Ultrasonic Sensors

Detection Irrespective of Material, Colour and Illumination
Straightforward and with many benefits: Detection by ultrasonic.

Light and sound are two natural phenomena which let every living being recognise their environment without physical contact and over widely varying distances. Likewise, industrial processes require reliable information.

Detection and measurement, regardless of material

Transparent objects such as glass and film are often a difficult task for sensors, as are clear and coloured fluids. But it is hard to deceive ultrasonic. Almost all materials affect and reflect sound waves.

Never confused by loud colours

Not even the oddest colours can bias ultrasonic sensors. Reflecting objects do not irritate them at all. When objects change colour, there is no need to readjust the sensors. They just go on working as before - can anyone think of a more convenient way?
SICK’s ultrasonic sensors detect objects and measure distances with high accuracy. The realm of sound is a world of its own, and for this reason ultrasonic sensors are simply the better choice in many industrial applications requiring sensor technology.

Highly available, even under difficult conditions

Dust and dirt, steam and spray are no problem for ultrasonic sensors. Unfavourable environments have little effect on them. Interferences are simply “blanked out”. And they do not even mind strong light and adverse temperatures.

Sound has an advantage – even on superficial inspection

Whether the surface is rough or smooth, reflecting or retroreflecting, regular or irregular in shape, ultrasonic sensors are generally unaffected. They detect objects reliably and almost independently of their appearance.
Ultrasonic proximity sensors UM30, UM18 and UC12 – powerful devices for almost any application.

Even when it’s extremely dusty: The ultrasonic proximity sensors are not impaired by foreign bodies in the air, mist, vapour and dirt. Even the background suppression is near perfect. We call this concentrating on the essentials.

**UM30**

Far and near – different scanning ranges

Short, medium or long-distance? The UM30 has three different scanning ranges. The minimum operating distance begins at a minute 30 mm, and for really long-distance applications, to the limit of the scanning range is astonishing 6000 mm.

Detection or measurement as required

The UM30 can be fitted with a binary output or analogue interface. Depending on the task on hand, objects can simply be detected or their distance measured.

**UM18**

Smaller diameter with the same functionality

The UM18 has 1 or 2 switching outputs and extended features (for instance, ObSB mode): The sensor is taught a fixed background and reliably switches when an object is detected between sensor and background: Perfect for detecting round or tilted surfaces!

**Typical applications**

- Level control of solids and liquids
- Checking presence of outer packaging
- Assignment control during packaging
- Checking presence of PET bottles
- Diameter control
- Loop control

**Typical applications**

- Positioning of small objects in tight environments
- Checking for the presence of small, transparent or opaque outer packaging
After 2 seconds/shortest time to operation

Position object, press Teach-in button, ready. There is no faster way to commission an ultrasonic sensor. This flexibility is further enhanced by the ObSB and window modes.

Typical applications

- Checking presence of very dark objects
- Level control in the food and drinks industry
- Detecting transparent packaging
- Detecting printed/coloured paper during the printing process

Ultrasonic proximity sensors point by point

Easy to learn – Teach-in

Setting a sensor’s parameters can sometimes be time consuming – unless you just show it what to do. We call that “Teach-in”. This makes the UM30 quick and easy to handle. And when changes have to be made, it can be re-taught in a jiffy to cope with the new situation.

Well balanced and reliable – temperature compensation

Ultrasonic time measurements depend on the state of the medium transmitting the sound, i.e. the air. UM30 sensors balance temperature fluctuations out automatically, thereby ensuring precision and reliability.

Current or voltage – the appropriate signal automatically

The analogue output of the UM30 sensor switches automatically between current and voltage. With its 4 to 20 mA or 0 to 10 V DC, it fits perfectly into any measuring environment.

Q or \( \bar{Q} \), no problem here

What signal does the application require, Q or \( \bar{Q} \)? The UM30 has an invertible switching output and can cope with both.

ObSB mode – Object between sensor and background

Perfect for detecting round and tilted surfaces, UM18 and UC12.
Mode of operation: detecting, measuring and switching with ultrasonic proximity sensors.

The detection of objects with ultrasonic sensors opens up a new dimension. Objects are positioned, detected and controlled virtually irrespective of material and environment.

Sensors with a profile – defining the detection area

SICK Ultrasonic Sensors generate an ultrasonic wave by means of a piezo element in the front part of the housing. The wave spreads in the atmosphere in accordance with the laws of physics. The same piezo element can detect and measure the sound reflected by an object. Therefore it functions alternately as sender and receiver (transceiver).

The measurement principle of ultrasonic sensors is based on the time taken for ultrasonic to travel through the medium air. The signals are transmitted in defined “packages”.

With the help of its processing electronics, the transceiver evaluates the time taken between the transmission of a sound “package” and the arrival of the reflection from an object. As a result, either a signal proportionate to the distance is sent via an analogue interface, or a switching signal depending on a previously set distance parameter is sent through a binary output. The accuracy of the measurement and the maximum scanning range lie within a tolerance range which depends mainly on the state of the carrier medium air and the roughness of the object in question.

Positioning
Object detection and distance measurement independent of material

Detection
Recognise transparent objects

Unwind
Distance measurement for diameter check
Ultrasonic sensors UM30 are used as non-contact proximity switches which process reflected signals, e.g. from objects on a conveyor belt. An essential benefit of the working principle of ultrasonic sensors is the almost complete blanking of the background, a prerequisite for accurate detection.

Ultrasonic sensors UM30 are small and easily installed even in confined spaces. And if things get really tight, the right accessories can help out. Suitable reflectors allow sound to be deflected almost without loss.

**Package**
“Engaged” check on package content

**Adjust**
Control material looping

**Monitoring**
Level control in silos and containers
Ultrasonic double-sheet control UM18, the specialist for double layers – with smart vision.

For Double-Sheet Control

When ultrasonic is used to detect two thin sheets, one of which is immediately behind the other, e.g. paper, film or thin sheet material, separate sender and receiver units are required. The continuously transmitted sonic waves packages cause vibrations in the first sheet which it then transmits via the intervening air to the second sheet, which also begins to vibrate. The receiver unit is able to detect these weakened signals via the air.

The sender and receiver units of the UM18 are only 40 mm apart and work effectively without having to be parametered. They adjust automatically to a wide spectrum of different materials.

UM18 For Double-Sheet Control

- Double-sheet check for film, paper, corrugated cardboard and fine metal sheet
- Automatic adjustment
- Alignment and Teach-in unnecessary
- Compact design
- Plug and Play
- 2 PNP outputs for double- and mis-fed-sheets

A sensor that does not stop at the surface

Detection of two superimposed sheets of material is no easy matter.

The UM18 can find out whether one or two sheets of film, paper, metal or cardboard lie between its sender and receiver. Which other sensor is able to look beyond the surface?

No need to tell it what to do

The UM18 adjusts to its task itself. Fully automatically. Film down to 0.4 mm in thickness, paper of 1200 g/m² or metal sheet of 0.3 mm thickness – almost anything is detected.

Small and versatile

The sender and receiver of the UM18 are located in an 18 mm threaded tube, and, because they are mounted only 40 mm apart, can be accommodated in the most confined spaces.

With regard to alignment to the sheets, the UM18 is undemanding. It puts up with as much as 45 degrees deviation from the vertical.
Detection range and assembly of ultrasonic sensors.

Detection range

To determine the area of detection of the sensors, a series of measurements are carried out with two standardised objects, a thin round rod and a plate. The three-dimensional area within which the sensor responds to the rod has the form of a thin club. It marks the typical operating scanning range of the sensor.

The sensor responds to the plate within the area of a larger beam. This area defines the maximum or limit detection range of the sensor.

When projected onto a two-dimensional grid, typical profiles are created. These are the operating diagrams of the ultrasonic sensors, from which the operating scanning range, the limiting scanning range, the specific shape and the blind zone of the detection range can be read off. Objects which are smaller than the round rod may only be detected within an area smaller than the operating scanning range.

Every ultrasonic sensor has its characteristic club-shaped detection range. It is narrow for smaller objects and wide for larger ones. The typical detection areas are depicted by sound-beam diagrams.

<table>
<thead>
<tr>
<th>Operating scanning range</th>
<th>Min. installation distance A</th>
<th>Min. installation distance B</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.25 m</td>
<td>10 cm</td>
<td>&gt; 100 cm</td>
</tr>
<tr>
<td>0.35 m</td>
<td>&gt; 30 cm</td>
<td>&gt; 170 cm</td>
</tr>
<tr>
<td>1.3 m</td>
<td>&gt; 60 cm</td>
<td>&gt; 540 cm</td>
</tr>
<tr>
<td>3.4 m</td>
<td>&gt; 160 cm</td>
<td>&gt; 1600 cm</td>
</tr>
<tr>
<td>6 m</td>
<td>&gt; 260 cm</td>
<td>&gt; 3000 cm</td>
</tr>
</tbody>
</table>

Installation

Ultrasonic sensors installed close together or opposite one another may affect each other mutually. For this reason, different axial and lateral distances have to be maintained depending on the detection range. The sensor with the largest detection range determines the minimum distance.
UM30 Ultrasonic sensor

- Independent of material shape (including films, glass and bottles)
- Teach-in
- Insensitive to dirt, dust and fog
- Operating scanning range up to 1300 mm
- Binary outputs or analogue output

**Operating scanning range**
30 ... 1300 mm

**Connection types**
- UM30-11111
- UM30-12111
- UM30-13111

**Accessories**
- Mounting systems

**Adjustments possible**
- Fastening nuts, width across 36 mm
- Connection plug M12
- Control and display panel
- Setting key 2
- Setting key 1
- LED 2
- LED 1

**Connection types**

- UM30-11112
- UM30-12112
- UM30-13112

- UM30-11113
- UM30-12113
- UM30-13113
### Technical data

<table>
<thead>
<tr>
<th>UM30-11111</th>
<th>UM30-11112</th>
<th>UM30-11113</th>
<th>UM30-12111</th>
<th>UM30-12112</th>
<th>UM30-12113</th>
<th>UM30-13111</th>
<th>UM30-13112</th>
<th>UM30-13113</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating scanning range</strong></td>
<td>30 ... 250 mm (350)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(limiting scanning range)</td>
<td>60 ... 350 mm (600)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ultrasonic frequency</td>
<td>320 kHz</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resolution</td>
<td>0.36 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reproducibility</td>
<td>± 0.15 % of final value</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accuracy</td>
<td>≤ 2 % of final value</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply voltage $V_s$</td>
<td>9 ... 30 V DC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residual ripple</td>
<td>± 10 %</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current consumption</td>
<td>≤ 60 mA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Switching outputs, reversible</strong></td>
<td>Q: PNP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Q, Q; 2 x PNP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analogue output, reversible</td>
<td>Q: 4 ... 20 mA/0 ... 10 V</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response time</td>
<td>50 ms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>70 ms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>110 ms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switching frequency</td>
<td>11/s</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8/s</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6/s</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switching hysteresis</td>
<td>20 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.5 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standby delay</td>
<td>2 s</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection type</td>
<td>Plug M12, 5-pin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enclosure rating</td>
<td>IP 65</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>Operation –20 °C ... +70 °C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Storage –40 °C ... +85 °C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>260 g</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housing material</td>
<td>Nickel-plated brass</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1) Limit values
2) Without load
3) Outputs short-circuit protected
4) Automatic switching between voltage and current outputs dependent on load

#### Detection ranges

![Detection ranges](chart.png)

1. Aligned plate 500 x 500 mm
2. Pipe diameter 10 mm
3. Pipe diameter 27 mm
4. Operating scanning range
5. Limiting scanning range

### Order information

<table>
<thead>
<tr>
<th>Type</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>UM30-11111</td>
<td>6025655</td>
</tr>
<tr>
<td>UM30-11112</td>
<td>6025656</td>
</tr>
<tr>
<td>UM30-11113</td>
<td>6025657</td>
</tr>
<tr>
<td>UM30-12111</td>
<td>6025660</td>
</tr>
<tr>
<td>UM30-12112</td>
<td>6025661</td>
</tr>
<tr>
<td>UM30-12113</td>
<td>6025662</td>
</tr>
<tr>
<td>UM30-13111</td>
<td>6025665</td>
</tr>
<tr>
<td>UM30-13112</td>
<td>6025666</td>
</tr>
<tr>
<td>UM30-13113</td>
<td>6025667</td>
</tr>
</tbody>
</table>

[1] Limit values
[4] Automatic switching between voltage and current outputs dependent on load
[5] Temperature compensation at –20 ... +65 °C
[6] Plastic parts: PBT
Ultrasonic transducer: Polyurethane-foam, glass epoxy resin
UM30 Ultrasonic sensor

- Independent of material shape (including films, glass and bottles)
- Teach-in
- Insensitive to dirt, dust and fog
- Operating scanning range up to 1300 mm
- Binary outputs or analogue output

Operating scanning range 30 ... 1300 mm

UM30-12115
UM30-11115
UM30-13115

UM30-11114
UM30-13114
UM30-12114

Adjustments possible

1. Fastening nuts, width across 36 mm
2. Connection plug M12
3. Control and display panel
4. Setting key 2
5. Setting key 1
6. LED 2
7. LED 1

Connection types

UM30-12115  UM30-11115  UM30-13115
UM30-11114  UM30-13114  UM30-12114

Accessories

Mounting systems

5-pin, M12

5-pin, M12
## Technical data

<table>
<thead>
<tr>
<th>Operating scanning range (limiting scanning range)</th>
<th>UM30-11114</th>
<th>UM30-11115</th>
<th>UM30-12114</th>
<th>UM30-12115</th>
<th>UM30-13114</th>
<th>UM30-13115</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 ... 250 mm (350)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60 ... 350 mm (600)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200 ... 1300 mm (2000)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ultrasonic frequency</td>
<td>320 kHz</td>
<td>400 kHz</td>
<td>200 kHz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resolution</td>
<td>0.36 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reproducibility</td>
<td>± 0.15 % of final value</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accuracy</td>
<td>≤ 2 % of final value</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply voltage $V_S$</td>
<td>9 ... 30 V DC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residual ripple</td>
<td>± 10 %</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current consumption</td>
<td>≤ 60 mA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switching outputs, reversible</td>
<td>Q: NPN</td>
<td>Q, Q; 2 x NPN</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response time</td>
<td>50 ms</td>
<td>70 ms</td>
<td>110 ms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switching frequency</td>
<td>11/s</td>
<td>8/s</td>
<td>6/s</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switching hysteresis</td>
<td>20 mm</td>
<td>5 mm</td>
<td>2.5 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standby delay</td>
<td>2 s</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection type</td>
<td>Plug M12, 5-pin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enclosure rating</td>
<td>IP 65</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>Operation –20 °C ... +70 °C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>260 g</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housing material</td>
<td>Nickel-plated brass</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1) Limit values
2) Without load
3) Outputs short-circuit protected
4) Temperature compensation
5) Plastic parts: PBT Ultrasonic transducer: Polyurethane-foam, glass epoxy resin

### Detection ranges

1. Aligned plate 500 x 500 mm
2. Pipe diameter 10 mm
3. Pipe diameter 27 mm
4. Operating scanning range
5. Limiting scanning range

---

8010312/12-01-06 © SICK AG - Industrial Sensors - Germany · All rights reserved
UM30 Ultrasonic sensor

- Independent of material shape (including films, glass and bottles)
- Teach-in
- Insensitive to dirt, dust and fog
- Operating scanning range up to 3400 mm
- Binary outputs or analogue output

**Adjustments possible**

<table>
<thead>
<tr>
<th>All types</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Fastening nuts, width across 36 mm</td>
</tr>
<tr>
<td>2 Connection plug M12</td>
</tr>
<tr>
<td>3 Control and display panel</td>
</tr>
<tr>
<td>4 Setting key 2</td>
</tr>
<tr>
<td>5 Setting key 1</td>
</tr>
<tr>
<td>6 LED 2</td>
</tr>
<tr>
<td>7 LED 1</td>
</tr>
</tbody>
</table>

**Connection types**

<table>
<thead>
<tr>
<th>UM30-14111</th>
<th>UM30-14112</th>
<th>UM30-14113</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-pin, M12</td>
<td>5-pin, M12</td>
<td>5-pin, M12</td>
</tr>
</tbody>
</table>

**CE**
**Technical data**

<table>
<thead>
<tr>
<th>Order no.</th>
<th>UM30-14111</th>
<th>UM30-14112</th>
<th>UM30-14113</th>
<th>UM30-14114</th>
<th>UM30-14115</th>
</tr>
</thead>
</table>

**Operating scanning range** 350 ... 3400 mm (5000)

**Type**

- UM30-14111
- UM30-14112
- UM30-14113
- UM30-14114
- UM30-14115

**Detection ranges**

1. Aligned plate 500 x 500 mm
2. Pipe diameter 27 mm
3. Operating scanning range
4. Limiting scanning range

**Operational scanning range**

- Ultrasonic frequency: 120 kHz
- Resolution: 1 mm
- Reproducibility: ± 0.15 % of final value
- Accuracy: ≤ 2 % of final value

**Supply voltage Vₜ**

- DC 9 ... 30 V

**Residual ripple**

- ± 10 %

**Current consumption**

- ≤ 60 mA

**Switching outputs, reversible**

- Q: PNP
- Q: NPN
- Q₁, Q₂: 2 x PNP
- Q₁, Q₂: 2 x NPN

**Analogue output, reversible**

- Q₃: 4 ... 20 mA/0 ... 10 V

**Response time**

- 180 ms

**Switching frequency**

- 3/s

**Switching hysteresis**

- 50 mm

**Standby delay**

- 2 s

**Connection type**

- Plug M12, 5-pin

**Enclosure rating**

- IP 65

**Ambient temperature**

- Operation –20 °C ... +70 °C
- Storage –40 °C ... +85 °C

**Weight**

- 310 g

**Housing material**

- Nickel-plated brass

---

1) Limit values
2) Without load
3) Outputs short-circuit protected
4) Automatic switching between voltage and current outputs dependent on load

NPN: High = Vₛ / LOW ≤ 2 V
PNP: High = Vₛ / LOW = 0 V

Current output 4 ... 20 mA:

- Rₑ ≤ 500 Ω; Vₛ ≥ 20 V;
- Rₑ ≤ 100 Ω; Vₛ ≥ 12 V

Voltage output 0 ... 10 V:

- Rₑ ≤ 100 kΩ; Vₛ > 15 V

5) Temperature compensation at –20 ... +65 °C
UM30 Ultrasonic sensor

- Independent of material shape (including films, glass and bottles)
- Teach-in
- Insensitive to dirt, dust and fog
- Operating scanning range up to 6000 mm
- Binary outputs or analogue output

Adjustments possible

| All types |

1. Fastening nuts, width across 36 mm
2. Connection plug M12
3. Control and display panel
4. Setting key 2
5. Setting key 1
6. LED 2
7. LED 1

Connection types

<table>
<thead>
<tr>
<th>UM30-15111</th>
<th>UM30-15112</th>
<th>UM30-15113</th>
</tr>
</thead>
<tbody>
<tr>
<td>UM30-15115</td>
<td>UM30-15114</td>
<td></td>
</tr>
</tbody>
</table>

Accessories

Mounting systems
## Technical data

<table>
<thead>
<tr>
<th>UM30-</th>
<th>15111</th>
<th>15112</th>
<th>15113</th>
<th>15114</th>
<th>15115</th>
</tr>
</thead>
</table>

### Operating scanning range

<table>
<thead>
<tr>
<th>(limiting scanning range)</th>
<th>800 ... 6000 mm (8000)</th>
</tr>
</thead>
</table>

### Ultrasonic frequency

- UM30-15111: 80 kHz
- UM30-15112: 80 kHz
- UM30-15113: 80 kHz
- UM30-15114: 80 kHz
- UM30-15115: 80 kHz

### Resolution

- UM30-15111: 1 mm
- UM30-15112: 1 mm
- UM30-15113: 1 mm
- UM30-15114: 1 mm
- UM30-15115: 1 mm

### Reproducibility

- UM30-15111: ± 0.15 % of final value
- UM30-15112: ± 0.15 % of final value
- UM30-15113: ± 0.15 % of final value
- UM30-15114: ± 0.15 % of final value
- UM30-15115: ± 0.15 % of final value

### Accuracy

- UM30-15111: ≤ 2 % of final value
- UM30-15112: ≤ 2 % of final value
- UM30-15113: ≤ 2 % of final value
- UM30-15114: ≤ 2 % of final value
- UM30-15115: ≤ 2 % of final value

### Supply voltage $V_S$

- UM30-15111: DC 9 ... 30 V
- UM30-15112: DC 9 ... 30 V
- UM30-15113: DC 9 ... 30 V
- UM30-15114: DC 9 ... 30 V
- UM30-15115: DC 9 ... 30 V

### Residual ripple

- UM30-15111: ± 10 %
- UM30-15112: ± 10 %
- UM30-15113: ± 10 %
- UM30-15114: ± 10 %
- UM30-15115: ± 10 %

### Current consumption

- UM30-15111: ≤ 60 mA
- UM30-15112: ≤ 60 mA
- UM30-15113: ≤ 60 mA
- UM30-15114: ≤ 60 mA
- UM30-15115: ≤ 60 mA

### Switching outputs, reversible

- UM30-15111: Q: PNP, Q: NPN, $Q_1$, $Q_2$: 2 x PNP, $Q_1$, $Q_2$: 2 x NPN
- UM30-15112: Q: PNP, Q: NPN, $Q_1$, $Q_2$: 2 x PNP, $Q_1$, $Q_2$: 2 x NPN
- UM30-15113: Q: PNP, Q: NPN, $Q_1$, $Q_2$: 2 x PNP, $Q_1$, $Q_2$: 2 x NPN
- UM30-15114: Q: PNP, Q: NPN, $Q_1$, $Q_2$: 2 x PNP, $Q_1$, $Q_2$: 2 x NPN
- UM30-15115: Q: PNP, Q: NPN, $Q_1$, $Q_2$: 2 x PNP, $Q_1$, $Q_2$: 2 x NPN

### Analogue output, reversible

- UM30-15111: $Q_1$: 4 ... 20 mA/0 ... 10 V
- UM30-15112: $Q_1$: 4 ... 20 mA/0 ... 10 V
- UM30-15113: $Q_1$: 4 ... 20 mA/0 ... 10 V
- UM30-15114: $Q_1$: 4 ... 20 mA/0 ... 10 V
- UM30-15115: $Q_1$: 4 ... 20 mA/0 ... 10 V

### Response time

- UM30-15111: 240 ms
- UM30-15112: 240 ms
- UM30-15113: 240 ms
- UM30-15114: 240 ms
- UM30-15115: 240 ms

### Switching frequency

- UM30-15111: 2/s
- UM30-15112: 2/s
- UM30-15113: 2/s
- UM30-15114: 2/s
- UM30-15115: 2/s

### Switching hysteresis

- UM30-15111: 100 mm
- UM30-15112: 100 mm
- UM30-15113: 100 mm
- UM30-15114: 100 mm
- UM30-15115: 100 mm

### Standby delay

- UM30-15111: 2 s
- UM30-15112: 2 s
- UM30-15113: 2 s
- UM30-15114: 2 s
- UM30-15115: 2 s

### Connection type

- Plug M12, 5-pin

### Enclosure rating

- IP 65

### Ambient temperature

- Operation: –20 °C ... +70 °C
- Storage: –40 °C ... +85 °C

### Weight

- 360 g

### Housing material

- Nickel-plated brass

---

### Detection ranges

<table>
<thead>
<tr>
<th>Detection range</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aligned plate</td>
<td>500 x 500 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pipe diameter</td>
<td>27 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating scanning range</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limiting scanning range</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

1) Limit values
2) Without load
3) Outputs short-circuit protected
4) Automatic switching between voltage and current outputs dependent on load
5) Current output 4 ... 20 mA:
   - $R_L \leq 500 \Omega, V_S \geq 20 V$
   - $R_L \leq 100 \Omega, V_S \geq 12 V$
5) Voltage output 0 ... 10 V:
   - $R_L \geq 100 k\Omega, V_S > 15 V$
5) Temperature compensation
   - at –20 ... +65 °C
UM18 Ultrasonic sensor

- Independent of material shape (also foils, glass, bottles)
-Insensitive to dirt, dust and fog
- 1 switching output or 2 switching outputs (PNP or NPN) or analogue output
- Teach-in via control input MF

**Operating distance**
30 ... 250 mm

**Ultrasonic sensor**

**Dimensional drawing**

1. Locking nuts, 24 mm A/F
2. Connection plug M12
3. LED 1 (UM18-51112, UM18-51114, UM18-11116 and UM18-11117)
4. LED 2 (UM18-51112, UM18-51114, UM18-11116 and UM18-11117)

**Connection types**

<table>
<thead>
<tr>
<th>UM18-51111</th>
<th>UM18-51112</th>
<th>UM18-11116</th>
</tr>
</thead>
<tbody>
<tr>
<td>UM18-51115</td>
<td>UM18-51114</td>
<td>UM18-11117</td>
</tr>
</tbody>
</table>

- 5-pin, M12
- 5-pin, M12
- 5-pin, M12

[Diagram of connection types]

- L+ 1
- Q 4
- M 3
- NC 2
- L+ 1
- Q₂, Q₂ 4
- M 3
- Q₁, Q₁ 2
- MF 5
- L+ 1
- NC 4
- M 3
- Qₐ 2
- MF 5
### Technical data

<table>
<thead>
<tr>
<th>Operating distance</th>
<th>30 mm – 250 mm (&lt; 350 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(maximum scanning distance)</td>
<td></td>
</tr>
<tr>
<td>Ultrasonic frequency</td>
<td>320 kHz</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.36 mm</td>
</tr>
<tr>
<td>Reproducibility</td>
<td>typ. ±0.15 % of final value</td>
</tr>
<tr>
<td>Accuracy</td>
<td>≤ 2 % of final value</td>
</tr>
<tr>
<td>Supply voltage $V_s$</td>
<td>$V_s = 10 \ldots 30$ V DC $^1$</td>
</tr>
<tr>
<td>Residual ripple</td>
<td>± 10 %</td>
</tr>
<tr>
<td>Current consumption $^2$</td>
<td>≤ 40 mA</td>
</tr>
<tr>
<td>Display elements</td>
<td>2 yellow LEDs</td>
</tr>
<tr>
<td>Control input MF</td>
<td>Teach-in; Reset</td>
</tr>
<tr>
<td>Switching outputs</td>
<td>Q: NPN</td>
</tr>
<tr>
<td></td>
<td>Q: PNP</td>
</tr>
<tr>
<td>invertible $^3$</td>
<td>Q₁, Q₂: 2 x PNP</td>
</tr>
<tr>
<td>invertible $^3$</td>
<td>Q₁, Q₂: 2 x NPN</td>
</tr>
<tr>
<td>Analogue output, invertible $^3$</td>
<td>Q₃: 4 ... 20 mA</td>
</tr>
<tr>
<td></td>
<td>Q₃: 0 ... 10 V</td>
</tr>
<tr>
<td>Response time</td>
<td>32 ms</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>15/s</td>
</tr>
<tr>
<td>Switching hysteresis</td>
<td>2.0 mm ± 10 %</td>
</tr>
<tr>
<td>Temperature compensation</td>
<td></td>
</tr>
<tr>
<td>Synchronisation option</td>
<td></td>
</tr>
<tr>
<td>Functional display</td>
<td></td>
</tr>
<tr>
<td>0sbS-B-mode $^6$</td>
<td></td>
</tr>
<tr>
<td>Standby delay</td>
<td>&lt; 300 ms</td>
</tr>
<tr>
<td>Connection type</td>
<td>Plug M12, 5-pin</td>
</tr>
<tr>
<td>Enclosure rating</td>
<td>IP 67</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>Operating –25 °C ... +70 °C</td>
</tr>
<tr>
<td></td>
<td>Storage –40 °C ... +85 °C</td>
</tr>
<tr>
<td>Weight</td>
<td>65 g approx.</td>
</tr>
<tr>
<td>Housing material $^5$</td>
<td>Nickel-plated brass</td>
</tr>
</tbody>
</table>

$^1$ Limit values
$^2$ Without load
$^3$ Outputs short-circuit protected
$I_{max} = 200$ mA
PNP: High = $V_s$ – (< 2 $V_s$/LOW = 0 V
NPN: High = $V_s$/LOW ≤ 2 V
$^4$ Object between sensor and background
$^5$ Plastic parts: PBT
Ultrasonic transducer: Polyurethane-foam, glass epoxy resin

### Order information

<table>
<thead>
<tr>
<th>Type</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>UM18-5111</td>
<td>6028965</td>
</tr>
<tr>
<td>UM18-51112</td>
<td>6028964</td>
</tr>
<tr>
<td>UM18-51114</td>
<td>6028973</td>
</tr>
<tr>
<td>UM18-51115</td>
<td>6028974</td>
</tr>
<tr>
<td>UM18-51116</td>
<td>6029507</td>
</tr>
<tr>
<td>UM18-51117</td>
<td>6029508</td>
</tr>
</tbody>
</table>

### Detection ranges

1. Aligned plate 500 x 500 mm²
2. Tube diameter 10 mm
3. Operating distance
4. Maximum scanning distance
UC12 Ultrasonic sensor

- Independent of material shape (including films, glass and bottles)
- Teach-in
-Insensitive to dirt, dust and fog
- 1 switching output PNP/NPN
- Very good background suppression (BGS)

**Operating scanning distance**

| 20 ... 150 mm | 55 ... 250 mm |

**Dimensional drawing**

| 1 | Centre of sender and receiver axis |
| 2 | M4 threated mounting hole – 4 mm deep |
| 3 | Mounting hole Ø 4.2 mm |
| 4 | Control element(s) |
| 5 | Signal strength indicator |

**Adjustments possible**

- All types

**Connection type**

- All types

- 4-pin, M12

**Accessories**

- Mounting systems
### Technical data

<table>
<thead>
<tr>
<th>Feature</th>
<th>UC12-11231</th>
<th>UC12-12231</th>
<th>UC12-11235</th>
<th>UC12-12235</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating scanning distance</td>
<td>20 ... 150 mm (250 mm)</td>
<td>55 ... 250 mm (350 mm)</td>
<td>55 ... 250 mm (350 mm)</td>
<td>55 ... 250 mm (350 mm)</td>
</tr>
<tr>
<td>(limiting scanning distance)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ultrasonic frequency</td>
<td>Approx. 380 kHz</td>
<td>Approx. 500 kHz</td>
<td>Approx. 500 kHz</td>
<td>Approx. 500 kHz</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.18 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reproducibility</td>
<td>typ. ±0.15 % of final value</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accuracy</td>
<td>≤ 2 % of final value</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply voltage $V_s$</td>
<td>10 ... 30 V DC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residual ripple</td>
<td>10 %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current consumption</td>
<td>≤ 40 mA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Switching output</strong> 1)</td>
<td>Q: PNP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Q: NPN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response time</td>
<td>27 ms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switching frequency</td>
<td>&lt; 25/s</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switching hysteresis</td>
<td>2.0 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standby delay</td>
<td>&lt; 300 ms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indicator</td>
<td>Double-LED green/yellow</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control element(s)</td>
<td>Teach-in button</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Connection type</strong></td>
<td>Plug M12, 4-pin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>VDE protection class</strong></td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Temperature compensation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Enclosure rating</strong></td>
<td>IP 67</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operation</td>
<td>−20 °C ... +70 °C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage</td>
<td>−40 °C ... +85 °C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>Approx. 75 g</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housing material 2)</td>
<td>Nickel-plated brass</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1) Outputs short-circuit protected  
   $I_{sc} = 200 \text{ mA}$  
   PNP: High = $V_s - 2 \text{ V}$/LOW = 0 V  
   NPN: High = $V_s$/LOW ≤ 2 V

2) Temperature compensation  
   at −20 °C ... +65 °C

3) Ultrasonic transducer: Polyurethane-foam, glass epoxy resin

### Measurement ranges

<table>
<thead>
<tr>
<th>Measurement</th>
<th>50 25 0 25 50 [mm]</th>
<th>100 50 0 50 100 [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aligned plate 10 x 10 mm²</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Pipe diameter 10 mm</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Operating scanning distance</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Limiting scanning distance</td>
<td></td>
</tr>
</tbody>
</table>

### Order information

<table>
<thead>
<tr>
<th>Type</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>UC12-11231</td>
<td>6029831</td>
</tr>
<tr>
<td>UC12-12231</td>
<td>6029832</td>
</tr>
<tr>
<td>UC12-11235</td>
<td>6029833</td>
</tr>
<tr>
<td>UC12-12235</td>
<td>6029834</td>
</tr>
</tbody>
</table>
UM18 Ultrasonic double-sheet detector

Double-sheet detection of foils, metal sheets and ultra-fine corrugated cardboards

Automatic adjustment, no Teach-in necessary

Colour-independent

Plug & Play

2 PNP outputs for double- and mis-fed-sheets

Operational area 40 mm ± 3 mm

Connection cable 2 m (receiver)
Connection cable 1.2 m, 2-pin sender and receiver
2-color LED indicator, receiver
Connection cable 1 m, 2-pin sender and receiver
Fastening nuts, width across 24 mm

Adjustments possible

UM18-20012

Connection types

UM18-20012*

Receiver

Sender

5 x 0.25 mm² 2-pin 2-pin

* Sender/receiver pair: Individual components on request
## Installation Distance

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sender – Receiver Distance</td>
<td>40 mm ± 3 mm</td>
</tr>
<tr>
<td>Blind Zone</td>
<td>7 mm, each time before sender</td>
</tr>
<tr>
<td></td>
<td>and receiver</td>
</tr>
<tr>
<td>Permissible Angle Deviation</td>
<td>± 45° perpendicular to sheet</td>
</tr>
<tr>
<td>Ultrasonic Frequency</td>
<td>400 kHz</td>
</tr>
<tr>
<td>Resolution</td>
<td>Double-sheets not completely</td>
</tr>
</tbody>
</table>

## Operational Area

- **Paper grams per square meter**: 20 ... 1200 g/m²
- **Metal-laminated sheets and films**: ≤ 0.4 mm thickness
- **Self-adhesive films, metal sheets**: ≤ 0.3 mm
- **Ultra-fine corrugated cardboard**:

## Supply Voltage \(V_s\)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ripple</td>
<td>± 10 %</td>
</tr>
<tr>
<td>Current Consumption (\leq 45 mA)</td>
<td></td>
</tr>
</tbody>
</table>

## Double-Sheet Switching \(Q_1\)

- Q₁: PNP, \(V_s = -2 V, I_{max} = 500 mA\)

## Mis-fed-Sheet Switching Output \(Q_2\)

- Q₂: PNP, \(V_s = -2 V, I_{max} = 500 mA\)

## Response Time

- Double-sheet: 2.5 ms or 6.5 ms
- Mis-fed-sheet: 6.5 ms when \(V_s > 9 V DC\)

## Off Delay

- 10 ms
- Double-sheet: 300 ms
- Mis-fed-sheet: Response time 2.5 ms when \(V_s < 5 V DC\)

## Connection Type

- **Cable PVC**: 2 m; 5 x 0.25 mm²
- **Sender Cable**: PVC, 1.2 m with 2-pin plug
- **Receiver Cable**: PVC, 1 m with 2-pin plug

## Ambient Temperature

- **Operation**: +5 °C ... +60 °C
- **Storage**: –40 °C ... +85 °C

## Weight

- 280 g

## Housing Material

- Nickel-plated brass

---

### Measurement Ranges

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Double-sheet</th>
<th>Single-sheet</th>
<th>Mis-fed-sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Low</td>
<td>High Low</td>
<td>High Low</td>
<td></td>
</tr>
<tr>
<td>Output</td>
<td>double-sheet</td>
<td>mis-fed-sheet</td>
<td></td>
</tr>
</tbody>
</table>

---

### Order Information

<table>
<thead>
<tr>
<th>Type</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>UM18-20012</td>
<td>6025670</td>
</tr>
</tbody>
</table>

---

1. Limit values
2. Without load
3. Outputs short-circuit protected, Opener; no switching hysteresis
4. If the control line is laid against a ground, the response time is 2.5 ms. If the control line is laid against L+, the response time is 6.5 ms.
5. Not reverse-polarity protected
6. Off delay
**Zubehör**

**Accessories**

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

- Contact assignment according to EN 50 044
- DC coding

### Female connector M12, 5-pin, straight

<table>
<thead>
<tr>
<th>Type</th>
<th>Order no.</th>
<th>Contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOS-1205-G</td>
<td>6009719</td>
<td>5</td>
</tr>
</tbody>
</table>

**Contacts**

1. Pin 1 = brown
2. Pin 2 = white
3. Pin 3 = blue
4. Pin 4 = black
5. Pin 5 = grey

**Cable diameter**

4 to 6 mm

**Cable length**

2 m

### Female connector M12, 5-pin, right angle

<table>
<thead>
<tr>
<th>Type</th>
<th>Order no.</th>
<th>Contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOS-1205-W</td>
<td>6009720</td>
<td>5</td>
</tr>
</tbody>
</table>

**Contacts**

1. Pin 1 = brown
2. Pin 2 = white
3. Pin 3 = blue
4. Pin 4 = black
5. Pin 5 = grey

**Cable diameter**

4 to 6 mm

**Cable length**

2 m

### Female connector M12, 5-pin, straight

**Cable diameter 6 mm, 5 x 0.25 mm², sheath PVC**

<table>
<thead>
<tr>
<th>Type</th>
<th>Order no.</th>
<th>Contacts</th>
<th>Cable length</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOL-1205-G02M</td>
<td>6008899</td>
<td>5</td>
<td>2 m</td>
</tr>
<tr>
<td>DOL-1205-G05M</td>
<td>6009868</td>
<td>5</td>
<td>5 m</td>
</tr>
<tr>
<td>DOL-1205-G10M</td>
<td>6010544</td>
<td>5</td>
<td>10 m</td>
</tr>
</tbody>
</table>

### Female connector M12, 5-pin, right angle

**Cable diameter 6 mm, 5 x 0.25 mm², sheath PVC**

<table>
<thead>
<tr>
<th>Type</th>
<th>Order no.</th>
<th>Contacts</th>
<th>Cable length</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOL-1205-W02M</td>
<td>6008900</td>
<td>5</td>
<td>2 m</td>
</tr>
<tr>
<td>DOL-1205-W05M</td>
<td>6009869</td>
<td>5</td>
<td>5 m</td>
</tr>
<tr>
<td>DOL-1205-W10M</td>
<td>6010542</td>
<td>5</td>
<td>10 m</td>
</tr>
</tbody>
</table>

**Contact assignment according to EN 50 044**

**Pin assignment**

1. Pin 1 = brown
2. Pin 2 = white
3. Pin 3 = blue
4. Pin 4 = black
5. Pin 5 = grey

**DC coding**

**Cable diameter**

4 to 6 mm

**Cable length**

2 m

5 m

10 m

**Dimensional drawings and order informations**

© SICK AG · Industrial Sensors · Germany · All rights reserved 8010312/12-01-06
## Accessories

### Dimensional drawings and order informations

<table>
<thead>
<tr>
<th>Mounting bracket for UM18</th>
<th>Mounting bracket for UM30</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td><strong>Type</strong></td>
</tr>
<tr>
<td>BEF-WN-M18</td>
<td>BEF-WN-M30</td>
</tr>
<tr>
<td><strong>Order no.</strong></td>
<td><strong>Order no.</strong></td>
</tr>
<tr>
<td>5308446</td>
<td>5308445</td>
</tr>
</tbody>
</table>

**Mounting bracket for UM18**

![Mounting bracket for UM18 diagram]

<table>
<thead>
<tr>
<th>Diverter plate for UM30 to 1300 mm operating scanning range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
</tr>
<tr>
<td>USP-UM30</td>
</tr>
</tbody>
</table>

**Diverter plate for UM30 to 1300 mm operating scanning range**

![Diverter plate for UM30 diagram]
Australia
Phone +61 3 9497 4100
1800 33 48 02 – tollfree
E-Mail sales@sick.com.au

Belgium/Luxembourg
Phone +32 (0)2 466 55 66
E-Mail info@sick.be

Brasil
Phone +55 11 5091-4900
E-Mail sac@sick.com.br

Česká Republika
Phone +420 2 57 91 18 50
E-Mail sick@sick.cz

China
Phone +852-2763 6966
E-Mail ghk@sick.com.hk

Danmark
Phone +45 45 82 64 00
E-Mail sick@sick.dk

Deutschland
Phone +49 (0)2 11 53 01-250
E-Mail info@sick.de

España
Phone +34 93 480 31 00
E-Mail info@sick.es

France
Phone +33 1 64 62 35 00
E-Mail info@sick.fr

Great Britain
Phone +44 (0)1727 831121
E-Mail info@sick.co.uk

India
Phone +91-22-2822 7084
E-Mail info@sick-india.com

Italia
Phone +39 02 27 40 93 19
E-Mail info@sick.it

Japan
Phone +81 (0)3 3358 1341
E-Mail info@sick.jp

Nederlands
Phone +31 (0)30 229 25 44
E-Mail info@sick.nl

Norge
Phone +47 67 81 50 00
E-Mail austefjord@sick.no

Österreich
Phone +43 (0)22 36 62 28 8-0
E-Mail office@sick.at

Polska
Phone +48 22 837 40 50
E-Mail info@sick.pl

Republic of Korea
Phone +82-2 786 6321/4
E-Mail kang@sickkorea.net

Republika Slowenija
Phone +386 (0)1-47 69 990
E-Mail office@sick.si

Russia
Phone +7 95 775 05 30
E-Mail info@sick-automation.ru

Schweiz
Phone +41 41 619 29 39
E-Mail contact@sick.ch

Singapore
Phone +65 6744 3732
E-Mail admin@sicksgp.com.sg

Suomi
Phone +358-9-25 15 800
E-Mail sick@sick.fi

Sverige
Phone +46 8 680 64 50
E-Mail info@sick.se

Taiwan
Phone +886 2 2365-6292
E-Mail sickgrc@ms6.hinet.net

Türkiye
Phone +90 216 388 95 90 pbx
E-Mail info@sick.com.tr

USA/Canada/México
Phone +1(952) 941-6780
1 800-325-7425 – tollfree
E-Mail info@sickusa.com

More representatives and agencies
in all major industrial nations at
www.sick.com