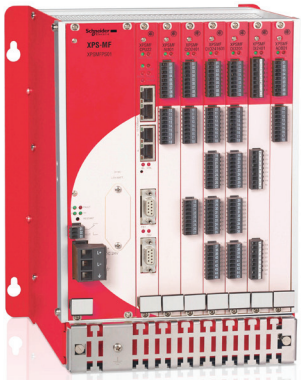
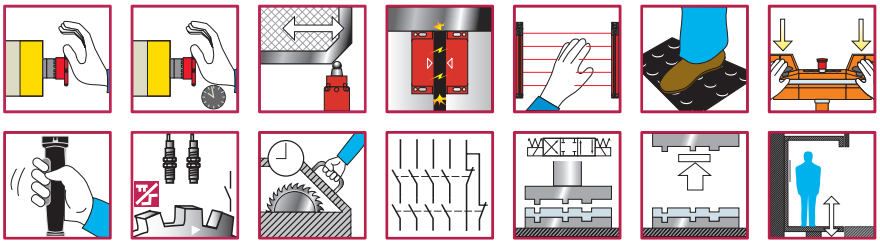
Preventa safety modular PLC

XPSMF60

Catalogue

January 2015





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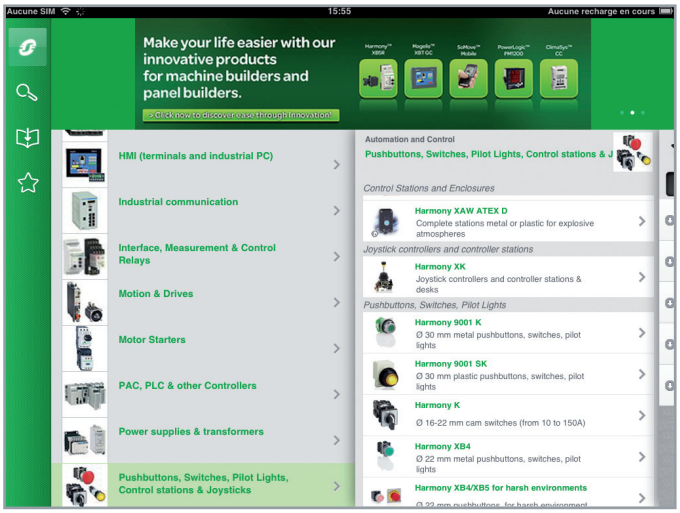

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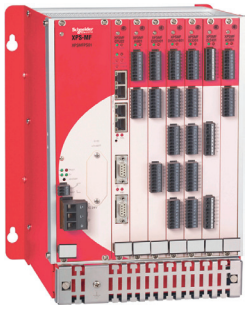
Preventa safety modular PLC
Type XPSMF60

Compact safety PLCs



Modular safety PLCs

Safety remote input/output modules

Preventa compact/Modular Safety PLCs and remote I/O 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 safety PLCs and remote I/O are intended for use in safety related parts of control systems.

They can manage up to category 4 performance level e EN/ISO 13849-1, SIL 3 (safety integrity level) EN/IEC 61508 or EN/IEC 62061.

Safety PLCs

In order to meet safety requirements, the compact/modular safety PLCs incorporate two essential functions (**Redundancy** and **Self-monitoring**).

In addition uses **SafeEthernet** safe communications protocol between the safety PLCs and safe remote I/O modules.

Redundancy

- The double or triple *(1)* processors integrated in the compact and modular safety PLCs analyses 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 processors and compared in real-time.

Self-monitoring (Watchdog)

The safety PLCs and remote I/O continuously monitor the data processing cycle and the execution of tasks, and intervenes if the cycle time does not conform to the predefined values.

Integrated switch

The integrated 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 and remote I/O on the Ethernet network, whilst avoiding signal collisions and excessive amounts of data on the network.

Line control for safety PLCs and safety remote I/O modules

Line control is a means of short circuit and line break monitoring. Using line control outputs enables category 4 performance level e EN/ISO 13849-1, SIL 3 (safety integrity level) EN/IEC 61508 or EN/IEC 62061 to be achieved.

The line control outputs provide a high signal with a very short low signal enabling a wiring fault (short-circuit, line break) to be identified on the inputs of the safety PLCs and safety remote I/O.

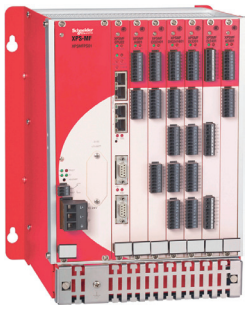
Programming automated safety functions

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) With XPSMF40 PLC only

Preventa safety modular PLC
Type XPSMF60

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, performance level "e" EN/ISO 13849-1, and up to SIL 3 EN/IEC 61508 or EN/IEC 62061.



User memory	Application	500 kB
	Data	500 kB
Response time		Depending on size of application
Maximum consumption		30 A max., 32 A external fuse
Supply		External ⎓ 24 V supply (with separate protection conforming to EN/IEC 60950, SELV (Safety Extra Low Voltage) or PELV (Protection Extra Low Voltage) rated)

Inputs	**Digital**	Number of channels	–	–	–	**24**, electrically isolated	**32** *(2)*, electrically isolated	**24** *(2)*, electrically isolated	–
		Current at state 0	–	–	–	–	1 mA at 5 V	1 mA at 5 V	–
		Current at state 1	–	–	–	≥ 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	–
	Analogue	Number of channels	**8** single-pole or **4** 2-pole, configurable, electrically isolated	–	–	–	–	–	–
		Range: voltage/ current	- 10…+ 10 V/0…20 mA *(1)*	–	–	–	–	–	–
	Counting	Number of channels	–		**2**	–	–	–	–
		Current	–	–	0.8 A at ⎓ 3.3 V 0.1 A at ⎓ 5 V 0.1 A + output current at ⎓ 24 V	–	–	–	–

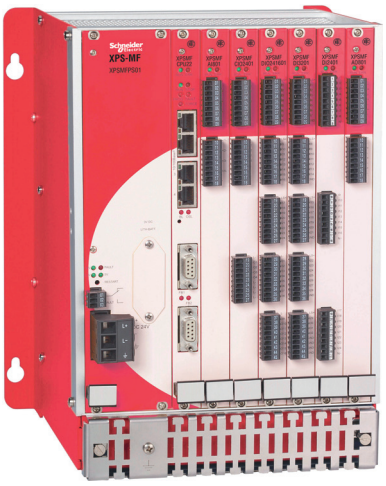
Outputs	**Digital**	Number of channels	–	–	**4**	–	–	**16** *(3)*, electrically isolated	–
		Output current	–	–	0.5 A per channel, 2 A max. per "in rack" card	–	–	2 A per channel at 30 °C, 8 A max. at 30 °C per "in rack" card	–
	Analogue	Number of channels	–	**8**, electrically isolated	–	–	–	–	–
		Range: voltage/ current	–	- 10…10 V / 0…20 mA	–	–	–	–	–
	Relay	Number	–	–	–	–	–	–	**8**
		Switching voltage	–	–	–	–	–	–	⎓ 6…250 V
	Line control		–	–	–	–	–	*(3)*	–

Input/output connections	Removable screw terminals are provided with "in rack" I/O cards and Power supply module
Communication	■ **Safe communication** using SafeEthernet protocol
	■ **Non safe communication** using Modbus TCP/IP protocol, server (slave)
	Non safety using Modbus RTU protocol, slave (RS 485)
	Non safety using PROFIBUS DP protocol, (V0 slave)
Safety PLC type	**XPSMFGEH01 (rack) + XPSMFPS01 (power supply) + XPSMFCPU22 (central processing unit) + "in rack" I/O cards**
See page	4

"In rack" card type	**XPSMFAI801**	**XPSMFAO801**	**XPSMFCIO2401**	**XPSMFDI2401**	**XPSMFDI3201**	**XPSMFDIO241601**	**XPSMFDO801**
See page	8	9	9	10	10	11	11

(1) With 250 Ω or 500 Ω shunt. (2) Digital inputs can be supplied by the line control outputs of the same I/O card. (3) The digital outputs (n° 1… n° 16) can be configured as line control outputs.

Preventa safety modular PLC
Type XPSMF60
Rack, power supply and CPU



XPSMF60

Presentation

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.

Modularity

The safety PLC **XPSMF60** is a modular system comprising 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 catalogue 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	
	Type	Details
Metal rack XPSMFGEH01 with back plane bus assuring electrical connection of components installed + metal securing plate for shielded cables (EMC), two cooling fans **+** **a power supply module (⎓ 24 V) XPSMFPS01**, **+ a central processing unit XPSMFCPU22** with 4 x RJ45 integrated switched Ethernet 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) and in addition a SUB-D (FB2) connector for communication on Modbus serial (RTU)	**XPSMFAI801**	8 single-pole analogue inputs or 4 2-pole analogue inputs
	XPSMFAO801	8 analogue outputs
	XPSMFCIO2401	2 counting inputs, 4 digital outputs
	XPSMFDI2401	24 digital inputs (⎓ 110 V / ∿ 127 V)
	XPSMFDI3201	32 digital inputs
	XPSMFDIO241601	24 digital inputs, 16 digital outputs
	XPSMFDO801	8 relay outputs (≂ 6…250 V)

Preventa safety modular PLC
Type XPSMF60
I/O cards


XPSMFDI2401


XPSMFDI3201


XPSMFAI801


XPSMFCIO2401


XPSMFDIO241601


XPSMFAO801


XPSMFDO801

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 below indicate the number of inputs and outputs available for connection to the machines to be monitored.

Digital inputs cards *(1)*

- **XPSMFDI2401**: 24 Digital inputs
- **XPSMFDI3201**: 32 Digital inputs

Analogue input card *(1) (2)*

- **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

Mixed I/O cards *(1)*

- **XPSMFCIO2401:**
  - 2 Counting inputs
    - Incremental encoders (⎓ 5 V),
    - Sensors 2/3-wire PNP/NPN (⎓ 24 V)
  - 4 Digital outputs

- **XPSMFDIO241601:**
  - 24 digital outputs
  - 16 digital outputs

Analogue output card *(1) (2)*

- **XPSMFAO801:** 8 analog outputs for function:
  - Closed circuit scanning of output channels,
  - Single-pole measuring of 0 to 10 V voltages,
  - Measuring, using shunt, 0/4 to 20 mA currents (with 500 Ω external resistor)

Relay output card *(1) (2)*

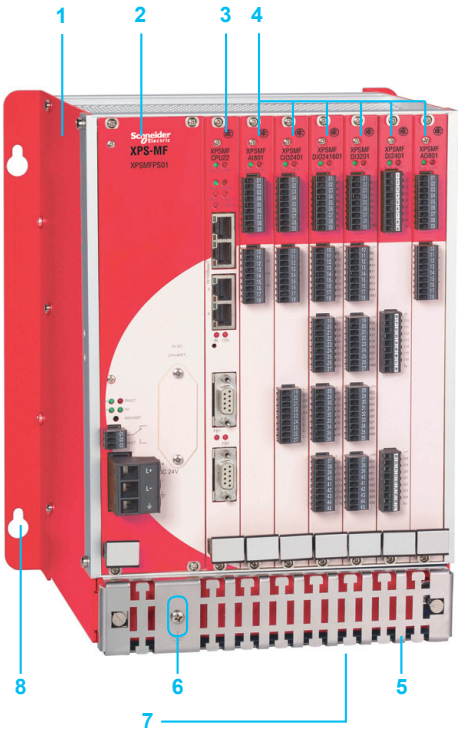
- **XPSMFDO801:** 8 relay outputs

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 300 m, short-circuit unused analogue inputs.

Preventa safety modular PLC
Type XPSMF60
Rack, power supply and CPU

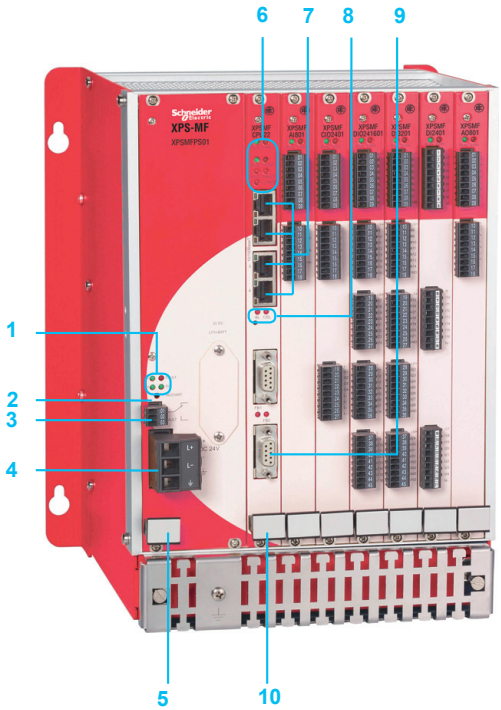


Description

Modular safety PLC

Modular assembly comprising:

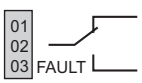
1 A metal rack **XPSMFGEH01**.
2 A ⎓ 24 V power supply module **XPSMFPS01**.
3 A central processing unit **XPSMFCPU22**.
4 Six optional “in rack” I/O cards (back plane bus assures the electrical connection of “in rack” cards installed, the power supply module and the CPU).
5 A metal plate for securing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



Power supply module XPSMFPS01 and Central processing unit XPSMFCPU22 comprising:

1 Four voltage status LEDs (FAULT, 24 V, 3.3 V or 5 V).
2 A RESTART button (accessible using fine pointed tool).
3 A 3-pole terminal block (3 captive screws) for “Fault contact” function *(1)*.
4 A ⎓ 24 V supply terminal block, including earth connection *(2)*.
5 A grip to assist installation/removal of the power supply module.
6 Seven process status LEDs.
7 Four 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 server protocol).
8 Two process status LEDs.
9 A SUB-D 9-pin connector (FB2) for connection on Modbus serial (RTU) (FB1 not used), with process status LED.
10 A grip to assist installation/removal of the CPU

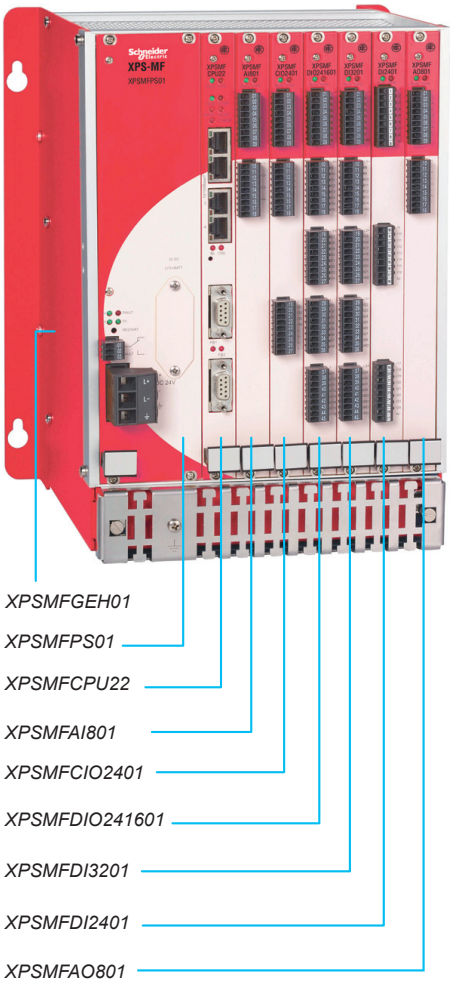
*(1) “**Fault contact**” function: the power supply module incorporates a volt-free changeover contact. Operating errors occurring in the system are read and displayed by the LEDs. The errors are analysed on the programming PC:*



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.

Preventa safety modular PLC
Type XPSMF60
Rack, power supply and CPU



Modular PLC (⎓ 24 V supply)

Minimum basic equipment

Description	Reference	Weight kg/ *lb*
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**	0.820/ *1.808*
CPU *(1)* **fitted with:** □ 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 □ 1 x SUB-D 9-pin port (FB2) for access to Modbus serial (RTU)	**XPSMFCPU22**	0.280/ *0.617*

Optional "in rack" I/O cards

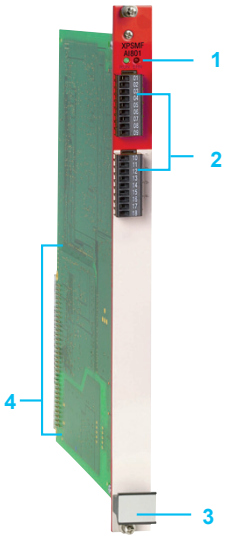
Description	Functions		Reference	Weight kg/ *lb*
	Inputs	Outputs		
"In rack" I/O card *(1)*	Analogue: 8 single-pole or 4 2-pole, configurable	–	**XPSMFAI801**	0.240/ *0.529*
	–	8 analogue	**XPSMFAO801**	0.280/ *0.617*
	2 counting	4 digital	**XPSMFCIO2401**	0.260/ *0.573*
	24 digital (⎓ 110 V / ∿ 127 V)	–	**XPSMFDI2401**	0.260/ *0.573*
	32 digital	–	**XPSMFDI3201**	0.260/ *0.573*
	24 digital	16 digital *(2)*	**XPSMFDIO241601**	0.260/ *0.573*
	–	8 relay ∿ 6…250 V	**XPSMFDO801**	0.600/ *1.323*

Accessories for modular PLC

Description	For use with	Reference	Weight kg/ *lb*
Covering plate	Unused "in rack" I/O card slots	**XPSMFBLK**	–

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

Preventa safety modular PLC
Type XPSMF60
"In rack" analogue input card



XPSMFAI801

Presentation

The "in rack" analogue input card **XPSMFAI801** incorporates 8 analogue 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 values *(1)*

Number	Type	Voltage	Current	Value range	Example
8 inputs	Single-pole	± 10 V	–	± 1000	Single-pole measuring of 0 to 10 V voltages
		–	0...20 mA	0...1000 *(2)* 0...2000 *(3)*	Measuring 0 to 20 mA currents using shunt
4 inputs	2-pole	± 10 V	–	± 1000	Closed circuit scanning of input channels

Description

On the front face 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**.

References

Description	Number of channels	Voltage Current	Reference	Weight kg/ *lb*
Analogue input card	8 single-pole	± 10 V 0...20 mA *(1)*	**XPSMFAI801**	0.240/ *0.529*
	4 2-pole	± 10 V		

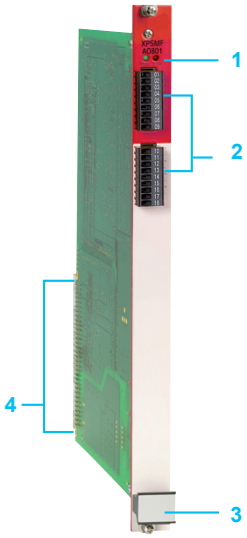
(1) The unused input channels must be short-circuited on the reference pole (L-).
(2) With 250 Ω external shunt.
(3) With 500 Ω external shunt.
(4) Removable screw terminals are provided with the "in rack" card **XPSMFAI801**.

Preventa safety modular PLC

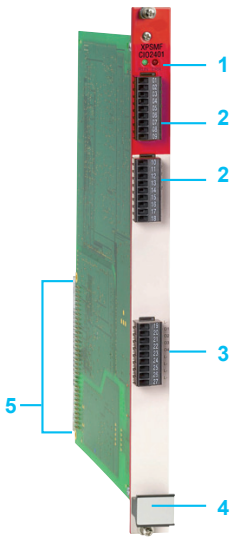
Type XPSMF60

“In rack” analogue output card

“In rack” mixed card: counting inputs/digital outputs



XPSMFAO801



XPSMFCIO2401

Presentation

The analogue output card **XPSMFAO801** incorporates 8 configurable analogue outputs (0…20 mA, 0…+ 10 V ou - 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				
Type	Voltage	Current	Value range	
			Half scale (FS1000)	Full scale (FS2000)
8 analogue outputs	–	0…20 mA	0...+ 1000	0...+ 2000
	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.

Description

On the front face of the card:

1 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**.

References

Description	Number of channels	Configuration		Reference	Weight kg/ *lb*
		Current	Voltage		
Analogue output card	8	0...20 mA	- 10…+ 10 V	**XPSMFAO801**	0.280/ *0.617*

Presentation

The mixed counting input and digital output card **XPSMFCIO2401** incorporates:
□ 2x 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.

Description

On the front face of the card:

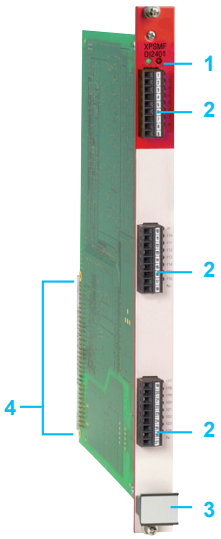
1 Two process status LEDs (RUN, ERR).
2 Two removable screw terminal blocks (9 terminals per block) for connection of inputs *(1)*.
3 One removable screw terminal block (9 terminals) for connection of outputs *(1)* with four output status LEDs.
4 Grip to assist installation/removal.
5 **On the rear**: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

References

Description	Characteristics	Reference	Weight kg/ *lb*
Mixed I/O card	■ 2 x 24-bit counting inputs, configurable: 5 V…24 V ■ 4 digital outputs	**XPSMFCIO2401**	0.260/ *0.573*

(1) Removable screw terminals are provided with the “in rack” card.

Preventa safety modular PLC
Type XPSMF60
"In rack" digital input cards



XPSMFDI2401

Presentation

The digital input card **XPSMFDI2401** incorporates 24 ⎓ 110 / ∿ 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.

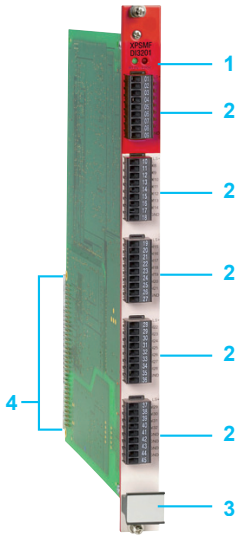
Description

On the front face 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**.

References

Description	Characteristics	Reference	Weight kg/ *lb*
Input card	24 digital inputs ⎓ 110 V / ∿ 127 V	**XPSMFDI2401**	0.260/ *0.573*



XPSMFDI3201

Presentation

The digital input card **XPSMFDI3201** 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.

Description

On the front face of the card:

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

References

Description	Characteristics	Reference	Weight kg/ *lb*
Input card	32 digital inputs	**XPSMFDI3201**	0.260/ *0.573*

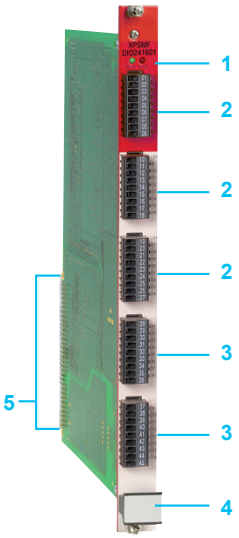
(1) Removable screw terminals are provided with the "in rack" card.

Preventa safety modular PLC

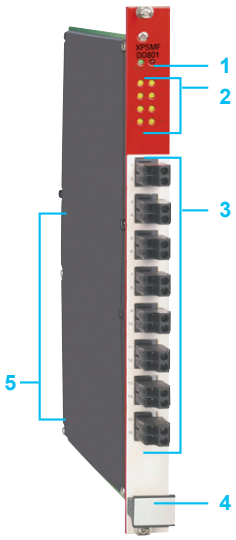
Type XPSMF60

“In rack” digital I/O card

“In rack” relay output card



XPSMFDIO241601



XPSMFDO801

Presentation

The digital I/O card **XPSMFDIO241601** 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.

Description

On the front face 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 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**

References

Description	Characteristics	Reference	Weight kg/ *lb*
I/O card	■ 24 digital inputs ■ 16 digital outputs, configurable for line control	**XPSMFDIO241601**	0.260/ *0.573*

Presentation

The relay output card **XPSMFDO801** 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.

Description

On the front face 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**.

References

Description	Characteristics	Reference	Weight kg/ *lb*
Output card	8 relay outputs ≂ 6 V…250 V	**XPSMFDO801**	0.600/ *1.323*

(1) Removable screw terminals are provided with the “in rack” card.

Preventa safety modular PLC
Type XPSMF60
Communication on network and bus

Presentation

To communicate, Preventa modular safety PLC **XPSMF60** is fitted with:
- Integrated 4 RJ45 Ethernet switched ports for transfer Safety and Non-safety related data (Safety Related using SafeEthernet protocol, Non-Safety Related using Modbus TCP/IP protocol),
- 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.

Communication on Ethernet network			Communication on fieldbus	
Port (number x type)	**SafeEthernet protocol: safe communication**	**Modbus TCP/IP protocol: non safe communication**	**Modbus serial (RTU) protocol**	**PROFIBUS DP protocol**
4 x RJ45	yes	yes	yes (slave) / 1 x SUB-D (9-pin)	no

Preventa safety modular PLC
Type XPSMF60
Communication on network and bus

Characteristics

Protocol			**SafeEthernet**
Compatibility with modular safety PLC			**XPSMFCPU22 (central processing unit of modular PLC XPSMF60)**
Transmission	Speed (Baud rate)		100 Mbps Half duplex, 10 Mbps Full duplex, Autonegotiation
	Communication 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		Modbus TCP/IP
			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
Bus type			**Modbus serial (RTU)**
Compatibility			**XPSMFCPU22 (CPU of modular PLC)**
Serial link port		Number and type	1 x SUB-D 9-pin female (FB2)
		Master/Slave	Slave
Addressing			122 slave addresses. Addressing range: 1…247
Medium			Shielded twisted pair cable
Physical layer			RS 485
Services			13 Modbus functions (reading/writing of bits and words, event counters, connection events, 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, 38 400, 19 200, 9600, 4800, 2400, 1200, 600, 300. Default value: 57 600
Elements	**Parity**		None. Odd. Even. Default value: even
	Stop bit		Standard. 1 stop bit. 2 stop bits. Default value: standard

Programming software
Type XPSMFWIN
for Preventa compact & modular safety PLCs XPSMF

Presentation

Conforming to standard IEC 61131-3, programming software **XPSMFWIN** is designed for programming all safety PLCs **XPSMF** and safety remote I/O modules.

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.

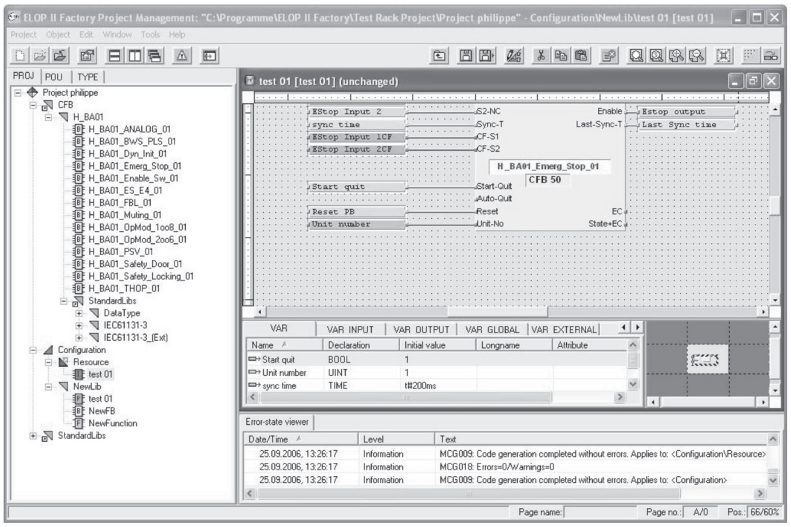
Using the **XPSMFWIN** software, it is possible to program complete systems comprising several safety PLCs and safety remote I/O modules.
The conditions detailed in the software manual must be adhered to and a complete report accompanying the certificate should be established.

Reference

■ Reference **SSV1XPSMFWIN** is the full version of software **XPSMFWIN** version 4.1 and must be installed if no previous version of this software has been installed.

Description	Operating system	Composition	Language	Reference	Weight kg/ *lb*
Configuration software XPSMFWIN for programming compact XPSMF40●●, XPSMF3● and modular XPSMF60 safety PLCs	Windows 2000, Windows XP	CD-ROM + user manual	English, German, French	**SSV1XPSMFWIN**	0.520/ *1.146*

Installation



Software XPSMFWIN: project management

Software **XPSMFWIN** uses an electronic key (dongle) for protection against unauthorised 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 recognise 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 colours minimum, 8 Mb XGA, 1280 x 1024 True colour 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
Type XPSMFWIN
for Preventa compact & modular safety PLCs XPSMF

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.

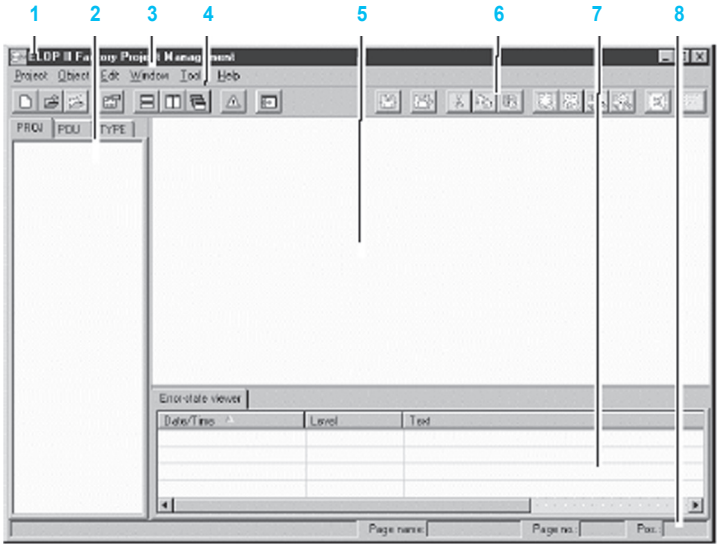
Items included in the XPSMFWIN interface

- 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.

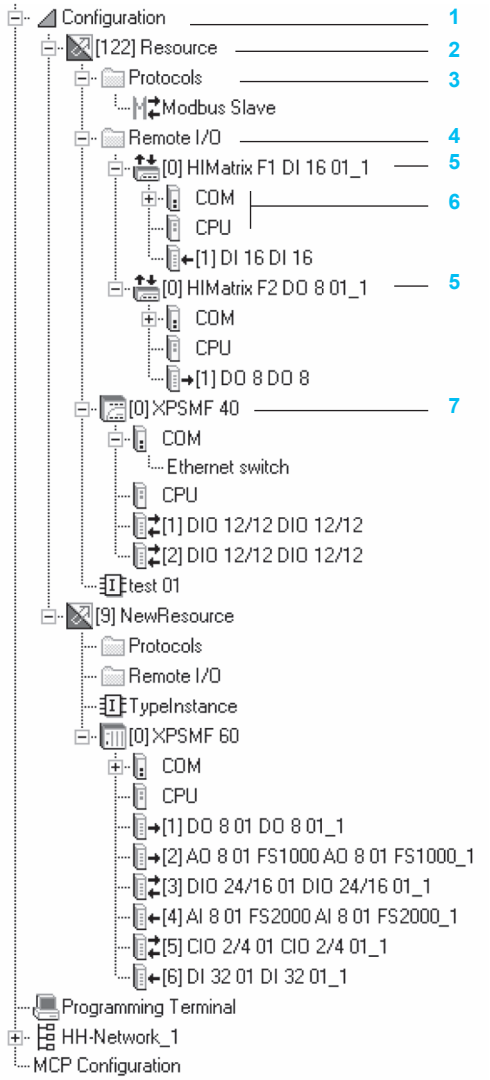
Project Management window layout

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.

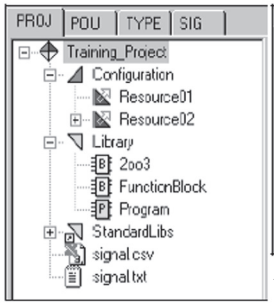
Programming software
Type XPSMFWIN
for Preventa compact & modular safety PLCs XPSMF



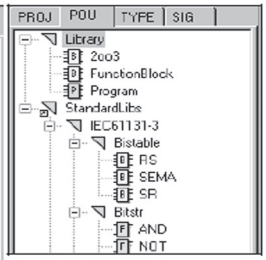
Structure window

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

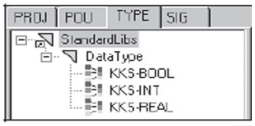
The structure window displays the hierarchical structure of the project. Selecting one of three views provides the user with different levels of detail.



Complete project



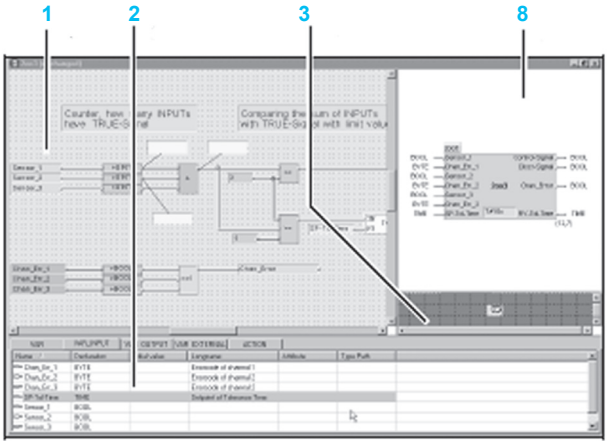
All POUs (Program Organisation Units)



All data types

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 comprises the following panes:



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

Programming software
Type XPSMFWIN
for Preventa compact & 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 familiarise 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, Flip-Flop, etc.) 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.

Preventa safety modular PLC
Type XPSMF60
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More information on
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MKTED2140708EN

January 2015