Instantaneous
PZE X4



Contact expansion module for increasing the number of available contacts

Approvals

	PZE X4
cULus LISTED	◆
TÜV SÜDDEUTSCHLAND	◆
CCC	◆

Unit features

- Positive-guided relay outputs:
  – 4 safety contacts (N/O), instantaneous
- Safe separation of safety contacts 13-14, 23-24, 33-34 from input circuit A1 and feedback loop Y1-Y2
- Connection for feedback loop
- Switch status channel 1/2
- See order reference for unit types

Unit description

The unit meets the requirements of EN 60204-1 and IEC 60204-1. The contact expansion module is used to increase the number of contacts available on a base unit. Base units are all

- Safety relays with feedback loop
- Programmable safety systems with feedback loop

The category that can be achieved in accordance with EN 954-1 and EN ISO 13849-1 depends on the category of the base unit. The contact expansion module may not exceed this.

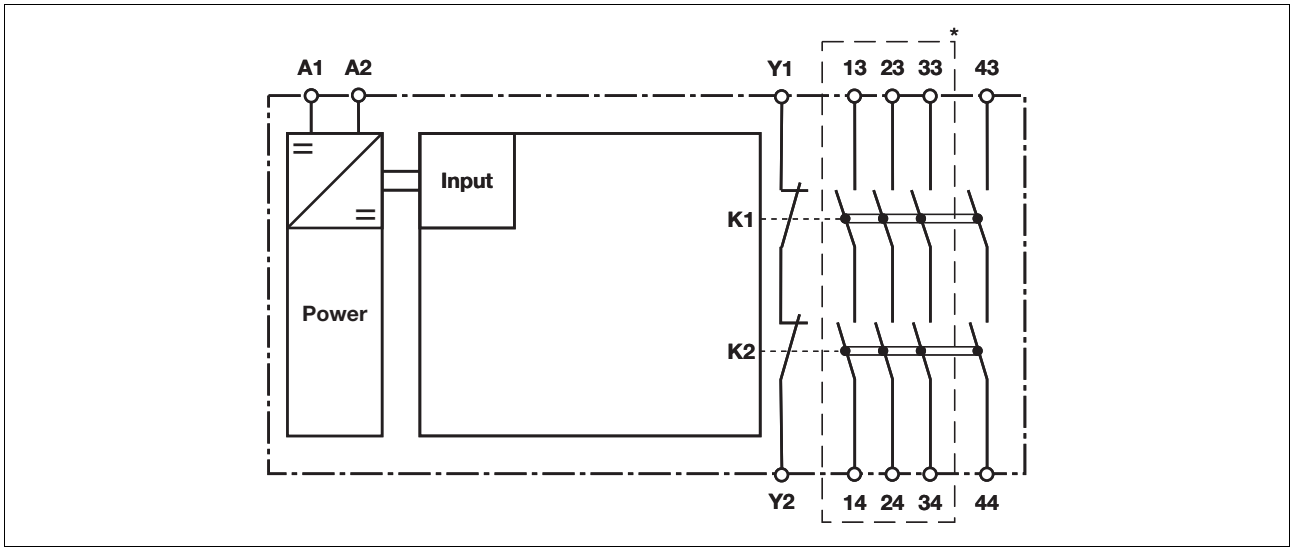
Safety features

The unit meets the following safety requirements:

- The contact expansion module expands an existing circuit. As the output relays are monitored via the base unit's feedback loop, the safety functions on the existing circuit are transferred to the contact expansion module.
- The safety function remains effective in the case of a component failure.
- Earth fault in the feedback loop: Detected, depending on the base unit that is used.
- Earth fault in the input circuit: The output relays de-energise and the safety contacts open.

Block diagram

* Safe separation in accordance with EN 60947-1, 6 kV (see unit features)

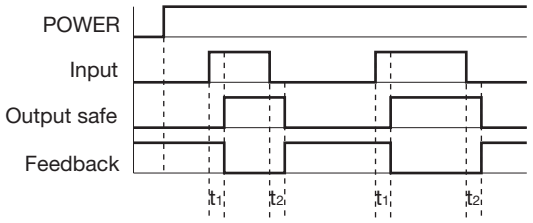


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Function description

- Single-channel operation: one input circuit affects both output relays

Timing diagram



Key

- Power: Supply voltage
- Input: Input circuits A1
- Output safe: Safety contacts 13-14, 23-24, 33-34, 43-44
- Feedback: Feedback loop Y1-Y2
- t_1: Switch-on delay
- t_2: Delay-on de-energisation

Wiring

Please note:

- Information given in the “Technical details” must be followed.
- Outputs 13-14, 23-24, 33-34, 43-44 are safety contacts.
- To prevent contact welding, a fuse should be connected before the output contacts (see technical details).
- Calculation of the max. cable runs l_{max} in the input circuit:

$$l_{max} = \frac{R_{lmax}}{R_l / km}$$

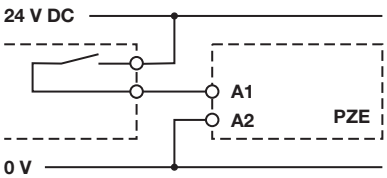
R_{lmax} = max. overall cable resistance (see technical details)
R_l /km = cable resistance/km

- Use copper wire that can withstand 60/75 °C.
- Sufficient fuse protection must be provided on all output contacts with capacitive and inductive loads.

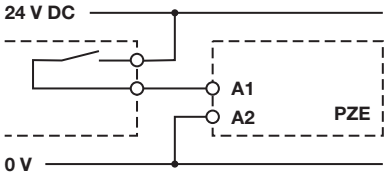
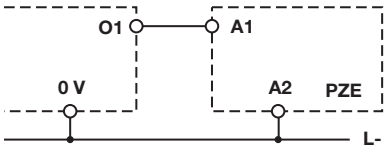
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Preparing for operation

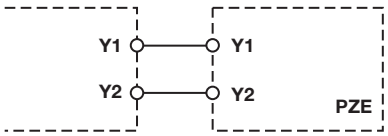
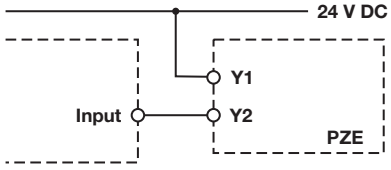
- Supply voltage

Supply voltage	AC	DC
		

- Input circuit

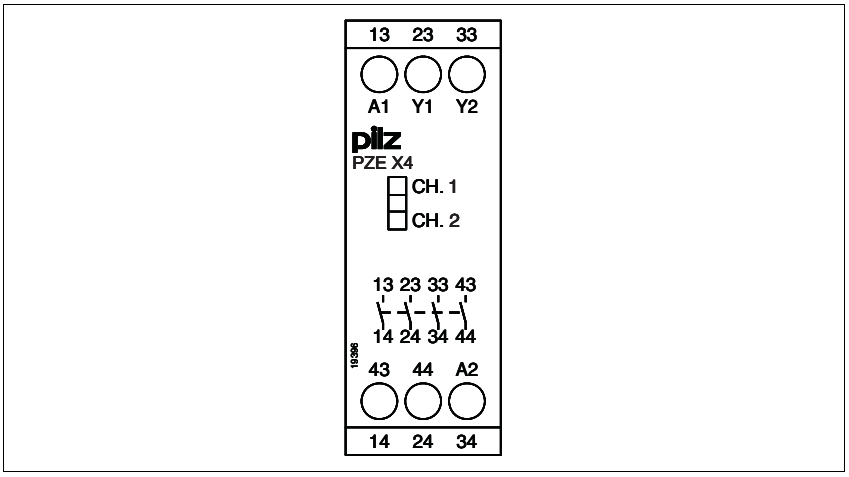
Input circuit	Single-channel	Dual-channel
Base unit: PNOZ X safety relay Driven via safety contacts		
Base unit: PNOZelog safety relay, programmable safety system or PNOZmulti Driven via semiconductor outputs (24 VDC)		

- Feedback loop

Feedback loop	Base unit: PNOZ X safety relay	Base unit: PNOZelog safety relay, programmable safety system or PNOZmulti
Y1, Y2 and Input are inputs on the base unit; they evaluate the feedback loop		

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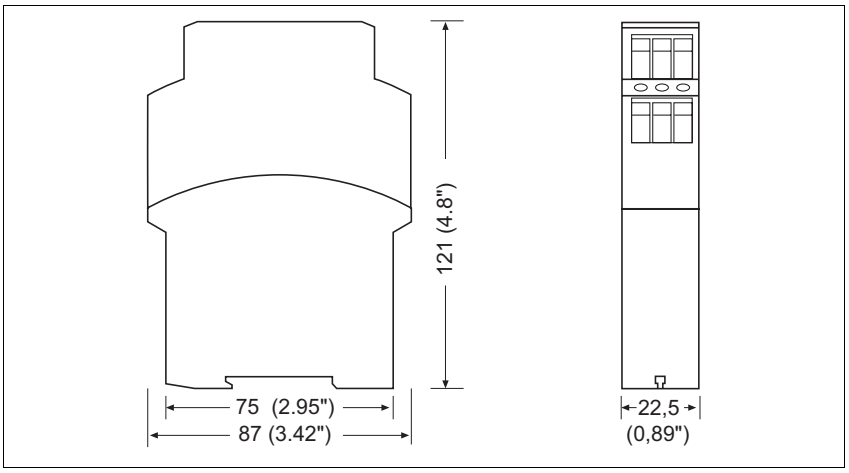
Terminal configuration



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

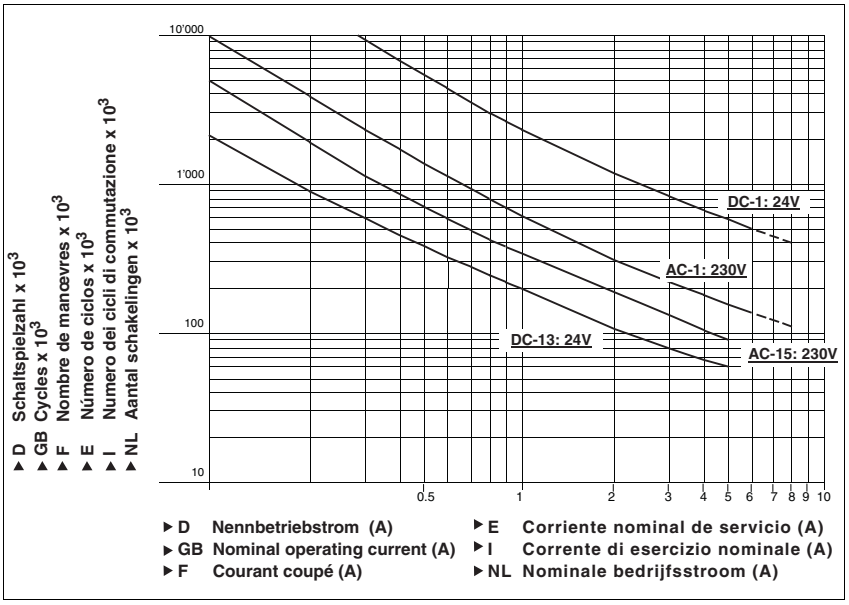


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Notice

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	
Supply voltage U_B DC	**24 V**
Voltage tolerance	**-15 %/+10 %**
Power consumption at U_B DC	**2.5 W**
Residual ripple DC	**20 %**
Voltage and current at	
Input circuit DC: **24.0 V**	**95.0 mA**
Number of output contacts	
Safety contacts (S) instantaneous:	**4**
Utilisation category in accordance with **EN 60947-4-1**	
Safety contacts: AC1 at **240 V**	I_{min}: **0.01 A** , I_{max}: **6.0 A** P_{max}: **1500 VA**
Safety contacts: DC1 at **24 V**	I_{min}: **0.01 A** , I_{max}: **6.0 A** P_{max}: **150 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}: **5.0 A**
Contact material	**AgCuNi + 0.2 µm Au**
External contact fuse protection (I_K = 1 kA) to **EN 60947-5-1**	
Blow-out fuse, quick	
Safety contacts:	**10 A**
Blow-out fuse, slow	
Safety contacts:	**6 A**
Circuit breaker 24 VAC/DC, characteristic B/C	
Safety contacts:	**6 A**
Max. overall cable resistance R_{lmax} per input circuit	
single-channel at U_B DC	**30 Ohm**

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Safety-related characteristic data	
PL in accordance with **EN ISO 13849-1**	**PL e** (**Cat. 4**)
Category in accordance with **EN 954-1**	**Cat. 4**
SIL CL in accordance with **EN IEC 62061**	**SIL CL 3**
PFH in accordance with **EN IEC 62061**	**2.31E-09**
SIL in accordance with **IEC 61511**	**SIL 3**
PFD in accordance with **IEC 61511**	**2.03E-06**
t_M in years	**20**
Times	
Switch-on delay	
with automatic reset after power on typ.	**30 ms**
with automatic reset after power on max.	**50 ms**
Delay-on de-energisation	
with E-STOP typ.	**30 ms**
with E-STOP max.	**50 ms**
with power failure typ.	**30 ms**
with power failure max.	**50 ms**
Supply interruption before de-energisation	**20 ms**
Environmental data	
EMC	**EN 60947-5-1**, **EN 61000-6-2**
Vibration to **EN 60068-2-6**	
Frequency	**10 - 55 Hz**
Amplitude	**0.35 mm**
Climatic suitability	**EN 60068-2-78**
Airgap creepage in accordance with **EN 60947-1**	
Pollution degree	**2**
Overvoltage category	**III**
Rated insulation voltage	**250 V**
Rated impulse withstand voltage	**6.00 kV**
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**
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	**22.5 mm**
Depth	**121.0 mm**
Weight	**175 g**

The standards current on **2009-12** apply.

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Conventional thermal current	
I_{th} (A) at U_B DC	
1 contact	**6.00 A**
2 contacts	**6.00 A**
3 contacts	**5.00 A**
4 contacts	**4.00 A**

Order reference

Type	Features		Terminals	Order no.
PZE X4		24 VDC	Screw terminals	774 585