



Ultrasonic sensor

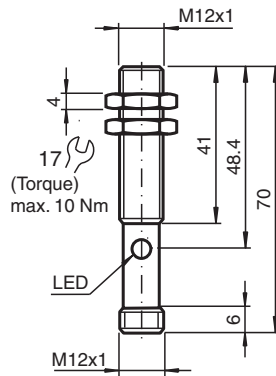
UB400-12GS-U-V1-Y70151686

- Analog output 0 ... 10 V
- Measuring window adjustable
- Program input
- Temperature compensation

Single head system



Dimensions



Technical Data

General specifications	
Sensing range	30 ... 400 mm
Adjustment range	50 ... 400 mm
Dead band	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	solid yellow: object in the evaluation range yellow, flashing: program function, object detected
LED red	solid red: Error red, flashing: program function, object not detected
Electrical specifications	
Operating voltage	U_B 15 ... 30 V DC , ripple 10 % _{SS}
No-load supply current	I_0 ≤ 30 mA
Input	
Input type	1 program input lower evaluation limit A1: $-U_B ... +1$ V, upper evaluation limit A2: $+4$ V ... $+U_B$ input impedance: > 4.7 kΩ, pulse duration: ≥ 1 s
Output	
Output type	1 analog output 0 ... 10 V

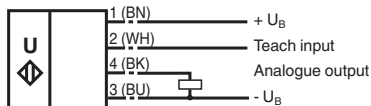
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Technical Data

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
Compliance with standards and directives	
Standard conformity	
Standards	EN IEC 60947-5-2:2020 EN 60947-5-2:2019 EN 60947-5-7:2003 IEC 60947-5-7:2003
Approvals and certificates	
UL approval	cULus Listed, Class 2 Power Source
CCC approval	CCC approval / marking not required for products rated ≤36 V
Ambient conditions	
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Storage temperature	-40 ... 85 °C (-40 ... 185 °F)
Mechanical specifications	
Connection type	Connector plug M12 x 1 , 4-pin
Degree of protection	IP67
Material	
Housing	1.4305 / AISI 303-housing
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Mass	25 g
Dimensions	
Length	70 mm
Diameter	12 mm

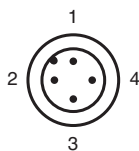
Connection Assignment

Standard symbol/Connections:
(version U)



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

Connection Assignment



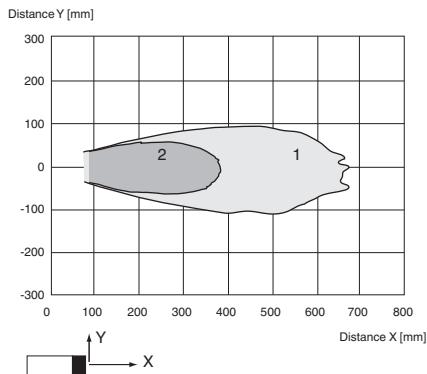
Connection Assignment

Wire colors in accordance with EN 60947-5-2

1	BN	(brown)
2	WH	(white)
3	BU	(blue)
4	BK	(black)

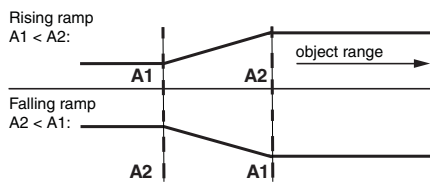
Characteristic Curve

Characteristic response curve



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

Programming the analog output mode



Programming

Adjusting the evaluation limits

The ultrasonic sensor features a switch output with two teachable switching points. These are set by applying the supply voltage -UB or +UB 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 -UB, A2 with +UB.

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 -UB
- Set target to far switching point
- TEACH-IN switching point A2 with +UB

TEACH-IN window mode, normally-closed function

- Set target to near switching point
- TEACH-IN switching point A2 with +UB

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Programming

- Set target to far switching point
- TEACH-IN switching point A1 with -UB

TEACH-IN switching point, normally-open function

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

TEACH-IN switching point, normally-closed function

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

TEACH-IN detection of objects presence

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

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

Additional Information

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.