



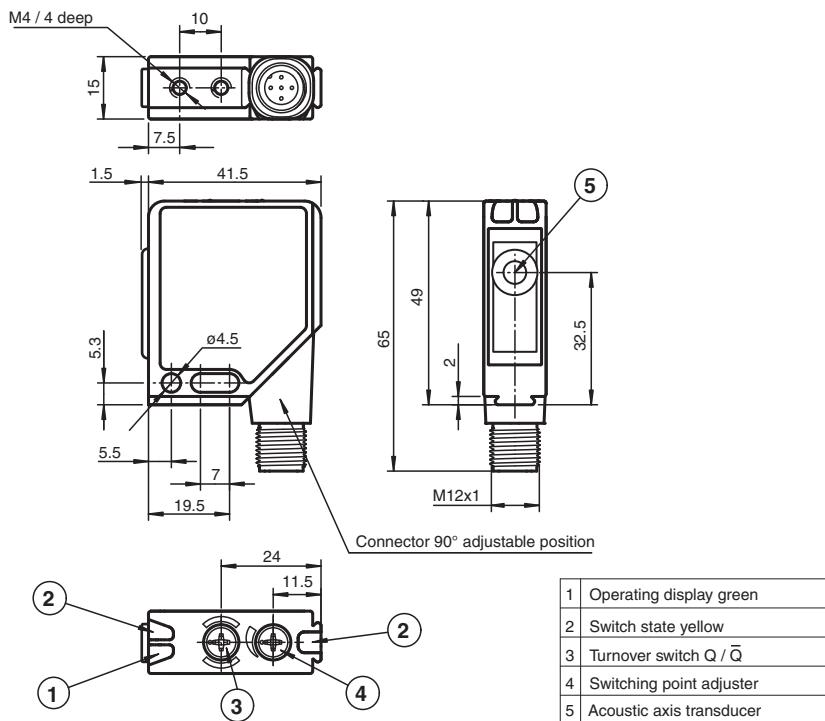
Ultrasonic sensor UB120-F12P-EP-V15

- Switching point adjustment via potentiometer
- Extremely narrow projection cone
- Synchronization options
- Very small unusable area
- Push-pull output
- Temperature compensation

Single head system



Dimensions



Release date: 2020-05-23 Date of issue: 2021-02-05 Filename: 203368_eng.pdf

Technical Data

General specifications

Sensing range	15 ... 150 mm
Adjustment range	15 ... 120 mm
Dead band	0 ... 15 mm
Standard target plate	100 mm x 100 mm
Transducer frequency	approx. 850 kHz
Response delay	approx. 10 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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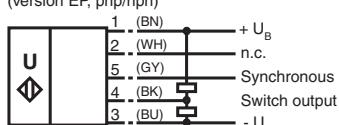
Technical Data

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	≤ 60 mA
Input/Output		
Synchronization		1 synchronous connection, bi-directional 0-level: $-U_B \dots +1$ V 1-level: $+4$ V... $+U_B$ input impedance: > 12 k Ω synchronization pulse: ≥ 100 μ s, synchronization interpulse period: ≥ 2 ms
Synchronization frequency		max. 45 Hz
Common mode operation		$\leq 45/n$ Hz, n = number of sensors
Multiplex operation		
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	50 Hz
Range hysteresis	H	1 mm
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

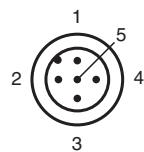
Standard symbol/Connections:

(version EP, pnp/pnp)



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

Connection Assignment

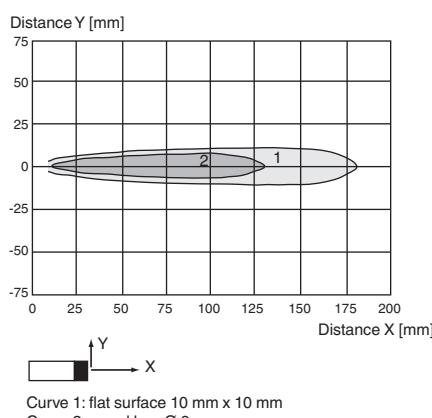


Wire colors in accordance with EN 60947-5-2

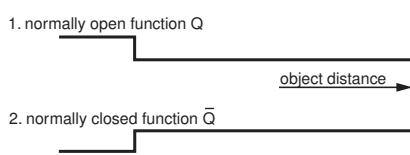
1	BN	(brown)
2	WH	(white)
3	BU	(blue)
4	BK	(black)
5	GY	(gray)

Characteristic Curve

Characteristic response curve



Switching output function



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

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

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 number 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).

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 / \bar{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	