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Preventa safety modules
for emergency stop, limit switch and two-hand control monitoring

Operating principle, characteristics

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Operating principle (see page 1/12)

Characteristics

Type		XPS-AS	XPS-AM	XPS-AP
Product designed for use in safety related parts of control systems (conforming to EN 954-1)		Category 4		
Supply				
- voltage	V	∼ and ⎓ 24 or 48, ∼ 115, ∼ 230		
- voltage limits		∼ - 20...+ 10 % (24 V, 48 V) ⎓ - 20...+ 20 % (24 V, 48 V) ∼ - 15...+ 15 % (115 V) ∼ - 15...+ 10 % (230 V)		
- frequency	Hz	50/60		
Consumption	VA			
24 V		< 6	< 6	< 8
48 V		< 9	< 9	< 11
115 V/230 V		< 6	< 7	< 8
Module fuse protection		Internal, electronic		
Control unit voltage between S11-S12, S21-S22 or S11-B1	V	24 (24 V version), 48 (48 V, 115 V, 230 V versions)		
Minimum voltage and current between terminals S11-S12, S21-S22 or S11-B1 (inputs A and B)				
U min./I min. - 24 V (20 °C) version		16 V/70 mA	16 V/60 mA	16 V/100 mA
U min./I min. - 48 V (20 °C) version		35 V/25 mA	35 V/25 mA	35 V/45 mA
U min./I min. - 115 V/230 V (20° C) vers.		41 V/25 mA	41 V/25 mA	41 V/45 mA
Calculation of wiring resistance RL between terminals S11-S12, S21-S22 or S11-B1 as a function of the internal supply voltage U int (terminals S11-S21)	Ω	RL max. = $\frac{\text{U int - U min.}}{\text{I min.}}$ Ue = true voltage applied to terminals A1-A2 U int = supply voltage Ue - 3 V (24 V, 48 V version) U int between 42 V and 45 V, with typical value = 45 V (115 V, 230 V version) RL max. must not exceed 50 Ω		
Synchronisation time between inputs A and B automatic start, linked terminals S33-S34	ms	Approx. 300		
Outputs				
- voltage reference		Volt-free		
- number and type of safety circuits		2 N/O (13-14, 23-24)	3 N/O (13-14, 23-24, 33-34)	6 N/O (13-14, 23-24, 33-34, 43-44, 53-54, 63-64)
- number and type of additional circuits		–	1 N/C (41-42)	1 N/C (71-72)
- breaking capacity in AC-15	VA	C300 : inrush 1800, maintained 180	B300 : inrush 3600, maintained 360	
- breaking capacity in DC-13		24 V/1.5 A - L/R = 50 ms		
- max. thermal current (Ithe)	A	5	6	
- output fuse protection conforming to IEC 947-5-1, DIN VDE 0660 part 200	A	6 fast acting, 4 gl	6 gl	
- minimum current	mA	10		
- minimum voltage	V	17		
- max. total thermal current	A	10	15	30
Electrical life		See page 1/10		
Response time on input opening	ms	< 40		
Rated insulation voltage (Ui)	V	300 (degree of pollution 2 conforming to IEC 947-5-1, DIN VDE 0110 parts 1 and 2)		
Rated impulse withstand voltage (Uimp)	kV	4 (overvoltage category III, conforming to IEC 947-1, DIN VDE 0110 parts 1 and 2)		
LED display		4		
Operating temperature	°C	- 10...+ 55		
Storage temperature	°C	- 25...+ 85		
Degree of protection Terminals		IP 20		

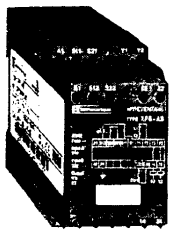
Components for safety applications

Preventa safety modules
for emergency stop, limit switch and two-hand control monitoring

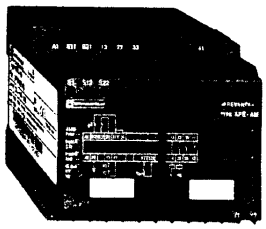
References

References

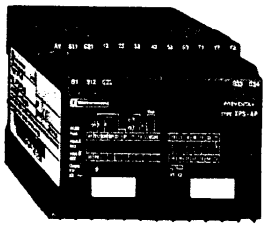
Description	No. of safety circuits	Additional outputs	Supply	Reference	Weight kg
Safety modules for emergency stop, limit switch and two-hand control monitoring	2	–	∼ and ⎓ 24 V	**XPS-AS5140**	0.350
			∼ and ⎓ 48 V	**XPS-AS5340**	0.350
			∼ 115 V	**XPS-AS3440**	0.450
			∼ 230 V	**XPS-AS3740**	0.450
	3	1 (NC)	∼ and ⎓ 24 V	**XPS-AM5140**	0.600
			∼ and ⎓ 48 V	**XPS-AM5340**	0.600
			∼ 115 V	**XPS-AM3440**	0.700
			∼ 230 V	**XPS-AM3740**	0.700
	6	1 (NC)	∼ and ⎓ 24 V	**XPS-AP5140**	0.600
			∼ and ⎓ 48 V	**XPS-AP5340**	0.600
			∼ 115 V	**XPS-AP3440**	0.700
			∼ 230 V	**XPS-AP3740**	0.700



XPS-AS



XPS-AM

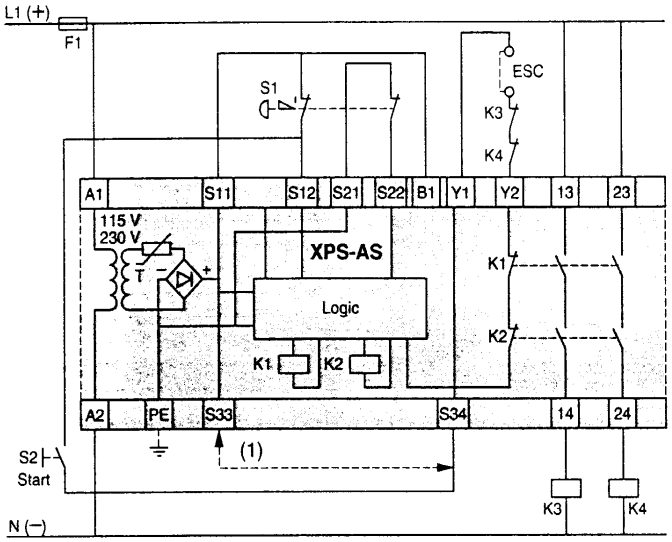


XPS-AP

Preventa safety modules
for emergency stop, limit switch and two-hand control monitoring

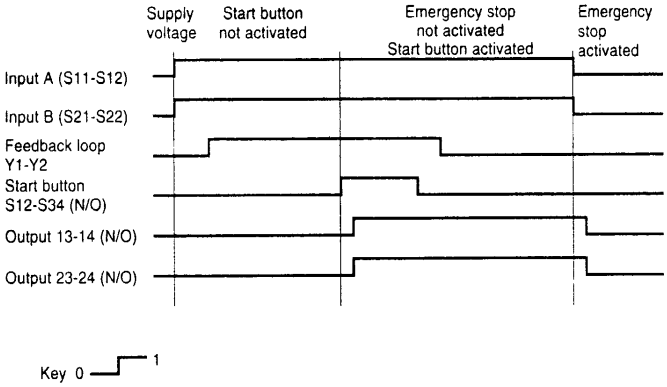
Connections, functional diagrams

XPS-AS
Module XPS-AS associated with an emergency stop button with 2 N/C contacts

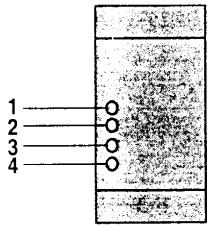


ESC : External start conditions
Y1-Y2 : Feedback loop
(1) Automatic start

Functional diagrams
Emergency stop function

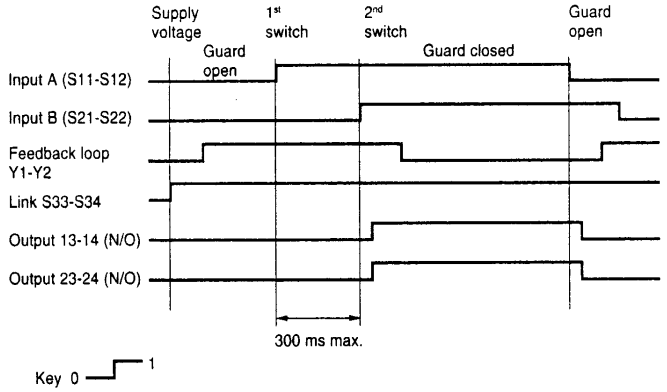


Key to LEDs

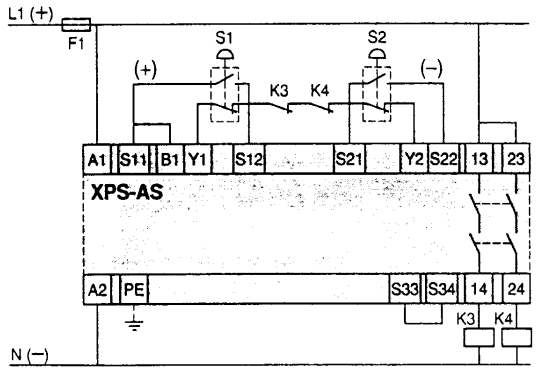


1 A1-A2 supply voltage, fuse status
2 Input S12 (A)
3 Input S22 (B)
4 K1/K2 status (N/O safety outputs off)

Guard with automatic start function

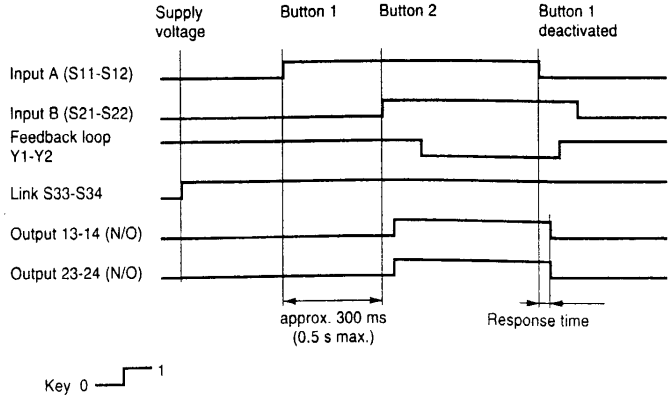


Type III A two-hand control monitoring conforming to EN 574



S1 and S2 : pushbuttons.

Two-hand control function

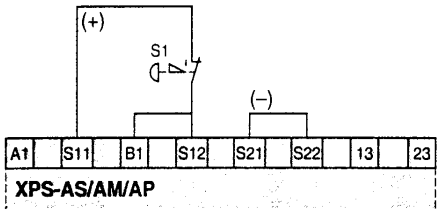


Components for safety applications

Preventa safety modules
for emergency stop, limit switch and two-hand control monitoring

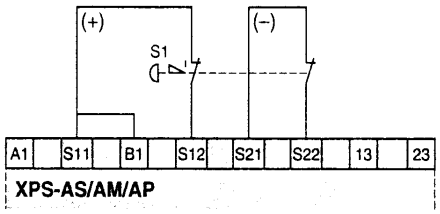
Connections

XPS-AS/AM/AP
Emergency stop monitoring configuration
1-channel wiring

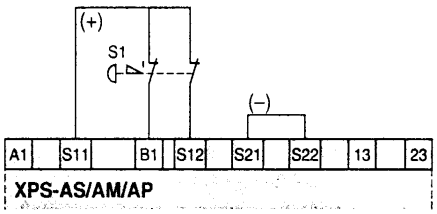


Emergency stop button with 1 N/C contact.
Not all faults are detected : a short-circuit on the emergency stop button is not detected.

2-channel wiring

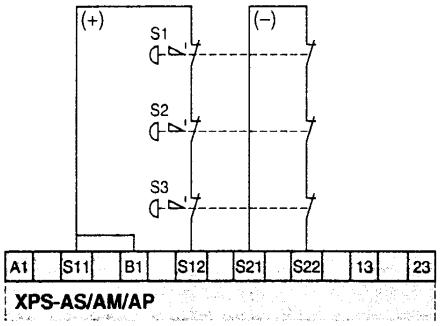


Emergency stop button with 2 N/C contacts (recommended application).
The 2 input channels are connected to different polarities. A short-circuit between the 2 inputs is detected.



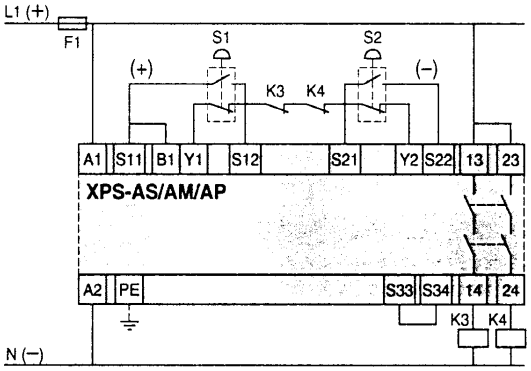
Emergency stop button with 2 N/C contacts.
Both input channels are connected to the same polarity. A short-circuit between the 2 inputs is not detected.

2-channel wiring



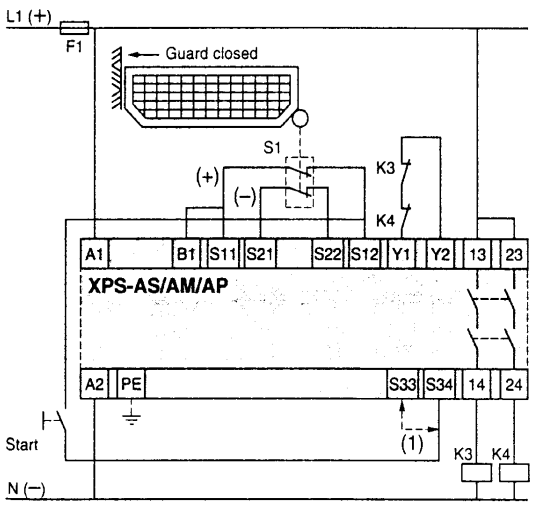
Connection to multiple emergency stop buttons with 2 N/C contacts (recommended application).
The 2 input channels are connected to different polarities. A short-circuit between the 2 inputs is detected.
NOTE : A high resistance short between channels may not be detected.

Type III A two-hand control monitoring, conforming to EN 574



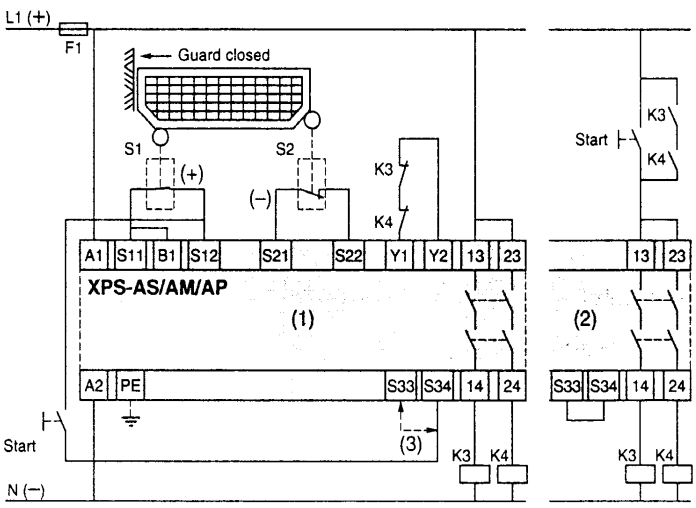
S1 and S2 : pushbuttons.
Must not be used for applications (presses) requiring type III C modules (XPS-BC) conforming to standard EN 574.
See page 1/41.

Monitoring of a guard associated with a limit switch with 2 N/C contacts



Single limit switch lock for a movable guard with manual or automatic reset after closing.
In automatic reset mode (1), synchronisation time between the two inputs is monitored. In manual reset mode, input

Monitoring of a movable guard associated with 2 limit switches with 1 contact each (limit switch 1 with N/O contact, limit switch 2 with N/C contact)



(1) Manual reset after closing, no synchronisation control of limit switches.
(2) Manual reset after closing with limit switch synchronisation check.
(3) Automatic reset after closing with limit switch synchronisation check.

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