Preventa safety compact PLCs
XPSMF40, XPSMF31/30/35

Catalogue
January 2015
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Type XPSMF40, XPSMF31/30/35

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Preventa safety compact PLCs
Type XPSMF40, XPSMF31/30/35

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
**Selection guide**

**Preventa safety compact PLCs**

Type XPSMF40, XPSMF31/30/35

### Presentation

Products referenced XPSMF31222, XPSMF3022 and XPSMF35 are marked HIMatrix F31, HIMatrix F30 and HIMatrix F35.

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

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

### User memory

| Application | 250 kB |
| Data | 250 kB |

### Response time

Depending on size of application

### Maximum consumption

| Supply | 8 A | 9 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) |

### Inputs

| Digital | Number of channels | 24, configurable, not electrically isolated | 20, not electrically isolated | 24, not electrically isolated |
| Current at state 0 | 1.5 mA max. at 24 V | 1.5 mA max., 1.25 mA at 5 V |
| Current at state 1 | 3.5 mA at 24 V | 4.5 mA at 30 V | ≥ 2 mA at 15 V | > 2 mA at 15 V | 3.5 mA at 24 V |
| Analogue | Number of channels | – | – | – | 8, single-pole |
| Range: voltage/current | – | – | – | – | 0...10 V/0...20 mA (1) |
| Counting | Number of channels | – | – | – | 2 |

### Outputs

| Digital | Number of channels | 8 (2), not electrically isolated | 8, not electrically isolated |
| Chnls. 1 to 3 and 5 to 7: 0.5 A at 60 °C | Channels 1 to 3 and 5 to 7: 0.5 A at 60 °C | Channels 4 and 8: 1 A at 60 °C, 2 A at 50 °C | Channels 4 and 8: 1 A at 60 °C, 2 A at 50 °C |
| Output current | Channels 4 and 8: 1 A at 60 °C, 2 A at 50 °C |

### Line control

2 x 4 (2) (2) –

### Input/output connections

- Safe communication using SafeEthernet protocol yes yes yes yes
- Non safe communication using Modbus TCP/IP protocol, server (slave) yes (XPSMF4002/4022/4042) yes (XPSMF31222) yes (XPSMF3022) yes (XPSMF3502/MF3522/MF3542)
- Communication on fieldbus
  - Non safety using Modbus RTU protocol, slave (RS 485) yes (XPSMF4020/4022) – yes (XPSMF3022) yes (XPSMF3522)
  - Non safety using PROFIBUS DP protocol, (V0 slave) yes (XPSMF4040/4042) – – yes (XPSMF3542) oui (XPSMF4040/4042) – – oui (XPSMF3542)
- Safety compact PLC type

### See page

4 6

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(1) With shunt 500 W.
(2) Digital inputs can be supplied by the line control outputs of the same I/O card.

More technical information on www.schneider-electric.com
Preventa safety compact PLCs
Type XPSMF40

Presentation
The safety compact PLC range XPSMF40 comprises of 6 versions that are differentiated by their non safety related communication protocols.

<table>
<thead>
<tr>
<th>Compact PLCs</th>
<th>Digital Inputs/Outputs</th>
<th>Line control outputs</th>
<th>Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>On Ethernet network</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Safety protocol</td>
</tr>
<tr>
<td>XPSMF4000</td>
<td>24, configurable</td>
<td>8</td>
<td>SafeEthernet</td>
</tr>
<tr>
<td>XPSMF4002</td>
<td>24, configurable</td>
<td>8</td>
<td>SafeEthernet</td>
</tr>
<tr>
<td>XPSMF4020</td>
<td>24, configurable</td>
<td>8</td>
<td>SafeEthernet</td>
</tr>
<tr>
<td>XPSMF4022</td>
<td>24, configurable</td>
<td>8</td>
<td>SafeEthernet</td>
</tr>
<tr>
<td>XPSMF4040</td>
<td>24, configurable</td>
<td>8</td>
<td>SafeEthernet</td>
</tr>
<tr>
<td>XPSMF4042</td>
<td>24, configurable</td>
<td>8</td>
<td>SafeEthernet</td>
</tr>
</tbody>
</table>

Digital inputs
Safety compact PLCs XPSMF40 incorporate up to 24 digital inputs for the connection of safety related input devices, such as emergency stop contacts, magnetic switches, light curtains, etc.

Digital outputs
Safety compact PLCs XPSMF40 incorporate up to 24 digital outputs for the connection of safety related output devices, such as contactors, illuminated beacons, sirens, etc.

Line control outputs
Safety compact PLCs XPSMF40 incorporate 8 line control outputs for short-circuits and line break monitoring.

Remote inputs and outputs
In addition to the inputs/outputs integrated as standard, safety compact 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 TSXRKY. 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 the software.

Example of mechanical integration of a safety compact 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 Safety compact PLC XPSMF40
Preventa safety compact PLCs
Type XPSMF40

Description
Safety PLCs XPS
XPSMF4000/MF4002/ MF4020/MF4022/ MF4040/MF4042

On the front face of the enclosure:
1. One terminal block (1) for ± 24 V supply.
2. 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.
6. Two terminal blocks (1) for connection of line control outputs.
7. On the rear face: one removable plate with spring fixing for mounting on 35 mm DIN rail.

Safety PLCs XPSMF4020/MF4022
On the front face of the enclosure:
8. One RJ45 connector for connection on Modbus serial (RTU), with 2 process status LEDs.

Safety PLCs XPSMF4040/MF4042
On the front face of the enclosure:
9. One SUB-D (9-pin female) connector for connection on PROFIBUS DP, with 2 process status LEDs.

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

Safety compact PLCs

<table>
<thead>
<tr>
<th>± 24 V supply</th>
<th>Digital Inputs or Outputs</th>
<th>Line control outputs</th>
<th>Communication on Ethernet network</th>
<th>Modbus serial protocol</th>
<th>PROFIBUS DP protocol</th>
<th>Reference</th>
<th>Weight kg/ lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>± 24 V supply</td>
<td>0…24 configurable channels</td>
<td>2 x 4</td>
<td>Yes</td>
<td>--</td>
<td>--</td>
<td>Yes, server</td>
<td>XPSMF4000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>XPSMF4002</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>XPSMF4020</td>
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<td></td>
<td></td>
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<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>XPSMF4020</td>
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<tr>
<td></td>
<td></td>
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<td>--</td>
<td>--</td>
<td>--</td>
<td>XPSMF4040</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>XPSMF4042</td>
</tr>
</tbody>
</table>

Notes:
- SafeEthernet protocol
- Modbus TCP/IP protocol
- XPSMF4000
- XPSMF4002
- XPSMF4020
- XPSMF4022
- XPSMF4040
- XPSMF4042
Preventa safety compact PLCs
Type XPSMF31/30/35

Presentation

The safety compact PLC range XPSMF31/30/35 comprises 5 versions that are differentiated by their characteristics, detailed below. Safety compact PLCs XPSMF3 series incorporate up to 24 digital inputs for the connection of safety related input devices.

<table>
<thead>
<tr>
<th>Compact PLCs</th>
<th>Inputs</th>
<th>Outputs</th>
<th>Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>XPSMF31222</td>
<td></td>
<td>8 (1)</td>
<td>On fieldbus</td>
</tr>
<tr>
<td>XPSMF3022</td>
<td></td>
<td>8 (1)</td>
<td>Modbus serial Slave (RTU)</td>
</tr>
<tr>
<td>XPSMF3502</td>
<td>24</td>
<td>8</td>
<td>Modbus serial Slave (RTU)</td>
</tr>
<tr>
<td>XPSMF3522</td>
<td>24</td>
<td>8</td>
<td>PROFIBUS DP V0 slave</td>
</tr>
<tr>
<td>XPSMF3542</td>
<td>24</td>
<td>8</td>
<td>-</td>
</tr>
</tbody>
</table>

Digital inputs
Safety compact PLCs XPSMF3 series incorporate up to 24 digital inputs for the connection of safety related input devices.

Analogue inputs
Safety compact PLCs XPSMF3 series incorporate 8 analogue measuring inputs that receive analogue safety related signals from the machines to be monitored (1).

- Closed circuit scanning of input channels,
- Single-pole measuring of 0 to 10 V voltages,
- Measuring 0 to 20 mA currents using shunt

Counter inputs
Safety compact PLCs XPSMF3 series incorporate 2 independent and configurable counting channels:

- Incremental encoders (\(\pm\) 5 V),
- Sensors, 2/3-wire PNP/NPN (\(\pm\) 24 V).

Digital outputs
Each safety compact PLC XPSMF3 series incorporate 8 digital outputs for connection to signalling equipment and machines to be controlled (2).

Remote inputs and outputs
In addition to the inputs/outputs integrated as standard, safety compact PLCs XPSMF3 series 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 compact PLCs XPSMF3 series is performed on an Ethernet network using the SafeEthernet safety protocol, via the Integrated RJ45 switched Ethernet communications ports.

(1) Digital outputs can be configured for line control.
(2) Use shielded dual twisted pair cables, maximum length 300 m, short-circuit unused analogue inputs.
Preventa safety compact PLCs
Type XPSMF31/30/35

Description

Safety PLCs XPSMF31222 and XPSMF3022

On the front face of the metal enclosure:
1. One terminal block (1) for 24 V supply.
2. Two terminal blocks (1) for connection of digital outputs, with output status LED (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. 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/IP server protocol).
6. On XPSMF3022 only: two unused SUB-D connectors (FB1 and FB2).
7. On XPSMF3022 only: one SUB-D 9-pin connector for connection on Modbus serial (RTU) (FB3).
8. One earth connection screw.
9. On the top: one "Reset" button.
10. On the rear face: one spring operated fixing device for mounting on 35 mm rail.

Safety PLCs XPSMF35

On the front face of the metal enclosure:
1. One terminal block (1) for 24 V supply.
2. One terminal block (1) for connection of digital outputs, with four digital output status LEDs.
3. Three terminal blocks (1) for connection of digital inputs, with input status LED (eight LEDs per terminal block).
4. One terminal block (1) for connection of 2 counting input channels.
5. Four terminal blocks (1) for connection of analogue inputs.
6. One plate for securing shielded analogue input connection cables.
7. Eight process status LEDs.
8. Two unused SUB-D connectors (FB1 and FB2).
9. 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/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 earth connection screw.
12. On the top: one "Reset" button.
13. On the rear face: one spring operated fixing device for mounting on 35 mm rail.

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

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Safety compact PLCs

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Outputs Digital</th>
<th>Outputs Analogue</th>
<th>Outputs Counting</th>
<th>Communication on Ethernet network</th>
<th>Reference</th>
<th>Weight kg/ lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>0</td>
<td>0</td>
<td>8</td>
<td>Safe Ethernet protocol</td>
<td>XPSMF31222</td>
<td>1.000/ 2.205</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Modbus TCP/IP server protocol</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>8</td>
<td>2</td>
<td>8</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>PROFIBUS DP</td>
<td>XPSMF3022</td>
<td>1.200/ 2.646</td>
</tr>
<tr>
<td></td>
<td>Slave</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td>XPSMF3502</td>
<td>1.200/ 2.646</td>
</tr>
<tr>
<td></td>
<td>Slave</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td>XPSMF3522</td>
<td>1.200/ 2.646</td>
</tr>
<tr>
<td></td>
<td>V0 Slave</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td>XPSMF3542</td>
<td>1.200/ 2.646</td>
</tr>
</tbody>
</table>

Products referenced XPSMF31222, XPSMF3022 and XPSMF35 are marked HIMatrix F31, HIMatrix F30 and HIMatrix F35.
Preventa safety compact PLCs
Type XPSMF40, XPSMF31/30/35
Communication on network and bus

Presentation

To communicate, Preventa safety compact PLCs XPSMF are fitted with:
- Integrated 2 or 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).
- 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.

<table>
<thead>
<tr>
<th>Safety PLCs</th>
<th>Communication on Ethernet network</th>
<th>Communication on fieldbus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compact</td>
<td>Port (number x type)</td>
<td>SafeEthernet protocol: safe communication</td>
</tr>
<tr>
<td>XPSMF31222</td>
<td>4 x RJ45</td>
<td>yes</td>
</tr>
<tr>
<td>XPSMF3022</td>
<td>4 x RJ45</td>
<td>yes</td>
</tr>
<tr>
<td>XPSMF3502</td>
<td>4 x RJ45</td>
<td>yes</td>
</tr>
<tr>
<td>XPSMF3522</td>
<td>4 x RJ45</td>
<td>yes</td>
</tr>
<tr>
<td>XPSMF3542</td>
<td>4 x RJ45</td>
<td>yes</td>
</tr>
<tr>
<td>XPSMF4000</td>
<td>2 x RJ45</td>
<td>yes</td>
</tr>
<tr>
<td>XPSMF4002</td>
<td>2 x RJ45</td>
<td>yes</td>
</tr>
<tr>
<td>XPSMF4020</td>
<td>2 x RJ45</td>
<td>yes</td>
</tr>
<tr>
<td>XPSMF4022</td>
<td>2 x RJ45</td>
<td>yes</td>
</tr>
<tr>
<td>XPSMF4040</td>
<td>2 x RJ45</td>
<td>yes</td>
</tr>
<tr>
<td>XPSMF4042</td>
<td>2 x RJ45</td>
<td>yes</td>
</tr>
</tbody>
</table>
Characteristics

Preventa safety compact PLCs
Type XPSMF40, XPSMF31/30/35
Communication on network and bus

<table>
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<tr>
<th>Characteristics</th>
<th>SafeEthernet</th>
<th>XPSMF31222, XPSMF3022, XPSMF3502, XPSMF3522, XPSMF3542</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protocol</td>
<td>XPSMF4000, XPSMF4002, XPSMF4020, XPSMF4022, XPSMF4040, XPSMF4042</td>
<td>XPSMF31222, XPSMF3022, XPSMF3502, XPSMF3522, XPSMF3542</td>
</tr>
<tr>
<td>Compatibility with safety compact PLCs</td>
<td>XPSMF4000, XPSMF4002, XPSMF4020, XPSMF4022, XPSMF4040, XPSMF4042</td>
<td>XPSMF31222, XPSMF3022, XPSMF3502, XPSMF3522, XPSMF3542</td>
</tr>
<tr>
<td>Transmission Speed (Baud rate)</td>
<td>100 Mbps Half duplex, 10 Mbps Full duplex, Autonegotiation</td>
<td>Integrated 2 RJ45 switched Ethernet communications ports</td>
</tr>
<tr>
<td>Integrated 4 RJ45 switched Ethernet communications ports</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| 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 with safety compact PLCs | XPSMF3022, XPSMF3522 | XPSMF4020, XPSMF4022 |
| Serial link port | Number and type | 1 x SUB-D 9-pin female (FB3) | 1 x RJ45 (Modbus) |
| 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) |

<table>
<thead>
<tr>
<th>Functions</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Modbus slave</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Reading n bits of output</td>
<td></td>
</tr>
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| 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 |

| Bus type | PROFIBUS DP |
| Compatibility with safety compact 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 |
| Physical layer | RS 485 |
| Topology | Linear, with line terminators at each end |
| Medium | Shielded twisted pair cable |
| Number of slaves | 32 slaves on each segment, 126 slaves maximum with repeaters |
| Data exchange speed | 9.6 kbps…12 Mbps, depending on the length of the segment (1200 m…100 m) |
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.

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<td>Configuration software XPSMFWIN for programming compact XPSMF40e, XPSMF3x and modular XPSMF60 safety PLCs</td>
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<td>CD-ROM + user manual</td>
<td>English, German, French</td>
<td>SSV1XPSMFWIN</td>
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Installation

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.
**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.
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.

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 compact PLCs
Type XPSMF40, XPSMF31/30/35
Product reference index

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