



Visualisation; Diagnostics

Easy to Configure

Programming IEC 61131-3

Rapid Installation

**PSS67 IO1 16FDI**

**PILZ**  
THE SPIRIT OF SAFETY

► Decentralised periphery

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SD means Secure Digital

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# 1 Introduction

## 1.1 Validity of documentation

This documentation is valid for the product PSS67 IO1 16FDI. 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 features

Application of the product PSS67 IO1 16FDI:

PSS67 device of the performance class "PSS 4000 I/O" for use in a rugged industrial environment up to protection type IP67, for connection to a control system with SafetyNET p.

The product has the following features:

- ▶ 2 free switch ports for connection to SafetyNET p
- ▶ 16 digital inputs distributed over 4 slots
- ▶ 16 test pulse outputs distributed over 4 slots. Test pulse outputs with the same name are connected on a slot. The test pulse outputs can be configured as:
  - Independent test pulse outputs that use different test pulses (device supply)
  - Outputs with constant voltage (device supply)
- ▶ SD card used to store the device project and the naming data
- ▶ Reset pushbutton
  - For warm reset
  - To transfer the naming data and/or device project from the SD card to the device memory
- ▶ Supply voltage
  - Device supply is buffered for 20 ms if the supply voltage is interrupted
- ▶ LEDs for:
  - Switch status of each input
  - Status display of the device

## 2.2 Front view

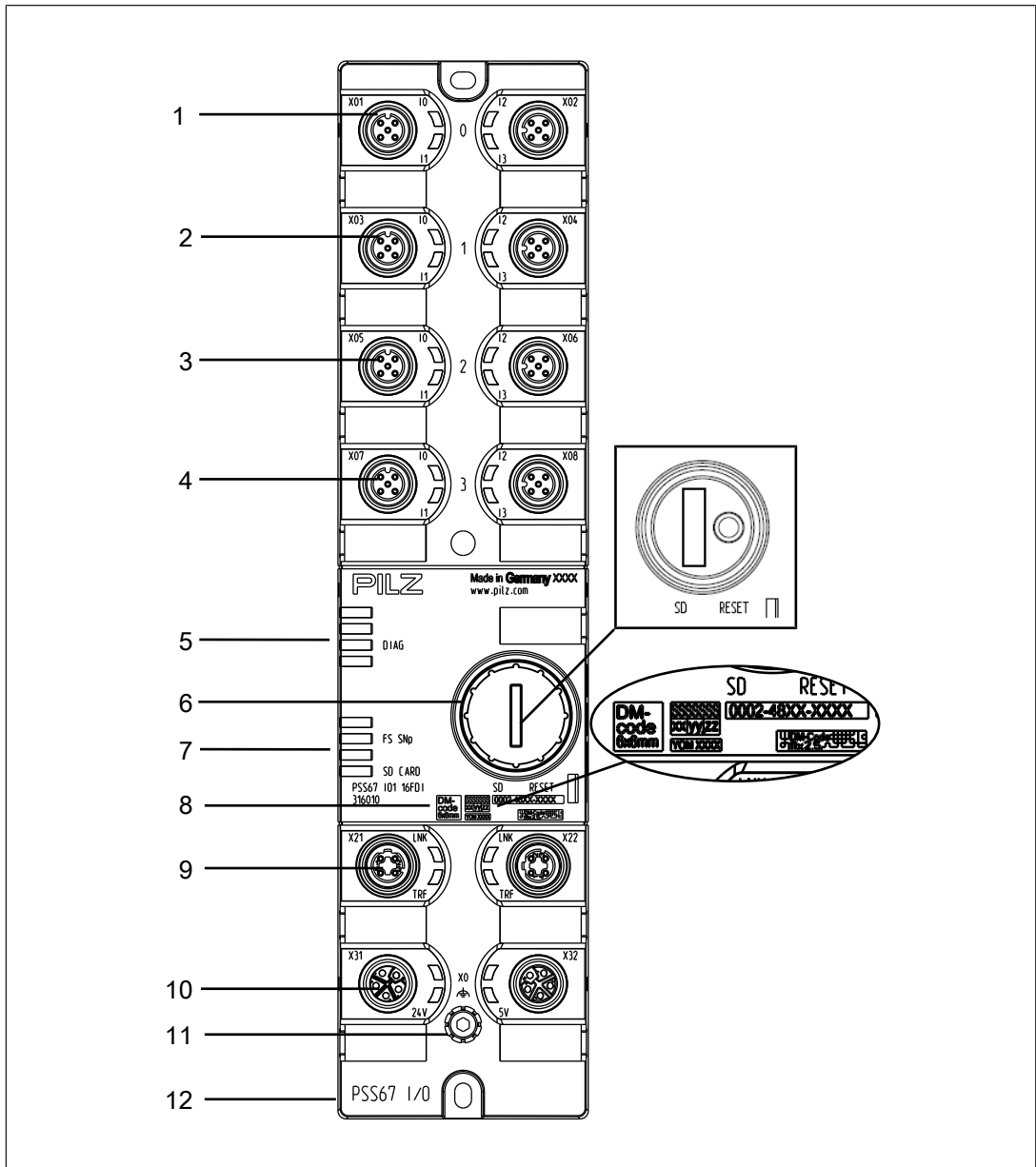


Fig.: Front view

### Legend

- 1 Input module on slot 0 with plug-in connectors X01 and X02
- 2 Input module on slot 1 with plug-in connectors X03 and X04
- 3 Input module on slot 2 with plug-in connectors X05 and X06
- 4 Input module on slot 3 with plug-in connectors X07 and X08
- 5 Diag LED
- 6 End cap for the microSD card and reset button
- 7 Status LEDs
- 8 Field for 2D code, field for firmware and hardware version, field for MAC address



- 9 SafetyNET p interface with plug-in connectors X21 and X22
- 10 Interface to power supply for the supply voltage for device supply and load supply
- 11 Functional earth X0
- 12 Type designation/abbreviation for the performance class PSS 4000 I/O

## 2.3 Scope of supply

- ▶ PSS67 device PSS67 IO1 16FDI with:
  - End cap for the microSD card and reset button
  - 13 label strips
  - 2 x M4 locking washers for the functional earth
  - 1 x M4 screw for the functional earth
  - 1 x microSD card
  - 2 x set with 4 protective caps

## 3 Safety

### 3.1 Intended use

The PSS67 device PSS67 IO1 16FDI is suitable for use in a rugged industrial environment up to protection type IP67. It may not be used in a potentially explosive area.

The PSS67 device PSS67 IO1 16FDI is suitable for use in safety-related applications with **SafetyNET p**.

Intended use includes making the electrical installation EMC-compliant. The module is designed for use in an industrial environment. Interference may occur if used within a domestic environment.

The following is deemed improper use in particular

- ▶ Any component, technical or electrical modification to the module,
- ▶ Use of the module outside the areas described in this manual,
- ▶ Any use of the module that is not in accordance with the technical details.

### 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 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

The PSS67 device PSS67 IO1 16FDI consists of a head module of the performance class PSS 4000 I/O with a SafetyNET p interface and four input modules. The head module and input modules are connected via an internal module bus. The inputs of each module are implemented on two plug-in connectors. Plug-in connectors X01 and X02 are used for the module on slot 0.

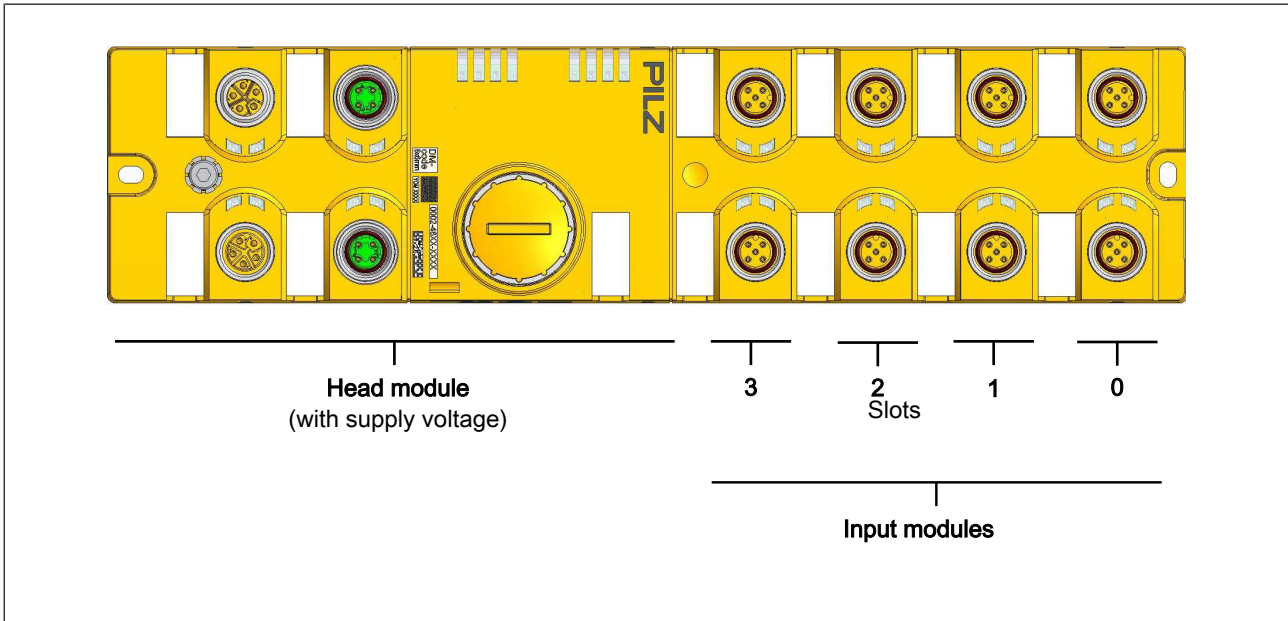


Fig.: Module structure

### 4.1 Supply voltages

#### ▶ Device supply

Supply voltage for the device, sensors and test pulses. The device supply is fed in at the plug-in connector X31 and is forwarded to the plug-in connector X32. By forwarding in this way, additional devices can be supplied. The module supply for supplying the device and the periphery supply for supplying the sensors and test pulses is generated internally from the device supply.

#### ▶ Load supply

Supply voltage for the actuators. The supply voltage for load supply is not required for the operation of this device. The load supply is fed in at the plug-in connector X31 and is forwarded to the plug-in connector X32.

Device supply and load supply are galvanically isolated within the device.

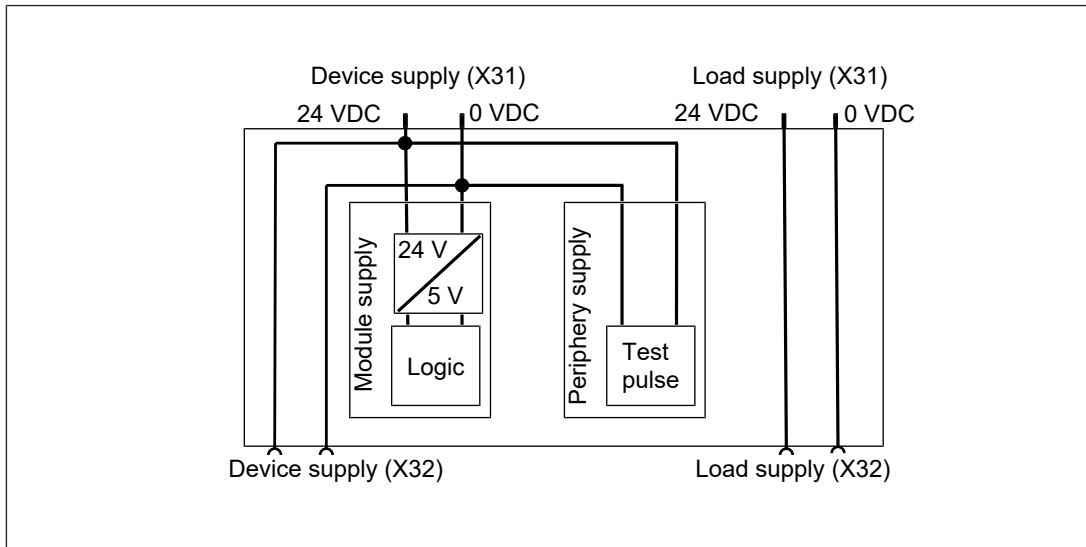


Fig.: Representation of the internal voltages

## 4.2 Head module

### 4.2.1 Connection to SafetyNET p

#### Functions

- ▶ The SafetyNET p interface enables the device to be controlled by means of a higher level control system (e.g. PSSu PLC).
- ▶ The head module in the PSS67 device receives signals from a higher level control system and forwards them to the input modules on the PSS67 device.
- ▶ The head module in the PSS67 device receives signals from the input modules via the internal module bus and forwards them to a higher level control system.

#### MAC address

- ▶ The PSS67 device has a MAC address:
  - MAC address of PSS67 device. You'll find the address on the front of the PSS67 device.



#### INFORMATION

Further information on SafetyNET p can be found in the "PSS 4000 System Description".

### 4.2.2 Integrated protection mechanisms

The PSS67 device has the following protection mechanisms:

- ▶ Multi-channel diverse processor section
- ▶ Cyclical self tests
- ▶ Potentially isolated **SafetyNET p** interface
- ▶ Temperature monitoring

- ▶ Infeed for device supply
  - Polarity protection
  - Voltage monitoring
  - Transient voltage limitation
  - 20 ms voltage buffer if the supply voltage is interrupted

### 4.2.3 microSD card

The SD card has the following functions:

- ▶ The microSD card is used to store the naming data and the device project; see PSS 4000 System Description.
- ▶ The microSD card is part of the safety concept on PSS 4000. If the microSD card is missing or has been swapped, the next time the PSS67 device is booted it will be unable to achieve the operating status "PSSu System/PSS67 device in RUN condition without error".

### 4.2.4 Reset button

The "Reset" button has various functions:

- ▶ Perform warm reset.  
The reset button can be used to perform a warm reset.
- ▶ Transfer the naming data and/or device project from the SD card (deliberate operator action to transfer the naming data and/or device project from the SD card to the device memory).



#### INFORMATION

The warm reset and the transfer of the naming data and/or device project are described in the "PSS 4000 System Description".

## 4.3 Input modules

Inputs

- ▶ The input status is signalled to the head module via the module bus.
- ▶ Test pulses can be used to check the inputs for shorts across contacts and correct functionality.
- ▶ The inputs have input filters.

Test pulse outputs

- ▶ 4 test pulse outputs per slot (2 x test pulse 0 and 2 x test pulse 1). Test pulse outputs with the same name are connected on a slot.
- ▶ Test pulse outputs T0 and T1 are independent and use different test pulses.
- ▶ The test pulse outputs are short circuit-proof.
- ▶ Test pulse outputs have a current limit.
- ▶ Test pulses can be switched on or off.

- ▶ Test pulses are switched on in the default setting.
- ▶ When test pulses are switched off, the device supply (24 V) is constantly available at the test pulse outputs.

Detection of shorts across contacts

- ▶ The test pulses are used to detect shorts between inputs. Shorts between inputs are detected when the test pulses are different (test pulse 0, test pulse 1)
- ▶ Shorts between inputs of the same module with the same test pulses will not be detected.

### 4.3.1 Integrated protection mechanisms

- ▶ Test pulse signals are always buffered for 20 ms.

The module provides the following diagnostic data:

- ▶ Start-up error
- ▶ Configuration error
- ▶ FS communication error
- ▶ Bus termination error
- ▶ Temperature error: Too warm
- ▶ Test pulse error
- ▶ Input error

### 4.3.2 PSSu assignment in system environment B

Data access is via pre-defined I/O data types:

I/O data name <i>Input (Slot:Pin)</i>	I/O data type	I/O data element	Meaning
I0(X01:4) I1(X01:2) I2(X02:4) I3(X02:2)	FS_I_DI	Data: SAFEBOOL	Input data I0 ... I3 for the module on slot 0 with plug-in connectors X01 and X02
I0(X03:4) I1(X03:2) I2(X04:4) I3(X04:2)	FS_I_DI	Data: SAFEBOOL	Input data I0 ... I3 for the module on slot 1 with plug-in connectors X03 and X04
I0(X05:4) I1(X05:2) I2(X06:4) I3(X06:2)	FS_I_DI	Data: SAFEBOOL	Input data I0 ... I3 for the module on slot 2 with plug-in connectors X05 and X06

I/O data name <i>Input (Slot:Pin)</i>	I/O data type	I/O data element	Meaning
I0(X07:4) I1(X07:2) I2(X08:4) I3(X08:2)	FS_I_DI	Data: SAFEBOOL	Input data I0 ... I3 for the module on slot 3 with plug-in connectors X07 and X08

### 4.3.3 Reaction times

Information on the reaction times of the inputs can be found in the "PSSuniversal" System Description and the System Description "Automation system PSS 4000".

## 4.4 Derating diagram

The relationship between the load current at the load supply and the operating temperature is illustrated in the following derating diagram. The device supply is limited to a maximum of 8 A.

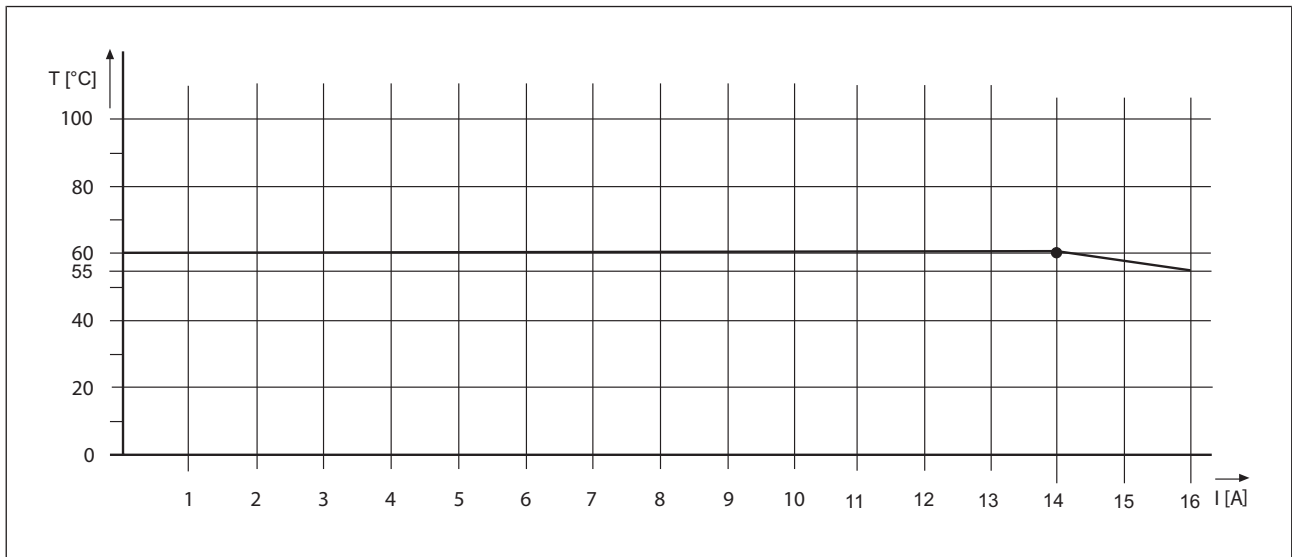


Fig.: Derating diagram for the load supply



## 5 Installation

### 5.1 General installation guidelines

To meet the requirements of the protection type IP67, ensure that:

- ▶ The cover of the SD card is firmly closed
- ▶ The plug-in connectors are fastened tightly
- ▶ The protective caps on unused plug-in connectors are fastened tightly

Protect the PSS67 device from:

- ▶ Weather conditions (particularly sunlight)
- ▶ Chemicals
- ▶ Contamination
- ▶ Intentional damage

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.

To install the system, proceed as follows:

- ▶ Fit 2 x M4 internal threads on the mounting surface.
- ▶ Use fixing screws with washers. In environments with vibration we recommend that you use locking washers.
- ▶ When using internal hexagonal fixing screws with a strength class of 8.8, tighten the mounting screws with a torque of 2.6 Nm to 3.3 Nm.
- ▶ Use two fixing screws to attach the product to the mounting plate.
- ▶ Attach the functional earth.

The functional earth can be connected to pin 5 of the X31 connector or to the lower fixing screw (X0).

We recommend that you connect the functional earth to the lower fixing screw (X0). Minimum conductor cross section of the earth cable on the fixing screw (X0) is 2.5 mm<sup>2</sup>. For the fixing screw you can use the supplied ratchet screw for the functional earth connection.

Tighten the fixing screw with a torque of 1.2 Nm.

### 5.1.1 Dimensions

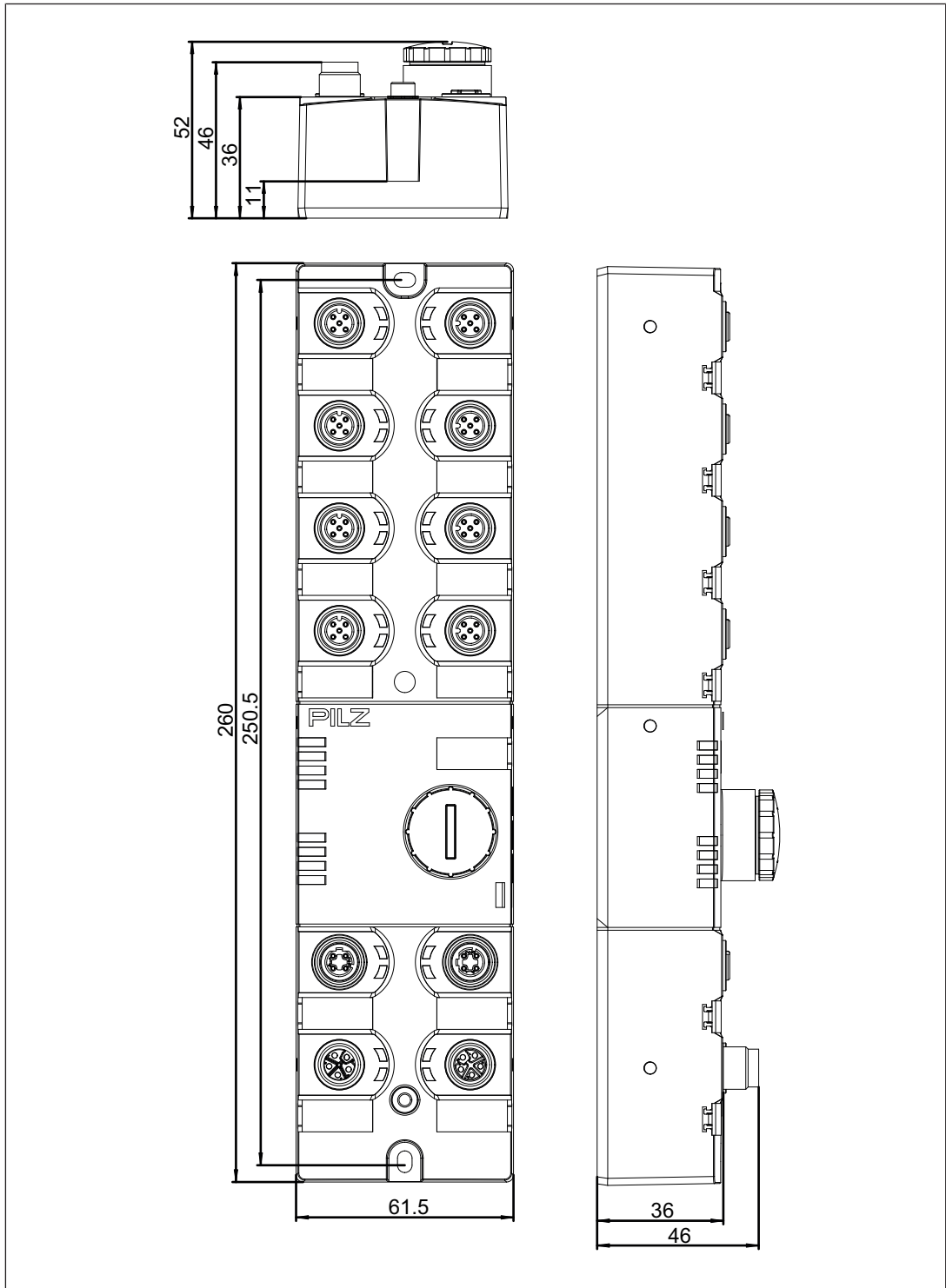



Fig.: Dimensions in mm

## 6 Wiring

### 6.1 General wiring guidelines

Please 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.
- ▶ For details of the cable length for the test pulses see [Technical details](#) [ 30].
- ▶ Pilz pre-assembled cable can be used to connect the inputs (see order reference).
- ▶ We recommend you use pre-assembled Pilz connectors to connect the inputs and test pulse outputs (see order reference).



#### CAUTION!

The supply voltages for an external device must be extra low voltages with safe electrical separation (PELV or SELV) in accordance with VDE 0100, Part 410. Protective separation must be ensured for the external power supplies that generate the supply voltages. Failure to do so could result in electric shock. The external power supplies must comply with the current applicable standard EN 60950-1, EN 61140, EN 50178 or EN 61558-1.



#### CAUTION!

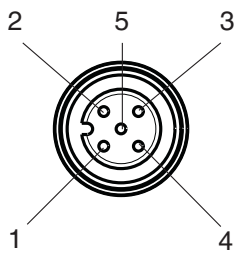
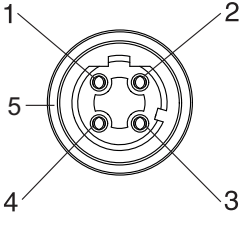
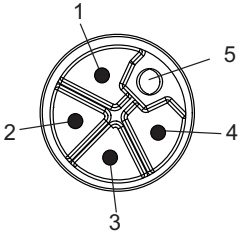
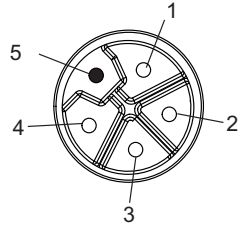
In order to guarantee protection type IP67, unused plug-in connectors should be sealed using the protective caps supplied.



#### 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 X01 to X08	Assignment	
5-pin M12 female connector A-coded	1: Test pulse x / 24 VDC 2: Input X+1 3: GND 4: Input X 5: Test pulse x+1 / 24 VDC	
SafetyNET p interface X21 and X22	Assignment	
4-pin M12 female connector D-coded	1: TD+ 2: RD+ 3: TD- 4: RD- 5: Connection to functional earth on the connector housing	
Interface to the 24 V power supply or to previous decentralised module: X31	Assignment	
5 pin M12 male connector L-coded	1: + 24 VDC supply voltage for device supply 2: 0 V supply voltage for load supply 3: 0 V supply voltage for device supply 4: + 24 VDC supply voltage for load supply 5: Connection to functional earth	
Interface to the next decentralised module: X32	Assignment	
5-pin M12 female connector L-coded	1: + 24 VDC supply voltage for device supply 2: 0 V supply voltage for load supply 3: 0 V supply voltage for device supply 4: + 24 VDC supply voltage for load supply 5: Connection to functional earth.	

## 6.3 Connecting the supply voltage

Use a 5-pin M12 plug-in connector to connect the PSS67 device to the external supply voltage for device supply and load supply. The supply voltage for load supply is not required for the operation of this device. The device has an M12 socket (X32), which is physically adjacent to the M12 connector; this is used to forward the device supply and load supply to other devices.



### WARNING!

The current load capacity of the M12 plug-in connectors X31 and X32 is 8 A per connector. You must ensure that this value is not exceeded. Exceeding the permitted current load capacity can damage the plug-in connector. Please note that the connection of the additional supply voltage is not monitored for overload. Please refer to the derating diagram in the section entitled [Derating diagram](#) [16].



### INFORMATION

The functional earth can be connected to pin 5 of the X31 connector or to the lower fixing screw (X0). We recommend that you connect the functional earth to the lower fixing screw (X0).

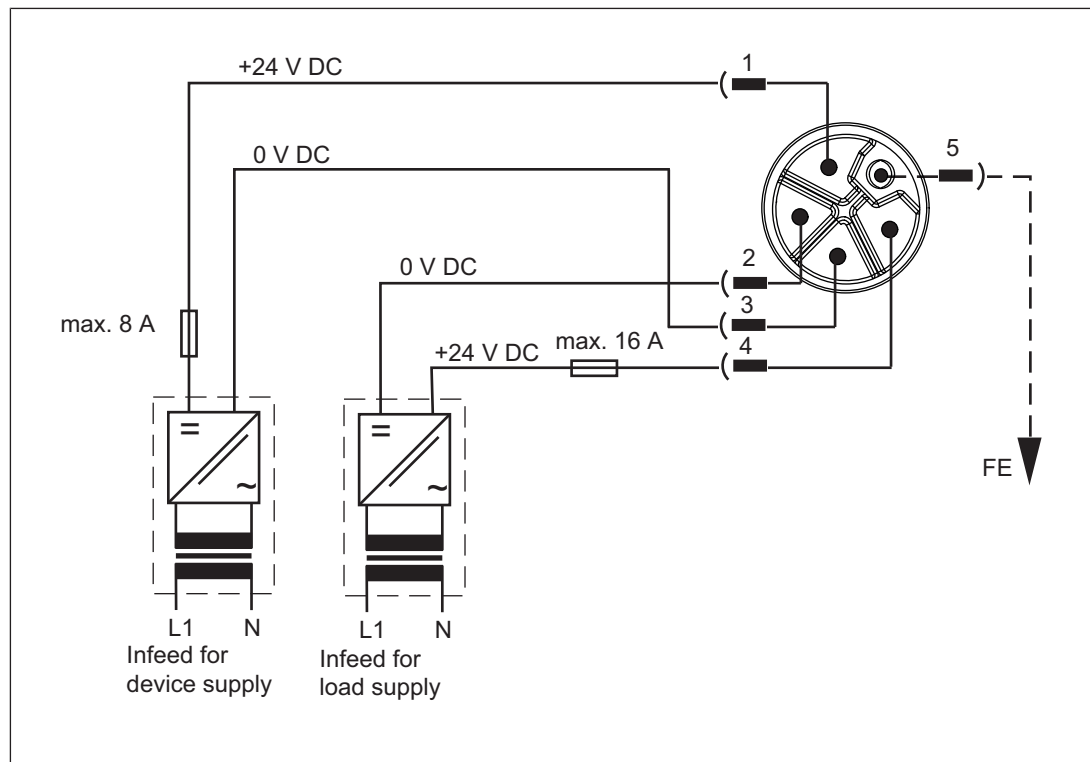


Fig.: Separate power supplies for device supply and load supply

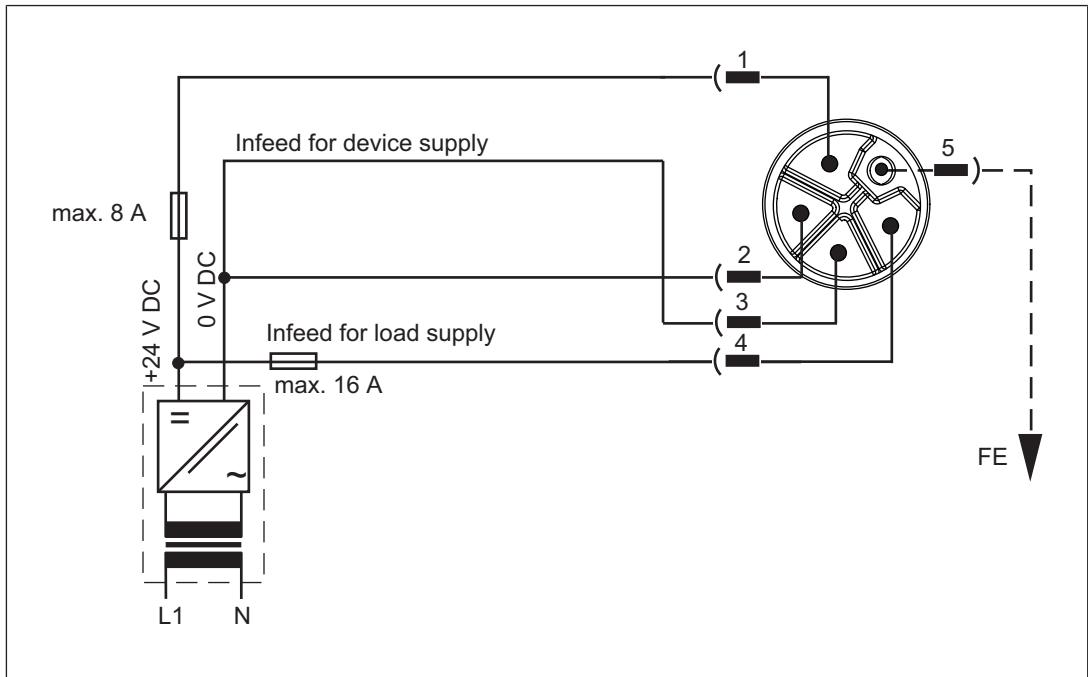
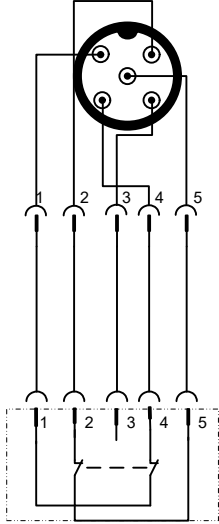


Fig.: Common power supply for device supply and load supply

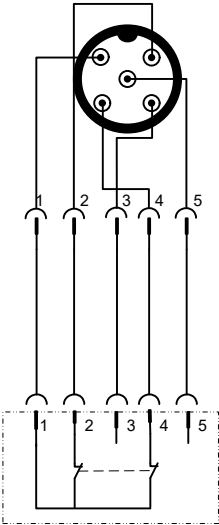
## 6.4 Wiring examples

### 6.4.1 Dual-channel homogeneous safety switch with separate test pulse

Features	Connection example, PILZ safety switch
<ul style="list-style-type: none"> <li>▶ 2-channel safety switch</li> <li>▶ Homogeneous (equivalent)</li> <li>▶ Separate test pulse:</li> <li>▶ Test pulse assignment in PAS4000:                             <ul style="list-style-type: none"> <li>– I0: T1</li> <li>– I1: T0</li> </ul> </li> <li>▶ Pin assignment:                             <ul style="list-style-type: none"> <li>– 1: T0</li> <li>– 2: I1</li> <li>– 3: 0 V</li> <li>– 4: I0</li> <li>– 5: T1</li> </ul> </li> </ul>	

Features	Connection example, AIDA wiring
<ul style="list-style-type: none"> <li>▶ 2-channel safety switch</li> <li>▶ Homogeneous (equivalent)</li> <li>▶ Separate test pulse:</li> <li>▶ Test pulse assignment in PAS4000:                             <ul style="list-style-type: none"> <li>– I0: T0</li> <li>– I1: T1</li> </ul> </li> <li>▶ Pin assignment:                             <ul style="list-style-type: none"> <li>– 1: T0</li> <li>– 2: I1</li> <li>– 3: 0 V</li> <li>– 4: I0</li> <li>– 5: T1</li> </ul> </li> </ul>	

### 6.4.2 Dual-channel homogeneous safety switch with common test pulse

Features	Connection example, AIDA wiring
<ul style="list-style-type: none"> <li>▶ 2-channel safety switch</li> <li>▶ Homogeneous (equivalent)</li> <li>▶ Common test pulse:</li> <li>▶ Test pulse assignment in PAS4000:                             <ul style="list-style-type: none"> <li>– I0:T0</li> <li>– I1: T0</li> </ul> </li> <li>▶ Pin assignment:                             <ul style="list-style-type: none"> <li>– 1: T0</li> <li>– 2: I1</li> <li>– 3: 0 V</li> <li>– 4: I0</li> <li>– 5: T0</li> </ul> </li> </ul>	



**WARNING!**

Short circuits between the cable from the test pulse to the sensor and the cable from the sensor to the input or between cables to various sensors will not be detected. Depending on the application, serious injury or death may result.

Avoid short circuits through

- 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

### 6.4.3 Electronic safety switch with OSSD outputs

Features	Connection example, AIDA sensor
<ul style="list-style-type: none"> <li>▶ Safety switch with OSSD outputs</li> <li>▶ Homogeneous (equivalent)</li> <li>▶ Failsafe</li> <li>▶ Test pulse switched off in PAS4000:               <ul style="list-style-type: none"> <li>– I0: 24 V</li> <li>– I1: 24 V</li> </ul> </li> <li>▶ Pin assignment:               <ul style="list-style-type: none"> <li>– 1: 24 V</li> <li>– 2: I1</li> <li>– 3: 0 V</li> <li>– 4: I0</li> <li>– 5: 24 V</li> </ul> </li> </ul>	



## 7 Operation

### 7.1 Messages

The PSS67 device provides many options for diagnostics, fault detection and communication with other control systems.




Diagnostics for the PSS67 device can be run via the

- ▶ LEDs on the head module,
- ▶ Diagnostic list and diagnostic log.


All errors and faults are signalled to the head module and are entered in the diagnostic list and diagnostic log. You can read the head module's diagnostic list and diagnostic log, e.g. using the PAS4000 or the combination of OPC Server and PSS 4000 Diag Control.

### 7.2 Display elements

#### Legend

-  LED on
-  LED flashes
-  LED off

#### 7.2.1 I0 ... I3 (X01 ... X08)

Colour	State	Meaning
---	●	0 signal is present
Green		1 signal is present





## 7.2.2 DIAG

The "DIAG" LED indicates whether there is a fault on a system section of the PSS67 device. Precise evaluation can be made via the diagnostic list.

Colour	State	Meaning
- - -	●	No system section is started, device supply is missing.
Green	☀	No message of "Error" or "Warning" severity is present for the device.
	☀	Device diagnostic list and device diagnostic log are being prepared
Red	☀	A message of "Error" severity is present for at least one system section (see diagnostic list).
	☀	A major FS error is present for at least one FS system section (see diagnostic list).
Orange	☀	A message of at least "Warning" severity is present for the device (see diagnostic list).
Red - green	☀	Start of "deliberate operator action" (function of reset button)







### 7.2.3 FS SNp

The "FS SNp" LED indicates the status of the safety-related system section FS-SafetyNET p RTFN.

Colour	Status	Meaning
- - -	●	System section FS SafetyNET p RTFN has not been started
Green		Operating state "FS SafetyNET p RTFN in RUN condition without error"
		Operating status "FS SafetyNET p RTFN in RUN condition with minor error"
Red		Operating state "FS SafetyNET p RTFN in STOP condition with error: Major FS error"
		Operating state "FS SafetyNET p RTFN in STOP condition with error: Major FS+ST error"


## 7.2.4 SD CARD

The LED "SD CARD" shows the status of the removable data medium and is used for device identification.

Colour	State	Meaning
- - -	●	Supply voltage for device supply is missing
Red		SD card is missing or SD card not recognised or SD card defective
		<ul style="list-style-type: none"> <li>▶ "Bind device projects to devices" function: The device project needs a device with a certain device key, but this device key does not exist on the device.</li> </ul> and/or <ul style="list-style-type: none"> <li>▶ "Bind device projects to SD cards" function: The device project is bound to an SD card, but this SD card is not inserted in the device.</li> </ul>
Green		Naming data and device project on the PSSu system and SD card match
		Product type on the SD card does not match the head module or No device project on the SD card
Green-red		Naming data and device project on the PSSu system and SD card do not match
Orange		Device identification activated by user


## 7.2.5 LNK, TRF (X21, X22)

### LNK

Colour	State	Meaning
----	●	No network connection
Green		Network connection is error-free

The designation "LNK" stands for "LINK".


### TRF

Colour	State	Meaning
----	●	No data traffic
Yellow		Data traffic is error-free


The designation "TRF" stands for "TRAFFIC".

## 7.2.6 5V, 24V (X31, X32)

The "5 V" LED shows the status of the device supply.

Colour	State	Meaning
---	●	No supply voltage for device supply or supply voltage is faulty
Green		Device supply connected

The "24 V" LED shows the status of the load supply.

Colour	State	Meaning
---	●	No supply voltage for load supply or supply voltage is faulty
Green		Load supply connected

## 8 Technical details

<b>General</b>	
Approvals	TÜV
Application range	Failsafe
Module's device code	0A00h
<b>System sections</b>	
ST resource	No
FS resource	No
ST module bus	No
FS module bus	yes
ST SNp interface	No
FS SNp interface	yes
PROFINET IO DEVICE	No
IP connections	No
EtherNet/IP adapter	No
Diagnostic Server	No
OPC Server	No
<b>Programming</b>	
IEC 61131 programming	No
Multi programming	No
Non-volatile variables	No
<b>Electrical data</b>	
Supply voltage	
for	<b>Device supply</b>
Voltage	24 V
Kind	DC
Voltage tolerance	-20 %/+25 %
Output of external power supply (DC)	4,9 W
Supply voltage	
for	<b>Load Supply</b>
Voltage	24 V
Kind	DC
Voltage tolerance	-20 %/+25 %
Output of external power supply (DC)	0,2 W
<b>CPU</b>	
Real-time clock for time and date functions	
Resolution	1 s
Deviation	+/- 10s/day
Buffer time	10 days
Working memory (RAM)	128 MB
<b>Removable data medium</b>	
Type	microSD

<b>Inputs</b>	
Number	<b>16</b>
Voltage at inputs	<b>24 V DC</b>
Input current range	<b>2,4 - 3,1 mA</b>
Min. threshold voltage when signal changes from "1" to "0"	<b>8,2 V</b>
Max. threshold voltage when signal changes from "0" to "1"	<b>10 V</b>
Max. processing time of input when signal changes from "1" to "0"	<b>1 ms</b>
Max. processing time of input when signal changes from "0" to "1"	<b>1 ms</b>
Min. processing time of input when signal changes from "1" to "0"	<b>0,5 ms</b>
Min. processing time of input when signal changes from "0" to "1"	<b>0,5 ms</b>
Potential isolation between input and internal module bus voltage	<b>No</b>
<b>Test pulse outputs</b>	
Number of test pulse outputs	<b>16</b>
Voltage, test pulse outputs	<b>24 V DC</b>
Short circuit-proof	<b>yes</b>
Number of outputs that can be configured as test pulses	<b>16</b>
Max. output current at "1" signal	<b>0,25 A</b>
Max. cable length between test pulse output and input	<b>200 m</b>
<b>SafetyNET p interface</b>	
Number	<b>2</b>
IP address (automatically off)	<b>169.254.X.Y</b>
Connection	<b>M12</b>
Transmission rates	<b>100 MBit/s</b>
Set via	<b>Automatic</b>
Max. number of FS-Tx and FS-Rx connections	<b>64</b>
Cycle time (t <sub>SNp</sub> RTFN)	<b>2 ... 60 000 ms</b>
Max. number of variables with elementary FS data types	<b>4000</b>
<b>Environmental data</b>	
Climatic suitability	<b>EN 60068-2-1, EN 60068-2-14, EN 60068-2-2, EN 60068-2-78</b>
Ambient temperature	
In accordance with the standard	<b>EN 60068-2-14</b>
Temperature range	<b>0 - 60 °C</b>
Storage temperature	
In accordance with the standard	<b>EN 60068-2-1/-2</b>
Temperature range	<b>0 - 60 °C</b>
Condensation during operation	<b>Permitted</b>

<b>Environmental data</b>	
EMC	<b>EN 61131-2 (Zone B)</b>
Vibration	
In accordance with the standard	<b>EN 60068-2-6</b>
Frequency	<b>8,4 - 150 Hz</b>
Acceleration	<b>10 m/s<sup>2</sup></b>
Shock stress	
In accordance with the standard	<b>EN 60068-2-27</b>
Number of shocks	<b>3</b>
Acceleration	<b>150 m/s<sup>2</sup></b>
Duration	<b>11 ms</b>
In accordance with the standard	<b>EN 60068-2-27</b>
Airgap creepage	
In accordance with the standard	<b>EN 61131-2</b>
Overvoltage category	<b>II</b>
Pollution degree	<b>3</b>
Protection type	
In accordance with the standard	<b>EN 60529</b>
Housing	<b>IP67</b>
<b>Potential isolation</b>	
Potential isolation between	<b>Load supply and device supply</b>
Type of potential isolation	<b>Functional insulation</b>
Rated surge voltage	<b>1000 V</b>
Potential isolation between	<b>SafetyNET p and device supply</b>
Type of potential isolation	<b>Functional insulation</b>
Rated surge voltage	<b>1000 V</b>
<b>Mechanical data</b>	
Connection type	<b>M12</b>
Mounting type	<b>screw interlocked</b>
Dimensions	
Height	<b>260 mm</b>
Width	<b>61,5 mm</b>
Depth	<b>52 mm</b>
Weight	<b>940 g</b>

Where standards are undated, the 09-2016 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 62061 SIL CL	EN 62061 PFH <sub>D</sub> [1/h]	EN ISO 13849-1: 2015 T <sub>M</sub> [year]
<b>Logic</b>						
Logic	2-channel	PL e	Cat. 4	SIL CL 3	6,06E-10	20
Logic	2-channel	PL e	Cat. 4	SIL CL 3	6,06E-10	20
<b>Input</b>						
Digital inputs	1-channel	PL d	Cat. 2	SIL CL 2	1,18E-09	20
Digital inputs	2-channel	PL e	Cat. 4	SIL CL 3	9,75E-11	20
Digital inputs	2-ch. pulsed	PL e	Cat. 4	SIL CL 3	7,75E-11	20
Digital inputs	1-ch., pulsed light barrier	PL e	Cat. 4	SIL CL 3	1,85E-10	20

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 Product

Product type	Features	Order no.
PSS67 IO1 16FDI	Compact PSSu system with IP67	316 010

### 9.2 Accessories

#### microSD card

Product type	Features	Order no.
µSD Card 512MB industrial	512MB microSD memory card for PSSu head modules	328 835

#### SafetyNET p

Product type	Features	Order no.
SafetyNET p Cable	SafetyNET p cable, standard, 4-core, sold by the metre, minimum purchase 10 m	380 000
M12 con., straight, male, 4-pin, D	Connector, M12, 4-pin, D-coded	380 316
SafetyNET p Connector RJ45s	SafetyNET p connector RJ45 straight IP20	380 400
Stripping tool	Assembly tool for SafetyNET p cable	380 070

#### Supply voltage

Product type	Features	Order no.
Supply cable 5x1.5	Voltage cable 5x1.5mm <sup>2</sup> , sold by the metre, minimum purchase 10 m	380 327
Supply cable 5x0.5	Voltage cable 5x0.5mm <sup>2</sup> , sold by the metre, minimum purchase 10 m	380 321
M12 con., straight, female, 5 pin, L, S	Socket, M12, 5-pin, L-coded	380 317
M12 con., straight, male, 5 pin, L, S	Connector, M12, 5-pin, L-coded	380 318
Crimping Tool	Crimping tool for crimping machined contacts. Suitable for cross-sections of 0.08 - 2.5 mm <sup>2</sup>	380 071

**Sensors**

Product type	Features		Order no.
PSS67 I/O Cable	Cable, PUR, unshielded, yellow, 5-core	1 - 30 m	380 320
PSS67 Cable M12sf M12sm	Cable, straight M12 socket, straight M12 connector, 5-pin	3 m	380 208
PSS67 Cable M12sf M12sm	Cable, straight M12 socket, straight M12 connector, 5-pin	5 m	380 209
PSS67 Cable M12sf M12sm	Cable, straight M12 socket, straight M12 connector, 5-pin	10 m	380 210
PSS67 Cable M12sf M12sm	Cable, straight M12 socket, straight M12 connector, 5-pin	30 m	380 211
PSS67 Cable M12af M12am	Cable, angled M12 socket, angled M12 connector, 5-pin	3 m	380 212
PSS67 Cable M12af M12am	Cable, angled M12 socket, angled M12 connector, 5-pin	5 m	380 213
PSS67 Cable M12af M12am	Cable, angled M12 socket, angled M12 connector, 5-pin	10 m	380 214
PSS67 Cable M12af M12am	Cable, angled M12 socket, angled M12 connector, 5-pin	30 m	380 215
PSS67 M12 connector, straight, male, 5pole	Connector, M12, straight, 5-pin, A-coded		380 308
PSS67 M12 connector, straight, female, 5pole	Socket, M12, straight, 5-pin, A-coded		380 309
PSS67 M12 connector, angled, male, 5pole	Connector, M12, angled, 5-pin, A-coded		380 310
PSS67 M12 connector, angled, female, 5pole	Socket, M12, angled, 5-pin, A-coded		380 311
PSEN ma adapter	Adapter for connection to safety switch PSENmag		380 300
PSEN cs adapter	Adapter for connection to safety switch PSENcode		380 301

**Plug**

Product type	Features	Order no.
Caps for IP67 modules	Protective caps for M12 sockets (4 pieces)	380 324
PSS67 Cap 7/8"	End cap for the microSD card and reset button	316 011

# ► Support

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