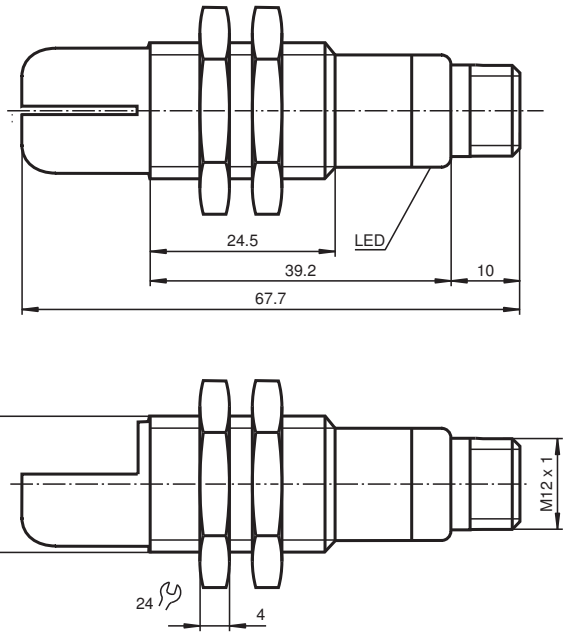
Ultrasonic sensor

UB800-18GM40A-U-V1-Y70109110

- Short design, 40 mm
- Function indicators visible from all directions
- Temperature compensation
- Analog output 0 ... 10 V DC
- Near analog limit 10 V, far limit 0 V
- Preset, customized range limits

Single head system

Dimensions



Technical Data

General specifications		
Sensing range		60 ... 300 mm (fixed)
Dead band		0 ... 50 mm
Standard target plate		100 mm x 100 mm
Transducer frequency		approx. 255 kHz
Response delay		approx. 100 ms
Indicators/operating means		
LED green		Power on
LED yellow		solid yellow: object in the evaluation range yellow, flashing: program function, object detected

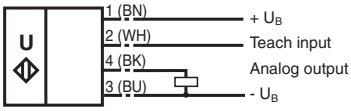
Release date: 2020-03-24 Date of issue: 2021-02-05 Filename: 70109110_eng.pdf

Technical Data

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	≤ 20 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
Default setting		evaluation limit A2: 60 mm evaluation limit A1: 300 mm
Resolution		0.4 mm at max. sensing range
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 60947-5-2:2007+A1:2012 IEC 60947-5-2:2007 + A1:2012 EN 60947-5-7:2003 IEC 60947-5-7:2003
Approvals and certificates		
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		brass, nickel-plated
Transducer		epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Mass		25 g

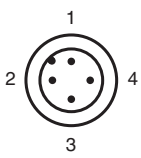
Connection

Standard symbol/Connections:
(version U)



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

Connection Assignment



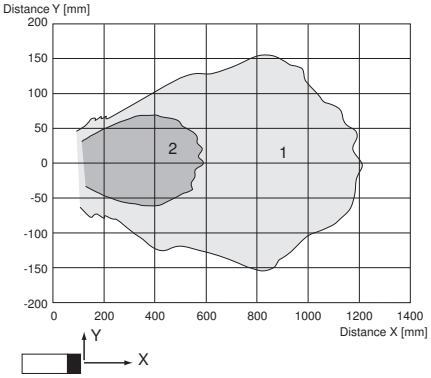
Release date: 2020-03-24 Date of issue: 2021-02-05 Filename: 70109110_eng.pdf

Wire colors in accordance with EN 60947-5-2

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

Characteristic Curve

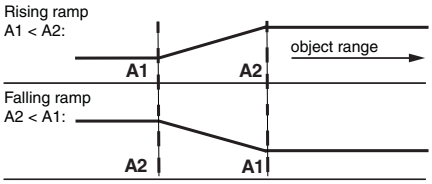
Characteristic response curve



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

Programming

Programming the analog output mode



A1 -> ∞, A2 -> ∞: Detection of object presence

Object detected: 10 V
No object detected: 0 V

Release date: 2020-03-24 Date of issue: 2021-02-05 Filename: 70109110_eng.pdf

Programming

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

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