

VISIONSCANNER4

V1

April 2025



Simple by Design

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1. INTRODUCTION

With this operating manual, we would like to inform you about the proper handling and maintenance of the sensor.

Chapter 2 contains the project-specific information:

- Specifications
- Overview drawing, components and dimensions
- Spare and wear parts list
- Accessories
- Declaration

From chapter 3 Product-specific and generally applicable information can be found:

- General information on the operating instructions
- Safety
- Assembly, disassembly and commissioning
- Maintenance, servicing and troubleshooting
- Supplier directory

CHANGES

Version	Author	Date	Alteration
1.1	EngRoTec	26.09.2024	Building
1.2	N. Plappert	11.03.2025	Functional description adapted to IP64
1.3	N. Plappert	01.04.2025	Laser warning stickers updated
1.4	N. Plappert	21.05.2025	Pin assignment of device connection revised

2. PRODUCT DESCRIPTION

TECHNICAL DATA

Property	Value
Manufacturer	EngRoTec Solutions GmbH Zum Wolfsgraben 5 D-36088 Hünfeld Phone: +49 (0) 6652-793948-0 Fax: +49 (0) 6652-793948-98 www.ai-engrotec.de info@ai-engroec.de Managing Director: Marc Burzlaff VAT ID: DE 27088 1463HRB 5780 120 x 45 x 45 mm
Dimensions	120 x 45 x 45 mm
Weight	Approx. 400 g
Class	IP64
Case	Aluminum, anodized
Application environment	Interiors, no explosive atmospheres
Environmental conditions for storage	-20° to 60°C, max. 90% relative humidity
Operating environment	0° to 45°C, max. 80% relative humidity
Height	Up to 2,000 m above sea level
Transient surges	Standard (IEC 61010 1.4.1)
Degree	Standard, Pollution Degree 2 (IEC 61010 1.4.1 and 3.6.2)
Power supply	24 V DC, max. 400 mA (+ possible power consumption at outputs)
I/O interface	See chapter Fehler! Verweisquelle konnte nicht gefunden werden. (p. Fehler! Textmarke nicht definiert.)
Ethernet	Fast Ethernet 10/100/1000 Mbit, half-/full-duplex, autonegotiation
Sensor technology:	CMOS sensor 1400x1080 pixels
Reading rate	Up to 1000 measurements/second
Measurement accuracy	±0.1% of the measuring range, depending on the geometry and surface finish of the feature
Laser Wavelength	Red laser 660 nm, blue laser 405 nm
Laser power	<1mW
Classification	Class 2
<ul style="list-style-type: none"> Most restrictive distance 	~140mm
<ul style="list-style-type: none"> Safety distance NOHD 	not defined for class 2
Laser diode service life	40,000h (regardless of switching cycles)

SENSOR VARIANTS (TYPE DESIGNATION)

	Type	-	Measuring range	Laser Paint
Example	VS4	-	85	B

The following variants are possible:

Field	Key	Meaning
Measuring range	45	Depth of field of view 45 mm
	85	Depth of field of view 85 mm
	240	Depth of field of view 240 mm
Laser Paint		Red laser with a wavelength of 660 nm
	B	blue laser with a wavelength of 405 nm

MEANING OF LED DISPLAY

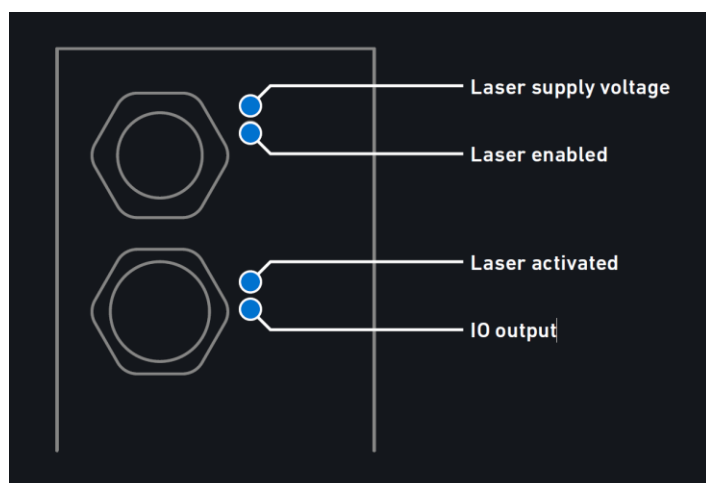


Illustration 1: Meaning LED Display

The meaning of the LED display is as follows:

- Laser supply voltage indicates whether the supply voltage is applied
- Laser enabled: The laser needs laser enable
- Laser activated: The laser is activated. The laser is always triggered when an image or profile is taken.
- IO output: Digital output, it depends on the customized application.

DEVICE CONNECTOR FOR POWER SUPPLY



WARNING!

The LASER ENABLE of the sensor should be switched by a safety controller. Otherwise, the safe shutdown of the laser in a dangerous situation is not guaranteed. Please also note the regulations from section Residual risks (p. 13).

Device connector for power supply – M12 plug, 4-pin, A-coded


Connection	Pin No.	Signal	Voltage range	Remark
	1	+24V DC	24V ± 20%	Supply voltage (max. 3.15A)
	2	LASER ENABLE	0 – 24V *	Laser Release (24V Input)
	3	GND, 0V	-	Ground, 0V Supply Voltage
	4	IO OUT	0 – 24V **	Output
	Umbrella			Connect to pin 3 = ground

Note on the connector assignment of the control cable:

Cable	> 0.25 mm per wire, shielded, flexible, approved for energy chains and the like.
* Laser release	The laser release is directly connected to the inner logic circuits (not potential-free). The threshold voltage is +10V, the power consumption of the inputs is about 1mA at 24V. The components can be loaded up to 28.8V (24V+20%). Operation of the laser is only possible with a positively switched LASER ENABLE signal
**Output	The digital output is not potential-free and carries the input voltage. The current load is limited by a PTC fuse. The maximum current is 0.4A per output and 0.5A total at 20°C; under hot ambient conditions, the fuse may close at lower currents.

DEVICE CONNECTOR FOR ETHERNET

Device connector for Ethernet – M12 socket, 8-pin, X-coded

Connection	Pin No.	Signal	RJ45 Pin	Remark
	1	ETH_A_CONN+	1	Transmission Data Ethernet A+
	2	ETH_A_CONN-	2	Transmission Data Ethernet A-
	3	ETH_B_CONN+	3	Transmission Data Ethernet B+
	4	ETH_B_CONN-	4	Transmission Data Ethernet B-
	5	ETH_C_CONN+	5	Transmission Data Ethernet C+
	6	ETH_C_CONN-	6	Transmission Data Ethernet C-
	7	ETH_D_CONN+	7	Transmission Data Ethernet D+
	8	ETH_D_CONN-	8	Transmission Data Ethernet D-
	Cable shield			Connected to connector housing

3. PREFACE

With this operating manual, we provide information on the proper handling of the system. Please note the information in the chapter 5 for safety and the special warnings to identify danger points in good time and avoid dangerous situations in the field.

The service life of the system as well as the operational and functional reliability can be significantly increased if the information in chapter 7 regarding maintenance and care.

We reserve the right to make changes and additions due to technical developments.

The **VISIONSCANNER4** is part of a customer-specific measuring system (consisting of the **VISIONSCANNER4**, kinematics and specific software), which in turn is integrated into an automatic production system. This manual refers to the **VISIONSCANNER4** as the sensor hardware of the measuring system. That is why this manual is part of the operating manual of the customer-specific measuring system. Both this manual and the operating instructions of the customer-specific measuring system must be included in the technical documentation of the automatic production system in which the **VISIONSCANNER4** sensor will be installed.

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TARGET GROUP DEFINITION

This operating manual is intended for the following target groups:

- Integrators / designers of a higher-level machine system in which a **VISIONSCANNER4** is installed as part of a measuring system
- Operator
- Maintenance and repair personnel

WARRANTY AND LIABILITY

In principle, our General Terms and Conditions of Sale and Delivery apply.

Warranty and liability claim for personal injury and property damage are excluded if they are due to one or more of the following causes:

- Non-intended use.
- Improper assembly, commissioning, shutdown, operation and maintenance.
- Unauthorized structural changes.
- Poor monitoring of parts labeled as wear parts.
- Improperly performed repairs.
- Catastrophes due to foreign bodies and force majeure

EXPLANATION OF SYMBOLS AND INFORMATION



Warning of laser radiation. Please refer to the section Rules for handling and protective measures (p. 14).



Warning of electrical hazards



Warning of flammable substances



Hot Surface Warning



DANGER!

The keyword "danger" means an imminent danger to the life and health of persons. Failure to follow these instructions will result in serious harmful effects on health, up to and including life-threatening injuries.



WARNING!

The keyword "warning" means a possible imminent danger to the life and health of persons. Failure to follow these instructions will result in serious harmful effects on health, up to and including life-threatening injuries.



Symbols of this kind mean that certain personal protective equipment (in this case, gloves) is mandatory.



INFORMATION

This symbol indicates special instructions for users that can be followed or are particularly useful as background information.



This symbol refers to information on environmental protection.

4. FUNCTIONAL DESCRIPTION

ESSENTIAL COMPONENTS

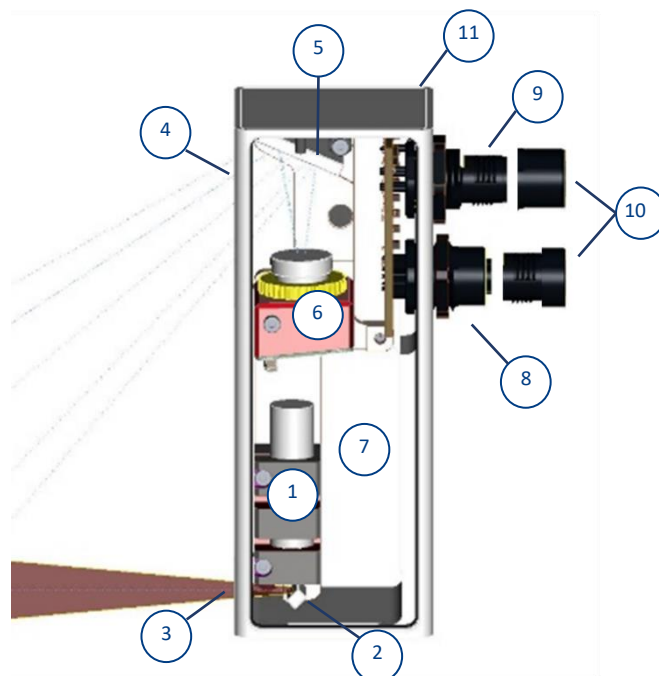



Illustration 2: Overview of VISIONSCANNER4 components

No.	Designation	
1	Line laser block	 <p>WARNING!</p>
2	Laser mirrors	
3	Laser windows	3 mm x 21 mm, covered with a borofloat glass panel
4	Camera window	31 mm x 31 mm, covered with a borofloat glass pane
5	Camera mirror	
6	Camera block	
7	Control	Laser and CMOS drivers, integrated control and image processing
8	Plug connection network	M12, 8-pin, male
9	Plug connection control	M12, 4-pin, female
10	Sealing caps	
11	Case	Aluminum, anodized, IP64



INFORMATION

The IP64 protection class is only guaranteed with connected cables or with the sealing caps included in the delivery

PRINCIPLE

The **VISIONSCANNER4** is an optical testing and measuring device for automated quality assurance and robot guidance.

The mode of operation uses structured lighting and observation of the object to be examined. A laser beam with a defined wavelength range is fanned out. The cutting line of the laser beam fan and the object is recorded and evaluated. In measurement technology, this principle is referred to as the triangulation method.

The evaluation of the acquired image data is carried out either by the CPU integrated in the device or after transfer to an external computer.

To perform a test or measurement task, a signal is sent from the higher-level controller to the sensor, after which the laser is switched on for the duration of the data acquisition. If the integrated CPU is used, the determined test or measurement results are made available via the existing interfaces such as the digital outputs or the Ethernet interface of the higher-level controller. Alternatively, only the captured image data is sent to the external computer via the Ethernet interface for further processing.

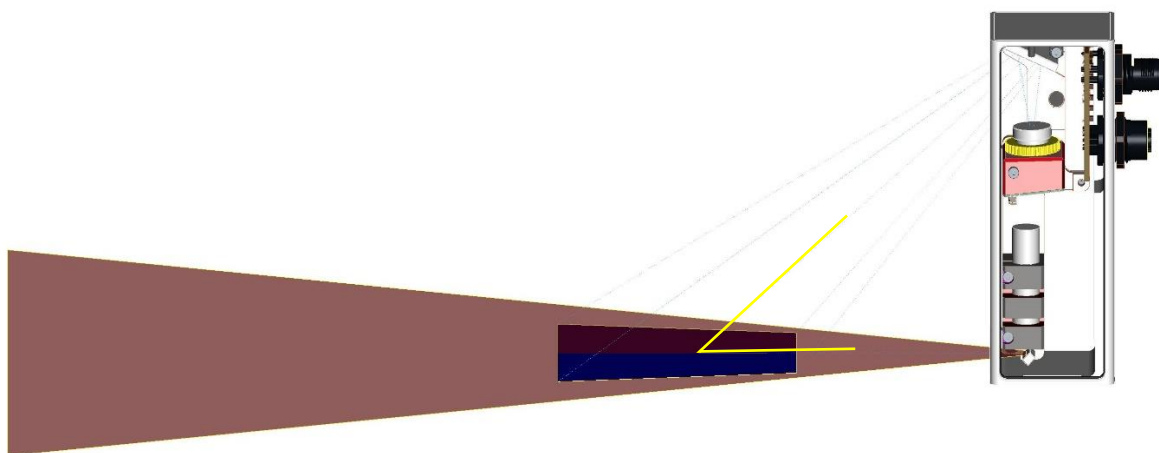





Illustration 3: Operating principle VISIONSCANNER4

	Laser level, maximum angle
	Maximum field of view
	Triangulation angle

The specific process flow and the details of the communication interfaces depend on the use case and thus the installed application software and cannot be described further here. The application software is not part of the sensor.

A mutual movement of object and sensor allows continuous monitoring of seams or joints or the inspection of other discrete properties of the object.

5. SAFETY

INTENDED USE

The **VISIONSCANNER4** may only be used as a triangulation sensor for industrial, fully automated, optical inspection and measurement applications. The **VISIONSCANNER4** must always be used as a component of a customized measurement system (consisting of sensor, kinematics and specific software), which in turn is incorporated into an automatic production system. The latter must be designed and operated in accordance with all relevant safety regulations.

VISIONSCANNER4 sensors can be used to inspect geometric issues on workpieces that have sufficient diffuse reflection and cannot be ignited by the laser radiation of the VISIONSCANNER4.

The operation of the **VISIONSCANNER4** requires consideration and compliance with the permissible technical data. The intended use also includes:

- observing all instructions in this operating manual
- Compliance with the service intervals of the maintenance plan specified in Chapter 6



DANGER!

Any other or more than this use is considered not to be in accordance with its intended purpose!
The device must only be operated under the environmental conditions specified in the technical data (page 5).

In the interest of safe and reliable operation, the device must only be installed and operated by adequately qualified personnel.

RESIDUAL RISKS

The **VISIONSCANNER4** has the following residual risks, which must be mitigated by the integrators in the course of integration into the measurement process and further into the higher-level machine system or by the operator:



WARNING!

Laser Class 2 according to IEC 60825-1:2007
Prevent people or flammable materials from being exposed to laser radiation.

 WARNING!	24V DC power unit. Prevent any contact with higher voltages!
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Further risks could arise with regard to malfunctions of the machine system due to a sensor malfunction. This depends on the specific application and cannot be covered here.

RULES FOR HANDLING AND PROTECTIVE MEASURES

The **VISIONSCANNER4** uses a Class 2 laser with a wavelength of 660 nm or a wavelength of 405 nm. The wavelength depends on the type (see Technical data, page 5). For this reason, safe handling of the **VISIONSCANNER4** and appropriate protective measures are required to protect the eyes during installation, commissioning, maintenance and care.

With a class 2 laser, neither the eyes nor the skin are at risk in the event of accidental irradiation, including a direct unintentional look into the beam. Class 2 lasers can therefore be operated without further protective measures, as long as the natural eyelid reflex or saccades are not suppressed. However, class 2 lasers can cause disturbing optical effects such as irritation, glare and afterimages, especially in low ambient brightness.

You should consciously close your eyes and turn away as soon as you notice that a class 2 laser beam hits the eye.

 CAUTION!	If other operating or adjustment equipment than those specified herein is used, or if other procedures are carried out, this may result in dangerous exposure to radiation.
--	---

In order to rule out any risk when handling the sensor from the outset, please observe the following simple rules:

General rules

- Do not look directly into the laser radiation unprotected. Don't stare into the beam. Do not stare at wet or polished surfaces that the jet could hit.
- Laser radiation should not be directed into the eyes of other people.
- Never use optical instruments (such as magnifying glasses or binoculars) to view the device or the materials to be tested with the laser switched on.
- People with delayed reflexes, limited eye mobility, or reduced head mobility are not allowed to be near the **VISIONSCANNER4** while laser release is active.

Rules for automatic operation

In fully automatic mode, the **VISIONSCANNER4** must be operated behind separating distance protection devices or non-separating safety devices such as light curtains. The guards must be designed in accordance with local legal regulations and relevant standards¹. When identifying the hazardous areas, the class 2 laser radiation of the **VISIONSCANNER4** sensor must be taken into account. In this case, the escaping beam fan is to be regarded as a hazardous area up to a distance of 400 mm from the outlet opening (i.e. the integrator must ensure that this virtual contour is always outside the safety distances of separating and non-separating protective devices in automatic mode).² If this safety distance cannot be maintained with regard to separating protective devices, these must be designed to absorb in the spectral range around 660nm or 405nm.

Interlocks must be put in place to ensure that a person cannot approach the laser without the radiation being safely shut off, and that the laser cannot be turned back on until the person has left the hazardous area.

The machine system must be designed and operated in such a way that the **VISIONSCANNER4** is contaminated as little as possible. Avoid movement below glue nozzles. If flying sparks can occur in the environment (machining, welding), the use of a protective flap (not included in the scope of delivery of the sensor) and an interlock between sparking processes and measuring processes is an option.

The measurement process should be programmed in such a way that the switch-on time of the laser is as short as possible. During positioning movements, the laser should be switched off. The laser should be switched off if the intended relative movement of the sensor and workpiece is blocked. The laser can only be switched on when laser release is active (see Technical data, page 5). It is recommended to connect the laser release to your safety-related control part. In this way, the laser is switched off in an emergency.

It is recommended to design the power supply to a maximum of 3.15A ("Limited Energy").

The **VISIONSCANNER4** sensor cannot be used as a safety-related control component.

Commissioning, adjustment, maintenance of the higher-level machine system





In order to set up, test and calibrate the measurement application, it may be necessary to operate the **VISIONSCANNER4** sensor while the protective devices intended for automatic operation are open ("setup mode"). In these cases

¹ In the European Economic Area, the protective devices are subject to ISO 12100, EN ISO 14120 and the associated safety distances are subject to ISO 13857 and ISO 13855 respectively.

² The limit value of accessible radiation power for laser class 1 is also complied with in the 1st fault case (failure of the power control) from a distance of approx. 150mm from the laser source. From this distance, even longer irradiation of the retina is considered uncritical. This results in a safety distance of 400mm with >2.5 times the certainty.

- everyone who is in the protected area must know that there is an active class 2 laser in the accessible area and observe the relevant safety regulations. Only persons familiar with laser radiation risks are allowed to enter the protected area.
- the laser must be safely switched off unless a qualified person activates it willingly. This can be the fuse button of a robot control panel, provided that the relative movement of the sensor and the object to be monitored is controlled by the controller of exactly this robot. However, it is recommended to activate the laser separately, as the laser source and the electronic components for image processing are from the same voltage source. This allows the image data to be further processed while the assigned robot does not have a driving clearance.
- the person qualified to work with the **VISIONSCANNER4** sensor in set-up mode must deactivate the laser immediately after completion of the work.
- the parties involved must remove all waste, dirt, solvent and adhesive residues before leaving the hazardous area.

During work such as cleaning the higher-level machine system, replacing components, etc., the laser must not be activated under any circumstances.

	Only trained persons are allowed to work on, with or with a KI.2 laser.
 WARNING!	When the laser is used for testing tasks on reflective materials and during the cleaning of the sensor, it is recommended to wear suitable laser safety glasses, as the directly accessible laser radiation is often not expected.
 WARNING!	In normal operation, the surface of the sensor does not heat up to 65°C as long as the ambient temperature is up to 40°C. In the event of a fault (single fault), the surface of the sensor can reach 120°C (IEC 61010-1, 1.4 and 10.1)
	To protect against surface temperatures above 65°C and against contamination of the protective screens by fingerprints, wear suitable fibre-free protective gloves!

Troubleshooting and maintenance of the sensor

VISIONSCANNER4 sensors must not be opened on site.

Only specially trained people are allowed to work on open **VISIONSCANNER4** sensors. This work requires an electrostatically dissipative working environment.

Always keep **VISIONSCANNER4** sensors clean.

In the delivery state, each **VISIONSCANNER4** sensor is electrically adjusted to the nominal laser power and optically to the correct bundling and fanning.

**CAUTION!**

Attempts to change the electrical or optical setting can lead to dangerous radiation and are therefore strictly prohibited.

Replace the **VISIONSCANNER4** sensor if:

- after bumps / collisions with obstacles
- if it has been exposed to excessive temperatures or electrical voltages
- if the glass panes are scratched
- if the safety signage is no longer legible.

**WARNING!**

When testing the sensor in the workshop, it is recommended to wear suitable laser safety glasses, as the directly accessible laser radiation is often not expected. The laser block is also a Class 2 device outside the housing.

**WARNING!**

Dirt on the laser window can get hot or even catch fire.
Scratches on the laser window can lead to unpredictable refractions of the laser radiation.

**WARNING!**

In normal operation, the surface of the sensor does not heat up to 65°C as long as the ambient temperature is up to 40°C.
In the event of a fault (single fault), the surface of the sensor can reach 120°C (IEC 61010-1, 1.4 and 10.1)

**DANGER!**

The sensor must not be connected to voltages greater than 28.8V DC (24V + 20%).



To protect against surface temperatures above 65°C and against contamination of the protective screens by fingerprints, wear suitable fibre-free protective gloves!

Description of the safety labeling

The **VISIONSCANNER4** sensor is labelled on the top with the laser warning symbol and the device-specific data, see Illustration 4, page 18.



Illustration 4: Laser warning symbol at the top, device-specific data (example), Information about the wavelength and laser power

On the underside of the VISIONSCANNER4 you will find the labelling required for a laser product for the European³ and US markets⁴, see Illustration 5, page 18.



Illustration 5: Labelling for a laser product

OBLIGATION OF THE OPERATOR

The operator is obliged:

- to use the system only in a technically perfect condition,

³ In accordance with the IEC 60825-1:2007 standard

⁴ In accordance with FDA performance standards for laser products

- to have prescribed adjustment, maintenance and inspection work carried out by competent personnel in due time,
- ensure that only persons who comply with the safety regulations (Chapter 5)
- to instruct everyone who might come into contact with the system in the safe use of it (chapter 5)
- to refrain from any instruction that is contrary to the safety regulations (Chapter 5) disagrees. Every employee has the right to reject any instruction that cannot be safely followed.
- in addition to the instructions given in these operating instructions, to comply with the applicable legal regulations for environmental protection.

We recommend keeping this operating manual close to the place of use so that the necessary information for maintenance and repair can be obtained quickly in the event of questions and problems.

6. TRANSPORT, ASSEMBLY AND COMMISSIONING

TRANSPORT

The **VISIONSCANNER4** is delivered completely pre-assembled. For any further transport projects, the system must be secured against damage and packed accordingly.

For storage temperatures, see section Technical data, page 5).

ASSEMBLY

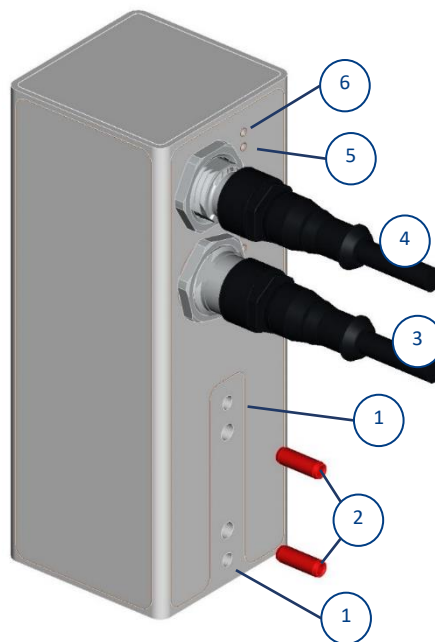


Illustration 6: Mounting VISIONSCANNER4, [1] Threaded holes for M4, [2] H7 locking pins, [3] Ethernet cable, [4] Cable for power supply, [5] Laser release LED, [6] Power LED

Attach the **VISIONSCANNER4** as it is in Illustration 6 . Use H7 locking pins [2] to achieve higher reproducibility of the mounting position. Make sure that the **VISIONSCANNER4** is sufficiently cooled by attaching the back of the to a material that is well thermally conductive. Tighten the M4 screws with the correct tightening torque, see section Tightening torques page 22. The dimensions of the fastening and passing holes are in Illustration 7 on page 21 depicted.

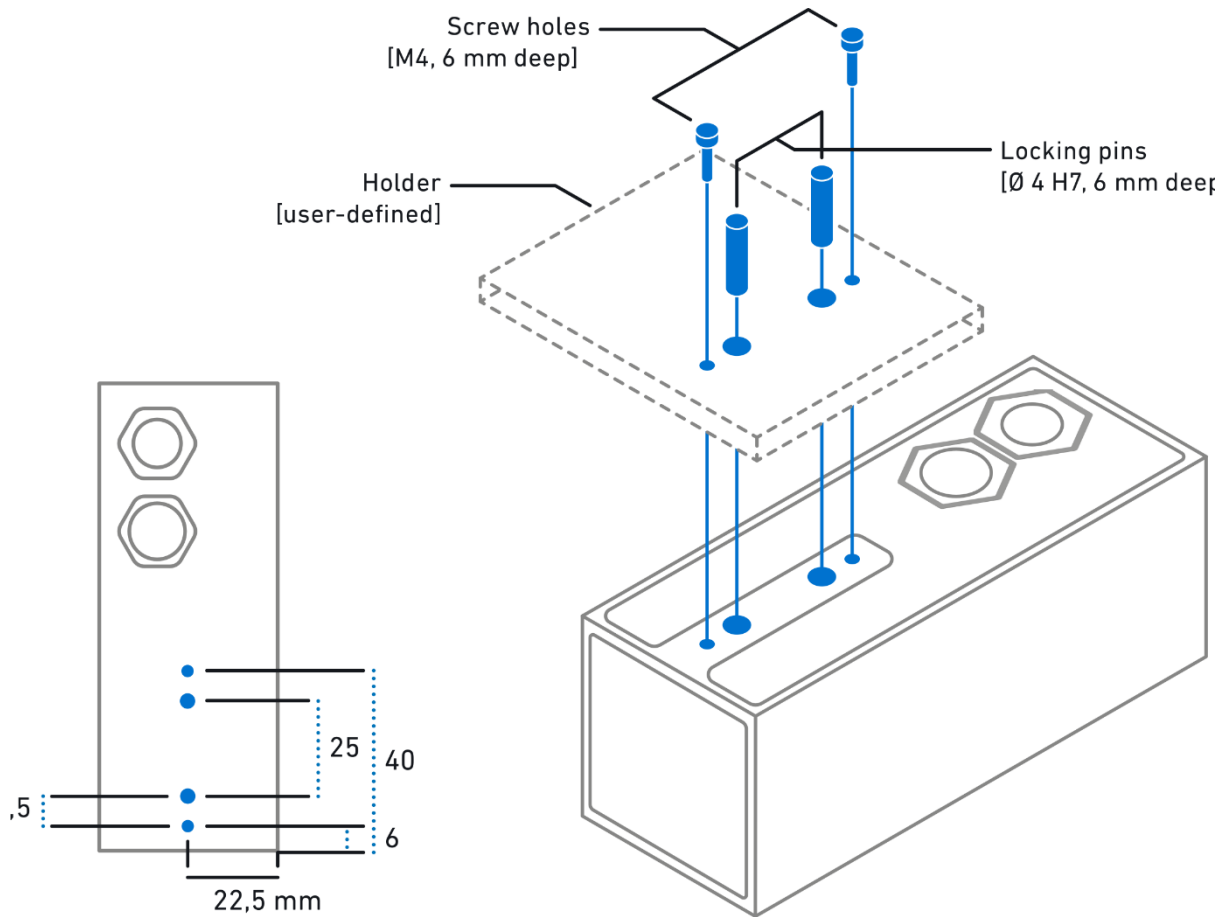


Illustration 7: Dimensioning of the fastening and fitting holes

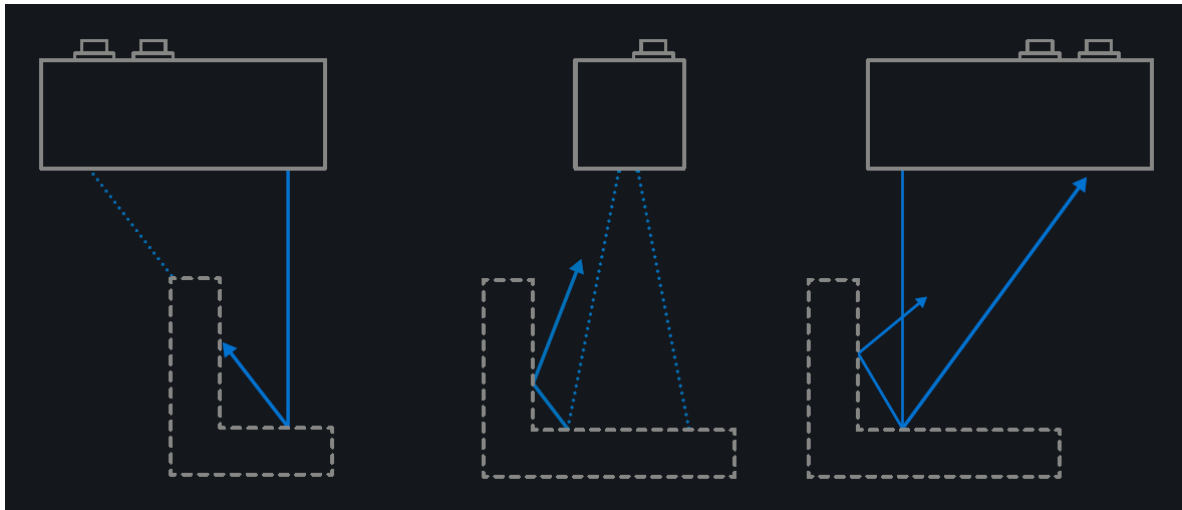


Illustration 8: Error prevention during installation

Avoid shadowing the camera by other objects, see Illustration 8, page 21. In addition, make sure that reflective surfaces can lead to undesirable disturbing effects.

Connect the power cable [3] and the Ethernet cable [4] to the connectors on the **VISIONSCANNER4**. Make sure that the cables are connected correctly.

Make sure that the cables meet the following conditions:

- The cables have the correct connector assignment
- The cables are shielded according to the requirements
- The cables are safely kept away from any voltage above 24V+20%
- The cables are approved for the connection of a mobile device (unless the **VISIONSCANNER4** is stationary)
- The cables are correctly laid in cable ducts and energy chains and the permissible bending radii of the flexible cables are observed.

Defective cables must not be used.

Instant control

To immediately check whether the power supply cable has been connected correctly, the LEDs on the back can be used, see Illustration 1, page 6 or Illustration 6, page 20. To do this, switch on the 24V power supply and the power LED [6] must light up. When laser release is activated, the laser release LED lights up [5].

Tightening torques

Thread Size	Grade	Value ⁵
M4	8.8	3.0 Nm

COMMISSIONING

During commissioning, care must be taken to ensure that the **VISIONSCANNER4** is securely fastened and can be operated safely and collision-free in the available installation space.

Proceed according to the safety regulations.

The setup and adjustment of the sensor technology follows the specifications of the documentation of the corresponding application.

In the delivery state, each **VISIONSCANNER4** sensor is electrically adjusted to the nominal laser power and optically to the correct bundling and fanning.



CAUTION!

Attempts to change the electrical or optical setting can lead to dangerous radiation and are therefore strictly prohibited.

⁵ Guideline values apply to metric threads + utilization of the screw yield strength to 90% coefficient of friction 0.14 (screws new, without post-treatment, without lubrication)

7. MAINTENANCE AND CARE

The functional reliability of the **VISIONSCANNER4** sensor and its service life depend largely on maintenance and care.




Therefore, the availability and quality of the **VISIONSCANNER4** sensor must be maintained through preventive maintenance. As a result, unplanned costs and downtimes can be kept as low as possible. Maintenance and care should be planned and regular and recorded in a comprehensible manner.

VISIONSCANNER4 sensors have no wearing parts.

The only preventive maintenance required is regular cleaning and regular calibration (the latter should be done automatically if delayed).

SAFETY

The provisions in chapter 5 must be always followed.

	If an unplanned mechanical load occurs, the function and in particular the mechanical connection of the sensor must be checked and, if necessary, all or parts of it must be replaced.
	Dispose of all residual materials safely, environmentally friendly and properly in accordance with the current state of legislation.
	We recommend that you only use parts according to the spare and wear parts list for maintenance, servicing and troubleshooting problems. Especially for these parts, the safety and suitability were determined separately. Therefore, no guarantee can be given for alternative products.

CLEANING




Regular cleaning serves trouble-free operation, safety and value retention.

- The cleaning instructions of the maintenance plan must be observed.
- The use of high-pressure cleaners and cleaning with dry ice are not permitted.
- Avoid abrasive cleaning agents so that the protective screens are not scratched, and the safety labels are not worn out.

Housing, gasket, protective screens and labels are resistant to

- Water, slightly alkaline detergents
- Isopropanol 70% Vol.

Clean the **VISIONSCANNER4** sensor with a lint-free cloth. If necessary, rub dry with a similar cloth.

	Warning of property damage due to improper cleaning!
	Inappropriate cleaning agents and methods can cause damage to the system. When using flammable cleaning agents, care must be taken to ensure that no residues remain in the system area after completion of the work. Residues of cleaning agents can lead to fires and property damage.
	Handle and dispose of used cleaning agents, cleaning cloths and auxiliary materials properly.

MAINTENANCE SCHEDULE

The maintenance plan provides an overview of the intervals at which maintenance work must be carried out.

In addition to the constructive design, the maintenance intervals are essentially based on the operating and environmental influences.

If it turns out during ongoing maintenance that intervals are too long or too short, these must be adapted by the plant operator to the existing operating conditions.

The following abbreviations of the intervals are used in the maintenance plan:

- **S = Changes of shift**
- **W = Weekly**
- **M = Monthly**
- **A = Annual**

Component	Interval	Work to be carried out
VISIONSCANNER4	S	Visual inspection for damage and contamination Basic cleaning and removal of disturbing dirt
Sensor Mounting	M	Check for play and damage

CONSUMABLES

In general, all components of the sensor are designed to be largely maintenance-free.

Apart from necessary cleaning agents, no separate consumables must be provided.

TECHNICAL AVAILABILITY

If the sensor is used correctly in the field of determination and maintenance is carried out correctly according to the maintenance plan, a technical availability of the system of >99.85% is assumed.

8. MAINTENANCE AND REPAIR



Warning! On-site repairs are not possible.

Repair or adjustment attempts in the system lead to increased electrical and optical hazards and/or damage to the sensor itself.

REPLACING THE SENSOR

Replace the **VISIONSCANNER4** in the following cases:

- after bumps / collisions with obstacles
- after being exposed to excessive temperatures or voltages
- in case of scratches on the protective lenses
- if the security labels are no longer legible.

Please proceed as described below when exchanging.

- Tools needed:
 - Allen Wrench M4
- Preconditions:
 - The necessary electrical connections [3] and [4] are separated
- Assembly process:
 - Loosen and remove 2 fastening screws [1]
 - Remove **VISIONSCANNER4** from bracket
 - Install in reverse order, making sure that the locking pins [2] are still correctly inserted in the holder or **VISIONSCANNER4**.
 - Maintain tightening torques see section Assembly (p. 20)
- Perform calibration if necessary (see documentation of the specific measurement application)

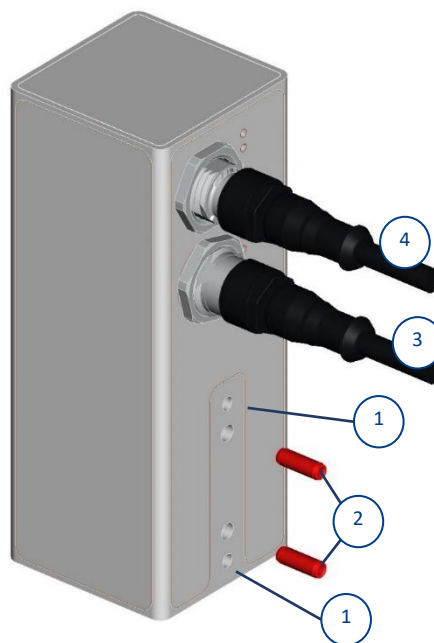




Illustration 9: Assembly VISIONSCANNER4

DISPOSAL

	<p>Dispose of the sensor properly. It contains aluminum, copper and semiconductors.</p>
	<p>Please do not dispose of VISIONSCANNER4 sensors as general waste / household waste.</p>

In the event of a defect or if it is simply no longer needed, EngRoTec Solutions GmbH will take back the sensor.

TROUBLESHOOTING

Problem/Error	Possible cause	Measure
Despite the power supply, the power LED does not light up	The power supply is incorrectly connected	Check the power supply
	The device is defective	Check system, possibly replace components
The power LED is on, but the laser won't turn on	Overtemperature	Wait for the system to cool down
	Program paused	Restart sensor
	Software bugs	Reload software
	Contact error inside the sensor, e.g. after a shock	Replacing the sensor
The laser won't turn on, the laser release LED won't light up	Laser release is not active	Check laser release
	Laser release is not connected	Connect and activate laser release
The laser won't turn on, the laser release LED is on, the power LED isn't lit	The power supply is not on, the system is not turned on	Turn on the power supply
The laser does not turn on, the power and laser release LEDs light up	The system may not be booted up yet	Wait for the system to be operational.

For more error scenarios, see the documentation of the specific application.

9. SUPPLIER DIRECTORY

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