Up to Category 2, EN 954-1
PNOZ X7

Safety relay for monitoring E-STOP pushbuttons.

Approvals

	PNOZ X7
	◆
	◆
	◆

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

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

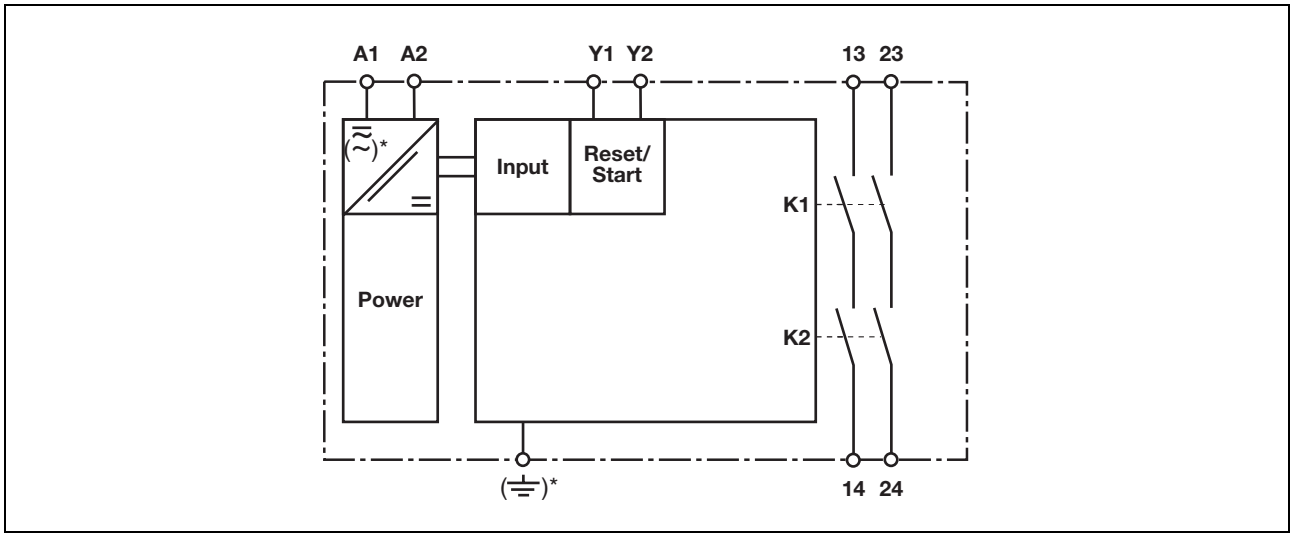
- a dynamic start is not possible
- the unit can be started during the delay-on de-energisation time.

Safety features

The relay conforms to the following safety criteria:

- 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.

Block diagram



*Only when U_B = 42 - 240 VAC

Galvanic isolation only when U_B = 42 – 240 VAC

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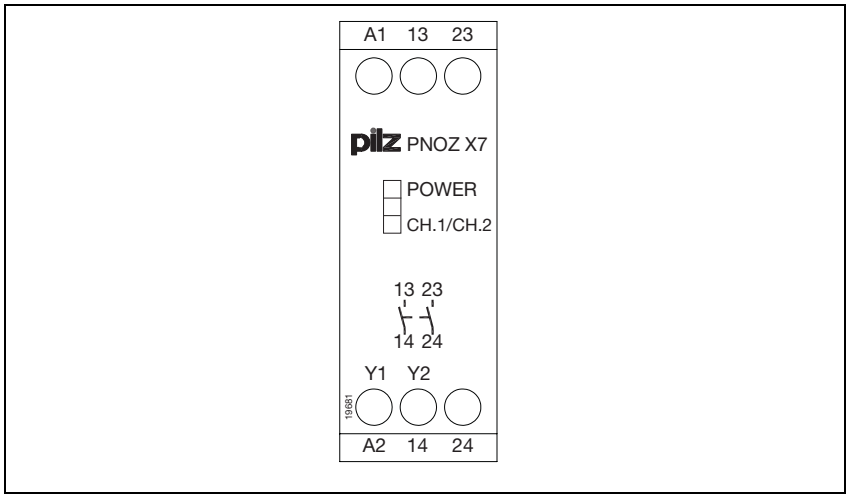
- Key

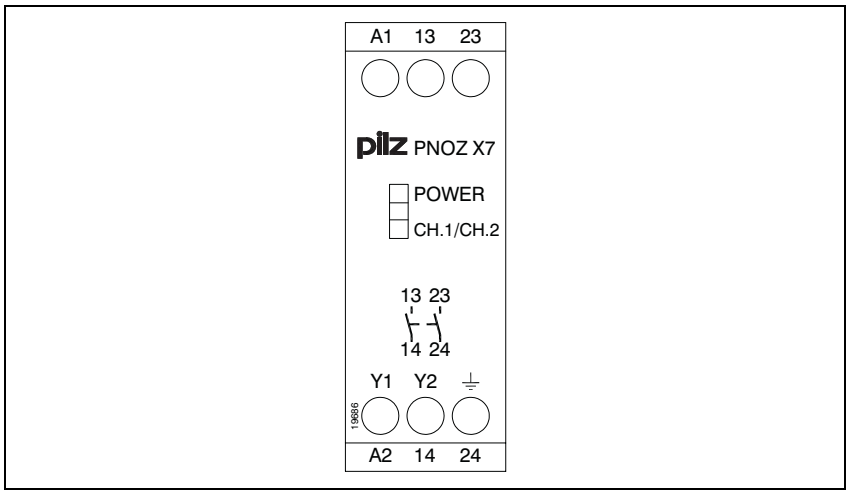
S1	E-STOP pushbutton
S3	Reset button
	Switch operated
	Gate open
	Gate closed

Terminal configuration

U_B = 24 VAC/DC



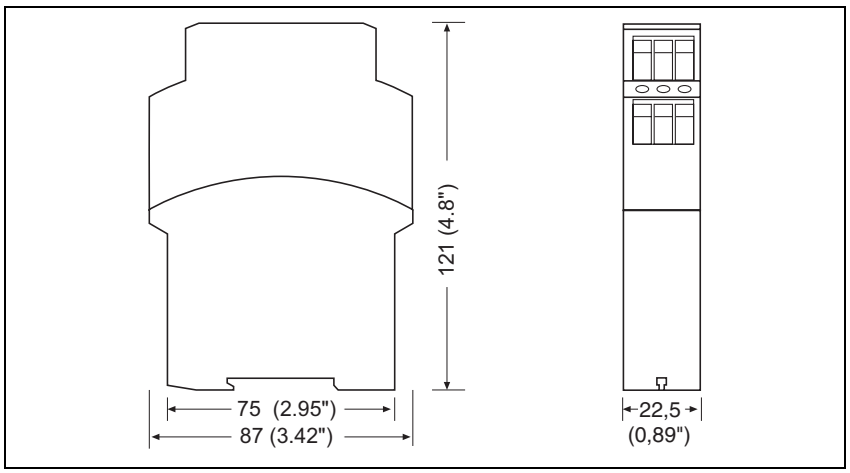
U_B AC



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

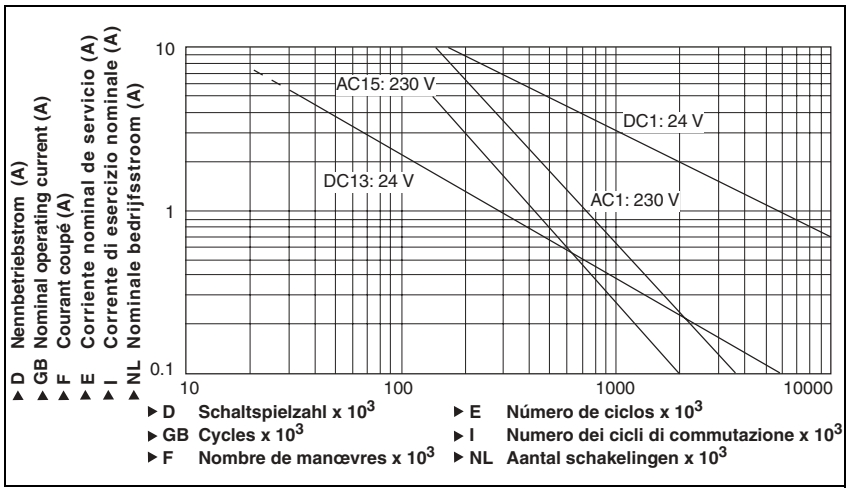


Up to Category 4, EN 954-1
PNOZ X3

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	
Supply voltage U_B AC	**24 V**, **42 V**, **48 V**, **110 V**, **115 V**, **120 V**, **230 V**, **240 V**
Supply voltage U_B DC	**24 V**
Voltage tolerance	**-15 %/+10 %**
Power consumption at U_B AC	**5.0 VA**
Power consumption at U_B DC	**2.5 W**
Frequency range AC	**50 - 60 Hz**
Residual ripple DC	**160 %**
Voltage and current at	
input circuit DC: **24.0 V**	**50.0 mA**
reset circuit DC: **24.0 V**	**35.0 mA**
feedback loop DC: **24.0 V**	**20.0 mA**
Output contacts in accordance with **EN 954-1** Category **4**	Safety contacts (N/O): **3** Auxiliary contacts (N/C): **1**
Utilisation category in accordance with **EN 60947-4-1**	
Safety contacts: AC1 at **240 V**	I_{min}: **0.01 A** , I_{max}: **8.0 A** P_{max}: **2000 VA**
Safety contacts: DC1 at **24 V**	I_{min}: **0.01 A** , I_{max}: **8.0 A** P_{max}: **200 W**
Auxiliary contacts: AC1 at **240 V**	I_{min}: **0.01 A** , I_{max}: **8.0 A** P_{max}: **2000 VA**
Auxiliary contacts: DC1 at **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**	
Safety contacts: AC15 at **230 V**	I_{max}: **5.0 A**
Safety contacts: DC13 at **24 V** (6 cycles/min)	I_{max}: **6.0 A**
Auxiliary contacts: AC15 at **230 V**	I_{max}: **5.0 A**
Auxiliary contacts: DC13 at **24 V** (6 cycles/min)	I_{max}: **6.0 A**
Contact material	**AgSnO2 + 0.2 µm Au**

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Electrical data	
External contact fuse protection to **EN 60947-5-1**	
Blow-out fuse, quick	
Safety contacts:	**10 A**
Auxiliary contacts:	**10 A**
Blow-out fuse, slow	
Safety contacts:	**6 A**
Auxiliary contacts:	**6 A**
Circuit breaker 24 VAC/DC, characteristic B/C	
Safety contacts:	**6 A**
Auxiliary contacts:	**6 A**
Semiconductor outputs (short circuit proof)	**24.0 V** DC, **20 mA**
External supply voltage	**24.0 V** DC
Voltage tolerance	**-20 %/+20 %**
Max. overall cable resistance R_{lmax} input circuits, reset circuits	
single-channel at U_B DC	**150 Ohm**
single-channel at U_B AC	**180 Ohm**
dual-channel with detect. of shorts across contacts at U_B DC	**15 Ohm**
dual-channel with detect. of shorts across contacts at U_B AC	**30 Ohm**
Times	
Switch-on delay	
with automatic reset typ.	**250 ms**
with automatic reset max.	**500 ms**
with automatic reset after power on typ.	**280 ms**
with automatic reset after power on max.	**550 ms**
with monitored reset typ.	**35 ms**
with monitored reset max.	**50 ms**
Delay-on de-energisation	
with E-STOP typ.	**15 ms**
with E-STOP max.	**30 ms**
with power failure typ.	**50 ms**
with power failure max.	**70 ms**
Recovery time at max. switching frequency 1/s	
after E-STOP	**50 ms**
after power failure	**100 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	**-20 - 55 °C**
Storage temperature	**-40 - 85 °C**
Protection type	
Mounting (e.g. control cabinet)	**IP54**
Housing	**IP40**
Terminals	**IP20**
Mechanical data	
Housing material	
Housing	**PPO UL 94 V0**
Front	**ABS UL 94 V0**

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Mechanical data	
Max. cross section of external conductors with screw terminals	
1 core flexible	**0.20 - 4.00 mm² , 24 - 10 AWG**
2 core, same cross section, flexible:	
with crimp connectors, without insulating sleeve	**0.20 - 2.50 mm² , 24 - 14 AWG**
without crimp connectors or with TWIN crimp connectors	**0.20 - 2.50 mm² , 24 - 14 AWG**
Torque setting with screw terminals	**0.60 Nm**
Dimensions	
Height	**87.0 mm**
Width	**45.0 mm**
Depth	**121.0 mm**
Weight	**375 g**

The standards current on **08/02** apply.

Max. continuous current

Number of contacts	I_{max} (A) at U_B DC	I_{max} (A) at U_B AC
1	**8.00 A**	**8.00 A**
2	**8.00 A**	**7.50 A**
3	**7.00 A**	**6.50 A**

Order reference

Type	Features		Terminals	Order no.
PNOZ X3	24 VAC/DC	24 VDC	Screw terminals	774 310
PNOZ X3	42 VAC	24 VDC	Screw terminals	774 311
PNOZ X3	48 VAC	24 VDC	Screw terminals	774 312
PNOZ X3	110 VAC	24 VDC	Screw terminals	774 314
PNOZ X3	115 VAC	24 VDC	Screw terminals	774 315
PNOZ X3	120 VAC	24 VDC	Screw terminals	774 316
PNOZ X3	230 VAC	24 VDC	Screw terminals	774 318
PNOZ X3	240 VAC	24 VDC	Screw terminals	774 319

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