

Ultrasonic sensor UBE1000-18GM40-SE2-V1



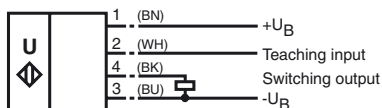
Features

- Short design, 40 mm
- Function indicators visible from all directions
- Switch output
- TEACH-IN input
- Integrated alignment aid

Electrical connection

Standard symbol/Connection:
(version E2, pnp)

Receiver:



Emitter:

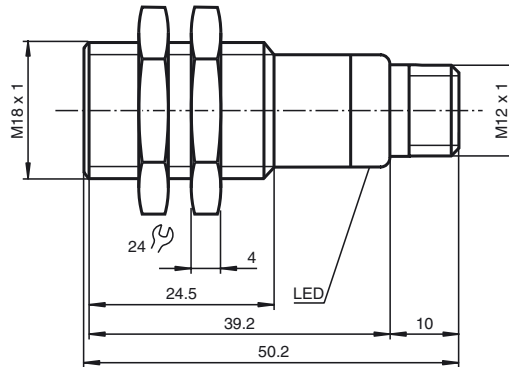


Core colours in accordance with EN 60947-5-2.

Connector V1



Dimensions



Technical data



General specifications

Sensing range	50 ... 1000 mm
Standard target plate	100 mm x 100 mm
Transducer frequency	approx. 205 kHz

Indicators/operating means

LED green	Power on
LED yellow	switching state
LED red	error, object uncertain

Electrical specifications

Operating voltage	10 ... 30 V DC, ripple 10 % _{SS}
No-load supply current I ₀	≤ 20 mA

Input

Input type	1 TEACH_IN input operating distance 1: -U _B ... +1 V, operating distance 2: +6 V ... +U _B input impedance: > 4,7 kΩ TEACH-IN pulse: ≥ 1 s
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Output

Output type	NO pnp
Rated operational current I _e	200 mA, short-circuit/overload protected
Voltage drop U _d	≤ 3 V
Switching frequency f	≤ 100 Hz
Switch-on delay t _{on}	< 5 ms

Standard conformity

Standards	EN 60947-5-2
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Ambient conditions

Ambient temperature	-25 ... 70 °C (248 ... 343 K)
Storage temperature	-40 ... 85 °C (233 ... 358 K)

Mechanical specifications

Protection degree	IP65
Connection	V1 connector (M12 x 1), 4-pin
Material	
Housing	brass, nickel-plated
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Mass	25 g

Function

A through-beam ultrasonic barrier always consists of a single emitter and a single receiver. The function of a through-beam ultrasonic barrier is based in the interruption of the sound transmission to the receiver by the object to be detected.

The emitter sends an ultrasonic signal that is evaluated by the receiver. If the signal is interrupted or muted by the object to be detected, the receiver switches.

No electrical connections are required between the emitter and receiver.

The function of through-beam ultrasonic barriers is not dependent on the position of their installation. We recommend, however, to install the emitter below in the case of vertical installations to prevent the accumulation of dust particles.

Startup and parameterising

For easy alignment of emitter and receiver towards each other, the receiver is equipped with an alignment aid. To activate the alignment aid, the TEACH-Input of the receiver (pin 2) has to be connected to ground ($-U_B$). The flashing frequency of the yellow LED indicates the strength of the received ultrasonic signal. The better the alignment, the stronger the signal.

LED yellow, flashing frequency	Description
slowly (appr. 1.5 Hz)	no signal
medium (appr. 3 Hz)	weak signal
fast (appr. 9 Hz)	strong signal

Simultaneously the ultrasonic barrier evaluates the signal strength of the unobstructed signal path and generates the optimal switching threshold. When disconnecting the TEACH-input from $-U_B$, this threshold is stored non-volatile in the receivers memory. In case of clear ultrasonic path (no object), all LEDs are off.

TEACH-In of very small objects/obstacles

Like shown in the curve "obstacle size", the ultrasonic barrier offers the possibility to detect very small objects at a distance of more than 300 mm.

- place the object to be detected in the desired distance inside the ultrasonic path
- connect TEACH-input of the receiver to $+U_B$ (yellow LED flashes slowly)
- disconnect TEACH-input

In case of successful TEACH-IN (object is detected reliable), the yellow LED is on and the taught detection threshold is stored non-volatile to the receivers memory.

In case of unsuccessful TEACH-IN (object too small or too porous for ultrasonic sound), the red LED flashes 5 times and the ultrasonic barrier continues normal operation with unmodified detection threshold value.

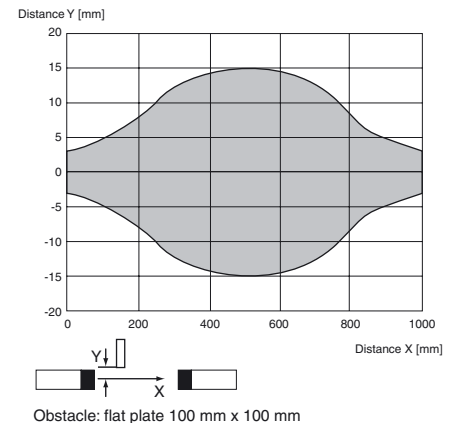
Test function

For test purpose, the ultrasonic emitter is equipped with a test input. In normal operation mode (test input not connected or connected to $-U_B$), the green LED of the emitter is on. If the test input is connected to $+U_B$, the ultrasonic emitter gets deactivated and its LED changes into red. Simultaneously the receiver switches and its yellow LED goes on.

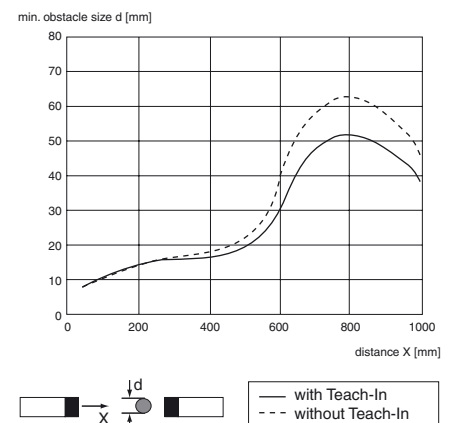
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Characteristic curves/additional information

Characteristic response curve



Obstacle size



Accessories

Programming device

UB-PROG2

Mounting aids/fixing flanges

OMH-04

BF 18

BF 18F

BF 5-30

Cable sockets^{*)}

V1-G-2M-PVC

V1-W-2M-PUR

^{*)} For additional cable sockets see section „Accessories“.