CDE50

Connection Device Ethernet





Described product

CDE50

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 more information, refer to the operating instructions of the specific machine or system.

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/CDE

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

- Model-specific online data sheets for device types, 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 types in various electronic formats
- 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 used to connect a SICK sensor in a Power-over-Ethernet (PoE) environment.

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.

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	Basic practical technical trainingKnowledge of the current safety regulations in the workplace

Activities	Qualification
Electrical installation, device replacement	 Practical electrical training Knowledge of current electrical safety regulations Knowledge of the operation and control of the devices in their particular application
Commissioning, configuration	 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	 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 RG0

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.

Product description 3

3.1 **Device view**



Figure 1: CDE50 device view

- 1 Drill hole for mounting
- **(2**) Cover with signal LEDs
- **(3**) Connection for sensor and PoE environment

3.2 **Functionality**

The CDE device is used to connect a SICK sensor in a Power-over-Ethernet (PoE) environment. Voltage is supplied to the device via PoE.

In the device, a separation of voltage supply and Ethernet takes place. A sensor can then be connected via separate cables for voltage supply (DEVICE connection) and Ethernet.

An additional sensor or a signal lamp can be integrated via the I/O connection. Signals can be displayed visually in the cover by integrated LEDs.

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:

- Do not store outdoors.
- Store in a dry area that is protected from dust.
- Do not expose to any aggressive substances.
- Protect from sunlight.
- Avoid mechanical shocks.
- Storage temperature: see "Technical data", page 19.
- For storage periods of longer than 3 months, check the general condition of all components and packaging on a regular basis.

5 **Mounting**



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. If you have any questions or anything remains unclear in this regard, please contact our service team.

5.1 Scope of delivery

- CDE50
- 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.

5.2 Preparing for mounting

Mounting 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.

Preparing for mounting

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

5.3 Mounting the device

- 1. Set the device on the mounting site.
- Fasten device with at least two M6 screws (max. 6 Nm) on opposite device sides 2. 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 at www.sick.com.

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

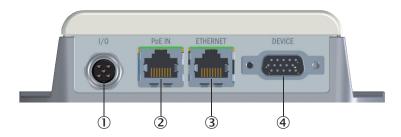


Risk of damage/malfunction due to incorrect PIN assignment

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



- ① I/O: Connection for sensor/signal lamp with digital inputs and outputs, voltage supply
- 2 PoE IN: Supply voltage and 100 Mbit Ethernet¹⁾
- 3 ETHERNET: 100 Mbit Ethernet
- 4 DEVICE: Connection of SICK 4Dpro identification sensor

6.5 Pin allocation of the connections

6.5.1 I/0



Figure 2: I/O pin assignment, M12 – 5-pin A-coded, female

PIN	Signal	Function
1	24 V	Supply voltage, peripherals
2	Result 1	Digital switching output 1, see pin 12 device connection
3	GND	Ground
4	Input sensor 1	Digital switching input 1, see pin 14 device connection
5	Result 2	Digital switching output 2, see pin 13 device connection

6.5.2 DEVICE

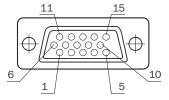


Figure 3: Device pin assignment, D-Sub-HD 15-pin, female

PIN	Signal	Function
1	24 V	Supply voltage
2	NC	Not connected
3	NC	Not connected
4	NC	Not connected

¹⁾ Mode A and mode B possible in line with IEEE 802.3at.

PIN	Signal	Function
5	GND	Ground
6	NC	Not connected
7	NC	Not connected
8	NC	Not connected
9	NC	Not connected
10	NC	Not connected
11	NC	Not connected
12	Result 1	Digital switching output 1
13	Result 2	Digital switching output 2
14	Input sensor 1	Digital switching input 1
15	GND	Ground

Connecting voltage supply 6.6



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.
- Lay the cable(s) with strain relief.
- 3. Have the user connect the voltage supply.
- Have the user activate the voltage.

Operation 7

7.1 Feedback display

Feedback corresponding to "Result 1" or "Result 2" of the connected SICK identification sensor is provided via signal LEDs in the cover.

Designation	LED behavior	display
Result	SICK	Result not active
	SICK	Result 1 active
	500-11	Result 2 active
	SICK	Result 1 and 2 active

8 **Maintenance**

8.1 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. Particular attention must be paid to ensure that the cooling ribs and, if present, the fan are free from dust and dirt. Clean using a dry towel or an industrial vacuum cleaner. Do not use cleaning agents.

8.2 Maintenance plan

During operation, the device works maintenance-free.

Table 2: 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 the screw connections and plug connectors.	Depends on the place of use, ambient conditions or operating requirements. Recommended: At least every 6 months.	Specialist

9 Decommissioning

9.1 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.

Technical data 10



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/CDE

Please note: This documentation may contain further technical data.

10.1 **Features**

Table 3: Features

Feature	Parameters
Task	Integration of a SICK sensor into a PoE environment
Supported devices	SICK 4Dpro identification sensor

10.2 **Interfaces**

Table 4: Interfaces

Feature	Parameters	
PoE IN/ ETHERNET		
Function	PoE IN: Power-over-Ethernet ETHERNET: Ethernet	
Data transmission rate	10/100 Mbit/s	
Length of cable	max. 100 m	
Digital input/output I/O		
Function	1 × input	
	2 x output	
DEVICE		
Function	SICK 4Dpro identification sensor connection	

Mechanics and electronics 10.3

Table 5: Mechanics and electronics

Feature	Parameters
Optical indicators	LEDs green/red in cover
Electrical connection	PoE IN: 1 x RJ45 8-pin ETHERNET: 1x RJ45 8-pin I/O: M12 5-pin female connector, A-coded DEVICE: 1 x 15-pin D-Sub-HD female connector
Supply voltage	DC 42 57 V, typically 48 V, according to PoE technology, class 4
Power consumption	4 W max., without connected devices, without activation of signal LEDs
Power output	21.5 W without operation of signal LEDs 19.5 W during operation of a signal LED 17.5 W during simultaneous operation of both signal LEDs

Feature	Parameters
Housing material	Aluminum, polypropylene
Housing color	Unpainted aluminum
Protection class	III
Weight	265 g
Dimensions (W x D x H)	138 x 94 x 35 mm

Ambient data 10.4

Table 6: Ambient data

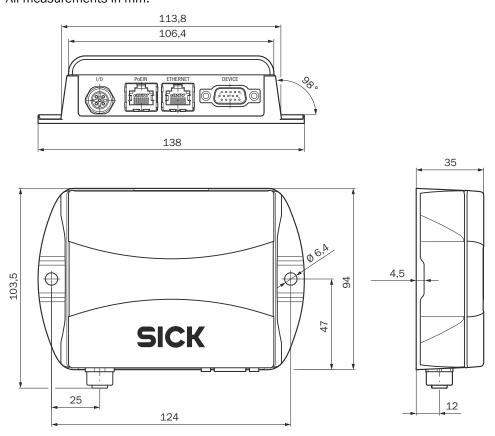
Feature	Parameters
Electromagnetic compatibility (EMC)	IEC 61000-6-2:2016-08 IEC 61000-6-4:2018-02
Vibration resistance	EN 60068-2-6: 2008-02
Shock resistance	EN 60068-2-27:2009-05
Electrical safety	EN 61010
Overvoltage category	II
Enclosure rating	IP20
Ambient operating temperature	-40 °C +45 °C, when the described mounting requirements are taken into account, see "Mounting", page 12
Storage temperature	-40 °C +70 °C
Permissible relative humidity	90%, non-condensing
Height position	max. 2,000 m

11 Annex

11.1 Dimensional drawings

Dimensions without accessories

All measurements in mm.



11.2 Licenses

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