

UC12

Ultrasonic sensor

SICK
Sensor Intelligence.



Described product

UC12

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 the handling and safe operation of the machine or system in which the device is integrated. Information on this can be found in the operating instructions for the 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

More information can be found on the product page.

The page can be accessed via the **SICK Product ID: pid.sick.com/{P/N}/{S/N}**

{P/N} corresponds to the part number of the product, see type label.

{S/N} corresponds to the serial number of the product, see type label (if indicated).

The following information is available depending on the product:

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

2 Safety information

2.1 Intended use

The UC12 ultrasonic sensor is used for non-contact detection and distance measurement. Distance measurement is not possible below the operating range of the device.

SICK AG assumes no liability for losses or damage arising from the use of the product, either directly or indirectly. This applies in particular to use of the product that does not conform to its intended purpose and is not described in this documentation.

2.2 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 the documentation must be strictly observed.
- Shut down the product immediately in case of damage.

2.3 Cybersecurity

Overview

To protect against cybersecurity threats, it is necessary to continuously monitor and maintain a comprehensive cybersecurity concept. A suitable concept consists of organizational, technical, procedural, electronic, and physical levels of defense and considers suitable measures for different types of risks. The measures implemented in this product can only support protection against cybersecurity threats if the product is used as part of such a concept.

You will find further information at www.sick.com/psirt, e.g.:

- General information on cybersecurity
- Contact option for reporting vulnerabilities
- Information on known vulnerabilities (security advisories)

2.4 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

2.5 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.

2.6 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.

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

2.7 Operational safety and specific hazards

Please observe the safety notes and the warnings listed here and in other sections 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 UL conformity

The UL certification is dependent on the type. Any existing UL certification can be found on the type label.



NFPA79 applications only. Adapters including field wiring cables are available.

More information can be found on the product page:

The page can be accessed via the **SICK Product ID: pid.sick.com/{P/N}/{S/N}**

{P/N} corresponds to the part number of the product, see type label.

{S/N} corresponds to the serial number of the product, see type label (if indicated).

3 Product description

3.1 Scope of delivery

The delivery of the device includes the following components:

No. of units	Component	Remarks
1	Device in the version ordered	Device versions <ul style="list-style-type: none"> • Digital output without IO-Link • Digital output with IO-Link
1	Printed safety notes, multilingual	Brief information and general safety notes

Accessories are only supplied if you order them separately, see "Accessories", page 30.

The actual scope of delivery may differ for special designs, additional orders or due to the latest technical changes.

3.2 Product identification

Packaging

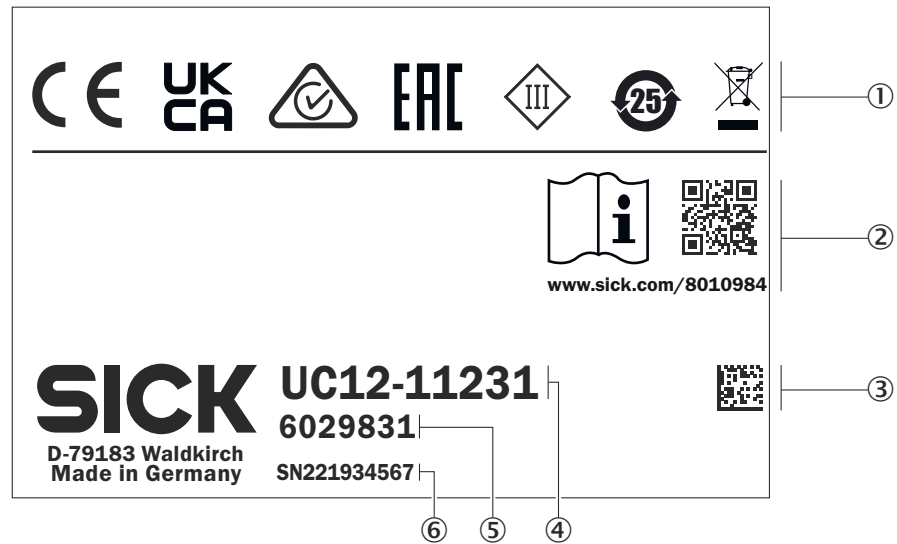


Figure 1: Packaging (example)

- ① Approval marks and test symbols
- ② Link to the operating instructions
- ③ Data Matrix code with product data
- ④ Type code
- ⑤ Part number
- ⑥ Serial number

Type label



Figure 2: Type label (example)

- ① Connection diagram
- ② Approval marks and test symbols
- ③ Operating range and limiting range
- ④ Supply voltage and output current
- ⑤ Part number
- ⑥ Type code

3.3 Type code

Type code structure

UC12 – a b c d e

Position	Description	Characteristic
a	Principle of operation	1: Button operation
b	Detection range	1: 20 mm ... 150 mm 2: 55 mm ... 250 mm
c	Connection technology	2: Male connector M12, 4-pin
d	Housing material	3: Nickel-plated brass
e	Output function	1: 2 PNP (complementary digital outputs) 5: 2 NPN (complementary digital outputs) E: 2 push-pull: PNP/NPN with IO-Link 1.1



NOTE

Not all combinations based on type code are possible. The available device types can be found online at www.sick.com/UC12.

3.4 Product overview

Product overview

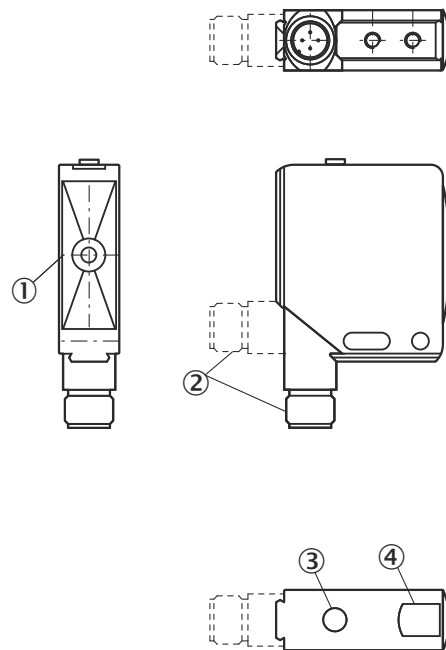


Figure 3: Product overview, UC12

- ① Sending and receiving axis
- ② Connection
- ③ Teach-in button
- ④ Status LED

Further topics

- [Dimensional drawing](#)

4 Transport and storage

4.1 Transport

**NOTICE****Damage due to improper transport!**

- The product must be packaged with protection against shock and damp.
- Recommendation: Use the original packaging.
- Note the symbols on the packaging.
- Do not remove packaging until immediately before you start mounting.

4.2 Unpacking

- To protect the device against condensation, allow it to equilibrate with the ambient temperature before unpacking if necessary.
- Handle the device with care and protect it from mechanical damage.

4.3 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.

4.4 Storage

- Do not store outdoors.
- Store in a place protected from moisture and dust.
- Recommendation: Use the original packaging.
- 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 Mounting instructions

- Observe the technical data.
- To prevent condensation, avoid exposing the device to rapid changes in temperature.
- The mounting site has to be designed for the weight of the device.
- When using multiple devices, observe the mounting distance, see "Mounting distances", page 14.

5.2 Mounting distances

Device type	Parallel	Opposite
UC12-11xx	> 250 mm	> 1300 mm
UC12-12xx	> 250 mm	> 1400 mm

5.3 Aligning the device

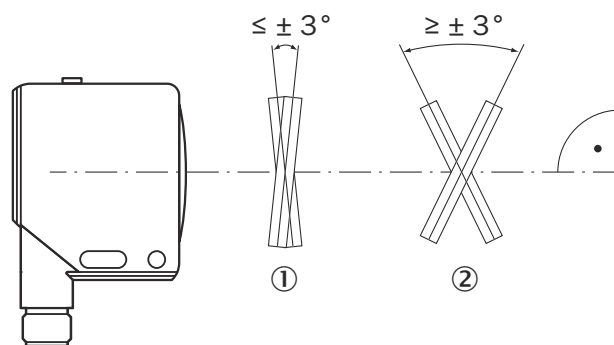


Figure 4: Aligning the device for smooth and rough surfaces

- ① Smooth surface: Angle $\leq 90^\circ \pm 3^\circ$ between the sensor axis and object surface
- ② Rough surface: Angle $\geq 90^\circ \pm 3^\circ$ between the sensor axis and object surface

6 Electrical installation

6.1 Wiring instructions



NOTE

Pre-assembled cables can be found on the product page. It can be called up via **SICK Product ID: pid.sick.com/{P/N}**
{P/N} corresponds to the part number of the product (see type label).



NOTICE

Faults during operation and defects in the device or the system

Incorrect wiring may result in operational faults and defects.

- Follow the wiring notes precisely.

The enclosure rating stated in the technical data is achieved only with a screwed plug connector or protective cap.

Connect the connecting cables in a de-energized state. Do not switch on the supply voltage until installation is complete and all connecting cables are connected to the device and control.

The supply voltage must be as specified in the technical data, see "[Technical data](#)", [page 25](#).

When commissioning, protect the device from moisture and contamination.

6.2 Prerequisites for safe operation of the device



WARNING

Risk of injury and damage caused by electrical current!

As a result of equipotential bonding currents between the device and other grounded devices in the system, faulty grounding of the device can give rise to the following dangers and faults:

- Dangerous voltages are applied to the metal housings.
- Devices will behave incorrectly or be destroyed.
- Cable shielding will be damaged by overheating and cause cable fires.

Remedial measures

- Only skilled electricians should be permitted to carry out work on the electrical system.
- If the cable insulation is damaged, disconnect the voltage supply immediately and have the damage repaired.
- Ensure that the ground potential is the same at all grounding points.
- Where local conditions do not meet the requirements for a safe earthing method, take appropriate measures. For example, ensure low-impedance and current-carrying equipotential bonding.

The device is connected to the peripheral devices (any local trigger sensor(s), system controller) via shielded cables. The cable shield – for the data cable, for example – rests against the metal housing of the device.

The device can be grounded through the cable shield or through a blind tapped hole in the housing, for example.

If the peripheral devices have metal housings and the cable shields are also in contact with their housings, it is assumed that all devices involved in the installation have the **same ground potential**.

This is achieved by complying with the following conditions:

- Mounting the devices on conductive metal surfaces
- Correctly grounding the devices and metal surfaces in the system
- If necessary: low-impedance and current-carrying equipotential bonding between areas with different ground potentials

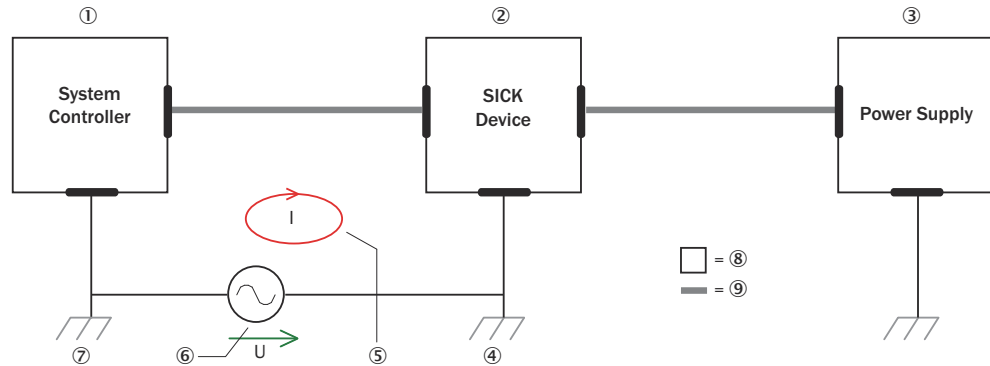


Figure 5: Example: Occurrence of equipotential bonding currents in the system configuration

- ① System controller
- ② Device
- ③ Voltage supply
- ④ Grounding point 2
- ⑤ Closed current loop with equalizing currents via cable shield
- ⑥ Ground potential difference
- ⑦ Grounding point 1
- ⑧ Metal housing
- ⑨ Shielded electrical cable

If these conditions are not fulfilled, equipotential bonding currents can flow along the cable shielding between the devices due to differing ground potentials and cause the hazards specified. This is, for example, possible in cases where there are devices within a widely distributed system covering several buildings.

Remedial measures

The most common solution to prevent equipotential bonding currents on cable shields is to ensure low-impedance and current-carrying equipotential bonding. If this equipotential bonding is not possible, the following solution approaches serve as a suggestion.



NOTICE

We expressly advise against opening up the cable shields. This would mean that the EMC limit values can no longer be complied with and that the safe operation of the device data interfaces can no longer be guaranteed.

Measures for widely distributed system installations

On widely distributed system installations with correspondingly large potential differences, the setting up of local islands and connecting them using commercially available **electro-optical signal isolators** is recommended. This measure achieves a high degree of resistance to electromagnetic interference.

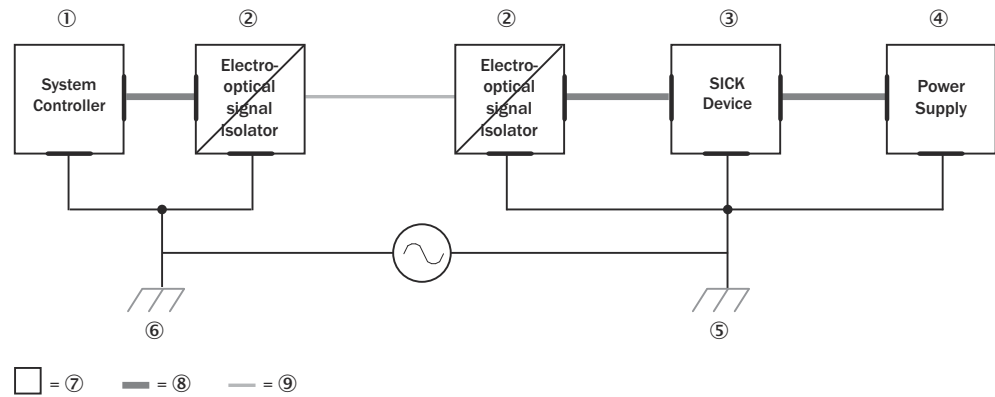


Figure 6: Example: Prevention of equipotential bonding currents in the system configuration by the use of electro-optical signal isolators

- ① System controller
- ② Electro-optical signal isolator
- ③ Device
- ④ Voltage supply
- ⑤ Grounding point 2
- ⑥ Grounding point 1
- ⑦ Metal housing
- ⑧ Shielded electrical cable
- ⑨ Optical fiber

The use of electro-optical signal isolators between the islands isolates the ground loop. Within the islands, a stable equipotential bonding prevents equalizing currents on the cable shields.

Measures for small system installations

For smaller installations with only slight potential differences, insulated mounting of the device and peripheral devices may be an adequate solution.

Even in the event of large differences in the ground potential, ground loops are effectively prevented. As a result, equalizing currents can no longer flow via the cable shields and metal housing.



NOTICE

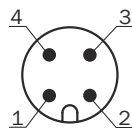
The voltage supply for the device and the connected peripheral devices must also guarantee the required level of insulation.

Under certain circumstances, a tangible potential can develop between the insulated metal housings and the local ground potential.

6.3 Pin assignment

Teach-in via digital output: The first output is complementary to the second output.

UC12-xxxx1, UC12-xxxx5



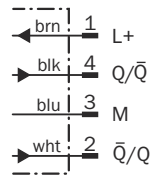


Figure 7: Male connector, M12, 4-pin

Table 2: Pin assignment for UC12-xxxx1, UC12-xxxx5

Contact	Labels	Wire color	Description
1	L+	Brown	Supply voltage, see "Mechanics/Electronics", page 25
2	\bar{Q}/Q	White	Inverted digital output / digital output
3	M	Blue	Supply voltage: 0 V
4	Q/\bar{Q}	Black	Digital output / inverted digital output

UC12-xxxxE

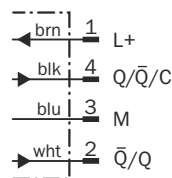
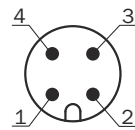


Figure 8: Male connector, M12, 4-pin

Table 3: Pin assignment for UC12-xxxxE

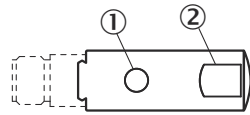
Contact	Labels	Wire color	Description
1	L+	Brown	Supply voltage, see "Mechanics/Electronics", page 25
2	\bar{Q}/Q	White	Inverted digital output / digital output
3	M	Blue	Supply voltage: 0 V
4	$Q/\bar{Q}/C$	Black	Digital input / inverted digital output / IO-Link

7 Operation

7.1 Display and control elements

Overview

The device has a status LED that can light up green or orange depending on the operational status.



- ① Teach-in button
- ② Status LED

Status LED

LED	Status (color)	Status
Status LED	● (Green)	Device ready
	● (Orange)	Digital output active
	☀ (Orange) Flashes quickly for 3 seconds.	Teach-in: <ul style="list-style-type: none"> • No object detected • Object outside the detection range • First switching point within and second switching point outside the detection range ¹⁾ The existing switching points are retained.

● = Lights up; ● = Flashes; ○ = Does not light up.

¹⁾ Valid for the switching point modes Window Mode and Window Mode ± 8%.

7.2 Digital output teach-in

7.2.1 Factory settings of the digital output

- N/O contact
- Switching point at maximum operating range

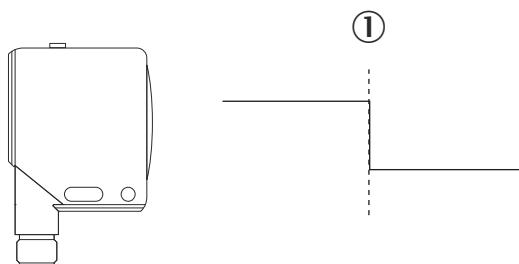
If one or more digital outputs have been inverted via IO-Link, these inversion settings are reset back to the factory settings by a teach-in on the device (complementary output).

7.2.2 Teaching in the switching point (Single Point Mode, DtO)

Overview

When the object is located below the taught-in switching point, the digital output is active.

Approach



1. Position the object at ①.
2. Press the teach-in button for 2 seconds until the orange LED flashes.
- ✓ The switching point is taught in. The device automatically switches to normal operation mode.

7.2.3 Teaching in the switching window (Window Mode)

Overview

When the object is located within the taught-in switching window, the digital output is active.

Important information

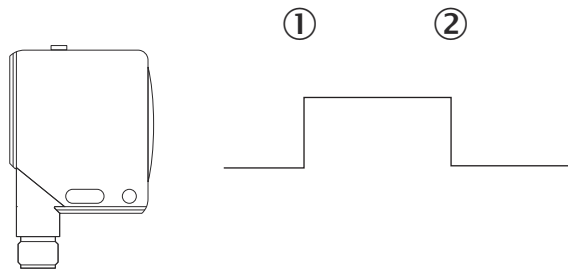


NOTE

UC12-xxxx1, UC12-xxxx5: The hysteresis points apply outwards from the configured switching window points.

UC12-xxxxE: The hysteresis points apply inwards from the configured switching window points.

Approach



1. Position the object at ①.
2. Press the teach-in button for 5 seconds until the green LED flashes.
- ✓ LED flashes orange and green alternately.
3. Position the object at ②.
- ✓ LED flashes orange and green alternately.
4. Press the teach-in button for 1 second.
- ✓ The switching points are taught-in. The device automatically switches to normal operation mode.

7.2.4 Teaching in the background (Window Mode $\pm 8\%$, ObSB)

Overview

When the object is located either below the taught-in reflector -10 mm (IO-Link: -8%) or above the taught-in reflector +10 mm (IO-Link: +8%), the digital output is active.

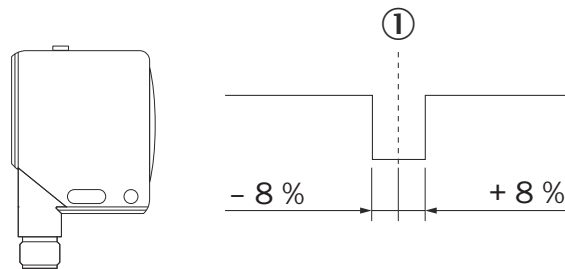
Approach

Figure 9: UC12-xxxxE

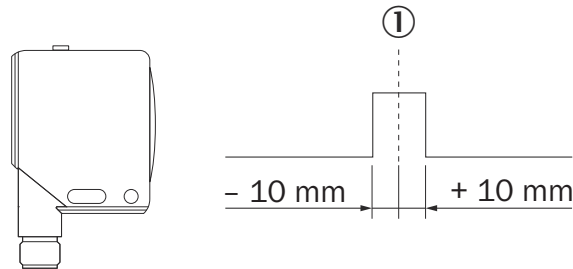


Figure 10: UC12-xxxx1, UC12-xxxx5

1. Position the background at ①.
2. Press the teach-in button for 5 seconds until the green LED flashes.
 - ✓ LED flashes orange and green alternately.
3. Press the teach-in button for 10 seconds until the green LED lights up.
 - ✓ The background is taught-in. The device automatically switches to normal operation mode.

7.3 Resetting the device to factory settings**Approach**

1. Switch off the supply voltage.
2. While pressing the teach-in button, switch on the supply voltage. Keep pressing and holding down the teach-in button for 13 seconds until the LED lights up permanently orange or green depending on the state of the digital output.
 - ✓ The device is reset to the factory settings. The device automatically switches to normal operation mode.

7.4 Activating and deactivating the teach-in button**Approach**

1. Switch off the supply voltage.
2. While pressing the teach-in button, switch on the supply voltage. Press and hold down the teach-in button for 5 seconds until the orange LED flashes.
 - ✓ Teach-in button activated: LED flashes orange quickly.
 - ✓ Teach-in button deactivated: LED flashes green quickly.
3. To change the setting, press the teach-in button for 1 second.
 - ✓ The flashing LED changes color.
4. Wait 10 seconds.
 - ✓ The device automatically switches to normal operation mode.

7.5 IO-Link

Depending on the device type, the device can exchange process data and parameters via IO-Link. To do this, connect the device to a suitable IO-Link master. A sensor-specific device description file (IODD) is required in the IO-Link master.

The IODD and additional information are available at www.sick.com/UC12.

7.6 Establishing a connection to SOPAS ET

Overview

The SOPAS Engineering Tool (SOPAS ET) software is suitable for parameterization as well as for service and diagnostics purposes. SOPAS ET can be used for device types that come with an IO-Link interface.

Prerequisites

- A computer with the SOPAS ET software installed on it, and a free USB 2.0 compatible port



NOTE

The most up-to-date version of the SOPAS ET software can be downloaded from www.sick.com/SOPAS_ET. The respective system requirements for installing SOPAS ET are also specified there.

-
- SICK SiLink2 Master (available as accessory)
 - Connection cable with M12 male and female connectors, 4-pin (available as accessory)
 - Device description file (SDD)



NOTE

The SDD can be installed in SOPAS ET or via the SICK website. Follow the instructions in SOPAS ET.

Approach

1. Connect the device to the SiLink2 Master via the male connector or an additional connection cable.
2. Connect the SiLink2 Master to the computer using the supplied USB cable.
3. Switch on and start the computer.
4. To ensure an adequate voltage supply to the device, also connect the enclosed wall plug to the SiLink2 Master.
- ✓ The status LEDs light up green after successful initialization. The device is ready for use.
5. Install the device description file.
6. Select the device from the device catalog and add it to a project.
- ✓ A connection to the device is established via the communication interface. The connection must be activated for data transmission (**online**).

8 Maintenance

8.1 Maintenance plan

During operation, the device works maintenance-free.

Table 4: 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
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

8.2 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.
-
- ▶ Carefully clean the adjoining faces with water at regular intervals.

9 Troubleshooting

9.1 Repairs

Repair work on the device may only be performed by qualified and authorized personnel from SICK AG. Interruptions or modifications to the device by the customer will invalidate any warranty claims against SICK AG.

9.2 Returns

- ▶ Only send in devices after consulting with SICK Service.
- ▶ The device must be sent in the original packaging or an equivalent padded packaging.



NOTE

To enable efficient processing and allow us to determine the cause quickly, please include the following when making a return:

- Details of the contact person
 - Description of the application
 - Description of the fault that occurred
-

9.3 Disposal



CAUTION

Risk of injury due to hot device surface.

The surface of the device can become hot.

- Before performing work on the device (e.g. mounting, cleaning, disassembly), switch off the device and allow it to cool down.
 - Ensure good dissipation of excess heat from the device to the surroundings.
-

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.
-

10 Technical data



NOTE

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

It can be called up via **SICK Product ID: pid.sick.com/{P/N}**

{P/N} corresponds to the part number of the product (see type label).

Please note: This documentation may contain further technical data.

10.1 Mechanics/Electronics

Supply voltage V_S	DC 10 V ... 30 V ¹⁾
Power consumption	≤ 1.2 W ²⁾
Initialization time	< 300 ms
Design	Cuboid
Housing material	Metal (zinc die cast) Ultrasonic converter: Polyurethane foam, epoxy resin with glass content
Connection type	Male connector, M12, 4-pin
Display	1 x LED
Weight	75 g
Sending axis	Straight
Dimensions (W x H x D)	15 mm x 48.8 mm x 43.5 mm
Enclosure rating	IP65 / IP67 (EN 60529)
Protection class	III

¹⁾ Limit values, reverse-polarity protected Operation in short-circuit protected network: max. 8 A.

²⁾ Without load.

10.2 Dimensional drawing

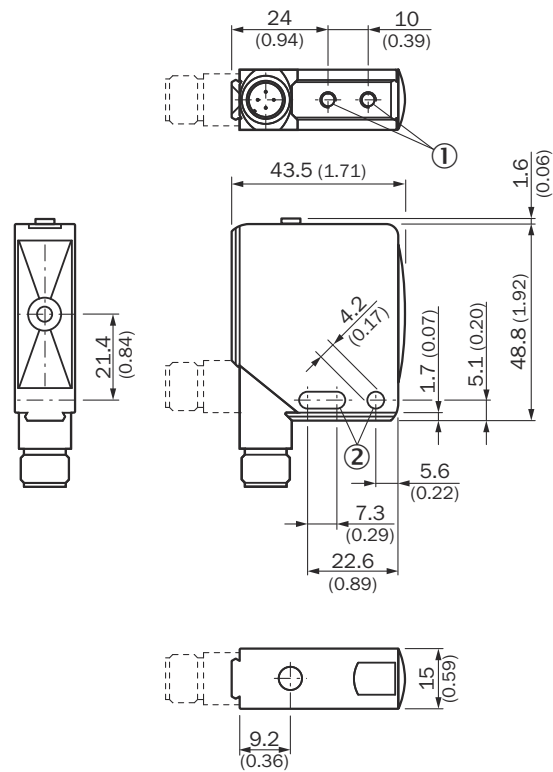


Figure 11: structure and device dimensions, unit: mm (inch), decimal separator: period

- ① M4 threaded mounting hole, 4 mm depth
- ② Fixing hole

10.3 Performance

Operating range	UC12-1123x: 20 mm ... 150 mm UC12-1223x: 55 mm ... 250 mm
Limiting range	UC12-1123x: 250 mm UC12-1223x: 350 mm
Measuring object	Natural objects
Resolution	≥ 0.1 mm
Repeatability	± 0.15% ¹⁾
Accuracy	± 1% ²⁾
Temperature compensation	✓
Response time	30 ms
Switching frequency	25 Hz
Output time	8 ms
Ultrasonic frequency (typical)	UC12-1123x: 380 kHz UC12-1223x: 500 kHz
Detection range (typical)	Detection ranges

Additional function	<ul style="list-style-type: none"> Configurable switching point modes: Single Point Mode (DtO), Window Mode (switching window), Window Mode $\pm 8\%$ (ObsB) Teachable digital output Teach-in button (can be deactivated) Reset to factory settings
----------------------------	---

- 1) Relative to the current measured value, minimum value \geq resolution.
 2) Relative to the current measured value.

10.4 Interfaces

IO-Link	UC12-1x23E: IO-Link V1.1 Function: Process data, parameterization, diagnostics, data storage
digital output	UC12-11231: 2 PNP (complementary digital outputs Q, \bar{Q}) ¹⁾ , maximum output current $I_A \leq 500$ mA UC12-11235: 2 NPN (complementary digital outputs Q, \bar{Q}) ²⁾ , maximum output current $I_A \leq 500$ mA UC12-1x23E: Push-pull: PNP/NPN ³⁾ (complementary digital outputs Q, \bar{Q}), maximum output current $I_A \leq 100$ mA
Hysteresis	2 mm

- 1) PNP: HIGH = $U_V - (< 2 V)$ / LOW = 0 V.
 2) NPN: HIGH $\leq 2 V$ / LOW = U_V .
 3) Push-pull: PNP/NPN: HIGH = $U_V - (< 0.6 V)$ / LOW = $< 0.6 V$.

10.5 Ambient data

Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-40 °C ... +85 °C

10.6 Temperature compensation

UC12-xxxx1, UC12-xxxx5

The internal temperature compensation reaches the optimal operating point after an uptime of 30 minutes.

UC12-xxxxE

The internal temperature compensation reaches the optimal operating point after an uptime of 2 minutes. Temperature compensation is adjusted at the factory to standard mounting conditions with an aluminum mounting bracket and mounting nuts.

Temperature compensation is automatically adjusted to the individual installation situation under the following conditions.

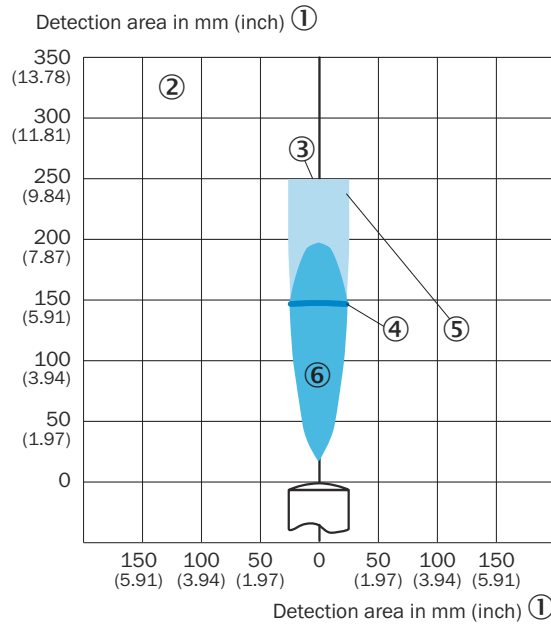
Conditions of automatic adjustment of temperature compensation

- The device is in a cold state.
- Digital output: The digital output is deactivated for approx. 30 minutes.

If the measured value changes in the 30 minutes, the adjustment is canceled. The default parameters or the last adjusted parameters are retained. Automatic adjustment is suitable for installation situations that deviate greatly from standard installation conditions or where high measurement accuracy is required. One example is thermally insulated mounting.

10.7 Detection ranges

UC12-112x



- ① Detection range in mm (inch)
- ② Detection range dependent on reflection properties, size, and alignment of the object
- ③ Limiting range
- ④ Operating range
- ⑤ Example object: aligned plate 10 mm x 10 mm
- ⑥ Example object: cylindrical bar with a diameter of 10 mm

11 Accessories



NOTE

On the product page you will find accessories and, if applicable, related installation information for your product.

It can be called up via **SICK Product ID: pid.sick.com/{P/N}**

{P/N} corresponds to the part number of the product (see type label).

12 Annex

12.1 Declarations of conformity and certificates

You can download declarations of conformity and certificates via the product page.

It can be called up via **SICK Product ID: pid.sick.com/{P/N}**

{P/N} corresponds to the part number of the product (see type label).

12.2 Licenses

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For license texts see www.sick.com/licensetexts.

Printed copies of the license texts are also available on request.

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