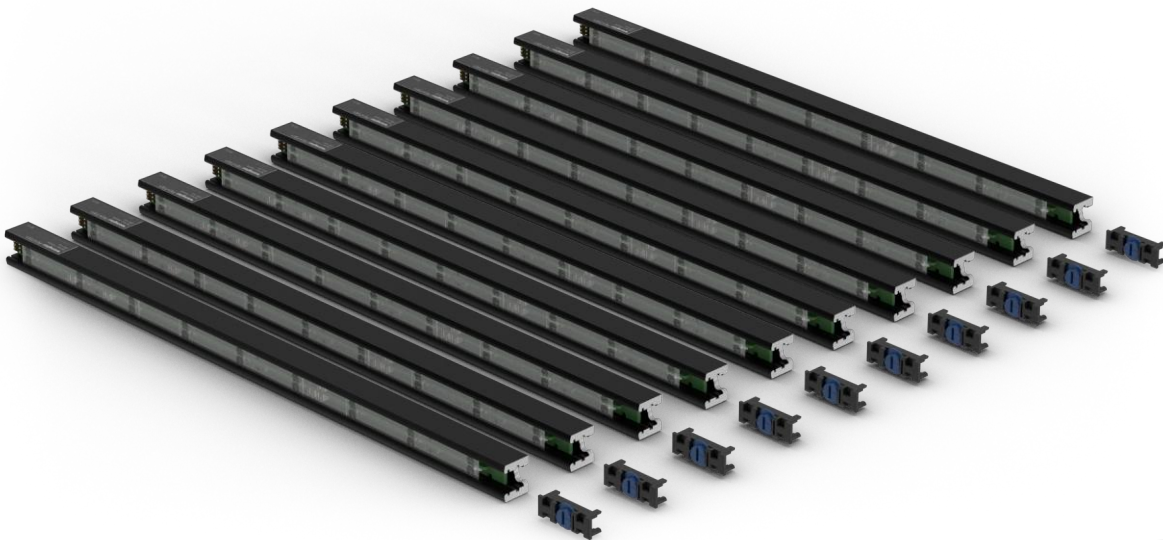


Operating Instructions

PEHT003

Light Curtain for conveying technology, expansion set



EN



Table of Contents

1 General	3
1.1 Information Concerning these Instructions.....	3
1.2 System overview	3
1.3 Explanation of Symbols	4
1.4 Limitation of Liability	5
1.5 Copyrights	5
2 For Your Safety	6
2.1 Use for Intended Purpose.....	6
2.2 Use for Other than the Intended Purpose.....	6
2.3 Personnel Qualifications.....	6
2.4 Modification of Products.....	7
2.5 General Safety Precautions	7
2.6 Approvals and protection classes	7
3 Technical Data	8
3.1 General Data	8
3.2 Housing Dimensions	9
3.3 Complementary Products	10
4 Transport and Storage	11
4.1 Transport	11
4.2 Storage	11
5 Installation and Electrical Connection	12
5.1 Installation	12
5.2 Installation with Protective Cover ZPTG005	15
5.3 Electrical Connection	16
5.4 Diagnosis	17
5.5 Troubleshooting	18
6 Settings.....	19
6.1 Settings via IO-Link.....	19
6.2 Bit mapping.....	19
6.3 Sensor Functions.....	20
6.4 Input/output functions (I/O).....	20
6.5 Switching Point Functions (SSC1/SSC2).....	21
7 Spare parts	22
8 Maintenance Instructions	24
9 Proper Disposal	25
10 Declarations of Conformity.....	26

1 General

1.1 Information Concerning these Instructions

- These instructions ensure the safe and efficient use of the product.
- These instructions are part of the product and must be retained for its entire service life.
- In addition, local accident prevention regulations and national occupational safety regulations must be observed.
- The product is subject to technical improvements, so the instructions and information in these operating instructions may also be subject to change. You can find the current version at www.wenglor.com in the product's download section.

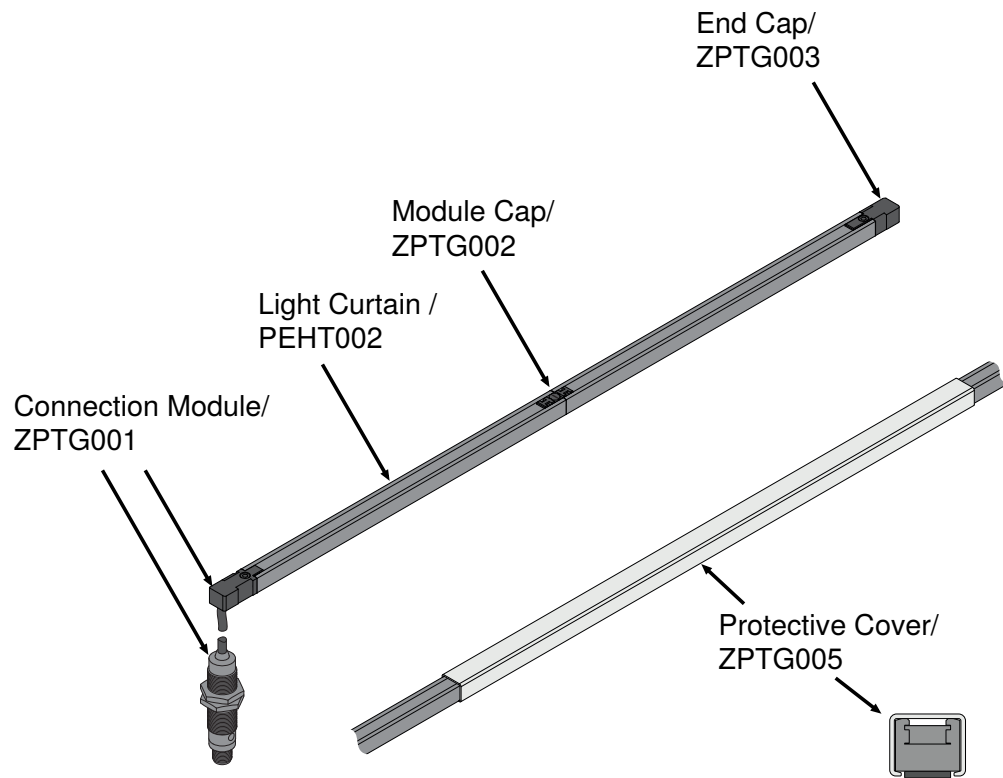


INFORMATION

The operating instructions must be read carefully before use and kept for future reference.

1.2 System overview

Item Number	Description	Description	scope of delivery
PEHT001	Starter Kit: Light Curtain for Conveyor Technology	A starter kit containing one connection module and two light curtains	2 × Light Curtains for Conveyor Systems 1 × connection module 1 × End cap 1 × Module cap
PEHT002	Light curtain for conveyor systems	A light curtain, 270 mm long, 9 beams	1 × Light curtain for conveyor systems 1 × Module cap
PEHT003	Light curtain for conveyor systems, 10 pieces	Pack of 10 light curtains for serial applications	10 × Light curtains for conveyor systems 10 × module cap
ZPTG001	Connection module	M18 connection module, supply voltage, and IO-Link	1 × Connection module 1 × End cap
ZPTG002	Module cap	Pack of 10 module caps for spare parts	10 × module cap
ZPTG003	End cap	Pack of 10 end caps for spare parts	10 × end cap
ZPTG004	connection module	400-mm cable bridge for corner configurations	1 × Connection module
ZPTG005	Protective Cover	IP54 protective cover for up to eight PEHT strips	1 × Cover profile 2215 mm 9 × Spacers



1.3 Explanation of Symbols

- Safety precautions and warnings are emphasized by means of symbols and signal words.
- Safe use of the product is only possible if these safety precautions and warnings are adhered to.

The safety precautions and warnings are laid out in accordance with the following principle:

SIGNAL WORD

Type and source of danger!

Possible consequences in the event that the hazard is disregarded.

→ Measures for averting the hazard.

The meanings of the signal words, as well as the scope of the associated hazards, are listed below:



DANGER

This signal word indicates a hazard with a high degree of risk which, if not avoided, results in death or severe injury.



WARNING

This signal word indicates a hazard with a medium degree of risk which, if not avoided, may result in death or severe injury.



CAUTION

This signal word indicates a hazard with a low degree of risk which, if not avoided, may result in minor or moderate injury.



NOTICE

This signal word draws attention to a potentially hazardous situation which, if not avoided, may result in property damage.



INFORMATION

Information draws attention to useful tips and suggestions, as well as information on efficient, error-free use.

1.4 Limitation of Liability

- The product has been developed in consideration of the current state-of-the-art technology, as well as applicable standards and guidelines. Subject to change without notice.
- A valid declaration of conformity can be accessed at www.wenglor.com in the product's separate download area.
- wenglor sensoric elektronische Geräte GmbH (hereinafter referred to as "wenglor") excludes all liability in the event of:
 - Non-compliance with the instructions
 - Use of the product for purposes other than those intended.
 - Use by untrained personnel.
 - Use of unapproved spare parts.
 - Unapproved modification of products.
- These operating instructions do not include any guarantees from wenglor with regard to the described procedures or specific product characteristics.
- wenglor assumes no liability for printing errors or other inaccuracies contained in these operating instructions unless wenglor was verifiably aware of such errors at the point in time at which the operating instructions were prepared.

1.5 Copyrights

- The contents of these instructions are protected by copyright law.
- All rights are reserved by wenglor.
- Commercial reproduction or any other commercial use of the provided content and information, in particular graphics and images, is not permitted without previous written consent from wenglor.

2 For Your Safety

2.1 Use for Intended Purpose

Light Curtains for Conveyor Systems

The light curtain for conveyor technology consists of many individual sensors that operate on the principle of Energetic Reflex Sensors. The sensors emit infrared light and measure the light intensity reflected by an object. If the light intensity exceeds a threshold value, an object is considered detected. The binary states of each individual sensor are transmitted to an analysis module via an internal data bus. The analysis module can generate defined switching signals from this data or transmit the information from the individual beams to a controller via IO-Link. This function is particularly relevant in conveyor technology for determining the width of packages moving along a conveyor belt.

This Product Can Be Used in the Following Industry Sectors:

- Special-purpose mechanical engineering
- Heavy mechanical engineering
- Logistics
- Automotive industry
- Food industry
- Packaging industry
- Pharmaceuticals industry
- Plastics industry
- Woodworking industry
- Consumer goods industry
- Paper industry
- Electronics industry
- Glass industry
- Steel industry
- Aviation industry
- Chemicals industry
- Alternative energies
- Raw materials extraction

2.2 Use for Other than the Intended Purpose

- Not a safety component in accordance with 2006/42/EC (Machinery Directive).
- The product is not suitable for use in potentially explosive atmospheres.
- The product may be used only with accessories supplied or approved by wenglor, or in combination with approved products. A list of approved accessories and combination products can be found at www.wenglor.com on the product detail page.



DANGER

Risk of personal injury or property damage in case of use for other than the intended purpose!

Use for other than the intended purpose may lead to hazardous situations.

→ Observe instructions regarding use for intended purpose.

2.3 Personnel Qualifications

- Suitable technical training is a prerequisite.
- In-house electronics training is required.
- Trained personnel who use the product must have (permanent) access to the operating instructions.



DANGER

Risk of personal injury or property damage in case of incorrect initial start-up and maintenance!

Personal injury and damage to equipment may occur.

→ Adequate training and qualification of personnel

2.4 Modification of Products



DANGER

Risk of personal injury or property damage if the product is modified!

Personal injury and damage to equipment may occur. Noncompliance may result in loss of the CE and/or UKCA mark and voiding of the warranty.

→ Modification of the product is not permitted

2.5 General Safety Precautions



INFORMATION

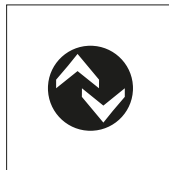
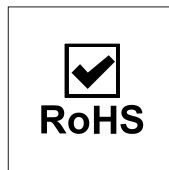
These instructions are an integral part of the product and must be kept on hand for the entire duration of its service life.

In the event of possible changes, the current version of the operating instructions can be found at www.wenglor.com in the product's separate download area.

Read the operating instructions carefully before using the product.

Protect the sensor against contamination and mechanical influences.

2.6 Approvals and protection classes



3 Technical Data

3.1 General Data

Light Curtains for Material Handling

Technical Specifications	
Range	230 mm
Switching Hysteresis	15 %
Beam Distance	30 mm
Light Source	Infrared, LED
Opening Angle	± 6 °
Electrical data	
Current Consumption (U _b = 24 V)	< 50 mA
Temperature Drift	< 10 %
Temperature Range	-25...60 °C
Mechanical data	
Degree of Protection	IP50 *
Safety technology data	
MTTFd (EN ISO 13849-1)	59.96 a

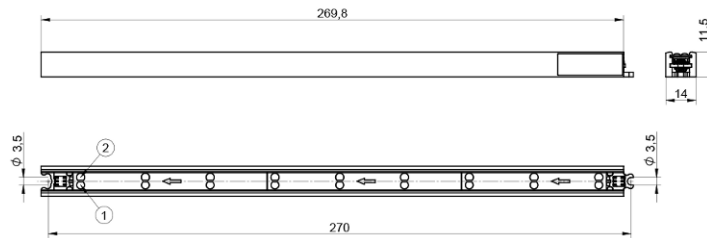
* With protective cover ZPTG005, protection rating IP54 is achieved.

Connection module (sold separately)

Electrical data	
Supply Voltage	18...30 V DC
Current Consumption (U _b = 24 V)	< 10 mA
Switching Frequency	555 Hz
Response Time	900 µs
Temperature Range	-25...60 °C
Switching Output Voltage Drop	< 2 V
Switching Output/Switching Current	100 mA
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Overload Protection	yes
Interface	IO-Link
Protection Class	III
General Data	
Scope of delivery	1 × end cap 1 × connection module

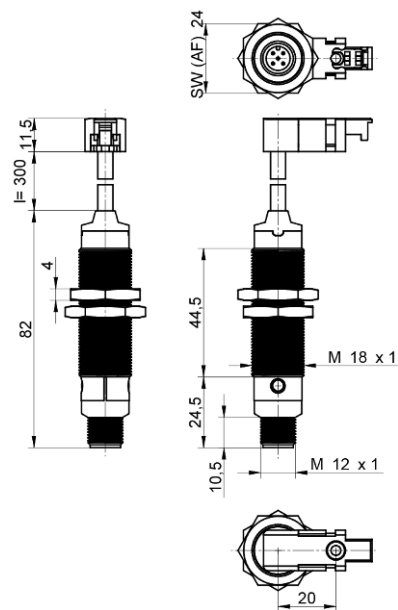
3.2 Housing Dimensions

light curtain

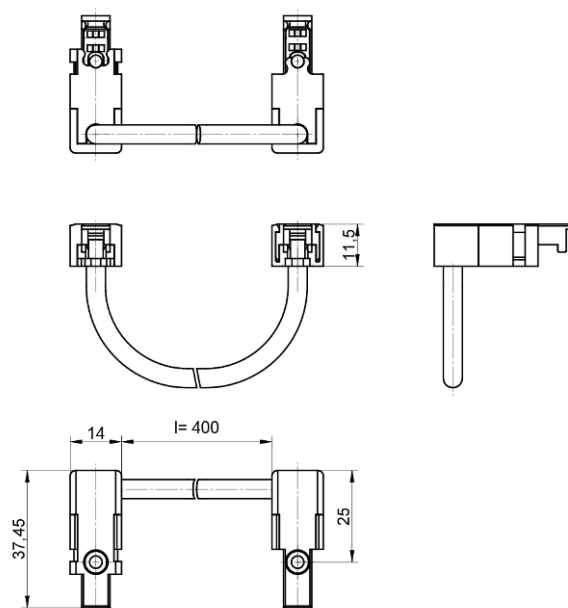


- ① Receiver Diode
- ② Transmitter Diode

Connection module (sold separately)



Connection module (sold separately)



Dimensions in mm (1 mm = 0.03937 inch)

3.3 Complementary Products

wenglor offers you the right connection and mounting technology as well as other accessories for your product. You can find this at www.wenglor.com on the product details page at the bottom.

4 Transport and Storage

4.1 Transport

Upon receipt of shipment, the goods must be inspected for damage in transit. In the case of damage, conditionally accept the package and notify the manufacturer of the damage. Then return the device, making reference to damage in transit.

4.2 Storage

The following points must be taken into consideration with regard to storage:

- Do not store the product outdoors.
- Store the product in a dry, dust-free place.
- Protect the product against mechanical impacts.
- Protect the product against exposure to direct sunlight.



NOTICE

Risk of property damage in case of improper storage!

The product may be damaged.

→ Storage instructions must be complied with.

5 Installation and Electrical Connection

5.1 Installation

- Protect the product from contamination during installation.
- Observe the applicable electrical and mechanical regulations, standards, and safety rules.
- Protect the product from mechanical impact.
- Ensure that the sensor is mechanically secure during installation.
- Torque specifications must be observed (see the section “ Technical Data [► 8] ”).



NOTICE

Risk of property damage if not installed properly

Damage to the product is possible! The power connection must not be established until all components are securely and completely mounted.

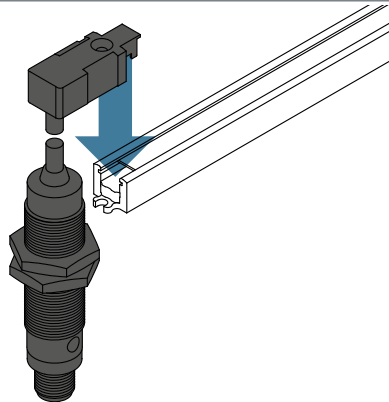
→ Follow the installation instructions.



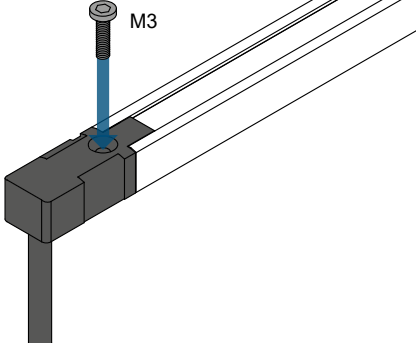
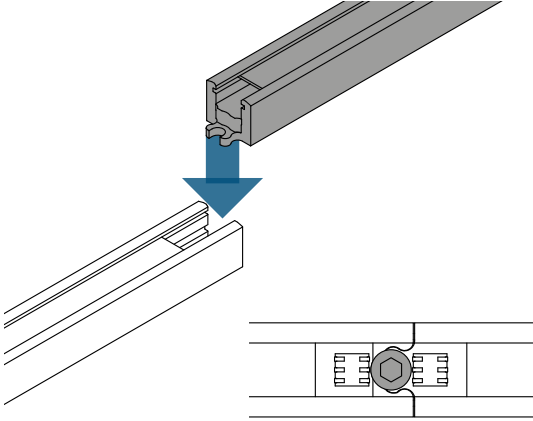
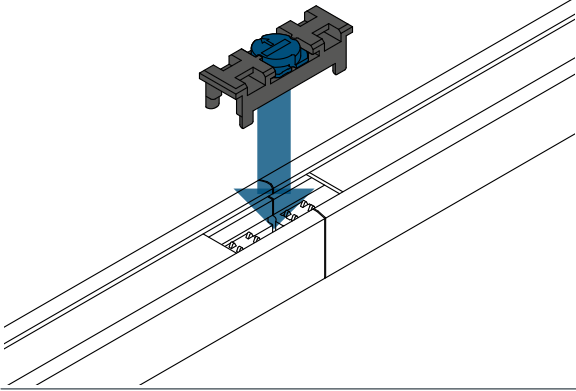
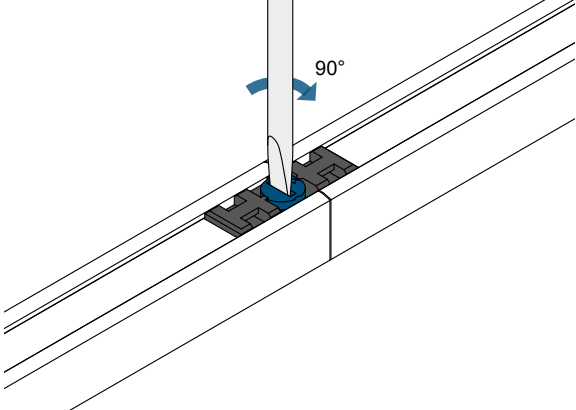
NOTICE

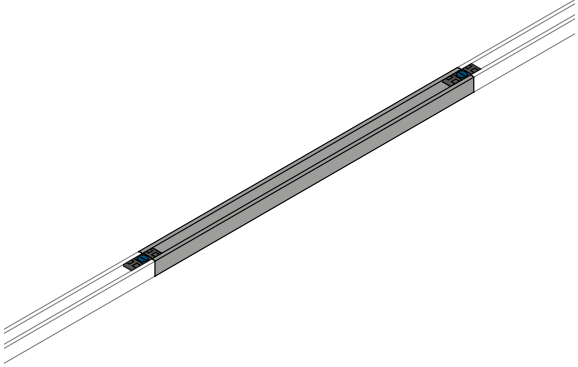
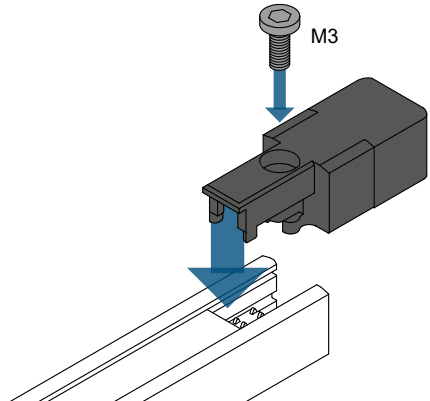
For controlled tightening, use M3 cylinder head screws with a flat seating surface. We recommend screws conforming to DIN 912 / ISO 4762, DIN 7984 (hex socket), or ISO 14580 (Torx). The thread length of the screws depends on the specific installation. A torque screwdriver must be used for tightening. Phillips and flat-blade screwdrivers do not ensure reproducible tightening with a defined torque.

Example: With a thread protrusion of 5 mm, a thread length of 7 mm is required between the PEHT002 light curtains. A thread length of 14 mm is required at the beginning (ZPTG001) and at the end of the entire light curtain (ZPTG003).



Connect the ZPTG001 connection module to the light curtain.

	Secure the light curtains with an M3 screw. M3 screws in accordance with DIN 7984 are recommended.
	Up to 15 light curtains can be assembled together. The alignment of the individual modules must be observed. The light curtains are mechanically secured with an M3 screw. M3 screws in accordance with DIN 7984 are recommended. In the event of a defect, the light curtains can be replaced individually. To do this, the entire system must be de-energized. After replacing the light curtain, the system will be reinitialized at the next restart.
	Insert the ZPT002 module cap into the gap between the light curtains.
	The system is secured by turning the blue locking mechanism 90° clockwise.

	A maximum of 15 light curtains can be connected.
	To complete the connected light curtains, the end cap ZPTG003 must be secured with an M3 screw. M3 screws in accordance with DIN 7984 are recommended. Once all components are secured, the light curtain can be put into operation.

The individual modules can be flexibly assembled in terms of length and arrangement. The ZPTG004 accessory provides a flexible spacer to enable angled mounting scenarios as well.

Here are some examples:





NOTICE

Risk of property damage if disassembled improperly!

The individual light curtains must not be disconnected while energized.

→ De-energize the system before disassembly.



CAUTION

Risk of personal injury and property damage during installation!

Injuries and damage to products are possible.

→ Ensure a safe installation environment.

5.2 Installation with Protective Cover ZPTG005

- The ZPTG005 protective cover is an optional accessory and is installed on the fully assembled light curtain (see the "Installation" [► 12] section).
- The protective cover increases the degree of protection of the light curtains for conveyor systems from IP50 to IP54.
- The protective cover is supplied in a length of 2215 mm and can be cut by the user to match the length of the installed light curtain system.
- The included spacers compensate for the difference in height, ensuring that the cover lies flat.



NOTICE

Risk of property damage if the protective cover is not installed properly!

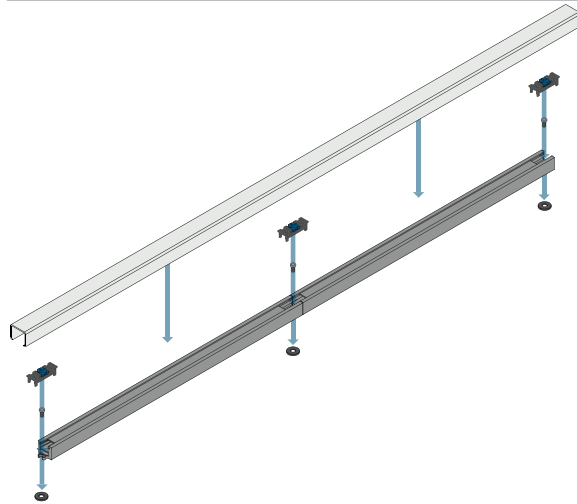
An inaccurate or too-short cut, or omitting the spacers, can result in the protective cover not lying flat.

→ Use the spacers as described and ensure the cover is cut to a sufficient length.

Cutting Recommendation

module	Cut length (in mm)	Note
1	325	Cut the profile to a length corresponding to the number of modules. The cutting lengths are based on the total length of the complete system and include a 5-mm allowance.
2	595	
3	865	
4	1,135	

module	Cut length (in mm)	Note
5	1,405	
6	1675	
7	1945	
8	2215	



1. Determine the length of the light curtain system and cut the protective cover to size accordingly (see the cutting recommendations table).
2. Insert the supplied spacers in the area of the M3 screws below the light bars.
3. Place the cut-to-size protective cover centered over the light curtain and press it down evenly along its entire length until it is snapped into place along the entire length.



INFORMATION

The degree of protection IP54 is achieved only when the protective cover is fully and flushly mounted. Without the protective cover, the degree of protection IP50 continues to apply, as specified in the Technical Data [► 8] section.



INFORMATION

Installing the protective cover may cause a minimal change in the detection range of the light curtain.

5.3 Electrical Connection

- Wire the sensor according to the connection diagram.
- Switch on the supply voltage (see section Technical Data [► 8]).
- Connect the sensor to 18...30 V DC.

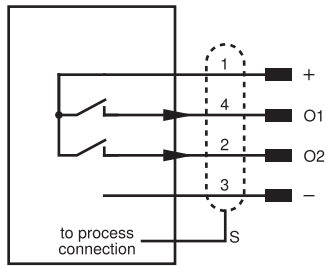


DANGER

Risk of personal injury or property damage due to electric current.

Live parts may cause damage to persons and equipment.

→ The electrical device may only be connected by qualified personnel.



pin	Pin Function	Polarity	Circuit
1	Supply Voltage +		
2	Switching output 2	PNP	NO
3	Supply voltage 0 V		
4	Switching output 1	PNP	NO
S	Shielding		

5.4 Diagnosis

light curtain

display	Status	Meaning
Power LED		Sensor ready
P (1 × per light curtain)	(4 Hz)	Error (communication error or short circuit)
	(2 Hz)	Localization function active via IO-Link
		No voltage supply available
Switching status indicator (9 per module, always positioned on the light beam)		Object detected on this channel
	(2 Hz)	Contamination on this channel
	(4 Hz)	Internal short circuit on this channel

Connection module

display	Status	Meaning
Power LED		Sensor ready
P	(2 Hz)	Localization function active via IO-Link
		No voltage supply available

- = Not lit
- = Steady light
- = Flashing

5.5 Troubleshooting



INFORMATION

Action in Case of Error:

1. Shut down the machine.
2. Analyze the cause of the error using the diagnostic information and correct it.
3. If the error cannot be resolved, contact wenglor Support.
4. Do not operate the machine if the error behavior is unclear.
5. The machine must be taken out of service if the error cannot be clearly identified or safely resolved.



DANGER

Risk of personal injury or property damage if not observed!

The system's safety function is disabled. Risk of injury to personnel and damage to equipment.

→ Follow the specified procedure in the event of an error.

6 Settings

6.1 Settings via IO-Link

The sensors can exchange parameters and process data via IO-Link. The parameters can be used to make many additional settings on the device. The process data transmit cyclical data and condition monitoring.

To this end, the sensor is connected to a suitable IO-Link master (see product detail page/complementary products). The interface protocol and the IODD can be found at www.wenglor.com in the download area for the respective product.

6.2 Bit mapping

There are several places in the IODD where 16 bytes are used, with their bits representing the individual beams. The mapping of bits to beams always follows the same pattern. This pattern is shown in the following table. Eight beams are mapped per byte. A single light curtain has 9 beams. This means that there is no direct mapping between bytes and light curtains. The mapping is performed according to this table.

	MSB							LSB
Chanel Status B0	Mod 0 Ch 7	Mod 0 Ch 6	Mod 0 Ch 5	Mod 0 Ch 4	Mod 0 Ch 3	Mod 0 Ch 2	Mod 0 Ch 1	Mod 0 Ch 0
Chanel Status B1	Mod 1 Ch 6	Mod 1 Ch 5	Mod 1 Ch 4	Mod 1 Ch 3	Mod 1 Ch 2	Mod 1 Ch 1	Mod 1 Ch 0	Mod 0 Ch 8
Chanel Status B2	Mod 2 Ch 5	Mod 2 Ch 4	Mod 2 Ch 3	Mod 2 Ch 2	Mod 2 Ch 1	Mod 2 Ch 0	Mod 1 Ch 8	Mod 1 Ch 7
Chanel Status B3	Mod 3 Ch 4	Mod 3 Ch 3	Mod 3 Ch 2	Mod 3 Ch 1	Mod 3 Ch 0	Mod 2 Ch 8	Mod 2 Ch 7	Mod 2 Ch 6
Chanel Status B4	Mod 4 Ch 3	Mod 4 Ch 2	Mod 4 Ch 1	Mod 4 Ch 0	Mod 3 Ch 8	Mod 3 Ch 7	Mod 3 Ch 6	Mod 3 Ch 5
Chanel Status B5	Mod 5 Ch 2	Mod 5 Ch 1	Mod 5 Ch 0	Mod 4 Ch 8	Mod 4 Ch 7	Mod 4 Ch 6	Mod 4 Ch 5	Mod 4 Ch 4
Chanel Status B6	Mod 6 Ch 1	Mod 6 Ch 0	Mod 5 Ch 8	Mod 5 Ch 7	Mod 5 Ch 6	Mod 5 Ch 5	Mod 5 Ch 4	Mod 5 Ch 3
Chanel Status B7	Mod 7 Ch 0	Mod 6 Ch 8	Mod 6 Ch 7	Mod 6 Ch 6	Mod 6 Ch 5	Mod 6 Ch 4	Mod 6 Ch 3	Mod 6 Ch 2
Chanel Status B8	Mod 7 Ch 8	Mod 7 Ch 7	Mod 7 Ch 5	Mod 7 Ch 5	Mod 7 Ch 4	Mod 7 Ch 3	Mod 7 Ch 2	Mod 7 Ch 1
Chanel Status B9	Mod 8 Ch 7	Mod 8 Ch 6	Mod 8 Ch 5	Mod 8 Ch 4	Mod 8 Ch 3	Mod 8 Ch 2	Mod 8 Ch 1	Mod 8 Ch 0
Chanel Status B10	Mod 9 Ch 6	Mod 9 Ch 5	Mod 9 Ch 4	Mod 9 Ch 3	Mod 9 Ch 2	Mod 9 Ch 1	Mod 9 Ch 0	Mod 8 Ch 8
Chanel Status B11	Mod10 Ch 5	Mod10 Ch 4	Mod10 Ch 3	Mod10 Ch 2	Mod10 Ch 1	Mod10 Ch 0	Mod 9 Ch 8	Mod 9 Ch 7
Chanel Status B12	Mod11 Ch 4	Mod11 Ch 3	Mod11 Ch 2	Mod11 Ch 1	Mod11 Ch 0	Mod10 Ch 8	Mod10 Ch 7	Mod10 Ch 6
Chanel Status B13	Mod12 Ch 3	Mod12 Ch 2	Mod12 Ch 1	Mod12 Ch 0	Mod11 Ch 8	Mod11 Ch 7	Mod11 Ch 6	Mod11 Ch 5
Chanel Status B14	Mod13 Ch 2	Mod13 Ch 1	Mod13 Ch 0	Mod12 Ch 8	Mod12 Ch 7	Mod12 Ch 6	Mod12 Ch 5	Mod12 Ch 4
Chanel Status B15	Mod14 Ch 1	Mod14 Ch 0	Mod13 Ch 8	Mod13 Ch 7	Mod13 Ch 6	Mod13 Ch 5	Mod13 Ch 4	Mod13 Ch 3
Chanel Status B16	NA	Mod14 Ch 8	Mod14 Ch 7	Mod14 Ch 6	Mod14 Ch 5	Mod14 Ch 4	Mod14 Ch 3	Mod14 Ch 2

6.3 Sensor Functions

Function	Available settings	Default
Localization	The sensor's supply voltage indicator can be set to flash blue. This makes it easy to locate the sensor in a system. On The LED supply voltage indicator flashes blue. Off LEDs in normal operation.	Off
Number of beams	Specifies the number of beams in the current module combination.	
Number of modules	Indicates how many modules are combined to form a system.	
Sensitivity	The sensor has high sensitivity and can detect even objects with very weak signals. In applications where the object to be detected emits only a weak signal (e.g., due to steep angles or unfavorable reflection properties), the sensitivity or amplification of the optical signal can be increased. However, as sensitivity increases, so does susceptibility to interference. Adjusting the sensitivity has no effect on the sensor's switching speed. 0...200	100
Hysteresis	The hysteresis is the difference between the switch-on and switch-off point and can be set in 3 stages. Minimum Medium Maximum	Medium

6.4 Input/output functions (I/O)

Function	Available settings	Default settings
O1	switching output The switching output is assigned to switching point SSC1. error output The error output switches in the event of one of the assigned faults. Warning output The warning output switches when one of the assigned warnings occurs.	switching output
O2	switching output The switching output is assigned to switching point SSC2. error output The error output switches in the event of one of the assigned faults. Warning output The warning output switches when one of the assigned warnings occurs. Disabled The pin is disabled.	switching output

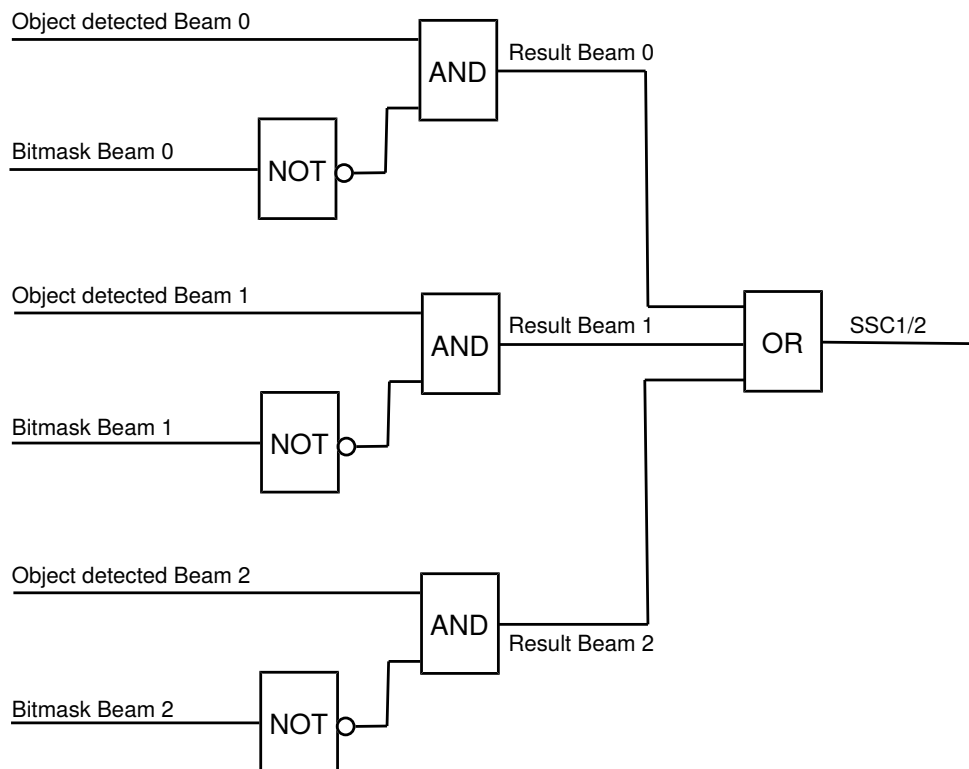
6.5 Switching Point Functions (SSC1/SSC2)

The two switching points, SSC1 and SSC2, are set using the switching point functions.

Function	Possible settings	Default setting
Altitude measurement	100: Start of height measurement. The currently measured height or the interrupted beams are taught in as SSC2. 110: SSC2 is reset; the currently measured height or the interrupted beams are ignored	
SSC1 switching point	The switching point is set using a bit mask as described in Bit mapping [► 19].	
Switching point SSC2	The switching point is set using a bit mask as described in Bit mapping [► 19].	

Switching point SSC1/2

A bit mask can be used to specify which beam influences the logical switching state SSC1 or SSC2. If a bit is set to 1, the beam is excluded from the evaluation (masked). All beams whose bits are set to 0 are included in the evaluation using OR logic.



7

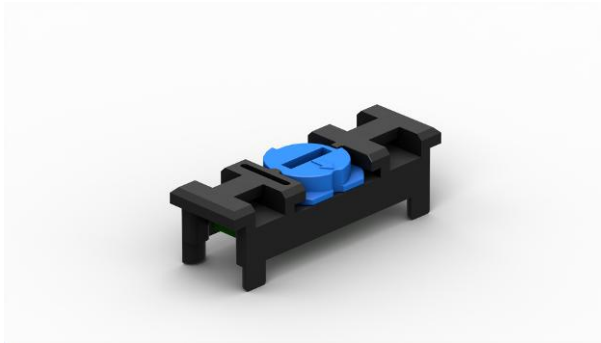
Spare parts

wenglor offers the following spare parts for this system:

ZPTG002

Module lid

Packaging unit: 10 Pieces



ZPTG003

End lid

Packaging unit: 10 Pieces



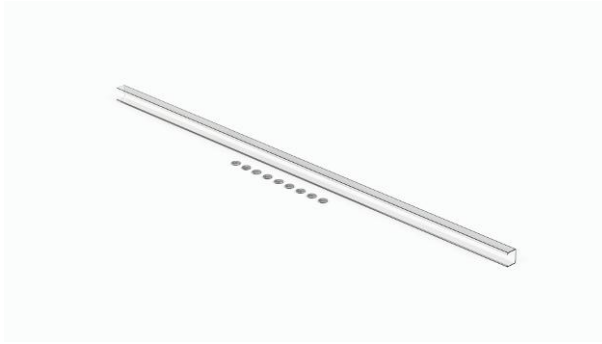
ZPTG004

Connection Module

Packaging unit: 1 Piece



ZPTG005



Protective Cover (2215 mm)

Spacers: 9 pieces

Packaging unit: 1 Piece

8 Maintenance Instructions



NOTICE

This wenglor product is maintenance-free.

Cleaning and inspection of the plug connections at regular intervals are advisable.

Do not clean the product with solvents or cleaning agents that could damage the product.

The product must be protected against contamination during initial start-up.

9 **Proper Disposal**

wenglor sensoric GmbH does not accept the return of unusable or irreparable products. Respectively valid national waste disposal regulations apply to product disposal.

10 **Declarations of Conformity**

Declarations of conformity can be found on our website at www.wenglor.com in the product's separate download area.