

SIM1004

Sensor Integration Machine



Described product

SIM1004

Manufacturer

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Original document

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1 About this document

1.1 Information on the operating instructions

These operating instructions provide important information on how to use devices from SICK AG.

Prerequisites for safe work are:

- Compliance with all safety notes and handling instructions supplied.
- Compliance with local work safety regulations and general safety regulations for device applications

The operating instructions are intended to be used by qualified personnel and electrical specialists.



NOTE

Read these operating instructions carefully to familiarize yourself with the device and its functions before commencing any work.

The operating instructions are an integral part of the product. Store the instructions in the immediate vicinity of the device so they remain accessible to staff at all times. Should the device be passed on to a third party, these operating instructions should be handed over with it.

These operating instructions do not provide information on operating the machine or system in which the device is integrated. For information about this, refer to the operating instructions of the specific machine.

1.2 Explanation of symbols

Warnings and important information in this document are labeled with symbols. Signal words introduce the instructions and indicate the extent of the hazard. To avoid accidents, damage, and personal injury, always comply with the instructions and act carefully.



DANGER

... indicates a situation of imminent danger, which will lead to a fatality or serious injuries if not prevented.



WARNING

... indicates a potentially dangerous situation, which may lead to a fatality or serious injuries if not prevented.



CAUTION

... indicates a potentially dangerous situation, which may lead to minor/slight injuries if not prevented.



NOTICE

... indicates a potentially harmful situation, which may lead to material damage if not prevented.



NOTE

... highlights useful tips and recommendations as well as information for efficient and trouble-free operation.

1.3 Further information



NOTE

Further documentation for the device can be found on the online product page at:

- www.sick.com/SIM10xx

There, additional information has been provided depending on the product, such as:

- Model-specific online data sheets for device variants, containing technical data, dimensional drawing, and specification diagrams
 - EU declarations of conformity for the product family
 - Dimensional drawings and 3D CAD dimension models of the device variants in various electronic formats
 - This documentation, available in English and German, and in other languages if necessary
 - Other publications related to the devices described here
 - Publications dealing with accessories
-

2 Safety information

2.1 General safety notes

The following safety notes must always be observed regardless of specific application conditions:

- The device must only be mounted, commissioned, operated, and maintained by professionally qualified safety personnel.
- Electrical connections with peripheral devices must only be made when the voltage supply is disconnected.
- The device is only to be operated when mounted in a fixed position.
- The device voltage supply must be protected in accordance with the specifications.
- The specified ambient conditions must be observed at all times.
- The electrical connections to peripheral devices must be screwed on correctly.
- The pin assignment of pre-assembled cables must be checked and adjusted if necessary.
- These operating instructions must be made available to the operating personnel and kept ready to hand.

2.2 Intended use

The device is a programmable control and evaluation unit for sensors and image processing devices. The device also acts as a link between system and plant controls, and the connected terminal devices. The device is mainly used in an industrial environment in production, testing, and control. Other applications are possible depending on the device-specific properties.

The device is programmed on a PC by using the development environment software SICK AppSpace. Depending on the application, a browser-based, graphical user interface (HMI) can be created, which provides opportunities defined by the application developer to influence an application at operator level.

The device connection to the peripherals is established by means of a range of industrial interfaces.

The device offers various interfaces for controlling, programming, and operating purposes, which can be activated as necessary via development environments, control systems (programmable logic controllers), or applications.

However, configuration, programming, and control requires various technical skills, depending on how the device is connected and used.

2.3 Improper use

Any use outside of the stated areas, in particular use outside of the technical specifications and the requirements for intended use, will be deemed to be incorrect use.

- The device does not constitute a safety component in accordance with the respective applicable safety standards for machines.
- The device must not be used in explosion-hazardous areas, in corrosive environments or under extreme environmental conditions.
- Any use of accessories not specifically approved by SICK AG is at your own risk.



WARNING

Danger due to improper use!

Any improper use can result in dangerous situations.

Therefore, observe the following information:

- Product should be used only in accordance with its intended use.
 - All information in these operating instructions must be strictly observed.
 - Shut down the product immediately in case of damage.
-

2.4 Internet protocol (IP) technology



NOTE

SICK uses standard IP technology in its products. The emphasis is placed on availability of products and services.

SICK always assumes the following prerequisites:

- The customer ensures the integrity and confidentiality of the data and rights affected by its own use of the aforementioned products.
 - In all cases, the customer implements the appropriate security measures, such as network separation, firewalls, virus protection, and patch management.
-

2.5 Limitation of liability

Relevant standards and regulations, the latest technological developments, and our many years of knowledge and experience have all been taken into account when compiling the data and information contained in these operating instructions. The manufacturer accepts no liability for damage caused by:

- Non-adherence to the product documentation (e.g., operating instructions)
- Incorrect use
- Use of untrained staff
- Unauthorized conversions or repair
- Technical modifications
- Use of unauthorized spare parts, consumables, and accessories

With special variants, where optional extras have been ordered, or owing to the latest technical changes, the actual scope of delivery may vary from the features and illustrations shown here.



NOTE

The product is a programmable device. The respective programmer is therefore responsible for his/her programming work and the resultant operation of the device. The liability and warranty of SICK AG is limited to the device specification (hardware functionality and any programming interfaces) according to the agreed conditions. SICK AG will therefore not be liable, among other things, for any damages resulting from the programming of the product by the customer or third parties.

2.6 Modifications and conversions



NOTICE

Modifications and conversions to the device may result in unforeseeable dangers.

Interrupting or modifying the device or SICK software will invalidate any warranty claims against SICK AG. This applies in particular to opening the housing, even as part of mounting and electrical installation.

2.7 Requirements for skilled persons and operating personnel



WARNING

Risk of injury due to insufficient training.

Improper handling of the device may result in considerable personal injury and material damage.

- All work must only ever be carried out by the stipulated persons.

This product documentation refers to the following qualification requirements for the various activities associated with the device:

- **Instructed personnel** have been briefed by the operator about the tasks assigned to them and about potential dangers arising from improper action.
- **Skilled personnel** have the specialist training, skills, and experience, as well as knowledge of the relevant regulations, to be able to perform tasks delegated to them and to detect and avoid any potential dangers independently.
- **Electricians** have the specialist training, skills, and experience, as well as knowledge of the relevant standards and provisions, to be able to carry out work on electrical systems and to detect and avoid any potential dangers independently. The electrician must comply with the provisions of the locally applicable work safety regulation.

The following qualifications are required for various activities:

Table 1: Activities and technical requirements

Activities	Qualification
Mounting, maintenance	<ul style="list-style-type: none"> ■ Basic practical technical training ■ Knowledge of the current safety regulations in the workplace
Electrical installation, device replacement	<ul style="list-style-type: none"> ■ Practical electrical training ■ Knowledge of current electrical safety regulations ■ Knowledge of the operation and control of the devices in their particular application
Commissioning, configuration	<ul style="list-style-type: none"> ■ Basic knowledge of the computer operating system used ■ Basic knowledge of the design and setup of the described connections and interfaces ■ Basic knowledge of data transmission
Operation of the device for the particular application	<ul style="list-style-type: none"> ■ Knowledge of the operation and control of the devices in their particular application ■ Knowledge of the software and hardware environment for the particular application

2.8 Operational safety and particular hazards

Please observe the safety notes and the warnings listed here and in other chapters of this product documentation to reduce the possibility of risks to health and avoid dangerous situations.



WARNING

Electrical voltage!

Electrical voltage can cause severe injury or death.

- Work on electrical systems must only be performed by qualified electricians.
 - The power supply must be disconnected when attaching and detaching electrical connections.
 - The product must only be connected to a voltage supply as set out in the requirements in the operating instructions.
 - National and regional regulations must be complied with.
 - Safety requirements relating to work on electrical systems must be complied with.
-



WARNING

Risk of injury and damage caused by potential equalization currents!

Improper grounding can lead to dangerous equipotential bonding currents, which may in turn lead to dangerous voltages on metallic surfaces, such as the housing. Electrical voltage can cause severe injury or death.

- Work on electrical systems must only be performed by qualified electricians.
 - Follow the notes in the operating instructions.
 - Install the grounding for the product and the system in accordance with national and regional regulations.
-

2.8.1 LED RGO

The product is fitted with LEDs in risk group 0. The accessible radiation from these LEDs does not pose a danger to the eyes or skin.

3 Product description

3.1 Device view



Figure 1: SIM1004 device view

- ① Elongated drill hole for mounting
- ② Status indicators
- ③ Servicing panel
- ④ Connections for Ethernet and sensors

3.2 Functionality

The SIM1004 Sensor Integration Machine is part of the eco-system SICK AppSpace Opens new paths for solving applications.

Data from SICK sensors such as laser scanners or cameras can be merged, evaluated, archived, and transmitted.

Other sensors can be integrated via IO-Link, for example for distance and height measuring purposes.

Ethernet interfaces with OPC UA and MQTT provide preprocessed data (edge computing) for cloud computing. In addition, the SIM can be integrated into a SICK CAN sensor network.

The SICK AppSpace open software platform enables tailor-made application programs to be developed for demanding applications.

HMIs can be displayed and data visualized via a browser-capable notebook, tablet or PC. The required app is developed in SICK AppStudio.

3.3 SICK AppSpace



Detailed instructions on the SICK AppStudio as well as programming the device can be found at supportportal.sick.com.

3.4 Preset Ethernet interfaces



NOTE

Preset IP addresses of the ETHERNET interfaces:

- ETHERNET 1: 192.168.0.1
 - ETHERNET 2: 192.168.1.1
 - ETHERNET 3: 192.168.2.1
-

When expanding the 1 GigE interfaces with one or more Ethernet switches, it is essential to use only jumbo-frame compatible 1 GigE switches. Switches limited to just 100 Mb do not support the data packet mode used by cameras and can cause transmission errors.

Changing the IP addresses

The individual IP addresses can be changed using the Welcome app pre-installed in the device or via the SICK PC tool SOPAS ET .

4 Transport and storage

4.1 Transport

For your own safety, please read and observe the following notes:



NOTICE

Damage to the product due to improper transport.

- The device must be packaged for transport with protection against shock and damp.
- Recommendation: Use the original packaging as it provides the best protection.
- Transport should be performed by trained specialist staff only.
- The utmost care and attention is required at all times during unloading and transportation on company premises.
- Note the symbols on the packaging.
- Do not remove packaging until immediately before you start mounting.

4.2 Transport inspection

Immediately upon receipt in Goods-in, check the delivery for completeness and for any damage that may have occurred in transit. In the case of transit damage that is visible externally, proceed as follows:

- Do not accept the delivery or only do so conditionally.
- Note the scope of damage on the transport documents or on the transport company's delivery note.
- File a complaint.



NOTE

Complaints regarding defects should be filed as soon as these are detected. Damage claims are only valid before the applicable complaint deadlines.

4.3 Storage

Store the device under the following conditions:

- Recommendation: Use the original packaging.
- Do not store outdoors.
- Store in a dry area that is protected from dust.
- So that any residual damp can evaporate, do not package in airtight containers.
- Do not expose to any aggressive substances.
- Protect from sunlight.
- Avoid mechanical shocks.
- Storage temperature: see "Technical data", page 25.
- For storage periods of longer than 3 months, check the general condition of all components and packaging on a regular basis.

5 Mounting

5.1 Overview of mounting procedure



NOTE

The mounting procedure described here for the device meets the requirements for use in the target system.

Additional or different requirements may become necessary in the laboratory and during preparation, and should be taken into account as necessary, [see "Commissioning", page 20](#). If you have any questions or anything remains unclear in this regard, please contact our service team.

-
- Mounting the device.
 - Connect the cables.
 - Connecting peripheral devices.
 - Connecting the voltage supply.

5.2 Scope of delivery

- SIM1004
- Safety note
- Optional: ordered accessories



NOTE

For a list of cables suitable for use with the device, see: supportportal.sick.com or at www.sick.com.

5.3 Preparing for mounting

Installation requirements



NOTE

The specific mounting instructions must be taken into account at high ambient temperatures from 40 °C.

For additional information [see "Mounting the device at a critical ambient temperature from 40 °C", page 15](#).

-
- Select the mounting site: Plan space requirements and sufficient distance from other devices. Be aware of the possibility of heat dissipation.
 - Unpack the device and allow to acclimatize to avoid formation of condensation.
 - Prepare vibration reduction measures, if necessary.

Preparing for mounting

1. Place the device at the mounting site.
2. Mark the mounting holes.
3. Proceed to drill the mounting holes.

5.4 Mounting the device

1. Place device at mounting site.
2. Fasten the device with at least two M6 screws (max. 6 Nm) and corresponding washers on opposite sides of the device.

**NOTICE**

Use self-locking or lock nuts on mounting sites that are exposed to vibrations to prevent the holding plates from loosening.

5.5 Mounting the device at a critical ambient temperature from 40 °C

**NOTICE**

To prevent damage to the device or the attached peripheral devices at high ambient temperatures from 40 °C, the following extended installation conditions must be taken into account when mounting the device.

Prerequisites

- Aluminum profiles for mounting on the system (min. 40 x 40 mm and 500 mm in length)
- No direct sunlight and heat radiation
- Distance to other components or housing walls: min. 100 mm

Installation steps

1. Set device on aluminum profile.
 2. Fasten device with at least two M6 screws (max. 6 Nm) on opposite device sides and corresponding washers.
-

**NOTICE**

Use self-locking or lock nuts on mounting sites that are exposed to vibrations to prevent the holding plates from loosening.

6 Electrical installation

6.1 Important notes

**WARNING****Risk of injury and damage caused by electrical current!**

Due to equipotential bonding currents, incorrect earthing can lead to the following dangers and faults: Voltage is applied to the metal housing, cable fires due to cable shields heating up, the product and other devices become damaged.

- Generate the same ground potential at all grounding points.
-

**NOTICE****Device damage due to improper supply voltage!**

- Only operate the device with the specified supply voltage.
 - The voltage supply and all connected signals must meet the requirements for extra-low voltages with safe separation (SELV, PELV) as specified in EN 61010 .
-

**NOTE****Layout of data cables**

- Use screened data cables with twisted-pair wires.
 - Implement the screening design correctly and completely.
 - To avoid interference, e.g. from switching power supplies, motors, clocked drives, and contactors, always use cables and layouts that are suitable for EMC.
 - Do not lay cables over long distances in parallel with power supply cables and motor cables in cable channels.
-

6.2 Preparing the electrical installation

To carry out the electrical installation, you will need:

- Connection cables for the peripheral devices, including the corresponding data sheets
- Voltage supply cable
- If customers assemble the cables: crimping tool, ferrules, soldering iron, and other installation material

6.3 Assembling the cables (optional)

For a list of cables suitable for use with the device, see:

supportportal.sick.com or www.sick.com.

Customer assembly of the cables is only necessary in special cases. Make sure the length of cable is sufficient, e.g. for strain-relief clamps.

**NOTICE****Risk of damage/malfunction due to incorrect PIN assignment**

Incorrect wiring of the male connectors/female connectors can lead to damage to or malfunctions in the system.

- Observe data sheets provided by the cable manufacturer.
 - Observe the pin assignment.
-

6.4 Overview of connections

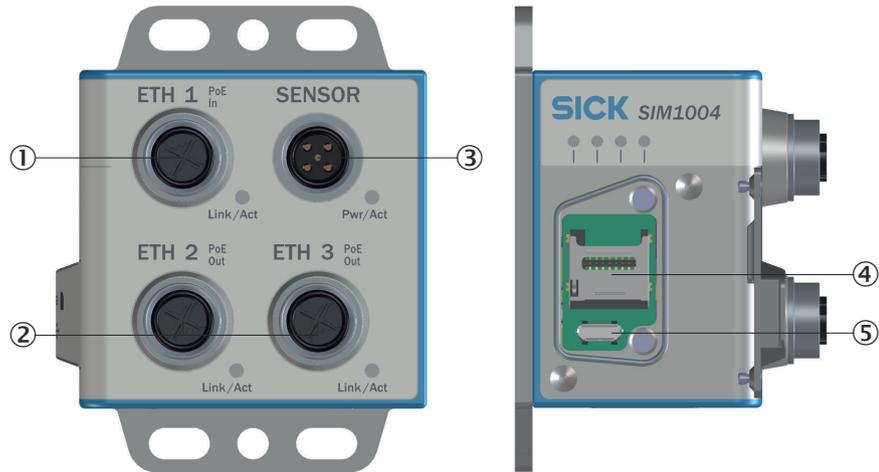


Figure 2: SIM1004 connection overview

- ① ETH 1 PoE In: SIM supply voltage and gigabit Ethernet
- ② ETH 2 – ETH 3 PoE Out: 2 x 1 gigabit Ethernet with PoE
- ③ SENSOR: connection with digital inputs/outputs and voltage supply. Can be alternatively used as a IO-Link master connection.
- ④ microSD card slot
- ⑤ USB connection (Micro-B, for configuration/diagnostics/firmware update)

6.5 Pin allocation of the connections

6.5.1 ETHERNET 1: PoE In

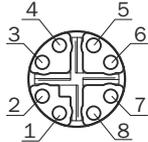


Table 2: ETH1 pin assignment, M12 – 8-pin, X-coded, female

Pin	Mode A*		Mode B*	
	Specifica-tions	Voltage supply	Specifica-tions	Voltage supply
1	D1+	DC+	D1+	
2	D1-	DC+	D1-	
3	D2+	DC-	D2+	
4	D2-	DC-	D2-	
5	D4+		D4+	DC+
6	D4-		D4-	DC+
7	D3-		D3-	DC-
8	D3+		D3+	DC-

* Mode A and mode B possible in line with IEEE 802.3at.

Additional notes

- The SIM1004 requires a supply via PoE from class 4 (e.g. via a PoE injector or switch according to standard 802.3at).
- SIM supply voltage, see "Important notes", page 16.
- Ethernet connection, e.g. for PC or network
- Transmission rate: 10/100/1,000 Mbit/s
- When expanding the 1 GigE interfaces with one or more Ethernet switches, it is essential to use only jumbo-frame compatible 1 GigE switches.

6.5.2 ETHERNET 2-3: PoE Out

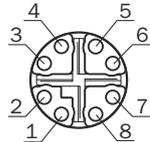


Table 3: ETH2- ETH3 pin assignment, M12 - 8-pin, X-coded, female

Pin	Specifications	Voltage supply
1	D1+	DC+
2	D1-	DC+
3	D2+	DC-
4	D2-	DC-
5	D4+	
6	D4-	
7	D3-	
8	D3+	

Additional notes

- 2 x 1 GigE connections with configurable PoE are available.
- Ethernet connection, e.g. for picoCam and midiCam and SICK LIDAR scanner or for a PC or a network.
- The relevant drivers are implemented in the SIM1004 to enable usage of the SICK picoCam and midiCam camera families.
- Transmission rate: 10/100/1,000 Mbit/s
- PoE voltage supply activated on the factory side
- PoE voltage supply is not activated until after the boot process
- Information on available performance see "Mechanics and electronics", page 26
- When expanding the 1 GigE interfaces with one or more Ethernet switches, it is essential to use only jumbo-frame compatible 1 GigE switches.

6.5.3 SENSOR

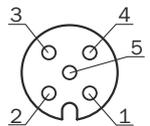


Table 4: SENSOR pin assignment, M12 - 5-pin, A-coded, female

Pin	Signal	Function	Factory settings
1	+24 V	Supply voltage for peripherals, configurable	Deactivated

Pin	Signal	Function	Factory settings
2	Input 2	Digital input	-
3	GND	Ground	-
4	C/Q or Input 1 / Output 1	C/Q IO-Link or configurable switching input/output	All IO connections configured as inputs
5	NC	Not connected	-
Housing	-	Screen	-

Additional notes

- 1 x IO-Link master
- Max. output current, see "Technical data", page 25
- digital output
 - Min. high output logic level: 21 V
 - Max. low output logic level: 3 V
 - Push/pull, NPN, PNP configurable
 - Max. IO-Link output frequency: 230 kHz
 - Max. IO output frequency: 30 kHz
- Digital inputs
 - Min. high input logic level: 12 V
 - Max. low input logic level: 4 V
 - Max. IO-Link input frequency: 230 kHz
 - Max. IO input frequency: 30 kHz

6.6 Connecting peripheral devices

The device can be connected to a wide range of sensors and cameras.

The required pin assignments can be found in the data sheets for the peripherals to be connected as well as in the relevant connection descriptions, see "Pin allocation of the connections", page 17.

1. Connect the cables to peripheral devices.
2. Route the cables to the device using installation materials (cable channels, cable ties, etc.). When doing so, pay attention to cable strain relief.
3. Connect cables to the relevant device connections and screw together tightly.
4. Seal unused connections with dummy plugs.

6.7 Connecting voltage supply



NOTICE

Risk of damage to peripheral devices!

If peripheral devices are connected when the voltage supply is also applied, these devices can become damaged.

- Only connect peripheral devices when the voltage supply is disconnected.

1. Connect the voltage supply cable(s) to the device.
2. Lay the cable(s) with strain relief.
3. Have the user connect the voltage supply.
4. Have the user activate the voltage.

7 Commissioning

7.1 Preparatory commissioning

Commissioning for preparatory purposes and under laboratory conditions differs in some respects from commissioning in the target system.

In general, all safety and hazard warnings applicable to mounting (see ["Mounting", page 14](#)) and electrical installation (see ["Important information"](#)) must also be observed under laboratory conditions. In addition, further notes must be taken into consideration to guarantee the most effective preparation possible:

- Only connect those devices to the product that you want to configure or program.
- Operate the connected device in a controlled and contained network environment for the time being to check network communication if necessary.
- Note the company standards that apply to the use of checking and testing devices.
- For initial programming, use ideal conditions for sensor or camera recognition.
- Use the largest possible deviations from these ideal conditions to check the programming with respect to its error tolerance and reliability, and to determine error limit values.

Procedure

1. Place the device on a non-slip base.
2. Connect the required peripheral devices, see ["Connecting peripheral devices", page 19](#).
3. Connect the network connection.
4. Connect the voltage supply.
5. Switch on the voltage supply.

8 Operation

8.1 Status LEDs

When the device is operating, the operational status of the connections is indicated visually by status LEDs.

Using these status indicators, the operator can find out quickly and easily whether the device and the peripherals are working properly or whether any faults or errors have occurred.

Monitoring the visual indicators is part of the routine inspection carried out on the device and the machine/plant area into which the device is incorporated.

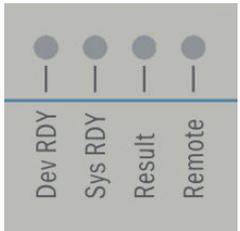
Meaning of symbols

Table 5: Explanation of characters

Symbol	Meaning
	LED off
	LED on
	LED flashes
	LED goes out briefly
	LED lights up briefly

8.2 Device status

Table 6: Device status

Location	Designation	LED behavior	Description
	Dev RDY		Device booting
			Runlevel READY, no errors detected*
			Runlevel READY, boot process error
	Sys RDY Result Remote		User-defined, can be configured with SICK AppSpace .
			
			
			
			

* Time delay before availability due to boot process (approx. 30 s)

SENSOR

Table 7: Sensor

Location	Designation	LED behavior	Description
	Pwr/Act		Voltage not applied to the connection.
			Voltage applied. No signal activity.
			Voltage applied. Signal activity.
			Voltage not applied to the connection. Signal activity.

ETHERNET 1-3

Table 8: Ethernet 1-3

Location	Designation	LED behavior	Description
	Link/Act		Connection not established with Ethernet.
			Connection established with Ethernet.
			Data transmission via Ethernet.

9 Maintenance

9.1 Cleaning



NOTICE

Equipment damage due to improper cleaning.

Improper cleaning may result in equipment damage.

- Only use recommended cleaning agents and tools.
- Never use sharp objects for cleaning.

- ▶ The device must be cleaned regularly from the outside to guarantee heat dissipation and therefore operation. Clean using a dry towel or an industrial vacuum cleaner. Do not use cleaning agents.

9.2 Maintenance plan

During operation, the device works maintenance-free.

Depending on the assignment location, the following preventive maintenance tasks may be required for the device at regular intervals:

Table 9: Maintenance plan

Maintenance work	Interval	To be carried out by
Check device and connecting cables for damage at regular intervals.	Depends on ambient conditions and climate.	Specialist
Clean housing.	Depends on ambient conditions and climate.	Specialist
Check that all unused connections are sealed with protective caps.	Depends on ambient conditions and climate. Recommended: At least every 6 months.	Specialist

10 Decommissioning

10.1 Disposal

**CAUTION**

Risk of injury due to hot device surface.

The surface of the device can become hot during operation.

- Before commencing disassembly, switch off the device and allow it to cool down as necessary.
-

If a device can no longer be used, dispose of it in an environmentally friendly manner in accordance with the applicable country-specific waste disposal regulations. Do not dispose of the product along with household waste.

**NOTICE**

Danger to the environment due to improper disposal of the device.

Disposing of devices improperly may cause damage to the environment.

Therefore, observe the following information:

- Always observe the national regulations on environmental protection.
 - Separate the recyclable materials by type and place them in recycling containers.
-

11 Technical data



NOTE

The relevant online data sheet for your product, including technical data, dimensional drawing, and connection diagrams can be downloaded, saved, and printed from the Internet:

- www.sick.com/SIM10xx

These operating instructions provide additional technical data if required.

11.1 Features

Table 10: Features

Feature	Parameter
Task	data recording, evaluation, and archiving
Supported devices (excerpt)	Encoders, code readers, RFID read/write devices, SICK LiDAR scanners, SICK picoCam and midiCam
Technology	Embedded hardware architecture: <ul style="list-style-type: none"> • dual-core ARM Cortex-A9 CPU with NEON accelerator • FPGA for I/O handling
	Software: <ul style="list-style-type: none"> • Can be programmed within the SICK AppSpaceenvironment • SICK Algorithm API
Random Access Memory	1 GB
Flash memory	256 MB total, of which 30 MB Available for applications
memory card (optional)	Industry-grade microSD memory card (flash card), max. 32 GB
Programming software	SICK AppSpace
Sensor data processing	According to SICK Algorithm API

11.2 Interfaces

Table 11: Interfaces

Feature	Parameter
Data storage and retrieval	Image and data logging via microSD memory card, internal RAM, and external FTP
ETHERNET	
Quantity	3
Function	Host, AUX, image transmission ETH1: PoE In ETH2-3: PoE Out
Data transmission rate	10/100/1,000 Mbit/s
Protocol	TCP/IP, FTP (image transmission)
Length of cable	max. 100 m
IO-Link	

Feature	Parameter
Quantity	1 (SENSOR)
Function	IO-Link master
Data transmission rate	max. 230 kBaud
Digital input/output	
SENSOR	Input: 1 max. frequency: 30 kHz Input/Output (configurable): 1, max. frequency: 30 kHz
USB	
Quantity	1
Function	USB 2.0 for configuration/diagnostics/firmware update

11.3 Mechanics and electronics

Table 12: Mechanics and electronics

Feature	Parameter
Optical indicators	4 x RGB (red/green/blue) for device status 3 x green for Ethernet Link/Act 1 x red/green for sensor
Electrical connection	ETHERNET PoE In: 1 x M12, 8-pin female connector, X-coded ETHERNET PoE Out: 2 x M12, 8-pin female connector, X-coded SENSOR, IO-Link master: 1 x M12, 5-pin female connector, A-coded
Supply voltage	DC 42 ... 57 V, typically 48 V, according to PoE technology
SIM power consumption	10 W max., without connected sensors
Total power output ETH2, ETH3	Available power at the input of the SIM minus SIM power consumption minus sensor port power consumption
Output current	
SENSOR, IO	Max. output current to digital output pin: 100 mA
SENSOR, IO	Max. output current to power supply pin: 0.6 A
Housing material	Aluminum
Housing color	Light blue (RAL 5012) with gray-white front foil (RAL 9002)
Protection class	III
Weight	252 g (including connection plug)
Dimensions (W x D x H)	65 x 57 x 89

11.4 Ambient data

Table 13: Ambient data

Feature	Parameter
Electromagnetic compatibility (EMC)	IEC 61000-6-2:2016-08 IEC 61000-6-4:2018-02
Vibration resistance	EN 60068-2-6: 2008-02

Feature	Parameter
Shock resistance	EN 60068-2-27:2009-05
Electrical safety	EN 61010
Overvoltage category	II
Enclosure rating	IP65 as per EN 60529:1991-10 + A1:2000-02 + A2:2013-10 (blind plugs must be inserted into unused connections)
Ambient operating temperature	0 °C ... +50 °C, taking the described mounting requirements into account, see "Mounting", page 14
Storage temperature	-20 °C ... +70 °C
Permissible relative humidity	90%, non-condensing
Height position	max. 2,000 m

12 Annex

12.1 Dimensional drawings

Dimensions without accessories

All measurements in mm.

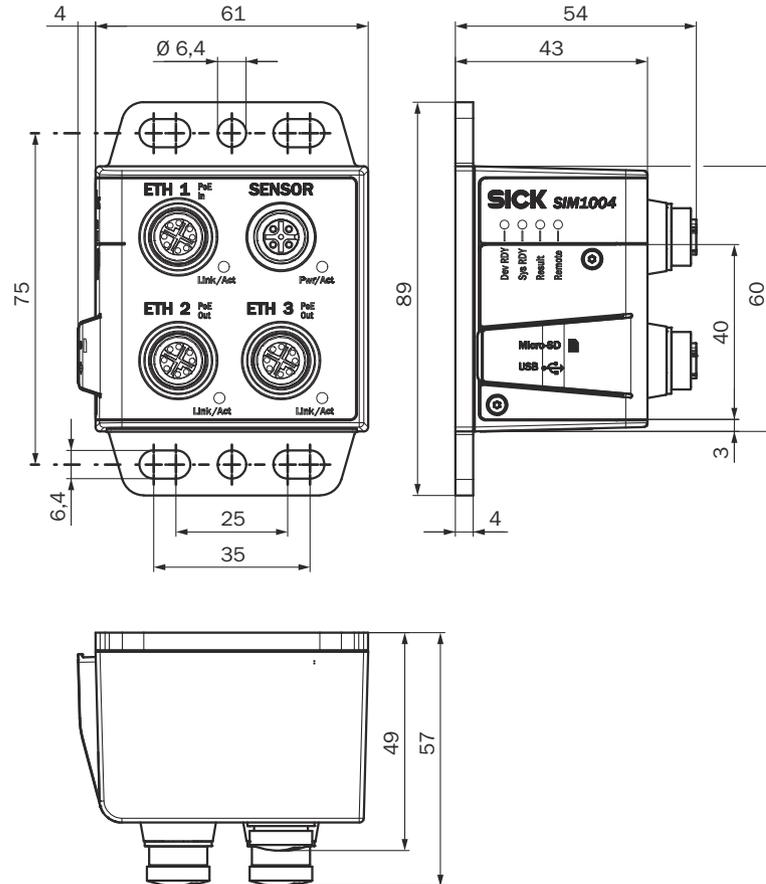


Figure 3: SIM1004 dimensional drawings

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