



MLG05A-0295R50501  
MLG-2

AUTOMATION LIGHT GRIDS

**SICK**  
Sensor Intelligence.



Illustration may differ



Ordering information

| Type              | part no. |
|-------------------|----------|
| MLG05A-0295R50501 | 1116031  |

Other models and accessories → [www.sick.com/MLG-2](http://www.sick.com/MLG-2)

Detailed technical data

Features

|                                 |                                                                                                                                                                                                                                                                                  |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Device version                  | Pro - Extended functionality                                                                                                                                                                                                                                                     |
| Sensor principle                | Sender/receiver                                                                                                                                                                                                                                                                  |
| Minimum detectable object (MDO) | 5 mm <sup>1)</sup><br>9 mm <sup>2)</sup><br><sup>3)</sup>                                                                                                                                                                                                                        |
| Beam separation                 | 5 mm                                                                                                                                                                                                                                                                             |
| Type of synchronization         | Cable                                                                                                                                                                                                                                                                            |
| Number of beams                 | 60                                                                                                                                                                                                                                                                               |
| Detection height                | 295 mm                                                                                                                                                                                                                                                                           |
| Software features (default)     | <div><div>Q<sub>1</sub></div><div>Q<sub>2</sub> / IN</div><div>Q<sub>3</sub></div><div>Q<sub>4</sub> / IN2</div><div>Teach</div></div> <div>Presence detection</div> <div>Teach input</div> <div>Presence detection</div> <div>Presence detection</div> <div>Standard mode</div> |
| Operating mode                  | <div><div>Standard</div><div>Transparent</div></div> <div>✓</div> <div>✓</div>                                                                                                                                                                                                   |

<sup>1)</sup> MDO min. detectable object at high measurement accuracy.  
<sup>2)</sup> MDO min. detectable object for standard measurement accuracy.  
<sup>3)</sup> Depending on beam separation without cross beam setting.

|                               |                              |                                                                                                                                                                                                                          |
|-------------------------------|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Function</b>               | Dust- and sunlight-resistant | ✓                                                                                                                                                                                                                        |
|                               | Cross beam                   | ✓                                                                                                                                                                                                                        |
|                               | Beam blanking                | ✓                                                                                                                                                                                                                        |
|                               | High-speed scan              | ✓                                                                                                                                                                                                                        |
|                               | High measurement accuracy    | ✓                                                                                                                                                                                                                        |
| <b>Applications</b>           | Switching output             | Object detection/object width<br>Object recognition<br>Height classification<br>Hole detection/hole size<br>Outside/inside dimension<br>Object position<br>Hole position<br>Zone definition                              |
|                               | Data interface               | Object detection<br>Hole detection<br>Object height measurement<br>Measurement of the outside dimension<br>Measurement of the inside dimension<br>Measurement of the object position<br>Measurement of the hole position |
| <b>Included with delivery</b> |                              | 1 × sender (in IP69K protective pipes)<br>1 × receiver (in IP69K protective pipes)<br>1 × IP69K mounting instructions<br>1 × Quick Start Guide                                                                           |

1) MDO min. detectable object at high measurement accuracy.

2) MDO min. detectable object for standard measurement accuracy.

3) Depending on beam separation without cross beam setting.

## Mechanics/electronics

|                                            |                                                                                                                                                                             |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Light source</b>                        | LED, Infrared light                                                                                                                                                         |
| <b>Wave length</b>                         | 850 nm                                                                                                                                                                      |
| <b>Supply voltage <math>V_s</math></b>     | DC 19.2 V ... 28.8 V <sup>1)</sup>                                                                                                                                          |
| <b>Power consumption sender</b>            | 58 mA <sup>2)</sup>                                                                                                                                                         |
| <b>Power consumption receiver</b>          | 132 mA <sup>2)</sup>                                                                                                                                                        |
| <b>Ripple</b>                              | < 5 V <sub>pp</sub>                                                                                                                                                         |
| <b>Output current <math>I_{max}</math></b> | 100 mA                                                                                                                                                                      |
| <b>Output load, capacitive</b>             | 100 nF                                                                                                                                                                      |
| <b>Output load, Inductive</b>              | 1 H                                                                                                                                                                         |
| <b>Initialization time</b>                 | < 1 s                                                                                                                                                                       |
| <b>Switching output</b>                    | Push-pull: PNP/NPN                                                                                                                                                          |
| <b>Connection type</b>                     | Plug, M12, 5-pin, 0.39 m<br>Male connector M12, 8-pin, 0.39 m                                                                                                               |
| <b>Housing material</b>                    | Aluminum (light grid)<br>PMMA Plexiglas XT Food Contact DoC (protective pipe)<br>Polypropylene, stainless steel 1.4404 (cable)<br>VA 1.4305 (pressure compensation element) |

1) Without load.

2) Without load with 24 V.

3) Operating in outdoor condition only with a external protection housing.

|                           |                                                                                                                              |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------|
|                           | Stainless steel 1.4404 (end caps)<br>Stainless steel V4A 1.4404 DIN EN 1672-2 (cable gland)                                  |
| <b>Display</b>            | LED                                                                                                                          |
| <b>Enclosure rating</b>   | IP69K<br>3)                                                                                                                  |
| <b>Circuit protection</b> | U <sub>V</sub> connections, reverse polarity protected<br>Output Q short-circuit protected<br>Interference pulse suppression |
| <b>Protection class</b>   | III                                                                                                                          |
| <b>Weight</b>             | 1.16 kg                                                                                                                      |
| <b>Option</b>             | Protective housing IP69K                                                                                                     |
| <b>UL File No.</b>        | NRKH.E181493                                                                                                                 |

1) Without load.

2) Without load with 24 V.

3) Operating in outdoor condition only with a external protection housing.

## Performance

|                        |                      |
|------------------------|----------------------|
| <b>Maximum range</b>   | 5.25 m <sup>1)</sup> |
| <b>Minimum range</b>   | ≥ 0 m                |
| <b>Operating range</b> | 3.75 m               |
| <b>Response time</b>   | 5.9 ms <sup>2)</sup> |

1) No reserve for environmental issue and deterioration of the diode.

2) Without high speed.

## Interfaces

|                        |                                   |
|------------------------|-----------------------------------|
| <b>IO-Link</b>         | ✓, IO-Link V1.1                   |
| Data transmission rate | 230,4 kbit/s (COM3)               |
| Maximum cable length   | 20 m                              |
| Cycle time             | 2.3 ms                            |
| VendorID               | 26                                |
| DeviceID HEX           | 800068                            |
| DeviceID DEC           | 8388712                           |
| Process data length    | 32 Byte (TYPE_2_V) <sup>1)</sup>  |
| <b>Inputs/outputs</b>  | 4 x Q (IO-Link)                   |
| <b>Digital output</b>  | Q <sub>1</sub> ... Q <sub>4</sub> |
| Number                 | 4                                 |
| <b>Digital input</b>   | In <sub>1</sub> , In <sub>2</sub> |
| Number                 | 2                                 |

1) For an IO-Link master with V1.0, reverts to interleaved mode (consisting of TYPE\_1\_1 (ProcessData) and TYPE\_1\_2 (on-request data)).

## Ambient data

|                             |                                                                                    |
|-----------------------------|------------------------------------------------------------------------------------|
| <b>Shock resistance</b>     | Continuous shocks 10 g, 16 ms, 1000 shocks<br>Single shocks 15 g, 11 ms 3 per axle |
| <b>Vibration resistance</b> | Sinusoidal oscillation 10-150 Hz 5 g                                               |

1) Outdoor mode.

2) Light resistance indirect.

|                                      |                                                                        |
|--------------------------------------|------------------------------------------------------------------------|
| <b>EMC</b>                           | EN 60947-5-2                                                           |
| <b>Ambient light immunity</b>        | Direct: 150,000 lx <sup>1)</sup><br>Indirect: 200,000 lx <sup>2)</sup> |
| <b>Ambient operating temperature</b> | -20 °C ... +55 °C                                                      |
| <b>Ambient temperature, storage</b>  | -40 °C ... +70 °C                                                      |

<sup>1)</sup> Outdoor mode.

<sup>2)</sup> Light resistance indirect.

## Smart Task

|                        |             |
|------------------------|-------------|
| <b>Smart Task name</b> | Base logics |
|------------------------|-------------|

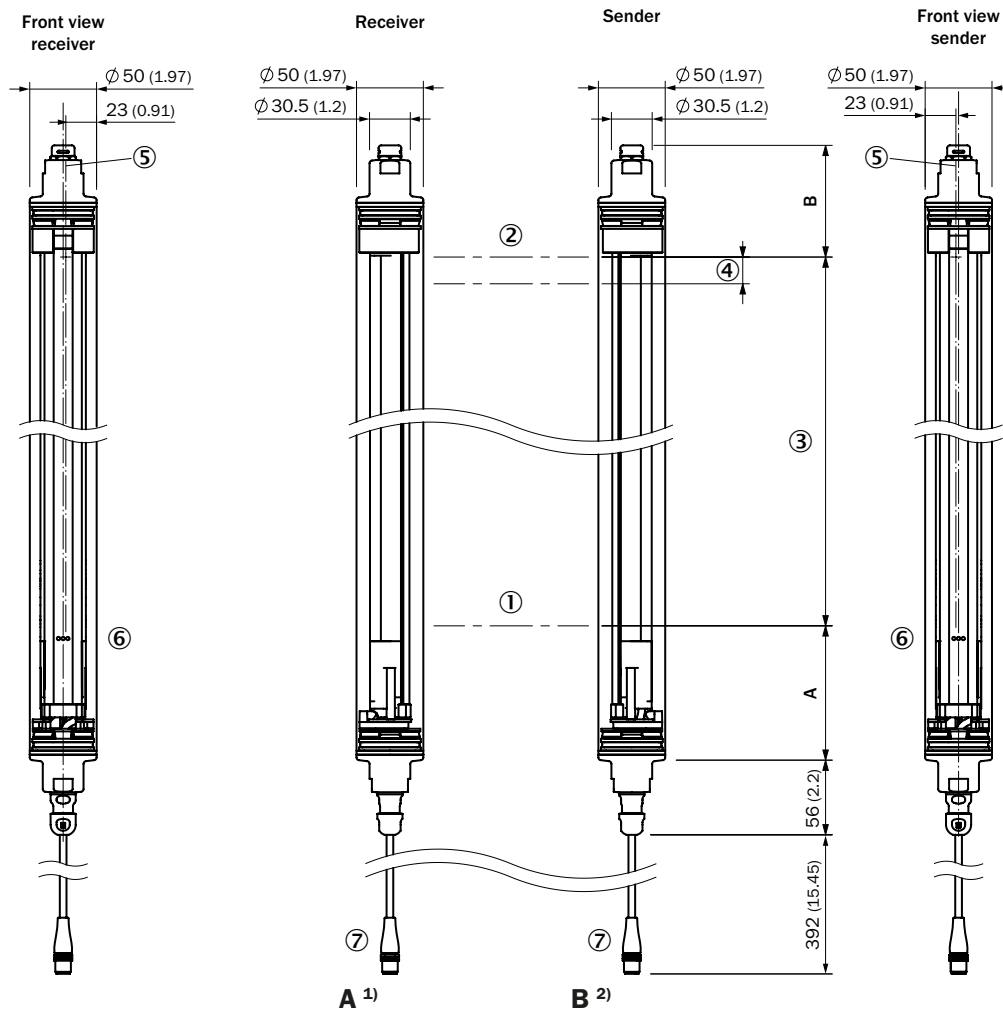
## Certificates

|                                              |   |
|----------------------------------------------|---|
| <b>EU declaration of conformity</b>          | ✓ |
| <b>UK declaration of conformity</b>          | ✓ |
| <b>ACMA declaration of conformity</b>        | ✓ |
| <b>Moroccan declaration of conformity</b>    | ✓ |
| <b>cULus certificate</b>                     | ✓ |
| <b>IO-Link certificate</b>                   | ✓ |
| <b>Photobiological safety (IEC EN 62471)</b> | ✓ |

## Classifications

|                       |          |
|-----------------------|----------|
| <b>ECLASS 5.0</b>     | 27270910 |
| <b>ECLASS 5.1.4</b>   | 27270910 |
| <b>ECLASS 6.0</b>     | 27270910 |
| <b>ECLASS 6.2</b>     | 27270910 |
| <b>ECLASS 7.0</b>     | 27270910 |
| <b>ECLASS 8.0</b>     | 27270910 |
| <b>ECLASS 8.1</b>     | 27270910 |
| <b>ECLASS 9.0</b>     | 27270910 |
| <b>ECLASS 10.0</b>    | 27270910 |
| <b>ECLASS 11.0</b>    | 27270910 |
| <b>ECLASS 12.0</b>    | 27270910 |
| <b>ETIM 5.0</b>       | EC002549 |
| <b>ETIM 6.0</b>       | EC002549 |
| <b>ETIM 7.0</b>       | EC002549 |
| <b>ETIM 8.0</b>       | EC002549 |
| <b>UNSPSC 16.0901</b> | 39121528 |

## Dimensional drawing



|                        | A <sup>1)</sup>                         | B <sup>2)</sup> |
|------------------------|-----------------------------------------|-----------------|
| Beam separation 2.5 mm | 94.25 (3.71)                            | 84.7 (3.33)     |
| Beam separation 5 mm   | 95.5 (3.76)                             | 83.6 (3.29)     |
| Beam separation 10 mm  | 100.5 (3.96)                            | 83.6 (3.29)     |
| Beam separation 20 mm  | 100.5 (3.96)/110.5 (4.35) <sup>3)</sup> | 83.6 (3.29)     |
| Beam separation 25 mm  | 115.5 (4.55)                            | 83.6 (3.29)     |
| Beam separation 30 mm  | 120.5 (4.74)                            | 83.6 (3.29)     |
| Beam separation 50 mm  | 140.5 (5.53)                            | 83.6 (3.29)     |

<sup>1)</sup> Distance: MLG-2 edge - first beam

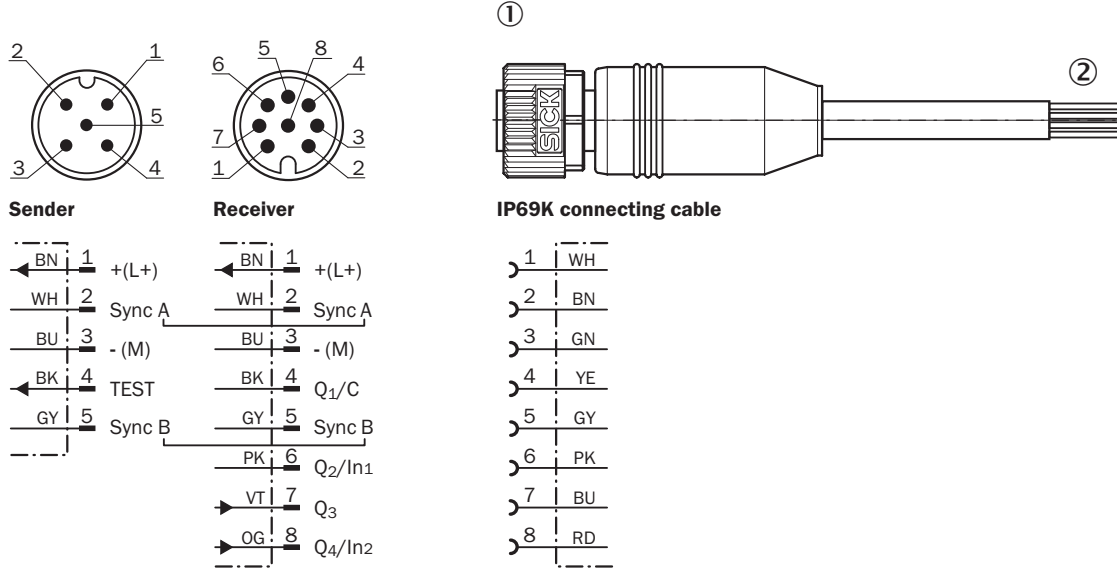
<sup>2)</sup> Distance: MLG-2 edge - last beam

<sup>3)</sup> MLG20x-xx**40**: 100.5 mm  
MLG20x-xx**80**: 110.5 mm

Dimensions in mm (inch)

- ① First beam
- ② last beam
- ③ detection height (see technical data)
- ④ Beam separation
- ⑤ Optical axis
- ⑥ status indicator: green, yellow, red LEDs
- ⑦ Connection

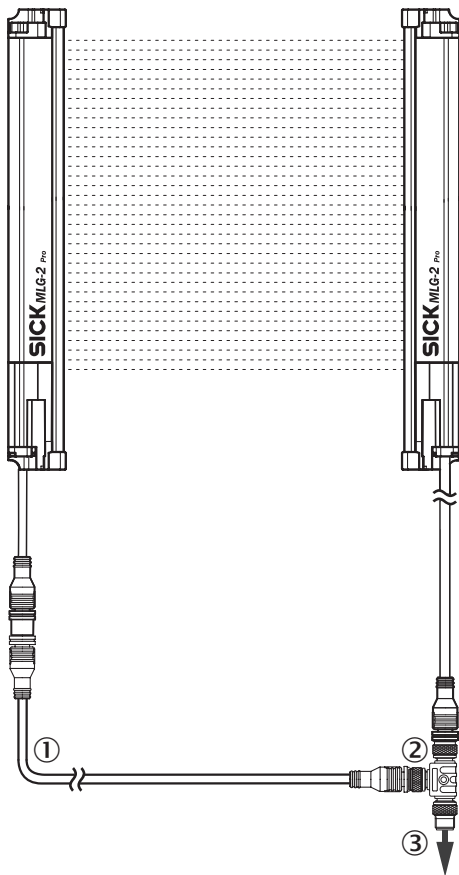
Connection type and diagram M12 male connector, 5/8-pin, switching outputs Q | YF2AP8-xxxPA4XLEAX (IP69K connecting cable)



① Valid for: YF2AP8-250PA4XLEAX (2116447), YF2AP8-020PA4XLEAX (2111888)

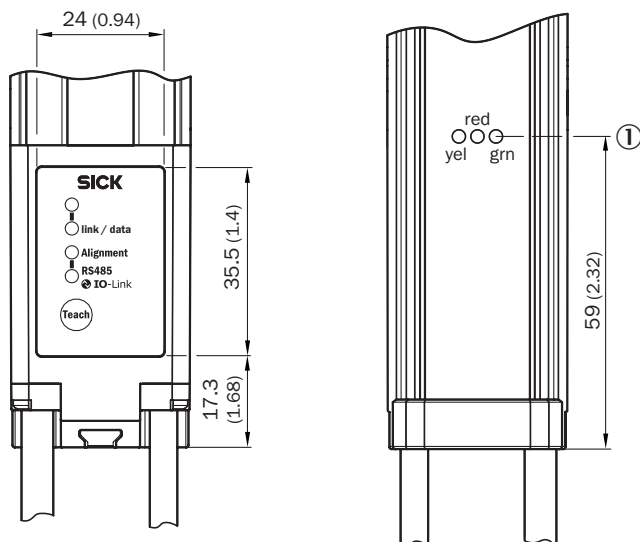
② For 8-pin sensor-actuator cables, the wire colors are not standardized. Therefore, please observe the pin assignment of the sensor and the cable in the respective data sheet.

### Pinouts



- ① Connection cable receiver (2096010)
- ② T-junctions
- ③ Connection cable (6020664)

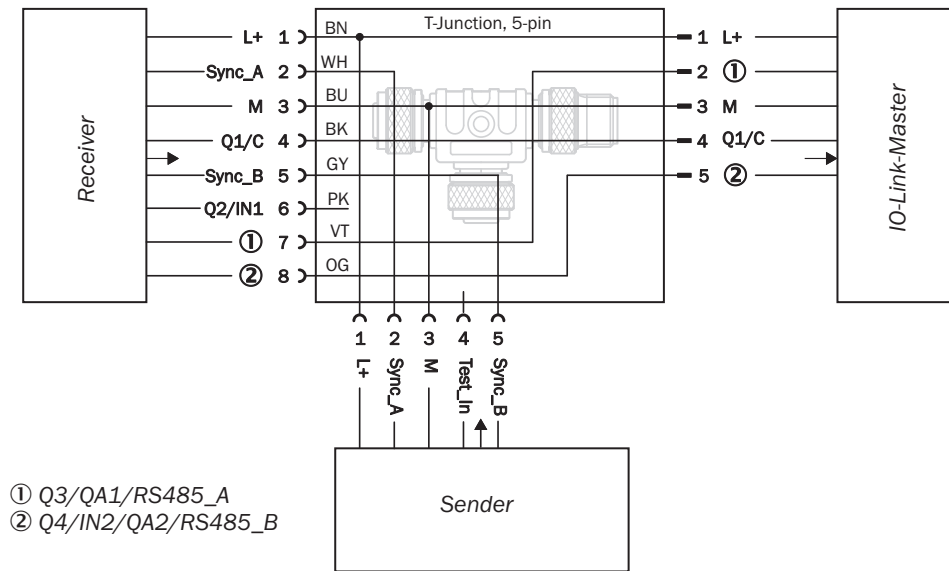
### Adjustments



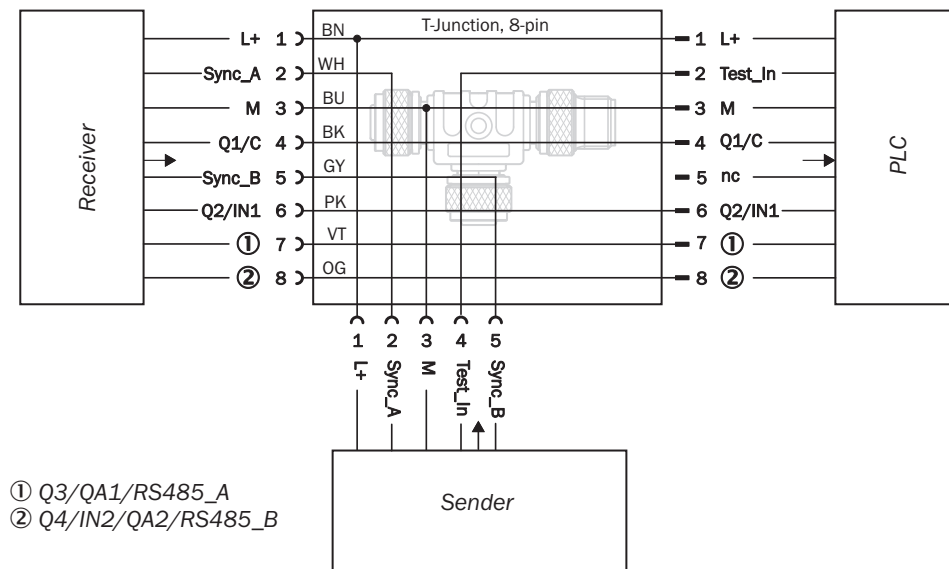
- ① status indicator: green, yellow, red LEDs



## Connection diagram T-splitter, IO-Link Master

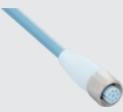


## Connection diagram T-splitter, PLC



## Recommended accessories

Other models and accessories → [www.sick.com/MLG-2](http://www.sick.com/MLG-2)

|                                                                                     | 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, A-coded</li> <li>• <b>Connection type head B:</b> Female connector, M12, 8-pin, A-coded</li> <li>• <b>Connection type head C:</b> Male connector, M12, 8-pin, A-coded</li> <li>• <b>Description:</b> Unshielded</li> <li>• <b>Note:</b> For connecting of a PLC</li> </ul>                                                                                                                                          | SB0-02F12-SM1      | 6053172  |
|    | <ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 8-pin, straight</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, 8-wire, PVC</li> <li>• <b>Description:</b> Sensor/actuator cable, special color code, shielded</li> <li>• <b>Connection systems:</b> Flying leads</li> <li>• <b>Application:</b> Uncontaminated zones, Zones with chemicals</li> </ul>                           | DOL-1208-G05MF     | 6020664  |
|    | <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> Male connector, M12, 5-pin, straight, A-coded</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, unshielded</li> <li>• <b>Application:</b> Drag chain operation, Zones with oils and lubricants, Robot, Drag chain operation</li> </ul> | YF2A15-050UB5M2A15 | 2096010  |
|    | <ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 8-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, 8-wire</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Drag chain operation, Robot</li> </ul>                                                                                                           | YF2AP8-020PA4XLEAX | 2111888  |
|   | <ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 8-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> 25 m, 8-wire</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Drag chain operation, Robot</li> </ul>                                                                                                          | YF2AP8-250PA4XLEAX | 2116447  |
|  | <ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 8-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, 8-wire</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Drag chain operation, Robot</li> </ul>                                                                                                          | YF2AP8-100PA4XLEAX | 2146858  |
|  | <ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 8-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, 8-wire</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Drag chain operation, Robot</li> </ul>                                                                                                          | YF2AP8-200PA4XLEAX | 2146859  |
|  | <ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 8-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> 40 m, 8-wire</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Drag chain operation, Robot</li> </ul>                                                                                                          | YF2AP8-400PA4XLEAX | 2146860  |

|                                                                                     | Brief description                                                                                                                                                                                                                                                         | Type             | part no. |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------|
| network devices                                                                     |                                                                                                                                                                                                                                                                           |                  |          |
|    |                                                                                                                                                                                                                                                                           | SIG350-0004AP100 | 6076871  |
|    |                                                                                                                                                                                                                                                                           | SIG350-0006AP100 | 6076924  |
|    |                                                                                                                                                                                                                                                                           | SIG350-0005AP100 | 6076923  |
| Mounting systems                                                                    |                                                                                                                                                                                                                                                                           |                  |          |
|  | <ul style="list-style-type: none"> <li>• <b>Description:</b> Stainless steel bracket, rotatable</li> <li>• <b>Material:</b> Stainless steel</li> <li>• <b>Details:</b> Stainless steel 1.4350, stainless steel 1.4301</li> <li>• <b>Packing unit:</b> 4 pieces</li> </ul> | BEF-2SMMEAES4    | 2023708  |

## 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.

**For us, that is “Sensor Intelligence.”**

## WORLDWIDE PRESENCE:

Contacts and other locations –[www.sick.com](http://www.sick.com)