



Distance Sensor DS30

Setting new standards in background suppression

Distance Sensor DS30

The Distance Sensor DS30 – High performance

The Distance Sensor comprises modern technology in a minimum of space – and is unbeatable value for money. The specification for the DS30 lies exactly between the distance sensor DS60/DS40 and the standard sensors for close-range distance measurement. Its capacity as a low-cost high performer sets new standards.

The specific product characteristics of the DS30

The DS30 distance sensor operates by time-of-flight measuring. It is as compact as a photoelectric switch. However it has an extremely high performance with a scanning range of two metres. The DS30 distance sensor is the perfect solution for accurate distance measurement, maintaining set distances and scanning for object presence.

The high resolution and reproducibility make the DS30 highly accurate and reliable, even with diffuse reflections. Its high functional reserves ensure perfect function even under dirty conditions. But what makes the DS30 distance sensor a truly outstanding product in its class is its precise background suppression. Nothing can interfere with distance measurement by a DS30.

Applications: The DS30 distance sensor is in a league of its own

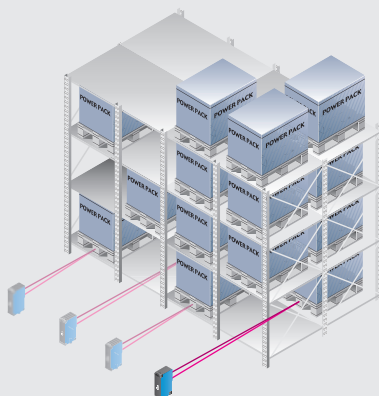
DS30: Scanning for object presence

The DS30 can detect even very dirty objects with high precision. The switch output is activated when the distance measured is less than the distance taught.

Task:

Scan for presence of Europallets in high-bay stores.

Once the distance to the wall of the empty bay has been taught, the DS30 can detect even very dirty pallets. The DS30 switches and signals that the bay is occupied.



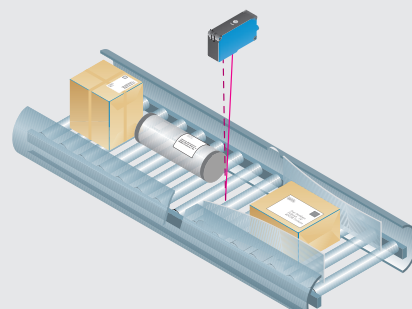
DS30: Detecting objects

The DS30 is insensitive to all colours and surfaces. Since it can also detect objects at an angle, it is the perfect solution for scanning parcels, packages and objects with shiny surfaces.

Task:

Detection of parcels for triggering bar code scanners.

Its virtual insensitivity to surface type makes the DS30 ideal for detecting packages and parcels of all shapes. When the DS30 detects an object within its 2-metre range, it gives a signal (e.g.) to a bar code scanner which then reads the code.





The DS30 distance sensor simplifies projection

Are you scanning for black-and-white characteristics?

Then you've found them. The DS30 has a range of 2 metres, regardless of whether the object is black or white.

Do you require adaptive reduction of switching frequency for dark objects at long distance?

You've got it! The switch frequency is always the same, whether black or white, close by or at 2 metres' distance.

Do you need a simple setting characteristic?

The DS30 is what you're looking for. Just install it, align it and teach it. It's as simple as that!

DS30: Maintaining distance

Through its scanning range of 2 metres and its compact design, the DS30 is perfect for distancing with cranes, suspension and floor-conveyors.

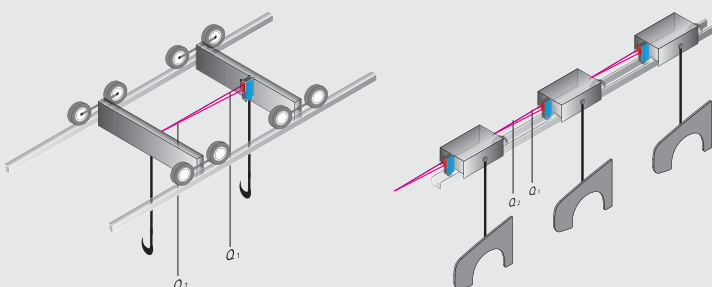
Task:

Distance control of conveyor sections

If the distance between conveyor segments is less than the set value, the DS30 switches and can (for example) trigger a braking operation. Even very dirty conveyor sections are reliably detected.

DS30: Other possible uses

The precise background suppression even makes it possible to use the DS30 in surroundings where there are other reflectors, reflective safety clothing, shiny metal objects etc. Typical fields of application are in the rubber, paper and steel industries.

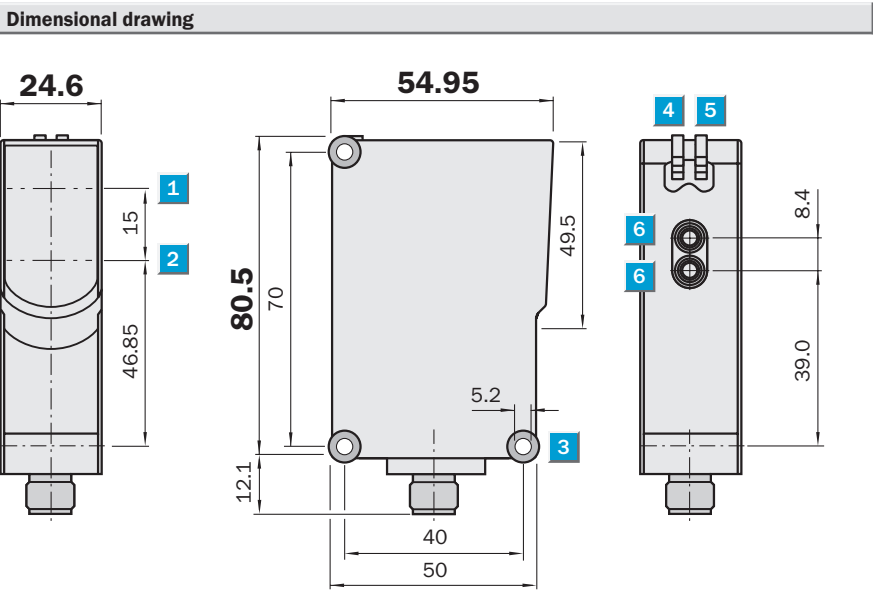


DS30 Distance Sensor: time-of-flight measurement from object, infrared light

Scanning distance
200 ... 3,000 mm

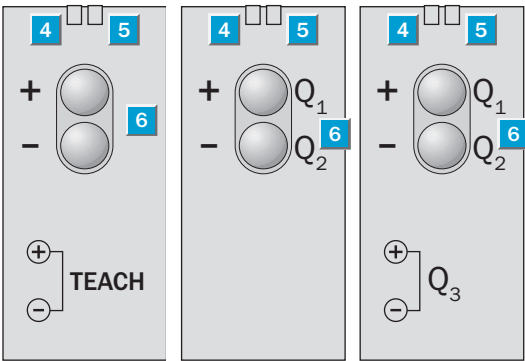
Distance Sensor

- 2,000 mm on black and white
- 3,000 mm on grey and white
- Background suppression up to 150 m (incl. highly reflektive objects)
- Most reliable detection: from black to extremely bright targets

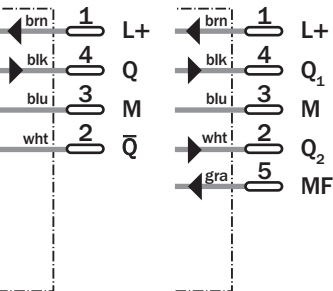
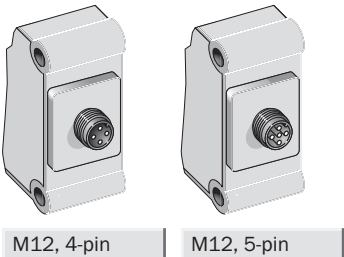


| Adjustments possible | | |
|----------------------|------------|------------|
| DS30-P1241 | DS30-P1253 | DS30-P1255 |
| DS30-N1241 | DS30-P2253 | DS30-P2255 |

- 1 Optical axis, sender
- 2 Optical axis, receiver
- 3 Through hole Ø 5.2 mm
- 4 Indicator LED 1
- 5 Indicator LED 2
- 6 Setting for scanning distance: teach buttons



| Connection type | | |
|-----------------|------------|------------|
| DS30-P1241 | DS30-P1253 | DS30-P2253 |
| DS30-N1241 | DS30-P1255 | DS30-P2255 |



| Accessories |
|-----------------------|
| Mounting |
| Connectors and cables |
| Weather protection |

General Technical Data

| | |
|---|--|
| Resolution (Teach-In) | 10 mm |
| Light source ¹⁾ | Laserdiode, infrarot - 850 nm |
| Light spot diameter in 2m distance | typ. Ø 20mm |
| Supply voltage V _S ²⁾ | 10...30 V DC |
| Ripple ³⁾ | ≤ 5Vss |
| Current consumption ⁴⁾ | < 1,7 W |
| Output current I _A ⁵⁾ | 100 mA |
| Enclosure rating | IP65 (EN 60529) |
| VDE protection class ⁶⁾ | □ |
| Laser class | 1 (EN 60825-1) |
| Ambient temperature ⁷⁾ | Betrieb -40°C...+55°C Lager -40°C...+75°C |
| Weight | 120 g |

1) Average life time 100 000 h, at Tu=+25°C

2) Limit values, reverse polarity protected

3) Without load, 24V and Tu=+25°C

4) Must be within Vs tolerances

5) Outputs Q short circuit protected

6) Reference voltage DC 50V

7) Do not distort cable below 0 °C, minimum startup temperature -25 °C, warm up time max. 10 min.

Pre selection table according to range

| Type | Range |
|----------------|-----------------------------|
| DS30-■1■ ■ ■ ■ | 200...2000 mm |
| DS30-■2■ ■ ■ ■ | 200...3000 mm ⁸⁾ |

8) for 18...90% Remission

Type specific data including order number**DS30-■1■ ■ ■ ■ 200...2000 mm**

| Type | Order Number | Input / Outputs Interface ⁹⁾ | | Switching Frequency | Connector |
|------------|--------------|---|--------------------|---------------------|------------|
| DS30-P1241 | 1040034 | PNP | Q, /Q | 50/s | M12, 4-pol |
| DS30-P1253 | 1043374 | PNP, MF | 2xQ, ext. Teach-In | 25/s | M12, 5-pol |
| DS30-P1255 | 1044255 | PNP, MF | 3xQ, ext. Teach-In | 15/s | M12, 5-pol |
| DS30-N1241 | 1042181 | NPN | Q, /Q | 50/s | M12, 4-pol |
| DS30-N1253 | 1043375 | NPN, MF | 2xQ, ext. Teach-In | 25/s | M12, 5-pol |
| DS30-N1255 | 1047065 | NPN, MF | 3xQ, ext. Teach-In | 15/s | M12, 5-pol |

DS30-■2■ ■ ■ ■ 200...3000 mm

| Type | Order Number | Input / Outputs Interface ⁹⁾ | | Switching Frequency | Connector |
|------------|--------------|---|--------------------|---------------------|------------|
| DS30-P2253 | 1044253 | PNP, MF | 2xQ, ext. Teach-In | 25/s | M12, 5-pol |
| DS30-P2255 | 1044254 | PNP, MF | 3xQ, ext. Teach-In | 15/s | M12, 5-pol |
| DS30-N2253 | 1047066 | NPN, MF | 2xQ, ext. Teach-In | 25/s | M12, 5-pol |
| DS30-N2255 | 1047067 | NPN, MF | 3xQ, ext. Teach-In | 15/s | M12, 5-pol |

9) 3xQ binary coded

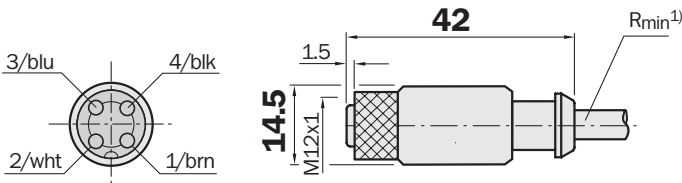
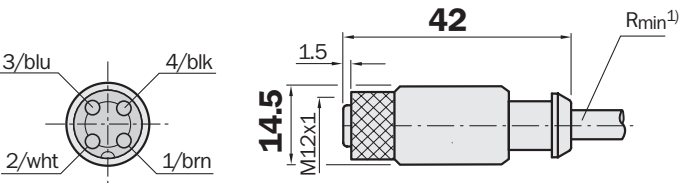
Accessories

Dimensional drawings and order information

SENSICK screw-in system M12, 4-pin, enclosure rating IP 67

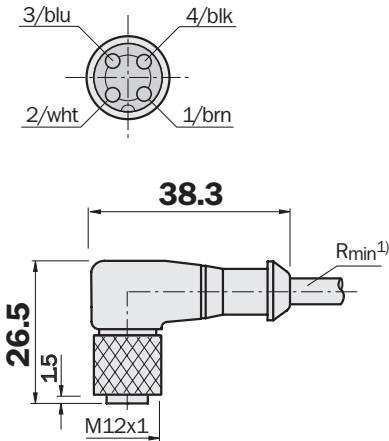
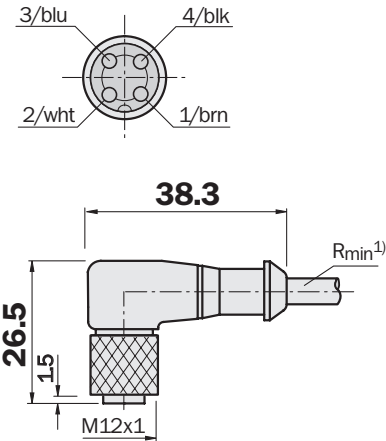
| Female connectors M12, 4-pin, straight | | | |
|--|-----------|----------|--------------|
| Cable diameter 5/6 mm, 4 x 0.25 mm ² , sheath PVC | | | |
| Type | Order no. | Contacts | Cable length |
| DOL-1204-G02M | 6009382 | 4 | 2 m |
| DOL-1204-G05M | 6009866 | 4 | 5 m |
| DOL-1204-G10M | 6010543 | 4 | 10 m |
| DOL-1204-G15M | 6010753 | 4 | 15 m |

| Female connector M12, 4-pin, straight | | |
|--|-----------|--------------|
| Cable diameter 4.5 mm, 4 x 0.34 mm ² , sheath PUR | | |
| Type | Order no. | Cable length |
| DOL-1204-G05MC | 6025901 | 5 m |



| Female connectors M12, 4-pin, angled | | | |
|--|-----------|----------|--------------|
| Cable diameter 5/6 mm, 4 x 0.25 mm ² , sheath PVC | | | |
| Type | Order no. | Contacts | Cable length |
| DOL-1204-W02M | 6009383 | 4 | 2 m |
| DOL-1204-W05M | 6009867 | 4 | 5 m |
| DOL-1204-W10M | 6010541 | 4 | 10 m |

| Female connector M12, 4-pin, angled | | |
|--|-----------|--------------|
| Cable diameter 4.5 mm, 4 x 0.34 mm ² , sheath PUR | | |
| Type | Order no. | Cable length |
| DOL-1204-W05MC | 6025904 | 5 m |



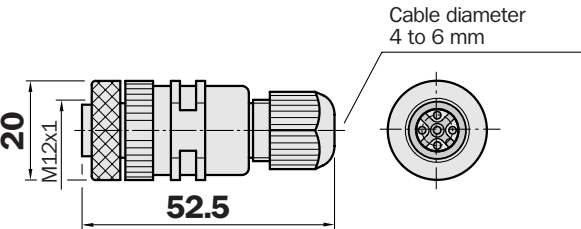
¹⁾ Minimum bend radius in dynamic use
 $R_{min} = 20 \times \text{cable diameter}$

Dimensional drawings and order information

SENSICK screw-in system M12, 4-pin, enclosure rating IP 67

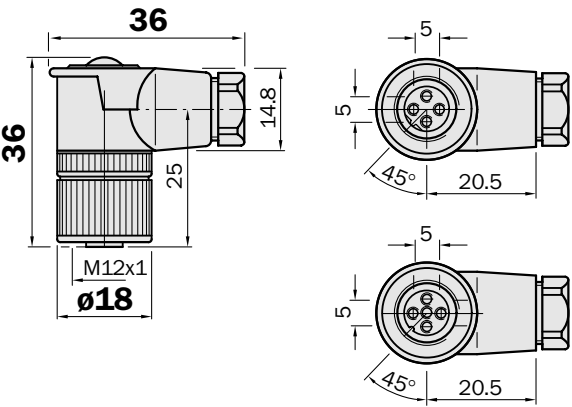
Female connector M12, 4-pin, straight

| Type | Order no. | Contacts |
|------------|-----------|----------|
| DOS-1204-G | 6007302 | 4 |



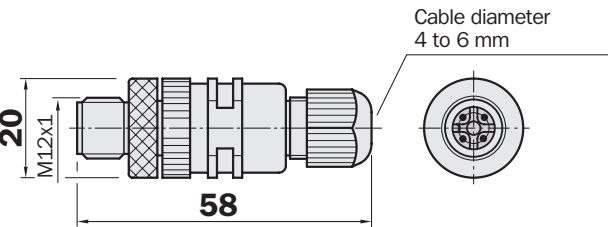
Female connector M12, 4-pin, angled

| Type | Order no. | Contacts |
|------------|-----------|----------|
| DOS-1204-W | 6007303 | 4 |



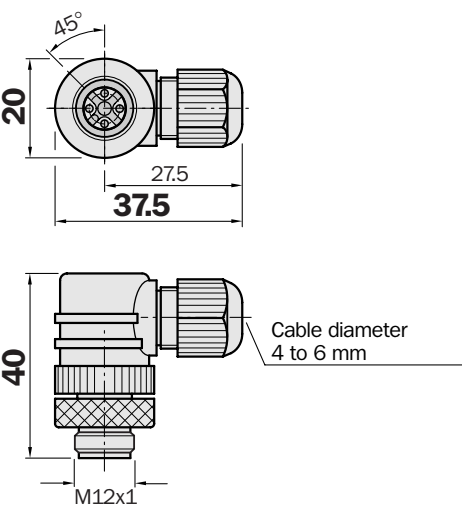
Male connector M12, 4-pin, straight

| Type | Order no. |
|------------|-----------|
| STE-1204-G | 6009932 |



Male connector M12, 4-pin, angled

| Type | Order no. |
|------------|-----------|
| STE-1204-W | 6022084 |



Accessories

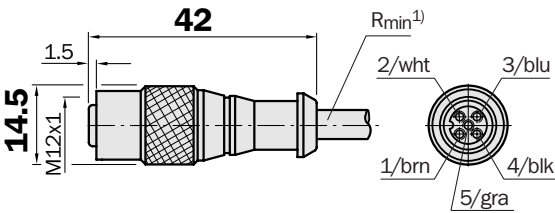
Dimensional drawings and order information

SENSICK screw-in system M12, 5-pin, enclosure rating IP 67

Female connectors M12, 5-pin, straight

Cable diameter 5/6 mm, 4/5 x 0.25 mm², sheath PVC

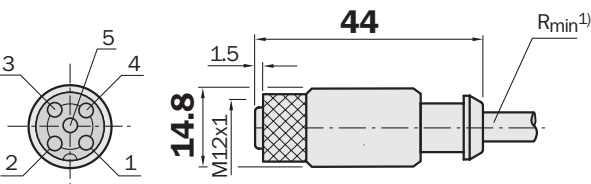
| Type | Order no. | Contacts | Cable length |
|---------------|-----------|----------|--------------|
| DOL-1205-G02M | 6008899 | 5 | 2 m |
| DOL-1205-G05M | 6009868 | 5 | 5 m |
| DOL-1205-G10M | 6010544 | 5 | 10 m |



Female connector M12, 5-pin, straight

Cable diameter 4.5 mm, 4 x 0.34 mm², sheath PUR

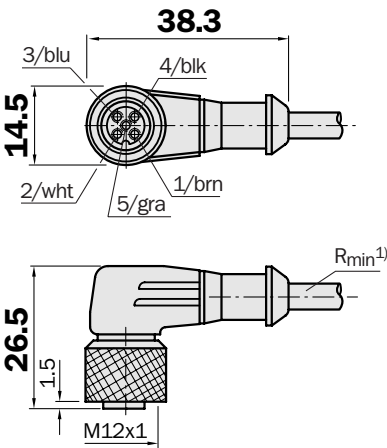
| Type | Order no. | Contacts | Cable length |
|----------------|-----------|----------|--------------|
| DOL-1205-G02MC | 6025906 | 5 | 2 m |
| DOL-1205-G05MC | 6025907 | 5 | 5 m |
| DOL-1205-G10MC | 6025908 | 5 | 10 m |



Female connectors M12, 5-pin, angled

Cable diameter 5/6 mm, 4/5 x 0.25 mm², sheath PVC

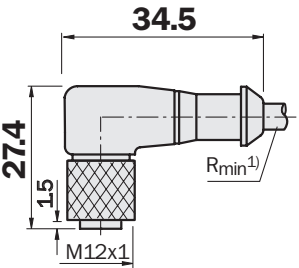
| Type | Order no. | Contacts | Cable length |
|---------------|-----------|----------|--------------|
| DOL-1205-W02M | 6008900 | 5 | 2 m |
| DOL-1205-W05M | 6009869 | 5 | 5 m |
| DOL-1205-W10M | 6010542 | 5 | 10 m |



Female connector M12, 5-pin, angled

Cable diameter 4.5 mm, 4 x 0.34 mm², sheath PUR

| Type | Order no. | Contacts | Cable length |
|----------------|-----------|----------|--------------|
| DOL-1205-W02MC | 6025909 | 5 | 2 m |
| DOL-1205-W05MC | 6025910 | 5 | 5 m |
| DOL-1205-W10MC | 6025911 | 5 | 10 m |



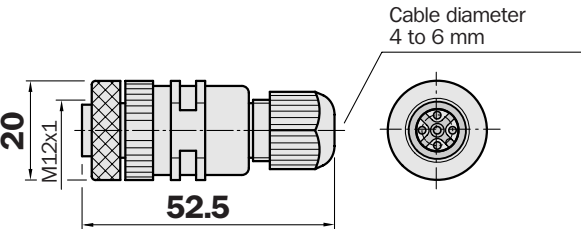
¹⁾ Minimum bend radius in dynamic use
 $R_{min} = 20 \times \text{cable diameter}$

Dimensional drawings and order information

SENSICK screw-in system M12, 5-pin, enclosure rating IP 67

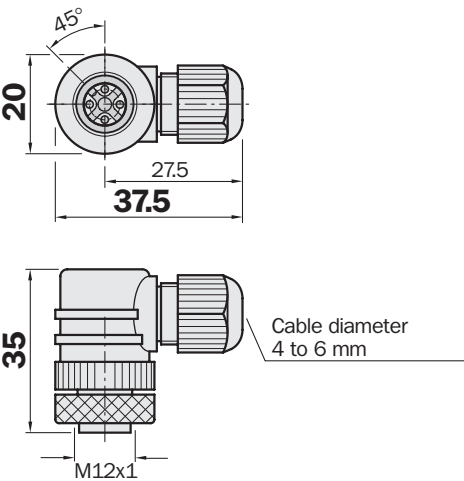
Female connector M12, 5-pin, straight

| Type | Order no. | Contacts |
|------------|-----------|----------|
| DOS-1205-G | 6009719 | 5 |



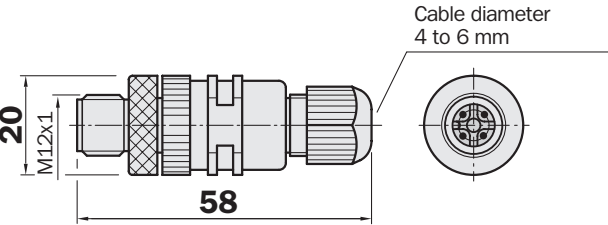
Female connector M12, 5-pin, angled

| Type | Order no. | Contacts |
|------------|-----------|----------|
| DOS-1205-W | 6009720 | 5 |



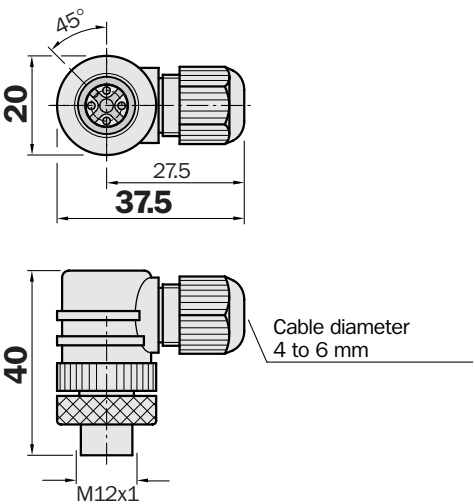
Male connector M12, 5-pin, straight

| Type | Order no. |
|------------|-----------|
| STE-1205-G | 6022083 |



Male connector M12, 5-pin, angled

| Type | Order no. |
|------------|-----------|
| STE-1205-W | 6022082 |

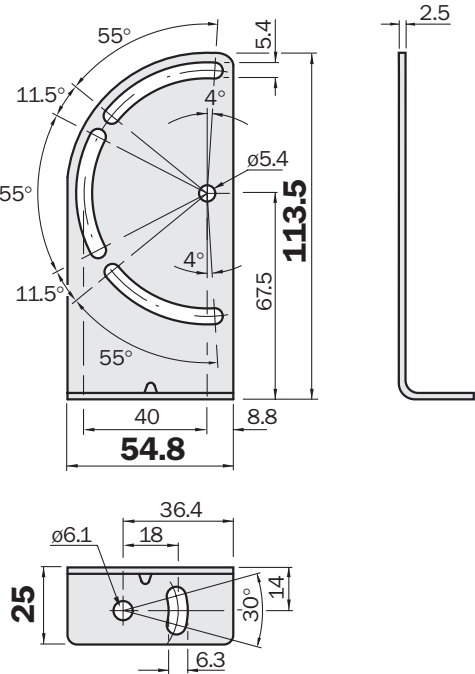


Accessories

Dimensional drawings and order information

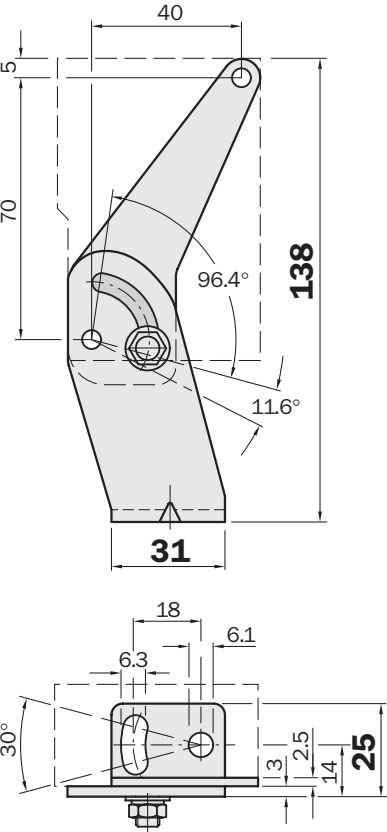
Mounting bracket for DS30

| Type | Order no. |
|------------|-----------|
| BEF-WN-W23 | 2019085 |



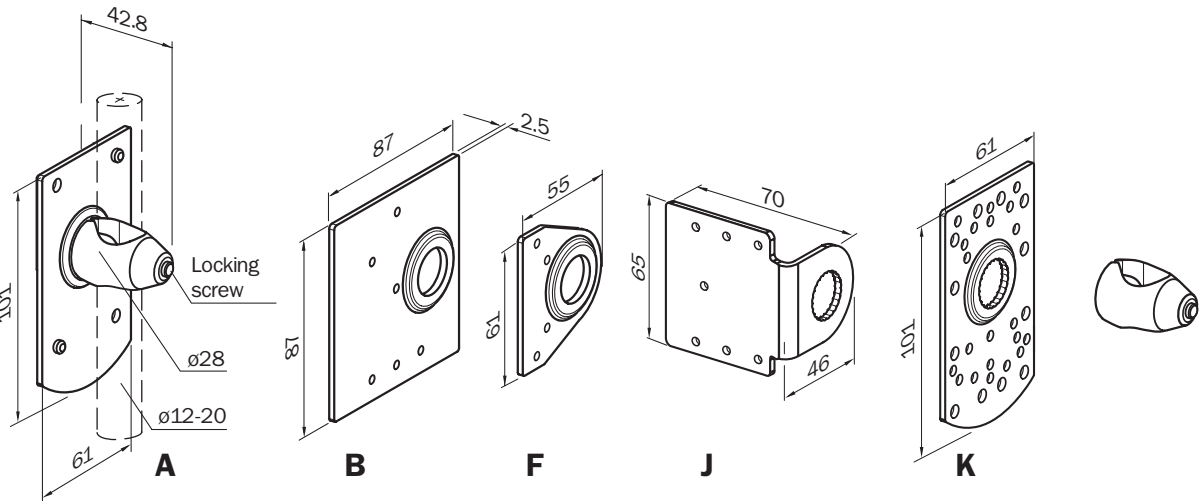
Mounting bracket for DS30

| Type | Order no. |
|------------|-----------|
| BEF-WN-W27 | 2009122 |



Dimensional drawings and order information

Universal bar clamps for sensors and reflectors



| Mounting plates | Type | Order no. | for device/reflector type |
|-----------------|-------------|-------------------------|---|
| A | BEF-KHS-A01 | 2022458 ¹⁾²⁾ | DS30 |
| B | BEF-KHS-B01 | 2022459 ¹⁾²⁾ | P250, P250F, PL30A, PL40A, PL50A, PL80A, C110 |
| F | BEF-KHS-F01 | 2022463 ¹⁾²⁾ | PL20A, PL20F, P250, P250F |
| J | BEF-KHS-J01 | 2022719 ¹⁾²⁾ | PL20A, PL20F, PL40A, PL50A, P250, P250F, C110 |
| K | BEF-KHS-K01 | 2022718 ¹⁾ | W11, W12-2, W12L-2, W14-2, W18-3, W23-2, W24-2, W27-3, W30, W32, W34, KT2, KT5, KT10, CS1/3, LUT3, DS60, PL20A, PL20F, PL30-A, PL40A, PL50A, PL80A, P250, P250F, C110, DS30 |
| | BEF-KHS-KH1 | 2022726 | Clamp without mounting plate |

1) Order no. includes bar support and mounting material.

2) Mounting plate does not contain threads; the sensor/reflector is mounted from the sensor/reflector side with self-cutting screws.

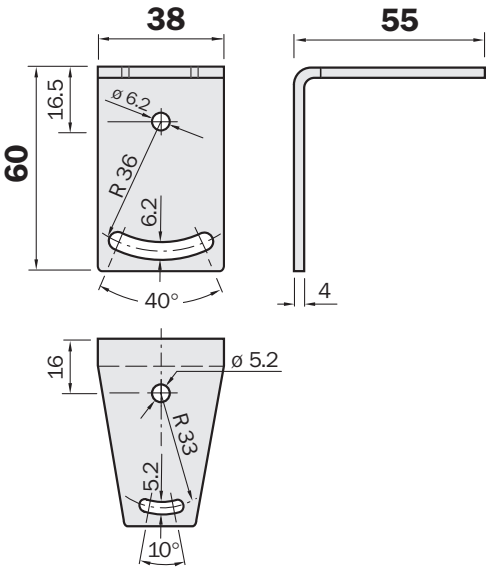
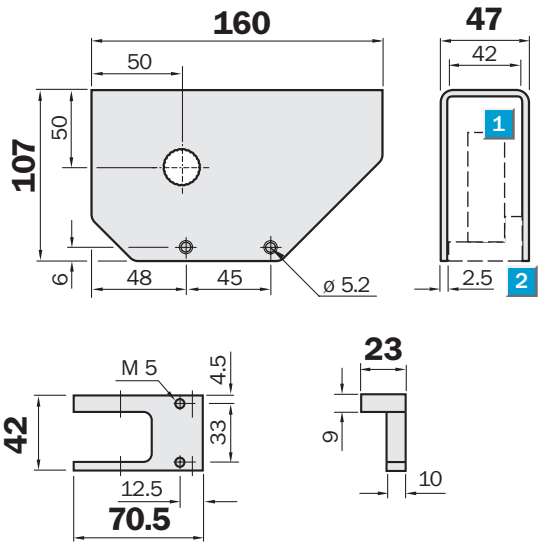
Special accessories

Weather protection hood for DS30 *)

| Type | Order no. | 1 | Sensor |
|-------------|-----------|---|---|
| OBW-KHS-M01 | 2023240 | 2 | Clamp with mounting material included with delivery |

Mounting bracket for weather protection hood OBW-KHS-M01

| Type | Order no. |
|------------|-----------|
| BEF-WN-OBW | 2023251 |



*) Also suitable as bar support with separate bar clamp BEF-KHS-KH1 (Order no. 2022726)

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