

Ultrasonic sensor UB400-12GM-E5-V1

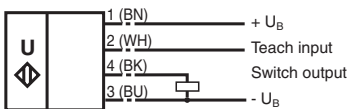


Features

- Switch output
- 5 different output functions can be set
- TEACH-IN input
- Temperature compensation

Electrical connection

Standard symbol/Connections:
(version E5, pnp)

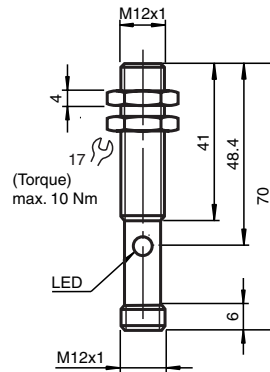


Core colours in accordance with EN 60947-5-2.

Connector V1



Dimensions



Technical data

General specifications

Sensing range	30 ... 400 mm
Adjustment range	50 ... 400 mm
Unusable area	0 ... 30 mm
Standard target plate	100 mm x 100 mm
Transducer frequency	approx. 310 kHz
Response delay	approx. 50 ms

Indicators/operating means

LED yellow	indication of the switching state flashing: TEACH-IN function object detected
LED red	"Error", object uncertain in TEACH-IN function: No object detected

Electrical specifications

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

Input

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

Output type	1 switch output E5, pnp NO/NC, parameterisable
Repeat accuracy	≤ 1 %
Rated operational current I _e	100 mA, short-circuit/overload protected
Voltage drop U _d	≤ 3 V
Switching frequency f	≤ 8 Hz
Range hysteresis H	1 % of the set operating distance
Temperature influence	± 1,5 % of full-scale value

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

Notes

Adjusting the switching points

The ultrasonic sensor features a switch output with two teachable switching points. These are set by applying the supply voltage $-U_B$ or $+U_B$ to the TEACH-IN input. The supply voltage must be applied to the TEACH-IN input for at least 1 s. LEDs indicate whether the sensor has recognised the target during the TEACH-IN procedure. Switching point A1 is taught with $-U_B$, A2 with $+U_B$.

Five different output functions can be set

1. Window mode, normally-open function
2. Window mode, normally-closed function
3. one switching point, normally-open function
4. one switching point, normally-closed function
5. Detection of object presence

TEACH-IN window mode, normally-open function

- Set target to near switching point
- TEACH-IN switching point A1 with $-U_B$
- Set target to far switching point
- TEACH-IN switching point A2 with $+U_B$

TEACH-IN window mode, normally-closed function

- Set target to near switching point
- TEACH-IN switching point A2 with $+U_B$
- Set target to far switching point
- TEACH-IN switching point A1 with $-U_B$

TEACH-IN switching point, normally-open function

- Set target to near switching point
- TEACH-IN switching point A2 with $+U_B$
- Cover sensor with hand or remove all objects from sensing range
- TEACH-IN switching point A1 with $-U_B$

TEACH-IN switching point, normally-closed function

- Set target to near switching point
- TEACH-IN switching point A1 with $-U_B$
- Cover sensor with hand or remove all objects from sensing range
- TEACH-IN switching point A2 with $+U_B$

TEACH-IN detection of objects presence

- Cover sensor with hand or remove all objects from sensing range
- TEACH-IN switching point A1 with $-U_B$
- TEACH-IN switching point A2 with $+U_B$

Default setting of switching points

A1 = blind range, A2 = nominal distance

LED Displays

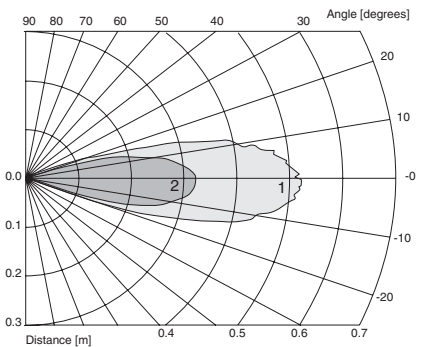
Displays in dependence on operating mode	Red LED	Yellow LED
TEACH-IN switching point:		
Object detected	off	flashes
No object detected	flashes	off
Object uncertain (TEACH-IN invalid)	On	off
Normal operation	off	Switching state
Fault	on	Previous state

Model number

UB400-12GM-E5-V1

Characteristic curves/additional information

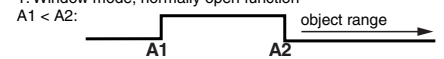
Characteristic response curves



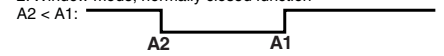
Curve 1: flat plate 100 mm x 100 mm
Curve 2: round bar, Ø 25 mm

Programmed switching output function

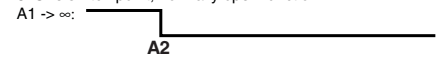
1. Window mode, normally open function



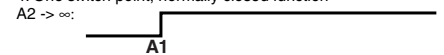
2. Window mode, normally closed function



3. One switch point, normally open function



4. One switch point, normally closed function



5. A1 -> ∞, A2 -> ∞: Detection of object presence
Object detected: Switch output closed
No object detected: Switch output open

Accessories

Programming device

UB-PROG2

Mounting aids/fixing flanges

BF 5-30

BF 12

BF 12-F

Cable sockets^{*)}

V1-G-2M-PVC

V1-W-2M-PUR

^{*)} Additional cable sockets find in section „Accessories“.