

## Ultrasonic sensor UB500-F42S-U-V15

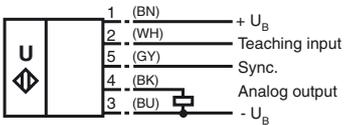


## Features

- Analogue output 0 V ... 10 V
- Extremely small unusable area
- TEACH-IN
- Interference suppression (adjustable width of sound cone in close range)
- Temperature compensation
- Synchronisation options
- Mode of operation adjustable

## Electrical connection

Standard symbol/Connections:  
(version U)

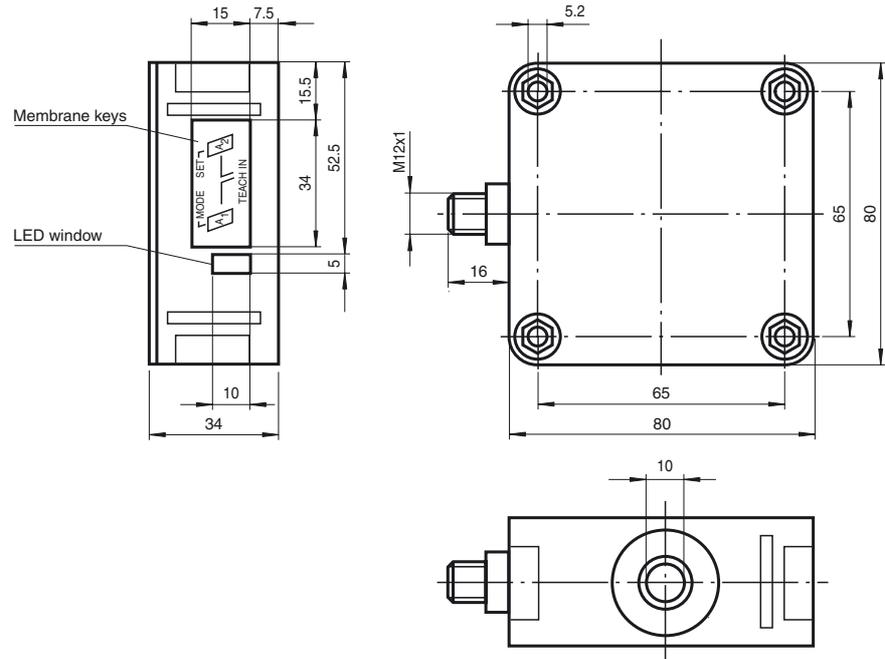


Core colours in accordance with EN 60947-5-2.

## Connector V15



## Dimensions



## Technical data



### General specifications

Sensing range	30 ... 500 mm
Adjustment range	50 ... 500 mm
Unusable area	0 ... 30 mm
Standard target plate	100 mm x 100 mm
Transducer frequency	approx. 390 kHz
Response delay	approx. 50 ms

### Indicators/operating means

LED green	permanently green: Power on permanent: object in evaluation range flashing: TEACH-IN function
LED yellow	normal operation: "fault"
LED red	TEACH-IN function: no object detected

### Electrical specifications

Operating voltage	17 ... 30 V DC, ripple 10 % <sub>SS</sub>
No-load supply current I <sub>0</sub>	≤ 50 mA

### Input/Output

Synchronisation	bi-directional 0 level: -U <sub>B</sub> ...+1 V 1 level: +4 V...+U <sub>B</sub> input impedance: > 12 kOhm synchronisation pulse: ≥ 100 μs, synchronisation interpulse period: ≥ 2 ms
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### Synchronisation frequency

Common mode operation	≤ 95 Hz
Multiplex operation	≤ 95/n Hz, n = number of sensors

### Output

Output type	1 analogue output 0 ... 10 V
Resolution	0.2 mm at max. sensing range
Deviation of the characteristic curve	± 1 % of full-scale value
Repeat accuracy	± 0.1 % of full-scale value
Load impedance	> 1 kOhm
Temperature influence	± 1 % of full-scale value

### Standard conformity

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

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

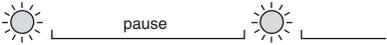
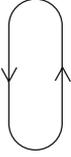
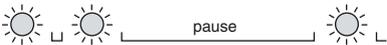
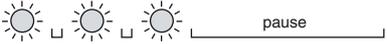
### Mechanical specifications

Protection degree	IP54
Connection	connector V15 (M12 x 1), 5 pin
Material	
Housing	ABS
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Mass	140 g



**Step 2, parameterisation of the ultrasound beam width**

Via Step 2, the ultrasound beam width may be adapted to the requirements of the corresponding application. The beam width parameterised last is displayed first. Available beam width settings may be selected via consecutive, brief strokes of the A2 key. These strokes are visualised via the flash sequence of the red LED.

Beam width	Flash sequence of the red LED	A2 key
Small beam		
Medium beam		
Large beam		

Hold down the A1 key for 2 seconds to save the selected beam shape, terminate the parameterisation and ensure that the sensor returns to normal mode. Briefly press the A1 key to return to Step 1 (parameterisation of the output function).

If the parameterisation mode is not terminated within 5 minutes (hold down the A1 key for 2 seconds), the sensor aborts this mode without modifying the settings.

**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.