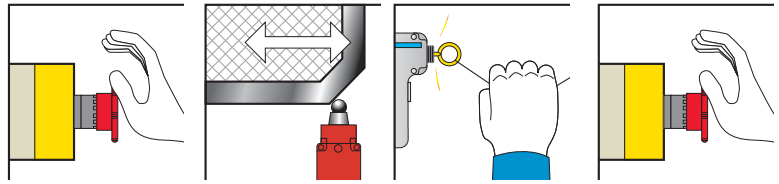


Applications



Modules

For Emergency stop and switch monitoring

For Emergency stop and protective guard applications

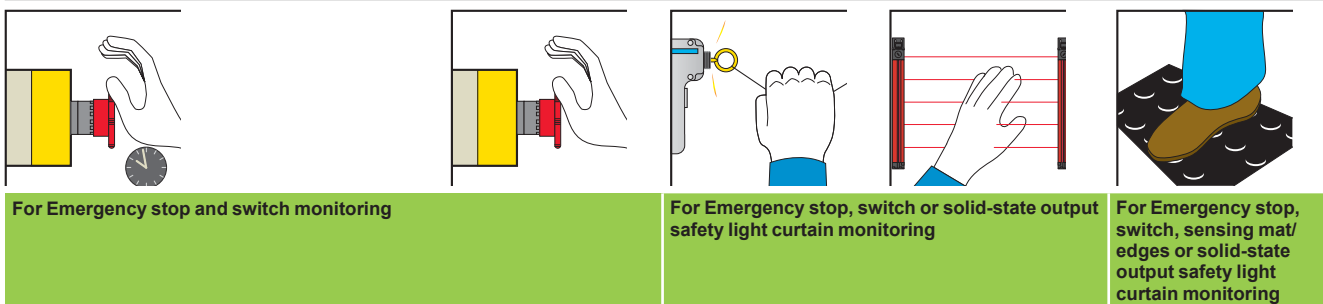


3

Maximum achievable safety level	PLe/Category 4 conforming to EN/ISO 13849-1, SILCL3 conforming to EN/IEC 61508 and EN/IEC 62061	PLe/Category 4 conforming to EN/ISO 13849-1, SILCL3 conforming to EN/IEC 61508 and EN/IEC 62061	PLe/Category 4 (instantaneous safety outputs) and PL/Category 3 (time delay safety outputs) conforming to EN/ISO 13849-1, SILCL3 (instantaneous safety outputs) and SILCL2 (time delay safety outputs) conforming to EN/IEC 61508 and EN/IEC 62061	PLe/Category 4 conforming to EN ISO 13849-1, SILCL3 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	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/ISO 13850, EN 1088/ISO 14119, EN/IEC 60947-1, EN/IEC 60947-5-1	EN 62061, EN ISO 13849-1, EN 50156-1, EN 60204-1, EN/IEC 61496-1, EN/IEC 60947-5-1
Product certifications	UL, CSA, TÜV	UL, CSA, BG	UL, CSA, TÜV	UL, CSA, TÜV
Number of circuits				
Safety	3 NO	3 NO	2 NO instantaneous + 3 NO time delay	3 NO instantaneous + 3 NO time delay
Additional	1 solid-state output for signalling to PLC	1 relay output for signalling to PLC	4 solid-state outputs for signalling to PLC	1 NC
Display	2 LEDs	2 LEDs	4 LEDs	5 LEDs
Supply voltage	a and 24 V c 48 V a 115 V a 230 V a	a and 24 V c	a and 24 V c 115 V a 230 V a	c 24 V a 115...230 V
Synchronisation time between inputs	Unlimited	Unlimited	75 ms (automatic start)	1
Input channel voltage				
24 V/48 V version	a and 24 V c /48 V a	24 V c	24 V c /-	24 V c /-
24 V/48 V or 110 V/120 V/230 V version	115 V a /230 V -	-	48 V a /48 V -	24 V c /-
Module type	XPSAC	XPSAXE	XPSATE	XPSATR
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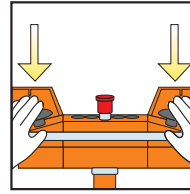
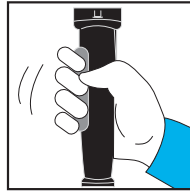
PLe/Category 4 conforming to EN/ISO 13849-1, SILCL3 conforming to EN/IEC 61508 and EN/IEC 62061	PLe/Category 4 (instantaneous safety outputs) and PLd/Category 3 (time delay safety outputs) conforming to EN/ISO 13849-1, SILCL3 (instantaneous safety outputs) and SILCL2 (time delay safety outputs) conforming to EN/IEC 61508 and EN/IEC 62061	PLe/Category 4 conforming to EN/ISO 13849-1, SILCL3 conforming to EN/IEC 61508 and EN/IEC 62061	PLe/Category 4 conforming to EN/ISO 13849-1, SILCL3 conforming to EN/IEC 61508 and EN/IEC 62061	PLe/Category 4 conforming to EN/ISO 13849-1, SILCL3 conforming to EN/IEC 61508 and EN/IEC 62061	PLe/Category 4 conforming to EN/ISO 13849-1, SILCL3 conforming to EN/IEC 61508 and 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/ISO 13850, EN 1088/ISO 14119	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, EN/IEC 61496-1 (type 4)	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
UL, CSA, TÜV	UL, CSA, BG	UL, CSA, TÜV	UL, CSA, TÜV	UL, CSA, TÜV	UL, CSA, TÜV

3 NO instantaneous + 3 NO time delay	2 NO instantaneous + 1 NO time delay	3 NO		7 NO	3 NO instantaneous
3 solid-state outputs for signalling to PLC	–	–		2 NC + 4 solid-state outputs for signalling to PLC	1 NC + 4 solid-state outputs for signalling to PLC
11 LEDs	3 LEDs	3 LEDs		4 LEDs	4 LEDs
24 V c	24 V c	a and 24 V c		a and 24 V c 115 V a and 24 V c 230 V a and 24 V c	a and 24 V c 48 V a 110 V a and 24 V c 120 V a and 24 V c 230 V a and 24 V c

Unlimited or 1.5 s (depending on wiring)	Unlimited	Unlimited			Unlimited or 2 s, 4 s (depending on wiring)
24 V c/-	24 V c/-	c 24 V/-		24 V c/-	24 V c/-
–	–	–		24 V a /24 V	–
–	–	–		–	24 V c /24 V/24 V

XPSAV	XPSABV	XPSAF	XPSAFL	XPSAR	XPSAK
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Applications



Modules

For enabling switch monitoring

For electrical monitoring of two-hand control stations



3

Maximum achievable safety level

PLe/Category 4 conforming to EN/ISO 13849-1, SILCL3 conforming to EN/IEC 61508 and EN/IEC 62061

PLc/Category 1 conforming to EN/ISO 13849-1 SILCL1 conforming to EN/IEC 62061

PLe/Category 4 conforming to EN/ISO 13849-1, SILCL3 conforming to EN/IEC 61508 and EN/IEC 62061

Conformity to standards

EN/IEC 60204-1, EN 61326, EN/IEC 60947-1, EN/IEC 60947-5-1

EN 574 type III A, EN/IEC 60204-1, EN/IEC 60947-5-1, EN 62061

EN/IEC 60204-1, EN/IEC 60947-1, EN/IEC 60947-5-1, EN 574 type III C/ISO 13851

Product certifications

UL, CSA, TÜV

UL, CSA, TÜV

UL, CSA, BG

Number of circuits

Safety

2 NO

1 NO

2 NO

Additional

2 solid-state outputs for signalling to PLC

1 NC

1 NC

Display

3 LEDs

2 LEDs

3 LEDs

Supply voltage

24 V_C

a and 24 V_C
115/230 V_a

a and 24 V_C
115/120 V_a
230 V_a

Synchronisation time between inputs

–

500 ms

500 ms

Input channel voltage

24 V/48 V version

24 V/–

24 V_C/–

24 V_C

115 V/230 V version

–

24 V_a/24 V

–

Module type

XPSVC

XPSBAE

XPSBCE

Pages

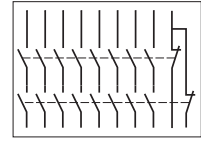
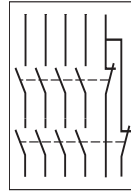
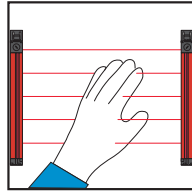
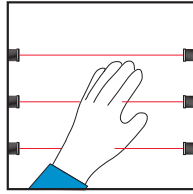
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For control of 1 to 4 single-beam photo-electric sensors XU2 S (transmitter-receiver pair)

For monitoring type 2 and type 4 light curtains Compact and slim ranges

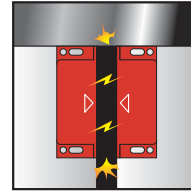
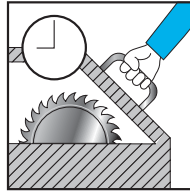
For extending the number of safety contacts



3

PLe/Category 4 conforming to EN/ISO 13849-1, SILCL3 conforming to EN/IEC 61508 and EN/IEC 62061	PLc/Category 2 conforming to EN/ISO 13849-1, SILCL1 conforming to EN/IEC 61508 and EN/IEC 62061	PLe/Category 4 conforming to EN/ISO 13849-1, SILCL3 conforming to EN/IEC 61508 and EN/IEC 62061	PLe/Category 4 conforming to EN/ISO 13849-1, SILCL3 conforming to EN/IEC 61508 and EN/IEC 62061 (when connected to the appropriate module)	PLe/Category 4 conforming to EN/ISO 13849-1, SILCL3 conforming to EN/IEC 61508 and EN/IEC 62061 (when connected to the appropriate module)
EN/IEC 60204-1, EN/IEC 60947-1, EN/IEC 60947-5-1, EN 574 type III C/ISO 13851	EN/IEC 61496-1, EN/IEC 61496-2, EN/IEC 60204-1, EN/IEC 60947-1, EN/IEC 60947-5-1	EN/IEC 61496-1, EN/IEC 61496-2, EN/IEC 60204-1, 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/IEC 60947-1, EN/IEC 60947-5-1
UL, CSA, TÜV	UL, CSA, IFA	UL, CSA, TÜV	UL, CSA, BG	UL, CSA, TÜV
2 NO	2 NO	2 solid-state	4 NO	8 NO
2 solid-state outputs for signalling to PLC	4 solid-state PNP NO outputs for signalling to PLC	1 PNP + 1 NPN output for signalling to PLC	2 NC	1 NC
3 LEDs	4 LEDs	14 LEDs + 2-digit display	2 LEDs	3 LEDs
24 V _C	24 V _C	24 V _C	a and 24 V _C	a and 24 V _C 115 V _a 230 V _a
500 ms	–	3 s or infinite	–	–
24 V _C /–	–	–	–	–
–	–	–	–	–
XPSBF	XPSCM	XPSLCM	XPSECME	XPSECPE
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Applications



Modules

For the monitoring of applications requiring safety time delays

For coded magnetic switch monitoring

For 2 max.

For 6 max.



3

Maximum achievable safety level
Conformity to standards
Product certifications

PL d/Category 3 conforming to EN/ISO 13849-1, SILCL 2 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	PL e/Category 4 conforming to EN/ISO 13849-1 SILCL 3 conforming to EN/IEC 62061
EN/IEC 60204-1, 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	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	UL, CSA, TÜV	UL, CSA, TÜV	UL, CSA, TÜV

Number of circuits	Safety	1 NO time delayed	1 NO pulse type	2 NO
	Additional	2 NC + 2 solid-state outputs for signalling to PLC		2 solid-state outputs for signalling to PLC
Display	4 LEDs		3 LEDs	15 LEDs
Supply voltage	a and 24 V c 115 V a 230 V a		c 24 V	

Synchronisation time between inputs

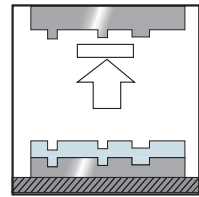
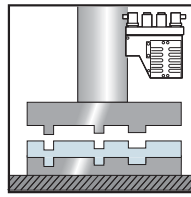
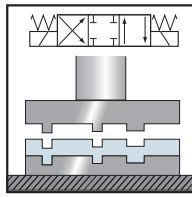
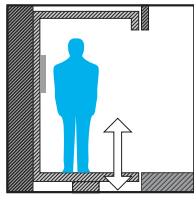
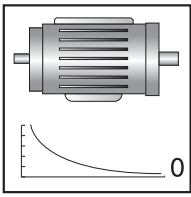
-	-	500 ms
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Module type

XPSTSA	XPSTSW	XPSDME	XPSDME
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Pages

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

For lift control

For dynamic monitoring of hydraulic valves on linear presses

For dynamic monitoring of double-bodied solenoid valves

For safety stop at top dead centre with automatic overtravel monitoring and control



3

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	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	PL e/Category 4 conforming to EN/ISO 13849-1, SILCL 3 conforming to EN/IEC 62061
EN/IEC 60204-1, EN/IEC 60947-1, EN/IEC 60947-5-1	EN 81-1, EN 81-2, EN/IEC 60947-5-1, EN 12015, EN 12016	EN 693, EN/IEC 60204-1, EN/IEC 60947-1, EN/IEC 60947-5-1	EN 692, EN/IEC 60204-1, EN/IEC 60947-1, EN/IEC 60947-5-1	EN 692, EN/IEC 60204-1, EN/IEC 60947-1, EN/IEC 60947-5-1
UL, CSA, TÜV	TÜV	UL, CSA, TÜV	UL, CSA, TÜV	UL, CSA, TÜV

1 NO + 1 NC	2 NO	2 NO + 1 NC	1 NO + 1 NC	3 NO
2 solid-state outputs for signalling to PLC		–	4 solid-state outputs for signalling to PLC	
4 LEDs	4 LEDs	8 LEDs		
24 V _c 115 V _a 230 V _a	a and 24 V _c	24 V _c	24 V _c 115 V _a 230 V _a	– 115 V _a 230 V _a
–	Infinite	–	–	–

XPSVNE	XPSEDA	XPSPVT	XPSPVK	XPSOT
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Monitor and Processing

Preventa safety modules types XPSAC, XPSAXE

For Emergency stop and switch monitoring

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 protective devices conforming to standard EN/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.

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

b The **XPSAXE** module has 3 safety outputs and a relay output for signalling to the PLC

3

References

Description	Connection	Number of instantaneous opening safety circuits	Additional outputs	Supply	Reference	Weight kg/lb
Safety modules for Emergency stop and switch monitoring	Captive screw clamp terminals Terminal block integrated in module	3	1 solid-state	a and c 24 V	XPSAC5121	0.160/ 0.353
				a 48 V	XPSAC1321	0.210/ 0.463
				a 115 V	XPSAC3421	0.210/ 0.463
				a 230 V	XPSAC3721	0.210/ 0.463
	Captive screw clamp 3 terminals Terminal block removable from module	3	1 solid-state	a and c 24 V	XPSAC5121P	0.160/ 0.353
				a 48 V	XPSAC1321P	0.210/ 0.463
				a 115 V	XPSAC3421P	0.210/ 0.463
				a 230 V	XPSAC3721P	0.210/ 0.463
			1 relay	a and c 24 V	XPSAXE5120P	0.229/ 0.505
	Spring terminals Terminal block removable from module	3	1 relay	a and c 24 V	XPSAXE5120C	0.229/ 0.505



XPSACpppp



XPSACppppP



XPSAXE5120P



XPSAXE5120C

Monitor and Processing

Preventa safety modules types XPSAV, XPSABV, XPSATE

For Emergency stop and switch monitoring

Operating principle

Safety modules **XPSAV**, **XPSABV** and **XPSATE** 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/ISO 14119.

They provide protective 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.

In addition to the stop category 0 instantaneous opening safety outputs (3 for **XPSAV**, 2 for **XPSABV** and 2 for **XPSATE**), the modules incorporate stop category 1 time delay outputs (3 for **XPSAV**, 1 for **XPSABV** and 3 for **XPSATE**) which allow for controlled deceleration of the motor components until a complete stop is achieved (for example, motor braking by variable speed drive).

At the end of the preset delay, the supply is disconnected by opening the time delay output circuits.

b For module **XPSAV**, the time delay of the 3 output circuits is adjustable, in 15 preset values, between 0 and 300 seconds using selector buttons.

b For module **XPSABV**, the time delay of the 3 output circuits is adjustable between 0.15 and 3 seconds or 1.5 and 30 seconds, depending on the model, using a selector switch.

b For module **XPSATE**, the time delay of the 3 output circuits is adjustable between 0 and 30 seconds using a 12-position selector switch.

Module **XPSAV** also incorporates 3 solid-state signalling outputs for signalling to the process PLC.

Module **XPSATE** incorporates 4 solid-state signalling outputs for signalling to the process PLC.

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

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



XPSAV11113



XPSAV11113P



XPSABVppppP



XPSABVppppC



XPSATE5110

References

Description	Connection	Number of safety circuits	Additional outputs	Setting range of time delay	Supply	Reference	Weight kg/lb
Safety modules for Emergency stop and switch monitoring	Captive screw clamp terminals Terminal block integrated in module	6 NO (3 NO time delay)	3 solid-state	0...300 s	c 24 V	XPSAV11113	0.320/ 0.705
	Captive screw clamp terminals Terminal block removable from module	6 NO (3 NO time delay)	3 solid-state	0...300 s	c 24 V	XPSAV11113P	0.320/ 0.705
	Captive screw clamp terminals Terminal block integrated in module	6 NO (3 NO time delay)	3 solid-state	0...300 s (Start delay 0,5 s)	c 24 V	XPSAV11113T050	0.320/ 0.705
	Captive screw clamp terminals Terminal block integrated in module	6 NO (3 NO time delay)	3 solid-state	0.1 ...2 s	c 24 V	XPSAV11113Z002	0.320/ 0.705
	Captive screw clamp terminals Terminal block removable from module	3 NO (1 NO time delay)	–	0,15...3 s	c 24 V	XPSABV1133P	0.280/ 0.617
	Spring terminals Terminal block removable from module	3 NO (1 NO time delay)	–	0,15...3 s	c 24 V	XPSABV1133C	0.275/ 0.606
	Captive screw clamp terminals Terminal block removable from module	3 NO (1 NO time delay)	–	1,5...30 s	c 24 V	XPSABV11330P	0.280/ 0.617
	Spring terminals Terminal block removable from module	3 NO (1 NO time delay)	–	1,5...30 s	c 24 V	XPSABV11330C	0.275/ 0.606
	Captive screw clamp terminals Terminal block integrated in module	5 NO (3 NO time delay)	4 solid-state	0...30 s	a and c 24 V	XPSATE5110	0.280/ 0.617
	Captive screw clamp terminals Terminal block removable from module	5 NO (3 NO time delay)	4 solid-state	0...30 s	a and c 24 V	XPSATE5110P	0.280/ 0.617
	Captive screw clamp terminals Terminal block integrated in module	5 NO (3 NO time delay)	4 solid-state	0...30 s	a 115 V	XPSATE3410	0.380/ 0.838
	Captive screw clamp terminals Terminal block removable from module	5 NO (3 NO time delay)	4 solid-state	0...30 s	a 115 V	XPSATE3410P	0.380/ 0.838
	Captive screw clamp terminals Terminal block integrated in module	5 NO (3 NO time delay)	4 solid-state	0...30 s	a 230 V	XPSATE3710	0.380/ 0.838
	Captive screw clamp terminals Terminal block removable from module	5 NO (3 NO time delay)	4 solid-state	0...30 s	a 230 V	XPSATE3710P	0.380/ 0.838

Operating principle

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

Safety modules **XPSATR** are electronic, redundant and self-monitoring devices with positively driven relays.

They are used for monitoring Emergency stop circuits (single or two-channel) and protective guard applications. The modules are conforming to standards EN/ISO 13850 and EN 60204-1.

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.

XPSATR incorporate 3 NO and 1 NC not delayed contacts and 3 delayed NO contacts.

To aid diagnostics, the modules have 5 LEDs on the front face which provide information on the monitoring circuit status.

References

Description	Connection	Number of safety circuits	Additional outputs	Time setting range	Supply	Reference	Weight kg/lb
Safety modules for emergency stop and safety guards monitoring	Captive screw clamp terminals Terminal block removable from module	3 NO + 3 NO time delay	1 NC	0.1...3 s	c 24 V	XPSATR1153P	0.330/ 0.728
				0.1...3 s	a 115...230 V	XPSATR3953P	0.350/ 0.772
				0...30 s	c 24 V	XPSATR11530P	0.330/ 0.728
				0...30 s	a 115...230 V	XPSATR39530P	0.350/ 0.772
	Cage clamp terminals Terminal block removable from module	3 NO + 3 NO time delay	1 NC	0.1...3 s	c 24 V	XPSATR1153C	0.330/ 0.728
				0.1...3 s	a 115...230 V	XPSATR3953C	0.350/ 0.772
				0...30 s	c 24 V	XPSATR11530C	0.330/ 0.728
				0...30 s	a 115...230 V	XPSATR39530C	0.350/ 0.772



XPSATRppppP



XPSATRppppC

Monitor and Processing

Preventa safety modules type XPSAF

For Emergency stop and switch monitoring

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:

b Monitoring Emergency stop circuits conforming to standards EN/ISO 13850 and EN/IEC 60204-1.

b Electrical monitoring of switches activated by protection devices conforming to standard EN/ISO 14119.

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

Preventa safety modules **XPSAFppppP** 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.

3

References

Description	Connection	Number of safety circuits	Supply	Reference	Weight kg/ lb
Safety modules for Emergency stop and switch monitoring	Captive screw clamp terminals Terminal block integrated in module	3	a and c 24 V	XPSAF5130	0.250/ 0.551
	Captive screw clamp terminals Terminal block removable from module	3	a and c 24 V	XPSAF5130P	0.250/ 0.551



XPSAF5130

Monitor and Processing

Preventa safety modules type XPSAFL

For Emergency stop, switch and safety light curtain monitoring

Operating principle

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

They are used for:

- b Monitoring Emergency stop circuits conforming to standards EN/ISO 13850 and EN/IEC 60204-1.
- b Electrical monitoring of switches activated by protection devices conforming to standard EN/ISO 14119.

They can also be used for monitoring type 4 light curtains conforming to EN 61496-1 that have solid-state safety outputs (for example, light curtains type XUSL). This system conforms to Performance Level PL e/Category 4 in accordance with EN/ISO 13849-1.

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

3

References

Description	Connection	Number of safety circuits	Supply	Reference	Weight kg/lb
Safety modules for Emergency stop, switch and safety light curtain monitoring	Captive screw clamp terminals Terminal block integrated in module	3	a and c 24 V	XPSAFL5130	0.250/ 0.551
	Captive screw clamp terminals Terminal block removable from module	3	a and c 24 V	XPSAFL5130P	0.250/ 0.551



XPSAFL5130

Monitor and Processing

Preventa safety modules type XPSAR

For Emergency stop, switch or safety light curtain monitoring

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:

- b Monitoring Emergency stop circuits conforming to EN/ISO 13850 and EN/IEC 60204-1.
- b Electrical monitoring of switches activated by protection devices conforming to standard EN/ISO 14119.
- b Monitoring type 4 light curtains conforming to EN/IEC 61496-1 that have solid-state safety outputs with test function (light curtains XUS L).

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 **XPSARpppppP** 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.

References

Description	Connection	Number of safety circuits	Additional outputs/ solid-state outputs to PLC	Supply	Reference	Weight kg/ lb	
Safety modules for Emergency stop, switch or safety light curtain monitoring	Captive screw clamp terminals, Terminal block integrated in module	7	2/4	a and c 24 V	XPSAR311144	0.300/ 0.661	
				a 115 V c 24 V	XPSAR351144	0.400/ 0.882	
				a 230 V c 24 V	XPSAR371144	0.400/ 0.882	
	Captive screw clamp terminals, Terminal block removable from module	7	2/4		a and c 24 V	XPSAR311144P	0.300/ 0.661
					a 115 V c 24 V	XPSAR351144P	0.400/ 0.882
					a 230 V c 24 V	XPSAR371144P	0.400/ 0.882



XPSAR3p1144

Monitor and Processing

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:

b Monitoring Emergency stop circuits conforming to standards EN/ISO 13850 and EN/IEC 60204-1.

b Electrical monitoring of switches activated by protection devices, with optional selection of synchronisation time between signals.

b Monitoring 4-wire sensing mats or edges.

b 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 **XPSAKppppP** 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.

3

References

Description	Connection	Number of safety circuits	Additional outputs / Solid-state outputs for PLC	Supply	Reference	Weight kg/ lb
Safety modules for Emergency stop, switch, sensing mat/edges or safety light curtain monitoring	Captive screw clamp terminals Terminal block integrated in module	3	1 / 4	a and c 24 V	XPSAK311144	0.300/ 0.661
				a 110 V c 24 V	XPSAK361144	0.400/ 0.882
				a 120 V c 24 V	XPSAK351144	0.400/ 0.882
				a 230 V c 24 V	XPSAK371144	0.400/ 0.882
	Captive screw clamp terminals Terminal block removable from module	3	1 / 4	a and c 24 V	XPSAK311144P	0.300/ 0.661
				a 48 V	XPSAK331144P	0.300/ 0.661
				a 110 V c 24 V	XPSAK361144P	0.400/ 0.882
				a 120 V c 24 V	XPSAK351144P	0.400/ 0.882
				a 230 V c 24 V	XPSAK371144P	0.400/ 0.882



XPSAK3p1144

Operating principle

The enabling grip switch system, comprising an enabling switch XY2AU and a monitoring module **XPSVC**, enables authorised personnel to carry out adjustment, programming or maintenance operations within hazardous zones of machines providing certain conditions are met.

To be accessible, such operations are often carried out at reduced speed, and must be intentionally selected by authorised persons by means of a selector switch or key switch. Once the selection is made, the enabling switch system temporarily takes over from the hazardous zone's usual protection measures.

Caution: The enabling switch system alone must not cause dangerous movements of the machine to be activated; a second intentional control action on the part of the operator is required. In addition, each person remaining in the hazardous zone must be provided with an individual enabling switch to ensure their own safety.



XPSVC1132

References

Description	Connection	Number of safety circuits	Solid-state outputs for PLC	Supply	Reference	Weight kg/lb
Safety modules for enabling switch monitoring	Captive screw clamp terminals Terminal block integrated in module	2 NO	2	C 24	XPSVC1132	0.250/ 0.551
	Captive screw clamp terminals Terminal block removable from module	2 NO	2	C 24	XPSVC1132P	0.250/ 0.551

Operating principle

Two-hand control stations are designed to provide protection against hand injury. They require machine operators to keep their hands clear of the dangerous movement zone. The use of two-hand control is an individual protective measure, which can safely protect only one operator. Separate two-hand control stations must be provided for each operator in a multiple-worker environment.

Safety modules **XPSBAE**, **BCE** and **BF** for two-hand control stations comply with the requirements of European standard EN 574/ISO 13851 for two-hand control systems.

The control stations must be designed and installed such that they cannot be activated involuntarily or easily rendered inoperative. Depending on the application, the requirements of type C standards specific to the machinery involved must be met (additional personal protection methods may have to be considered).

To initiate a dangerous movement, both operators (two-hand control pushbuttons) must be activated within an interval γ 0.5 s (synchronous activation). If one of the two pushbuttons is released during a dangerous operation, the control sequence is cancelled. Resumption of the dangerous operation is possible only if both pushbuttons are returned to their initial position and reactivated within the required time interval.

The safety distance between the control units and the hazardous zone must be sufficient to ensure that when only one operator is released, the hazardous zone cannot be reached before the dangerous movement has been completed or stopped.

3



XPSBAEppppP



XPSBAEppppC



XPSBCEppppP



XPSBCEppppC



XPSBF1132

Selection

Requirements of standard EN 574/ISO 13851

Standard EN 574/ISO 13851 defines the selection of two-hand controls according to its behavior. The following table details the 3 types of two-hand control conforming to EN 574/ISO 13851. For each type, it lists the operating characteristics and minimum requirements.

	Type I	Type II	Type III		
			A	B	C
Use of both hands (simultaneous action)					
Link between input and output signals					
Output signal inhibited					
Prevention of accidental operation					
Tamper-proof					
Output signal reinitialised					
Synchronous action (specified time limit)					
Use of proven components (Category 1 conforming to EN/ISO 13849-1)			XPSBAE		
Redundancy with partial error detection (Category 3 conforming to EN/ISO 13849-1)				XPSBCE XPSBF	
Redundancy + Self-monitoring (Category 4 conforming to EN/ISO 13849-1)					XPSBCE XPSBF
Two-hand control station	XY2SBpp				

Conforming to standard EN/ISO 13849-1

Meets the requirements of standard EN 574/ISO 13851

References

Description	Type conforming to standard EN 574	Connection	Number of safety circuits	Additional outputs	Supply	Reference	Weight kg/ lb
Safety modules for electrical monitoring of two-hand control stations	III A	Captive screw clamp terminals	1 NO	1 NC	a and 24 V c	XPSBAE5120P	0.100/ 0.220
		Terminal block removable from module			a 115/230V	XPSBAE3920P	0.100/ 0.220
		Spring terminals	1 NO	1 NC	a and 24 V c	XPSBAE5120C	0.100/ 0.220
	III C	Terminal block removable from module			a 115/230V	XPSBAE3920C	0.100/ 0.220
		Captive screw clamp terminals	2 NO	1 NC relay	a and 24 V c	XPSBCE3110P	0.272/ 0.600
		Terminal block removable from module			a 115/120 V	XPSBCE3410P	0.322/ 0.710
		Spring terminals	2 NO	1 NC relay	a 230 V	XPSBCE3710P	0.322/ 0.710
					a and 24 V c	XPSBCE3110C	0.272/ 0.600
					a 115 /120 V	XPSBCE3410C	0.322/ 0.710
		Captive screw clamp terminals	2 NO	2 solid-state	c 24 V	XPSBF1132	0.150/ 0.331
					c 24 V	XPSBF1132P	0.150/ 0.331

Monitor and Processing

Preventa safety modules and single-beam photo-electric sensors

With a test input associated with a built-in “muting” function

Operating principle

XPSCM safety modules used in conjunction with XU2S single-beam photo-electric sensors (periodically tested), establish a category 2 light curtain conforming to IEC/EN 61496 parts 1 and 2.

The connection of 1 to 4 pairs of XU2S photo-electric sensors makes it possible to create a protected zone up to 1200 mm high conforming to EN 999/ISO 13855 and 8 m long.

The built-in “muting” function allows the automatic passage of parts to be machined, or loaded pallets, without interrupting the transportation movement.

When the system is switched on by the start command (in series with the main circuit feedback loop) and the light protection is not interrupted, the main circuit is closed by the two safety relays of the XPSCM module.

An interruption of the protective field causes the safety outputs to open instantaneously, and the process PLC receives a stop command. The LED on the XPSCM front panel changes from green to red. The “open” state is maintained until the module is restarted using the start button.

The “muting” function allows the light curtain protection to be inhibited. This can be used to authorise the passage of a materials trolley through the light curtain without tripping the main circuit. The “muting” function cannot be activated by supplying the inhibition sensors unless the safety outputs have been switched on beforehand.

To trigger the “muting” function, the inhibition devices must be activated within the 3 second time interval. This synchronisation time for the two inhibition inputs can be deactivated by connecting two configuration terminals. The “muting” cycle has a maximum duration of 60 seconds. During this period, materials can be transported through the protection field without deactivating the safety outputs. The 60 second limit value of the “muting” cycle may be made infinite by connecting two configuration terminals.

During the “muting” process, a light indicating the “muting” status is controlled by the XPSCM module. An fault at indicator light level (short-circuit, open circuit) will be immediately recognised and deactivate the “muting” function. The indicator light comes on when a “muting” signal is generated and indicates the inhibition of the protection function.

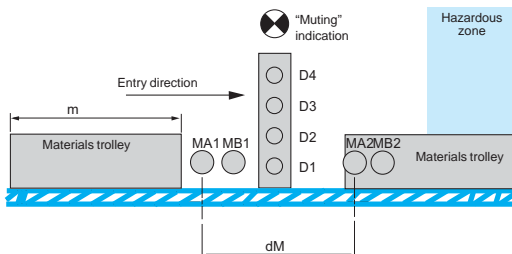
Conditions to be observed for the “muting” function

- b The “muting” sensors must either be:
 - ✓ Thru-beam type, sensing distance 8 m: XU2S18PP340L5 (or XU2S18PP340D).
 - ✓ Thru-beam type, sensing distance 15 m: XUB2BKSNL2T (or XUB2BKSNM12T) + XUB2BPANL2R (or XUB2BPANM12R).
 - ✓ Polarised reflex type, sensing distance 2 m: XUB9BPNAL2 (or XUB9BPNAM12) + XUZC50.
 - ✓ Polarised reflex type, sensing distance 5 m: XUM9APCNL2 (or XUM9APCNM8) or XUM9BPANL2 + XUZC50.
 - ✓ Limit switches.

b $dM \geq m$ to obtain continuous validation of the “muting” function.

b Avoid the intrusion of persons during the “muting” phase. This phase is indicated by the indicator light connected to the “muting” indicator output of the XPSCM module.

b A materials trolley must provide the “muting” signal before entering the protection field and cease it once it has cleared all the sensors of the protection field on exiting.



D1, D2, D3, D4: monitoring photo-electric sensors.
MA1, MB1, MA2, MB2: “muting” photo-electric sensors.
m = trolley length (including material)
dM = distance between MA1, MB1 and MA2, MB2.

References

Description	Type of terminal block connection	Number of safety circuits	Additional safety outputs	Supply	Reference	Weight kg/ lb
Safety modules for monitoring single-beam photo-electric sensors, with a built-in “muting” function	Integrated in module	2	4	24 V c	XPSCM1144	0.350/ 0.772
	Removable from module	2	4	24 V c	XPSCM1144P	0.350/ 0.772



XPSCM1144p

Monitor and Processing

Safety monitoring module

Preventa XPSLCM

for the “muting” function of type 2 and type 4 safety light curtains

3

Operating principle

XPSLCM safety modules are used with type 4 light curtains conforming to EN/IEC 61496-1 to provide a system inhibiting the light curtain protection, i.e. “muting”. This function enables the automatic passage of parts for machining or loaded pallets, without interrupting the transportation movement within the zone protected by the electro-sensitive protection equipment (ESPE) system. In addition to the electro-sensitive protection and XPSLCM safety modules, the system comprises 4 to 8 inhibition sensors, 2 indicator lights and a key switch to reset the system to the initial state in the event of a sequence error.

When the system is switched on by the start command and the light curtain protection not interrupted, the main circuit is closed by the safety outputs of the XPSLCM modules (solid-state safety outputs). In addition to safety outputs, the modules incorporate signalling outputs for sending system status information to the PLC. Either 5 or 14 LEDs and a 2-digit display, mounted on the front face of the module, provide information on the safety circuit status.

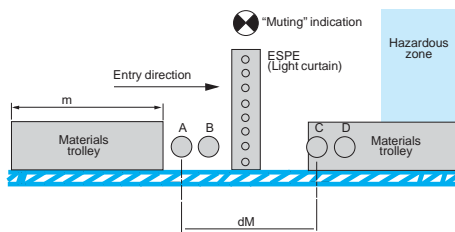
An interruption of the protection field monitored by the electro-sensitive protection equipment causes instantaneous opening of the safety outputs; the process PLC receives a stop command and the LED display mounted on the front face indicates the change of state of the safety circuits. The “open” state is maintained until the module is restarted using the Start button.

The “muting” function cannot be activated by supplying the inhibition sensors unless the safety outputs have been switched on beforehand. To trigger the “muting” function, the inhibition devices must be activated within the 3 second time interval. During the activated “muting” phase, materials can be transported through the protection field without deactivating the safety outputs. In the event of intrusion into the hazardous zone, a person cannot activate the inhibition sensors in the same way and the system stops.

Whilst the “muting” function is activated, a “muting” status indicator light is controlled by the XPSLCM module. A fault at indicator light level (short-circuit, open circuit) is immediately recognised and deactivates the “muting” function. The indicator light only illuminates when a “muting” signal is generated and indicates the inhibition of the protection function.

Conditions to be observed for the “muting” function

- b The “muting” sensors must either be:
 - ✓ Thru-beam type, sensing distance 15 m: XUM2APCNL2 (or XUM2APCNM8) or XUM2BPANL2 or XUM2BPNL2.
 - ✓ Polarised reflex type, sensing distance 5 m: XUM9APCNL2 (or XUM9APCNM8) or XUM9BPANL2 or XUM9BPNL2 + XUZC50.
 - ✓ Polarised reflex type, sensing distance 11 m: XUX9APANT16 (or XUX9APANM12) or XUX9APBNT16 (or XUX9APBNM12) + XUZC50.
 - ✓ Limit switches
- b dM y m to obtain continuous validation of the “muting” function.
- b Avoid the intrusion of persons during the “muting” phase. This phase is indicated by the indicator light connected to the “muting” indicator output of the XPSLCM module.
- b A materials trolley must provide the “muting” signal before entering the protection field and cease it once it has cleared all the sensors of the protection field on exiting.



ESPE: electro-sensitive protection equipment (light curtain).
A, B, D, C: “muting” sensors.
m: trolley length and dM = distance between A, B and D, C.

References

Description	Type of terminal block connection	Number of safety circuits	Auxiliary outputs	Supply	Reference	Weight kg/ lb
Safety module for “muting” function	Removable from module	2 PNP	1 PNP + 1 NPN	24 V \bar{C}	XPSLCM1150	0.660/ 1.455



XPSLCM1150

Monitor and Processing

Preventa safety modules types XPSECME, XPSECPE

For extending the number of safety contacts

Operating principle

Safety modules **XPSECME** and **XPSECPE**, for extending the number of safety contacts, are available as additions to Preventa XPSbase modules (Emergency stop, limit switch, two-hand control, etc.). They are used to extend the number of safety output contacts of the base modules.

References

Description	Connection	Number of safety circuits	Additional outputs	Supply	Reference	Weight kg/lb
Safety modules for extending the number of safety contacts, for use with XPSbase modules	Captive screw clamp terminals Terminal block removable from module	4	2	a and c 24 V	XPSECME5131P	0.270/ 0.595
	Spring terminals Terminal block removable from module	4	2	a and c 24 V	XPSECME5131C	0.270/ 0.595
	Captive screw clamp terminals Terminal block removable from module	8	1	a and c 24 V	XPSECPE5131P	0.550/ 1.213
	Spring terminals Terminal block removable from module	8	1	a and c 24 V	XPSECPE5131C	0.650/ 1.433
	Captive screw clamp terminals Terminal block removable from module	8	1	a 115...230 V	XPSECPE3910P	0.650/ 1.433
	Spring terminals Terminal block removable from module	8	1	a 115...230 V	XPSECPE3910C	0.650/ 1.433



XPSECME5131P



XPSECME5131C



XPSECPE5131P



XPSECPE5131C

Monitor and Processing

Preventa safety modules types XPSTSA, XPSTSW

For safety time delays

Operating principle

Safety modules **XPSTSA** and **XPSTSW** are used in applications requiring safety time delays:

- b modules **XPSTSA** in applications with interlocking on high inertia machines with long rundown time (guards unlocked after safety time delay has elapsed),
- b modules **XPSTSW** in applications with a safety switchover contact (shunting contact in association with XPSVN modules for zero speed detection, solenoid valve monitoring, etc.).

The time delay of safety circuits can be set to 16 preset values, using 2 selectors located on the front face of the modules.

To aid diagnostics, the modules have LEDs which provide information on the monitoring circuit status and 2 solid-state outputs for signalling to the process PLC. In addition, their removable terminal blocks optimise machine maintenance.

3

References						
Description	Connection	Number of safety circuits	Additional outputs / Solid-state outputs to PLC	Supply	Reference	Weight kg/ lb
Safety modules for applications with interlocking on high inertia machines	Captive screw clamp terminals Terminal block removable from module	1 delayed	2 NC / 2	a and c 24 V	XPSTSA5142P	0.250/ 0.551
				a 115 V	XPSTSA3442P	0.360/ 0.774
				a 230 V	XPSTSA3742P	0.360/ 0.774
Safety modules for applications with safety switchover contact	Captive screw clamp terminals Terminal block removable from module	1 pulse type	2 NC / 2	a and c 24 V	XPSTSW5142P	0.250/ 0.551
				a 115 V	XPSTSW3442P	0.360/ 0.774
				a 230 V	XPSTSW3742P	0.360/ 0.774



XPSTSA5142P



XPSTSW5142P

Monitor and Processing

Preventa safety modules types XPSDMB, XPSDME

For coded magnetic switch monitoring

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 **XPSDMpppppP** 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.



XPSDMB1132



XPSDME1132

References							
Description	Connection	Number of safety circuits	Synchro time between inputs	Solid-state outputs for PLC	Supply	Reference	Weight kg/lb
Safety module for monitoring 2 coded magnetic switches	Captive screw clamp terminals Terminal block integrated in module	2 NO	<0.5 s	2	⊖ 24 V	XPSDMB1132	0.250/ 0.551
Safety module for monitoring 6 coded magnetic switches	Captive screw clamp terminals Terminal block integrated in module	2 NO	<0.5 s	2	⊖ 24 V	XPSDME1132	0.300/ 0.661
Safety module for monitoring 2 coded magnetic switches	Captive screw clamp terminals Terminal block removable from module	2 NO	<0.5 s	2	⊖ 24 V	XPSDMB1132P	0.250/ 0.551
Safety module for monitoring 6 coded magnetic switches	Captive screw clamp terminals Terminal block removable from module	2 NO	<0.5 s	2	⊖ 24 V	XPSDME1132P	0.300/ 0.661
Safety module for monitoring 6 coded magnetic switches	Captive screw clamp terminals Terminal block integrated in module	2 NO	<2.2 s	2	⊖ 24 V	XPSDME1132TS220	0.300/ 0.661

Monitor and Processing

Preventa safety modules type XPSVNE

For zero speed detection

3

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 **XPSVNEppppHS** 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.

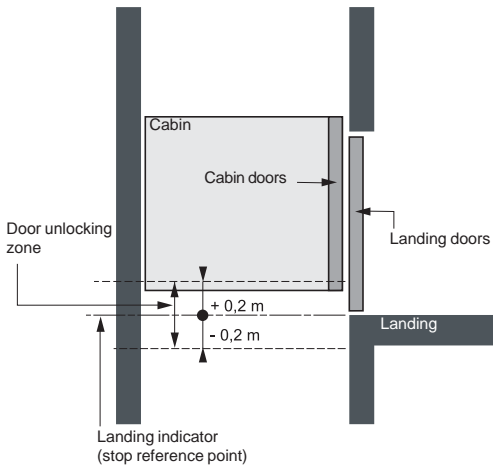
To aid diagnostics, modules **XPSVNE** have 4 LEDs and 2 solid-state outputs to provide information on the status of the zero speed detection circuit.

References

Description	Connection	Number of safety circuits/ Solid-state outputs for PLC	Supply	Frequency of motor power supply	Reference	Weight kg/ lb
Safety modules for zero speed detection	Captive screw clamp terminals Terminal block removable from module	2/ 2	c 24 V	y 60 Hz	XPSVNE1142P	0.500/ 1.102
				> 60 Hz	XPSVNE1142HSP	0.500/ 1.102
			a 115 V	y 60 Hz	XPSVNE3442P	0.600/ 1.333
				> 60 Hz	XPSVNE3442HSP	0.600/ 1.323
			a 230 V	y 60 Hz	XPSVNE3742P	0.600/ 1.323
				> 60 Hz	XPSVNE3742HSP	0.600/ 1.323



XPSVNEppppp



Operating principle

When the cabin is parked at a landing, with the doors open, some lifts automatically correct their level (isolevelling) in relation to the landing in order to compensate for any differences generated by modification of the load in the cabin. During this operation, European standard EN/IEC 81 recommends that the presence of the cabin be checked within a zone of ± 0.2 m around the landing (door unlocking zone), by means of a safety circuit which will cause the cabin to stop if it moves out of the specified zone.

The use of the safety module **XPSEDA**, which checks the presence of the cabin in the specified zone at two points, meets this requirement. The module incorporates two safety outputs and two solid-state outputs for signalling functions. Four LEDs on the front face of the module provide visual indication of the status of the safety circuit.

The position of the cabin in relation to the landing is detected by two limit switches in the lift shaft. It is also possible to use non-contact sensors (magnetic sensors with reed contact).

When the cabin reaches the preset position and when it is within the permissible tolerances in relation to the landing, the two safety circuits in safety module **XPSEDA** close and allow isolevelling of the cabin with the doors open. Any change in one of the input signals (cabin outside the specified zone) or detection of a fault (break in the wiring, short-circuit, etc.) causes immediate opening of the safety outputs in the **XPSEDA** module and subsequent stopping of the cabin.

References

Description	Connection	Number of safety circuits	Solid-state outputs for PLC	Supply	Reference	Weight kg/lb
Safety module for lift control	Captive screw clamp terminals Terminal block integrated in module	2	2	a and c 24 V	XPSEDA5142	0.180/ 0.397



XPSEDA5142

Monitor and Processing

Preventa safety module type XPSPVT

For dynamic monitoring of hydraulic valves on linear presses

3

Operating principle

Safety module **XPSPVT** is specifically designed for monitoring hydraulic safety system valves which control the movements of potentially dangerous machines. The operating principle of this module is explained in the circuit diagram of a hydraulic safety system for linear presses (see below).

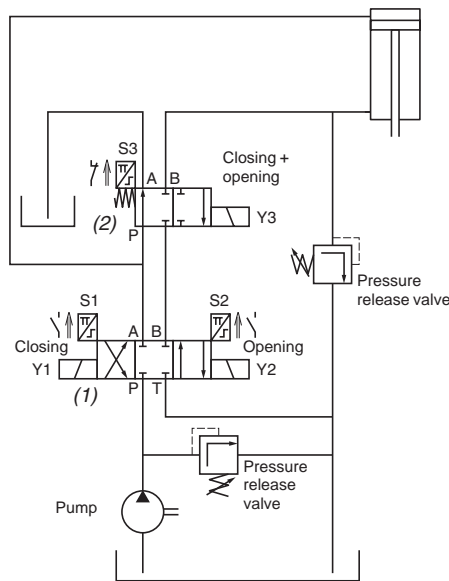
This hydraulic safety system features a 3 position piston which controls the up and down stroke of the operating cylinder. The circuit is equipped with a safety valve to complete the redundant system. This circuit must be activated to enable the up and down stroke of the cylinder.

If either of the 2 pistons becomes defective (for example, due to a broken spring or to oil contamination), and the valve piston shifts from its normal position towards the open position, the **XPSPVT** module will detect it and prevent resumption of the piston stroke.

Proximity sensors integrated in the valve to detect the piston positions and connected to the **XPSPVT** module must be damped when the valve coils are in the de-energised state (zero position).

The sensor circuits of the **XPSPVT** module are designed to allow connection of NPN and PNP proximity sensors or sensing components. Either 2-wire or 3-wire types can be used.

Hydraulic safety system circuit operating on a linear press.
Monitoring of valves in position 0.



(1) 3 position hydraulic valve.
(2) 2 position hydraulic valve.



XPSPVT1180

Reference

Description	Display	Supply	Reference	Weight kg/ lb
Safety module for dynamic monitoring of hydraulic valves on linear presses	8 LEDs	24 V c	XPSPVT1180	0.540/ 1.190

Monitor and Processing

Preventa safety modules type XPSPVK

For dynamic monitoring of double-bodied solenoid valves

Operating principle

Safety module **XPSPVK** is specially designed for dynamic monitoring of the safety valves in eccentric presses, conforming to European standard EN 692.

This standard establishes the specifications related to safety control systems for presses equipped with friction clutches.

To meet the requirements of this standard, the clutch/brake control must be monitored dynamically.

This function is provided by a double-bodied solenoid valve (safety valve for presses) which performs the functions of two valves mounted in one body.

The position of the two valve pistons can be monitored by proximity sensors, mechanical limit switches or pressure switches.

Module **XPSPVK** checks for the correct operation of the double-bodied safety valves at 3 points in the cycle.

b Start at top dead centre: checks the rest position of the two valves.

b Take-on point (transfer function): checks that the two valves are in the "activated" (energised) position.

b Press stop trigger point: checks that the two valves return to the rest position.

Return must be simultaneous for both valves within a defined time period.

To set up an automatic disconnect of the **XPSPVK** module at the first machine stroke, a NC auxiliary contact mounted on the main control contactor or on another contactor/relay, activated at the same time, can be wired to terminals 7 and 8 in parallel with the RESET button.

If a fault is detected during the cycle, the **XPSPVK** module will stop the slide stroke and will also inhibit the start of another cycle.

References

Description	Display	Supply	Reference	Weight kg/ lb
Safety modules for dynamic monitoring of double-bodied solenoid valves	8 LEDs	24 V c	XPSPVK1184	0.700/ 1.543
		115 V a	XPSPVK3484	0.900/ 1.984
		230 V a	XPSPVK3784	0.900/ 1.984



XPSPVK

Monitor and Processing

Preventa safety modules type XPSOT

For safety stop with automatic overtravel monitoring and control

Operating principle

Safety module **XPSOT** is used on eccentric presses to monitor overtravel and ensure that the press slide stops in a non-dangerous position, i.e. top dead centre (TDC), during normal (non-emergency) operation.

Use of this module, designed in accordance with standard EN 692 relating to mechanical press safety, makes it possible to create a redundant, self-monitoring control system.

The two essential functions of this safety module are to:

b **Trigger the end of cycle stop sequences slightly before top dead centre (at point A) so as to come to a complete stop at TDC.**

After TDC, the permissible overtravel is approximately 10° . The safety module immediately detects any overtravel. Overtravel is indicative of braking device deterioration and, in this case, jog mode must be used to move the slide back to TDC. The next cycle will be inhibited to allow maintenance to be performed on the braking device (cam 1).

b Take over control monitoring during the dangerous part of the cycle (slide downstroke). Any stop instruction issued between TDC (0°) and point C (approximately 150° after TDC) causes an immediate stop of the press.

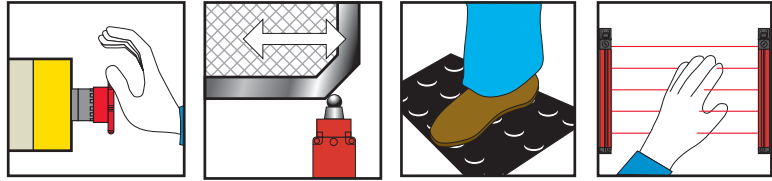
This approximate value of 150° corresponds to the 8 mm tool closure dimension (safety point).

When a stop instruction is issued after this safety point, the press completes the cycle and comes to a complete stop at TDC (cam 2).

Control of the dangerous part of the cycle (generally the slide downstroke) is usually activated from a two-hand control station associated with a safety module (type **XPSBCE**).

Overtravel monitoring is performed **on each cycle** by safety module **XPSOT**.

Applications



Modules

Controllers for monitoring 2 independent safety functions simultaneously. User selection of 2 functions from a choice of 15, programmable from front face of controller.



3

Functions

- ✓ Emergency stop monitoring
- ✓ Switch monitoring
- ✓ Enabling switch monitoring
- ✓ Sensing mat or edges monitoring
- ✓ Light curtain monitoring, relay output type
- ✓ etc.

Maximum achievable safety level

PL e/Category 4 conforming EN ISO 13849-1, SILCL 3 conforming to EN/IEC 61508 and EN/IEC 62061

Conformity to standards

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

Product certifications

UL, CSA, TÜV

Number of circuits

Safety

6 NO (3 NO per function)

Additional

3 solid-state outputs for signalling to PLC

Display

12 LEDs

Supply voltage

24 V_C

Communication

CANopen bus

–

Profibus bus

–

Modbus bus

–

Module type

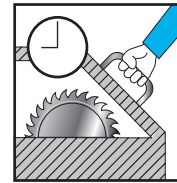
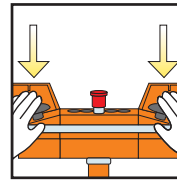
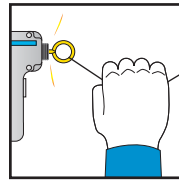
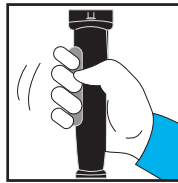
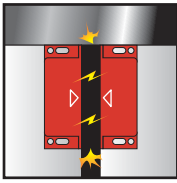
XPSMP

Pages

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More technical information on www.schneider-electric.com



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



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

PL e/Category 4 conforming to EN ISO 13849-1,
SILCL 3 conforming to EN/IEC 61508 and EN/IEC 62061

EN/IEC 60204-1,
EN 1760-1/ISO 13856-1,
EN/IEC 61496-1,
EN 574/ISO 13851,
EN/IEC 60947-1,
EN/IEC 60947-5-1

UL, CSA, TÜV

4 NO (2 NO per function) + 6 solid-state

1 "muting" signalling output

LED display on front face

24 V c

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

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

Via RJ45 connector, on all controllers XPS MCppZp

XPSMC

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More technical information on www.schneider-electric.com

Monitor and Processing

Preventa safety controllers type XPSMP

With pre-defined functions

Presentation

Operating principle

Preventa safety controller modules XPSMP are designed for a Performance Level of up to PL e/Category 4 conforming to standard EN/ISO 13849-1.

They enable two independent safety functions (selected from a choice of 15 pre-defined configurations) to be performed using the same product. Configuration selection is easily made using 3 buttons on the front face of the module.

These 15 pre-programmed safety functions provide a solution for the majority of safety applications, for example: monitoring Emergency stops, limit switches, safety mats and sensing edges, enabling switches, coded magnetic switches, type 4 safety light curtains conforming to EN/IEC 61496-1.

Safety controllers XPSMP incorporate 6 safety outputs (3 per function) and 3 solid-state signalling outputs for signalling to the process PLC.

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

3

	Configuration	Synchronisation time	Type of start (1)		Start test	Notes
			Automatic or unmonitored	Monitored		
Functions disabled	0	–	–	–	–	Factory setting
Emergency stop monitoring, 1-channel wiring (category 2)	1	–	X	–	–	–
	2	–	–	X	–	–
Emergency stop monitoring, 2-channel wiring, or guard monitoring (category 4)	3	Unlimited	X	–	X	–
	4	Unlimited	–	X	X	–
	5	1.5 s	X	–	X	–
	6	1.5 s	–	X	X	–
	7	Unlimited	X	–	–	–
	8	Unlimited	–	X	–	–
Guard monitoring for injection press or blowing machine (category 4)	9	1.5 s	–	X	X	Uses both safety outputs (2)
Enabling grip switch monitoring (3 position switch) (category 4)	10	–	X	–	X	The start button acts as start-up preparation
Sensing mat and edges monitoring (category 3)	11	–	X	–	–	Mats with circuit making contacts
	12	–	–	X	–	
Relay output safety light curtain monitoring (category 4)	13	0.5 s	–	X	X	–
Coded magnetic switch monitoring (category 4)	14	1.5 s	X	–	–	Magnetic switches with 2 contacts, 1 NO and 1 NC
	15	1.5 s	–	X	–	

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

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

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

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

(2) Tool zone guard with 3rd switch.

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

Monitor and Processing

Preventa safety controllers type XPSMP

With pre-defined functions

References

Description	Type of terminal block connection	Number of safety circuits	Additional outputs	Supply	Reference	Weight kg
Modules for 2 independent safety functions	Integrated in module	3 NO per function (6 NO total)	3 solid-state	24 V C	XPSMP11123	0.320



XPSMP11123



XPSMP11123P

	Removable from module	3 NO per function (6 NO total)	3 solid-state	24 V C	XPSMP11123P	0.320
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Monitor and Processing

Preventa configurable safety controllers

Type XPSMC

3



XPSMC16ZC



XPSMC32ZC

Presentation

Configurable safety controllers XPSMCppZp are designed to provide a solution for safety applications requiring conformity to Performance Level PL e/Category 4 EN/ISO 13849-1 and SIL 3 EN/IEC 61508.

The range of configurable safety controllers comprises 6 products, each with different technical characteristics.

Configurable controllers	Safety inputs	Safety outputs (1)	Communication via		
			CANopen bus	Profibus bus	Modbus serial link
XPSMC16Z	16	6 + 2 x 2	–	–	Yes, slave
XPSMC16ZC	16	6 + 2 x 2	Yes, slave	–	Yes, slave
XPSMC16ZP	16	6 + 2 x 2	–	Yes, slave	Yes, slave
XPSMC32Z	32	6 + 2 x 2	–	–	Yes, slave
XPSMC32ZC	32	6 + 2 x 2	Yes, slave	–	Yes, slave
XPSMC32ZP	32	6 + 2 x 2	–	Yes, slave	Yes, slave

Line control

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

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

Configuration

Safety controllers XPSMCppZp are configurable and addressable using software XPSMCWIN running on a PC. Connection accessories required: see page 3/105.

Connections

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

- ✓ screw connectors type XPSMCTSp, or
- ✓ spring clip connectors type XPSMCTCp.

These connectors are to be ordered separately, see page 3/105.

(1) 8 independent safety outputs = 6 solid-state safety outputs + 2 x 2 relay outputs (4 relay outputs with mechanically linked contacts).

(2) 8 control outputs are available but they are not safety outputs.