



**Model Number**

**UB120-F12P-EP-V15**

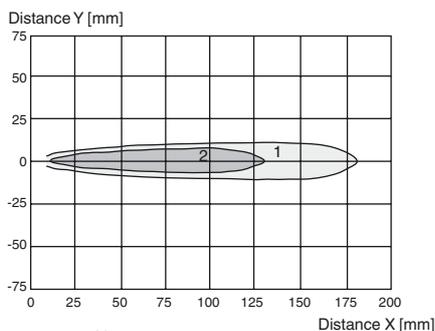
Single head system

**Features**

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

**Diagrams**

**Characteristic response curve**



Curve 1: flat surface 10 mm x 10 mm  
Curve 2: round bar, Ø 8 mm

**Technical data**

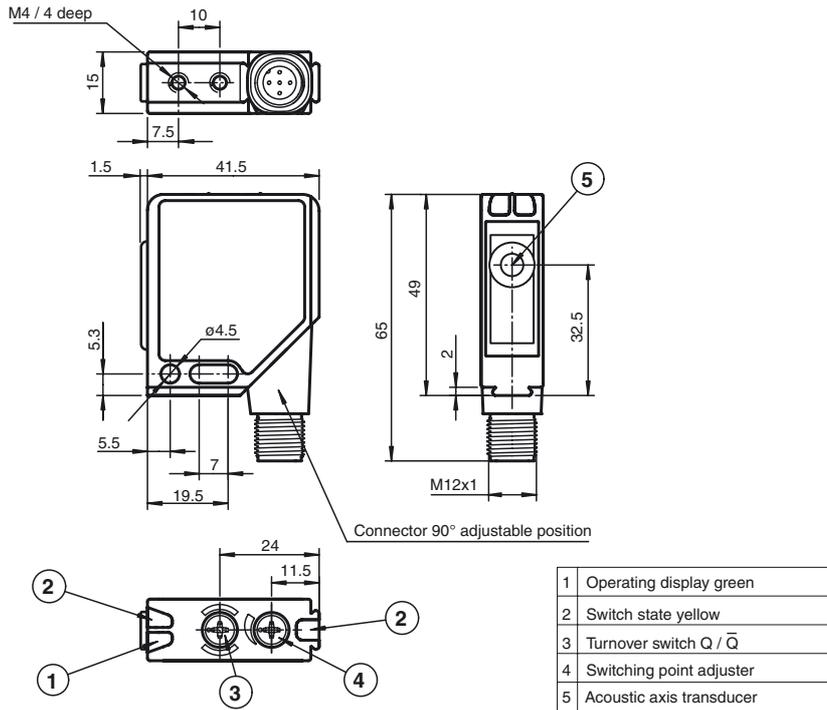
<b>General specifications</b>	
Sensing range	15 ... 150 mm
Adjustment range	15 ... 120 mm
Dead band	0 ... 15 mm
Standard target plate	100 mm x 100 mm
Transducer frequency	approx. 850 kHz
Response delay	approx. 10 ms
<b>Indicators/operating means</b>	
LED green	Operating display
LED yellow	switch output
LED red	solid: stop plate switch point adjuster flashing: error
<b>Electrical specifications</b>	
Operating voltage $U_B$	10 ... 30 V DC , ripple 10 % <sub>SS</sub>
No-load supply current $I_0$	≤ 60 mA
<b>Input/Output</b>	
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	≤ 45 Hz
Multiplex operation	≤ 45/n Hz, n = number of sensors
<b>Output</b>	
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
<b>Ambient conditions</b>	
Ambient temperature	-15 ... 70 °C (5 ... 158 °F)
Storage temperature	-40 ... 85 °C (-40 ... 185 °F)
<b>Mechanical specifications</b>	
Connection type	Connector M12 x 1 , 5-pin
Degree of protection	IP54
<b>Material</b>	
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

<b>Compliance with standards and directives</b>	
<b>Standard conformity</b>	
Standards	EN 60947-5-2:2007 + A1:2012 IEC 60947-5-2:2007 + A1:2012

<b>Approvals and certificates</b>	
UL approval	cULus Listed, General Purpose
CSA approval	cCSAus Listed, General Purpose
CCC approval	CCC approval / marking not required for products rated ≤36 V

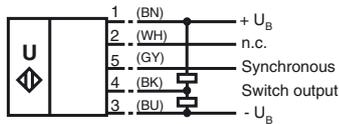
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**Dimensions**



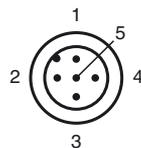
**Electrical Connection**

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



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

**Pinout**

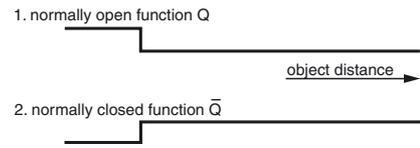


Wire colors in accordance with EN 60947-5-2

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

**Additional Information**

**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  $\varnothing$  12 mm or sheet 1.5 mm ... 3 mm

**OMH-06**

Mounting aid for round steel  $\varnothing$  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, M12, 5-pin, PVC cable

**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  $\mu$ s. 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 ( $\bar{Q}$ )
<b>LED green:</b>	Power On	
<b>LED yellow:</b>	Switch state Object outside switching area, or no object	Switch state Object detected in switching area
<b>LED red</b>	Potentiometer for setting of switch point at "limit"	
<b>LED red flashing</b>	Ultrasonic error	

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