




Up to Category 2, EN 954-1 PNOZ X7



Safety relay for monitoring E-STOP pushbuttons.

Approvals

	PNOZ X7
	◆
	◆
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Unit features

- ▶ Positive-guided relay outputs:
 - 2 safety contacts (N/O), instantaneous
- ▶ Connection options for:
 - E-STOP pushbutton
 - Reset button
- ▶ LED indicator for:
 - Switch status channel 1/2
 - Supply voltage
- ▶ See order reference for unit types

- ▶ The circuit is redundant with built-in self-monitoring.
- ▶ The safety function remains effective in the case of a component failure.
- ▶ The correct opening and closing of the safety function relays is tested automatically in each on-off cycle.

Unit description

The safety relay meets the requirements of EN 60204-1 and IEC 60204-1 and may be used in applications with

- ▶ E-STOP pushbuttons

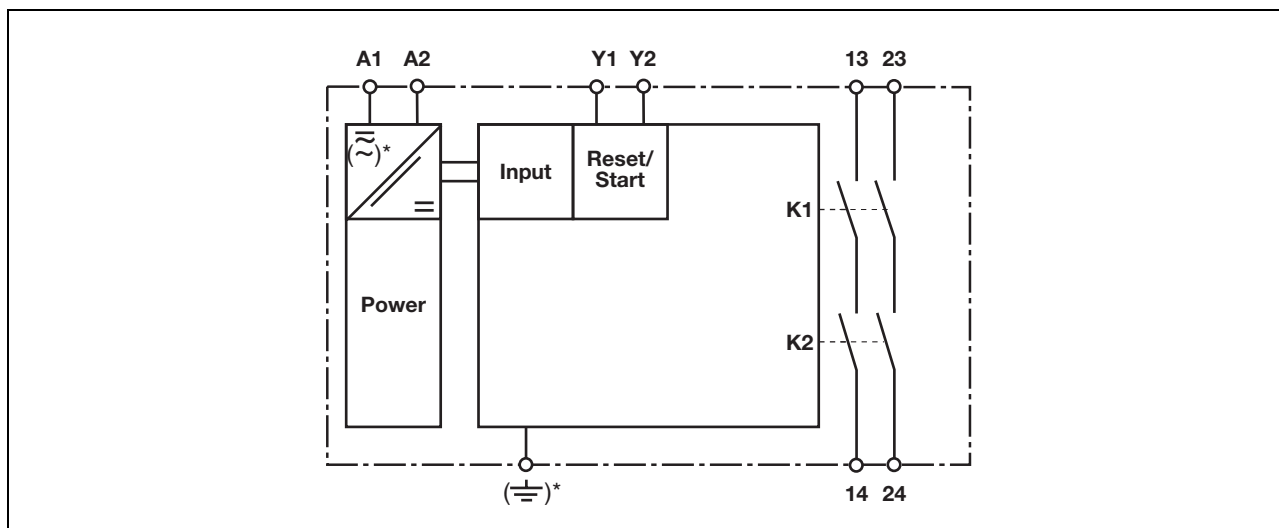
The safety relay is not suitable for non-contact barriers because

- ▶ a dynamic start is not possible
- ▶ the unit can be started during the delay-on de-energisation time.

Safety features

The relay conforms to the following safety criteria:

Block diagram






*Only when $U_B = 42 - 240 \text{ VAC}$

Galvanic isolation only when $U_B = 42 - 240 \text{ VAC}$

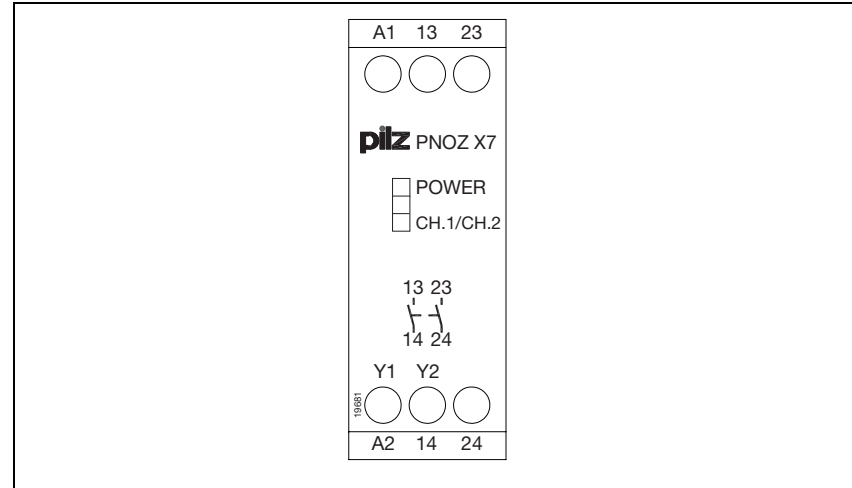
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▶ Key

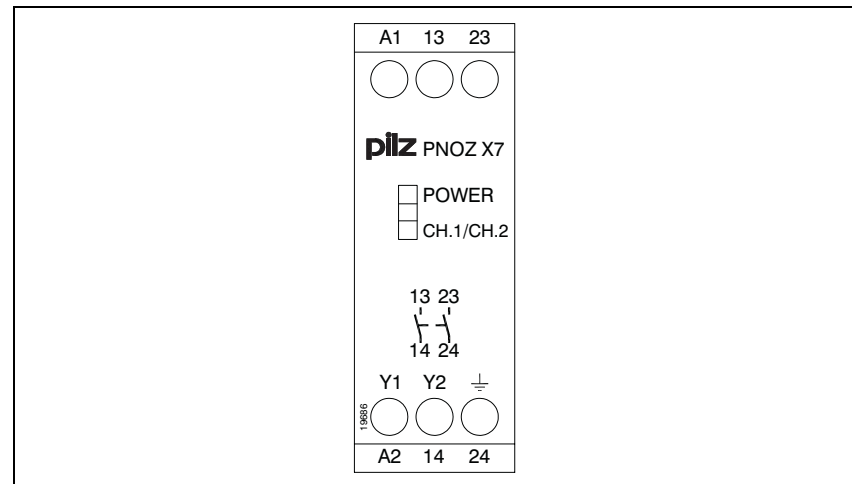
S1	E-STOP pushbutton
S3	Reset button
	Switch operated
	Gate open
	Gate closed

Terminal configuration

$U_B = 24 \text{ VAC/DC}$



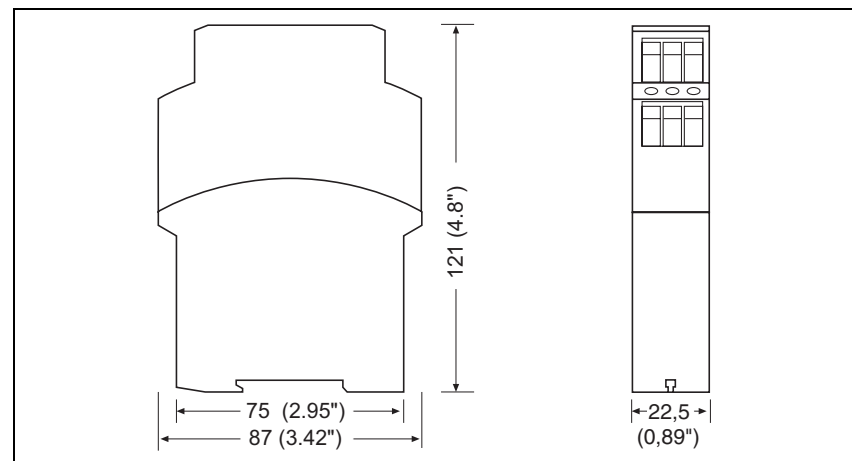
$U_B \text{ AC}$



Installation

- ▶ The safety relay should be installed in a control cabinet with a protection type of at least IP54.
- ▶ Use the notch on the rear of the unit to attach it to a DIN rail.
- ▶ Ensure the unit is mounted securely on a vertical DIN rail (35 mm) by using a fixing element (e.g. retaining bracket or an end angle).

Dimensions

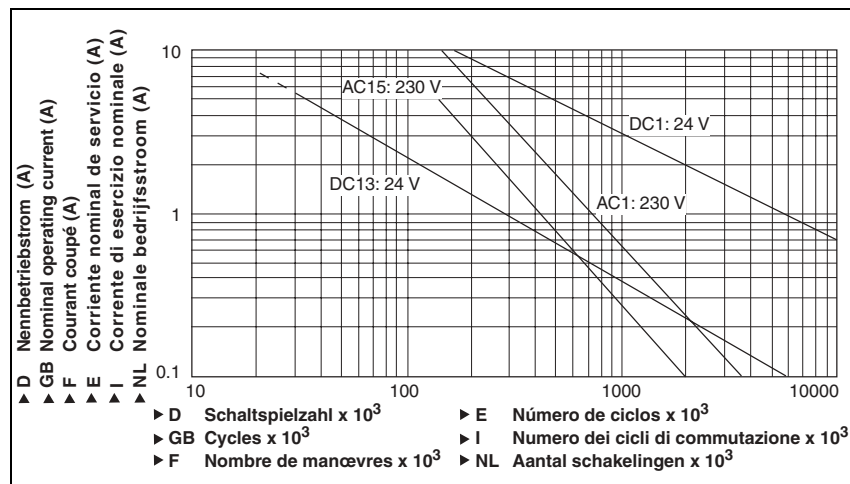


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Notice

This data sheet is only intended for use during configuration. For installation and operation, please refer to the operating instructions supplied with the unit.

Service life graph



Technical details

Electrical data

Supply voltage U_B DC	24 V
Voltage tolerance	-15% / +10%
Power consumption	4.5 W
Residual ripple DC	160 %
Voltage and current at input circuit: 24.0 V DC	35.0 mA
reset circuit: 24.0 V DC	40.0 mA
feedback loop: 24.0 V DC	5.0 mA
Output contacts in accordance with EN 954-1 , Category 4	Safety contacts (N/O): 2 ST
Output contacts in accordance with EN 954-1 Category 1 Order no. 774500, 774508	Safety contacts (N/O), delayed: 2 ST When delay time >30 s
Category 3	When delay time <30 s
Utilisation category in accordance with EN 60947-4-1	
AC1: 240 V	I_{min} : 0.01 A , I_{max} : 8.0 A P_{max} : 2,000 VA
DC1: 24 V	I_{min} : 0.01 A , I_{max} : 8.0 A P_{max} : 200 W
Utilisation category in accordance with EN 60947-5-1	
AC15: 230 V	I_{max} : 5.0 A
DC13 (6 cycles/min): 24 V	I_{max} : 7.0 A
Contact material	AgSnO₂ + 0.2 σm Au
External contact fuse protection (EN 60947-5-1)	
Blow-out fuse, quick	10 A
Blow-out fuse, slow	6 A
Circuit breaker	6 A , 24 VAC/DC, characteristic B/C
Max. overall cable resistance R_{lmax} input circuits, reset circuits	
Single-channel	100 Ohm
Dual-channel with detection of shorts across contacts	10 Ohm

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Times	
Switch-on delay	
with automatic reset typ.	350 ms
with automatic reset max.	650 ms
with automatic reset after power on typ.	385 ms
with automatic reset after power on max.	700 ms
with monitored reset typ.	45 ms
with monitored reset max.	70 ms
Delay-on de-energisation	
with E-STOP typ.	15 ms
with E-STOP max.	30 ms
with power failure typ.	85 ms
with power failure max.	200 ms
Recovery time at max. switching frequency 1/s after E-STOP after power failure	50 ms + t _v 250 ms
Delay time t _v selectable	0.10 s, 0.20 s, 0.30 s, 0.40 s, 0.50 s, 0.60 s, 0.70 s, 0.80 s, 1.00 s, 1.50 s, 2.00 s, 3.00 s Order no.: 774502 0.00 s, 0.50 s, 1.00 s, 2.00 s, 4.00 s, 6.00 s, 8.00 s, 10.00 s, 15.00 s, 20.00 s, 25.00 s, 30.00 s Order no.: 774500 0.00 s, 5.00 s, 10.00 s, 20.00 s, 40.00 s, 60.00 s, 80.00 s, 100.00 s, 150.00 s, 200.00 s, 250.00 s, 300.00 s Order no.: 774508 0.5 s Order no.: 774504, 3.0 s Order no.: 774505, 10 s Order no.: 774506
fixed	
Repetition accuracy	2 %
Time accuracy	-15% / +15% +50 ms
Waiting period with a monitored reset	300 ms
Min. start pulse duration with a monitored reset	30 ms
Simultaneity, channel 1 and 2	←
Supply interruption before de-energisation	20 ms
Environmental data	
EMC	EN 60947-5-1, EN 61000-6-2
Vibration in accordance with EN 60068-2-6	
Frequency	10 - 55 Hz
Amplitude	0.35 mm
Climatic suitability	EN 60068-2-78
Airgap creepage	VDE 0110-1
Ambient temperature	-10 - 55 °C
Storage temperature	-40 - 85 °C
Protection type	
Mounting (e.g. cabinet)	IP54
Housing	IP40
Terminals	IP20
Mechanical data	
Housing material	
Housing	PPO UL 94 V0
Front	ABS UL 94 V0
Max. cross section of external conductors with screw terminals	
1 core flexible	0.20 - 4.00 mm ²
2 core, same cross section, flexible:	
with crimp connectors, without insulating sleeve	0.20 - 2.50 mm ²
without crimp connectors or with TWIN crimp connectors	0.20 - 2.50 mm ²
Torque setting with screw terminals	0.60 Nm
Dimensions (H x W x D)	87 mm x 45 mm x 121 mm
Weight	350 g Order no.: 774502, 774500, 774508 340 g Order no.: 774504, 774505, 774506

The standards current on 11/03 apply.

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Max. continuous current

Number of contacts	I_{\max} (A) at U_B DC
1	8.00 A
2	6.80 A
3	5.50 A
4	4.80 A

Order reference

Type	Features	Terminals	Order no.
PNOZ XV2	24 VDC	0.5 s fixed	Screw terminals 774 504
PNOZ XV2	24 VDC	3.0 s fixed	Screw terminals 774 505
PNOZ XV2	24 VDC	10.0 s fixed	Screw terminals 774 506
PNOZ XV2	24 VDC	3 s selectable	Screw terminals 774 502
PNOZ XV2	24 VDC	30 s selectable	Screw terminals 774 500
PNOZ XV2	24 VDC	300 s selectable	Screw terminals 774 508