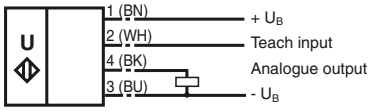
Ultrasonic sensor
UB400-12GM-U-V1

Features

- Analogue output 0 V ... 10 V
- Measuring window adjustable
- TEACH-IN input
- Temperature compensation

Electrical connection

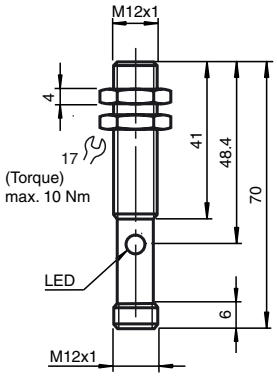
Standard symbol/Connections:
(version U)



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

Connector V1

Dimensions



Technical data

CE

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	permanently yellow: object in the evaluation range yellow, flashing: TEACH-IN function, object detected
LED red	permanently red: Error red, flashing: TEACH-IN function, object not detected
Electrical specifications	
Operating voltage	15 ... 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
Output	
Output type	1 analogue output 0 ... 10 V
Resolution	0,17 mm
Deviation of the characteristic curve	± 1 % of full-scale value
Repeat accuracy	± 0,5 % of full-scale value
Load impedance	> 1 kOhm
Temperature influence	± 1,5 % 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	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

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Notes

Adjusting the evaluation limits

The ultrasonic sensor features an analogue output with two teachable evaluation limits. 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. The lower evaluation limit A1 is taught with $-U_B$, A2 with $+U_B$.

Two different output functions can be set:

1. Analogue value increases with rising distance to object (rising ramp)
2. Analogue value falls with rising distance to object (falling ramp)

TEACH-IN rising ramp (A2 > A1)

- Position object at lower evaluation limit
- TEACH-IN lower limit A1 with - U_B
- Position object at upper evaluation limit
- TEACH-IN upper limit A2 with + U_B

TEACH-IN falling ramp (A1 > A2):

- Position object at lower evaluation limit
- TEACH-IN lower limit A2 with + U_B
- Position object at upper evaluation limit
- TEACH-IN upper limit A1 with - U_B

Default setting

A1:	unusable area
A2:	nominal sensing range
Mode of operation:	rising ramp

LED Displays

Displays in dependence on operating mode	Red LED	Yellow LED
TEACH-IN evaluation limit		
Object detected	off	flashes
No object detected	flashes	off
Object uncertain (TEACH-IN invalid)	on	off
Normal mode (evaluation range)	off	on
Fault	on	previous state

Installation conditions

If the sensor is installed at places, where the environment temperature can fall below 0 °C, for the sensors fixation, one of the mounting flanges BF 12, BF 12-F or BF 5-30 must be used. In case of direct mounting of the sensor in a through hole, it has to be fixed at the middle of the housing thread.

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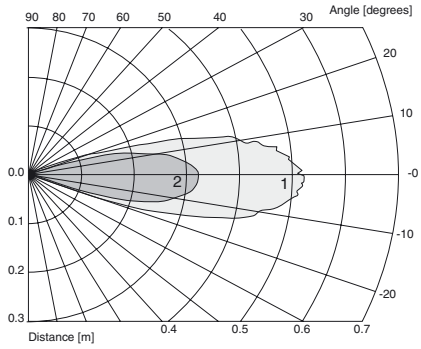
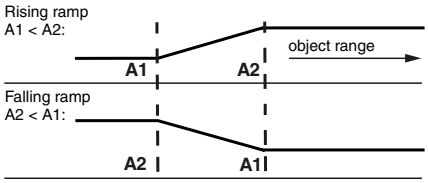
Characteristic curves/additional information

Characteristic response curves



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

Programmed analogue output function



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“.