

PDP67 F 8DI ION



Decentralised periphery

This document is the original document.

Where unavoidable, for reasons of readability, the masculine form has been selected when formulating this document. We do assure you that all persons are regarded without discrimination and on an equal basis.

All rights to this documentation are reserved by Pilz GmbH & Co. KG. Copies may be made for the user's internal purposes. Suggestions and comments for improving this documentation will be gratefully received.

Pilz®, PIT®, PMI®, PNOZ®, Primo®, PSEN®, PSS®, PVIS®, SafetyBUS p®, SafetyEYE®, SafetyNET p®, the spirit of safety® are registered and protected trademarks of Pilz GmbH & Co. KG in some countries.



| 1 | Introduction | 5 |
|-------|--------------------------------------------------------------------|----|
| 1.1 | Validity of documentation | |
| 1.1.1 | Retaining the documentation | |
| 1.2 | Definition of symbols | |
| 2 | Overview | 7 |
| 2.1 | Unit structure | 7 |
| 2.1.1 | Unit features | 7 |
| 2.2 | Front view | 8 |
| 2.3 | Scope of supply | 8 |
| 3 | Safety | 9 |
| 3.1 | Intended use | 9 |
| 3.2 | Safety regulations | 9 |
| 3.2.1 | Use of qualified personnel | |
| 3.2.2 | Warranty and liability | 10 |
| 3.2.3 | Disposal | 10 |
| 4 | Function description | |
| 4.1 | Operation | 11 |
| 4.1.1 | Inputs | |
| 4.1.2 | Outputs | |
| 4.2 | Data download | |
| 4.3 | Diagnostics | 11 |
| 5 | Installation | 12 |
| 5.1 | General installation guidelines | |
| 5.2 | Dimensions | |
| 6 | Wiring | |
| 6.1 | General wiring guidelines | 13 |
| 6.2 | Connector pin assignment | |
| 6.3 | Wiring examples | |
| 6.3.1 | Example: Single-channel, failsafe input device, without test pulse | |
| 6.3.2 | Example: Dual-channel input devices, without test pulses | |
| 6.3.3 | Example: Single-channel, failsafe input device, with test pulse | |
| 6.3.4 | Example: Dual-channel, failsafe input device, with test pulse | 19 |
| 7 | Operation | |
| 7.1 | Messages | |
| 8 | Technical details | |
| 8.1 | Safety characteristic data | |
| 9 | Order reference | |
| 9.1 | Order reference for module | |
| 9.2 | Order reference for accessories | |
| 9.2.1 | Plug | |

| 9.2.2 | Cable (by the metre) | |
|-------|--------------------------------|--|
| 9.2.3 | Cable, M12 to M8 | |
| 9.2.4 | Cable, M12 to M12 | |
| 9.2.5 | Adapter | |
| | | |
| 10 | EC declaration of conformity | |
| | | |
| 11 | UKCA-Declaration of Conformity | |
| | - | |

1 Introduction

1.1 Validity of documentation

This documentation is valid for the products PDP67 F 8DI ION, PDP67 F 8DI ION VA. 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 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 Unit features

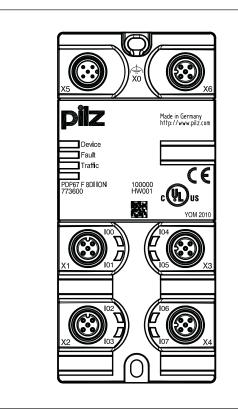
Application of the products PDP67 F 8DI ION, PDP67 F 8DI ION VA:

Decentralised input module for connection to a Pilz control system, for use in a rugged industrial environment up to protection type IP67.

The product has the following features:

- Protection type IP67
- ▶ 8 inputs for connecting 8 single-channel or 4 dual-channel sensors
- ▶ 8 outputs, which can be configured as
 - Standard outputs
 - Test pulse outputs
 - 24 V outputs
- ▶ LED for:
 - Operating status
 - Connection status
 - Fault
 - Input status at each input

2.2 Front view



Legend:

▶ X1 ... X4:

Inputs and outputs

► X5:

Interface to the control system or to X6 on the upstream module

► X6:

Interface to X5 on the downstream module

LEDs:

- Device

- Fault
- Traffic
- 100 ... 107

2.3 Scope of supply

- Decentralised input module PDP67 F 8DI ION/PDP67 F 8DI ION VA
- 4 blind plugs

3 Safety

3.1 Intended use

The products PDP67 F 8DI ION, PDP67 F 8DI ION VA are decentralised input modules designed for use in a rugged industrial environment up to protection type IP67.

The module can be connected to a link module PNOZ ml2p or PNOZ mml2p from the configurable control system PNOZmulti.

Improper use

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 operating manual,
- Use of the product outside the technical details (see Technical details).



NOTICE

EMC-compliant electrical installation

The product is designed for use in an industrial environment. The product may cause interference if installed in other environments. If installed in other environments, measures should be taken to comply with the applicable standards and directives for the respective installation site with regard to interference.

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 persons who are competent to do so.

A competent person is a qualified and knowledgeable person who, because of their training, experience and current professional activity, has the specialist knowledge required. To be able to inspect, assess and operate devices, systems and machines, the person has to be informed of the state of the art and the applicable national, European and international laws, directives and standards.

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 the section entitled Safety
- 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 or
- Operating personnel are not suitably trained.

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).

4 Function description

4.1 Operation

The functions of the inputs and outputs are configured in the system software.

4.1.1 Inputs

Single and dual-channel sensors can be connected to the inputs, with or without test pulses.

Input signals must show a "High" ("1" signal) of 15 VDC (+15 ... +30 VDC) and a "Low" ("0" signal) of 0 VDC (-3 ... +5 VDC).

The input status is signalled to the control system via the bus.

Green LEDs indicate the status of the inputs.

Test pulses can be used to check the inputs for shorts across contacts and correct functionality.

4.1.2 Outputs

The outputs can be used as standard outputs, as test pulse outputs or as 24 VDC outputs.

The test pulse outputs are suitable for testing the sensor wiring. All safety-related inputs must operate in accordance with the failsafe principle (on switching off).

Two test pulses are available on each plug-in connector; these test pulses are permanently assigned to the inputs. The assignment of the test pulses to the inputs cannot be changed in the system software's configurator.

If the test pulse outputs are not being used, they can be configured as standard outputs or 24 VDC outputs in the system software's configurator.

4.2 Data download

Communication with the control system is via a safe data link. Data is exchanged cyclically.

4.3 Diagnostics

The status and error messages shown by the LEDs are saved in an error stack. The system software can read this error stack.

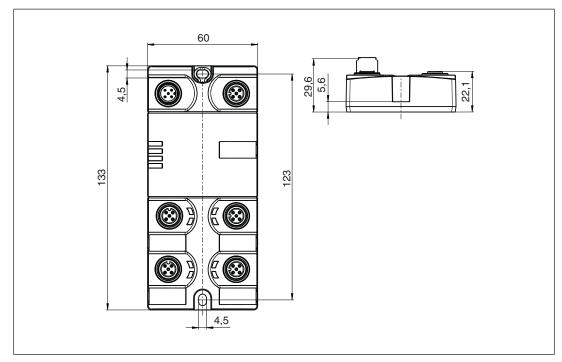
5 Installation

5.1 General installation guidelines

The product must be fastened to a flat mounting surface, so that there is no strain on the housing when the module is screwed down. The mounting distances will depend on which plug-in connectors are used and on the bending radius of the cables. Unused connectors should be sealed using blind plugs.

To install the system, proceed as follows:

- Fit 2 x M4 internal threads on the mounting surface.
- Use two fixing screws to attach the product to the mounting plate.
- With shielded cables, connect the functional earth to the upper fixing screw X0.



5.2 Dimensions

6 Wiring

6.1 General wiring guidelines

Note:

- Information given in the "Technical details" must be followed.
- Where safety-related applications are concerned, it is essential that short circuits and open circuits are unable to cause a hazardous condition within a plant. The way in which this is done will depend on the degree of hazard from the plant section, the switching frequency of the sensors and the level of safety of the sensors and actuators.
- Please refer to the link module's operating manual for details of the maximum cable length.
- Pilz pre-assembled cable can be used to connect the inputs and outputs (see order reference).
- We recommend you use pre-assembled Pilz connectors to connect the inputs and test pulse outputs (see order reference).



CAUTION!

The power supply must meet the regulations for extra low voltages with protective electrical separation (SELV, PELV).



CAUTION!

In order to guarantee protection type IP67, unused plug-in connectors should be sealed using the blind plugs supplied.



CAUTION!

Make sure that the plug-in connectors are connected to the sensors correctly. Once you have run a function test to check that the plug-in connectors are connected to the sensors correctly, the inputs should be labelled. If the inputs are connected to the sensors incorrectly, life-threatening situations may arise on the plant.

6.2 Connector pin assignment

| Inputs/outputs X1 to X4 | Assignment | | | |
|----------------------------|------------------------------------------|---|---|---|
| 5-pin M12 female | 1: Test pulse x / 24 VDC / ST output. | 2 | 5 | 3 |
| connector | 2: Input X | | | |
| A-coded | 3: 0 V | | | |
| | 4: Input X + 1 | | |) |
| | 5: Test pulse X + 1 / 24 VDC / ST output | | Y | |
| | | 1 | | 4 |

| Interface to the link module: X5 | Assignment | |
|------------------------------------------------------|-----------------------------------------------------|--|
| 5 pin M12 male con- nector A-coded | 1: VCC 2: CAN- 3: GND 4: CAN+ 5: Shield | |
| Interface to the next decentralised module: X6 | Assignment | |
| 5-pin M12 female connector A-coded | 1: VCC 2: CAN- 3: GND 4: CAN+ 5: Shield | |

6.3 Wiring examples

6.3.1 Example: Single-channel, failsafe input device, without test pulse

Features:

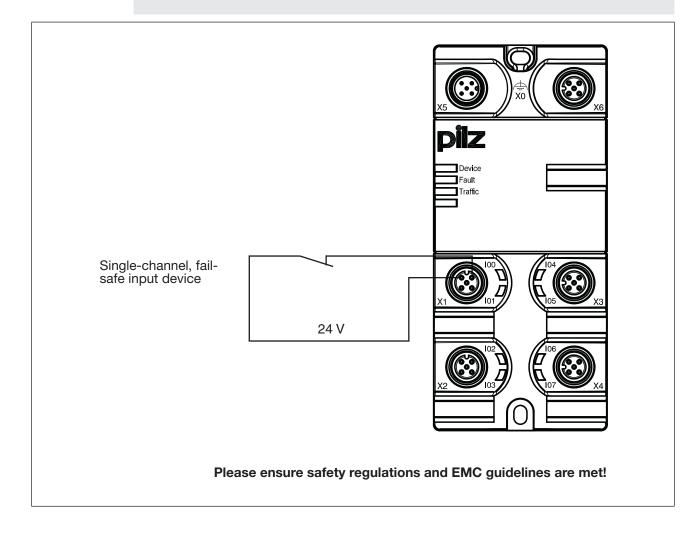
- Depending on the application area and its respective regulations, this connection diagram is suitable for input devices with frequent and infrequent operation in accordance with EN ISO 13849-1 up to PL d and EN IEC 62061 up to SIL CL 2.
- The input device must be approved for failsafe applications.
- Please read the instructions provided with the input device.



WARNING!

Short circuits between the cable to the input device and the 24 V line or between cables to various input devices will not be detected. Depending on the application, serious injury or death may result. Avoid short circuits by

- Appropriate wiring
- Wiring in accordance with the requirements of IEC 61076-2-101 and IEC 60204-1, clause 14.1.1 and 14.1.2



6.3.2 Example: Dual-channel input devices, without test pulses

Features:

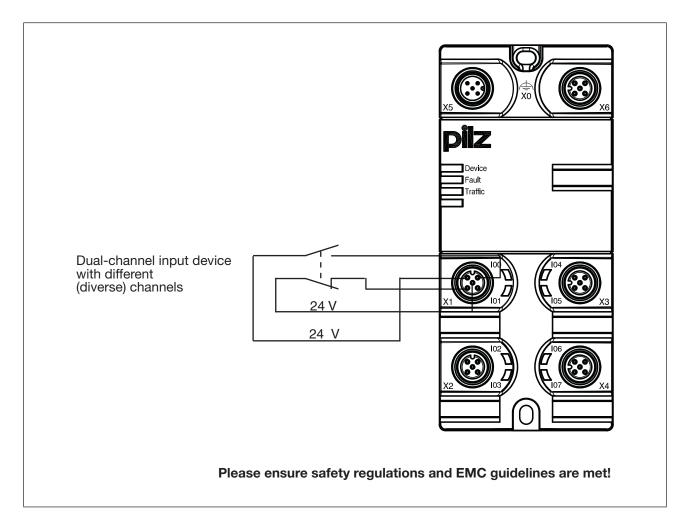
- ▶ This type of connection is mainly used for signal inputs with frequent operation.
- Depending on the application area and its respective regulations, this connection diagram is suitable for input devices with frequent operation and diverse channels in accordance with EN ISO 13849-1 up to PL e and EN IEC 62061 up to SIL CL 3, provided the functionality of both input device channels is monitored in the user program via a feasibility check.
- > The input device must be approved for failsafe applications.
- If you are using input devices with different (diverse) channels, adjacent inputs may be used. The user program will detect short circuits via the feasibility check.



WARNING!

Short circuits between the cable to the input device and the 24 V line or between cables to various input devices will not be detected. Depending on the application, serious injury or death may result. Avoid short circuits by

- Appropriate wiring
- Wiring in accordance with the requirements of IEC 61076-2-101 and IEC 60204-1, clause 14.1.1 and 14.1.2



6.3.3 Example: Single-channel, failsafe input device, with test pulse

Features:

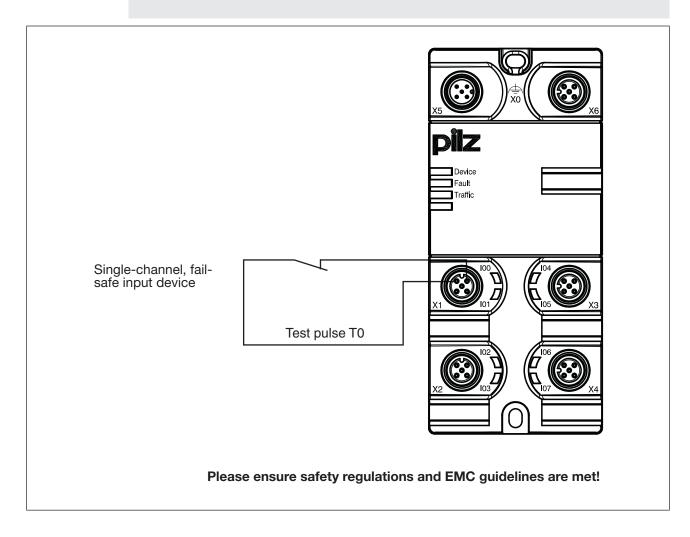
- Depending on the application area and its respective regulations, this connection diagram is suitable in accordance with EN ISO 13849-1 up to PL d and EN IEC 62061 up to SIL CL 2.
- > The input device must be approved for failsafe applications.
- Test pulses can be used to check the inputs for short circuit to 24 V and correct functionality. Short circuits that short out the input device (cable from the test pulse to the input device and cable from the input device to the input) will not be detected.
- Please read the instructions provided with the input device.
- > Only input devices with N/C contacts can be tested.



CAUTION!

Short circuits between the cable to the input device and the 24 V line or between cables to various input devices will not be detected. Avoid short circuits by

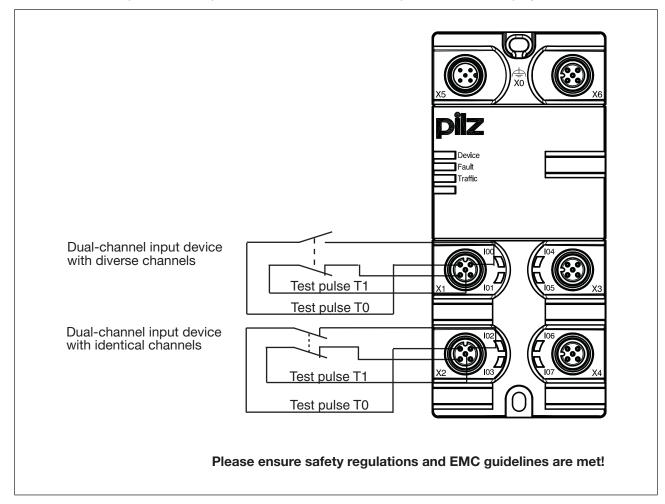
- Appropriate wiring
- Wiring in accordance with the requirements of IEC 61076-2-101 and IEC 60204-1, clause 14.1.1 and 14.1.2



6.3.4 Example: Dual-channel, failsafe input device, with test pulse

Features:

- Depending on the application area and its respective regulations, this connection diagram is suitable in accordance with EN ISO 13849-1 up to PL e and EN IEC 62061 up to SIL CL 3.
- > The input device must be approved for failsafe applications.
- ▶ This type of connection is mainly used for signal inputs with infrequent operation.
- ▶ As the test pulses are permanently assigned to the inputs, all short circuits will be detected, with the exception of short circuits that short out the input device (cable from the test pulse to the input device and cable from the input device to the input).



7 Operation

7.1 Messages

The module is ready for operation when the "Ready" LED on the link module is lit continuously.

Legend

| -ò- | LED on |
|-----|--------|
| /-\ | |

- € LED flashes
- LED off

| LED | LED sta | tus | Meaning | | |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| Device | ->>> | Green | The unit is ready for operation | | |
| | Green The supply voltage is/was too low. Once the fault has been rectified, the LED w flashing until the system has been switched on again. | | | | |
| | • | | The unit is not ready for operation | | |
| FAULT | ->>> | Red | Internal error | | |
| | • | | No error | | |
| Traffic | ->>> | Yellow | Connection to control system established | | |
| | €. | Yellow | Error in the connection to the control system. Flashing stops a max. of 1 min. after the fault has been rectified. | | |
| | • | | No connection to control system established | | |
| Input LEDs | ->>> | Green | 1 signal is present | | |
| Once the fau module will c | | Green | Link module has detected a pulse error. Once the fault has been rectified, the decentralised input module will continue to work normally after a waiting period of just a few seconds. | | |
| | • | | 0 signal is present | | |

8 Technical details

| General | 773600 | 773614 |
|----------------------------------------------------------------------|---------------------------------------------------|---------------------------------------------------|
| Certifications | CE, KOSHA, TÜV, UKCA, cULus Listed | CE, KOSHA, TÜV, UKCA, cULus Listed |
| Application range | Standard/failsafe | Standard/failsafe |
| Electrical data | 773600 | 773614 |
| Supply voltage | | |
| for | Supply | Supply |
| Voltage | 24 V | 24 V |
| Kind | DC | DC |
| Voltage tolerance | -30 %/+25 % | -30 %/+25 % |
| Current load capacity at UB | 4 A | 4 A |
| Output of external power supply (DC) | 1,2 W | 1,2 W |
| Terminal voltage when switching off inductive loads | -45 V | -45 V |
| Permitted loads | inductive, capacitive, resistive | inductive, capacitive, resistive |
| Inputs | 773600 | 773614 |
| Number | 8 | 8 |
| Signal level at "0" | -3 - +5 V DC | -3 - +5 V DC |
| Signal level at "1" | 15 - 30 V DC | 15 - 30 V DC |
| Input voltage in accordance with EN 61131-2 Type 1 | 24 V DC | 24 V DC |
| Input current at rated voltage | 3 mA | 3 mA |
| Input current range | 3 mA | 3 mA |
| Min. threshold voltage when signal changes from "1" to "0" | 7,5 V | 7,5 V |
| Max. threshold voltage when signal changes from "0" to "1" | 11,5 V | 11,5 V |
| Max. processing time of input when signal changes from "1" to "0" | 1 ms | 1 ms |
| Max. processing time of input when signal changes from "0" to "1" | 1,2 ms | 1,2 ms |
| Min. processing time of input when signal changes from "1" to "0" | 0,5 ms | 0,5 ms |
| Min. processing time of input when signal changes from "0" to "1" | 0,7 ms | 0,7 ms |
| Potential isolation | No | No |
| Semiconductor outputs | 773600 | 773614 |
| Number of positive-switching single-pole semiconductor outputs | 8 | 8 |
| Function | 24 VDC output, standard output, test pulse output | 24 VDC output, standard output, test pulse output |
| Rated voltage | 24 V DC | 24 V DC |
| Typ. output current at "1" signal and rated voltage of semiconductor | | |
| output | 0,5 A | 0,5 A |

| Semiconductor outputs | 773600 | 773614 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Permitted current range | 0,000 - 0,600 A | 0,000 - 0,600 A |
| Residual current at "0" signal | 0,02 mA | 0,02 mA |
| Max. internal voltage drop | 200 mV | 200 mV |
| Potential isolation | Νο | No |
| Short circuit-proof | yes | yes |
| Test pulse outputs | 773600 | 773614 |
| Max. cable length between test pulse output and input | 20 m | 20 m |
| Environmental data | 773600 | 773614 |
| | | |
| Climatic suitability | EN 60068-2-78 | EN 60068-2-78 |
| Ambient temperature | | |
| In accordance with the standard | | EN 60068-2-14 |
| Temperature range | -30 - 60 °C | -30 - 60 °C |
| Storage temperature | | |
| In accordance with the standard | | EN 60068-2-1/-2 |
| Temperature range | -40 - 70 °C | -40 - 70 °C |
| Climatic suitability | EN 60060 0 70 | |
| In accordance with the standard | 93 % r. h. at 40 °C | EN 60068-2-78 93 % r. h. at 40 °C |
| Humidity Condensation during operation | Short-term | Short-term |
| EMC | | |
| EMC | EN 55011: class A, EN 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 | EN 55011: class A, EN 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 |
| Vibration | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN |
| | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN |
| Vibration | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 |
| Vibration In accordance with the standard | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 EN 60068-2-6 | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 EN 60068-2-6 |
| Vibration In accordance with the standard Frequency | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 EN 60068-2-6 10 - 55 Hz | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 EN 60068-2-6 10 - 55 Hz |
| Vibration In accordance with the standard Frequency Amplitude | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 EN 60068-2-6 10 - 55 Hz 0,35 mm | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 EN 60068-2-6 10 - 55 Hz 0,35 mm |
| Vibration In accordance with the standard Frequency Amplitude Acceleration Shock stress In accordance with the standard | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 EN 60068-2-6 10 - 55 Hz 0,35 mm 1g | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 EN 60068-2-6 10 - 55 Hz 0,35 mm |
| Vibration In accordance with the standard Frequency Amplitude Acceleration Shock stress In accordance with the standard Number of shocks | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 EN 60068-2-6 10 - 55 Hz 0,35 mm 1g EN 60068-2-27 3 | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 EN 60068-2-6 10 - 55 Hz 0,35 mm 1g EN 60068-2-27 3 |
| Vibration In accordance with the standard Frequency Amplitude Acceleration Shock stress In accordance with the standard Number of shocks Acceleration | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 EN 60068-2-6 10 - 55 Hz 0,35 mm 1g EN 60068-2-27 3 15g | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 EN 60068-2-6 10 - 55 Hz 0,35 mm 1g EN 60068-2-27 3 15g |
| Vibration In accordance with the standard Frequency Amplitude Acceleration Shock stress In accordance with the standard Number of shocks Acceleration Duration | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 EN 60068-2-6 10 - 55 Hz 0,35 mm 1g EN 60068-2-27 3 15g 11 ms | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 EN 60068-2-6 10 - 55 Hz 0,35 mm 1g EN 60068-2-27 3 15g 11 ms |
| Vibration In accordance with the standard Frequency Amplitude Acceleration Shock stress In accordance with the standard Number of shocks Acceleration Duration In accordance with the standard | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 EN 60068-2-6 10 - 55 Hz 0,35 mm 1g EN 60068-2-27 3 15g 11 ms EN 60068-2-27 | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 EN 60068-2-6 10 - 55 Hz 0,35 mm 1g EN 60068-2-27 3 15g 11 ms EN 60068-2-27 |
| Vibration In accordance with the standard Frequency Amplitude Acceleration Shock stress In accordance with the standard Number of shocks Acceleration Duration In accordance with the standard Number of shocks | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 EN 60068-2-6 10 - 55 Hz 0,35 mm 1g EN 60068-2-27 3 15g 11 ms EN 60068-2-27 500 | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 EN 60068-2-6 10 - 55 Hz 0,35 mm 1g EN 60068-2-27 3 15g 11 ms EN 60068-2-27 500 |
| Vibration In accordance with the standard Frequency Amplitude Acceleration Shock stress In accordance with the standard Number of shocks Acceleration Duration In accordance with the standard Number of shocks Acceleration | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 EN 60068-2-6 10 - 55 Hz 0,35 mm 1g EN 60068-2-27 3 15g 11 ms EN 60068-2-27 500 10g | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 EN 60068-2-6 10 - 55 Hz 0,35 mm 1g EN 60068-2-27 3 15g 11 ms EN 60068-2-27 500 10g |
| Vibration In accordance with the standard Frequency Amplitude Acceleration Shock stress In accordance with the standard Number of shocks Acceleration Duration In accordance with the standard Number of shocks Acceleration Duration Duration Duration | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 EN 60068-2-6 10 - 55 Hz 0,35 mm 1g EN 60068-2-27 3 15g 11 ms EN 60068-2-27 500 | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 EN 60068-2-6 10 - 55 Hz 0,35 mm 1g EN 60068-2-27 3 15g 11 ms EN 60068-2-27 500 |
| Vibration In accordance with the standard Frequency Amplitude Acceleration Shock stress In accordance with the standard Number of shocks Acceleration Duration In accordance with the standard Number of shocks Acceleration Duration Duration Duration Airgap creepage | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 EN 60068-2-6 10 - 55 Hz 0,35 mm 1g EN 60068-2-27 3 15g 11 ms EN 60068-2-27 500 10g 16 ms | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 EN 60068-2-6 10 - 55 Hz 0,35 mm 1g EN 60068-2-27 3 15g 11 ms EN 60068-2-27 500 10g 16 ms |
| Vibration In accordance with the standard Frequency Amplitude Acceleration Shock stress In accordance with the standard Number of shocks Acceleration Duration In accordance with the standard Number of shocks Acceleration Duration In accordance with the standard Number of shocks Acceleration Duration Airgap creepage In accordance with the standard | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 EN 60068-2-6 10 - 55 Hz 0,35 mm 1g EN 60068-2-27 3 15g 11 ms EN 60068-2-27 500 10g 16 ms IEC 60664-1 | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 EN 60068-2-6 10 - 55 Hz 0,35 mm 1g EN 60068-2-27 3 15g 11 ms EN 60068-2-27 500 10g 16 ms IEC 60664-1 |
| Vibration In accordance with the standard Frequency Amplitude Acceleration Shock stress In accordance with the standard Number of shocks Acceleration Duration In accordance with the standard Number of shocks Acceleration Duration Duration Duration Airgap creepage | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 EN 60068-2-6 10 - 55 Hz 0,35 mm 1g EN 60068-2-27 3 15g 11 ms EN 60068-2-27 500 10g 16 ms | 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-9 EN 60068-2-6 10 - 55 Hz 0,35 mm 1g EN 60068-2-27 3 15g 11 ms EN 60068-2-27 500 10g 16 ms |

| Environmental data | 773600 | 773614 |
|---------------------------------|-------------------|------------------------|
| Protection type | | |
| In accordance with the standard | EN 60529 | EN 60529 |
| Housing | IP67 | IP67 |
| Terminals | IP67 | IP67 |
| Mechanical data | 773600 | 773614 |
| Material | | |
| Тор | Valox 855 | Valox 855 |
| Labelling bracket (accessories) | PC | PC |
| Connection type | M12 | Stainless steel 1.4305 |
| Mounting type | screw interlocked | screw interlocked |
| Dimensions | | |
| Height | 133 mm | 133 mm |
| Width | 60 mm | 60 mm |
| Depth | 30 mm | 30 mm |
| Weight | 250 g | 250 g |

Where standards are undated, the 2010-03 latest editions shall apply.

8.1 Safety characteristic data



NOTICE

You must comply with the safety characteristic data in order to achieve the required safety level for your plant/machine.

| Unit | Operating mode | EN ISO 13849-1: 2015 PL | EN ISO 13849-1: 2015 Category | EN IEC 62061 SIL CL/ maximum SIL | EN IEC 62061 PFH _D [1/h] | EN/IEC 61511 SIL | EN/IEC 61511 PFD | EN ISO 13849-1: 2015 T _M [year] |
|--------------------|-------------------|----------------------------------|----------------------------------------|----------------------------------------------|-------------------------------------------|------------------------|------------------------|-----------------------------------------------------|
| Input | | | | 011 01 0 | | 0.11 0 | | |
| Inputs | 1-channel | PL d | Cat. 2 | SIL CL 2 | 9,06E-09 | SIL 2 | 7,89E-04 | 20 |
| Inputs | 2-channel | PL e | Cat. 4 | SIL CL 3 | 1,24E-09 | SIL 3 | 1,68E-05 | 20 |
| Bus interfa | ace | | | | | | | |
| Bus inter- face | _ | PL e | Cat. 4 | SIL CL 3 | 1,94E-09 | SIL 3 | 2,87E-05 | 20 |

Explanatory notes for the safety-related characteristic data:

Safety characteristic data in accordance with EN IEC 62061 and EN/IEC 61511 was calculated based on EN/IEC 61508.

▶ T_M is the maximum mission time in accordance with EN ISO 13849-1. The value also applies as the retest interval in accordance with EN/IEC 61508-6 and EN/IEC 61511 and as the proof test interval and mission time in accordance with EN IEC 62061.

All the units used within a safety function must be considered when calculating the safety characteristic data.



INFORMATION

A safety function's SIL/PL values are **not** identical to the SIL/PL values of the units that are used and may be different. We recommend that you use the PAScal software tool to calculate the safety function's SIL/PL values.

9 Order reference

9.1 Order reference for module

| Product type | Features | Order no. |
|-----------------------|------------------------------------------|-----------|
| PDP67 F 8DI ION | Decentralised input module | 773600 |
| PDP67 F 8DI ION VA | Decentralised input module, V2A ring nut | 773614 |

9.2 Order reference for accessories

9.2.1 Plug

| Product type | Features | Order no. |
|----------------------------|------------|-----------|
| Caps for IP67 mod- ules | Blind plug | 380324 |

9.2.2 Cable (by the metre)

| Product type | Features | Order no. |
|-------------------------|--------------|-----------|
| PSS SB BUS- CABLE LC | By the metre | 311074 |
| PSS67 I/O Cable | By the metre | 380320 |

9.2.3 Cable, M12 to M8

| Product type | Features | Connector X1 | Connector X2 | Connector X3 | Order no. |
|--------------------------------|----------|-------------------------------------------------|---------------------------------------------|--------------|-----------|
| PSS67 Cable M8sf M12sm, 3m | 3 m | M 4, 8-pin fe- male con- nector, straight | M12, 4-pin male con- nector, straight | | 380200 |
| PSS67 Cable M8sf M12sm, 5m | 5 m | M 4, 8-pin fe- male con- nector, straight | M12, 4-pin male con- nector, straight | | 380201 |
| PSS67 Cable M8sf M12sm, 10m | 10 m | M 4, 8-pin fe- male con- nector, straight | M12, 4-pin male con- nector, straight | | 380202 |
| PSS67 Cable M8sf M12sm, 30m | 30 m | M 4, 8-pin fe- male con- nector, straight | M12, 4-pin male con- nector, straight | | 380203 |
| PSS67 Cable M8af M12sm, 3m | 3 m | M 4, 8-pin fe- male con- nector, angled | M12, 4-pin male con- nector, straight | | 380204 |
| PSS67 Cable M8af M12sm, 5m | 5 m | M 4, 8-pin fe- male con- nector, angled | M12, 4-pin male con- nector, straight | | 380205 |

| Product type | Features | Connector X1 | Connector X2 | Connector X3 | Order no. |
|--------------------------------|----------|-----------------------------------------------|---------------------------------------------|--------------|-----------|
| PSS67 Cable M8af M12sm, 10m | 10 m | M 4, 8-pin fe- male con- nector, angled | M12, 4-pin male con- nector, straight | | 380206 |
| PSS67 Cable M8af M12sm, 30m | 30 m | M 4, 8-pin fe- male con- nector, angled | M12, 4-pin male con- nector, straight | | 380207 |

9.2.4 Cable, M12 to M12

| Product type | Features | Connector X1 | Connector X2 | Connector X3 | Order no. |
|-----------------------------------------|----------|-------------------------------------------------|---------------------------------------------|--------------|-----------|
| PDP67 Cable M12-5sf M12-5sm, 0.5m | 0.5 m | M12, 5-pin fe- male con- nector, straight | M12, 5-pin male con- nector, straight | | 380710 |
| PDP67 Cable M12-5sf M12-5sm, 1m | 1 m | M12, 5-pin fe- male con- nector, straight | M12, 5-pin male con- nector, straight | | 380711 |
| PDP67 Cable M12-5sf M12-5sm, 1.5m | 1.5 m | M12, 5-pin fe- male con- nector, straight | M12, 5-pin male con- nector, straight | | 380712 |
| PDP67 Cable M12-5sf M12-5sm, 2m | 2 m | M12, 5-pin fe- male con- nector, straight | M12, 5-pin male con- nector, straight | | 380713 |
| PSS67 Cable M12sf M12sm, 3m | 3 m | M12, 5-pin fe- male con- nector, straight | M12, 5-pin male con- nector, straight | | 380208 |
| PSS67 Cable M12sf M12sm, 5m | 5 m | M12, 5-pin fe- male con- nector, straight | M12, 5-pin male con- nector, straight | | 380209 |
| PSS67 Cable M12sf M12sm, 10m | 10 m | M12, 5-pin fe- male con- nector, straight | M12, 5-pin male con- nector, straight | | 380210 |
| PSS67 Cable M12sf M12sm, 30m | 30 m | M12, 5-pin fe- male con- nector, straight | M12, 5-pin male con- nector, straight | | 380211 |
| PSS67 Cable M12af M12am, 3m | 3 m | M12, 5-pin fe- male con- nector, angled | M12, 5-pin male con- nector, angled | | 380212 |
| PSS67 Cable M12af M12am, 5m | 5 m | M12, 5-pin fe- male con- nector, angled | M12, 5-pin male con- nector, angled | | 380213 |
| PSS67 Cable M12af M12am, 10m | 10 m | M12, 5-pin fe- male con- nector, angled | M12, 5-pin male con- nector, angled | | 380214 |
| PSS67 Cable M12af M12am, 30m | 30 m | M12, 5-pin fe- male con- nector, angled | M12, 5-pin male con- nector, angled | | 380215 |

9.2.5 Adapter

| Product type | Features | Connector X1 | Connector X2 | Connector X3 | Order no. |
|-------------------------|-----------------------------------------------------------------|---------------------------------|----------------------------------|--------------|-----------|
| PSEN ma adapter | Adapter for PSENmag/PIT en1.0 | 4-pin M12 fe- male connector | 5-pin M12 male connector | | 380300 |
| PSEN cs adapter | Adapter for PSENcode | 8-pin M12 fe- male connector | 5-pin M12 male connector | | 380301 |
| PSEN sl adapter | Adapter for PSENslock | 8-pin M12 fe- male connector | 5-pin M12 male connector | | 380325 |
| PSEN op SL ad- apter | Set of 2 ad- apter cables for transmitter and receiver | M12, 5-pin male connector | M12, 5-pin fe- male connector | | 631187 |

10 EC declaration of conformity

This product/these products meet the requirements of the directive 2006/42/EC for machinery of the European Parliament and of the Council. The complete EC Declaration of Conformity is available on the Internet at www.pilz.com/downloads.

Authorised representative: Norbert Fröhlich, Pilz GmbH & Co. KG, Felix-Wankel-Str. 2, 73760 Ostfildern, Germany

11 UKCA-Declaration of Conformity

This product(s) complies with following UK legislation: Supply of Machinery (Safety) Regulation 2008.

The complete UKCA Declaration of Conformity is available on the Internet at www.pilz.com/ downloads.

Representative: Pilz Automation Technology, Pilz House, Little Colliers Field, Corby, Northamptonshire, NN18 8TJ United Kingdom, eMail: mail@pilz.co.uk

Support

Technical support is available from Pilz round the clock.

Americas

Brazil +55 11 97569-2804 Canada +1 888 315 7459 Mexico +52 55 5572 1300 USA (toll-free) +1 877-PILZUSA (745-9872)

Asia

China +86 21 60880878-216 Japan +81 45 471-2281 South Korea +82 31 778 3300

Australia and Oceania

Australia +61 3 95600621 New Zealand +64 9 6345350

Europe

Austria +43 1 7986263-0 Belgium, Luxembourg +32 9 3217570 France +33 3 88104003 Germany +49 711 3409-444 Ireland +353 21 4804983 Italy, Malta +39 0362 1826711

Pilz develops environmentally-friendly products using ecological materials and energy-saving technologies. Offices and production facilities are ecologically designed, environmentally-aware and energy-saving. So Pilz offers sustainability, plus the security of using energy-efficient products and environmentally-friendly solutions.









Scandinavia +45 74436332 Spain +34 938497433 Switzerland +41 62 88979-32 The Netherlands +31 347 320477 Turkey +90 216 5775552 United Kingdom +44 1536 462203

You can reach our international hotline on: +49 711 3409-222 support@pilz.com

We are represented internationally. Please refer to our homepage www.pilz.com for further details or contact our headquarters.

Headquarters: Pilz GmbH & Co. KG, Felix-Wankel-Straße 2, 73760 Ostfildern, Germany Telephone: +49 711 3409-0, Telefax: +49 711 3409-133, E-Mail: info@pilz.com, Internet: www.pilz.com

