



# PNOZmulti

**pilz**  
more than automation  
safe automation

Modular safety relays

Many functions, one solution



## ► PNOZmulti – As simple as a PNOZ, as flexible as a



*The right solution  
for each  
application – the  
PNOZ safety relay  
product ranges*

### **PNOZmulti**

#### **From PNOZ to PNOZmulti**

For decades Pilz has stood for innovation in the field of safe integrated automation. The latest development shows once again: Pilz provides tailor-made solutions for use in many areas of mechanical engineering. PNOZmulti is a multifunctional, freely configurable and modular safety relay – and yet another highlight in the long line of successful PNOZ safety relays. Designed for all safety applications such as E-STOP, safety gate and light barrier monitoring and much more, PNOZmulti has the appropriate certification to make it suitable for use worldwide.

### **The innovative PNOZmulti**

A new feature on PNOZmulti is the ability to create the safety circuit using a graphics configuration tool on the PC. The motto is “Configuration rather than wiring”. Up to 14 different safety functions can be covered. Data is transferred from the PC to the PNOZmulti through a smart card or via a serial interface. It's simple to use – see for yourself.



as a controller ...



#### Evolution of the PNOZ

PNOZmulti is as simple to use as all the PNOZ safety relays. The PNOZ functionalities are extended by an exchangeable memory in the form of a smart card, which can be written and copied as many times as you like. The configuration created on the PC is written to the smart card, which is then inserted into the base unit. The base unit is then attached to the top hat rail and simply wired up – ready.







## ► ... economical and modular

### Safety is our strength

Pilz offers a universal concept for safety solutions. On simpler plants, safety relays from the PNOZ X and PNOZelog-ranges

are guaranteed to be cost-effective. On complex or distributed plants, PSS programmable safety systems and the safe bus system SafetyBUS p can be used. Our products are

approved by BG up to and including category 4 in accordance with EN 954-1.

*Pilz offers a universal concept for safety-related solutions.*

**Economy/costs**

**SafetyBUS p**  
The Safe Standard

PSS

PNOZmulti

PNOZelog

PNOZ X

1

4

14

**Complexity/  
safety functions**

## Optimum cost/performance ratio

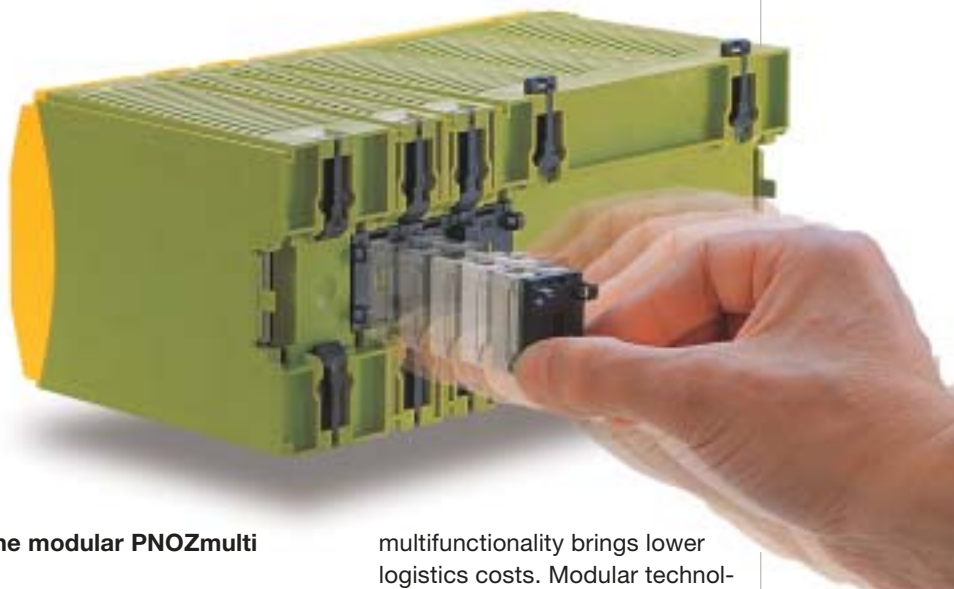
For safety applications of average complexity, using the PNOZmulti is the most economical solution. This new modular safety system covers the area between 4 and 14 safety functions perfectly, so today, if you have more than 4 safety functions to perform, PNOZmulti is the system for you.

## Flexible and certified

PNOZmulti combines high flexibility with ease of operation: safety functions such as E-STOP, safety gate, light barrier or two-hand monitoring can be configured freely, without any special programming knowledge. And all this with maximum safety – up to and including category 4 in accordance with EN 954-1. Certification to IEC 61 508 is in progress.

## Industry-wide applications

PNOZmulti is the ideal solution for many mechanical engineering sectors, particularly on series machines, processing centres, tool, packaging and printing machinery, robot cells and production lines.



### The modular PNOZmulti

The base unit completely covers the functions of simple machines. With complex applications, the base unit is flexible and can be expanded using the most varied range of modules.

You make savings all down the line – not just space in the control cabinet but costs as well, because

multifunctionality brings lower logistics costs. Modular technology means you only pay for what you actually need. PNOZmulti is non-wearing and has a long service life thanks to the use of semiconductor technology. It is suitable for use in a rugged everyday industrial environment, just like the original PNOZ – the synonym for safety relays.

### Safety assessment in accordance with EN 954-1

#### S. Severity of injury

S1 Slight (normally reversible) injury (i.e. cut or bruise)

S2 Serious (normally irreversible) injury

#### F. Frequency and/or exposure time to the hazard

F1 Seldom to quite often

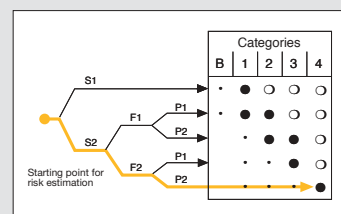
F2 Frequent to continuous

### P. Possibility of avoiding the hazard

(relates in general to the speed and frequency with which the hazardous part moves and to the distance from the hazardous part)

P1 Possible under specific conditions

P2 Scarcely possible



Example risk assessment



\* Pending: the current status of approvals is available at [www.pnozmulti.de](http://www.pnozmulti.de)



## ► Many functions ...

### From application to safety function

*PNOZmulti –  
application  
e.g. on machine  
tools ...*

PNOZmulti is ideally suited for use in the most varied of industries: illustrated here using a machine tool, injection moulding and packaging machine as an example. PNOZmulti is designed for the safe monitoring of plant and machinery with up to 14 safety functions, such as E-STOP, safety gates, light barriers, two-hand controls, operating mode selector switches and enabling switches. Other safety functions will follow.

As user, you know the safety functions and, through the risk analysis, the category that is required. Based on this information you can transfer your solution quickly and easily to the PNOZmulti, thereby covering all functions and categories.



*... injection-  
moulding  
machines ...*

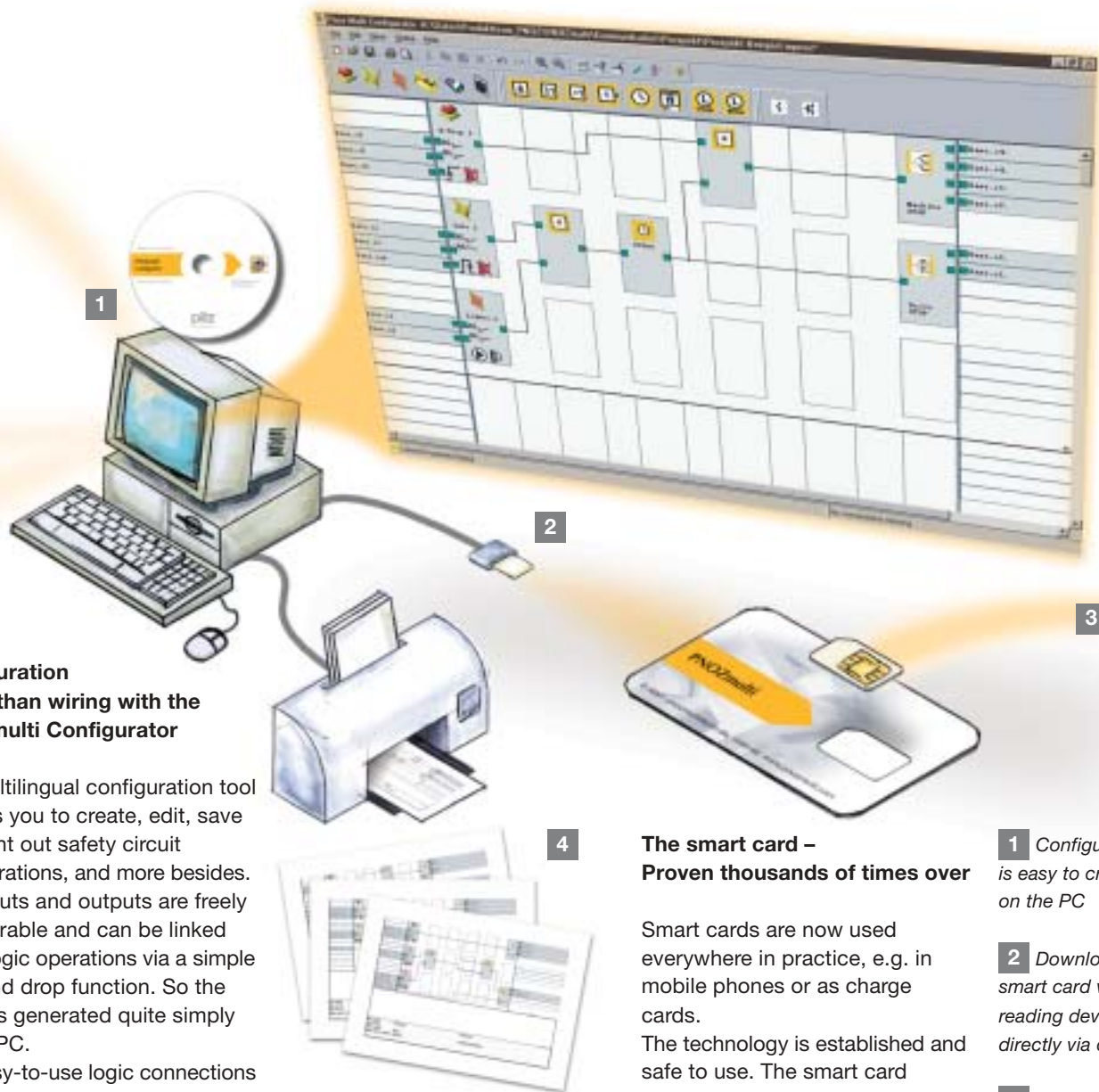


*... or packaging  
machines*





## ► ... one solution ...



### **Configuration rather than wiring with the PNOZmulti Configurator**

The multilingual configuration tool enables you to create, edit, save and print out safety circuit configurations, and more besides. The inputs and outputs are freely configurable and can be linked using logic operations via a simple drag and drop function. So the wiring is generated quite simply on the PC.

The easy-to-use logic connections mean considerably less wiring, guaranteeing fast commissioning. No special programming knowledge is required – operation

of the PNOZmulti Configurator is intuitive. While the configuration is being created, help functions are available at any time from the integral manual, documentation and application examples. The completed configuration can be printed out and used as documentation.

### **The smart card – Proven thousands of times over**

Smart cards are now used everywhere in practice, e.g. in mobile phones or as charge cards.

The technology is established and safe to use. The smart card reader is used to write the configuration to the smart card, which is then inserted into the PNOZmulti base unit. An adhesive label can be used to protect against manipulation, then you're all set.

**1** Configuration is easy to create on the PC

**2** Download to a smart card via a reading device or directly via cable

**3** Insert the chip into the base unit – configuration can be implemented

**4** Print-out can be used as documentation

## ► ... can be used individually ...

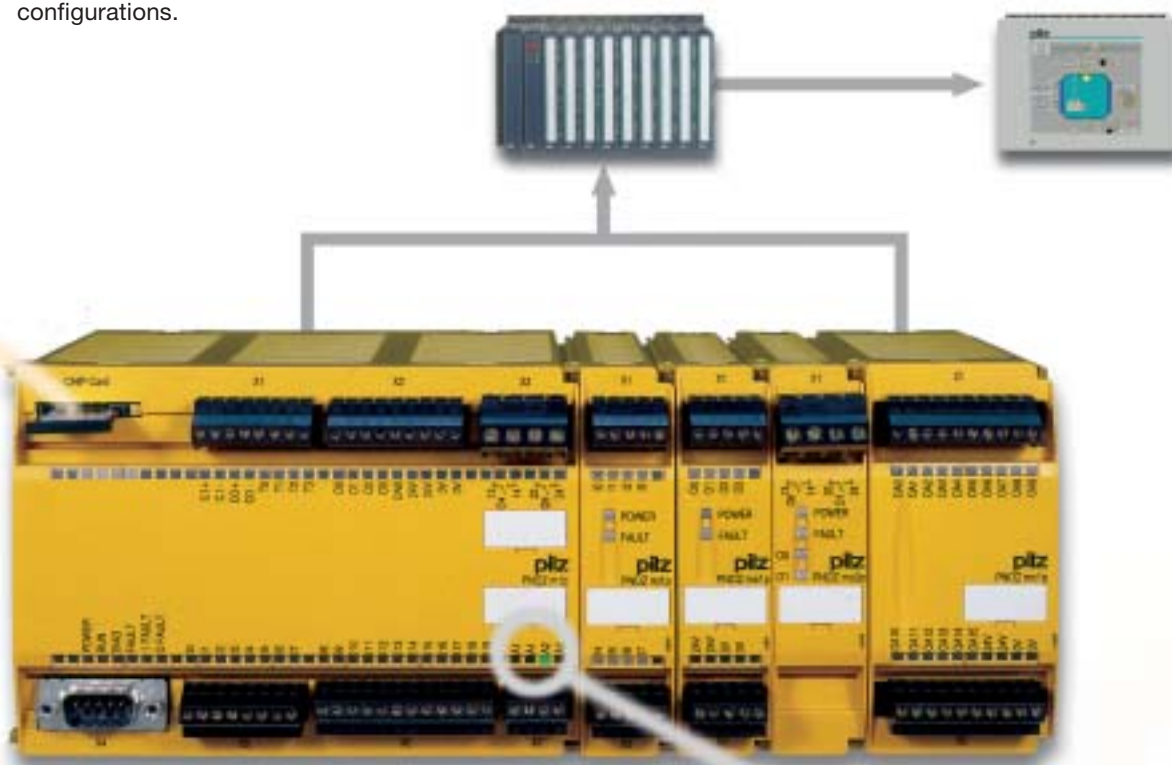
### Changes – No problem

Even configuration changes at a later date are no problem – just remove the smart card, re-write it, confirm the changes, insert the card. For use in series machines, you can copy the same configuration on to as many smart cards as you like – quickly and with little effort. Pilz also provides a service to carry out customised configurations.

### Standard integrated

All inputs can have logic connections to standard functions such as AND/OR links, negations and time delay elements. The signal module PNOZ mc1p is used to

signal non-safety-related functions. The stated standard functions are available now on the PNOZmulti Configurator and are constantly being expanded.



**SafetyBUS p<sup>®</sup>**  
The Safe Standard

**PROFI<sup>®</sup>**  
SAFE

**DeviceNet**

Connection to bus  
systems in  
development

### Diagnostics – Always in the picture

The configuration can be implemented as soon as the smart card has been inserted. No PC is required directly on the

machine. High availability is guaranteed thanks to easy-to-use diagnostic options: separate status LEDs are provided on each terminal, operating and fault conditions are displayed. The signal module PNOZ mc1p is available to send signals to a PLC. Connection to all common bus systems is in development. Additional diagnostic options enable you to read the error stack.



Easy-to-use  
diagnostics  
through  
separate  
status LEDs  
for each terminal



## ► ... one solution ...

The safety functions on the PNOZmulti enable the standard requirements of machinery to be covered in the simplest way possible. Monitoring E-STOPS, safety gates and light barriers are the most common safety applications; they can be found on almost every machine. But even industry-specific safety functions can be easily controlled using PNOZmulti.

- The ability to evaluate enabling switches and operating mode selector switches is of particular interest for use on machine tools.
- Safety gate monitoring is so flexible that even three-channel switches can be processed for use on injection moulding machines. The time delay can be set as required, which is an additional benefit.
- In conjunction with PNOZmulti, the safe gate switch PSEN can be connected directly without an additional evaluation device for safety gate and cover monitoring – the complete solution with safe gate switches. Muting blocks will enable light barriers and light curtains with lamp monitoring to be connected directly – of particular interest for packaging machines.

PNOZmulti can be used economically and safely in many industries:

- General mechanical engineering, e.g. lathes, milling and drilling machines
- Synthetic processing machines, e.g. blow moulding machines
- Laser machines, e.g. laser welding and laser punch presses
- Packaging machines, e.g. drink dispensing and palletizing machines
- Forming technology: small presses, punch presses
- Robots: processing, welding and spraying robots
- Print and paper industry, e.g. printing, enveloping and paper machines





## ► ... child's play to operate

### Safety input elements



E-STOP



Safety gate



Light curtain



Two-hand



Enabling switch



Operating mode selector switch

### Output elements



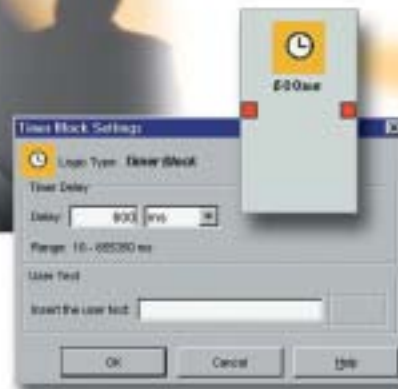
Relays



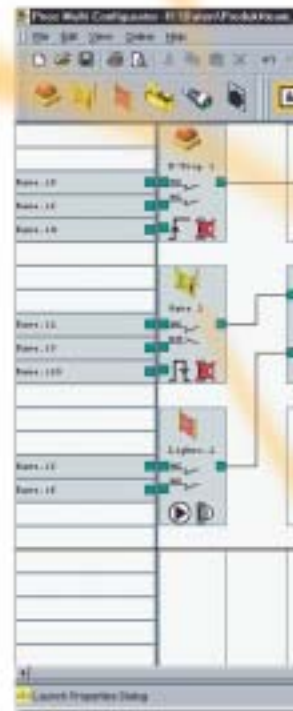
Semiconductors



Symbol bar  
Input elements



Example of a time delay element with a delay time of 600 ms (selectable)



### The PNOZmulti Configurator

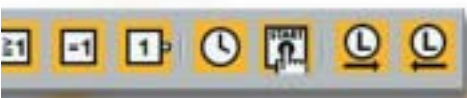
Using the PNOZmulti Configurator is as easy as you can imagine. The user interface conforms to the Windows® standard; all elements are available either as symbols on the configurator interface or in selection menus.

#### Input block and function block

On an E-STOP function, for example, it is necessary to determine whether this is single or dual-channel, with or without detection of shorts across contacts and whether it is to operate with manual or automatic reset. In this way, parameters can be set for all safety functions, including safety gate and light-barrier monitoring, operating mode selector switch, enabling switch or two-hand functions.

#### Logic block and output block

The next step is to create logic links between these functions. Logic AND/OR connections, time delays and negations are available for this purpose. Selected results of logic operations can then be linked to outputs as required.



Symbol bar  
Logic elements



Symbol bar  
Output elements

Hardware and configuration tool are tested and approved by BG.

Logic elements –  
Standard integrated



AND connection



OR connection



Exclusive OR  
connection



NEGATION



Time delay  
element



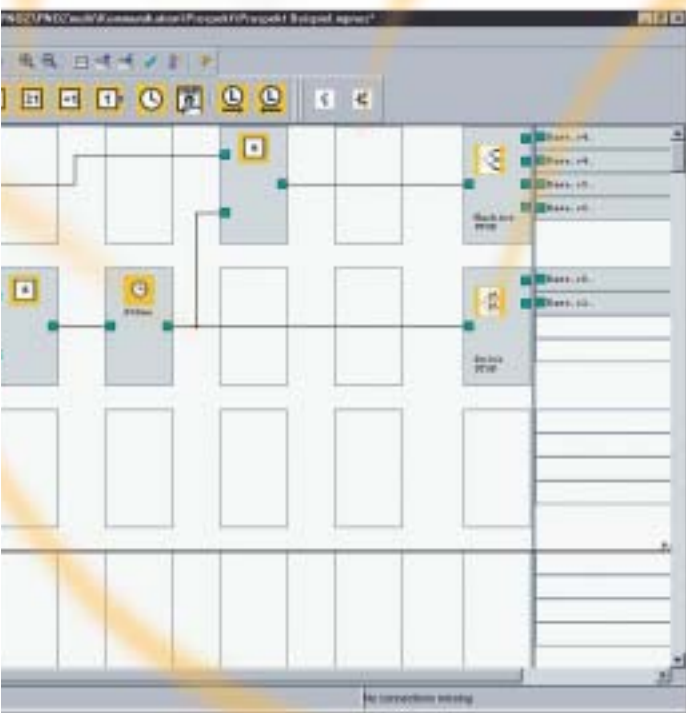
Start element



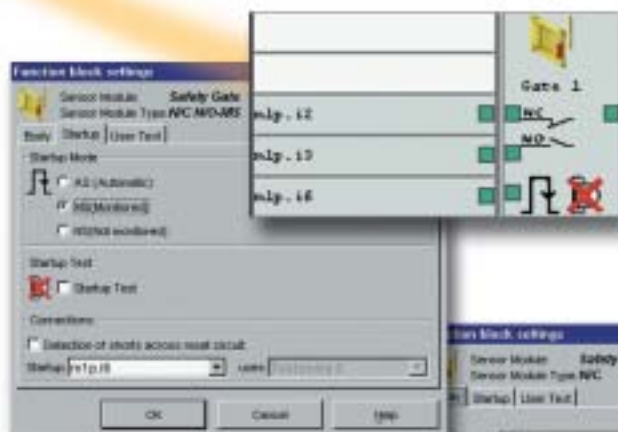
Input Label



Output Label



Example of a semiconductor output  
in accordance with Category 4,  
EN 954-1, without feedback loop



Safety function

Comment text

Switch type

Operating mode

Example of safety gate  
monitoring using PSEN  
(monitoring N/C / N/O)







## ► PNOZmulti – Technical details

Base unit with  
expansion modules –  
flexible to use

### PNOZmulti – The modular safety relays



#### Base unit PNOZ m1p

Application range in accordance with EN 954-1, 12/96, up to Category 4: E-STOP, two-hand, safety gate, light barrier, scanner, enabling switch, PSEN, operating mode selector switch

Order number:

- 773 100 – 24 V DC, without terminals

Accessories:

- 783 100 – Set of plug-in cage clamp terminals
- 793 100 – Set of plug-in screw terminals
- 779 100 – Tool Kit PNOZmulti

- 20 freely configurable inputs
- 4 test pulse outputs, 1 auxiliary output
- 4 safe semiconductor outputs in accordance with EN 954-1, 12/96, Cat. 3 or 2 safe semiconductor outputs in accordance with EN 954-1, 12/96, Cat. 4; 2 safe relay outputs in accordance with EN 954-1, 12/96, Cat. 2 or 1 safe relay output in accordance with EN 954-1, Cat. 4
- Configurable using PNOZmulti Configurator via smart card or RS 232 interface
- Exchangeable program memory
- Diagnostic interface
- Max. 8 expansion modules can be connected
- Base unit without terminals; plug-in terminals with cage clamp or screw connection available as accessories



#### Input module PNOZ mi1p

Application range in accordance with EN 954-1, 12/96, up to Category 4: E-STOP, two-hand, safety gate, light barrier, scanner, enabling switch, PSEN, operating mode selector switch

Order number:

- 773 400 – without terminals

Accessories:

- 783 400 – Set of plug-in cage clamp terminals
- 793 400 – Set of plug-in screw terminals

- 8 inputs
- Max. 8 input modules can be connected to the base unit
- Connection to base unit via plug-in-connector on the back of the unit
- Expansion module without terminals; plug-in terminals with cage clamp or screw connection available as accessories



#### Semiconductor output module PNOZ mo1p

Application range in accordance with EN 954-1, 12/96, up to Category 4: switching 24 V actuators

Order number:

- 773 500 – without terminals

Accessories:

- 783 400 – Set of plug-in cage clamp terminals
- 793 400 – Set of plug-in screw terminals

- 4 safe semiconductor outputs in accordance with EN 954-1, 12/96, Category 3 or 2 safe semiconductor outputs in accordance with EN 954-1, 12/96, Category 4
- Max. 6 semiconductor output modules can be connected to the base unit
- Connection to base unit via plug-in-connector on the back of the unit
- Expansion module without terminals; plug-in terminals with cage clamp or screw connection available as accessories



#### Relay output module PNOZ mo2p

Application range in accordance with EN 954-1, 12/96, up to Category 4: volt-free switching of actuators

Order number:

- 773 520 – without terminals

Accessories:

- 783 520 – Set of plug-in cage clamp terminals
- 793 520 – Set of plug-in screw terminals

- 2 safe relay outputs in accordance with EN 954-1, 12/96, Cat. 2 or 1 safe relay output in accordance with EN 954-1, 12/96, Cat. 4
- Max. 6 relay output modules can be connected to the base unit
- Connection to base unit via plug-in-connector on the back of the unit
- Expansion module without terminals; plug-in terminals with cage clamp or screw connection available as accessories

## PNOZmulti – The modular safety relays



### Signal module PNOZ mc1p

Application range: status message to PLC

Order number:

- ▶ 773 700 – without terminals

Accessories:

- ▶ 783 700 – Set of plug-in cage clamp terminals
- ▶ 793 700 – Set of plug-in screw terminals

- ▶ 16 auxiliary outputs using semiconductor technology
- ▶ Max. 6 signal modules can be connected to the base unit
- ▶ Connection to base unit via plug-in-connector on the back of the unit
- ▶ Expansion module without terminals; plug-in terminals with cage clamp or screw connection available as accessories

## PNOZmulti Software



### PNOZmulti Configurator Configuration software

Order number:

- ▶ 773 000...<sup>1)</sup>

<sup>1)</sup> 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. 773 000B

- ▶ Runs under Windows® 95/98/2000 and Windows® NT 4.0
- ▶ Project configuration, configuration generation, documentation, commissioning
- ▶ Data transfer via standard serial cable or via a smart card
- ▶ Graphic configuration of safety circuit

*A powerful tool for creating your configuration*

## PNOZmulti – Geared for the future

Units can be exchanged without problem – even when application changes are made at a later date.



*With plug-in screw terminals or, alternatively, cage clamp terminals*



Integration of power contacts is at the planning stage. The power module will switch off supply voltages and motors directly and safely.

## ► PNOZmulti – Much more than a product

### 1 Tool Kit

The Tool Kit contains the accessories for starting with PNOZmulti –  
Order number: 779 100

### 2 Smart card reader

- Used to write, rewrite and save the completed configuration on to a smart card
- Order number: 779 230\*

### 3 Smart card set

- External memory medium for the configuration created on the PC, used to transfer data to the PNOZmulti base unit, includes a smart card adapter for rewriting chips removed from the smart card
- Order number: 779 200\*

### 4 Configuration cable

- For reading diagnostic data, configuration download in development
- Order number: 310 300\*

### 5 Documentation folder with single user licence for PNOZmulti Configurator on CD-ROM.

- Contents: Getting Started, with installation notes and much more
- Order number: 773 000\*

### 6 Catalogue/System Manual

- Contents: application examples, with reference to configuration examples on the Configurator CD-ROM
- Order number: 773 050\*

\*For use only with subsequent orders



### Aid



Demo-CD-ROM  
PNOZmulti Configurator

- Get to know the PNOZmulti Configurator without obligation. Request a free demo copy.



Pilz Service Applications CD with  
EPLAN macros

- For fast, simple design and documentation of your circuits, Pilz has developed a practical tool with special Pilz product macros under EPLAN. The macros are available in German and English.
- Order number: 301 996 or online in our Pilz Shop at [www.pilz.com](http://www.pilz.com)



Internet and E-Mail

- Further information is available on our homepage [www.pilz.com](http://www.pilz.com) or at [www.pnozmulti.com](http://www.pnozmulti.com) (English) or [www.pnozmulti.de](http://www.pnozmulti.de) (German)
- Do you need support or do you have any questions? Simply send an E-Mail to [pnozmulti@pilz.de](mailto:pnozmulti@pilz.de).



#### Your benefits at a glance

- ▶ Inputs and outputs are completely configurable using the graphics configuration tool
- ▶ Configuration is child's play, no special programming knowledge required
- ▶ Memory medium for data transfer is safe and easy-to-use
- ▶ Covers the area between 4 and 14 safety functions perfectly
- ▶ Simple wiring and fast commissioning
- ▶ Easy-to-use diagnostic options
- ▶ Saves a lot of space in the control cabinet
- ▶ Economical through adaptation of hardware and lower logistics costs
- ▶ Scalable through selection of appropriate modules
- ▶ Non-wearing thanks to the use of semiconductor technology
- ▶ Geared for the future through expansions to the product range

#### Request for information and consultation

**Please copy this section and return the completed form to one of the Fax numbers overleaf.**

- ☐ I would like a no-obligation consultation on your products and services. Please call me.

#### Please send me information on:

- ☐ Your company
- ☐ Your services, e.g. project management, risk analysis, etc.
- ☐ Your training courses and seminars

#### Please send me further information on the following product groups

- ☐ Operator devices: text displays, line-based operator terminals, graphics touchscreen terminal PMI
- ☐ Modular safety relays PNOZmulti, PNOZpower, PNOZplus
- ☐ Compact safety relays PNOZelog, PNOZ X, PNOZclassic
- ☐ Programmable safety systems PSS
- ☐ The safe, open bus system SafetyBUS p
- ☐ Safe sensors
- ☐ Control and monitoring technology

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Please refer to our Homepage  
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## WWW

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**pilz**  
more than automation  
safe automation