



## Array Sensor Ax20

Track Edge Control and Diameter Detection

# Innovation: Line Scan Sensor in Compact Sensor Housing

Detect edges, measure thicknesses, count lines

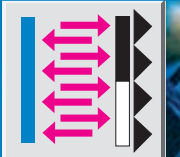
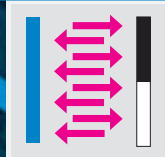
## THE NEW ...

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 value differences.

Its precise edge detection, very high degree of repetition accuracy and large measurement range of 30 mm predestine the sensors for all applications requiring reliable track edge control or position detection, among other things. In these areas, the Ax20 can be used both as a scanner and reflector-based. The respective material run is controlled via the signals of the analogue 4-20 mA output correspondingly.

The very compact and robust metal housing of the sensors makes their use possible even in cramped or difficult-to-access spaces.



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

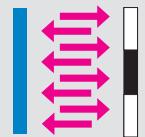
### Application areas

- Measurement value recording for track edge control, e.g., paper tracks, foils and transparent materials
- Object positioning (optical catch)
- Line tracking

**DIAMETER DETECTION**  
 (AT20D, D=Diameter)

**PROXIMITY**  
 (AT20D)

 Scanning distance  
 25 mm

 Scanning distance  
 100 mm

**Application areas**

- automated glue application check
- Double sheet detection
- Column detection
- Width measurement

**Features at a glance**

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

The new Ax20 sensors from SICK are excellently suited for detecting diameters and widths in very different areas of industry.

The extremely easy alignment of the sensors is just one significant feature of them. Teach-in is not required, because the Ax20 work independent of the reflection properties of material surfaces.

The clearly visible light spot in the measurement area makes simple alignment possible.

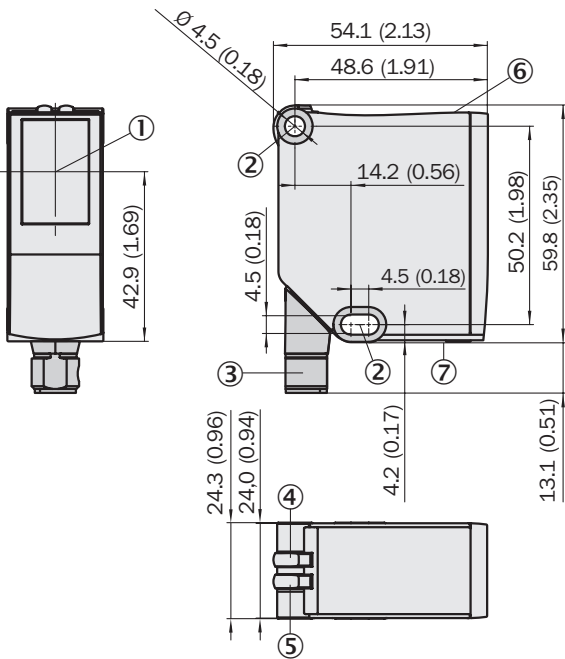
The devices are especially insensitive to extraneous light.



- First line scan sensor
- Precise detection of “edges” and “diameters”
- High degree of repetition accuracy of 30 µm
- Very simple alignment
  - no teach-in
  - visible light spot
  - large measurement range of 30 mm
- Compact metal housing

## Maßbild

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 <sup>1)</sup>	< 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 <sup>2)</sup>	100 mA
Standby time	0.48 sec <sup>3)</sup>
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 <sup>4)</sup>	A, B, C
Housing material	Metal
Weight	Approx. 135 g
Shock/vibration stress	To IEC 60068

<sup>1)</sup> Without load

<sup>2)</sup> Output Q short-circuit protected

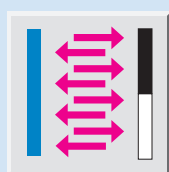
<sup>3)</sup> Typ. max. 1.6 sec

<sup>4)</sup> A =  $V_s$  connections reverse-polarity

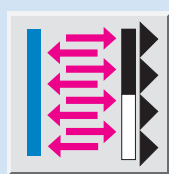
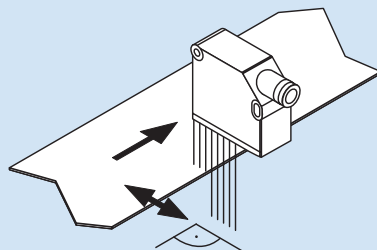
B = Output Q short-circuit protected

C = Interference pulse suppression

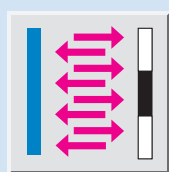
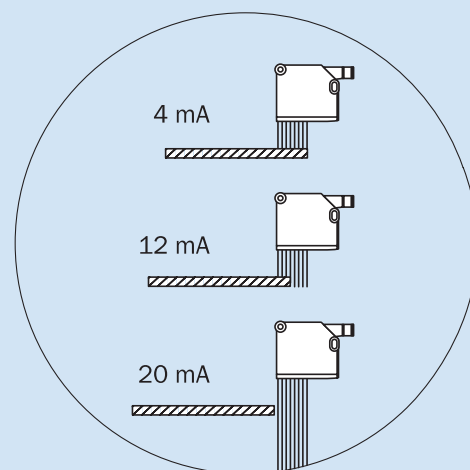
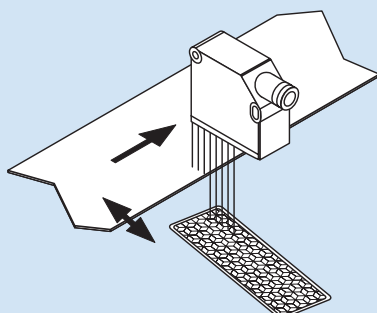
### Pictogram key



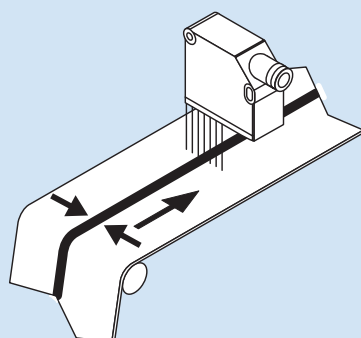
Edge  
detection



Edge  
detection  
reflector



Diameter  
detection



## Type-specific data

### Edge sensor

Type	Order no.	Scanning distance Operational area	Measuring range Light spot diameter	Reproducibility <sup>1)</sup> Linearity <sup>4)</sup>	Output	Object size <sup>2)</sup>
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 <sup>1)</sup> Linearity <sup>4)</sup>	Output	Object size <sup>2)</sup>
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 <sup>1)</sup>	Output	Object size <sup>3)</sup>
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

<sup>1)</sup> With respect to scanning range

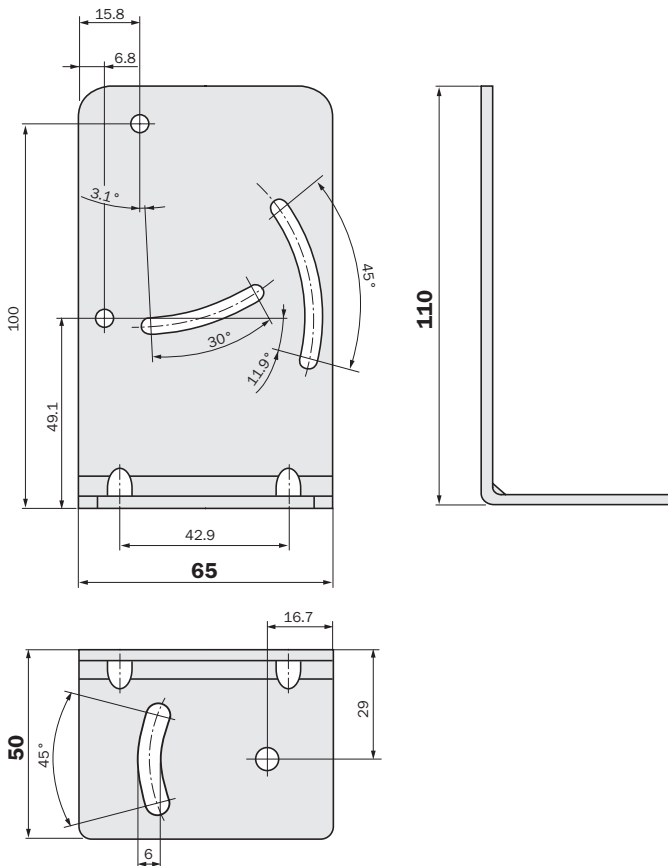
<sup>2)</sup> Smallest detectable track

<sup>3)</sup> Minimum detectable diameter

<sup>4)</sup> Analogue current range (16 mA)

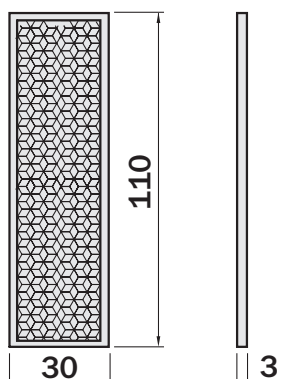
## Mounting systems

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



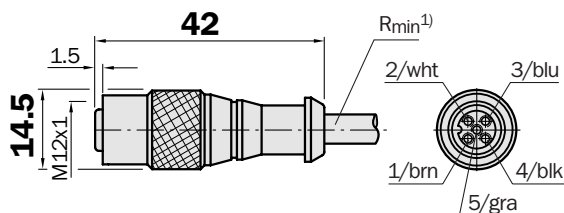
## Mounting systems

Type	Order no.	Description
REF-AX-001	1046640	Reflector

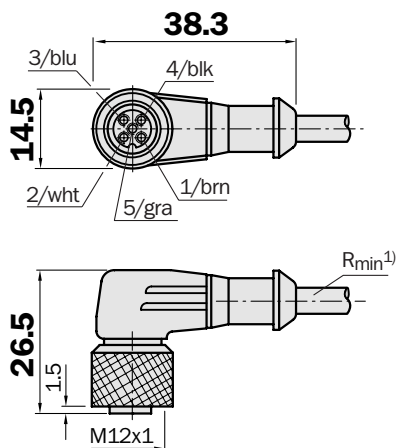


## Cables and connectors

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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