1) Term 80 (EL2904) - Module 1 (FSOES).OutputChannel1 (TwinSafeGroup1) Term 80 (EL2904) - Module 1 (FSOES).OutputChannel2 (TwinSafeGroup1) TwinSafeGroup1.WaitDoorClose.FBAnd1.AndIn2 TwinSafeGroup1.WaitDoorClose.FBOr2.OrIn4
LO2	TwinSafeGroup1.Network1.FBMon1.MonOut	LO2.Out (TwinSafeGroup1) Term 80 (EL2904) - Module 1 (FSOES).OutputChannel3 (TwinSafeGroup1) Term 80 (EL2904) - Module 1 (FSOES).OutputChannel4 (TwinSafeGroup1) TwinSafeGroup1.WaitWarningTime.FBAnd2.AndIn3
GroupComErr	TwinSafeGroup1.Com Err (GroupPort)	GroupComErr.Out (TwinSafeGroup1)
GroupFBErr	TwinSafeGroup1.FB Err (GroupPort)	GroupFBErr.Out (TwinSafeGroup1)

Local Variables Table

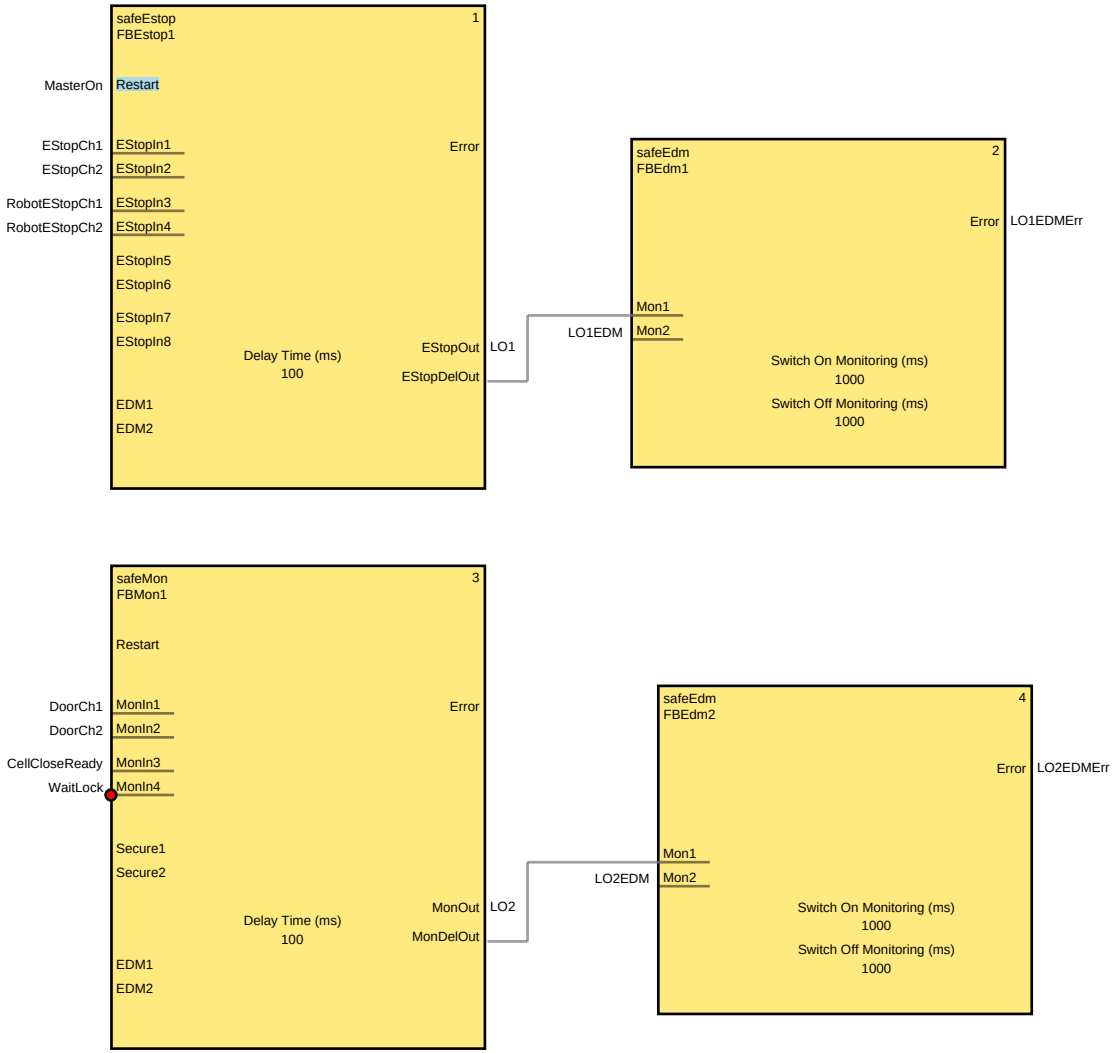
Variable	Assignment	Usages
GroupOtherErr	TwinSafeGroup1.Other Err (GroupPort)	GroupOtherErr.Out (TwinSafeGroup1)
RobotEStopCh1	EL1918, 8 digital inputs_1.FSIN Module 5.Input (TwinSafeGroup1)	TwinSafeGroup1.Network1.FBEstop1.EStopIn3
RobotEStopCh2	EL1918, 8 digital inputs_1.FSIN Module 6.Input (TwinSafeGroup1)	TwinSafeGroup1.Network1.FBEstop1.EStopIn4
CEA	CellEmptyAck.In (TwinSafeGroup1)	TwinSafeGroup1.WaitDoorClose.FBAnd1.AndIn1
WaitLock	TwinSafeGroup1.WaitDoorClose.FBRs1.RsOut	WaitLock.Out (TwinSafeGroup1) TwinSafeGroup1.Network1.FBMon1.MonIn4
LockTimeout	TwinSafeGroup1.WaitDoorClose.FBTon1.TonOut	TwinSafeGroup1.WaitDoorClose.FBOr2.OrIn1
CellCloseReady	TwinSafeGroup1.WaitWarningTime.FBRs2.RsOut	TwinSafeGroup1.Network1.FBMon1.MonIn3 TwinSafeGroup1.WaitDoorClose.FBAnd1.AndIn5
WarningSignal	TwinSafeGroup1.WaitWarningTime.FBAnd3.AndOut	Term 81 (EL2904) - Module 1 (FSOES).OutputChannel1 (TwinSafeGroup1)
BlinkSignal	Blink.In (TwinSafeGroup1)	TwinSafeGroup1.WaitWarningTime.FBAnd3.AndIn1

FunctionBlocks Overview

TwinSAFE Group: TwinSafeGroup1	22
Network: Network1	29
FBEstop1	30
FBEdm1	32
FBMon1	34
FBEdm2	36
Network: WaitDoorClose	38
FBAnd1	39
FBRs1	41
FBTon1	43
FBOr2	45
Network: WaitWarningTime	47
FBAnd2	48
FBTon2	50
FBRs2	52
FBOr1	54
FBAnd3	56
Reference Links Table: TwinSafeGroup1	58

TwinSAFE Group: TwinSafeGroup1

Network1



WaitDoorClose

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TwinSAFE Group: TwinSafeGroup1

Network1

WaitDoorClose

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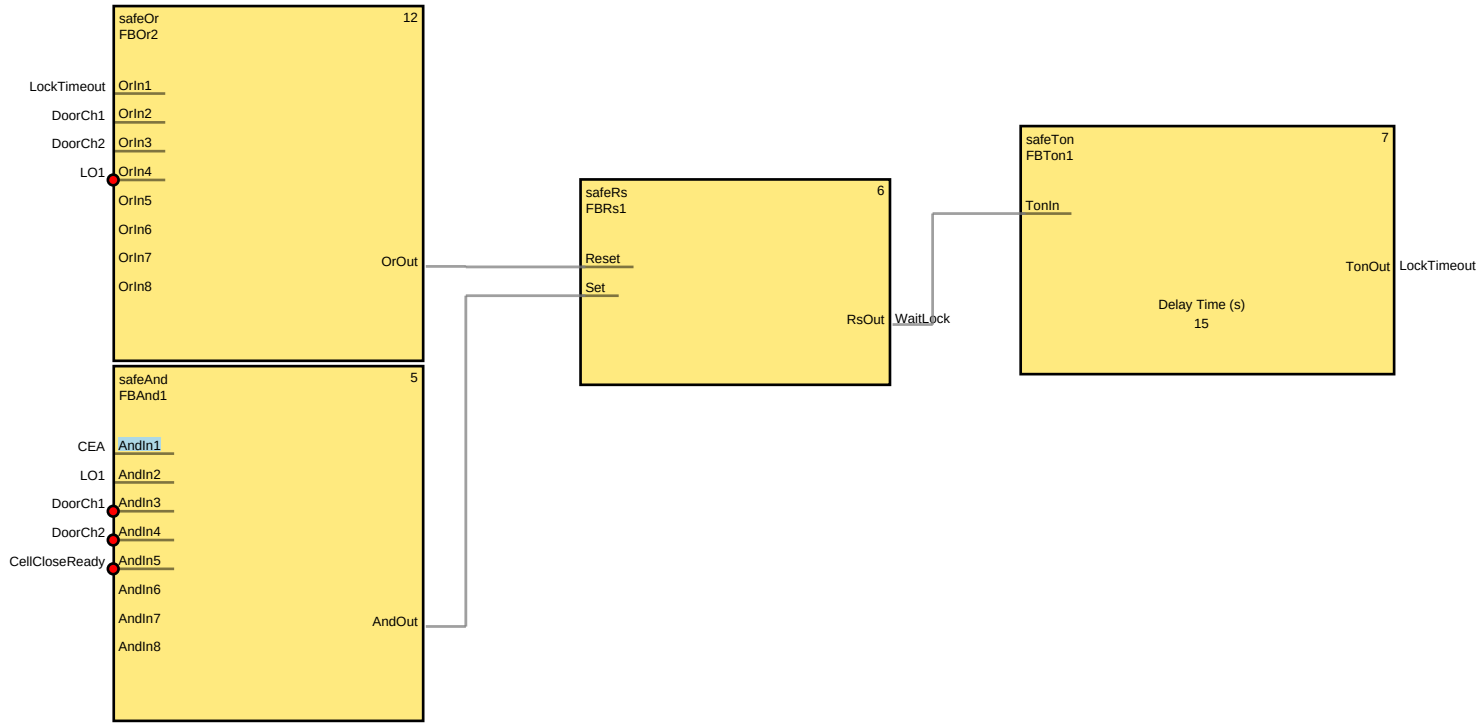
TwinSAFE Group: TwinSafeGroup1

Network1

WaitDoorClose



WaitWarningTime

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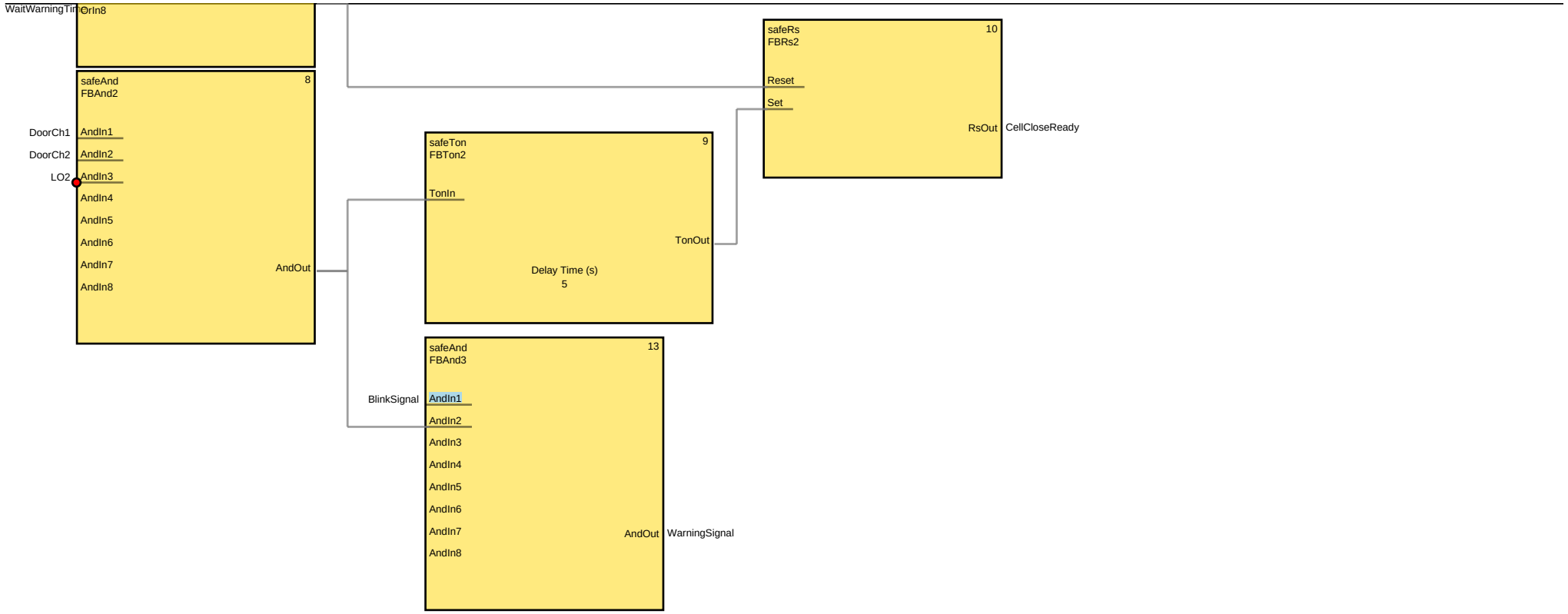
TwinSAFE Group: TwinSafeGroup1

Network1

WaitDoorClose

WaitWarningTime

TwinSAFE Group: TwinSafeGroup1



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TwinSAFE Group: TwinSafeGroup1

WaitWarningTime

TwinSAFE Group: TwinSafeGroup1

Info Data

Map Diag:	False
Map State:	False

Customization Settings

Passivation Allowed:	False
Permanent Deactivation Allowed:	False
Temporary Deactivation Allowed:	False
Timeout passivation Allowed (ms):	10000
Customizing Settings:	

Failsafe Settings

Analog FB Output Failsafe Values:	Zero

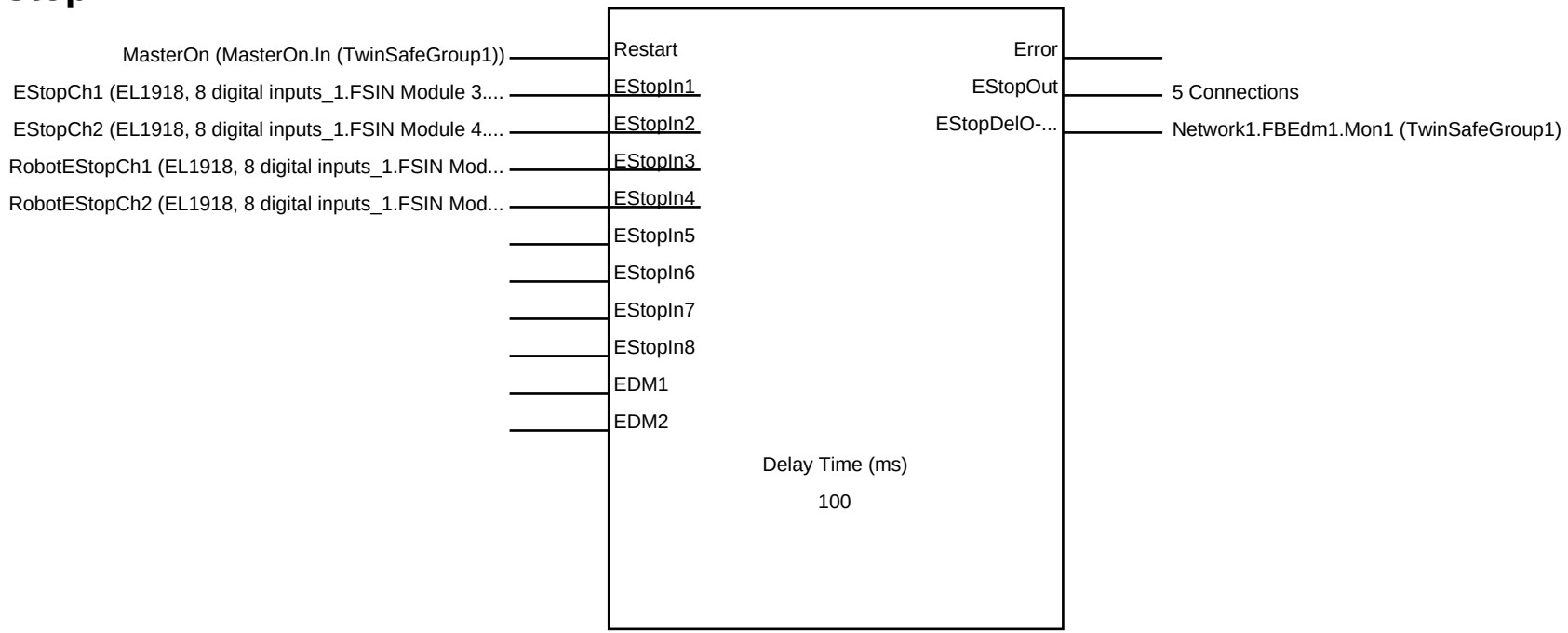
Startup Settings

Verify Analog FB Inputs at Group Startup:	False

Network: Network1

	A	B	C	D	E	F	G	H	I	J
0										
1										
2										
3										
4										
5										

FBEstop1



Type: safeEstop
Map State: False
Map Diag: False
Order of Execution: 1

Safe Input After Disc Error: False
Delay Time (ms): 100

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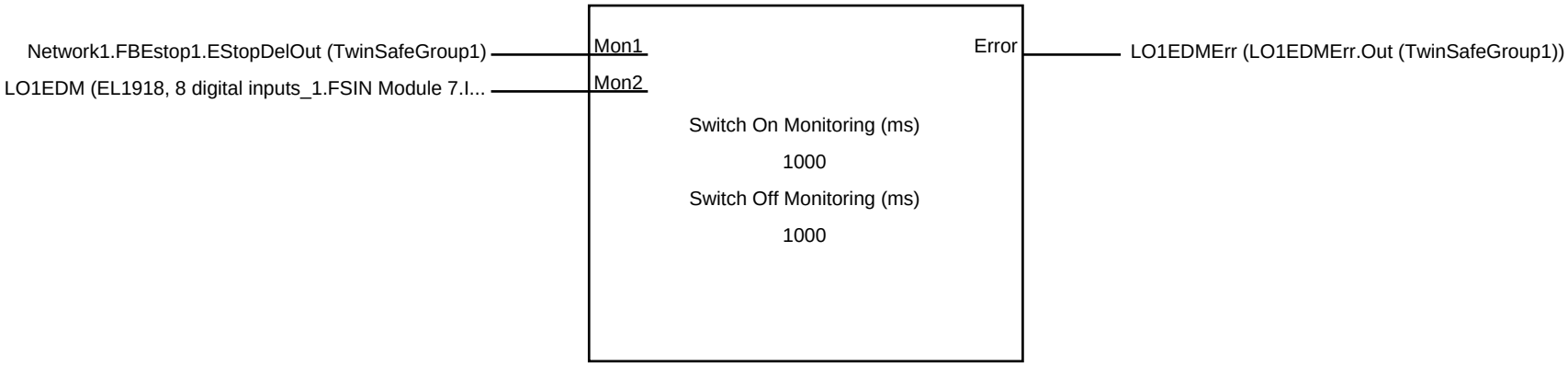
FBEstop1

Type: safeEstop

FunctionBlockPort	Connection Name
InPort: Restart	MasterOn (MasterOn.In (TwinSafeGroup1))
InPort: EStopIn1	EStopCh1 (EL1918, 8 digital inputs_1.FSIN Module 3.Input (TwinSafeGroup1))
InPort: EStopIn2	EStopCh2 (EL1918, 8 digital inputs_1.FSIN Module 4.Input (TwinSafeGroup1))
InPort: EStopIn3	RobotEStopCh1 (EL1918, 8 digital inputs_1.FSIN Module 5.Input (TwinSafeGroup1))
InPort: EStopIn4	RobotEStopCh2 (EL1918, 8 digital inputs_1.FSIN Module 6.Input (TwinSafeGroup1))
OutPort: EStopOut	LO1 (LO1.Out (TwinSafeGroup1)) LO1 (Term 80 (EL2904) - Module 1 (FSOES).OutputChannel1 (TwinSafeGroup1)) LO1 (Term 80 (EL2904) - Module 1 (FSOES).OutputChannel2 (TwinSafeGroup1)) LO1 (WaitDoorClose.FBAnd1.AndIn2 (TwinSafeGroup1)) LO1 (WaitDoorClose.FBOr2.OrIn4 (TwinSafeGroup1))
OutPort: EStopDelOut	Network1.FBEdm1.Mon1 (TwinSafeGroup1)

FBEdm1



Type: safeEdm
Map State: False
Map Diag: False
Order of Execution: 2

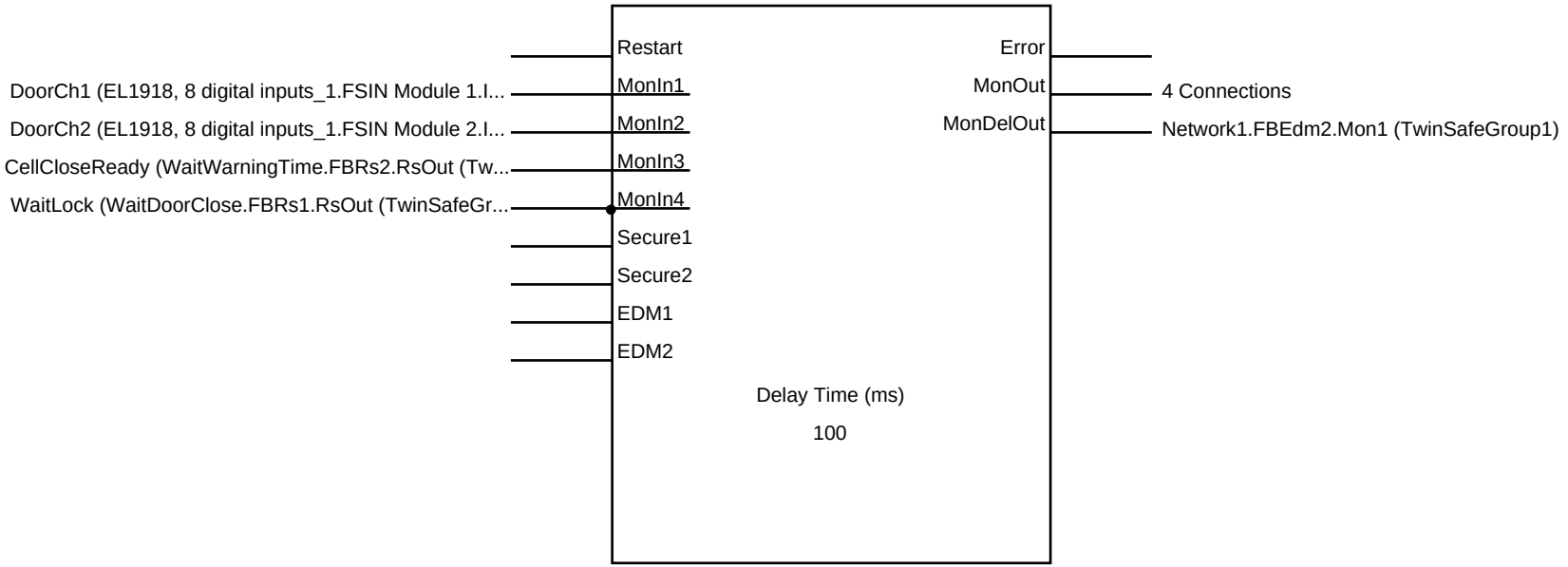
Switch On Monitoring (ms): 1000
Switch Off Monitoring (ms): 1000

FBEdm1

Type: safeEdm

FunctionBlockPort	Connection Name
InPort: Mon1	Network1.FBEstop1.EStopDelOut (TwinSafeGroup1)
InPort: Mon2	LO1EDM (EL1918, 8 digital inputs_1.FSIN Module 7.Input (TwinSafeGroup1))
OutPort: Error	LO1EDMErr (LO1EDMErr.Out (TwinSafeGroup1))

FBMon1



Type: safeMon
Map State: False
Map Diag: False
Order of Execution: 3

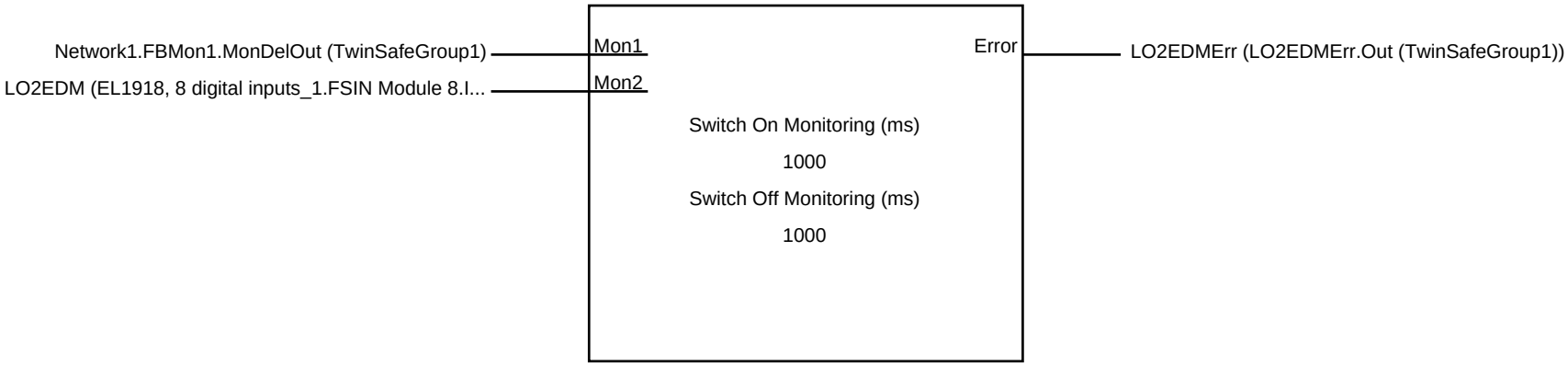
Manual Function Test: False
Safe Input After Disc Error: False
Delay Time (ms): 100

FBMon1

Type: safeMon

FunctionBlockPort	Connection Name
InPort: MonIn1	DoorCh1 (EL1918, 8 digital inputs_1.FSIN Module 1.Input (TwinSafeGroup1))
InPort: MonIn2	DoorCh2 (EL1918, 8 digital inputs_1.FSIN Module 2.Input (TwinSafeGroup1))
InPort: MonIn3	CellCloseReady (WaitWarningTime.FBRs2.RsOut (TwinSafeGroup1))
InPort: MonIn4	WaitLock (WaitDoorClose.FBRs1.RsOut (TwinSafeGroup1))
OutPort: MonOut	LO2 (LO2.Out (TwinSafeGroup1)) LO2 (Term 80 (EL2904) - Module 1 (FSOES).OutputChannel3 (TwinSafeGroup1)) LO2 (Term 80 (EL2904) - Module 1 (FSOES).OutputChannel4 (TwinSafeGroup1)) LO2 (WaitWarningTime.FBAnd2.AndIn3 (TwinSafeGroup1))
OutPort: MonDelOut	Network1.FBEdm2.Mon1 (TwinSafeGroup1)

FBEdm2



Type: safeEdm
Map State: False
Map Diag: False
Order of Execution: 4

Switch On Monitoring (ms): 1000
Switch Off Monitoring (ms): 1000

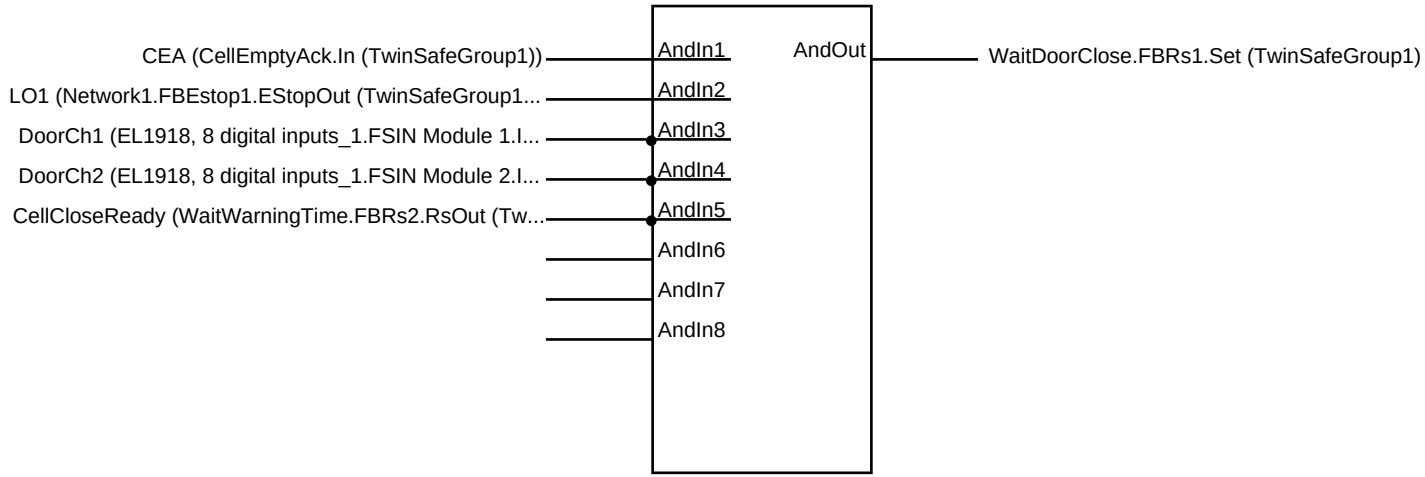
FBEdm2

Type: safeEdm

FunctionBlockPort	Connection Name
InPort: Mon1	Network1.FBMon1.MonDelOut (TwinSafeGroup1)
InPort: Mon2	LO2EDM (EL1918, 8 digital inputs_1.FSIN Module 8.Input (TwinSafeGroup1))
OutPort: Error	LO2EDMErr (LO2EDMErr.Out (TwinSafeGroup1))

Network: WaitDoorClose

FBAnd1



Type: safeAnd
Map State: False
Map Diag: False
Order of Execution: 5

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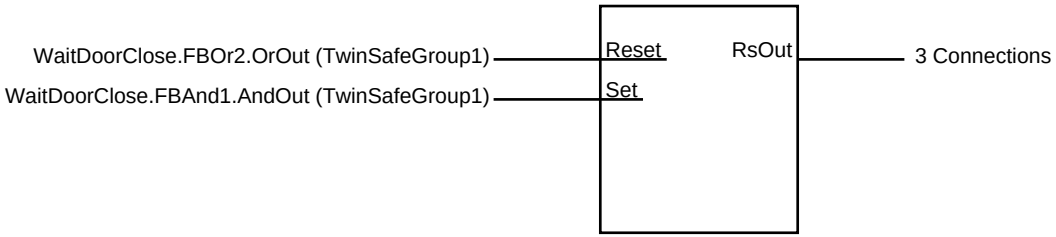
FBAnd1

Type: safeAnd

FunctionBlockPort	Connection Name
InPort: AndIn1	CEA (CellEmptyAck.In (TwinSafeGroup1))
InPort: AndIn2	LO1 (Network1.FBEstop1.EStopOut (TwinSafeGroup1))
InPort: AndIn3	DoorCh1 (EL1918, 8 digital inputs_1.FSIN Module 1.Input (TwinSafeGroup1))
InPort: AndIn4	DoorCh2 (EL1918, 8 digital inputs_1.FSIN Module 2.Input (TwinSafeGroup1))
InPort: AndIn5	CellCloseReady (WaitWarningTime.FBRs2.RsOut (TwinSafeGroup1))
OutPort: AndOut	WaitDoorClose.FBRs1.Set (TwinSafeGroup1)

FBRs1



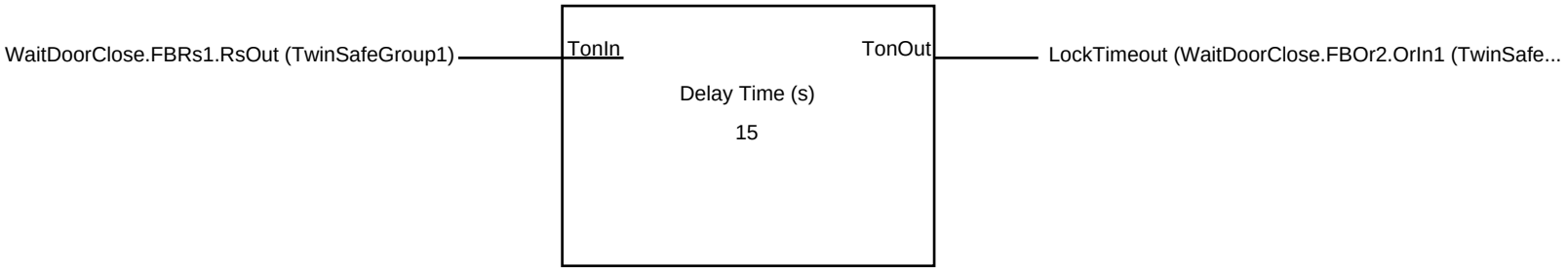
Type: safeRs
Map State: False
Map Diag: False
Order of Execution: 6

FBRs1

Type: safeRs

FunctionBlockPort	Connection Name
InPort: Reset	WaitDoorClose.FBOr2.OrOut (TwinSafeGroup1)
InPort: Set	WaitDoorClose.FBAnd1.AndOut (TwinSafeGroup1)
OutPort: RsOut	WaitDoorClose.FBTon1.TonIn (TwinSafeGroup1) WaitLock (WaitLock.Out (TwinSafeGroup1)) WaitLock (Network1.FBMon1.MonIn4 (TwinSafeGroup1))

FBTon1



Type: safeTon
Map State: False
Map Diag: False
Order of Execution: 7

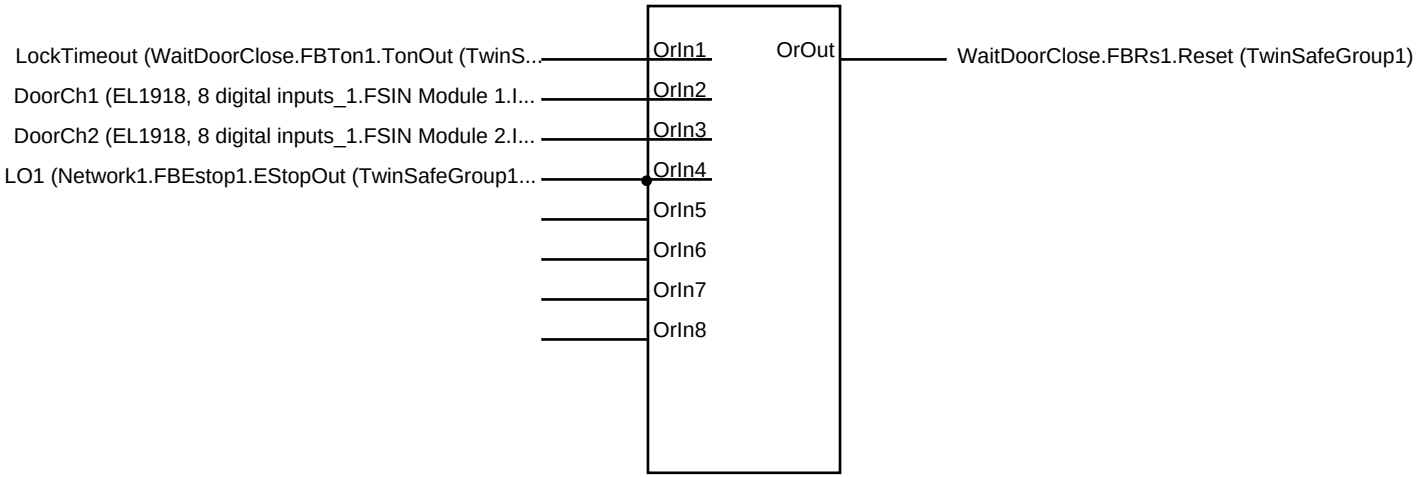
Delay Time (s): 15

FBTon1

Type: safeTon

FunctionBlockPort	Connection Name
InPort: TonIn	WaitDoorClose.FBRs1.RsOut (TwinSafeGroup1)
OutPort: TonOut	LockTimeout (WaitDoorClose.FBOr2.OrIn1 (TwinSafeGroup1))

FBOr2



Type: safeOr
Map State: False
Map Diag: False
Order of Execution: 12

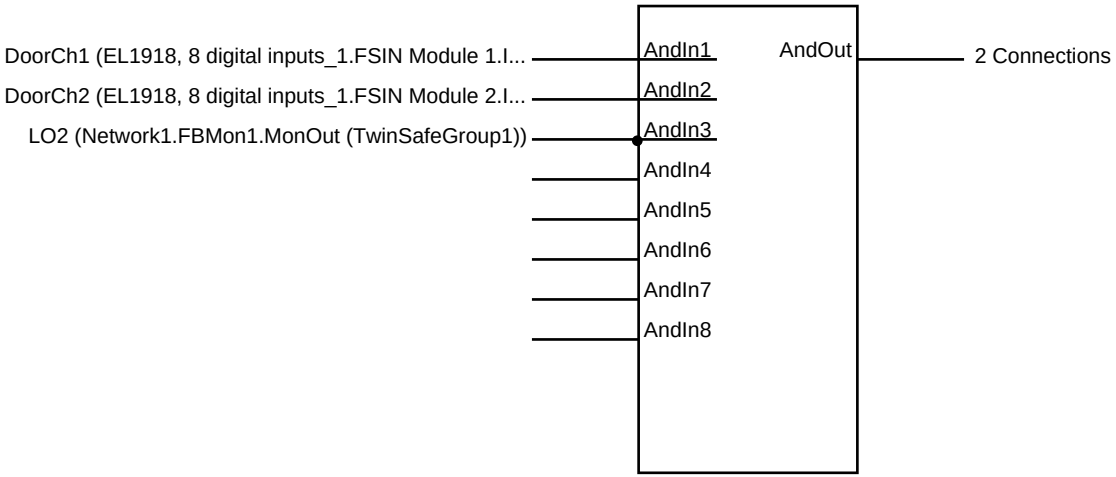
FBOr2

Type: safeOr

FunctionBlockPort	Connection Name
InPort: OrIn1	LockTimeout (WaitDoorClose.FBTon1.TonOut (TwinSafeGroup1))
InPort: OrIn2	DoorCh1 (EL1918, 8 digital inputs_1.FSIN Module 1.Input (TwinSafeGroup1))
InPort: OrIn3	DoorCh2 (EL1918, 8 digital inputs_1.FSIN Module 2.Input (TwinSafeGroup1))
InPort: OrIn4	LO1 (Network1.FBEstop1.EStopOut (TwinSafeGroup1))
OutPort: OrOut	WaitDoorClose.FBRs1.Reset (TwinSafeGroup1)

Network: WaitWarningTime

FBAnd2



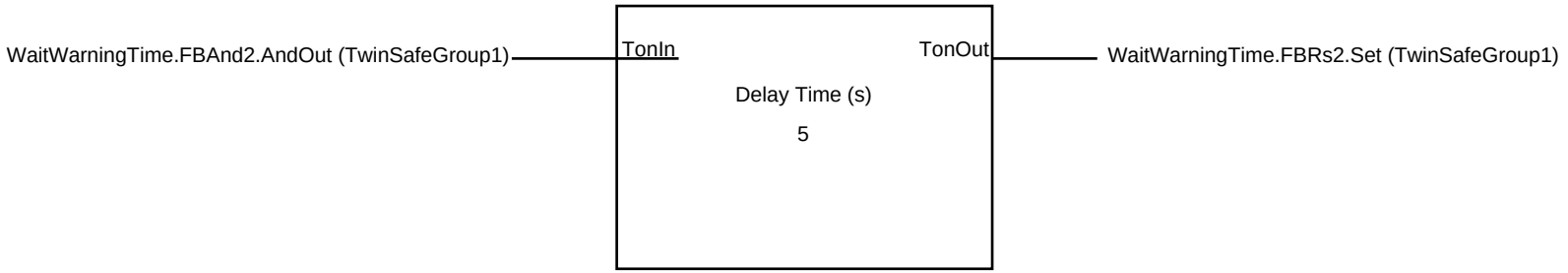
Type: safeAnd
Map State: False
Map Diag: False
Order of Execution: 8

FBAnd2

Type: safeAnd

FunctionBlockPort	Connection Name
InPort: AndIn1	DoorCh1 (EL1918, 8 digital inputs_1.FSIN Module 1.Input (TwinSafeGroup1))
InPort: AndIn2	DoorCh2 (EL1918, 8 digital inputs_1.FSIN Module 2.Input (TwinSafeGroup1))
InPort: AndIn3	LO2 (Network1.FBMon1.MonOut (TwinSafeGroup1))
OutPort: AndOut	WaitWarningTime.FBTon2.TonIn (TwinSafeGroup1) WaitWarningTime.FBAnd3.AndIn2 (TwinSafeGroup1)

FBTon2



Type: safeTon
Map State: False
Map Diag: False
Order of Execution: 9

Delay Time (s): 5

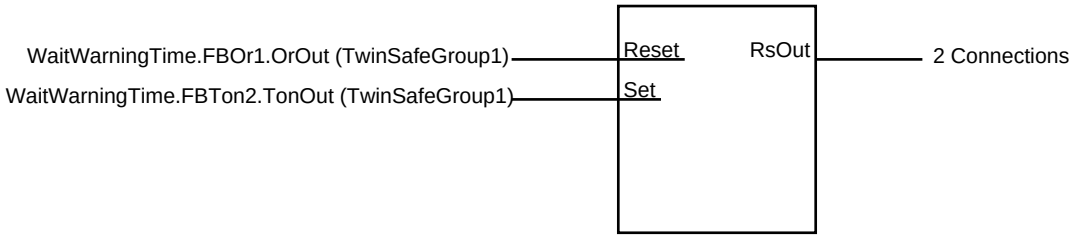
Date	2023-09-13	BECKHOFF	FBTon2	
Editor	zavori.zsolt			
Plot	2023-09-13	Beckhoff Automation & Co. KG	TwinSAFE Group: TwinSafeGroup1; Network: WaitWarningTime	Page: 50

FBTon2

Type: safeTon

FunctionBlockPort	Connection Name
InPort: TonIn	WaitWarningTime.FBAnd2.AndOut (TwinSafeGroup1)
OutPort: TonOut	WaitWarningTime.FBRs2.Set (TwinSafeGroup1)

FBRs2



Type: safeRs
Map State: False
Map Diag: False
Order of Execution: 10

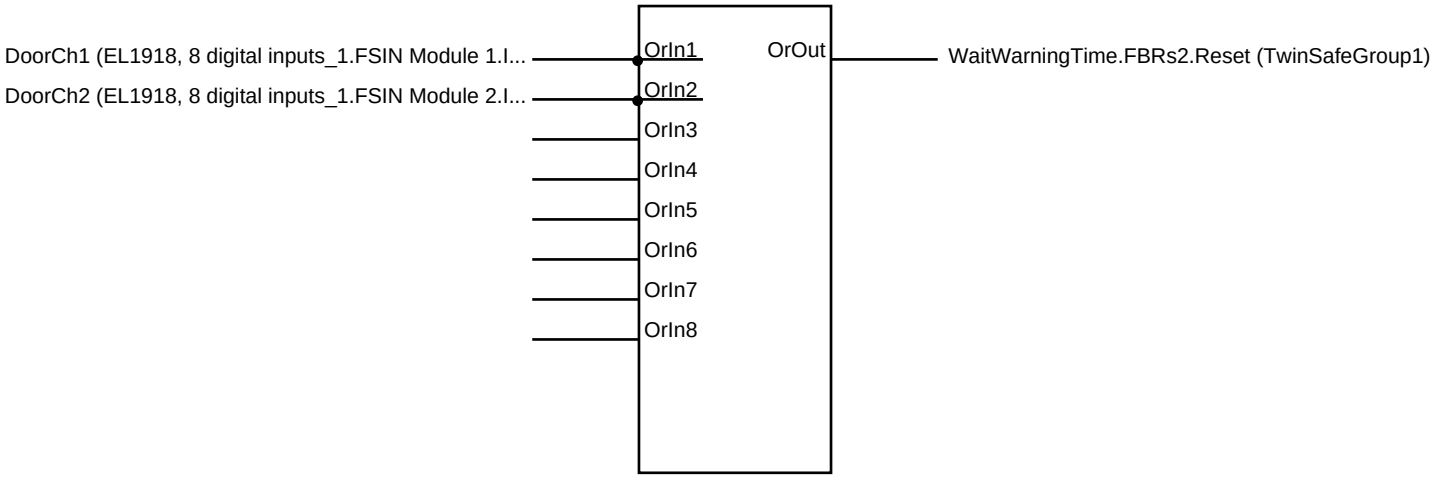
Date	2023-09-13	BECKHOFF	FBRs2	
Editor	zavori.zsolt		TwinSAFE Group: TwinSafeGroup1; Network: WaitWarningTime	Page: 52
Plot	2023-09-13	Beckhoff Automation & Co. KG		

FBRs2

Type: safeRs

FunctionBlockPort	Connection Name
InPort: Reset	WaitWarningTime.FBOr1.OrOut (TwinSafeGroup1)
InPort: Set	WaitWarningTime.FBTon2.TonOut (TwinSafeGroup1)
OutPort: RsOut	CellCloseReady (Network1.FBMon1.MonIn3 (TwinSafeGroup1)) CellCloseReady (WaitDoorClose.FBAnd1.AndIn5 (TwinSafeGroup1))

FBOr1



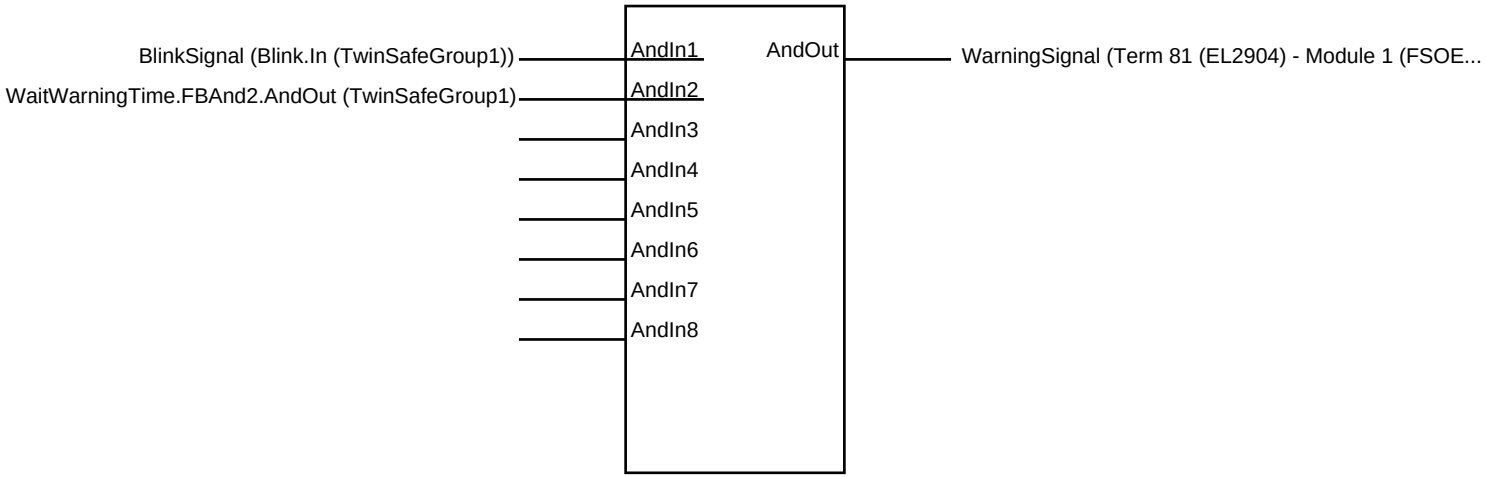
Type: safeOr
Map State: False
Map Diag: False
Order of Execution: 11

FBOr1

Type: safeOr

FunctionBlockPort	Connection Name
InPort: OrIn1	DoorCh1 (EL1918, 8 digital inputs_1.FSIN Module 1.Input (TwinSafeGroup1))
InPort: OrIn2	DoorCh2 (EL1918, 8 digital inputs_1.FSIN Module 2.Input (TwinSafeGroup1))
OutPort: OrOut	WaitWarningTime.FBRs2.Reset (TwinSafeGroup1)

FBAnd3



Type: safeAnd
Map State: False
Map Diag: False
Order of Execution: 13

FBAnd3

Type: safeAnd

FunctionBlockPort	Connection Name
InPort: AndIn1	BlinkSignal (Blink.In (TwinSafeGroup1))
InPort: AndIn2	WaitWarningTime.FBAnd2.AndOut (TwinSafeGroup1)
OutPort: AndOut	WarningSignal (Term 81 (EL2904) - Module 1 (FSOES).OutputChannel1 (TwinSafeGroup1))

Reference Links Table: TwinSafeGroup1

Variable	Assignment	Usages
GroupPort_ErrAck (Local Variable)	ErrorAcknowledgement.In (TwinSafeGroup1)	TwinSafeGroup1.Err Ack
GroupPort_RunStop (Local Variable)	Run.In (TwinSafeGroup1)	TwinSafeGroup1.Run/Stop
MasterOn (Local Variable)	MasterOn.In (TwinSafeGroup1)	TwinSafeGroup1.Network1.FBEstop1.Restart
LO1EDMErr (Local Variable)	TwinSafeGroup1.Network1.FBEdm1.Error	LO1EDMErr.Out (TwinSafeGroup1)
LO1EDM (Local Variable)	EL1918, 8 digital inputs_1.FSIN Module 7.Input (TwinSafeGroup1)	TwinSafeGroup1.Network1.FBEdm1.Mon2
DoorCh1 (Local Variable)	EL1918, 8 digital inputs_1.FSIN Module 1.Input (TwinSafeGroup1)	TwinSafeGroup1.Network1.FBMon1.MonIn1 TwinSafeGroup1.WaitWarningTime.FBAnd2.AndIn1 TwinSafeGroup1.WaitDoorClose.FBAnd1.AndIn3 TwinSafeGroup1.WaitWarningTime.FBOr1.OrIn1 TwinSafeGroup1.WaitDoorClose.FBOr2.OrIn2
DoorCh2 (Local Variable)	EL1918, 8 digital inputs_1.FSIN Module 2.Input (TwinSafeGroup1)	TwinSafeGroup1.Network1.FBMon1.MonIn2 TwinSafeGroup1.WaitWarningTime.FBAnd2.AndIn2 TwinSafeGroup1.WaitDoorClose.FBAnd1.AndIn4 TwinSafeGroup1.WaitWarningTime.FBOr1.OrIn2 TwinSafeGroup1.WaitDoorClose.FBOr2.OrIn3
LO2EDM (Local Variable)	EL1918, 8 digital inputs_1.FSIN Module 8.Input (TwinSafeGroup1)	TwinSafeGroup1.Network1.FBEdm2.Mon2
LO2EDMErr (Local Variable)	TwinSafeGroup1.Network1.FBEdm2.Error	LO2EDMErr.Out (TwinSafeGroup1)

Reference Links Table: TwinSafeGroup1

Variable	Assignment	Usages
EStopCh1 (Local Variable)	EL1918, 8 digital inputs_1.FSIN Module 3.Input (TwinSafeGroup1)	TwinSafeGroup1.Network1.FBEstop1.EStopIn1
EStopCh2 (Local Variable)	EL1918, 8 digital inputs_1.FSIN Module 4.Input (TwinSafeGroup1)	TwinSafeGroup1.Network1.FBEstop1.EStopIn2
LO1 (Local Variable)	TwinSafeGroup1.Network1.FBEstop1.EStopOut	LO1.Out (TwinSafeGroup1) Term 80 (EL2904) - Module 1 (FSOES).OutputChannel1 (TwinSafeGroup1) Term 80 (EL2904) - Module 1 (FSOES).OutputChannel2 (TwinSafeGroup1) TwinSafeGroup1.WaitDoorClose.FBAnd1.AndIn2 TwinSafeGroup1.WaitDoorClose.FBOr2.OrIn4
LO2 (Local Variable)	TwinSafeGroup1.Network1.FBMon1.MonOut	LO2.Out (TwinSafeGroup1) Term 80 (EL2904) - Module 1 (FSOES).OutputChannel3 (TwinSafeGroup1) Term 80 (EL2904) - Module 1 (FSOES).OutputChannel4 (TwinSafeGroup1) TwinSafeGroup1.WaitWarningTime.FBAnd2.AndIn3
GroupComErr (Local Variable)	TwinSafeGroup1.Com Err	GroupComErr.Out (TwinSafeGroup1)
GroupFBErr (Local Variable)	TwinSafeGroup1.FB Err	GroupFBErr.Out (TwinSafeGroup1)

Reference Links Table: TwinSafeGroup1

Variable	Assignment	Usages
GroupOtherErr (Local Variable)	TwinSafeGroup1.Other Err	GroupOtherErr.Out (TwinSafeGroup1)
RobotEStopCh1 (Local Variable)	EL1918, 8 digital inputs_1.FSIN Module 5.Input (TwinSafeGroup1)	TwinSafeGroup1.Network1.FBEstop1.EStopIn3
RobotEStopCh2 (Local Variable)	EL1918, 8 digital inputs_1.FSIN Module 6.Input (TwinSafeGroup1)	TwinSafeGroup1.Network1.FBEstop1.EStopIn4
CEA (Local Variable)	CellEmptyAck.In (TwinSafeGroup1)	TwinSafeGroup1.WaitDoorClose.FBAnd1.AndIn1
WaitLock (Local Variable)	TwinSafeGroup1.WaitDoorClose.FBRs1.RsOut	WaitLock.Out (TwinSafeGroup1) TwinSafeGroup1.Network1.FBMon1.MonIn4
LockTimeout (Local Variable)	TwinSafeGroup1.WaitDoorClose.FBTon1.TonOut	TwinSafeGroup1.WaitDoorClose.FBOr2.OrIn1
CellCloseReady (Local Variable)	TwinSafeGroup1.WaitWarningTime.FBRs2.RsOut	TwinSafeGroup1.Network1.FBMon1.MonIn3 TwinSafeGroup1.WaitDoorClose.FBAnd1.AndIn5
WarningSignal (Local Variable)	TwinSafeGroup1.WaitWarningTime.FBAnd3.AndOut	Term 81 (EL2904) - Module 1 (FSOES).OutputChannel1 (TwinSafeGroup1)
BlinkSignal (Local Variable)	Blink.In (TwinSafeGroup1)	TwinSafeGroup1.WaitWarningTime.FBAnd3.AndIn1
Wired Link	TwinSafeGroup1.Network1.FBEstop1.EStopDelOut	TwinSafeGroup1.Network1.FBEdm1.Mon1
Wired Link	TwinSafeGroup1.Network1.FBMon1.MonDelOut	TwinSafeGroup1.Network1.FBEdm2.Mon1
Wired Link	TwinSafeGroup1.WaitDoorClose.FBAnd1.AndOut	TwinSafeGroup1.WaitDoorClose.FBRs1.Set
Wired Link	TwinSafeGroup1.WaitDoorClose.FBOr2.OrOut	TwinSafeGroup1.WaitDoorClose.FBRs1.Reset
Wired Link	TwinSafeGroup1.WaitDoorClose.FBRs1.RsOut	TwinSafeGroup1.WaitDoorClose.FBTon1.TonIn

Reference Links Table: TwinSafeGroup1

Variable	Assignment	Usages
Wired Link	TwinSafeGroup1.WaitWarningTime.FBAnd2.AndOut	TwinSafeGroup1.WaitWarningTime.FBTon2.TonIn
Wired Link	TwinSafeGroup1.WaitWarningTime.FBAnd2.AndOut	TwinSafeGroup1.WaitWarningTime.FBAnd3.AndIn2
Wired Link	TwinSafeGroup1.WaitWarningTime.FBTon2.TonOut	TwinSafeGroup1.WaitWarningTime.FBRs2.Set
Wired Link	TwinSafeGroup1.WaitWarningTime.FBOr1.OrOut	TwinSafeGroup1.WaitWarningTime.FBRs2.Reset