




## 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

- ▶ 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

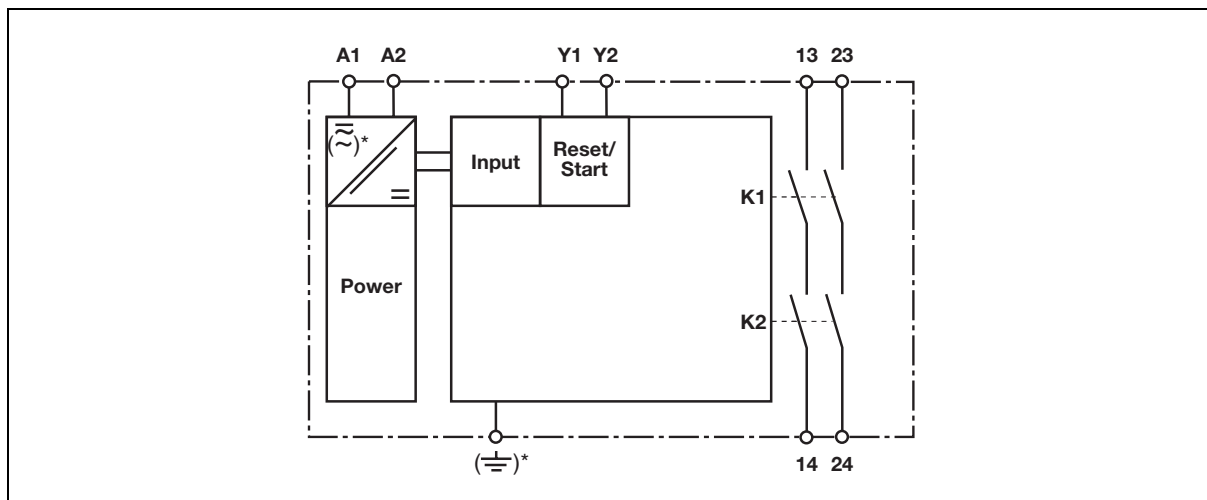
The safety relay is not suitable for non-contact barriers because

- ▶ 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  $U_B = 42 - 240 \text{ VAC}$

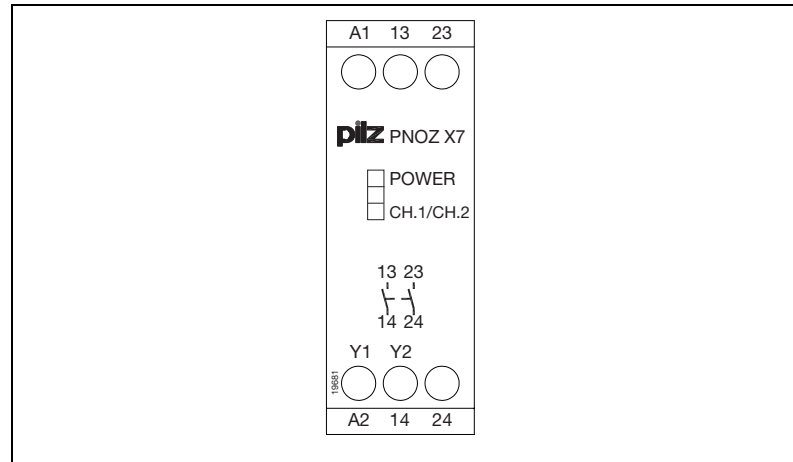
## Up to Category 2, EN 954-1 PNOZ X7

### ▶ Key

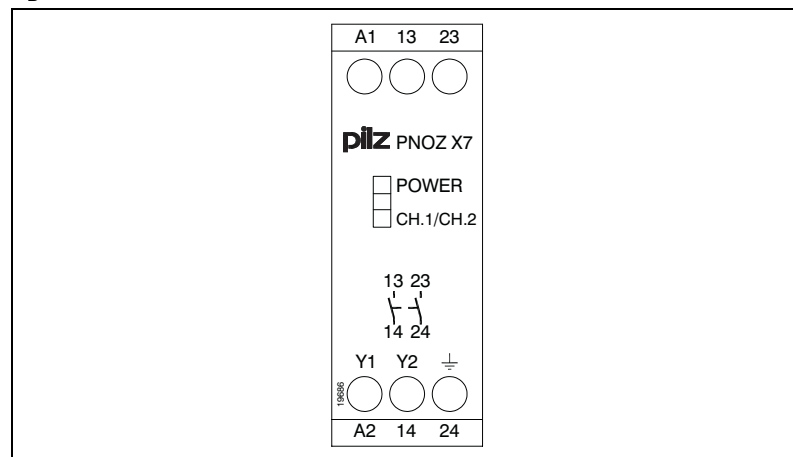
|   |                   |
|---|-------------------|
| S1  | E-STOP pushbutton |
| S3  | Reset button      |
|  | Switch operated   |
|  | Gate open         |
|  | Gate closed       |

### Terminal configuration

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



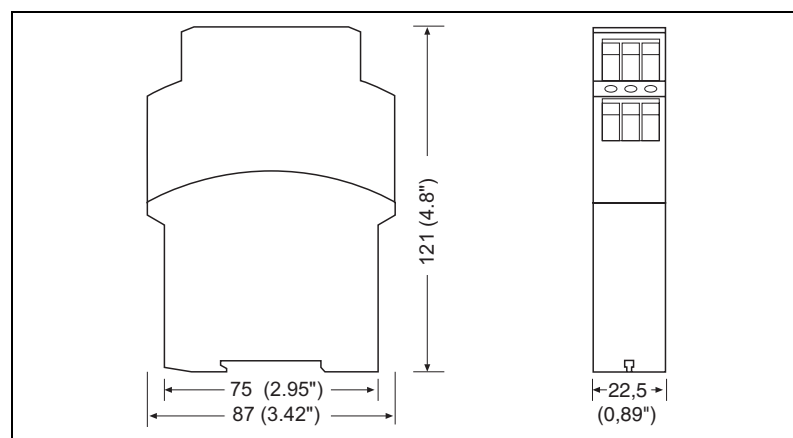
$U_B \text{ AC}$



### 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

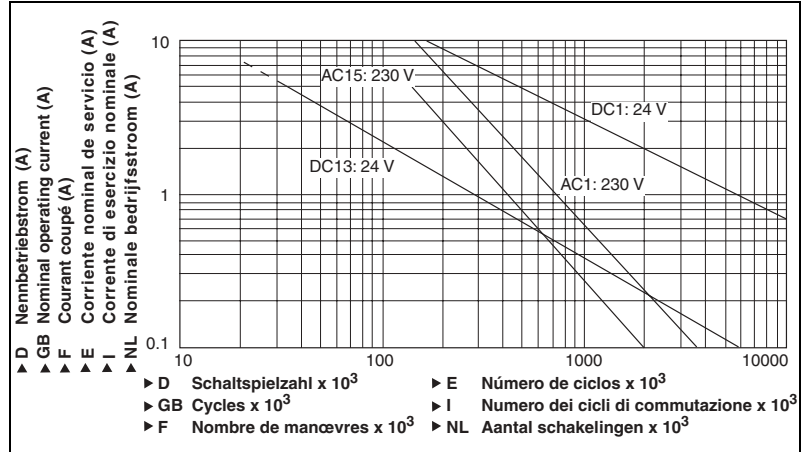


## Up to Category 4, EN 954-1 PNOZ XV2

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

## Up to Category 4, EN 954-1 PNOZ XV2

| 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     | 50 ms + t <sub>v</sub>  |
| after power failure  | 250 ms  |
| Delay time t <sub>v</sub> 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 |
| fixed  | 0.5 s Order no.: 774504, 3.0 s Order no.: 774505, 10 s Order no.: 774506  |
| 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 <sup>2</sup>   |
| 2 core, same cross section, flexible:                          |   |
| with crimp connectors, without insulating sleeve               | 0.20 - 2.50 mm <sup>2</sup>   |
| without crimp connectors or with TWIN crimp connectors         | 0.20 - 2.50 mm <sup>2</sup>   |
| 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                  | <b>8.00 A</b>              |
| 2                  | <b>6.80 A</b>              |
| 3                  | <b>5.50 A</b>              |
| 4                  | <b>4.80 A</b>              |

### Order reference

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