

PNOZ m ES RS232

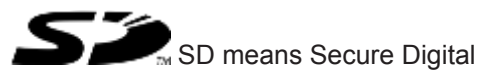
pilz

Configurable Control System PNOZmulti

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1 Introduction

1.1 Validity of documentation

This documentation is valid for the product PNOZ m ES RS232. It is valid until new documentation is published.

This operating manual explains the function and operation, describes the installation and provides guidelines on how to connect the product.

1.1.1 Retaining the documentation

This documentation is intended for instruction and should be retained for future reference.

1.2 Overview of documentation

1 Introduction

The introduction is designed to familiarise you with the contents, structure and specific order of this manual.

2 Overview

This chapter provides information on the product's most important features.

3 Safety

This chapter must be read as it contains important information on safety and intended use.

4 Function Description

This chapter describes the product's mode of operation.

5 Installation

This chapter explains how to install the product.

6 Commissioning

This chapter describes the product's commissioning and wiring.

7 Operation

This chapter describes how to operate the product and gives tips in the case of a fault.

8 Technical Details

This chapter contains the technical details.

9 Supplementary Data

This chapter contains additional technical details such as diagrams and tables.

10 Order Reference

This chapter contains the product's order references and accessories.

1.3 Definition of symbols

Information that is particularly important is identified as follows:



DANGER!

This warning must be heeded! It warns of a hazardous situation that poses an immediate threat of serious injury and death and indicates preventive measures that can be taken.



WARNING!

This warning must be heeded! It warns of a hazardous situation that could lead to serious injury and death and indicates preventive measures that can be taken.



CAUTION!

This refers to a hazard that can lead to a less serious or minor injury plus material damage, and also provides information on preventive measures that can be taken.



NOTICE

This describes a situation in which the product or devices could be damaged and also provides information on preventive measures that can be taken. It also highlights areas within the text that are of particular importance.



INFORMATION

This gives advice on applications and provides information on special features.

2 Overview

2.1 Unit structure

2.1.1 Scope of delivery

- ▶ Expansion module PNOZ m ES RS232
- ▶ Jumper 779 260

2.1.2 Unit features

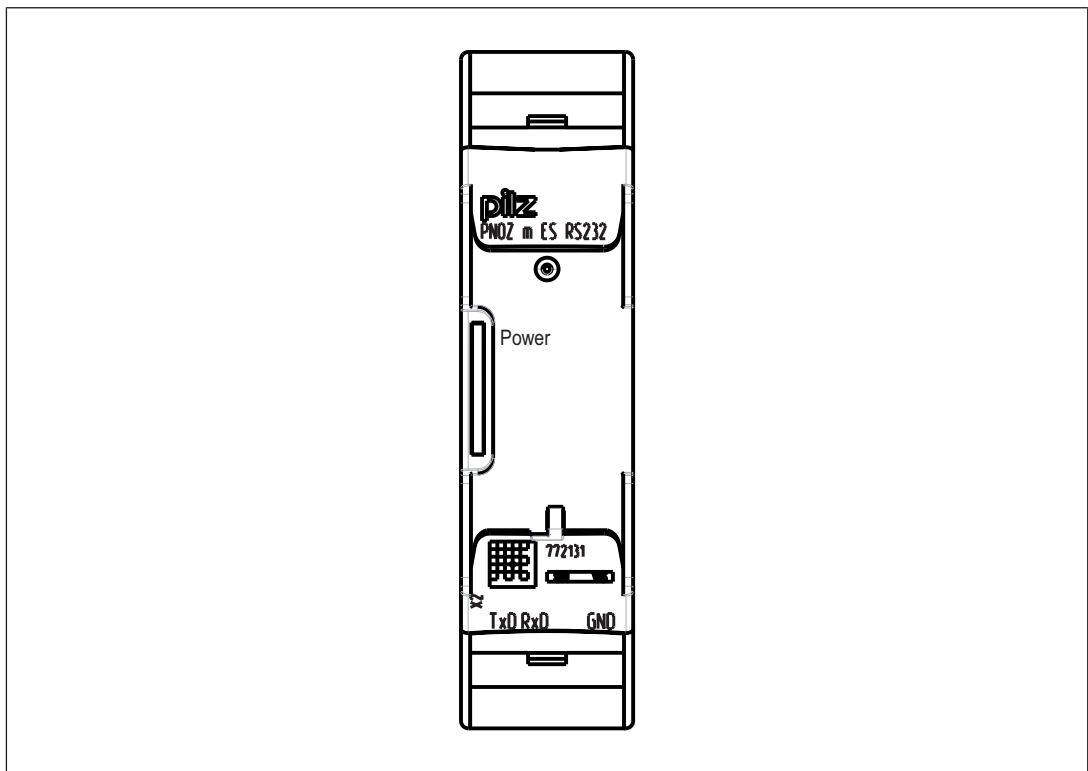
Using the product PNOZ m ES RS232:

Communication module for connection to a base unit from the configurable control system PNOZmulti 2.

The product has the following features:

- ▶ Can be configured in the PNOZmulti Configurator
- ▶ 1 serial interface RS232
- ▶ Status indicator for supply voltage
- ▶ Max. 1 communication module can be connected to the left of the base unit PNOZmulti 2
- ▶ Plug-in connection terminals (either cage clamp terminals or screw terminals)

2.2 Front view



2.2.1

Key

Key:

- ▶ X2: Serial interface RS 232
- ▶ LED:
 - Power

3 Safety

3.1 Intended use

The expansion module PNOZ m ES RS232 is used for communication of the configurable safety relay PNOZmulti 2 via a serial interface RS232.

The expansion module may only be connected to a base unit from the configurable control system PNOZmulti 2 (please refer to the document "PNOZmulti System Expansion" for details of the base units that can be connected).

The configurable control system PNOZmulti 2 is used for the safety-related interruption of safety circuits and is designed for use in:

- ▶ E-STOP equipment
- ▶ Safety circuits in accordance with VDE 0113 Part 1 and EN 60204-1

The expansion module may not be used for safety-related functions.

Intended use includes making the electrical installation EMC-compliant. The product is designed for use in an industrial environment. It is not suitable for use in a domestic environment, as this can lead to interference.

The following is deemed improper use in particular:

- ▶ Any component, technical or electrical modification to the product
- ▶ Use of the product outside the areas described in this manual
- ▶ Use of the product outside the technical details (see chapter entitled "Technical Details")

3.1.1 System requirements

Please refer to the "Product Modifications" document in the "Version overview" section for details of which versions of the base unit and PNOZmulti Configurator can be used for this product.

3.2 Safety regulations

3.2.1 Use of qualified personnel

The products may only be assembled, installed, programmed, commissioned, operated, maintained and decommissioned by competent persons.

A competent person is someone who, because of their training, experience and current professional activity, has the specialist knowledge required to test, assess and operate the work equipment, devices, systems, plant and machinery in accordance with the general standards and guidelines for safety technology.

It is the company's responsibility only to employ personnel who:

- ▶ Are familiar with the basic regulations concerning health and safety / accident prevention
- ▶ Have read and understood the information provided in this description under "Safety"
- ▶ And have a good knowledge of the generic and specialist standards applicable to the specific application.

3.2.2 Warranty and liability

All claims to warranty and liability will be rendered invalid if

- ▶ The product was used contrary to the purpose for which it is intended
- ▶ Damage can be attributed to not having followed the guidelines in the manual
- ▶ Operating personnel are not suitably qualified
- ▶ Any type of modification has been made (e.g. exchanging components on the PCB boards, soldering work etc.).

3.2.3 Disposal

- ▶ In safety-related applications, please comply with the mission time t_M in the safety-related characteristic data.
- ▶ When decommissioning, please comply with local regulations regarding the disposal of electronic devices (e.g. Electrical and Electronic Equipment Act).

3.2.4 For your safety

The unit meets all necessary conditions for safe operation. However, you should always ensure that the following safety requirements are met:

- ▶ This operating manual only describes the basic functions of the unit. Information on the advanced functions can be found in the online help for the PNOZmulti Configurator and in the PNOZmulti technical catalogue. Only use these functions after you have read and understood the documentation. All necessary documentation can be found on the PNOZmulti Configurator CD.
- ▶ Do not open the housing or make any unauthorised modifications.
- ▶ Please make sure you shut down the supply voltage when performing maintenance work (e.g. exchanging contactors).

4 Function description

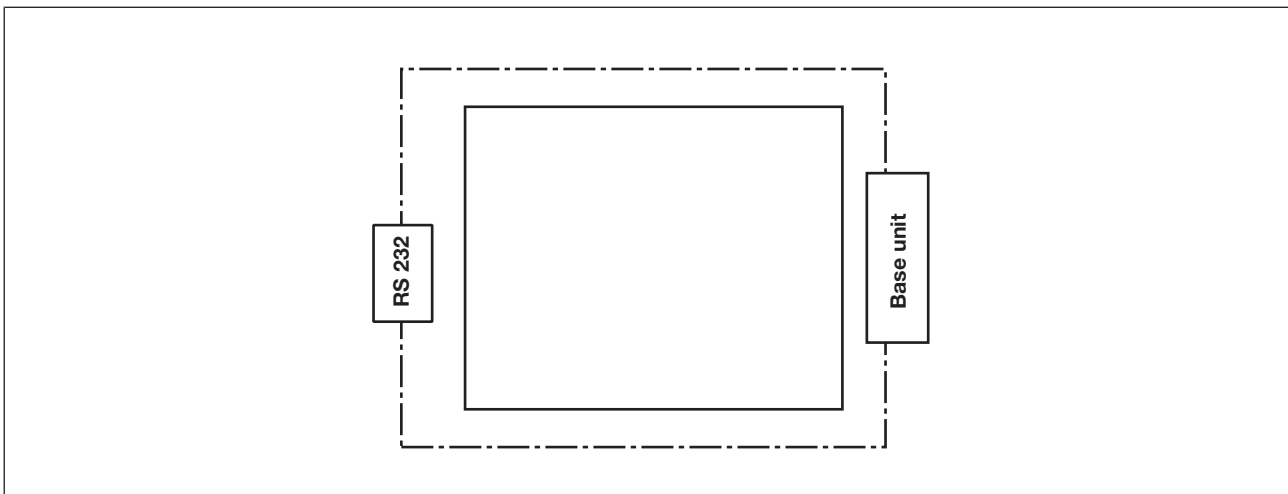
4.1 Unit properties

The product PNOZ m ES RS232 has a serial interface RS232 interface to

- ▶ Download the project
- ▶ Read the diagnostic data
- ▶ Set virtual inputs for standard functions
- ▶ Read virtual outputs for standard functions.

Information on diagnostics can be found in the document "Communication Interfaces".

4.1.1 Block diagram



5 Installation

5.1 General installation guidelines

- ▶ The unit should be installed in a single mounting area with a protection type of at least IP54.
- ▶ Fit the safety system to a horizontal mounting rail. The venting slots must face upwards and downwards. Other mounting positions could destroy the safety system.
- ▶ Use the locking slide on the rear of the unit to attach it to a mounting rail.
- ▶ In environments exposed to heavy vibration, the unit should be secured using a fixing element (e.g. retaining bracket or end angle).
- ▶ Open the locking slide before lifting the unit from the mounting rail.
- ▶ To comply with EMC requirements, the mounting rail must have a low impedance connection to the control cabinet housing.
- ▶ The ambient temperature of the PNOZmulti units in the control cabinet must not exceed the figure stated in the technical details, otherwise air conditioning will be required.

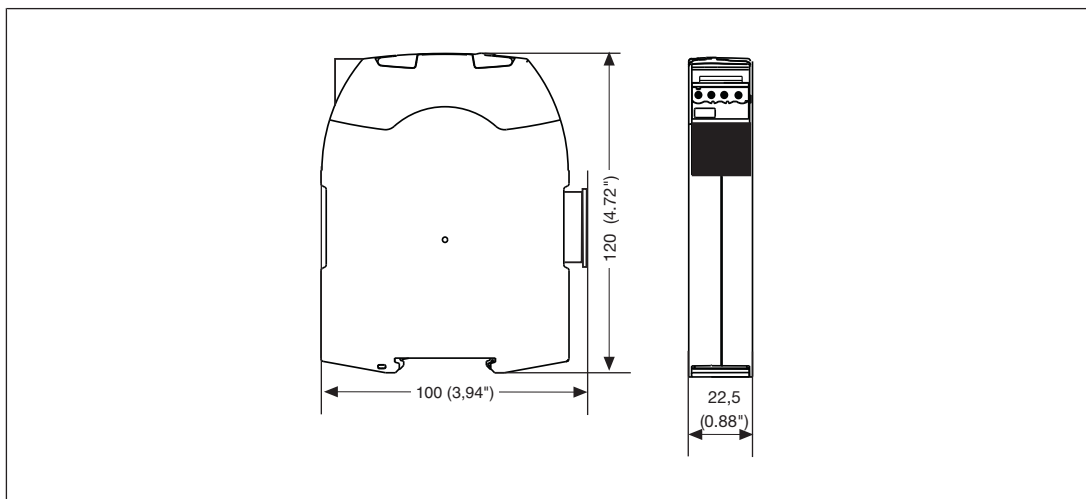


CAUTION!

Damage due to electrostatic discharge!

Electrostatic discharge can damage components. Ensure against discharge before touching the product, e.g. by touching an earthed, conductive surface or by wearing an earthed armband.

5.1.1 Dimensions



5.2 Connecting the base unit and expansion modules

You can install a maximum of 1 PNOZ m ES RS232 to the left of the base unit.

Connect the base unit and the expansion module as described in the operating instructions for the base units.

- ▶ Install the expansion module in the position in which it is configured in the PNOZmulti Configurator.
- ▶ Connect the base unit and expansion modules using the yellow/black jumper.
- ▶ Connect the black/yellow terminator to the expansion module.

6 Commissioning

6.1 Wiring

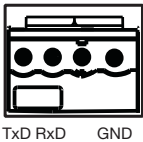
6.1.1 General wiring guidelines

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

Please note:

- ▶ Information given in the "Technical details" must be followed.
- ▶ Use copper wire that can withstand 75°C.

6.1.2 Interface configuration

Serial interface RS232	Standard
	TxD (Transmit)
	RxD (Receive)
	GND (Ground)

6.2 Preparing for operation

The serial interface RS 232 is activated and detected depending on the USB interface on the base unit:

- ▶ **USB interface on the base unit not connected**
In this case, the serial interface RS 232 will be detected and activated by the base unit as soon as the communication module has been connected to the base unit.
- ▶ **USB interface on the base unit connected**
If the USB interface on the base unit is already connected, the "External" interface will first need to be selected on the base unit display to enable the serial interface RS 232 on the base unit to be detected and activated (see operating manual for the base unit for details of the setting).

6.2.1 Download modified project to the PNOZmulti safety system

As soon as an additional expansion module has been connected to the system, the project must be amended using the PNOZmulti Configurator. Proceed as described in the operating instructions for the base unit.



NOTICE

For the commissioning and after every program change, you must check whether the safety devices are functioning correctly.

7 Operation

7.1 Messages




When the supply voltage is switched on, the PNOZmulti safety system copies the configuration from the chip card.



The LEDs "POWER", "DIAG", "FAULT", "IFAULT" and "OFAULT" light up on the base unit.

The safety system PNOZmulti is ready for operation when the "POWER" and "RUN" LEDs on the base unit and the "POWER" LED on the PNOZ m ES RS232 are lit continuously.

7.1.1 Display elements for device diagnostics

Legend:

	LED on
	LED flashes
	LED off

LED	LED status		Meaning
Power			No supply voltage
		Green	Supply voltage is present

8 Technical details

General	772131
Approvals	CCC, CE, GOST, cULus Listed
Application area	Standard
Electrical data	772131
Supply voltage	
Internal	Via base unit
Current consumption	9 mA
Power consumption	0,3 W
Status indicator	LED
Fieldbus interface	772131
Galvanic isolation	No
Serial interface	772131
Number of RS232 interfaces	1
Environmental data	772131
Ambient temperature	
In accordance with the standard	EN 60068-2-14
Temperature range	0 - 60 °C
Forced convection in control cabinet off	55 °C
Storage temperature	
In accordance with the standard	EN 60068-2-1/-2
Temperature range	-25 - 70 °C
Climatic suitability	
In accordance with the standard	EN 60068-2-30, EN 60068-2-78
Condensation during operation	Not permitted
EMC	EN 61131-2
Vibration	
In accordance with the standard	EN 60068-2-6
Frequency	10,0 - 150,0 Hz
Acceleration	1g
Shock stress	
In accordance with the standard	EN 60068-2-27
Acceleration	15g
Duration	11 ms
Max. operating height above sea level	2000 m
Airgap creepage	
In accordance with the standard	EN 61131-2
Overvoltage category	II
Rated insulation voltage	30 V
Protection type	
In accordance with the standard	EN 60529
Mounting (e.g. cabinet)	IP54
Housing	IP20
Terminals	IP20

Mechanical data	772131
Mounting position	Horizontal on top hat rail
DIN rail	
Top hat rail	35 x 7,5 EN 50022
Recess width	27 mm
Max. cable length	
Max. cable length per input	22,0 m
Material	
Bottom	PC
Front	PC
Top	PC
Conductor cross section with screw terminals	
1 core flexible	0,25 - 2,50 mm², 24 - 12 AWG
2 core with the same cross section, flexible without crimp connectors or with TWIN crimp connectors	0,20 - 1,50 mm², 24 - 16 AWG
Rigid single-core, flexible multi-core or multi-core with crimp connector	0,5 - 1,5 mm²
Torque setting with screw terminals	0,50 Nm
Connection type	Spring-loaded terminal, screw terminal
Mounting type	plug in
Conductor cross section with spring-loaded terminals: flexible with/without crimp connector	0,20 - 2,50 mm², 24 - 12 AWG
Spring-loaded terminals: Terminal points per connection	2
Stripping length	9 mm
Dimensions	
Height	101,4 mm
Width	22,5 mm
Depth	120,0 mm
Weight	85 g

The standards current on 2012-04 apply.

9 Order reference

Order reference		
Product type	Features	Order no.
PNOZ m ES RS232	Expansion module	772 131
Order reference: Terminator, jumper		
Product type	Features	Order no.
PNOZ mm0.xp connector left	Jumper yellow/black to connect the modules, 1 piece	779 260
Order reference: Accessories		
Product type	Features	Order no.
Spring terminals PNOZ mmc2p, mml1p 1 pc.	Spring-loaded terminals, 1 pieces	783 538
Spring terminals PNOZ mmc2p,mml1p 10 pcs	Spring-loaded terminals, 10 pieces	783 539
Screw terminals PNOZ mmc2p, mml1p 1 pc.	Screw terminals, 1 piece	793 538
Screw terminals PNOZ mmc2p,mml1p 10 pcs.	Screw terminals, 10 pieces	793 539



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