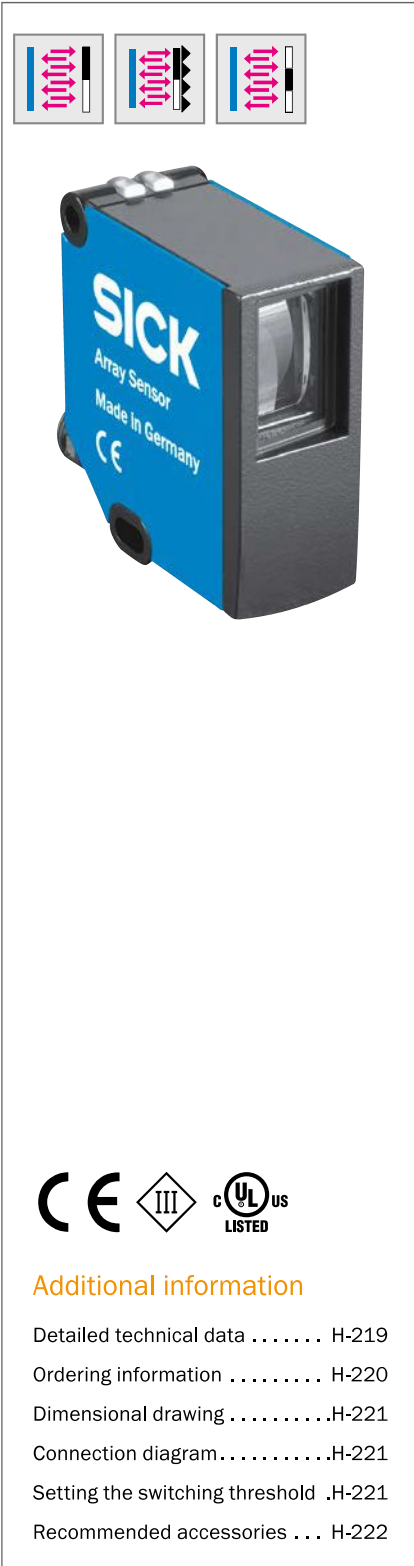


AX20 ARRAY SENSORS FOR EDGE AND DIAMETER DETECTION SOLUTIONS



Product description

Array sensors use closely spaced beams of light to detect even the slightest differences in gray scale between the target and the background within their field-of-view. They are ideal for edge and diameter detection as well as detecting

widths and gaps. SICK's array sensors offer industry-leading reproducibility, in addition to compact, rugged metal housings for use in highly restricted or harsh environments.

At a glance

- Proximity contrast line sensor in a compact housing
- Application-specific sensor functions
- Detect position of edge of material
- Diameter, width and gap detection of different objects
- Very high reproducibility of 0.03 mm
- Large measurement range: 30 mm
- Visible white LED light spot to enable accurate alignment
- Simple setup, no teach-in necessary

Your benefits

- Cost-effective solution to reliably determine edge position and width measurement
- Easy-to-integrate, compact housing can be mounted over the web so less downtime is required for maintenance
- No reflector is required, reducing maintenance and providing greater product reliability. Reduces downtime. Only array sensors available in diffuse mode, making them ideal for environments where dirt and dust can interfere with other types of solutions that require a reflector.
- High reproducibility of 0.03 mm and industry-leading resolution enable greater accuracy and quality control
- Highly visible white LED light spot ensures fast and accurate alignment, reducing time-consuming fine adjustment
- No teach, program or menu activities make setup virtually hassle free



Additional information

- Detailed technical data H-219
- Ordering information H-220
- Dimensional drawing H-221
- Connection diagram H-221
- Setting the switching threshold . H-221
- Recommended accessories . . . H-222

→ www.sick.com/de/en/Ax20

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



H

Detailed technical data

Features

Dimensions (W x H x D)	24.3 mm x 59.8 mm x 54.1 mm
Sensing distance	25 mm / 100 mm (depending on type)
Housing design (light emission)	Rectangular
Operating range	20 mm, 30 mm / 90 mm, 110 mm (depending on type)
Measurement range	20 mm / 30 mm (depending on type)
Minimum detectable object (MDO)	0.8 mm / 1.6 mm (depending on type)
Light source	LED
Type of light	Visible white light
Wave length	400 nm ... 700 nm
Repeatability	0.03 mm ¹⁾ / 0.05 mm ¹⁾ (depending on type)
Linearity ²⁾	± 2 %

¹⁾ With respect to sensing distance.

²⁾ Analog current range (16 mA)

Mechanics/electronics

Supply voltage ¹⁾	≤ 24 V DC
Ripple ²⁾	≤ 5 V
Power consumption ³⁾	< 3.1 W
Output type	PNP: HIGH = $V_S - \leq 2 \text{ V}$ / LOW approx. 0 V / NPN: HIGH = approx. V_S / LOW ≤ 2 V (depending on type)
Output type	PNP ⁴⁾ / NPN ⁴⁾ (depending on type)
Analog output Q_A	4 mA ... 20 mA
Resolution of analog output	12 bit
Output rate of analog output	1 ms
Output current I_{max}	< 100 mA
Initialization time ⁵⁾	0.48 s
Connection type	Connector M12, 5-pin
Protection class	III
Circuit protection	V_S connections reverse-polarity protected, Output Q short-circuit protected, Interference suppression
Enclosure rating	IP 67
Weight	135 g
Housing material	Metal

¹⁾ ± 20 %. Operation in short-circuit protected network max. 8 A.

²⁾ May not exceed or fall below U_v tolerances.

³⁾ Without load.

⁴⁾ Active when object detected.

⁵⁾ Typ. max. 1.6 s.

Ambient data

Ambient operating temperature	-10 °C ... +55 °C
Ambient storage temperature	-25 °C ... +75 °C
Shock load	According to IEC 60068
UL File No.	NRKH.E181493 & NRKH7.E181493

Ordering information

Other models → www.sick.com/de/en/Ax20

AT20E

- **Functional principle:** Edge detection
- **Operation mode:** Proximity and reflector

Sensing distance	Measurement range	Repeatability ¹⁾	MDO	Output type ²⁾	Type	Part no.
25 mm	20 mm	0.03 mm	0.8 mm	PNP	AT20E-PM111	1044484
				NPN	AT20E-NM111	1046458
100 mm	30 mm	0.05 mm	1.6 mm	PNP	AT20E-PM331	1045990
				NPN	AT20E-NM331	1046459

¹⁾ With respect to sensing distance.

²⁾ Active when object detected.

AL20E

- **Functional principle:** Edge detection
- **Operation mode:** Reflector

Sensing distance	Measurement range	Repeatability ¹⁾	MDO	Output type ²⁾	Type	Part no.
25 mm	20 mm	0.03 mm	0.8 mm	PNP	AL20E-PM111	1046463
				NPN	AL20E-NM111	1046460
100 mm	30 mm	0.05 mm	1.6 mm	PNP	AL20E-PM331	1046462
				NPN	AL20E-NM331	1046461

¹⁾ With respect to sensing distance.

²⁾ Active when object detected.

AT20D

- **Functional principle:** Diameter detection
- **Operation mode:** Proximity and reflector

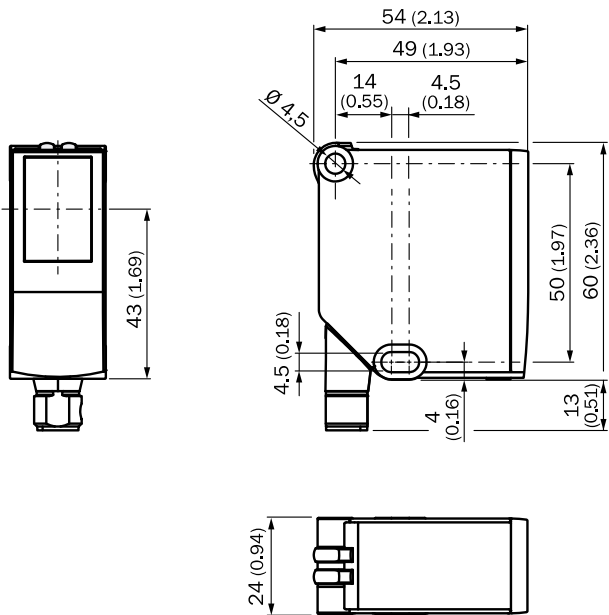
Sensing distance	Measurement range	Repeatability ¹⁾	MDO	Output type ²⁾	Type	Part no.
25 mm	20 mm	0.03 mm	0.8 mm	PNP	AT20D-PM111	1046464
				NPN	AT20D-NM111	1046466
100 mm	30 mm	0.05 mm	1.6 mm	PNP	AT20D-PM331	1046465
				NPN	AT20D-NM331	1046467

¹⁾ With respect to sensing distance.

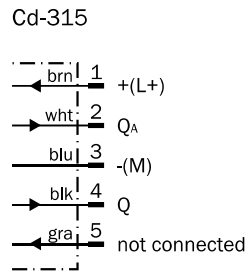
²⁾ Active when object detected.



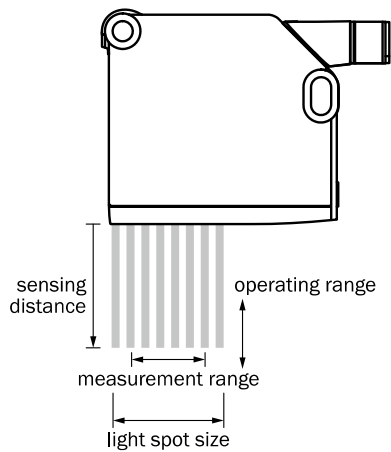
Dimensional drawing (Dimensions in mm (inch))



Connection diagram



Setting the switching threshold




Sensing distance	Operating range	Measurement range	Light spot size
25 mm	20 mm ... 30 mm	20 mm	30 mm x 5 mm
100 mm	90 mm ... 110 mm	30 mm	50 mm x 10 mm



Recommended accessories

Mounting brackets and mounting plates

Mounting brackets

Figure	Description	Type	Part no.
	Mounting bracket, stainless steel (1.4404), without mounting material, for DT20 Hi	BEF-WN-DT20	4043524

Reflectors

Description	Type	Part no.
Glass covered reflector, 70 mm x 16 mm, reflective area: 40 mm x 10 mm	REF-AX-007	2080183



Reflective tape

Description	Type	Part no.
IRF 2000 reflective tape, 95 mm x 30 mm x 0.3 mm, without polarization effect	REF-AX-002	2049249
IRF 2000 reflective tape, 110 mm x 30 mm x 0.15 mm, without polarization effect	REF-AX-001	2049250
IRF 2000 reflective tape, 220 mm x 10 mm x 0.3 mm, without polarization effect	REF-AX-004	2062695
IRF 2000 reflective tape, 220 mm x 50 mm x 0.3 mm, without polarization effect	REF-AX-005	2069161

Plug connectors and cables

Connecting cables with female connector

M12, 5-pin, PVC, chemical resistant

Figure	Connection type head A	Connection type head B	Connecting cable	Type	Part no.
	Female connector, M12, 5-pin, straight, unshielded	Cable, open conductor heads	2 m, 5-wire	DOL-1205-G02M	6008899
			5 m, 5-wire	DOL-1205-G05M	6009868
			10 m, 5-wire	DOL-1205-G10M	6010544
	Female connector, M12, 5-pin, angled, unshielded	Cable, open conductor heads	2 m, 5-wire	DOL-1205-W02M	6008900
			5 m, 5-wire	DOL-1205-W05M	6009869
			10 m, 5-wire	DOL-1205-W10M	6010542

→ For additional accessories, please see page K-240



