

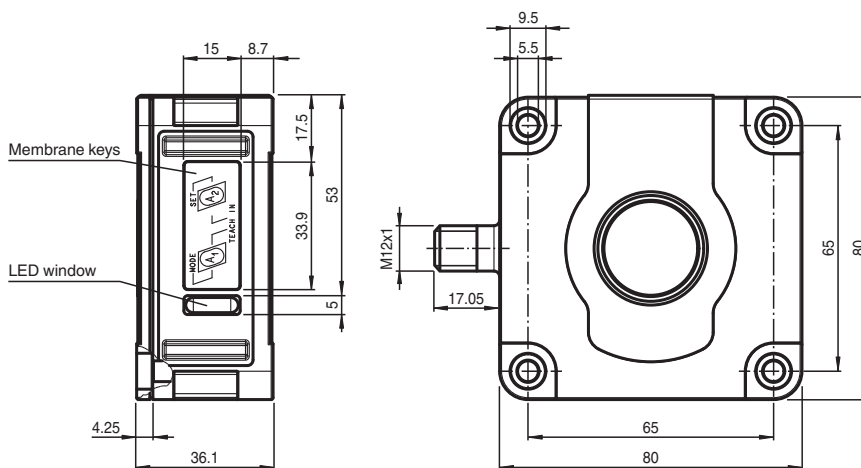
## Ultrasonic sensor UB2000-F42-I-V15

- Analog output 4 mA ... 20 mA
- Extremely small unusable area
- TEACH-IN
- Interference suppression (adjustable divergence of sound cone in close range)
- Temperature compensation
- Synchronization options
- Mode of operation adjustable

Single head system



### Dimensions



### Technical Data

#### General specifications

Sensing range	60 ... 2000 mm
Adjustment range	90 ... 2000 mm
Dead band	0 ... 60 mm
Standard target plate	100 mm x 100 mm
Transducer frequency	approx. 175 kHz
Response delay	approx. 150 ms

#### Indicators/operating means

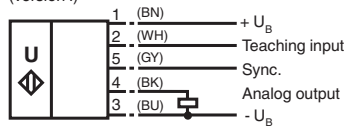
LED green	solid green: Power on
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## Technical Data

LED yellow		solid: object in evaluation range flashing: program function
LED red		normal operation: "fault" program function: no object detected
<b>Electrical specifications</b>		
Operating voltage	$U_B$	10 ... 30 V DC, ripple 10 % <sub>SS</sub>
No-load supply current	$I_0$	≤ 50 mA
<b>Input/Output</b>		
Synchronization		bi-directional 0 level: $-U_B \dots +1 \text{ V}$ 1 level: $+4 \text{ V} \dots +U_B$ input impedance: > 12 KOhm synchronization pulse: ≥ 100 μs, synchronization interpulse period: ≥ 2 ms
Synchronization frequency		
Common mode operation		max. 30 Hz
Multiplex operation		≤ 30/n Hz, n = number of sensors
<b>Output</b>		
Output type		1 analog output 4 ... 20 mA
Default setting		evaluation limit A1: 90 mm, evaluation limit A2: 2000 mm, wide sound lobe
Resolution		0.7 mm
Deviation of the characteristic curve		± 1 % of full-scale value
Repeat accuracy		± 0.1 % of full-scale value
Load impedance		0 ... 300 Ohm
Temperature influence		± 1 % of full-scale value
<b>Compliance with standards and directives</b>		
Standard conformity		
Standards		EN IEC 60947-5-2:2020 IEC 60947-5-2:2019 EN 60947-5-7:2003 IEC 60947-5-7:2003
<b>Approvals and certificates</b>		
UL approval		cULus Listed, Class 2 Power Source
CCC approval		CCC approval / marking not required for products rated ≤ 36 V
<b>Ambient conditions</b>		
Ambient temperature		-25 ... 70 °C (-13 ... 158 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
<b>Mechanical specifications</b>		
Connection type		Connector plug M12 x 1, 5-pin
Degree of protection		IP54
Material		
Housing		ABS
Transducer		epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Mass		140 g
Dimensions		
Height		80 mm
Width		80 mm
Length		34 mm

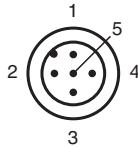
## Connection Assignment

Standard symbol/Connections:  
(version I)



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

## Connection Assignment

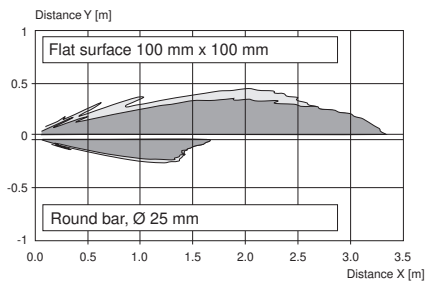


Wire colors in accordance with EN 60947-5-2

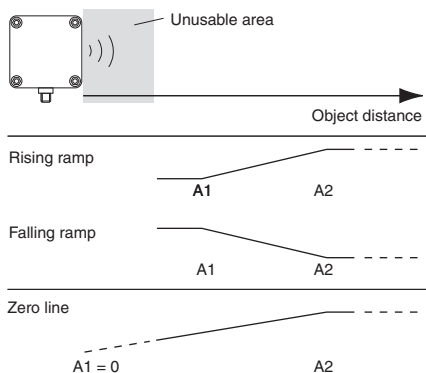
1	BN	(brown)
2	WH	(white)
3	BU	(blue)
4	BK	(black)
5	GY	(gray)

## Characteristic Curve

### Characteristic response curve



### Analogue output programming



Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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**PEPPERL+FUCHS**



**Synchronisation**

The sensor provides a synchronisation port to suppress mutual influencing. If this port has not been connected, the sensor works at an internally generated cycle rate. Several sensors may be synchronised via the following options.

**External synchronisation:**

The sensor may be synchronised via the external application of a square wave voltage. A synchronisation pulse on the synchronisation input initiates a measuring cycle. The pulse width must be greater than 100 µs. The measuring cycle is started with the falling edge. A low level > 1 s or an open synchronisation input initiate the transition to normal sensor mode. A high level on the synchronisation input deactivates the sensor.

Two modes are possible:

- Several sensors are controlled via the same synchronisation signal. The sensors work in common mode.
- The synchronisation pulses are forwarded at cyclic intervals to respectively one single sensor. The sensors work in multiplex mode.

**Self-synchronisation:**

The synchronisation ports of up to 5 sensors suitable for self-synchronisation are connected to each other. These sensors work in multiplex mode after Power on. The On delay increases depending on the number of sensors to be synchronised. While the learn mode is active, no synchronisation is possible (and vice-versa). To specify the switching points, the sensors must be operated in non-synchronised mode.

**Note:**

If the synchronisation option is not used, the synchronisation input must be connected to ground (0V) or the sensor must be operated with a (4-pole) V1 connecting cable.