Dimensions

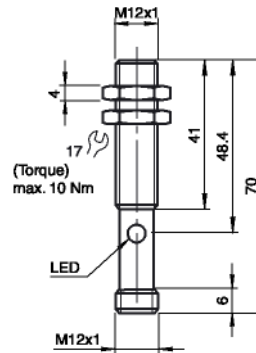## Order Code

UB120-12GM-E5-V1

CE

Features

- Extremely narrow projection cone
- Switch output
- Very small unusable area
- 5 different output functions can be set
- short response time

Electrical Connection

Standard symbol/Connections:
(version E5, pnp)

1 (BN) — + U_B
2 (WH) — Teach input
4 (BK) — Switch output
3 (BU) — - U_B
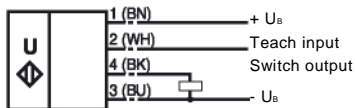
Core colours in accordance with EN 60947-5-2.

Connector V1

Technical Data

General specifications

Sensing range	15 … 120 mm
Adjustment range	20 … 120 mm
Unusable area	0 … 15 mm
Standard target plate	10 mm x 10 mm
Transducer frequency	approx. 850 kHz
Response delay	approx. 9 ms

Indicators/operating means

LED yellow	indication of the switching state
	flashing: TEACH-IN function object detected
LED red	permanently red: Error
	red, flashing: TEACH-IN function, object not detected

Electrical specifications

Operating voltage No-load supply current I_0	10 … 30 V DC, ripple 10 % ss
	~ 30 mA
Input	
Input type	1 TEACH_IN input
	operating distance 1: -U_B ... +1 V, operating distance 2: +6 V ... +U_B
	input impedance: > 4,7 k~ TEACH-IN pulse: ~ 1 s

Output

Output type	1 switch output E5, pnp NO/NC, parameterisable
Rated operational current I_e	100 mA , short-circuit/overload protected
Voltage drop U_d	~ 3 V
Repeat accuracy	~ 1 %
Switching frequency f	~ 52 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

Ambient conditions

Ambient temperature	-25 … 70 ºC (248 … 343 K)
Storage temperature	-40 … 85 ºC (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

Subject to reasonable modifications due to technical advances.

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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

Installation conditions

If the sensor is installed at places, where the environment temperature can fall below 0℃, 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.

Characteristic Curves/Additional Information

Characteristic response curve
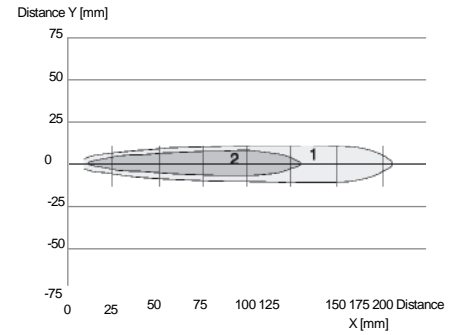
Curve 1: flat surface 10 mm x 10 mm
Curve 2: round bar, Ø 8 mm

Programmed switching output function

1. Window mode, normally open function
A1 < A2:   object range

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

3. One switch point, normally open function
A1 -> ~ :

4. One switch point, normally closed function
A2 -> ~ :

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

Accessories

UB-PROG2
Programming unit

BF 5-30
Mounting flange

BF 12
Mounting flange

BF 12-F
Mounting flange

V1-G-2M-PVC
Cable connector

V1-W-2M-PUR
Cable connector

UVW90-M12
Ultrasonic -deflector