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Expansion modules
PNOZ mo4p



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

Approvals

	PNOZ mo4p
c UL us LISTED	◆
	◆
	◆

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:

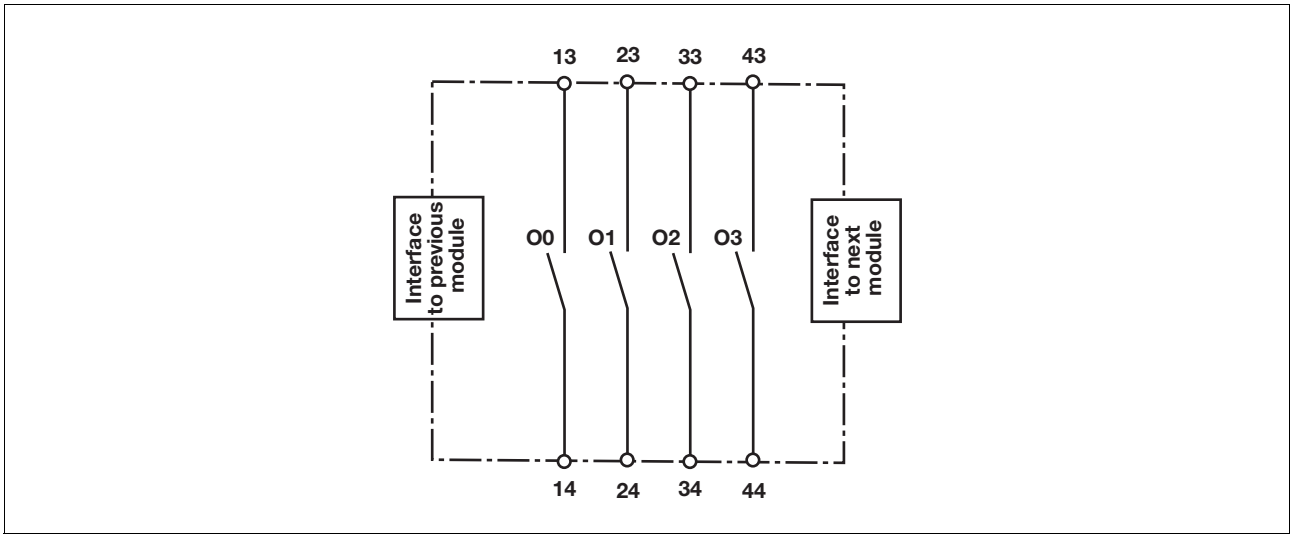
- Emergency stop equipment
- Safety circuits in accordance with VDE 0113 Part 1 and EN 60204-1

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



Expansion modules
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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.

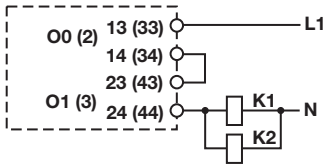
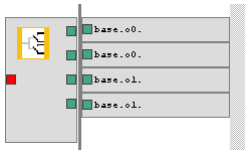
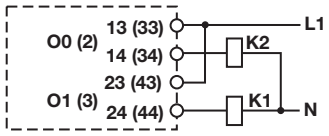
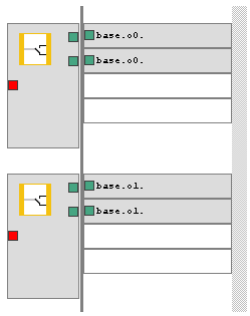
Wiring

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.

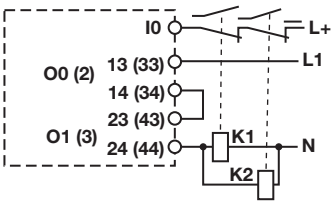
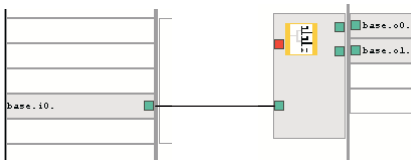
Expansion modules
PNOZ mo4p

Preparing for operation

▸ Relay outputs

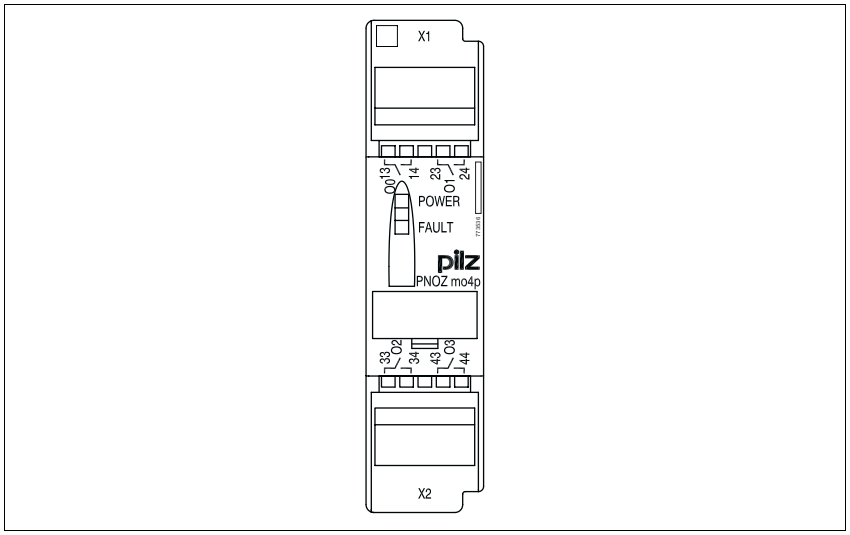
Redundant		
Single		

▸ Feedback loop

Feedback loop	Redundant output	
Contacts from external contactors		

Expansion modules
PNOZ mo4p

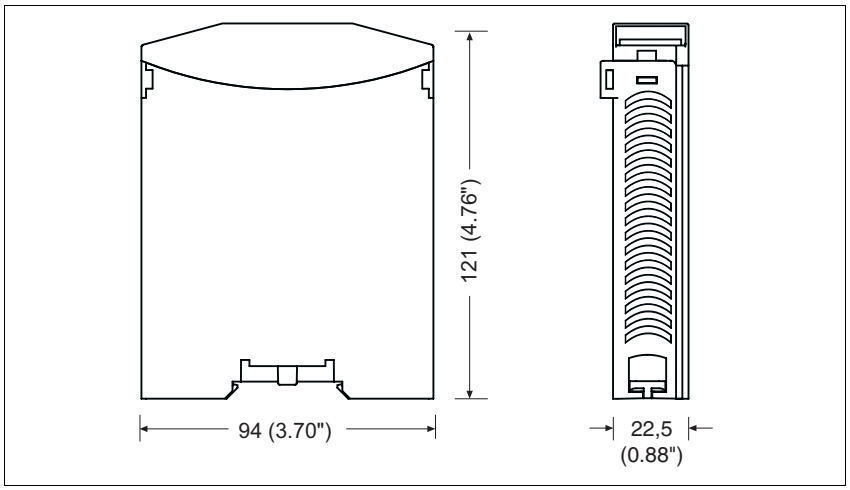
Terminal configuration



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



Expansion modules
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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	**DIN VDE 0110-1, 04/97**
relay contacts	**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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Expansion modules
PNOZ mo4p

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

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