Pulsing
PZW

Pulse-on timer relay for step-by-step control of movement sequences

Approvals

	PZW
c UL us LISTED	◆
CCC	◆
BG-PRÜFZERT	◆

Unit features

- Positive-guided relay outputs:
  - 1 safety contact, pulsing
  - 2 auxiliary contacts, pulsing
- LED indicator for:
  - Supply voltage
  - Pulse time
- Redundant output circuit
- 12 pulse times, set via rotary switch
- Feedback loop for monitoring external contacts

Unit description

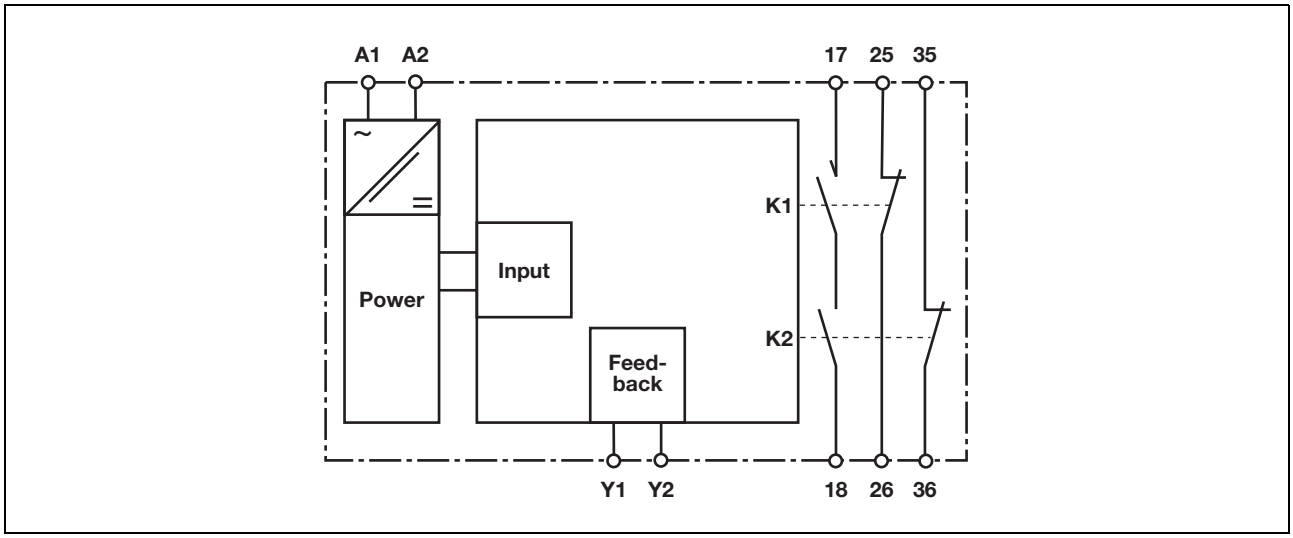
The unit operates as a pulse relay
- in accordance with EN 292 Part 2, clause 3.7.10 and 4.1.4 and EN 292 Part 1, clause 3.23.8 (inching circuit for limit movement of hazardous machine components during installation, set up and positioning)
- in safety circuits in accordance with VDE 0113 and EN 60204-1 (e.g. on movable guards)

The unit is designed for use with
- A safety relay from the PNOZ series
- Safety gate monitors from the PST series
- Two-hand relays from the P2HZ series

Safety features

The relay meets the following safety requirements:
- The circuit is redundant in design
- The safety function remains effective in the case of a component failure.
- The correct opening and closing of the safety function relays is tested automatically in each on-off cycle.

Block diagram



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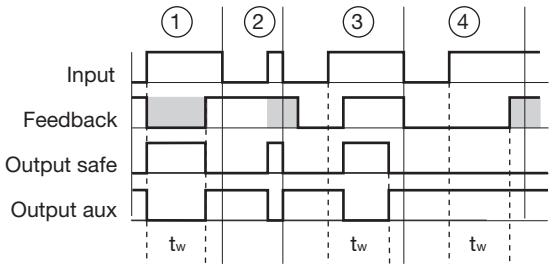
Function description

The time is ready to start once the feedback loop is closed. If the supply voltage at the input circuit is interrupted, the safety contact will open. If the input circuit is closed, i.e. supply voltage is present, the safety contact will be closed immediately. The safety contact will be closed again once the set pulse time has elapsed.

Timing diagram



Key

- Input: Input circuitA1-A2
- Feedback: Feedback loop Y1-Y2
- Output safe: Safety contact17-18
- t_w: Pulse time

①: Normal operating cycle
②: Fault: Input circuit opened too early
③: Fault: Feedback loop closed too late within t_w
④: Fault: Feedback loop closed too late after t_w elapsed

Wiring

Please note:

- Information given in the “Technical details” must be followed.
- Output 17-18 is a safety contact, outputs 25-26, 35-36 are auxiliary contacts (e.g. for display)
- To prevent contact welding, a fuse should be connected before the output contacts (see technical details).
- Do not use the unlabelled terminals!
- Calculation of the max. cabling 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.
- Supply voltage 24 VDC: Shorts between the input circuit and feedback loop or earth faults in the feedback loop can damage the unit.
- We recommend the use of a short circuit-proof voltage supply with current limitation

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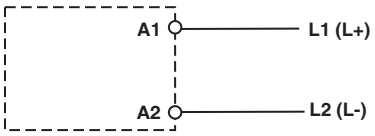
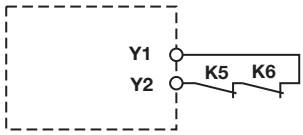
Preparing for Operation

- Supply voltage, input circuit

Supply voltage, input circuit	
Input circuit is driven by connecting U_B	

- Feedback loop

Feedback loop	
Contacts from external contactors	

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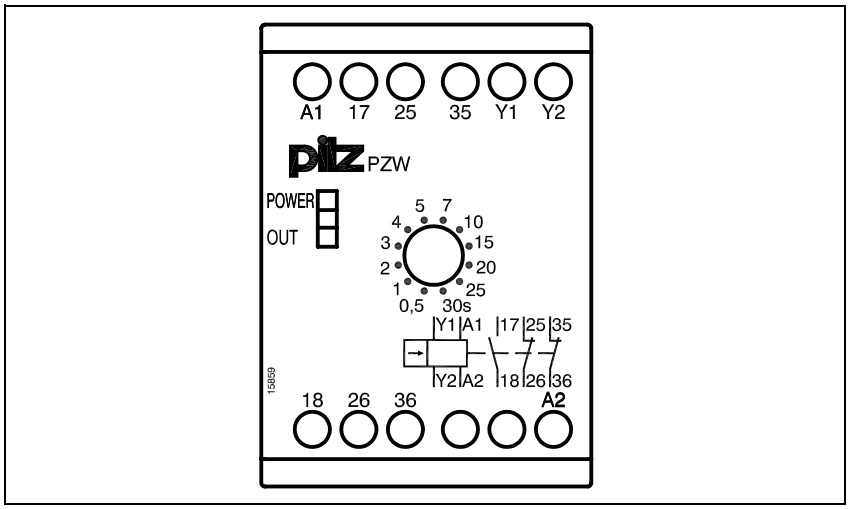
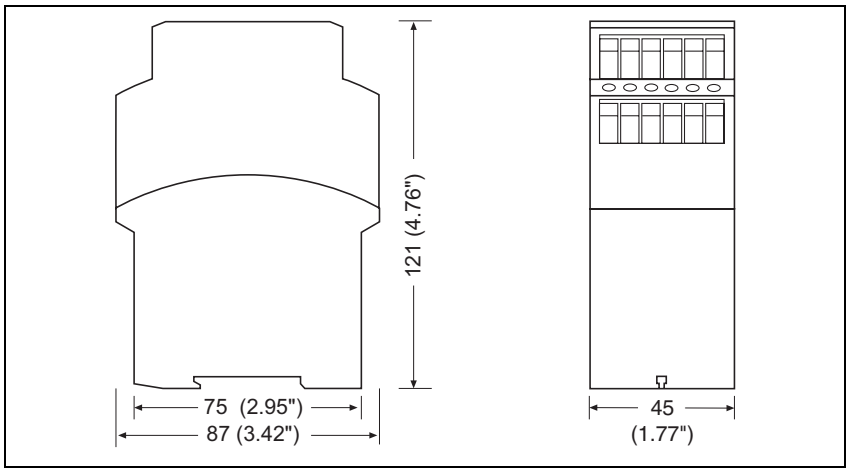
Terminal configuration



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



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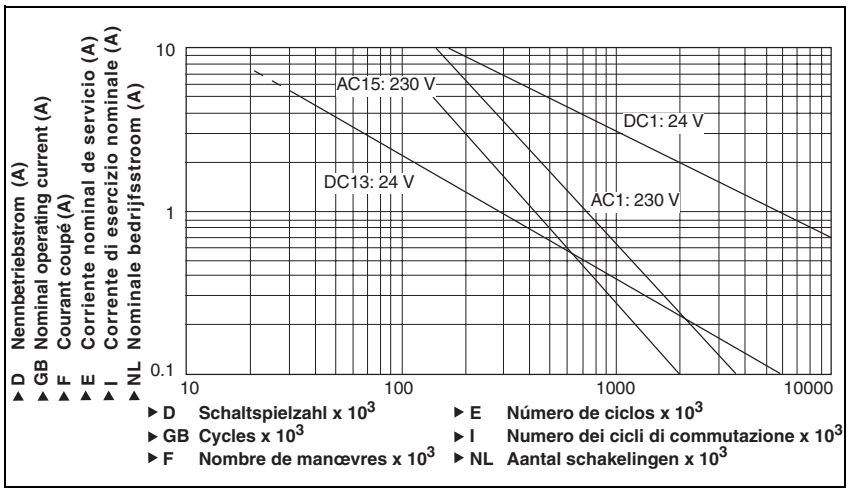
Notice

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	
Supply voltage U_B AC	**110 - 120 V**, **230 V**
Supply voltage U_B DC	**24 V**
Voltage tolerance	**-15 %/+10 %**
Power consumption at U_B AC	**4.5 VA** Order no.: 774015, 774017, 774044, 774048
Power consumption at U_B DC	**3.0 W** Order no.: 774019, 774042
Frequency range AC	**50 - 60 Hz**
Residual ripple DC	**10 %**
Voltage and current at feedback loop DC: **24.0 V**	**50.0 mA**
Output contacts in accordance with **EN 954-1** Category **3**	Safety contacts (N/O), pulsing:**1** Auxiliary contacts (N/C), pulsing: **2**
Utilisation category in accordance with **EN 60947-4-1**	
Safety contacts: AC1 at **240 V**	I_{min}: **0.01 A** , I_{max}: **6.00 A** P_{max}: **1,500 VA**
Safety contacts: DC1 at **24 V**	I_{min}: **0.01 A** , I_{max}: **6.0 A** P_{max}: **150 W**
Auxiliary contacts: AC1 at **240 V**	I_{min}: **0.01 A** , I_{max}: **6.0 A** P_{max}: **1,500 VA**
Auxiliary 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}: **4.0 A**
(6 cycles/min)	I_{max}: **3.0 A**
Auxiliary contacts: AC15 at **230 V**	I_{max}: **4.0 A**
Auxiliary contacts: DC13 at **24 V** (6 cycles/min)	I_{max}: **3.0 A**
Contact material	**AgSnO2 + 0.2 µm Au**

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Electrical data	
External contact fuse protection to **EN 60947-5-1**	
Blow-out fuse, quick	
Safety contacts:	**6 A**
Auxiliary contacts:	**6 A**
Blow-out fuse, slow	
Safety contacts:	**4 A**
Auxiliary contacts:	**4 A**
Circuit breaker 24 VAC/DC, characteristic B/C	
Safety contacts:	**4 A**
Min. unit fuse protection	**1 A**
Times	
Switch-on delay	**100 ms** Order no.: 774015, 774017, 774044, 774048 **50 ms** Order no.: 774019, 774042
Recovery time at max. switching frequency 1/s	
after power failure	**80 ms**
Delay time t_V: selectable	**0.50 s**; **1.00 s**; **2.00 s**; **3.00 s**; **4.00 s**; **5.00 s**; **7.00 s**; **10.00 s**; **15.00 s**; **20.00 s**; **25.00 s**; **30.00 s** Order no.: 774015 **0.50 s**; **1.00 s**; **2.00 s**; **3.00 s**; **4.00 s**; **5.00 s**; **7.00 s**; **10.00 s**; **15.00 s**; **20.00 s**; **25.00 s**; **30.00 s** Order no.: 774017 **0.50 s**; **1.00 s**; **2.00 s**; **3.00 s**; **4.00 s**; **5.00 s**; **7.00 s**; **10.00 s**; **15.00 s**; **20.00 s**; **25.00 s**; **30.00 s** Order no.: 774019 **0.05 s**; **0.10 s**; **0.20 s**; **0.30 s**; **0.40 s**; **0.50 s**; **0.70 s**; **1.00 s**; **1.50 s**; **2.00 s**; **2.50 s**; **3.00 s** Order no.: 774042 **0.05 s**; **0.10 s**; **0.20 s**; **0.30 s**; **0.40 s**; **0.50 s**; **0.70 s**; **1.00 s**; **1.50 s**; **2.00 s**; **2.50 s**; **3.00 s** Order no.: 774044 **0.05 s**; **0.10 s**; **0.20 s**; **0.30 s**; **0.40 s**; **0.50 s**; **0.70 s**; **1.00 s**; **1.50 s**; **2.00 s**; **2.50 s**; **3.00 s** Order no.: 774048
Repetition accuracy	**1 %**
Voltage dependency per 1 % U_B	**+/- 0,06 %**
Temperature dependency per 1 °C	**+/- 0,1 %**
Setting accuracy	
Start of range	**0.03 s**
End of range	**0.6 s**
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. control 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 , 24 - 10 AWG**
2 core, same cross section, flexible:	
with crimp connectors, without insulating sleeve	**0.20 - 2.50 mm² , 24 - 14 AWG**
without crimp connectors or with TWIN crimp connectors	**0.20 - 2.50 mm² , 24 - 14 AWG**
Torque setting with screw terminals	**0.60 Nm**

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Mechanical data	
Dimensions	
Height	**87.0 mm**
Width	**45.0 mm**
Depth	**121.0 mm**
Weight	**330 g**

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

Order reference

Type	Features			Terminals	Order no.
PZW		110 - 120 VDC	30 s selectable	Screw terminals	774 015
PZW	230 VAC		30 s selectable	Screw terminals	774 017
PZW		24 VDC	30 s selectable	Screw terminals	774 019
PZW		24 VDC	3 s selectable	Screw terminals	774 042
PZW		110 - 120 VDC	3 s selectable	Screw terminals	774 044
PZW	230 VAC		3 s selectable	Screw terminals	774 048