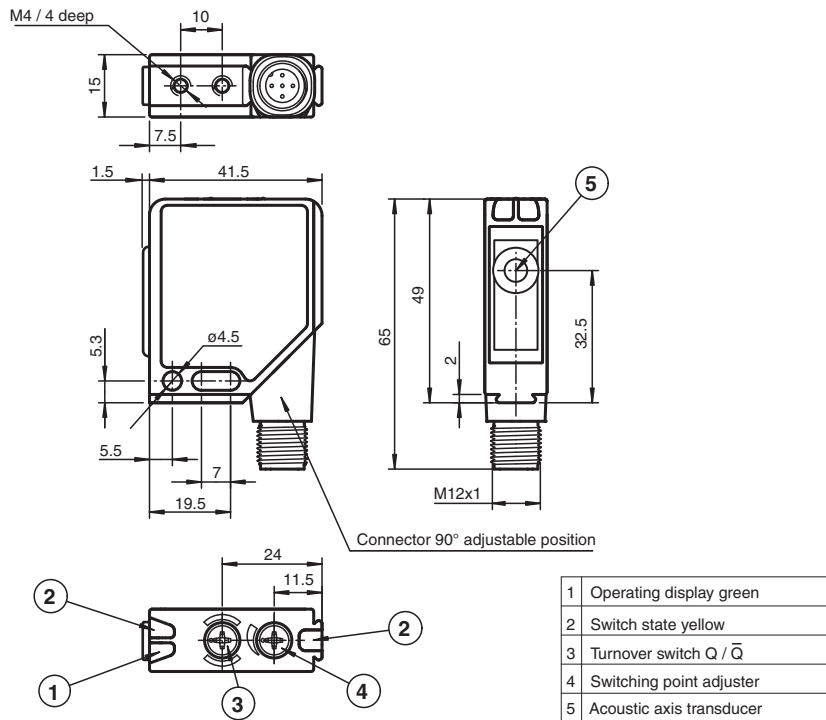# Ultrasonic sensor
UB800-F12P-EP-V15

- Switching point adjustment via potentiometer
- Selectable sound lobe width
- Synchronization options
- Very small unusable area
- Push-pull output
- Temperature compensation

Single head system

CE   CSA C/US   c UL US

Dimensions

M4 / 4 deep
10
15
7.5
1.5   41.5
5.3
ø4.5
5.5
7
19.5
65
49
2
5
32.5
M12x1
Connector 90° adjustable position
24
11.5
2
2
1
3   4

1	Operating display green
2	Switch state yellow
3	Turnover switch Q / $\overline{Q}$
4	Switching point adjuster
5	Acoustic axis transducer

Technical Data

General specifications

Sensing range	30 ... 800 mm
Adjustment range	50 ... 800 mm
Dead band	0 ... 30 mm
Standard target plate	100 mm x 100 mm
Transducer frequency	approx. 310 kHz
Response delay	approx. 100 ms
Indicators/operating means	
LED green	Operating display
LED yellow	switch output

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

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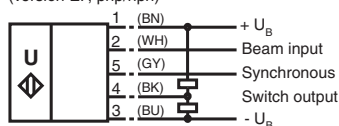fa-info@sg.pepperl-fuchs.com

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Technical Data

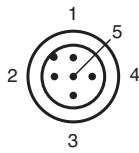|		
LED red		solid: stop plate switch point adjuster flashing: error
Electrical specifications		
Operating voltage	U_B	10 ... 30 V DC , ripple 10 %$_{SS}$
No-load supply current	I_0	≤ 25 mA
Input/Output		
Synchronization		1 synchronous connection, bi-directional 0-level: -U_B...+1 V 1-level: +4 V...+U_B input impedance: > 12 kΩ synchronization pulse: ≥ 100 µs, synchronization interpulse period: ≥ 2 ms
Synchronization frequency		
Common mode operation		max. 45 Hz
Multiplex operation		≤ 45/n Hz, n = number of sensors
Input		
Input type		1 input for sound lobe adjustment small sound beam: -U_B ... +1 V wide sound beam: +4 V ... +U_B or open input input impedance: > 10 kΩ switching delay: 1 s
Output		
Output type		Push-pull output, short-circuit protected, reverse polarity protected
Rated operating current	I_e	200 mA , short-circuit/overload protected
Voltage drop	U_d	≤ 3 V
Repeat accuracy		≤ 1 %
Switching frequency	f	max. 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 60947-5-2:2007+A1:2012 IEC 60947-5-2:2007 + A1:2012
Approvals and certificates		
UL approval		cULus Listed, General Purpose
CSA approval		cCSAus Listed, General Purpose
CCC approval		CCC approval / marking not required for products rated ≤36 V
Ambient conditions		
Ambient temperature		-15 ... 70 °C (5 ... 158 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Mechanical specifications		
Connection type		Connector M12 x 1 , 5-pin
Degree of protection		IP54
Material		
Housing		Frame: nickel plated, die cast zinc, Laterals: glass-fiber reinforced plastic PC
Transducer		epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Mass		60 g

Connection

Standard symbol/Connections:
(version EP, pnp/npn)


```
1 . (BN)  ── + U_B
2 . (WH)  ── Beam input
5 . (GY)  ── Synchronous
4 . (BK)  ── Switch output
3 . (BU)  ── - U_B
```

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

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

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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

Distance Y [mm]

flat surface 100 mm x 100 mm

round bar, Ø 25 mm

Distance X [mm]

□ wide sound lobe
▨ narrow sound lobe
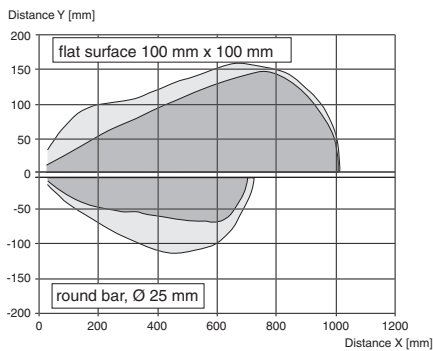
Switching output function

1. normally open function Q

object distance

2. normally closed function Q̄
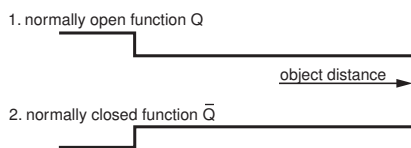
Accessories

	OMH-K01	dove tail mounting clamp
	OMH-K02	dove tail mounting clamp
	OMH-K03	dove tail mounting clamp
	OMH-01	Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm

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Accessories

	OMH-06	Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm
	OMH-MLV12-HWG	Mounting bracket for series MLV12 sensors
	OMH-MLV12-HWK	Mounting bracket for series MLV12 sensors
	V15-G-2M-PVC	Female cordset single-ended M12 straight A-coded, 5-pin, PVC cable grey

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Additional Information

Synchronisation

To suppress mutual influence, the sensor is equipped with a synchronisation connection. If this is not activated, the sensor works with an internally generated clock. Synchronisation of multiple sensors can be achieved in the following ways.

External synchronisation

The sensor can be synchronized by external application of a square wave voltage. A synchronisation impulse on the synchronisation input leads to the execution of one measurement cycle. The impulse width must be larger than 100 µs. The measurement cycle starts with the falling flank. A low level > 1 sec or an open synchronisation input puts the sensor in normal mode. A high level on the synchronisation input deactivates the sensor.

Two operational modes are possible
1. Multiple sensors are controlled using the same synchronisation signal. The sensors work in synch.
2. The synchronisation impulses are cyclically fed to only one sensor at a time. The sensors work in multiplex mode.

Autosynchronisation

The synchronisation connections of up to 10 sensors are connected together. These sensors then work in multiplex mode after power is switched on. The activation delay is increased corresponding to the numer of synchronised sensors.

Note:

If the synchronisation option is not used, the sync. input should be connected to ground (0V), or the sensor connected using a V1 connector cable (4-pin).

Selection of beam characteristics

By switching the beam input, the activation characteristics of the ultrasound sensor can be selected. If the beam input is open or connected to $+U_B$, the sensor works with a wide ultrasonic cone. A beam input connected to $-U_B$ causes the sensor to work with a narrower ultrasonic cone. This setting is preferred when an object in the vicinity of the sensor is close to the ultrasonic beam, and should be suppressed. The characteristic of the ultrasonic cone can be changed during sensor operation. Switching the sound cone characteristics becomes active one second after the change to the signal level at the beam input.

Setting the switch point

The ultrasonic sensor possesses a switch output, of which the switching point can be set simply and precisely using the built-in 12-position potentiometer. Using the switch Q / $\overline{Q}$ which is also easy to find on the upper side of the sensor, the effective direction of the switching output can be selected.

There are two different output functions which can be selected
1. one switching point, normally open
2. one switching point, normally closed

LED display

	Opening function (Q\)	Closing function (Q)
LED green:	Power On	
LED yellow:	Switch state Object outside switching area, or no object	Switch state Object detected in switching area
LED red	Potentiometer for setting of switch point at "limit"	
LED red flashing	Ultrasonic error	

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