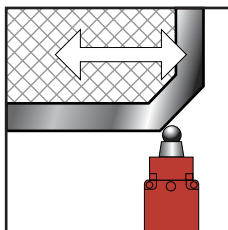


Applications



Modules

For Emergency stop and switch monitoring



Maximum achievable safety level

PL e/Category 4 conforming to EN/ISO 13849-1, SILCL 3 conforming to EN/IEC 62061

Conformity to standards

EN/IEC 60204-1, EN 1088/ISO 14119, EN/ISO 13850, EN/IEC 60947-1, EN/IEC 60947-5-1

Product certifications

UL, CSA, TÜV	UL, CSA, BG	UL, CSA, TÜV
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Number of circuits

Safety	3
Additional	1 solid-state output for signalling to PLC, 1 relay output for signalling to PLC, -

2 LEDs	3 LEDs
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Display

Supply voltage

~ and 24 V $\overline{\text{---}}$ 48 V ~ 115 V ~ 230 V ~	~ and 24 V $\overline{\text{---}}$
--	------------------------------------

Synchronisation time between inputs

Unlimited

Input channel voltage

24 V/48 V version	~ and 24 V $\overline{\text{---}}$ /48 V ~	24 V $\overline{\text{---}}$	24 V $\overline{\text{---}}$ /-
24 V/48 V or 110 V/120 V/230 V version	115 V ~/230 V	-	-
	-	-	-

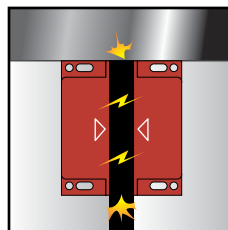
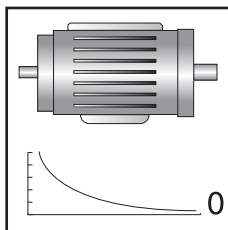
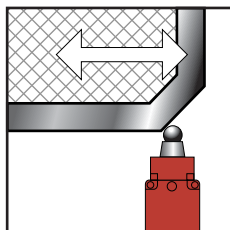
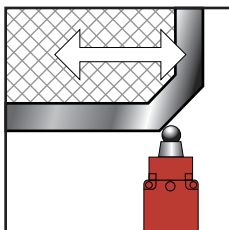
~ and 24 V $\overline{\text{---}}$ /48 V ~	24 V $\overline{\text{---}}$	24 V $\overline{\text{---}}$ /-
115 V ~/230 V	-	-
-	-	-

Module type

<b>XPSAC</b>	<b>XPSAXE</b>	<b>XPSAF</b>
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Pages

91	93
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For Emergency stop, switch, sensing mat/edges or solid-state output safety light curtain monitoring

For Emergency stop, switch or solid-state output safety light curtain monitoring

For zero speed detection of AC or DC motors which produce a remanent voltage in their windings due to residual magnetism

For coded magnetic switch monitoring

For 2 max.

For 6 max.



PL e/Category 4 conforming to EN/ISO 13849-1, SILCL 3 conforming to EN/IEC 62061

PL d/Category 3 conforming to EN/ISO 13849-1, SILCL 2 conforming to EN/IEC 62061

PL e/Category 4 conforming to EN/ISO 13849-1, SILCL 3 conforming to EN/IEC 62061

EN/IEC 60204-1, EN 1088/ISO 14119, EN/ISO 13850, EN/IEC 60947-1, EN/IEC 60947-5-1

EN/IEC 60204-1, EN/IEC 60947-1, EN/IEC 60947-5-1

EN/IEC 60204-1, EN 1088/ISO 14119, EN/IEC 60947-1, EN/IEC 60947-5-1, EN/IEC 60947-5-3

UL, CSA, TÜV

3	7	2		
1 relay + 4 solid-state outputs for signalling to PLC	2 relay + 4 solid-state outputs for signalling to PLC	2 solid-state outputs for signalling to PLC		
4 LEDs			3 LEDs	15 LEDs
~ and 24 V $\overline{\text{---}}$ 48 V ~ 110 V ~ and 24 V $\overline{\text{---}}$ 120 V ~ and 24 V $\overline{\text{---}}$ 230 V ~ and 24 V $\overline{\text{---}}$	~ and 24 V $\overline{\text{---}}$ 115 V ~ and 24 V $\overline{\text{---}}$ 230 V ~ and 24 V $\overline{\text{---}}$	24 V $\overline{\text{---}}$ 115 V ~ 230 V ~	24 V $\overline{\text{---}}$	
Unlimited or 2 s, 4 s (depending on wiring)	Unlimited	–		
24 V $\overline{\text{---}}$ /–		–		
–	24 V ~/24 V	–		
24 V $\overline{\text{---}}$ /24 V/24 V	–	–		
<b>XPSAK</b>	<b>XPSAR</b>	<b>XPSVNE</b>	<b>XPSDMB</b>	<b>XPSDME</b>
95	97	99	101	

### Operating principle

Safety modules XPSAC and XPSAXE are used for monitoring Emergency stop circuits conforming to standards EN/ISO 13850 and EN/IEC 60204-1 and also meet the safety requirements for the electrical monitoring of switches in protection devices conforming to standard EN 1088/ISO 14119. They provide protection for both the machine operator and the machine by immediately stopping the dangerous movement on receipt of a stop instruction from the operator, or on detection of a fault in the safety circuit itself.

To aid diagnostics, the modules have LEDs which provide information on the monitoring circuit status.





The XPSAC module has 3 safety outputs and a solid-state output for signalling to the PLC.  
The XPSAXE module has 3 safety outputs and a relay output for signalling to the PLC.

### Characteristics

Module type		XPSAC, XPSAC●●●●P	XPSAXE●●●●P, XPSAXE●●●●C
<b>Maximum achievable safety level</b>		PL e/Category 4 conforming to EN/ISO 13849-1, SILCL 3 conforming to EN/IEC 62061	PL e/Category 4 conforming to EN/ISO 13849-1, SILCL 3 conforming to EN/IEC 62061
<b>Reliability data</b>	Mean Time To dangerous Failure (MTTF <sub>d</sub> )	<b>Years</b> 210.4	457
	Diagnostic Coverage (DC)	<b>%</b> > 99	> 99
	Probability of dangerous Failure per Hour (PFH <sub>d</sub> )	<b>1/h</b> 3.56 x 10 <sup>-9</sup>	3 x 10 <sup>-8</sup>
<b>Conformity to standards</b>		EN/IEC 60204-1, EN 1088/ISO 14119, EN/ISO 13850, EN/IEC 60947-1, EN/IEC 60947-5-1	EN/IEC 60204-1, EN 1088/ISO 14119, EN/ISO 13850, EN/IEC 60947-1, EN/IEC 60947-5-1
<b>Product certifications</b>		UL, CSA, TÜV	UL, CSA, BG
<b>Supply</b>	Voltage	<b>V</b> ~ and 24 ---, 48 ~, 115 ~, 230 ~	~ and 24 ---
	Voltage limits	- 20...+ 10 % (24 V ~) - 20...+ 20 % (24 V ---) - 15...+ 10 % (48 V ~) - 15...+ 15 % (115 V) - 15...+ 10 % (230 V)	- 15...+ 10 %
	Frequency	<b>Hz</b> 50/60	50/60
<b>Consumption</b>		<b>W</b> < 1.2 (24 V ---)	-
		<b>VA</b> < 2.5 (24 V ~) < 6 (48 V ~) < 7 (115 V ~) < 6 (230 V ~)	< 4
<b>Start button monitoring</b>		No	No
<b>Control unit voltage</b> (at nominal supply voltage)		Identical to supply voltage	
	24 V version	<b>V</b> 24 ~ (approx. 90 mA), 24 --- (approx. 40 mA)	24 ---
	48 V version	<b>V</b> 48 ~ (approx. 100 mA)	-
	115 V version	<b>V</b> 115 ~ (approx. 60 mA)	-
	230 V version	<b>V</b> 230 ~ (approx. 25 mA)	-
<b>Outputs</b>	Voltage reference	Volt-free	Volt-free
	Number and type of safety circuits	3 NO (13-14, 23-24, 33-34)	3 NO (13-14, 23-24, 33-34)
	Number and type of additional circuits	1 solid-state	1 NC relay (41-42)
	Breaking capacity in AC-15	<b>VA</b> C300: inrush 1800, maintained 180	B300
	Breaking capacity in DC-13	24 V/2 A L/R = 50 ms	24 V/1.5 A L/R = 50 ms
	Max. thermal current (I <sub>the</sub> )	<b>A</b> 6	8
	Max. total thermal current	<b>A</b> 10.5	-
	Output fuse protection, using fuses conforming to IEC/EN 60947-5-1, DIN VDE 0660 part 200	<b>A</b> 4 gG (gl) or 6 fast acting	6 gG
	Minimum current	<b>mA</b> 10	10
Minimum voltage	<b>V</b> 17	17	
<b>Electrical durability</b>		Please refer to our catalogue "Safety functions and solutions using Preventa".	
<b>Response time on input opening</b>		<b>ms</b> < 100	< 80
<b>Rated insulation voltage (U<sub>i</sub>)</b>		<b>V</b> 300 (degree of pollution 2 conforming to IEC/EN 60947-5-1, DIN VDE 0110 parts 1 & 2)	
<b>Rated impulse withstand voltage (U<sub>imp</sub>)</b>		<b>kV</b> 3 (overvoltage category III, conforming to IEC/EN 60947-5-1, DIN VDE 0110 parts 1 & 2)	4 (overvoltage category III, conforming to IEC/EN 60947-5-1, DIN VDE 0110 parts 1 & 2)
<b>LED display</b>		2	2
<b>Operating temperature</b>		<b>°C</b> - 10...+ 55	- 25...+ 55
<b>Storage temperature</b>		<b>°C</b> - 25...+ 85	- 25...+ 75
<b>Degree of protection</b> conforming to IEC/EN 60529	Terminals	IP 20	IP 20
	Enclosure	IP 40	IP 40

Characteristics						
Module type			XPSAC	XPSAC●●●●P	XPSAXE●●●●P	XPSAXE●●●●C
Connection	Type	Terminals	Captive screw clamp terminals	Captive screw clamp terminals	Captive screw clamp terminals	Spring terminals
		Terminal block	Integrated in module	Removable from module	Removable from module	Removable from module
1-wire connection	Without cable end		Solid or flexible cable: 0.14...2.5 mm <sup>2</sup>	Solid or flexible cable: 0.2...2.5 mm <sup>2</sup>		
	With cable end		Without bezel, flexible cable: 0.25...2.5 mm <sup>2</sup>			
2-wire connection	Without cable end		With bezel, flexible cable: 0.25...1.5 mm <sup>2</sup>	With bezel, flexible cable: 0.25...2.5 mm <sup>2</sup>	With bezel, flexible cable: 0.25...1.5 mm <sup>2</sup>	With bezel, flexible cable: 0.25...2.5 mm <sup>2</sup>
			Solid or flexible cable: 0.14...0.75 mm <sup>2</sup>	Solid cable: 0.2...1 mm <sup>2</sup> , flexible cable: 0.2...1.5 mm <sup>2</sup>	Solid or flexible cable: 0.2...1 mm <sup>2</sup>	—
	With cable end		Without bezel, flexible cable: 0.25...1 mm <sup>2</sup>			—
			Double, with bezel, flexible cable: 0.5...1.5 mm <sup>2</sup>			Double, with bezel, flexible cable: 0.5...1 mm <sup>2</sup>

## References

	Description	Connection	Number of instantaneous opening safety circuits	Additional out	Supply	Reference	Weight kg
 XPSAC●●●●	Safety modules for Emergency stop and switch monitoring	Captive screw clamp terminals Terminal block integrated in module	3	1 solid-state	~ and 24 V $\overline{\text{DC}}$	XPSAC5121	0.160
					48 V ~	XPSAC1321	0.210
					115 V ~	XPSAC3421	0.210
 XPSAC●●●●P		Captive screw clamp terminals Terminal block removable from module	3	1 solid-state	~ and 24 V $\overline{\text{DC}}$	XPSAC5121P	0.160
					48 V ~	XPSAC1321P	0.210
					115 V ~	XPSAC3421P	0.210
 XPSAXE5120P					230 V ~	XPSAC3721P	0.210
					230 V ~	XPSAC3721P	0.210
 XPSAXE5120C				1 relay	~ and 24 V $\overline{\text{DC}}$	XPSAXE5120P	0.229
				Spring terminals Terminal block removable from module	3	1 relay	~ and 24 V $\overline{\text{DC}}$

### Operating principle

Safety modules XPSAF meet the requirements of Performance Level PL e/Category 4 conforming to standard EN/ISO 13849-1.

They are used for:

- Monitoring Emergency stop circuits conforming to standards EN/ISO 13850 and EN/IEC 60204-1.
- Electrical monitoring of switches activated by protection devices conforming to standard EN 1088.

Housed in a compact enclosure, the modules have 3 safety outputs.

Preventa safety modules XPSAF●●●●P incorporate removable terminal blocks, thus optimising machine maintenance.

To aid diagnostics, the modules have 3 LEDs on the front face which provide information on the monitoring circuit status.

The Start button monitoring function is configurable depending on the wiring.

### Characteristics

Module type			XPSAF5130	XPSAF5130P	
<b>Maximum achievable safety level</b>			PL e/Category 4 conforming to EN/ISO 13849-1, SILCL 3 conforming to EN/IEC 62061		
<b>Reliability data</b>	Mean Time To dangerous Failure (MTTF <sub>d</sub> )	<b>Years</b>	243		
	Diagnostic Coverage (DC)	<b>%</b>	> 99		
	Probability of dangerous Failure per Hour (PFH <sub>d</sub> )	<b>1/h</b>	4.62 x 10 <sup>-9</sup>		
<b>Conformity to standards</b>			EN/IEC 60204-1, EN 1088/ISO 14119, EN/IEC 60947-5-1, EN/IEC 60947-1, EN/ISO 13850		
<b>Product certifications</b>			UL, CSA, TÜV		
<b>Supply</b>	Voltage	<b>V</b>	~ and 24 $\overline{\text{---}}$		
	Voltage limits		- 15...+ 10 %		
	Frequency	<b>Hz</b>	50/60		
<b>Consumption</b>		<b>VA</b>	≤ 5		
<b>Module inputs fuse protection</b>			Internal, electronic		
<b>Start button monitoring</b>			Yes/No (configurable by terminal connections)		
<b>Control unit voltage and current</b>			24 V $\overline{\text{---}}$ /30 mA approx. (at nominal supply voltage)		
<b>Maximum wiring resistance RL</b>		<b>Ω</b>	90		
<b>Synchronisation time between inputs A and B</b>			Unlimited		
<b>Outputs</b>	Voltage reference		Volt-free		
	Number and type of safety circuits		3 NO (13-14, 23-24, 33-34)		
	Breaking capacity in AC-15	<b>VA</b>	C300: inrush 1800, maintained 180		
	Breaking capacity in DC-13		24 V/1.5 A - L/R = 50 ms		
	Max. thermal current (I <sub>the</sub> )	<b>A</b>	6		
	Max. total thermal current	<b>A</b>	18		
	Output fuse protection	<b>A</b>	4 gG or 6 fast acting, conforming to IEC/EN 60947-5-1, DIN VDE 0660 part 200		
	Minimum current	<b>mA</b>	10		
	Minimum voltage	<b>V</b>	17		
<b>Electrical durability</b>			Please refer to our catalogue "Safety functions and solutions using Preventa".		
<b>Response time on input opening</b>		<b>ms</b>	≤ 40		
<b>Rated insulation voltage (U<sub>i</sub>)</b>		<b>V</b>	300 (degree of pollution 2 conforming to IEC/EN 60947-5-1, DIN VDE 0110 parts 1 & 2)		
<b>Rated impulse withstand voltage (U<sub>imp</sub>)</b>		<b>kV</b>	4 (overvoltage category III, conforming to IEC/EN 60947-5-1, DIN VDE 0110 parts 1 & 2)		
<b>LED display</b>			3		
<b>Operating temperature</b>		<b>°C</b>	- 10...+ 55		
<b>Storage temperature</b>		<b>°C</b>	- 25...+ 85		
<b>Degree of protection conforming to IEC/EN 60529</b>	Terminals		IP 20		
	Enclosure		IP 40		
<b>Connections</b>	Type	Terminals	Captive screw clamp terminals	Captive screw clamp terminals	
		Terminal block	Integrated in module	Removable from module	
	1-wire connection	Without cable end		Solid or flexible cable: 0.14...2.5 mm <sup>2</sup>	Solid or flexible cable: 0.2...2.5 mm <sup>2</sup>
		With cable end		Without bezel, flexible cable: 0.25...2.5 mm <sup>2</sup>	
	2-wire connection	With cable end		With bezel, flexible cable: 0.25...1.5 mm <sup>2</sup>	With bezel, flexible cable: 0.25...2.5 mm <sup>2</sup>
		Without cable end		Solid or flexible cable: 0.14...0.75 mm <sup>2</sup>	Solid cable: 0.2...1 mm <sup>2</sup> , flexible cable: 0.2...1.5 mm <sup>2</sup>
		With cable end		Without bezel, flexible cable: 0.25...1 mm <sup>2</sup>	
		With cable end		Double, with bezel, flexible cable: 0.5...1.5 mm <sup>2</sup>	Double, with bezel, flexible cable: 0.5...1.5 mm <sup>2</sup>

# Safety automation solutions

Preventa safety modules type XPSAF  
For Emergency stop and switch monitoring

## References



XPSAF5130

Description	Type of terminal block connection	Number of safety circuits	Supply	Reference	Weight kg
Safety modules for Emergency stop and switch monitoring	Integrated in module	3	~ and 24 V $\overline{\text{DC}}$	XPSAF5130	0.250
	Removable from module	3	~ and 24 V $\overline{\text{DC}}$	XPSAF5130P	0.250

# Safety automation solutions

## Preventa safety modules type XPSAK

For Emergency stop, switch, sensing mat/edges or safety light curtain monitoring

### Operating principle

Safety modules XPSAK meet the requirements of Performance Level PL e/Category 4 conforming to standard EN/ISO 13849-1.

They are used for:

- Monitoring Emergency stop circuits conforming to standards EN/ISO 13850 and EN 60204-1.
- Electrical monitoring of switches activated by protection devices, with optional selection of synchronisation time between signals.
- Monitoring 4-wire sensing mats or edges.
- Monitoring type 4 light curtains conforming to EN/IEC 61496-1 which have solid-state safety outputs with test function (light curtains XUSL).

Housed in a compact enclosure, the modules have 3 safety outputs, a relay signalling output and 4 solid-state signalling outputs for signalling to the process PLC.

Preventa safety modules XPSAK●●●●P incorporate removable terminal blocks, thus optimising machine maintenance.

To aid diagnostics, the modules have 4 LEDs on the front face which provide information on the monitoring circuit status.

The Start button monitoring function is configurable depending on the wiring.

### Characteristics

Module type		XPSAK3●1144	XPSAK3●1144P
<b>Maximum achievable safety level</b>		PL e/Category 4 conforming to EN/ISO 13849-1, SILCL 3 conforming to EN/IEC 62061	
<b>Reliability data</b>	Mean Time To dangerous Failure (MTTF <sub>d</sub> )	<b>Years</b>	154.5
	Diagnostic Coverage (DC)	<b>%</b>	> 99
	Probability of dangerous Failure per Hour (PFH <sub>d</sub> )	<b>1/h</b>	7.39 x 10 <sup>-9</sup>
<b>Conformity to standards</b>		EN/IEC 60204-1, EN 1088/ISO 14119, EN/ISO 13850, EN/IEC 60947-1, EN/IEC 60947-5-1	
<b>Product certifications</b>		UL, CSA, TÜV	
<b>Supply</b>	Voltage	<b>V</b>	~ and 24 ---, 48 ~, 110 ~ and 24 ---, 120 ~ and 24 ---, 230 ~ and 24 ---
	Voltage limits		- 15...+ 10 %
	Frequency	<b>Hz</b>	50/60
<b>Consumption</b>	24 V version	<b>VA</b>	≤ 5
	110/120/230 V versions		≤ 6
<b>Module inputs fuse protection</b>		Internal, electronic	
<b>Start button monitoring</b>		Yes/No (configurable by terminal connections)	
<b>Control unit voltage and current</b> between terminals S21-S22, S31-S32		24 V ---/30 mA approx. (at nominal supply voltage)	
<b>Maximum wiring resistance RL</b> between terminals S21-S22, S31-S32		<b>Ω</b>	28
<b>Synchronisation time between inputs A and B</b> (terminals S21-S22, S31-S32)		<b>s</b>	Automatic start: 2 or 4 depending on wiring Manual start (start button between S33 and S34): unlimited
<b>Outputs</b>	Voltage reference		Volt-free
	Number and type of safety circuits		3 NO (13-14, 23-24, 33-34)
	Number and type of additional circuits		1 NC (41-42) + 4 solid-state
	Breaking capacity in AC-15	<b>VA</b>	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		24 V/20 mA, 48 V/10 mA
	Max. thermal current (I <sub>the</sub> )	<b>A</b>	6
	Max. total thermal current	<b>A</b>	18
	Output fuse protection	<b>A</b>	4 gG or 6 fast acting, conforming to IEC/EN 60947-5-1, DIN VDE 0660 part 200
	Minimum current	<b>mA</b>	10
	Minimum voltage	<b>V</b>	17
<b>Electrical durability</b>		Please refer to our catalogue "Safety functions and solutions using Preventa".	
<b>Response time on input opening</b>		<b>ms</b>	≤ 40
<b>Rated insulation voltage (Ui)</b>		<b>V</b>	300 (degree of pollution 2 conforming to IEC/EN 60947-5-1, DIN VDE 0110 parts 1 & 2)
<b>Rated impulse withstand voltage (U<sub>imp</sub>)</b>		<b>kV</b>	4 (overvoltage category III, conforming to IEC/EN 60947-5-1, DIN VDE 0110 parts 1 & 2)
<b>LED display</b>			4
<b>Operating temperature</b>		<b>°C</b>	- 10...+ 55
<b>Storage temperature</b>		<b>°C</b>	- 25...+ 85
<b>Degree of protection</b>	Conforming to IEC 60529	Terminals	IP 20
		Enclosure	IP 40

# Safety automation solutions

Preventa safety modules type XPSAK  
For Emergency stop, switch, sensing mat/edges  
or safety light curtain monitoring

## Characteristics (continued)

Module type			XPSAK3●1144	XPSAK3●1144P
Connections	Type	Terminals	Captive screw clamp terminals	Captive screw clamp terminals
		Terminal block	Integrated in module	Removable from module
	1-wire connection	Without cable end	Solid or flexible cable: 0.14...2.5 mm <sup>2</sup>	Solid or flexible cable: 0.2...2.5 mm <sup>2</sup>
		With cable end	Without bezel, flexible cable: 0.25...2.5 mm <sup>2</sup>	
	2-wire connection	With cable end	With bezel, flexible cable: 0.25...1.5 mm <sup>2</sup>	With bezel, flexible cable: 0.25...2.5 mm <sup>2</sup>
		Without cable end	Solid or flexible cable: 0.14...0.75 mm <sup>2</sup>	Solid cable: 0.2...1 mm <sup>2</sup> , flexible cable: 0.2...1.5 mm <sup>2</sup>
		With cable end	Without bezel, flexible cable: 0.25...1 mm <sup>2</sup>	
		With cable end	Double, with bezel, flexible cable: 0.5...1.5 mm <sup>2</sup>	

## References



XPSAK3●1144

Description	Type of terminal block connection	Number of safety circuits	Outputs: Additional / Solid-state for PLC	Supply	Reference	Weight kg
Safety modules for Emergency stop, switch, sensing mat/edges or safety light curtain monitoring	Integrated in module	3	1 / 4	24 V ~ 24 V ☰	XPSAK311144	0.300
				110 V ~ 24 V ☰	XPSAK361144	0.400
				120 V ~ 24 V ☰	XPSAK351144	0.400
				230 V ~ 24 V ☰	XPSAK371144	0.400
				24 V ~ 24 V ☰	XPSAK311144P	0.300
				48 V ~	XPSAK331144P	0.300
	Removable from module	3	1 / 4	24 V ~ 24 V ☰	XPSAK311144P	0.300
				110 V ~ 24 V ☰	XPSAK361144P	0.400
				120 V ~ 24 V ☰	XPSAK351144P	0.400
				230 V ~ 24 V ☰	XPSAK371144P	0.400



### Operating principle

Safety modules XPSAR meet the requirements of Performance Level PL e/ Category 4 conforming to standard EN/ISO 13849-1 and are designed for the following safety applications:

- Monitoring Emergency stop circuits conforming to EN/ISO 13850 and EN/IEC 60204-1.
  - Electrical monitoring of switches activated by protection devices conforming to standard EN 1088/ISO 14119.
  - Monitoring type 4 light curtains conforming to EN/IEC 61496-1 that have solid-state safety outputs with test function (light curtains XUSL).
- In addition to 7 safety outputs, modules XPSAR incorporate 2 relay signalling outputs and 4 solid-state signalling outputs for signalling to the process PLC.

Safety modules XPSAR●●●●●P incorporate removable terminal blocks, thus optimising machine maintenance.

To aid diagnostics, the modules have 4 LEDs on the front face which provide information on the monitoring circuit status.

The Start button monitoring function is configurable depending on the wiring.

### Characteristics

Module type		XPSAR3●1144	XPSAR3●1144P	
<b>Maximum achievable safety level</b>		PL e/Category 4 conforming to EN/ISO 13849-1, SILCL 3 conforming to EN/IEC 62061		
<b>Reliability data</b>	Mean Time To dangerous Failure (MTTF <sub>d</sub> )	<b>Years</b>	277.8	
	Diagnostic Coverage (DC)	<b>%</b>	> 99	
	Probability of dangerous Failure per Hour (PFH <sub>d</sub> )	<b>1/h</b>	2.22 x 10 <sup>-9</sup>	
<b>Conformity to standards</b>		EN/IEC 60204-1, EN 1088/ISO 14119, EN/ISO 13850, EN/IEC 60947-1, EN/IEC 60947-5-1		
<b>Product certifications</b>		UL, CSA, TÜV		
<b>Supply</b>	Voltage	<b>V</b>	~ and 24 ---, 115 ~, 230 ~	
	Voltage limits	24 V ---	<b>%</b>	- 15...+ 10
		24 V ~	<b>%</b>	- 15...+ 10
		115 V ~	<b>%</b>	- 15...+ 15
		230 V ~	<b>%</b>	- 15...+ 10
Frequency	<b>Hz</b>	50/60		
<b>Consumption</b>		24 V --- version: < 4 W, 24 V ~ version: < 7 VA, 115/230 V version: < 9 VA		
<b>Module inputs fuse protection</b>		Internal, electronic		
<b>Start button monitoring</b>		Yes/No (configurable by terminal connections)		
<b>Control unit voltage and current</b> (between terminals S11-S52 and S21-S22). 24 V, 115 V and 230 V version		<b>V</b>	24 --- (20 mA approx.) (at nominal supply voltage)	
<b>Maximum wiring resistance RL</b> (between terminals S11-S52 and S21-S22)		<b>Ω</b>	50	
<b>Synchronisation time between inputs A and B</b> Automatic start, terminals S33, S34 linked		<b>ms</b>	100	
<b>Safety outputs</b>	Voltage reference		Volt-free	
	Number and type of safety circuits		7 NO (13-14/23-24/33-34/43-44/53-54/63-64/73-74)	
	Number and type of additional outputs		4 solid-state (Y31-Y32, Y31-Y64, Y31-Y74, Y31-Y35)	
	Number and type of auxiliary contacts		2 NC (81-82/91-92)	
	Breaking capacity in AC-15	<b>VA</b>	B300 (inrush: 3600, maintained: 360)	
	Breaking capacity in DC-13		24 V/2 A, L/R = 50 ms	
	Breaking capacity of solid-state outputs		24 V/20mA	
	Max. thermal current (I <sub>the</sub> )	<b>A</b>	10	
	Max. total thermal current	<b>A</b>	40	
	Output fuse protection	<b>A</b>	6 gG or 10 fast acting, conforming to EN/IEC 60947-5-1, DIN VDE0660 part 200	
	Minimum current	<b>mA</b>	170	
Minimum voltage	<b>V</b>	17		
<b>Electrical durability</b>		Please refer to our catalogue "Safety functions and solutions using Preventa".		
<b>Response time on input opening</b>		<b>ms</b>	< 20	
<b>Rated insulation voltage (U<sub>i</sub>)</b>		<b>V</b>	300 (degree of pollution 2 conforming to IEC/EN 60947-5-1, DIN VDE 0110 parts 1 & 2)	
<b>Rated impulse withstand voltage (U<sub>imp</sub>)</b>		<b>kV</b>	4 (overvoltage category III, conforming to IEC/EN 60947-5-1, DIN VDE 0110 parts 1 & 2)	
<b>LED display</b>			4	
<b>Operating temperature</b>		<b>°C</b>	- 10...+ 55	
<b>Storage temperature</b>		<b>°C</b>	- 25...+ 85	
<b>Degree of protection</b> conforming to IEC 60529		Terminals: IP 20, enclosure: IP 40		

#### Characteristics (continued)

Module type			XPSAR3●1144	XPSAR3●1144P
Connection	Type	Terminals	Captive screw clamp terminals	Captive screw clamp terminals
		Terminal block	Integrated in module	Removable from module
1-wire connection	Without cable end		Solid or flexible cable: 0.14...2.5 mm <sup>2</sup>	Solid or flexible cable: 0.2...2.5 mm <sup>2</sup>
	With cable end		Without bezel, flexible cable: 0.25...2.5 mm <sup>2</sup>	
	With cable end		With bezel, flexible cable: 0.25...1.5 mm <sup>2</sup>	With bezel, flexible cable: 0.25...2.5 mm <sup>2</sup>
2-wire connection	Without cable end		Solid or flexible cable: 0.14...0.75 mm <sup>2</sup>	Solid cable: 0.2...1 mm <sup>2</sup> , flexible cable: 0.2...1.5 mm <sup>2</sup>
	With cable end		Without bezel, flexible cable: 0.25...1 mm <sup>2</sup>	
	With cable end		Double, with bezel, flexible cable: 0.5...1.5 mm <sup>2</sup>	

#### References

Description	Type of terminal block connection	Number of safety circuits	Additional outputs/ solid-state outputs to PLC	Supply	Reference	Weight
				V		kg
Safety modules for Emergency stop, switch or safety light curtain monitoring	Integrated in module	7	2 / 4	24 ~ 24 ---	XPSAR311144	0.300
				115 ~ 24 ---	XPSAR351144	0.400
				230 ~ 24 ---	XPSAR371144	0.400
	Removable from module	7	2 / 4	24 ~ 24 ---	XPSAR311144P	0.300
				115 ~ 24 ---	XPSAR351144P	0.400
				230 ~ 24 ---	XPSAR371144P	0.400



XPSAR3●1144

### Operating principle

Preventa safety modules XPSVNE for zero speed detection are used to detect the stop condition of electric motors. Their most common applications include: providing the unlock signal for electrically interlocked sliding or removable machine guards, controlling rotation direction signals for reversing motors and engaging locking brakes after a motor has come to a standstill.

As electric motors run down, a remanent voltage is produced in the windings of the motor due to residual magnetism. This voltage is proportional to the speed of the motor and, therefore, decreases as the motor comes to a standstill. This remanent voltage is measured in a redundant manner so as to detect the stop condition of the motor. The cabling between the motor windings and the inputs of the XPSVNE module is also monitored to prevent a cabling breakage or fault being seen as a stopped motor.

A transformer should not be used to connect the motor to terminals Z1, Z2 and Z3 since there is no monitoring of the connection with the motor winding via the resistance monitoring.

Modules XPSVNE are suitable for detecting the stop condition of all types of AC or DC motor driven machines which, when the motor runs down, produce a remanent voltage in the windings due to residual magnetism. These machines can be controlled by electronic devices, such as variable speed drives or DC injection brakes. The input filters for standard XPSVNE modules are designed for a frequency of up to 60 Hz.

For motors operating at a frequency higher than 60 Hz, which therefore produce a high frequency remanent voltage, special modules XPSVNE●●●●HS should be used.

Modules XPSVNE have 2 potentiometers mounted on the front face of the module which allow independent adjustment of the switching threshold for each input circuit. This allows adjustment for different types of motors and application requirements.

To aid diagnostics, modules XPSVNE have 4 LEDs and 2 solid-state outputs to provide information on the status of the zero speed detection circuit.

### Characteristics

Module type		XPSVNE	
<b>Maximum achievable safety level</b>			PL d/Category 3 conforming to EN/ISO 13849-1, SILCL 2 conforming to EN/IEC 62061
<b>Reliability data</b>	Mean Time To dangerous Failure (MTTF <sub>d</sub> )	<b>Years</b>	124.1
	Diagnostic Coverage (DC)	<b>%</b>	> 99
	Probability of dangerous Failure per Hour (PFH <sub>d</sub> )	<b>1/h</b>	9.26 x 10 <sup>-9</sup>
<b>Conformity to standards</b>			EN/IEC 60204-1, EN/IEC 60947-1, EN/IEC 60947-5-1
<b>Product certifications</b>			UL, CSA, TÜV
<b>Supply</b>	Voltage	<b>V</b>	24 $\overline{\text{---}}$ 115 $\sim$ 230 $\sim$
	Voltage limits		- 15...+ 10 % (24 V $\overline{\text{---}}$ ) - 15...+ 15 % (115 V $\sim$ ) - 15...+ 10 % (230 V $\sim$ )
	Frequency	<b>Hz</b>	50/60 (115 V, 230 V)
<b>Consumption</b>		<b>W</b>	≤ 3.5 (24 V $\overline{\text{---}}$ )
		<b>VA</b>	≤ 7.5 (115 V $\sim$ ), ≤ 7 (230 V $\sim$ )
<b>Frequency of motor power supply</b>		<b>Hz</b>	≤ 60 Hz (XPSVNE●●42), > 60 Hz (XPSVNE●●42HS)
<b>Inputs</b>	Maximum voltage between terminals Z1 - Z2 - Z3	<b>V</b>	500 rms
	Detection threshold	<b>V</b>	0.01 - 0.1 (adjustable)

Characteristics (continued)				
Module type		XPSVNE		
<b>Outputs</b>	Voltage reference	Volt-free		
	Number and type of safety circuits	1 NO (13-14), 1 NC (21-22)		
	Number and type of additional circuits	2 solid-state		
	Breaking capacity in AC-15	C300 (inrush: 1800 VA/maintained: 180 VA)		
	Breaking capacity in DC-13	24 V/1.5 A - L/R = 50 ms (contact 13-14) 24 V/1.2 A - L/R = 50 ms (contact 21-22)		
	Breaking capacity of solid-state outputs	24 V/20 mA, 48 V/10 mA		
	Max. thermal current (I <sub>the</sub> )	<b>A</b> 2.5		
	Output fuse protection	<b>A</b> 4 gG, conforming to IEC/EN 60947-5-1, DIN VDE 0660 part 200		
	Minimum current (volt-free contact)	<b>mA</b> 10 (1)		
Minimum voltage (volt-free contact)	<b>V</b> 17 (1)			
<b>Electrical durability</b>	Please refer to our catalogue "Safety functions and solutions using Preventa".			
<b>Rated insulation voltage (U<sub>i</sub>)</b>	<b>V</b>	300 (degree of pollution 2 conforming to IEC/EN 60947-5-1, DIN VDE 0110 parts 1 & 2)		
<b>Rated impulse withstand voltage (U<sub>imp</sub>)</b>	<b>kV</b>	4 (overvoltage category III, conforming to IEC/EN 60947-5-1, DIN VDE 0110 parts 1 & 2)		
<b>LED display</b>		4		
<b>Operating temperature</b>	<b>°C</b>	- 10...+ 55		
<b>Storage temperature</b>	<b>°C</b>	- 25...+ 85		
<b>Degree of protection</b> Conforming to EN/IEC 60529	Terminals	IP 20		
	Enclosure	IP 40		
<b>Connection</b>	Type	Terminals	Captive screw clamp	
		Terminal block	Removable from module	
	1-wire connection	Without cable end	Solid or flexible cable: 0.2...2.5 mm <sup>2</sup>	
		With cable end	Without bezel, solid or flexible cable: 0.25...2.5 mm <sup>2</sup> With bezel, solid or flexible cable: 0.25...2.5 mm <sup>2</sup>	
	2-wire connection	Without cable end	Solid cable: 0.2...1 mm <sup>2</sup> , flexible cable: 0.2...1.5 mm <sup>2</sup>	
		With cable end	Without bezel, flexible cable: 0.25...1 mm <sup>2</sup> With bezel, flexible cable: 0.5...1.5 mm <sup>2</sup>	

(1) The module is also capable of switching low power loads (17 V/10 mA) 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).

## References



XPSVNE●●●●●●

Description	Number of safety circuits	Solid-state outputs for PLC	Supply	Frequency of motor power supply	Reference	Weight kg	
Safety modules for zero speed detection	2	2	24 V ∴	≤ 60 Hz	XPSVNE1142P	0.500	
				> 60 Hz	XPSVNE1142HSP	0.500	
				115 V ∼	≤ 60 Hz	XPSVNE3442P	0.600
					> 60 Hz	XPSVNE3442HSP	0.600
				230 V ∼	≤ 60 Hz	XPSVNE3742P	0.600
					> 60 Hz	XPSVNE3742HSP	0.600

### Operating principle

Safety modules XPSDMB and XPSDME are specifically designed for monitoring coded magnetic safety switches. They incorporate two safety outputs and two solid-state outputs for signalling to the process PLC. Conforming to Performance Level PL e/Category 4 conforming to EN/ISO 13849-1, modules XPSDMB can monitor two independent sensors and modules XPSDME can monitor up to six independent sensors.

To monitor a higher number of magnetic switches using these safety modules, the magnetic switches can be connected in series parallel, while meeting the requirements of Performance Level PL d/Category 3 conforming to standard EN/ISO 13849-1.

Safety modules XPSDME●●●●●P incorporate removable terminal blocks, thus optimising machine maintenance.

To aid diagnostics, the modules have LEDs on the front face which provide information on the monitoring circuit status.

### Characteristics

Module type		XPSDMB1132	XPSDMB1132P	XPSDME1132	XPSDME1132P		
<b>Maximum achievable safety level</b>		PL e/Category 4 conforming to EN/ISO 13849-1, SILCL 3 conforming to EN/IEC 62061					
<b>Reliability data</b>	Mean Time To dangerous Failure (MTTF <sub>d</sub> )	<b>Years</b>	83.1	82.4			
	Diagnostic Coverage (DC)	<b>%</b>	> 99	> 99			
	Probability of dangerous Failure per Hour (PFH <sub>d</sub> )	<b>1/h</b>	3.92 x 10 <sup>-9</sup>	3.97 x 10 <sup>-9</sup>			
<b>Conformity to standards</b>		EN/IEC 60204-1, EN 1088/ISO 14119, EN/IEC 60947-1, EN/IEC 60947-5-1, EN/IEC 60947-5-3					
<b>Product certifications</b>		UL, CSA, TÜV					
<b>Supply (U<sub>e</sub>)</b> conforming to IEC 60038	Voltage	<b>V</b>	24 V ~				
	Voltage limits		- 20...+ 20 %				
<b>Consumption</b>		<b>W</b>	< 2.5	< 3.5			
<b>Module inputs fuse protection</b>			Internal, electronic				
<b>Maximum wiring resistance RL</b> between the module and the coded magnetic switches		<b>Ω</b>	100				
<b>Control unit voltage and current</b>			28 V/8 mA				
<b>Synchronisation time between magnetic switch inputs</b>		<b>s</b>	< 0.5				
<b>Safety outputs</b>	Voltage reference		Volt-free				
	Number and type of safety circuits		2 NO				
	Number and type of solid-state outputs		2				
	Breaking capacity in AC-15	<b>VA</b>	C300: inrush 1800, maintained: 180				
	Breaking capacity in DC-13		24 V/1.5 A, L/R = 50 ms				
	Max. thermal current (I <sub>the</sub> )	<b>A</b>	6				
	Max. total thermal current	<b>A</b>	12				
	Output fuse protection	<b>A</b>	4 gG or 6 fast acting				
	Minimum current	<b>mA</b>	10				
	Minimum voltage	<b>V</b>	17				
<b>Electrical durability</b>			Please refer to our catalogue "Safety functions and solutions using Preventa".				
<b>Response time on input opening</b>		<b>ms</b>	< 20				
<b>Rated insulation voltage (U<sub>i</sub>)</b>		<b>V</b>	300 (degree of pollution 2 conforming to IEC/EN 60947-5-1, DIN VDE 0110 parts 1 & 2)				
<b>Rated impulse withstand voltage (U<sub>imp</sub>)</b>		<b>kV</b>	4 (overvoltage category III, conforming to IEC/EN 60947-5-1, DIN VDE 0110 parts 1 & 2)				
<b>LED display</b>			3	15			
<b>Ambient air temperature</b>	For operation	<b>°C</b>	- 10...+ 55				
	For storage	<b>°C</b>	- 25...+ 85				
<b>Degree of protection</b> conforming to EN/IEC 60529			Terminals: IP 20, enclosure: IP 40				
<b>Connection</b>	Type	Terminals	Captive screw clamp terminals				
		Terminal block	Integrated in module	Removable from module	Integrated in module	Removable from module	
	1-wire connection	Without cable end		Solid or flexible cable: 0.14...2.5 mm <sup>2</sup>	Solid or flexible cable: 0.2...2.5 mm <sup>2</sup>	Solid or flexible cable: 0.14...2.5 mm <sup>2</sup>	Solid or flexible cable: 0.14...2.5 mm <sup>2</sup>
			With cable end	Without bezel, flexible cable: 0.25...2.5 mm <sup>2</sup>			
		With cable end		With bezel, flexible cable: 0.25...1.5 mm <sup>2</sup>	With bezel, flexible cable: 0.25...2.5 mm <sup>2</sup>	With bezel, flexible cable: 0.25...1.5 mm <sup>2</sup>	With bezel, flexible cable: 0.25...2.5 mm <sup>2</sup>
	2-wire connection	Without cable end		Solid or flexible cable: 0.14...0.75 mm <sup>2</sup>	Solid cable: 0.2...1 mm <sup>2</sup> , flexible cable: 0.2...1.5 mm <sup>2</sup>	Solid or flexible cable: 0.14...0.75 mm <sup>2</sup>	Solid cable: 0.2...1 mm <sup>2</sup> , flexible cable: 0.2...1.5 mm <sup>2</sup>
			With cable end	Without bezel, flexible cable: 0.25...1 mm <sup>2</sup>			
		With cable end		With bezel, flexible cable: 0.5...1.5 mm <sup>2</sup>			

# Safety automation solutions

Preventa safety modules types XPSDMB,  
XPSDME  
For coded magnetic switch monitoring



XPSDMB1132



XPSDME1132

References						
Description	Type of terminal block connection	Number of safety circuits	Solid-state outputs for PLC	Supply	Reference	Weight
				V		kg
Safety module for monitoring 2 coded magnetic switches	Integrated in module	2 NO	2	24 V	XPSDMB1132	0.250
Safety module for monitoring 6 coded magnetic switches	Integrated in module	2 NO	2	24 V	XPSDME1132	0.300
Safety module for monitoring 2 coded magnetic switches	Removable from module	2 NO	2	24 V	XPSDMB1132P	0.250
Safety module for monitoring 6 coded magnetic switches	Removable from module	2 NO	2	24 V	XPSDME1132P	0.300