Instantaneous
PZE 9



Contact expander module for increasing the number of available contacts

Approvals

	PZE 9	
c UL us LISTED	◆	
CCC	◆	

Unit features

- Positive-guided relay outputs:
  - 8 safety contacts (N/O), instantaneous
  - 1 auxiliary contact (N/C), instantaneous
- LED indicator for:
  - Switch status channel 1/2
  - Supply voltage
- See order reference for unit types

Gerätebeschreibung

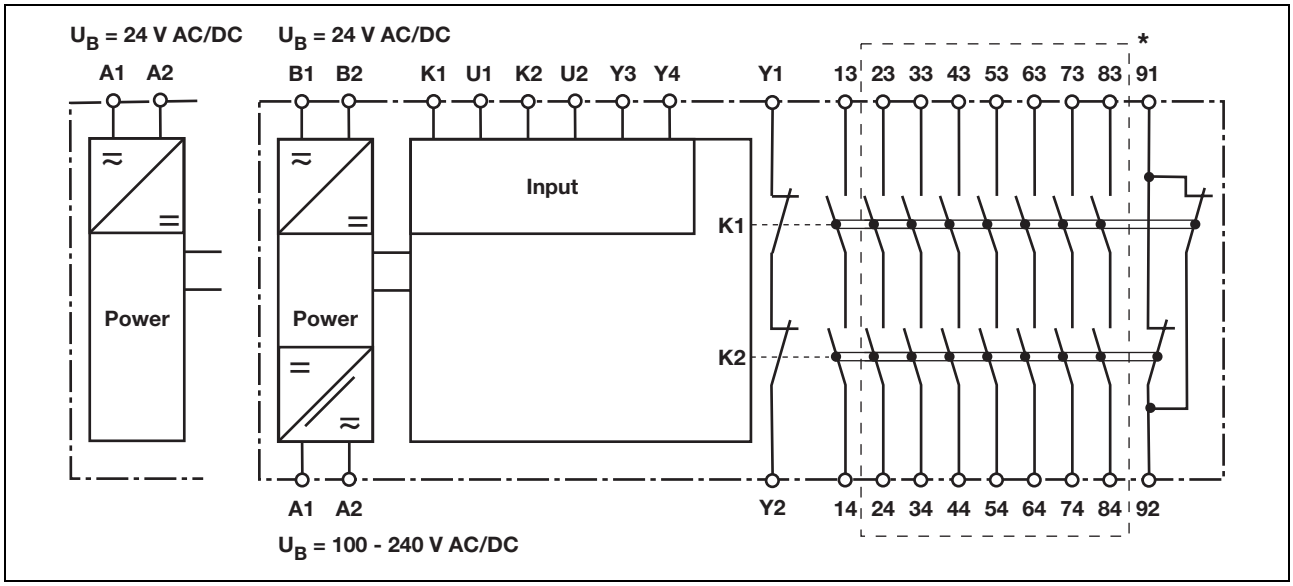
The unit meets the requirements of EN 60204-1 and IEC 60204-1. The contact expander module is used to increase the number of contacts available on a base unit. Base units are all safety relays with feedback loop. The category that can be achieved in accordance with EN 954-1 depends on the category of 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.

Blockschaltbild



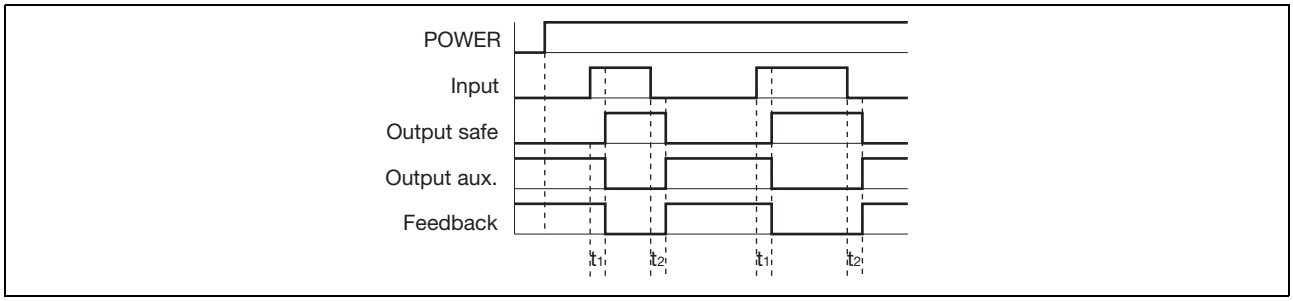
* Galvanic isolation at U_B AC

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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 U1, U2, K1, K2, 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 l_{max} in the input circuit:

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

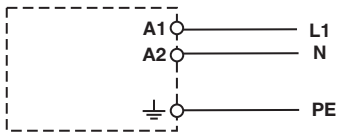
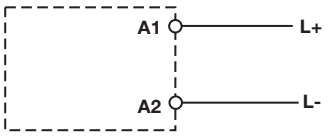
R_{lmax} = max. overall cable resistance (see technical details)
R_l / km = cable resistance/km

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

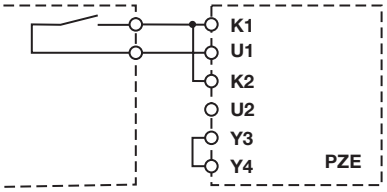
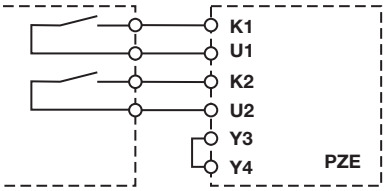
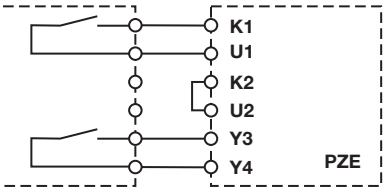
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Preparing for operation

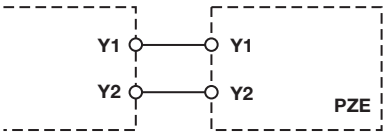
- Supply voltage

Supply voltage	AC	DC
		

- Input circuit

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

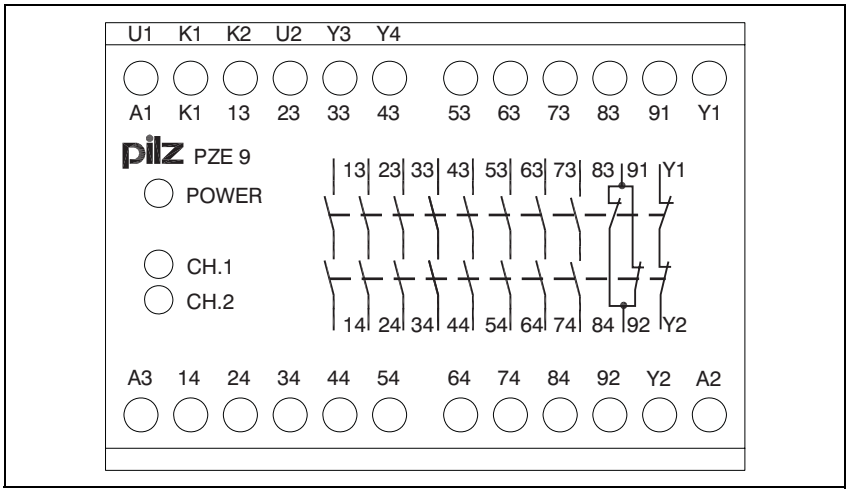
- Feedback loop

Y1 and Y2 are feedback loop inputs on the base unit	

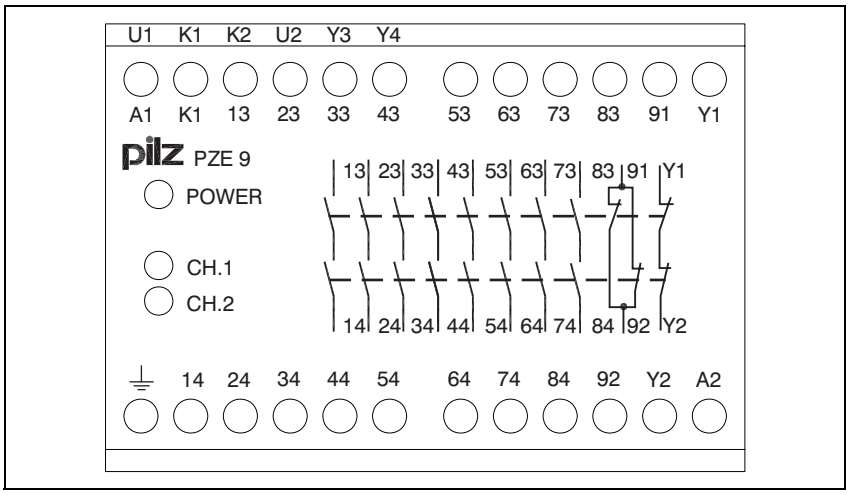
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Terminal configuration

UB = 24 VDC



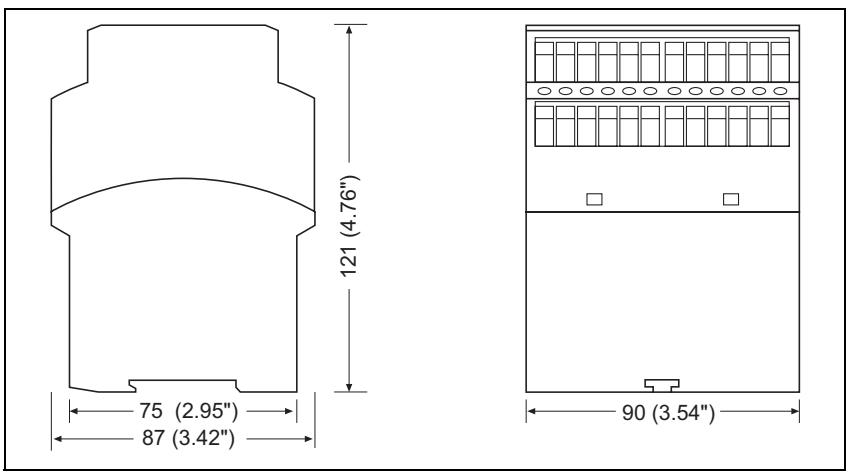
UB = 24 V, 42 V, 48 V, 110 – 120 V, 230 – 240 VAC



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



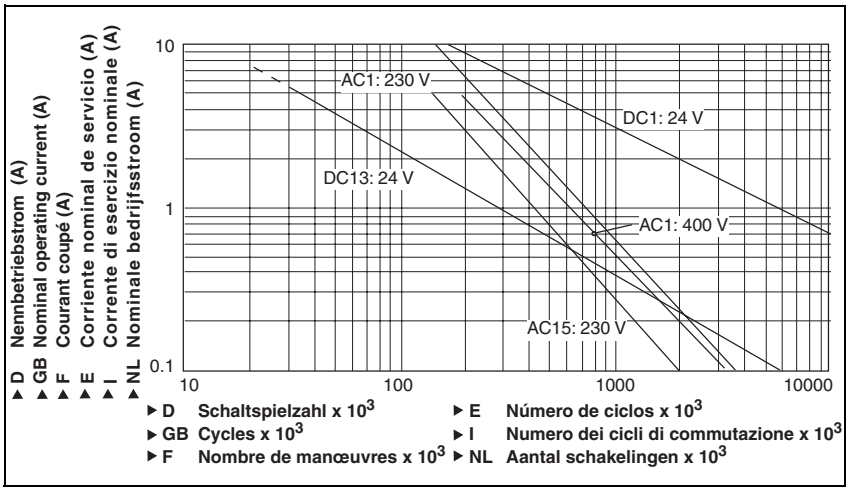
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Notice

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 U_B AC	**24 V, 42 V, 48 V, 110 – 120 V, 230 - 240 V**
Supply voltage U_B DC	**24 V**
Voltage tolerance	**-15 % / +10 %**
Power consumption at U_B AC	**7 VA**
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**
AC1: **400 V**	I_{min}: **0.01 A**, I_{max}: **5 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**	I_{max}: **5 A**
DC13 (6 cycles/min): **24 V**	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}: 5**0 VA**
Utilisation category in accordance with **EN 60947-5-1**	
AC15: **230 V**	I_{max}: **2 A**
DC13 (6 cycles/min): **24 V**	I_{max}: **2 A**
Contact material	**$AgSnO_2$ + 0.2 μm Au**
External contact fuse protection (**EN 60947-5-1**) Safety contacts	
Blow-out fuse, quick	**10 A**
Blow-out fuse, slow	**6 A**
Circuit breaker	**6 A**, 24 VAC/DC, characteristic B/C

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Electrical data	
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** Order no.: 774150
Single-channel at U_B AC	**80 Ohm** Order no.: 777140, 774141, 777142, 777143, 774148
Dual-channel without detect. of shorts across contacts at U_B DC	**100 Ohm** Order no.: 774150
Dual-channel without detect. of shorts across contacts at U_B AC	**160 Ohm** Order No.: 777140, 774141, 777142, 777143, 774148
Dual-channel with detect. of shorts across contacts at U_B DC	**5 Ohm** Order no.: 774150
Dual-channel with detect. of shorts across contacts at U_B AC	**10 Ohm** Order no.: 777140, 774141, 777142, 777143, 774148
Times	
Switch-on delay	
After closing the input circuits typ.	**30 ms** Order no.: 774150
	25 ms Order no.: 777140, 774141, 777142, 777143, 774148
After closing the input circuits max.	**40 ms**
After power on typ.	**30 ms** Order no.: 774150
	50 ms Order no.: 777140, 774141, 777142, 777143, 774148
Power on max.	**40 ms** Order no.: 774150
	70 ms Order no.: 777140, 774141, 777142, 777143, 774148
Delay-on de-energisation	
After opening the input circuits typ.	**20 ms**
After opening the input circuits max.	**30 ms**
with power failure typ.	**110 ms** Order no.: 774150
	220 ms Order no.: 777140, 774141, 777142, 777143, 774148
with power failure max.	**150 ms** Order no.: 774150
	300 ms Order no.: 777140, 774141, 777142, 777143, 774148
Supply interruption before de-energisation	**20 ms** Order no.: 774150
	150 ms Order no.: 777140, 774141, 777142, 777143, 774148
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	**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	**0.20 – 4.00 mm²**
2 core, same cross section, flexible:	
with crimp connectors, without insulating sleeve	**0.20 – 2.50 mm²**
without crimp connectors or with TWIN crimp connectors	**0.20 – 2.50 mm²**
Torque setting with screw terminals	**0.6 Nm**
Dimensions (H x W x D)	
with screw terminals	**87 mm** x **90 mm** x **121 mm**
Weight	**450 g** Order no.: 774150
	600 g Order no.: 777140, 774141, 777142, 777143, 774148

The standards current on **03/01** apply.

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Max. continuous current

Number of contacts	I_{max} (A) at U_B DC	I_{max} (A) at U_B AC	I_{max} (A) at U_B AC, DC: AC1 = 400 V
1	**8.0 A** Order no.: 774150	**8.0 A** Order no.: 774140, 774141, 774142, 774143, 774148	**5.0 A**
2	**8.0 A** Order no.: 774150	**8.0 A** Order no.: 774140, 774141, 774142, 774143, 774148	**5.0 A**
3	**8.0 A** Order no.: 774150	**7.4 A** Order no.: 774140, 774141, 774142, 774143, 774148	**5.0 A**
4	**7.1 A** Order no.: 774150	**6.4 A** Order no.: 774140, 774141, 774142, 774143, 774148	**5.0 A**
5	**6.3 A** Order no.: 774150	**5.7 A** Order no.: 774140, 774141, 774142, 774143, 774148	**5.0 A**
6	**5.8 A** Order no.: 774150	**5.2 A** Order no.: 774140, 774141, 774142, 774143, 774148	**5.0 A**
7	**5.4 A** Order no.: 774150	**4.8 A** Order no.: 774140, 774141, 774142, 774143, 774148	**4.8 A**
8	**5.0 A** Order no.: 774150	**4.5 A** Order no.: 774140, 774141, 774142, 774143, 774148	**4.5 A**

Order reference

Type	Features	Terminals	Order no.
PZE 9	24 VAC	Screw terminals	774 140
PZE 9	42 VAC	Screw terminals	774 141
PZE 9	48 VAC	Screw terminals	774 142
PZE 9	110 - 120 VAC	Screw terminals	774 143
PZE 9	230 - 240 VAC	Screw terminals	774 148
PZE 9	24 VDC	Screw terminals	774 150