



Ax20 Array Sensor

Web Edge Guidance and Diameter Detection

Innovation: Line Scan Sensor in a Compact Sensor Housing

Detect edges, measure thickness, count parts

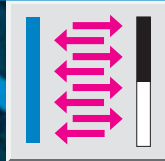
THE NEW ...

A x

The extremely versatile array sensor series Ax20 from SICK is a new, innovative development. The devices are line scan sensors, which can detect even minimal gray scale differences.

Its precise edge detection, very high repeatability and large measurement range of 30 mm ensure the sensors sustainability for all applications requiring reliable edge guidance control or position detection. In these application areas, the Ax20 can be used both as a scanner and a reflector-based system. The material web position is controlled via the analogue 4 to 20 mA output.

The very compact and robust metal housing of the sensors enables them to be installed where space is at a premium.



EDGE DETECTION (Ax20E, E=EDGE)			
PROXIMITY (AT20E)		REFLECTOR (AL20E)	
Scanning distance	Scanning distance	Scanning distance	Scanning distance
25 mm	100 mm	25 mm	100 mm

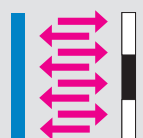
Application areas

- Measurement web edge guidance control, e.g., paper, webs, foil and transparent materials
- Object positioning (optical catch)
- Line tracking

DIAMETER DETECTION
 (AT20D, D=Diameter)

PROXIMITY
 (AT20D)

 Scanning distance
 25 mm

 Scanning distance
 100 mm


The new Ax20 sensors from SICK are perfectly suited to detecting object diameters and widths in a variety of industrial applications.

The sensors are quick and simple to set up once installed. A teach-in procedure is not required, as the Ax20 works independently of the reflective properties of material surfaces.

The bright light source ensures that alignment is simple and quick.

The devices are insensitive to the effects of other external light sources.

Application areas

- Automated glue application check
- Double sheet detection
- Gap detection
- Width measurement

Features at a glance

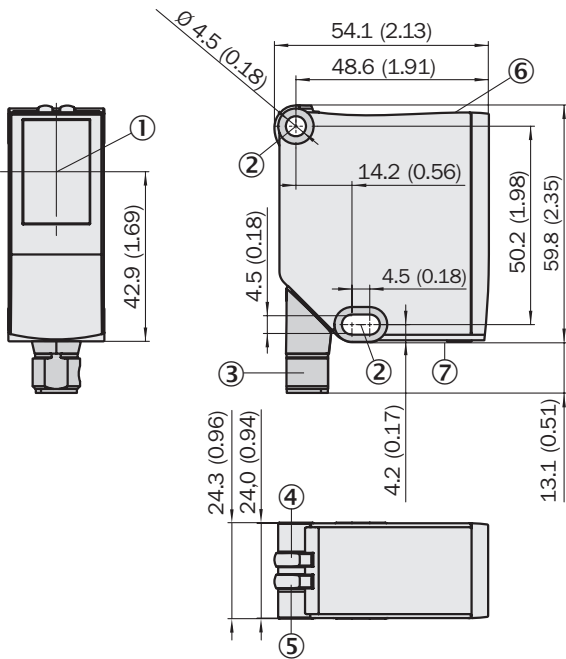
- Line scan sensor in a compact housing
- Very high degree of reproducibility 30 µm
- Measurement range up to 30 mm
- Visible white light line



- First line scan sensor
- Precise detection of “edges” and “diameters”
- High degree of repeatability of 30 µm
- Very simple set-up
 - no teach-in
 - visible light spot to aid alignment
 - long measuring range of 30 mm
- Compact metal housing

Dimensional drawing

A X 20



mm (inch)

Connection type, M12, 5-pin

A X 20



General technical data

Supply voltage V_s	24 V \pm 20 % DC
Power consumption ¹⁾	< 3.1 W
Residual ripple	\leq 5 V
Light source	LED, white
Wavelength	400 ... 700 nm
Output, analogue	4 ... 20 mA
Output rate of analogue output	1 ms
Switching output	Q (PNP)
PNP	High = $U_V \leq 2$ V / Low = 0 V
Output current ²⁾	100 mA
Standby time	0.48 sec ³⁾
Connection type	Plug M12, 5 pin
VDE protection class	ⓘ
Enclosure rating	IP 67
Ambient temperature	Operation -10 °C ... +55 °C Storage -25 °C ... +55 °C
Circuit protection ⁴⁾	A, B, C
Housing material	Metal
Weight	Approx. 135 g
Shock/vibration stress	To IEC 60068

¹⁾ Without load

²⁾ Output Q short-circuit protected

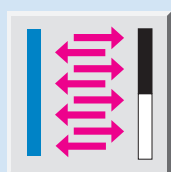
³⁾ Typ. max. 1.6 sec

⁴⁾ A = V_s connections reverse-polarity

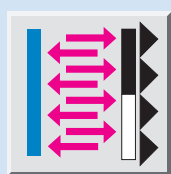
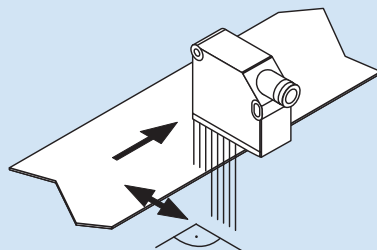
B = Output Q short-circuit protected

C = Interference pulse suppression

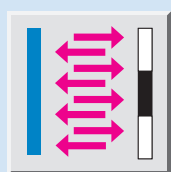
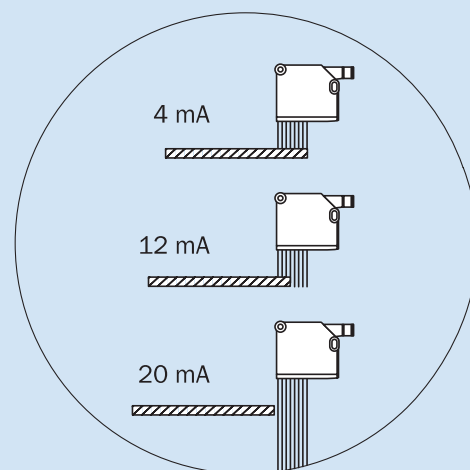
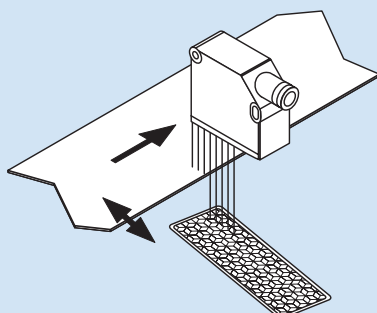
Pictogram key



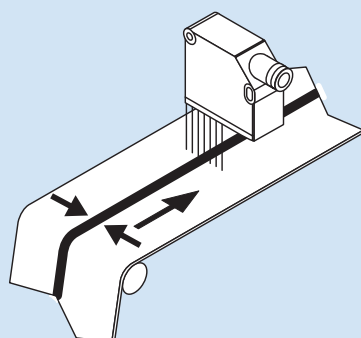
Edge
detection



Edge
detection
reflector



Diameter
detection



Type-specific data

Edge sensor

Type	Order no.	Scanning distance Operational area	Measuring range Light spot diameter	Reproducibility ¹⁾ Linearity ⁴⁾	Output	Object size ²⁾
AT20E-PM111	1044484	25 mm 20 ... 30 mm	20 mm 30 x 5 mm	0.03 mm ± 0.5 %	4 ... 20 mA; Q (pnp)	0.8 mm
AT20E-PM331	1045990	100 mm 90 ... 110 mm	30 mm 50 x10 mm	0.05 mm ± 0.5 %	4 ... 20 mA; Q (pnp)	1.6 mm

Edge reflector sensor

Type	Order no.	Scanning distance Operational area	Measuring range Light spot diameter	Reproducibility ¹⁾ Linearity ⁴⁾	Output	Object size ²⁾
AL20E-PM111	1046463	25 mm 20 ...30 mm	20 mm 30 x 5 mm	0.03 mm ± 0.5 %	4 ... 20 mA; Q (pnp)	0.8 mm
AL20E-PM331	1046462	100 mm 90 ... 110 mm	30 mm 50 x10 mm	0.05 mm ± 0.5 %	4 ... 20 mA; Q (pnp)	1.6 mm

Diameter sensor

Type	Order no.	Scanning distance Operational area	Measuring range Light spot diameter	Reproducibility ¹⁾	Output	Object size ³⁾
AT20D-PM111	1046464	25 mm 20 ... 30 mm	20 mm 30 x 5 mm	0.1 mm	4 ... 20 mA; Q (pnp)	0.8 mm
AT20D-PM331	1046465	100 mm 90 ... 110 mm	30 mm 50 x10 mm	0.2 mm	4 ... 20 mA; Q (pnp)	1.6 mm

¹⁾ With respect to scanning range

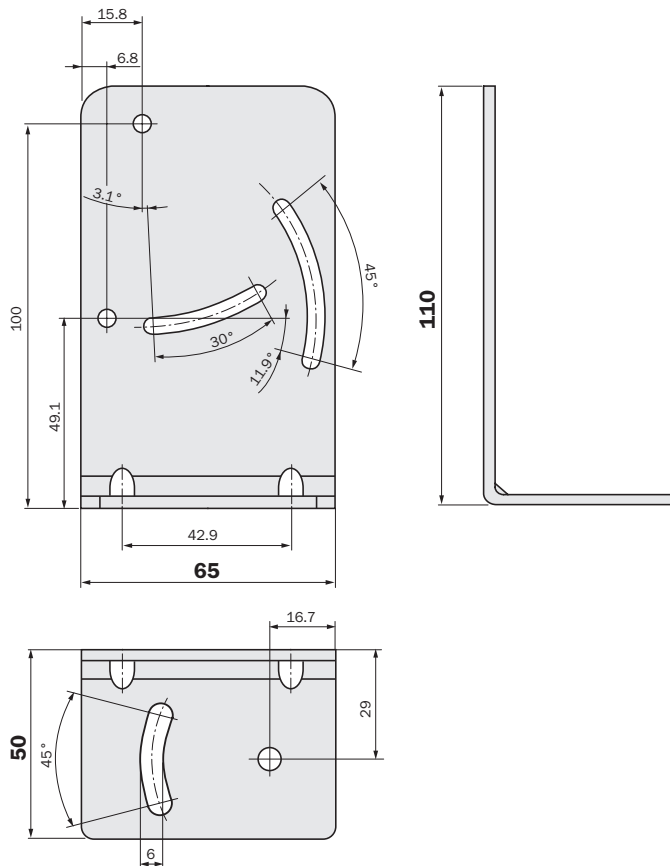
²⁾ Smallest detectable track

³⁾ Minimum detectable diameter

⁴⁾ Analogue current range (16 mA)

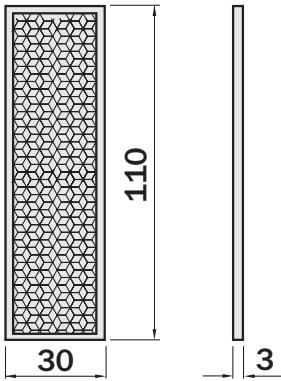
Mounting systems

Type	Order no.	Description
BEF-WN-DT20	4043524	Mounting bracket



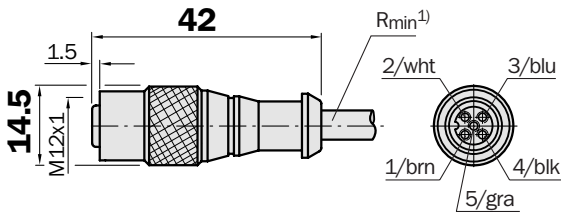
Mounting systems

Type	Order no.	Description
REF-AX-001	2049250	Reflector

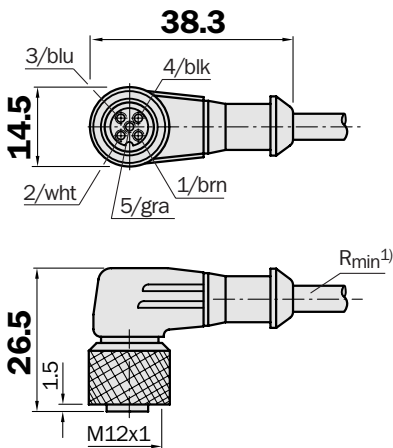


Cables and connectors

Type	Order no.	Description
DOL-1205-G02M	6008899	Female connector, M12, 5 pin, straight, 2 m, PVC
DOL-1205-G05M	6009868	Female connector, M12, 5 pin, straight, 5 m, PVC
DOL-1205-G10M	6010544	Female connector, M12, 5 pin, straight, 10 m, PVC
DOL-1205-G02MC	6025906	Female connector, M12, 5 pin, straight, 2 m, PUR halogenfree
DOL-1205-G05MC	6025907	Female connector, M12, 5 pin, straight, 5 m, PUR halogenfree
DOL-1205-G10MC	6025908	Female connector, M12, 5 pin, straight, 10 m, PUR halogenfree



Type	Order no.	Description
DOL-1205-W02M	6008900	Female connector, M12, 5 pin angled, 2 m, PVC
DOL-1205-W05M	6009869	Female connector, M12, 5 pin angled, 5 m, PVC
DOL-1205-W10M	6010542	Female connector, M12, 5 pin angled, 10 m, PVC
DOL-1205-W02MC	6025909	Female connector, M12, 5 pin angled, 2 m, PUR halogenfree
DOL-1205-W05MC	6025910	Female connector, M12, 5 pin angled, 5 m, PUR halogenfree
DOL-1205-W10MC	6025911	Female connector, M12, 5 pin angled, 10 m, PUR halogenfree



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