

# A3M60A-BHPB014x17

A3M60

**ABSOLUTE ENCODERS**

**SICK**  
Sensor Intelligence.



### Ordering information

Type	part no.
A3M60A-BHPB014x17	1053333

Other models and accessories → [www.sick.com/A3M60](http://www.sick.com/A3M60)

Illustration may differ



### Detailed technical data

#### Safety-related parameters

<b>MTTF<sub>D</sub> (mean time to dangerous failure)</b>	60 years (EN ISO 13849-1) <sup>1)</sup>
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<sup>1)</sup> This product is a standard product and does not constitute a safety component as defined in the Machinery Directive. Calculation based on nominal load of components, average ambient temperature 40 °C, frequency of use 8760 h/a. All electronic failures are considered hazardous. For more information, see document no. 8015532.

#### Performance

<b>Number of steps per revolution (max. resolution)</b>	16,384 (14 bit)
<b>Number of revolutions</b>	131,072 (17 bit)
<b>Max. resolution (number of steps per revolution x number of revolutions)</b>	14 bit x 17 bit (16,384 x 131,072)
<b>Error limits G</b>	0.35° (at room temperature) <sup>1)</sup>
<b>Repeatability standard deviation <math>\sigma_r</math></b>	0.15° (at room temperature) <sup>2)</sup>

<sup>1)</sup> In accordance with DIN ISO 1319-1, position of the upper and lower error limit depends on the installation situation, specified value refers to a symmetrical position, i.e. deviation in upper and lower direction is the same.

<sup>2)</sup> In accordance with DIN ISO 55350-13; 68.3% of the measured values are inside the specified area.

#### Interfaces

<b>Communication interface</b>	PROFIBUS DP
<b>Communication Interface detail</b>	DPV0 / DPV1 / DPV2
<b>Data transmission rate (baud rate)</b>	≤ 12 MBaud
<b>Initialization time</b>	Approx. 1 s
<b>Parameterising data</b>	Number of steps per revolution Number of revolutions PRESET Counting direction Sampling rate for position calculation Unit for output of the speed value Round axis functionality
<b>Available diagnostics data</b>	Maximumspeed Power-on counter Operating hour counter Counter for number of cw movements/number of ccw movements

	Minimum and maximum operating voltage
<b>Bus termination</b>	DIP switch

## Electronics

<b>Connection type</b>	Male connector, 2x, M12, 5-pin, axial Female connector, 1x, M12, 5-pin, axial
<b>Supply voltage</b>	10 ... 32 V
<b>Power consumption</b>	≤ 1.5 W
<b>Reverse polarity protection</b>	✓

## Mechanics

<b>Mechanical design</b>	Blind hollow shaft
<b>Shaft diameter</b>	15 mm
<b>Characteristics of the shaft</b>	Front clamp
<b>Weight</b>	0.28 kg
<b>Shaft material</b>	Stainless steel
<b>Flange material</b>	Aluminum
<b>Housing material</b>	Aluminum
<b>Start up torque</b>	2 Ncm (+20 °C)
<b>Operating torque</b>	1.6 Ncm (+20 °C)
<b>Permissible movement static</b>	± 0.3 mm (radial) ± 0.5 mm (axial)
<b>Permissible movement dynamic</b>	± 0.1 mm (radial) ± 0.2 mm (axial)
<b>Operating speed</b>	≤ 6,000 min <sup>-1</sup> <sup>1)</sup>
<b>Bearing lifetime</b>	3.0 x 10 <sup>9</sup> revolutions
<b>Angular acceleration</b>	≤ 500,000 rad/s <sup>2</sup>

<sup>1)</sup> Self warming 35 K at maximum operating speed.

## Ambient data

<b>EMC</b>	According to EN 61000-6-2 and EN 61000-6-3
<b>Enclosure rating</b>	IP67, shaft side (IEC 60529) IP67, housing side (IEC 60529) <sup>1)</sup>
<b>Permissible relative humidity</b>	95 % (Condensation not permitted)
<b>Operating temperature range</b>	-30 °C ... +80 °C
<b>Storage temperature range</b>	-40 °C ... +100 °C
<b>Resistance to shocks</b>	80 g, 6 ms (EN 60068-2-27)
<b>Resistance to vibration</b>	30 g, 10 Hz ... 2,000 Hz (EN 60068-2-6)

<sup>1)</sup> With mating connector fitted.

## Certificates

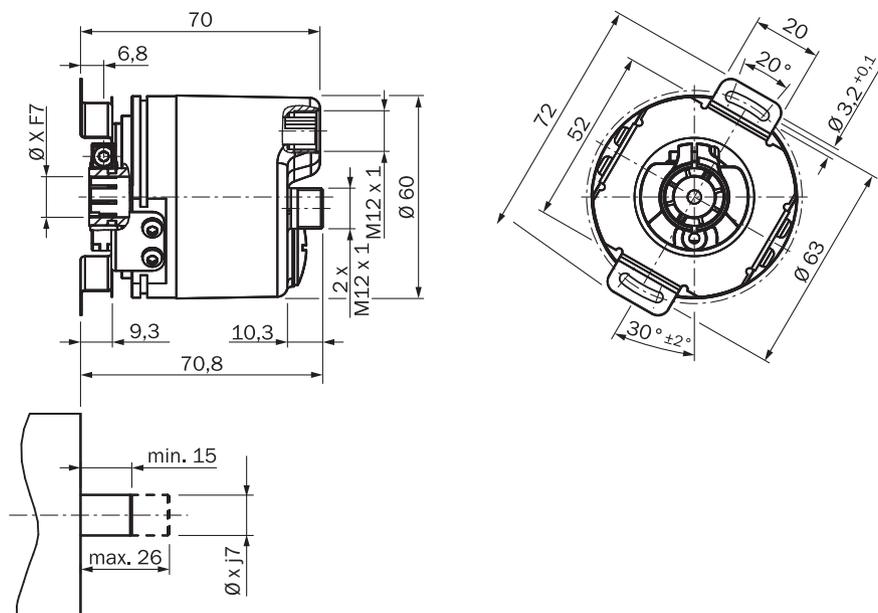
<b>EU declaration of conformity</b>	✓
<b>UK declaration of conformity</b>	✓
<b>ACMA declaration of conformity</b>	✓
<b>Moroccan declaration of conformity</b>	✓

China RoHS	✓
cULus certificate	✓
Information according to Art. 3 of Data Act (Regulation EU 2023/2854)	✓

### Classifications

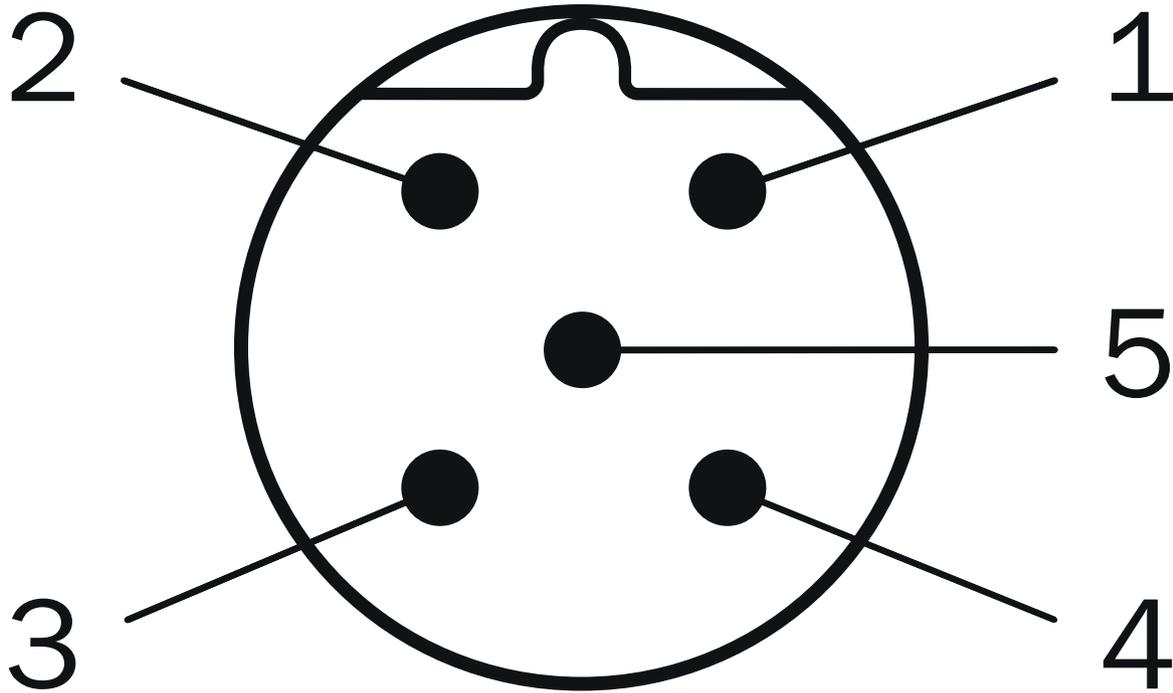
<b>ECLASS 5.0</b>	27270502
<b>ECLASS 5.1.4</b>	27270502
<b>ECLASS 6.0</b>	27270590
<b>ECLASS 6.2</b>	27270590
<b>ECLASS 7.0</b>	27270502
<b>ECLASS 8.0</b>	27270502
<b>ECLASS 8.1</b>	27270502
<b>ECLASS 9.0</b>	27270502
<b>ECLASS 10.0</b>	27270502
<b>ECLASS 11.0</b>	27270502
<b>ECLASS 12.0</b>	27270502
<b>ETIM 5.0</b>	EC001486
<b>ETIM 6.0</b>	EC001486
<b>ETIM 7.0</b>	EC001486
<b>ETIM 8.0</b>	EC001486
<b>UNSPSC 16.0901</b>	41112113

### Dimensional drawing



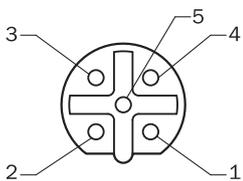
Dimensions in mm (inch)

Anschlussbelegung



PIN	PROFIBUS IN	PROFIBUS OUT	Supply voltage
1	Not assigned	+5 V2P5 <sup>1)</sup>	Operating voltage
2	PROFIBUSDataA	PROFIBUSDataA	Not assigned
3	Not assigned	0 V (2M) <sup>1)</sup>	Ground (0 V)
4	PROFIBUSDataB	PROFIBUSDataB	Not assigned
5	Shielding	Shielding	Not assigned
<sup>1)</sup> External connection to the bus			

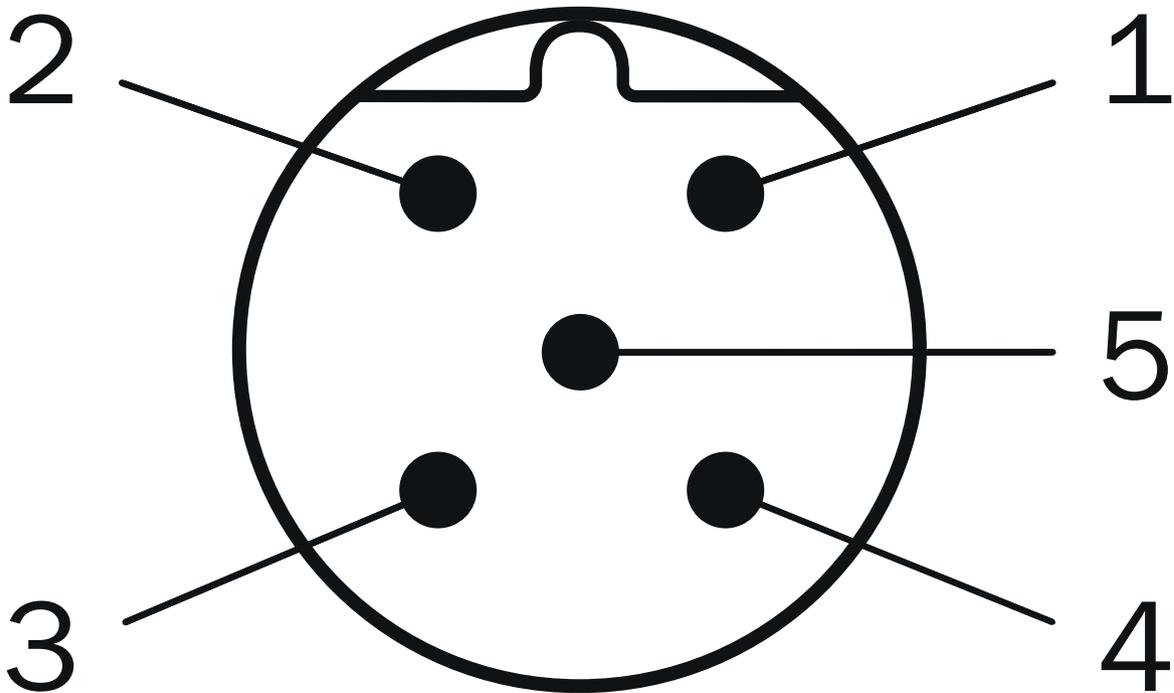
Anschlussbelegung



PIN	PROFIBUS IN	PROFIBUS OUT	Supply voltage
1	Not assigned	+5 V2P5 <sup>1)</sup>	Operating voltage
2	PROFIBUSDataA	PROFIBUSDataA	Not assigned
3	Not assigned	0 V (2M) <sup>1)</sup>	Ground (0 V)

PIN	PROFIBUS IN	PROFIBUS OUT	Supply voltage
4	PROFIBUSDataB	PROFIBUSDataB	Not assigned
5	Shielding	Shielding	Not assigned
<sup>1)</sup> External connection to the bus	-	-	-

### Anschlussbelegung

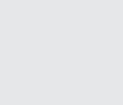


PIN	PROFIBUS IN	PROFIBUS OUT	Supply voltage
1	Not assigned	+5 V2P5 <sup>1)</sup>	Operating voltage
2	PROFIBUSDataA	PROFIBUSDataA	Not assigned
3	Not assigned	0 V (2M) <sup>1)</sup>	Ground (0 V)
4	PROFIBUSDataB	PROFIBUSDataB	Not assigned
5	Shielding	Shielding	Not assigned
<sup>1)</sup> External connection to the bus	-	-	-

Recommended accessories

Other models and accessories → [www.sick.com/A3M60](http://www.sick.com/A3M60)

	Brief description	Type	part no.
connectors and cables			
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, straight, B-coded</li> <li><b>Connection type head B:</b> Male connector, M12, 5-pin, straight, B-coded</li> <li><b>Signal type:</b> Fieldbus, PROFIBUS DP</li> <li><b>Cable:</b> 10 m, 2-wire, PUR, halogen-free</li> <li><b>Description:</b> Fieldbus, twisted pair, shielded, PROFIBUS DP</li> <li><b>Note:</b> Wire shield Al-Pt film, overall shield C-screen tin-plated</li> <li><b>Application:</b> Zones with oils and lubricants, Drag chain operation</li> </ul>	DSL-1205-G10MQ	6032640
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Flying leads</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> PROFIBUS DP</li> <li><b>Items supplied:</b> By the meter</li> <li><b>Cable:</b> 2-wire, PUR</li> <li><b>Description:</b> PROFIBUS DP, shielded</li> </ul>	LTG-2102-MW	6021355
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 4-pin, straight, B-coded</li> <li><b>Signal type:</b> PROFIBUS DP</li> <li><b>Description:</b> PROFIBUS DP, terminal resistor</li> </ul>	STE-END-Q	6021156
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 5-pin, straight, B-coded</li> <li><b>Signal type:</b> PROFIBUS DP</li> <li><b>Description:</b> PROFIBUS DP, shielded</li> <li><b>Connection systems:</b> Screw-type terminals</li> <li><b>Permitted cross-section:</b> ≤ 0.75 mm<sup>2</sup></li> </ul>	STE-1205-GQ	6021354
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, straight, B-coded</li> <li><b>Signal type:</b> PROFIBUS DP</li> <li><b>Description:</b> PROFIBUS DP, shielded</li> <li><b>Connection systems:</b> Screw-type terminals</li> <li><b>Permitted cross-section:</b> ≤ 0.75 mm<sup>2</sup></li> </ul>	DOS-1205-GQ	6021353
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, angled, B-coded</li> <li><b>Signal type:</b> PROFIBUS DP</li> <li><b>Description:</b> PROFIBUS DP, shielded</li> <li><b>Connection systems:</b> Spring-cage connection</li> <li><b>Permitted cross-section:</b> 0.14 mm<sup>2</sup> ... 0.5 mm<sup>2</sup></li> </ul>	DOS-1205-WQ	6041429
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 5-pin, angled, B-coded</li> <li><b>Signal type:</b> PROFIBUS DP</li> <li><b>Description:</b> PROFIBUS DP, shielded</li> <li><b>Connection systems:</b> Spring-cage connection</li> <li><b>Permitted cross-section:</b> 0.14 mm<sup>2</sup> ... 0.5 mm<sup>2</sup></li> </ul>	STE-1205-WQ	6041428
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, angled, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 5 m, 2-wire, PUR, halogen-free</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Note:</b> Voltage supply</li> <li><b>Application:</b> Zones with oils and lubricants</li> </ul>	DOL-1202-W05MC	6042067
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, angled, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 10 m, 2-wire, PUR, halogen-free</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Note:</b> Voltage supply</li> <li><b>Application:</b> Zones with oils and lubricants</li> </ul>	DOL-1202-W10MC	6042068
	<ul style="list-style-type: none"> <li><b>Items supplied:</b> 1 x female connector M12, 4-pin, angled, 1 x female connector M12, 5-pin, angled, male connector M12, 5-pin, angled, cable?</li> <li><b>Description:</b> Unshielded</li> <li><b>Note:</b> Set of connectors</li> </ul>	DOS-3XM12-W	2058177
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 5 m, 5-wire, PUR, halogen-free</li> <li><b>Description:</b> Sensor/actuator cable, shielded</li> </ul>	YF2A25-050UB6XLEAX	2095733

	Brief description	Type	part no.
	<ul style="list-style-type: none"> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants, Robot, Drag chain operation</li> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 10 m, 5-wire, PUR, halogen-free</li> <li><b>Description:</b> Sensor/actuator cable, shielded</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants, Robot, Drag chain operation</li> </ul>	YF2A25-100UB6XLEAX	2095734
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 20 m, 5-wire, PUR, halogen-free</li> <li><b>Description:</b> Sensor/actuator cable, shielded</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants, Robot, Drag chain operation</li> </ul>	YF2A25-200UB6XLEAX	2095738
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, angled, A-coded</li> <li><b>Description:</b> Unshielded</li> <li><b>Connection systems:</b> Screw-type terminals</li> <li><b>Permitted cross-section:</b> ≤ 0.75 mm<sup>2</sup></li> </ul>	DOS-1205-W	6009720
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li><b>Description:</b> Unshielded</li> <li><b>Connection systems:</b> Screw-type terminals</li> <li><b>Permitted cross-section:</b> ≤ 0.75 mm<sup>2</sup></li> </ul>	DOS-1205-G	6009719
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 2-pin, straight, B-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Fieldbus, PROFIBUS DP</li> <li><b>Cable:</b> 15 m, 2-wire, PUR, halogen-free</li> <li><b>Description:</b> Fieldbus, shielded, PROFIBUS DP</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>	YM2B22-150P-B1XLEAX	2106276
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 2-pin, angled, B-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Fieldbus, PROFIBUS DP</li> <li><b>Cable:</b> 5 m, 2-wire, PUR, halogen-free</li> <li><b>Description:</b> Fieldbus, shielded, PROFIBUS DP</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>	YN2B22-050P-B1XLEAX	2106277
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 2-pin, angled, B-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Fieldbus, PROFIBUS DP</li> <li><b>Cable:</b> 5 m, 2-wire, PUR, halogen-free</li> <li><b>Description:</b> Fieldbus, shielded, PROFIBUS DP</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>	YG2B22-050P-B1XLEAX	2106274
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 2-pin, angled, B-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Fieldbus, PROFIBUS DP</li> <li><b>Cable:</b> 10 m, 2-wire, PUR, halogen-free</li> <li><b>Description:</b> Fieldbus, shielded, PROFIBUS DP</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>	YG2B22-100P-B1XLEAX	2106275
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 2-pin, angled, B-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Fieldbus, PROFIBUS DP</li> <li><b>Cable:</b> 10 m, 2-wire, PUR, halogen-free</li> <li><b>Description:</b> Fieldbus, shielded, PROFIBUS DP</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>	YN2B22-100P-B1XLEAX	2106278
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 2-pin, straight, B-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Fieldbus, PROFIBUS DP</li> <li><b>Cable:</b> 5 m, 2-wire, PUR, halogen-free</li> <li><b>Description:</b> Fieldbus, shielded, PROFIBUS DP</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>	YM2B22-050P-B1XLEAX	2106270
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 2-pin, straight, B-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Fieldbus, PROFIBUS DP</li> <li><b>Cable:</b> 10 m, 2-wire, PUR, halogen-free</li> <li><b>Description:</b> Fieldbus, shielded, PROFIBUS DP</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>	YM2B22-100P-B1XLEAX	2106271
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 2-pin, straight, B-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Fieldbus, PROFIBUS DP</li> <li><b>Cable:</b> 10 m, 2-wire, PUR, halogen-free</li> <li><b>Description:</b> Fieldbus, shielded, PROFIBUS DP</li> </ul>	YF2B22-100P-B1XLEAX	2106269

	Brief description	Type	part no.
	<ul style="list-style-type: none"> <li>• <b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> <li>• <b>Connection type head A:</b> Female connector, M12, 2-pin, straight, B-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Fieldbus, PROFIBUS DP</li> <li>• <b>Cable:</b> 15 m, 2-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Fieldbus, shielded, PROFIBUS DP</li> <li>• <b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>	YF2B22-150P-B1XLEAX	2106272
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 2-pin, straight, B-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Fieldbus, PROFIBUS DP</li> <li>• <b>Cable:</b> 20 m, 2-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Fieldbus, shielded, PROFIBUS DP</li> <li>• <b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>	YF2B22-200P-B1XLEAX	2106273
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 2-pin, straight, B-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Fieldbus, PROFIBUS DP</li> <li>• <b>Cable:</b> 5 m, 2-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Fieldbus, shielded, PROFIBUS DP</li> <li>• <b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>	YF2B22-050P-B1XLEAX	2121936
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 2 m, 5-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Sensor/actuator cable, shielded</li> <li>• <b>Application:</b> Drag chain operation, Zones with oils and lubricants, Robot, Drag chain operation</li> </ul>	YF2A25-020UB6XLEAX	2145583
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 1 m, 5-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Sensor/actuator cable, shielded</li> <li>• <b>Application:</b> Drag chain operation, Zones with oils and lubricants, Robot, Drag chain operation</li> </ul>	YF2A25-010UB6XLEAX	2145582
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 0.6 m, 5-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Sensor/actuator cable, shielded</li> <li>• <b>Application:</b> Drag chain operation, Zones with oils and lubricants, Robot, Drag chain operation</li> </ul>	YF2A25-C60UB6XLEAX	2145581

## SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

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## WORLDWIDE PRESENCE:

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