OPERATING INSTRUCTION

# WI180C-PN

## WI180C-PN PROFINET coupler

SICK
Sensor Intelligence.

### Described product

WI180C-PN

### Manufacturer

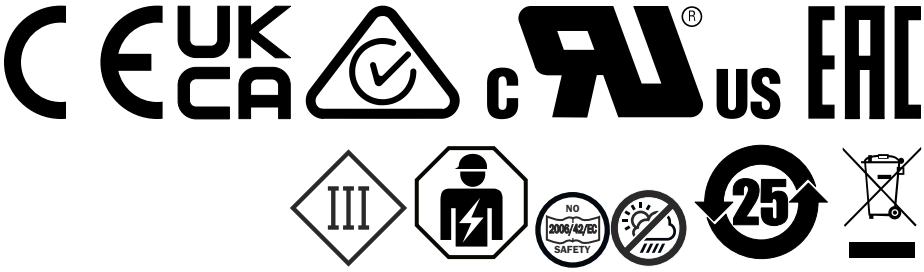
SICK AG
Erwin-Sick-Str. 1
79183 Waldkirch
Germany

### Legal information



### Original document

This document is an original document of SICK AG.



# Contents

# 1 About this document

## 1.1 Information on the operating instructions

Read these operating instructions carefully before starting any work in order to familiarize yourself with the product and its functions.

The operating instructions are an integral part of the product and should remain accessible to the personnel at all times. When handing this product over to a third party, include these operating instructions.

These operating instructions do not provide information on the handling and safe operation of the machine or system in which the product is integrated. Information on this can be found in the operating instructions for the machine or system.

## 1.2 Further information

You can find the product page with further information via the SICK Product ID:
pid.sick.com/{P/N}/{S/N}
(see "Product identification via the SICK product ID", page 8).

**The following information is available depending on the product:**

- This document in all available language versions
- Data sheets
- Other publications
- CAD files and dimensional drawings
- Certificates (e.g., declaration of conformity)
- Software
- Accessories

## 1.3 Symbols and document conventions

**Warnings and other notes**

**DANGER**
Indicates a situation presenting imminent danger, which will lead to death or serious injuries if not prevented.

**WARNING**
Indicates a situation presenting possible danger, which may lead to death or serious injuries if not prevented.

**CAUTION**
Indicates a situation presenting possible danger, which may lead to moderate or minor injuries if not prevented.

**NOTICE**
Indicates a situation presenting possible danger, which may lead to property damage if not prevented.

**NOTE**
Highlights useful tips and recommendations as well as information for efficient and trouble-free operation.

### Instructions to action

► The arrow denotes instructions to action.

1. The sequence of instructions is numbered.
2. Follow the order in which the numbered instructions are given.

✓ The tick denotes the results of an action.

# 2 Safety information

## 2.1 General safety notes

- The mounting, electrical installation and configuration of the device must be carried out by professionally qualified personnel only.
- Before mounting, it is imperative that you familiarize yourself with the operating instructions for the connected devices.
- When mounting and electrical installation work is being carried out, always comply with applicable health and safety and environmental regulations.
- The device must not be used outdoors or in areas with flammable/explosive atmospheres!
- When installing the device, always consider the electrical connected loads.
- Replace faulty or damaged cables and male connectors immediately.
- Replace damaged or faulty couplers immediately.
- When mounting the device, it is imperative that you use suitable mounting equipment and that you consider their specific requirements.
- Ensure a constant power supply to the device within the set parameters.
- Only operate the device within the set operating parameters.
- Regularly check that the device is functioning properly.
- Structural modifications to the device are not permitted.
- The device is not designed as a safety product.
- This device complies with the Radio Safety Requirements (EMC) for the industrial sector (Radio Safety Class A). It may cause radio interference if used in a residential area.

## 2.2 Correct use

Correct use requires that the device is used industrially indoors without any specific climatic and atmospheric requirements. Any use outside of the areas mentioned in each case will be considered to be incorrect use and void any warranty claims against SICK AG.

## 2.3 Forseeable misuse

Not taking account of the pin assignment or using an incorrect adapter cable may damage or destroy the connected PROFINET coupler.

Connecting the PROFINET coupler to signal or power cables that are too long may lead to a loss of data and damage to the PROFINET coupler.

# 3 Product description

## 3.1 Product identification via the SICK product ID

### SICK product ID

The SICK product ID uniquely identifies the product. It also serves as the address of the web page with information on the product.

The SICK product ID comprises the host name pid.sick.com, the part number (P/N), and the serial number (S/N), each separated by a forward slash.

The SICK product ID is displayed as text and QR code on the type label and/or on the packaging.


*Figure 1: SICK product ID*

## 3.2 Product information

*Table 1: Product information*

| | |
|---|---|
| **Product name** | WI180C-PN |
| **Article number** | 6068088 |
| **Device version** | PROFINET |
| **Manufacturer** | SICK AG |

## 3.3 Product characteristics

The device is an interface coupler, which can be used to connect connected devices (e.g. WLL180) to a PROFINET IO network. The relevant devices are connected via a simple plug system on the side of the coupler.

Usually, the entire system is mounted on a mounting rail close to the application.

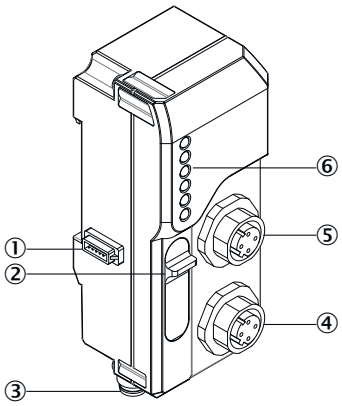
The coupler supports up to 16 connected devices, which are likewise connected to one another via the plug system.

Further properties:

- PROFINET IO device
- Option to communicate via function block (e.g. Siemens SFB52 or SFB53)
- 2 Ethernet ports with transmission speed of 10 or 100 MBaud

Further specifications can be found in the technical data (see "Technical data", page 32).

## 3.4 Setup and function




① Bus male connector (system bus)
② Service port
③ Power supply connection (M8), 4-pin
④ D-coded M12 connector, 4-pin, PROFINET / Ethernet
⑤ D-coded M12 connector, 4-pin, PROFINET / Ethernet
⑥ Status LEDs

## 3.5 Interfaces

### 3.5.1 PROFINET

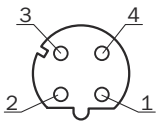



*Table 2: PROFINET pin assignment*

| Pin | Pin assignment |
|---|---|
| 1 | Tx+ |
| 2 | Rx+ |
| 3 | Tx- |
| 4 | Rx- |

### 3.5.2 Power supply

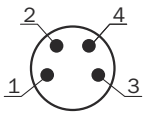



*Table 3: Power supply pin assignment*

| Pin | Pin assignment |
|---|---|
| 1 | +12 – 24 VDC |
| 2 | Not assigned |
| 3 | GND |
| 4 | Not assigned |

### 3.5.2.1 UL Satisfaction Ratings

The total control output current and ambient temperature will be retricted as follows depends on the number of sensors (proximity switch) connected to the programmable controller.

**Up to 3 units:**

| **Input** | **12 - 24 V dc, max. 1.02 A, Class 2** |
|---|---|
| Output | 12 - 24 V dc, max. 0.45 A, Class 2 |
| Maximum surround air Temperature +55 °C. | |

**Up to 8 units:**

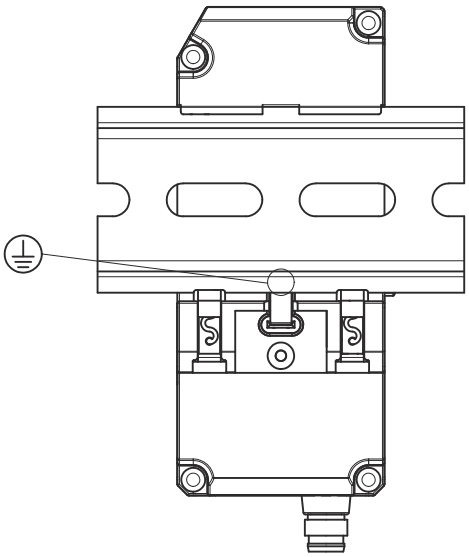
| **Input** | **12 - 24 V dc, max. 1.02 A, Class 2** |
|---|---|
| Output | 12 - 24 V dc, max. 0.8 A, Class 2 |
| Maximum surround air Temperature +50 °C. | |

**Up to 16 units:**

| **Input** | **12 - 24 V dc, max. 1.02 A, Class 2** |
|---|---|
| Output | 12 - 24 V dc, max. 0.8 A, Class 2 |
| Maximum surround air Temperature +45 °C. | |

### 3.5.3 Grounding

The device is grounded via the mounting rail by means of a spring contact:



# 4 Transport and storage

## 4.1 Transport

Either transport the device in the original packaging or use a padded transport container. Make sure that you comply with the maximum permitted environmental conditions (see "Technical data", page 32).

## 4.2 Storage

If you want to store the devicefor a relatively long time, pack it as you would for transport. Make sure that the storage location complies with the permitted environmental conditions (see "Technical data", page 32).

# 5 Mounting

## 5.1 Required materials

You need the following additional materials to mount the device:

- grounded mounting rail (pre-mounted)
- pre-assembled cable (max. 30 m) with M8 female connector (see "Interfaces", page 9)
- pre-assembled cable for PROFINET with M12 D-coded male connector (see "Interfaces", page 9)
- one or more signal sources (e.g. WLL180T)
- small slotted screwdriver

## 5.2 Preparing mounting location

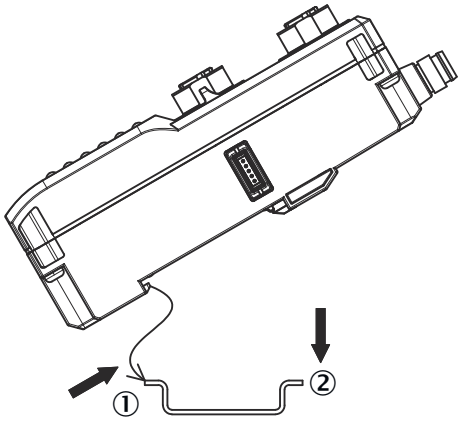
1. Mount a grounded mounting rail in the same area as the application.
2. Lay the two pre-assembled cables so that they can easily be connected to the connections of the device. If necessary, use cable channels, cable ties and cable grips.

## 5.3 Scope of delivery

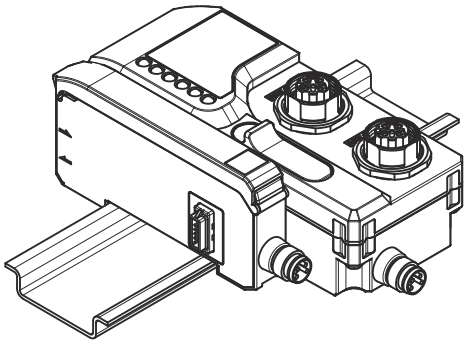
- WI180C-PN
- Quick start instructions

## 5.4 Mounting procedure

1. Carefully unpack the device.




2. Clamp the device onto the mounting rail, as shown in the image.
3. Clamp the series-connected devices onto the mounting rail as shown in their mounting instructions.



4. Push the series-connected devices onto the 5-pin connection on the left side of the device. Make sure that the sequence is correct.[1)]
5. Fix the connected devices on the mounting rail without any spaces.

## 5.5 Connecting the device

**NOTE**
Switch the power supply off before you connect or replace the devices.

1. Connect[2)] the male M12 D-coded connector for the PROFINET network to the PROFINET connection on the device and secure it using the sleeve nut.
2. Connect the female M8 connector on the power supply to the underside of the device and screw the male connector tight.

1) see the operating instructions for the relevant device
2) AOD1 devices on left side of WI180C-PN. WLL180T devices on left side of AOD.

# 6 Commissioning

## 6.1 Configuration

The device is configured with appropriate PLC/PROFINET tools. This includes addressing and module selection.

1. Call up your PLC/PROFINET engineering tool.
2. Download the current GSD file for the device from www.sick.com.
3. Install the GSD file in your engineering tool.

## 6.2 Switching on

1. Switch on the power supply for the device.
2. Wait approximately two seconds until the device indicates that it is ready, see "LED status indicators", page 15.

# 7 Operation

## 7.1 Safety

A few guidelines must be followed to ensure the operational safety of the device:

- Carry out a daily functional check (see "Daily thorough check", page 15).
- If you want to connect devices to the device or remove devices, switch off the power supply first.
- Only operate the device under the specified operating conditions (see "Technical data", page 32).

## 7.2 Daily thorough check

You should carry out the following functional checks once a day:

- Check the function of the LED indicators.
- Use appropriate status queries to check communication with each of the connected devices.

## 7.3 LED status indicators

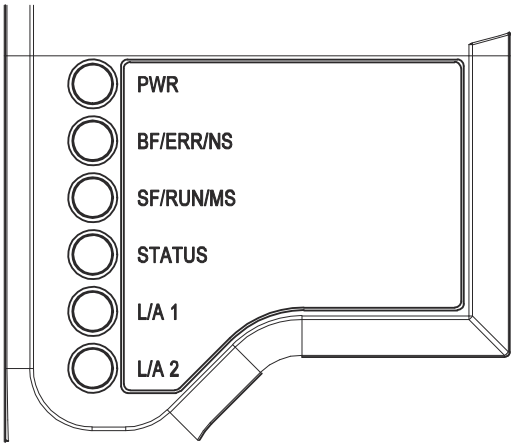



*Table 4: LED status indicators*

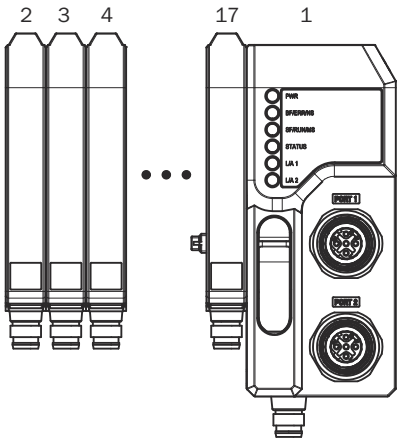
| LED | Indication | Meaning |
|---|---|---|
| PWR | green | Power on |
| | dark | Power off |
| BF (Bus fault) | dark | PROFINET connection ok |
| | red | Device offline from PROFINET |
| | red blinking | PROFINET communication start-up or invalid configuration |
| SF (System fault) | dark | PROFINET connection ok |
| | red | System fault of the device |
| STATUS | dark | Device not configured |
| | green | Device running |
| L/A1 (Link/Activity 1) | dark | No network connection on port 1 |
| | green | Network connected on port 1 |
| L/A2 (Link/Activity 2) | dark | No network connection on port 2 |
| | green | Network connected on port 2 |

## 7.4 Device slots and modules

The device is structured in different slots.

Slot 1 represents the PROFINET coupler.

Slots 2 to 17 represent the connected devices as shown in the following figure.




WI180C-PN supports up to 16 device modules. The following products are supported:

*Table 5: Supported products*

| Supported products | Product description | Note |
|---|---|---|
| WLL180T-L*<br>WLL180T-M* | Fiber amplifier base unit | • WLL180T base unit can only be placed as module #1 (left-most on DIN rail)<br>• No extra power supply to WLL180T device required |
| WLL180T-E*<br>WLL180T-F* | Fiber amplifier expansion unit | • WLL180T expansion unit can only be placed as module #2 ... #16<br>• No extra power supply to WLL180T device required |
| WLL80 | Fiber amplifier base unit & expansion unit | • WLL80 base unit can only be placed as module #1 (left-most on DIN rail)<br>• WLL80 expansion unit can only be placed as module #2 ... #16<br>• No extra power supply to WLL80 device required |
| OD1 on one input of AOD1-M | Displacement sensor evaluation base unit | • For each AOD1 unit plugged, the total number of pluggable modules decreases by one (max. 8 AOD1 units possible)<br>• If AOD1 and WLL180T are used in combination with WI180C-PN, all WLL180T devices must be placed left from the AOD1<br>• AOD1-M base unit can only be placed as Module #1/2 (left-most on DIN rail)<br>• Power supply to AOD1-M device required |
| OL1 on one input of AOD1-M | Displacement sensor evaluation base unit | |

| Supported products | Product description | Note |
|---|---|---|
| OD1 on one input of AOD1-S | Displacement sensor evaluation expansion unit | • For each AOD1 unit plugged, the total number of pluggable modules decreases by one (max. 8 AOD1 units possible)<br>• If AOD1 and WLL180T are used in combination with WI180C-PN, all WLL180T devices must be placed left from the AOD1<br>• AOD1-S expansion unit can only be placed as module #3/4 ... #15/16<br>• Power supply to AOD1-S device required |
| OL1 on one input of AOD1-S | Displacement sensor evaluation expansion unit | |
| KTL180-ML*<br>KTL180-MM* | Fiber contrast sensor base unit | • KTL180 base unit can only be placed as module #1 (left-most on DIN rail)<br>• No extra power supply to KTL180 device required |
| KTL180-ME*<br>KTL180-MF* | Fiber contrast sensor expansion unit | • KTL180 expansion unit can only be placed as module #2 ... #16<br>• No extra power supply to KTL180 device required |

## 7.5 Cyclic communication via PROFINET IO

The following modules are supported by WI180C-PN:

*Table 6: Supported modules*

| Module | Module Ident No | Applicable slot | Data direction | Byte address | Function |
|---|---|---|---|---|---|
| 1 | 0x0101 | 1 | Input and Output | In 0 ... 7<br>Out 0 ... 3 | All binary module inputs and outputs; with global configuration settings |
| 2 | 0x0102 | 1 (default mode) | Input and Output | In 0 ... 7<br>Out 0 ... 3 | All binary module inputs and outputs; without global configuration settings |
| 3 | 0x0103 | 1 | Input | 0 ... 1 | Q1 signals of all modules |
| 4 | 0x0104 | 2 ... 17 | Input | 0 ... 1 | WLL180T fiber amplifier reception signal |
| 5 | 0x0105 | 2 ... 17 | Input | 0 ... 1 | Output value of AOD1 evaluation value (OD1 displacement sensor measurement value or AOD1 calculated value) |
| 6 | 0x0106 | 2 ... 17 | Input | 0 ... 1 | Output value of AOD1 evaluation value (OL1 line sensor measurement value or AOD1 calculated value) |

| Module | Module Ident No | Applicable slot | Data direction | Byte address | Function |
|---|---|---|---|---|---|
| 7 | 0x0107 | 2 ... 17 | Input | 0 ... 1 | KTL180 fiber contrast sensor reception signal |

## 7.6 IO Data

The device supports the following IO data:

*Table 7: Supported IO data*

| | | | Module # | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Slot number** | | **Device allocation** | **Byte address** | **7** | **6** | **5** | **4** | **3** | **2** | **1** | **0** | **7** | **6** | **5** | **4** | **3** | **2** | **1** | **0** | **Device function** |
| Input | 1 | WI180C-PN | 0 | | | | | | | | | x | x | x | x | x | x | x | x | Value of Channel 1 (Q1 or Go) |
| | | | 1 | x | x | x | x | x | x | x | x | | | | | | | | | |
| | | | 2 | | | | | | | | | x | x | x | x | x | x | x | x | Value of Channel 2 (Q2 or Lo) |
| | | | 3 | x | x | x | x | x | x | x | x | | | | | | | | | |
| | | | 4 | | | | | | | | | x | x | x | x | x | x | x | x | Value of Channel 3 (Ext.In or Hi) |
| | | | 5 | x | x | x | x | x | x | x | x | | | | | | | | | |
| | | | 6 | | | | | | | | | x | x | x | x | x | x | x | x | Error Indication |
| | | | 7 | x | x | x | x | x | x | x | x | | | | | | | | | |
| Output | | | 0 | | | | | | | | | x | x | x | x | x | x | x | x | Teach command |
| | | | 1 | x | x | x | x | x | x | x | x | | | | | | | | | |
| | | | 2 | | | | | | | | | x | x | x | x | x | x | x | x | Error clear |
| | | | 3 | x | x | x | x | x | x | x | x | | | | | | | | | |
| Input | 2 | Depending on module | 0 | Unsigned 16 bit value | | | | | | | | | | | | | | | | Measurement value |
| | | | 1 | | | | | | | | | | | | | | | | | |
| Input | 3 | Depending on module | 0 | Unsigned 16 bit value | | | | | | | | | | | | | | | | Measurement value |
| | | | 1 | | | | | | | | | | | | | | | | | |
| Input | 4 | Depending on module | 0 | Unsigned 16 bit value | | | | | | | | | | | | | | | | Measurement value |
| | | | 1 | | | | | | | | | | | | | | | | | |
| Input | 5 | Depending on module | 0 | Unsigned 16 bit value | | | | | | | | | | | | | | | | Measurement value |
| | | | 1 | | | | | | | | | | | | | | | | | |
| Input | 6 | Depending on module | 0 | Unsigned 16 bit value | | | | | | | | | | | | | | | | Measurement value |
| | | | 1 | | | | | | | | | | | | | | | | | |
| Input | 7 | Depending on module | 0 | Unsigned 16 bit value | | | | | | | | | | | | | | | | Measurement value |
| | | | 1 | | | | | | | | | | | | | | | | | |
| Input | 8 | Depending on module | 0 | Unsigned 16 bit value | | | | | | | | | | | | | | | | Measurement value |
| | | | 1 | | | | | | | | | | | | | | | | | |
| Input | 9 | Depending on module | 0 | Unsigned 16 bit value | | | | | | | | | | | | | | | | Measurement value |
| | | | 1 | | | | | | | | | | | | | | | | | |
| Input | 10 | Depending on module | 0 | Unsigned 16 bit value | | | | | | | | | | | | | | | | Measurement value |
| | | | 1 | | | | | | | | | | | | | | | | | |
| Input | 11 | Depending on module | 0 | Unsigned 16 bit value | | | | | | | | | | | | | | | | Measurement value |
| | | | 1 | | | | | | | | | | | | | | | | | |
| Input | 12 | Depending on module | 0 | Unsigned 16 bit value | | | | | | | | | | | | | | | | Measurement value |
| | | | 1 | | | | | | | | | | | | | | | | | |
| Input | 13 | Depending on module | 0 | Unsigned 16 bit value | | | | | | | | | | | | | | | | Measurement value |
| | | | 1 | | | | | | | | | | | | | | | | | |
| Input | 14 | Depending on module | 0 | Unsigned 16 bit value | | | | | | | | | | | | | | | | Measurement value |
| | | | 1 | | | | | | | | | | | | | | | | | |
| Input | 15 | Depending on module | 0 | Unsigned 16 bit value | | | | | | | | | | | | | | | | Measurement value |
| | | | 1 | | | | | | | | | | | | | | | | | |

| | | | Module # | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Slot number** | | **Device allocation** | **Byte address** | **7** | **6** | **5** | **4** | **3** | **2** | **1** | **0** | **7** | **6** | **5** | **4** | **3** | **2** | **1** | **0** | **Device function** |
| Input | 16 | Depending on module | 0 | Unsigned 16 bit value | | | | | | | | | | | | | | | | Measurement value |
| | | | 1 | | | | | | | | | | | | | | | | | |
| Input | 17 | Depending on module | 0 | Unsigned 16 bit value | | | | | | | | | | | | | | | | Measurement value |
| | | | 1 | | | | | | | | | | | | | | | | | |

## 7.7 Acyclic communication via PROFINET IO

Function blocks are used for communicating with record data of the connected devices.

**Examples:**

**Standard function blocks:**

- Read SFB52 RDREC dataset
- Write SFB52 WRREC dataset

## 7.8 Startup record

The start-up record is only applicable to WI180C-PN head module when using module 1 (module ident no 0x0101) in slot 1.

*Table 8: Startup record*

| Index No. | Function | Further description | R/W | Length (bytes) | Contents/Meaning |
|---|---|---|---|---|---|
| 0x0000 | Global configuration | Byte 0 - record major version number (read-only)<br>Byte 1 - record minor version number (read-only)<br>Byte 2/3 - global configuration settings<br>b1 - global diagnostics disa-ble/enable | R/W | 4 | Version number: 1.0 (0x01 0x00)<br>Global diagnostics:<br>0: disable<br>1: enable (default) |

## 7.9 Record data

**NOTE**

Each module has 256 unique record addresses.

- Slot 1 - Gateway - Records 0x2000 ... 0x20FF
- Slot 2 - Sensor #1 (left-most) - Records 0x2100 ... 0x21FF
- Slot 3 - Sensor #2 - Records 0x2200 ... 0x22FF
- ...
- Slot 17 - Sensor #16 - Records 0x3000 ... 0x30FF

The device supports the following records:

*Table 9: Record data*

| Index No. | Function | Further description | R/W | Length (bytes) | Contents/Meaning |
|---|---|---|---|---|---|
| **Module WI180C** | | | | | |
| 0x2000 | Products series | b15-12 Manufacturer<br>b11-8 Categories<br>b7-0 Family | R | 2 | 0x1505<br>1: SICK<br>5: Communication unit<br>5: WI180C-PN |
| 0x2001 | Product type | | R | 2 | 1: WI180C-PN |

| Index No. | Function | Further description | R/W | Length (bytes) | Contents/Meaning |
|---|---|---|---|---|---|
| 0x2002 | Firmware version | | R | 2 | 1 |
| 0x2003 | Protocol version | | R | 2 | 1 |
| 0x2004 | Product revision | | R | 2 | 1 |
| 0x2005 | Vendor name | | R | 2 ... 16 | "SICK AG" |
| 0x2006 | Product name | | R | 2 ... 32 | "WI180C-PN" |
| 0x2007 | Product ID | | R | 2 ... 16 | 0x1300 |
| 0x2008 | User Tag name | | R/W | 2 ... 32 | Blank space |
| 0x2009 | Operation status | | R | 2 | 0: Idle<br>2: Run |
| 0x200A | Vendor ID | | R | 2 | 257 |
| 0x200B | Network Profile | | R | 2 ... 32 | "Profinet Coupler" |
| 0x205F | Product serial number | | R | 16 | |
| 0x2061 | Number of sensors | | R | 2 | 0 ... 16 |
| 0x2062 | Error code | | R/W | 2 | Read: last error code<br>Write any value: delete last error code |
| 0x20C8 | Firmware identifier application | | R | 4 | |
| 0x20C9 | Firmware identifier communication | | R | 2 ... 16 | |
| 0x20CA | Find me | | R/W | 2 | 0: Stop<br>1: Start |
| 0x20D4 | Factory reset | | R | 2 | 3: Execute |
| **Module WLL180T** | | | | | |
| 0xnn00 | Products series | b15-12 Manufacturer<br>b11-8 Categories<br>b7-0 Family | R | 2 | 0x1101 (1 output model)<br>0x1102 (2 outputs model)<br>1: SICK<br>1: Fiber amplifier<br>1: WLL180T 1 output<br>2: WLL180T 2 outputs |
| 0xnn01 | Product type | | R | 2 | 17: WLL180T |
| 0xnn02 | Firmware version | | R | 2 | 0x0200 or higher |
| 0xnn03 | Protocol version | | R | 2 | 1 |
| 0xnn04 | Product Revision | | R | 2 | 1 |
| 0xnn05 | Vendor name | | R | 2 ... 16 | "SICK AG" |
| 0xnn06 | Product name | | R | 2 ... 32 | Actual product type name |
| 0xnn07 | Product ID | | R | 2 ... 16 | Actual product type code |
| 0xnn08 | User Tag name | | R/W | 2 ... 32 | Blank space (default) |
| 0xnn09 | Operation Status | | R | 2 | 0: Init<br>1: Idle<br>2: Run<br>3: In operation by user |
| 0xnn62 | Error code | | R/W | 2 | Read: last error code<br>Write any value: delete last error code |

| Index No. | Function | Further description | R/W | Length (bytes) | Contents/Meaning |
|---|---|---|---|---|---|
| 0xnn64 | Display | | R/W | 2 | 0: numeric display<br>1: bar display<br>2: percent display |
| 0xnn66 | Teach-in mode | CH1 | R/W | 2 | 0: 1-Point<br>1: 2-Point<br>2: Auto<br>3: Zone<br>4: Glass |
| 0xnn67 | | CH2 | | 2 | |
| 0xnn68 | Response speed | | R/W | 2 | 0: 16 us<br>1: 70 us<br>2: 250 us<br>3: 2 ms<br>4: 8 ms |
| 0xnn69 | Sender power | | R/W | 2 | 0: Low power<br>1: Middle power<br>2: Normal |
| 0xnn6A | MF input | | R/W | 2 | 0: External teach-in<br>1: Test input<br>2: Synchronization<br>3: Counter reset<br>4: Master teach-in<br>5: No function |
| 0xnn6B | Key lock | | R/W | 2 | 0: Cancel<br>1: Full-Lock<br>2: Lock but the external teach is available |
| 0xnn6C | Operation mode | CH1 | R/W | 2 | 0: Light on<br>1: Dark on |
| 0xnn6D | | CH2 | | 2 | |
| 0xnn6E | Threshold level | CH1 Lower limit | R/W | 2 | "-999 ... 9999 Any value out of range will be replaced by the nearest valid value." |
| 0xnn6F | | CH1 Upper limit | | 2 | |
| 0xnn70 | | CH2 Lower limit | | 2 | |
| 0xnn71 | | CH2 Upper limit | | 2 | |
| 0xnn72 | Timer setting | CH1 | R/W | 2 | 0: Off delay<br>1: One shot |
| 0xnn73 | | CH2 | | 2 | |
| 0xnn74 | Off delay time | CH1 | R/W | 2 | "0 ... 9999: 0 ... 9999 ms<br>-1 ... -9: 0.1 ... 0.9 ms" |
| 0xnn75 | On delay time | CH1 | | 2 | |
| 0xnn76 | Off delay time | CH2 | | 2 | |
| 0xnn77 | On delay time | CH2 | | 2 | |
| 0xnn7B | Hysteresis | | R/W | 2 | 1 ... 40 |
| 0xnn7D | ASC | | R/W | 2 | 0: off<br>1: normal |
| 0xnn7E | Eco mode | | R/W | 2 | 0: off<br>1: energy saving display |
| 0xnn7F | Reverse display | | R/W | 2 | 0: normal<br>1: display upside-down |
| 0xnnC8 | Store zero-reset | | W | 2 | Write any value to execute Zero-reset |
| 0xnnC9 | Cancel zero-reset | | W | 2 | Write any value to execute Zero-reset |
| 0xnnCA | Teach-in 1-point | | W | 2 | 1: CH1<br>2: CH2 |

| Index No. | Function | Further description | R/W | Length (bytes) | Contents/Meaning |
|---|---|---|---|---|---|
| 0xnnCB | Teach-in 2-point | | W | 2 | |
| 0xnnD2 | Reset | | W | 2 | 3: Execute |
| 0xnnD3 | Return to Top Menu | | W | 2 | Write any value to go back to Top Menu |
| 0xnnD4 | Factory reset | | W | 2 | 3: Execute |
| **Module OD1 (on one channel of AOD1 evaluation unit)** | | | | | |
| 0xnn00 | Products series | b15-12 Manufacturer<br>b11-8 Categories<br>b7-0 Family | R | 2 | 0x1301 (15 mm model)<br>0x1302 (35 mm model)<br>0x1303 (100 mm model)<br>1: SICK<br>3: Displacement<br>1: OD1 15 mm<br>2: OD1 35 mm<br>3: OD1 100 mm |
| 0xnn01 | Product type | | R | 2 | 17 (TBD) |
| 0xnn02 | Firmware version | | R | 2 | 1 |
| 0xnn03 | Protocol version | | R | 2 | 0 |
| 0xnn04 | Product Revision | | R | 2 | 0 |
| 0xnn05 | Vendor name | | R | 2 ... 16 | "Sick AG" |
| 0xnn06 | Product name | | R | 2 ... 32 | Actual product type name |
| 0xnn07 | Product ID User | | R | 2 ... 16 | Actual product type code |
| 0xnn08 | Tag name | | R/W | 2 ... 32 | Blank space (default) |
| 0xnn09 | Operation Status | | R | 2 | 0: Init<br>1: Idle<br>2: Run<br>3: In operation by user |
| 0xnn62 | Error code | | R/W | 2 | Read: last error code<br>Write any value: delete last error code |
| | **AOD1 parameters (applied to both connected sensors)** | | | | |
| 0xnn64 | Threshold | Near | R/W | 2 | -32768 ... 32767 (default: -50) |
| 0xnn65 | | Far | R/W | 2 | -32768 ... 32767 (default: 50) |
| 0xnn66 | Output hysteresis | | R/W | 2 | 0 ... 32767 (default: 10) |
| 0xnn6B | Monitor accumulations | | R/W | 2 | Fieldbus channel #2 data selection (0: Head2, 1: Accumulated value) |
| 0xnn6C | Accumulations | Head1 | R/W | 2 | 0:None<br>1:Add<br>2:Sub<br>3:Diff |
| 0xnn6D | | Head2 | | | |
| 0xnn6E | | Left unit Head1 | | | |
| 0xnn6F | | Left unit Head2 | | | |
| 0xnn70 | I/O polarity | | R/W | 2 | 0: PNP (N.O.)<br>1: NPN (N.O.)<br>2: PNP (N.C.)<br>3:NPN (N.C.) |

| Index No. | Function | Further description | R/W | Length (bytes) | Contents/Meaning |
|---|---|---|---|---|---|
| 0xnn71 | Output selection | Out1 | R/W | 2 | 0: Off<br>1: Calculated GO<br>2: Calculated LO<br>3: Calculated HI<br>4: Head 1 GO<br>5: Head 1 LO<br>6: Head 1 HI<br>7: Head 2 GO<br>8: Head 2 LO<br>9: Head 2 HI |
| 0xnn72 | | Out2 | | | |
| 0xnn73 | | Out3 | | | |
| 0xnn74 | External input selection | | R/W | 2 | 0: Off<br>1: Teach-in (rising: far, falling: near)<br>2: OBSB teach<br>3: Zero reset<br>4: Laser off |
| 0xnn75 | Analog output selection | | R/W | 2 | 0: Off<br>1: Calculated<br>2: Head 1<br>3: Head 2 |
| 0xnn76 | Analog scaling | | R/W | 2 | 0: Off<br>1: On |
| 0xnn77 | Analog scaling max | 10V / 20mA | R/W | 2 | -32768 ... 32767 (default: 10000) |
| 0xnn78 | Analog scaling min | 0V / 4mA | R/W | 2 | -32768 ... 32767 (default: -10000) |
| 0xnn81 | Amplifier information | b15-b0: Amplifier product series | R | 2 | 0x1503 |
| | **AOD1 parameters (applied to sensor in this slot only)** | | | | |
| 0xnn67 | Calculation flags | | R/W | 2 | 0: No calculation<br>1: Calculation |
| 0xnn68 | Calculation coefficient A | Add | R/W | 2 | -10000 ... 10000 (default: 0) |
| 0xnn69 | Calculation coefficient M | Multiply | R/W | 2 | -10000 ... 10000 (default: 1) |
| 0xnn6A | Calculation coefficient D | Divide | R/W | 2 | 1 ... 32767 (default: 1) |
| 0xnn79 | Baud rate | | R/W | 2 | 0: No sensor head<br>1: 9.6k<br>2: 19.2k<br>3: 38.4k<br>4: 57.6k<br>5: 115.2k<br>6: 230.4k<br>7: 312.5k<br>8: 460k<br>9: 500k<br>10: 625k<br>11: 833k<br>12: 921k<br>13: 1250k (default: 9) |
| | **OD1 parameters** | | | | |

| Index No. | Function | Further description | R/W | Length (bytes) | Contents/Meaning |
|---|---|---|---|---|---|
| 0xnn82 | Switching point | Near | R/W | 2 | OD1 15 mm: -7499 ... 7499 (default: -1000)<br>OD1 35 mm: -2249 ... 2249 (default: -300)<br>OD1 100 mm: -7499 ... 7499 (default: -1000)<br>OD1 15 mm: -7499 ... 7499 (default: 1000)<br>OD1 35 mm: -2249 ... 2249 (default: 300)<br>OD1 100 mm: -7499 ... 7499 (default: 1000) |
| 0xnn83 | | Far | | | |
| 0xnn84 | Background ObSB | | R/W | 2 | OD1 15 mm: -7499 ... 7499 (default: 0)<br>OD1 35 mm: -2249 ... 2249 (default: 0)<br>OD1 100 mm: -7499 ... 7499 (default: 0) |
| 0xnn85 | Tolerance ObSB | | R/W | 2 | OD1 15 mm: 0 ... 7499 (default: 1000)<br>OD1 35 mm: 0 ... 2249 (default: 300)<br>OD1 100 mm: 0 ... 7499 (default: 1000) |
| 0xnn86 | Moving average | | R/W | 2 | 0: Across 1 value<br>1: 8 values<br>2: 64 values<br>3 : 512 values |
| 0xnn87 | Teaching mode | | R/W | 2 | 0: 2-Point<br>1: 1-Point<br>2: ObSB |
| 0xnn88 | Sampling rate | | R/W | 2 | 0: 500 us<br>1: 1000 us<br>2: 2000 us<br>3: 4000 us<br>4: Auto |
| 0xnn89 | Key lock | | R/W | 2 | 0: Unlocked<br>1: Locked |
| 0xnn8A | Switching behavior | | R/W | 2 | 0: Light-ON<br>1: Dark-ON |
| 0xnn8B | Near end calibration | | R/W | 2 | OD1 15 mm: -7499 ... 7499 (default: -5000)<br>OD1 35 mm: -2249 ... 2249 (default: -1500)<br>OD1 100 mm: -7499 ... 7499 (default: -5000) |
| 0xnn8C | Far end calibration | | R/W | 2 | OD1 15 mm: -7499 ... 7499 (default: 5000)<br>OD1 35 mm: -2249 ... 2249 (default: 1500)<br>OD1 100 mm: -7499 ... 7499 (default: 5000) |
| 0xnn8D | Error behavior | | R/W | 2 | 0: Clamp<br>1: Hold |
| 0xnn8E | Clamp holding time | | R/W | 2 | 0 ... 9999 (default: 0) |
| 0xnn90 | Zeroing value | | R/W | 2 | OD1 15 mm: -7499 ... 7499 (default: 0)<br>OD1 35 mm: -2249 ... 2249 (default: 0)<br>OD1 100 mm: -7499 ... 7499 (default: 0) |
| 0xnn94 | Barycenter | | R/W | 2 | 0: Max light<br>1: Closest<br>2: 2nd Point<br>3: 3rd Point<br>4: 4th Point<br>5: 5th Point |
| 0xnn97 | Hysteresis value | | R/W | 2 | OD1 15 mm: 0 ... 7499 (default: 50)<br>OD1 35 mm: 0 ... 2249 (default: 50)<br>OD1 100 mm: 0 ... 7499 (default: 50) |

| Index No. | Function | Further description | R/W | Length (bytes) | Contents/Meaning |
|---|---|---|---|---|---|
| 0xnn98 | Sensitivity | | R/W | 2 | 0: Auto adjust<br>1: Min Sense<br>2: 2nd Sense<br>3: 3rd Sense<br>4: 4th Sense<br>5: 5th Sense<br>6: Max Sense |
| 0xnn99 | Light threshold | | R/W | 2 | 0: Lowest<br>1: Lower<br>2: Middle<br>3: Upper |
| 0xnn9B | Key lock active | | R/W | 2 | 0: Display active when locked<br>1: display inactive when locked |
| 0xnnC8 | Store zero-reset | | W | 2 | |
| 0xnnC9 | Cancel zero-reset | | W | 2 | |
| 0xnnCA | Teach-in far | | W | 2 | |
| 0xnnCB | Teach-in near | | W | 2 | |
| 0xnnCC | Teach-in ObSB | | W | 2 | |
| 0xnnD2 | Reset | | W | 2 | 3: Execute |
| 0xnnD3 | Return to Top Menu | | W | 2 | Write any value to go back to Top Menu |
| 0xnnD4 | Factory reset | | W | 2 | 3: Execute |
| **Module OL1 (on one channel of AOD1 evaluation unit)** | | | | | |
| 0xnn00 | Products series | b15-12 Manufacturer<br>b11-8 Categories<br>b7-0 Family | R | 2 | 0x1321<br>1: SICK<br>3: Displacement<br>21: OL1 |
| 0xnn01 | Product type | | R | 2 | 17 |
| 0xnn02 | Firmware version | | R | 2 | 0x1011 |
| 0xnn03 | Protocol version | | R | 2 | 0 |
| 0xnn04 | Product Revision | | R | 2 | 0 |
| 0xnn05 | Vendor name | | R | 2 ... 16 | "SICK AG" |
| 0xnn06 | Product name | | R | 2 ... 32 | Actual product type name |
| 0xnn07 | Product ID | | R | 2 ... 16 | Actual product type code |
| 0xnn08 | User Tag name | | R/W | 2 ... 32 | Blank space (default) |
| 0xnn09 | Operation Status | | R | 2 | 0: Init<br>1: Teach<br>2: Run<br>3: In operation by user |
| 0xnn0E | Serial Number | | R | 16 | Actual product serial number |
| | **AOD1 parameters (applied to both connected sensors)** | | | | |
| 0xnn64 | Threshold | Near | R/W | 2 | -32768 ... 32767 (default: -50) |
| 0xnn65 | | Far | R/W | 2 | -32768 ... 32767 (default: 50) |
| 0xnn66 | Output hysteresis | | R/W | 2 | 0 ... 32767 (default: 10) |
| 0xnn6B | Monitor accumulations | | R/W | 2 | Fieldbus channel #2 data selection<br>(0: Head2, 1: Accumulated value) |

| Index No. | Function | Further description | R/W | Length (bytes) | Contents/Meaning |
|---|---|---|---|---|---|
| 0xnn6C | Accumulations | Head1 | R/W | 2 | 0: None<br>1: Add<br>2: Sub<br>3: Diff |
| 0xnn6D | | Head2 | | | |
| 0xnn6E | | Left unit Head1 | | | |
| 0xnn6F | | Left unit Head2 | | | |
| 0xnn70 | I/O polarity | | R/W | 2 | 0: PNP (N.O.)<br>1: NPN (N.O.)<br>2: PNP (N.C.)<br>3:NPN (N.C.) |
| 0xnn71 | Output selection | Out1 | R/W | 2 | 0: Off<br>1: Calculated GO<br>2: Calculated LO<br>3: Calculated HI<br>4: Head 1 GO<br>5: Head 1 LO<br>6: Head 1 HI<br>7: Head 2 GO<br>8: Head 2 LO<br>9: Head 2 HI |
| 0xnn72 | | Out2 | | | |
| 0xnn73 | | Out3 | | | |
| 0xnn74 | External input selection | | R/W | 2 | 0: Off<br>1: Teach-in (rising: far, falling: near)<br>2: OBSB teach<br>3: Zero reset<br>4: Laser off |
| 0xnn75 | Analog output selection | | R/W | 2 | 0: Off<br>1: Calculated<br>2: Head 1<br>3: Head 2 |
| 0xnn76 | Analog scaling | | R/W | 2 | 0: Off<br>1: On |
| 0xnn77 | Analog scaling max. | 10 V / 20 mA | R/W | 2 | -32768 ... 32767 (default: 10000) |
| 0xnn78 | Analog scaling min. | 0 V / 4 mA | R/W | 2 | -32768 ... 32767 (default: -10000) |
| 0xnn81 | Amplifier information | b15-b0: Amplifier product series | R | 2 | 0x1503 |
| | **AOD1 parameters (applied to sensor in this slot only)** | | | | |
| 0xnn67 | Calculation flags | | R/W | 2 | 0: No calculation<br>1: Calculation |
| 0xnn68 | Calculation coefficient A | Add | R/W | 2 | -10000 ... 10000 (default: 0) |
| 0xnn69 | Calculation coefficient M | Multiply | R/W | 2 | -10000 ... 10000 (default: 1) |
| 0xnn6A | Calculation coefficient D | Divide | R/W | 2 | 1 ... 32767 (default: 1) |

| Index No. | Function | Further description | R/W | Length (bytes) | Contents/Meaning |
|---|---|---|---|---|---|
| 0xnn79 | Baud rate | | R/W | 2 | 0: No sensor head<br>1: 9.6k<br>2: 19.2k<br>3: 38.4k<br>4: 57.6k<br>5: 115.2k<br>6: 230.4k<br>7: 312.5k<br>8: 460k<br>9: 500k<br>10: 625k<br>11: 833k<br>12: 921k<br>13: 1250k (default: 9) |
| | **OL1 parameters** | | | | |
| 0xnn86 | Moving average | | R/W | 2 | 1 ... 128 (sample points) |
| 0xnn87 | Measurement type | | R/W | 2 | 0: Edge positive<br>1: Edge negative<br>2: Width |
| 0xnn88 | Sampling rate | | R/W | 2 | 0: 500 us (fixed) |
| 0xnn8F | Measuring direction | | R/W | 2 | 0: Top to bottom<br>1: Bottom to top |
| 0xnn90 | Zeroing value | | R/W | 2 | -9999 ... 5000 (default: 0) |
| 0xnn98 | Sensitivity | | R/W | 2 | 0: Min Sense<br>1: 2nd Sense<br>2: 3rd Sense<br>3: 4th Sense<br>4: Max Sense<br>5: Adjusted |
| 0xnnC8 | Store zero-reset | | W | 2 | |
| 0xnnC9 | Cancel zero-reset | | W | 2 | |
| 0xnnD4 | Factory reset | | W | 2 | 3: Execute (All settings except Baud rate are reset to defaults) |
| **Module KTL180** | | | | | |
| 0xnn00 | Products series | b15-12 Manufacturer<br>b11-8 Categories<br>b7-0 Family | R | 2 | 0x1111 (1 output model) / 0x1112 (2 outputs model)<br>1: SICK<br>1: Fiber amplifier<br>11: KTL180 1 output<br>12: KTL180 2 outputs |
| 0xnn01 | Product type | | R | 2 | 17: WLL180T |
| 0xnn02 | Firmware version | | R | 2 | 0x0100 |
| 0xnn03 | Protocol version | | R | 2 | 1 |
| 0xnn04 | Product Revision | | R | 2 | 1 |
| 0xnn05 | Vendor name | | R | 2 ... 16 | "SICK AG" |
| 0xnn06 | Actual product type name | | R | 2 ... 32 | Actual product type name |
| 0xnn07 | Product ID | | R | 2 ... 16 | Actual product type code |
| 0xnn08 | User Tag name | | R/W | 2 ... 32 | Blank space (default) |

| Index No. | Function | Further description | R/W | Length (bytes) | Contents/Meaning |
|---|---|---|---|---|---|
| 0xnn09 | Operation Status | | R | 2 | 0: Init<br>1: Idle<br>2: Run<br>3: In operation by user |
| 0xnn62 | Error code | | R/W | 2 | Read: last error code<br>Write any value: delete last error code |
| 0xnn64 | Display | | R/W | 2 | 0: numeric display<br>1: bar display<br>2: percent display |
| 0xnn66 | Teach-in mode | CH1 | R/W | 2 | 0: 1-Point<br>1: 2-Point<br>2: Dynamic |
| 0xnn67 | | CH2 | | | |
| 0xnn68 | Response speed | | R/W | 2 | 0: 16 us<br>1: 200 us |
| 0xnn69 | Gain | | R/W | 2 | 0: Low<br>1: Standard<br>2: High<br>3: Auto |
| 0xnn6A | MF input | | R/W | 2 | 0: External teach-in<br>1: All teach-in<br>2: L/S selection<br>3: Blanking<br>4: No function |
| 0xnn6B | Key lock | | R/W | 2 | 0: Cancel<br>1: Full-Lock<br>2: Lock but the external teach is available |
| 0xnn6C | Operation mode | CH1 | R/W | 2 | 0: Auto<br>1: Light on<br>2: Dark on |
| 0xnn6D | | CH2 | | | |
| 0xnn6E | Threshold level | CH1 Lower limit | R/W | 2 | "-999...9999 Any value out of range will be replaced by the nearest valid value." |
| 0xnn6F | | CH2 Upper limit | | | |
| 0xnn70 | | CH2 Lower limit | | | |
| 0xnn71 | | CH2 Upper limit | | | |
| 0xnn72 | Timer setting | CH1 | R/W | 2 | 0: Off delay<br>1: One shot |
| 0xnn73 | | CH2 | | | |
| 0xnn74 | Off delay time | CH1 | R/W | 2 | "0 ... 9999: 0 ... 9999ms<br>-1 ... -9: 0.1 ... 0.9ms" |
| 0xnn75 | On delay time | CH1 | | | |
| 0xnn76 | Off delay time | CH2 | | | |
| 0xnn77 | On delay time | CH2 | | | |
| 0xnn79 | Synchronization | | R/W | 2 | 0: Async<br>1: Sync |
| 0xnn7B | Sensitivity | | R/W | 2 | 0: 10%<br>1: 20%<br>2: 50% |
| 0xnn7D | ASC | | R/W | 2 | 0: off<br>1: normal |
| 0xnn7E | Eco mode | | R/W | 2 | 0: off<br>1: energy saving display |

| Index No. | Function | Further description | R/W | Length (bytes) | Contents/Meaning |
|---|---|---|---|---|---|
| 0xnn7F | Reverse display | | RW | 2 | 0: normal<br>1: display upside-down |
| 0xnnC8 | Store zero-reset | | W | 2 | Write any value to execute Zero-reset |
| 0xnnC9 | Cancel zero-reset | | W | 2 | Write any value to execute Zero-reset |
| 0xnnCA | Teach-in 1-point | | W | 2 | 1: CH1<br>2: CH2 |
| 0xnnCB | Teach-in 2-point | | W | 2 | |
| 0xnnD2 | Reset | | W | 2 | 3: Execute |
| 0xnnD3 | Return to Top Menu | | W | 2 | Write any value to go back to Top Menu |
| 0xnnD4 | Factory reset | | W | 2 | 3: Execute (Not available for locked unit) |

# 8 Diagnosis

The device implements the following manufacturer-specific channel errors:

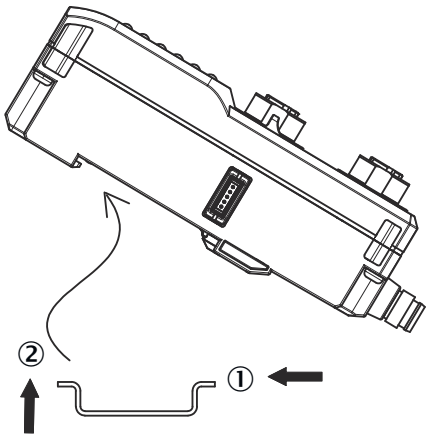
*Table 10: Error meanings*

| Error type | Extended error type | Error text |
|---|---|---|
| 19 | - | WI180 system communication error |
| 19 | 6 | Number of modules in WI180 system changed |
| 19 | 7 | Invalid module in WI180 system |
| 19 | 11 | WI180 system internal communication error |

# 9 Decommissioning

## 9.1 Dismantling

1. Switch off the power supply for the device.
2. Disconnect the male connector of the power supply and the PROFINET male connector.
3. Detach the mountings for the connected devices.
4. Disconnect the connected devices from the bus male connector of the device.
5. Carefully push up the device until you can tip it forwards.



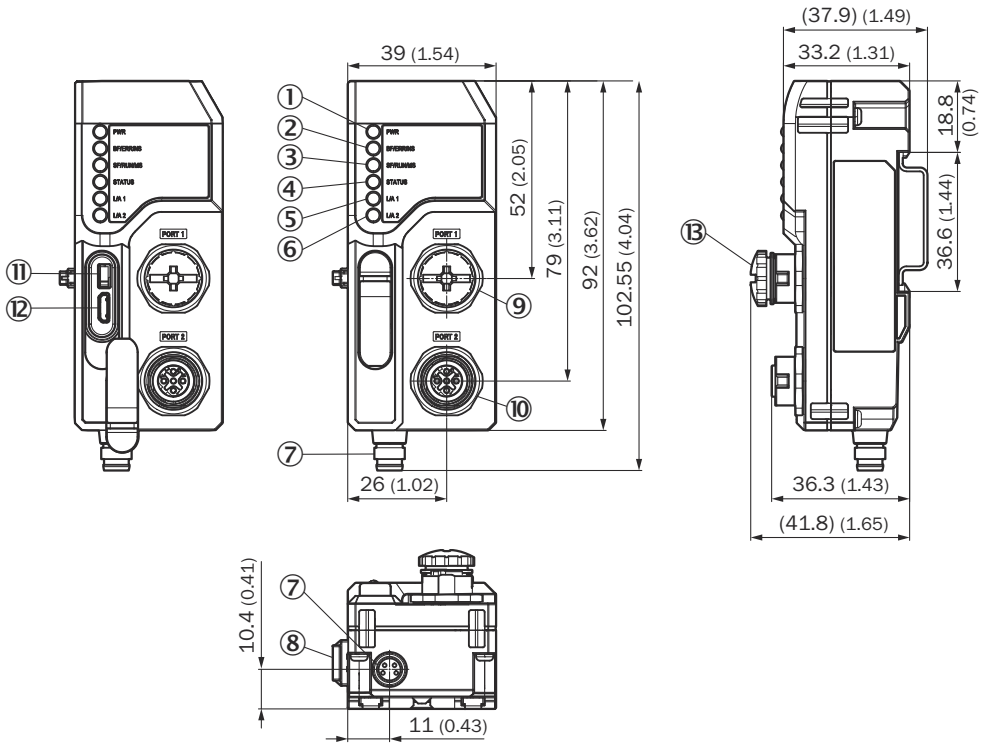

6. Remove the device from the mounting rail.

## 9.2 Disposal

At the end of its service life, the device must be disposed of correctly as waste electronics. Take the regulations in your country into account also.

# 10 Technical data

## 10.1 Dimensional drawings




① PWR-LED
② BF/ERR/NS-LED
③ SF/RUN/MS-LED
④ STATUS-LED
⑤ L/A1-LED
⑥ L/A2-LED
⑦ Power supply connection M8, 4-pin
⑧ Bus male connection, 5-pin (system bus)
⑨ D-coded M12 connector, 4-pin, PROFINET / Ethernet
⑩ D-coded M12 connector, 4-pin, PROFINET / Ethernet
⑪ Factory reset button
⑫ Service port (USB, Micro-B)
⑬ M12 Connector Cap (accessory)

## 10.2 Technical data

### Electrical

*Table 11: Electrical data*

| Description | Value |
|---|---|
| Supply voltage | 12 – 24 VDC ±10 % |
| Power consumption (without connected devices) | 3 W |
| Switch-on delay | 1000 ms |
| Switch-on delay (overall system) | 2000 ms |

| Description | Value |
|---|---|
| LEDs | PWR, BF/ERR/NS, SF/RUN/MS, STATUS, L/A1, L/A2 |
| Power supply | Male M8 plug connector, 4-pin |
| Other interfaces | Male bus connector, 5-pin, internal system bus<br>2 x M12 4-pin D-coded, PROFINET |

### PROFINET IO

*Table 12: PROFINET IO data*

| Description | Value |
|---|---|
| Maximum number of modules to be connected | 16 |
| Transmission speed | 100 MBit/s |
| Maximum distance between nodes | 100 m |
| Process data | Depending on selected modules<br>Max. 44 bytes input, 4 bytes output<br>Min. cycle time 1 ms |
| Asynchronous data | supported, see "Record data", page 19 |
| Compliant standard | IEEE802.3u (100Base-Tx) |
| Conformance class | Class C (PROFINET IRT) |
| Netload class | III |
| Ethernet ports | 2 |
| PROFINET features | Media Redundancy (MRP),<br>network diagnostic (MIB/SNMP),<br>topology detection,<br>port diagnostic (Up/Down),<br>connection diagnostic (connection length measurement),<br>I&M0...4,<br>auto device replacement,<br>reduction ratio,<br>openVAS tested |
| GSD file | available (V2.2, V2.32, V2.33, V2.34) |

### EMC

*Table 13: EMC data*

| Description | Value |
|---|---|
| Noise immunity (Length of cable ≤30 m) | in accordance with EN 61000-6-2/ EN 61131-2 |
| Emission | in accordance with EN 55011, class A |

### Product safety

*Table 14: Product safety data*

| Description | Value |
|---|---|
| Protection class | 3 |
| Short-circuit protection | in accordance with VDE 0160 |

### Mechanical

*Table 15: Mechanical data*

| Description | Value |
|---|---|
| Protection category | IP54[1] |
| Sensitivity to vibrations | IEC 60068, 10 – 55 Hz |
| Shock resistance | IEC 60068, 500 m/s$^2$ (~50 g) |
| Housing material | Polycarbonate |
| Dimensions (HxWxD) in mm | 39 x 102.55 x 36.3 |

1 Valid, if WI180C-PN is connected via internal system bus with modules which fullfill IP54

### Environmental parameters

*Table 16: Environmental parameters*

| Description | Value |
|---|---|
| Air humidity (operation/storage) | 35 – 85 % relative humidity |
| Temperature range (storage) | -40 – +70 °C |
| Temperature range (Operation, ≤3 connected devices) | -25 – +55 °C [1] |
| Temperature range (Operation, ≤8 connected devices) | -25 – +50 °C [1] |
| Temperature range (Operation, ≤16 connected devices) | -25 – +45 °C [1] |

1 Temperature ranges valid if no output current on connected devices

## 10.3 Ordering information, accessories

*Table 17: Ordering information*

| Type | Description | Part number |
|---|---|---|
| YF8U14-020VA3XLEAX | Female connector, M8, 4-pin, straight, 2 m cable | 2095888 |
| YF8U14-050VA3XLEAX | Female connector, M8, 4-pin, straight, 5 m cable | 2095889 |
| YG8U14-020VA3XLEAX | Female connector, M8, 4-pin, angled, 2 m cable | 2095962 |
| YG8U14-050VA3XLEAX | Female connector, M8, 4-pin, angled, 5 m cable | 2095963 |
| SSL-1204-G02MZ90 | Male connector, M12, 4-pin, straight, D-coded, 2 m cable | 6048241 |
| | | |
| BEF-EB01-W190 | Rail end piece for block mounting | 5313011 |

# 11 Annex

## 11.1 Conformities and certificates

You can obtain declarations of conformity, certificates, and the current operating instructions for the product at www.sick.com. To do so, enter the product part number in the search field (part number: see the entry in the “P/N” or “Ident. no.” field on the type label).

8023551.1GL8/2024/01/26/en

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