

Expansion modules

PNOZ mo1p



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

Unit features

- ▶ Can be configured in the PNOZmulti Configurator
- ▶ Semiconductor outputs:
 - 2 safety outputs in accordance with EN 954-1, Cat. 4
 - or 4 safety outputs in accordance with EN 954-1, Cat. 3
- ▶ Status indicators
- ▶ Plug-in connection terminals (either cage clamp terminal or screw terminal)
- ▶ Max. 6 PNOZ mo1p units can be connected to the base unit

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 safety outputs are tested periodically using a disconnection test.

Unit description

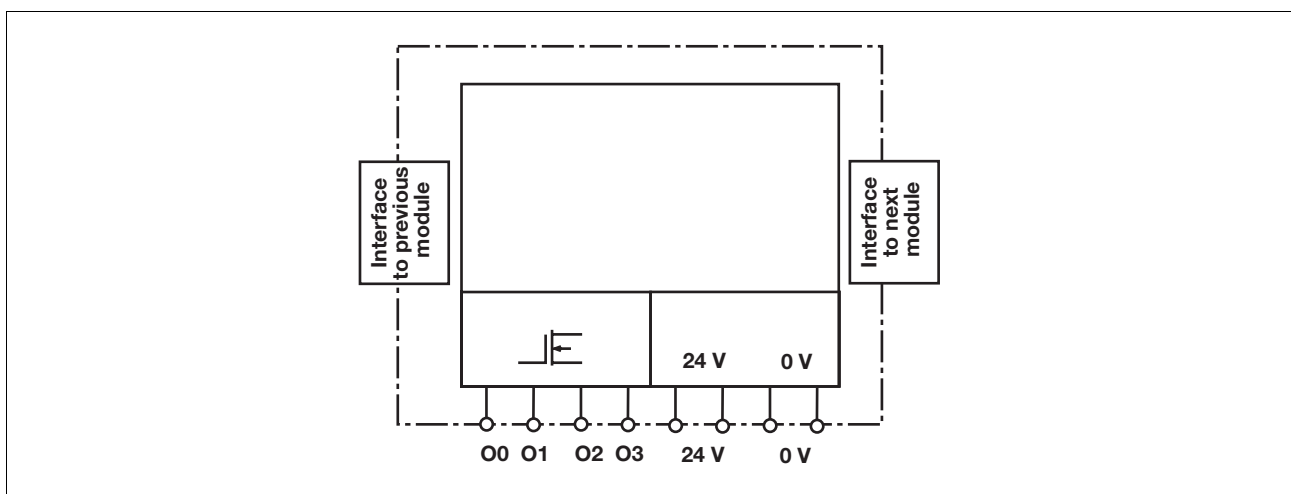
The expansion module may only be connected to a base unit from the PNOZmulti modular safety system. The PNOZmulti modular safety system is used for the safety-related interruption of safety circuits and is designed for use in:

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

Approvals

| | PNOZ mo1p |
|---|-----------|
|  | ◆ |
|  | ◆ |
|  | ◆ |

Block diagram



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Function description

The expansion module provides additional semiconductor 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.


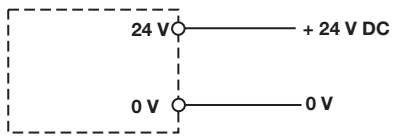
Please note:

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

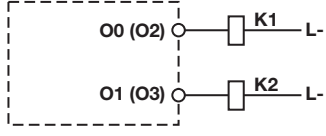

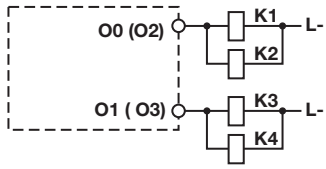
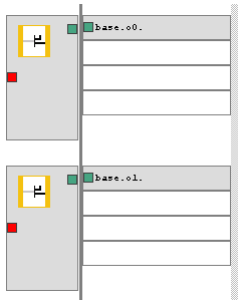
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Preparing for operation

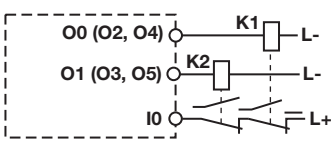
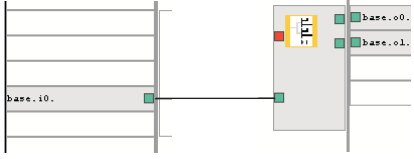
► Supply voltage

| Supply voltage | AC | DC |
|----------------|---|---|
| |  |  |

► Semiconductor outputs

| | | |
|------------------|---|--|
| Redundant output |  |  |
| Single output |  |  |

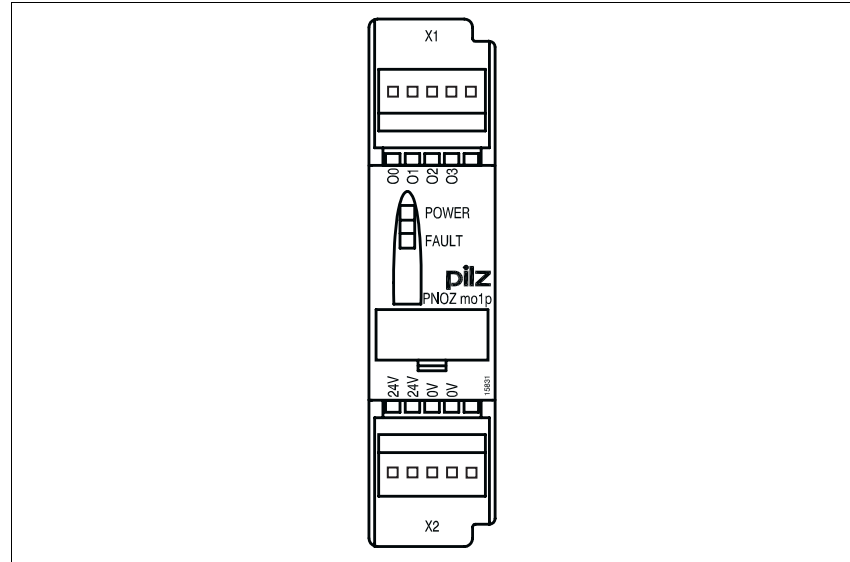
► Feedback loop

| Feedback loop | Redundant output | |
|-----------------------------------|---|---|
| Contacts from external contactors |  |  |

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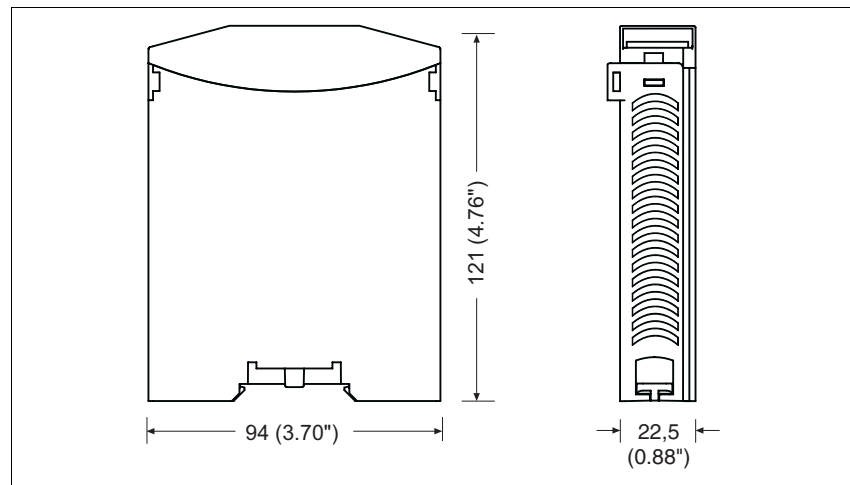
Terminal configuration



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.

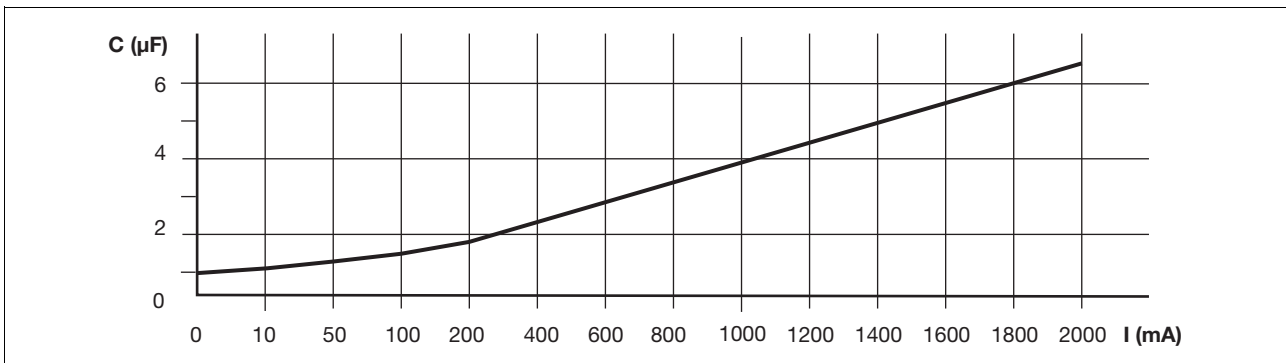
Dimensions



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Maximum capacitive load C (µF) with load current I (mA) at the semiconductor outputs



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) via base unit | 24 VDC |
| Voltage tolerance | -15% ... 10% |
| Power consumption at U _B without load | < 2.5 W |
| Residual ripple U _B | +/- 5 % |
| Times | |
| Switch-on delay | 5 s (after U _B is applied) |
| Supply interruption before de-energisation | Min. 20 ms |
| Semiconductor outputs | |
| Number for EN 954-1, 12/96, Cat. 4 | 2 |
| for EN 954-1, 12/96, Cat. 3 | 4 |
| Switching capability | 24 VDC / max. 2 A / max. 48 W |
| Max. capacitive load | See diagram |
| External supply voltage (U _B) | 24 VDC |
| Voltage tolerance | -15% - 10% |
| Off time during self test | < 300 µs |
| Galvanic isolation | Yes |
| Short circuit protection | Yes |
| Switch-off delay | < 30 ms |
| Residual current at "0" | < 0.5 mA |
| Signal level at "1" | U _B - 0.5 VDC at 2 A |
| Status indicator | LED |
| Environmental data | |
| Airgap creepage | DIN VDE 0110-1, 04/97 |
| Vibration in accordance with EN 60068-2-6, 01/00 | |
| Frequency: | 10 ... 55 Hz |
| Amplitude: | 0.35 mm |
| Climatic suitability | EN 60068-2-78, 10/01 |
| EMC | EN 60947-5-1, 11/97 |

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| Environmental data | |
|---|-----------------------------|
| 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 |
| Recess width | 27 mm |
| Cable cross section | |
| Rigid single-core, flexible multi-core or multi-core with crimp connector | 0.5 ... 1.5 mm ² |
| Torque setting for connection terminals (screws) | 0.2 ... 0.25 Nm |
| Housing material | |
| Housing | PPO UL 94 V0 |
| Front | ABS UL 94 V0 |
| Dimensions (H x W x D) | 94 x 22.5 x 121 mm |
| Weight with connector | 150 g |

| Order reference | | | |
|-----------------|------------------|------------------------------------|-----------|
| Type | Features | | Order no. |
| PNOZ mo1p | Expansion module | 2 or 4 semiconductor outputs, safe | 773 500 |