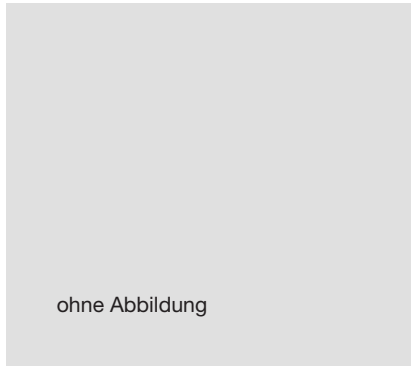


Instantaneous PZE X4.1P with universal power supply



Contact expansion module for increasing the number of available contacts

Approvals

PZE X4.1P with universal power supply	
	◆
	◆
	◆

Unit features

- ▶ Positive-guided relay outputs:
 - 4 safety contacts (N/O), instantaneous
- ▶ LED indicator for:
 - Switch status channel 1/2
 - Supply voltage
- ▶ Plug-in connection terminals (either spring-loaded terminal or screw terminal)
- ▶ Suitable to be driven via a semiconductor output
- ▶ See order reference for unit types

Unit description

The unit meets the requirements of EN 60947-5-1, EN 60204-1 and VDE 0113-1. The contact expansion module is used to increase the number of instantaneous safety contacts available on a base unit. Base units are all safety relays with feedback loop monitoring.

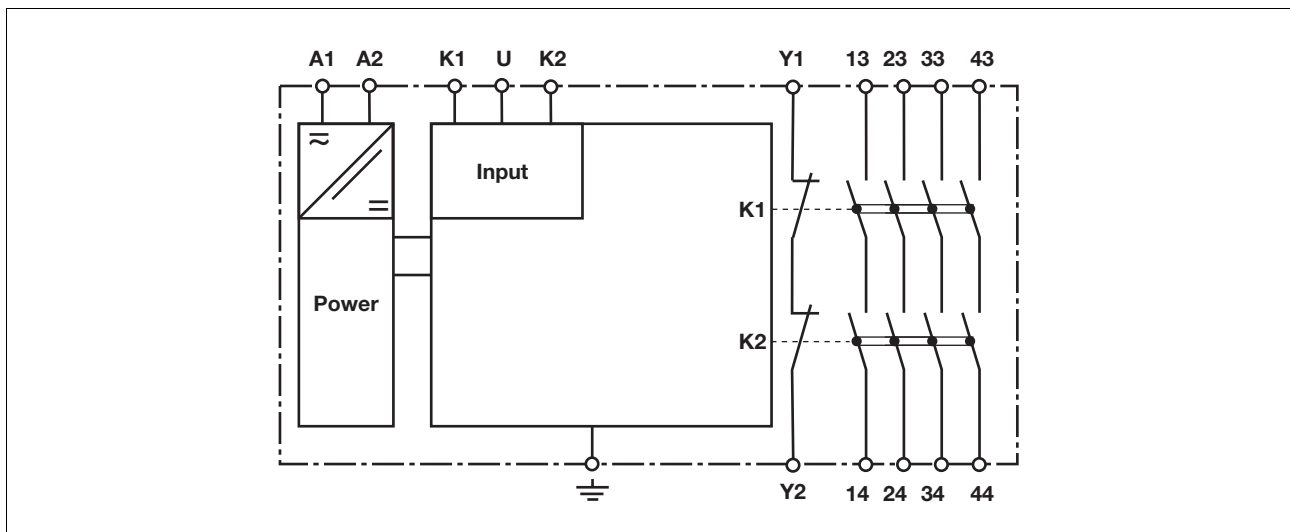
The category that can be achieved in accordance with EN 954-1 and EN ISO 13849-1 depends on the category of the base unit. The contact expansion module may not exceed this.

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

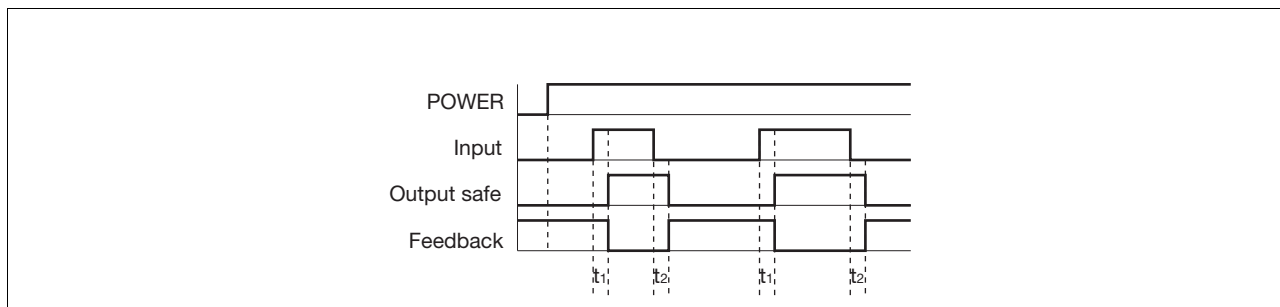


Instantaneous PZE X4.1P with universal power supply

Function description

- ▶ Single-channel operation: one input circuit affects both output relays
- ▶ Dual-channel operation:
 - two redundant input circuits affect one output relay
- Detection of shorts across contacts is also possible

Timing diagram



Key

- ▶ Power: Supply voltage
- ▶ Input: Input circuits K1-U-K2
- ▶ 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.

Instantaneous PZE X4.1P with universal power supply

Preparing for operation

▶ Supply voltage

Supply voltage	AC	DC

▶ Input circuit

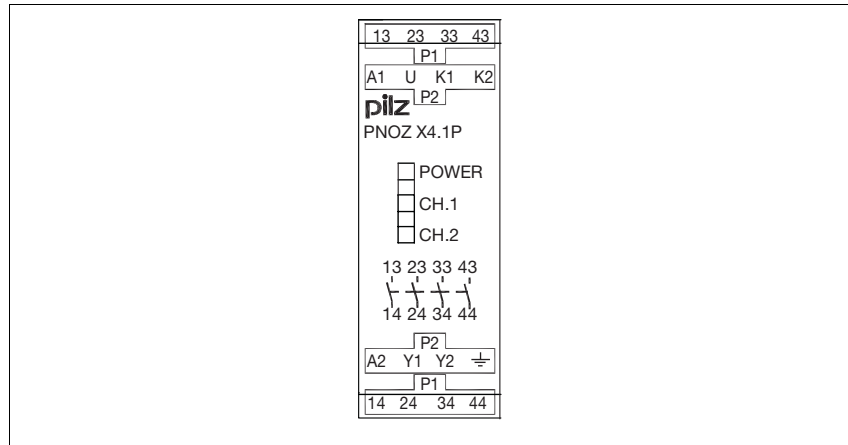
Input circuit	Single-channel	Dual-channel
Base unit: PNOZ X safety relay Driven via safety contacts		

▶ Feedback loop

Y1 and Y2 are inputs on the base unit; they evaluate the feedback loop	
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Instantaneous PZE X4.1P with universal power supply

Terminal configuration

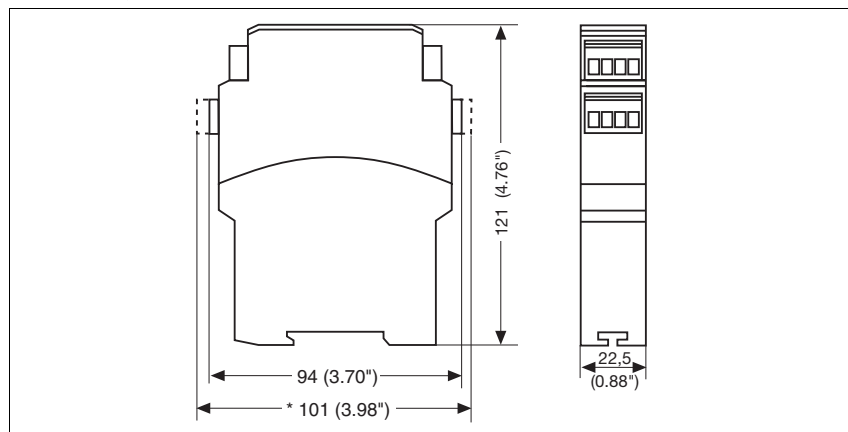


Installation

- ▶ 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

*with spring-loaded terminals

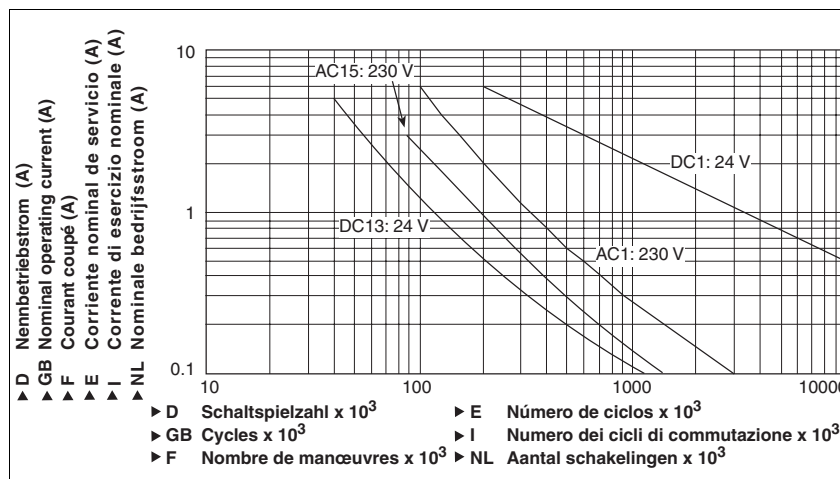


Instantaneous PZE X4.1P with universal power supply

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/DC	24 - 240 V
Voltage tolerance	-15 %/+10 %
Power consumption at U _B AC	4.0 VA
Power consumption at U _B DC	2.0 W
Frequency range AC	50 - 60 Hz
Residual ripple DC	20 %
Voltage and current at	
Input circuit DC: 24.0 V	30.0 mA
Number of output contacts	
Safety contacts (S) instantaneous:	4
Category of output contacts in accordance with EN 954-1, EN ISO 13849-1	
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} : 3.0 A
Safety contacts: DC13 at 24 V (6 cycles/min)	I _{max} : 4.0 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:	6 A
Blow-out fuse, slow	
Safety contacts:	4 A
Circuit breaker 24 VAC/DC, characteristic B/C	
Safety contacts:	4 A
Max. overall cable resistance R _{lmax} per input circuit	
single-channel at U _B DC	70 Ohm
single-channel at U _B AC	70 Ohm
dual-channel without detect. of shorts across contacts at U _B DC	140 Ohm
dual-channel without detect. of shorts across contacts at U _B AC	140 Ohm

Instantaneous PZE X4.1P with universal power supply

Times	
Switch-on delay	
with automatic reset typ.	13 ms
with automatic reset max.	20 ms
with automatic reset after power on typ.	230 ms
with automatic reset after power on max.	360 ms
Delay-on de-energisation	
with E-STOP typ.	10 ms
with E-STOP max.	20 ms
with power failure typ. U_B AC/DC: 24 V	270 ms
with power failure max. U_B AC/DC: 24 V	350 ms
with power failure typ. U_B AC : 240 V	1,300 ms
with power failure max. U_B AC : 240 V	1900 ms
Supply interruption before de-energisation	20 ms
Supply interruption before de-energisation in the input circuit	2.5 ms
Environmental data	
EMC	EN 60947-5-1, EN 61000-6-2, EN 61000-6-4
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
Rated insulation voltage	250 V
Rated impulse withstand voltage	6.0 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	0.25 - 2.50 mm ² , 24 - 12 AWG
2 core, same cross section, flexible:	
with crimp connectors, without insulating sleeve	0.25 - 1.00 mm ² , 24 - 16 AWG
without crimp connectors or with TWIN crimp connectors	0.20 - 1.50 mm ² , 24 - 16 AWG
Torque setting with screw terminals	0.50 Nm
Cross section of external conductors with spring-loaded terminals: Flexible with/without crimp connectors	0.20 - 1.50 mm ² , 24 - 16 AWG
Spring-loaded terminals: Terminal points per connection	2
Stripping length	8 mm
Dimensions	
Height	101.0 mm Order no.: 787588 94.0 mm Order no.: 777588
Width	22.5 mm
Depth	121.0 mm
Weight	215 g Order no.: 787588 220 g Order no.: 777588

The standards current on 2008-12 apply.

Instantaneous

PZE X4.1P with universal power supply

Conventional thermal current

Number of contacts	I_{th} (A) at U_B DC	I_{th} (A) at U_B AC
1	6.00 A	6.00 A
2	6.00 A	6.00 A
3	4.50 A	4.50 A
4	3.50 A	3.50 A

Order reference

Type	Features	Terminals	Order no.
PZE X4.1P C	24 - 240 VAC/DC	Spring-loaded terminals	787 588
PZE X4.1P	24 - 240 VAC/DC	Screw terminals	777 588