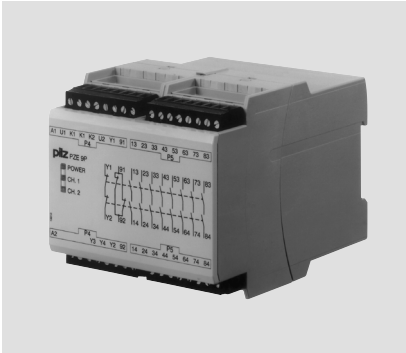





Instantaneous PZE 9P



Contact expander module for increasing the number of available contacts

Approvals

	PZE 9P
	◆
	◆
	◆

Unit features

- ▶ Positive-guided relay outputs:
 - 8 safety contacts (N/O), instantaneous
 - 1 auxiliary contact (N/C), instantaneous
- ▶ Safe separation of safety contacts 23-24 ... 83-84 from input circuits K1-U2, K2-U2, Y3-Y4, feedback loop Y1-Y2 and auxiliary contact 91-92.
- ▶ LED indicator for:
 - Switch status channel 1/2
 - Supply voltage
- ▶ Plug-in connection terminals (either cage clamp terminal or screw terminal)
- ▶ See order reference for unit types

Unit description

The unit meets the requirements of EN 60204-1 and IEC 60204-1. The contact expander 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 depends on the category of the base unit. The contact expander module may not exceed this.

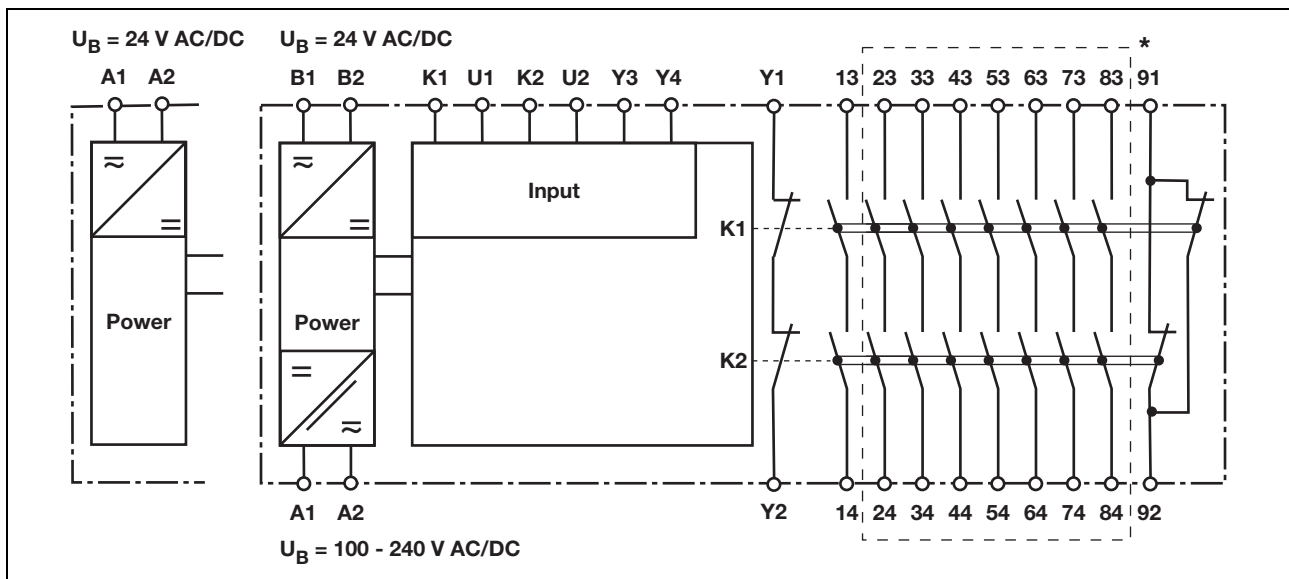
Safety features

The unit meets the following safety requirements:

- ▶ The contact expander 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 expander 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

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

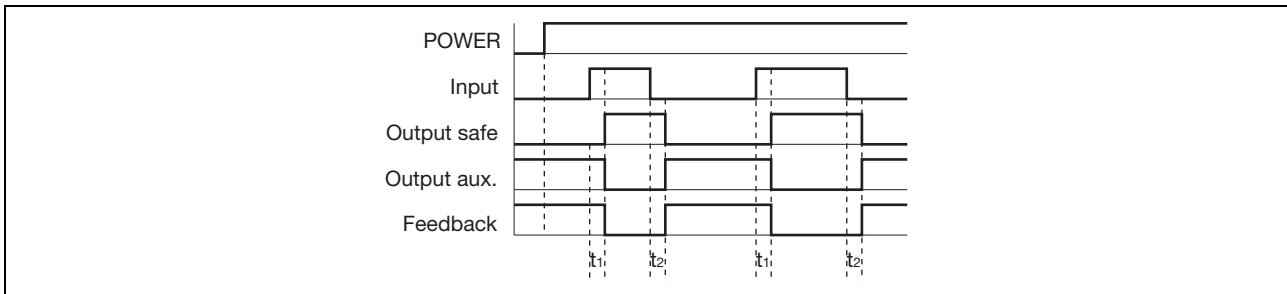


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Function description

- ▶ Single-channel operation: one input circuit affects both output relays
- ▶ 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-U1, K2-U2, Y3-Y4
- ▶ Output safe: Safety contacts 13-14, 23-24, 33-34, 43-44, 53-54, 63-64, 73-74, 83-84
- ▶ Output aux: Auxiliary contacts 91-92
- ▶ Feedback: Feedback loop Y1-Y2
- ▶ t_1 : Switch-on delay

Wiring

Please note:

- ▶ Information given in the "Technical details" must be followed.
- ▶ Outputs 13-14, 23-24, 33-34, 43-44, 53-54, 63-64, 73-74, 83-84 are safety contacts, output 91-92 is an auxiliary contact (e.g. for display).
- ▶ To prevent contact welding, a fuse should be connected before the output contacts (see technical details).
- ▶ Calculation of the max. cable runs I_{max} in the input circuit:

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

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

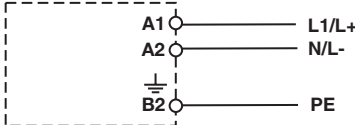
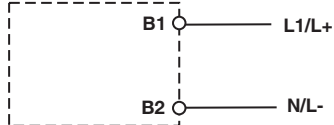
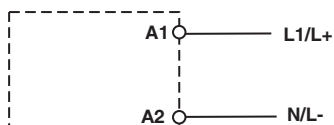
R_l / km = cable resistance/km

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

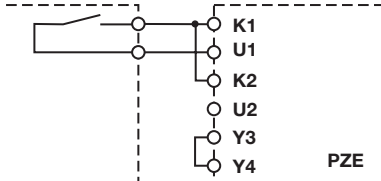
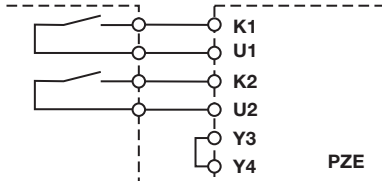
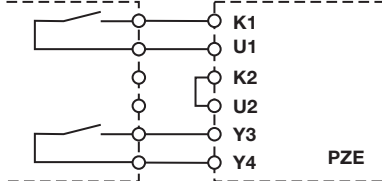
Instantaneous PZE 9P

Preparing for operation

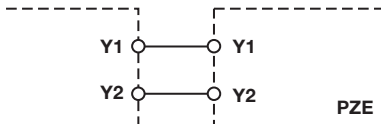
▶ Supply voltage

Supply voltage	AC/DC	AC/DC
	Order no.: 777148, 787148 $U_B = 100 - 240\text{ V}$ 	Order no. 777148, 787148 $U_B = 24\text{ V}$ 
	/	Order no. 777140, 787140 $U_B = 24\text{ V}$ 

▶ Input circuit

Input circuit	Single-channel	Dual-channel
without detection of shorts across contacts		
with detection of shorts across contacts	/	

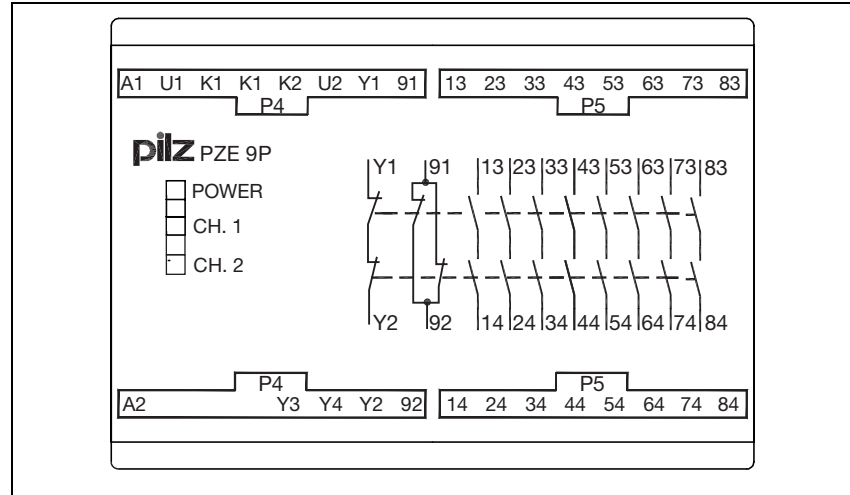
▶ Feedback loop

Y1 and Y2 are feedback loop inputs on the base unit	
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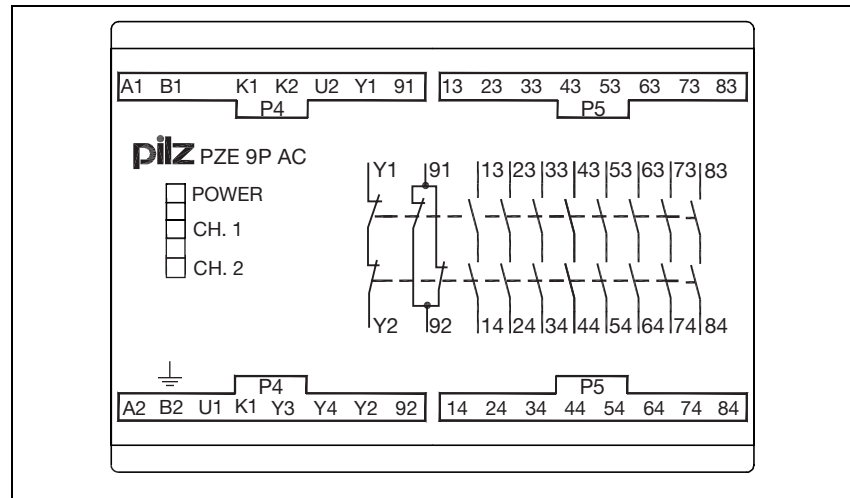
Instantaneous PZE 9P

Terminal configuration

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



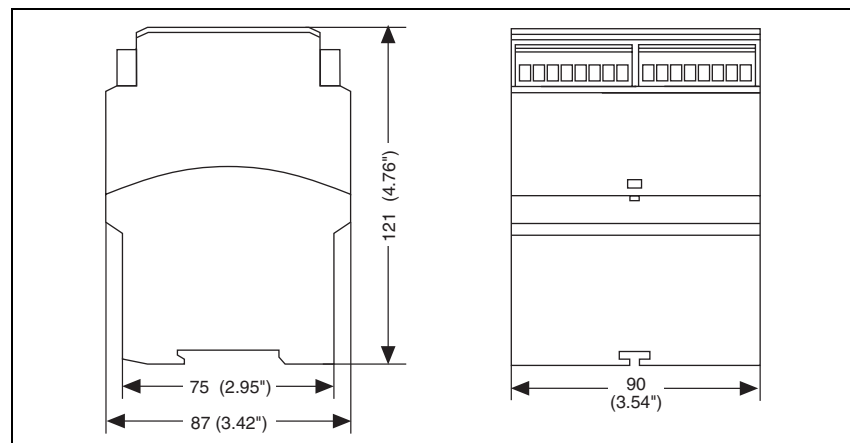
$U_B = 24 \text{ VAC/DC}, 100 - 240 \text{ VAC/DC}$



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

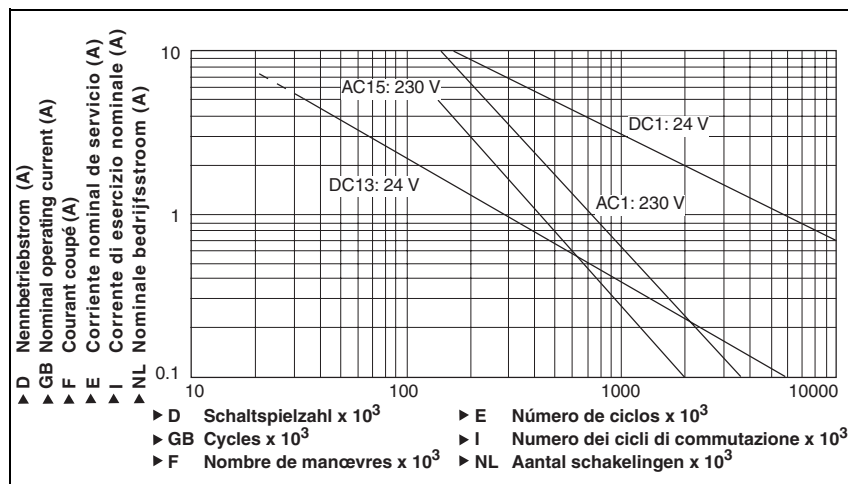


Instantaneous PZE 9P

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 AC	24 V, 100 - 240 V
Supply voltage U_B DC	24 V, 100 - 240 V
Voltage tolerance	-15 % / 10 %
Power consumption at U_B AC	9.5 VA Order no.: 777140, 787140 6 VA Order no.: 777148, 787148
Power consumption at U_B DC	3.5 W
Frequency range AC	50 - 60 Hz
Residual ripple DC	160 %
Voltage and current at Input circuit: 24 V DC	40 mA
Output contacts in accordance with EN 954-1	Safety contacts (N/O): 8 Auxiliary contacts (N/C): 1
Utilisation category in accordance with EN 60947-4-1 Safety contacts AC1: 240 V	I_{min} : 0.01 A , I_{max} : 8 A P_{max} : 2000 VA
DC1: 24 V	I_{min} : 0.01 A , I_{max} : 8 A P_{max} : 200 W
Utilisation category in accordance with EN 60947-5-1 AC15: 230 V DC13 (6 cycles/min): 24 V	I_{max} : 5 A I_{max} : 7 A
Utilisation category in accordance with EN 60947-4-1 Auxiliary contacts AC1: 240 V	I_{min} : 0.01 A , I_{max} : 2 A P_{max} : 500 VA
DC1: 24 V	I_{min} : 0.01 A , I_{max} : 2 A P_{max} : 50 W
Utilisation category in accordance with EN 60947-5-1 AC15: 230 V DC13 (6 cycles/min): 24 V	I_{max} : 2 A I_{max} : 2 A
Contact material	AgSnO₂ + 0.2 µm Au
External contact fuse protection (EN 60947-5-1) Safety contacts Blow-out fuse, quick Blow-out fuse, slow Circuit breaker	10 A 6 A 6 A , 24 VAC/DC, characteristic B/C

Instantaneous PZE 9P

External contact fuse protection (EN 60947-5-1)	
Auxiliary contacts	
Blow-out fuse, quick	4 A
Blow-out fuse, slow	2 A
Circuit breaker	2 A, 24 VAC/DC, characteristic B/C
Max. overall cable resistance R_{lmax} Input circuits, reset circuits	
Single-channel at U_B DC	50 Ohm
Single-channel at U_B AC	80 Ohm
Dual-channel without detect. of shorts across contacts at U_B DC	100 Ohm
Dual-channel without detect. of shorts across contacts at U_B AC	160 Ohm
Dual-channel with detect. of shorts across contacts at U_B DC	5 Ohm Order no.: 777140, 787140
	3 Ohm Order no.: 777148, 787148
Dual-channel with detect. of shorts across contacts at U_B AC	10 Ohm Order no.: 777140, 787140
	8 Ohm Order no.: 777148, 787148
Times	
Switch-on delay	
after closing the input circuits typ.	30 ms Order no.: 777140, 787140
	25 ms Order no.: 777148, 787148
after closing the input circuits max.	40 ms Order no.: 777140, 787140
	30 ms Order no.: 777148, 787148
after power on typ.	30 ms Order no.: 777140, 787140
	40 ms Order no.: 777148, 787148
after power on max.	40 ms Order no.: 777140, 787140
	50 ms Order no.: 777148, 787148
Delay-on de-energisation	
after opening the input circuits typ.	20 ms
after opening the input circuits max.	30 ms
with power failure typ. $U_B = 24$ VAC/DC	110 ms Order no.: 777140, 787140
	125 ms Order no.: 777148, 787148
with power failure max. $U_B = 24$ VAC/DC	200 ms Order no.: 777140, 787140
	200 ms Order no.: 777148, 787148
with power failure typ. $U_B = 100$ VAC/DC	150 ms Order no.: 777148, 787148
with power failure max. $U_B = 100$ VAC/DC	200 ms Order no.: 777148, 787148
with power failure typ. $U_B = 240$ VAC/DC	270 ms Order no.: 777148, 787148
with power failure max. $U_B = 240$ VAC/DC	400 ms Order no.: 777148, 787148
Supply interruption before de-energisation	
Supply voltage	20 ms
Input circuit	10 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 600682-78
Airgap creepage	EN 60947-1
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	0.25 - 2.50 mm²
2 core, same cross section, flexible:	
with crimp connectors, without insulating sleeve	0.25 - 1.00 mm²
without crimp connectors or with TWIN crimp connectors	0.20 - 1.50 mm²
Torque setting with screw terminals	0.5 Nm

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Mechanical data

Max. cross section of external conductors with cage clamp terminals: flexible without crimp connectors	0.20 – 1.50 mm²
Cage clamp terminals	2
Terminal points per connection	8 mm
Stripping length	87 mm x 90 mm x 121 mm
Dimensions (H x W x D)	87 mm x 90 mm x 121 mm
Weight	430 g Order no.: 777140 450 g Order no.: 777148 425 g Order no.: 787140 445 g Order no.: 787148

The standards current on **10/02** apply.

Max. continuous current

Number of contacts	I_{\max} (A) at U_B DC	I_{\max} (A) at U_B AC
1	8.0 A	8.0 A
2	8.0 A	8.0 A
3	8.0 A	8.0 A
4	7.1 A	7.1 A
5	6.3 A	6.3 A
6	5.8 A	5.8 A
7	5.4 A	5.4 A
8	5.0 A	5.0 A

Order reference

Type	Features	Terminals	Order no.
PZE 9P C	24 VAC/DC	Cage clamp terminals	787 140
PZE 9P	24 VAC/DC	Screw terminals	777 140
PZE 9P C	24 VAC/DC, 100 - 240 VAC/DC	Cage clamp terminals	787 148
PZE 9P	24 VAC/DC, 100 - 240 VAC/DC	Screw terminals	777 148