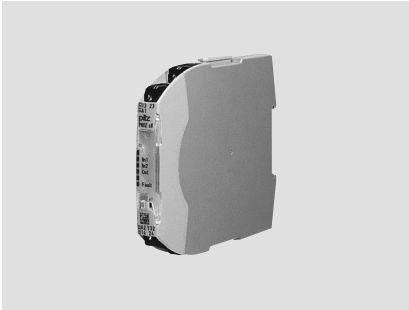


up to PL c of EN ISO 13849-1 PNOZ s8



Contact expansion module for increasing the number of available contacts

Approvals

	PNOZ s8
	◆
	◆
	◆

Unit features

- ▶ Relay outputs:
 - 2 safety contacts (N/O), instantaneous
- ▶ 1 semiconductor output
- ▶ LED indicator for:
 - Input status, channel 1
 - Input status, channel 2
 - Switch status of the safety contacts
 - Errors
- ▶ Plug-in connection terminals (either spring-loaded terminal or screw terminal)

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 cate-

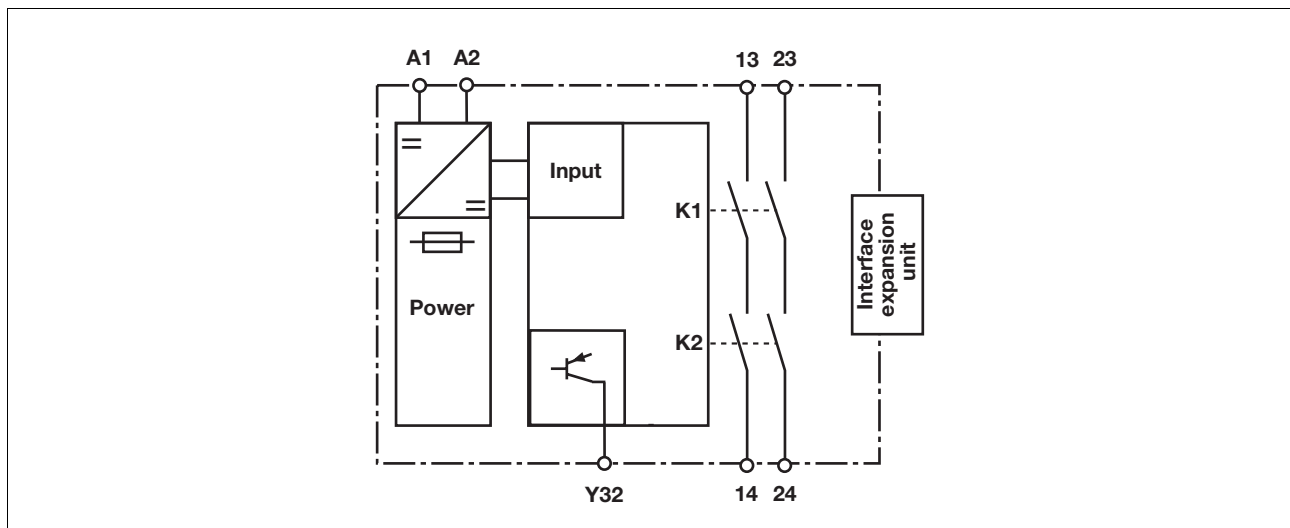
gory of the base unit. The contact expansion module may not exceed this.

Safety features

The unit meets the following safety requirements:

- ▶ The unit monitors its own output contacts.
- ▶ 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

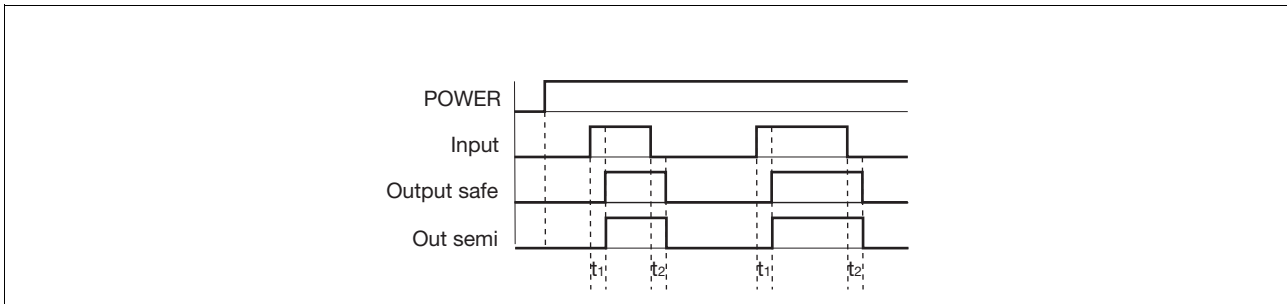
with PNOZsigma base unit:

- ▶ Dual-channel operation via PNOZsigma connector

without PNOZsigma base unit:

- ▶ Single-channel operation: one input circuit affects the output relays

Timing diagram



Key

- ▶ Power: Supply voltage
- ▶ Input: Input circuits A1
- ▶ Output safe: Safety contacts 13-14, 23-24
- ▶ Out semi: Semiconductor output Y32
- ▶ 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 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 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
Base unit: PNOZ X safety relay		
Base unit: PNOZelog safety relay Driven via semiconductor outputs (24 VDC)		

► Feedback loop

with PNOZsigma base unit:
The feedback loop is connected and evaluated via the connector.

without PNOZsigma base unit:
Feedback loop does not need to be monitored because the contact ex-

pansion block monitors its own output contacts.

► Semiconductor output

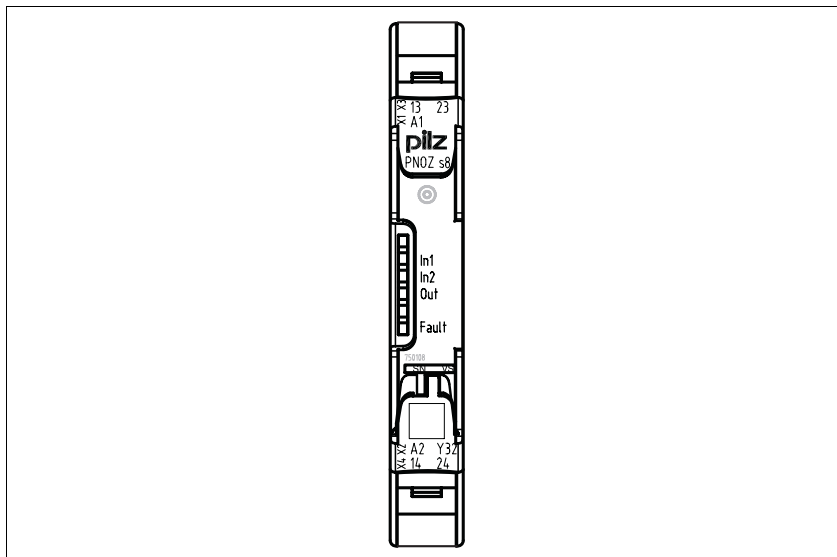
<p>*Connect together the 0V connections on all the external power supplies</p>

INFORMATION

If a base unit and a contact expander module from the PNOZsigma range are connected via the connector, no additional wiring is necessary. Do not connect A1 to the contact expander module!

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Terminal configuration



Installation

Install contact expander module without base unit:

- ▶ Ensure that the plug terminator is inserted at the side of the unit.

Connect base unit and PNOZsigma contact expander module:

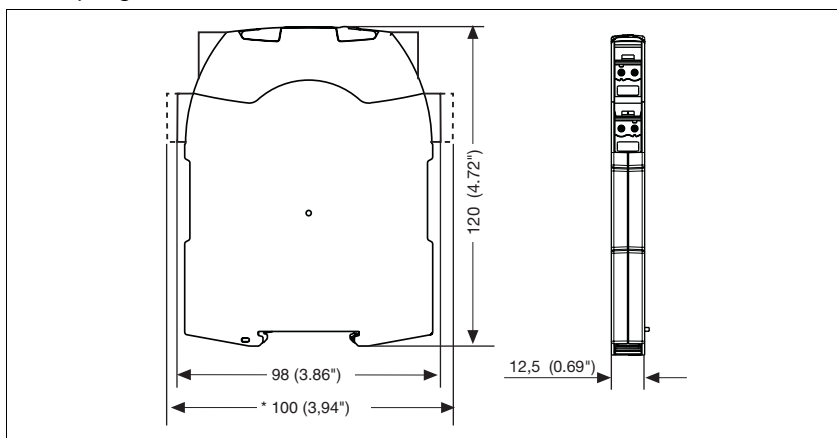
- ▶ Remove the plug terminator at the side of the base unit and at the contact expander module
- ▶ Connect the base unit and the contact expander module to the supplied connector before mounting the units to the DIN rail.

Installation in control cabinet

- ▶ 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).
- ▶ Push the unit upwards or downwards before lifting it from the DIN rail.

Dimensions

*with spring-loaded terminals



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NOTICE

This data sheet is only intended for use during configuration. For installation and operation, please refer to the op-

erating instructions supplied with the unit.

Technical details	
Electrical data	
Supply voltage	
Supply voltage U_B DC	24 V
Voltage tolerance	-20 %/+20 %
Power consumption at U_B DC	2.0 W
Residual ripple DC	20 %
Voltage and current at	
Input circuit DC: 24.0 V	65.0 mA
Number of output contacts	
Safety contacts (S) instantaneous:	2
Utilisation category in accordance with EN 60947-4-1	
Safety contacts: AC1 at 240 V	$I_{min}: 0.02 A, I_{max}: 3.0 A$ $P_{max}: 720 VA$
Safety contacts: DC1 at 24 V	$I_{min}: 0.02 A, I_{max}: 3.0 A$ $P_{max}: 72 W$
Utilisation category in accordance with EN 60947-5-1	
Safety contacts: AC15 at 230 V	$I_{max}: 1.5 A$
Safety contacts: DC13 at 24 V (6 cycles/min)	$I_{max}: 1.5 A$
Contact material	AgSnO2
External contact fuse protection ($I_k = 1 kA$) to EN 60947-5-1	
Blow-out fuse, quick	
Safety contacts:	4 A
Blow-out fuse, slow	
Safety contacts:	2 A
Circuit breaker 24 VAC/DC, characteristic B/C	
Safety contacts:	2 A
Semiconductor outputs (short circuit proof)	24.0 V DC, 20 mA
Max. overall cable resistance R_{lmax} input circuits, reset circuits single-channel at U_B DC	30 Ohm
Safety-related characteristic data	
Performance level (PL) in accordance with EN ISO 13849-1	
Safety contacts, instantaneous	c
Category of output contacts in accordance with EN 954-1, EN ISO 13849-1	
Safety contacts (S) instantaneous:	3
SIL claim limit (SIL CL) in accordance with EN IEC 62061	
Safety contacts, instantaneous	2
Probability of dangerous failure per hour (PFH_D) in accordance with EN IEC 62061	
Safety contacts, instantaneous	2.00E-07 1/h
Mission time/Proof test interval in years	20
Times	
Switch-on delay	
with automatic reset after power on typ.	100 ms
with automatic reset after power on max.	150 ms
Delay-on de-energisation	
with E-STOP typ.	30 ms
with E-STOP max.	40 ms
with power failure typ.	30 ms
with power failure max.	40 ms

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Environmental data	
EMC	EN 60947-5-1, EN 61000-6-2, EN 61000-6-4
Vibration to EN 60068-2-6	
Frequency	10 - 55 Hz
Amplitude	0.35 mm
Climatic suitability	EN 60068-2-78
Airgap creepage in accordance with EN 60947-1	
Pollution degree	2
Rated insulation voltage	250 V
Rated impulse withstand voltage	4.0 kV
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	PC
Front	PC
Cross section of external conductors with screw terminals	
1 core flexible	0.25 - 2.50 mm ² , 24 - 12 AWG Order no.: 750108
2 core, same cross section, flexible:	
with crimp connectors, without insulating sleeve	0.25 - 1.00 mm ² , 24 - 16 AWG Order no.: 750108
without crimp connectors or with TWIN crimp connectors	0.20 - 1.50 mm ² , 24 - 16 AWG Order no.: 750108
Torque setting with screw terminals	0.50 Nm Order no.: 750108
Cross section of external conductors with spring-loaded terminals: Flexible with/without crimp connectors	0.20 - 2.50 mm ² , 24 - 12 AWG Order no.: 751108
Spring-loaded terminals: Terminal points per connection	2 Order no.: 751108
Stripping length	9 mm Order no.: 751108
Dimensions	
Height	102.0 mm Order no.: 751108 98.0 mm Order no.: 750108
Width	12.5 mm
Depth	120.0 mm
Weight	105 g

The standards current on 2006-04 apply.

Conventional thermal current	
I_{th} (A) at U_B DC	
1 contact	3.00 A
2 contacts	3.00 A

Order reference			
Type	Features	Terminals	Order no.
PNOZ s8	24 VDC	With screw terminal	750 108
PNOZ s8 C	24 VDC	With spring-loaded terminal	751 108