Instantaneous

PZE X5P

Contact expander module for increasing the number of available contacts

Approvals

	PZE X5P
c(UL)us LISTED	◆
BG-PRÜFZERT	◆
CCC	◆

Unit features

▸ Positive-guided relay outputs:
  – 5 safety contacts (N/O), instantaneous
▸ 2 semiconductor outputs
▸ LED indicator for:
  – Switch status channel 1/2
  – Supply voltage
▸ Semiconductor outputs signal:
  – Switch status channel 1/2
  – Supply voltage is present
▸ 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. 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
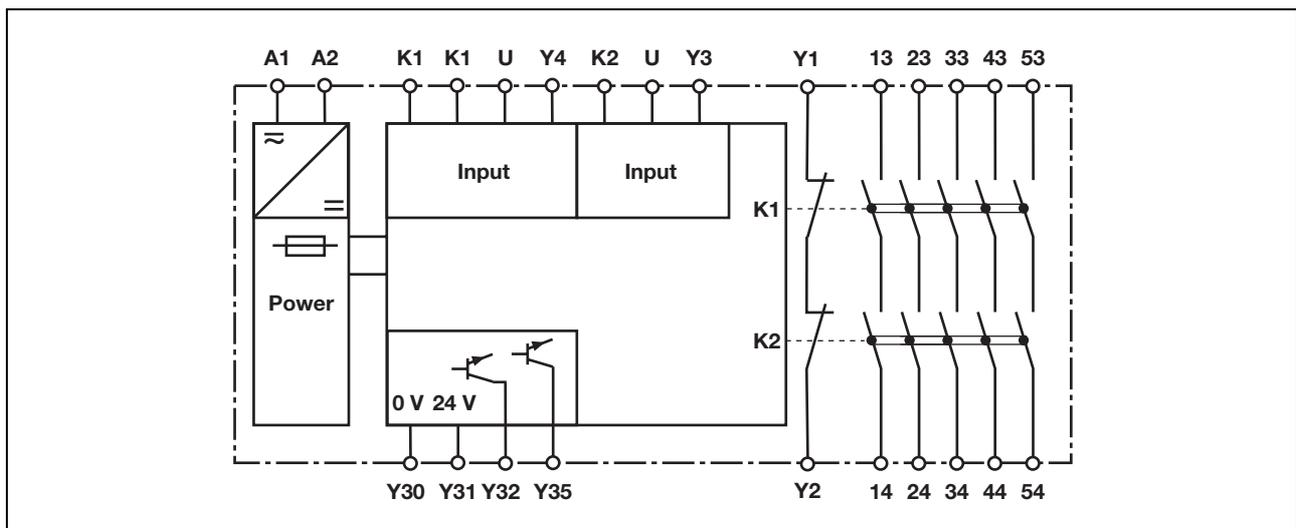
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Function description

▶ 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
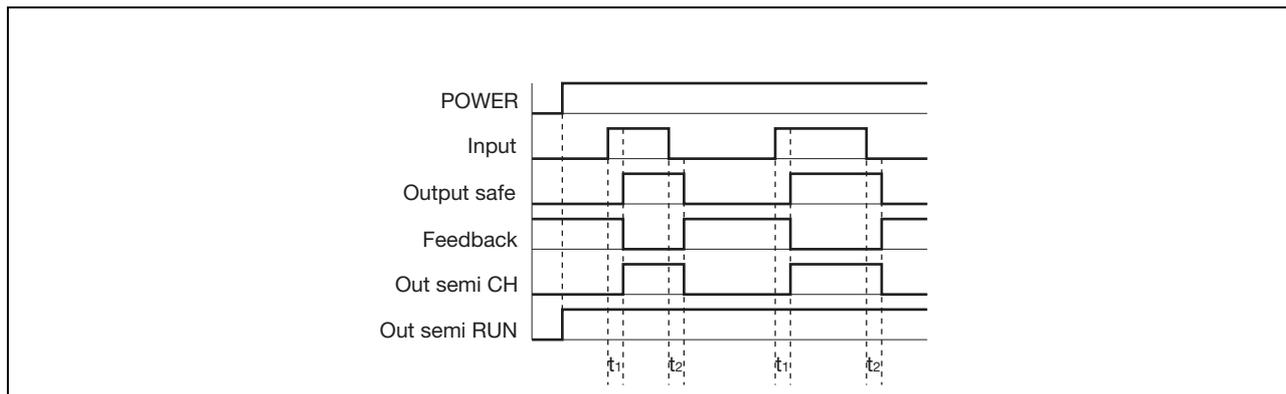
Key

▶ Power: Supply voltage
▶ Input: Input circuits K1, K2
▶ Output safe: Safety contacts 13-14, 23-24, 33-34, 43-44, 53-54

▶ Out semi CH: Semiconductor output switch status channel 1/2
▶ Out semi RUN: Semiconductor output supply voltage

▶ 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, 53-54 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 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.

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Preparing for operation

▶ Supply voltage

Supply voltage	AC	DC
		A1 — L+ A2 — L-
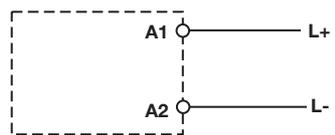
▶ Input circuit

Input circuit	Single-channel	Dual-channel
E-STOP **without** detection of shorts across contacts	K1 U K2 Y3 Y4 PZE	K1 U K2 Y3 Y4 PZE
E-STOP **with** detection of shorts across contacts		K1 U K2 Y3 Y4 PZE
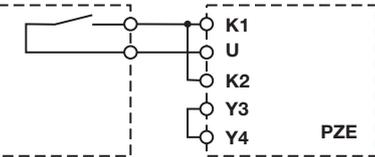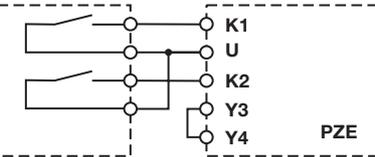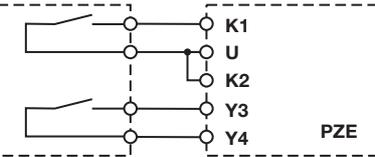
▶ Feedback loop

Y1 and Y2 are feedback loop inputs on the base unit	Y1 — Y1 Y2 — Y2 PZE

▶ Semiconductor output

Y31 — 24 V DC
Y32 — SPS Input
Y35 — SPS Input
Y30 — 0 V

Expander modules
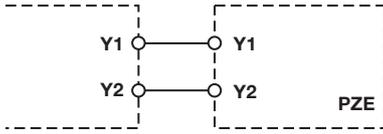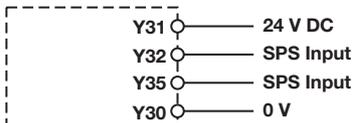
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Terminal configuration
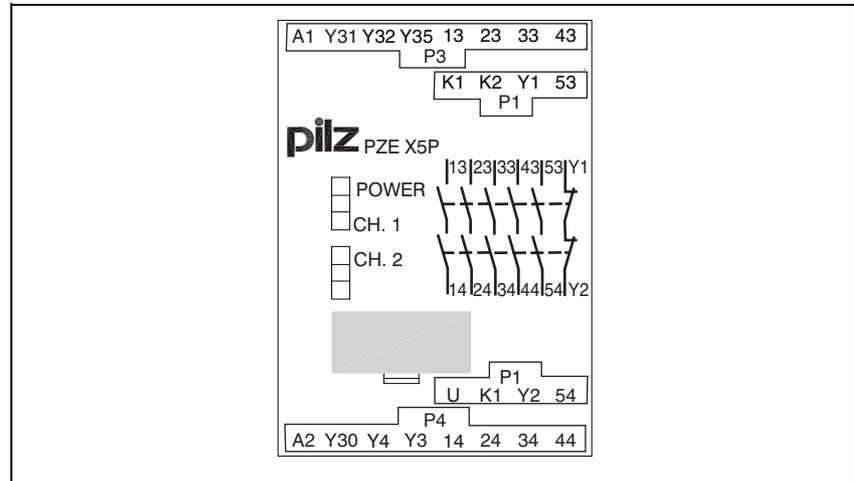
Installation

▸ 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

* with cage clamp terminals
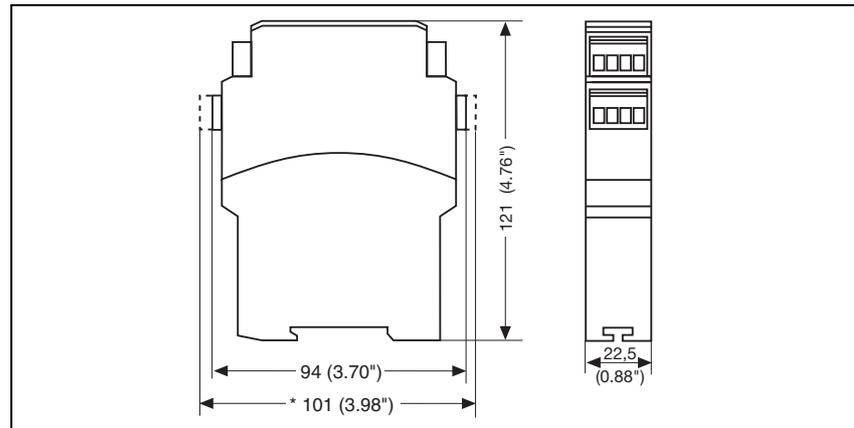
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Notice

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

|		
▶ D	Schaltspielzahl x 10^3	▶ E Número de ciclos x 10^3
▶ GB	Cycles x 10^3	▶ I Numero dei cicli di commutazione x 10^3
▶ F	Nombre de manœvres x 10^3	▶ NL Aantal schakelingen x 10^3
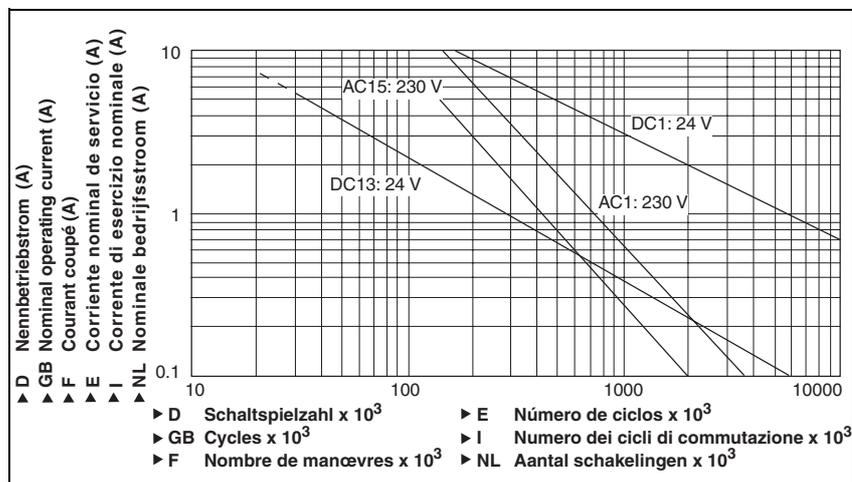
Technical details

Electrical data

Supply voltage U_B DC	**24 V**
Voltage tolerance	**-15 % / +10 %**
Power consumption at U_B DC	**3.5 W**
Residual ripple DC	**20 %**
Voltage and current at input circuit: **24 V** DC	**40 mA**
Output contacts in accordance with **EN 954-1**	Safety contacts (N/O): **5**
Utilisation category in accordance with **EN 60947-4-1** 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**	I_{max}: **5 A**
DC13 (6 cycles/min): **24 V**	I_{max}: **7 A**
Contact material	**AgSnO$_2$ + 0.2 μm Au**
External contact fuse protection (**EN 60947-5-1**) Blow-out fuse, quick	**10 A**
Blow-out fuse, slow	**6 A**
Circuit breaker	**6 A**, 24 VAC/DC, characteristic B/C
Semiconductor outputs (short circuit proof)	**24 V** DC, **20 mA**
External supply voltage	**24 V** DC
Voltage tolerance	**-20 % / +20 %**
Max. overall cable resistance R_{lmax} Input circuits, reset circuits Single-channel at U_B DC	**120 Ohm**
Dual-channel without detect. of shorts across contacts at U_B DC	**240 Ohm**
Dual-channel with detect. of shorts across contacts at U_B DC	**4 Ohm**

Times

Switch-on delay with automatic reset typ.	**16 ms**
with automatic reset max.	**30 ms**

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Times	
Delay-on de-energisation	
with E-STOP typ.	**13 ms**
	30 ms
with E-STOP max.	**110 ms**
	150 ms
Supply interruption before de-energisation	
Supply voltage	**20 ms**
Input circuit	**8 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	**0.25 – 2.50 mm^2**
2 core, same cross section, flexible:	
with crimp connectors, without insulating sleeve	**0.25 – 1.00 mm^2**
without crimp connectors or with TWIN crimp connectors	**0.20 – 1.50 mm^2**
Torque setting with screw terminals	**0.5 Nm**
Max. cross section of external conductors with cage clamp terminals: flexible without crimp connectors	**0.20 – 1.50 mm^2**
Cage clamp terminals	
Terminal points per connection	**2**
Stripping length	**8 mm**
Dimensions (H x W x D)	
with screw terminals	**94 mm** x **45 mm** x **121 mm**
with cage clamp terminals	**101 mm** x **45 mm** x **121 mm**
Weight	**260 g** Order no.: 777150
	255 g Order no.: 787150

The standards current on **09/04** apply.

Max. continuous current	
Number of contacts	I_{max} (A) at U_B DC
1	**8.00 A**
2	**8.00 A**
3	**6.50 A**
4	**5.60 A**
5	**5.00 A**

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Order reference				
Type	**Features**		**Terminals**	**Order no.**
PZE X5P C	24 VDC		Cage clamp terminals	787 150
PZE X5P	24 VDC		Screw terminals	777 150