Preventa[™] Machine Safety Products

Catalog 2014

Chapter 2

Safety Automation System Solutions







Preventa[™] safety PLCs, XPSMF

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Preventa safety modular PLC, XPSMF60:	
Rack, power supply and central processing unit 2 "In rack" analog input card 2 "In rack" analog output card 2 "In rack" mixed card: counting inputs/digital outputs 2 "In rack" digital input card (24 digital inputs) 2 "In rack" digital input card (32 digital inputs) 2 "In rack" digital input card (32 digital inputs) 2 "In rack" digital input card (32 digital inputs) 2 "In rack" relay output card 2	2/54 2/56 2/58 2/60 2/62 2/64
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2 On the "Products" page, find the "Machine Safety Products" icon and select "All Machine Safety Products".





On the "Machine Safety Products" page, select the product you are interested in, for example: "Safety Controllers - Preventa XPS MC, XPS MP - Safety Controllers".



Explore the product page you have selected, including the "Product Information" tabs: "Documents & Downloads" and "Support".



Save time and money with our Preventa[™] machine safety solutions offer



Safety-related signal transmission

Acquiring information...

- > Safety interlock devices used as part of safeguarding systems to control access, under specific conditions of reduced risk.
- Light curtains to detect approach to dangerous and limited areas.
- > Emergency stop buttons and cable pull switches for emergency shut down.

Monitoring and processing...

- > Safety relay modules with specific safety functions to monitor input signals from safety-related devices, and to interface with contactors and drives - by switching off output safety contacts.
- > Safety Controller: configurable safety device capable of centralizing a range of safety monitoring functions.
- Safety PLCs: programmable electronic systems to > carry out safety or non-safety related tasks for machinery and equipment.
- > "As-interface safety at work": safety field bus network certified to work with safety-related devices to provide safety functions.

















Emergency stop

Cable pull switch

Safety relays

Safety Controller

As-interface safety at work

Safety interlocks

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Safety PLCs



Stopping the machine...

- Contactors to cut-off the electrical power supply to motors – with mechanically linked or mirrored auxiliary contacts – integrated for feedback loop diagnosis of safety relay modules, safety controllers, or safety PLCs.
- > Variable speed drives and servo drives with integrated safety functions...control stopping of dangerous movements.

Up to 50% better space optimization

Compact components have smaller footprint

Save up to 30% on installation time

Reduce installation time with quick and easy wiring





Variable speed drives Servo drives

Schneider Blectric

Selection guide

Introduction

Safety automation system solutions

Preventa[™] safety PLCs Compact and modular, XPSMF

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Products referenced XPSMF31222, XPSMF3022 and XPSMF35... are marked HIMatrix® F31, HIMatrix® F30 and HIMatrix® F35 (manufactured by Hima, sold by Schneider Electric).

Compact PLCs: Designed for use with numerous machine safety functions and for the protection of personnel. Designed for use in safety related parts of control systems up to category 4 conforming to EN 954-1, up to performance level "e" conforming to EN/ISO 13849-1, and up to SIL 3 conforming to EN/IEC 61508. HIMatrix 20 . HIMatrix F35 HIMatrix FO N N N ARRAY AL

User m	emory	Application	250 kB 250 kB					
		Data						
Respon	nse time		Depending on size of applic	cation				
Maximu	ım power cor	nsumption	8A 9A					
Supply			External == 24 V supply (with separate protection conforming to EN/IEC 60950, SELV (Extra Low Voltage) or PELV (Protection Extra Low Voltage) rated)					
Inputs	Digital	Number of channels	24 , configurable, not electrically isolated			24, not electrically isolated		
		Current at state 0	1.5 mA max. at == 24 V	1.5 mA max., 1.25 m	Aat 5 V			
		Current at state 1	3.5 mA at == 24 V 4.5 mA at == 30 V	≥2 mAat 15 V	> 2 mA at 15 V	3.5 mA at == 24 V 4.5 mA at == 30 V		
	Analog	Number of channels	-	-	-	8, single-pole		
		Range: voltage/current	-	-	-	010 V/020 mA (1)		
	Counting	Number of channels	-	-	-	2		
		Current	-	-	-	1.4 mA at == 5 V, 6.5 mA at == 24 V		
Outputs Digital Number of channels		Number of channels	24, configurable, not electrically isolated					
		Output current	Chnls. 1 to 3, 5 to 7, 9 to 11, 13 to 15, 17 to 19, 21 to 23: 0.5Aat 140°F (60°C) Channels 4, 8, 12, 16, 20 and 24: 1 Aat 140 °F (60°C), 2 Aat 122°F (50°C)	Channels 4 and 8: 1	5 to 7: 0.5 A at 140 °F (6 A at 140°F(60 °C), 2 A a			
	Analog	Number of channels	-	-	-	-		
		Range: voltage/current	-	-	-	-		
	Relay	Number	-	_	_	_		
		Switching voltage	-	-	-	-		
	Line contro		2 x 4	(2)	(2)	-		
Input/o	utput connec		Removable screw terminals Reference XPSMF40 •• is	s are provided with all \$				
Commu	inication on I	Ethernet network	By integrated RJ45 switc	hed Ethernet commu	nication ports			
Safe	communica	tion using SafeEthernet protocol	yes	yes	yes	yes		
Non		Inication using Modbus [™] TCP/IP	yes (XPSMF4002/4022/4042)	yes (XPSMF31222)		yes (XPSMF3502/ MF3522/MF3542)		
Commu	inication on f	fieldbus						
Non sa	fety using Mo	dbus RTU protocol, slave (RS 485)	yes (XPSMF4020/4022)	-	yes (XPSMF3022)	yes (XPSMF3522)		
Non sa	fety using PR	OFIBUS DP protocol, (V0 slave)	yes (XPSMF4040/4042	-	-	yes (XPSMF3542)		
Safety I	PLC type		XPSMF400●/MF402●/ MF404●	XPSMF31222	XPSMF3022	XPSMF3502/ MF3522/MF3542		
See pag	ge -		2/16	2/31	2/31	2/31		
	" card type		-	-	-	-		
See pag			-	-	-	_		
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(1) With 500Ω jumper. (2) The digital outputs can be configured as line control outputs.

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Selection guide (continued)

Safety automation system solutions

Preventa[™] safety PLCs Compact and modular, XPSMF

Modular PLC XPSMF60: metal rack XPSMFGEH01 with slots for power supply module XPSMFPS01, central processing unit XPSMFCPU22 and six "in rack" I/O cards.

Designed for use with numerous machine safety functions and for the protection of personnel.

Designed for use in safety related parts of control systems up to category 4 conforming to EN 954-1, up to performance level "e" conforming to EN/ISO 13849-1, and up to SIL 3 conforming to EN/IEC 61508.



500 kB

500 kB Depending on size of application

30 A max., 32 A external fuse

External - 24 V supply (with separate protection conforming to EN/IEC 60950, SELV (Safety Extra Low Voltage) or PELV (Protection Extra Low Voltage) rated)

-	-	-	24, electrically isolated	32 (2), electrically isolated	24 (2), electrically isolated	-
-	-	-	-	1 mA at 5 V	1 mA at 5 V	-
-	-	-	≥ 2.2 mA at 79 V	2 mA at == 10 V, 5 mA at == 24 V	2 mA at == 10 V, 5 mA at == 24 V	-
8 single-pole or 4 2-pole, configurable, electrically isolated	_	-	-	-	-	-
- 10+ 10 V/020 mA <i>(1)</i>	-	-	-	-	-	-
-		2	-	-	-	-
-	-	0.8 A at == 3.3 V 0.1 A at == 5 V 0.1 A + output current at == 24 V	-	-	-	-
-	-	4	-	-	16 (3), electrically isolated	-
-	-	0.5 A per channel, 2 A max. per "in rack" card	-	-	2 A per channel at 86 °F (30 °C), 8 A max. at 86 °F (30 °C) per "in rack" card	-
-	8, electrically isolated	-	-	-	-	-
-	- 1010 V / 020 mA	-	-	-	-	-
-	-	-	-	-	-	8
-	-	-	-	-	-	abla 6250 V
-	-	-	-	-	(3)	-
Removable screw terminals are provided with "in rack" I/O cards and Power supply module						

By integrated RJ45 switched Ethernet communication ports

By integrated RJ45 switched Ethernet communication ports
yes
yes
yes
yes
XPSMFGEH01 (rack) + XPSMFPS01 (power supply) + XPSMFCPU22 (central processing unit) + "in rack" I/O cards (to be selected from below)
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Preventa[™] safety PLCs Compact, XPSMF40

Introduction

Preventa[™] compact safety PLCs XPSMF40●● enable the monitoring of simple to complex safety functions for all industrial applications relating to the protection of personnel and machine safety.

Designed for use with numerous machine safety functions, these compact safety PLCs are intended for use in safety related parts of control systems. They can manage up to:

- category 4 conforming to EN 954-1,
- performance level "e" conforming to EN/ISO 13849-1,
- SIL 3 (safety integrity level) conforming to EN/IEC 61508.

The compact safety PLC range XPSMF40ee consists of 6 versions that are differentiated by their non safety related communication protocols.

Compact	Digital	Line	Communication				
PLCs	Inputs/Outputs	control	On Ethernet ne	On fieldbus			
		outputs	Safety protocol	Non safety protocol			
XPSMF4000	24, configurable	8	SafeEthernet	-	-		
XPSMF4002	24, configurable	8	SafeEthernet	Modbus [™] TCP/IP Server	-		
XPSMF4020	24, configurable	8	SafeEthernet	-	Modbus serial Slave (RTU)		
XPSMF4022	24, configurable	8	SafeEthernet	Modbus TCP/IP Server	Modbus serial Slave (RTU)		
XPSMF4040	24, configurable	8	SafeEthernet	-	PROFIBUS DP V0 slave		
XPSMF4042	24, configurable	8	SafeEthernet	Modbus TCP/IP Server	PROFIBUS DP V0 slave		

Safety PLCs

In order to meet safety requirements, the compact safety PLCs XPSMF40 •• incorporate two essential functions (Redundancy and Self-monitoring) complying to category 4 conforming to EN 954-1 and performance level "e" conforming to EN/ISO 13849-1 in addition to the SafeEthernet safety communication protocol between the safety PLCs and the safety remote I/O modules (Special Switch).

■ Redundancy: the triple processor integrated in the compact safety PLCs analyzes and compares the data received from the safety inputs and outputs. The incoming and outgoing data (programmed values and received values) are received in parallel by the three processors and compared in real-time.

Self-monitoring ("Watchdog"): the compact safety PLCs continuously monitor the data processing cycle and the execution of tasks, and intervenes if the cycle time does not conform to the predefined value.

■ The integrated switch (Special Switch) stores for a very short time and sends at very high speed the data provided by the inputs and outputs of the safety PLCs on the Ethernet network, while avoiding signal collisions and excessive amounts of data on the network.



Functional diagrams

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Preventa[™] safety PLCs Compact, XPSMF40



Compact safety PLCs XPSMF4040/MF4042



Line control for safety PLCs XPSMF40••

Line control is a means of short-circuit and line break monitoring. Using line control outputs enables SIL 3 (EN/IEC 61508) and category 4 (EN 954-1) safety to be achieved. The line control outputs send a high signal with a very short low signal, thus enabling a wiring anomaly (short-circuit, line break) to be seen at the inputs of the safety PLCs.

The line control outputs 1 to 8 are connected to the digital inputs of the same circuit.

Example: Emergency stop pushbutton with two normally closed (N.C.) contacts that are supplied by two different line control outputs connected via these two normally closed contacts and fed into the inputs of the safety PLCs

Programming automated safety functions

Software **XPSMFWIN** (reference SSV1XPSMFWIN) running on a PC enables the programming of all safety remote I/O modules and safety PLCs, as well as configuration of the communication settings.

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		- • • • •			

Preventa[™] safety PLCs Compact, XPSMF40

- 24 configurable I/O channels
- digital inputs
- or digital outputs
- and 8 (2 x 4) line control output channels.

Digital inputs

Compact safety PLCs **XPSMF40ee** incorporate up to 24 digital inputs for the connection of safety related input devices, such as emergency stop contacts, magnetic switches, and light curtains.

Compact PLCs	Digital i	igital inputs				
	N°	Safety detection	Safety dialog			
XPSMF4000	24	Limit switches,	Mushroom head Emergency			
XPSMF4002	24	Guard switches, with reset and with actuator,	stops, Enclosures for control and			
XPSMF4020	24	Light curtains type 2 and type	signalling units,			
XPSMF4022	24	4,	Two-hand control stations			
XPSMF4040	24	Safety mats and sensing edges				
XPSMF4042	24	euges				

Digital outputs

Compact safety PLCs **XPSMF40** incorporate up to 24 digital outputs for the connection of safety related output devices, such as contactors, illuminated beacons, and sirens.

Compact PLCs	Digital outputs						
	N°	Safety actuators	Safety dialog				
XPSMF4000	24	Contactors-motors,	Beacons and indicator banks,				
XPSMF4002	24	Contactors-reversing, Variable speed drives	Rotating mirror beacons, Sirens				
XPSMF4020	24	variable speed drives	Silens				
XPSMF4022	24						
XPSMF4040	24						
XPSMF4042	24						

Line control outputs

Compact PLCs	Line control outputs				
	N°				
XPSMF4000	8	Short-circuit and line break monitoring			
XPSMF4002	(2 x 4)				
XPSMF4020					
XPSMF4022]				
XPSMF4040					
XPSMF4042					

Remote inputs and outputs

In addition to the inputs/outputs integrated as standard, compact safety PLCs XPSMF40•• can be connected to safety remote input modules XPSMF1 and/or safety remote output modules XPSMF2 and/or safety remote mixed I/O modules XPSMF3.

The safety remote input, output and mixed I/O modules can be located within the vicinity of the machines to be monitored, thus reducing cabling.

Communication between these safety remote I/O modules and safety PLCs **XPSMF40**•• is performed on an Ethernet network using the SafeEthernet safety protocol, via the integrated RJ45 switched Ethernet communications ports.

Integrating safety PLCs XPSMF40 on a Premium[™] automation platform

Designed for mechanical integration on a Premium automation platform, safety PLCs **XPSMF40** occupy 2 slots on the Premium rack **TSX RKY**. There is interaction between the two programming environments (Unity and XPSMFWIN): the variables defined using software **XPSMFWIN** can be retrieved by Unity (platform programming software) by using a tool included in Safety Suite V2.



Example of mechanical integration of a compact safety PLC **XPSMF40** on a Premium[™] automation platform.

- 1 Premium rack
- 2 Power supply module
- 3 Premium processor module
- 4 Other Premium modules (communication, I/O)
- 5 Compact safety PLC XPSMF40

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Preventa[™] safety PLCs Compact, XPSMF40

Safety communication on Ethernet network

Communication between the PC, Magelis[™] graphic terminals or automation platform (Premium[™]) and the compact safety PLCs **XPSMF40●** is achieved by **Ethernet** network connection via the integrated RJ45 switched Ethernet communication ports of the compact PLCs.



- 1 Premium[™] automation platform: Modbus[™] TCP/IP client.
- 2 Graphic terminal **XBTGT**: Modbus TCP/IP client.
- 3 Safety PLCs XPSMF40ee: Modbus TCP/IP servers.
- 4 Safety remote I/O modules XPSMF1/2/3. They communicate with safety PLCs XPSMF40e2 using the SafeEthernet protocol.

Communication on Modbus serial (RTU) and PROFIBUS DP fieldbus

■ On **Modbus serial (RTU)**, safety PLCs **XPSMF4020** and **XPSMF4022** are slaves of the Premium[™] automation platform and Magelis graphic terminal.

They are connected to the Modbus serial network via their RJ45 connector.



- 1 Graphic terminal **XBTGT**: Modbus serial (RTU) master.
- 2 Premium[™] automation platform: Modbus serial (RTU) master.
- 3 Safety PLCs **XPSMF402e**: Modbus serial (RTU) slave, Modbus TCP/IP server.
- 4 Safety remote I/O modules XPSMF1/2/3. They communicate with safety PLCs XPSMF402• using the SafeEthernet protocol.
- 5 Graphic terminal XBTGT: Modbus serial (RTU) client.

■ On **PROFIBUS DP**, safety PLCs **XPSMF4040** and **XPSMF4042** are slaves of the Premium[™] automation platform and Magelis graphic terminal.

They are connected to the PROFIBUS DP network via their SUB-D 9-pin connector.



- 1 Premium[™] automation platform: PROFIBUS DP master.
- 2 Graphic terminal XBTGT: PROFIBUS DP master.
- 3 Safety PLC XPSMF404e: PROFIBUS DP slave, Modbus TCP/IP server.
- 4 Graphic terminal XBTGT: Modbus TCP/IP client.
- 5 Safety remote I/O modules XPSMF1/2/3. They communicate with safety PLCs XPSMF404• using the SafeEthernet protocol.

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Preventa[™] safety PLCs Compact, XPSMF40





Safety PLCs XPSMF4000/MF4002

On the front cover of the enclosure:

- One terminal block (1) for == 24 V supply.
- Two integrated RJ45 (type 10BASE-T/100BASE-TX) switched ports for programming, and for Safety and non-safety related communication on Ethernet (safety related using SafeEthernet protocol and Non-safety related using Modbus TCP/IP server protocol).
- 3 Process status LEDs.
- 4 One "Reset" button.
- 5 Six terminal blocks (1) for connection of configurable digital I/Os.
- Two terminal blocks (1) for connection of line control outputs. 6
- On the rear face: one removable plate with spring mounting for mounting on 35 mm DIN rail.

Safety PLCs XPSMF4020/MF4022

On the front cover of the enclosure:

- One terminal block (1) for == 24 V supply.
- Two integrated RJ45 (type 10BASE-T/100BASE-TX) switched ports for programming, and for Safety and non-safety related communication on Ethernet (safety related using SafeEthernet protocol and Non-safety related using Modbus server protocol).
- 3 Process status LEDs.
- One "Reset" button. 4
- Six terminal blocks (1) for connection of configurable digital I/Os.
- Two terminal blocks (1) for connection of line control outputs. 6
- One RJ45 connector for connection on Modbus serial (RTU), with 2 process status LEDs.
- On the rear face: one removable plate with spring mounting for mounting on 8 35 mm DIN rail.

Safety PLCs XPSMF4040/MF4042

On the front cover of the enclosure:

- One terminal block (1) for --- 24 V supply.
- Two integrated RJ45 (type 10BASE-T/100BASE-TX) switched ports for 2 programming, and for Safety and non-safety related communication on Ethernet (safety related using SafeEthernet protocol and Non-safety related using Modbus TCP/IP server protocol).
- Process status LEDs. 3
- 4 One "Reset" button.
- 5 Six terminal blocks (1) for connection of configurable digital I/Os.
- Two terminal blocks (1) for connection of line control outputs.
- One SUB-D (9-pin female) connector for connection on PROFIBUS DP, with 2 7 process status LEDs.
- 8 On the rear face: one removable plate with spring mounting for mounting on 35 mm DIN rail.

(1) Removable Screw and Cage clamp terminals are provided with compact safety PLCs XPSMF40.





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Description (continued)

Safety automation system solutions Preventa[™] safety PLCs Compact, XPSMF40

	1	5	9	13	17	21	T1 T5
			10	14	18	22	T2 T6
							T3 T7
FAU 🕒 BL 🌰	4	8	12	16	20	24	T4 T8

Process status LEDs



1 Internal Ethernet LED

2 External Ethernet LEDs



Modbus serial (RTU) LEDs



PROFIBUS DP LEDs

Proces	s status	LEDs on	safety PLCs XPSMF40●●
LED	Color	Status	Meaning
124	Green	On	Channels configured as inputs: input signal being received. Channels configured as outputs: output signal being sent.
T1T8	Green	On	Line control outputs active.
PWR	Green	On	24 V voltage present.
		Off	No voltage.
PG	Yellow	On	The CPU is being loaded with a new configuration.
		Flashing	The FLASH ROM is being loaded with a new operating system
	Ded	Off	No loading of configuration or operating system.
ERR	Red	On	Software error or hardware anomaly detected by the CPU.
			The monitoring program (Watchdog) has triggered the STOP state of the process because the programmed cycle time has been exceeded.
			The CPU has stopped the execution of the user application, ended all hardware and software tests and all outputs have been reset.
			The process can only be started again from the PC.
		Off	No errors detected.
FAU	Orange	On	Error display for line control.
			The user application has caused an error.
			The system configuration is defective.
		Floobing	The loading of a new operating system was defective and the operating system is corrupt.
		Flashing	An error has occurred while writing to FLASH ROM memory (during updating of the operating system). One or more I/O errors have occurred.
		Off	None of the above errors have occurred.
RUN	Green	On	Normal service mode, loaded program running, the PLC
	Croon		receives I/O messages, communication and hardware/softwar tests carried out.
		Flashing	The CPU is in STOP and is not executing any user application. All the outputs are reset to a safe, de-energized state.
		Off	The CPU is in "ERROR" state (see ERR).
FOR	Green	On Flashing	The CPU is in RUN mode and force is active.
			The system is not processing (STOP), but force is prepared an is activated if the triple processor is started.
OSL	Orango	Off Flashing	Force mode not activated. Emergency loading of the operating system is active.
BL		Flashing	COM in INIT Fail state.
	-	-	PLCs XPSMF40
LK/ACT	Green	Off	No connection/link established.
external	Croon	On	Connection established/link established.
		Flashing	External data exchange (speed 10100 Mbps).
LK/ACT	Green	Off	No connection/link established.
internal		On	Connection established/link established.
		Flashing	Internal data exchange (speed 10100 Mbps).
Modbu	s [™] seria	I (RTU) LE	EDs on safety PLCs XPSMF4020/MF4022
сом	Yellow	Off	No bus network signals being received or transmitted.
		On	Bus network signals being received or transmitted.
RDY	Green	Off	Transmission power not available.
		On	Equipment on.
			safety PLCs XPSMF4040/MF4042
RUN	Green	Off	Equipment not connected or not operational.
ERR	Red	On Off	Equipment operational. Transmission power not available or the slave is exchanging
		On	data. Connection to other equipment is established but no data exchange is possible.
			Bus disconnected or bus Master not available. A configuration error has occurred and no data exchange is
		Flashing	

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Safety automation system solutions Preventa[™] safety PLCs Compact, XPSMF40

Environment			
Compact safety PLC type			XPSMF4000/4002, XPSMF4020/4022, XPSMF4040/4042
	- in a fatura late durante of		
Products designed for max. us control systems (conforming to EN/IEC 61508)	EN 954-1, EN/ISO 13849-1 and		Category 4 (EN 954-1), Performance level "e" (EN/ISO 13849-1), Safety integrity level: SIL 3 (EN/IEC 61508)
Product certifications			IEC 61511 part 1-3: 2004, DIN VDE 0116: 1989, EN 50156-1: 2004, EN 12067-2: 2004, EN 298: 2003, EN 230: 2005, NFPA 85: 2001,
		05 (00)	EN/IEC 61131-2: 2003, EN 61000-6-2: 2001, EN 61000-6-4: 2001
Ambient air temperature onforming to EN/IEC 61131-2	Operating	°F (°C)	+32 + 140 (0+ 60)
Ŭ	Storage	°F (°C)	-40 + 185 (- 40 + 85)
elative humidity			95% (supply not connected)
egree of protection	Enclosure		IP 20
ollution			Degree of pollution II
ltitude			6560 ft. (2,000 m)
Protection class			Class II, conforming to EN/IEC 61131-2
lectromagnetic compatibility	,		Conforming to EN/IEC 61131-2
ibration resistance onforming to EN/IEC 61131-2	Operating		1 g, frequency 9150 Hz
Shock resistance onforming to EN/IEC 61131-2	Operating		15 g (duration 11 ms), unit test while operating, 2 cycles per axis
Resistance to electrostatic dis onforming to EN/IEC 61000-4-2		kV	4 contact, 8 air discharge
mmunity to high frequency in onforming to EN/IEC 61000-4-3		V/m	10 (80 MHz2 GHz), amplitude modulation 80%
Electrical specificati	ons		
Supply	Voltage	v	== 24 (external supply with separate protection conforming to EN/IEC 60950, SELV
			(Safety Extra Low Voltage) or PELV (Protection Extra Low Voltage) rated)
	Voltage limits		- 15+ 20 %
laximum power consumption	1	Α	8
dle current		Α	0.5
nmunity to momentary suppl	vinterruptions	ms	10
rotection	<u>,</u>		Internal fuse, 10 A
esponse time		ms	Depending on size of application
lock		1115	Supplied by backup capacitor for 1 week following loss of supply
	Application	kB	
lser memory	Application Data	кв kB	250
ED Parts	Dala	KD	
	Data		Yes
Digital inputs			Yes
Digital inputs lumber	Inputs not electrically isolated		Yes 24, configurable channels
Digital inputs lumber		mA	Yes
Digital inputs lumber	Inputs not electrically isolated		Yes 24, configurable channels
Digital inputs lumber Permissible current	Inputs not electrically isolated At state 0	mA	Yes 24, configurable channels 1.5 max. at 24 V
Digital inputs lumber ermissible current nput supply	Inputs not electrically isolated At state 0	mA	Yes 24, configurable channels 1.5 max. at == 24 V 3.5 at == 24 V, 4.5 at == 30 V
Digital inputs lumber Permissible current nput supply nput resistance	Inputs not electrically isolated At state 0	mA mA	Yes 24, configurable channels 1.5 max. at 24 V 3.5 at 24 V, 4.5 at 30 V 3 x 20 V/100 mA (on 24 V)
Digital inputs lumber 'ermissible current nput supply nput resistance overvoltage protection	Inputs not electrically isolated At state 0	mA mA kΩ	Yes 24, configurable channels 1.5 max. at 24 V 3.5 at 24 V, 4.5 at 30 V 3 x 20 V/100 mA (on 24 V) <7 -10, + 35
Digital inputs lumber Permissible current nput supply nput resistance Overvoltage protection ED display	Inputs not electrically isolated At state 0 At state 1	mA mA kΩ	Yes 24, configurable channels 1.5 max. at 24 V 3.5 at 24 V, 4.5 at 30 V 3 x 20 V/100 mA (on 24 V) <7 -10, + 35 Yes, see page 2/13
Digital inputs lumber Permissible current nput supply nput resistance Overvoltage protection ED display Maximum distance of equipment	Inputs not electrically isolated At state 0 At state 1	mA mA kΩ	Yes 24, configurable channels 1.5 max. at 24 V 3.5 at 24 V, 4.5 at 30 V 3 x 20 V/100 mA (on 24 V) <7 -10, + 35
Digital inputs lumber Permissible current nput supply nput resistance Overvoltage protection ED display Maximum distance of equipme Digital outputs	Inputs not electrically isolated At state 0 At state 1	mA mA kΩ	Yes 24, configurable channels 1.5 max. at 24 V 3.5 at 24 V, 4.5 at 30 V 3 x 20 V/100 mA (on 24 V) < 7 - 10, + 35 Yes, see page 2/13 984 ft. (300 m)
Digital inputs lumber Permissible current nput supply nput resistance Overvoltage protection .ED display Maximum distance of equipme Digital outputs lumber	Inputs not electrically isolated At state 0 At state 1	mA mA kΩ V	Yes 24, configurable channels 1.5 max. at 24 V 3.5 at 24 V, 4.5 at 30 V 3 x 20 V/100 mA (on 24 V) < 7 - 10, + 35 Yes, see page 2/13 984 ft. (300 m) 24, configurable channels
Digital inputs lumber ermissible current nput supply nput resistance overvoltage protection ED display laximum distance of equipme Digital outputs lumber output voltage	Inputs not electrically isolated At state 0 At state 1 ent Outputs not electrically isolated Channels 1 to 3, 5 to 7, 9 to 11,	mA mA kΩ	Yes 24, configurable channels 1.5 max. at 24 V 3.5 at 24 V, 4.5 at 30 V 3 x 20 V/100 mA (on 24 V) < 7 - 10, + 35 Yes, see page 2/13 984 ft. (300 m)
Digital inputs lumber ermissible current nput supply nput resistance evervoltage protection ED display laximum distance of equipme Digital outputs lumber putput voltage	Inputs not electrically isolated At state 0 At state 1 ent Outputs not electrically isolated Channels 1 to 3, 5 to 7, 9 to 11, 13 to 15, 17 to 19, 21 to 23	mA mA kΩ V V	Yes 24, configurable channels 1.5 max. at 24 V 3.5 at 24 V, 4.5 at 30 V 3 x 20 V/100 mA (on 24 V) < 7 - 10, + 35 Yes, see page 2/13 984 ft. (300 m) 24, configurable channels 24 ± 2 0.5 at 140 °F (60 °C)
Digital inputs lumber Permissible current hput supply hput resistance Overvoltage protection ED display Maximum distance of equipme Digital outputs lumber Dutput voltage Dutput current	Inputs not electrically isolated At state 0 At state 1 ent Outputs not electrically isolated Channels 1 to 3, 5 to 7, 9 to 11,	mA mA kΩ V V	Yes 24, configurable channels 1.5 max. at 24 V 3.5 at 24 V, 4.5 at 30 V 3 x 20 V/100 mA (on 24 V) < 7 - 10, + 35 Yes, see page 2/13 984 ft. (300 m) 24, configurable channels 24 ± 2 0.5 at 140 °F (60 °C) 1 at 140 °F (60 °C), 2 at 122 °F (50 °C)
Digital inputs lumber Permissible current hput supply hput resistance Overvoltage protection ED display Maximum distance of equipme Digital outputs lumber Dutput voltage Dutput current	Inputs not electrically isolated At state 0 At state 1 ent Outputs not electrically isolated Channels 1 to 3, 5 to 7, 9 to 11, 13 to 15, 17 to 19, 21 to 23	mA mA kΩ V V A A A mA	Yes 24, configurable channels 1.5 max. at $= 24 V$ 3.5 at $= 24 V$, 4.5 at $= 30 V$ 3 x $= 20 V/100 mA$ (on 24 V) < 7 - 10, + 35 Yes, see page 2/13 984 ft. (300 m) 24, configurable channels $= 24 \pm 2$ 0.5 at 140 °F (60 °C) 1 at 140 °F (60 °C), 2 at 122 °F (50 °C) 2 per channel
Digital inputs lumber Permissible current hput supply hput resistance Overvoltage protection ED display Maximum distance of equipme Digital outputs lumber Dutput voltage Dutput current Animum load eakage current at state 0	Inputs not electrically isolated At state 0 At state 1 ent Outputs not electrically isolated Channels 1 to 3, 5 to 7, 9 to 11, 13 to 15, 17 to 19, 21 to 23	mA mA kΩ V V	Yes 24, configurable channels 1.5 max. at $= 24 V$ 3.5 at $= 24 V$, 4.5 at $= 30 V$ 3 x $= 20 V/100 mA$ (on 24 V) < 7 - 10, + 35 Yes, see page 2/13 984 ft. (300 m) 24, configurable channels $= 24 \pm 2$ 0.5 at 140 °F (60 °C) 1 at 140 °F (60 °C), 2 at 122 °F (50 °C) 2 per channel 1 max. at 2 V
Digital inputs lumber Permissible current hput supply hput resistance Overvoltage protection .ED display Maximum distance of equipme Digital outputs lumber Dutput voltage Dutput current Aninimum load eakage current at state 0 Response to overload	Inputs not electrically isolated At state 0 At state 1 ent Outputs not electrically isolated Channels 1 to 3, 5 to 7, 9 to 11, 13 to 15, 17 to 19, 21 to 23	mA mA kΩ V 	Yes 24, configurable channels 1.5 max. at $=$ 24 V 3.5 at $=$ 24 V, 4.5 at $=$ 30 V 3 x $=$ 20 V/100 mA (on 24 V) < 7 - 10, + 35 Yes, see page 2/13 984 ft. (300 m) 24, configurable channels $=$ 24 \pm 2 0.5 at 140 °F (60 °C) 1 at 140 °F (60 °C), 2 at 122 °F (50 °C) 2 per channel 1 max. at 2 V Shutdown of outputs concerned with cyclic reconnection
Digital inputs lumber Permissible current hput supply hput resistance Overvoltage protection .ED display Maximum distance of equipme Digital outputs lumber Dutput voltage Dutput voltage Dutput current Alinimum load .eakage current at state 0 Response to overload otal output current	Inputs not electrically isolated At state 0 At state 1 ent Outputs not electrically isolated Channels 1 to 3, 5 to 7, 9 to 11, 13 to 15, 17 to 19, 21 to 23	mA mA kΩ V V A A A mA	Yes 24, configurable channels 1.5 max. at $=$ 24 V 3.5 at $=$ 24 V, 4.5 at $=$ 30 V 3 x $=$ 20 V/100 mA (on 24 V) < 7 - 10, + 35 Yes, see page 2/13 984 ft. (300 m) 24, configurable channels $=$ 24 \pm 2 0.5 at 140 °F (60 °C) 1 at 140 °F (60 °C), 2 at 122 °F (50 °C) 2 per channel 1 max. at 2 V Shutdown of outputs concerned with cyclic reconnection 7 max., shutdown of all outputs if exceeded with cyclic reconnection
Digital inputs lumber ermissible current oput supply oput resistance ermissible current overvoltage protection ED display laximum distance of equipme Digital outputs lumber output voltage output current linimum load eakage current at state 0 tesponse to overload otal output current ED display	Inputs not electrically isolated At state 0 At state 1 ent Outputs not electrically isolated Channels 1 to 3, 5 to 7, 9 to 11, 13 to 15, 17 to 19, 21 to 23 Channels 4, 8, 12, 16, 20 and 24	mA mA kΩ V 	Yes 24, configurable channels 1.5 max. at $=$ 24 V 3.5 at $=$ 24 V, 4.5 at $=$ 30 V 3 x $=$ 20 V/100 mA (on 24 V) < 7 - 10, + 35 Yes, see page 2/13 984 ft. (300 m) 24, configurable channels $=$ 24 \pm 2 0.5 at 140 °F (60 °C) 1 at 140 °F (60 °C), 2 at 122 °F (50 °C) 2 per channel 1 max. at 2 V Shutdown of outputs concerned with cyclic reconnection 7 max., shutdown of all outputs if exceeded with cyclic reconnection Yes
Digital inputs lumber ermissible current input supply input resistance invervoltage protection ED display laximum distance of equipme Digital outputs lumber inutput voltage inutput current linimum load eakage current at state 0 esponse to overload otal output current ED display laximum distance of equipme	Inputs not electrically isolated At state 0 At state 1 ent Outputs not electrically isolated Channels 1 to 3, 5 to 7, 9 to 11, 13 to 15, 17 to 19, 21 to 23 Channels 4, 8, 12, 16, 20 and 24	mA mA kΩ V 	Yes 24, configurable channels 1.5 max. at $=$ 24 V 3.5 at $=$ 24 V, 4.5 at $=$ 30 V 3 x $=$ 20 V/100 mA (on 24 V) < 7 - 10, + 35 Yes, see page 2/13 984 ft. (300 m) 24, configurable channels $=$ 24 \pm 2 0.5 at 140 °F (60 °C) 1 at 140 °F (60 °C), 2 at 122 °F (50 °C) 2 per channel 1 max. at 2 V Shutdown of outputs concerned with cyclic reconnection 7 max., shutdown of all outputs if exceeded with cyclic reconnection
Digital inputs lumber ermissible current pout supply oput resistance ivervoltage protection ED display laximum distance of equipme Digital outputs lumber output voltage output current linimum load eakage current at state 0 esponse to overload otal output current ED display laximum distance of equipme Line control outputs	Inputs not electrically isolated At state 0 At state 1 ent Outputs not electrically isolated Channels 1 to 3, 5 to 7, 9 to 11, 13 to 15, 17 to 19, 21 to 23 Channels 4, 8, 12, 16, 20 and 24 ent	mA mA kΩ V 	Yes 24, configurable channels 1.5 max. at $=$ 24 V 3.5 at $=$ 24 V, 4.5 at $=$ 30 V 3 x $=$ 20 V/100 mA (on 24 V) < 7 -10, + 35 Yes, see page 2/13 984 ft. (300 m) 24, configurable channels = 24 ± 2 0.5 at 140 °F (60 °C) 1 at 140 °F (60 °C), 2 at 122 °F (50 °C) 2 per channel 1 max. at 2 V Shutdown of outputs concerned with cyclic reconnection 7 max., shutdown of all outputs if exceeded with cyclic reconnection Yes 984 ft. (300 m)
Digital inputs lumber remissible current oput supply oput resistance Divervoltage protection ED display laximum distance of equipme Digital outputs lumber Dutput voltage Dutput current linimum load eakage current at state 0 Response to overload otal output current ED display laximum distance of equipme Line control outputs lumber	Inputs not electrically isolated At state 0 At state 1 ent Outputs not electrically isolated Channels 1 to 3, 5 to 7, 9 to 11, 13 to 15, 17 to 19, 21 to 23 Channels 4, 8, 12, 16, 20 and 24	mA mA kΩ V A A A mA mA MA A	Yes 24, configurable channels 1.5 max. at $=$ 24 V 3.5 at $=$ 24 V, 4.5 at $=$ 30 V 3 x $=$ 20 V/100 mA (on 24 V) < 7 -10, + 35 Yes, see page 2/13 984 ft. (300 m) 24, configurable channels = 24 ± 2 0.5 at 140 °F (60 °C) 1 at 140 °F (60 °C), 2 at 122 °F (50 °C) 2 per channel 1 max. at 2 V Shutdown of outputs concerned with cyclic reconnection 7 max., shutdown of all outputs if exceeded with cyclic reconnection Yes 984 ft. (300 m) 8 (2 x 4)
Digital inputs lumber remissible current oput supply oput resistance Divervoltage protection ED display laximum distance of equipme Digital outputs lumber Dutput voltage Dutput current linimum load eakage current at state 0 Response to overload otal output current ED display laximum distance of equipme Line control outputs lumber	Inputs not electrically isolated At state 0 At state 1 ent Outputs not electrically isolated Channels 1 to 3, 5 to 7, 9 to 11, 13 to 15, 17 to 19, 21 to 23 Channels 4, 8, 12, 16, 20 and 24 ent	mA mA kΩ V 	Yes 24, configurable channels 1.5 max. at $=$ 24 V 3.5 at $=$ 24 V, 4.5 at $=$ 30 V 3 x $=$ 20 V/100 mA (on 24 V) < 7 -10, + 35 Yes, see page 2/13 984 ft. (300 m) 24, configurable channels = 24 ± 2 0.5 at 140 °F (60 °C) 1 at 140 °F (60 °C), 2 at 122 °F (50 °C) 2 per channel 1 max. at 2 V Shutdown of outputs concerned with cyclic reconnection 7 max., shutdown of all outputs if exceeded with cyclic reconnection Yes 984 ft. (300 m)
Digital inputs Number Permissible current nput supply nput resistance Divervoltage protection .ED display Maximum distance of equipme Digital outputs Number Dutput voltage Dutput voltage Dutput current Leakage current at state 0 Response to overload Total output current .ED display Maximum distance of equipme Line control outputs Number Dutput voltage	Inputs not electrically isolated At state 0 At state 1 ent Outputs not electrically isolated Channels 1 to 3, 5 to 7, 9 to 11, 13 to 15, 17 to 19, 21 to 23 Channels 4, 8, 12, 16, 20 and 24 ent	mA mA kΩ V A A A mA mA MA A	Yes 24, configurable channels 1.5 max. at $=$ 24 V 3.5 at $=$ 24 V, 4.5 at $=$ 30 V 3 x $=$ 20 V/100 mA (on 24 V) < 7 -10, + 35 Yes, see page 2/13 984 ft. (300 m) 24, configurable channels = 24 ± 2 0.5 at 140 °F (60 °C) 1 at 140 °F (60 °C), 2 at 122 °F (50 °C) 2 per channel 1 max. at 2 V Shutdown of outputs concerned with cyclic reconnection 7 max., shutdown of all outputs if exceeded with cyclic reconnection Yes 984 ft. (300 m) 8 (2 x 4)
Digital inputs Number Permissible current nput supply nput resistance Divervoltage protection .ED display Maximum distance of equipme Digital outputs Number Dutput voltage Dutput voltage Dutput current Leakage current at state 0 Response to overload Total output current .ED display Maximum distance of equipme Line control outputs Number Dutput voltage Dutput voltage Dutput voltage Dutput voltage Dutput voltage Dutput voltage Dutput voltage Dutput voltage	Inputs not electrically isolated At state 0 At state 1 ent Outputs not electrically isolated Channels 1 to 3, 5 to 7, 9 to 11, 13 to 15, 17 to 19, 21 to 23 Channels 4, 8, 12, 16, 20 and 24 ent	mA mA kΩ V V A A A mA mA M A V V	Yes 24, configurable channels 1.5 max. at $=$ 24 V 3.5 at $=$ 24 V, 4.5 at $=$ 30 V 3 x $=$ 20 V/100 mA (on 24 V) < 7 -10, + 35 Yes, see page 2/13 984 ft. (300 m) 24, configurable channels = 24 ± 2 0.5 at 140 °F (60 °C) 1 at 140 °F (60 °C), 2 at 122 °F (50 °C) 2 per channel 1 max. at 2 V Shutdown of outputs concerned with cyclic reconnection 7 max., shutdown of all outputs if exceeded with cyclic reconnection Yes 984 ft. (300 m) 8 (2 x 4) 20, depending on the supply voltage
Digital inputs Number Permissible current nput supply nput resistance Divervoltage protection .ED display Maximum distance of equipme Digital outputs Number Dutput voltage Dutput voltage Dutput current Leb display Maximum distance of equipme Line control outputs Number Dutput voltage Dutput voltage Dutput current .ED display Maximum distance of equipme Line control outputs Number Dutput voltage Dutput voltage Dutput voltage Dutput current Animum load	Inputs not electrically isolated At state 0 At state 1 ent Outputs not electrically isolated Channels 1 to 3, 5 to 7, 9 to 11, 13 to 15, 17 to 19, 21 to 23 Channels 4, 8, 12, 16, 20 and 24 ent	mA mA kΩ V V A A A mA MA A V V V V MA	Yes 24, configurable channels 1.5 max. at $=$ 24 V 3.5 at $=$ 24 V, 4.5 at $=$ 30 V 3 x $=$ 20 V/100 mA (on 24 V) < 7 -10, + 35 Yes, see page 2/13 984 ft. (300 m) 24, configurable channels = 24 ± 2 0.5 at 140 °F (60 °C) 1 at 140 °F (60 °C), 2 at 122 °F (50 °C) 2 per channel 1 max. at 2 V Shutdown of outputs concerned with cyclic reconnection 7 max., shutdown of all outputs if exceeded with cyclic reconnection Yes 984 ft. (300 m) 8 (2 x 4) 20, depending on the supply voltage 60
ED display Digital inputs Jumber Permissible current Input supply Input resistance Dvervoltage protection ED display Maximum distance of equipme Digital outputs Jumber Dutput voltage Dutput current Minimum load Leakage current at state 0 Response to overload Fotal output current ED display Maximum distance of equipme Line control outputs Jumber Dutput voltage Dutput voltage Dutput voltage Dutput surrent ED display Maximum distance of equipme Line control outputs Jumber Dutput voltage Dutput current Minimum load Response to overload LED display	Inputs not electrically isolated At state 0 At state 1 ent Outputs not electrically isolated Channels 1 to 3, 5 to 7, 9 to 11, 13 to 15, 17 to 19, 21 to 23 Channels 4, 8, 12, 16, 20 and 24 ent	mA mA kΩ V V A A A mA MA A V V V V MA	Yes 24, configurable channels 1.5 max. at $= 24 \vee$ 3.5 at $= 24 \vee$, 4.5 at $= 30 \vee$ 3 x $= 20 \vee$ /100 mA (on 24 \vee) < 7 - 10, + 35 Yes, see page 2/13 984 ft. (300 m) 24, configurable channels $= 24 \pm 2$ 0.5 at 140 °F (60 °C) 1 at 140 °F (60 °C) 1 at 140 °F (60 °C), 2 at 122 °F (50 °C) 2 per channel 1 max. at 2 \vee Shutdown of outputs concerned with cyclic reconnection 7 max., shutdown of all outputs if exceeded with cyclic reconnection Yes 984 ft. (300 m) 8 (2 x 4) 20, depending on the supply voltage 60 None
Digital inputs Number Permissible current nput supply nput resistance Divervoltage protection .ED display Maximum distance of equipme Digital outputs Number Dutput voltage Dutput voltage Dutput current LeD display Maximum distance of equipme Line control outputs Number Dutput voltage Dutput current Minimum load Response to overload	Inputs not electrically isolated At state 0 At state 1 ent Outputs not electrically isolated Channels 1 to 3, 5 to 7, 9 to 11, 13 to 15, 17 to 19, 21 to 23 Channels 4, 8, 12, 16, 20 and 24 ent	mA mA kΩ V V A A A mA MA A V V V MA	Yes 24, configurable channels 1.5 max. at $= 24 \vee$ 3.5 at $= 24 \vee$, 4.5 at $= 30 \vee$ 3 x $= 20 \vee$, 100 mA (on 24 \vee) < 7 - 10, + 35 Yes, see page 2/13 984 ft. (300 m) 24, configurable channels $= 24 \pm 2$ 0.5 at 140 °F (60 °C) 1 at 140 °F (60 °C) 2 per channel 1 max. at 2 \vee Shutdown of outputs concerned with cyclic reconnection 7 max., shutdown of all outputs if exceeded with cyclic reconnection Yes 984 ft. (300 m) 8 (2 x 4) 20, depending on the supply voltage 60 None 4 x \ge 19.2 V/60 mA (on 24 V), short-circuit current Yes

Specifications (continued)

Safety automation system solutions Preventa[™] safety PLCs Compact, XPSMF40

	ork						
Safety commu	inication using SafeEthernet safety prot	ocol					
Compatibility			XPSMF4000/MF4002, XPSMF4020/MF40	22, XPSMF4040/MF4042			
Fransmission	Communication ports		Integrated 2 RJ45 switched Ethernet comm	nunications ports			
	Baud rate	Mbps	100 Half duplex, 10 Full duplex, Autonegoti	iation			
Structure			10BASE-T/100BASE-TX				
ledium			Dual twisted pair cable, category 5D or bett	ter (Ethernet)			
Non safety co	mmunication using Modbus [™] TCP/IP pro	otocol					
Compatibility			XPSMF4002, XPSMF4022, XPSMF4042				
connection ports	s Number and type		Integrated 2 RJ45 switched Ethernet comm	nunications ports			
	Baud rate	Mbps	100 Half duplex, 10 Full duplex, Autonegoti	iation			
	Master/Slave		Server (slave)				
tructure			10BASE-T/100BASE-TX				
ledium			Dual twisted pair cable, category 5D or better (Ethernet)				
ansparent Ready™ Class			A10				
ervice	Standard Ethernet TCP/IP communication		Modbus TCP/IP server.				
	services (supported by compact safety		Modbus TCP/IP messaging (reading/writing	g of data words)			
	PLCs XPSMF40)		Modbus identification requests				
	TCP port		Standard 502				
	Max. number of Modbus TCP/IP connections		1 to 20				
Modbus serial	(RTU)						
Compatibility			XPSMF4020, XPSMF4022				
erial link ports	Number and type		1 x RJ45				
Master/Slave			Slave, V0				
ddressing			122 slave addresses				
hysical layer			RS 485				
ledium			Shielded dual twisted pair cable				
PROFIBUS DP							
Compatibility			XPSMF4040, XPSMF4042				
erial link ports	Number and type		1 x SUB-D 9-pin female				
Master/Slave			Slave, V0				
hysical layer	indeten, eldre		RS 485				
ledium			Shielded dual twisted pair cable				
Connection							
			Demonship community (amin al bla alta (2)	Personal la consiste descrite al blacket			
Type of connect	ion Number of terminal blocks		Removable screw clamp terminal blocks (2)	Removable spring terminal blocks			
Supply onnection	For 1 cable without cable end		Solid or flexible AWG 24-12 (0.22.5				
	For a cable without cable end		mm ²)	-			
	For 1 flexible cable with or without plastic cable		AWG 24-14 (0.252.5 mm ²)	-			
	end For 2 cables of same diameter, without cable		_	Solid or flexible AWG 24-12 (0.22.5			
	end			mm ²)			
	For 2 cables of same diameter, flexible without cable end		-	AWG 24-12 (0.252.5 mm ²)			
	For 2 cables of same diameter, flexible with plastic cable end		-	AWG 24-12 (0.252.5 mm ²)			
able	Tightening torque		4.43 lb-in (0.5 Nm)	-			
onnection	Bared length		0.39" (10 mm)	0.35" (9 mm)			
Connection to	Number of terminal blocks		8	8			
igital input hannels, digital	For 1 cable without cable end		Solid or flexible AWG 24-16 (0.141.5 mm ²)	-			
utput hannels, line	For 1 flexible cable without cable end		AWG 24-16 (0.251.5 mm ²)	-			
,	For 1 flexible cable with plastic cable end		AWG 24-20 (0.250.5 mm ²)	-			
nannels	For 2 cables of same diameter, without cable		-	Solid or flexible AWG 26-16 (0.141.			
	end For 2 cables of same diameter, flexible without		-	mm ²) AWG 22 (0.250.34 mm ²)			
	cable end						
	For 2 cables of same diameter, flexible with plastic cable end		-	AWG 20 (0.5 mm²)			
able onnection	Tightening torque		1.952.21 lb-in (0.220.25 Nm)	-			
COLUMPICATION	Bared length		0.35" (9mm)	0.35" (9mm)			

(1) AWG: American Wire Gauge.
 (2) Removable Screw and Cage Clamp terminals provided with safety PLCs XPSMF40e.

Introduction:	Specifications:	References:	Dimensions, mounting:	Connections:		
page 2/8	page 2/14	page 2/16	page 2/19	page 2/20		



References

Safety automation system solutions

Modbus[™] PROFIBUS DP

(RTU)

Weight

oz (kg)

35.273 (1.000)

Reference

XPSMF4000

Preventa[™] safety PLCs Compact, XPSMF40

Communication on

SafeEthernet Modbus TCP/IP serial

protocol

Ethernet network

protocol



XPSMF4000 XPSMF4002

0...24 configurable 2 x 4 Yes channels Yes, server _ Yes, server

Line

control

outputs

Compact safety PLCs

= 24 V supply Digital

Inputs or Outputs

XPSMF4020 XPSMF4022



XPSMF4002 35.273 _ _ (1.000) XPSMF4020 35.273 Yes. _ (1.000) slave Yes, XPSMF4022 35.273 (1.000) slave XPSMF4040 35.273 Yes, _ slave (1.000)XPSMF4042 35.273 Yes, server Yes, _ slave (1.000)

XPSMF4040 XPSMF4042

Configuration software

■ Reference SSV1XPSMFWIN contains the full version of the programming software XPSMFWIN software for the XPSMF Safety PLCs. The XPSMFWIN is part of our Safety Suite and is not available separately.

Description	Operating system	Details	Languages	Reference	Weight oz (kg)
Configuration software XPSMFWIN for programming compact safety PLCs CD-ROM + user manual	Windows [®] 2000, Windows [®] XP	Software available on Safety Suite V2 software pack	English, German, French	SSV1XPSMFWIN	18.342 (0.520)

Introduction: page 2/8	Specifications: page 2/14	References: page 2/16	Dimensions, mounting: page 2/19	Connections: page 2/20		
Schneider						

GElectric

References (continued)

Safety automation system solutions Preventa[™] safety PLCs Compact, XPSMF40



ABL8RPS24050



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ABL1REM24025
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XBTGT2130, XBTGT2330



XBTGT4330



XBTGT5•30



XBTGT6330

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	and the second se
ALC: NOT THE OWNER OF THE OWNER OWNER OF THE OWNER OWNE OWNER OWNE	

XBTGT7340

N	A 4 . 4	ALC:	ALC: UNK OFFICIAL	A	On the state of	D (144.1.1.4
Mains input voltage	Output voltage	Nominal power	Nominal current	Auto-protect reset	Conformity to standard IEC EN 61000-3-2 and IEC EN 60950	Reference	Weight
٧	v	w	Α				oz (kg)
Universal range, sing	jle-phase	(N-L1) or	2-phase (L1-L2) connec	tion		
~ 100…120 V/200…500 - 15%, + 10%	2428.8	72	3	Auto/Manual	Yes	ABL8RPS24030	10.582 (0.300)
50/60 Hz		120	5	Auto/Manual	Yes	ABL8RPS24050	24.692 (0.700)
		240	10	Auto/Manual	Yes	ABL8RPS24100	35.273 (1.000)
Dedicated range, sin	gle-phase	e connect	ion				
~ 100…240 <i>(1)</i> wide range, 47…63 Hz	12	60	5	Auto	No	ABL1REM12050	15.521 (0.440)
	24	60	2.5	Auto	No	ABL1REM24025	15.521 (0.440)
~100120/200240 (2)	24	240	10	Auto	No	ABL1REM24100	31.041 (0.880)

Magelis[™] multifunction graphic terminals with touch sensitive screen and on-board Ethernet (1)(2)

STN PLCs) 1 x RJ 1 x US 1 x RJ 1 x SU PLCs) 1 x RJ 1 x SU 1 x RJ 1 x RJ	45 (RS 485 serial link) 38 (peripheral connection and a 145 (Ethernet TCP/IP, 10BASE-1 JB-D 9-pin (RS 232C or RS 422/) 145 (RS 485 serial link) 38 (peripheral connection and a 145 (Ethernet TCP/IP, 10BASE-1 JB-D 9-pin (RS 232C or RS 422/) 145 (Ethernet TCP/IP, 10BASE-1 J45 (Ethernet TCP/IP, 10BASE-1 J45 (Ethernet TCP/IP, 10BASE-1 JB-D 9-pin (RS 232C or RS 422/)	pplication transfer) f/100BASE-TX) /485 serial link to pplication transfer) f/100BASE-TX) /485 serial link to pplication transfer) f/100BASE-TX)	16 Mb 16 Mb 32 Mb	XBTGT2330 XBTGT2330 XBTGT4330	(1.000
PLCs) 1 x RJ 1 x US 1 x RJ 1 x SL PLCs) 1 x RJ 1 x US 1 x RJ 1 x SL PLCs) 1 x RJ 1 x SL PLCs)) 145 (RS 485 serial link) BB (peripheral connection and an 145 (Ethernet TCP/IP, 10BASE-1 JB-D 9-pin (RS 232C or RS 422/) 145 (RS 485 serial link) BB (peripheral connection and an 145 (Ethernet TCP/IP, 10BASE-1 JB-D 9-pin (RS 232C or RS 422/)	pplication transfer) r/100BASE-TX) /485 serial link to pplication transfer) r/100BASE-TX)	32 Mb	XBTGT4330	
PLCs) 1 x RJ 1 x US 1 x RJ) 145 (RS 485 serial link) SB (peripheral connection and a 145 (Ethernet TCP/IP, 10BASE-1 JB-D 9-pin (RS 232C or RS 422/)	pplication transfer) [/100BASE-TX)			63.493 (1.800)
PLCs) 1 x RJ)	485 serial link to	32 Mb	VDTOTCOOC	
	SB (peripheral connection and a 145 (Ethernet TCP/IP, 10BASE-1			XBTGT5230	105.822 (3.000)
PLCs) 1 x RJ 2 x US	JB-D 9-pin (RS 232C or RS 422/) I45 (RS 485 serial link) 38 (peripheral connection and a I45 (Ethernet TCP/IP, 10BASE-1	pplication transfer)	32 Mb	XBTGT5330	105.822 (3.000)
PLCs) 1 x RJ 2 x US) 145 (RS 485 serial link) 6B (peripheral connection and a	pplication transfer)	32 Mb	XBTGT6330	105.822 (3.000)
PLCs) 1 x RJ 2 x US) 145 (RS 485 serial link) 6B (peripheral connection and a	pplication transfer)	32 Mb	XBTGT7340	197.534 (5.600)
-	PLCs 1 x R, 2 x US 1 x R, 1 x SL PLCs 1 x R, 2 x US 1 x R, (1) Se (2) Of	PLCs) 1 x RJ45 (RS 485 serial link) 2 x USB (peripheral connection and a 1 x RJ45 (Ethernet TCP/IP, 10BASE-1 1 x SUB-D 9-pin (RS 232C or RS 422, PLCs) 1 x RJ45 (RS 485 serial link) 2 x USB (peripheral connection and a 1 x RJ45 (Ethernet TCP/IP, 10BASE-1 (1) Service instructions, USB connect (2) Other operator dialog terminals, in	1 x RJ45 (RS 485 serial link) 2 x USB (peripheral connection and application transfer) 1 x RJ45 (Ethernet TCP/IP, 10BASE-T/100BASE-TX) 1 x SUB-D 9-pin (RS 232C or RS 422/485 serial link to PLCs) 1 x RJ45 (RS 485 serial link) 2 x USB (peripheral connection and application transfer) 1 x RJ45 (Ethernet TCP/IP, 10BASE-T/100BASE-TX) (1) Service instructions, USB connectors locking device a (2) Other operator dialog terminals, industrial PCs: please	PLCs) 1 x RJ45 (RS 485 serial link) 2 x USB (peripheral connection and application transfer) 1 x RJ45 (Ethernet TCP/IP, 10BASE-T/100BASE-TX) 1 x SUB-D 9-pin (RS 232C or RS 422/485 serial link to 32 Mb PLCs) 1 x RJ45 (RS 485 serial link) 2 x USB (peripheral connection and application transfer) 1 x RJ45 (Ethernet TCP/IP, 10BASE-T/100BASE-TX) (1) Service instructions, USB connectors locking device and mounting (2) Other operator dialog terminals, industrial PCs: please refer to our	PLCs) 1 x RJ45 (RS 485 serial link) 2 x USB (peripheral connection and application transfer) 1 x RJ45 (Ethernet TCP/IP, 10BASE-T/100BASE-TX) 1 x SUB-D 9-pin (RS 232C or RS 422/485 serial link to 32 Mb XBTGT7340 PLCs) 1 x RJ45 (RS 485 serial link) 2 x USB (peripheral connection and application transfer)

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Safety automation system solutions Preventa[™] safety PLCs Compact, XPSMF40

Connecting cables for network and bus

\sim
490NTW000.

Description	Pre-fitted connectors		Length ft. (m)	Reference	Weigh oz (kę
Shielded twisted pair cables,	2 RJ45 connectors		6.56 (2)	490NTW00002(1)	
straight through	For connection to DTE	16.40 (5)	490NTW00005(1)		
	(Data Terminal Equipment)	39.37 (12)	490NTW00012(1)		
		131.23 (40)	490NTW00040 (1)		
			262.47 (80)	490NTW00080(1)	
Shielded twisted pair cables,	2 RJ45 connectors		16.40 (5)	490NTC00005(1)	
crossed wires	For connection between hu transceivers	bs, switches and	49.21 (15)	490NTC00015(1)	
			131.23 (40)	490NTC00040(1)	
				490NTC00080(1)	
Connection to Modbus [™] s	erial link				
Description	Use		Length	Reference	Weigh
	From	То	ft. (m)		lb (kg
Trunk cables, shielded dual twisted pair, RS 485	Compact safety PLCs XPSMF4020/MF4022	Modbus splitter box LU9 GC3 (RJ45)	328 (100)	TSXCSA100	12.52 (5.68
	(RJ45)		656 (200)	TSXCSA200	24.0 (10.92
			1640 (500)	TSXCSA500	66.1 (30.00
	Graphic terminals XBTGT (SUB-D 9-pin)	Modbus splitter box LU9 GC3 (RJ45)	8.2 (2.5)	XBTZ938(2)	0.4 (0.21
Adaptor for cable XBTZ938	SUB-D 9-pin (XBTGT)	XBTZ938 (SUB-D 25-pin)	0.66 (0.2)	XBTZG909	
Description	Specifications	Sold in lots of		Unit reference	Weigl oz (k
End of line adaptors For RJ45 connector	$R = 120 \Omega,$ C = 1 nF	2		VW3A8306RC	7.0 (0.20
	R = 150 Ω	2		VW3A8306R	0.3 (0.01
PROFIBUS DP bus conne	•				
Description	Profile	Services		Reference TSXPBY100	Weigl oz (kę
PROFIBUS DP module set for Premium™ PLCs	Master, 12 Mbps	Master, 12 Mbps Class 1 and Class 2 master V0 functions, see specifications. PROFIBUS FMS messaging not supported			30.6 (0.87
Description	Use			Reference	Weigl oz (k
Remote inputs/outputs on PROFIBUS DP bus	Advantys™ STB network in	terface module		STBNDP2112	4.9 (0.14
	Momentum [™] communication		170DTN11000		
Connectors for remote I/O	Line terminators		490NAD91103		
communication module	Intermediate connection			490NAD91104	
	Intermediate connection an		490NAD91105		
Description	Length ft. (m)			Reference	Weigh oz (kg
PROFIBUS DP connecting	328 (100)			TSXPBSCA100	
cables	1312 (400)			TSXPBSCA400	
Description				Reference	Weigh oz (kg
Replacement parts	Main bus junction box			490NAE91100	
	PCMCIA card			467NHP81100	

cables, add the letter **U** to the end of the reference.





490NAD91103

(2) Requires adaptor XBTZG909.

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Dimensions, mounting

Safety automation system solutions

Preventa[™] safety PLCs Compact, XPSMF40

Dimensions

XPSMF40●●







(1) 6.02 in (153 mm) with screw terminal block, 5.96 in (151.4 mm) with spring terminal block. (2) Removable plate with spring mounting for mounting on 1.38 (35 mm) DIN rail.

Mounting

Mounting precautions relating to connectors Access to Ethernet network Access to Modbus[™] serial link Access to Profibus DP bus (RTU) RJ45 socket (SafeEthernet protocol, Modbus TCP/IP server protocol) Connector 490 NAD 911 03 in SUB-D 9-pin socket RJ45 socket \Box 〕 Г Г INCHES Millimieters r = 22.5 min. r = 22.5 min. Dual Dimensions 1.77 45 Mounting in panel or enclosure Mounting on Premium[™] rack Mechanical mounting only, without connection to either the back plane bus or to the Premium™ platform supply 3.94 100 (□) C 3.94 100 (....



(1) Minimum recommended value. (2) Prefabricated electrical ducting for passage of cables.

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Safety automation system solutions Preventa[™] safety PLCs Compact, XPSMF40

Connections

D



m	Connection	Connector	Screw	22, XPSMF4040/MF4042 Function
	Connection Supply		24 V	24 V
	Supply	Supply	24 V 0 V	24 V 24 V (reference pole)
	Divital	0	FE	Ground (1)
	Digital Inputs or Outputs	Connector 1	S+	Supply to Inputs 1 to 4
			1	Input/Output 1
			2	Input/Output 2
			3	Input/Output 3
			4	Input/Output 4
			L-	Inputs/Outputs 1 to 4 common
		Connector 2	<u>S+</u>	Supply to Inputs 5 to 8
			5	Input/Output 5
			6	Input/Output 6
			7	Input/Output 7
			8	Input/Output 8
			L-	Inputs/Outputs 5 to 8 common
		Connector 3	S+	Supply to Inputs 9 to 12
			9	Input/Output 9
			10	Input/Output 10
			11	Input/Output 11
		12	Input/Output 12	
			L-	Inputs/Outputs 9 to 12 common
	Connector 5	S+	Supply to Inputs 13 to 16	
		13	Input/Output 13	
		14	Input/Output 14	
			15	Input/Output 15
		16	Input/Output 16	
			L-	Inputs/Outputs 13 to 16 common
		Connector 6	S+	Supply to Inputs 17 to 20
			17	Input/Output 17
			18	Input/Output 18
		19	Input/Output 19	
		20	Input/Output 20	
			L-	Inputs/Outputs 17 to 20 common
		Connector 7	S+	Supply to Inputs 21 to 24
			21	Input/Output 21
			22	Input/Output 22
			23	Input/Output 23
			24	Input/Output 24
			L-	Inputs/Outputs 21 to 24 common
	Line control	Connector 4	L-	Outputs 1 to 4 common
	outputs	2011100101 4	<u> </u>	Line control Output 1 (T1)
			2	Line control Output 2 (T2)
			3	Line control Output 3 (T3)
			3 4	
				Line control Output 4 (T4)
		Connector 0	L-	Outputs 1 to 4 common
		Connector 8	L-	Outputs 5 to 8 common
			5	Line control Output 5 (T5)
			6	Line control Output 6 (T6)
			7	Line control Output 7 (T7)
			8	Line control Output 8 (T8)
			L-	Outputs 5 to 8 common

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Preventa[™] safety PLCs Compact, XPSMF40



Connections examples

Actuator connections to the outputs



Emergency stop connections (line control)



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Preventa[™] safety PLCs Compact, XPSMF31/30/35

2

XPSMF31222



HIMatrix F31

XPSMF3022



XPSMF35

Products referenced XPSMF31222, XPSMF3022 and XPSMF35 • are marked HIMatrix® F31, HIMatrix® F30 and HIMatrix® F35 (manufactured by Hima, sold by Schneider Electric).

Introduction

Preventa[™] compact safety PLCs XPSMF31/30/35 enable the monitoring of simple to complex safety functions for all industrial applications relating to the protection of personnel and machine safety.

Designed for use with numerous machine safety functions, these compact safety PLCs are intended for use in safety related parts of control systems.

They can manage up to:

- category 4 conforming to EN 954-1,
- performance level "e" conforming to EN/ISO 13849-1.
- SIL 3 (safety integrity level) conforming to EN/IEC 61508.

The compact safety PLC range XPSMF31/30/35 comprises 5 versions that are differentiated by their specifications, detailed below.

Compact PLCs				Outputs	Communication	
	Digital	Analog	Counter	Digital	On Ethernet network	On fieldbus
XPSMF31222	20	-	-	8 (1)	For all compact PLCs XPSMF31/30/35 using	-
XPSMF3022	20	-	-	8 (1)	SafeEthernet safety protocol, and with non	Modbus serial Slave (RTU)
XPSMF3502	24	8	2	8	Safety protocol Modbus™ TCP/IP server	-
XPSMF3522	24	8	2	8		Modbus serial Slave (RTU)
XPSMF3542	24	8	2	8		PROFIBUS DP V0 slave

Safety PLCs

In order to meet safety requirements, the compact safety PLCs XPSMF31/30/35 incorporate two essential functions (Redundancy and Self-monitoring) complying to category 4 conforming to EN 954-1 and performance level "e" conforming to EN/ISO 13849-1 in addition to the SafeEthernet safety communication protocol between the safety PLCs and the safety remote I/O modules (Special Switch).

■ Redundancy: the dual processor integrated in the compact safety PLCs analyzes and compares the data received from the safety inputs and outputs.

The incoming and outgoing data (programmed values and received values) are received in parallel by the two processors and compared in real-time.

Self-monitoring ("Watchdog"): the compact safety PLCs continuously monitor the data processing cycle and the execution of tasks, and intervenes if the cycle time does not conform to the predefined value.

The integrated switch (Special Switch) stores for a very short time and sends at very high speed the data provided by the inputs and outputs of the safety PLCs on the Ethernet network, while avoiding signal collisions and excessive amounts of data on the network.



(1) Digital outputs can be configured for line control.

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Preventa[™] safety PLCs Compact, XPSMF31/30/35





Line control for XPSMF31222 and XPSMF3022

Line control is a means of short-circuit and line break monitoring. Using line control outputs enables SIL 3 (EN/IEC 61508) and category 4 (EN 954-1) safety to be achieved. The line control outputs send a high signal with a very short low signal, thus enabling a wiring anomaly (short-circuit, line break) to be seen at the inputs of the safety PLC inputs.

Digital outputs 1 to 8 are connected to the digital inputs of the same circuit.

Example: Emergency stop pushbutton with two normally closed (N.C.) contacts that are supplied by two different line control outputs connected via these two normally closed contacts and fed into the inputs of the safety PLCs.

Programming automated safety functions

Software **XPSMFWIN** (reference SSV1XPSMFWIN) running on a PC enables the programming of all safety remote I/O modules and safety PLCs, as well as configuration of the communication settings.

- (1) Digital outputs can be configured for line control.
- (2) FB1 and FB2 not used.
- (3) FB3 not available on safety PLC XPSMF3502.

(4) Depending on model.

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Preventa[™] safety PLCs Compact, XPSMF31/30/35

Digital inputs

Compact safety PLCs **XPSMF3**•••• incorporate up to 24 digital inputs for the connection of safety related input devices.

Compact PLCs	Digital inputs					
	N°	Safety detection	Safety dialog			
XPSMF31222	20	Limit switches,	Mushroom head Emergency			
XPSMF3022	20	Guard switches, with reset	stops,			
XPSMF3502	24	and with actuator,	Enclosures for control and signalling units,			
XPSMF3522	24	and type 4,	Two-hand control stations			
XPSMF3542	24	Safety mats and sensing edges				

Analog inputs

Compact safety PLCs **XPSMF35**•• incorporate 8 analog measuring inputs that receive analog safety related signals from the machines to be monitored (1).

Compact PLCs	Analog inputs with transmitter supply		
	N°	Functions	
XPSMF3502		Closed circuit scanning of input channels,	
XPSMF3522		Single-pole measuring of 0 to 10 V voltages,	
XPSMF3542	8	-Measuring 0 to 20 mA currents using jumper	

Counter inputs

Compact safety PLCs **XPSMF35**•• incorporate 2 independent and configurable counting channels:

- as a counting function, independent to the direction of counting,
- as a counting function, dependent to the direction of counting,
- or as a counting function via an absolute encoder with Gray code.

Compact PLCs	Counti	Counting inputs		
	N°			
XPSMF3502	2	Incremental encoders	Sensors, 2/3-wire PNP/NPN	
XPSMF3522	2			
XPSMF3542	2]		

Digital outputs

All compact safety PLCs **XPSMF**•••• incorporate 8 digital outputs for connection to signalling equipment and machines to be controlled (1).

Compact PLCs	Digital outputs				
	N°	Safety actuators	Safety dialog		
XPSMF31222	8	Contactors-motors,	Beacons and indicator banks,		
XPSMF3022	8	Control relays,	Rotating mirror beacons,		
XPSMF3502	8	Variable speed drives.	Sirens		
XPSMF3522	8				
XPSMF3542	8				

Remote inputs and outputs

In addition to the inputs/outputs integrated as standard, compact safety PLCs XPSMF31/30/35 can be connected to safety remote input modules XPSMF1 and/or safety remote output modules XPSMF2 and/or safety remote mixed I/O modules XPSMF3.

The safety remote input, output and mixed I/O modules can be located within the vicinity of the machines to be monitored, thus reducing cabling.

Communication between these safety remote I/O modules and compact safety PLCs **XPSMF31/30/35** is performed on an Ethernet network using the SafeEthernet safety protocol, via the Integrated RJ45 switched Ethernet communications ports.

(1) Use shielded dual twisted pair cables, maximum length 984.2 ft (300 m), short-circuit unused analog inputs.

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Preventa[™] safety PLCs Compact, XPSMF31/30/35

Safety communication on Ethernet network

Communication between the PC, Magelis[™] graphic terminal or automation platform (Premium[™]) and the compact safety PLCs is achieved by Ethernet network connection via the Integrated RJ45 switched Ethernet communications ports of compact PLCs XPSMF31/30/35.



- 1 Premium[™] automation platform: Modbus[™] TCP/IP client.
- Graphic terminal XBTGT: Modbus TCP/IP client. 2
- 3 Safety PLC XPSMF31/30/35: Modbus TCP/IP server.
- Safety remote I/O modules XPSMF1/2/3. They communicate with safety PLCs XPSMF31/30/35 using the SafeEthernet protocol.

Communication on Modbus serial (RTU) and PROFIBUS DP fieldbus

■ On Modbus serial (RTU), safety PLCs XPSMF3022 and XPSMF3522 are slaves of the Premium™ automation platform and Magelis graphic terminals.

They are connected to the Modbus serial network via their SUB-D 9-pin connector (FB3).



- Graphic terminal XBTGT: Modbus serial (RTU) master. 1
- 2 Premium™ automation platform: Modbus serial (RTU) master.
- 3 Graphic terminal XBTGT: Modbus serial (RTU) client.
- Safety PLC XPSMF3022 or XPSMF3522: Modbus serial (RTU) slave, Modbus TCP/IP server.
- 5 Safety remote I/O modules XPSMF1/2/3. They communicate with safety PLCs XPSMF3002 using the SafeEthernet protocol.

■ On PROFIBUS DP, safety PLC XPSMF3542 is a slave of the Premium[™] automation platform and Magelis[™] graphic terminal.

It is connected to the PROFIBUS DP network via its SUB-D 9-pin connector (FB3).



- Premium[™] automation platform: PROFIBUS DP master. 1
- Graphic terminal XBTGT: PROFIBUS DP master. 2
 - Safety PLC XPSMF3542: PROFIBUS DP slave, Modbus TCP/IP server.

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Safety remote I/O modules XPSMF1/2/3. They communicate with safety PLC XPSMF3542 using the SafeEthernet protocol.

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Graphic terminal XBTGT: Modbus TCP/IP client. 5

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Preventa[™] safety PLCs Compact, XPSMF31/30/35







Description

Safety PLCs XPSMF31222 and XPSMF3022

On the front cover of the metal enclosure:

- One terminal block (1) for == 24 V supply.
- Two terminal blocks (1) for connection of digital outputs, with output status LED 2 (four LEDs per terminal block).
- Five terminal blocks (1) for connection of digital inputs, with input status LED (four LEDs per terminal block).
- Eight process status LEDs.
- Four integrated RJ45 (type 10BASE-T/100BASE-TX) switched ports for 5 programming, and for Safety and non-safety related communication on Ethernet (safety related using SafeEthernet protocol and Non-safety related using Modbus[™] TCP/IP server protocol).
- 6 On XPSMF3022 only: two unused SUB-D connectors (FB1 and FB2).
- On XPSMF3022 only: one SUB-D 9-pin connector for connection on Modbus serial (RTU) (FB3).
- One ground connection screw.
- 9 On the top: one "Reset" button.
- 10 On the rear face: one spring operated mounting device for mounting on 35 mm DIN rail.

Safety PLCs XPSMF35...

On the front cover of the metal enclosure:

- 1 One terminal block (1) for == 24 V supply.
- One terminal block (1) for connection of digital outputs, with four digital output 2 status LEDs
- 3 Three terminal blocks (1) for connection of digital inputs, with input status LED (eight LEDs per terminal block).
- One terminal block (1) for connection of 2 counting input channels.
- 5 Four terminal blocks (1) for connection of analog inputs.
- One plate for securing shielded analog input connection cables. 6
- Eight process status LEDs. 7
- Two unused SUB-D connectors (FB1 and FB2). 8
- Four integrated RJ45 (type 10BASE-T/100BASE-TX) switched ports for 9 programming, and for Safety and non-safety related communication on Ethernet (safety related using SafeEthernet protocol and Non-safety related using Modbus TCP/IP server protocol).
- 10 One type SUB-D 9-pin connector (FB3) for connection on PROFIBUS DP (XPSMF3542) or Modbus serial (RTU) (XPSMF3522).
- 11 One ground connection screw.
- 12 On the top: one "Reset" button.
- 13 On the rear face: one spring operated mounting device for mounting on 35 mm DIN rail.

(1) Removable screw terminals are provided with compact safety PLCs XPSMF31/30/35.

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Introduction

Description (continued)

Safety automation system solutions Preventa[™] safety PLCs Compact, XPSMF31/30/35







Compost	of a full DI		4222 VDCME2022 and VDCME25
			1222, XPSMF3022 and XPSMF35ee
LED	Color	Status	Meaning
FB1, FB2	-	-	Not used.
FB3	Orange	On	Communication on Modbus [™] serial or PROFIBUS DF (1) active.
Inputs 1 to 20	Orange	On	Inputs active.
Outputs 1 to 8	Orange	On	Outputs active.
24 VDC	Green	On	24 V voltage present.
		Off	No voltage.
RUN	Green	On	Normal service mode, loaded program running, the PLC receives I/O messages, communication and hardware/software tests carried out.
		Flashing	The CPU is in STOP and is not executing any user application.
			All the outputs are reset to a safe, de-energized state
		Off	The CPU is in "ERROR" state (see ERROR).
ERROR	Red	On	Software error or hardware anomaly detected by the CPU.
			The monitoring program (Watchdog) has triggered th STOP state of the process because the programmed cycle time has been exceeded.
			The CPU has stopped the execution of the user application, ended all hardware and software tests an all outputs have been reset.
			The process can only be started again from the PC.
		Off	No errors detected.
PROG	Orange	On	The CPU is being loaded with a new configuration.
		Flashing	The FLASH ROM is being loaded with a new operation system.
		Off	No loading of configuration or operating system.
FORCE	Orange	On	The CPU is in RUN mode and force is active.
		Flashing	The system is not processing (STOP), but force is prepared and is activated if the dual processor is started.
		Off	Force mode not activated.
FAULT	Orange	On	Error display for line control.
			The user application has caused an error.
			The system configuration is defective.
			The loading of a new operating system was defective and the operating system is corrupt.
		Flashing	An error has occurred while writing to FLASH ROM memory (during updating of the operating system).
			One or more I/O errors have occurred.
		Off	None of the above errors have occurred.
OSL	Orange	Flashing	Emergency loading of the operating system is active
BL	Orange	Flashing	COM in INIT_Fail state.
RJ45	Green	On	Full duplex mode operation.
		Flashing	Signal collision.
		Off	Half duplex mode operation, no collision.
	Yellow	On	Connection established.
		Flashing	Interface active.

(1) Depending on PLC model.

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Specifications

Safety automation system solutions Preventa[™] safety PLCs Compact, XPSMF31/30/35

Environment							
Compact safety PLC ty	20		XPSMF31222	XPSMF3022	XPSMF3502, XPSMF3522,		
Compact safety PLC ty	pe		APSWIF31222	APSINF3022	XPSMF3502, XPSMF3522, XPSMF3542		
	nax. use in safety related parts of ming to EN 954-1, EN/ISO 13849-1 and		Category 4 (EN 954-1), Performance level "e" (El Safety integrity level: SIL				
Product certifications			IEC 61511: 2004, DIN VDE 0116: 1989, EN 50156-1: 2004, EN 12067-2: 2004, EN 298: 2003, EN 230: 1990, NFPA 85: 2001, EN/IEC 61131-2: 2003, EN 61000-6-2: 2001, EN 61000-6-4: 2001		IEC 61511: 2004, DIN VDE 0116: 1989, EN 50156-1: 2004, EN 12067-2: 2004, EN 298: 2003, EN 230: 1990, NFPA 85: 2001, EN/IEC 61131-2: 2003, EN 61000-6-2: 2001, EN 61000-6-4: 2001, EN 54-2: 1997, NFPA 72: 2002		
Ambient air temperature conforming to EN 61131-2	· · ·	°F(°C)	+32 + 140 (0+ 60)				
	For storage	°F(°C)	-40 + 185 (- 40 + 85)				
Relative humidity	Enclosure		95% (supply not connect IP 20	ed)			
Degree of protection	Enclosure						
Pollution Altitude			Degree of pollution II 6560 ft (2000 m)				
Protection class			Class II, conforming to El	N/IEC 61131-2			
Electromagnetic compa	tibility		Conforming to IEC 61131				
Vibration resistance conforming to EN 61131-2	Operating		1 g, frequency 9150 Hz				
Shock resistance conforming to EN 61131-2		kV		it test while operating, 2 cyc	les per axis		
Resistance to electrostatic discharges conforming to EN/IEC 61000-4-2 Immunity to high frequency interference			4 contact, 8 air discharge 10 (80 MHz2 GHz), amplitude modulation 80%				
conforming to EN/IEC 610		V/m	10 (80 MHz2 GHz), arr	iplitude modulation 80%			
Electrical specif	ications						
Supply	Voltage	۷	(Safety Extra Low Voltage) O	h separate protection confo r PELV (Protection Extra Low V	rming to EN/IEC 60950, SELV oltage) rated)		
	Voltage limits		- 15+ 20%				
Maximum power consumption		Α	8	8	9		
Idle current		Α	0.4	0.5	0.75		
Immunity to momentary	supply interruptions	ms	10				
Protection Response time		ms	Internal fuse Depending on size of app	liantian			
Clock		1115	<u> </u>	icitor for 1 week following los	as of supply		
User memory	Application	kB	250				
	Data	kB	250				
LED display			Yes				
Digital inputs							
Number	Inputs not electrically isolated		20		24		
Permissible current	At state 0	mA	1.5 max., 1 mA at 5 V	1.5 max., 1.25 mA at 5 V	1.5 max., 1 mA at 5 V		
	At state 1	mA	≥2 at 15 V	> 2 at 15 V	Approx. 3.5 at 24 V Approx. 4.5 at 30 V		
Input supply			5 x 20 V/100 mA (on 24 V	()	20 V/100 mA		
Input protection			· · · · · · · · · · · · · · · · · · ·	circuits, short-circuits to grou	Ind		
Overvoltage protection		۷	500, conforming to IEC 6	1000-4-5			
Switching point		V	Typically 7.5		-		
Current		mA	> 2 (15 V)		-		
LED display	nuinmont		Yes				
Maximum distance of ed Digital outputs	1		328 ft (100 m)				
Number	Outputs not electrically isolated		8, configurable for line co	ntrol	8		
Output voltage	Calpate not electrically isolated	v	$= 24 \pm 2$		· · · · · · · · · · · · · · · · · · ·		
Output current	Channels 1 to 3 and 5 to 7	A	0.5 at 140 °F (60 °C)				
-	Channels 4 and 8	Α	1 at 140 °F (60 °C), 2 at 1	22 °F (50 °C)			
Minimum load			2 per channel				
Leakage current at state	e 0	mA	1 max. at 2 V				
Response to overload			Shutdown of outputs con	cerned with cyclic reconnec	tion		
Total output current		Α	7 max., shutdown of all o	utputs if exceeded with cycli	c reconnection		
LED display			Yes				
Maximum distance of ea	· · ·		328 ft (100 m)				
Introduction: page 2/22	Specifications: page 2/28	Reference page 2/3		Dimensions, mounting: age 2/34	Connections: page 2/36		

Schneider Gelectric

Specifications (continued)

Safety automation system solutions Preventa[™] safety PLCs Compact, XPSMF31/30/35

Electrical spe	cifications (continued)				
Compact safety PLC	type		XPSMF3502, XPSMF3	522, XPSMF3542	
Analog inputs					
Number	Inputs not electrically isolated	1	8, single-pole		
	Inputs not electrically isolated			an application	
External jumper		Ω	250 or 500 depending	on application	
nput values	Nominal value	V	010		
		mA	020, with 500 Ω jump	ber	
	Service value	v	0.111.5		
		mA	$0/423$, with 500 Ω jur	nper	
nput impedance		MΩ	1		
laximum distance o	f equipment	m	300		
nternal resistance of		Ω	≤500		
Overvoltage protecti		v	+ 15, - 4		
Resolution (A/D conv		-	12-bit		
afety accuracy		-	±2%		
ED display		-	Yes		
			Tes		
Counting inputs	-		I		
lumber	Counter		2, not electrically isolat		
	Inputs		3 on each pole (A, B, Z		
nput voltages	High threshold 5 V	v	46		
	High threshold 24 V	v	1333		
	Low threshold 5 V	v	00.5		
	Low threshold 24 V	v	- 35		
put currents		mA	1.4 at 5 V		
			6.5 at 24 V		
nput impedance		kΩ	3.7		
laximum distance o	f equipment		1640 ft (500 m), with sh	nielded dual twisted pair ca	ble
p/down counting re	· · ·		24-bit	· · · ·	
put frequency		kHz	100, at 5 and 24 V		
riggering		14112	On falling edge		
		V/µs	1		
Edge steepness		v/µ5			
ED display			Yes		
Communicatio	on				
Compatibility			XPSMF31222	XPSMF3022	XPSMF3502, XPSMF3522 XPSMF3542
Ethernet network	: safety communication using SafeE	Etherne	t protocol		
ransmission	Communication ports		Integrated 4 RJ45 swite	ched Ethernet communicat	ions ports
	Baud rate	Mbps	100 Half duplex, 10 Fu	I duplex, Autonegotiation	
structure		-	10BASE-T/100BASE-		
			IUDAGE-I/IUUDAGE-		
ledium					ernet)
	Non-safety related communication	using	Dual twisted pair cable	, category 5D or better (Eth	nernet)
Ethernet network	: Non-safety related communication	using	Dual twisted pair cable Modbus [™] TCP/IP pro	, category 5D or better (Eth btocol	
Ethernet network	Number and type		Dual twisted pair cable Modbus [™] TCP/IP pro Integrated 4 RJ45 swit	, category 5D or better (Eth btocol ched Ethernet communicat	
Ethernet network	Number and type Baud rate		Dual twisted pair cable Modbus [™] TCP/IP pro Integrated 4 RJ45 switt 100 Half Duplex, 10 Fu	, category 5D or better (Eth btocol	
Ethernet network connection Ports	Number and type		Dual twisted pair cable Modbus [™] TCP/IP pro Integrated 4 RJ45 switt 100 Half Duplex, 10 Fu Server (slave)	, category 5D or better (Eth btocol Il Duplex, Autonegotiation	
Ethernet network connection Ports tructure	Number and type Baud rate		Dual twisted pair cable Modbus [™] TCP/IP pro Integrated 4 RJ45 switt 100 Half Duplex, 10 Fu Server (slave) 10BASE-T/100BASE-	, category 5D or better (Eth btocol ched Ethernet communical II Duplex, Autonegotiation TX	ion ports
Ethernet network connection Ports tructure ledium	Number and type Baud rate		Dual twisted pair cable Modbus [™] TCP/IP pro Integrated 4 RJ45 switt 100 Half Duplex, 10 Fu Server (slave) 10BASE-T/100BASE-	, category 5D or better (Eth btocol Il Duplex, Autonegotiation	ion ports
Ethernet network connection Ports tructure ledium ransparent Ready™	Number and type Baud rate		Dual twisted pair cable Modbus [™] TCP/IP pro Integrated 4 RJ45 switt 100 Half Duplex, 10 Fu Server (slave) 10BASE-T/100BASE-	, category 5D or better (Eth btocol ched Ethernet communical II Duplex, Autonegotiation TX	ion ports
Ethernet network connection Ports tructure ledium ransparent Ready™	Number and type Baud rate Master/Slave		Dual twisted pair cable Modbus [™] TCP/IP pro Integrated 4 RJ45 switt 100 Half Duplex, 10 Fu Server (slave) 10BASE-T/100BASE- Dual twisted pair cable	, category 5D or better (Eth btocol II Duplex, Autonegotiation IX , category 5D or better (Eth	ion ports
Ethernet network connection Ports structure ledium ransparent Ready™	Number and type Baud rate Master/Slave Class		Dual twisted pair cable Modbus [™] TCP/IP pro Integrated 4 RJ45 switt 100 Half Duplex, 10 Fu Server (slave) 10BASE-T/100BASE- Dual twisted pair cable A10 Modbus TCP/IP Serve	, category 5D or better (Eth btocol ched Ethernet communicat II Duplex, Autonegotiation TX , category 5D or better (Eth	ion ports nernet)
Ethernet network connection Ports structure ledium ransparent Ready™	Number and type Baud rate Master/Slave Class Standard Ethernet TCP/IP		Dual twisted pair cable Modbus [™] TCP/IP pro Integrated 4 RJ45 switt 100 Half Duplex, 10 Fu Server (slave) 10BASE-T/100BASE- Dual twisted pair cable A10 Modbus TCP/IP Serve	, category 5D or better (Eth btocol ched Ethernet communicat II Duplex, Autonegotiation FX , category 5D or better (Eth - iging (reading/writing of da	ion ports nernet)
Ethernet network connection Ports structure ledium ransparent Ready™	Number and type Baud rate Master/Slave Class Standard Ethernet TCP/IP communication services		Dual twisted pair cable Modbus [™] TCP/IP prod Integrated 4 RJ45 switt 100 Half Duplex, 10 Fu Server (slave) 10BASE-T/100BASE- Dual twisted pair cable A10 Modbus TCP/IP Serve Modbus TCP/IP messa Modbus identification r	, category 5D or better (Eth btocol ched Ethernet communicat II Duplex, Autonegotiation FX , category 5D or better (Eth - iging (reading/writing of da	ion ports nernet)
Ethernet network connection Ports tructure ledium ransparent Ready™	Number and type Baud rate Master/Slave Class Standard Ethernet TCP/IP communication services TCP port	Mbps	Dual twisted pair cable Modbus [™] TCP/IP prod Integrated 4 RJ45 switt 100 Half Duplex, 10 Fu Server (slave) 10BASE-T/100BASE- ⁻ Dual twisted pair cable A10 Modbus TCP/IP Serve Modbus TCP/IP messa Modbus identification r Standard 502	, category 5D or better (Eth btocol ched Ethernet communicat II Duplex, Autonegotiation FX , category 5D or better (Eth - iging (reading/writing of da	ion ports nernet)
Ethernet network onnection Ports tructure ledium ransparent Ready™ ervices	Number and type Baud rate Master/Slave Class Standard Ethernet TCP/IP communication services TCP port Max. number of Modbus TCP/IP connections	Mbps	Dual twisted pair cable Modbus [™] TCP/IP prod Integrated 4 RJ45 switt 100 Half Duplex, 10 Fu Server (slave) 10BASE-T/100BASE- Dual twisted pair cable A10 Modbus TCP/IP Serve Modbus TCP/IP messa Modbus identification r	, category 5D or better (Eth btocol ched Ethernet communicat II Duplex, Autonegotiation FX , category 5D or better (Eth - iging (reading/writing of da	ion ports nernet)
Ethernet network connection Ports tructure ledium ransparent Ready™ ervices	Number and type Baud rate Master/Slave Class Standard Ethernet TCP/IP communication services TCP port Max. number of Modbus TCP/IP connections FUJ	Mbps	Dual twisted pair cable Modbus [™] TCP/IP prod Integrated 4 RJ45 switt 100 Half Duplex, 10 Fu Server (slave) 10BASE-T/100BASE- ⁻ Dual twisted pair cable A10 Modbus TCP/IP Serve Modbus TCP/IP messa Modbus identification r Standard 502	, category 5D or better (Eth btocol ched Ethernet communicat II Duplex, Autonegotiation TX , category 5D or better (Eth uging (reading/writing of da equest	ion ports hernet) ta words)
Ethernet network onnection Ports tructure ledium ransparent Ready™ ervices	Number and type Baud rate Master/Slave Class Standard Ethernet TCP/IP communication services TCP port Max. number of Modbus TCP/IP connections FUJ Number and type	Mbps	Dual twisted pair cable Modbus [™] TCP/IP prod Integrated 4 RJ45 switt 100 Half Duplex, 10 Fu Server (slave) 10BASE-T/100BASE- ⁻ Dual twisted pair cable A10 Modbus TCP/IP Serve Modbus TCP/IP messa Modbus identification r Standard 502	, category 5D or better (Eth btocol ched Ethernet communicat II Duplex, Autonegotiation TX , category 5D or better (Eth 	ion ports hernet) ta words)
Ethernet network onnection Ports tructure ledium ransparent Ready™ ervices Modbus serial (R ⁻ erial link ports	Number and type Baud rate Master/Slave Class Standard Ethernet TCP/IP communication services TCP port Max. number of Modbus TCP/IP connections FUJ	Mbps	Dual twisted pair cable Modbus [™] TCP/IP prod Integrated 4 RJ45 switt 100 Half Duplex, 10 Fu Server (slave) 10BASE-T/100BASE- ⁻ Dual twisted pair cable A10 Modbus TCP/IP Serve Modbus TCP/IP messa Modbus identification r Standard 502	, category 5D or better (Eth btocol Ched Ethernet communicat II Duplex, Autonegotiation TX , category 5D or better (Eth aging (reading/writing of da equest 1 x SUB-D 9-pin fema Slave	ion ports hernet) ta words)
Ethernet network onnection Ports tructure ledium ransparent Ready™ ervices Modbus serial (R erial link ports ddressing	Number and type Baud rate Master/Slave Class Standard Ethernet TCP/IP communication services TCP port Max. number of Modbus TCP/IP connections FUJ Number and type	Mbps	Dual twisted pair cable Modbus [™] TCP/IP prod Integrated 4 RJ45 switt 100 Half Duplex, 10 Fu Server (slave) 10BASE-T/100BASE- ⁻ Dual twisted pair cable A10 Modbus TCP/IP Serve Modbus TCP/IP messa Modbus identification r Standard 502	category 5D or better (Eth bed Ethernet communicat II Duplex, Autonegotiation TX , category 5D or better (Eth aging (reading/writing of da equest 1 x SUB-D 9-pin fema Slave 122 slave addresses	ion ports hernet) ta words)
Ethernet network connection Ports tructure ledium ransparent Ready™ ervices Modbus serial (R erial link ports ddressing	Number and type Baud rate Master/Slave Class Standard Ethernet TCP/IP communication services TCP port Max. number of Modbus TCP/IP connections FUJ Number and type	Mbps	Dual twisted pair cable Modbus [™] TCP/IP prod Integrated 4 RJ45 switt 100 Half Duplex, 10 Fu Server (slave) 10BASE-T/100BASE- ⁻ Dual twisted pair cable A10 Modbus TCP/IP Serve Modbus TCP/IP messa Modbus identification r Standard 502	, category 5D or better (Eth btocol Ched Ethernet communicat II Duplex, Autonegotiation TX , category 5D or better (Eth aging (reading/writing of da equest 1 x SUB-D 9-pin fema Slave	ion ports hernet) ta words)
Ethernet network connection Ports atructure ledium ransparent Ready™ ervices Modbus serial (R erial link ports ddressing hysical layer	Number and type Baud rate Master/Slave Class Standard Ethernet TCP/IP communication services TCP port Max. number of Modbus TCP/IP connections FUJ Number and type	Mbps	Dual twisted pair cable Modbus [™] TCP/IP prod Integrated 4 RJ45 switt 100 Half Duplex, 10 Fu Server (slave) 10BASE-T/100BASE- ⁻ Dual twisted pair cable A10 Modbus TCP/IP Serve Modbus TCP/IP messa Modbus identification r Standard 502	category 5D or better (Eth bed Ethernet communicat II Duplex, Autonegotiation TX , category 5D or better (Eth aging (reading/writing of da equest 1 x SUB-D 9-pin fema Slave 122 slave addresses	ion ports hernet) ta words)
Ethernet network Connection Ports Structure Medium Transparent Ready TM Services Modbus serial (R Serial link ports Addressing Physical layer Medium	Number and type Baud rate Master/Slave Class Standard Ethernet TCP/IP communication services TCP port Max. number of Modbus TCP/IP connections FUJ Number and type	Mbps	Dual twisted pair cable Modbus [™] TCP/IP prod Integrated 4 RJ45 switt 100 Half Duplex, 10 Fu Server (slave) 10BASE-T/100BASE- ⁻ Dual twisted pair cable A10 Modbus TCP/IP Serve Modbus TCP/IP messa Modbus identification r Standard 502	category 5D or better (Eth btocol ched Ethernet communicat II Duplex, Autonegotiation TX , category 5D or better (Eth aging (reading/writing of da equest 1 x SUB-D 9-pin fema Slave 122 slave addresses RS 485	ion ports hernet) ta words) ile (FB3)
Ethernet network Connection Ports Structure Medium Transparent Ready TM Services Modbus serial (R Serial link ports Addressing Physical layer Medium PROFIBUS DP	Number and type Baud rate Master/Slave Class Standard Ethernet TCP/IP communication services TCP port Max. number of Modbus TCP/IP connections TU Number and type Master/Slave	Mbps	Dual twisted pair cable Modbus [™] TCP/IP prod Integrated 4 RJ45 switt 100 Half Duplex, 10 Fu Server (slave) 10BASE-T/100BASE- ⁻ Dual twisted pair cable A10 Modbus TCP/IP Serve Modbus TCP/IP messa Modbus identification r Standard 502	category 5D or better (Eth bed Ethernet communicat II Duplex, Autonegotiation TX , category 5D or better (Eth aging (reading/writing of da equest 1 x SUB-D 9-pin fema Slave 122 slave addresses RS 485	ion ports hernet) ta words) ile (FB3) pair cable
Ethernet network Connection Ports Structure Medium Transparent Ready [™] Services Modbus serial (R Serial link ports Addressing Physical layer Medium PROFIBUS DP	Number and type Baud rate Master/Slave Class Standard Ethernet TCP/IP communication services TCP port Max. number of Modbus TCP/IP connections FU) Number and type Master/Slave	Mbps	Dual twisted pair cable Modbus [™] TCP/IP prod Integrated 4 RJ45 switt 100 Half Duplex, 10 Fu Server (slave) 10BASE-T/100BASE- ⁻ Dual twisted pair cable A10 Modbus TCP/IP Serve Modbus TCP/IP messa Modbus identification r Standard 502	category 5D or better (Eth bed Ethernet communicat II Duplex, Autonegotiation TX , category 5D or better (Eth aging (reading/writing of da equest 1 x SUB-D 9-pin fema Slave 122 slave addresses RS 485	ion ports hernet) ta words) ile (FB3) pair cable 1 x SUB-D 9-pin female
Ethernet network Connection Ports Structure Medium Transparent Ready [™] Services Modbus serial (R Serial link ports Addressing Physical layer Medium PROFIBUS DP Serial link ports	Number and type Baud rate Master/Slave Class Standard Ethernet TCP/IP communication services TCP port Max. number of Modbus TCP/IP connections TU Number and type Master/Slave	Mbps	Dual twisted pair cable Modbus [™] TCP/IP prod Integrated 4 RJ45 switt 100 Half Duplex, 10 Fu Server (slave) 10BASE-T/100BASE- ⁻ Dual twisted pair cable A10 Modbus TCP/IP Serve Modbus TCP/IP messa Modbus identification r Standard 502	, category 5D or better (Eth btocol Ched Ethernet communicat II Duplex, Autonegotiation TX , category 5D or better (Eth 	ion ports hernet) ta words) ile (FB3) pair cable 1 x SUB-D 9-pin female Slave, V0
Connection Ports Structure Medium Transparent Ready™ Services Modbus serial (R Serial link ports Addressing Physical layer Medium	Number and type Baud rate Master/Slave Class Standard Ethernet TCP/IP communication services TCP port Max. number of Modbus TCP/IP connections FU) Number and type Master/Slave	Mbps	Dual twisted pair cable Modbus [™] TCP/IP prod Integrated 4 RJ45 switt 100 Half Duplex, 10 Fu Server (slave) 10BASE-T/100BASE- ⁻ Dual twisted pair cable A10 Modbus TCP/IP Serve Modbus TCP/IP messa Modbus identification r Standard 502	, category 5D or better (Eth btocol Ched Ethernet communicat II Duplex, Autonegotiation TX , category 5D or better (Eth 	ion ports hernet) ta words) ile (FB3) pair cable 1 x SUB-D 9-pin female

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Specifications (continued)

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Safety automation system solutions Preventa[™] safety PLCs Compact, XPSMF31/30/35

Safety PLC type	9	XPSMF31222	XPSMF3022	XPSMF3502, XPSMF3522, XPSMF3542
Type of connect	ion	Screw clamp terminal bl	ocks (2)	
Supply	Number of terminal blocks	1		
connection	For 1 cable without cable end	Solid or flexible AWG 24	-12 (0.22.5 mm ²)	
	For 1 flexible cable with or without plastic cable	AWG 22-16 (0.252.5	mm²)	
	end For 2 cables of same diameter, without cable end	Solid or flexible AWG 24	-12 (0.21.5 mm ²)	
	For 2 cables of same diameter, flexible without cable end	AWG 22-18 (0.251.0	mm²)	
	For 2 cables of same diameter, flexible with plastic cable end	AWG 22-16 (0.51.5 m	1m²)	
Digital input channel and	Number of terminal blocks	5 (inputs) and 2 (outputs) 5 (inputs) and 2 (outp	uts) 3 (inputs) and 1 (output)
output channel	For 1 cable without cable end	Solid or flexible AWG 28-	16 (0.141.5 mm ²)	
onnection	For 1 flexible cable without cable end	AWG 22-16 (0.251.5	mm²)	
	For 1 flexible cable with plastic cable end	AWG 22-20 (0.250.5	mm²)	
	For 2 cables of same diameter, without cable end	Solid: AWG 28-20 (0.14 Flexible: AWG 28-18 (0		
	For 2 cables of same diameter, flexible without cable end	AWG 22 (0.250.34 mi	m²)	
	For 2 cables of same diameter, flexible with plastic cable end	AWG 20 (0.5 mm ²)		
Analog input channel	Number of terminal blocks	-	-	4
connection	For 1 cable without cable end	-	-	Solid or flexible AWG 28-16 (0.141.5 mm ²)
	For 1 flexible cable without cable end	-	-	AWG 22-16 (0.251.5 mm ²)
	For 1 flexible cable with plastic cable end	-	-	AWG 22-20 (0.250.5 mm ²)
	For 2 cables of same diameter, without cable end	-	-	Solid: AWG 28-20 (0.140.5 mm ²) Flexible: AWG 28-18 (0.140.7 mm ²)
	For 2 cables of same diameter, flexible without cable end	-	-	AWG 22 (0.250.34 mm ²)
	For 2 cables of same diameter, flexible with plastic cable end	-	-	AWG 20 (0.5 mm ²)
Counting channel	Number of terminal blocks	-	-	1
connection	For 1 cable without cable end	-	-	Solid or flexible AWG 28-16 (0.141.5 mm ²)
	For 1 flexible cable without cable end	-	-	AWG 22-16 (0.251.5 mm ²)
	For 1 flexible cable with plastic cable end	-	-	AWG 22-20 (0.250.5 mm ²)
	For 2 cables of same diameter, without cable end	-	-	Solid: AWG 28-20 (0.140.5 mm ²) Flexible: AWG 28-18 (0.140.7 mm ²)
	For 2 cables of same diameter, flexible without cable end	-	-	AWG 22 (0.250.34 mm ²)
	For 2 cables of same diameter, flexible with plastic cable end	-	-	AWG 20 (0.5 mm ²)
Cable connection	Tightening torque	1.92.2 lb-in (0.220.2	25 Nm)	
	Bared length	0.35 in. (9 mm)		

(1) AWG: American Wire Gauge.
(2) Removable screw terminals are provided with compact safety PLCs XPSMF31/30/35.

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References

Safety automation system solutions Preventa[™] safety PLCs Compact, XPSMF31/30/35

	•			<u> </u>						
			fety PLC	;s						
		supply								
and the second s	Inputs			Distant	Communicati		NA . N . TM	PROFINIO	Reference	Weight oz (kg)
To the second second	District.	A	0		Ethernet netw		Modbus serial	PROFIBUS DP		or (ng)
HIMatrix F37	Digital	Analog	Counting		Safe Ethernet protocol	TCP/IP server protocol	(RTU)	51		
XPSMF31222	20	-	-	8	Yes	Yes	-	-	XPSMF31222	35.273 (1.000)
HIMatrix F30							Yes Slave	-	XPSMF3022	42.328 (1.200)
XPSMF3022	24	8	2	8	Yes	Yes	-	-	XPSMF3502	42.328 (1.200)
XPSMF35••							Yes Slave	-	XPSMF3522	42.328 (1.200)
Products referenced XPSMF31222, XPSMF3022 and XPSMF35•• are marked HIMatrix® F31, HIMatrix® F30 and HIMatrix® F35 (manufactured by Hima, sold by Schneider Electric).								Yes slave	XPSMF3542	42.328 (1.200)

Configuration software

■ Reference SSV1XPSMFWIN contains the full version of the programming software XPSMFWIN software for the XPSMF Safety PLCs. The XPSMFWIN is part of our Safety Suite and is not available seperately.

Description	Operating system	Details	Languages	Reference	Weight oz (kg)
Configuration software XPSMFWIN for programming compact safety PLCs CD-ROM + user manual	Windows [®] 2000, Windows [®] XP	Software available on Safety Suite V2 software pack	English, German, French	SSV1XPSMFWIN	18.342 (0.520)

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		Schneider Electric			2/31

Safety automation system solutions Preventa[™] safety PLCs Compact, XPSMF31/30/35

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		-	-	
- 3	1		-	
		144	F	

ABL8RPS24050



ABL1REM24025



XBTGT2130, XBTGT2330



XBTGT4330



XBTGT5•30



XBTGT6330



XBTGT7340

Mains input voltage	Output voltage	Nominal power	Nominal current	Auto-protect reset	Conformity to standard IEC EN 61000-3-2 and IEC EN 60950		Weight
٧	v	W	Α				oz (kg)
Universal range, sing	jle-phase	(N-L1) or	2-phase (L1-L2) connect	ion		
~100…120 V/200…500 - 15%, + 10%	2428.8	72	3	Auto/Manual	Yes	ABL8RPS24030	10.582 (0.300)
50/60 Hz		120	5	Auto/Manual	Yes	ABL8RPS24050	24.692 (0.700)
		240	10	Auto/Manual	Yes	ABL8RPS24100	35.273 (1.000)
Dedicated range, sing	gle-phase	e connecti	on				
~100…240 <i>(1)</i> wide range, 47…63 Hz	12	60	5	Auto	No	ABL1REM12050	15.521 (0.440)
	24	60	2,5	Auto	No	ABL1REM24025	15.521 (0.440)
~ 100120/200240 (2)	24	240	10	Auto	No	ABL1REM24100	31.041 (0.880)

Magelis[™] multifunction graphic terminals with touch sensitive screen and on-board Ethernet (1)(2)

Desc	ription	Ports: serial and communication (type of link)	Application memory	Reference	Weight oz (kg)
5.7"	Monochrome black and white STN	1 x SUB-D 9-pin (RS 232C or RS 422/485 serial link to PLCs) 1 x RJ45 (RS 485 serial link) 1 x USB (peripheral connection and application transfer) 1 x RJ45 (Ethernet TCP/IP, 10BASE-T/100BASE-TX)	16 Mb	XBTGT2130	35.273 (1.000)
	Color TFT	1 x SUB-D 9-pin (RS 232C or RS 422/485 serial link to PLCs) 1 x RJ45 (RS 485 serial link) 1 x USB (peripheral connection and application transfer) 1 x RJ45 (Ethernet TCP/IP, 10BASE-T/100BASE-TX)	16 Mb	XBTGT2330	35.273 (1.000)
7.5"	Color TFT	1 x SUB-D 9-pin (RS 232C or RS 422/485 serial link to PLCs) 1 x RJ45 (RS 485 serial link) 1 x USB (peripheral connection and application transfer) 1 x RJ45 (Ethernet TCP/IP, 10BASE-T/100BASE-TX)	32 Mb	XBTGT4330	63.493 (1.800)
10.4"	Color STN	1 x SUB-D 9-pin (RS 232C or RS 422/485 serial link to PLCs) 1 x RJ45 (RS 485 serial link) 2 x USB (peripheral connection and application transfer) 1 x RJ45 (Ethernet TCP/IP, 10BASE-T/100BASE-TX)	32 Mb	XBTGT5230	105.822 (3.000)
	Color TFT	1 x SUB-D 9-pin (RS 232C or RS 422/485 serial link to PLCs) 1 x RJ45 (RS 485 serial link) 2 x USB (peripheral connection and application transfer) 1 x RJ45 (Ethernet TCP/IP, 10BASE-T/100BASE-TX)	32 Mb	XBTGT5330	105.822 (3.000)
12.1"	Color TFT	1 x SUB-D 9-pin (RS 232C or RS 422/485 serial link to PLCs) 1 x RJ45 (RS 485 serial link) 2 x USB (peripheral connection and application transfer) 1 x RJ45 (Ethernet TCP/IP, 10BASE-T/100BASE-TX)	32 Mb	XBTGT6330	105.822 (3.000)
15"	Color TFT	1 x SUB-D 9-pin (RS 232C or RS 422/485 serial link to PLCs) 1 x RJ45 (RS 485 serial link) 2 x USB (peripheral connection and application transfer) 1 x RJ45 (Ethernet TCP/IP, 10BASE-T/100BASE-TX)	32 Mb	XBTGT7340	197.534 (5.600)

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Safety automation system solutions Preventa[™] safety PLCs Compact, XPSMF31/30/35

Connecting cables for network and bus

Connection to Ethernet network

\bigcirc	
490 NTW 000••	

TSX PBY 100

490 NAD 911 03

Description	Pre-fitted connectors		Length ft (m)	Reference	Weig oz (
Shielded twisted pair cables, straight through	2 RJ45 connectors For connection to DTE		6.6 (2)	490NTW00002(1)				
straight through	(Data Terminal Equipment)		16.4 (5)	490NTW00005(1)				
	(490NTW00012 (1)				
				490NTW00040(1)				
			262.5 (80)	490NTW00080(1)				
Shielded twisted pair cables,		a awitahaa and	16.4 (5)	490NTC00005(1)				
crossed wires	For connection between hubs, switches and transceivers		49.2 (15)	490NTC00015(1)				
				490NTC00040(1)				
			262.5 (80)	490NTC00080(1)				
Connection to Modbus [™] serial link								
Description	Use		Length	Reference	We			
Modbus serial link connecting	From	To Modbus splitter box	ft. (m) 1.0 (0.3)	VW3A8306R03	oz (
cables	Compact PLCs XPSMF3022/3522 + adaptor XPSMFADAPT (RJ45)	Modbus splitter box r LU9 GC3 (RJ45)	1.0 (0.3)	VW3A0300R03	(0.			
			3.28 (1)	VW3A8306R10	2 (0.			
			9.84 (3)	VW3A8306R30	74			
			1.0.(0.0)	VERMONOV	(1			
		Premium [™] module TSX SCY 21601 (SUB-D 25-pin)	1.0 (0.3)	XPSMCSCY				
	Graphic terminals XBTGT (SUB-D 9-pin)	Modbus splitter box LU9 GC3 (RJ45)	8.2 (2.5)	XBTZ938 (2)	7 (0			
Adaptor for cable XBTZ938	SUB-D 9-pin (XBTGT)	XBTZ938 (SUB-D 25-pin)	0.66 (0.2)	XBTZG909				
Adaptor SUB-D 9-pin/RJ45	Compact PLCs (SUB-D 9-pin)	Connecting cables for Modbus serial link (RJ45)	-	XPSMFADAPT				
Description	Specifications	Sold in lots of		Unit reference	We oz			
End of line adaptors For RJ45 connector	R = 120 Ω, C = 1 nF	2		VW3A8306RC	(0			
	R = 150 Ω	2		VW3A8306R	() (0			
PROFIBUS DP bus conne	•							
Description	Profile	Services		Reference	We oz			
PROFIBUS DP module set for Premium™ PLCs	Master, 12 Mbps	Class 1 and Class 2 master functions, see specification FMS messaging not support	ns. Profibus	TSXPBY100	30 (0			
Description	Use			Reference	We oz			
Remote inputs/outputs on PROFIBUS DP bus	Advantys [™] STB network interface module			STBNDP2112	2 (0			
	Momentum [™] communication	n module		170DTN11000				
Connectors for remote I/O communication module	Line terminators			490NAD91103				
	Intermediate connection		490NAD91104					
	Intermediate connection and	terminal port		490NAD91105				
Description	Length (m)			Reference	We oz			
PROFIBUS DP connecting cables	100			TSXPBSCA100				
	400			TSXPBSCA400				
Description				Reference	We oz			
				490NAE91100				
Replacement parts	Main bus junction box			490NAL91100				

(1) Cable conforming to standard EIA/TIA-568 category 5 and IEC 1180/EN 50 173 class D. For UL and CSA 22.1 approved cables, add the letter **U** to the end of the reference. (2) Requires adaptor XBTZG909.



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Dimensions

Safety automation system solutions

Preventa[™] safety PLCs Compact, XPSMF31/30/35

2



(1) Removable screw terminals are provided with compact safety PLC XPSMF31222.





(1) Removable screw terminals are provided with compact safety PLC XPSMF3022.

XPSMF35●●



(1) Removable screw terminals are provided with compact safety PLC $\textbf{XPSMF35}\bullet\bullet.$

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Safety automation system solutions Preventa[™] safety PLCs Compact, XPSMF31/30/35



Access to Ethernet network

RJ45 socket (SafeEthernet protocol, Modbus TCP/IP server protocol)



INCHES Dual Dimensions: Milli

Mounting in panel or enclosure





(1) Prefabricated electrical ducting for passage of cables.

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Safety automation system solutions Preventa[™] safety PLCs Compact, XPSMF31/30/35

Co	nnections								
	MF31222, XP	SME302	2						
J	J	0000 002	2						
3 10/100	BaseT 10/100BaseT 4		1234	<u>7 8 9 10 11 12</u>					
⊖⊕	A1		B	C					
A2	L= L= L+ L+		D0 000	DO DO DO OOOO					
FB3 Q	FB2 FB1								
		O 24V DC O RUN							
l _		O ERROR O PROG							
		O FORCE O FAULT							
		O OSL O BL							
K		012							
			LS+12 DIOO	3 4 L LS+5 6 7 8 L LS+9 10 11 12 L LS+13 14 15 16 L LS+17 18 19 20 L OO DI OOOO DI OOOO DI OOOO DI OOOO DI OOOO					
				E F G H					
1 10/100	BaseT 10/100BaseT 2		13 14 15 1	6 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42					
J	J	Correct	Sere	v Eurotion	ltow	Connection	Same	Same	Function
Item	Connection	Screw N°	Screv	v Function	Item	Connection	Screw N°	Screw	Function
A1	Supply	-	L+	24 V	G	Inputs	31	LS+	Sensor supply for inputs 13 to 16
			L+		-	Digital	32	13	Digital input 13
			L-	24 V (reference pole)	-		33 34	14	Digital input 14
A2	Ground			24 V (reference pole) Ground	-		34 35	15 16	Digital input 15 Digital input 16
		1		Outputs common	-		36	L-	Inputs common
B	Outputs Digital	2	1	Outputs common	H	Inputs	30	L- LS+	Sensor supply for inputs 17 to 20
	Digital	3	2	Output 2		Digital	38	17	Digital input 17
		4	3	Output 3	-	2.9	39	18	Digital input 18
		5	4	Output 4 (for increased load)	-		40	19	Digital input 19
		6	L-	Outputs common	-		41	20	Digital input 20
C	Outputs	7		Outputs common	-		41	 L-	Inputs common
Ŭ	Digital	8	5	Output 5	Item	Connection	Туре	-	Function
	U	9	6	Output 6	ĸ	Communication		9-pin	XPSMF3022: slave on Modbus [™] serial
			_				(FB3)		(RTU)
		10 11	7	Output 7	J	Programming	Integra		Either of the four switched Ethernet ports can be used to create a
		11	8 L-	Output 8 (for increased load) Outputs common	-		RJ45 switched Ethernet Communication		connection between the safety PLC
D	Inputs	13	LS+	Sensor supply for inputs 1 to 4	-				
0	Digital	14	1	Digital input 1	-		ports		point to point or via an Ethernet network for programming, or setting ar
	-	15	2	Digital input 2	-				IP address.
		16	3	Digital input 3		Safe	-		Either of the four switched Ethernet
		17	4	Digital input 4	-	Communication			ports can be used to create a
		18	L-	Inputs common	-	(all XPSMF			connection between the safety PLC and other safety related components
E	Inputs	19	LS+	Sensor supply for inputs 5 to 8	_	Safety PLCs and Remote I/Os)			(e.g other XPSMF safety PLCs or
	Digital	20	5	Digital input 5	-				Safety Remote I/O modules) this can be established in a point to point way o
		21 22	6	Digital input 6	-				via an Ethernet network.
			8	Digital input 7		Non Sofe	-		Either of the four switched Ethernet
		23 24	0 L-	Digital input 8 Inputs common	-	Non-Safe Communication			Either of the four switched Ethernet ports can be used to create a
F	Inputs	25	LS+	Sensor supply for inputs 9 to 12	-	available with			connection between the safety PLC
	Digital	26	9	Digital input 9	-	references:			and other non- safety related components (e.g HMI Magelis [™] ,
		27	10	Digital input 10	-	XPSMF3022, and XPSMF31222	I		standard PLCs, and Scada systems)
		28	11	Digital input 11	_	AF SIVIFS 1222			this can be established in a point to point way or via an Ethernet network.
		29	12	Digital input 12					point way of via an Ethernet Hetwork.
		30	L-	Inputs common					



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Connections (continued)

Safety automation system solutions Preventa[™] safety PLCs Compact, XPSMF31/30/35

Connections L L Image: Connection state	Screw T1 I1	Function
L L 1 2 3 4 5 6 7 8 9 10 A2 A2 C C C C C C C C C C C C C	T1	
A1 B 112 13 14 15 (CT 13 1202 112 13 14 15 (CT 13		
A2 D D D D D D A2 A2 L L L D 000000000 B 000000000 D D 00000000 D 000000000 A2 A3 A4 A5 A5 A1 B1 A1 A5 A5 A1 A1 A1 A5 A5 A1		Transmittar supply 1
FB3 FB2 FB1 O <t< th=""><th></th><th>Transmitter supply 1 Analog input 1</th></t<>		Transmitter supply 1 Analog input 1
FB3 FB2 FB1 O 24V DC 44 O RUN O RUN 0 RUN 45 O PROG 11 AI AI CO	L-	Inputs common
ORIN O ERROR AJ AJ AJ AJ CO O PROG TI TH LT2 IZ L T3 B LT4 H L T5 B LT6 B L T3 IS LT6 B L A IB IZ1 LA2 B2 Z2 L O PROG TI TH LT2 IZ L T3 B LT4 H L T5 B LT6 B L A IB IZ1 LA2 B2 Z2 L	T2	Transmitter supply 2
O PROG TI H L T2 I2 L T3 B L T4 H L T5 B L T6 B L T5 I5 L T6 B L A I BI ZI L AZ B2Z2 L	12	Analog input 2
	 L-	Inputs common
G Inputs - Analog 47	T3	Transmitter supply 3
	13	Analog input 3
K 49	 L-	Inputs common
		Transmitter supply 4
1 101/00BaseT 101/00BaseT 2	14	Analog input 4
110/00/aser 2	L-	Inputs common
L L H Inputs - Analog 53	 T5	Transmitter supply 5
54	15	Analog input 5
Item Connection Screw Screw Function 55	L-	Inputs common
N°		·
A1 Supply – L+	T6	Transmitter supply 6
L+	16	Analog input 6
L	L-	Inputs common
L	T7	Transmitter supply 7
	17	Analog input 7
B Outputs - Digital 1 L- Outputs common 61 2 1 Digital output 1 62	L- T8	Inputs common
	18	Transmitter supply 8
	L-	Analog input 8 Inputs common
	A1	Input A1 or bit 0 (LSB)
	B1	Input B1 or bit 1
6 5 Digital output 5 66 7 6 Digital output 6 67	Z1	Input Z1 or bit 2 (MSB)
8 7 Digital output 7 68	L-	Inputs common
9 8 Digital output 8 (for increased load) 69	A2	Input A2 or bit 0 (LSB)
10 L- Outputs common 70	B2	Input B2 or bit 1
C Inputs - Digital 11 LS+ Sensor supply for inputs 1 to 8 71	Z2	Input Z2 or bit 2 (MSB)
12 1 Digital input 1 72	L-	Inputs common
13 2 Digital input 2 Item Connection Type		Function
14 3 Digital input 3 K Communication SUB-D 9-	-pin	XPS3522: slave on Modbus™
15 4 Digital input 4 (FB3)		serial (RTU) XPS3542 : slave V0 on
16 5 Digital input 5		PROFIBUS DP
17 6 Digital input 6		
18 7 Digital input 7 L Programming Integrated		
19 8 Digital input 8 Switched Commun		t Ethernet ports can be used to create a connection between
20 L- Inputs common ports		the safety PLC and the
D Inputs - Digital 21 LS+ Sensor supply for inputs 9 to 16		programming terminal in a point to point or via an
22 9 Digital input 9		Ethernet network for
23 10 Digital input 10		programming, or setting an IP address.
24 11 Digital input 11 Safe Communication		Either of the four switched
25 12 Digital input 12 (all XPSMF Safety		Ethernet ports can be used to
26 13 Digital input 13 PLCs and Remote		create a connection between the safety PLC and other safety
27 14 Digital input 14 I/Os) 28 15 Digital input 15 I/Os)		related components (e.g other
		XPSMF safety PLCs or Safety Remote I/O modules) this can
29 16 Digital input 16 30 L- Inputs common		be established in a point to
E Inputs - Digital 31 LS+ Sensor supply for inputs 17 to 24		point way or via an Ethernet network.
32 17 Digital input 17 Non-Safe		Either of the four switched
33 18 Digital input 18 Communication		Ethernet ports can be used to
34 19 Divisibility 10 available with		create a connection between the safety PLC and other
references:		non-safety related components
35 20 Digital input 20 XPSMF3502, 36 21 Digital input 21 XPSMF3522 and		(e.g HMI Magelis [™] , standard PLCs, and Scada systems)
37 22 Digital input 22 XPSMF3542		this can be established in a
38 23 Digital input 23		point to point way or via an Ethernet network.
39 24 Digital input 24		
40 L- Inputs common		
		-

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Introduction

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Safety automation system solutions

Preventa[™] safety PLCs Modular, XPSMF60 Rack, power supply and CPU



Modular safety PLC XPSMF60, fitted with 6 different "in rack" I/O cards

Introduction

Safety PLC XPSMF60 offers a modular solution for monitoring simple to complex safety functions for all industrial applications relating to the protection of personnel and machine safety.

Designed for use with numerous machine safety functions, this modular safety PLC is intended for use in safety related parts of control systems.

- It can manage up to:
 - category 4 conforming to EN 954-1,
 - performance level "e" conforming to EN/ISO 13849-1,
 - SIL 3 (safety integrity level) conforming to EN/IEC 61508.

Modularity

The safety PLC XPSMF60 is a modular system consisting of a metal housing or rack, fitted with a power supply module, a CPU and "in rack" I/O cards.

■ Various types of "in rack" I/O cards are catalog listed and are selected according to the application.

■ Mounting the "in rack" cards is a simple operation using the guide rails (6 slots). Electrical connection is automatic and assured by the back plane bus of the rack. ■ The mounting order of the "in rack" I/O cards is open to the user, but the order,

however, must correspond to the programming software.

■ The removal of the "in rack" cards, performed with the supply switched-off, is facilitated by a grip at the base of the cards.

Covering plates for unused "in rack" I/O card slots are available to protect the system in polluted environments.

Composition of the modular safety PLC XPSMF60

Minimum basic equipment	Optional "in rack" I/O cards			
	Туре	Details		
Metal rack XPSMFGEH01 with back plane bus assuring electrical connection of components installed +	XPSMFAI801	8 single-pole analog inputs or 4 2-pole analog inputs		
metal securing plate for shielded cables (EMC),	XPSMFAO801	8 analog outputs		
two cooling fans + a power supply module (24 V)	XPSMFCIO2401	2 counting inputs, 4 digital outputs		
Power supply module (24 v) PSMFPS01,	XPSMFDI2401	24 digital inputs ($=$ 110 V / \sim 127 V)		
a central processing unit XPSMFCPU22	XPSMFDI3201	32 digital inputs		
with 4 x RJ45 integrated switched Ethernet ports for Programming, and for Safety and non-safety related	XPSMFDIO241601	24 digital inputs, 16 digital outputs		
communication on Ethernet (safety related using SafeEthernet protocol and Non-safety related using Modbus™ TCP/ IP server protocol) and in addition a SUB-D (FB2) connector for	XPSMFDO801	8 relay outputs (≂ 6250 V)		

Safety PLCs

communication on Modbus serial (RTU)

In order to meet safety requirements, the modular safety PLC XPSMF60 incorporates two essential functions (Redundancy and Self-monitoring) complying to category 4 conforming to EN 954-1 and performance level "e" conforming to EN/ISO 13849-1 in addition to the SafeEthernet safety communication protocol between the safety PLCs and the safety remote I/O modules (Special Switch). Redundancy: the 2 processors integrated in the modular safety PLC analyze and

compare the data received from the safety inputs and outputs. The incoming and outgoing data (programmed values and received values) are

received in parallel by the two processors and compared in real-time.

■ Self-monitoring ("Watchdog"): the modular safety PLC continuously monitors the data processing cycle and the execution of tasks, and intervenes if the cycle time does not conform to the predefined value.

■ The integrated switch (Special Switch) stores for a very short time and sends at very high speed the data provided by the inputs and outputs of the safety PLC on the Ethernet network, while avoiding signal collisions and excessive amounts of data on the network.

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GElectric

Preventa[™] safety PLCs Modular, XPSMF60 Rack, power supply and CPU



Power supply module XPSMFPS01



Line control for "in rack" I/O card XPSMFDIO241601 and "in rack" input card XPSMFDI3201

Line control is a means of short-circuit and line break monitoring.

Using line control outputs enables SIL 3 (EN/IEC 61508) and category 4 (EN 954-1) safety to be achieved. The line control outputs send a high signal with a very short low signal, thus enabling a wiring anomaly (short-circuit, line break) to be seen at the inputs of the safety PLCs.

The digital outputs 1 to 16 of card **XPSMFDIO241601** are connected to the digital inputs of the same card or to the digital inputs of card **XPSMFDI3201**.

(1) FB1 not used.

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Preventa[™] safety PLCs Modular, XPSMF60 Rack, power supply and CPU

Safety inputs and outputs (continued)

Programming automated safety functions

Software **XPSMFWIN** (reference SSV1XPSMFWIN) running on a PC enables the programming of all safety remote I/O modules and the modular safety PLCs, as well as configuration of the communication settings.

Safety inputs and outputs

The modularity of the PLC **XPSMF60** allows the user to select and install, in the six slots of the rack, various input, output and input/output cards to alter the number and type of safety inputs and/or outputs to be monitored.

6 identical cards can be installed in the same rack.

The cards listed (see below and next page) indicate the number of inputs and outputs available for connection to the machines to be monitored.

Digital input cards (1)

Eightai nipat e	41.40 ()	'/			
Cards	Digital inputs				
	Nº	№ Type			
		Safety detection	Safety dialog		
XPSMFDI2401	24	Limit switches, Guard switches, with reset and	Mushroom head emergency stops,		
XPSMFDI3201	32	with actuator, Light curtains type 2 and type 4, Safety mats and sensing edges	Enclosures for control and signalling units, Two-hand control stations		

	• • • • •			
Analog input	card (1)(2)			
Card	Analog measuring inputs			
	N°	Functions		
XPSMFAI801	8 single-pole or 4 2-pole	Closed circuit scanning of input channels, Single-pole measuring of 0 to 10 V voltages, 2-pole measuring of -10 to +10 V voltages, Single-pole measuring of 0 to 20 mA currents		

(1) Removable screw terminal blocks are provided with the power supply and "in rack" I/O cards. (2) Use shielded dual twisted pair cables, maximum length 984 ft (300m), short-circuit unused analog inputs.

2



XPSMFAI801

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Introduction (continued)

Safety automation system solutions

Preventa[™] safety PLCs Modular, XPSMF60 Rack, power supply and CPU

Safety inputs and outputs (continued)

XPSMFCI02401



XPSMFA0801



XPSMFDIO241601



XPSMFD0801

Card	Cou	nting inputs		Digit	al outputs	
	N°		24 V	N°	Туре	
XPSMFCIO2401	2	Incremental encoders	Sensors 2/3-wire PNP/NPN	4	Safety actuators Contactors-motors, Control relays,	
		Independent ar counting inputs counting and ou increasing or du counting direction	(one channel for ne channel for ecreasing		Variable speed drives. Safety dialog Beacons and indicator banks Rotating mirror beacons, Sirens	
Card Digital inputs				Digital outputs		
	N°	Туре		N°	Туре	
XPSMFDIO24160 [,]	1 24	Limit switches Guard switche with actuator, Light curtains Safety mats a Safety dialog	, es, with reset and type 2 and type 4, nd sensing edges ead Emergency or control and ts,	16	Safety actuators Contactors-motors, Control relays, Variable speed drives. Safety dialog Beacons and indicator banks, Rotating mirror beacons, Sirens	

Analog output card (1)(2)

Card	Ana	Analog outputs					
	N°	Functions					
XPSMFAO801	8	Closed circuit scanning of output channels, Single-pole measuring of 0 to 10 V voltages, Measuring, using jumper, 0/4 to 20 mA currents (with 500 Ω external resistor)					

Relay output card (1) (2)

Card	Rela	ay outputs
	N°	Туре
XPSMFDO801	8	Safety actuators Contactors-motors, Control relays, Variable speed drives. Safety dialog Beacons and indicator banks, Rotating mirror beacons, Sirens

Remote inputs and outputs

In addition to the inputs/outputs available as standard on the optional "in rack" cards, the modular safety PLC **XPSMF60** can be connected to safety remote input modules **XPSMF1** and/or safety remote output modules **XPSMF2** and/or safety remote mixed I/O modules **XPSMF3**.

The safety remote input, output and mixed I/O modules can be located within the vicinity of the machines to be monitored, thus reducing cabling.

Communication between these safety modules and the safety PLC **XPSMF60** is performed on an Ethernet network using the SafeEthernet safety protocol, via the integrated RJ45 switched Ethernet communications ports.

(1) Removable screw terminal blocks are provided with the power supply and "in rack" I/O cards. (2) Use shielded dual twisted pair cables, maximum length 984 ft (300 m), short-circuit unused analog inputs.

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Preventa[™] safety PLCs Modular, XPSMF60 Rack, power supply and CPU

Communication

Safety communication on Ethernet network

Communication between the PC, Magelis[™] graphic terminals or automation platform (Premium[™]) and the modular safety PLC is achieved by the **Ethernet** network connection via the integrated RJ45 switched Ethernet communications ports of the modular safety PLC.



- 1 Premium[™] automation platform: Modbus[™] TCP/IP client.
- 2 Graphic terminal XBTGT: Modbus TCP/IP client.
- 3 Modular safety PLC: Modbus TCP/IP server.
- 4 Safety remote I/O modules XPSMF1/2/3. They communicate with compact and modular safety PLCs using the SafeEthernet protocol.
- 5 Compact safety PLC XPSMF31/30: Modbus TCP/IP server.
- 6 Compact safety PLC **XPSMF35** ••: Modbus TCP/IP server.

Communication on Modbus serial (RTU) fieldbus

On Modbus serial (RTU), the modular safety PLC is a slave of the Premium[™] automation platform and Magelis graphic terminal.

It is connected to the Modbus serial network via its SUB-D 9-pin connector (FB2).



Dimonsional mounting

Connections

- Graphic terminal XBTGT: Modbus serial (RTU) master.
- 2 Premium[™] automation platform: Modbus serial (RTU) master.

Deferor

- 3 Modular safety PLC: Modbus serial (RTU) slave, Modbus TCP/IP server.
- 4 Safety remote I/O modules XPSMF1/2/3. They communicate with the modular safety PLC using the SafeEthernet protocol.
- 5 Graphic terminal XBTGT: Modbus serial (RTU) client.

Specifications

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Description

Safety automation system solutions

Preventa[™] safety PLCs Modular, XPSMF60 Rack, power supply and CPU



Description

Modular safety PLC

Modular assembly consisting of:

- A metal rack XPSMFGEH01.
- A 24 V power supply module **XPSMFPS01**. 2
- 3 A central processing unit XPSMFCPU22.
- Six optional "in rack" I/O cards (back plane bus assures the electrical connection 4 of "in rack" cards installed, the power supply module and the CPU).
- 5 A metal plate for securing shielded analog input connection cables (EMC),
- 6 One ground connection screw.
- 7 Two cooling fans (beneath the metal rack).
- 8 Four Ø 0.55 in (14 mm) elongated holes for mounting the rack on a vertical support.



Power supply module XPSMFPS01 and Central processing unit XPSMFCPU22 consisting of:

- Four voltage status LEDs (FAULT, 24 V, 3.3 V or 5 V).
- A RESTART button (accessible using fine pointed tool). 2
- 3 A 3-pole terminal block (3 captive screws) for "Fault contact" function (1).
- A == 24 V supply terminal block, including ground connection (2). 4
- 5 A grip to assist installation/removal of the power supply module.
- 6 Seven process status LEDs.
- Four integrated RJ45 (type 10BASE-T/100BASE-TX) switched ports for 7 Programming, and for Safety and non-safety related communication on Ethernet. (safety related using SafeEthernet protocol and Non-safety related using Modbus[™] TCP server protocol).
- Two process status LEDs.
- A SUB-D 9-pin connector (FB2) for connection on Modbus serial (RTU) (FB1 not 9 used), with process status LED.
- 10 A grip to assist installation/removal of the CPU.

(1) "Fault contact" function: the power supply module incorporates a volt-free changeover contact. Operating errors occurring in the system are read and displayed by the LEDs. The errors are analyzed on the programming PC:

010	Contact positions	Status
	1-2 closed (2-3 open)	Normal operation of the PLC.
	1-2 open (2-3 closed)	Absence of supply to the PLC or the CPU is in ERROR STOP mode.

(2) Removable screw terminal blocks are provided with the power supply and "in rack" I/O cards.

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Safety automation system solutions Preventa[™] safety PLCs Modular, XPSMF60

Rack, power supply and CPU



LED c	LED details							
Power supply module XPSMFPS01								
LED	Color	Status	Meaning					
24 VDC	Green	On	24 V voltage present.					
		Off	No voltage.					
3.3 VDC	Green	On	3.3 V voltage present.					
		Off	No voltage.					
5 VDC	Green	On	5 V voltage present.					
		Off	No voltage.					
FAULT	Orange	On	Operating error.					
			The user application has caused an error.					
			The system configuration is defective.					
			Replace module.					
		Off	None of the above errors have occurred.					

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Description (continued)

Safety automation system solutions Preventa[™] safety PLCs Modular, XPSMF60

Rack, power supply and CPU



Control	Innocasi		SMECDU22
		ng unit XPS	
LED	Color	Status	Meaning
RUN	Green	On	Program in operation: CPU in STOP or RUN mode.
		Flashing	A new programming system will be downloaded.
		Off	The CPU is in "ERROR" state (see ERROR).
ERR	Red	On	Software error or hardware anomaly detected by the CP The monitoring program (Watchdog) has triggered the STOP state of the process because the programmed cyc time has been exceeded. The CPU has stopped the execution of the user application, ended all hardware and software tests and all outputs have been reset. The process can only be started again from the PC.
		Flashing	In the event of all the LEDs being on, restarting has detected a system error, a new operating system (OS) must be loaded.
		Off	No error detected.
FB1	_	-	Not used.
FB2	Orange	On	Communication on Modbus [™] serial link active.
RUN	Green	On	Normal service mode, loaded program running, the PLC receives I/O messages, communication and hardware/ software tests carried out.
		Off	The CPU is in "ERROR" state (see ERROR).
STOP	Red	On	The CPU is in STOP mode and no program can be executed.
			The outputs are in the waiting state for the correct supply
			The CPU has stopped the execution of the user application, ended all hardware and software tests and a outputs have been reset.
			The process can only be started again from the terminal.
		Off	CPU operating. A new programming system will be downloaded.
PROG	Orange	On	The CPU is being loaded with a new configuration.
		Flashing	CPU changing from INIT state to STOP state. The FLASH ROM is being loaded with a new operating system.
		Off	No loading of configuration or operating system.
FAULT	Orange	On	Program error.
			The loading of a new operating system was defective an the operating system is corrupt.
		Flashing	An error has occurred while writing to FLASH ROM memory (during updating of the operating system).
			One or more I/O errors have occurred.
		Off	None of the above errors have occurred.
FORCE	Orange	On	CPU in RUN mode and force is active.
		Flashing	Program in STOP mode, but force is prepared and activated if the program restarts.
		Off	Force not activated.
OSL	Orange	Flashing	Operating system and backup loading active.
BL	Orange	Flashing	COM in INIT_Fail state.
RJ45	Green	On	Full duplex mode operation.
		Flashing	Signal collision.
		Off	Half duplex mode operation, no collision.
	Yellow	On	Connection established.
		Flashing	Interface active.

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Safety automation system solutions Preventa[™] safety PLCs Modular, XPSMF60

Rack, power supply and CPU

Environment			
Modular safety PLC			Rack XPSMFGEH01 + power supply module XPSMFPS01 and central processing unit XPSMFCPU22
Products designed for max. t control systems (conforming t EN/IEC 61508)	use in safety related parts of to EN 954-1, EN/ISO 13849-1 and		Category 4 (EN 954-1), Performance level "e" (EN/ISO 13849-1), Safety integrity level: SIL 3 (EN/IEC 61508)
Product certifications			EN/IEC 61508, part 1-7: 2000, IEC 61511 part 1-3: 2004, DIN VDE 0116: 1989, EN 50156-1: 2004, EN 12067-2: 2004, EN 298: 2003, EN 230: 1990, NFPA 85: 2001, EN/IEC 61131-2: 2003, EN 61000-6-2: 2001, EN 61000-6-4: 2001 EN 54-2: 1997, NFPA 72: 2002
Ambient air temperature	Operating	°F (°C)	Rack, power supply module and CPU: +32 + 140 (0+ 60)
conforming to EN 61131-2	Storage	°F (°C)	 Rack XPSMFGEH01: -40 + 185 (- 40+ 85), Power supply module XPSMFPS01: -40 + 185 (- 40+ 85), without backup battery -22 + 185 (- 30+ 85), with backup battery Central processing unit XPSMFCPU22: -40 + 185 (- 40+ 85)
Relative humidity			95% (supply not connected)
Degree of protection	Enclosure		IP 20 with covering plate on unused "in rack" I/O card slots
Pollution			Degree of pollution II
Altitude			6560 ft (2000 m)
Protection class			Class II, conforming to EN/IEC 61131-2
Electromagnetic compatibilit	ty		Conforming to EN/IEC 61131-2
Vibration resistance conforming to EN 61131-2	Operating		1 g, frequency 10150 Hz, unit test while operating, 10 cycles per axis
Shock resistance conforming to EN 61131-2	Operating		15 g (duration 11 ms), unit test while operating, 2 cycles per axis
Resistance to electrostatic di conforming to EN/IEC 61000-4	-2	kV	4 contact, 8 air discharge
Immunity to high frequency in conforming to EN/IEC 61000-4		V/m	10 (26 MHz1 GHz)
Rack material			Metal alloy
Electrical specificat	tions		
Supply	Voltage	v	24 (External supply with separate protection conforming to EN/IEC 60950, SELV (Safety Extra Low Voltage) or PELV (Protection Extra Low Voltage) rated)
	Voltage limits		- 15 + 20% (power supply module) - 20 + 25%
Output voltage of power supp	ply module	V V	
Maximum power consumptio	on	Α	30 max., 32 A external fuse
Immunity to momentary supp	oly interruptions	ms	10
Protection			Internal fuse
Response time		ms	Depending on size of application
Backup capacitor			Approximately 1 week for diagnostics and time information Program is not effected
Clock			Yes
Operational data of CPU			
	Application	L.D.	
User memory	Application	kB	500
	Data	kP.	500
LED display	Data	kB	500 Yes
	Data	kB	
Communication Ethernet network: safety	Data communication using SafeE		Yes protocol
Communication Ethernet network: safety Compatibility	communication using SafeE		Yes protocol Central processing unit XPSMFCPU22
Communication Ethernet network: safety	communication using SafeE	thernet	Yes protocol Central processing unit XPSMFCPU22 Integrated 4 RJ45 switched Ethernet communications ports
Communication Ethernet network: safety Compatibility Transmission	communication using SafeE		Yes protocol Central processing unit XPSMFCPU22 Integrated 4 RJ45 switched Ethernet communications ports 100 Half duplex, 10 Full duplex, Autonegotiation
Communication Ethernet network: safety Compatibility Transmission Structure	communication using SafeE	thernet	Yes protocol Central processing unit XPSMFCPU22 Integrated 4 RJ45 switched Ethernet communications ports 100 Half duplex, 10 Full duplex, Autonegotiation 10BASE-T/100BASE-TX
Communication Ethernet network: safety Compatibility Transmission Structure Medium	communication using SafeE Communication ports Baud rate	thernet	Yes protocol Central processing unit XPSMFCPU22 Integrated 4 RJ45 switched Ethernet communications ports 100 Half duplex, 10 Full duplex, Autonegotiation 10BASE-T/100BASE-TX Dual twisted pair cable, category 5D or better (Ethernet)
Communication Ethernet network: safety Compatibility Transmission Structure	communication using SafeE	thernet	Yes protocol Central processing unit XPSMFCPU22 Integrated 4 RJ45 switched Ethernet communications ports 100 Half duplex, 10 Full duplex, Autonegotiation 10BASE-T/100BASE-TX

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Specifications (continued)

Safety automation system solutions Preventa[™] safety PLCs

Modular, XPSMF60 Rack, power supply and CPU

Compatibility			Central processing unit XPSMFCPU22
	Non-safety related communication	using	
Connection Ports	Number and type	using r	
connection Ports		Mhao	Integrated 4 RJ45 switched Ethernet communication ports
	Baud rate	Mbps	100 Half duplex, 10 Full duplex, Autonegotiation
	Master/Slave		Server (slave)
Structure			10BASE-T/100BASE-TX
/ledium			Dual twisted pair cable, category 5D or better (Ethernet)
ransparent Ready [™] ervices	Class		A10
	Standard Ethernet TCP/IP communication services		Modbus TCP/IP Server
	communication services		Modbus TCP/IP messaging (reading/writing of data words)
	TCP port		Modbus identification requests standard 502
	Max. number of Modbus TCP/IP		1 to 20
	connections		1 10 20
Modbus serial (RTL		·	•
erial link ports	Number and type		1 x SUB-D 9-pin female (FB2)
charmin ports	Master/Slave		Slave
ddressing			122 slave addresses
hysical layer			RS 485
Connections (1)			
Power supply module			XPSMFPS01
ype of connection			Removable screw terminal blocks (2)
upply connection	Number of terminal blocks		1
	For 1 cable without cable end		Solid or flexible AWG 20 (0.7516 mm ²)
	For 1 flexible cable with or without		AWG 20 (0.516 mm ²)
	plastic cable end For 2 cables of same diameter, without cable end		Solid or flexible AWG 20 (0.756 mm ²)
	For 2 cables of same diameter, flexible		AWG 20 (0.54 mm ²)
	without cable end		Awy 3 20 (0.54 mm ⁻)
	For 2 cables of same diameter, flexible with plastic cable end		AWG 20 (0.56 mm ²)
"In rack" I/O card			XPSMFAI801, XPSMFAO801, XPSMFCIO2401, XPSMFDI2401, XPSMFDI3201, XPSMFDI0241601, XPSMFD0801
Type of connection			Removable screw terminal blocks (2)
igital input channel nd output channel	Number of terminal blocks		Depending on "in rack" I/O card type
	For 1 cable without cable end		Solid or flexible: AWG 28-16 (0.141.5 mm ²)
onnection	For 1 flexible cable without cable end		AWG 22-16 (0.251.5 mm ²)
	For 1 flexible cable with plastic cable end		AWG 22-20 (0.250.5 mm ²)
	For 2 cables of same diameter, without		Solid: AWG 28-20 (0.140.5 mm ²)
	cable end		Flexible: AWG 28-18 (0.140.75 mm ²)
	For 2 cables of same diameter, flexible without cable end		AWG 22 (0.250.34 mm ²)
igital input channel nd output channel	For 2 cables of same diameter, flexible		AWG 20 (0.5 mm ²)
	with plastic cable end		
	Number of terminal blocks		Depending on "in rack" I/O card type
nd output channel	For 1 cable without cable end		Solid or flexible: AWG 28-16 (0.141.5 mm ²)
	For 1 flexible cable without cable end		AWG 22-16 (0.251.5 mm ²)
	For 1 flexible cable with plastic cable end		AWG 22-20 (0.250.5 mm ²)
	For 2 cables of same diameter, without		Solid: AWG 28-20 (0.140.5 mm ²)
	cable end For 2 cables of same diameter, flexible		Flexible: AWG 28-18 (0.140.75 mm ²) AWG 22 (0.250.34 mm ²)
	without cable end For 2 cables of same diameter, flexible		AWG 20 (0.5 mm ²)
	with plastic cable end		
Counting channel onnection	Number of terminal blocks		Depending on "in rack" I/O card type
	For 1 cable without cable end		Solid or flexible: AWG 28-16 (0.141.5 mm ²)
	For 1 flexible cable without cable end		AWG 22-16 (0.251.5 mm ²)
	For 1 flexible cable with plastic cable end		AWG 22-20 (0.250.5 mm ²)
	For 2 cables of same diameter, without cable end		Solid: AWG 28-20 (0.140.5 mm ²) Flexible: AWG 28-18 (0.140.75 mm ²)
	For 2 cables of same diameter, flexible without cable end		AWG 22 (0.250.34 mm ²)
	For 2 cables of same diameter, flexible with plastic cable end		AWG 20 (0.5 mm ²)
able connection	Tightening torque		1.92.2 lb-in (0.220.25 Nm)

(1) AWG: American Wire Gauge. (2) Removable screw terminal blocks are provided with the power supply and "in rack" I/O cards.



Safety automation system solutions Preventa[™] safety PLCs

Modular, XPSMF60 Rack, power supply and CPU



Modular PLC (24 V supply)		
Minimum basic equipment		
Description	Reference	Weight oz (kg)
Metal rack (1) fitted with: a back plane bus, assuring electrical connection of components installed: power supply module, CPU and "in rack" cards two cooling fans a metal securing plate for shielded cables (EMC) 	XPSMFGEH01	_
24 V power supply module (1)	XPSMFPS01	28.925 (0.820)

CPU (1) fitted with:	XPSMFCPU22	9.877
□ 4 x integrated RJ45 (type 10BASE-T/100BASE-TX) switched ports for Programming, and for Safety and non-safety related communication on Ethernet. (safety related using SafeEthernet protocol and Non-safety related using Modbus [™] TCP/IP server protocol		(0.280)

□ 1 x SUB-D 9-pin port (FB2) for access to Modbus serial (RTU)

Optional "in rack" I/O cards

Description	Functions		Reference	Weight
	Inputs	Outputs		oz (kg)
"In rack" I/O card (1)	Analog: 8 single-pole or 4 2-pole, configurable	-	XPSMFAI801	8.466 (0.240)
	_	8 analog	XPSMFAO801	9.877 (0.280)
	2 counting	4 digital	XPSMFCIO2401	9.171 (0.260)
	24 digital (110 V / ∼ 127 V)	-	XPSMFDI2401	9.171 (0.260)
	32 digital	-	XPSMFDI3201	9.171 (0.260)
	24 digital	16 digital <i>(2)</i>	XPSMFDIO241601	9.171 (0.260)
	_	8 relay ≂ 6250 V	XPSMFDO801	21.164 (0.600)

(1) Removable screw terminal blocks are provided with the power supply and "in rack" I/O cards.
 (2) Configurable for line control.

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Safety automation system solutions Preventa[™] safety PLCs Modular, XPSMF60

Rack, power supply and CPU

Configuration software

Reference SSV1XPSMFWIN contains the full version of the programming software XPSMFWIN software for the XPSMF Safety PLCs. The XPSMFWIN is part of our Safety Suite and is not available seperately.

Description	Operating system	Details	Languages	Reference	Weight oz (kg)
Configuration software XPSMFWIN for programming modular safety PLCs CD-ROM + user manual	Windows [®] 2000, Windows [®] XP	Software available on Safety Suite V2 software pack	0,	SSV1XPSMFWIN	18.342 (0.520)

Accessories for	modular PLC		
Description	For use with	Reference	Weight oz (kg)
Covering plate	Unused "in rack" I/O card slots	XPSMFBLK	-

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		Calary falses			

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Safety automation system solutions Preventa[™] safety PLCs

Preventa[™] safety PLCs Modular, XPSMF60 Rack, power supply and CPU



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ABL8RPS24050



ABL1REM24025



XBTGT2130, XBTGT2330



XBTGT4330



XBTGT5•30



XBTGT6330



XBTGT7340

Mains input voltage	Output voltage	Nominal power	Nominal current	Auto-protect reset	Conformity to standard IEC EN 61000-3-2 and IEC EN 60950	Reference	Weight
٧	v	w	Α			-	oz (kg)
Universal range, sing	le-phase	(N-L1) or	2-phase (L1-L2) connect	ion		
~100…120 V/200…500 - 15%, + 10%	2428.8	72	3	Auto/Manual	Yes	ABL8RPS24030	10.582 (0.300)
50/60 Hz		120	5	Auto/Manual	Yes	ABL8RPS24050	24.692 (0.700)
		240	10	Auto/Manual	Yes	ABL8RPS24100	35.273 (1.000)
Dedicated range, sing	gle-phase	e connecti	on				
∿ 100…240 <i>(1)</i> wide range, 47…63 Hz	12	60	5	Auto	No	ABL1REM12050	15.521 (0.440)
	24	60	2.5	Auto	No	ABL1REM24025	15.521 (0.440)
~100120/200240 (2)	24	240	10	Auto	No	ABL1REM24100	31.041 (0.880)

Magelis[™] multifunction graphic terminals with touch sensitive screen and on-board Ethernet (1)

.

Desc	ription	Ports: serial and communication (type of link)	Application memory	Reference	Weight oz (kg)
5.7"	Monochrome black and white STN	1 x SUB-D 9-pin (RS 232C or RS 422/485 serial link to PLCs) 1 x RJ45 (RS 485 serial link) 1 x USB (peripheral connection and application transfer) 1 x RJ45 (Ethernet TCP/IP, 10BASE-T/100BASE-TX)	16 Mb	XBTGT2130	35.273 (1.000)
	Color TFT	1 x SUB-D 9-pin (RS 232C or RS 422/485 serial link to PLCs) 1 x RJ45 (RS 485 serial link) 1 x USB (peripheral connection and application transfer) 1 x RJ45 (Ethernet TCP/IP, 10BASE-T/100BASE-TX)	16 Mb	XBTGT2330	35.273 (1.000)
7.5"	Color TFT	1 x SUB-D 9-pin (RS 232C or RS 422/485 serial link to PLCs) 1 x RJ45 (RS 485 serial link) 1 x USB (peripheral connection and application transfer) 1 x RJ45 (Ethernet TCP/IP, 10BASE-T/100BASE-TX)	32 Mb	XBTGT4330	63.493 (1.800)
10.4"	Color STN	1 x SUB-D 9-pin (RS 232C or RS 422/485 serial link to PLCs) 1 x RJ45 (RS 485 serial link) 2 x USB (peripheral connection and application transfer) 1 x RJ45 (Ethernet TCP/IP, 10BASE-T/100BASE-TX)	32 Mb	XBTGT5230	105.822 (3.000)
	Color TFT	1 x SUB-D 9-pin (RS 232C or RS 422/485 serial link to PLCs) 1 x RJ45 (RS 485 serial link) 2 x USB (peripheral connection and application transfer) 1 x RJ45 (Ethernet TCP/IP, 10BASE-T/100BASE-TX)	32 Mb	XBTGT5330	105.822 (3.000)
12.1"	Color TFT	1 x SUB-D 9-pin (RS 232C or RS 422/485 serial link to PLCs) 1 x RJ45 (RS 485 serial link) 2 x USB (peripheral connection and application transfer) 1 x RJ45 (Ethernet TCP/IP, 10BASE-T/100BASE-TX)	32 Mb	XBTGT6330	105.822 (3.000)
15"	Color TFT	1 x SUB-D 9-pin (RS 232C or RS 422/485 serial link to PLCs) 1 x RJ45 (RS 485 serial link) 2 x USB (peripheral connection and application transfer) 1 x RJ45 (Ethernet TCP/IP, 10BASE-T/100BASE-TX)	32 Mb	XBTGT7340	197.534 (5.600)

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Safety automation system solutions Preventa[™] safety PLCs

Modular, XPSMF60 Rack, power supply and CPU

Connecting cables for network and bus

\bigcirc	
490NTW000.	

Description	Pre-fitted connectors		Length ft (m)	Reference	Weig oz (k
Shielded twisted pair cables,	2 RJ45 connectors		6.6 (2)	490NTW00002(1)	02 (1
straight through	For connection to DTE 1 (Data Terminal Equipment)				
				490NTW00012(1)	
		131.2 (40)	490NTW00040 (1)		
		262.5 (80)	490NTW00080 (1)		
Shielded twisted pair cables,	2 RJ45 connectors	16.4 (5)	490NTC00005(1)		
crossed wires	For connection between hul transceivers	49.2 (15)	490NTC00015(1)		
		131.2	490NTC00040(1)		
			(40) 262.5 (80)	490NTC00080(1)	
Connection to Modbus [™] s	erial link		(80)		
Description	Use		Length	Reference	Weig
	From	То	ft. (m)		lb (l
Trunk cables, shielded dual	Compact safety PLCs	Modbus splitter box	328	TSXCSA100	12.
twisted pair, RS 485	XPSMF4020/MF4022 (RJ45)	LU9 GC3 (RJ45)	(100)		(5.6
	(1040)		656 (200)	TSXCSA200	24. (10.9
			1640	TSXCSA500	66.
			(500)		(30.0
	Graphic terminals XBTGT (SUB-D 9-pin)	Modbus splitter box LU9 GC3 (RJ45)	8.2 (2.5)	XBTZ938(2)	0. (0.2
Adaptor for cable XBTZ938	SUB-D 9-pin (XBTGT)	XBTZ938 (SUB-D 25-pin)	0.66 (0.2)	XBTZG909	
Adaptor SUB-D 9-pin/RJ45	Compact PLCs (SUB-D 9-pin)	Connecting cables for Modbus serial link (RJ	45)	XPSMFADAPT	
Description	Specifications	Sold in lots of		Unit reference	Weig oz (l
End of line adaptors For RJ45 connector	R = 120 Ω, C = 1 nF	2		VW3A8306RC	7. (0.2
	R = 150 Ω	2		VW3A8306R	0. (0.0
PROFIBUS DP bus conne	ction components				
Description	Profile	Services		Reference	Weig oz (ł
PROFIBUS DP module set for Premium™ PLCs	Master, 12 Mbps	Class 1 and Class 2 m functions, see specific PROFIBUS FMS mess supported	ations.	TSXPBY100	30. (0.8
Description	Use			Reference	Weig oz (l
Remote inputs/outputs on PROFIBUS DP bus	Advantys™ STB network in	terface module		STBNDP2112	4. (0.1
	Momentum [™] communication	on module		170DTN11000	
Connectors for remote I/O communication module	Line terminators			490NAD91103	
	Intermediate connection	490NAD91104			
	Intermediate connection an	d terminal port		490NAD91105	
Description	Length ft (m)			Reference	Weig oz (l
PROFIBUS DP connecting	328 (100)			TSXPBSCA100	
cables	1312 (400)			TSXPBSCA400	
Description				Reference	Weig oz (l
Replacement parts	Main bus junction box	_		490NAE91100	
	PCMCIA card			467NHP81100	

 Cable conforming to standard EIA/TIA-568 cate cables, add the letter **U** to the end of the reference.
 Requires adaptor XBTZG909. 68 category 5 and IEC 1180/EN and CSA 22.1 approved

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490NAD91103
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TSXPBY100

Dimensions, mounting

Dimensions

Safety automation system solutions Preventa[™] safety PLCs

Modular, XPSMF60 Rack, power supply and CPU





(1) Removable screw terminal blocks are provided with the power supply and "in rack" I/O cards.

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min.

Connections

Safety automation system solutions Preventa[™] safety PLCs Modular, XPSMF60

Rack, power supply and CPU

Connections				
Power supply module and CPU				
	Item	Connection	Screw	Function
	Ą	Supply	L+	24 V
			L-	24 V (reference pole)
Areas and a set of a			Ŧ	Ground
	Item	Connection	Туре	Function
	В	Communication	SUB-D 9-pin female (FB2)	XPSMFCPU22 : slave on Modbus [™] serial (RTU)
	C	Programming	Integrated 4 RJ45 switched Ethernet Communication ports	Either of the four switched Ethernet ports can be used to create a connection between the safety PLC and the programming terminal in a point to point or via an Ethernet network for programming, and setting an IP address.
		Safe Communication (all XPSMF Safety PLCs and Remote I/Os)	_	Either of the four switched Ethernet ports can be used to create a connection between the safety PLC and other safety related components (e.g other XPSMF safety PLCs or Safety Remote I/O modules) this can be established in a point to point way or via an Ethernet network.
		Non-Safe Communication available with: XPSMF60 (reference XPSMFCPU22	-	Either of the four switched Ethernet ports can be used to create a connection between the safety PLC and other non- safety related components (e.g. HMI Magelis ^{TW} , standard PLCs, and Scada systems) this can be established in a point to point way or via an Ethernet network.

Connection examples Actuator connections to the outputs



Emergency stop connections (line control)



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Introduction, description

Safety automation system solutions

Preventa[™] safety PLCs Modular, XPSMF60 "In rack" analog input card

Introduction

- The "in rack" analog input card **XPSMFAI801** is designed to manage up to:
 - category 4 conforming to EN 954-1,
 - performance level "e" conforming to EN/ISO 13849-1,
 - SIL 3 (safety integrity level) conforming to EN/IEC 61508.
- It incorporates 8 analog inputs:
- electrically isolated from the back plane bus of rack **XPSMFGEH01**,

□ configured by choice of connection for managing eight single-pole or four 2-pole functions.

■ The card can be installed in rack **XPSMFGEH01** as many times as required in the six slots available.

Input va	Input values (1)								
Number	Туре	Voltage	Current	Value range	Example				
8 inputs	Single-pole	e ± 10 V	-	± 1000	Single-pole measuring of 0 to 10 V voltages				
		_	020 mA	01000 <i>(2)</i> 02000 <i>(3)</i>	Measuring 0 to 20 mA currents using jumper				
4 inputs	2-pole	±10 V	_	±1000	Closed circuit scanning of input channels				

Functional diagram



Description

On the front cover of the card:

- 1 Two process status LEDs (RUN, ERR).
- 2 Two removable screw terminal blocks (9 terminals per block) for connection of inputs (4).
 - 3 Grip to assist installation/removal.
- 4 On the rear: terminals for automatic electrical connection to the back plane bus of rack XPSMFGEH01.

LED details

LLDUC						
LED	Color	Status	Meaning			
RUN	Green	On	Voltage present.			
		Off	No voltage.			
ERR	Red	On	Card defect or external error, diagnostics response.			
		Off	No error regarding the card or on the channels.			

(1) The unused input channels must be short-circuited on the reference pole (L-).

(2) With 250 Ω external jumper.

(3) With 500 Ω external jumper.

(4) Removable screw terminals are provided with the "in rack" card XPSMFAI801.



Specifications, references, connections

Safety automation system solutions Preventa[™] safety PLCs

Preventa[™] safety PLCs Modular, XPSMF60 "In rack" analog input card

Card type			XPSMFAI801
Number of analog inputs			8 single-pole inputs (\pm 10 V / 020 mA) or 4 2-pole inputs (\pm 10 V), electrically isolated, configurable by choice of connection
Supply	Voltage	v	24, supplied by rack XPSMFGEH01 incorporating power supply module XPSMFPS01
	Voltage limits		- 15+ 20%
Signal	Usable range	v	± 10.25
		mA	0+ 20.5 (with jumper)
	Nominal value	v	±10
		mA	0+ 20 (with jumper)
Maximum input signal V		v	± 10.7
Jumper for current measurement Ω		Ω	250 or 500
Overvoltage protection		v	15+ 15 (30 V range)
Input resistance	d.c.	MΩ	1
Operational data			24 V/380 mA 3.3 V/150 mA
Ambient air temperature	Operating	°F (°C)	+32 + 140 (0+ 60)
conforming to EN 61131-2	Storage	°F (°C)	- 40 + 185 (- 40+ 85)
Resolution	Effective		9-bit
	Maximum		12-bit
Output voltage			± 1% max.
Safety accuracy			± 1% max.
Transient deviation			± 1% max.
Value acquisition renewal			Once per CPU cycle
Processing time			Approximately 45 μs
Connections			See page 2/47

References				
Description	Number of channels	Voltage Current	Reference	Weight oz (kg)
Analog input card	8 single-pole	± 10 V 020 mA <i>(1)</i>	XPSMFAI801	8.466 (0.240)
	42-pole	± 10 V		

	8	
	A	
	В	
and the second		
anal I		
	G	

XPSMFAI801

		4	12-pole	1	± 10 V	1			
Con	nections								
Item	Connection			Screw	N° Screw	Function			
A	Analog inpu	ts		01	L1+	L1+ Analog input 1			
				02	L-	Input 1 (refe	rence pole)		
				03	L2+	Analog input	2		
				04	L-	Input 2 (refe	rence pole)		
				05	L3+	Analog input	t 3		
				06	L-	Input 3 (refe	rence pole)		
				07	L4+	Analog input	t 4		
				80	L-	Input 4 (refe	rence pole)		
				09	÷	Ground/Shie	elding		
В	Analog inpu	ts		10	L5+/L1	 Analog input 	5		
				11	L-	Input 5 (refe	rence pole)		
				12	L6+/L2	 Analog input 	6		
				13	L-	Input 6 (refe	rence pole)		
				14	L7+/L3	 Analog input 	17		
				15	L-	Input 7 (reference pole)			
				16	L8+/L4	+/L4- Analog input 8			
				17	L-	Input 8 (refe	rence pole)		
				18	÷	Ground/Shie	elding		
	guration of a	analog	•	5					
Conne	ection		with		Conr	nection		with	
8 single	e-pole inputs	L1+		L-	4 2-p	ole inputs	L1+		L5+/L1-
		L2+ L3+		L-			L2+		L6+/L2-
				L-			L3+		L7+/L3-
		L4+		L-			L4+		L8+/L4-
		L5+/L1		L-					
		L6+/L2	-	L-					

(1) With a 250 Ω or 500 Ω external jumper.

L7+/L3-

L8+/L4-

L-

L-



Preventa[™] safety PLCs Modular, XPSMF60 "In rack" analog output card

Introduction

The analog output card XPSMFAO801 is designed to manage up to:

- category 4 conforming to EN 954-1,
- performance level "e" conforming to EN/ISO 13849-1,
- SIL 3 (safety integrity level) conforming to EN/IEC 61508.
- It incorporates 8 configurable analog outputs (0...20 mA, 0...+ 10 V or
- 10...+ 10 V):

□ For selection of the type of voltage/current measurement: a switch enables selection of 6 functions for each output channel.

Switch position	Outputs					
	Voltage ± 10 V	Current 0+ 20 mA				
1	-	On				
2	-	On				
3	-	On				
4	On	-				
5	On	_				
6	On	-				

 Selection of measuring scale using software XPSMFWIN: the "Properties" sub-menu displays the scale options in the "Type" window (...FS1000 or ...FS2000).
 Configurable output values

Туре	Voltage	Current	Value range	
			Half scale (version FS1000)	Full scale (version FS2000)
8 analog	-	020 mA	0+ 1000	0+ 2000
outputs	0+ 10 V	-	0+ 1000	0+ 2000
	- 10+ 10 V	_	- 1000+ 1000	- 2000+ 2000

■ The card can be installed in rack **XPSMFGEH01** as many times as required in the six slots available.

Functional diagram



Description

On the front cover of the card:

- Two process status LEDs (RUN, ERR).
- 2 Two removable screw terminal blocks (9 terminals per block) for connection of outputs (1).
- 3 Grip to assist installation/removal.
- 4 On the rear: terminals for automatic electrical connection to the back plane bus of rack **XPSMFGEH01**.

LED details

	actuno		
LED	Color	Status	Meaning
RUN	Green	On	Voltage present.
		Off	No voltage.
ERR	Red	On	Card defect or external error, diagnostics response.
		Off	No error regarding the card or on the channels.

(1) Removable screw terminals are provided with the "in rack" card XPSMFA0801.





Specifications, references, connections

Safety automation system solutions Preventa[™] safety PLCs Modular, XPSMF60

"In rack" analog output card

Card type			XPSMFA	0801				
Number of outputs			8 analog o	outputs				
Supply	Voltage	v	24 (supplied by rack XPSMFGEH01 incorporating power XPSMFPS01)				ower supply modul	е
	Voltage limits		- 15+ 20					
Nominal output values		v	± 10 (- 10.	+ 10)				
		mA	0+ 20					
Maximum output value		v	± 10.25					
		mA	0+ 21					
Overvoltage protection		v	24					
Output resistance	Current	Ω	≤600					
	Voltage	kΩ	>1					
Operational data			3.3 V/130 5 V/280 m 24 V/630 i	A				
Ambient air temperature	Operating	°F (°C)	+32+1	40 (0+ 60)				
conforming to EN 61131-2	Storage	°F (°C)	-40 + 18	35 (- 40+ 85)				
Resolution	Effective		7-bit					
	Maximum		12-bit					
Symmetrical tolerance			± 1% max.					
Safety accuracy			± 1% max.					
Processing time		Approximately 45 µs						
Connections			See page	2/47				
		Refei	ences					
		Descrip	otion	Number of channels	Configurati		Reference	Weight oz (kg)
					Current	Voltage		J= (

Analog output card 8

	Conservation of the second	A
		В
XPSMF	A0801	

COL	nections			
Item	Connection	Screw	N° Screw	Function
Α	Analog outputs	01	01+	Analog output 1
		02	01-	Output 1 (reference pole)
		03	O2+	Analog output 2
		04	O2-	Output 2 (reference pole)
		05	O3+	Analog output 3
		06	O3-	Output 3 (reference pole)
		07	04+	Analog output 4
		08	04-	Output 4 (reference pole)
		09	÷	Ground/Shielding
В	Analog outputs	10	O5+	Analog output 5
		11	O5-	Output 5 (reference pole)
		12	06+	Analog output 6
		13	O6-	Output 6 (reference pole)
		14	07+	Analog output 7
		15	07-	Output 7 (reference pole)
		16	O8+	Analog output 8
		17	O8-	Output 8 (reference pole)
		18	÷	Ground/Shielding

0...20 mA

- 10...+ 10 V XPSMFAO801

9.877 (0.280)

Introduction, description

Safety automation system solutions

Preventa[™] safety PLCs Modular, XPSMF60

"In rack" mixed card: counting inputs/digital outputs

Introduction

The mixed counting input and digital output card XPSMFCIO2401 is designed to manage up to:

- category 4 conforming to EN 954-1,
- performance level "e" conforming to EN/ISO 13849-1,
- SIL 3 (safety integrity level) conforming to EN/IEC 61508.

It incorporates:

2 24-bit independent and configurable counting channels (one channel for counting and one channel for increasing or decreasing counting direction). They are configured using software XPSMFWIN. □ 4 digital outputs.

■ The card can be installed in rack XPSMFGEH01 as many times as required in the six slots available.

Functional diagram





On the front cover of the card:

- 1 Two process status LEDs (RUN, ERR).
- 2 Two removable screw terminal blocks (9 terminals per block) for connection of inputs (1).
- One removable screw terminal block (9 terminals) for connection of outputs (1) 3 with four output status LEDs.
 - 4 Grip to assist installation/removal.
- On the rear: terminals for automatic electrical connection to the back plane bus of 5 rack XPSMFGEH01.

LED details

LED	Color	Status	Meaning
RUN	Green	On	Voltage present.
		Off	No voltage.
ERR	Red	On	Card defect or external error, diagnostics response.
		Off	No error regarding the card or on the channels.

(1) Removable screw terminals are provided with the "in rack" card XPSMFCIO2401.

2



Specifications, references, connections

Safety automation system solutions

Preventa[™] safety PLCs Modular, XPSMF60 "In rack" mixed card: counting inputs/digital outputs

Specifications								
Mixed card type			XPSMFCIO2401					
Supply	Voltage	v	24 (supplied by rac XPSMFPS01)	k XPSMFGE	H01 inco	rporating power supply module		
	Voltage limits		- 15+ 20%					
Ambient air temperature	Operating	°F (°C)	+32 + 140 (0+ 60)					
conforming to EN 61131-2	Storage		- 40 + 185 (- 40+	,				
Counting inputs		1.(-)		,				
Number	Counter		2					
lander	Inputs		4 on each pole (A, B,	7 (1)				
nnut voltogo	IIIpuls	v	5 or 24	2,0)				
nput voltage								
nput current		mA	≤3					
nput resistance		k Ω	3.7					
Counting frequency		MHz	01					
Resolution			24-bit					
Fime base accuracy		0.2%						
Operational data			3.3 V/0.8 A 5 V/0.1 A 24 V / 0.1 A + output	ut current				
Maximum distance of equip	ment		1640 ft (500 m), with	shielded dual	twisted p	air cable		
nput connections			See page 2/47					
Digital outputs								
Number			4					
Output voltage		v	18.426.8					
Output current	A	0.5 per channel, 2 ma	w por oard C	Continuou	a abort aircuit proof			
•	V	· · · · · · · · · · · · · · · · · · ·	ix. per caru. C	Jonunuou	is short-circuit proof			
nternal volt drop			3 max. at 0.5 A					
Minimum current	At 1 1 0	mA	2 per channel					
Permissible current	At state 0	mA	1 mA max. at 2 V					
Current power consumption	1	v	24 / 0.1 A + output	current				
Output connections			See page 2/47					
		Refei	rences					
		Descrip	ption Specifications			Reference	Weight oz (kg)	
		Mixed I/	O card 2 x 24-bit counting inputs, configurable: 5 V24 V 4 digital outputs		XPSMFCIO2401	9.17 (0.260		
				outputs			(0.200	
		Conn		outputs			(0.200	
		Conn	4 digital	·	N° Screw	Function	(0.200	
		•••••	■ 4 digital	·	N° Screw C-	Function Common reference pole	(0.200	
		Item	4 digital ections Connection	Screw			(0.200	
		Item	4 digital ections Connection	Screw 01	C-	Common reference pole	(0.200	
1		Item	4 digital ections Connection	01 02	C- A1	Common reference pole Input A1 or bit 1 Input B1 or bit 2	(0.200	
		Item	4 digital ections Connection	01 02 03	C- A1 B1	Common reference pole Input A1 or bit 1 Input B1 or bit 2 Input Z1 or bit 3		
1		Item	4 digital ections Connection	01 02 03 04	C- A1 B1 Z1	Common reference pole Input A1 or bit 1 Input B1 or bit 2		
		Item	4 digital ections Connection	01 02 03 04 05	C- A1 B1 Z1 C1	Common reference pole Input A1 or bit 1 Input B1 or bit 2 Input Z1 or bit 3 Input C1 or bit 4 Common reference pole		
1		Item	4 digital ections Connection	Screw 01 02 03 04 05 06	C- A1 B1 Z1 C1 C-	Common reference pole Input A1 or bit 1 Input B1 or bit 2 Input Z1 or bit 3 Input C1 or bit 4 Common reference pole Common reference pole		
1		Item	4 digital ections Connection	Screw 01 02 03 04 05 06 07	C- A1 B1 C1 C- C- C- C-	Common reference pole Input A1 or bit 1 Input B1 or bit 2 Input Z1 or bit 3 Input C1 or bit 4 Common reference pole Common reference pole		
1		Item 1	 4 digital ections Connection Counting input 	Screw 01 02 03 04 05 06 07 08 09	C- A1 B1 C1 C- C- C- C- C- C-	Common reference pole Input A1 or bit 1 Input B1 or bit 2 Input Z1 or bit 3 Input C1 or bit 4 Common reference pole Common reference pole Common reference pole Common reference pole		
1		Item	4 digital ections Connection	Screw 01 02 03 04 05 06 07 08	C- A1 B1 C1 C- C- C- C- C- C- C- C-	Common reference pole Input A1 or bit 1 Input B1 or bit 2 Input Z1 or bit 3 Input C1 or bit 4 Common reference pole Common reference pole Common reference pole Common reference pole		
1		Item 1	 4 digital ections Connection Counting input 	Screw 01 02 03 04 05 06 07 08 09 10 11	C- A1 B1 C1 C- C- C- C- C- C- A2	Common reference pole Input A1 or bit 1 Input B1 or bit 2 Input Z1 or bit 3 Input C1 or bit 4 Common reference pole Common reference pole Common reference pole Common reference pole Common reference pole Input A2 or bit 1		
1		Item 1	 4 digital ections Connection Counting input 	Screw 01 02 03 04 05 06 07 08 09 10 11 12	C- A1 B1 C1 C- C- C- C- C- C- C- C- A2 B2	Common reference pole Input A1 or bit 1 Input B1 or bit 2 Input Z1 or bit 3 Input C1 or bit 4 Common reference pole Common reference pole Common reference pole Common reference pole Common reference pole Input A2 or bit 1 Input B2 or bit 2		
		Item 1	 4 digital ections Connection Counting input 	Screw 01 02 03 04 05 06 07 08 09 10 11 12 13	C- A1 B1 C1 C- C- C- C- C- C- C- C- A2 B2 Z2	Common reference pole Input A1 or bit 1 Input B1 or bit 2 Input Z1 or bit 3 Input C1 or bit 4 Common reference pole Common reference pole Common reference pole Common reference pole Input A2 or bit 1 Input B2 or bit 2 Input Z2 or bit 3		
		Item 1	 4 digital ections Connection Counting input 	Screw 01 02 03 04 05 06 07 08 09 10 11 12 13 14	C- A1 B1 C1 C- C- C- C- C- C- C- A2 B2 Z2 C2	Common reference pole Input A1 or bit 1 Input B1 or bit 2 Input Z1 or bit 3 Input C1 or bit 4 Common reference pole Common reference pole Common reference pole Common reference pole Common reference pole Input A2 or bit 1 Input B2 or bit 2 Input Z2 or bit 3 Input C2 or bit 4		
		Item 1	 4 digital ections Connection Counting input 	Screw 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15	C- A1 B1 C1 C- C- C- C- C- C- A2 B2 Z2 Z2 C2 C-	Common reference pole Input A1 or bit 1 Input B1 or bit 2 Input Z1 or bit 3 Input C1 or bit 4 Common reference pole Common reference pole Common reference pole Common reference pole Common reference pole Input A2 or bit 1 Input B2 or bit 2 Input Z2 or bit 3 Input C2 or bit 4 Common reference pole		
		Item 1	 4 digital ections Connection Counting input 	Screw 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16	C- A1 B1 C1 C- C- C- C- C- C- C- C- B2 B2 Z2 Z2 C2 C2 C- C- C- C-	Common reference pole Input A1 or bit 1 Input B1 or bit 2 Input Z1 or bit 3 Input C1 or bit 4 Common reference pole Common reference pole Common reference pole Common reference pole Input A2 or bit 1 Input B2 or bit 2 Input Z2 or bit 3 Input C2 or bit 4 Common reference pole Common reference pole		
		Item 1	 4 digital ections Connection Counting input 	Screw 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17	C- A1 B1 C1 C- C- C- C- C- C- C- C- B2 B2 Z2 C2 C2 C2 C2 C- C- C- C- C- C- C- C- C- C- C- C- C-	Common reference pole Input A1 or bit 1 Input B1 or bit 2 Input Z1 or bit 3 Input C1 or bit 4 Common reference pole Common reference pole Common reference pole Common reference pole Input A2 or bit 1 Input B2 or bit 2 Input Z2 or bit 3 Input C2 or bit 4 Common reference pole Common reference pole Common reference pole		
		1 1 2	4 digital	Screw 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18	C- A1 B1 C1 C- C- C- C- C- C- C- C- B2 Z2 C2 C2 C2 C2 C2 C- C- C- C- C- C- C- C- C- C- C- C- C-	Common reference pole Input A1 or bit 1 Input B1 or bit 2 Input Z1 or bit 3 Input C1 or bit 4 Common reference pole Common reference pole Common reference pole Common reference pole Input A2 or bit 1 Input B2 or bit 2 Input Z2 or bit 3 Input C2 or bit 4 Common reference pole Common reference pole Common reference pole Common reference pole Common reference pole		
		Item 1	 4 digital ections Connection Counting input 	Screw 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19	C- A1 B1 C1 C- C- C- C- C- C- C- C- C- C- C2 C2 C2 C2 C2 C2 C- C- C- C- C- C- C- C- C- C- C- C- C-	Common reference pole Input A1 or bit 1 Input B1 or bit 2 Input Z1 or bit 3 Input C1 or bit 4 Common reference pole Common reference pole Common reference pole Common reference pole Input A2 or bit 1 Input B2 or bit 2 Input Z2 or bit 3 Input C2 or bit 4 Common reference pole Common reference pole Common reference pole Common reference pole Common reference pole		
		1 1 2	4 digital	Screw 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20	C- A1 B1 C1 C- C- C- C- C- C- C- C- C- C- C2 C2 C2 C2 C2 C- C- C- C- C- C- C- C- 1	Common reference pole Input A1 or bit 1 Input B1 or bit 2 Input Z1 or bit 3 Input C1 or bit 4 Common reference pole Common reference pole Common reference pole Common reference pole Input A2 or bit 1 Input B2 or bit 2 Input Z2 or bit 3 Input C2 or bit 4 Common reference pole Common reference pole Common reference pole Common reference pole Common reference pole Common reference pole Common reference pole		
3		1 1 2	4 digital	Screw 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21	C- A1 B1 Z1 C- C- C- C- C- C- C- C- Z2 C2 C2 C2 C2 C2 C- C- C- C- C- C- C- L- 1 2	Common reference pole Input A1 or bit 1 Input B1 or bit 2 Input Z1 or bit 3 Input C1 or bit 4 Common reference pole Common reference pole Common reference pole Common reference pole Input A2 or bit 1 Input B2 or bit 2 Input Z2 or bit 3 Input C2 or bit 4 Common reference pole Common reference pole		
		1 1 2	4 digital	Screw 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22	C- A1 B1 Z1 C1 C- C- C- C- C- C- C- C- C2 C2 C2 C2 C2 C2 C- C- C- C- C- C- C- 1 2 3	Common reference pole Input A1 or bit 1 Input B1 or bit 2 Input Z1 or bit 3 Input C1 or bit 4 Common reference pole Common reference pole Common reference pole Common reference pole Common reference pole Input A2 or bit 1 Input B2 or bit 2 Input Z2 or bit 3 Input C2 or bit 4 Common reference pole Common reference pole Digital output 1 Digital output 3		
3		1 1 2	4 digital	Screw 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21	C- A1 B1 Z1 C- C- C- C- C- C- C- C- Z2 C2 C2 C2 C2 C2 C- C- C- C- C- C- C- L- 1 2	Common reference pole Input A1 or bit 1 Input B1 or bit 2 Input Z1 or bit 3 Input C1 or bit 4 Common reference pole Common reference pole Common reference pole Common reference pole Input A2 or bit 1 Input B2 or bit 2 Input Z2 or bit 3 Input C2 or bit 4 Common reference pole Common reference pole		

24

25

26

27

L-

L-

L-

L-

Common reference pole

Common reference pole

Common reference pole

Common reference pole

Introduction, description

Safety automation system solutions

Preventa[™] safety PLCs Modular, XPSMF60 "In rack" digital input card

Introduction

The digital input card XPSMFDI2401 is designed to manage up to:

- It incorporates 24 = 110 / \sim 127 V digital inputs that are configurable using software **XPSMFWIN**.
- The card can be installed in rack **XPSMFGEH01** as many times as required in the six slots available.

Functional diagram



Description

On the front cover of the card:

- 1 Two process status LEDs (RUN, ERR).
- 2 Three removable terminal blocks (9 terminals per block) for connection of inputs (1), each with eight input status LEDs.
- 3 Grip to assist installation/removal.
- 4 On the rear: terminals for automatic electrical connection to the back plane bus of rack **XPSMFGEH01**.

LED details

	Juno		
LED	Color	Status	Meaning
RUN	Green	On	Voltage present.
		Off	No voltage.
ERR	Red	On	Card defect or external error, diagnostics response.
		Off	No error regarding the card or on the channels.
(1) 5			

(1) Removable screw terminals are provided with the "in rack" card XPSMFDI2401.



Specifications, references, connections

Safety automation system solutions Preventa[™] safety PLCs

Modular, XPSMF60 "In rack" digital input card

Specifications								
Input card type			XPSMFDI2401					
Supply	Voltage	v	24 (supplied by rack XPSMFGEH01 incorpora XPSMFPS01)	PSMFGEH01 incorporating power supply module				
	Voltage limits		- 15+ 20%					
Ambient air temperature	Operating	°F (°C)	+32 + 140 (0+ 60)					
conforming to EN 61131-2 Storage		°F (°C)	-40 + 185 (- 40 + 85)					
Number of inputs			24, electrically isolated					
Nominal voltage			110/~ 127 (single-phase)					
Input voltage	At state 0	V	≤20					
	At state 1	v	≥79					
Input current	At state 1	mA	≥ 2.2 at 79 V					
Operational data			3.3 V/0.05 A 24 V / 0.1 A (79 V at state 1)					
LED display			Yes					
Connections			Shielded dual twisted pair cable recommended to provide protection against electromagnetic interference, or Ø 0.47 in (12 mm) max. cable with connection to ground of rack XPSMFGEH01					
		Refe	ences					
		Descrip	tion Specifications	Reference	Weight oz (kg)			
		Input ca	rd 24 digital inputs $=$ 110 V / \sim 127 V	XPSMFDI2401	9.17 (0.260			



XPS MFDI2401

em	Connection	Screw	N° Screw	Function
	Digital inputs	01	11	Input 1
	- '	02	12	Input 2
		03	13	Input 3
		04	14	Input 4
		05	15	Input 5
		06	16	Input 6
		07	17	Input 7
		08	18	Input 8
		09	N/-	Common reference pole
B Digi	Digital inputs	10	19	Input 9
		11	l10	Input 10
		12	111	Input 11
		13	l12	Input 12
		14	I13	Input 13
		15	I14	Input 14
		16	I15	Input 15
		17	l16	Input 16
		18	N/-	Common reference pole
)	Digital inputs	19	117	Input 17
		20	l18	Input 18
		21	119	Input 19
		22	120	Input 20
		23	121	Input 21
		24	122	Input 22
		25	123	Input 23
		26	124	Input 24
		27	N/-	Common reference pole

Introduction, description

Safety automation system solutions

Preventa[™] safety PLCs Modular, XPSMF60 "In rack" digital input card

Introduction

The digital input card XPSMFDI3201 is designed to manage up to:

- category 4 conforming to EN 954-1,
- performance level "e" conforming to EN/ISO 13849-1,
- SIL 3 (safety integrity level) conforming to EN/IEC 61508.

It incorporates 32 digital inputs that are configurable using programming software XPSMFWIN.

The card can be installed in rack XPSMFGEH01 as many times as required in the six slots available.

Functional diagram



Line control for card XPSMFDI3201

Line control is a means of short-circuit and line break monitoring. Using line control outputs enables SIL 3 (EN/IEC 61508) and category 4 (EN 954-1) safety to be achieved. The line control outputs send a high signal with a very short low signal, thus enabling a wiring anomaly (short-circuit, line break) to be seen at the inputs of the safety PLCs.

Description

On the front cover of the card:

- Two process status LEDs (RUN, ERR).
- Five removable terminal blocks (9 terminals per block) for connection of inputs (1), 2 with a status LED for each input terminal.
- 3 Grip to assist installation/removal.
- On the rear: terminals for automatic electrical connection to the back plane bus of rack XPSMFGEH01.

LED details

	lano		
LED	Color	Status	Meaning
RUN	Green	On	Voltage present.
		Off	No voltage.
ERR	Red	On	Card defect or external error, diagnostics response.
		Off	No error regarding the card or on the channels.

(1) Removable screw terminals are provided with the "in rack" card XPSMFDI3201.



Specifications, references, connections

Safety automation system solutions

Preventa[™] safety PLCs Modular, XPSMF60 "In rack" digital input card

Specifications										
Input card type			XPSMFDI	3201						
Supply	Voltage	v	24, sup XPSMFPS		MFGEH	01 incorp	orating power supply mo	dule		
	Voltage limits		- 15+ 20	1%						
Ambient air temperature	Operating	°F (°C)	C) +32 + 140 (0+ 60)							
conforming to EN 61131-2	Storage	°F (°C)	-40 + 185 (- 40+ 85)							
Number of digital inputs			32, electrically isolated							
Nominal voltage		V	24							
Input voltage	At state 0	V	5 max.							
	At state 1	v	1030							
Input current	At state 0	mA	1.0 at 5 V							
	At state 1	mA	2 at 10 V, 5	5 at 24 V						
Operational data			3.3 V / 0	0.05 A, == 24 V / 0.	2A					
LED display			Yes	,						
Connections			electromag				I to provide protection aga nm) max. cable with conne			
		Refe	rences							
		Descri	iption	Specifications			Reference	Weight oz (kg)		
		Input ca	ard	32 digital inputs			XPSMFDI3201	9.171 (0.260		
		Conr	nection	S						
		Item	Connection		Screw 1	N° Screw	Function			
NEW		A	Digital inp	outs	01	LS+	Supply for inputs 1 to 7			
			5		02	11	Input 1			
and a second sec					03	12	Input 2			
(E)					04	13	Input 3			
2					05	14	Input 4			
1					06	15	Input 5			
					07	16	Input 6			
2					08	17	Input 7			
					09	EGND	Reference pole			
		В	Digital inp	outs	10	LS+	Supply for inputs 8 to 14	1		
2					11	18	Input 8			
					12	19	Input 9			
					13	110	Input 10			
2					14	111	Input 11			
12					15	112	Input 12			
4-					16	113	Input 13			
2					17	I14	Input 14			
1000		-	Digital		18 19	EGND	· · · · · · · · · · · · · · · · · · ·	24		
- 3		С	Digital inp	JUIS		LS+	Supply for inputs 15 to 2	21		
1					20 21	15 16	Input 15 Input 16			
					21	110	Input 17			
					23	118	Input 18			
					23	119	Input 19			
					25	120	Input 20			
					26	121	Input 21			
					27	EGND				
		D	Digital inp	outs	28	LS+	Supply for inputs 22 to 2	28		
		_	- '		29	122	Input 22			
					30	123	Input 23			
					31	124	Input 24			
					32	125	Input 25			
					22	100	Innut 06			

Digital inputs

E

33

34

35

36

37

38

39

40

41

42

43

44

45

126

127

128

LS+

129

130

131

132

Input 26

Input 27

Input 28 EGND Reference pole

Input 29

Input 30

Input 31

Input 32

EGND Reference pole

EGND Reference pole

EGND Reference pole

EGND Reference pole

Supply for inputs 29 to 32

Introduction, description

Safety automation system solutions

Preventa[™] safety PLCs Modular, XPSMF60 "In rack" digital I/O card

Introduction

- The digital I/O card XPSMFDIO241601 is designed to manage up to:
 - category 4 conforming to EN 954-1,
 - performance level "e" conforming to EN/ISO 13849-1,
 - SIL 3 (safety integrity level) conforming to EN/IEC 61508.
- It incorporates 24 digital inputs and 16 digital outputs.

■ The card can be installed in rack **XPSMFGEH01** as many times as required in the six slots available.

Functional diagrams

24 digital inputs



I/O bus (back plane bus of rack XPSMFGEH01)





Line control for card XPSMFDIO241601

Line control is a means of short-circuit and line break monitoring. Using line control outputs enables SIL 3 (EN/IEC 61508) and category 4 (EN 954-1) safety to be achieved. The line control outputs send a high signal with a very short low signal, thus enabling a wiring anomaly (short-circuit, line break) to be seen at the inputs of the safety PLCs.

Description

On the front cover of the card:

- Two process status LEDs (RUN, ERR).
- 2 Three removable terminal blocks (9 terminals per block) for connection of inputs (1), each with eight input status LEDs.
- 3 Two removable screw terminal blocks (9 terminals per block) for connection of outputs (1), each with eight output status LEDs.
- 4 Grip to assist installation/removal.
- 5 On the rear: terminals for automatic electrical connection to the back plane bus of rack **XPSMFGEH01**.

LED details

LED	Color	Status	Meaning
RUN	Green	On	Voltage present.
		Off	No voltage.
ERR	Red	On	Card defect or external error, diagnostics response.
		Off	No error regarding the card or on the channels.

(1) Removable screw terminals are provided with the "in rack" card XPSMFDIO241601.

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Specifications, references, connections

Safety automation system solutions Preventa[™] safety PLCs Modular, XPSMF60

"In rack" digital I/O card

IFGEH01 in	incorporating power supply mo	odule			
+32 + 140 (0+ 60)					
-40 + 185 (- 40+ 85)					
le recommer or Ø 0.47 in	ended to provide protection aga n (12mm) max. cable with conn	ainst lection to ground			
<u> </u>					
4					
	Continuous short simultare f				
per card. Co	Continuous short-circuit proof				
cations	Reference	Weig			
		oz (k			
ital inputs	XPSMFDIO				
ntrol	s, configurable	(0.20			
ew N° Screw					
LS+ 1	Supply for inputs 1 to 8				
11	Input 1 Input 2				
13	Input 3				
14	Input 4				
15	Input 5				
16	Input 6				
17	Input 7				
18	Input 8				
LS+	Supply for inputs 9 to 16				
19	Input 9				
10 11	Input 10 Input 11				
112	Input 12				
112	Input 13				
114	Input 14				
115	Input 15				
116	Input 16				
LS+	Supply for inputs 17 to 24				
117	Input 17				
118	Input 18				
119	Input 19				
20 21	Input 20 Input 21				
121	Input 22				
122	Input 23				
124	Input 24				
Scre	crew N° Screw Function				
	Se	I24 Input 24 Screw N° Screw Function 37 L- Reference pole for			

•									
Item	Connection	Screw N°	Screw	Function	Item	Connection	Screw N°	Screw	Function
D	Digital outputs	28	L-	Reference pole for outputs 1 to 8	E	Digital outputs	37	L-	Reference pole for outputs 9 to 16
		29	01	Output 1	_		38	O9	Output 9
		30	02	Output 2	_		39	O10	Output 10
		31	O3	Output 3	_		40	O11	Output 11
		32	O4	Output 4	_		41	O12	Output 12
		33	O5	Output 5	_		42	O13	Output 13
		34	O6	Output 6	_		43	O14	Output 14
		35	07	Output 7	_		44	O15	Output 15
		36	O8	Output 8			45	O16	Output 16

Introduction, description

Safety automation system solutions

Preventa[™] safety PLCs Modular, XPSMF60 "In rack" relay output card

Introduction

The relay output card XPSMFDO801 is designed to manage up to :

- category 4 conforming to EN 954-1,
- performance level "e" conforming to EN/ISO 13849-1,
- SIL 3 (safety integrity level) conforming to EN/IEC 61508.

■ It incorporates 8 relay safety outputs (3.15 A fuse) that are configurable using software **XPSMFWIN**.

■ The card can be installed in rack **XPSMFGEH01** as many times as required in the six slots available.

Functional diagram



Description

On the front cover of the card:

- 1 Two process status LEDs (RUN, ERR).
- 2 Eight output status LEDs.
- 3 Eight removable screw terminal blocks (2 terminals per block) for connection of outputs (1).
- 4 Grip to assist installation/removal.
- 5 On the rear: terminals for automatic electrical connection to the back plane bus of rack **XPSMFGEH0**.

LED details

	tuno			
LED	Color	Status	Meaning	
RUN	Green	On	Dn Voltage present.	
		Off	No voltage.	
ERR	Red	On	Card defect or external error, diagnostics response.	
		Off	No error regarding the card or on the channels.	

(1) Removable screw terminals are provided with the "in rack" card XPSMFDO801.



Specifications, references, connections

Safety automation system solutions Preventa[™] safety PLCs Modular, XPSMF60

"In rack" relay output card

Output card type			XPSMFDO801			
Supply	Voltage V		24, supplied by rack XPSMFGEH01 incorporating power supply module XPSMFPS01			
	Voltage limits		- 15+ 20%			
Ambient air temperature	Operating	°F (°C)	+ 32 + 122 (0+ 50) (1)			
conforming to EN 61131-2	Storage	°F (°C)	- 40 + 185 (- 40+ 85)			
Number and type of outputs			8 relay outputs, relay hard contact, with N.O. contact			
Relay	Туре		2 safety relays with positively guided contacts			
	Degree of protection		IP 40			
	Contact material		Silver alloy, gold flashed			
	Switching time	ms	30 approx.			
	Reset time	ms	20 approx.			
	Bounce time	ms	30 approx.			
	Mechanical life		≥ 10 million operating cycles			
	Electrical life		≥ 250 000 operating cycles on full load (resistive) and < 0.1 operating cycles/s			
Switching voltage		v	≂6V250V			
Switching current		A	3.15 A with internal fuse Breaking capacity 100 A			
Switching capacity	a.c.	VA	700 max., cos φ = 1			
	d.c. (non inductive)		 ≤: 30 V: 95 W max. (3.15 A) ≤: 70 V: 40 W max. (0.5 A) ≤: 110 V: 33 W max. (315 A) With suitable external fuse 			
Operational data			== 3.3 V / 0.2 A, == 24 V ± 10% (1) / 0.7 A			
LED display			Yes			
Connections			Shielded dual twisted pair cable recommended to provide protection against electromagnetic interference, or Ø 0.47 in (12 mm) max. cable with connection to ground of rack XPSMFGEH01			
		(1) Limi	ted system data.			
			References			

Description

Output card

В С D F F G XPSMFD0801

Con	Connections							
Item	Connection	Screw N°	Screw	Function				
Α	Relay output	01	1	Contact 1, terminal A				
		02		Contact 1, terminal B				
В	Relay output	03	2	Contact 2, terminal A				
		04		Contact 2, terminal B				
С	Relay output	05	3	Contact 3, terminal A				
		06		Contact 3, terminal B				
D	Relay output	07	4	Contact 4, terminal A				
		08		Contact 4, terminal B				
E	Relay output	09	5	Contact 5, terminal A				
		10		Contact 5, terminal B				
F	Relay output	11	6	Contact 6, terminal A				
		12		Contact 6, terminal B				
G	Relay output	13	7	Contact 7, terminal A				
		14		Contact 7, terminal B				
Н	Relay output	15	8	Contact 8, terminal A				
		16		Contact 8, terminal B				

Specifications

8 relay outputs

 \approx 6 V...250 V

Weight oz (kg)

21.164

(0.600)

Reference

XPSMFDO801

Preventa[™] safety PLCs Compact and modular, XPSMF

Communication on network and bus

Introduction

To communicate, Preventa[™] compact and modular safety PLCs **XPSMF** are fitted with:

■ Integrated 2 or 4 RJ45 Ethernet switched ports for transfer Safety and Nonsafety related data (Safety Related using SafeEthernet protocol, Non-Safety Related using Modbus[™] TCP/IP protocol),

■ and/or serial communication ports for transferring non safety related data.

Safety communication on a single network

The Ethernet network supports the SafeEthernet protocol: physically, a single network is possible for communication between:

- safety products (SafeEthernet protocol),
- non safety related products (Modbus TCP/IP and other protocols),
- safety related and non safety related products (Modbus TCP/IP protocol).

Communication on more than one network: a minimum of two separate cabling systems are established.

□ An Ethernet network with Modbus TCP/IP protocol is used for communication between non safety related products and the safety PLCs.

An Ethernet network with SafeEthernet protocol is used for communication between the safety PLCs XPSMF and safety remote I/O modules XPSMF1/2/3.
 A Modbus serial network with Modbus serial (RTU) protocol is used for communication between the safety PLCs XPSMF and non safety related products.
 A PROFIBUS DP network with PROFIBUS protocol is used for communication between the safety PLCs XPSMF and non safety related products.

Safety PLCs	Commun	ication on Ethernet networ	k	Communication on field	bus
Compact	Port (number x type)	SafeEthernet protocol: safe communication	Modbus TCP/IP protocol: non safe communication	Modbus serial (RTU) protocol	PROFIBUS DP protocol
XPSMF31222	4 x RJ45	yes	yes	no	no
XPSMF3022	4 x RJ45	yes	yes	yes (slave) / 1 x SUB-D (9-pin)	no
XPSMF3502	4 x RJ45	yes	yes	no	no
XPSMF3522	4 x RJ45	yes	yes	yes (slave) / 1 x SUB-D (9-pin)	no
XPSMF3542	4 x RJ45	yes	yes	no	yes (slave) / 1 x SUB-D (9-pin)
XPSMF4000	2 x RJ45	yes	no	no	no
XPSMF4002	2 x RJ45	yes	yes	no	no
XPSMF4020	2 x RJ45	yes	no	yes (slave) / 1 x RJ45	no
XPSMF4022	2 x RJ45	yes	yes	yes (slave) / 1 x RJ45	no
XPSMF4040	2 x RJ45	yes	no	no	yes (slave) / 1 x SUB-D (9-pin)
XPSMF4042	2 x RJ45	yes	yes	no	yes (slave) / 1 x SUB-D (9-pin)
Modular					
XPSMFCPU22 (central processing unit)	4 x RJ45	yes	yes	yes (slave) / 1 x SUB-D (9-pin)	no

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Preventa[™] safety PLCs Compact and modular, XPSMF Communication on network and bus



1 Premium[™] processor **TSX P57 ●634M/●623M** or module **TSX ETY 4103** on Premium[™] automation platform: Modbus[™] TCP/IP client (master).

2 Graphic supervision terminal XBTGT5230: Modbus TCP/IP client (master).

- 3 Modular safety PLC XPSMF60: Modbus TCP/IP server (slave).
- 4 Safety remote I/O modules XPSMF1/2/3.
- 5 Graphic supervision terminal XBTGT2130: Modbus TCP/IP client (master).
- 6 Compact safety PLCs **XPSMF31/30/35**: Modbus TCP/IP server (slave).
- 7 Shielded twisted pair cables 490 NTW 000 ••, lengths 6.6 to 262 ft (2 to 80 m).
- 8 Compact safety PLCs XPSMF40: Modbus TCP/IP server (slave).
- 9 Programming PC.
- 10 Ethernet connector.

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Protocol		SafeEthernet			
Compatibility with com	pact and modular safety PLCs	XPSMF4000, XPSMF4002, XPSMF4020, XPSMF4022, XPSMF4040, XPSMF4042 XPSMF4040, XPSMF4042 XPSMF2022, XPSMF3502, XPSMF3522, XPSMF35 XPSMFCPU22 (central processing u modular PLC XPSMF60)			
Transmission	Speed (Baud rate)	100 Mbps Half duplex, 10 Mbps Full duplex, Autonegotiation			
	Communication ports	Integrated 2 RJ45 switched Ethernet communications ports	Integrated 4 RJ45 switched Ethernet communications ports		
	Medium	Dual twisted pair cable, category 5D or better			
Structure		10BASE-T/100BASE-TX			
Transparent Ready™ service	Class	A10			
	Standard Ethernet TCP/IP communication services (supported	Modbus [™] TCP/IP			
	by compact and modular safety PLCs)	Modbus TCP/IP messaging (reading/writing of data words) Modbus identification requests			
	TCP port	Standard 502			
	Max. number of TCP/IP connections	1 to 20			

Preventa[™] safety PLCs Compact and modular, XPSMF Communication on network and bus



- 1 Premium[™] module **TSXSCY21601**: access to Modbus serial, on a Premium[™] automation platform: Modbus serial (RTU) master.
- 2 Cable TSXSCYCM6030.
- 3 Graphic supervision terminal XBTGT5230: Modbus serial (RTU) master.
- 4 Cable XBTZ938 + adaptor XBTZG909.
- 5 Cables VW3A83•6R•• for Modbus serial, lengths 1.0 to 9.8 ft (0.3 to 3 m).
- 6 Modbus serial splitter box LU9 GC3 for equipment connection.
- 7 Cables TSXCSA •00 for Modbus serial, lengths 328 to 1640 ft (100 to 500 m).
- 8 Compact safety PLCs XPSMF4020/MF4022: Modbus serial (RTU) slaves, Modbus TCP/IP server.
- 9 Programming PC.
- 10 Graphic supervision terminal XBTGT2130: Modbus serial (RTU) client.
- 11 Safety remote I/O modules XPSMF1/2/3.
- 12 Compact safety PLCs XPSMF3022/3522: Modbus serial (RTU) slaves, Modbus TCP/IP server.
- 13 Modular safety PLC XPSMF60, Modbus serial (RTU) slaves, Modbus TCP/IP server.
- 14 Direct connection cables XPSMCSCY for safety PLCs to Premium™ module TSXSCY21601, length 1 ft (0.3 m).
- 15 Connector XPSMFADAPT (RJ45/SUB-D 9-pin male) for connector FB2 or FB3, depending on PLC.

Specificatio	ons						
Bus type			Modbus serial (RTU)				
Compatibility with compact and modular safety PLCs			XPSMF3022, XPSMF3522	XPSMF4020, XPSMF4022	XPSMFCPU22 (CPU of modular PLC XPSMF60)		
Serial link port Number and type			1 x SUB-D 9-pin female (FB3)	1 x RJ45 (Modbus)	1 x SUB-D 9-pin female (FB2)		
		Master/Slave	Slave				
Addressing			122 slave addresses. Addressing	range: 1247			
Medium			Shielded twisted pair cable				
Physical layer			RS 485				
Services			13 Modbus functions (reading/writing of bits and words, event counters, connection even diagnostics, identification)				
	Functions	Code	Modbus slave				
		01	Reading n bits of output				
		02	Reading n bits of inputs				
		03	Reading n words of output				
		04	Reading n words of inputs				
		23	Reading/writing variables				
		15	Writing bit variables				
		16	Writing word variables				
		05	Writing 1 bit of output				
		06	Writing 1 word of output				
		08	Diagnostics				
		43	Reading equipment identification				
Transmission	Binary transfer	rate (bps)	115 200, 76 800, 62 500, 57 600, 3 Default value: 57 600	38 400, 19 200, 9600, 4	800, 2400, 1200, 600, 300.		
Elements	Parity		None. Odd. Even. Default value: even				
	Stop bit		Standard. 1 stop bit. 2 stop bits. Default value: standard				

Schneider Electric
Introduction, specifications (continued)

Safety automation system solutions

Preventa[™] safety PLCs Compact and modular, XPSMF Communication on network and bus

Connection on PROFIBUS DP



- 1 Graphic terminal connected to TER/AUX port of Premium automation platform: PROFIBUS DP master.
- 2 Connecting cable (RS 485) + adaptor .
- 3 PROFIBUS module on Premium[™] processor: PROFIBUS DP master.
- 4 Connecting cable •, lengths 328 and 1312 ft (100 and 400 m).
- 5 Connector (SUB-D 9-pin male) on the FB3 connector of safety PLC or on the "PROFIBUS" connector of safety PLC .
- 6 Compact safety PLC : PROFIBUS DP slaves, Modbus™ TCP/IP server.
- 7 Compact safety PLCs : PROFIBUS DP slaves, Modbus TCP/IP server.
- 8 Graphic supervision terminal : Modbus TCP/IP client.
- 9 Safety remote I/O modules .

Specificat	tions				
Bus type		PROFIBUS DP			
Compatibility v	vith compact safety PLCs	XPSMF3542	XPSMF4040, XPSMF4042		
Serial port	Number and type	1 x SUB-D 9-pin female (FB3)	1 x SUB-D 9-pin female (PROFIBUS)		
	Master/Slave	Slave, V0	Slave, V0		
Physical layer		RS 485	RS 485		
Topology		Linear, with line terminators at each en	Linear, with line terminators at each end		
Medium		Shielded twisted pair cable	Shielded twisted pair cable		
Number of slaves		32 slaves on each segment, 126 slaves	32 slaves on each segment, 126 slaves maximum with repeaters		
Data exchange	speed	9.6 kbps12 Mbps, depending on the	9.6 kbps12 Mbps, depending on the length of the segment (3937328 ft / 1200100 m)		

Programming software XPSMFWIN for Preventa[™] compact and modular safety PLCs XPSMF

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Introduction

Conforming to standard IEC 61131-3, programming software XPSMFWIN is designed for programming all safety PLCs XPSMF and safety remote I/O modules. This safety software is part of the Safety Suite V2 software pack.

To create a program the user can use predefined function blocks, such as the elementary logic functions and certified function blocks, by dragging the blocks into the software programming area.

The "drag and drop" operation of the Windows® programming environment enables quick and simple creation of configurations.

Using the XPSMFWIN software, it is possible to program complete systems consisting of several safety PLCs and safety remote I/O modules. The conditions detailed in the software manual must be adhered to and a complete report accompanying the certificate should be established.

Reference

■ Reference SSV1XPSMFWIN contains the full version of the programming software XPSMFWIN software for the XPSMF Safety PLCs. The XPSMFWIN is part of our Safety Suite and is not available separately.

Description	Operating system	Composition	Language	Reference	Weight oz (kg)
Configuration software XPSMFWIN for programming compact XPSMF40ee, XPSMF3e and modular XPSMF60 safety PLCs	Windows [®] XP	CD-ROM + user manual	English, German, French	SSV1XPSMFWIN Available with Safety Suite V2 software pack for safety systems	18.342 (0.520)

Installation



Software XPSMFWIN: project management

Software XPSMFWIN uses an electronic key (dongle) for protection against unauthorized use.

A USB dongle is available. It must be connected to the PC before the software is installed.

Drivers must also be installed on the computer to recognize the dongle. These drivers are included with software **XPSMFWIN** and are automatically installed during installation.

- To install software XPSMFWIN:
- Connect the dongle.
- Insert the SSV1XPSMFWIN software CD-ROM into the computer.
- Launch installation.
- Select the preferred language from the configuration menu.
- Follow the guided installation procedure for the
- software
- Restart the computer.

Launch the software by clicking on the Safety Suite icon on the desktop.

The computer hardware requirements are as follows:

■ Processor (Intel[®] Pentium II 400 MHz minimum, Intel® Pentium III 800 MHz recommended).

RAM (128 Mb minimum, 256 Mb recommended).

■ Graphics card (2 Mb XGA, 1024 x 768, 256 colors minimum, 8 Mb XGA, 1280 x 1024 True color recommended).

- Hard disk (1 Gigabyte minimum).
- Operating system:
- □ Windows[®] 2000 Professional with Service Pack 1 or higher.
- □ Windows[®] XP with Service pack 1.

Programming software XPSMFWIN for Preventa[™] compact and modular safety PLCs XPSMF

Safety related communication

Safety related communication for the safety systems is performed using SafeEthernet protocol.

SafeEthernet is a TCP/IP based protocol that uses highly intelligent switches to provide extremely reliable deterministic communication.

Connection is made automatically between the master and slaves when assigning the slaves to the corresponding masters. Transmission speeds of up to 100 Mbps in Half duplex mode and 10 Mbps in Full duplex mode can be achieved and using Autonegotiation ensures the correct baud rates for the connection.

Each safety PLC can manage up to 64 safety connections. These 64 connections can consist of safety remote I/Os and other safety PLCs.

Communication between two safety PLCs is established via a Peer-Peer link. This Peer-Peer communication enables data between two or more safety PLCs to be communicated safely.

The connectivity of all the equipment enables centralised or decentralised networks to be established. It also enables safety PLCs and safety remote I/O modules to be connected anywhere on the network with only the assigning of an IP address, to each module, in the software.

Interface

XPSMFWIN features two distinct windows, one for internal configuration and one for hardware management.

Project management

This window enables creation, archiving and recalling of all the user programs. It contains all the logic functions and predefined certified function blocks. ■ Hardware management

This window enables all hardware specific data, inputs and outputs and signal transfer between safety controllers to be defined, as well as the various safety PLCs being used or safety remote I/O modules.

Items included in the XPSMFWIN interface

- Menu and title bar
- Toolbar and status bar
- Windows[®] layout, structure window and work space
- Error display window

XPSMFWIN is a program offering numerous functions and features intuitive, Windows[®] style, operation, making it a very user-friendly programming environment.

Project Management window layout

On launching software **XPSMFWIN**, the standard screen shown below opens. This screen generally includes the following items:

- 1 Title bar.
- 2 Structure window.
- 3 Menu bar.
- 4 Project management toolbar.
- 5 Work space.
- 6 FBD (Function Block Diagram) editor toolbar.
- 7 Error display window.
- 8 Status bar with coordinate information of the function plan editor.

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Introduction (continued)

Safety automation system solutions

Programming software XPSMFWIN for Preventa[™] compact and modular safety PLCs XPSMF



Structure window

- Configuration.
- 2 Resource folder.
- 3 Communication protocols.
- 4 Remote I/O folder.
- 5 Remote I/O type.
- 6 Components and modules.7 Resource type.

The structure window displays the hierarchical structure of the project.

Selecting one of three views provides the user with different levels of detail.



Complete project

FBD (Function Block Diagram) editor



Using this editor, the user can create function blocks in FBD (Function Block Diagram) language or SFC (Sequential Function Chart) language. The FBD editor consists of the following panes:

- 1 Drawing field.
- 2 Variable declaration editor.
- 3 Overview window.
- 4 Interface declaration editor.



Programming software XPSMFWIN for Preventa[™] compact and modular safety PLCs XPSMF

Programming

Software **XPSMFWIN** enables programming of the entire range of Preventa[™] safety PLCs **XPSMF**.

The powerful and easy to use methodology of this software enables users to quickly and simply familiarize themselves with the product. The Windows® based look and user-friendliness provides users with trouble free operation of the software.

On launching the software, the program's start-up assistant opens simultaneously. This assistant enables the user to easily open a new or existing file, delete a file or archive a file. Once a new or existing file is opened, the user quickly accesses the working environment.

Configuration

The user can begin creating a configuration as soon as a personal library is set-up, that will contain the user configuration(s).

Once the personal library is opened, the user can use the standard library function blocks (And, Or, Not, and Flip-Flop) to create exactly what is required.

The user drags the function blocks into the configuration environment and places them where required. Once the function blocks are placed, the user can define specific signals or variables for the inputs and outputs.

The Hardware menu enables assigning of all the signals to the relevant inputs and outputs.

From within the Hardware menu the relevant safety PLCs are selected using the pull-down menu of each resource.

To add additional safety PLCs a new resource is easily created and assigned with the type of safety PLC.

Up to 64 remote inputs/outputs can be assigned to each safety PLC. Once all the safety PLCs and remote I/Os have been selected, the signals can be simply connected to the relevant safety modules. The "drag and drop" function enables defining of the inputs and outputs.

Therefore, configuration is very quick and simple.

Once all the inputs and outputs have been defined the user can compile the entire program, which is performed in the configuration menu. Compilation must be performed twice and the results of both compilations printed and compared. If both results match, the program can be downloaded via the Ethernet RJ45 communication port on any of the safety PLCs.

Program execution

The program will automatically be stored in all the safety PLCs. The safety PLCs can then execute the configuration and full diagnostics can be viewed on screen.

The software incorporates various diagnostic options that can be used to quickly identify the presence of errors. Some of these diagnostic options are "On-line test": which displays the logic condition of all the I/Os. Others allow the user to view the status of the transmission line, the cycle time and errors that have occurred on the communication line.

The programming tool enables the user to create and design to suit their needs. Other certified function blocks are available, which enable the overall configuration time to be further reduced. Included in these additional blocks are "Muting" and "Emergency stop" functions, together with 12 other certified functions.

Modbus[™] TCP/IP, Modbus serial (RTU) and PROFIBUS DP protocols are included in software **XPSMFWIN**. They can be used for non safety related data transfer.

Programming software XPSMFWIN for Preventa[™] compact and modular safety PLCs XPSMF

Non safety related communication protocols

Modbus[™] TCP/IP server (slave)

The **XPSMF** range of safety PLCs (**XPSMFCPU22**, **XPSMF40**•2, **XPSMF35**•2, **XPSMF3022** and **XPSMF31222**) allow the communication of non safety related data on an Ethernet network via a Modbus TCP/IP link.



On the Ethernet network, several masters (clients) can read data provided by several slaves (servers).

Creation of Modbus TCP/IP servers is quick and simple: Select Protocols / New / Modbus Slave.

Modbus serial (RTU)

The **XPSMF** range of safety PLCs (**XPSMFCPU22**, **XPSMF402e**, **XPSMF352e** and **XPSMF3022**) allow the communication of non safety related data on a Modbus serial (RTU) link.

On the Modbus serial network, a master can read the data provided by several slaves on a network segment.



Creation of Modbus (RTU) servers is quick and simple: Select Protocols / New / Modbus Slave.

Select the serial option in the properties window to activate, then select the signals to send and receive from your standard automation system equipment.

Programming software XPSMFWIN for Preventa[™] compact and modular safety PLCs XPSMF

Non safety related communication protocols PROFIBUS DP

To create a PROFIBUS DP slave on a resource (PLC), a project must be created. Safety PLCs **XPSMF404**• and **XPSMF3542** are PROFIBUS DP V0 slaves. Within hardware management, assignment of PROFIBUS DP slaves is simple: Select Protocols / New / PROFIBUS DP slave from the protocol tag of a resource.





The PROFIBUS DP Slave menu contains the following fields:

□ Connect signals tab: for connecting the inputs and outputs to and from the safety PLC, and predefined signals for diagnostics.

Import and Export tool: used for importing and exporting the signal list to/from a .CSV format file (format that can be imported into a standard automation PLC).
 Properties tab: enabling setting of the station address, interface, baud rate and

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data refresh rate.

Selection guide

Safety automation system solutions

Preventa[™] safety PLCs Compact and modular, XPSMF Safety remote input, output and input/output modules XPSMF1/2/3

Introduction

Remote input, output and input/output modules: Location: within the vicinity of machines to be monitored. Extension of the I/O capacity of compact and modular safety PLCs.

Designed for use in safety related parts of control systems up to category 4 conforming to EN 954-1, up to performance level "e" conforming to EN/ISO 13849-1, and up to SIL 3 conforming to EN/IEC 61508.







Products referenced XPSMF1DI1601 and XPSMF20000 are marked HIMatrix® F1DI and HIMatrix® F2DI (manufactured by Hima, sold by Schneider Electric).

User memory Application Data		Application	-				
		Data	-				
Response	time		Depending on size of application				
Maximum	power consumpti	on	0.8 A	0.5 A	9 A		
Supply			External 24 V supply (with se Extra Low Voltage) or PELV (Prot	eparate protection conforming to tection Extra Low Voltage) rated)	DEN/IEC 60950, SELV (Safety		
Inputs	Digital	Number of channels	16, not electrically isolated	-	-		
		Current at state 0	1.5 mA max., 1 mA at 5 V	-	-		
		Current at state 1	≥ 2 mA at 15 V	-	-		
	Analog	Number of channels	-	_	-		
		Range: voltage/current	-	-	-		
	Counting	Number of channels	_	-	-		
		Current	-	-	-		
Outputs	Digital	Number of channels	-	4, not electrically isolated	16, not electrically isolate		
		Output current	-	5 A max.	1 A max. at 140 °F (60 °C 2 A max. at 104 °F (40 °C		
	Analog	Number of channels	-	-	-		
		Range: voltage/current	-	-	-		
	Relay	Number	_	_	_		
		Switching voltage	-	-	-		
	Line control	Number	4, not electrically isolated	-	-		
		Current/Voltage	60 mA/20 V	-	-		
nput/outp	ut connections		Removable screw terminal blo	ocks (1)			
	nmunication on Et net protocol	thernet network using	Yes, access to network via inte	egrated 2 RJ45 switched Ethern	et communications ports		
					VDOMEODO4004		
Salety rem	ote I/O module ty	he	XPSMF1DI1601	XPSMF2DO401	XPSMF2DO1601		

See page

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2/82 2/89 (1) Removable screw terminal blocks are provided with safety remote I/O modules XPSMF1/2/3.

Selection guide (continued)

Safety automation system solutions

Preventa[™] safety PLCs Compact and modular, XPSMF Safety remote input, output and input/output modules XPSMF1/2/3



Products referenced XPSMF2000000 and XPSMF3000000 are marked HIMatrix® F2DO and HIMatrix® F3... (manufactured by Hima, sold by Schneider Electric).

-						
Depending on size of app	plication					
0.6 A	0.6 A	8 A	14 A	8 A	0.8 A	
External 🞞 24 V supply (with separate protection conforming to EN/IEC 60950, SELV (Safety Extra Low Voltage) or PELV (Protection Extra Low Voltage) rated)						

-	-	8, not electrically isolated	16, not electrically isolated	20, not electrically isolated	-
-	-	1.5 mA max. 1.25 mA at 5 V	1.5 mA max. 1 mA at 5 V	1.5 mA max. 1.25 mA at == 5 V	-
-	-	> 2 mA at 15 V	> 2 mA at 15 V	≥ 2 mA at == 15 V	-
-	-	-	-	-	8 single-pole
-	-	-	-	-	010 V/020 mA (1)
-	-	-	-	-	-
-	-	-	-	-	-
-	-	8 DO+ (reference pole L-) 2 DO- (reference pole S+)	8 2-pole or 16 single-pole, not electrically isolated	8, not electrically isolated (2)	-
-	-	DO+: channels 1 to 3 and 5 to 7: 0.5 A at 140 °F (60 °C) channels 4 and 8: 1 A at 140 °F (60 °C), 2 A at 104 °F (40 °C) DO-: channels 1 and 2: 1 A at 140 °F (60 °C)	2 A max. at 104 °F (40 °C), 1 A max. at 140 °F (60 °C), 10 mA min.	Channels 1 to 3 and 5 to 7: 0.5 A at 140 °F (60 °C) Channels 4 and 8: 1 A at 140 °F (60 °C), 2 A at 122 °F (50 °C)	-
-	-	-	-	-	4 non safety related outputs
-	-	-	-	-	Usable range: 020 mA Nominal range: 420 mA
8	16	-	-	-	-
\geq 5 V, \leq 250 V/ \sim 250 V	\geq 5 V, \leq 30 V/ \sim 60 V	-	-	-	-
-	-	2, not electrically isolated		-	-
-	-	60 mA/20 V	60 mA/20 V	-	-

Removable screw terminal blocks (3)

Yes, access to network via integrated 2 RJ45 switched Ethernet communications ports

XPSMF2DO801	XPSMF2DO1602	XPSMF3DIO8801	XPSMF3DIO16801	XPSMF3DIO20802	XPSMF3AIO8401
2/89		2/101			
(1) 14/21 500 0 1					

(1) With 500 Ω jumper (2) Configurable for Line control. (3) Removable screw terminal blocks are provided with safety remote I/O modules XPSMF1/2/3.

2

Introduction

Safety automation system solutions

Preventa[™] safety PLCs Compact and modular Safety remote input modules XPSMF1



XPSMF1DI1601

This product, referenced XPSMF1DI1601, is marked HIMatrix® F1DI (manufactured by Hima, sold by Schneider Electric).

Introduction

XPSMF1DI1601 is a compact safety remote input module which is designed to extend the input capacity of safety PLCs XPSMF, either compact or modular, to which it is associated.

The communication with either the compact or modular safety PLCs is managed via one of its' integrated 2 RJ45 switched Ethernet communications ports.

The safety remote input module XPSMF1DI1601 does not have a user program: it receives its instructions from its parent safety PLC.

Safety remote input module XPSMF1DI1601

Remo	Remote digital inputs					
N°	Safety detection	Safety dialog				
16	Limit switches, Guard switches, with reset and with actuator, Light curtains type 2 and type 4, Safety mats and sensing edges	Mushroom head Emergency stops, Enclosures for control and signalling units, Two-hand control stations				
Remote line control outputs						
N°						

4 Short-circuit and line break monitoring

Line control

Line control is a means of short-circuit and line break monitoring.

Using line control outputs enables SIL 3 (EN/IEC 61508) and category 4 (EN 954-1) safety to be achieved. The line control outputs send a high signal with a very short low signal, thus enabling a wiring anomaly (short-circuit, line break) to be seen at the inputs of the safety modules.

Example: The line control outputs 1 to 4 are connected to the digital inputs 1 to 16.

Safety PLCs

In order to meet safety requirements, the safety remote input module XPSMF1DI1601 incorporates two essential functions (Redundancy and Selfmonitoring) complying to category 4 conforming to EN 954-1 and performance level "e" conforming to EN/ISO 13849-1 in addition to the SafeEthernet safety communication protocol between this safety remote input module and the safety PLCs (Special Switch).

Redundancy: the dual processor integrated in the safety remote input module XPSMF1DI1601 analyzes and compares the data received from the safety inputs and outputs. The incoming and outgoing data (programmed values and received values) are received in parallel by the two processors and compared in real-time. Self-monitoring ("Watchdog"): the safety remote input module XPSMF1DI1601 continuously monitors the data processing cycle and the execution of tasks, and

intervenes if the cycle time does not conform to the predefined value. The integrated switch (Special Switch) stores for a very short time and sends at very high speed the data provided by the inputs of the safety module on the Ethernet

network, while avoiding signal collisions and excessive amounts of data on the network

Functional diagram



Safety communication on Ethernet network

The safety input module XPSMF1DI1601 incorporates two RJ45 (type 10BASE-T/100BASE-TX) integrated switched ports, that enable communication on the Ethernet network using SafeEthernet communication protocol and therefore, data exchange with compact or modular safety PLCs XPSMF.

Introduction:	Specifications:	References:	Dimensions, mounting:	Connections:	
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2/80		Schneider Gelectric			

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Description

Safety automation system solutions

Preventa[™] safety PLCs Compact and modular Safety remote input modules XPSMF1



Description

Safety remote input module XPSMF1DI1601

On the front cover of the metal enclosure:

- 1 One terminal block (1) for c 24 V supply.
- 2 Four terminal blocks (1) for connection of digital inputs, with input status LED (four LEDs per terminal block).
- 3 One terminal block (1) for connection of digital line control outputs, with four digital output status LEDs.
- 4 Two RJ45 (type 10BASE-T/100BASE-TX) integrated switched ports, for connection on Ethernet network and for configuring IP address.
- 5 Eight process status LEDs.
- 6 One ground connection screw.
- 7 On the top: one "Reset" button.
- 8 On the rear face: one spring operated mounting device for mounting on 35 mm DIN rail.

Status LED details

Status L			VEONEADIANA
			XPSMF1DI1601
LED	Color	Status	Meaning
Inputs 116	Orange	On	Inputs active.
Outputs 14	Orange	On	Outputs active.
24 VDC	Green	On	== 24 V voltage present.
		Off	No voltage.
RUN	Green	On	Normal service mode, loaded program running, the PLC receives I/O messages, communication and hardware/ software tests carried out.
		Flashing	The CPU is in STOP and is not executing any user application. All the outputs are reset to a safe, de-energized state.
		Off	The CPU is in "ERROR" state (see ERROR).
ERROR	Red	On	Software error or hardware anomaly detected by the CPU.
			The monitoring program (Watchdog) has triggered the STOP state of the process because the programmed cycle time has been exceeded.
			The CPU has stopped the execution of the user application ended all hardware and software tests and all outputs have been reset.
			The process can only be started again from the PC.
		Off	No errors detected.
PROG	Orange	On	The CPU is being loaded with a new configuration.
		Flashing	The FLASH ROM is being loaded with a new operating system.
		Off	No loading of configuration or operating system.
FORCE	Orange	On	The CPU is in RUN mode and force is active.
		Flashing	The system is not processing (STOP), but force is prepared and is activated if the dual processor is started.
		Off	Force mode not activated.
FAULT	Orange	On	Error display for line control.
			The user application has caused an error.
			The system configuration is defective.
			The loading of a new operating system was defective and the operating system is corrupt.
		Flashing	An error has occurred while writing to FLASH ROM memor (during updating of the operating system).
			One or more I/O errors have occurred.
		Off	None of the above errors have occurred.
OSL	Orange	Flashing	Emergency loading of the operating system is active.
BL	Orange	Flashing	COM in INIT_Fail state.
RJ45	Green	On	Full duplex mode operation.
		Flashing	Signal collision.
		Off	Half duplex mode operation, no collision.
	Yellow	On	Connection established.

Introduction:	Specifications:	References:	Dimensions, mounting:	Connections:		
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Specifications, references

Safety automation system solutions Preventa[™] safety PLCs Compact and modular Safety remote input modules XPSMF1

Supply voltage V ::::::::::::::::::::::::::::::::::::	Safety remote input module type			XPSMF1DI1601		
Ambient air temperature For operation "F" (°C) 432 + 140 (0+ 60) Ambient air temperature For storage "F" (°C) + 32 + 140 (0+ 60) Degree of protection IP 20 -40+ 185 (-40+ 85) Degree of protection IP 20 Response time IP 20 Current power consumption A 0.8 max. Backup battery None Digital inputs None Digital inputs 16, not electrically isolated Permissible current At state 1 mA At state 0 mA 1.5 max., 1 mA at 5 V Switching piont V Typically 7.5 Switching time µs 250 Input supply V Typically 7.5 Number 4. not electrically isolated Output voltage V 20 (approximately, depending on the supply voltage) Output voltage V 20 (approximately, depending on the supply voltage) Output voltage V 20 (approximately, depending on the supply voltage) Output current mA 60 Minimum load None Response to			V	= 24 (external supply with separate protection conforming to EN/IEC 60950, SELV		
For storage *F (*C) -40+185 (-40+85) Degree of protection ms Depending on size of application Response time ms Depending on size of application Current power consumption A 0.8 max. Backup battery None Digital inputs Digital inputs None None Permissible current At state 1 mA ≥ 2 at 15 V At state 0 mA 1.5 max., 1 mA at 5 V Switching point V Typically 7.5 Switching time µs 250 Input supply 4 x 19.2 V/40 mA (on 24 V), protected against short-circuits Line control outputs None Number Quipproximately, depending on the supply voltage) Output voltage V 20 (approximately, depending on the supply voltage) Output current mA 60 Minimu load None Response to overload See page 2/30 for wire sizes of the various connector types. Connections See page 2/30 for wire sizes of the various connector types. Transmission Communication ports Integrated 2 RJ45 switched Ethernet communications ports Baud rate Mbps 100 Half duplex, 10 Full duplex, Autonegotation Structure InBASE-T/100BASE-TX <t< td=""><td>Voltage limits</td><td></td><td>v</td><td>- 15+ 20%</td></t<>	Voltage limits		v	- 15+ 20%		
Degree of protection IIP 20 Response time ms Depending on size of application Current power consumption A 0.8 max. Backup battery None Digital inputs None Number If 6, not electrically isolated Permissible current At state 1 mA At state 0 mA 1.5 max., 1 mA at 5 V Switching point V Typically 7.5 Switching time µs 250 Input supply Image: A state 2 At state 2 Line control outputs 4 x 19.2 V/40 mA (on 24 V), protected against short-circuits Line control outputs 4, not electrically isolated Output voltage V 20 (approximately, depending on the supply voltage) Output current mA 60 Minimum load None None Response to overload Image: A state 2 RJ45 switched Ethernet communications ports Ethernet network: safety communication using SafeEthernet protocol Integrated 2 RJ45 switched Ethernet communications ports Baud rate Mbps 100 Half duplex, 10 Full duplex, Autonegotiation Structure Integrated 2 RJ45 switched Ethernet (Ethernet)	Ambient air temperature	For operation	°F (°C)	+ 32 + 140 (0+ 60)		
Response time ms Depending on size of application Current power consumption A 0.8 max. Backup battery None Digital inputs None Number 16, not electrically isolated Permissible current At state 1 mA ≥ 2 at == 15 V Switching point V Typically 7.5 Switching point Switching point V Typically 7.5 Switching point Switching point µs 250 Input supply 4 x 19.2 V/40 mA (on 24 V), protected against short-circuits Line control outputs 4 x 19.2 V/40 mA (on 24 V), protected against short-circuits U Output voltage V 20 (approximately, depending on the supply voltage) Output voltage V 20 (approximately, depending on the supply voltage) Output current mA 60 Minimum load None See page 2/30 for wire sizes of the various connector types. See page 2/30 for wire sizes of the various connector types. Connections Communication ports Integrated 2 RJ45 switched Ethernet communications ports Integrated 2 RJ45 switched Ethernet communications ports Baud rate Mbps 100 Half duplex, 10 Full duplex, Autonegotiation 108ASE-		For storage	°F (°C)	- 40+ 185 (- 40+ 85)		
Current power consumption A 0.8 max. Backup battery None Digital inputs None Number 16, not electrically isolated Permissible current At state 1 mA ≥ 2 at =:: 15 V Switching point V Typically 7.5 Switching time µs 250 Input supply 4 x 19.2 V/40 mA (on 24 V), protected against short-circuits Line control outputs 4, not electrically isolated Number 20 (approximately, depending on the supply voltage) Output voltage V 20 (approximately, depending on the supply voltage) Output current mA 60 Minimum load None None Response to overload 4 x ≥ 19.2 V, short-circuit current 60 mA at 24 V Connections See page 2/30 for wire sizes of the various connector types. Communication ports Integrated 2 RJ45 switched Ethernet communications ports Baud rate Mbps 100 Half duplex, 10 Full duplex, Autonegotiation Structure 10BASE-T/100BASE-TX Dual twisted pair cable, category 5D or better (Ethernet)	Degree of protection			IP 20		
Backup battery None Digital inputs None Number 16, not electrically isolated Permissible current At state 1 mA ≥ 2 at == 15 V At state 0 mA 1.5 max., 1 mA at 5 V Switching point V Typically 7.5 Switching time μs 250 Input supply 4 x 19.2 V/40 mA (on 24 V), protected against short-circuits Line control outputs 4, not electrically isolated Number 4, not electrically isolated Output voltage V 20 (approximately, depending on the supply voltage) Output current mA 60 Minimum load None None Response to overload 4 x ≥ 19.2 V, short-circuit current 60 mA at 24 V Connections See page 2/30 for wire sizes of the various connector types. Communication Integrated 2 RJ45 switched Ethernet communications ports Baud rate Mbps 100 Half duplex, 10 Full duplex, Autonegotiation Structure Integrated 2 RJ45 switched Ethernet (Ethernet)	Response time		ms	Depending on size of application		
Digital inputs Number 16, not electrically isolated Permissible current At state 1 mA ≥ 2 at: 15 V At state 0 mA 1.5 max., 1 mA at 5 V Switching point V Typically 7.5 Switching time μs 250 Input supply 4 x 19.2 V/40 mA (on 24 V), protected against short-circuits Line control outputs 4, not electrically isolated Number 4, not electrically isolated Output voltage V 20 (approximately, depending on the supply voltage) Output voltage V 20 (approximately, depending on the supply voltage) Output voltage V 20 (approximately, depending on the supply voltage) Output current mA 60 Minimum load None 4 x ≥ 19.2 V, short-circuit current 60 mA at 24 V Connections See page 2/30 for wire sizes of the various connector types. Communication ports Integrated 2 RJ45 switched Ethernet communications ports Baud rate Mbps 100 Half duplex, 10 Fuil duplex, Autonegotiation Structure 10BASE-T/100BASE-TX Dual twisted pair cable, category 5D or better (Ethernet)	Current power consumption	1	Α	0.8 max.		
Number 16, not electrically isolated Permissible current At state 1 mA > 2 at =:: 15 V At state 0 mA 1.5 max., 1 mA at 5 V Switching point V Typically 7.5 Switching time µs 250 Input supply v 4 x 19.2 V/40 mA (on 24 V), protected against short-circuits Line control outputs 4 x 19.2 V/40 mA (on 24 V), protected against short-circuits Number V 20 (approximately, depending on the supply voltage) Output voltage V 20 (approximately, depending on the supply voltage) Output current mA 60 Minimum load None 4 x > 19.2 V, short-circuit current 60 mA at 24 V Connections See page 2/30 for wire sizes of the various connector types. Cornections See page 2/30 for wire sizes of the various connector types. Transmission Communication ports Integrated 2 RJ45 switched Ethernet communications ports Baud rate Mbps 100 Half duplex, 10 Full duplex, Autonegotiation Structure InBASE-T/100BASE-TX Dual twisted pair cable, category 5D or better (Ethernet)	Backup battery			None		
Number 16, not electrically isolated Permissible current At state 1 mA > 2 at =:: 15 V At state 0 mA 1.5 max., 1 mA at 5 V Switching point V Typically 7.5 Switching time µs 250 Input supply 4 x 19.2 V/40 mA (on 24 V), protected against short-circuits Line control outputs 4 x 19.2 V/40 mA (on 24 V), protected against short-circuits Number V 20 (approximately, depending on the supply voltage) Output voltage V 20 (approximately, depending on the supply voltage) Output current mA 60 Minimum load None see page 2/30 for wire sizes of the various connector types. Connections See page 2/30 for wire sizes of the various connector types. Ethernet network: safety communication using SafeEthernet protocol Integrated 2 RJ45 switched Ethernet communications ports Baud rate Mbps 100 Half duplex, 10 Full duplex, Autonegotiation Structure Integrated 2 RJ45 switched Ethernet (Ethernet)	Digital inputs					
At state 0 mA 1.5 max., 1 mA at 5 V Switching point V Typically 7.5 Switching time μs 250 Input supply 4 x 19.2 V/40 mA (on 24 V), protected against short-circuits Line control outputs 4 x 19.2 V/40 mA (on 24 V), protected against short-circuits Number 4, not electrically isolated Output voltage V 20 (approximately, depending on the supply voltage) Output current mA 60 Minimum load None None Response to overload 4 x ≥ 19.2 V, short-circuit current 60 mA at 24 V Connections See page 2/30 for wire sizes of the various connector types. Certainsision Communication using SafeEthernet protocol Transmission Communication ports Integrated 2 RJ45 switched Ethernet communications ports Baud rate Mbps 100 Half duplex, 10 Full duplex, Autonegotiation Structure 10BASE-T/100BASE-TX Dual twisted pair cable, category 5D or better (Ethernet)	Number			16, not electrically isolated		
Switching point V Typically 7.5 Switching time µs 250 Input supply 4 x 19.2 V/40 mA (on 24 V), protected against short-circuits Line control outputs 4 x 19.2 V/40 mA (on 24 V), protected against short-circuits Number 4, not electrically isolated Output voltage V 20 (approximately, depending on the supply voltage) Output current mA 60 Minimun load None None Response to overload 4 x ≥ 19.2 V, short-circuit current 60 mA at 24 V Connections See page 2/30 for wire sizes of the various connector types. Communication Integrated 2 RJ45 switched Ethernet communications ports Baud rate Mbps 100 Half duplex, 10 Full duplex, Autonegotiation Structure 100BASE-T/100BASE-TX Dual twisted pair cable, category 5D or better (Ethernet)	Permissible current	At state 1	mA	≥ 2 at 15 V		
Switching time µs 250 Input supply 4 x 19.2 V/40 mA (on 24 V), protected against short-circuits Line control outputs 4 x 19.2 V/40 mA (on 24 V), protected against short-circuits Number 4, not electrically isolated Output voltage V 20 (approximately, depending on the supply voltage) Output current mA 60 Minimum load None Response to overload 4 x ≥ 19.2 V, short-circuit current 60 mA at 24 V Connections See page 2/30 for wire sizes of the various connector types. Communication Integrated 2 RJ45 switched Ethernet communications ports Baud rate Mbps 100 Half duplex, 10 Full duplex, Autonegotiation Structure 10BASE-T/100BASE-TX Dual twisted pair cable, category 5D or better (Ethernet)		At state 0	mA	1.5 max., 1 mA at 5 V		
Input supply 4 x 19.2 V/40 mA (on 24 V), protected against short-circuits Line control outputs 4, not electrically isolated Number 4, not electrically isolated Output voltage V Output current mA Minimum load None Response to overload 4 x ≥ 19.2 V, short-circuit current 60 mA at 24 V Connections See page 2/30 for wire sizes of the various connector types. Communication Integrated 2 RJ45 switched Ethernet communications ports Baud rate Mbps 100 Half duplex, Autonegotiation Structure 10BASE-TX Dual twisted pair cable, category 5D or better (Ethernet)	Switching point		v	Typically 7.5		
Line control outputs 4, not electrically isolated Number 4, not electrically isolated Output voltage V 20 (approximately, depending on the supply voltage) Output current mA 60 Minimum load None 4 x ≥ 19.2 V, short-circuit current 60 mA at 24 V Connections 4 x ≥ 19.2 V, short-circuit current 60 mA at 24 V Connections See page 2/30 for wire sizes of the various connector types. Ethernet network: safety communication using SafeEthernet protocol Integrated 2 RJ45 switched Ethernet communications ports Baud rate Mbps 100 Half duplex, 10 Full duplex, Autonegotiation Structure 10BASE-T/100BASE-TX Medium Ual twisted pair cable, category 5D or better (Ethernet)	Switching time		μs	250		
Number 4, not electrically isolated Output voltage V 20 (approximately, depending on the supply voltage) Output current mA 60 Minimum load None Response to overload 4 x ≥ 19.2 V, short-circuit current 60 mA at 24 V Connections See page 2/30 for wire sizes of the various connector types. Communication Letternet network: safety communication using SafeEthernet protocol Transmission Communication ports Integrated 2 RJ45 switched Ethernet communications ports Baud rate Mbps 100 Half duplex, 10 Full duplex, Autonegotiation Structure 10BASE-T/100BASE-TX Medium Dual twisted pair cable, category 5D or better (Ethernet)	Input supply			4 x 19.2 V/40 mA (on 24 V), protected against short-circuits		
Output voltage V 20 (approximately, depending on the supply voltage) Output current mA 60 Minimum load None Response to overload 4 x ≥ 19.2 V, short-circuit current 60 mA at 24 V Connections See page 2/30 for wire sizes of the various connector types. Ethernet network: safety communication using SafeEthernet protocol Integrated 2 RJ45 switched Ethernet communications ports Transmission Communication ports Integrated 2 RJ45 switched Ethernet communications ports Baud rate Mbps 100 Half duplex, 10 Full duplex, Autonegotiation Structure 10BASE-T/100BASE-TX Medium Dual twisted pair cable, category 5D or better (Ethernet)	•					
Output current mA 60 Minimum load None Response to overload 4 x ≥ 19.2 V, short-circuit current 60 mA at 24 V Connections See page 2/30 for wire sizes of the various connector types. Communication Integrated 2 RJ45 switched Ethernet communications ports Baud rate Mbps 100 Half duplex, 10 Full duplex, Autonegotiation Structure 100 Half duplex, 10 Full duplex, Autonegotiation Medium Dual twisted pair cable, category 5D or better (Ethernet)	Number			4, not electrically isolated		
Output current mA 60 Minimum load None Response to overload Value 4 x ≥ 19.2 V, short-circuit current 60 mA at 24 V Connections See page 2/30 for wire sizes of the various connector types. Communication Image: See page 2/30 for wire sizes of the various connector types. Ethernet network: safety communication using SafeEthernet protocol Integrated 2 RJ45 switched Ethernet communications ports Baud rate Mbps 100 Half duplex, 10 Full duplex, Autonegotiation Structure 10BASE-T/100BASE-TX Medium Dual twisted pair cable, category 5D or better (Ethernet)	Output voltage		v	20 (approximately, depending on the supply voltage)		
Response to overload 4 x ≥ 19.2 V, short-circuit current 60 mA at 24 V Connections See page 2/30 for wire sizes of the various connector types. Communication Ethernet network: safety communication using SafeEthernet protocol Transmission Communication ports Baud rate Mbps Structure 100 Half duplex, 10 Full duplex, Autonegotiation Structure Dual twisted pair cable, category 5D or better (Ethernet)			mA	60		
Connections See page 2/30 for wire sizes of the various connector types. Communication Ethernet network: safety communication using SafeEthernet protocol Transmission Communication ports Integrated 2 RJ45 switched Ethernet communications ports Baud rate Mbps 100 Half duplex, 10 Full duplex, Autonegotiation Structure 10BASE-T/100BASE-TX Medium Dual twisted pair cable, category 5D or better (Ethernet)	Minimum load			None		
Communication Ethernet network: safety communication using SafeEthernet protocol Transmission Communication ports Integrated 2 RJ45 switched Ethernet communications ports Baud rate Mbps 100 Half duplex, 10 Full duplex, Autonegotiation Structure 10BASE-T/100BASE-TX Medium Dual twisted pair cable, category 5D or better (Ethernet)	Response to overload			4 x ≥ 19.2 V, short-circuit current 60 mA at 24 V		
Ethernet network: safety communication using SafeEthernet protocol Transmission Communication ports Integrated 2 RJ45 switched Ethernet communications ports Baud rate Mbps 100 Half duplex, 10 Full duplex, Autonegotiation Structure 10BASE-T/100BASE-TX Medium Dual twisted pair cable, category 5D or better (Ethernet)	Connections			See page 2/30 for wire sizes of the various connector types.		
Transmission Communication ports Integrated 2 RJ45 switched Ethernet communications ports Baud rate Mbps 100 Half duplex, 10 Full duplex, Autonegotiation Structure 10BASE-T/100BASE-TX Medium Dual twisted pair cable, category 5D or better (Ethernet)	Communication					
Transmission Communication ports Integrated 2 RJ45 switched Ethernet communications ports Baud rate Mbps 100 Half duplex, 10 Full duplex, Autonegotiation Structure 10BASE-T/100BASE-TX Medium Dual twisted pair cable, category 5D or better (Ethernet)	Ethernet network: safet	y communication using S	afeEthernet	protocol		
Structure 10BASE-T/100BASE-TX Medium Dual twisted pair cable, category 5D or better (Ethernet)	Transmission	Communication ports		Integrated 2 RJ45 switched Ethernet communications ports		
Medium Dual twisted pair cable, category 5D or better (Ethernet)		Baud rate	Mbps	100 Half duplex, 10 Full duplex, Autonegotiation		
	Structure			10BASE-T/100BASE-TX		
References	Medium			Dual twisted pair cable, category 5D or better (Ethernet)		
	References			·		
Safety remote input module (24 V supply)			Safety	remote input module (24 V supply)		



XPSMF1DI1601

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This product, referenced **XPSMF1DI1601**, is marked **HIMatrix® F1DI** (manufactured by Hima, sold by Schneider Electric).

Safety remote input module (24 V supply)						
For use with	Digital inputs	Line control outputs	Ports	Reference	Weight oz (kg)	
Safety PLCs, modular XPSMF60 or compact XPSMF40 and XPSMF31/30/35	16	4	Integrated 2 RJ45 switched Ethernet communications ports	XPSMF1DI1601	24.692 (0.700)	

Connecting cables							
Description	For	Reference	Weight oz (kg)				
Ethernet network connecting cables	Connection between safety remote input modules and modular or compact safety PLCs XPSMF RJ45 connector fitted at each end	See 2/29	_				

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Dimensions, connections

Safety automation system solutions Preventa[™] safety PLCs

Compact and modular Safety remote input modules XPSMF1



(1) Removable screw terminals are provided with safety input module XPSMF1DI1601.

Connections XPSMF1DI1601





Item	Connection	Screw N°	Screw	Function
A1	Supply	-	L+	
~			L+	
			L-	24 V (reference pole)
			L-	24 V (reference pole)
A2	Ground	-	÷	Ground
B	Digital inputs	1	LS+	Sensor supply for inputs 1 to 4
		2	1	Digital input 1
		3	2	Digital input 2
		4	3	Digital input 3
		5	4	Digital input 4
		6	L-	Reference pole
С	Digital inputs	7	LS+	Sensor supply for inputs 5 to 8
		8	5	Digital input 5
		9	6	Digital input 6
		10	7	Digital input 7
		11	8	Digital input 8
		12	L-	Reference pole
D	Digital inputs	13	LS+	Sensor supply for inputs 9 to 12
		14	9	Digital input 9
		15	10	Digital input 10
		16	11	Digital input 11
		17	12	Digital input 12
		18	L-	Reference pole
E	Digital inputs	19	LS+	Sensor supply for inputs 13 to 16
		20 21	13	Digital input 13
		21	14	Digital input 14
		22	16	Digital input 15
		23	L-	Digital input 16 Reference pole
F	Line control outputs	25	L+	Outputs common
F	Line control outputs	26	1	Output 1
		27	2	Output 2
		28	3	Output 3
		29	4	Output 4
		30	L-	Outputs common
Item	Connection	Туре		Function
G	Programming	Integrate RJ45 swi Ethernet	itched	Either of the two switched Ethernet ports can be used to create a connection between the safety remote I/O and the programming terminal in a point to point or via an Ethernet network for setting the IP address
	Safe Communication (all XPSMF Safety PLCs and Remote I/Os) Ethernet Communication ports		itched	Either of the two switched Ethernet ports can be used to create a connection between the safety PLC and other safety related components (e.g other XPSMF safety PLCs or Safety Remote I/O modules) this can be established in a point to point way or via an Ethernet network.

Introduction

Safety automation system solutions

Preventa[™] safety PLCs Compact and modular Safety remote output modules XPSMF2

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XPSMF2DO401



XPSMF2DO1601



XPSMF2D0801



XPSMF2D0801

Products referenced **XPSMF2**.... are marked **HIMatrix® F2 DO...** (manufactured by Hima, sold by Schneider Electric).

Introduction

XPSMF2DO are compact safety remote output modules which are designed to extend the output capacity of safety PLCs **XPSMF**, either compact or modular, to which they are associated.

The communication with either the compact or modular safety PLCs is managed via one of its' integrated 2 RJ45 switched Ethernet communications ports. Safety modules **XPSMF2DO** do not have a user program: they receive their instructions from its parent safety PLC.

Safety remote output modules XPSMF2DO Safety output modules **Remote outputs** N° Type XPSMF2DO401 4 Digital power outputs Safety actuators: Contactors-motors, Control relays, XPSMF2DO1601 16 Digital outputs Variable speed drives XPSMF2DO801 8 Relay outputs Safety dialog: Beacons and indicator banks, rotating XPSMF2DO1602 16 Relay outputs mirror beacons, sirens

Safety PLCs

In order to meet safety requirements, the safety remote output modules **XPSMF2DO** incorporate two essential functions (**Redundancy** and **Self-monitoring**) complying to category 4 conforming to EN 954-1 and performance level "e" conforming to EN/ISO 13849-1 in addition to the SafeEthernet safety communication protocol between these safety remote output modules and the safety PLCs (**Special Switch**).

Redundancy: the dual processor integrated in the safety remote output modules XPSMF2 analyzes and compares the data received from the safety inputs and outputs. The incoming and outgoing data (programmed values and received values) are received in parallel by the two processors and compared in real-time.
 Self-monitoring ("Watchdog"): the safety remote output modules XPSMF2 continuously monitor the data processing cycle and the execution of tasks, and intervenes if the cycle time does not conform to the predefined value.
 The integrated switch (Special Switch) stores for a very short time and sends at very high speed the data provided by the outputs of the safety modules on the Ethernet network, while avoiding signal collisions and excessive amounts of data on the network.

Functional diagrams



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Introduction (continued)

Safety automation system solutions

Preventa[™] safety PLCs Compact and modular Safety remote output modules XPSMF2



Remote output module XPSMF2DO801



Remote output module XPSMF2DO1602



Safety communication on Ethernet network

The safety remote output modules **XPSMF2D0** incorporate two RJ45 (type 10BASE-T/100BASE-TX) integrated switched ports, that enable communication on the Ethernet network using SafeEthernet communication protocol and therefore, data exchange with compact or modular safety PLCs **XPSMF**.

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Description

Safety automation system solutions

Preventa[™] safety PLCs Compact and modular Safety remote output modules XPSMF2

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Remote output module XPSMF2DO401

On the front cover of the metal enclosure:

- 1 Two RJ45 (type 10BASE-T/100BASE-TX) integrated switched ports, for connection on Ethernet network and for configuring IP address.
- 2 Eight process status LEDs.
- 3 One ground connection screw.
- 4 Four terminal blocks (1) for connection of digital outputs, with output status LED (one LED per terminal block).
- 5 On the top: one "Reset" button.
- 6 On the rear face: one spring operated mounting device for mounting on 35 mm DIN rail.

Remote output module XPSMF2DO1601

On the front cover of the metal enclosure:

- 1 Two RJ45 (type 10BASE-T/100BASE-TX) integrated switched ports, for connection on Ethernet network and for configuring IP address.
- 2 Eight process status LEDs.
- 3 One ground connection screw.
- 4 One terminal block (1) for --- 24 V supply.
- 5 Four terminal blocks (1) for connection of digital outputs, with output status LED (four LEDs per terminal block).
 - One terminal block for connection of output channels.
- 7 On the top: one "Reset" button.
- 8 On the rear face: one spring operated mounting device for mounting on 35 mm DIN rail.

Remote output module XPSMF2DO801

On the front cover of the metal enclosure:

- 1 Two RJ45 (type 10BASE-T/100BASE-TX) integrated switched ports, for connection on Ethernet network and for configuring IP address.
- 2 Eight process status LEDs.
- 3 One ground connection screw.
- 4 One terminal block (1) for --- 24 V supply.
- 5 Eight terminal blocks (1) for connection of relay outputs, with output status LED (one LED per terminal block).
- On the top: one "Reset" button.
- 7 On the rear face: one spring operated mounting device for mounting on 35 mm DIN rail.

Remote output module XPSMF2DO1602

On the front cover of the metal enclosure:

- Two RJ45 (type 10BASE-T/100BASE-TX) integrated switched ports, for connection on Ethernet network and for configuring IP address.
- 2 One terminal block (1) for --- 24 V supply.
- 3 One ground connection screw.
- 4 Eight process status LEDs.
- 5 Four terminal blocks (1) for connection of relay outputs, with relay output status LEDs.
- 6 On the top: one "Reset" button.
- 7 On the rear face: one spring operated mounting device for mounting on 35 mm DIN rail.

(1) Removable screw terminals are provided with the safety output modules XPSMF2.

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Schneider Gelectric

Description (continued)

Safety automation system solutions Preventa[™] safety PLCs Compact and modular Safety remote output modules XPSMF2

Safety re	mote out	put modu	les XPSMF2DO
LED	Color	Status	Meaning
Outputs 1…16	Orange	On	Outputs active.
24 VDC	Green	On	24 V voltage present.
		Off	No voltage.
RUN	receives I/O messa		Normal service mode, loaded program running, the PLC receives I/O messages, communication and hardware/ software tests carried out.
		Flashing	The CPU is in STOP and is not executing any user application. All the outputs are reset to a safe, de-energized state.
		Off	The CPU is in "ERROR" state (see ERROR).
ERROR	Red	On	Software error or hardware anomaly detected by the CPU.
			The monitoring program (Watchdog) has triggered the STOP state of the process because the programmed cycle time has been exceeded.
			The CPU has stopped the execution of the user application ended all hardware and software tests and all outputs have been reset.
			The process can only be started again from the PC.
		Off	No errors detected.
PROG	Orange	On	The CPU is being loaded with a new configuration.
		Flashing	The FLASH ROM is being loaded with a new operating system.
		Off	No loading of configuration or operating system.
FORCE	Orange	On	The CPU is in RUN mode and force is active.
		Flashing	The system is not processing (STOP), but force is prepared and is activated if the dual processor is started.
		Off	Force mode not activated.
FAULT	Orange	On	Error display for line control.
			The user application has caused an error.
			The system configuration is defective.
			The loading of a new operating system was defective and the operating system is corrupt.
		Flashing	An error has occurred while writing to FLASH ROM memor (during updating of the operating system).
			One or more I/O errors have occurred.
		Off	None of the above errors have occurred.
OSL	Orange	Flashing	Emergency loading of the operating system is active.
BL	Orange	Flashing	COM in INIT_Fail state.
RJ45	Green	On	Full duplex mode operation.
		Flashing	Signal collision.
		Off	Half duplex mode operation, no collision.
	Yellow	On	Connection established.
		Flashing	Interface active.

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Safety automation system solutions Preventa[™] safety PLCs Compact and modular Safety remote output modules XPSMF2

Specifications						
Safety remote output modul	le type		XPSMF2DO401	XPSMF2DO1601	XPSMF2DO801	XPSMF2DO1602
Supply voltage		v		pply with separate protection		EC 60950, SELV
Voltage limits		v	(Safety Extra Low Voltage) or PELV (Protection Extra Low Voltage) rated) - 15+ 20%			
Ambient air temperature	For operation	°F (°C)	+32+140 (0	+ 60)		
	For storage	°F (°C)	- 40+ 185 (- 40.	+ 85)		
Degree of protection			IP 20			
Response time		ms	Depending on siz	e of application		
Maximum current power con	sumption	Α	0.5	9 per group	0.6	
				Residual: 0.2 per group		
External fuse Backup battery			10 A, slow blow None		•	
Connections					nnantar tunan	
			See page 2/30 10	wire sizes of the various co	nnector types.	
Digital outputs						
Number of outputs			4, not electrically isolated	16, not electrically isolated	-	
Permissible output channel o	current	Α	20 max.	16 max.	-	
Output current		A	5 max.	1 max. at 140 °F (60 °C) 2 max. at 104 °F (40 °C)	-	
Maximum lamp load		w	60	10 for 1 A outputs 25 for 2 A outputs	-	
Maximum inductive load		mH	500	500		
	At state 0	mA	1 at 1 V	1 at 2 V	_	
Maximum leakage current	Al state 0	mA			-	
Response to overload			reconnection	uts concerned with cyclic	-	
Relay outputs			•		•	
Relay type per channel			-	-	2, with positively gu 1 magnetic, high re	
Outputs	Number		-	-	8	16
	Туре				N.O.	
Switching voltage		v	-	_	≥5,	≥5,
					≤ 250 V/ ~ 250 V	≤ 30 V/ ~ 60 V
Switching current		mA			3 A, with internal	3.15 A, with
					fuse Breaking capacity	internal fuse Breaking capacity
Switching capacity	\sim	VA	_		100 A 240 max.,	100 A 48 max.,
(non inductive)					cos φ > 0.5	cos φ > 0.5
	Up to 30 V	w			90 max. (3.15 A inte	ernal fuse)
	Up to 70 V	w			35 max. (0.5 A internal fuse)	-
	Up to 127 V	w			30 max. (315 A internal fuse)	-
Contact material			_	-	Silver alloy	
Mechanical life			-	-	≥ 1 million operating	g cycles
Electrical life			-	-	≥ 250 000 operating	
					(resistive) and ≤ 0.1	operating cycles/s
Communication						
	communication using Sa	afeEthernet	í			
Transmission	Communication ports			switched Ethernet commur	•	
_	Baud rate	Mbps		0 Full duplex, Autonegotiati	on	
Structure			10BASE-T/100BASE-TX			
			Dual twisted pair of	cable, category 5D or better	(Ethernet)	
Medium			s: Dimensions, mounting: Connections:			

Schneider Gelectric

References

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References



XPSMF2DO401



XPSMF2D01601



XPSMF2D0801



XPSMF2DO1602

Products referenced XPSMF2 are marked HIMatrix® F2 DO ... (manufactured by Hima, sold by Schneider Electric).

Safety remote ou	Safety remote output modules (24 V supply)								
For use with	Outputs Digital	Relay	Ports	Reference	Weight oz (kg)				
Safety PLCs, modular XPSMF60 or compact XPSMF40 and XPSMF31/30/35	4	-	Integrated 2 RJ45 switched Ethernet communications ports	XPSMF2DO401	28.219 (0.800)				
	16	_	Integrated 2 RJ45 switched Ethernet communications ports	XPSMF2DO1601	29.983 (0.850)				
	_	8	Integrated 2 RJ45 switched Ethernet communications ports	XPSMF2DO801	45.856 (1.300)				
	-	16	Integrated 2 RJ45 switched Ethernet communications ports	XPSMF2DO1602	70.548 (2.000)				

Connecting cables								
Description	For	Reference	Weight oz (kg)					
Ethernet network connecting cables	Connection between safety remote output modules and modular or compact safety PLCs XPSMF RJ45 connector fitted at each end	See page 2/33	-					

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Safety automation system solutions Preventa[™] safety PLCs

Preventa[™] safety PLCs Compact and modular Safety remote output modules XPSMF2

Dimensions XPSMF2DO401





(1) Removable screw terminals are provided with the safety output modules **XPSMF2DO401**.







(1) Removable screw terminals are provided with the safety output modules XPSMF2DO1601.

Dual Dimensions: INCHES Millimieters

<u>.51</u> 13

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Dimensions (continued)

Safety automation system solutions Preventa[™] safety PLCs

Preventa[™] safety PLCs Compact and modular Safety remote output modules XPSMF2



(1) Removable screw terminals are provided with the safety output modules XPSMF2D0801.

XPSMF2DO1602





(1) Removable screw terminals are provided with the safety output modules XPSMF2DO1602.

RJ45 connector for access to Ethernet network (SafeEthernet protocol)



Dual Dimensions: INCHES Millimieters

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Connections

Safety automation system solutions Preventa[™] safety PLCs Compact and modular Safety remote output modules XPSMF2

			line and	Connection	Correct Min	Service	Function
	123456	7 8 9 10 11 12	Item A	Connection Ground	Screw N°	÷	Ground
00		C	B	Digital output 1	1	L+	Supply for output 1
	D01 O	D02 O	_		2	L+	Supply for output 1
	L+ L+ L- L- O L-	L+ L+ L- L- O L-			3	L-	Reference pole
	O 24V DC O RUN				4	L-	Reference pole
	O ERROR				5	0	Digital output 1
	O PROG O FORCE				6	L-	Reference pole
	O FAULT		С	Digital output 2	7	L+	Supply for output 2
	O OSL O BL				8	L+	Supply for output 2
					<u>9</u> 10	<u>L-</u> L-	Reference pole Reference pole
	L+ L+ L- O L- D03 O	L+ L+ L- 0 L- D04 O			10	0	Digital output 2
	D	E			12	L-	Reference pole
BaseT	10/100BaseT 2 13 14 15 16 17 18	19 20 21 22 23 24	D	Digital output 3	13	L+	Supply for output 3
-	F				14	L+	Supply for output 3
					15	L-	Reference pole
					16	L-	Reference pole
					17	0	Digital output 3
				D	18	L-	Reference pole
			E	Digital output 4	<u>19</u>	L+	Supply for output 4
					20	L+	Supply for output 4 Reference pale
					21 22	<u>L-</u> L-	Reference pole
					22	0	Digital output 4
					23	L-	Reference pole
SM	Safe Communication (all XPS) PLCs and Remote VOs) F2DO1601	Comr	ned Etherne nunication	IP address Either of the two sw PLC and other safe	itched Ethe	ernet po ompone	nal in a point to point or via an Ethernet network for settin rts can be used to create a connection between the sa ents (e.g other XPSMF safety PLCs or Safety Remote I point to point way or via an Ethernet network.
			Item	Connection	Screw N°		Function
	123456	13 14 15 16 17 18	Α	Ground	-	÷	Ground
)(B B1	C C1] B	Supply	-	L-	Reference pole
	D1 0000	D2 0000	1				
			.			L-	Reference pole
		L-L+2 L+2 L-5 6 7 8 I	-			L+	Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12
	O 24V DC O RUN					L+ L+	Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12
	O 24V DC O RUN O ERROR		B1	Digital outputs	 1	L+ L+ L-	Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Reference pole
	O 24V DC O RUN O ERROR O PROG O FORCE			Digital outputs	- - <u>1</u> 2	L+ L+ L- 1	Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Reference pole Digital output 1
	O 24V DC O RUN O ERROR O PROG O FORCE O FAULT			Digital outputs		L+ L+ 1 2	Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Reference pole Digital output 1 Digital output 2
	O 24V DC O RUN O ERROR O FORCE O FORCE O FORCE O SSL O SSL	L-L+2 L+2 L-5 6 7 8 I	B1	Digital outputs		L+ L+ L- 1 2 3	Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Reference pole Digital output 1 Digital output 2 Digital output 3
	O 24V DC O RUN O ERROR O PROG O FORCE O FAULT O OSL		B1	Digital outputs		L+ L+ 1 2	Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Reference pole Digital output 1 Digital output 2
	0 24V DC 0 RUN 0 ERROR 0 PROG 0 FORCE 0 FAULT 0 OSL 0 BL 1 9 10 1112 L 0 0000	L L 2 L 2 L 5 6 7 8 1 L 13 14 15 16 D2 OOOO	B1		- - 2 3 4 5	L+ L+ 1 2 3 4	Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Reference pole Digital output 1 Digital output 2 Digital output 3 Digital output 4
0BaseT	0 24V DC 0 RUN 0 ERROR 0 PROG 0 FORCE 0 FAULT 0 OSL 0 BL 0 BL	L-L+2 L+2 L-5 6 7 8 1 L-13 14 15 16 L	B1 B2	Digital outputs		L+ L+ 1 2 3 4 L-	Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Reference pole Digital output 1 Digital output 2 Digital output 3 Digital output 4 Reference pole
	0 24V DC 0 RUN 0 ERROR 0 PROG 0 FORCE 0 FAULT 0 OSL 0 BL L 9 10 1112 L 01 0000 B2	L L 2 L 2 L 5 6 7 8 1 L 13 14 15 16 L D2 0000 C2	B1 B2			L+ L- 1 2 3 4 L- L- 9 10	Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Reference pole Digital output 1 Digital output 2 Digital output 3 Digital output 4 Reference pole Reference pole
	O 24V DC O RUN O ERROR O PROG O FORCE O FAULT O GSL O BL L 9 10 11 12 L D 1 0000 E2 13 14 15 16 17 18	L L 2 L 2 L 5 6 7 8 1 L 13 14 15 16 L D2 0000 C2	B1 B2			L+ L- 1 2 3 4 L- L- 9 10 11	Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Reference pole Digital output 1 Digital output 2 Digital output 3 Digital output 4 Reference pole Reference pole Digital output 9 Digital output 10 Digital output 11
	O 24V DC O RUN O ERROR O PROG O FORCE O FAULT O GSL O BL L 9 10 11 12 L D 1 0000 E2 13 14 15 16 17 18	L L 2 L 2 L 5 6 7 8 1 L 13 14 15 16 L D2 0000 C2	B1 B2		- - 2 3 4 5 6 13 14 15 16 17	L+ L+ 1 2 3 4 L- L- 9 10 11 12	Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Reference pole Digital output 1 Digital output 2 Digital output 3 Digital output 4 Reference pole Reference pole Digital output 9 Digital output 10 Digital output 11 Digital output 12
	O 24V DC O RUN O ERROR O PROG O FORCE O FAULT O GSL O BL L 9 10 11 12 L D 1 0000 E2 13 14 15 16 17 18	L L 2 L 2 L 5 6 7 8 1 L 13 14 15 16 L D2 0000 C2	B1 B2	Digital outputs		L+ L- 1 2 3 4 L- L- 9 10 11 12 L-	Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Reference pole Digital output 1 Digital output 2 Digital output 3 Digital output 4 Reference pole Reference pole Digital output 9 Digital output 9 Digital output 10 Digital output 11 Digital output 12 Reference pole
	O 24V DC O RUN O ERROR O PROG O FORCE O FAULT O GSL O BL L 9 10 11 12 L D 1 0000 E2 13 14 15 16 17 18	L L 2 L 2 L 5 6 7 8 1 L 13 14 15 16 L D2 0000 C2	B1 B2			L+ L- 1 2 3 4 L- L- 9 10 11 12 L- L- L- L-	Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Reference pole Digital output 1 Digital output 2 Digital output 3 Digital output 4 Reference pole Digital output 9 Digital output 9 Digital output 10 Digital output 11 Digital output 12 Reference pole Reference pole
)BaseT	O 24V DC O RUN O ERROR O PROG O FORCE O FAULT O GSL O BL L 9 10 11 12 L D 1 0000 E2 13 14 15 16 17 18	L L 2 L 2 L 5 6 7 8 1 L 13 14 15 16 L D2 0000 C2	B1 B2	Digital outputs		L+ L+ 1 2 3 4 L- L- 9 10 11 12 L- L- L- L- L-	Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Reference pole Digital output 1 Digital output 2 Digital output 3 Digital output 4 Reference pole Digital output 9 Digital output 10 Digital output 11 Digital output 12 Reference pole Reference pole Reference pole Reference pole Reference pole Reference pole Reference pole
BaseT	O 24V DC O RUN O ERROR O PROG O FORCE O FAULT O GSL O BL L 9 10 11 12 L D 1 0000 E2 13 14 15 16 17 18	L L 2 L 2 L 5 6 7 8 1 L 13 14 15 16 L D2 0000 C2	B1 B2	Digital outputs		L+ L+ 1 2 3 4 L- L- 9 10 11 12 L- L- L- L- L- L- L-	Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Reference pole Digital output 1 Digital output 2 Digital output 3 Digital output 4 Reference pole Reference pole Digital output 10 Digital output 11 Digital output 12 Reference pole Reference pole
)BaseT	O 24V DC O RUN O ERROR O PROG O FORCE O FAULT O GSL O BL L 9 10 11 12 L D 1 0000 E2 13 14 15 16 17 18	L L 2 L 2 L 5 6 7 8 1 L 13 14 15 16 L D2 0000 C2	B1 B2 C	Digital outputs Supply		L+ L+ 1 2 3 4 L- L- 9 10 11 12 L- L- L- L- L-	Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Reference pole Digital output 1 Digital output 2 Digital output 3 Digital output 4 Reference pole Digital output 9 Digital output 10 Digital output 11 Digital output 12 Reference pole Reference pole Reference pole Reference pole Reference pole Reference pole Reference pole
BaseT	O 24V DC O RUN O ERROR O PROG O FORCE O FAULT O GSL O BL L 9 10 11 12 L D 1 0000 E2 13 14 15 16 17 18	L L 2 L 2 L 5 6 7 8 1 L 13 14 15 16 L D2 0000 C2	B1 B2	Digital outputs	- - 2 3 4 5 6 13 14 15 16 17 18 - - - - - -	L+ L- 1 2 3 4 L- L- 9 10 11 12 L- L- L- L- L- L- L- L- L- L-	Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Reference pole Digital output 1 Digital output 2 Digital output 3 Digital output 4 Reference pole Reference pole Digital output 10 Digital output 11 Digital output 12 Reference pole Reference pole Reference pole Reference pole Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16
	O 24V DC O RUN O ERROR O PROG O FORCE O FAULT O GSL O BL L 9 10 11 12 L D 1 0000 E2 13 14 15 16 17 18	L L 2 L 2 L 5 6 7 8 1 L 13 14 15 16 L D2 0000 C2	B1 B2 C	Digital outputs Supply		L+ L+ L- 2 3 4 L- L- 9 10 11 12 L- L- L- L- L- L- L- L- 5 6	Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Reference pole Digital output 1 Digital output 2 Digital output 3 Digital output 4 Reference pole Reference pole Digital output 9 Digital output 10 Digital output 11 Digital output 12 Reference pole Reference pole Reference pole Reference pole Reference pole Reference pole Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16
	O 24V DC O RUN O ERROR O PROG O FORCE O FAULT O GSL O BL L 9 10 11 12 L D 1 0000 E2 13 14 15 16 17 18	L L 2 L 2 L 5 6 7 8 1 L 13 14 15 16 L D2 0000 C2	B1 B2 C	Digital outputs Supply		L+ L+ L- 1 2 3 4 L- L- 9 10 11 12 L- L- L- L- L- L- L- 5 6 7	Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Reference pole Digital output 1 Digital output 2 Digital output 3 Digital output 4 Reference pole Digital output 9 Digital output 9 Digital output 10 Digital output 12 Reference pole Reference pole Reference pole Reference pole Reference pole Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Reference pole Digital output 5 Digital output 5 Digital output 5 Digital output 6 Digital output 7
	O 24V DC O RUN O ERROR O PROG O FORCE O FAULT O GSL O BL L 9 10 11 12 L D 1 0000 E2 13 14 15 16 17 18	L L 2 L 2 L 5 6 7 8 1 L 13 14 15 16 L D2 0000 C2	B1 B2 C	Digital outputs Supply		L+ L+ L- 1 2 3 4 L- L- 9 10 11 12 L- L- L- L- L- L- L- L- 5 6 7 8	Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Reference pole Digital output 1 Digital output 2 Digital output 3 Digital output 4 Reference pole Reference pole Digital output 10 Digital output 10 Digital output 12 Reference pole Reference pole Reference pole Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Reference pole Digital output 5 Digital output 5 Digital output 5 Digital output 7 Digital output 8
	O 24V DC O RUN O ERROR O PROG O FORCE O FAULT O GSL O BL L 9 10 11 12 L D 1 0000 E2 13 14 15 16 17 18	L L 2 L 2 L 5 6 7 8 1 L 13 14 15 16 L D2 0000 C2	B1 B2 C C1	Digital outputs Supply Digital outputs	- - 2 3 4 5 6 13 14 15 16 17 18 - - - 7 8 9 10 11 12	L+ L+ 1 2 3 4 L- L- 10 11 12 L- L- L- L+ L+ L+ 5 6 7 8 L-	Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Reference pole Digital output 1 Digital output 2 Digital output 3 Digital output 4 Reference pole Reference pole Digital output 9 Digital output 10 Digital output 11 Digital output 12 Reference pole Reference pole Reference pole Reference pole Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Reference pole Digital output 5 Digital output 5 Digital output 6 Digital output 8 Reference pole Reference pole
	O 24V DC O RUN O ERROR O PROG O FORCE O FAULT O GSL O BL L 9 10 11 12 L D 1 0000 E2 13 14 15 16 17 18	L L 2 L 2 L 5 6 7 8 1 L 13 14 15 16 L D2 0000 C2	B1 B2 C	Digital outputs Supply		L+ L+ 1 2 3 4 L- L- 10 11 12 L- L- L- L+ L+ L+ L+ 5 6 7 8 L- L-	Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Reference pole Digital output 1 Digital output 2 Digital output 3 Digital output 4 Reference pole Reference pole Digital output 9 Digital output 10 Digital output 11 Digital output 12 Reference pole Reference pole Reference pole Reference pole Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Reference pole Digital output 5 Digital output 5 Digital output 5 Digital output 6 Digital output 8 Reference pole Reference pole Reference pole Reference pole Reference pole
	O 24V DC O RUN O ERROR O PROG O FORCE O FAULT O GSL O BL L 9 10 11 12 L D 1 0000 E2 13 14 15 16 17 18	L L 2 L 2 L 5 6 7 8 1 L 13 14 15 16 L D2 0000 C2	B1 B2 C C1	Digital outputs Supply Digital outputs		L+ L+ L- 1 2 3 4 L- L- 9 10 11 12 L- L- L- L- L- L- L- L- - - - - - - - - - - - - -	Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Reference pole Digital output 1 Digital output 2 Digital output 3 Digital output 4 Reference pole Reference pole Digital output 9 Digital output 9 Digital output 10 Digital output 11 Digital output 12 Reference pole Reference pole Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Reference pole Digital output 5 Digital output 5 Digital output 5 Digital output 6 Digital output 8 Reference pole Reference pole Reference pole Reference pole Digital output 8 Reference pole Reference pole Digital output 13
	O 24V DC O RUN O ERROR O PROG O FORCE O FAULT O GSL O BL L 9 10 11 12 L D 1 0000 E2 13 14 15 16 17 18	L L 2 L 2 L 5 6 7 8 1 L 13 14 15 16 L D2 0000 C2	B1 B2 C C1	Digital outputs Supply Digital outputs		L+ L+ L- 3 4 L- L- 9 10 11 12 L- L- L- L- L- L- L- L- L- L-	Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Reference pole Digital output 1 Digital output 2 Digital output 3 Digital output 4 Reference pole Reference pole Digital output 9 Digital output 10 Digital output 12 Reference pole Reference pole Reference pole Reference pole Reference pole Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Reference pole Digital output 7 Digital output 5 Digital output 5 Digital output 7 Digital output 8 Reference pole Reference pole Digital output 8 Reference pole Digital output 13 Digital output 14
	O 24V DC O RUN O ERROR O PROG O FORCE O FAULT O GSL O BL L 9 10 11 12 L D 1 0000 E2 13 14 15 16 17 18	L L 2 L 2 L 5 6 7 8 1 L 13 14 15 16 L D2 0000 C2	B1 B2 C C1	Digital outputs Supply Digital outputs		L+ L+ L- 1 2 3 4 L- L- 9 10 11 12 L- L- L- L- L- L- L- L- L- L-	Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Reference pole Digital output 1 Digital output 2 Digital output 3 Digital output 4 Reference pole Digital output 9 Digital output 9 Digital output 10 Digital output 11 Digital output 12 Reference pole Reference pole Reference pole Reference pole Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Reference pole Digital output 5 Digital output 5 Digital output 5 Digital output 7 Digital output 8 Reference pole Reference pole Digital output 8 Reference pole Digital output 13 Digital output 13 Digital output 14 Digital output 15
	O 24V DC O RUN O ERROR O PROG O FORCE O FAULT O GSL O BL L 9 10 11 12 L D 1 0000 E2 13 14 15 16 17 18	L L 2 L 2 L 5 6 7 8 1 L 13 14 15 16 L D2 0000 C2	B1 B2 C C1	Digital outputs Supply Digital outputs		L+ L+ L- 3 4 L- L- 9 10 11 12 L- L- L- L- L- L- L- L- L- L-	Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Reference pole Digital output 1 Digital output 2 Digital output 3 Digital output 4 Reference pole Reference pole Digital output 9 Digital output 10 Digital output 12 Reference pole Reference pole Reference pole Reference pole Reference pole Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Reference pole Digital output 7 Digital output 5 Digital output 5 Digital output 7 Digital output 8 Reference pole Reference pole Digital output 8 Reference pole Digital output 13 Digital output 14
	O 24V DC O RUN O ERROR O PROG O FORCE O FAULT O GSL O BL L 9 10 11 12 L D 1 0000 E2 13 14 15 16 17 18	L L 2 L 2 L 5 6 7 8 1 L 13 14 15 16 L D2 0000 C2	B1 B2 C C1	Digital outputs Supply Digital outputs		L+ L+ 1 2 3 4 L- L- 9 9 10 11 12 L- L- L- L+ L+ L+ L+ L+ L+ L- 5 6 7 8 L- L- 13 14 15 16	Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Reference pole Digital output 1 Digital output 2 Digital output 3 Digital output 4 Reference pole Reference pole Digital output 4 Reference pole Digital output 9 Digital output 10 Digital output 11 Digital output 12 Reference pole Reference pole Reference pole Reference pole Reference pole Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Reference pole Digital output 5 Digital output 5 Digital output 5 Digital output 5 Digital output 6 Digital output 7 Digital output 13 Digital output 13 Digital output 14 Digital output 14 Digital output 15
	Connection Programming Safe Communication (all XPSi	L Li 2 Li 2 Li 5 6 7 6 1 D 19 14 15 16 L D 20000 C2 19 20 21 22 20 2 19 20 21 22 20 2 19 20 21 22 20 2	B1 B2 C C C1 C2	Digital outputs Supply Digital outputs Digital outputs Digital outputs Either of the two swit remote I/O and the p IP address Either of the two switeres Eit		L+ L+ L- 1 2 3 4 L- L- 9 9 10 11 12 L- L- L+ L+ L+ L+ L+ L- 5 6 7 8 L- L+ 13 14 15 16 L- mit portion of the set of the se	Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Reference pole Digital output 1 Digital output 2 Digital output 3 Digital output 4 Reference pole Reference pole Digital output 10 Digital output 11 Digital output 12 Reference pole Reference pole Reference pole Reference pole Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Reference pole Digital output 5 Digital output 7 Digital output 8 Reference pole Reference pole Reference pole Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Reference pole Digital output 5 Digital output 5 Digital output 7 Digital output 13 Digital output 14 Digital output 15 Digital output 15 Digital output 16 Reference pole Reference
	O 24V DC O RUN O ERROR O FOOL O SOL O BL D	L Li 2 Li 2 Li 5 6 7 6 1 D 19 14 15 16 L D 20000 C2 19 20 21 22 20 2 19 20 21 22 20 2 19 20 21 22 20 2	B1 B2 C C C1 C2	Digital outputs Supply Digital outputs Digital outputs Digital outputs Either of the two swi t remote I/O and the p IP address Either of the two swi PLC and other safe		L+ L+ L- 1 2 3 4 L- L- 10 11 12 L- L- L+ L+ L+ L+ L- 5 6 7 8 L- L- 13 14 15 16 L- 15 16 L- 10 20 20 20 20 20 20 20 20 20 2	Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Reference pole Digital output 1 Digital output 2 Digital output 3 Digital output 4 Reference pole Reference pole Digital output 9 Digital output 10 Digital output 12 Reference pole Reference pole Reference pole Reference pole Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Reference pole Digital output 7 Digital output 7 Digital output 8 Reference pole Reference pole Digital output 8 Reference pole Digital output 13 Digital output 15 Digital output 15 Digital output 15 Digital output 15 Digital output 16 Reference pole Supply for outputs 5 Digital output 15 Digital output 15 Digital output 16 Reference pole Supply 16 Reference pole
n	Connection Programming Safe Communication (all XPSI PLCs and Remote VOs)	L Li 2 Li 2 Li 5 6 7 6 1 D 19 14 15 16 L D 20000 C2 19 20 21 22 20 2 19 20 21 22 20 2 19 20 21 22 20 2	B1 B2 C C C1 C2	Digital outputs Supply Digital outputs Digital outputs Digital outputs Either of the two swi t remote I/O and the p IP address Either of the two swi PLC and other safe		L+ L+ L- 1 2 3 4 L- L- 10 11 12 L- L- L- L+ L+ L+ L+ L- 5 6 7 8 L- L- 13 14 15 16 L- ret portor g termin portor	Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Supply for outputs 1, 2, 3, 4, 9, 10, 11, 12 Reference pole Digital output 1 Digital output 2 Digital output 3 Digital output 4 Reference pole Reference pole Digital output 9 Digital output 10 Digital output 11 Digital output 12 Reference pole Reference pole Reference pole Reference pole Reference pole Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Supply for outputs 5, 6, 7, 8, 13, 14, 15, 16 Reference pole Digital output 5 Digital output 5 Digital output 6 Digital output 7 Digital output 13 Digital output 13 Digital output 15 Digital output 16 Reference pole Scan be used to create a connection between the safet nal in a point to point or via an Ethernet network for settir rts can be used to create a connection between the safet nal in a point XPSMF safety PLCs or Safety Remote I

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Connections (continued)

Safety automation system solutions Preventa[™] safety PLCs Compact and modular Safety remote output modules XPSMF2

onnections						
SMF2D0801		Item	Connection		Screw	Function
	6 7 8		Cumple	N°	L+	Supply for relay outputs
A1 B C D) E	A1	Supply		L+ L+	Supply for relay outputs
L-L-L+L+ D01 D02 D0	3 D04				L-	Reference pole
	0				L-	Reference pole
		A2	Ground	-	÷	Ground
2 ORUN O RUN O ERROR		В	Relay output 1	1	-	Contact 1, terminal A
O PROG					-	Contact 1, terminal B
O FORCE O FAULT O O	o 0	С	Relay output 2	<u> </u>	-	Contact 2, terminal A
O OSL O BL			Dila di da	· ·	-	Contact 2, terminal B
	D07 D08	D	Relay output 3	-	-	Contact 3, terminal A Contact 3, terminal B
BaseT 10/100BaseT 2	HJ	E	Relay output 4			Contact 4, terminal A
3 10 11 12	13 14 15 16		itera) carpat		_	Contact 4, terminal B
ĸ		F	Relay output 5	9	-	Contact 5, terminal A
				10	-	Contact 5, terminal B
		G	Relay output 6	<u></u>	-	Contact 6, terminal A
			Delau estast 7		-	Contact 6, terminal B
		н	Relay output 7			Contact 7, terminal A Contact 7, terminal B
		J	Relay output 8		_	Contact 7, terminal A
		· ·			_	Contact 8, terminal B
Connection	Type Fur	nction				
PLCs and Remote I/Os) MF2DO1602			afety related components an be established in a point			/IF safety PLCs or Safety Remote I/O via an Ethernet network.
		Item	Connection	Screw N°	Screw	Function
A1	O 24V DC O FORCE	A1	Supply	-	L+	Supply for relay outputs
└ └ └ └ ↓ ↓	O RUN O FAULT O ERROR O OSL O O O PROG O BL				L+	Supply for relay outputs
L 1 2 3 4 5 6 7 8 9 10 11 12 13 14					L-	Reference pole
			One of the second secon		<u>L-</u> ÷	Reference pole
		<u>A2</u>	Ground			Ground
		В	Relay outputs 1 to 4	-		Contact 1, terminal A Contact 1, terminal B
						Contact 2, terminal A
DO 1 2 3 4 DO 5 6 7 8 DO 9 10	11 12 DO 13 14 15	16			-	Contact 2, terminar A
	11 12 DO 13 14 15	16		3	-	Contact 2, terminal B
B C D 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 1920 3	E			3 4 5		Contact 2, terminal B Contact 3, terminal A
B C D 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 1920 3	E			3 4 5 6	- - -	Contact 2, terminal B Contact 3, terminal A Contact 3, terminal B
B C D 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 1920 3	E			3 4 5 6 7	 	Contact 2, terminal B Contact 3, terminal A Contact 3, terminal B Contact 4, terminal A
B C D 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 1920 3	E	1 32	Polov outputs 5 to 9	3 4 5 6 7 8	- - - - -	Contact 2, terminal B Contact 3, terminal A Contact 3, terminal B Contact 4, terminal A Contact 4, terminal B
B C D 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 1920 3	E		Relay outputs 5 to 8	3 4 5 6 7 8 9	 	Contact 2, terminal B Contact 3, terminal A Contact 3, terminal B Contact 4, terminal A Contact 4, terminal B Contact 5, terminal A
B C D 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 1920 3	E	1 32	Relay outputs 5 to 8	3 4 5 6 7 8 9 10	- - - - -	Contact 2, terminal B Contact 3, terminal A Contact 3, terminal B Contact 4, terminal A Contact 4, terminal B Contact 5, terminal A Contact 5, terminal B
B 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 1920 3	E	1 32	Relay outputs 5 to 8	3 4 5 6 7 8 9 10 11		Contact 2, terminal B Contact 3, terminal A Contact 3, terminal B Contact 4, terminal A Contact 4, terminal B Contact 5, terminal A
B 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 1920 3	E	1 32	Relay outputs 5 to 8	3 4 5 6 7 8 9 10 11 12		Contact 2, terminal B Contact 3, terminal A Contact 3, terminal B Contact 4, terminal A Contact 5, terminal B Contact 5, terminal A Contact 5, terminal B Contact 6, terminal A
B 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 1920 3	E	1 32	Relay outputs 5 to 8	3 4 5 6 7 7 8 9 10 11 12 13 14 14		Contact 2, terminal B Contact 3, terminal A Contact 3, terminal B Contact 4, terminal A Contact 4, terminal B Contact 5, terminal A Contact 6, terminal B Contact 6, terminal A Contact 6, terminal A Contact 7, terminal A Contact 7, terminal B
B 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 1920 3	E	1 32	Relay outputs 5 to 8	3 4 5 6 7 8 9 10 11 12 13 14 15		Contact 2, terminal B Contact 3, terminal A Contact 3, terminal A Contact 4, terminal A Contact 4, terminal B Contact 5, terminal A Contact 5, terminal B Contact 6, terminal A Contact 6, terminal A Contact 7, terminal A Contact 7, terminal A Contact 7, terminal A
B 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 1920 3	E			3 4 5 6 7 8 9 10 11 12 13 14 15 16		Contact 2, terminal B Contact 3, terminal A Contact 3, terminal B Contact 4, terminal B Contact 4, terminal B Contact 5, terminal A Contact 5, terminal B Contact 6, terminal A Contact 6, terminal B Contact 7, terminal A Contact 7, terminal B Contact 7, terminal A Contact 8, terminal A Contact 8, terminal A
B 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 1920 :	E	1 32	Relay outputs 5 to 8 Relay outputs 9 to 12	3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 17		Contact 2, terminal B Contact 3, terminal A Contact 3, terminal A Contact 4, terminal A Contact 4, terminal A Contact 5, terminal A Contact 5, terminal A Contact 6, terminal A Contact 6, terminal A Contact 7, terminal A Contact 7, terminal A Contact 8, terminal A
B 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 1920 :	E			3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18		Contact 2, terminal B Contact 3, terminal A Contact 3, terminal B Contact 4, terminal B Contact 4, terminal B Contact 5, terminal A Contact 5, terminal B Contact 6, terminal A Contact 6, terminal B Contact 7, terminal A Contact 7, terminal B Contact 7, terminal A Contact 8, terminal A Contact 8, terminal A
B 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 1920 :	E			3 4 5 6 7 8 9 10 11 12 13 14 15 15 16 17 18 19		Contact 2, terminal B Contact 3, terminal A Contact 3, terminal A Contact 4, terminal A Contact 4, terminal A Contact 5, terminal A Contact 5, terminal A Contact 6, terminal A Contact 6, terminal A Contact 7, terminal A Contact 7, terminal A Contact 8, terminal A Contact 8, terminal A Contact 8, terminal A Contact 8, terminal A Contact 9, terminal A Contact 9, terminal A
B 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 1920 :	E			3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 20 21		Contact 2, terminal B Contact 3, terminal A Contact 3, terminal B Contact 4, terminal B Contact 4, terminal B Contact 5, terminal A Contact 5, terminal A Contact 6, terminal B Contact 7, terminal B Contact 7, terminal B Contact 7, terminal A Contact 8, terminal A Contact 9, terminal A Contact 9, terminal A Contact 9, terminal A Contact 9, terminal A Contact 10, terminal B Contact 10, terminal B Contact 10, terminal B Contact 10, terminal A
B 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 1920 2	E			3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22		Contact 2, terminal B Contact 3, terminal A Contact 3, terminal A Contact 4, terminal A Contact 4, terminal A Contact 5, terminal A Contact 5, terminal A Contact 6, terminal A Contact 7, terminal A Contact 7, terminal A Contact 7, terminal A Contact 8, terminal A Contact 9, terminal A Contact 9, terminal A Contact 10, terminal B Contact 10, terminal B Contact 10, terminal B Contact 10, terminal A Contact 10, terminal A Contact 11, terminal A
B 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 1920 2	E			3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23		Contact 2, terminal B Contact 3, terminal A Contact 3, terminal A Contact 4, terminal A Contact 4, terminal A Contact 5, terminal A Contact 5, terminal A Contact 6, terminal A Contact 7, terminal A Contact 7, terminal B Contact 8, terminal B Contact 8, terminal B Contact 8, terminal A Contact 9, terminal A Contact 9, terminal A Contact 10, terminal A Contact 10, terminal A Contact 11, terminal A Contact 11, terminal B Contact 11, terminal B Contact 11, terminal B
B 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 1920 2	E	C D	Relay outputs 9 to 12	3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24		Contact 2, terminal B Contact 3, terminal A Contact 3, terminal A Contact 4, terminal A Contact 4, terminal A Contact 5, terminal A Contact 5, terminal A Contact 6, terminal A Contact 7, terminal A Contact 7, terminal A Contact 7, terminal B Contact 8, terminal A Contact 8, terminal A Contact 8, terminal A Contact 9, terminal A Contact 10, terminal A Contact 10, terminal A Contact 10, terminal A Contact 11, terminal B Contact 11, terminal B Contact 11, terminal B Contact 12, terminal A Contact 12, terminal B Contact 12, terminal A Contact 12, terminal A Contact 12, terminal A
B 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 1920 3	E			3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25		Contact 2, terminal B Contact 3, terminal A Contact 3, terminal A Contact 4, terminal A Contact 4, terminal A Contact 5, terminal A Contact 5, terminal A Contact 6, terminal A Contact 6, terminal A Contact 7, terminal A Contact 7, terminal B Contact 8, terminal B Contact 8, terminal A Contact 9, terminal A Contact 9, terminal A Contact 10, terminal A Contact 10, terminal A Contact 11, terminal A Contact 11, terminal B Contact 11, terminal B Contact 11, terminal B
B 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 1920 3	E	C D	Relay outputs 9 to 12	3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26		Contact 2, terminal B Contact 3, terminal A Contact 3, terminal A Contact 4, terminal A Contact 4, terminal A Contact 5, terminal A Contact 5, terminal A Contact 6, terminal A Contact 6, terminal B Contact 7, terminal B Contact 7, terminal B Contact 8, terminal A Contact 8, terminal A Contact 9, terminal A Contact 9, terminal A Contact 10, terminal B Contact 10, terminal B Contact 11, terminal B Contact 12, terminal A Contact 12, terminal A
B 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 1920 3	E	C D	Relay outputs 9 to 12	3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27		Contact 2, terminal B Contact 3, terminal A Contact 4, terminal A Contact 4, terminal A Contact 4, terminal B Contact 5, terminal A Contact 5, terminal A Contact 6, terminal A Contact 7, terminal B Contact 7, terminal B Contact 7, terminal B Contact 8, terminal A Contact 8, terminal A Contact 9, terminal A Contact 9, terminal A Contact 10, terminal B Contact 10, terminal B Contact 11, terminal A Contact 11, terminal A Contact 12, terminal A Contact 12, terminal A Contact 12, terminal B Contact 13, terminal A Contact 13, terminal A
B 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 1920 3	E	C D	Relay outputs 9 to 12	3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29		Contact 2, terminal B Contact 3, terminal A Contact 3, terminal B Contact 4, terminal B Contact 4, terminal A Contact 5, terminal A Contact 5, terminal A Contact 6, terminal A Contact 6, terminal A Contact 7, terminal A Contact 7, terminal B Contact 8, terminal A Contact 9, terminal A Contact 9, terminal A Contact 10, terminal B Contact 10, terminal B Contact 11, terminal A Contact 11, terminal A Contact 11, terminal A Contact 12, terminal A Contact 13, terminal A Contact 14, terminal A Contact 13, terminal A Contact 13, terminal A Contact 13, terminal A Contact 14, terminal A
B 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 1920 3	E	C D	Relay outputs 9 to 12	3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30		Contact 2, terminal B Contact 3, terminal A Contact 3, terminal A Contact 4, terminal A Contact 4, terminal A Contact 5, terminal A Contact 5, terminal A Contact 6, terminal A Contact 6, terminal A Contact 7, terminal A Contact 7, terminal A Contact 8, terminal A Contact 8, terminal A Contact 8, terminal A Contact 9, terminal A Contact 10, terminal A Contact 10, terminal B Contact 10, terminal B Contact 11, terminal B Contact 12, terminal B Contact 13, terminal B Contact 14, terminal B Contact 14, terminal B Contact 13, terminal A Contact 14, terminal B Contact 14, terminal B
B C D 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 1920 3	E	C D	Relay outputs 9 to 12	3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31		Contact 2, terminal B Contact 3, terminal A Contact 3, terminal B Contact 4, terminal B Contact 4, terminal A Contact 5, terminal A Contact 5, terminal A Contact 6, terminal A Contact 6, terminal A Contact 7, terminal A Contact 7, terminal B Contact 8, terminal A Contact 9, terminal A Contact 9, terminal A Contact 10, terminal A Contact 10, terminal B Contact 11, terminal A Contact 11, terminal A Contact 11, terminal A Contact 12, terminal A Contact 13, terminal A Contact 14, terminal B Contact 13, terminal A Contact 13, terminal A Contact 14, terminal B Contact 14, terminal A Contact 14, terminal A
B 2 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 10 T 10 19 20 F Connection	21 22 23 24 22 30 31 25 20 27 20 29 30 31	C D E	Relay outputs 9 to 12 Relay outputs 13 to 16	3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32		Contact 2, terminal B Contact 3, terminal A Contact 3, terminal B Contact 4, terminal B Contact 4, terminal A Contact 5, terminal A Contact 5, terminal A Contact 6, terminal A Contact 6, terminal A Contact 7, terminal B Contact 7, terminal B Contact 8, terminal A Contact 9, terminal A Contact 9, terminal A Contact 9, terminal B Contact 10, terminal B Contact 10, terminal B Contact 11, terminal B Contact 12, terminal A Contact 12, terminal A Contact 13, terminal B Contact 14, terminal B Contact 15, terminal A Contact 15, terminal A Contact 16, terminal A Contact 16, terminal A Contact 17, terminal A Contact 13, terminal A Contact 13, terminal A Contact 13, terminal A Contact 14, terminal A Contact 15, terminal A Contact 16, terminal A Contact 16, terminal A Contact 16, terminal A
B 2 1 2 3 4 5 6 7 8 F	21 22 22 32 32 22 22 22 22 22 22 22 22 22	C C D E	Relay outputs 9 to 12 Relay outputs 13 to 16	3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 20 21 22 23 24 25 26 27 28 29 30 31 32		Contact 2, terminal B Contact 3, terminal A Contact 3, terminal B Contact 4, terminal B Contact 4, terminal A Contact 5, terminal A Contact 5, terminal A Contact 6, terminal A Contact 6, terminal A Contact 7, terminal A Contact 7, terminal A Contact 7, terminal A Contact 8, terminal A Contact 9, terminal A Contact 9, terminal A Contact 10, terminal B Contact 10, terminal B Contact 11, terminal A Contact 11, terminal B Contact 12, terminal B Contact 12, terminal B Contact 13, terminal B Contact 13, terminal B Contact 13, terminal B Contact 13, terminal B Contact 14, terminal B Contact 15, terminal A Contact 15, terminal A Contact 16, terminal B Contact 16, terminal A Contact 16, terminal A Contact 16, terminal A Contact 16, terminal A Contact 16, terminal A
B 2 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 10 T 10 19 20 F Connection	Type Fur Integrated 2 RJ45 Eit switched Ethernet rer Communication IP	C C C C C C C C C C C C C C C C C C C	Relay outputs 9 to 12 Relay outputs 13 to 16 switched Ethernet ports ca he programming terminal in	3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 23 24 25 26 27 28 29 30 31 32 n be used a point to		Contact 2, terminal B Contact 3, terminal A Contact 3, terminal B Contact 4, terminal B Contact 4, terminal B Contact 5, terminal A Contact 5, terminal A Contact 6, terminal A Contact 6, terminal A Contact 7, terminal B Contact 7, terminal B Contact 8, terminal A Contact 9, terminal A Contact 9, terminal B Contact 9, terminal B Contact 10, terminal B Contact 10, terminal B Contact 11, terminal B Contact 12, terminal A Contact 12, terminal A Contact 13, terminal B Contact 14, terminal B Contact 15, terminal A Contact 15, terminal A Contact 16, terminal A Contact 17, terminal B Contact 13, terminal A Contact 13, terminal A Contact 13, terminal A Contact 14, terminal B Contact 15, terminal A Contact 15, terminal A Contact 15, terminal A Contact 16, terminal A Contact 16, terminal A

Introduction

Safety automation system solutions

Preventa[™] safety PLCs Compact and modular Safety remote mixed I/O modules XPSMF3

2



XPSMF3DI08801



XPSMF3DI016801



XPSMF3DI020802



XPSMF3AI08401

Products referenced **XPSMF3**••••• are marked **HIMatrix® F3...** (manufactured by Hima, sold by Schneider Electric).

Introduction

XPSMF3DIO/AIO are compact safety remote input/output modules which are designed to extend the I/O capacity of safety PLCs **XPSMF**, either compact or modular, to which they are associated.

The communication with either the compact or modular safety PLCs is managed via one of its' integrated 2 RJ45 switched Ethernet communications ports. Safety modules **XPSMF3DIO/AIO** do not have a user program: they receive their instructions from its' parent safety PLC.

Safety remote mixed I/O modules XPSMF3DIO/AIO

Calledy remote mixed i/o modules x1 own 5DIO/Alo							
Mixed I/O safety	Rem	note inputs	Remote outputs				
modules	N°	Туре	N°	Туре			
XPSMF3DIO8801	8	Digital	8 DO+ / 2 DO-	Digital			
			2	Line control			
XPSMF3DIO16801	IF3DIO16801 16 Digital		8 2-pole or 16 single-pole	Digital			
			2	Line control			
XPSMF3DIO20802	20	Digital	8	Digital			
XPSMF3AIO8401	8	Analog	4	Analog (non safety outputs)			

Examples of remote inputs of safety modules XPSMF3eIOeeeee

Digital inputs		
Safety actuators	Safety detection	Safety dialog
Contactors-motors, Control relays, Variable speed drives	Limit switches, Guard switches, with reset and with actuator, Light curtains type 2 and type 4, Safety mats and sensing edges	Mushroom head Emergency stops, Enclosures for control and signalling units, Two-hand control stations

Analog inputs

Closed circuit scanning of input channels,

Single-pole measuring of 0 to 10 V voltages,

Measuring, using jumper, 0/4 to 20 mA currents (with 500 Ω external resistor).

Examples of remote outputs of safety modules XPSMF3eIOeeeee

•	-
Digital outputs	
Safety actuators	Safety dialog
Contactors-motors, Control relays, Variable speed drives	Beacons and indicator banks, Rotating mirror beacons, Sirens

Line control outputs

Short-circuit and line break monitoring

Analog outputs

Closed circuit scanning of output channels,

Single-pole measuring of 0 to 10 V voltages,

Measuring, using jumper, 0/4 to 20 mA currents (with 500 $\Omega\,$ external resistor).

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Safety PLCs

In order to meet safety requirements, the safety remote mixed I/O modules XPSMF3eIOeeeee incorporate two essential functions (Redundancy and Self-monitoring) complying to category 4 conforming to EN 954-1 and performance level "e" conforming to EN/ISO 13849-1 in addition to the SafeEthernet safety communication protocol between these safety remote mixed I/O modules and the safety PLCs (Special Switch).

Redundancy: the dual processor integrated in safety modules XPSMF3eIOeeeee analyzes and compares the data received from the safety inputs and outputs. The incoming and outgoing data (programmed values and received values) are received in parallel by the two processors and compared in real-time. Self-monitoring ("Watchdog"): the safety remote mixed I/O modules XPSMF3eIOeeeee continuously monitor the data processing cycle and the execution of tasks, and intervenes if the cycle time does not conform to the predefined value.

The integrated switch (Special Switch) stores for a very short time and sends at very high speed the data provided by the inputs and outputs of the safety modules on the Ethernet network, while avoiding signal collisions and excessive amounts of data on the network.



Functional diagrams

Remote mixed I/O module XPSMF3DIO16801



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Functional diagrams (continued)





Remote mixed I/O module XPSMF3AIO8401



Line control

Line control is a means of short-circuit and line break monitoring.

Using line control outputs enables SIL 3 (EN/IEC 61508) and category 4 (EN 954-1) safety to be achieved. The line control outputs send a high signal with a very short low signal, thus enabling a wiring anomaly (short-circuit, line break) to be seen at the inputs of the safety modules.

Examples

□ For XPSMF3DIO8801 and XPSMF3DIO16801, the line control outputs 1 and 2 are connected to the digital inputs of the same circuit.

□ For XPSMF3DIO20802, the digital outputs 1 to 8 are connected to the digital inputs of the same circuit.

Safety communication on Ethernet network

The safety remote mixed I/O modules XPSMF3eIOeeee incorporate two RJ45 (type 10BASE-T/100BASE-TX) integrated switched ports, that enable communication on the Ethernet network using SafeEthernet communication protocol and therefore, data exchange with compact or modular safety PLCs XPSMF.

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Description

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Description

Remote mixed I/O module XPSMF3DIO8801

On the front cover of the metal enclosure:

- One terminal block (1) for == 24 V supply.
- 2 One terminal block (1) for connection of line control outputs, with four line control output status LEDs.
- 3 Two terminal blocks (1) for connection of digital outputs, with output status LED (four LEDs per terminal block).
- Two terminal blocks (1) for connection of digital inputs, with input status LED (four LEDs per terminal block).
- 5 Eight process status LEDs.
- Two RJ45 (type 10BASE-T/100BASE-TX) integrated switched ports, for 6 connection on Ethernet network and for configuring IP address.
- One ground connection screw.
- One "Reset" button (on the top). 8
- 9 On the rear face: One spring operated mounting device for mounting on 35 mm DIN rail.

Remote mixed I/O module XPSMF3DIO16801

On the front cover of the metal enclosure:

- One terminal block (1) for == 24 V supply. 1
- 2 Three terminal blocks for connection of digital output channels.
- One terminal block (1) for connection of line control outputs.
- 4 Four terminal blocks (1) for connection of digital inputs, with input status LED (four LEDs per terminal block).
- Sixteen digital output status LEDs. 5
- 6 Eight process status LEDs.
- Two RJ45 (type 10BASE-T/100BASE-TX) integrated switched ports, for 7 connection on Ethernet network and for configuring IP address.
- One ground connection screw.
- 9 One "Reset" button (on the top).
- 10 On the rear face: One spring operated mounting device for mounting on 35 mm DIN rail.

Remote mixed I/O module XPSMF3DIO20802

On the front cover of the metal enclosure:

- One terminal block (1) for == 24 V supply.
- Two terminal blocks (1) for connection of digital outputs, with output status LED 2 (four LEDs per terminal block)
- 3 Five terminal blocks (1) for connection of digital inputs, with input status LED (four LEDs per terminal block).
- 4 Eight process status LEDs.
- 5 Two RJ45 (type 10BASE-T/100BASE-TX) integrated switched ports, for connection on Ethernet network and for configuring IP address.
- 6 One ground connection screw.
- One "Reset" button (on the top).
- 8 On the rear face: One spring operated mounting device for mounting on 35 mm DIN rail.

Remote mixed I/O module XPSMF3AIO8401

On the front cover of the metal enclosure:

- One terminal block (1) for --- 24 V supply.
- Four terminal blocks (1) for connection of analog inputs. 2
- One terminal block (1) for connection of analog outputs. 3
- 4 One metal plate for securing shielded analog input/output connection cables
- (EMC). 5
- Eight process status LEDs.
- Two RJ45 (type 10BASE-T/100BASE-TX) integrated switched ports, for connection on Ethernet network and for configuring IP address.
- One ground connection screw.
- One "Reset" button (on the top). 8
- 9 On the rear face: one spring operated mounting device for mounting on 35 mm DIN rail

(1) Removable screw terminals are provided with the safety remote mixed I/O modules XPSMF3DIO/AIO.

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Schneider						

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Safety re	mote mix	ed I/O mo	dules XPSMF3elOeeee
LED	Color	Status	Meaning
24 VDC	Green	On	24 V voltage present.
		Off	No voltage.
RUN	Green	On	Normal service mode, loaded program running, the PLC receives I/O messages, communication and hardware/ software tests carried out.
		Flashing	The CPU is in STOP and is not executing any user application. All the outputs are reset to a safe, de-energized state.
		Off	The CPU is in "ERROR" state (see ERROR).
ERROR	Red	On	Software error or hardware anomaly detected by the CPU.
			The monitoring program (Watchdog) has triggered the STOP state of the process because the programmed cycle time has been exceeded.
			The CPU has stopped the execution of the user application ended all hardware and software tests and all outputs have been reset.
			The process can only be started again from the PC.
		Off	No errors detected.
PROG	Orange	On	The CPU is being loaded with a new configuration.
		Flashing	The FLASH ROM is being loaded with a new operating system.
		Off	No loading of configuration or operating system.
FORCE	Orange	On	The CPU is in RUN mode and force is active.
		Flashing	The system is not processing (STOP), but force is prepared and is activated if the dual processor is started.
		Off	Force mode not activated.
FAULT	Orange	On	Error display for line control.
			The user application has caused an error.
			The system configuration is defective.
			The loading of a new operating system was defective and the operating system is corrupt.
		Flashing	An error has occurred while writing to FLASH ROM memory (during updating of the operating system).
			One or more I/O errors have occurred.
		Off	None of the above errors have occurred.
OSL	Orange	Flashing	Emergency loading of the operating system is active.
BL	Orange	Flashing	COM in INIT_Fail state.
RJ45	Green	On	Full duplex mode operation.
		Flashing	Signal collision.
		Off	Half duplex mode operation, no collision.
	Yellow	On	Connection established.
		Flashing	Interface active.

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Specifications

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Safety remote mixed I/O r	nodule type		XPSMF3DIO8801	XPSMF	3DIO16801	XPSMF3DIO	20802	XPSMF3AIO840	
Supply voltage	v	24 (external supply with separate protection conforming toEN/IEC 60950, SELV (Safety Extra Low Voltage) or PELV (Protection Extra Low Voltage) rated)							
Voltage limits		v	- 15+ 20%						
Ambient air temperature	°F (°C)	+ 32 + 140 (0+ 6	50)						
	For storage	°F (°C)	- 40+ 185 (- 40+ 85)		185 (- 40… ithout battery	- 40+ 185 (40+	85)	
Degree of protection			IP 20						
Response time		ms	Depending on size o	of applicat	tion				
Maximum current power c	onsumption	A	8	14 (max Residua		8 (max. load) Residual: 0.4		0.8	
External fuse			10 A, slow blow	16 A, sl	ow blow	-		-	
Backup battery			None	-		None		None	
Connections			See page 2/30 for wi	ire sizes o	of the various of	connector type:	S.		
Digital inputs									
Safety remote mixed I/O r	nodule type		XPSMF3DIO8801		XPSMF3DIC	16801	XPSM	F3DIO20802	
Number	Inputs not electrically isolated		8		16		20		
Voltage	At state 1		1530						
		mA	> 2 at 15 V ≥ 2					15 V	
	At state 0	v	5 max.						
			1.5 max. 1.25 at == 5 V		1.5 max. 1 at == 5 V		1.5 max. 1.25 at == 5 V		
Switching voltage		v	7.5		7.5		7.5		
Switching time		μs	-		250		-		
Supply			2 x 20 V/100 mA at 24 V, protected against short-circuits		4 x 20 V/40 mA at 24 V, protected against short-circuits, buffered for 20 ms. 20 V/2 A total at 22 V, protected against short-circuits, not buffered Max. current 2 A at 140 °F (60 °C)		protec	V/100 mA at 24 V, ted against circuits	
LED display			Yes						
Digital outputs									
Safety remote mixed I/O r	nodule type		XPSMF3DIO8801		XPSMF3DIC	16801	XPSM	F3DIO20802	
Number	Outputs not electrically isolated		8 DO+ (reference pole L-)		8 x 2-pole or 16 x single-pole		8		
			2 DO- (reference pole S+)						
Output voltage		v	24 ± 2		24 ± 3		 24 :	±2	
Output current	Channels 1 to 3 and 5 to 7	Α	DO+: 0.5 at 140 °F (6	60 °C)			0.5 at	140 °F (60 °C)	
	Channels 4 and 8	Α	DO+: 1 at 140 °F (60) °C),	2 max. at 104 °F (40 °C) 1 max. at 140 °F (60 °C) 10 mA min.			10 °F (60 °C),	
			2 at 104 °F (40 °C)		10 mA min.		2 at 50)°C	

w Lamp load Channels 1 to 3 and 5 to 7 DO+: 10 25 max. DO+: 25 Channels 4 and 8 Channels 1 and 2 DO-: 25 Inductive load Channels 1 to 3 and 5 to 7 DO+: 500 500 mH max. Channels 4 and 8 DO+: 500 DO-: 500 Channels 1 and 2 Line break kΩ > 5 Short-circuit threshold Ω < 10 Minimum load mΑ 2 per channel Leakage current at state 0 1 max. at 2 V mΑ Response to overload Shutdown of outputs concerned with cyclic reconnection Total output current Α 7 max. 9 max. (14 A for 2 ms) 7 max. Shutdown of all outputs if exceeded with cyclic reconnection LED display Yes



Safety automation system solutions Preventa[™] safety PLCs Compact and modular Safety remote mixed I/O modules XPSMF3

Specification	ns (continued)							
Line control ou								
Module type			XPSMF3DIO8801		XPSMF3DIO16801			
Number	Outputs not electrically isolated		2		2			
Output voltage		v	20, depending on the	e supply voltage				
Output current		mA	60					
Minimum load			None					
Response to overl	load		4 x ≥ 19.2 V/60 mA (on 24 V), short-circuit	t current			
LED display			Yes					
Analog inputs								
•	xed I/O module type		XPSMF3AIO8401					
Number	Inputs not electrically isolated		8, single-pole					
External jumper		Ω	250 or 500 dependir	ng on application				
Input values	Nominal value	v	010					
		mA	020 , with 500 Ω ju	mper				
	Service value	v	0.111.5					
		mA	0/423, with 500 Ω	jumper				
Input impedance		MΩ	2					
Maximum distance	e of equipment		984 ft (300 m)					
Internal resistance	e of signal source	Ω	≤ 500					
Overvoltage prote		V	+ 15, - 4					
Resolution			12-bit					
Safety accuracy			±2%					
LED display			No					
Analog outputs								
	xed I/O module type		XPSMF3AIO8401					
Number	Outputs not electrically isolated			with breaking of safe	ty common			
Signal	Nominal range	mA	420					
	Usable range	mA	020					
Load impedance		Ω	600 max.					
Maximum distance	e of equipment		984 ft (300 m)					
Resolution			12-bit					
Relative error			±1%					
LED display			No					
Communica								
	ork: safety communication using Safe xed I/O module type	Ethernet	xpsMF3DIO8801	XPSME3DIO46904	XPSMF3DIO20802 XPSMF3AIO8401			
Transmission	Communication ports			witched Ethernet com				
					·			
	Baud rate	Mbps	· · ·	Full duplex, Autonego	otiation			
Structure			10BASE-T/100BAS	E-TX				
			Dual twisted pair cable, category 5D or better (Ethernet)					

Introduction:

Schneider GElectric

References

Safety automation system solutions

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RJ45 connector fitted at each end

(1) Configurable for line control.

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(1) Removable screw terminals are provided with the safety remote mixed I/O modules **XPSMF3DIO8801**.



(1) Removable screw terminals are provided with the safety remote mixed I/O modules **XPSMF3DIO16801**.

Dual Dimensions: INCHES Millimieters

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Dimensions, mounting

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(1) Removable screw terminals are provided with the safety remote mixed I/O modules XPSMF3DIO20802.





(1) Removable screw terminals are provided with the safety remote mixed I/O modules XPSMF3AIO8401.

RJ45 connector for access to Ethernet network (SafeEthernet protocol)



Dual Dimensions: INCHES Millimieters

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Connections

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XPSMF3DIO8801



	Oranastian	O	0	Franklar
Item	Connection	Screw N°	Screw	Function
A1	Supply		L-	24 V (reference pole)
		-	L-	24 V (reference pole)
			L+	24 V
		-	L+	24 V
A2	Ground	-	÷	Ground
B	Outputs - Line control/	1	L-	Reference pole
	Digital	2	1	Line control output 1
		3	2	Line control output 2
		4	4-	Digital output 4- (for increased load)
		5	8-	Digital output 8- (for increased load)
		6	S+	Reference pole
С	Outputs - Digital	7	L-	Reference pole
		8	1	Digital output 1
		9	2	Digital output 2
		10	3	Digital output 3
		11	4+	Digital output 4+ (for increased load)
		12	L-	Reference pole
D	Outputs - Digital	13	L-	Reference pole
		14	5	Digital output 5
		15	6	Digital output 6
		16	7	Digital output 7
		17	8+	Digital output 8+ (for increased load)
		18	L-	Reference pole
E	Inputs - Digital	19	LS+	Sensor supply for inputs 1 to 4
		20	1	Digital input 1
		21	2	Digital input 2
		22	3	Digital input 3
		23	4	Digital input 4
		24	L-	Reference pole
F	Inputs - Digital	25	LS+	Sensor supply for inputs 5 to 8
		26	5	Digital input 5
		27	6	Digital input 6
		28	7	Digital input 7
		29	8	Digital input 8
		30	L-	Reference pole
Item	Connection			Function
G	Programming			Either of the two switched Ethernet ports can be used to create a connection between the safety remote I/C and the programming terminal in a point to point or via an Ethernet network for setting the IP address
	Safe Communication (all XPSMF Safety PLCs and Remote I/Os)	Integrated 2 RJ45		Either of the two switched Ethernet ports can be used to create a connection between the safety PLC and other safety related components (e.g other XPSMF safety PLCs or Safety Remote I/O modules this can be established in a point to point way or via an Ethernet network.

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		.			

Connections (continued)

Safety automation system solutions Preventa[™] safety PLCs Compact and modular Safety remote mixed I/O modules XPSMF3

	nections								
XPSN	MF3DIO16801					0 "	0	100	
	1234567	8 9 10 1	1 12 13 14 15	6 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	Item (cor		Scre	w N° Screw	Function
			C + 2- 2+ 3- 3+ 4		F	Inputs - Digital	33	LS+	Sensor supply for inputs 1 to 4 (not protected)
		- 3- 001-1-	+ 2- 2+ 3- 3+ 4	4+ 005-5+6-6+7-7+6-6+1011111222	2		34	LS+	Sensor supply for inputs 1 to 4 (protected)
	RUN O 2 O ERROR O 3 O						35	1	Input 1
	O PROG O 4 O O FORCE O 5 O						36	2	Input 2
	OFAULT O 6 O OOSL O 7 O						37	3	Input 3
	OBL O 8 O						38	4	Input 4
		+5678L- 0000	L-⊕⊕ LS	+LS+9 10 11 12 L-L	~ ~		39	L-	24 V (reference pole)
	F	G		HJ			40	L-	24 V (reference pole)
10/100Base	eT 2 33 34 35 36 37 38 39 40 41 42 43 44 4	15 46 47 48 49	50 51 52 53	54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70	71 72		41	PA	Electrically clean ground
Κ	К					Inputs - Digital	42 43	PA LS+	Electrically clean ground Sensor supply for inputs 5 to 8 (not
tem	Connection	Screw N°	Screw	Function			44	LS+	protected) Sensor supply for inputs 5 to 8 (protected)
1	Supply	_	L+	24 V			45	5	Input 5
÷.,			L+	24 V			46	6	Input 6
			L-	== 24 V (reference pole)			47	7	Input 7
			L-	= 24 V (reference pole)			48	8	Input 8
2	Ground	-	÷	Ground			49	L-	24 V (reference pole)
	Supply of single-pole	1	S+	-			50	L-	= 24 V (reference pole)
	digital outputs	2	S+	-			51	PA	Electrically clean ground
		3	S+	_			52	PA	Electrically clean ground
		4	S+	-	н	Inputs - Digital	53	LS+	Sensor supply for inputs 9 to 12 (no
		5	S- S-	-					protected)
		7	S-	-			54	LS+	Sensor supply for inputs 9 to 12 (protected)
		8	S-	-			55	9	Input 9
;	Outputs - Digital	9	1-	Output 1			56	10	Input 10
		10	1+	Output 1			57	11	Input 11
		11	2-	Output 2			58	12	Input 12
		12	2+	Output 2			59	L-	24 V (reference pole)
		13	3-	Output 3			60	L-	24 V (reference pole)
		14	3+	Output 3			61	PA	Electrically clean ground
		15	4-	Output 4			62	PA	Electrically clean ground
		16	4+	Output 4	J	Inputs - Digital	63	LS+	Sensor supply for inputs 13 to 16 (not protected)
	Outputs - Digital	17 18	5- 5+	Output 5					(not protected)
		19	6-	Output 5 Output 6			64	LS+	Sensor supply for inputs 13 to 16
		20	6+	Output 6			65	5	(protected) Input 13
		20	7-	Output 8 Output 7			66	6	Input 13
		22	7+	Output 7			67	7	Input 15
		23	8-	Output 8			68	8	Input 16
		24	8-	Output 8			69	L-	
	Outputs - Line control		1	Output 1			70	L-	== 24 V (reference pole)
		26	1	Output 1			71	PA	Electrically clean ground
		27	1	Output 1			72	PA	Electrically clean ground
		28	1	Output 1	Item	Connection			Function
		29	2	Output 2	ĸ	Programming		grated 2	Either of the two switched Ethernet
		30	2	Output 2				5 switched	ports can be used to create a
		31 32	2	Output 2 Output 2			Ethe Corr ports	municatior	connection between the safety remote I/O and the programming terminal in a point to point or via an
									Ethernet network for setting the IP address
						Safe Communication (all XPSMF Safety PLCs and Remote I/Os)			Either of the two switched Etherne ports can be used to create a connection between the safety PL and other safety related componer (e.g other XPSMF safety PLCs or Safety Remote I/O modules) this can be established in a point to po way or via an Ethernet network.
	ction:	Speci	ification	s: Refer	ences:	Dimensi	ons, m	ountina:	Connections:
troau						2			

Safety automation system solutions Preventa[™] safety PLCs Compact and modular Safety remote mixed I/O modules XPSMF3

KPSMFDIO2080	2				_		
			Item	Connection	Screw	N° Screw	Function
O.⊕ A1	B	7 8 9 10 11 12	A1	Supply	-	L+	24 V
A2 L+ L+ L+	DO 0000	D0 0000				L+	24 V
O 24V DC	L-1234 L-	L-5678L-				L-	== 24 V (reference pole)
O RUN O ERROR						L-	24 V (reference pole)
O PROG			A2	Ground		÷	Ground
O FORCE O FAULT			В	Outputs - Digital	1	L-	Outputs common
O OSL O BL					2	1	Output 1
	LS+1234L-LS+5678 DIOOOO DIOOOO	L- LS+ 9 10 11 12 L- LS+ 13 14 15 16 L- LS+ 17 18 DI OOOO DI OOOO DI OO			3	2	Output 2
			H		4	3	Output 3
1 10/100BaseT 10/100BaseT 2	13 14 15 16 17 18 19 20 21 22 23	24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39			5 6	4 L-	Output 4 (for increased load)
JJ			C	Outputs - Digital	7		Outputs common Outputs common
			C	Outputs - Digital	8	5	Output 5
					9	6	Output 6
					10	7	Output 7
					10	8	Output 8 (for increased load)
					12	 L-	Outputs common
			D	Inputs - Digital	13	LS+	Sensor supply for inputs 1 to 4
			-		14	1	Digital input 1
					15	2	Digital input 2
					16	3	Digital input 3
					17	4	Digital input 4
					18	L-	Inputs common
			E	Inputs - Digital	19	LS+	Sensor supply for inputs 5 to 8
					20	5	Digital input 5
					21	6	Digital input 6
					22	7	Digital input 7
					23	8	Digital input 8
					24	L-	Inputs common
			F	Inputs - Digital	25	LS+	Sensor supply for inputs 9 to 12
					26 27	9	Digital input 9
					27	10	Digital input 10
					20	12	Digital input 11 Digital input 12
					30	L-	Inputs common
			G	Inputs - Digital	31	LS+	Sensor supply for inputs 13 to 16
			Ŭ		32	13	Digital input 13
					33	14	Digital input 14
					34	15	Digital input 15
					35	16	Digital input 16
					36	L-	Inputs common
			н	Inputs - Digital	37	LS+	Sensor supply for inputs 17 to 20
					38	17	Digital input 17
					39	18	Digital input 18
					40	19	Digital input 19
					41	20	Digital input 20
					42	L-	Inputs common
				Connection	late -	ted 0	Function
			J	Programming	Ethern	switched	Either of the two switched Ethernet ports can be used to create a connection between the safety rem I/O and the programming terminal in point to point or via an Ethernet network for setting the IP address
				Safe Communication (all XPSMF Safety PLCs and Remote I/Os)			Either of the two switched Etherner ports can be used to create a connection between the safety PLI and other safety related componer (e.g other XPSMF safety PLCs or Safety Remote I/O modules) this c be established in a point to point w or via an Ethernet network.
troduction:	Specific page 2/	cations:	References: page 2/101	Dime	nsions, m 2/102	ounting:	Connections: page 2/104
Connections (continued)

Safety automation system solutions Preventa[™] safety PLCs Compact and modular Safety remote mixed I/O modules XPSMF3

XPSMF3AIO8401	Screw N	°Screw	Function
A1 Supply	Screw N	Screw	Function
	_		
A2		L+	24 V
		L+	24 V
		L-	24 V (reference pole)
O 24V DC O RUN		L-	24 V (reference pole)
O FERROR O PROG AL AL AL AL AO A2 Ground		÷	Ground
O FORCE S1 11+ 11- S2 12+12- S3 13+ 13- S4 14+ 13- S5 15+ 15- S6 16+ 16- S7 17+ 17- S8 18+ 18- 1+ 1- 2+ 2- 3+ 3- 4+ 4 O FAULT	alog 1	S1	Transmitter supply 1
O OSL B C D E F	2	l1+	Input 1
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32	3	l1-	Reference pole
	4	S2	Transmitter supply 2
	5	12+	Input 2
1 10/1008set 7 10/1008set 2	6	12-	Reference pole
G G C Inputs - Ar	alog 7	S3	Transmitter supply 3
	8	13+	Input 3
	9	13-	Reference pole
	10	S4	Transmitter supply 4
	11	14+	Input 4
	12	14-	Reference pole
D Inputs - Ar	alog 13	S5	Transmitter supply 5
	14	15+	Input 5
	15	15-	Reference pole
	16	S6	Transmitter supply 6
	17	16+	Input 4
	18	16-	Reference pole
E Inputs - Ar		S7	Transmitter supply 7
	20	17+	Input 7
	21	17-	Reference pole
	22	S8	Transmitter supply 8
	23	18+	Input 8
	24	18-	Reference pole
F Outputs - /		01+	Output 1
	26	01-	Output 1 reference pole
	27	02+	Output 2
	28	02-	Output 2 reference pole
	29	03+	Output 3
	30	03-	Output 3 reference pole
	31 32	04+ 04-	Output 4
Item Connection	52	04-	Output 4 reference pole Function
G Programm	ing Integrat	ed 2	Either of the two switched Ethernet
	RJ45 sv		ports can be used to create a
	Etherne		connection between the safety remote
	ports	nication	I/O and the programming terminal in a point to point or via an Ethernet network for setting the IP address
	unication (all ety PLCs and s)		Either of the two switched Ethernet ports can be used to create a connection between the safety PLC and other safety related components (e.g other XPSMF safety PLCs or Safety Remote I/O modules) this can be established in a point to point way or via an Ethernet network.

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Selection guide

Safety automation system solutions Preventa[™] safety controllers

Applications Modules		Image: Controllers for monitoring 2 independent safety functions simultaneously. User selection of 2 functions from a choice of 15. Programmable from front cover of controller.
Functions		 Emergency stop monitoring Switch monitoring Enabling switch monitoring Sensing mat or edges monitoring Light curtain monitoring, relay output type
Conformity to standards	5	EN 954-1 - category 4/ISO 13849-1, EN/IEC 60204-1, DIN V VDE 801 + A1, EN/IEC 60947-1 + A11, EN/IEC 60947-5-1
Product certifications		UL, CSA, BIA
Number of circuits	Safety Additional	6 N.O. (3 N.O. per function) 3 solid-state outputs for signalling to PLC
Display		12 LEDs
Supply voltage		24 V
Communication	CANopen bus Profibus bus Modbus™ network	-
Module type		XPSMP

Selection guide (continued)

Safety automation system solutions

Preventa[™] safety controllers



Configurable controllers using software, for several independent safety functions: selection of safety functions using configuration software running on Windows® (16 or 32 inputs and 8 independent safety outputs)



- Emergency stop monitoring
- Limit switch monitoring
- Two-hand control monitoring
- Light curtain monitoring, with or without "muting" function
 Enabling switch monitoring, coded magnetic switch monitoring
- □ Safety mat monitoring
- Hydraulic press solenoid valve monitoring
- □ Eccentric press safety stop at top dead center monitoring. Zero speed detection
- Hydraulic press monitoring
- Eccentric press monitoring
 Foot switch monitoring
- □ Chain shaft breakage monitoring
- Position selector

EN 954-1 - category 4/ISO 13849-1, IEC 61508 - SIL 3, EN/IEC 60204-1, EN 1760-1/ISO 13856-1, EN/IEC 60947-5-1, EN/IEC 61496-1, EN 574/ISO 13851 EN 954-1/ISO 13849-1 UL, CSA, TÜV

4 N.O. (2 N.O. per function) + 6 solid-state

1 "muting" signalling output

LED display on front cover

---- 24 V

Via SUB-D 9-pin male connector, only on XPSMC16ZC and XPSMC32ZC

Via SUB-D 9-pin female connector, only on XPSMC16ZP and XPSMC32ZP

Via RJ45 connector, on all controllers XPSMC • Z •

XPSMC

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Preventa[™] safety controllers type XPSMP With pre-defined functions

Introduction

Operating principle

Preventa[™] safety controller modules XPSMP are designed to conform with category 4 of the standard EN 954-1/ISO 13849-1. They enable two independent safety functions

(selected from a choice of 15 pre-defined configurations) to be performed using the same product. Configuration selection is easily made using 3 buttons on the front cover of the module. These 15 pre-programmed safety functions provide a solution for the majority of safety applications up to level 4 conforming to the standard EN 954-1/ISO 13849-1, for example: monitoring Emergency stops, limit switches, safety mats and sensing edges, enabling switches, coded magnetic switches, type 4 relay output light curtains conforming to EN/IEC 61496-1 (for example, light curtains type XUS L. Safety controllers XPSMP incorporate 6 safety outputs (3 per function) and 3 solid-state signalling outputs for signalling to the process PLC.

To aid diagnostics, the modules have LEDs on the front cover which provide information on the monitoring circuit status. They also indicate and assist selection of the 2 required configurations.

	Configuration	Synchronization	Type of start (1)		Start test	Notes
		time	Automatic or unmonitored	Monitored		
			-1		1	
Functions disabled	0	-	-	-	-	Factory setting
Emergency stop monitoring,	1	-	X	-	-	-
1-channel wiring (category 2)	2	-	-	X	-	-
Emergency stop monitoring,	3	Unlimited	Х	-	Х	-
2-channel wiring, or guard	4	Unlimited	-	X	Х	-
monitoring (category 4)	5	1.5 s	Х	-	Х	-
	6	1.5 s	-	X	X	-
	7	Unlimited	Х	-	-	-
	8	Unlimited	-	X	-	-
Guard monitoring for injection press or blowing machine (category 4)	9	1.5 s	-	X	X	Uses both safety outputs (2)
Enabling grip switch monitoring (3 position switch) (category 4)	10	-	X	-	X	The start button acts as start-up preparation
Sensing mat and edges monitoring	11	-	Х	-	-	Mats with circuit
(category 3)	12	-	-	X	-	making contacts
Relay output light curtain monitoring (category 4)	13	0.5 s	-	X	X	-
Non-contact safety interlock switch	14	1.5 s	Х	-	-	Magnetic switches
monitoring (category 4)	15	1.5 s	-	X	-	with 2 contacts, 1 N.O. and 1 N.C.

(1) Automatic start: there is no start contact or it is jumpered.

Unmonitored start: the output is activated on closing of the start contact.

Monitored start: the start input is monitored so that there is no start-up in the event of the start contact being jumpered or the start circuit being closed for more than 10 seconds.

Start-up is triggered following activation of the start button (push-release function) on opening of the contact.

(2) Tool zone guard with 3rd switch.

Additional rear guard (optional) with automatic start. The opening of the guard cuts all outputs.

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Specifications

Safety automation system solutions Preventa[™] safety controllers type XPSMP With pre-defined functions

Specifications						
Module type			XPSMP11123	XPSMP11123P		
Conformity to standards			EN/IEC 60204-1, DIN V VDE 801 + A1, I	EN/IEC 60947-1 + A11, EN/IEC 60947-5-1		
Product certifications			UL, CSA, BIA			
	. use in safety related parts of		Category 4 max.			
	ng to EN 954-1/ISO 13849-1)	v	- 24			
Supply		v	24			
Voltage limits			- 20+ 20%			
Power consumption		w	≤5			
Module inputs fuse protec	tion		Internal, electronic			
Start button monitoring			Yes/No (depending on configuration sele	ected)		
Control unit voltage Between input terminals C1	-11, C2-12, C3-13, C4-14, C5-15 or C6-16	v	24 (at nominal supply voltage)			
Calculation of wiring resis between input terminals	stance RL	Ω	100 max. Maximum cable length: 6561 ft (2000 m)			
Synchronization time betw	veen inputs	s	0.5, 1.5 or unlimited, depending on confi	guration selected		
Outputs	Voltage reference		Relay hard contacts			
Number and type of safety circuits			3 N.O. per function (6 N.O. total) (13-14,	23-24, 33-34, 43-44, 53-54, 63-64)		
	Number and type of additional		3 solid-state			
	circuits					
	Breaking capacity in AC-15	VA	C300: inrush 1800, maintained 180			
	Breaking capacity in DC-13		24 V/1.5 A L/R = 50 ms			
Breaking capacity of solid-state outputs Max. thermal current (Ithe) for each			24 V/20 mA			
			3.3 A for all 3 outputs, or 6 A for 1 output and 2 A for the other 2 outputs, or 2 A for 1 output and 4 A for the other 2 outputs			
	group of 3 outputs Max. total thermal current	A	20			
	Output fuse protection	A	4 gG or 6 fast acting, conforming to EN/IEC 60947-5-1, DIN VDE 0660 part 200			
	Minimum current	mA				
	Minimum voltage	V	17			
Electrical life			See page 3/12			
Response time on input o	pening	ms	< 30			
Rated insulation voltage (Ui)	v	300 (degree of pollution 2 conforming to I	EN/IEC 60947-5-1, DIN VDE 0110 parts 1 & 2)		
Rated impulse withstand	voltage (Uimp.)	kV	4 (overvoltage category III, conforming to	EN/IEC 60947-5-1, DIN VDE 0110 parts 1 & 2		
LED display			12			
Operating temperature		°F (°C)	+ 14+ 131 (- 10+ 55)			
Storage temperature		°F (°C)	- 13+ 267.8 (- 25+ 85)			
Degree of protection	Terminals		IP 20			
conforming to IEC 60529	Enclosure		IP 40			
Connections	Туре		Captive screw clamp terminals	Captive screw clamp terminals, removable terminal block		
	1-wire connection, without cable end		Solid or flexible cable: 26-14 AWG (0.14 2.5 mm²)	Solid or flexible cable: 24-14 AWG		
	1-wire connection, with cable end		(0.14 2.5 mm²) (0.2 2.5 mm²) Without bezel, flexible cable: 24-14 AWG (0.25 2.5 mm²)			
			With bezel, flexible cable: 24-16 AWG (0.251.5 mm ²)	With bezel, flexible cable: 24-14 AWG (0.252.5 mm ²)		
	2-wire connection, without cable end		Solid or flexible cable: 26-20 AWG (0.140.75 mm ²)	Solid cable: 24-18 AWG (0.21 mm ²) Flexible cable: 24-18 AWG (0.21.5 mm ²)		
	2-wire connection, with cable end		Without bezel, flexible cable: 24-18 AWC	× ×		
			Double, with bezel, flexible cable: 22-14 A	WG (0.51.5 mm ²)		

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Safety automation system solutions Preventa[™] safety controllers type XPSMP

With pre-defined functions





References Description Type of Number Additional Supply Reference Weight terminal block of safety outputs circuits connection oz (kg) Modules for Integrated 3 N.O. per 3 solid-state 24 V XPSMP11123 11.287 2 independent safety functions function (6 N.O. total) in module (0.320)

XPSMP11123P

XPSMP11123		(0.110) (0.011)				
	Removable from module	3 N.O. per function (6 N.O. total)	3 solid-state	24 V	XPSMP11123P	11.287 (0.320)

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Safety automation system solutions Preventa[™] safety controllers type XPSMP

AM1 DP200 rail mounting



5 678 9 10 11 12 1 0 0 0 0 (F1) 2 0 0 0 0 (F2) 3 4 0 0 0 (K)	1-2-3 4 5-6-7 8 9 10 11 12 54 53 0/4	Function 1 configuration code. K1/K2 status (function 1, N.O. safety outputs closed). Function 2 configuration code. K3/K4 status (function 2, N.O. safety outputs closed). Supply voltage A1-A2. Fault. Function 1 configuration. Function 2 configuration.
	F1, F2, OK:	Configuration buttons.

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Preventa[™] safety controllers type XPSMP With pre-defined functions

XPSMP Emergency stop monitoring, 1-channel wiring

Configuration 1 (1-channel Emergency stop, automatic or unmonitored start) = function 1. Configuration 2 (1-channel Emergency stop, monitored start) = function 2.





(2) Function 1 safety outputs.















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Safety automation system solutions

Preventa[™] safety controllers type XPSMP With pre-defined functions



Preventa[™] safety controllers type XPSMP With pre-defined functions



XPSMP Guard monitoring with start test and synchronization time = 1.5 ms

Configuration 5 (locking of guard with start test, automatic or unmonitored start) = function 1. Configuration 6 (locking of guard with start test, monitored start) = function 2.



Safety automation system solutions

Preventa[™] safety controllers type XPSMP With pre-defined functions

XPSMP

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Emergency stop monitoring, 2-channel wiring

Configuration 7 (2-channel Emergency stop, automatic or unmonitored start) = function 1. Configuration 8 (2-channel Emergency stop, monitored start) = function 2.



Dimensions

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Guard monitoring for injection press or blowing machine

Safety automation system solutions

Preventa[™] safety controllers type XPSMP With pre-defined functions

2

XPSMP



(1) If sensors S4 and S5 are not used, terminals C4-I4 and C5-I5 must be linked.

(2) Safety outputs for tool zone.

(3) Safety outputs for rear access safety doors.

In configuration mode 9, the N.C. contacts of the relays or contactors controlled via outputs 43-44, 53-54, 63-64 cannot be monitored by the feedback loop (ESC). ESC = External start conditions.

Functional diagram





(1) Prevention of start-up necessary: to check the sensors connected, open and reclose the guard.

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Safety automation system solutions

Preventa[™] safety controllers type XPSMP With pre-defined functions

XPSMP

Enabling switch monitoring, safety mat monitoring

Configuration 10 (enabling switch monitoring, with or without start-up preparation) = function 1. Configuration 11 (safety mat monitoring, automatic or unmonitored start) = function 2.



Safety mat monitoring, light curtain monitoring

Safety automation system solutions

Preventa[™] safety controllers type XPSMP With pre-defined functions

XPSMP



(1) Function 1 safety outputs.

(2) Function 2 safety outputs.

ESC = External start conditions



(1) Start button control: the start button must not be activated on power-up.

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Safety automation system solutions

Preventa[™] safety controllers type XPSMP With pre-defined functions

XPSMP

Non-contact safety interlock switch monitoring

Configuration 14 (automatic or unmonitored start, synchronization time = 1.5 s) = function 1. Configuration 15 (monitored start, synchronization time = 1.5 s) = function 2.



(1) Automatic start.(2) Function 1 safety outputs.

Functional diagrams





(3) Function 2 safety outputs. ESC = External start conditions.



Introduction

Safety automation system solutions

Preventa[™] configurable safety controllers type XPSMC





XPSMC16ZC



XPSMC32ZC

Introduction

Configurable safety controllers XPSMC •• Z • are designed to provide a solution for safety applications requiring conformity to category 4 of standard EN 954-1/EN/ ISO 13849-1 and SIL 3 requirements of standard IEC 61508. The range of configurable safety controllers consists of 6 products, each with

different technical specifications.

Configurable	Safety	Safety	Communicatio	Communication via	
controllers	inputs	outputs (1)	CANopen bus	Profibus bus	Modbus [™] serial link
XPSMC16Z	16	6 + 2 x 2	-	-	Yes, slave
XPSMC16ZC	16	6 + 2 x 2	Yes, slave	_	Yes, slave
XPSMC16ZP	16	6+2x2	-	Yes, slave	Yes, slave
XPSMC32Z	32	6+2x2	-	_	Yes, slave
XPSMC32ZC	32	6+2x2	Yes, slave	-	Yes, slave
XPSMC32ZP	32	6 + 2 x 2	-	Yes, slave	Yes, slave

Line control

The safety inputs are supplied by the various control outputs (2), in such a manner so as to monitor for short-circuits between the inputs, short-circuits between each input and ground or the presence of residual voltages.

The controller, assisted by the control outputs, continuously tests all the connected inputs. As soon as an error is detected on an input, all the outputs associated with this input are disconnected. Safety outputs associated with other inputs remain active.

Configuration

Safety controllers XPSMC •• Z• are configurable and addressable using software XPSMCWIN running on a PC. Connection accessories required: see page 2/129.

Connections

For connection of safety inputs and outputs, safety controllers XPSMCeeZe can be fitted with a choice of:

□ screw connectors type XPSMCTS●●, or

spring clip connectors type XPSMCTC••.

These connectors are to be ordered separately, see page 2/128.

(1) 8 independent safety outputs = 6 solid-state safety outputs + 2 x 2 relay outputs (4 relay outputs with guided contacts). (2) 8 control outputs are available but they are not safety outputs.

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Safety automation system solutions

Preventa[™] configurable safety controllers type XPSMC

Safety functions

Configuration of the safety functions is carried out using XPSMCWIN software.

30 certified safety functions are available with this software and they are easily assignable to the safety outputs. The safety functions have multiple combination possibilities and various starting conditions.

The safety functions are:

- certified in accordance with EN 954-1/EN/ISO 13849-1 and IEC 61508,
- configurable in controller XPSMC using XPSMCWIN software.

All 8 safety outputs are suitable for use in safety related parts of control systems conforming to category 4 of EN 954-1/EN/ISO 13849-1 and each output can disconnect one of its safety circuits.

Main safety functions

- Emergency stop monitoring, with or without time delay, 1 or 2-channel wiring
- Two-hand control (type III-C conforming to EN 574/ISO 13851)
- Guard monitoring with 1 or 2 limit switches
- Guard monitoring for injection presses and blowing machines
- Magnetic switch monitoring
- Sensing mat monitoring
- Light curtain (type 4 conforming to EN/IEC 61496, relay or solid-state output) monitoring
- Zero speed detection
- Dynamic monitoring of hydraulic valves on linear presses
- Monitoring safety stop at top dead center on eccentric press
- Safety time delays
- "Muting" function of light curtains
- Enabling switch monitoring, 2 or 3 contact
- Hydraulic press
- Eccentric press
- Foot switch monitoring
- Chain shaft breakage monitoring
- Position selector

Wiring diagrams and functional diagrams

See from page 2/130

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Preventa[™] configurable safety controllers type XPSMC



Communication

CANopen fieldbus

Configurable safety controllers XPSMC • ZC incorporate a SUB-D 9-pin male connector for direct connection on CANopen bus.

CANopen bus is an open bus that ensures deterministic and reliable access to the real-time data of automation equipment. The bus uses a shielded dual twisted pair on which a maximum of 127 devices can be connected by chaining. The data rate varies between 10 Kbps and 1Mbps depending on the length of the bus (16,404 to 66 ft / 5,000 to 20 m).

Profibus bus

Configurable safety controllers XPSMC • ZP incorporate a SUB-D 9-pin female connector for connection on Profibus bus.

Configurable safety controllers XPSMC •• ZP are slaves on the Profibus bus.

Profibus bus is a fieldbus that meets industrial communication requirements. The topology of the Profibus bus is of the linear type with a centralized master/slave type access procedure. The physical link is a single shielded twisted pair.

Modbus[™] serial link

Configurable safety controllers XPSMCeeZe MC incorporate a Modbus communication interface (RJ45 connector) for configuration and diagnostics.

This interface enables connection of the controllers to:

- □ a PC (configuration),
- □ a PLC (diagnostics), or
- an operator dialog terminal (diagnostics).

The Modbus serial link consists of a master station (Premium[™] automation platform) and slave stations (configurable controllers XPSMC16/32Z•). Two exchange mechanisms are possible:

■ Question/response: the questions from the master are addressed to a given slave. The response is expected by return from the interrogated slave.

■ Distribution: the master distributes a message to all the stations of the Modbus serial link. The latter execute the order without transmitting a reply.

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Description

Safety automation system solutions

Preventa[™] configurable safety controllers type XPSMC



Description

Configurable safety controllers XPSMC••Z• Front cover of controllers:

- 1 LED display and system diagnostics.
- 2 Two LEDs for CANopen or Profibus (1) connection status.
- 3 SUB-D 9-pin male connector for connection on CANopen bus (XPSMC16ZC/ MC32ZC) or SUB-D 9-pin female connector for connection on Profibus bus (XPSMC16ZP/MC32ZP).
- 4 Solid-state safety output and "muting" indicator light terminals.
- 5 Power supply (--- 24 V) and relay safety output terminals.
- 6 Control output terminals for power supply to safety inputs and safety input terminals.
- 7 RJ45 connector for connection on Modbus[™] serial link.
- 8 RESET button (resetting of controller).

Rear face of controllers:

9 Mounting plate for mounting on rail.

Configurable safety controller XPSMC••Z•, with screw connectors



Illuminated display

(1) Depending on controller model.

LED detai	ls		
LED	Color	Status	Meaning
1 PWR	Green	On	Supply voltage present.
2 CNF	Yellow	On	In configuration mode.
		Flashing	Not configured, initial power-up.
3 E In	Red	On	Internal error: all safety outputs deactivated.
4 EEx	Red	On	External error: all safety outputs associated with the defective circuit are deactivated.
5 COM	Green	On	Controller communicating via the TER (RJ45) connection.
6 R1, R2	Green	On	Relay outputs 13/14, 23/24, 33/34 and 43/44 activated.
		Flashing	Fault on these outputs.
7 RUN	Green	Off	Hardware OK for the Profibus bus or the CANopen bus.
		On	Communicating on Profibus bus or on CANopen bus. Normal status.
8 ERR	Red	On	Communication impossible, configuration error, damaged cabling or absence. Bus deactivated
		Off	Communicating on CANopen or Profibus bus Normal status.
		Flashing (x 1)	Warning limit reach.
		Flashing (x 2)	Control event error on CANopen bus.
		Flashing (x 3)	Synchronization error on CANopen bus.
9 116	Green	On	Input circuit closed.
132		Flashing	Error detected on input relating to LED.
10 0106	Green	On	Solid-state output activated.
		Flashing	Short-circuit, anomaly on output.
11 RUN	Green	On	Run mode.
		Flashing	Changing from run mode to stop mode.

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Safety automation system solutions Preventa[™] configurable safety controllers type XPSMC

Specifications			
Configurable safety control	ler type		XPSMC16Z and MC32Z, XPSMC16ZC and MC32ZC, XPSMC16ZP and MC32ZP
Conformity to standards			EN/IEC 60204-1, EN 1760-1/ISO 13856-1, EN/IEC 60947-5-1, EN/IEC 61496-1, EN 574/ISO 13851, EN 954-1/EN/ISO 13849-1, IEC 61508
Product certifications			UL, CSA, TÜV
Products designed for max. use in safety related parts of control systems (conforming to EN 954-1/EN/ISO 13849-1 and EC 61508)			Category 4 max. (EN 954-1/EN/ISO 13849-1), SIL 3 max. (IEC 61508)
IEC 61508) Supply voltage		v	24 ± 20%
Maximum power consumpti	on	w	12
Fuse protection		A	16 gL max.
Start button monitoring			Configurable
Control circuit voltage			28.8 V/13 mA (between input terminals C1-I1 to C8-I16, resp. I32)
Calculation of wiring resista	nce RL	Ω	100 max, maximum cable length: 2000 m (Between input terminals)
Synchronization time betwe	en inputs	s	Depending on configuration selected
Outputs Relay	Voltage reference		Relay hard contacts
	Safety circuit		2 N.O. per function (4 N.O. total) (13-14, 23-24, 33-34, 43-44)
	Breaking capacity in AC-15	VA	C300: inrush 1800, maintained 180
	Breaking capacity in DC-13		24 V/1.5 A L/R = 50 ms
	Thermal current (Ithe) for each group of 2 outputs	A	6 for 1 output and 2 for the other, or 4 for both outputs.
	Current limit	Α	Ith ≤ 16 (with several relay output circuits simultaneously loaded)
	Output fuse protection	Α	4 gL or 6 quick blow
	Minimum current	mA	10 (1)
	Minimum voltage	v	17 (1)
Solid-state	Breaking capacity		24 V/2 A
	Safety circuit		6 solid-state (O1, O2, O3, O4, O5, O6)
	Current limit	Α	Ith \leq 6.5 (with several solid-state output circuits simultaneously loaded)
Electrical life			See page 3/12
Response time on input ope	ning	ms	Response time = 20 or 30, configurable using software XPSMCWIN □ if 20 for controllers XPSMC●eZ●: 30 for a safety mat □ if 30 for controllers XPSMC●eZ●: 45 for a safety mat
Rated insulation voltage (Ui)	v	300 (degree of pollution 2 conforming to IEC 60647-5-1, DIN VDE 0110 part 1)
Rated impulse withstand vo	Itage (Uimp.)	kV	4 (overvoltage category III, conforming to IEC 60647-5-1, DIN VDE 0110 part 1)
LED display			30 (XPSMC16Z), 46 (XPSMC32Z) 32 (XPSMC16ZC/MC16ZP, 48 (XPSMC32ZC/MC32ZP)
Temperature Operating		°F (°C)	+ 14+ 131 (- 10+ 55)
Storage		°F (°C)	- 13+ 267.8 (- 25+ 85)
Degree of protection			IP 20 conforming to EN/IEC 60529 (connector and enclosure)
(1) The controller is also canal	ale of switching low power loads (17	V/10 mA	minimum) provided that the contact has not been used for switching high power load.

(1) The controller is also capable of switching low power loads (17 V/10 mA minimum) provided that the contact has not been used for switching high power loads (possible contamination or wear of the gold layer on the contact tips).

ntroc	luct	ion:
ade	2/1:	22

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Dimensions: page 2/129

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Specifications (continued)

Safety automation system solutions Preventa[™] configurable safety controllers type XPSMC

Communication					
Modbus [™] serial link					
			VDSMC467 VDSMC207		
Compatibility			XPSMC16Z, XPSMC32Z, XPSMC16ZC, XPSMC32ZC, XPSMC16ZP, XPSMC32ZP		
Serial link ports	Number and type		1 x RJ45		
	Status		Slave		
Data exchange			14 words		
Addressing			1247		
Baud rate		bps	1200, 2400, 4800, 9600 or 19200		
Parity			Even, odd, none		
Fixed parameters			RTU (Remote Terminal Unit) mode 1 start bit / 8 data bits 1 stop bit stop with "even" or "odd" parity 2 stop bits without parity		
Functions supported			01: 8-bit output data / 32-bit input data (0 = OFF, 1 = ON) 02: 32-bit input data / 8-bit output data (0 = OFF, 1 = ON) 03: information and errors		
CANopen bus					
Compatibility			XPSMC16ZC, XPSMC32ZC		
Serial link ports	Number and type		1 x SUB-D 9-pin male		
• •••••	Status		Slave		
Data exchange			14 words By included dual port memory: only data ad	ddresses, diagnostics, but no baud rates	
Parameters	Baud rate	Kbps	20, 50, 125, 250, 500, 800		
(adjustable using software		Mbps	1		
XPSMCWIN)	Address	mope	1127		
	Address		1121		
Profibus bus					
Compatibility			XPSMC16ZP, XPSMC32ZP		
Serial link ports	Number and type		1 x SUB-D 9-pin female		
	Status		Slave		
Data exchange	Olaldo		14 words		
			By included dual port memory: only data addresses		
Parameters	Baud rate	Mbps	12		
	Address		1125		
O					
Connections					
Туре			Separate plug-in screw connector	Separate plug-in spring clip connect	
21° -				XPSMCTSee (1)	
			XPSMCTSee (1)		
Power supply and relay ou	•				
	•		Solid or flexible cable: 24-12 AWG (0.22		
Power supply and relay ou	•			.5 mm²)	
Power supply and relay ou	r Without cable end	_	Solid or flexible cable: 24-12 AWG (0.22	.5 mm²) 0.252.5 mm²)	
Power supply and relay ou 1 conducto	r Without cable end		Solid or flexible cable: 24-12 AWG (0.22 Without bezel, flexible cable: 22-12 AWG (With bezel, flexible cable: 22-12 AWG (0.2) Solid or flexible cable: 24-16 AWG	.5 mm²) 0.252.5 mm²)	
Power supply and relay ou 1 conducto	Without cable end		Solid or flexible cable: 24-12 AWG (0.22 Without bezel, flexible cable: 22-12 AWG (0.22 With bezel, flexible cable: 22-12 AWG (0.2 Solid or flexible cable: 24-16 AWG (0.21.5 mm ²) Without bezel, flexible cable: 22-16 AWG	.5 mm²) 0.252.5 mm²)	
Power supply and relay ou 1 conducto	r Without cable end With cable end rs Without cable end		Solid or flexible cable: 24-12 AWG (0.22 Without bezel, flexible cable: 22-12 AWG (0.2 With bezel, flexible cable: 22-12 AWG (0.2 Solid or flexible cable: 24-16 AWG (0.21.5 mm ²)	.5 mm²) 0.252.5 mm²) 52.5 mm²) -	
Power supply and relay ou 1 conducto	r Without cable end With cable end rs Without cable end		Solid or flexible cable: 24-12 AWG (0.22 Without bezel, flexible cable: 22-12 AWG (0.22 With bezel, flexible cable: 22-12 AWG (0.2 Solid or flexible cable: 24-16 AWG (0.21.5 mm ²) Without bezel, flexible cable: 22-16 AWG (0.251.5 mm ²)	.5 mm²) 0.252.5 mm²) 52.5 mm²)	
Power supply and relay ou 1 conducto 2 conducto	r Without cable end With cable end rs Without cable end		Solid or flexible cable: 24-12 AWG (0.22 Without bezel, flexible cable: 22-12 AWG (0.2. With bezel, flexible cable: 22-12 AWG (0.2. Solid or flexible cable: 24-16 AWG (0.21.5 mm ²) Without bezel, flexible cable: 22-16 AWG (0.251.5 mm ²) Double, with bezel, flexible cable:	.5 mm²) 0.252.5 mm²) 52.5 mm²) - - Double, with bezel, flexible cable:	
Power supply and relay ou 1 conducto 2 conducto	r Without cable end With cable end rs Without cable end With cable end With cable end torque of screw terminals		Solid or flexible cable: 24-12 AWG (0.22 Without bezel, flexible cable: 22-12 AWG (0.2. With bezel, flexible cable: 22-12 AWG (0.2. Solid or flexible cable: 24-16 AWG (0.21.5 mm ²) Without bezel, flexible cable: 22-16 AWG (0.251.5 mm ²) Double, with bezel, flexible cable: 20-16 AWG (0.51.5 mm ²)	.5 mm²) 0.252.5 mm²) 52.5 mm²) - - Double, with bezel, flexible cable:	
Power supply and relay ou 1 conducto 2 conducto Tightening Wire stripp	r Without cable end With cable end rs Without cable end With cable end With cable end torque of screw terminals		Solid or flexible cable: 24-12 AWG (0.22 Without bezel, flexible cable: 22-12 AWG (0.2) With bezel, flexible cable: 22-12 AWG (0.2) Solid or flexible cable: 24-16 AWG (0.21.5 mm ²) Without bezel, flexible cable: 22-16 AWG (0.251.5 mm ²) Double, with bezel, flexible cable: 20-16 AWG (0.51.5 mm ²) 4.25.3 lb-in (0.50.6 Nm)	.5 mm²) 0.252.5 mm²) 52.5 mm²) - - Double, with bezel, flexible cable:	
Power supply and relay ou 1 conducto 2 conducto Tightening	r Without cable end With cable end rs Without cable end With cable end With cable end torque of screw terminals ing length		Solid or flexible cable: 24-12 AWG (0.22 Without bezel, flexible cable: 22-12 AWG (0.2) With bezel, flexible cable: 22-12 AWG (0.2) Solid or flexible cable: 24-16 AWG (0.21.5 mm ²) Without bezel, flexible cable: 22-16 AWG (0.251.5 mm ²) Double, with bezel, flexible cable: 20-16 AWG (0.51.5 mm ²) 4.25.3 lb-in (0.50.6 Nm)	5 mm²) 0.252.5 mm²) 52.5 mm²) - - Double, with bezel, flexible cable: 20-18 AVVG (0.51.0 mm²) -	
Power supply and relay ou 1 conducto 2 conducto Tightening Wire stripp Other terminals	r Without cable end With cable end rs Without cable end With cable end With cable end torque of screw terminals ing length		Solid or flexible cable: 24-12 AWG (0.22 Without bezel, flexible cable: 22-12 AWG (0.2) With bezel, flexible cable: 22-12 AWG (0.2) Solid or flexible cable: 22-12 AWG (0.2) (0.21.5 mm ²) Without bezel, flexible cable: 22-16 AWG (0.251.5 mm ²) Double, with bezel, flexible cable: 20-16 AWG (0.51.5 mm ²) 4.25.3 lb-in (0.50.6 Nm) 0.39 in (10 mm)	5 mm ²) 0.252.5 mm ²) 52.5 mm ²) - Double, with bezel, flexible cable: 20-18 AWG (0.51.0 mm ²) - 1.5 mm ²)	
Power supply and relay ou 1 conducto 2 conducto Tightening Wire stripp Other terminals	r Without cable end With cable end rs Without cable end With cable end With cable end torque of screw terminals ing length r Without cable end		Solid or flexible cable: 24-12 AWG (0.22 Without bezel, flexible cable: 22-12 AWG (0.22 With bezel, flexible cable: 22-12 AWG (0.2: Solid or flexible cable: 24-16 AWG (0.21.5 mm ²) Without bezel, flexible cable: 22-16 AWG (0.251.5 mm ²) Double, with bezel, flexible cable: 20-16 AWG (0.51.5 mm ²) 4.25.3 lb-in (0.50.6 Nm) 0.39 in (10 mm) Solid or flexible cable: 28-16 AWG (0.14	5 mm ²) 0.252.5 mm ²) 52.5 mm ²) - - Double, with bezel, flexible cable: 20-18 AWG (0.51.0 mm ²) - 1.5 mm ²) 0.251.5 mm ²)	
Power supply and relay ou 1 conducto 2 conducto Tightening Wire stripp Other terminals 1 conducto	r Without cable end With cable end rs Without cable end With cable end With cable end torque of screw terminals ing length r Without cable end		Solid or flexible cable: 24-12 AWG (0.22 Without bezel, flexible cable: 22-12 AWG (0.22 With bezel, flexible cable: 22-12 AWG (0.2 Solid or flexible cable: 24-16 AWG (0.21.5 mm ²) Without bezel, flexible cable: 22-16 AWG (0.251.5 mm ²) Double, with bezel, flexible cable: 20-16 AWG (0.51.5 mm ²) 4.25.3 lb-in (0.50.6 Nm) 0.39 in (10 mm) Solid or flexible cable: 28-16 AWG (0.14 Without bezel, flexible cable: 23-16 AWG (0.14	5 mm ²) 0.252.5 mm ²) 52.5 mm ²) - - Double, with bezel, flexible cable: 20-18 AWG (0.51.0 mm ²) - 1.5 mm ²) 0.251.5 mm ²)	
Power supply and relay ou 1 conducto 2 conducto Tightening Wire stripp Other terminals 1 conducto	r Without cable end With cable end rs Without cable end With cable end torque of screw terminals ing length r Without cable end With cable end		Solid or flexible cable: 24-12 AWG (0.22 Without bezel, flexible cable: 22-12 AWG (0.22) With bezel, flexible cable: 22-12 AWG (0.22) Solid or flexible cable: 22-12 AWG (0.22) Without bezel, flexible cable: 22-16 AWG (0.251.5 mm ²) Double, with bezel, flexible cable: 22-16 AWG (0.251.5 mm ²) Double, with bezel, flexible cable: 22-16 AWG (0.251.5 mm ²) 4.25.3 lb-in (0.50.6 Nm) 0.39 in (10 mm) Solid or flexible cable: 28-16 AWG (0.14 Without bezel, flexible cable: 23-20 AWG (0.22) Solid cable: 28-20 AWG (0.140.5 mm ²) Flexible cable: 28-19 AWG	5 mm ²) 0.252.5 mm ²) 52.5 mm ²) - - Double, with bezel, flexible cable: 20-18 AWG (0.51.0 mm ²) - 1.5 mm ²) 0.251.5 mm ²)	
Power supply and relay ou 1 conducto 2 conducto Tightening Wire stripp Other terminals 1 conducto	r Without cable end With cable end Trs Without cable end With cable end Torque of screw terminals Torque of screw terminal		Solid or flexible cable: 24-12 AWG (0.22 Without bezel, flexible cable: 22-12 AWG (0.2) Solid or flexible cable: 22-12 AWG (0.2) Solid or flexible cable: 22-12 AWG (0.2) (0.21.5 mm ²) Without bezel, flexible cable: 22-16 AWG (0.251.5 mm ²) Double, with bezel, flexible cable: 22-16 AWG (0.251.5 mm ²) 4.25.3 lb-in (0.50.6 Nm) 0.39 in (10 mm) Solid or flexible cable: 28-16 AWG (0.14 Without bezel, flexible cable: 23-16 AWG (0.2) Solid cable: 28-20 AWG (0.140.5 mm ²) Flexible cable: 28-19 AWG (0.140.75 mm ²) Without bezel, flexible cable: 23-22 AWG	 5 mm²) 0.252.5 mm²) - - Double, with bezel, flexible cable: 20-18 AWG (0.51.0 mm²) - 1.5 mm²) 0.251.5 mm²) - - 	

(1) To be ordered separately.



Safety automation system solutions Preventa[™] configurable safety controllers type XPSMC



XPSMC16Z





XPSMC16ZC



XPSMC16ZP





XPSMC32ZP

Configurable	e safety con	rollers (connec	ector not included)		
Number of	Number of	outputs	Communication	Reference	Weight
inputs	Relay	Solid-state	(Link and bus)		oz (kg)
6 4 (2 x 2)	6	Modbus™	XPSMC16Z	28.925 (0.820)	
			Modbus, CANopen	XPSMC16ZC	28.925 (0.820)
			Modbus, Profibus	XPSMC16ZP	28.925 (0.820)
32	4 (2 x 2)	6	Modbus	XPSMC32Z	29.630 (0.840)
			Modbus, CANopen	XPSMC32ZC	29.630 (0.840)
			Modbus, Profibus	XPSMC32ZP	29.630

(0.840)

Plug-in connectors for configurable safety controllers (1)					
Description	For use with	Reference	Weight oz (kg)		
Screw connectors	XPSMC16Z, MC16ZC, MC16ZP	XPSMCTS16	2.822 (0.080)		
	XPSMC32Z, MC32ZC, MC32ZP	XPSMCTS32	3.880 (0.110)		
Spring clip connectors	XPSMC16Z, MC16ZC, MC16ZP	XPSMCTC16	2.822 (0.080)		
	XPSMC32Z, MC32ZC, MC32ZP	XPSMCTC32	3.880 (0.110)		
0					

Configuration	software				
Description	Operating system	Details (2)	Languages	Reference	Weight oz (kg)
Configuration software for controllers KPSMCZ. CD-ROM + user nanual	Windows® 2000, Windows® XP, Windows® Vista, Windows® 7	Software available on Safety Suite V2 software pack		XPSMCWIN	18.342 (0.520)

To be ordered separately to the controllers.
 EDS and GSD files are available on the XPSMCWIN configuration software CD-ROM.

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References (continued), dimensions

Safety automation system solutions Preventa[™] configurable safety controllers

type XPSMC

XPSMCCPC	







TSX CUSB485



TSX CAN TDM4



ABL8RPS24100

References					
Connecting cables (1)					
Function			Length ft (m)	Reference	Weight oz (kg)
Diagnostics using Magelis [™] o	operate	or dialog terminal type XBT GT	9.8 (3)	VW3A8306R30	39.86 (1.130
Configuration software	1	Adaptor: RJ45 socket/PC connection cables	_	XPSMCCPC	0.38 (0.011
	2	Cable to PC serial port (type SUB-D9)	8.2 (2.5)	TSXPCX1031	5.997 (0.170
	3	Straight shielded twisted pair cables,	6.6 (2)	490NTW00002	-
	J	EIA/TIA 568 standard	16.4 (5)	490NTW00005	
		(RJ45 connector at each end)	39.4 (12)	490NTW00012	-
		Straight shielded twisted pair cables,	6.6 (2)	490NTW00002U	-
		UL and CSA 22.1 approved (RJ45 connector at each end)	16.4 (5)	490NTW00005U	-
			39.4 (12)	490NTW00012U	-
	with	RJ45/PC USB port converter (2)	1.3 (0.4)	TSXCUSB485	-
Function	Med	ium	Length ft (m)	Reference	Weight oz (kg)
Iodbus serial link access	Prer	nium™ automation platform TSXSCY21601	-	XPSMCSCY	-
CANopen bus access		1 CANopen connection cables (fitted with: 1 SUB-D 9-pin female connector at each end)		TSXCANCADD03	-
3				TSXCANCADD1	-
	eaci			TSXCANCADD3	-
2			16.4 (5)	TSXCANCADD5	-
	2 C A	Nopen tap-off box	_	TSCCANTDM4	-
	3 Sta	andard CANopen cables	164 (50)	TSXCANCA50	-
			328 (100)	TSXCANCA100	-
			984 (300)	TSXCANCA300	-
Profibus bus access			328 (100)	TSXPBSCA100	-
			1312 (400)	TSXPBSCA400	-
Accessories (1)					
Regulated switch mode bower supply, single-phase	Nom	out voltage: 24…28.8 V ninal current: 10 A ninal power: 240 W		ABL8RPS24100	35.274 (1.000)

(1) To be ordered separately. (2) The converter **TSX CUSB485** is installed using **Driver Pack V2.3**. This "driver" is available on the Safety Suite V2 software pack or downloadable from our site: www.schneider-electric.com

Dimensions, mounting



(2) Metal adaptor for mounting on metal DIN 35 mm rail.



Preventa[™] configurable safety controllers type XPSMC

Emergency stop monitoring, with or without time delay, 1-channel wiring, with automatic start

Category 4 achieved with necessary precautions taken to eliminate input circuit anomalies. Wiring diagram



(1) Technical specifications for maximum rating of fuses, see page 2/126.
 (2) Only applicable to XPSMC32Ze.

Functional diagram



Key 0 - 1

tv = delay time

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Safety automation system solutions

Preventa[™] configurable safety controllers type XPSMC

Emergency stop monitoring, with or without time delay, 2-channel wiring, with start button





(1) Technical specifications for maximum rating of fuses, see page 2/126. (2) Only applicable to XPSMC32Ze.

Functional diagram



tv = delay time

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Preventa[™] configurable safety controllers type XPSMC

Two-hand control (type III-C conforming to EN 574-1)



(1) Technical specifications for maximum rating of fuses, see page 2/126.

(2) Only applicable to XPSMC32Z.

Functional diagram



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Preventa[™] configurable safety controllers type XPSMC

Guard monitoring with 1 safety limit switch Category 1 conforming to standard EN 954-1. Wiring diagram \sim 230 V 230 V + 24 V + 24 V Control outputs F1 (1) Guard closed F2 (1) Open S2 S1 Start ŀ (2) 13 23 H1 33 43 A1 C8 C7 C6 C5 C4 C3 C2 C1 117 132 11 12 13 116 XPS MC 24 V Sub-D 9 ко 🗖 μC 1 K1 | кз Г Logic μC 2 Chnl. 1 Chnl. 1 Chnl. 1 La Chnl. 1 Τ K4 [Chnl. 2 Chnl. 2 Chnl. 2 Chnl. 2 Chnl. 2 Chnl. 2 j. GND GND GND A2 01 02 04 05 06 14 24 34 44 03 Validation 0 V 0 V

Technical specifications for maximum rating of fuses, see page 2/126.
 Only applicable to XPSMC32Ze.

Functional diagrams



Rising edge monitored start



Falling edge monitored start



Start test = YES

Automatic start



Rising edge monitored start



Falling edge monitored start



2

Key 0

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Schneider						



Preventa[™] configurable safety controllers type XPSMC



ESC = external start conditions

EDM = external devices monitoring

(1) Technical specifications for maximum rating of fuses, see page 2/126. (2) Only applicable to XPSMC32Ze.

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Safety automation system solutions

Preventa[™] configurable safety controllers type XPSMC

Guard monitoring with 2 safety limit switches (continued)





Rising edge monitored start



Rising edge monitored start

Falling edge monitored start

Input Limit switch 1

Input Start

Input EDM

Output

Start-up

Guard

closed

No start-up

Guard

open

t < t sync

Guard

closed

t < t EDM



Falling edge monitored start



0 Key

EDM = external devices monitoring t EDM = maximum monitoring time of external devices t sync. = synchronization time

Wiring diagrams page 2/130 Introduction: Specifications: References Dimensions page 2/129 page 2/122 page 2/126 page 2/128

Preventa[™] configurable safety controllers type XPSMC



ESC = external start conditions

EDM = external devices monitoring

(1) Technical specifications for maximum rating of fuses, see page 2/126.

(2) Only applicable to XPSMC32Ze.

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Safety automation system solutions

Preventa[™] configurable safety controllers type XPSMC

Guard monitoring with 2 safety limit switches, with guard locking (continued)



Start test = YES Automatic start Start-up Guard Guard Guard open closed closed Input Limit switch 1 Input Limit switch 2 < t sync Input Locking Output No start-up

Rising edge monitored start



Rising edge monitored start



Falling edge monitored start



Falling edge monitored start



Key 0 - 1

t sync. = synchronization time

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2

Preventa[™] configurable safety controllers type XPSMC

Guard monitoring for injection presses and blowing machines Category 4 conforming to standard EN 954-1. Wiring diagram \sim 230 V 230 V + 24 V + 24 V Control outputs F1 (1) S4 Monitoring of second ≶ power circuit breaking device Open -Ċ ESC S2 S3 K01 K02 S1 |-Start EDM (2) 117 A1 C8 C7 C6 C5 C4 C3 C2 C1 ... |32 13 23 H1 33 43 13 116 11 12 14 15 16 XPS MC 0000 00000 Sub-D 9 Ter кз 📥 ко 📥 -μC 1 К1 📥 5 V Logic μC 2 Chnl. 1 Chnl. 1 🕞 Chnl. 1 Chnl. 1 Chnl. 1 Chnl. 1 本 К2 📥 K4 🗌 Chnl. 2 Chnl. 2 Chnl. 2 Chnl. 2 Chnl. 2 Chnl. 2 GND GND GND A2 01 02 03 04 05 06 14 24 34 44 K01 [K02[Channel 1 Channel 2 0 V 0 V

ESC = external start conditions

EDM = external devices monitoring

(1) Technical specifications for maximum rating of fuses, see page 2/126.

(2) Only applicable to XPSMC32Z.

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Schneider					

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GElectric

Safety automation system solutions

Preventa[™] configurable safety controllers type XPSMC

Guard monitoring for injection presses and blowing machines (continued)





Rising edge monitored start



Rising edge monitored start



Falling edge monitored start



Falling edge monitored start



- 1 Г Key 0 -

t sync. = synchronization time

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Schneider Electric					

Safety automation system solutions Preventa[™] configurable safety controllers

type XPSMC



ESC = external start conditions

EDM = external devices monitoring

Technical specifications for maximum rating of fuses, see page 2/126.
 Only applicable to XPSMC32Ze.

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Safety automation system solutions

Preventa[™] configurable safety controllers type XPSMC

Non-contact safety interlock (magnetic switch) monitoring (continued)





Rising edge monitored start



Falling edge monitored start



Key 0 ____'

EDM = external devices monitoring t EDM = maximum monitoring time of external devices t sync. = synchronization time

Start-up Magnet Magnet Magnet present not present present Input N.C. Input N.O. t < t sync. Input Start Input EDM Output t < t EDM No start-up

Falling edge monitored start

Rising edge monitored start



Introduction: page 2/122	Specifications: page 2/126	References: page 2/128	Dimensions: page 2/129	Wiring diagrams page 2/130	

Safety automation system solutions Preventa[™] configurable safety controllers

type XPSMC

Sensing mat monitoring

- Category 3 conforming to standard EN 954-1.
- Control outputs connected to a sensing mat cannot be used for other items.

Wiring diagram



ESC = external start conditions

EDM = external devices monitoring

(1) Technical specifications for maximum rating of fuses, see page 2/126.

(2) Only applicable to XPSMC32Ze.

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Safety automation system solutions Preventa[™] configurable safety controllers

type XPSMC

Sensing mat monitoring (continued)

Functional diagrams Start-up test

Automatic start



Rising edge monitored start



Falling edge monitored start



1 Key 0

EDM = external devices monitoring t EDM = maximum monitoring time of external devices

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Preventa[™] configurable safety controllers type XPSMC

Light curtain monitoring, relay output type



ESC = external start conditions

ESPE = electro-sensitive protection equipment OSSD1/OSSD2 = output signal switching device

(1) Technical specifications for maximum rating of fuses, see page 2/126.

(2) Only applicable to XPSMC32Z.

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Safety automation system solutions

Preventa[™] configurable safety controllers type XPSMC

Light curtain monitoring, relay output type (continued)



Automatic start





Rising edge monitored start



Rising edge monitored start



Falling edge monitored start



Falling edge monitored start

lagert	Rising edge	Light curtain bea made	ms 	Light curtain beam(s) broken	Light curtain beams made
Input OSSD 1				L	
Input OSSD 2				t <tsync.< td=""><td></td></tsync.<>	
Input Start					
Input EDM				J	
Output		► t <	t EDM		

Key 0 - 1

EDM = external devices monitoring

t EDM = maximum monitoring time of external devices t sync. = synchronization time

Introduction:	Specifications:	References:	Dimensions:	Wiring diagrams	
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Cabuaidan					



Preventa[™] configurable safety controllers type XPSMC

Light curtain monitoring, solid-state output type



ESC = external start conditions

ESPE = electro-sensitive protection equipment OSSD1/OSSD2 = output signal switching device

(1) Technical specifications for maximum rating of fuses, see page 2/126. (2) Only applicable to XPSMC32Ze.

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Safety automation system solutions

Preventa[™] configurable safety controllers type XPSMC

Light curtain monitoring, solid-state output type (continued)







Rising edge monitored start



Falling edge monitored start



Rising edge monitored start



Falling edge monitored start



Г Key 0 -

EDM = external devices monitoring

· 1

t EDM = maximum monitoring time of external devices t sync. = synchronization time

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~ 230 V

+ 24 V

44

0 V

34

Preventa[™] configurable safety controllers type XPSMC

Zero speed detection Category 4 conforming to standard EN 954-1. Wiring diagram \sim 230 V + 24 V Control F1 🛛 outputs (1) B2 (2) (3) A1 C8 C7 C6 C5 C4 C3 C2 C1 I2 I3 ... I16 117 ... 132 13 23 H1 33 43 11 XPS MC <u>ش</u> 0000 Те Sub-D 9 ко 📥 μC 1 КЗ 🗌 5 V Logic μC 2 Chnl. 1 Chnl. 1 本 Chnl. 1 - Chnl. 1 - Chnl. 1 - Chnl. 1 К4 Г Chnl. 2 Chnl. 2 L. Chnl. 2 🛓 Chnl. 2 🔄 Chnl. 2 📑 Chnl. 2 🛛 GND GND GND 06 14 A2 01 02 03 04 05 24 K01 K02 Ŕ Ń

 0 V
 I

 The zero speed signal (validation of the output) will be activated only if:

 1: one input is in a high state,

3: the frequency of the two inputs is less than the stated value.

(1) Technical specifications for maximum rating of fuses, see page 2/126.

(2) Only applicable to XPSMC32Ze.
 (3) Only one "Zero speed detection" function can be connected to an XPSMC controller, and only to the inputs i1 and i2.

Channel 1

Functional diagram

Sensor control



Channel 2

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Dynamic monitoring of hydraulic valves on linear presses



ESC = external start conditions

(1) Technical specifications for maximum rating of fuses, see page 2/126. (2) Only applicable to XPSMC32Ze.

Functional diagrams



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Monitoring safety stop at top dead center on eccentric press

Category 4 conforming to standard EN 954-1.

This function consists of several monitoring modes including:

- □ safety stop at top dead center (1),
- monitoring braking travel,

as an option, dynamic monitoring of doubled-bodied solenoid valves (2).

Wiring diagram



S8: Operating modes:

- 0 stop, 1 - adjust,
- 2 jog,
- 3 automatic continuous run.

OTS = Limit switch associated with top dead center (TDC)

UN = Limit switch associated with bottom dead center (BDC)

PSV = safety valve

(3) Technical specifications for maximum rating of fuses, see page 2/126.

(4) Only applicable to XPSMC32Z.

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Schneider Gelectric

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Safety automation system solutions

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Monitoring safety stop at top dead center on eccentric press (continued)



Key 0 -

OTS = Limit switch associated with top dead center (TDC)

UN = Limit switch associated with bottom dead center (BDC)

PSV = safety valve t sync = synchronization time

-1

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Functional diagram in jog mode

Safety automation system solutions Preventa[™] configurable safety controllers

type XPSMC

Monitoring safety stop at top dead center on eccentric press (continued)

				tart		
	stop J Reset	Jog mov	ement Stop at TDC	Closing of press	Automatic raised maintain	Braking Stop
Mushroom Input - N.C						
Input - N.C						
Mushroom head 2 Input - N.C						
Input - Emergency stop			-	<u> </u>		
Channel 1 Input - Emergency stop						
Channel 2						
Input - OTS Input - UN			-	No-load running		
Input - PSV 1						
Input - PSV 2				t < t sync.	t < t sync.	
Continuous deactivated						
Input Reset Input						
Stop selector Input Adjust selector	Stop					
Input Jog selector		Jog				
Input Continuous run foot switch (embedded tools)						
Output - Valve 1						
Output - Valve 2						
						Braking
Output - Emergency stop	—–––––					

0 ___ 1 Key

BDC = Bottom Dead Center

TDC = Top Dead Center

OTS = Limit switch associated with top dead center (TDC) VN = Limit switch associated with bottom dead center (FDC)PSV = safety valvet sync = synchronization time

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Safety automation system solutions

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Monitoring safety stop at top dead center on eccentric press (continued) Functional diagram in automatic continuous run mode Emergency Selector Start main stop Continuous movement Start Continuous stop Reset deactivated run Stop at TDC Continuous run Braking Stop at TDC Input - N.O. Mushroom head 1 Input - N.C. Input - N.O. Mushroom head 2 Input - N.C. t < 500 ms • Input - Emergency stop Channel 1 Input - Emergency stop Channel 2 Input - OTS No-load running Input - UN Input - PSV 1 Input - PSV 2 t < t sync. t < t sync. Input Continuous deactivated Input Reset Input Stop Stop selector Input Adjust selector Input Jog selector Input Continuous Continuous run foot switch run (embedded tools) Output - Valve 1 Output - Valve 2 Braking Output - Emergency stop

Key 0 - 1

BDC = Bottom Dead Center TDC = Top Dead Center

OTS = Limit switch associated with top dead center (TDC) UN = Limit switch associated with bottom dead center (BDC) PSV = safety valve

t sync = synchronization time

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Safety time delays Category 4 conforming to standard EN 954-1. Wiring diagram \sim 230 V \sim 230 V + 24 V + 24 V Control F1 *(1)* outputs Output signal Kx (t) S1 Control (2) signal 117 A1 C8 C7 C6 C5 C4 C3 C2 C1 11 l2 ... l16 132 13 23 H1 33 43 XPS MC ٢ 0000 24 V Sub-D 9 Ter K1 ко 📥 -μC 1 кз Г 5 V Logic μC 2 Chnl. 1 Ghnl. 1 Chnl. 1 Chnl. 1 4 Chnl. 1 Chnl. 1 F K2 🗌 K4 [Chnl. 2 Chnl. 2 Chnl. 2 Chnl. 2 Chnl. 2 Ŀ GND GND GND 06 A2 03 04 34 44 01 02 05 14 24 Output signal Kx (t) 0 V 0 V (1) Technical specifications for maximum rating of fuses, see page 2/126. (2) Only applicable to XPSMC32Z **Functional diagrams** Control signal Functions: t EV EV = On-delay AV = Off-delay Output signal for EV function EW = Pulse on energization AW = Pulse on de-energization Output signal for AV function t AV Output signal for EW function t EW Output signal for AW function t AW On-delay **Pulse on energization** Start-up Start-up Input Input Control signal Control signal Output Output Time delay Pulse time Off-delay Pulse on de-energization Start-up Start-up Input Input Control signal . Control signal Output Output Pulse time Time delay

1

Key

0

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2





ESC = external start conditions

EDM = external devices monitoring

ESPE = electro-sensitive protection equipment

OSSD1/OSSD2 = output signal switching device

(1) Technical specifications for maximum rating of fuses, see page 2/126.

(2) Only applicable to XPSMC32Ze.

(3) A light curtain with relay outputs can also be used with the "Muting" function.

(4) Only one "Muting" function can be connected to an XPSMC controller.

(5) Example using 2 safety outputs to control 2 contactors linked to one safety function.

Functional diagram

	Start necessary	ESPE protected	F		g" activated zone jumpere	ed	ESPE protected	"Muting" error	Outputs Stop		Free passage activated Protected zone	Start necessary	ESPE protected
Input - OSSD 1				1		1					jumpered		
Input - Start													
Input - "Muting" A1								_					
Input - "Muting" B1		t < t sync.						t < t sync.					
Input - "Muting" A2		-1		 [
Input - "Muting" B2 Input				•	t <tsync.< td=""><td></td><td>p</td><td></td><td></td><td></td><td></td><td></td><td></td></tsync.<>		p						
Free passage				- 1	14								
Output (H1) "Muting" indicator light			-	t	< t M	•				•	t < t F		
Output - Channel 2 Key 0	1			l inte	cted zone rrupted nuting"					4	Protected zone interrupted free passage		
tM = "Muting" tir		on timo											

= free passage activation time

t sync. = synchronization time

Enabling switch monitoring, 2 contact type

Safety automation system solutions

Preventa[™] configurable safety controllers type XPSMC



ко 📥 ---

Chnl. 1

Chnl. 2

К01 Г

01

0 V

34 44

 \sim 230 V

2

Deactivated

13 23 H1 33 43

кз 📛-

К4 📥

Switching of 2 contact enabling switch:

NO 13-14 NC 21-22

Key

К1 📥-

К2 —

Activated

14 24 + 24 V

(1) Technical specifications for maximum rating of fuses, see page 2/126. (2) Only applicable to XPSMC32Z.

μC 1

μC 2

GND GND GND

24 V

5 V

Logic

ы Б

本

A2

<u>0 V</u>

Functional diagram

	Start-up Enabling switch Position 1	Enabling switch Position 0	Enabling switch Position 1	Enabling switch Position 2	Enabling switch Position 1	Enabling switch Position 0
Input Closing enabling switch 13-14		1				
Closing enabling switch 13-14		t < t sync.				
Input Opening enabling switch 21-22						
Output Key 0 1			t < tZ		1	
t Z = enabling time						

16

Chnl. 2

03

Chnl. 2

₿

XPS MC

Chnl. 1

E

02

Channel 2

Chnl. 2

囱 K02

- 1

Channel 1

Ter

Chnl. 2

05

Chnl. 2

06

0000 00000 Sub-D 9

04

t Z = enabling time

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Enabling switch monitoring, 3 contact type Category 4 conforming to standard EN 954-1. Wiring diagram \sim 230 V \sim 230 V + 24 V + 24 V Control Switching of 3 contact F1 (1) outputs enabling switch: NO 1-2 NC 5-6 NO 3-4 S4 NO NC NO 012 ſ NO 1-2 Validation NC 5-6 ~ ŝ NO 3-4 Kev Activated Deactivated (2) 117 132 13 23 H1 33 43 A1 C8 C7 C6 C5 C4 C3 C2 C1 I1 I2 I3 I4 16 17 18 19 ... |116 15 XPS MC 0000 <u></u> Sub-D 9 Ter μC 1 ко 🗖 ٦., К1 []кз Г 5 V Logic μC 2 Chnl. 1 Chnl. 1 Chnl. 1 Chnl. 1 🔤 Chnl. 1 Chnl. 1 К2 📥 K4 [Chnl. 2 🛛 Chnl. 2 Chnl. 2 Chnl. 2 Chnl. 2 Chnl. 2 A2 GND GND GND 01 02 03 04 O5 06 14 24 34 44 K01 [ко2 Г ß Channel 1 Channel 2 0 V

<u>0 V</u>

(1) Technical specifications for maximum rating of fuses, see page 2/126. (2) Only applicable to XPSMC32Ze.

Functional diagram



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Preventa[™] configurable safety controllers type XPSMC

Hydraulic press Category 4 conforming to standard EN 954-1. Wiring diagram \sim 230 V ~ 230 V + 24 V + 24 V F2 (1) F1 (1) **B**3 Closing S1 S2 Opening S3 012 command command احل Emer stop R2 S3 S5 S4 **S**5 159 KM1 þ þ þ 1-|--2H |-<u>`</u> 2H AUF Кx от UT NWK A1 C8 C7 C6 C5 C4 C3 C2 C1 14 15 16 17 18 I9 I10 I11 I12 I13 I14 I15 116 13 23 H1 33 43 13 11 12 (2) 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 XPS MC 0000 00000 Sub-D 9 К1 + ۱ ش кз 📥 ко 📥 μC 1 Ter 5 V Logic μC 2 к₂ ____-, -\ K4 [____ 本 Chnl. 1 Chnl. 1 🔤 Chnl. 1 🔤 Chnl. 1 Chnl. 1 🔄 Chnl. To emergency stop Chnl. 2 Chnl. 2 Chnl. 2 - Chnl. 2 Chnl. 2 ⊒⊵ Chnl. 2 🔤 GND GND GND A2 01 02 O3 04 05 06 14 24 34 44 لامر FM1 虔 Y1 [¥ Y2 Л X1 SM1 Н1⊘ OFF-Stop Closing Closing Opening X2 SM2 |-ON-Run KM1 KM1 Overtravel Opening ΟK 0 V 0 V Ν

Ν

1 - adjust,

S8: Operating modes: 0 - stop,

AUF = open, to be used in inching.

OT = Limit switch associated with top dead center (TDC).

UT = Limit switch associated with bottom dead center (BDC).

NWK = overtravel monitoring.

2 - jog. (1) Technical specifications for maximum rating of fuses, see page 2/126.

(2) Only applicable to XPSMC32Ze (117...132).

Functional diagram

Hydraulic press, adjust mode



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Hydraulic press

Functional diagrams (continued)

Hydraulic press, mode = jog, with overtravel monitoring and opening and closing control coming from the automation platform



Hydraulic press, mode = automatic, with overtravel monitoring and opening and closing control coming from the automation platform





Hydraulic press, mode = jog





Hydraulic press, mode = automatic

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Eccentric press

Category 4 conforming to standard EN 954-1.





Ν

S8: Operating modes:

- 0 stop,
- 1 adjust,
- 2 jog,
- 3 automatic continuous run. OTS = Limit switch associated with top dead center (TDC)
- UN = Limit switch associated with bottom dead center (BDC)

PSV = safety valve

- B1 = sensor at tooth wheel in cam switch mechanism.
- (1) Technical specifications for maximum rating of fuses, see page 2/126.

(2) Only applicable to XPSMC32Z (117...132).

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Schneider

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Eccentric press (c	ontinued)								
Functional diagrams									
Eccentric press: Jog									
Emergency stop Adjust mode									
Jog mode									
Continuous mode									
Automatic continuous mode									
Osfatu davias u start									
Safety device + start Output(1)		t < t sync.							
Shaft monitoring sensor									
OTS									
UN									
PSV1									
PSV2									
Continuous function deactivated	(1)								
Reset Output									
Jupul		1 🖵	t <tsync.< td=""><td></td><td></td><td>t < t sync.</td><td></td><td>•</td><td></td></tsync.<>			t < t sync.		•	
						- 1	I		
Eccentric press: Continue	ous								
Emergency stop Adjust mode									
Jog mode									
Continuous mode Automatic continuous mode									
o (, , , , , , , , , , , , , , , , , ,									
Safety device + start									
Safety device for automatic conti	nuous mode (1)	t < t tot.							
Shaft monitoring sensor					-				
OTS			-		1				
UN				-					
PSV1			_						
PSV2	(1)								
Continuous function deactivated Reset	(1)								
Output								┓↓ ↓	
•		► ►	t <tsync. ◄</tsync. 				t < t sync		
-									
Eccentric press: automat	ic continuous								
Emergency stop									
Adjust mode									
Jog mode									
Continuous mode									
Automatic continuous mode									
Safety device + start									
Safety device for automatic continuous mode							-		
continuous mode		t < t tot.							
Shaft monitoring sensor									
OTS					1				_
UN					<u> </u>				
PSV1				-					
PSV2			_						
Continuous function deactivated	(1)								
Reset									
Output			t < t sync.				t < t sync.	┓┥┥┥	
		►					· · · SyriC.		
4									
Key 0 1	t sync. = synch t tot. = dead tin	nronization time	9						
	(1) Not used.								
	(1) NOLUSED.								

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Technical specifications for maximum rating of fuses, see page 2/126.
 Only applicable to XPSMC32Ze.



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(1) Technical specifications for maximum rating of fuses, see page 2/126. (2) Only applicable to XPSMC32Ze.

Functional diagrams



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Technical specifications for maximum rating of fuses, see page 2/126.
 Only applicable to XPSMC32Ze.

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2/18	V	2/33
2/18 2/33 2/51	V	2/33 2/51
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2/18 2/33 2/51 2/129 2/129 2/129 2/18 2/33 2/51 2/129	V VW3A8306R VW3A8306R03 VW3A8306R10 VW3A8306R30	2/33 2/51 2/33 2/33 2/33 2/129 2/18 2/33
2/18 2/33 2/51 2/129 2/129 2/18 2/33 2/51 2/129 2/129 2/129 2/129 2/129	V VW3A8306R03 VW3A8306R03 VW3A8306R10 VW3A8306R30 VW3A8306RC	2/33 2/51 2/33 2/33 2/33 2/129 2/129
2/18 2/33 2/51 2/129 2/129 2/129 2/18 2/33 2/51 2/129 2/129 2/18 2/33 2/51	V VW3A8306R03 VW3A8306R03 VW3A8306R10 VW3A8306R30 VW3A8306RC	2/33 2/51 2/33 2/33 2/129 2/129 2/18 2/33 2/51
2/18 2/33 2/51 2/129 2/129 2/18 2/33 2/51 2/129 2/129 2/129 2/129 2/129 2/129 2/129 2/129	V VW3A8306R03 VW3A8306R03 VW3A8306R10 VW3A8306R30 VW3A8306RC	2/33 2/51 2/33 2/33 2/33 2/129 2/18 2/33
2/18 2/33 2/51 2/129 2/129 2/129 2/18 2/33 2/51 2/129 2/129 2/18 2/33 2/51	V VW3A8306R03 VW3A8306R03 VW3A8306R10 VW3A8306R30 VW3A8306RC	2/33 2/51 2/33 2/33 2/129 2/129 2/129 2/129 2/129 2/12 2/17
2/18 2/33 2/51 2/129 2/129 2/18 2/33 2/51 2/129 2/129 2/129 2/129 2/129 2/129 2/129 2/129 2/129 2/129 2/129	V VW3A8306R03 VW3A8306R03 VW3A8306R10 VW3A8306R30 VW3A8306RC	2/33 2/51 2/33 2/33 2/129 2/129 2/18 2/33 2/51 2/17 2/32 2/50 2/17
2/18 2/33 2/51 2/129	V VW3A8306R03 VW3A8306R03 VW3A8306R10 VW3A8306R30 VW3A8306RC X XBTGT2130	2/33 2/51 2/33 2/33 2/33 2/129 2/18 2/33 2/51 2/17 2/32 2/50 2/17 2/32
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