

## Ultrasonic sensor UB4000-30GM-E2-V15

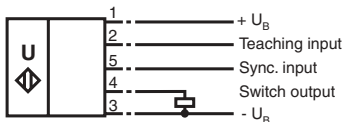


### Features

- Switch output
- 5 different output functions can be set
- TEACH-IN input
- Synchronisation options
- Deactivation option

### Electrical connection

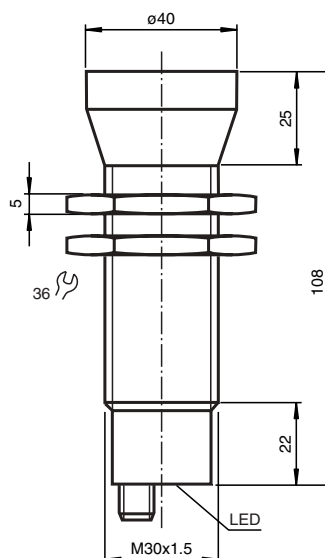
Standard symbol/Connections:  
(version E2, pnp)



### Connector V15



## Dimensions



CE

### Technical data

#### General specifications

Sensing range	500 ... 4000 mm
Unusable area	0 ... 500 mm
Standard target plate	100 mm x 100 mm
Transducer frequency	approx. 85 kHz
Response delay	approx. 280 ms

#### Indicators/operating means

LED green	"Power on", TEACH-IN function object detected
LED yellow	indication of the switching state, TEACH-IN function-no object detected
LED red	"Error", object uncertain

#### Electrical specifications

Operating voltage	20 ... 30 V DC, ripple 10 % <sub>SS</sub>
No-load supply current I <sub>0</sub>	≤ 60 mA

#### Input

Input type	1 TEACH-IN input, operating distance 1: -U <sub>B</sub> ... (-U <sub>B</sub> + 2 V), operating distance 2: (+U <sub>B</sub> - 2 V) ... +U <sub>B</sub> 1 synchronous input level 0: -U <sub>B</sub> ... (-U <sub>B</sub> + 1 V), level 1: (-U <sub>B</sub> + 5 V) ... +U <sub>B</sub> Input impedance 27 kOhm Synchronisation pulse: ≥ 100 μs Synchronisation pulse pause: ≥ 100 μs
Pulse length	

#### Synchronisation frequency

Common mode operation	≤ 20 Hz
Multiplex operation	≤ 20/n Hz, n = number of sensors

#### Output

Output type	1 switch output E2/E3, pnp, normally open/closed, programmable
Repeat accuracy	≤ 1 %
Rated operational current I <sub>e</sub>	200 mA, short-circuit/overload protected
Voltage drop U <sub>d</sub>	≤ 3 V
Switching frequency f	max. 1,7 Hz
Range hysteresis H	≤ 1 % of the set operating distance
Temperature influence	0,17 % / K

#### Standard conformity

Standards	EN 60947-5-2
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#### Climatic conditions

Ambient temperature	-25 ... 70 °C (248 ... 343 K)
Storage temperature	-40 ... 85 °C (233 ... 358 K)

#### Mechanical specifications

Protection degree	IP65
Connection type	connector V15 (M12 x 1), 5 pin

#### Material

Housing	brass, nickel plated, plastic components PBT
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Mass	180 g

**Notes**

**Function**

**Synchronisation**

The sensor features a synchronisation input for the suppression of mutual interference. It can be synchronised by applying a square wave voltage. The falling edge of a synchronisation pulse at the synchronisation input starts a measuring cycle. A low level > 1 s or an open synchronisation input will result in the non-synchronised normal operation of the sensor. A high level at the synchronisation input disables the sensor. Synchronisation cannot be performed during TEACH-IN and vice versa. Two operating modes are possible:

1. Multiple sensors can be controlled by the same synchronisation signal. The sensors are synchronised.
2. The synchronisation pulses are sent cyclically to individual sensors. The sensors operate in multiplex mode.

**Setting the switching points**

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:

Function	TEACH-IN procedure
Window mode, close function	- Set object to near switching point - Teach switching point A1 with -UB - Set object to far switching point - Teach switching point A2 with +UB
Window mode, open function	- Set object to near switching point - Teach switching point A2 with +UB - Set object to far switching point - Teach switching point A1 with -UB
1 switching point, close function	- Set object to near switching point - Teach switching point A2 with +UB - Cover sensor or remove all objects from sensing range - Teach switching point A1 with -UB
1 switching point, open function	- Set object to near switching point - Teach switching point A1 with -UB - Cover sensor or remove all objects from sensing range - Teach switching point A2 with +UB
Detection of object presence	- Cover sensor or remove all objects from sensing range - Teach switching point A1 with -UB - Teach switching point A2 with +UB

Default setting of switching points: A1 = blind range, A2 = nominal distance

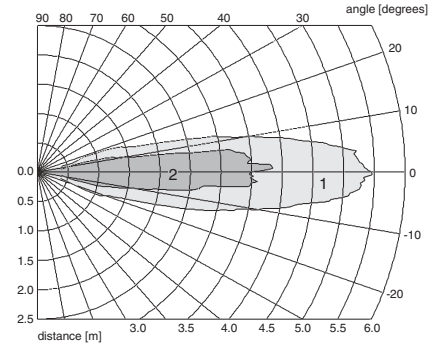
Displays in dependence on operating mode	Green LED	Red LED	Yellow LED
Teach switching point			
Object detected	Flashing	Off	Off
No object detected	Flashing	Off	On
Object uncertain (TEACH-IN invalid)	Off	Flashing	Off
Normal operation	On	Off	Switching state
Interference (e.g. compressed air)	Off	Flashing	Previous state

**Model number**

**UB4000-30GM-E2-V15**

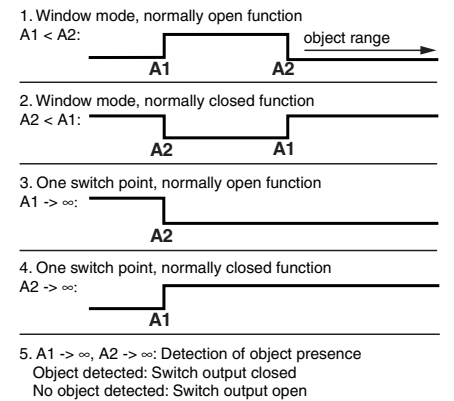
**Characteristic curves/additional information**

**Characteristic response curves**



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

**Programmed switching output function**



**LED-Window**

