




Expansion modules

PNOZ mo4p



Expansion module for connection to a base unit from the PNOZmulti modular safety system

Approvals

	PNOZ mo4p
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Unit features

- ▶ Can be configured in the PNOZmulti Configurator
- ▶ Positive-guided relay outputs:
 - 2 safety output in accordance with EN 954-1, Cat. 4
 - or 4 safety outputs in accordance with EN 954-1, Cat. 2
- ▶ Status indicators
- ▶ Plug-in connection terminals (either cage clamp terminal or screw terminal)
- ▶ Max. 6 PNOZ mo4p units can be connected to the base unit

Unit description

The expansion module may only be connected to a base unit from the PNOZmulti modular safety system. The PNOZmulti modular safety system is used for the safety-related interruption of safety circuits and is designed for use in:

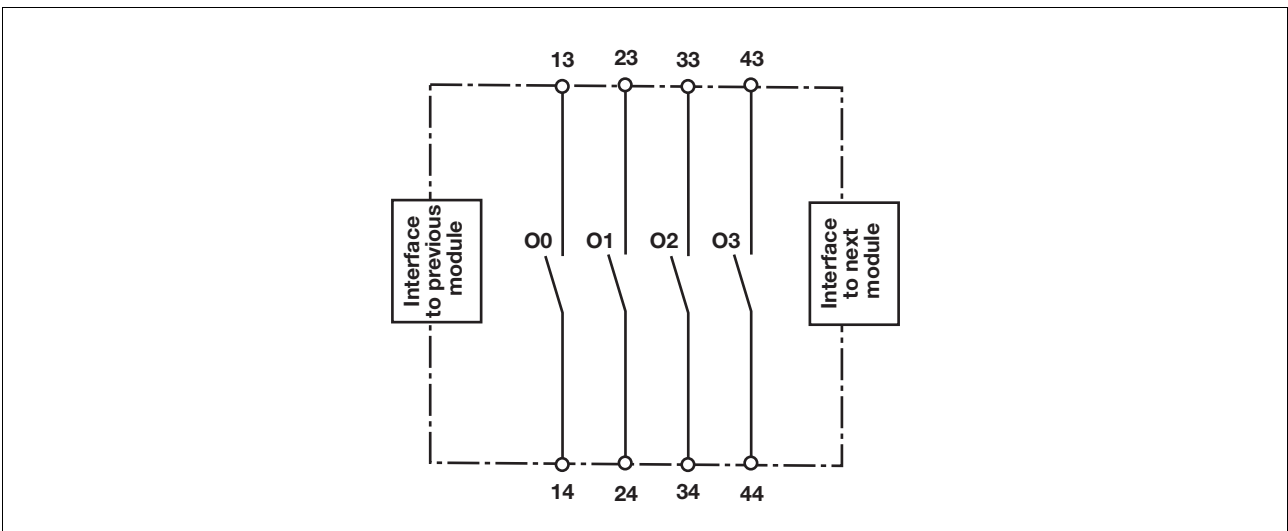
- ▶ Emergency stop equipment
- ▶ Safety circuits in accordance with VDE 0113 Part 1 and EN 60204-1

Safety features

The relay conforms to the following safety criteria:

- ▶ The circuit is redundant with built-in self-monitoring.
- ▶ The safety function remains effective in the case of a component failure.
- ▶ The relay contacts meet the requirements for safe separation through increased insulation compared with all other circuits in the safety system.
- ▶ A defective relay contact will be detected during switching.

Block diagram



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Function description

The expansion module provides additional relay outputs.

The function of the outputs on the safety system depends on the safety circuit created using the PNOZmulti

Configurator. A chip card is used to download the safety circuit to the base unit. The base unit has 2 microcontrollers that monitor each other. They evaluate the input circuits on the base unit and expansion modules and

switch the outputs on the base unit and expansion modules accordingly. The online help on the PNOZmulti Configurator contains descriptions of the operating modes and all the functions of the PNOZmulti safety system, plus connection examples.

Wiring

The wiring is defined in the circuit diagram in the Configurator.

Please note:

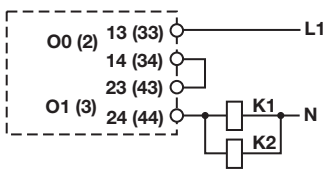
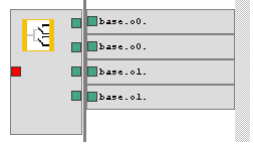
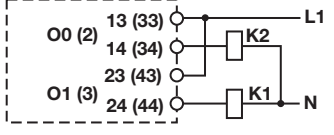
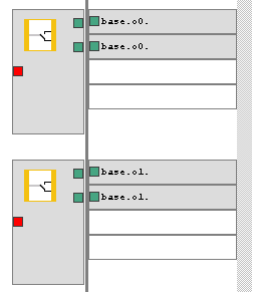
- ▶ Information given in the "Technical details" must be followed.
- ▶ Outputs O0 to O3 are relay outputs.
- ▶ Use copper wire that can withstand 75 °C.

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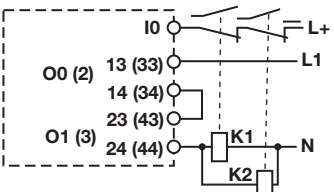
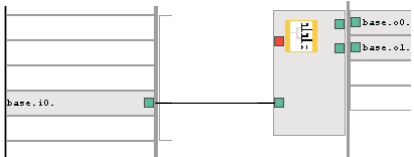
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Preparing for operation

► Relay outputs

<p>Redundant</p>		
<p>Single</p>		

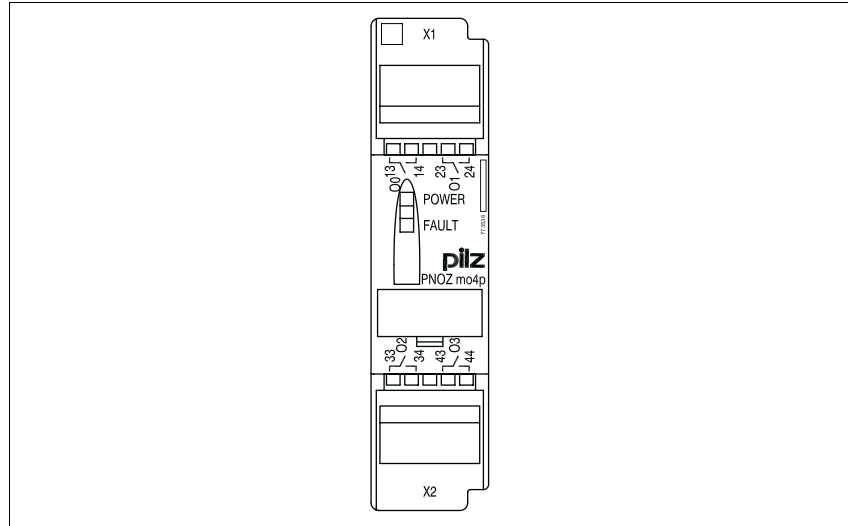
► Feedback loop

<p>Feedback loop</p> <p>Contacts from external contactors</p>	<p>Redundant output</p> 	
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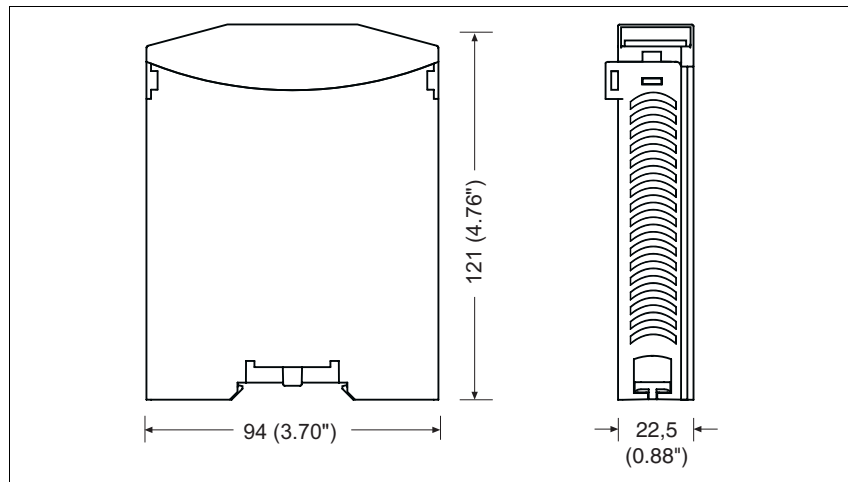
Terminal configuration



Installation

- ▶ The safety system should be installed in a control cabinet with a protection type of at least IP54. Fit the safety system to a horizontal DIN rail. The venting slots must face upward and downward. Other mounting positions could damage the safety system.
- ▶ Use the notches on the back of the unit to attach it to a DIN rail. Connect the safety system to the DIN rail in an upright position, so that the earthing springs on the safety system are pressed on to the DIN rail.
- ▶ To comply with EMC requirements, the DIN rail must have a low impedance connection to the control cabinet housing.

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.

Technical details	
Electrical data	
Supply voltage (U _B)	24 VDC
Voltage tolerance	-15% ... 10%
Power consumption at U _B without load	< 3.5 W per expansion module
Residual ripple U _B	+/- 5 %
Times	
Switch-on delay	5 s (after U_B is applied)
Supply interruption before de-energisation	Min. 20 ms
Relay outputs	
Number	
for EN 954-1, 12/96, Cat. 4	2
for EN 954-1, 12/96, Cat. 2	4
Utilisation category in accordance with EN 60947-4-1, 02/01	AC1: 240 V / 6 A / 1440 VA DC1: 24 V / 6 A / 144 W
EN 60947-5-1, 11/97	AC15: 230 V / 3 A / 690 VA DC13: 24 V / 3 A / 72 W
Max.total current	12 A
Airgap creepage between relay contacts	DIN VDE 0110-1, 04/97 3 mm
Relay contacts and other safe circuits	5.5 mm
Contact fuse protection in accordance with EN 60947-5-1, 08/00	
Blow-out fuse	6 A quick or slow
Circuit breaker 24 VDC	6 A (characteristic B + C)
Switch-off delay	50 ms
Status indicator	LED
Environmental data	
Vibration in accordance with EN 60068-2-6, 01/00	
Frequency:	10 ... 55 Hz
Amplitude:	0.35 mm
Climatic suitability	DIN IEC 60068-2-3, 12/86
EMC	EN 60947-5-1, 01/00
Ambient temperature	0 ... + 55 °C
Storage temperature	-25 ... + 70 °C
Mechanical data	
Protection type	
Mounting (e.g. cabinet)	IP54
Housing	IP20
Terminals	IP20
DIN rail	
Top hat rail	35 x 7.5 EN 50022
Inner width	27 mm
Maximum cable runs	
Per input	1 km
Sum of individual cable runs at the test pulse output	40 km
Cable cross section	
Rigid single-core, flexible multi-core or multi-core with crimp connector	0.5 ... 2.5 mm²
Flexible multi-core with plastic sleeve	0.5 ... 1.5 mm²
Torque setting for connection terminals (screws)	0.4 ... 0.5 Nm
Housing material	
Housing	PPO UL 94 V0
Front	ABS UL 94 V0

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Mechanical data

Dimensions (H x W x D)	94 x 22.5 x 121 mm
Weight with connector	205 g

Order reference

Type		Features	Order no.
PNOZ mo4p	Expansion module	2 or 4 relay outputs, positive-guided	773 536