

SIM1012

Sensor Integration Machine



Described product

SIM1012

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 instructions constitute an integral part of the product and are to be stored 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. The warnings are introduced by signal words that indicate the extent of the danger. These warnings must be observed at all times and care must be taken to avoid accidents, personal injury, and material damage.



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

The following information is available for download there:

- Model-specific online data sheets for device variants, containing technical data, dimensional drawing, and specification diagrams
 - EU declaration of conformity for the product family
 - Dimensional drawings and 3D CAD dimension models in various electronic formats
 - This documentation, in English and German and other languages if applicable
 - 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 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:

- Device should be used only in accordance with its intended use.
- All information in these operating instructions must be strictly observed.

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
- 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****Programmable device**

The Sensor Integration Machine (SIM) is a programmable device.

Therefore, the respective programmer is responsible for his/her programming performance and the resulting operating principle 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.

Therefore, SICK AG is not liable, among other things, for damages that are caused by programming of 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. In Germany, electricians must meet the specifications of the BGV A3 Work Safety Regulations (e.g. Master Electrician). Other relevant regulations applicable in other countries must be observed.

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 Windows™ operating system in use ■ 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

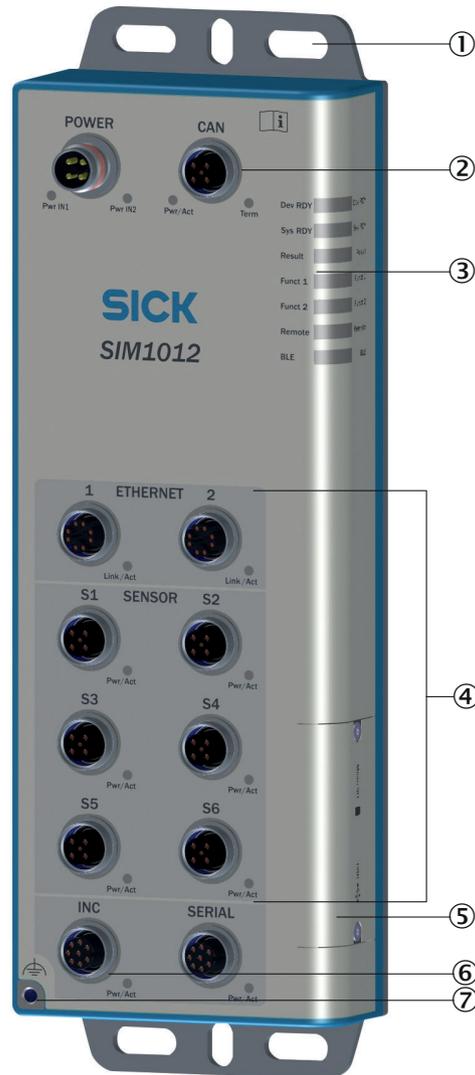


Figure 1: SIM1012 device view

- ① Elongated drill holes for mounting
- ② Connections for power and CAN
- ③ Status indicators
- ④ Connections for Ethernet and sensors
- ⑤ Servicing panel
- ⑥ Connections for increment and serial
- ⑦ Functional ground connection

3.2 Functionality

The SIM1012 Sensor Integration Machine – part of the SICK AppSpace ecosystem – is opening up new possibilities for application solutions.

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

Sensors can be integrated via IO Link, for example for distance or height measurement.

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

The open SICK AppSpace software platform makes it possible to develop customized application programs for demanding applications.

The HMI and data visualization features can be provided on any browser-enabled notebook, PC, or tablet. The app is created via the 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
-

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 SICK “SOPAS-ET” PC tool. This is described in detail in the “SIM Getting Started” description, which are available for download from the AppSpace area of the SICK Support Portal. This guide also includes further instructions on how to connect SICK sensors and the SICK picoCam and midiCam cameras to the Ethernet interfaces.

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 27.
- 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 21. 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

- SIM1012
- 1x grounding screw
- 1x toothed lock washer
- Safety note
- Optional: ordered accessories

**NOTE**

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

5.3 Preparing for mounting

Installation requirements

- 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.

6 Electrical installation

6.1 Important information



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.
- Ground the equipotential bonding via the functional ground connection with a low impedance (use standard cable lug with M4 hole).



NOTICE

Device damage due to improper supply voltage!

- Only operate the device with the specified supply voltage.
- All circuits connected to the device must be designed as SELV circuits (in accordance with EN 60950-1 or ES1 EN 62368-1).



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

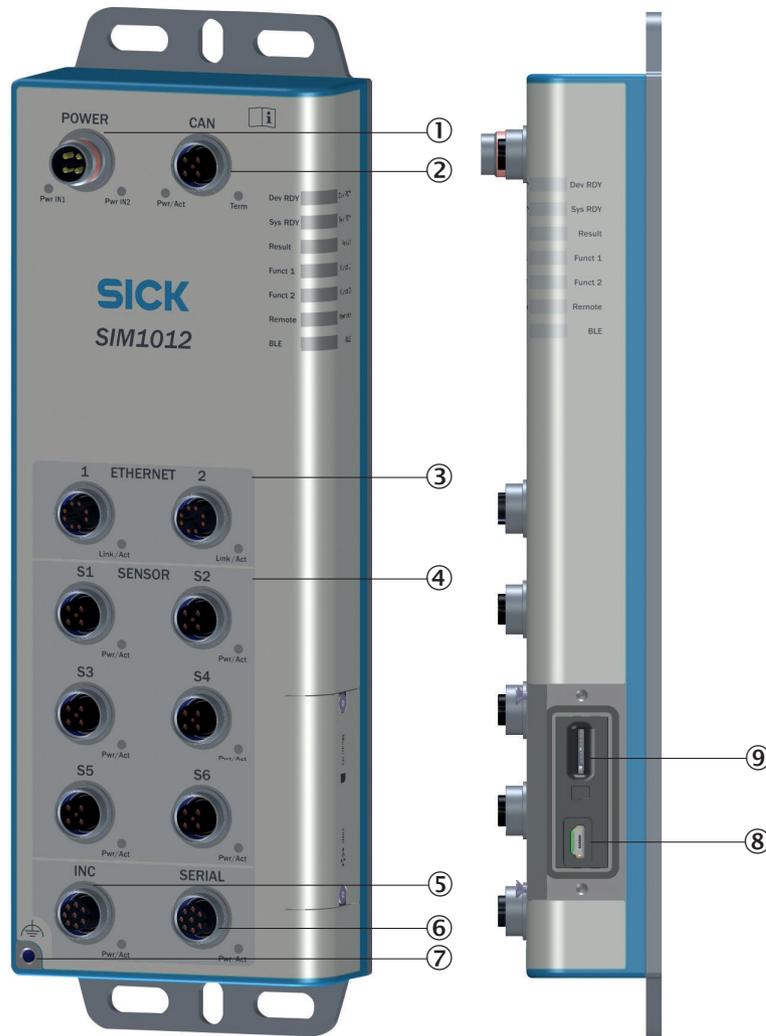


Figure 2: SIM1012 overview of connections

- ① **POWER:** Voltage supply input
- ② **CAN:** Connection for SICK CAN sensor network (receiver/transceiver)
- ③ **ETHERNET:** 2 x 1 Gigabit Ethernet
- ④ **SENSOR S1 - S6:** Connections with digital inputs/outputs and voltage supply. Can be alternatively used as IO-Link master connections.
- ⑤ **INC:** 1 x incremental encoder In/Out or 1 x RS-422
- ⑥ **SERIAL:** 1 x RS-232 / RS-422 / RS-485 or 1 x incremental encoder In/Out
- ⑦ For e functional ground connection, see electrical installation/notes chapter.
- ⑧ **USB connection** (Micro-B, for configuration/diagnostics/firmware update)
- ⑨ **microSD card slot**

6.5 Pin allocation of the connections

6.5.1 POWER

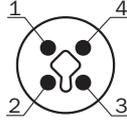


Table 2: POWER pin assignment, M12 - 4-pin T-coded, male

Pin	Signal	Function
1	24 V IN1	Supply voltage IN1 (except CAN)
2	GND IN2	Ground
3	GND IN1	Ground
4	24 V IN2	Supply voltage IN2 (CAN)
Housing	-	Screen

Additional notes:

- Max. 7.5 A (IN1), max. 4 A (IN2)
- 24 V \pm 10% supply voltage
- Maximum device power consumption (SIM1012): 15 W
- Maximum power output of all connections: 270 W
- The power cable must be protected with a total of 12 A

6.5.2 SERIAL

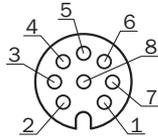


Table 3: SERIAL pin assignment, M12 - 8-pin A-coded, female

Pin	Mode			
	RS-422	RS-232*	RS-485	INC
1	-	-	-	A- (in/out)
2	-	-	-	A+ (in/out)
3	T-	-	Rx/Tx- (B)	B- (in/out)
4	T+	TxD	Rx/Tx+ (A)	B+ (in/out)
5	R-	-		
6	R+	RxD		
7	GND			
8	24 V (supply voltage for peripherals, configurable, deactivated with factory settings)			
Housing	Screen			

* Standard configuration

Additional notes:

- Max. 1 A output for supply voltage connections (compliant with LPS)
- Data transmission rates:
 - RS-232: 115.2 kBaud
 - RS-422: 2 MBaud
 - RS-485: 2 MBaud

6.5.3 INC

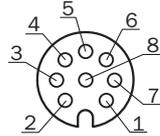


Table 4: INC pin assignment, M12 - 8-pin A-coded, female

Pin	Mode			
	RS-422*	RS-232	RS-485	INC
1	T-	-	-	A- (in/out)
2	T+	-	-	A+ (in/out)
3	R-	-	-	B- (in/out)
4	R+	-	-	B+ (in/out)
5	-	-	-	-
6	-	-	-	-
7	GND (ground)			
8	24 V (supply voltage for peripherals, configurable, deactivated with factory settings)			
Housing	Screen			

* Standard configuration

Additional notes:

- Max. 0.5 A output for supply voltage connections (compliant with LPS)
- Data transmission rates: max. 2 MBaud

6.5.4 CAN

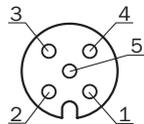


Table 5: CAN pin assignment, M12 - 5-pin A-coded, female

Pin	Signal	Function	Factory settings
1	-	Screen	-
2	+V24	Supply voltage for peripherals, configurable	Deactivated
3	GND	Ground	-
4	CAN_H	CAN high	Termination deactivated ¹⁾
5	CAN_L	CAN low	

Pin	Signal	Function	Factory settings
Housing	-	Screen	-

1) Termination can be controlled via app

Additional notes:

To enable voltage supply to the peripherals, both POWER CAN voltage supply strands must be connected to 24 V.

6.5.5 SENSOR S1 - S6

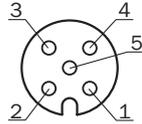


Table 6: SENSOR S1 - S6 pin assignment, M12 - 5-pin A-coded, female

Pin	Signal	Function	Factory settings
1	+24 V	Supply voltage for peripherals, configurable	Deactivated
2	Input 2	Switching input	-
3	GND	Ground	-
4	C/Q or Input 1/Output 1	IO-Link CQ or configurable switching input/output	All IO connections configured as inputs
5	NC	Not connected	-
Housing	-	Screen	-

Additional notes:

- 6 x IO-Link master (1x master available per connection)
- Max. 1 A output for supply voltage connections S1 to S6 (compliant with LPS)
- Switching output
 - Max. output 100 mA
 - Min. high output logic level: VCC – 3 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
- Switching 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

6.5.6 ETH1 – ETH2

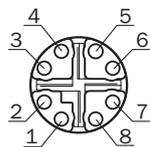


Table 7: ETH1 - ETH2 pin assignment, M12 - 8-pin X-coded, female

Pin	Function
1	D1+
2	D1-
3	D2+
4	D2-
5	D4+
6	D4-
7	D3-
8	D3+

Additional notes:

The Ethernet connections can be used to connect the picoCam and midiCam camera families and SICK LIDAR scanners as well as a PC or network.

The relevant drivers are implemented in the SIM1012 to enable usage of the SICK picoCam and midiCam camera families.

Jumbo frame support is needed when using Ethernet switches.

Transmission rate: max. 1 Gb/s

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. Ensure that the voltage has been disconnected by the user.
2. Connect voltage supply cable(s) to the device.
3. Lay the cable(s) with strain relief.
4. Have the user connect the voltage supply.
5. 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 ["Important information", page 15](#)) and electrical installation (see ["Mounting", page 14](#)) must also be observed under laboratory conditions. In addition, further information 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 20](#).
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

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

Device status

Location	Designation	LED behavior	Description
Dev RDY	Dev RDY		Device booting
			Runlevel READY, no errors detected*
			Runlevel READY, boot process error
Sys RDY	Sys RDY		User-defined, configurable with SICK AppSpace
			Result
			Funct 1
			Funct 2
Remote	Remote		
BLE	BLE		Currently not supported

* Time delay before availability due to boot process (about 20 s)

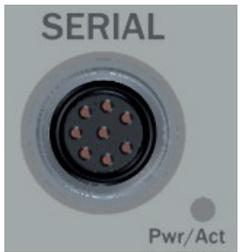
POWER IN

Location	Designation	LED behavior	Description
	POWER IN1 POWER IN2		Voltage not applied to the connection.
			Voltage applied.

INC

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.
			Overcurrent or short-circuit detected. No signal activity.
			Overcurrent or short-circuit detected. Signal activity.

SERIAL

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.
			Overcurrent or short-circuit detected. No signal activity.
			Overcurrent or short-circuit detected. Signal activity.

CAN

Location	Designation	LED behavior	Description
	PWR/ACT		Voltage not applied to the connection.
			Voltage applied. No signal activity.
			Voltage applied at signal activity connection.
			Voltage not applied to the connection. Signal activity.
			Overcurrent or short-circuit detected. No signal activity.
			Overcurrent or short-circuit detected. Signal activity.
	Term		Termination resistor not activated.
			Termination resistor activated.

SENSOR S1 - S6

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.
			Short-circuit detected.

ETHERNET 1 - 2

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 8: Maintenance plan

Maintenance work	Interval	To be carried out by
Check that the unused connections are sealed with blind plugs	Interval 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 valid 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

11.1 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"> • 2 Core ARM Cortex-A9 CPU with NEON acceleration • FPGA for I/O handling Software: <ul style="list-style-type: none"> • Can be programmed within the SICK AppSpace environment • SICK Algorithm API
Random Access Memory	1 GB
Flash memory	256 MB in total, 30 MB of which available for applications
Memory card (optional)	Industry-grade microSD memory card (flash card), max. 16 GB
Programming software	SICK AppStudio
Sensor data processing	According to SICK Algorithm API

11.2 Interfaces

Feature	Parameter
Data storage and retrieval	Image and data logging via microSD memory card, internal RAM, and external FTP
SERIAL (RS-232 / RS-422 / RS-485)	
Number	1, also configurable as an encoder output port
Function	RS-232 / RS-422 / RS-485, incremental encoder (In/Out)
Maximum data transmission rate	RS-232: 115.2 kBaud RS-422: 2 MBaud RS-485: 2 MBaud
INC (incremental)	
Number	1, also configurable as RS-422 interface
Function	Incremental encoder (In/OUT), RS-422
Maximum frequency	2 MHz
ETHERNET	
Number	2
Function	Host, AUX, image transmission
Data transmission rate	10/100/1,000 Mbit/s
Protocol	TCP/IP, FTP (image transmission)
CAN	

Feature	Parameter
Number	1
Function	SICK CAN sensor network (master/slave, multiplexer/server) with termination resistor which can be activated
Data transmission rate	20 kbit/s ... 1 Mbit/s
Protocol	CSN (SICK CAN sensor network)
IO-Link	
Number	6 (SENSOR S1 to S6)
Function	IO-Link master V1.1
Data transmission rate	max. 230 kBaud
Digital switching inputs/outputs	
S1-S6	Inputs: 1 each, max. frequency: 30 kHz Inputs/outputs: 1 each (configurable), max. frequency: 30 kHz
USB	
Number	1
Function	USB 2.0 for configuration/diagnostics/firmware update

11.3 Mechanics and electronics

Feature	Parameter
Optical indicators	7 x red/green status indicators 2 x orange/green link/act displays 11 x red/green status indicators for Power, CAN, sensor, Inc, Serial 1 x blue CAN termination
Electrical connection	POWER: 1 x M12, 4-pin male connector, T-coded INC: 1 x M12, 8-pin female connector, A-coded SERIAL: 1 x M12, 8-pin female connector, A-coded CAN: 1 x M12, 5-pin female connector, A-coded SENSOR S1-S6, IO-Link master: 6 x M12, 5-pin female connector, A-coded ETHERNET: 2 x M12, 8-pin female connector, X-coded USB: Micro-B
Supply voltage	24 V DC, $\pm 10\%$ SELV in accordance with EN 60950-1
Operating current	Limit to max. 12 A from external power supply unit
Power consumption	15 W max., without connected sensors
Power output	Total 270 W max. (all connections)
Output current	
SENSOR S1-S6, IO	Max. output current to switching output pins: 100 mA
SENSOR S1-S6, IO	Max. output current to power supply pins: 1 A, LPS in accordance with EN 60950-1
CAN	Max. output current to power supply pin: 3.2 A, LPS in accordance with EN 60950-1
SERIAL	Max. output current to power supply pin: 1 A, LPS in accordance with EN 60950-1
INC	Max. output current to power supply pin: 0.5 A, LPS in accordance with EN 60950-1
Housing material	Aluminum
Housing color	Light blue (RAL 5012), with white-gray front foil (RAL 9002)
Protection class	III with functional earth

Feature	Parameter
Weight	876 g (including connection plugs)
Dimensions (W x D x H)	86.5 x 45.8 x 265.5 mm

11.4 Ambient data

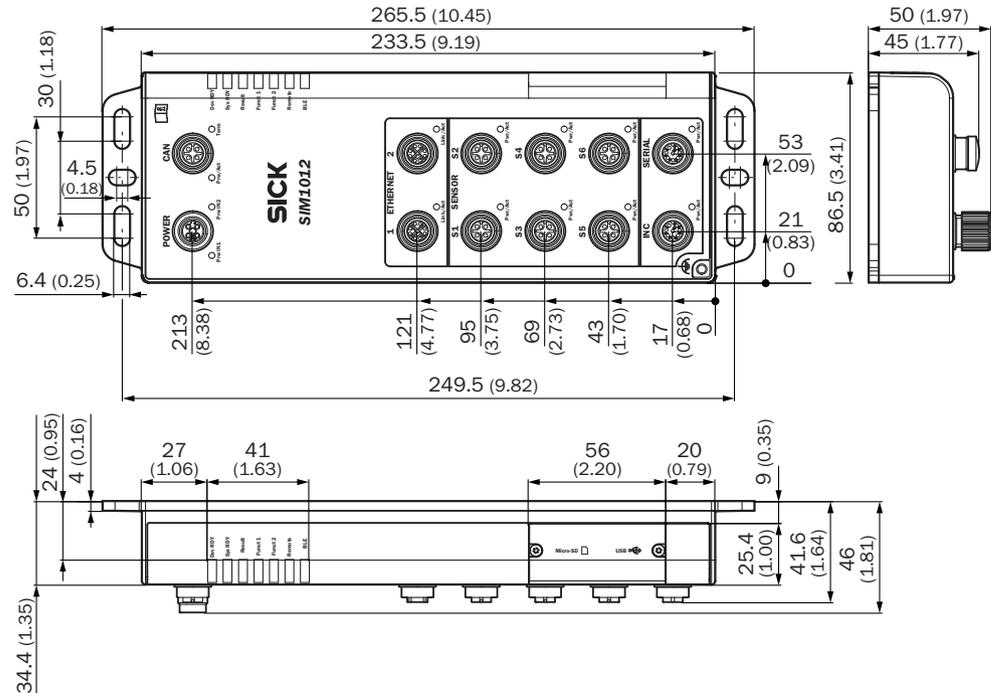
Feature	Parameter
Electromagnetic compatibility (EMC)	EN 61000-6-2:2005-08 EN 61000-6-4:2007 + A1:2011
Vibration resistance	EN 60068-2-6: 2008-02
Shock resistance	EN 60068-2-27:2009-05
Electrical safety	EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 +AC: 2011 + A2:2013
Enclosure rating	IP65 in accordance with EN 60529:1991-10 + A1:2000-02 + A2:2013-10 (requires blind plugs to be inserted into unused connections)
Ambient operating temperature	0 °C ... +50 °C, taking the described mounting requirements into account, see "Mounting the device", page 14
Storage temperature	-20 °C ... +70 °C
Permissible relative humidity	90%, non-condensing

12 Annex

12.1 Dimensional drawings

Dimensions without accessories

All measurements in mm.



12.2 Licenses

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