CLV62x, CLV63x and CLV64x with IP69K Protective Housing

Bar Code Scanners

SICK
Sensor Intelligence.

Described product

CLV62x, CLV63x and CLV64x in IP69K protective housing

Manufacturer

SICK AG
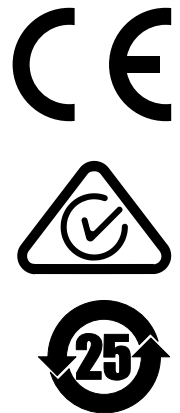Erwin-Sick-Str. 1
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Germany

Legal information

Original document

This document is an original document of SICK AG.

Contents

1   About this document

1.1   Information on the Technical Information

This Technical Information **supplements** the respective operating instructions and describes mounting and electrical installation of CLV62x, CLV63x and CLV64x bar code scanners which are equipped with an IP69K protective housing.

The operating instructions for the individual product families can be downloaded online from the respective product page on the Internet.

Table 1: Operating instructions for the CLV62x, CLV63x and CLV64x bar code scanners

Device	Material number Operating instructions German	Material number Operating instructions English	Material number Operating instructions French	Product page
CLV62x	8011964	8011965	8019585	www.sick.com/ CLV62x
CLV63x	8019587	8019588	8019589	www.sick.com/ CLV63x
CLV64x	8019587	8019588	8019589	www.sick.com/ CLV64x

This Technical Information contains the device-specific information on the device, mounting and electrical connection. See the operating instructions of the respective product family for more information.

Adherence to all the specified safety notes, warnings and guidelines in this Technical Information and in the corresponding operating instructions is a prerequisite for working safely.

This Technical Information is intended to be used by qualified personnel and electrical specialists.

> **NOTE**
> Carefully read this Technical Information and the operating instructions of the bar code scanner before carrying out any work with the device.

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.

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

2 Safety information

2.1 Intended use

The device consists of a bar code scanner of the product family CLV62x, CLV63x or CLV64x in the Ethernet version with a protective housing with enclosure rating IP69K.

The protective housing comprises two parts, the bar code scanner that is permanently installed in the protective housing at the factory and the supplied protective double bushing including sealing materials for the two electrical connections.

The device is protected against water from high-pressure or steam cleaners and against dust subject to use of the corresponding cables and correct mounting. For the specification, see "Technical data", page 27

> **!** **NOTICE**
> The following requirements must be met in order to achieve the IP69K enclosure rating:
> - Use only the connection cables specified by SICK.
> - Seal the two cable outlets at the protective double bushing with the corresponding O-rings.
>
> The O-rings are included in the device scope of delivery and are matched to the outer diameters of the plug connectors.

The device is an intelligent, opto-electronic SICK ID sensor and is used for automated, fixed identification and decoding of bar codes on moving or stationary objects. The device transmits the data content of the decoded bar codes to a higher-level control (PLC) for coordinating further processing.

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

- The protective housing of the factory-installed bar code scanner must not be opened.
- The device must not be used in explosion-hazardous areas.
- The device does not constitute a safety-relevant device according to the EC Machinery Directive (2006/42/EC).
- Any other use that is not described as intended use is prohibited.
- Any use of mounting accessories not specifically approved by SICK AG is at your own risk.

2.3 Hazard warnings and operational safety

To reduce health risks and to avoid dangerous situations, observe the safety notes and warnings set out in the following chapters of these operating instructions.

2.3.1 Laser radiation

The devices work with a red light laser diode in the wavelength 655 nm. They correspond to laser class 2.

⚠️ **CAUTION**

Optical radiation: Laser class 2

The human eye is not at risk when briefly exposed to the radiation for up to 0.25 seconds. Exposure to the laser beam for longer periods of time may cause damage to the retina. The laser radiation is harmless to human skin.

- Do not look into the laser beam intentionally.
- Never point the laser beam at people's eyes.
- If it is not possible to avoid looking directly into the laser beam, e.g., during commissioning and maintenance work, suitable eye protection must be worn.
- Avoid laser beam reflections caused by reflective surfaces. Be particularly careful during mounting and alignment work.
- Do not open the housing. Opening the housing may increase the level of risk.
- Current national regulations regarding laser protection must be observed.

It is not possible to entirely rule out temporary disorienting optical effects, particularly in conditions of dim lighting. Disorienting optical effects may come in the form of dazzle, flash blindness, afterimages, photosensitive epilepsy, or impairment of color vision, for example.

Output of laser radiation at the device

The entire reading window is a laser output aperture.
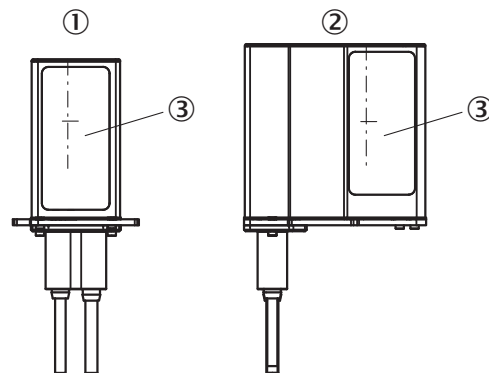
Figure 1: Reading window and output aperture of laser radiation in IP69K protective housing

①   Bar code scanners CLV62x, CLV63x and CLV64x with front reading window
②   Bar code scanners CLV63x and CLV64x with oscillating mirror and side reading window
③   Reading window and laser output aperture

ℹ️ **NOTE**

No maintenance is required to ensure compliance with Class 2 laser.

Warning symbol on the device

The laser warning label is lasered onto the protective housing. The type label is attached on the housing side of the connections.

In addition to other information, the type label also contains the laser output data. This data consists of: Laser output power (maximum/average), wavelength or wavelength range, and pulse time duration,
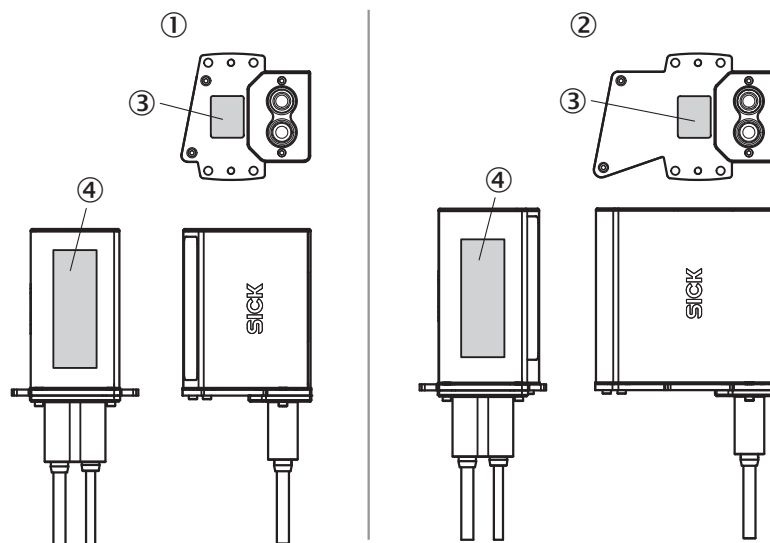
Figure 2: Position of type label and laser warning label on the IP69K protective housing

①   Bar code scanners CLV62x, CLV63x and CLV64x with front reading window

②   Bar code scanners CLV63x and CLV64x with oscillating mirror and side reading window

③   Position of the type label

④   Position of the laser warning label
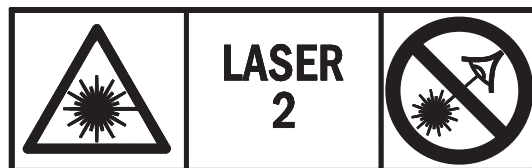
Figure 3: Inhalt des Laserwarnschildes am Gerät

What the laser warning label means: Laser radiation – Never look into the light beam – Laser class 2

ℹ️ **NOTE**

Additional laser warning label

If the laser warning label applied to the protective housing is concealed when the device is installed into a machine or paneling, the laser beam output aperture must be suitably labeled. For this purpose, an additional warning label of the same type must be applied next to the output aperture.

Controlling the laser diode

ℹ️ **NOTE**

The CLV62x, CLV63x and CLV64x bar code scanners in IP69K protective housing do not have an externally visible visual indicator (LED) for laser diode activity.

When operating properly, the device only switches the laser diode on if there is an object in the reading area, or if a reading is required (cyclic reading operation).

A laser timeout can switch off the laser diode automatically in this type of object trigger control if **the pulse has stopped for too long** (e.g. the conveyor system has stopped). In this case, the current internal reading interval of the device remains open.

Irrespective of the selected configuration type, the laser timeout can be set as follows:

- Using the SOPAS ET configuration software, on the **Illumination Control** device page
- During GSD configuration with the "10_Object Trigger Ctrl" module (PROFINET/ PROFIBUS)

At the default setting, laser timeout is deactivated.

The laser diode is permanently or repeatedly switched on in the following device statuses:

- In the "Percentage Evaluation" and "Auto Setup" operating modes (only used temporarily for configuration or diagnosis)
- In reading operation in the PSDI types "Auto pulse" (adjustable duty cycle) or "free."

If timeout is activated, it will have no effect here.

3 Product description

3.1 Product ID

3.1.1 Type label

The type label is attached on the housing side with the electrical connections.
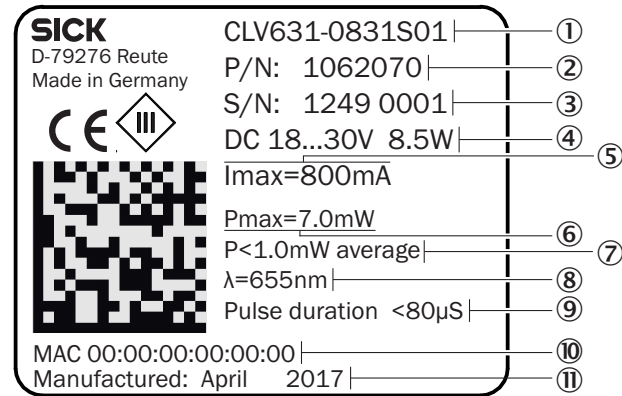
Figure 4: Type label on IP69K protective housing (example)

①   Type designation
②   Part number
③   Serial number
④   Supply voltage and power consumption
⑤   Maximum current consumption
⑥   Maximum laser output
⑦   Average laser output
⑧   Laser wavelength
⑨   Laser pulse duration
⑩   MAC address
⑪   Date of manufacture

3.2   Design

CLV62x in IP69K protective housing, front reading window

Figure 5: CLV62x: design and device dimensions of the IP69K protective housing with front reading window (dimensions in mm or inch)

①   Fixing holes, dia. 5.5 mm (4 x)

②   "Ethernet" connection, female connector, M12, 4-pin, D-coded

③   "Power/Serial Data/CAN/I/O" connection, male connector, M12, 17-pin, A-coded

④   Threaded hole, M5 (2 x)

⑤   Reference point for reading distance (housing edge – object)

⑥   Light emission position (central position of the deflected laser beam)

⑦   Protective double bushing for the electrical connections

CLV63x or CLV64x in IP69K protective housing, front reading window

Figure 6: CLV63x / CLV64x: design and device dimensions of the IP69K protective housing with front reading window (dimensions in mm or inch)

①   Fixing holes, dia. 5.5 mm (4 x)

②   "Ethernet" connection, female connector, M12, 4-pin, D-coded

③   "Power/Serial Data/CAN/I/O" connection, male connector, M12, 17-pin, A-coded

④   Threaded hole, M5 (2 x)

⑤   Reference point for reading distance (housing edge – object)

⑥   Light emission position (central position of the deflected laser beam)

⑦   Protective double bushing for the electrical connections

CLV63x or CLV64x with oscillating mirror in the IP69K protective housing, side reading window

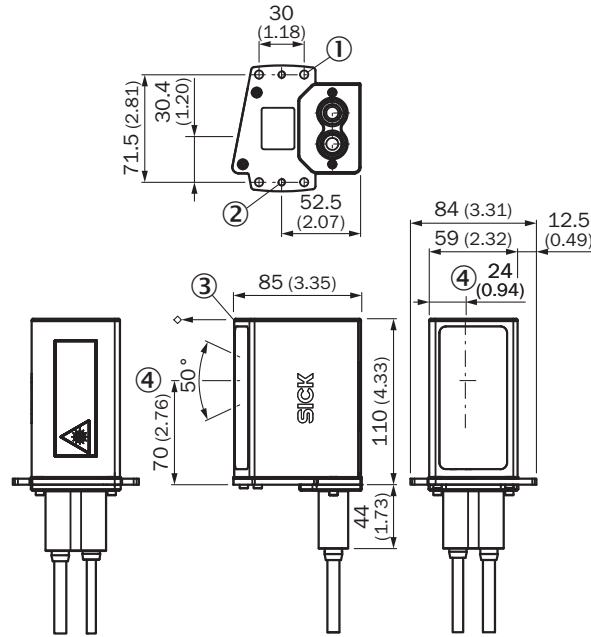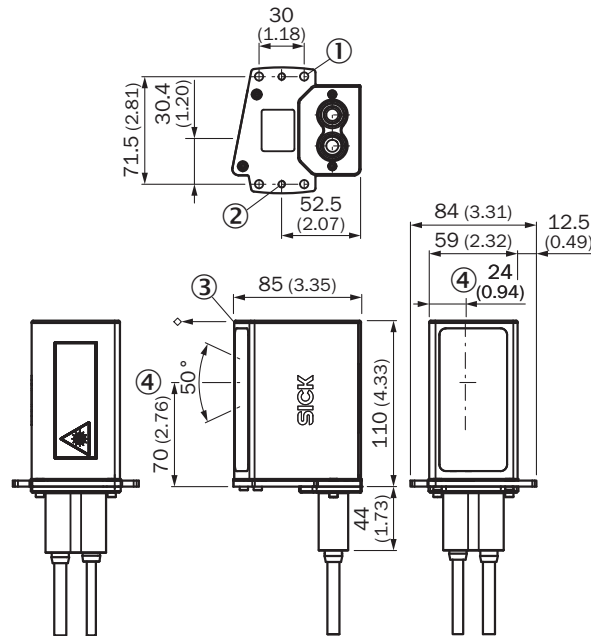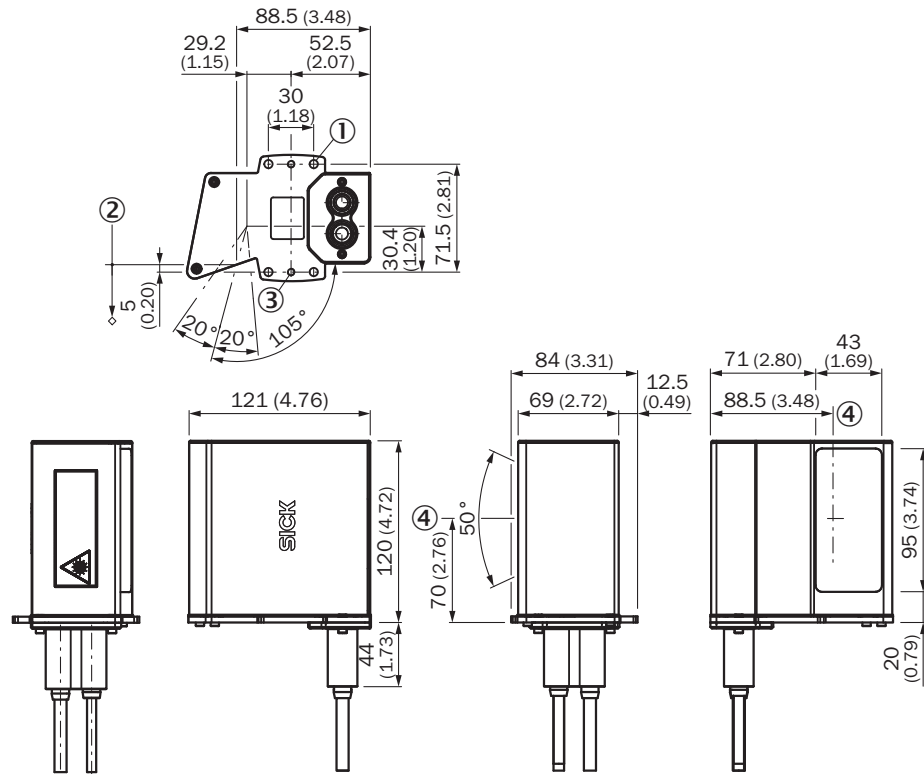*Figure 7: CLV63x / CLV64x with oscillating mirror: design and device dimensions of the IP69K protective housing, side reading window (dimensions in mm or inch)*

① Fixing holes, dia. 5.5 mm (4 x)

② "Ethernet" connection, female connector, M12, 4-pin, D-coded

③ "Power/Serial Data/CAN/I/O" connection, male connector, M12, 17-pin, A-coded

④ Threaded hole, M5 (2 x)

⑤ Reference point for reading distance (housing edge – object)

⑥ Light emission position (central position of the deflected laser beam and oscillating mirror in central position)

⑦ Protective double bushing for the electrical connections

3.3   Scope of delivery

The scope of delivery of the device includes the following components:

Table 2: Scope of delivery

Item	Component	Description
1	Bar code scanner CLV62x, CLV63x or CLV64x in the ordered version, in the screwed IP69K protective housing	Both M12 connections fitted with protective plug or cap.

Item	Component	Description
1	Protective double bushing for the two electrical connections in the terminal compartment	Seals the connections and the two cable outlets to the outside. Use of both bushings or only one bushing with dummy plug for the free bushing. Protective double bushing equipped with: • Recessed flat seal on the side to the protective housing • One internal groove in each case at the end of the bushings (cable outlet) to accommodate an O-ring for sealing • Two captive mounting screws for securing on the protective housing
2	O-ring Inside diameter x cord thickness: 11.0 mm x 4.0 mm	Seals the plug connector for the "Ethernet" connection towards the protective double bushing. One O-ring serves as a spare part.
2	O-ring Inside diameter x cord thickness: 13.5 mm x 3.0 mm	Seals the plug connector for the "Power/ Serial Data/CAN/I/O" connection towards the protective double bushing. One O-ring serves as a spare part.
1	Dummy plug	Seals the free bushing of the protective double bushing if the Ethernet connection is not used. Matching O-ring: 11.0 mm x 4.0 mm.

3.4 Differences between devices in IP65 standard housing and devices in IP69K protective housing

Table 3: Differences between devices in IP65 standard housing and devices in IP69K protective housing

Feature	Devices in IP65 standard housing	Devices in IP69K protective housing
Housing variant	Front reading window: CLV62x, CLV63x and CLV64x	Front reading window: CLV62x, CLV63x and CLV64x
	Side reading window and oscillating mirror: CLV63x and CLV64x	Side reading window and oscillating mirror: CLV63x and CLV64x
	Side reading window: CLV62x, CLV63x and CLV64x	– –
Housing material	Die-cast aluminum	Stainless steel
Housing color	Blue, painted	Unpainted
Enclosure rating	IP65	IP69K
Reading window	Glass or plastic	Plastic
Reading fields	For glass: 100% For plastic: depth of field reduced by 10%	Depth of field reduced by 10% Distance to device smaller
Laser warning label	Stuck on	Lasered on
Status displays	CLV62x: 6 LEDs CLV63x and CLV64x: 6 LEDs and bar graph display	Omitted
Operating buttons	CLV62x: None CLV63x and CLV64x: 2	Omitted

Feature	Devices in IP65 standard housing	Devices in IP69K protective housing
Optional plug-in memory card for parameter cloning	CLV62x: None CLV63x and CLV64x: 1	Omitted
Mounting	2 x 2 blind tapped hole M5, 5 mm deep	4 x holes 5.5 mm 2 x threaded holes M5
SOPAS ET	Shows the reading field of the devices in the standard housing	Shows the reading field of the devices in the standard housing

3.5 Reading fields

The reading fields of the devices in IP69K protective housing differ from the devices in IP65 standard housing with respect to the position of the housing edge and the depth of field.

- **Position**: The distance between the reading field and housing edge is smaller than on the standard devices in the case of devices in IP69K protective housing. The reason for this is the longer light path in the IP69K protective housing.
- **Depth of field**: On devices in the IP69K protective housing, the depth of field is reduced by approx. 10% (reduction of reading fields on both sides by 5% in each case for all module widths). This is due to the reading window made of plastic.
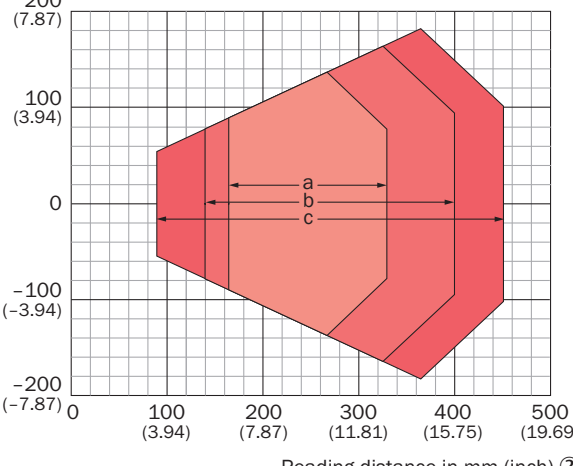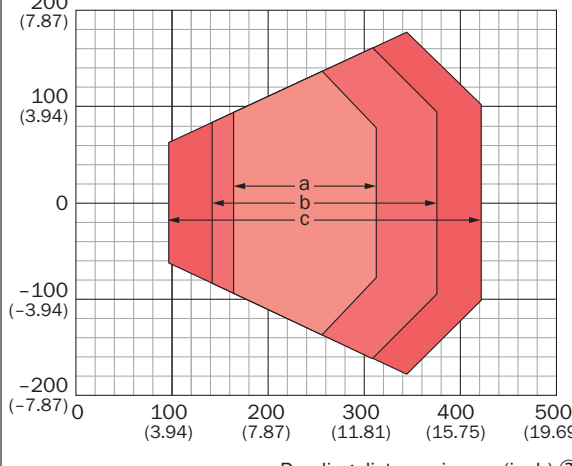
On devices in IP69K protective housing, the distance between the reading window and housing edge is reduced as follows compared with the reading window (glass) of a device in the standard housing:

- Bar code scanner with front reading window: 10.7 mm
- Bar code scanner with oscillating mirror and side reading window: 11.16 mm

Example: reading fields of the CLV631 with front reading window

The following table shows the reading fields of two comparable bar code scanners with front reading window by way of example.
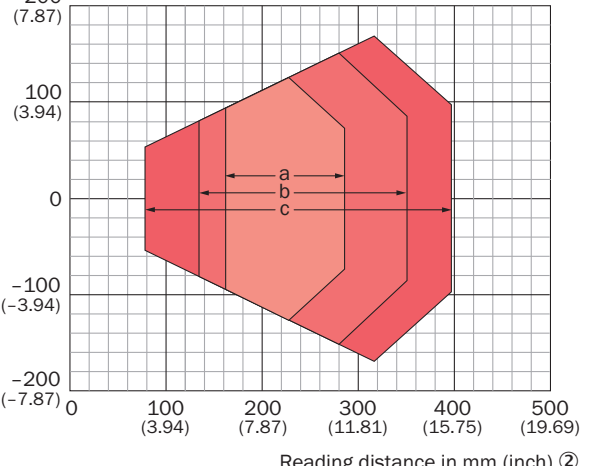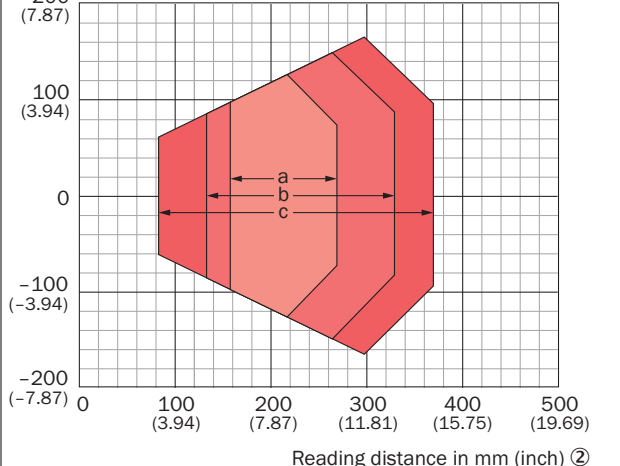
Table 4: CLV631 reading fields with front reading window

CLV631 in standard housing	CLV631 in IP69K protective housing
Reading field height in mm (inch) ①	Reading field height in mm (inch) ①
Reading distance in mm (inch) ②	Reading distance in mm (inch) ②
Resolution ③ ☐ a: 0.25 mm (9.8 mil)　☐ b: 0.35 mm (13.8 mil) ☐ c: 0.50 mm (19.7 mil)	**Resolution** ③ ☐ a: 0.25 mm (9.8 mil)　☐ b: 0.35 mm (13.8 mil) ☐ c: 0.50 mm (19.7 mil)
Figure 8: Reading field diagram of CLV631-0120, reading window at front	*Figure 9: Reading field diagram of CLV631-0831S01, front reading window*
①　Reading field height in mm (inch)	①　Reading field height in mm (inch)
②　Reading distance in mm (inch)	②　Reading distance in mm (inch)
③　Resolution	③　Resolution

Example: reading fields of CLV631 with oscillating mirror and side reading window

The following table shows the reading fields of two comparable bar code scanners with oscillating mirror and side reading window by way of example.

Table 5: Reading fields of CLV631 with oscillating mirror and side reading window

CLV631 in standard housing	CLV631 in IP69K protective housing
Reading field height in mm (inch) ① Reading distance in mm (inch) ② **Resolution** ③ ☐ a: 0.25 mm (9.8 mil) ☐ b: 0.35 mm (13.8 mil) ☐ c: 0.50 mm (19.7 mil)	Reading field height in mm (inch) ① Reading distance in mm (inch) ② **Resolution** ③ ☐ a: 0.25 mm (9.8 mil) ☐ b: 0.35 mm (13.8 mil) ☐ c: 0.50 mm (19.7 mil)
Figure 10: Reading field diagram of CLV631-6120, oscillating mirror and side reading window	*Figure 11: Reading field diagram of CLV631-6831S01, oscillating mirror and side reading window*
① Reading field height in mm (inch)	① Reading field height in mm (inch)
② Reading distance in mm (inch)	② Reading distance in mm (inch)
③ Resolution	③ Resolution

Display of reading field diagrams in SOPAS ET

The SOPAS ET configuration software displays the reading field diagrams of the bar code scanners in standard housing (reading window made of glass). The diagrams therefore do not provide a true representation of the restricted and displaced reading areas of the bar code scanners in IP69K protective housing (reading window made of plastic).

ⓘ **NOTE**
As a simplified rule: the depth of field is reduced by approx. 10% for devices with a plastic reading window.

4 Transport and storage

4.1 Bar code scanners CLV62x, CLV63x and CLV64x with IP69K protective housing

For transport and storage of the devices, see the operating instructions of the respective bar code scanner.

During transport and storage, additionally make sure that the connections on the protective housing are sealed with the corresponding protective covers.

5   Mounting

5.1   Overview of mounting procedure

- Choose and prepare the mounting location.
- Connect the connection cables at the protective housing via the protective double bushing, seal the cable outlets and mount the protective double bushing on the protective housing.
- Mount the device on a bracket.
- Align the device towards objects with bar code.
- Adjust the device.

For mounting location, mounting, alignment and adjustment, see the operating instructions of the respective bar code scanner.

5.2   Mounting requirements

The following tools and auxiliary equipment are required for mounting:
- Lubricant such as Vaseline

Please observe the following:
- Pay attention to the space requirements of the device. See type-specific dimensional drawing and reading field diagram.
- Observe the technical data of the device.
- To prevent condensation, avoid exposing the device to rapid changes in temperature.
- Protect the device from direct sunlight.
- Mount the device so that it is not exposed to shock and vibration.
- Preferably route the connection cables downwards away from the device.

5.3   Mounting options

You can mount the device as follows:
- Mount the device on an optional SICK bracket. The device is mounted on the bracket by means of the 2 M5 threaded holes. For the optional SICK brackets, see www.sick.com.
- Mount the device on a user-supplied bracket. You can mount the device on the bracket as follows:
  - With at least two M5 screws (in pairs) using two of the four 5.5 mm holes
  - Using the 2 M5 blind tapped holes
  Dimensional drawings see "Design", page 11.

For an exact description of the device mounting procedure, see the operating instructions of the respective bar code scanner.

Requirements for a user-supplied bracket

The brackets must meet the following requirements:
- The bracket must be designed for the weight of the device including connection cables, see "Technical data", page 27
- The bracket must be able to support the device free of vibrations and oscillations.
- It must be possible to adjust the bracket in x- and y-axes.
- The bracket must have the required holes for mounting the device on the bracket.

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5.4 Mounting the protective double bushing on the protective housing

During assembly, the connection cables are routed through the supplied protective double bushing and connected to the device in the protective housing.

If the Ethernet interface is not used, you must close off the free feedthrough in the protective double bushing with the supplied dummy plug.

> **NOTE**
> Use connection cables with a sufficient length.

> **NOTICE**
> The power supply must be disconnected when attaching and detaching electrical connections.

> **NOTICE**
> Do not install O-rings using sharp or pointed tools. The O-rings seal the protective double bushing towards the outside and therefore guarantee the enclosure rating.

5.4.1 Assembly with use of the Ethernet connection

Noting the MAC address

> **NOTE**
> The MAC address for the Ethernet interface is located on the type label, see "Type label", page 10. The address is partially or completely covered when the device is mounted on a bracket.
> Make a note of the MAC address and the name of the reading station.

Mounting the protective double bushing on the protective housing

Assembly is described on the basis of the protective housing for bar code scanner with front reading window. Assembly of protective housings for bar code scanners with oscillating mirror and side reading window takes place analogously.

Component overview

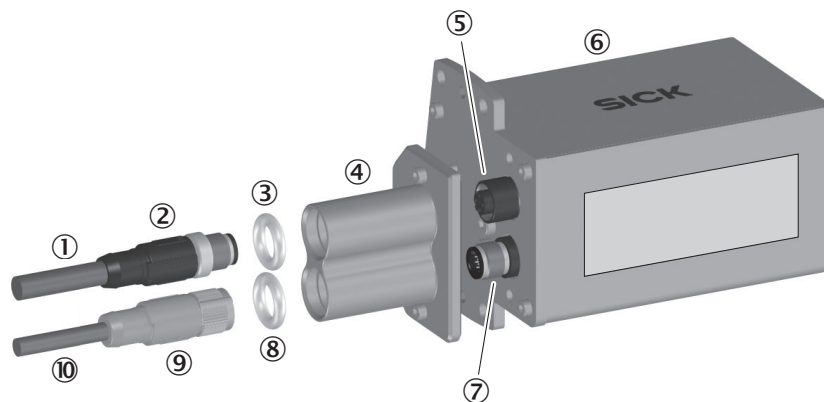*Figure 12: Assembly of IP69K protective housing, with use of the Ethernet connection*

① Connection cable for "Ethernet" connection
② Plug connector of connection cable for "Ethernet" connection
③ O-ring 11.0 mm x 4.0 mm
④ Protective double bushing

⑤   "Ethernet" connection, female connector, M12, 4-pin, D-coded

⑥   Protective housing, here for bar code scanners with front reading window

⑦   "Power/Serial Data/CAN/I/O" connection, male connector, M12, 17-pin, A-coded

⑧   O-ring 13.5 mm x 3.0 mm

⑨   Plug connector of connection cable for "Power/Serial Data/CAN/I/O" connection

⑩   Connection cable for "Power/Serial data/CAN/I/O" connection

When delivered, both connections on the protective housing are equipped with a protective cover.

Auxiliary equipment required
- Lubricant such as Vaseline

1. Position the device at the operating location.
2. Unscrew the protective plug from the 4-pin female connector. Turn the protective plug counterclockwise for this purpose.
3. Unscrew the protective cap from the 17-pin male connector. Turn the protective cap counterclockwise for this purpose.

Figure 13: Assembly of IP69K protective housing, with use of the Ethernet connection – Step 1

4. Guide O-ring 13.5 mm x 3.0 mm over the plug connector of the "Power/Serial data/CAN/I/O" connection cable.
5. Guide O-ring 11.0 mm x 4.0 mm over the plug connector of the "Ethernet" connection cable.
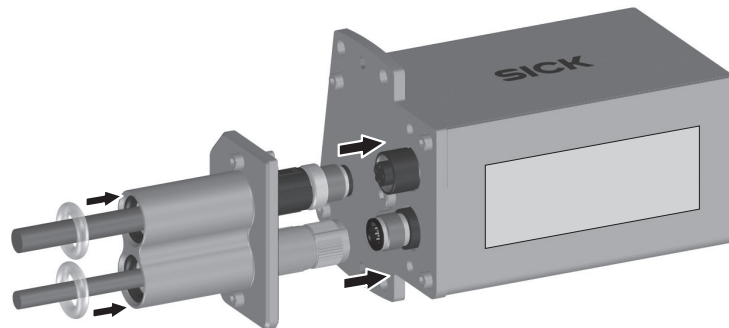
Figure 14: Assembly of IP69K protective housing, with use of the Ethernet connection – Step 2

6. Guide plug connector of the "Ethernet" connection cable through the protective double bushing.
7. Connect "Ethernet" connection cable to the M12 female connector of the protective housing.
8. Tighten coupling nut of the connected connection cable.
9. Guide the plug connector for the "Power/Serial Data/CAN/I/O" connection cable through the protective double bushing.
10. Connect the "Power/Serial Data/CAN/I/O" connection cable at the M12 male connector of the protective housing.
11. Tighten coupling nut of the connected connection cable.
12. Position O-rings in the provided grooves of the protective double bushing.
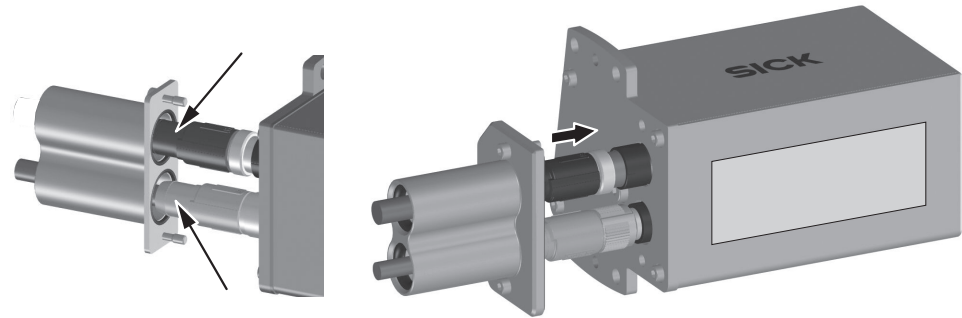
Figure 15: Assembly of IP69K protective housing, with use of the Ethernet connection – Step 3

13. Apply a small amount of a lubricant such as Vaseline as shown in the figure. This makes it easier to slide the protective double bushing over the plug connectors.
14. Carefully push the protective double bushing over the plug connectors.
15. Make sure that the O-rings are correctly positioned in the grooves of the protective double bushing.
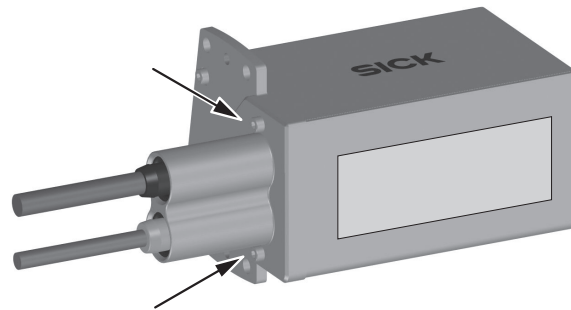
Figure 16: Assembly of IP69K protective housing, with use of the Ethernet connection – Step 4

16. Mount the protective double bushing on the protective housing using the two screws provided.

5.4.2 Assembly without use of the Ethernet connection

Mounting the protective double bushing on the protective housing

Assembly is described on the basis of the protective housing for bar code scanner with front reading window. Assembly of protective housings for bar code scanners with oscillating mirror and side reading window takes place analogously.

Component overview

Figure 17: Assembly of IP69K protective housing, without use of the Ethernet connection

① Dummy plug for "Ethernet" feedthrough

②   O-ring 11.0 mm x 4.0 mm

③   Protective double bushing

④   Protective plug for unused Ethernet connection, female connector, Dose, M12, 4-pin, D-coded

⑤   Protective housing, here for bar code scanners with front reading window

⑥   "Power/Serial Data/CAN/I/O" connection. male connector, M12, 17-pin, A-coded

⑦   O-ring 13.5 mm x 3.0 mm

⑧   Plug connector of connection cable

⑨   Connection cable for "Power/Serial data/CAN/I/O" connection

When delivered, both connections on the protective housing are equipped with a protective cover.

Auxiliary equipment required
- Lubricant such as Vaseline

1. Make sure that the protective plug of the Ethernet connection is securely tightened.
2. Guide connection cable through the protective double bushing. Seal the lower feedthrough with the O-ring. Connect the connection cable at the protective housing, see "Assembly with use of the Ethernet connection", page 20
3. Position O-ring 11.0 mm x 4.0 mm in the groove of the upper feedthrough of the protective double bushing.
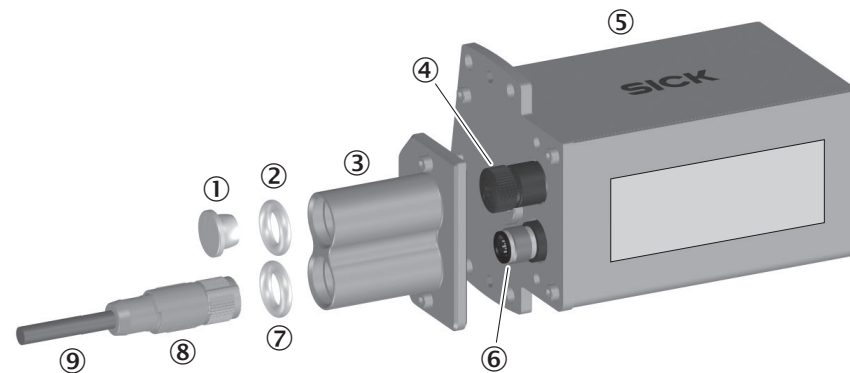4. Close off the upper feedthrough of the protective double bushing with the supplied dummy plug.

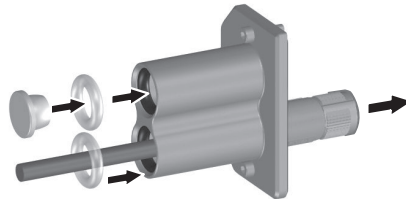*Figure 18: Assembly of IP69K protective housing, without use of the Ethernet connection – dummy plug*

5. Apply lubricant. Push protective double bushing over the plug connector and the Ethernet connection. Mount the protective double bushing on the protective housing, see "Assembly with use of the Ethernet connection", page 20
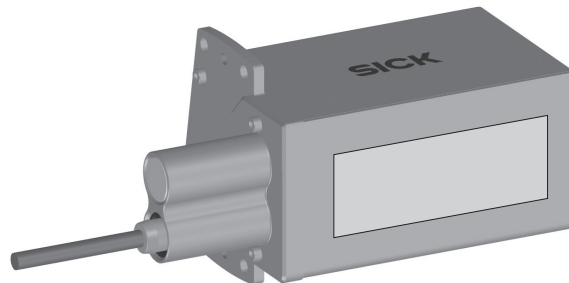

Figure 19: Assembly of IP69K protective housing, without use of the Ethernet connection

6 Electrical installation

6.1 Safety

6.1.1 Notes on electrical installation

> ⚠ **NOTICE**
> **Equipment damage due to incorrect supply voltage!**
> An incorrect supply voltage may result in damage to the equipment.
> - Only operate the device using a protected low voltage and safe electrical insulation as per protection class III.

> ⚠ **NOTICE**
> **Equipment damage or unpredictable operation due to working with live parts.**
> Working with live parts may result in unpredictable operation.
> - Only carry out wiring work when the power is off.
> - Only connect and disconnect electrical connections when the power is off.

- **Electrical installation must only be performed by electrically qualified personnel.**
- **Standard safety requirements must be observed when working on electrical systems.**
- Only switch on the supply voltage for the device when the connection tasks have been completed and the wiring has been thoroughly checked.
- When using extension cables with open ends, ensure that bare wire ends do not come into contact with each other (risk of short-circuit when supply voltage is switched on!). Wires must be appropriately insulated from each other.
- Wire cross-sections in the supply cable from the user's power system must be selected in accordance with the applicable standards. When this is being done in Germany, observe the following standards: DIN VDE 0100 (Part 430) and DIN VDE 0298 (Part 4) and/or DIN VDE 0891 (Part 1).
- Circuits connected to the device must be designed as SELV circuits (SELV = Safety Extra Low Voltage).
- Protect the device with a separate fuse of max. 2 A at the start of the supply circuit.

> ℹ **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.

The specified enclosure rating IP69K is achieved for the device only under the following conditions:

- The protective housing is assembled as described in these instructions.
  - The Ethernet connection of the device is used: see "Assembly with use of the Ethernet connection", page 20
  - The Ethernet connection of the device is not used: see "Assembly without use of the Ethernet connection", page 22
- Use of the specified cables, see "Cables", page 34

6.2   Prerequisites for safe operation of the device in a system

See operating instructions of the bar code scanner.

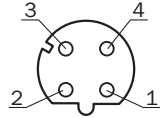## 6.3   Pin assignment of the connections

Figure 20: Female connector, M12, 4-pin, D-coded

Table 6: Ethernet version: Pin assignment on the 4-pin M12 female connector

Pin	Signal	Function
1	TD+	Sender+
2	RD+	Receiver+
3	TD−	Sender−
4	RD−	Receiver−
–	–	Shield
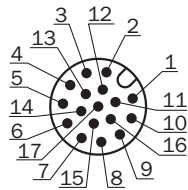
Figure 21: Male connector, M12, 17-pin, A-coded

Table 7: Ethernet version: Pin assignment on 17-pin M12 male connector

Pin	Signal	Function
1	GND	Ground
2	CLV62x: DC 10 V … 30 V CLV63x, CLV64x: DC 18 V … 30 V	Supply voltage
3	CAN L	CAN bus (IN/OUT)
4	CAN H	CAN bus (IN/OUT)
5	TD+ (RS-422/485)	Host interface (sender+)
6	TD− (RS-422/485); TxD (RS-232)	Host interface (sender-)
7	TxD (AUX)	AUX interface (sender)
8	RxD (AUX)	AUX interface (receiver)
9	SensGND	Switching input ground
10	Sensor 1	Digital switching input (external reading cycle)
11	RD+ (RS-422/485)	Host interface (receiver+)
12	RD− (RS-422/485); RxD (RS-232)	Host interface (receiver−)
13	Result 1	Digital switching output, function can be set
14	Result 2	Digital switching output, function can be set
15	Sensor 2	Digital switching input (external reading cycle)
16	–	–

Pin	Signal	Function
17	–	–

7 Technical data

7.1 Bar code scanner CLV62x in IP69K protective housing

> **NOTE**
> The relevant online data sheet for your product including technical data and dimensions can be downloaded from the Internet: www.sick.com/CLV62x

Optics

	CLV620
Working range	Mid range
Scanning method	Line or grid scanner [1], for identifier see type code in operating instructions
Reading window orientation	Front, for identifier see type code in operating instructions
Aperture angle	≤ 50°
Scan/decoder frequency	400 Hz ... 1,200 Hz
Resolution	0.2 mm ... 1.0 mm
Focus	Fixed focus
Light source	Laser diode, visible red light (λ = 655 nm)
MTBF (laser diode)	40,000 h at 25 °C
Laser class	Class 2 in accordance with EN/IEC 60825-1:2014 (identical laser class to EN/IEC 60825-1:2007). Complies with 21 CFR 1040.10 except for tolerances according to Laser Notice no. 50 of June 24, 2007 and its following versions.
Laser power (maximum/average)	1.5 mW / < 1.0 mW
Laser pulse duration	< 300 µs

[1] Grid height approx. 15 mm at a reading distance of 200 mm

Performance

	CLV620
Bar code types	Code 39, Code 128, Code 93, Codabar, GS1-128 / EAN 128, UPC / GTIN / EAN, 2/5 Interleaved, Pharmacode, GS1 DataBar, Telepen, MSI/Plessey
Print ratio	2:1 ... 3:1
No. of codes per scan	1 ... 20 (standard decoder) 1 ... 6 (SMART620)
No. of codes per reading interval [1]	1 ... 50 (auto-discriminating)
No. of characters per code/reading interval	Max. 50 characters / max. 5,000 characters across all bar codes per reading interval, 500 characters for multiplexer function (CAN)
Number of multiple readings	1 ... 99

[1] Reading interval: The time window generated internally by the reading cycle for code detection and evaluation

Interfaces

	CLV620
Serial (RS-232, RS-422/-485)	**Function:** Host, AUX **Data transmission rate:** 2.4 kBd ... 115.2 kBd, AUX: 57.6 kBd (RS-232)
Ethernet	**Function:** Host, AUX **Data transmission rate:** 10/100 Mbit/s, half/full duplex **Protocol:** TCP/IP, EtherNet/IP, PROFINET Single Port

	CLV620
CAN	**Function:** SICK CAN sensor network (master/slave, multiplexer/server) **Data transmission rate:** 20 kbit/s … 1 Mbit/s **Protocol:** CSN (SICK CAN sensor network), CANopen
PROFINET	PROFINET Dual Port optional over external fieldbus module CDF600-2
EtherCAT®	Optional via external fieldbus module CDF600
PROFIBUS	Optional via external fieldbus module CDF600-2
DeviceNet	Optional over external connection module CDM420 + CMF fieldbus module
Digital switching inputs	2 ("Sensor 1", "Sensor 2"), 2 additional inputs via CMC600 parameter cloning module in the CDB650 or CDM420 connection module Opto-decoupled, V_{in} = max. 32 V, reverse polarity protected, can be wired via PNP output, adjustable debouncing 0 ms … 10,000 ms
Digital switching outputs	2 ("Result 1", "Result 2"), 2 additional outputs via CMC600 parameter cloning module in the CDB650 or CDM420 connection module PNP, I_{out} = max. 100 mA, short-circuit protected, pulse duration adjustable (static, 10 ms … 10,000 ms)
Reading pulse	Pulse sources for start: "Sensor 1" and/or "Sensor 2" switching inputs; command (data interface), auto pulse, CAN Pulse sources for stop: reading cycle source, "Sensor 1", "Sensor 2", command, timer, condition (e.g. Good Read)
Optical indicators	Not accessible
Acoustic indicator	None
Configuration	SOPAS ET configuration software, profile programming with bar codes, command language, GSD configuration

Mechanics/electronics

	CLV620
Electrical connection	Ethernet version: 2 x round connections (1 x male connector, M12, 17-pin, A-coded, 1 x female connector, M12, 4-pin, D-coded)
Supply voltage	10 V DC … 30 V DC, LPS or NEC Class 2, reverse polarity protected
Power consumption	Max. 4.5 W with loaded switching outputs
Housing	Stainless steel
Housing color	Unpainted
Reading window material	Plastic
Dimensions (L x W x H) [1]	85 mm x 84 mm x 154 mm
Weight [2]	854 g, with double protective bushing
Safety	EN 60950-1
Electrical protection class	III (EN 61140)
Enclosure rating	IP69K (DIN 40050, Part 9) Test conditions: • Water spray quantity: 14 … 16 l/min • Water pressure/temperature: 10,000 KPa (100 bar) / 80 °C • Fan nozzle distance: 100 mm … 150 mm • Spray angle: 0°, 30°, 60°, 90° • Cycle: 30 s for each position • Rotational speed of test specimen: 5 rpm

[1] See also
[2] Without connecting cables

Ambient data

	CLV620
EMC test	Radiated emission: in accordance with EN 61000-6-3 (2007-01) Immunity: in accordance with EN 61000-6-2 (2005-08)
Vibration resistance	EN 60068-2-6: 2008-02
Shock resistance	EN 60068-2-27: 2009-05
Ambient operating temperature	0 °C ... +40 °C
Storage temperature	–20 °C ... +70 °C
Permissible relative humidity	0% ... 90%, non-condensing
Ambient light immunity	2,000 lx, on bar code
Bar code print contrast (PCS)	≥ 60%

7.2 Bar code scanner CLV63x in IP69K protective housing

> **NOTE**
> The relevant online data sheet for your product including technical data and dimensions can be downloaded from the Internet: **www.sick.com/CLV63x**

Optics

	CLV630	CLV631	CLV632
Working range	Long range	Mid range	Short range
Scanning method	Line scanner, grid scanner [1], or line scanner with oscillating mirror, for identifier see type code in operating instructions		
Reading window orientation	Front or side, for identifier see type code in operating instructions		
Aperture angle	Front reading window: ≤ 50°, side reading window: ≤ 51,5°		
Scan/decoder frequency	400 Hz ... 1,200 Hz		
Resolution	0.2 mm ... 1.0 mm (type-dependent)		
Focus	Fixed focus		
Light source	Laser diode, visible red light (λ = 655)		
MTTF (laser diode)	40,000 h at 25 °C		
Laser class	Class 2 in accordance with EN/IEC 60825-1:2014 (identical laser class to EN/IEC 60825-1:2007). Complies with 21 CFR 1040.10 except for tolerances according to Laser Notice no. 50 of June 24, 2007 and its following versions.		
Laser power (maximum/average)	3.2 mW/ < 1.0 mW		
Laser pulse duration	< 300 µs		

[1] Grid height approx. 15 mm at a reading distance of 200 mm

Performance

	CLV630	CLV631	CLV632
Bar code types	Code 39, code 128, code 93, Codabar, EAN, EAN 128, UPC, 2/5 Interleaved, Pharmacode		
Print ratio	2:1 ... 3:1		
No. of codes per scan	1 ... 20 (standard decoder) 1 ... 6 (SMART decoder)		
No. of codes per reading interval [1]	1 ... 50 (auto-discriminating)		

	CLV630	CLV631	CLV632
No. of characters per code/ reading interval	Max. 50 characters / max. 5,000 characters across all bar codes per reading interval, 500 characters for multiplexer function (CAN)		
Number of multiple readings	1 ... 99		

[1]   Reading interval: The time window generated internally by the reading cycle for code detection and evaluation

Interfaces

	CLV630	CLV631	CLV632
Serial (RS-232, RS-422/-485)	**Function:** Host, AUX **Data transmission rate:** 2.4 kBd ... 115.2 kBd, AUX: 57.6 kBd (RS-232)		
Ethernet	**Function:** Host, AUX **Data transmission rate**: 10/100 Mbit/s, half/full duplex **Protocol:** TCP/IP, EtherNet/IP, PROFINET Single Port		
CAN	**Function:** SICK CAN sensor network (master/slave, multiplexer/server) **Data transmission rate:** 20 kbit/s ... 1 Mbit/s **Protocol:** CSN (SICK CAN sensor network), CANopen		
PROFINET	PROFINET Dual Port optional over external fieldbus module CDF600-2		
EtherCAT®	Optional via external fieldbus module CDF600		
PROFIBUS	Optional via external fieldbus module CDF600-2		
DeviceNet	Optional over external connection module CDM420 + CMF fieldbus module		
Digital switching inputs	2 ("Sensor 1", "Sensor 2"), 2 additional inputs via CMC600 parameter cloning module in the CDB650 or CDM420 connection module Opto-decoupled, V_{in} = max. 32 V, reverse polarity protected, can be wired via PNP output, adjustable debouncing 0 ms ... 10,000 ms		
Digital switching outputs	2 ("Result 1", "Result 2"), 2 additional outputs via CMC600 parameter cloning module in the CDB650 or CDM420 connection module PNP, I_{out} = max. 100 mA, short-circuit protected, pulse duration adjustable (static, 10 ms ... 10,000 ms)		
Reading pulse	Pulse sources for start: "Sensor 1" and/or "Sensor 2" switching inputs; command (data inter-face), auto pulse, CAN Pulse sources for stop: reading cycle source, "Sensor 1", "Sensor 2", command, timer, condi-tion (e.g. Good Read)		
Optical indicators	Not accessible		
Acoustic indicator	None		
Configuration	SOPAS ET configuration software, profile programming with bar codes, command language, GSD configuration		

Mechanics/electronics

	CLV630	CLV631	CLV632
Electrical connection	Ethernet version: 2 x round connections (1 x male connector, M12, 17-pin, A-coded, 1 x female connector, M12, 4-pin, D-coded)		
Supply voltage	18 V DC ... 30 V DC, LPS or NEC Class 2, reverse polarity protected		
Power consumption	Typically 5 W, with no loading of switching outputs		
Housing	Stainless steel		
Housing color	Unpainted		
Reading window material	Plastic		
Device dimensions (L x W x H) [1]	Front reading window: 85 mm x 84 mm x 154 mm Side reading window (oscillating mirror): 121 mm x 84 mm x 164 mm		

	CLV630	CLV631	CLV632
Device weight [2]	Front reading window: 890 g, incl. double protective bushing Side reading window: 1,230 g, incl. double protective bushing		
Safety	EN 60950-1		
Electrical protection class	III (EN 61140)		
Enclosure rating	IP69K (DIN 40050, Part 9) Test conditions: • Water spray quantity: 14 … 16 l/min • Water pressure/temperature: 10,000 KPa (100 bar) / 80 °C • Fan nozzle distance: 100 mm … 150 mm • Spray angle: 0°, 30°, 60°, 90° • Cycle: 30 s for each position • Rotational speed of test specimen: 5 rpm		

[1] See also see figure 6, page 12 and see figure 7, page 13
[2] Without connecting cables

Ambient data

	CLV630	CLV631	CLV632
EMC test	Radiated emission: in accordance with EN 61000-6-3 (2007-01) Immunity: in accordance with EN 61000-6-2 (2005-08)		
Vibration resistance	EN 60068-2-6: 2008-02		
Shock resistance	EN 60068-2-27: 2009-05		
Ambient operating temperature	0 °C … +40 °C		
Storage temperature	−20 °C … +70 °C		
Permissible relative humidity	0% … 90%, non-condensing		
Ambient light immunity	2,000 lx, on bar code		
Bar code print contrast (PCS)	≥ 60%		

7.3 Bar code scanner CLV64x in IP69K protective housing

> **NOTE**
> The relevant online data sheet for your product including technical data and dimensions can be downloaded from the Internet: www.sick.com/CLV64x

Optics

	CLV640
Working range	Standard density
Scanning method	Line scanner, grid scanner [1], or line scanner with oscillating mirror, for identifier see type code in operating instructions
Reading window orientation	Front or side, for identifier see type code in operating instructions
Aperture angle	≤ 50°
Scan/decoder frequency	400 Hz … 1,200 Hz
Resolution	0.15 mm … 1.0 mm (type-dependent)
Focus	Dynamic focus adjustment
Light source	Laser diode, visible red light (λ = 655)
MTTF (laser diode)	40,000 h at 25 °C

	CLV640
Laser class	Class 2 in accordance with EN/IEC 60825-1:2014 (identical laser class to EN/IEC 60825-1:2007). Complies with 21 CFR 1040.10 except for tolerances according to Laser Notice no. 50 of June 24, 2007 and its following versions.
Laser power (maximum/average)	3.2 mW / < 1.0 mW
Laser pulse duration	< 300 µs

[1] Grid height approx. 15 mm at a reading distance of 200 mm

Performance

	CLV640
Bar code types	Code 39, code 128, code 93, Codabar, EAN, EAN 128, UPC, 2/5 Interleaved, Pharmacode
Print ratio	2:1 … 3:1
No. of codes per scan	1 … 20 (standard decoder) 1 … 6 (SMART decoder)
No. of codes per reading interval [1]	1 … 50 (auto-discriminating)
No. of characters per code/reading interval	Max. 50 characters / max. 5,000 characters across all bar codes per reading interval, 500 characters for multiplexer function (CAN)
Number of multiple readings	1 … 99

[1] Reading interval: The time window generated internally by the reading cycle for code detection and evaluation

Interfaces

	CLV640
Serial (RS-232, RS-422/-485)	**Function**: Host, AUX **Data transmission rate**: 2.4 kBd … 115.2 kBd, AUX: 57.6 kBd (RS-232)
Ethernet	**Function**: Host, AUX **Data transmission rate**: 10/100 Mbit/s, half/full duplex **Protocol**: TCP/IP, EtherNet/IP, PROFINET Single Port
CAN	**Function**: SICK CAN sensor network (master/slave, multiplexer/server) **Data transmission rate**: 20 kbit/s … 1 Mbit/s **Protocol**: CSN (SICK CAN sensor network), CANopen
PROFINET	PROFINET Dual Port optional over external fieldbus module CDF600-2
EtherCAT®	Optional via external fieldbus module CDF600
PROFIBUS	Optional via external fieldbus module CDF600-2
DeviceNet	Optional over external connection module CDM420 + CMF fieldbus module
Digital switching inputs	2 ("Sensor 1", "Sensor 2"), 2 additional inputs via CMC600 parameter cloning module in the CDB650 or CDM420 connection module Opto-decoupled, V_{in} = max. 32 V, reverse polarity protected, can be wired via PNP output, adjustable debouncing 0 ms … 10,000 ms
Digital switching outputs	2 ("Result 1", "Result 2"), 2 additional outputs via CMC600 parameter cloning module in the CDB650 or CDM420 connection module PNP, I_{out} = max. 100 mA, short-circuit protected, pulse duration adjustable (static, 10 ms … 10,000 ms)
Reading pulse	Pulse sources for start: "Sensor 1" and/or "Sensor 2" switching inputs; command (data interface), auto pulse, CAN Pulse sources for stop: reading cycle source, "Sensor 1", "Sensor 2", command, timer, condition (e.g. Good Read)
Optical indicators	Not accessible
Acoustic indicator	None

	CLV640
Configuration	SOPAS ET configuration software, profile programming with bar codes, command language, GSD configuration

Mechanics/electronics

	CLV640
Electrical connection	Ethernet version: 2 x round connections (1 x male connector, M12, 17-pin, A-coded, 1 x female connector, M12, 4-pin, D-coded)
Supply voltage	18 V DC ... 30 V DC, LPS or NEC Class 2, reverse polarity protected
Power consumption	Typically 5 W, with no loading of switching outputs
Housing	Stainless steel
Housing color	Unpainted
Reading window material	Plastic
Device dimensions (L x W x H) [1]	Front reading window: 85 mm x 84 mm x 154 mm Side reading window (oscillating mirror): 121 mm x 84 mm x 164 mm
Device weight [2]	Front reading window: 890 g, incl. double protective bushing Side reading window: 1,230 g, incl. double protective bushing
Safety	EN 60950-1
Electrical protection class	III (EN 61140)
Enclosure rating	IP69K (DIN 40050, Part 9) Test conditions: • Water spray quantity: 14 ... 16 l/min • Water pressure/temperature: 10,000 KPa (100 bar) / 80 °C • Fan nozzle distance: 100 mm ... 150 mm • Spray angle: 0°, 30°, 60°, 90° • Cycle: 30 s for each position • Rotational speed of test specimen: 5 rpm

[1] See also see figure 6, page 12 and see figure 7, page 13
[2] Without connecting cables

Ambient data

	CLV640
EMC test	Radiated emission: in accordance with EN 61000-6-3 (2007-01) Immunity: in accordance with EN 61000-6-2 (2005-08)
Vibration resistance	EN 60068-2-6: 2008-02
Shock resistance	EN 60068-2-27: 2009-05
Ambient operating temperature	0 °C ... +40 °C
Storage temperature	−20 °C ... +70 °C
Permissible relative humidity	0% ... 90%, non-condensing
Ambient light immunity	2,000 lx, on bar code
Bar code print contrast (PCS)	≥ 60%

8 Accessories

8.1 Brackets

SICK offers prefabricated brackets which are optimally suited for mounting the device in a wide range of applications. Also see on Internet at:

- www.sick.com/CLV62x
- www.sick.com/CLV63x
- www.sick.com/CLV64x

Figure 22: Example of optional bracket for bar code scanners CLV62x, CLV63x and CLV64x with front reading window in IP69K protective housing, here round pole bracket with mounting bracket, part number 2068599
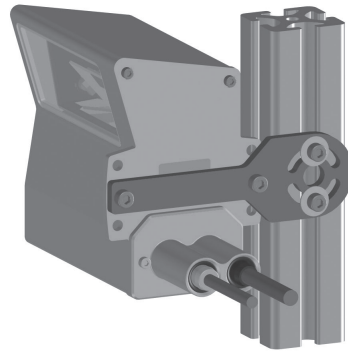
Figure 23: Example of optional bracket for bar code scanners CLV62x, CLV63x and CLV64x with oscillating mirror and side reading window, in IP69K protective housing, here mounting plate, part number 2068602

8.2 Cables

NOTICE
The following requirements must be met in order to achieve the IP69K enclosure rating:

- Use only the connection cables specified by SICK.
- Seal the two cable outlets at the protective double bushing with the corresponding O-rings.

The O-rings are included in the device scope of delivery and are matched to the outer diameters of the plug connectors.

The following connection cables are available as accessories for the devices.

Connection cables for "Power/Serial data/CAN/I/O" connection

Table 8: Connection cables for "Power/Serial data/CAN/I/O" connection

Part number	Description
6051194	Connection cable with female and male connector, 17-wire, shielded Head A: female connector, M12, 17-pin, straight, A-coded Head B: male connector, M12, 17-pin, straight, A-coded Length: 3 m
6051195	As 6051194, but length 5 m
2070425	Connection cable with female connector and cable, 17-wire, shielded Head A: female connector, M12, 17-pin, straight, A-coded Head B: open cable end, wires stripped Length: 3 m
2070426	As 2070425, but length 5 m
2070427	As 2070425, but length 10 m

NOTE

For cables with an open end at one end, the signal-neutral assignment of contacts of the female or male connector to the wire colors can be viewed on the Internet at:
www.sick.com

▶ For this purpose, enter the 7-digit part number of the cable in the search field.

For the device-specific signal assignment of the contacts, see this document, see "Pin assignment of the connections", page 25.

Connection cables for "Ethernet" connection

Table 9: Connection cables for "Ethernet" connection

Part number	Description
6050198	Connection cable with male and male connector, 4-wire, AWG26, shielded Head A: male connector, M12, 4-pin, straight Head B: male connector, RJ45, 8-pin, straight Length: 2 m
6050199	As 6050198, but length 3 m
6050200	As 6050198, but length 5 m
6050201	As 6050198, but length 10 m
6050596	As 6050198, but length 20 m