

AS30 Core

Array Sensor

SICK
Sensor Intelligence.



Described product

AS30 Core Edge / AS30 Core Position

Manufacturer

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Original document

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1 About this document

1.1 Information on the operating instructions

These operating instructions provide important information on how to use devices from SICK AG.

Prerequisites for safe work are:

- Compliance with all safety notes and handling instructions supplied
- Compliance with local work safety regulations and general safety regulations for device applications

The operating instructions are intended to be used by qualified personnel and electrical specialists.



NOTE

Read these operating instructions carefully before starting any work on the device, in order to familiarize yourself with the device and its functions.

The instructions constitute an integral part of the product and are to be stored in the immediate vicinity of the device so they remain accessible to staff at all times. Should the device be passed on to a third party, these operating instructions should be handed over with it.

These operating instructions do not provide information on operating the machine in which the device is integrated. For information about this, refer to the operating instructions of the specific machine.

1.2 Scope

These operating instructions serve to incorporate the device into a customer system. Step-by-step instructions are given for all required actions.

These instructions apply to all listed device variants of the product.

Available device variants are listed on the online product page.

▶ www.sick.com/AS30

Commissioning is described using one particular device variant as an example.

Simplified device designation in the document

In the following, the sensor is referred to in simplified form as “AS30” or “device”.

1.3 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.

**NOTE**

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

1.4 Further information

**NOTE**

All the documentation available for the device can be found on the online product page at:

▶ www.sick.com/AS30

The following information is available for download from this page:

- Type-specific online data sheets for device variants, containing technical data and dimensional drawings
 - EU declaration of conformity for the product family
 - Dimensional drawings and 3D CAD dimension models in various electronic formats
 - These operating instructions, available in English and German, and in other languages if necessary
 - Other publications related to the devices described here
 - Publications dealing with accessories
 - IO-Link device description IO-Link, driver file SDD for the configuration software SOPAS ET and technical information IO-Link v1.1.
-

1.5 Customer service

If you require any technical information, our customer service department will be happy to help. To find your agency, see the final page of this document.

**NOTE**

Before calling, make a note of all type label data such as type code, serial number, etc., to ensure faster processing.

2 Safety information

2.1 Intended use

The AS30 array sensor is an opto-electronic sensor for the optical, non-contact detection of contrast edges.

The array sensor is designed for mounting and may only be operated according to its intended function. For this reason, the array sensor is not equipped with direct safety devices.

The system designer must provide measures to ensure the safety of persons and systems in accordance with the legal guidelines.

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

The device is not suitable for the following applications (this list is not exhaustive):

- As a safety device to protect persons, their hands, or other body parts
- Underwater
- In explosion-hazardous areas
- Outdoors, without additional protection



NOTICE

Danger due to improper use!

Any improper use can result in dangerous situations.

Therefore, observe the following information:

- ▶ The device should be used only in line with intended use specifications.
- ▶ All information in these operating instructions must be strictly complied with.

2.3 Limitation of liability

Applicable standards and regulations, the latest state of technological development, and our many years of knowledge and experience have all been taken into account when assembling the data and information contained in these operating instructions. The manufacturer accepts no liability for damage caused by:

- Failure to observe the operating instructions
- Improper use
- Use by untrained personnel
- Unauthorized conversions
- Technical modifications
- Use of unauthorized spare parts, wear and tear parts, and accessories

With special variants, where optional extras have been ordered, or owing to the latest technical changes, the actual scope of delivery may vary from the features and illustrations shown here.

2.4 Requirements for skilled persons and operating personnel



WARNING

Risk of injury due to insufficient training!

Improper handling of the device may result in considerable personal injury and material damage.

- All work must only ever be carried out by the stipulated persons.

The operating instructions state the following qualification requirements for the various areas of work:

- **Instructed personnel** have been briefed by the operating entity about the tasks assigned to them and about potential dangers arising from improper action.
- **Skilled personnel** have the specialist training, skills, and experience, as well as knowledge of the relevant regulations, to be able to perform tasks assigned to them and to detect and avoid any potential dangers independently.
- **Electricians** have the specialist training, skills, and experience, as well as knowledge of the relevant standards and provisions to be able to carry out work on electrical systems and to detect and avoid any potential dangers independently. In Germany, electricians must meet the specifications of the BGV A3 Work Safety Regulations (e.g., Master Electrician). Other relevant regulations applicable in other countries must be observed.

The following qualifications are required for various activities:

Activities	Qualification
Mounting, maintenance	<ul style="list-style-type: none"> ■ Basic practical technical training ■ Knowledge of the current safety regulations in the workplace
Electrical installation, device replacement	<ul style="list-style-type: none"> ■ Practical electrical training ■ Knowledge of current electrical safety regulations ■ Knowledge of the operation and control of the devices in their particular application
Commissioning, configuration	<ul style="list-style-type: none"> ■ Basic knowledge of the design and setup of the described connections and interfaces ■ Basic knowledge of data transmission ■ Knowledge of the operation and control of the devices in their particular application
Operation of the devices in their particular application	<ul style="list-style-type: none"> ■ Knowledge of the operation and control of the devices in their particular application ■ Knowledge of the software and hardware environment in the application

2.5 Hazard warnings and operational safety

Please observe the safety notes and the warnings listed here and in other chapters of these operating instructions to reduce the possibility of risks to health and avoid dangerous situations.

2.6 Eye safety



CAUTION

The device is equipped with LEDs. The device meets the criteria of risk group 1 according to IEC 62471:2006. No special measures are required (e.g., eye protection).

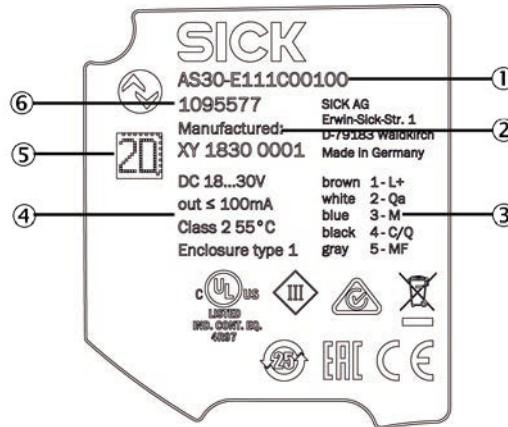
2.7 Repair

The product is a replacement device. The device is not intended to be repaired. Interference with or modifications to the device on the part of the customer will invalidate any warranty claims against SICK AG.

3 Product description

3.1 Product ID

3.1.1 Type label



- ① device designation
- ② Date of manufacture and serial number
- ③ Pin assignment
- ④ Electrical data and environmental data
- ⑤ 2D-Code
- ⑥ Article number

3.1.2 Type code

Table 1: Type code

1	2	-	3	4	5	6	7	8	9	10	11	12	13	14
AS	30	-	E	B	M	4	3	4	I	2	1	0	A	00

Position	Meaning	
1	Basic type	AS = array sensor
2	Type number	30 = current generation
3	Application	E = edge W = width P = position C = center
4	Switching output	B = push/pull
5	Type of light	M = white
6	Field of view	3 = 30 mm 4 = 45 mm 5 = 50 mm
7	Distance	1 = 25 mm 3 = 100 mm
8	Connection	4 = M12, 5-pin, Qa, Q, MF
9	Communication	I = IO-Link
10	HMI	1 = LED +3 buttons 2 = TFT +3 buttons

Position	Meaning	
11	Core/Prime/Pro	1 = Core 2 = Prime 3 = Pro
12	Filter	0 = no filter
13	Type of device	M = sample device S = special device A = SMART Task B = special device with SMART Task Z = standard
14	Sequential no. for SMART Task/special/sample	01 = 0 ... (= Increment = 1) 99 = 0 ZZ = standard

3.2 Product features and functions

3.2.1 Device view

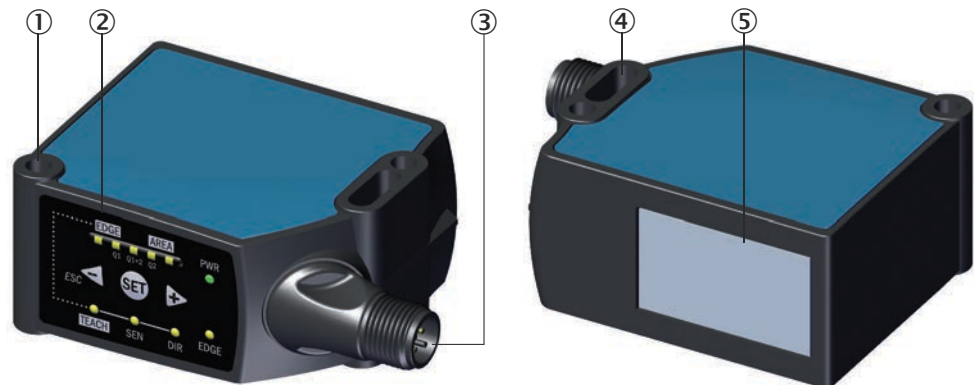


Figure 1: AS30 Core

- ① Fixing hole
- ② Display and control panel
- ③ Connection
- ④ Fixing hole
- ⑤ Light emission

3.2.2 Product characteristics

The AS30 Core array sensors can be used in any application that requires the detection of an edge based on a clear contrast difference.

Edges with a low contrast difference on transparent or reflective materials can be detected using a Prime device and the Reflector setting.

This variant of the AS30 Core provides 2 operating modes:

- **Edge:**
Detection and positioning of an edge, for example for edge guiding (smoothed position value).
- **Position:**
Detection and positioning of an edge for highly accurate positioning (accurate position value).

4 Mounting

4.1 Scope of delivery

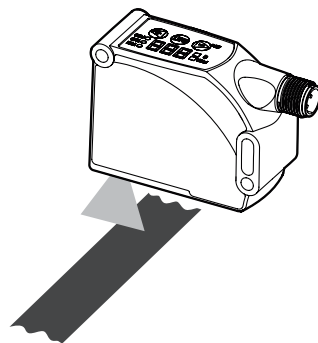
- Array sensor in the version ordered
- Quickstart

4.2 Installation requirements

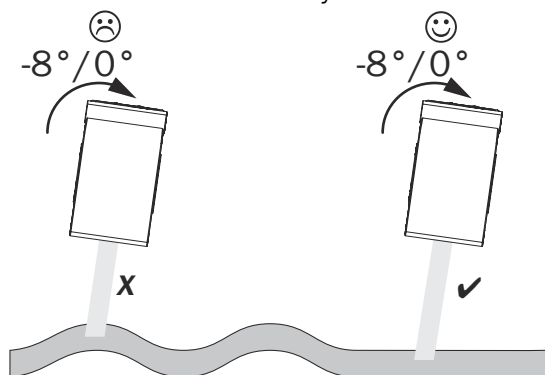
- For the typical space requirements for the device, see the type-specific dimensional drawing, [see "Technical data", page 33](#).
- Comply with technical data, such as the permitted ambient conditions for operation of the device (e.g., temperature range, EMC interference emissions, ground potential).
- To prevent condensation, avoid exposing the device to rapid changes in temperature.
- Protect the device from direct sunlight.
- The device must only be mounted using the pairs of fixing holes provided for this purpose.
- Shock and vibration-free mounting.

4.3 Mounting the device

1. Install the sensor via the fixing hole so that the light spot is positioned (longitudinally or transversely depending on the operating mode) on the object to be detected. **Observe the sensing range variation and tolerances.**



2. In the case of high-gloss materials, angle the AS30 Core Edge at $>8^\circ$ at the side for better detection reliability.



Sensing distance/Reading field	
25 mm / 30 mm	100 mm / 45 mm
1095581	1095582

Sensing distance/Reading field	
25 mm / 30 mm	100 mm / 45 mm
1095583	1095584

5 Electrical installation

5.1 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 with safety/protective extra-low voltage (SELV/PELV).
- The sensor is a device of protection class III.

**NOTICE****Equipment damage due to incorrect supply voltage!**

An incorrect supply voltage may result in damage to the equipment.

- Only operate the device with an LPS (limited power source) in accordance with IEC 60950-1 or an NEC Class 2 power supply unit.

**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.

- **The 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.
- The sensor must be protected with a fuse suitable for the cross-circuit of the connecting cable.
- Only operate the device with an LPS (limited power source) in accordance with IEC 60950-1 or an NEC Class 2 power supply unit.
- All circuits connected to the device must be designed as SELV/PELV circuits.

**NOTE****Layout of data cables**

- Implement the shielding 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 voltage supply cables and motor cables in cable channels.

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

- The cables plugged into the connections are screwed tight.

If these instructions are not complied with, the IP enclosure rating for the device is not guaranteed!

5.2 Note on the swivel connector



NOTICE


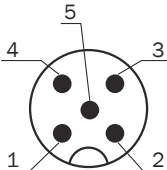
Damage to the connector unit from over-tightening!

The connector unit on the device has two opposite end positions.

- Do not rotate the connector unit from either of the two end positions by more than 180°.

5.3 Pin assignment of the connections

5.3.1 Pin assignment of the connections

AS30	
1 - BN	L+
2 - WH	Qa
3 - BU	M
4 - BK	C/Q
5 - GY	MF
	

Legend

L+ = Supply voltage

Qa = Analog output (edge information)

M = Ground

C/Q = Communication and switching output

MF = External input, external teach-in, QI1 output, QI2 output, input for changing the reading and searching direction



NOTICE

Crosstalk can occur on the analog output in IO-Link operation. Simultaneous operation is not recommended.

5.4 Connecting the supply voltage



NOTICE

Risk of damage to the device!

The device can become damaged if it is connected to a voltage supply that is already switched on.

- Only connect the device when the supply cable is de-energized.

The device must be connected to a power supply unit with the following properties:

- Supply voltage DC 18 V – 30 V (SELV/PELV as per currently valid standards)
- Electricity source with at least 3.1 W power

To ensure protection against short-circuits/overload in the customer's supply cables, the wire cross-sections used must be appropriately selected and protected.

5.5 Wiring the interfaces

5.5.1 Wiring the digital inputs

Pin 5 can be used as a digital input for an external teach-in or for changing the reading and edge searching direction.

Voltage level at the input starts the corresponding function of the device.

Electrical values

High: $12\text{ V} \leq U \leq U_V$

Low: $0\text{ V} \leq U \leq 9\text{ V}$

5.5.2 Wiring the digital outputs

In each case, the digital outputs are short-circuit protected and overcurrent protected.

Push/pull switching behavior

Electrical values

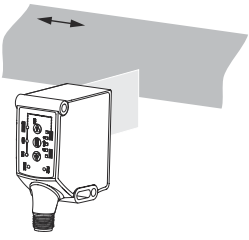
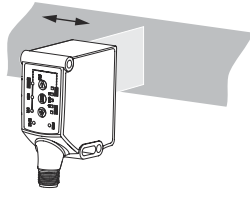
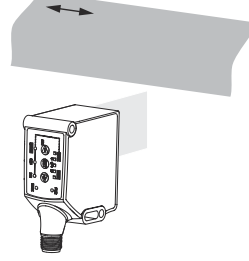
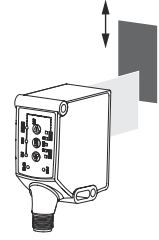
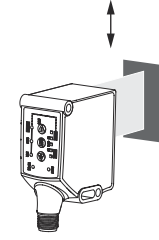
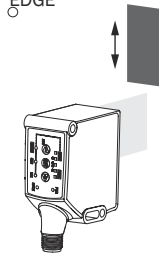
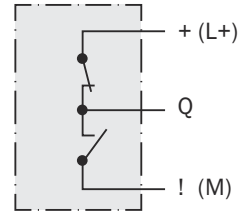
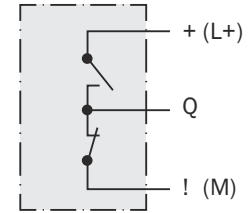
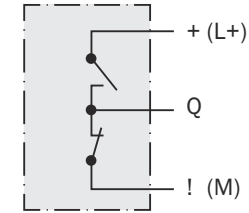
The sum current (100 mA) must be switched on for all digital outputs.

Push/pull

High: $V_S - 3\text{ V}$

Low: $\leq 3\text{ V}$

In the case of a push/pull sensor with PNP switching behavior, the signal must be inverted in the control system in order to obtain the same result as a sensor with NPN switching behavior.

<p>Edge</p>	<p>PWR ● EDGE ●</p> 	<p>PWR ● EDGE ○</p> 	<p>PWR ● EDGE ○</p> 
<p>Position</p>	<p>PWR ● EDGE ●</p> 	<p>PWR ● EDGE ○</p> 	<p>PWR ● EDGE ○</p> 
<p>Q Push- pull (\leq 100 mA)</p>			

6 Operation



NOTICE

In this chapter, the operation of the sensor from the control panel or via the SOPAS configuration software is described.

The SOPAS ET software can be downloaded from the following link:<https://www.sick.com/de/en/sopas-engineering-tool-2018/p/p367244>

The driver for this product can be found at www.sick.com/AS30.

This chapter will first describe how to operate the sensor from the control panel.

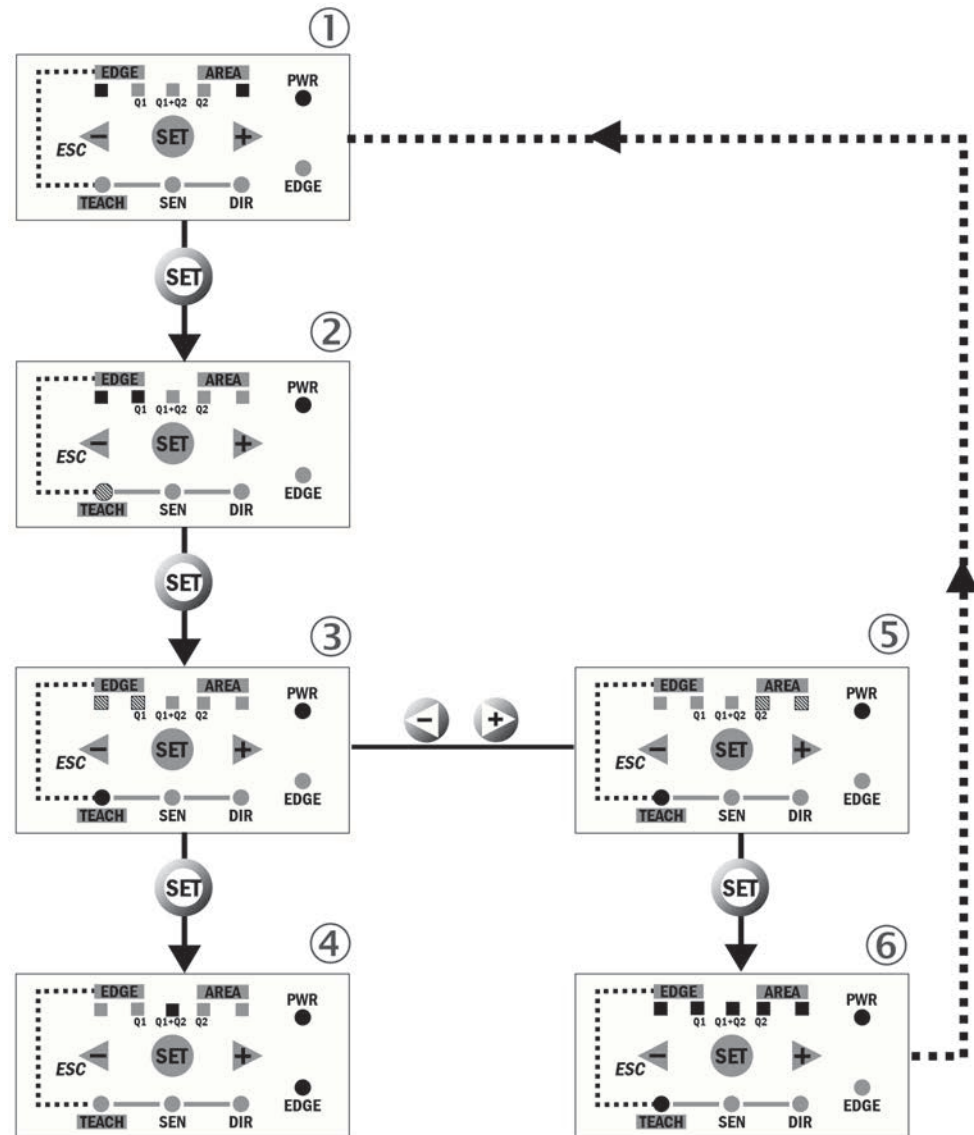
Some additional settings that are not available from the control panel are described in [see "Additional settings via SOPAS", page 23](#).

6.1 Edge teach-in and area teach-in

By default, the detection of edges also works without teach-in. The sensor detects the first edge in the reading field starting from the male connector side. The sensor switches as soon as an edge is detected in the reading field and outputs this as a position value.

If a teach-in has been performed, only the taught-in edges are detected and their position values outputted. This can increase the process reliability in some applications.

To commission the device, it is necessary to accurately align the device as described in [see "Mounting the device", page 12](#).



1. Display in RUN mode: If LEDs 1 and 5 light up, no edge has been detected in the reading field or the taught-in edge has been lost.
If LED 1 on the left lights up, the edge was lost on the head side.
If LED 5 on the right lights up, the edge was lost on the male connector side.
2. To open the operating menu, press SET. Select the Edge Teach menu item.
3. Edge Teach selected. To teach-in the device, the edge must be located in the reading field. If there are several edges in the reading field, the first edge is selected.
4. Edge has been taught in, Q1 and Q2 light up (depending on the Area Teach selected before) if the teach-in was successful.

5. Area Teach selected. To perform an area teach-in, the edge must be located at the desired position within the reading field, the switching zones for Q1 and Q2 are selected in the next step.
6. Definition of the switching window in relation to the taught-in edge: 1 LED lights up: 2 mm switching window (Q1 switches from 2 mm before the taught-in edge position to the end of the reading field, Q2 switches from the beginning of the reading field up to 2 mm after the taught-in edge); 2 LEDs light up: 4 mm switching window (Q1 switches from 4 mm before the taught-in edge position to the end of the reading field, Q2 switches from the beginning of the reading field up to 4 mm after the taught-in edge); 3 LEDs light up: 8 mm switching window (Q1 switches from 8 mm before the taught-in edge position to the end of the reading field, Q2 switches from the beginning of the reading field up to 8 mm after the taught-in edge); 4 LEDs light up = 16 mm switching window (Q1 switches from 16 mm before the taught-in edge position to the end of the reading field, Q2 switches from the beginning of the reading field up to 16 mm after the taught-in edge); 5 LEDs light up: The entire reading field becomes a switching window



NOTE

The two teach-in methods (edge and area) should, if necessary, be carried out independently of one another.

6.2 Operating elements

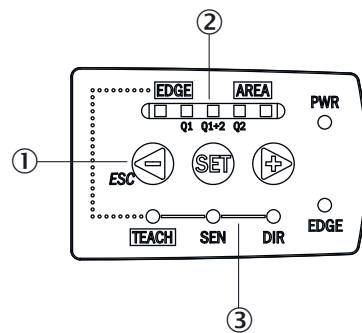


Figure 2: Operating elements

Table 2: Operating elements and functions

Item	Name	Function
1	Navigation buttons (plus (+) button, minus (-) button), SET Taste	<ul style="list-style-type: none"> - The plus button navigates through the menu items and increases values. - The SET button opens the menu, confirms entries, or switches to lower-level menus. - The minus/ESC button switches to the previous menu item, decreases values, or cancels the current operation (press for > 3 s).
2	Bar graph (5 LEDs)	<ul style="list-style-type: none"> - Q1 lights up when a switching event occurs (as set via area teach-in). - Q2 lights up when a switching event occurs (as set via area teach-in). <p>If Q1 and Q2 light up, then the taught-in edge is within the target zone (set via area teach-in - default: the whole reading field).</p>

Item	Name	Function
3	Display LEDs (status indicators)	<ul style="list-style-type: none">- EDGE: menu item for edge teach-in (see menu tree)- AREA: menu item for area teach-in (see menu tree)- TEACH: menu item for teach-in (see menu tree)- SEN: menu item for setting the sensitivity (see menu tree)- DIR: menu item for changing the reading direction (see menu tree)- EDGE: an edge was detected in the field of view.

6.3 AS30 Core menu tree

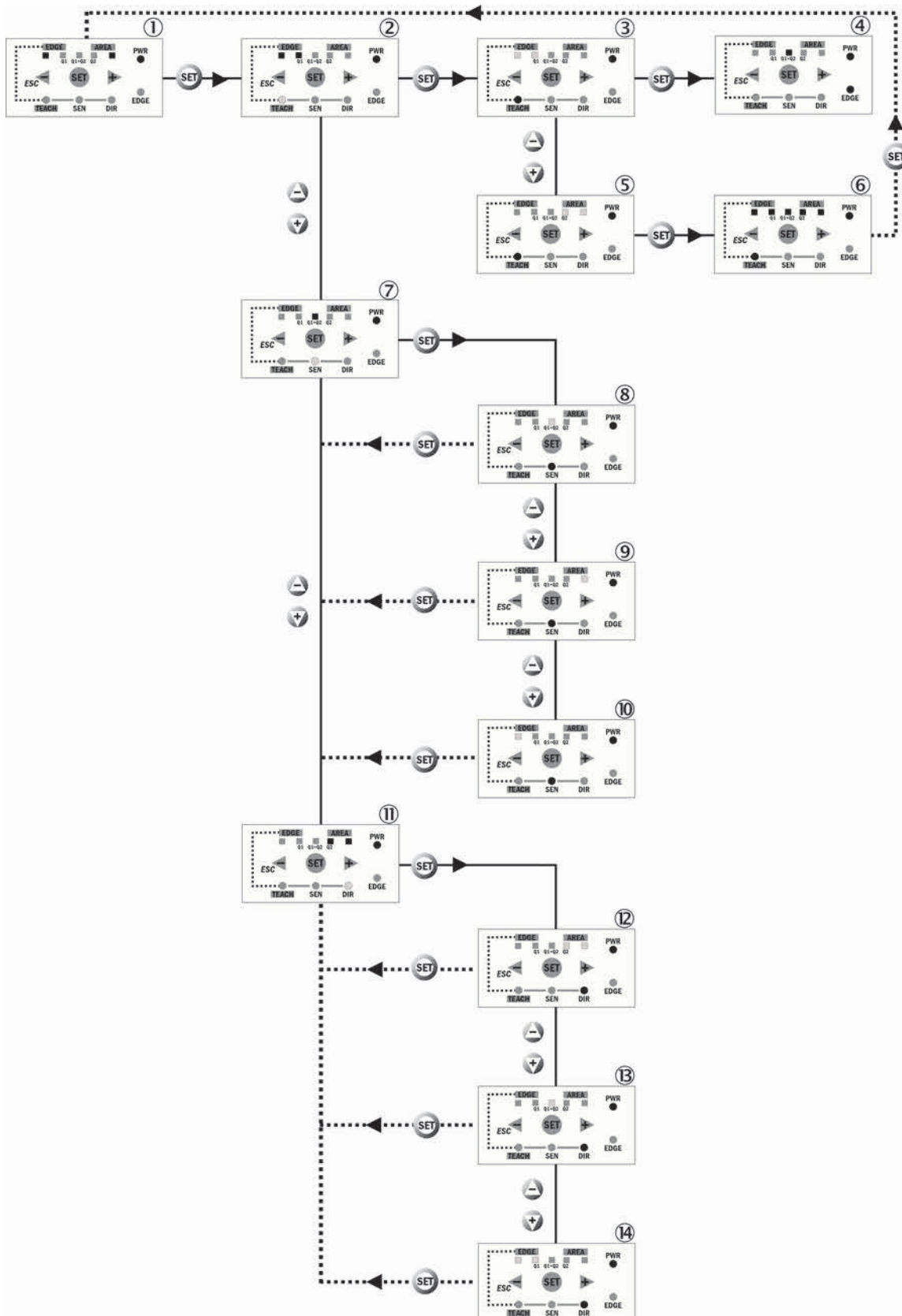


Table 3: Operating elements and functions

Item	Function
1	Display in RUN mode: If LEDs 1 and 5 light up, no edge has been detected in the reading field or the taught-in edge has been lost. If LED 1 on the left lights up, the edge was lost on the head side. If LED 5 on the right lights up, the edge was lost on the male connector side.
2	To open the operating menu, press SET. Select the Edge Teach menu item.
3	Edge Teach selected. To teach-in the device, the edge must be located in the reading field. If there are several edges in the reading field, the first edge is selected.
4	Edge has been taught in, Q1 and Q2 light up (depending on the Area Teach selected before) if the teach-in was successful.
5	Area Teach selected. To perform an area teach-in, the edge must be located at the desired position within the reading field, the switching zones for Q1 and Q2 are selected in the next step.
6	Definition of the switching window around the taught-in edge: 1 LED lights up: 2 mm switching window (Q1 switches from 2 mm before the taught-in edge position to the end of the reading field, Q2 switches from the beginning of the reading field up to 2 mm after the taught-in edge); 2 LEDs light up: 4 mm switching window (Q1 switches from 4 mm before the taught-in edge position to the end of the reading field, Q2 switches from the beginning of the reading field up to 4 mm after the taught-in edge); 3 LEDs light up: 8 mm switching window (Q1 switches from 8 mm before the taught-in edge position to the end of the reading field, Q2 switches from the beginning of the reading field up to 8 mm after the taught-in edge); 4 LEDs light up = 16 mm switching window (Q1 switches from 16 mm before the taught-in edge position to the end of the reading field, Q2 switches from the beginning of the reading field up to 16 mm after the taught-in edge); 5 LEDs light up: The entire reading field becomes a switching window.
7	Select the Sensitivity menu.
8	- Middle (standard sensitivity setting)
9	- Coarse (less sensitive, detection of clear edges)
10	- Fine (highly sensitive, detection of fine edges)
11	Select the reading direction menu: After changing the reading direction, any previous teach-in is deleted.
12	- Male connector to head side
13	- Select by teach
14	- Head to male connector side

6.4 Additional settings via SOPAS



NOTICE

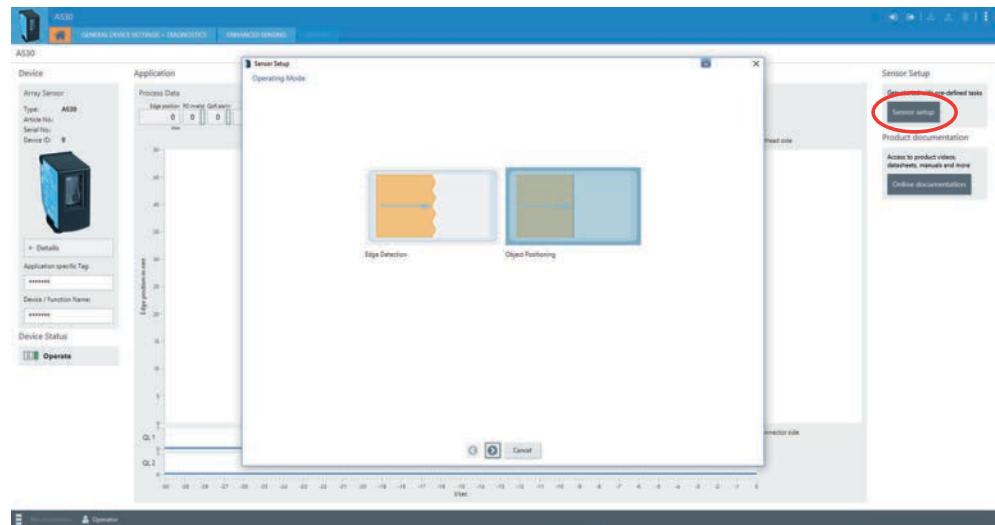
In this chapter, the operation of the sensor via the SOPAS configuration software is described.

The SOPAS ET software can be downloaded from the following link: <https://www.sick.com/de/en/sopas-engineering-tool-2018/p/p367244>

The driver for this product can be found at www.sick.com/AS30.

6.4.1 Selecting the operating mode

The AS30 Core offers 2 possible operating modes: “Edge” and “Position”.



- **Edge Detection**
The edge selected in the Teach-In Edges menu is detected within specified tolerances values. The smoothing function of the sensor, which smooths position values over a 33ms period, is automatically active. This ensures steady and stable edge guiding. The time interval for smoothing is configured via IO-Link and SOPAS.
- **Position**
The edge selected in the Teach-In Edges menu is positioned precisely. The smoothing function of the sensor is deactivated.

The Sensor Setup button is used to open a menu for selecting the operating mode. The wizard also asks for the reading direction, the background, the sensitivity, and the pin assignment configuration.

6.4.2 Selecting the operating mode

The AS30 Core offers 2 possible operating modes: “Edge” and “Position”.

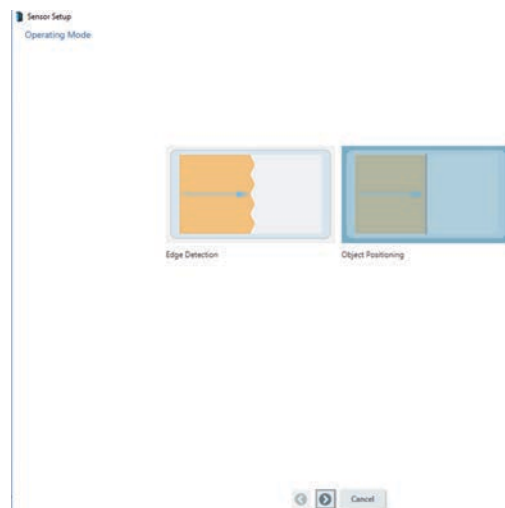


Figure 3: Operating mode - Edge / Postition

- **Edge Detection**
The edge selected in the Teach-In Edges menu is detected within specified tolerances values. The smoothing function of the sensor, which smooths position values over a 33ms period, is automatically active. This ensures steady and stable edge guiding. The time interval for smoothing is configured via IO-Link and SOPAS.
- **Position**
The edge selected in the Teach-In Edges menu is positioned precisely. The smoothing function of the sensor is deactivated.

The Sensor Setup button is used to open a menu for selecting the operating mode. The wizard also asks for the reading direction, the background, the sensitivity, and the pin 2 and pin 5 assignment configuration.

6.4.3 Other sensor settings and diagnostics

The sensor settings can be edited on the “General Device Settings + Diagnostics” tab. These are:

- **Reading direction**
The AS30 Core offers 2 reading directions for the sensor. The edge position values are outputted in the configured direction. The analog output on pin 2 switches accordingly. The options are
 - From the male connector to the head side (default)
 - From the head side to the male connector
 - Defined by input pin: Select this option to configure the reading direction via the input on pin 5.
- **Pin 2 configuration**
Pin 2 is the analog output of the detected edge and can be deactivated.
- **Pin 5 configuration**
Pin 5 can be configured either as an external input for edge teach-in, a second digital output, or an input for changing the reading direction.
- **Other settings (see figure 4)**
 - Activate/deactivate emitted light
 - Set find-me function
 - Set IO-Link events
 - Diagnostic display (including operating hours, temperature, or setting the “Quality of Run” alarm threshold)
 - Set pushbutton lock

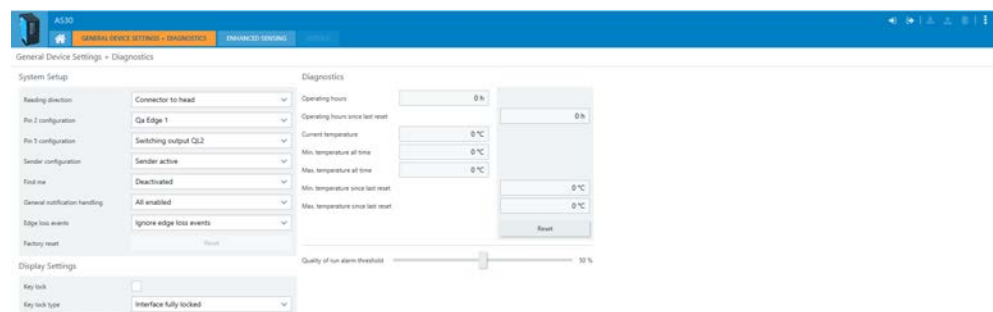


Figure 4: General Device Setting

6.4.4 Enhanced Sensing

The Enhanced Sensing menu has several functions:

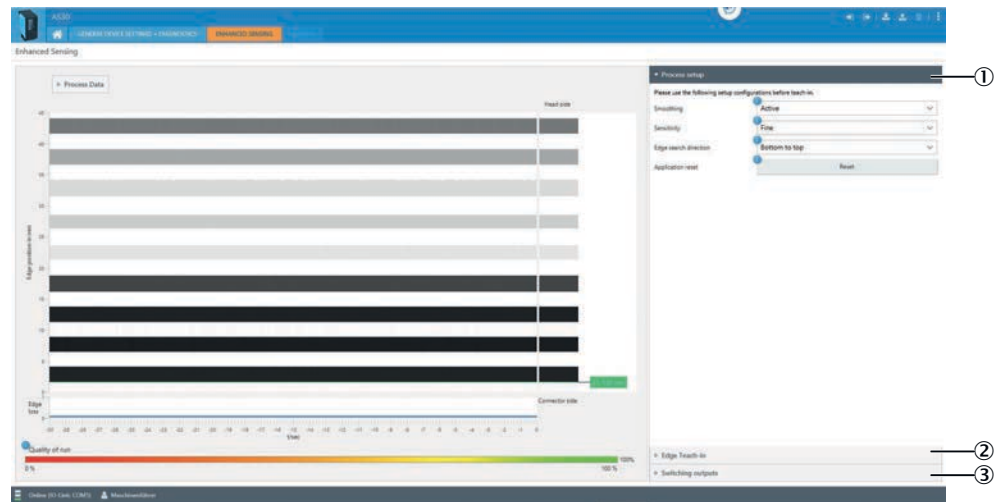


Figure 5: Enhanced Sensing

- 1 Checking and setting the most important device parameters in the “Process Setup” area

▼ Process setup

Please use the following setup configurations before teach-in.

Smoothing i Active

Sensitivity i Fine

Edge search direction i Bottom to top

Application reset i Reset

- 2 Performing an edge teach-in in the “Edge Teach-in” area
The easy teach-in teaches the currently outputted edge. This ignores other edges and achieves a higher process stability. The advanced teach-in also allows the edges to be taught-in to be selected from all detected edges.

► Process setup

▼ Edge Teach-in

Easy Teach-in

Teach-in

Teach-in for clear allocation of the desired object and for more robustness against background influences. The sensor will teach-in the first edge in edge search direction.

Advanced Teach-in

Teach-in Wizard

The Teach-in Wizard enables an individual edge selection. The Teach-in for clear allocation of the desired object and for more robustness against background influences

i Quality of teach

0%

- 3 Defining switching points or areas in the “Configuration Qint” area.

▸ Process setup

▸ Edge Teach-in

▼ Switching outputs

The sensor provides the possibility to place two switching outputs. Those can be used in different operating modes. Depending on the configuration you can use both as fast outputs on Pin 4 and 5. Pin 4 is linked to Qint.1, Pin 5 can be configured in "General Device Settings".

Qint	Mode / Task	Setpoints [mm]	Teach	Invert	View
Qint 1	Single point mode	1 0.0	Start	<input type="checkbox"/>	
		2 45.0	Start		
Qint 2	Window mode	1 0.0	Start	<input type="checkbox"/>	
		2 45.0	Start		

7 Troubleshooting

en

LED indicator/fault pattern	Cause	Measures
Bar graph and edge LED (yellow) indicator flash.	- Short-circuit / Overcurrent - Sensor is not connected properly	- Disconnect sensor from the power network - Check pin assignment - Reconnect sensor - Check the current at the switching output
Bar graph and edge LED indicator (yellow) and teach-in (yellow) flash	Programmed contrast or contrast difference is not sufficient for stable contrast detection.	- Clean sensor - Readjust the sensor - Check the application conditions - Restart teach process - Increase contrast difference (sensitivity)

7.1 Possible errors during operation

Table 4: Troubleshooting during operation

Display, error situation	Cause	Measure
No switching event any more	<ul style="list-style-type: none"> Distance or angle to material not consistent Sensor dirty 	<ul style="list-style-type: none"> Clean sensor Readjust sensor Check parameter settings Perform teach process again
Position value does not correspond to the actual value	Sensing distance incorrect	Reading direction not correct Realign sensor
An edge is detected even though there is no object in the field of view	Sensor dirty	Clean sensor

8 Maintenance

8.1 Maintenance

During operation, the device works maintenance-free.

Depending on the assignment location, the following preventive maintenance tasks may be required for the device at regular intervals:

Table 5: Maintenance schedule

Maintenance work	Interval	Implementation
Clean housing and front screen	Cleaning interval depends on ambient conditions and climate	Specialist
Check screw connections and plug connectors	Every 6 months	Specialist

8.2 Cleaning the device

At regular intervals (e.g., weekly), check the light emission window and the housing of the device for dirt. This is especially relevant in harsh operating environments (dust, abrasion, damp, fingerprints, etc.). The lens of the light emission window must be kept clean and dry during operation.



NOTICE

Device damage due to improper cleaning!

Improper cleaning may result in device damage.

- Only use suitable cleaning agents.
- Never use sharp objects for cleaning.

Cleaning the light emission window



NOTICE

Damage to the light emission window!

Reduced reading performance due to scratches or streaks on the light emission window!

- ▶ Clean the light emission window only when wet.
- ▶ Use a mild cleaning agent that does not contain powder additives. Do not use aggressive cleaning agents, such as acetone, etc.
- ▶ Avoid any movements that could cause scratches or abrasions on the light emission window.
- ▶ Only use cleaning agents suitable for the lens material.



NOTE

Static charge may cause dust particles to stick to the light emission window. This effect can be avoided by using an anti-static glass cleaner in combination with the SICK lens cloth (can be obtained from www.sick.com).



NOTE

If the light emission window is scratched or damaged (cracked or broken), the device must be replaced. Contact SICK Service to arrange this.

Cleaning the housing

In order to ensure that the heat produced by the internal power loss is adequately dissipated, the housing surface must be kept clean.

9 Decommissioning

9.1 Disassembly and disposal

Disassembling the device

1. Switch off the supply voltage to the device.
2. Detach all connecting cables from the device.
3. If the device is being replaced, mark its position and alignment on the bracket or surroundings.
4. Detach the device from the bracket.

Disposing of the device

Any device which can no longer be used must be disposed of in an environmentally friendly manner in accordance with the applicable country-specific waste disposal regulations.




NOTE

Disposal of batteries, electric and electronic devices

- According to international directives, batteries, accumulators and electrical or electronic devices must not be disposed of in general waste.
- The owner is obliged by law to return this devices at the end of their life to the respective public collection points.



 This symbol on the product, its package or in this document, indicates that a product is subject to these regulations.

9.2 Returning devices

- ▶ Do not dispatch devices to the SICK Service department without consultation.



NOTE

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

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

10 Technical data

10.1 General data

Table 6: Technical data

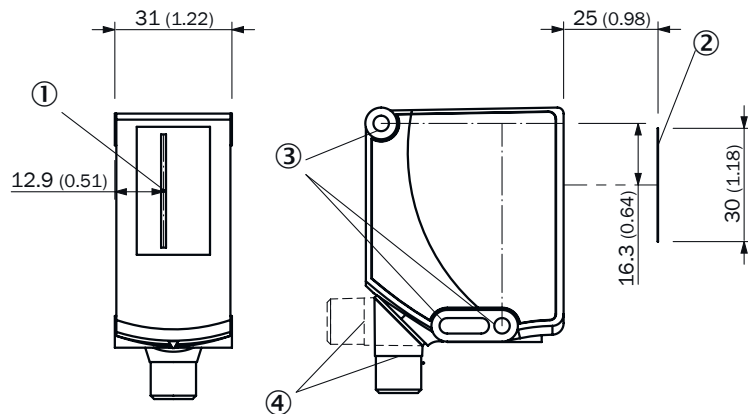
Attribute	Value			
Type designation	AS30-EBM314I110Z ZZ000C000ZZ Z	AS30-EBM434I110Z ZZ000C000ZZ Z	AS30-PBM314I110Z ZZ000C000ZZ Z	AS30-PBM434I110Z ZZ000C000ZZ Z
Part number	1095581	1095582	1095583	1095584
Operating modes	Edge guidance (default) Object position	Edge guidance (default) Object position	Edge guidance Object position (default)	Edge guidance Object position (default)
Principle of operation	Proximity	Proximity	Proximity	Proximity
Sensing distance	25 mm	100 mm	25 mm	100 mm
Working range	20 mm ... 30 mm	90 mm ... 110 mm	20 mm ... 30 mm	90 mm ... 110 mm
Reading field	30 mm	45 mm	30 mm	45 mm
Smallest detectable object (MDO)	0.2 mm	1.2 mm	0.2 mm	1.2 mm
Light source	LED, white	LED, white	LED, white	LED, white
Wavelength	400 nm ... 700 nm	400 nm ... 700 nm	400 nm ... 700 nm	400 nm ... 700 nm
Light spot size	39 mm x 12.2 mm	62.4 mm x 12.8 mm	39 mm x 12.2 mm	62.4 mm x 12.8 mm
Linearity of position value	±2%	±2%	±2%	±2%
Repeatability	±0.2 mm	±0.2 mm	±0.2 mm	±0.2 mm
Resolution of the display or output value	0.1 mm	0.1 mm	0.1 mm	0.1 mm
Alignment aid	IO-Link	IO-Link	IO-Link	IO-Link
Teach-in function	Edge, Area	Edge, Area	Edge, Area	Edge, Area
Supply voltage	18 - 30 V DC			
Ripple	≤5 V ¹⁾			
Power consumption	< 3.1 W ²⁾			
Switching output	Push / pull			
Switching output (voltage)	Push / pull: High = V _S - 3 V Low ≤3 V			
Analog output	4 mA ... 20 mA			
Analog output resolution	12 bit			
Output rate of analog output	1 ms			
Output current I _{max}	< 100 mA ³⁾			
Initialization time	0.48 s			
Connection type	Male connector M12, 5-pin ⁴⁾			
Protection class	III			

Attribute	Value
Circuit protection	UV connections, reverse polarity protected Output Q short-circuit protected Interference pulse suppression
Enclosure rating	IP67
Weight	250 g
Housing material	Zinc die cast, powder-coated
Ambient temperature, operation	-10 °C ... +55 °C
Ambient temperature, storage	-25 °C ... +75 °C
Impact load	According to IEC 60068
UL file no.	NRKH.E181493 (USA) NRKH7.E181493 (Canada)
Communication interface	IO-Link V1.1
Communication interface detail	COM3
Cycle time	min. 1 ms
Process data length	8 bytes

- 1) Must not fall below or exceed U_B tolerances.
- 2) Without load
- 3) Sum current of all outputs
- 4) Male connector $I_N = 2 A$

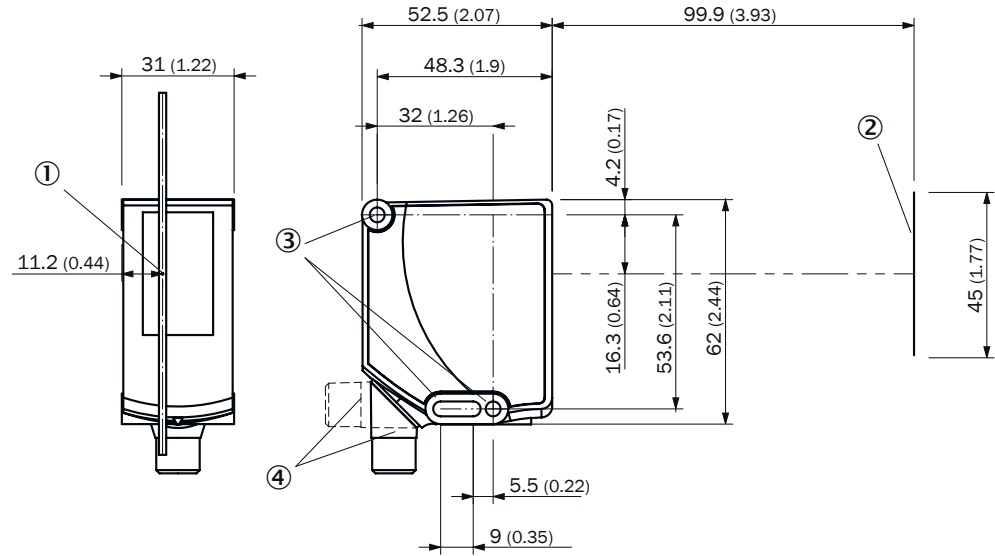
10.2 Dimensional drawing

AS30 Core Edge TW 25



- ① Optical axis
- ② Field of view, 30 mm
- ③ Fixing hole, 4.1 mm
- ④ Device connection, M12, can be rotated by 180°

AS30 Core Edge TW 100



- ① Optical axis
- ② Reading field, 45 mm
- ③ Fixing hole, 4.1 mm
- ④ M12 device connection, can be rotated by 180°

11 Accessories



NOTE

Accessories can be found on the online product page at:

▶ www.sick.com/AS30

12 Annex

12.1 EU declaration of conformity

The EU declaration of conformity and other certificates can be downloaded from the Internet at:

▶ www.sick.com/AS30

12.2 Certification according to UL60947-5-2



The AS30 Core series array sensors are certified in accordance with UL60947-5-2 if it is supplied with power by LPS or Class 2 power supply units.

The certification is only valid with corresponding device identification on the type label of the respective device.

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