Ultrasonic sensor
UB3000-F42-UK-V95

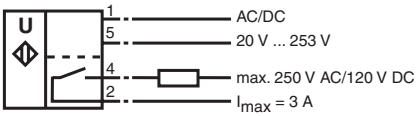


Features

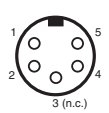
- Relay output for high power
- Extremely small unusable area
- TEACH-IN
- Interference suppression (adjustable switching treshold tracking and angle of divergence of sound beam)
- 4 operating modes can be set
- Temperature compensation
- NO/NC selectable

Electrical connection

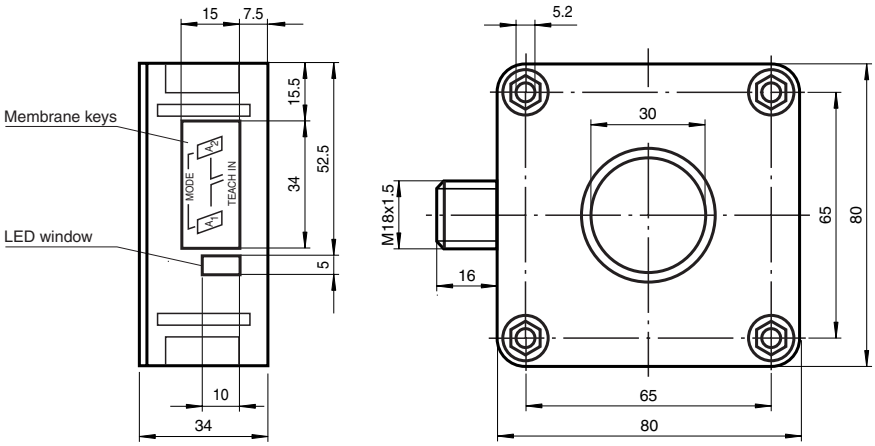
Standard symbol/Connections:



Plug connector -V95



Dimensions



CE

Technical data

General specifications	
Sensing range	200 ... 3000 mm
Adjustment range	240 ... 3000 mm
Unusable area	0 ... 200 mm
Standard target plate	100 mm x 100 mm
Transducer frequency	approx. 85 kHz
Response delay	approx. 325 ms
Indicators/operating means	
LED green	permanently green: Power on
LED yellow	permanent: switching state switch output flashing: TEACH-IN function
LED red	normal operation: "fault" TEACH-IN function: no object detected
Electrical specifications	
Operating voltage	20 ... V DC ... 253 V AC
No-load supply current I_0	≤ 60 mA
Output	
Output type	1 relay output
Repeat accuracy	≤ 0,5 % of switching point
Rated operational current I_e	3 A
Switching frequency f	≤ 1,5 Hz
Range hysteresis H	1 % of the set operating distance
Temperature influence	± 1 % of full-scale value
Standard conformity	
Standards	EN 60947-5-2
Ambient conditions	
Ambient temperature	-25 ... 70 °C (248 ... 343 K)
Storage temperature	-40 ... 85 °C (233 ... 358 K)
Mechanical specifications	
Protection degree	IP65
Connection	connector V15 (M12 x 1), 5 pin
Material	
Housing	PBT
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Mass	260 g

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Notes

Safety notes:

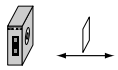
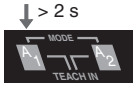
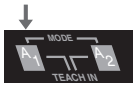
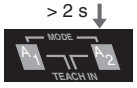
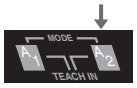
The supply circuit is separated from the relay circuit by basic insulation.

Safety class II is only guaranteed when using the accessorial connector cable. The connector cable may only be separated from the unit when the power is off.

CAUTION:

The UB...-F42(S)-UK-V95 ultrasonic sensor is <u>not</u> suitable for use in environments subject to explosion hazards.

Conformity:	EN 60947-5-2
Housing insulation:	Safety class II
Degree of contamination:	3
Overvoltage category:	III

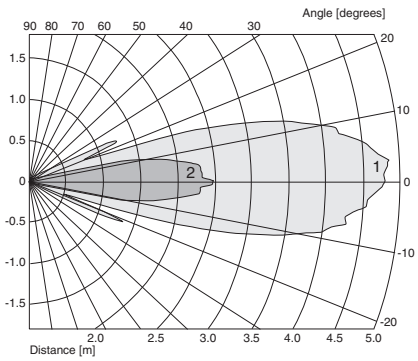
TEACH-IN for switching points			LED layout
			○ green (gn) ○ red (rd) ○ yellow (ye)
Switching point 1			
Position the target object at the desired position/distance. Press the A1 key > 2 s (time lock)	> 2 s 	Target detected (ye) or	Target not detected (rd) Correct the object position or sensor alignment until object is detected.
Acknowledge when target is detected.		(ye)	The value of the object distance will be stored.
Switching point 2			
Position the target object at the desired position/distance. Press the A2 key > 2 s (time lock)	> 2 s 	(ye) or	Target not detected (rd) Correct the object position or sensor alignment until object is detected.
Acknowledge when target is detected.		(ye)	The value of the object distance will be stored.
If TEACH-IN mode is not acknowledged within 5 min., the sensor goes back into normal mode and retains the last values to be stored.			

Model number

UB3000-F42-UK-V95

Characteristic curves/additional information

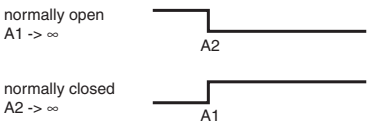
Characteristic response curves



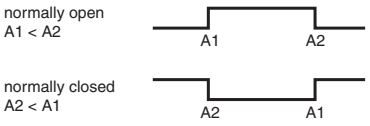
Curve 1: flat plate 100 mm x 100 mm
Curve 2: round bar, Ø 25 mm

Possible operating modes

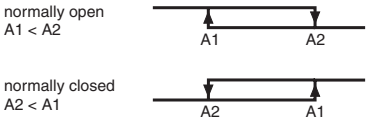
1. Switch point operation



2. Window operation



3. Hysteresis operation



4. Object presence detection mode

A1 -> ∞, A2 -> ∞: Sensor detects object presence within sensing range
Note A1 -> ∞, A2 -> ∞ means: cover sensor with hand or remove all objects from sensing range

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<table>
<tr><td colspan="3">Switching between hysteresis mode - switching point mode or window mode</td><td>LED layout
green (gn)
red (rd)
yellow (ye)</td></tr>
<tr><td>Hold down both keys at the same time.
(time lock)</td><td>> 2 s
MODE
A1 A2
TEACH IN</td><td colspan="2">Current operating mode
(gn) or (gn)
Hysteresis mode — Switching point mode
New operating mode
(gn) or (gn)
Switching point mode — Hysteresis mode</td></tr>
<tr><td>Release keys</td><td>MODE
A1 A2
TEACH IN</td><td colspan="2">5 s (gn) — 5 s (gn)</td></tr>
<tr><td colspan="4">If switching is not acknowledged within 5 min., the sensor goes back into normal mode and retains the last values to be stored.</td></tr>
</table>

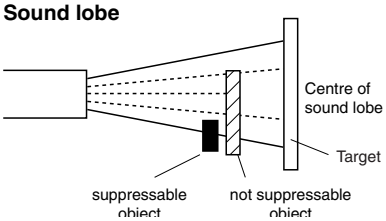
Interference target masking

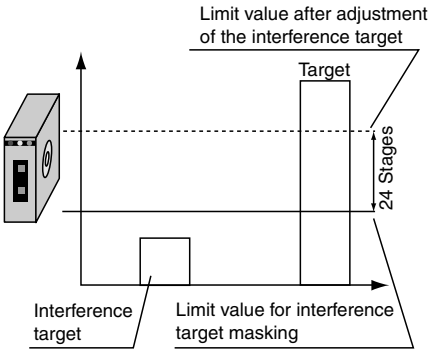
Interference target masking can be adjusted in 24 steps. Each brief keystroke on (A1) increase or (A2) decreases the limit value.
Permanently lighting red LED: max. or min. adjustment limit reached. Go back one step.

What is an interference target

- Small distance to the sensor as the actual target
- must not completely cover the actual goal
- The amplitude of the interference signal must be less than the amplitude of the usable signal.
- The interference target must be positioned only at the edge of the sound lobe and not in the center.

Sound lobe

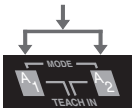


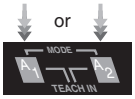
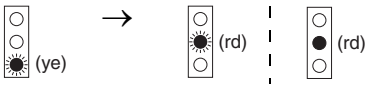
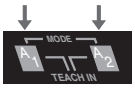


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<table>
<tr><td colspan="2">Interference target masking</td><td>LED layout
green (gn)
red (rd)
yellow (ye)</td></tr>
<tr><td>Remove the target object from the detection range.</td><td></td><td></td></tr>
<tr><td>Turn off the operating voltage

Hold down both keys while turning on the operating voltage

The interference target masking mode is now active</td><td></td><td>Interference target detected
</td></tr>
<tr><td>Adjust the limit value

Please note:
Press the keys only briefly. When the end of the adjustable range is reached, the red LED is lit continuously</td><td>
A1: Raise the limit
A2: Lower the limit</td><td>Interference target detected
Limit value OK
min/max
</td></tr>
<tr><td>Press both keys briefly</td><td></td><td>Exit interference mode, store the target value.</td></tr>
<tr><td colspan="3">Check target detection</td></tr>
<tr><td colspan="3">If interference target mode is not acknowledged within 5 min., the sensor goes back into normal mode and retains the last values to be stored.</td></tr>
</table>

Accessories

Mounting aid

MH 04-3505

Cable socket

V95.G-YE2M-ST500W