

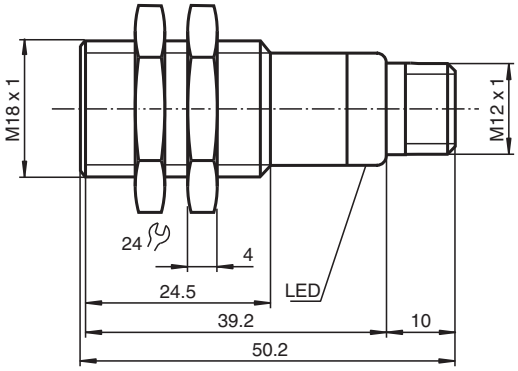
Ultrasonic sensor

UB800-18GM40-E5-V1

- Short design, 40 mm
- Function indicators visible from all directions
- Switching output
- 5 different output functions can be set
- Program input
- Temperature compensation

Single head system

Dimensions



Technical Data

General specifications		
Sensing range		50 ... 800 mm
Adjustment range		70 ... 800 mm
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

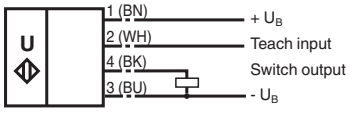
Release date: 2023-02-15 Date of issue: 2023-02-15 Filename: 205343_eng.pdf

Technical Data

LED yellow		indication of the switching state flashing: program function object detected
LED red		solid red: Error red, flashing: program function, object not detected
Electrical specifications		
Operating voltage	U_B	10 ... 30 V DC , ripple 10 %$_{SS}$
No-load supply current	I_0	≤ 20 mA
Input		
Input type		1 program input operating distance 1: -U_B ... +1 V, operating distance 2: +6 V ... +U_B input impedance: > 4,7 kΩ program pulse: ≥ 1 s
Output		
Output type		1 switching output E5, PNP NO/NC, programmable
Rated operating current	I_e	200 mA , short-circuit/overload protected
Default setting		Switch point A1: 70 mm , Switch point A2: 800 mm
Voltage drop	U_d	≤ 3 V
Repeat accuracy		≤ 1 %
Switching frequency	f	≤ 4 Hz
Range hysteresis	H	1 % of the set operating distance
Temperature influence		± 1.5 % of full-scale value
Compliance with standards and directives		
Standard conformity		
Standards		EN IEC 60947-5-2:2020 IEC 60947-5-2:2019
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
Housing diameter		18 mm
Degree of protection		IP67
Material		
Housing		brass, nickel-plated
Transducer		epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Mass		25 g

Connection

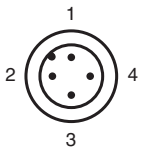
Standard symbol/Connections:
(version E5, pnp)



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

Release date: 2023-02-15 Date of issue: 2023-02-15 Filename: 205343_eng.pdf

Connection Assignment

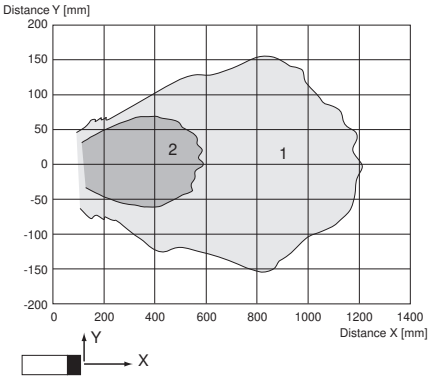


Wire colors in accordance with EN 60947-5-2

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

Characteristic Curve

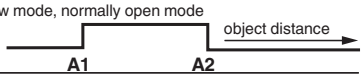
Characteristic response curve



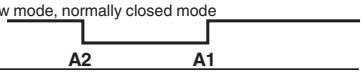
Curve 1: flat surface 100 mm x 100 mm
Curve 2: round bar, Ø 25 mm

Programmable output modes

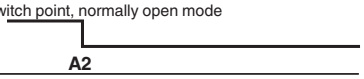
1. Window mode, normally open mode
A1 < A2:



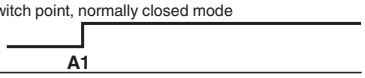
2. Window mode, normally closed mode
A2 < A1:



3. One switch point, normally open mode
A1 -> ∞:



4. One switch point, normally closed mode
A2 -> ∞:



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

Accessories

	**UB-PROG2**	Programming unit
	**OMH-04**	Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm

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Accessories

	**BF 18**	Mounting flange, 18 mm
	**BF 18-F**	Plastic mounting adapter, 18 mm
	**BF 5-30**	Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm
	**V1-G-2M-PVC**	Female cordset single-ended M12 straight A-coded, 4-pin, PVC cable grey
	**V1-W-2M-PUR**	Female cordset single-ended M12 angled A-coded, 4-pin, PUR cable grey
	**UVW90-K18**	Ultrasonic -deflector
	**M18K-VE**	Plastic nuts with centering ring for the vibration-free mounting of cylindrical sensors

Release date: 2023-02-15 Date of issue: 2023-02-15 Filename: 205343_eng.pdf

Teach-In

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 $+U_B$

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

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 BF18, BF18-F or BF 5-30 must be used.

In case of direct mounting of the sensor in a through hole using the steel nuts, it has to be fixed at the middle of the housing thread. If a fixation at the front end of the threaded housing is required, plastic nuts with centering ring (accessories) must be used.

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