

## Up to PL d of EN ISO 13849-1 PZE X4VP8



Contact expansion module for increasing the number of available contacts

### Approvals

	PZE X4VP8
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	◆
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### Unit features

- ▶ Positive-guided relay outputs:
  - 4 safety contacts (N/O), delay-on de-energisation
- ▶ LED indicator for:
  - Switch status channel 1/2
- ▶ Plug-in connection terminals (either spring-loaded terminal or screw terminal)
- ▶ 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.

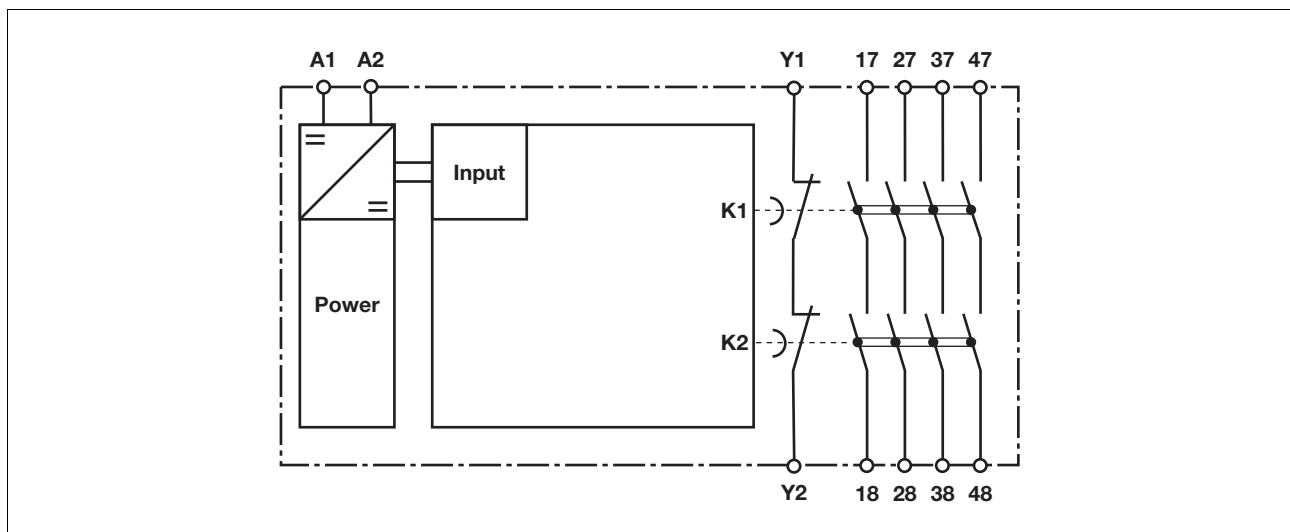
The category that can be achieved in accordance with EN 954-1 and EN ISO 13849-1 depends on the category of the base unit. The contact expansion module may not exceed this. The delay-on de-energisation safety contacts may only be used up to category 3.

### 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

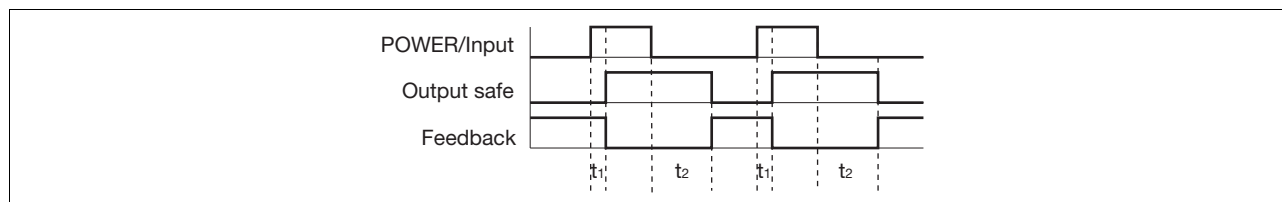


## Up to PL d of EN ISO 13849-1 PZE X4VP8

### 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 17-18, 27-28, 37-38, 47-48
- ▶ 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 17-18, 27-28, 37-38, 47-48 are delay-on de-energisation 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.

## Up to PL d of EN ISO 13849-1 PZE X4VP8

### Preparing for operation

#### ► Supply voltage

Supply voltage	AC	DC

#### ► Input circuit

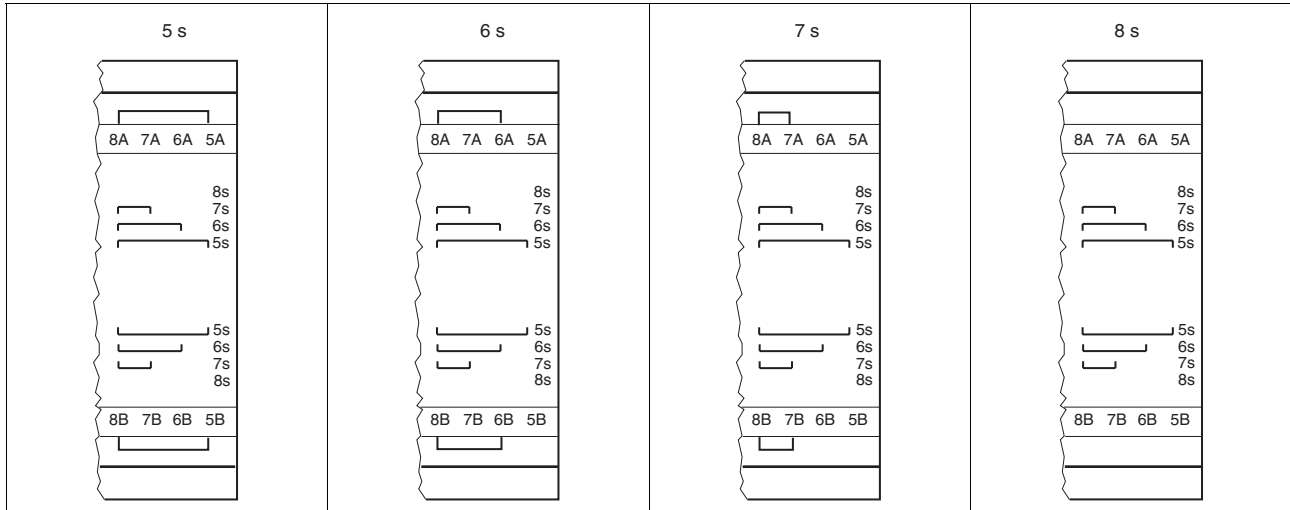
Input circuit	Single-channel	Dual-channel
Base unit: PNOZ X safety relay Driven via safety contacts		
Base unit: PNOZelog safety relay Driven via semiconductor outputs (24 VDC)		

#### ► Feedback loop

Feedback loop	Automatic reset	Monitored reset
Y1, Y2 and Input are inputs on the base unit; they evaluate the feedback loop		

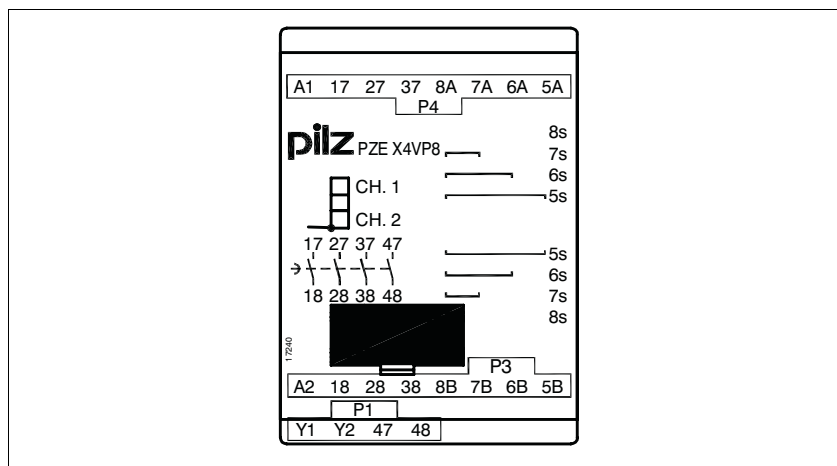
## Up to PL d of EN ISO 13849-1 PZE X4VP8

► Setting the delay time



## Up to PL d of EN ISO 13849-1 PZE X4VP8

### Terminal configuration

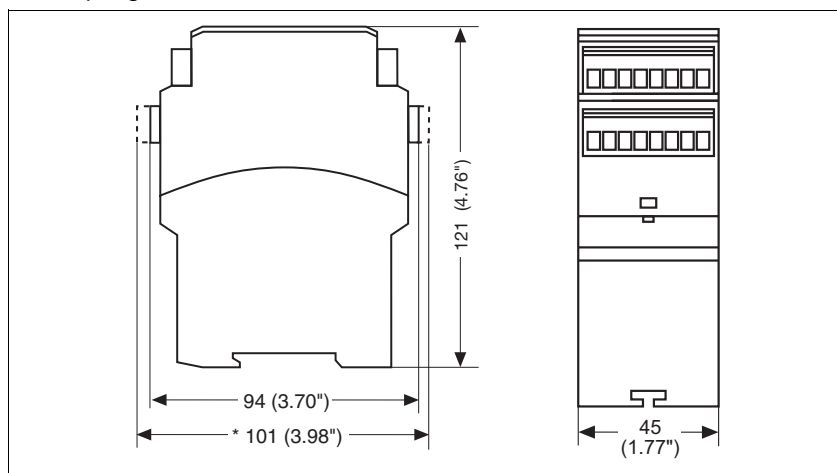


### Installation

- ▶ 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

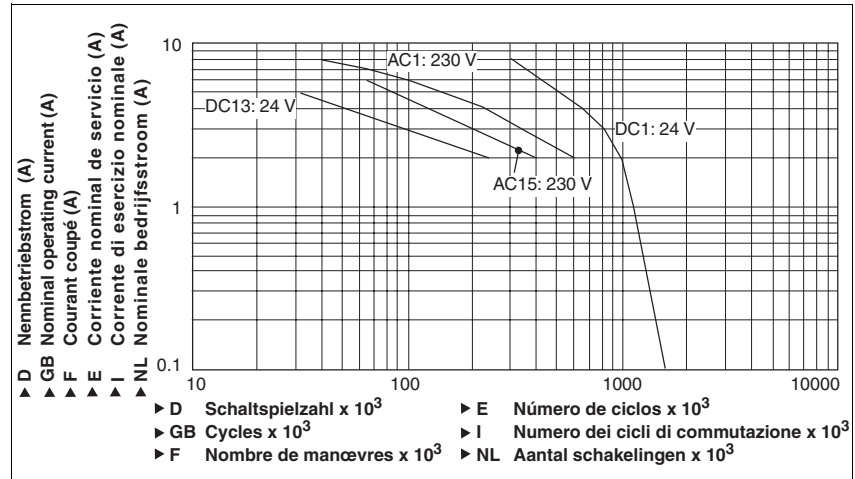


## Up to PL d of EN ISO 13849-1 PZE X4VP8

### 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	<b>24 V</b>
Voltage tolerance	<b>-15 %/+10 %</b>
Power consumption at $U_B$ DC	<b>2.5 W</b>
Residual ripple DC	<b>20 %</b>
Voltage and current at	
Input circuit DC: <b>24.0 V</b>	<b>70.0 mA</b>
Number of output contacts	
Safety contacts (N/O), delayed:	<b>4</b>
Utilisation category in accordance with <b>EN 60947-4-1</b>	
Safety contacts, delayed: AC1 at <b>240 V</b>	$I_{min}: 0.01 A, I_{max}: 5.0 A$ $P_{max}: 1200 VA$
Safety contacts, delayed: DC1 at <b>24 V</b>	$I_{min}: 0.01 A, I_{max}: 5.0 A$ $P_{max}: 120 W$
Utilisation category in accordance with <b>EN 60947-5-1</b>	
Safety contacts, delayed: AC15 at <b>230 V</b>	$I_{max}: 5.0 A$
Safety contacts, delayed: DC13 at <b>24 V</b> (6 cycles/min)	$I_{max}: 4.0 A$
Conventional thermal current	<b>5.0 A</b>
Contact material	<b>AgSnO<sub>2</sub> + 0.2 µm Au</b>
External contact fuse protection ( $I_k = 1 kA$ ) to <b>EN 60947-5-1</b>	
Blow-out fuse, quick	
Safety contacts:	<b>6 A</b>
Blow-out fuse, slow	
Safety contacts:	<b>4 A</b>
Circuit breaker 24 VAC/DC, characteristic B/C	
Safety contacts:	<b>4 A</b>
Max. overall cable resistance $R_{lmax}$ per input circuit single-channel at $U_B$ DC	<b>30 Ohm</b>

## Up to PL d of EN ISO 13849-1 PZE X4VP8

Safety-related characteristic data	
PL in accordance with <b>EN ISO 13849-1</b>	<b>PL d (Cat. 3)</b>
Category in accordance with <b>EN 954-1</b>	<b>Cat. 3</b>
SIL CL in accordance with <b>EN IEC 62061</b>	<b>SIL CL 2</b>
PFH in accordance with <b>EN IEC 62061</b>	<b>2.48E-09</b>
SIL in accordance with <b>IEC 61511</b>	<b>SIL 2</b>
PFD in accordance with <b>IEC 61511</b>	<b>1.47E-05</b>
$t_M$ in years	<b>20</b>
Times	
Switch-on delay	
with automatic reset after power on typ.	<b>320 ms</b>
with automatic reset after power on max.	<b>500 ms</b>
Delay time $t_D$ : selectable	<b>5,00 s; 6,00 s; 7,00 s; 8,00 s</b> Order no.: 777584
	<b>5,00 s; 6,00 s; 7,00 s; 8,00 s</b> Order no.: 787584
Time accuracy	<b>-50 %/+50 %</b>
Supply interruption before de-energisation	<b>20 ms</b>
Environmental data	
EMC	<b>EN 60947-5-1, EN 61000-6-2</b>
Vibration to <b>EN 60068-2-6</b>	
Frequency	<b>10 - 55 Hz</b>
Amplitude	<b>0.35 mm</b>
Climatic suitability	<b>EN 60068-2-78</b>
Airgap creepage in accordance with <b>EN 60947-1</b>	
Pollution degree	<b>2</b>
Overvoltage category	<b>III</b>
Rated insulation voltage	<b>250 V</b>
Rated impulse withstand voltage	<b>4.0 kV</b>
Ambient temperature	<b>-10 - 55 °C</b>
Storage temperature	<b>-40 - 85 °C</b>
Protection type	
Mounting (e.g. cabinet)	<b>IP54</b>
Housing	<b>IP40</b>
Terminals	<b>IP20</b>
Mechanical data	
Housing material	
Housing	<b>PPO UL 94 V0</b>
Front	<b>ABS UL 94 V0</b>
Cross section of external conductors with screw terminals	
1 core flexible	<b>0.25 - 2.50 mm<sup>2</sup>, 24 - 12 AWG</b> Order no.: 777584
2 core, same cross section, flexible:	
with crimp connectors, without insulating sleeve	<b>0.25 - 1.00 mm<sup>2</sup>, 24 - 16 AWG</b> Order no.: 777584
without crimp connectors or with TWIN crimp connectors	<b>0.20 - 1.50 mm<sup>2</sup>, 24 - 16 AWG</b> Order no.: 777584
Torque setting with screw terminals	<b>0.50 Nm</b> Order no.: 777584
Cross section of external conductors with spring-loaded terminals: Flexible with/without crimp connectors	<b>0.20 - 1.50 mm<sup>2</sup>, 24 - 16 AWG</b> Order no.: 787584
Spring-loaded terminals: Terminal points per connection	<b>2</b> Order no.: 787584
Stripping length	<b>8 mm</b> Order no.: 787584
Dimensions	
Height	<b>101.0 mm</b> Order no.: 787584
	<b>94.0 mm</b> Order no.: 777584
Width	<b>45.0 mm</b>
Depth	<b>121.0 mm</b>
Weight	<b>325 g</b> Order no.: 787584
	<b>330 g</b> Order no.: 777584

The standards current on **2008-07** apply.

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### Order reference

Type	Features	Terminals	Order no.
PZE X4VP8 C	24 VDC	8 s selectable Spring-loaded terminals	787 584
PZE X4VP8	24 VDC	8 s selectable Screw terminals	777 584