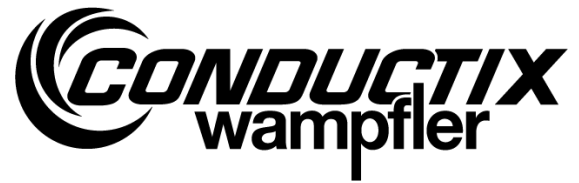


Technical description



OLM-708

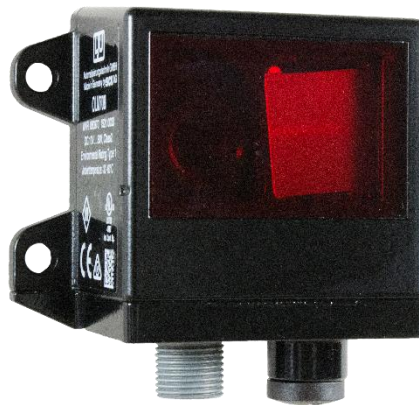
Optical Linear Measurement Sensor

Item number

3226597

WNR

CWA-60060970



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Translation of the original document

September 2022

The standard names, trade names, product names etc. used in this description may also be brand names even when not specially indicated and, as such, are subject to the statutory stipulations.

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1 General information and safety

1.1 Information about the description

This technical description contains technical information about the Optical Linear Measurement Sensor of the type:

OLM-708

It gives important notes on the device.

Read this technical description carefully before you use the device!

It will ensure smooth operation and prevention of errors, defects and damage to the system. Moreover, the universal safety and accident prevention specifications have to be implemented at the site where the devices are used.

The technical description includes important notes on the operation and safety; it is part of the product and must be kept at hand close to the device, so that it is accessible to the personnel at all times.

Every person who is assigned to work on or with the device must have read and understood this technical description before working with the device. This is mandatory even if the concerned person has already worked with such a device or the like, or has been trained by the manufacturer.

1.2 Symbols in the documentation

There are warning instructions and symbols in this description. It is absolutely mandatory to comply with these and follow them. These are working aids and they will warn you of possible damage to property and personnel. Always follow these instructions. Moreover, always follow the universal safety specifications and accident prevention specifications.



Warning!

This symbol along with the signal word "Warning" refers to a potentially dangerous situation that can lead to serious injuries or fatality if it is not avoided.



Caution!

This symbol along with the signal word "Caution" refers to a potentially dangerous situation that can lead to minor injuries and damage to property if it is not avoided.



Note!

This symbol indicates that there are additional and important information and tips on the relevant topic.



See also!

This symbol indicates that other detailed descriptions on the particular topic are available or provides references to other sections in this documentation.

1.3 Limitation of liability

All data and instructions in this description have been compiled taking into consideration the applicable standards and specifications, the state-of-the-art technology and our knowledge and experience gained over the years.

Conductix-Wampfler Automation GmbH is not liable for any damage or operational disorders arising due to:

- Non-compliance with the description
- Improper use
- Employment of untrained personnel
- Independent remodelling and modification of the device

Moreover, non-compliance with the description absolves Conductix-Wampfler Automation GmbH of the warranty obligation.

1.4 Copyright

The contents of this description should be treated as confidential. It is meant solely for persons working with the device. Handing over this technical document to third parties without written permission of the manufacturer is not allowed.



Note!

The content details, texts, drawings, images and other illustrations of the description are protected by copyright and are subject to the industrial property rights. Any improper utilization is punishable by law.

1.5 Conformity

Devices made by Conductix-Wampfler Automation GmbH been designed to comply with EU directives.

Please contact Conductix-Wampfler Automation GmbH if you wish to obtain a copy of these EU declarations of conformity.

1.6 Proper use

The optical linear measurement sensor OLM-708 is an opto-electronic sensor and is used for position reading/positioning using a barcode band in industrial transport systems.



Warning!

Danger due to improper use!

Any improper use and/or different use of the OLM-708 can lead to dangerous situations.

Therefore:

- *Only use the OLM-708 in a proper manner.*
- *Under all circumstances, comply with all technical data and permissible conditions at the site of operation.*
- *Do not operate the OLM-708 in environments with hazardous oils, acids, gases, vapors, dust, radiation, etc.*

1.7 Spare parts and repair



Warning!

Risk of injury due to spurious spare parts and incorrect repair!

Spurious or faulty spare parts and repair can lead to damage, malfunctions or total failure and can impair safety.

Therefore:

- *Use only original spare parts of the manufacturer.*
- *Replace defective devices immediately and send them in for repair.*

When **ordering a spare part**, specify the plant number **WNR** of the component and send it to the address given on the inner side of the covering sheet (page 2). The plant number is given on the type plate of the individual components.

Send in the defective device for **repair** with a short description of the error scenario to the address given on the inner side of the covering sheet (page 2).

1.8 Warranty

The warranty covers only manufacturing defects and component defects.

The manufacturer is in no way responsible for damage during transit or unpacking.

In no case and under no circumstances shall the manufacturer be liable under warranty for defects or damage caused by improper use, incorrect installation or impermissible operating conditions, or due to dust or aggressive substances.

Consequential and accidental damage are excluded from the warranty.

The warranty is valid for 12 months from the commencement of operation, however, maximum 24 months after delivery.

Resellers or distributors may negotiate different warranty periods in accordance with their terms and conditions of sale and delivery.

If you have further questions relating to the warranty, please contact your supplier.

1.9 Customer service

Our customer service is available to provide technical information.

Information about the responsible contact persons can be obtained via telephone, fax, e-mail or the Internet; see contacts on the inner side of the covering sheet (page 2).

1.10 Modifications and alterations

To avoid danger and to ensure optimal performance, no modifications, remodelling or add-ons are allowed on the device unless expressly approved by Conductix-Wampfler Automation GmbH.



Warning!

Risk of injury due to design modification!

Unauthorized technical modifications can lead to considerable damage to persons and property.

Therefore:

- *Replace the defective device!*
- *Replace it with a device of the same model.*

1.11 Personnel and qualification



Warning!

Risk due to improper use!

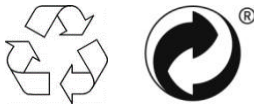
Improper operation can lead to serious damage to persons or property.

Therefore:

- *The installation, operation and maintenance of the device must be carried out by trained and instructed personnel.*

1.12 Disposal instructions / environmental specifications

Provided no agreement for take-back or disposal has been made, the individual components of the device must be appropriately dismantled, segregated and disposed of or recycled according to the current stipulations.



Materials marked with the recycling symbol or green dot have to be disposed of using the appropriate recycling method.

2 Product description

2.1 Use/application areas

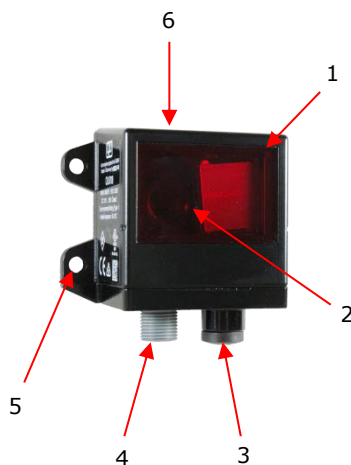
The optical linear measurement sensor OLM-708 is used in industrial transport systems, specifically at Conductix/LJU vehicle controllers.

The OLM-708 optical linear measurement sensor is suitable for the following application areas:

- positioning/position reading in automated high-bay warehouses,
- positioning/position reading of floor conveyors, monorail conveyors, stackers which travel round curves, slewing rings/turntables, shuttles,
- wherever mobile devices must be positioned.

2.2 Design

The optical linear measurement sensor OLM-708 is a compact, opto-electronic device.



The OLM-708 consists essentially of:

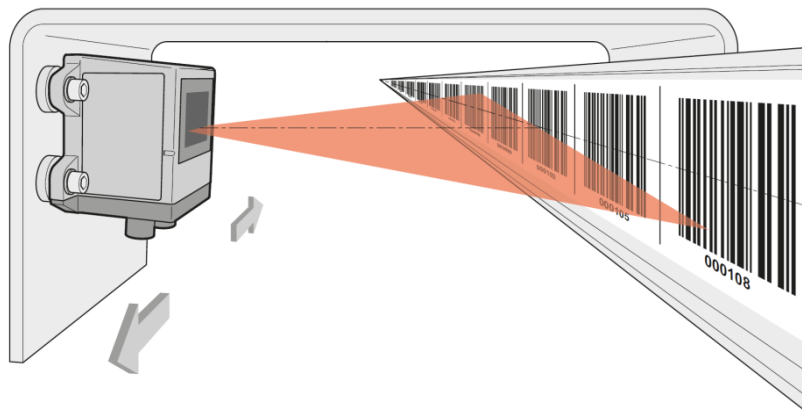
- housing (1) with internal intelligent electronic
- LED light transmitter (2)
- The connections for data and power supply are led out of the housing to M12-plugs.
 - Ethernet interface (3) (not used)
 - RS-485 interface/power supply (4)
- 4x fastening hole on the device (5) resp. fastening T-slot on the rear
- 2x status LED (6) on top of the device

2.3 Principle of operation

The optical linear measurement sensor OLM-708 is used for the positioning/position reading in industrial transport systems.

The sensor detects using a visible, red LED light beam shone onto a bar code tape attached along the travel path.

By reading the bar codes, which are printed on the bar code tape at 3 cm intervals, the OLM-708 optical linear measurement sensor determines the current position of the vehicle.



The position data is cyclically requested by the vehicle controller over the RS-485 serial interface with LJU protocol and is thus available as a way reference for regulating speed, distance regulation, positioning etc.

Travel speeds of up to 4 m/s are possible, with a resolution of 1 mm.

The function of the OLM-708 is constantly monitored and the status is displayed with two LEDs on top of the OLM-708.

3 Assembly, electrical installation, commissioning

This chapter describes how to prepare and perform the assembly, the electrical installation and the commissioning of the OLM-708 optical linear measurement sensor.

3.1 Laying of the bar code tape

3.1.1 General

- Align the bar code tape to a reference edge (e.g. rail) of the travel and glue it onto the level, dry, grease- and dust-free surface without tension, wrinkles and creases.
- Small expansion joints and slight unevenness can be taped over.

**Interference points!**

As regards imperfections, where taping across could lead to a marked distortion of the bar code tape (e.g. expansion cuts, track switches), see chapter 3.1.3.

- Begin the laying of the bar code tape in the system with code 2004 (roll 2).
- Bar code tape must be installed in ascending order in the direction of travel.
- Install the bar code tape continuously.
- Min. 900 mm bar code tape must be removed at a new starting point of a continuous installation (e.g. turn-offs). This bar code tape must under no circumstances be used elsewhere in the system.
- Install the bar code tape according to the system layout
→ Layer "LJU_barcode tape" in the system layout.

**Note!**

Avoid strong ambient light reflections on the bar code tape.

**Note!**

A damaged bar code tape can be repaired. For this purpose, files containing the bar codes can be downloaded at www.sick.com or requested from Conductix-Wampfler Automation GmbH.

Contact see page 2

3.1.2 Notes for the system layout

Bar code installation is recorded in the system layout. Layer "LJU_barcode tape" is used to do so.

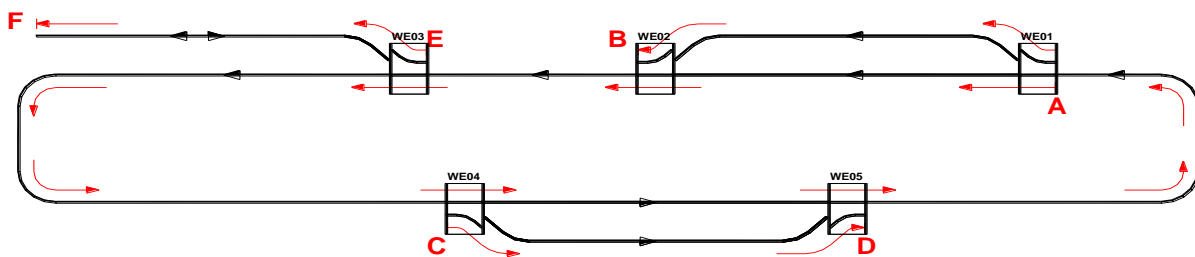
Prominent points in the layout are labeled with letters. These points include starting and ending points.

The bar code tape is installed between these points continuously and in ascending order in the direction of travel.

The installation path between points is marked by arrows. In addition, the layout contains a legend for the bar code tape installation. All prominent points are listed here as well in the sequence in which the bar code tapes are to be installed.

Removal of min. 900 mm bar code tape is marked by the tag "000". In addition, the first code of the bar code tape to be installed in the system is specified.

Example:



- From point A the bar code tape is installed continuously up to point B in the direction of travel without a break. Begin with code 2004 (roll 2).
- Remove min. 900 mm bar code tape and install the following bar code from point C up to point D continuously.
- Remove min. 900 mm bar code tape again and install the last section from point E up to point F continuously.

3.1.3 Execution of Cuts

In case the bar code tape has to run through an expansion cut, a track switch cut or lifter cut, the rail should be continuously laid and **subsequently** the required cut should be made.

Cut the bar code tape only at the cut marks. Cuts in the bar codes are non-permissible.

The cut should not be broader than 1 bar code.

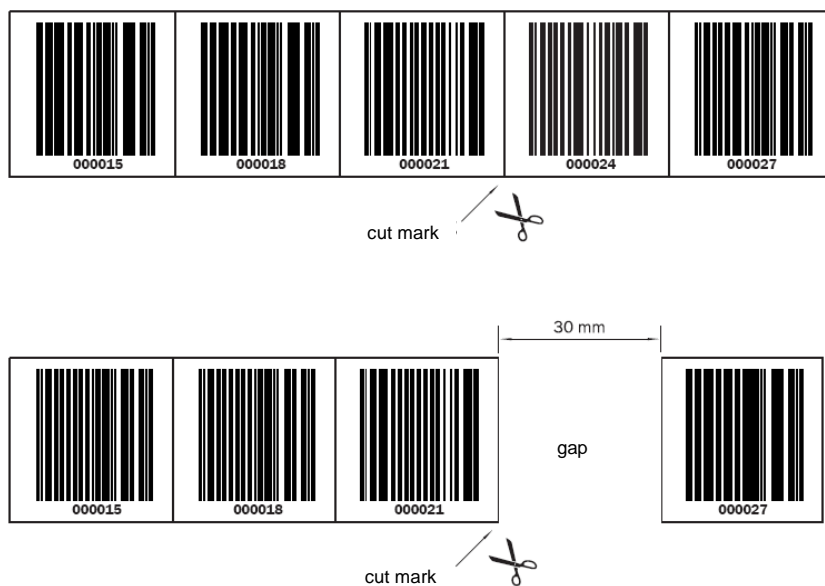
For optimum reproducibility, the distance between the two cut marks at the gap created must be 30 mm. A gap must be followed by at least two connected bar codes.



Note!

*If a larger break is required (e.g. in order to allow a "passage" of the vehicle), then it should not exceed a **maximum length of 210 mm**.*

No further use of the cut out bar codes.



3.1.4 Installation on inclined and sloping surfaces

To install the bar code tape on inclined and sloping surfaces, the bar code tape must be cut and folded out at the cut marks.

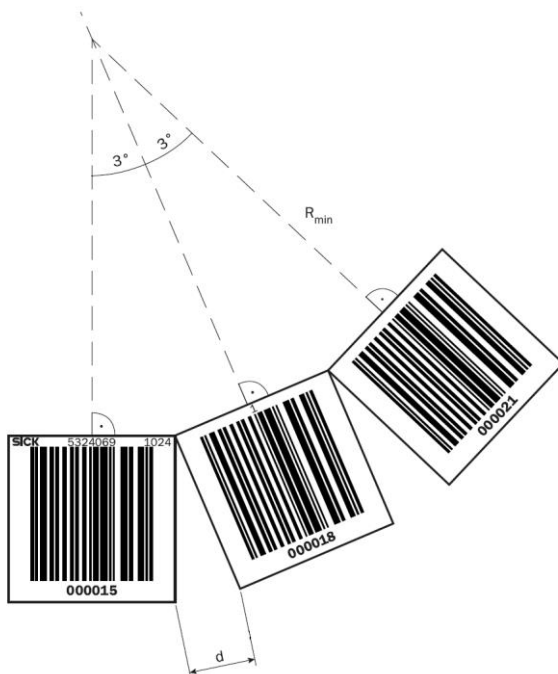
The angle may not exceed 3°. This corresponds to a gap "d" of 1.5 mm. This gives a minimum radius that may not be less than 500 mm.



Note!

For an optimal functional reserve, free areas resulting after folding out should not have a glossy surface.

Open spaces must be covered with blank labels.



Note!

When installing the bar code tape on inclined and sloping surfaces, make sure that the bar code tape remains always in the field of vision of the OLM-708.

The installation area of the OLM-708 is therefore to be selected in such way that the travel path runs parallel to the longitudinal axis of the bar code tape.



Note!

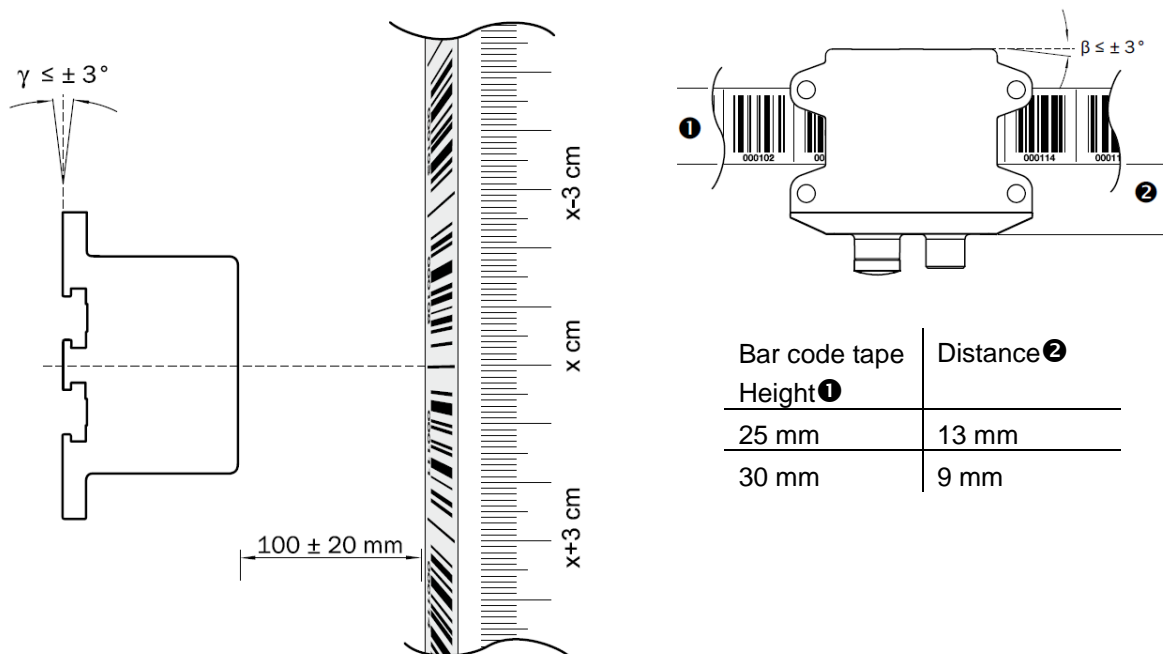
Only a limited degree of accuracy and reproducibility is possible in inclined and sloping surfaces.

3.2 Assembly and alignment OLM-708

3.2.1 Mounting

The OLM-708 optical linear measurement sensor can be assembled via the four through holes on the housing or via the T-slot on the rear of the housing using sliding brackets.

- Assemble the OLM-708 at a distance of $100 \text{ mm} \pm 20 \text{ mm}$ (recommended $> 85 \text{ mm}$ in curve segments) to the bar code tape and align it at right angle to the bar code tape.
- While doing so keep a clearance **2** between the housing bottom and the bottom edge of the bar code tape.



Note!

Especially when moving around bends, ensure that a distance of $100 \text{ mm} \pm 20 \text{ mm}$ (recommended $> 85 \text{ mm}$) is kept from the bar code tape.



Note!

When using two sensors next to one another: maintain a minimum gap of 120 mm between the two sensors.



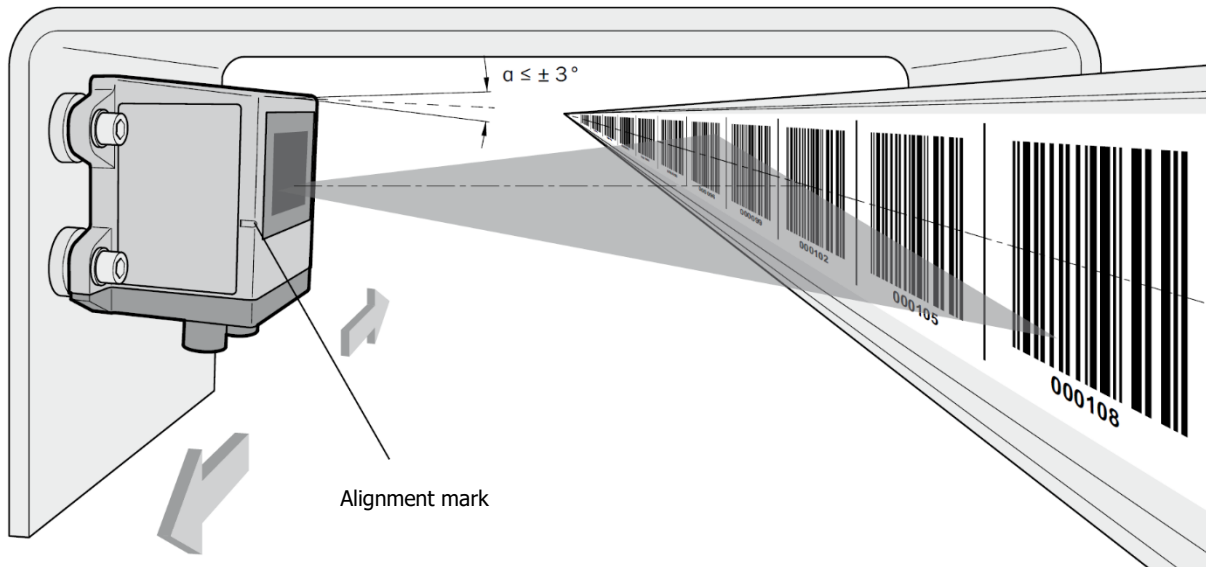
Note!

Mount the OLM-708 that in front of the bar code tape no other objects are in field of vision of the OLM-708.

3.2.2 Alignment

If optimally aligned, the two alignment marks on the front of the OLM-708 are located in the vertical middle of the bar code tape, so that the red luminous row is vertically centered on the bar code bar.

The vertical alignment must remain within a tolerance of ± 3.5 mm throughout the entire travel path.

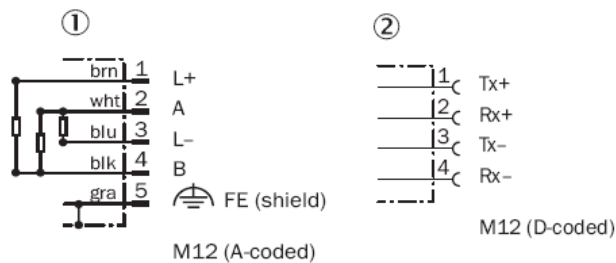
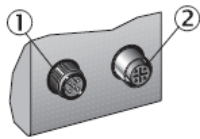


3.3 Electrical installation of the OLM-708

The OLM-708 is electrically connected to the vehicle controller via the RS-485/LJU bus interface (M12 male) using a 5-pole M12 industrial cable.

Connection diagram RS-485/LJU bus:

- ① RS-485/LJU bus interface
- ② Ethernet interface (not used)



The connection of the OLM-708 to the vehicle controller is specified in the connection diagram of your vehicle controller.

3.4 Commissioning

Is the optical linear measurement sensor OLM-708 connected to the vehicle controller and the vehicle controller is switched on, the control LED [power on] on top of the OLM-708 must be illuminated green.



Note!

The device is configured.

Changing of the device configuration is not required.

4 Servicing

4.1 Cleaning



Caution!

Damage to the OLM-708 due to improper cleaning!

Therefore:

- Do not use any cleaning agents, such as methylated spirits or other cleaners with aggressive ingredients!
- Do not clean with sharp objects!

We recommend to periodically:

- clean the glass of the light transmitter on the OLM-708 with a soft, antistatic cloth or damp chamois.



Note!

Errors such as 88d, 102d in the Dkz or driving over stopping positions indicate a soiled OLM-708.

- clean the bar code tape with isopropanol (80%) if it is very dirty with oil or grease.



Note!

Do not clean the bar code tape using permanently attached cleaning devices, as this reduces the reading quality.

4.2 Maintenance

The following maintenance work has to be carried out on the OLM-708 at regular intervals:

Interval	Maintenance job
Cleaning interval depends on the environmental conditions and climate	Clean housing and front glass of the OLM-708
Every 6 months	Check screw fittings and connectors

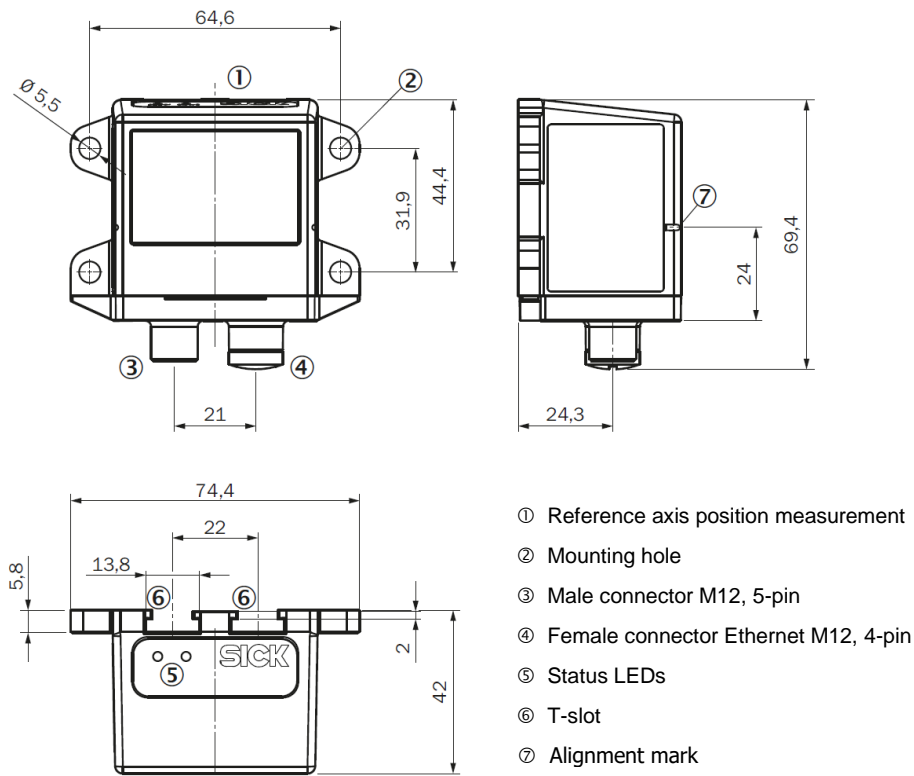
5 Technical data

5.1 Data sheet OLM-708

General data	
Item number	3226597
WNR	CWA-60060970
Light source	LED, visible red light
Service life	100.000 h ¹⁾
Distance from the bar code tape	100 mm ± 20 mm ⁵⁾
Resolution	1 mm
Output rate RS-485	5 ms
Electrical data	
Supply voltage ²⁾	10 ... 30 V DC
Power consumption	<3 W
VDE protection class	III
Indicators/controls	
Power LED	[power on]
Status LED	[status]
Interfaces	
Data interface	RS-485 LJU bus protocol, M12 5-pole male A-coded
Parameterization interface (not used)	Ethernet, M12 4-pole female D-coded
Mechanical data	
Housing material	Aluminum, zinc
Weight	approx. 260 g
Dimensions W x H x D	74.4 x 69.4 x 42 mm
Protection	IP65 (EN60529)
Environmental conditions	
Operating temperature ^{3) 4)}	-30 °C ... +60 °C
Storage temperature	-40 °C ... +75 °C

¹⁾ Typical at 25 °C.³⁾ Max. 95% humidity, non-condensing.⁵⁾ Recommended > 85 mm.²⁾ Limit values, reverse polarity protected.⁴⁾ Temperatures < -20 °C with 5 min warm-up time.

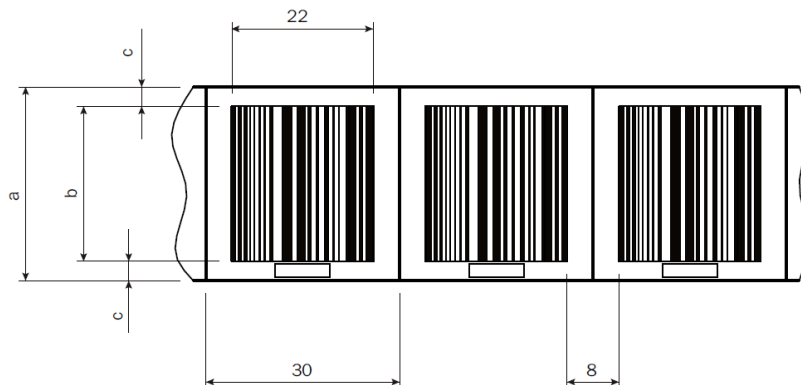
5.2 Dimensions OLM-708



5.3 Date sheet Bar code tape

Designation	Bar code tape
Item number / WNR / bar code tape height	3230179 / CWA-60039225 / 25 mm 3217441 / CWA-60039426 / 30 mm
Bar code tape length	customer-specific
Upper material	white, matt polyester foil, silicone-free
Foil thickness according to ISO 534	56 $\mu\text{m} \pm 10\%$
Upper material thickness incl. adhesive	102 μm approx.
Tear strength according to ISO 1184	> 150 N/15 mm
Adhesive	Permanent holding adhesive based on modified acrylates. Suitable for difficult backgrounds.
Min. mounting temperature	> +4 °C
Temperature resistance	-40 °C ... +150 °C
Chemical resistance	Resistant to most oils and greases, fuels, aliphatic solvents and weak acids.
Background corrosion	No corrosion on the glued background
Dimensional stability	Indicator 02 (tested according to DIN 30646) Shrinkage < 0.2%

5.4 Dimensions Bar code tape



All dimensions in mm

a (bar code tape height)	b (bar code height)	c (distance between the bar code and the bar code tape edge)
25	24	0
30	24	3

5.5 Ordering instructions Bar code tape

The following details are necessary when ordering bar code tape:

- Item number / WNR
- Bar code tape height
- customer specific length of the required bar code tape (in centimetres) with start and end numbering in 3 cm steps.



Note!

It is possible to order a length of not less than 2,000 cm (20 m) up to a maximum of 1,000,000 cm (10,000 m).

The bar code tape is delivered on rolls of 20 m.

Order example 1

The following bar code tape needs to be ordered:

- 20 m bar code tape from 0 ... 20 m
- Bar code tape height 30 mm

These are the details that should be given in the order:

- Item number 3217441 / WNR 60039426
- Bar code tape height 30 mm
- Length: 20 m, 0 cm to 2,001 cm

Order example 2

The following bar code tape needs to be ordered:

- 20 m Barcode-Band from 60 ... 80 m
- Bar code tape height 25 mm

These are the details that should be given in the order:

- Item number 3230179 / WNR 60039225
- Bar code tape height 25 mm
- Length: 20 m, 6,000 cm to 8,001 cm

6 Troubleshooting

Fault	LED display	Cause	Possible action
F1 Temperature fault	Power LED: red Status LED: off	Ambient temperature outside the specification	Await warm-up phase (for temp. ≤ -20 °C), Reduce ambient temperature
F2 No bar code tape exists	Power LED: green Status LED: red	There is no bar code tape in the OLM-708's field of view	Align sensor to the bar code tape
F3 No plausible position values exists	Power LED: green Status LED: red	Bar code tape dirty	Clean or renew bar code tape
F4 Sensor dirty	Power LED: green Status LED: flashing red	Sensor and front screen dirty LED transmission power insufficient	Clean bar code tape and sensor Replace sensor
F5 Interface problem	Power LED: green Status LED: green	Parameterization of the interface not correct	Check the interface
F6 Sensor outside the measuring range	Power LED: green Status LED: red	The OLM has gone below the measurement value 0mm or exceeded 9,999,999 mm	Change the value range of the attached bar code tape accordingly