



### Operating manual

### bks-3/CDD

### Ultrasonic edge sensor with two switched outputs

#### Product Description

The bks ultrasonic edge sensor is a fork sensor for scanning the edges of sound-impermeable materials such as foil or paper.

The fork's lower leg is equipped with an ultrasonic sensor which cyclically emits short sound impulses, which are detected by the ultrasonic receiver accommodated in the upper fork leg. Material immersing into the fork covers this sound path and thus attenuates the receive signal in dependence of the coverage, which is evaluated by the internal electronics, see fig. 1.

The switched outputs are set in dependence of the coverage degree.

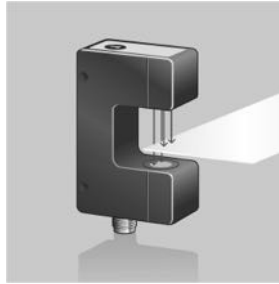
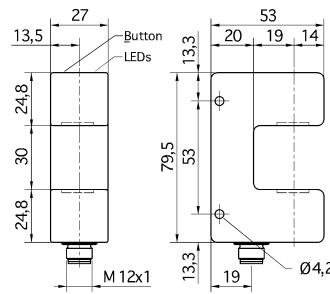
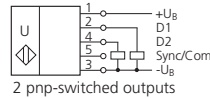


Fig.1: Functional principle

- Via the teach-in button on the edge sensor's top, the zero position of the edge to be controlled is set.



<b>Fork width</b>	30 mm
<b>Fork depth</b>	33 mm
<b>Operating range</b>	6 mm (± 3 mm)
<b>Transducer frequency</b>	200 kHz
<b>Resolution</b>	0.025 mm
<b>Reproducibility</b>	± 0.1 mm
<b>Accuracy</b>	± 0.1 mm at constant ambient conditions
<b>Operating voltage <math>U_B</math></b>	20 to 30 V DC, reverse polarity protection
<b>Voltage ripple</b>	± 10 %
<b>No-load current consumption</b>	≤ 50 mA
<b>Housing</b>	Aluminium anodized, plastic parts: PBT Ultrasonic transducer: polyurethane foam, epoxy resin with glass contents
<b>Class of protection to EN 60 529</b>	IP 65
<b>Type of connection</b>	5-pin M12 initiator plug, Brass, nickel-plated
<b>Controls</b>	Teach-in-button
<b>Indicators</b>	1 x LED green: center position; 2 x LED yellow: deviation from center position
<b>Programmable</b>	Yes, with LinkControl
<b>Synchronization</b>	No
<b>Operating temperature</b>	+5°C to +60°C
<b>Storage temperature</b>	-40°C to +85°C
<b>Weight</b>	140 g
<b>Response time<sup>1)</sup></b>	2.5 ms
<b>Time delay before availability</b>	< 300 ms
<b>Order No.</b>	<b>bks-3/CDD</b>
<b>Switched output</b>	2 x pnp, $U_B - 2 V$ , $I_{max} = 2 \times 500 \text{ mA}$ switchable NCC/NOC, short-circuit-proof



- Three LEDs indicate the position of the web material inside the fork.

#### Safety Notes

- Read the operating instructions prior to start-up.
- Connection, installation and adjustment works may only be carried out by expert personnel.
- No safety component in accordance with the EU Machine Directive.

#### Installation

- Mount sensor at the installation site.
- Connect a connection cable to the M12 device plug.

#### Start-Up

- Connect the power supply.
- Carry out the adjustment in accordance with the diagram.

#### Maintenance

microsonic sensors are maintenance-free. With heavy dirt deposits, we recommend a cleaning of the white sensor surface.

#### Notes

- Both switched outputs are set if the edge of the web material is in the zero position. If the coverage is less than 50 % D1 is reset, if the coverage is more than 50 % output D2 is reset.

- The web material should be in the area of ± 5 mm around the center between the ultrasonic transmitter and receiver.



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### Sensor adjustment with Teach-in procedure

