

Category 4, EN 954-1 PNOZ e1vp



Emergency stop relay and safety gate monitor in accordance with EN 60204-1 (VDE 0113-1), 12/97 and IEC 60204-1, 10/97

Features

- Monitored manual or automatic reset can be selected
- 2 safe semiconductor output, delay can be set
- 1 auxiliary output can also be used as a diagnostic output
- an AND and an OR input for logic AND/OR connections between several units
- Option for detecting shorts across the input contacts
- Applications in accordance with EN 954-1, 07/96, category 2, 3 or 4
- Self-test after U_B is supplied
- Continuous self-monitoring
- Regular switch-off test of the safety outputs

Approval

	PNOZ e1vp
	●
	●
	●

Technical details	PNOZ e1vp
Electrical data	
Supply voltage	24 VDC
Tolerance	80 ... 125 %
Power consumption	no load: 2 W
Residual Ripple DC	20 %
Outputs	2 safety outputs delayed/not delayed 1 auxiliary output
Switching capability	$U_B \leq 26.5$ V: 2 outputs under load: 2 A/50 W 1 output under load: 2.7 A/70 W $U_B > 26.5$ V: 2 outputs under load: 1.5 A/40 W 1 output under load: 2.2 A/50 W
Voltage and current at input and reset circuits and feedback control loop	24 VDC, 5 mA
auxiliary output and test pulse outputs	24 VDC/0.5 A
AND/OR inputs	24 VDC, 5 mA
Times	
Delay time	PNOZ e1vp 10 s : 0/0,15/0,5/1/2/3/5/7/10 s PNOZ e1vp 300 s : 0/15/25/50/100/150/200/250/300 s Accuracy: +/- 10% Repeat accuracy: +/- 5%
Delay-on energisation	monitored reset: 180 ms automatic reset: 100 ms
Delay-on de-energisation	max. 35 ms
Switch-on delay at S35/S36	120 ms
Switch-on delay	3 s (on initial reset once U_B is supplied)
Simultaneity channel 1/2	∞
Max. Supply Interruption before de-energisation	max. 20 ms
Environmental data	
Storage temperature	-25 ... 70 °C
Mechanical data	
Cross section of external conductors	
1 core	Flexible: 0.25 ... 2.5 mm ²
2 core with the same cross section	Flexible with crimp connectors, no plastic sleeve: 0.25 ... 1 mm ² Flexible, without crimp connectors or with TWIN crimp connectors: 0.25 ... 1.5 mm ²
Torque setting for terminals	0.5 ... 0.6 Nm (screws)
Dimensions (H x W x D)	87 x 22.5 x 121 mm
Weight	170 g

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Description

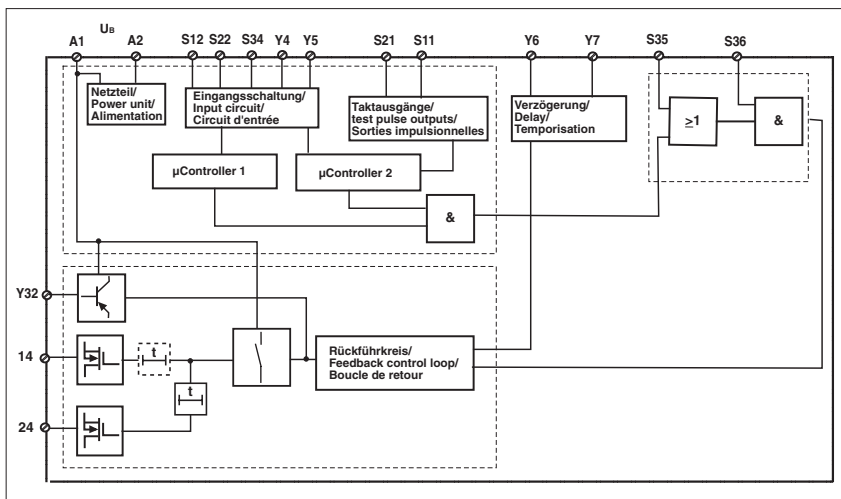
- 22.5 mm P-99 housing, DIN-Rail mounting
- Semiconductor outputs, short-circuit proof:
 - 2 safety outputs delayed/not delayed
 - 1 auxiliary output
 - 2 test pulse outputs
- one AND input, one OR input
- Delay time can be set by wire links
- Connections for
 - E-STOP button
 - safety gate limit switch
 - evaluation device for proximity switches
 - safety mats and connecting blocks made by Haake
 - Reset button
- Processes signals from output switching elements on safety mats or light barriers

- Auxiliary output can also be used as a diagnostic output
It is possible to program the driver for reading diagnostic data yourself. However, the CD „PLC Drivers for PNOZelog“ is also available. This contains pre-programmed drivers for the following controllers:
 - SIMATIC S7
- LEDs for switching status and faults in channel 1/2 and for supply voltage
- Shorts across the input contacts are detected by means of test pulse outputs
- Increase in the number of safety contacts available by connecting expander modules

Operating modes

- Single-channel operation
- Dual-channel operation
- Automatic reset
- Monitored manual reset

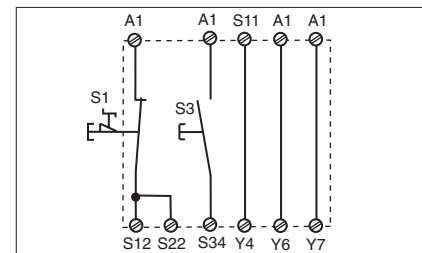
Internal wiring diagram



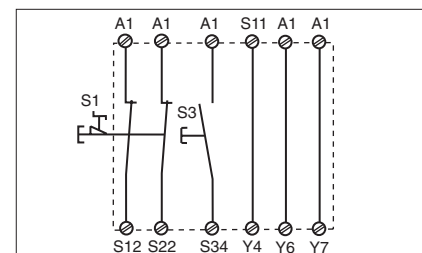
External wiring

The AND input is not active in the examples below.

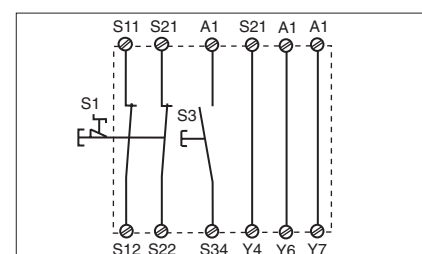
- Example 1
Single-channel emergency stop wiring with monitored manual reset without short-circuit recognition



- Example 2
Dual-channel emergency stop wiring with monitored manual reset without short-circuit recognition



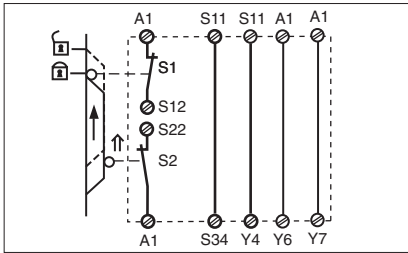
- Example 3
Dual-channel emergency stop wiring with monitored manual reset and shorts across the input contacts are detected



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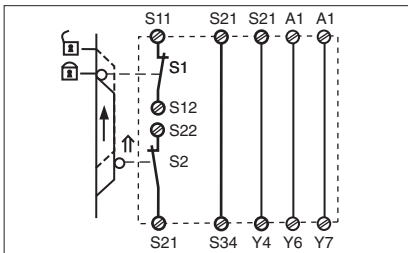
● Example 4

Dual-channel safety gate control with automatic reset without start-up test and without short-circuit recognition



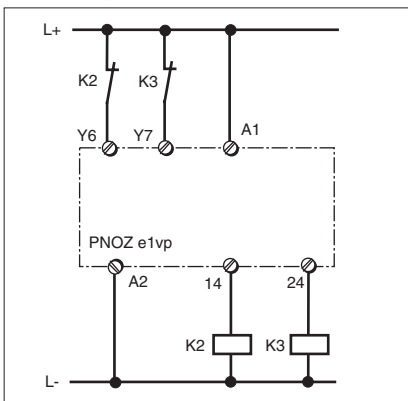
● Example 5

Dual-channel safety gate control with automatic reset and start-up test, shorts across the input contacts are detected



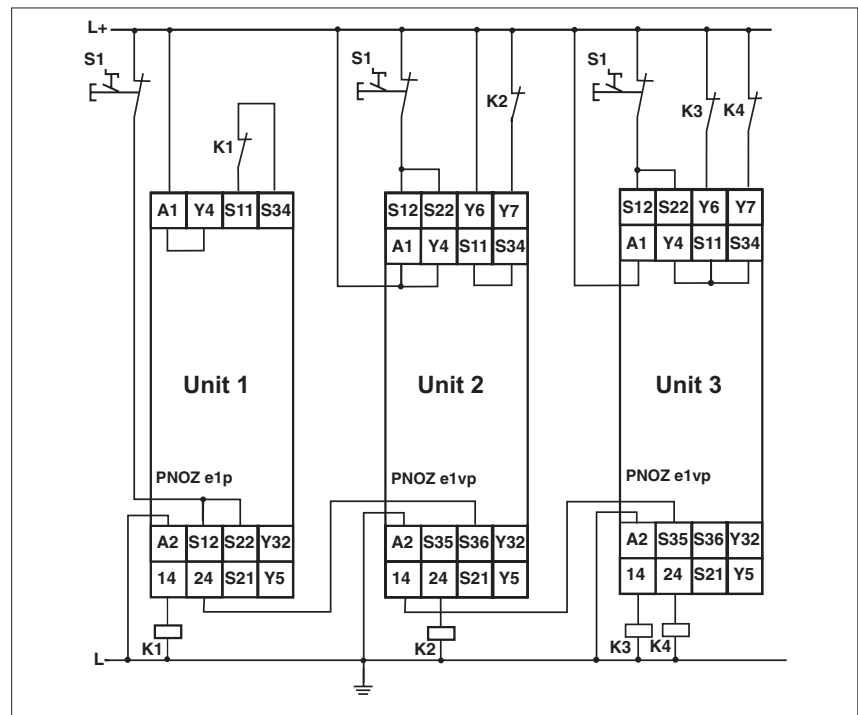
● Increase in the number of contacts

The number of output contacts can be increased by using expander modules or relays/contactors with positive-guided contacts.



Connection example

AND link Unit 1 and Unit 2, OR link Unit 2 and Unit 3



– Key

S1/S2: E-STOP or safety gate switch
S3: Reset button

Switch operated

Gate open

Gate closed

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General details

Unless stated otherwise in the technical details for the specific unit

Electrical data

AC frequency range	50 ... 60 Hz
DC residual ripple	160 %
Contact material	AgSnO ₂
Continuous duty	100 %

Environmental data

EMC	EN 60947-5-1, 11/97
Vibration in accordance with EN 60068-2-6, 04/95	Frequency: 10 ... 55 Hz, Amplitude: 0.35 mm
Climatic suitability	DIN IEC 60068-2-3, 12/86
Airgap creepage	DIN VDE 0110-1, 04/97
Ambient temperature	-10 ... +55 °C
Storage temperature	-40 ... +85 °C

Mechanical data

Torque setting for connection terminals	0.6 Nm (screws)
Mounting position	Any
Housing material	Front: ABS UL 94 V0 Housing: PPO UL 94 V0
Protection types	Mounting: IP54 Housing: IP40 Terminals: IP20

The units were tested in accordance with the standards applicable at the time of development.

Order reference

Type	U _B	t _v	Order number
PNOZ e1vp	24 VDC	10 s	774 131
PNOZ e1vp	24 VDC	300 s	774 132

Order references accessories

Description	Order number
PLC Drivers for PNOZelog	874 130... ¹⁾

¹⁾ When ordering, please state the type of licence you require after the order number (..B for basic licence, ..K for copy licence, ..G for general licence, ..U for update licence), e.g. 301 400B.