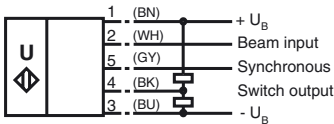## Ultrasonic sensor
UB800-F12P-EP-V15

Features

- Push-pull output
- Selectable sound lobe width
- Synchronisation options
- Temperature compensation
- Very small unusable area

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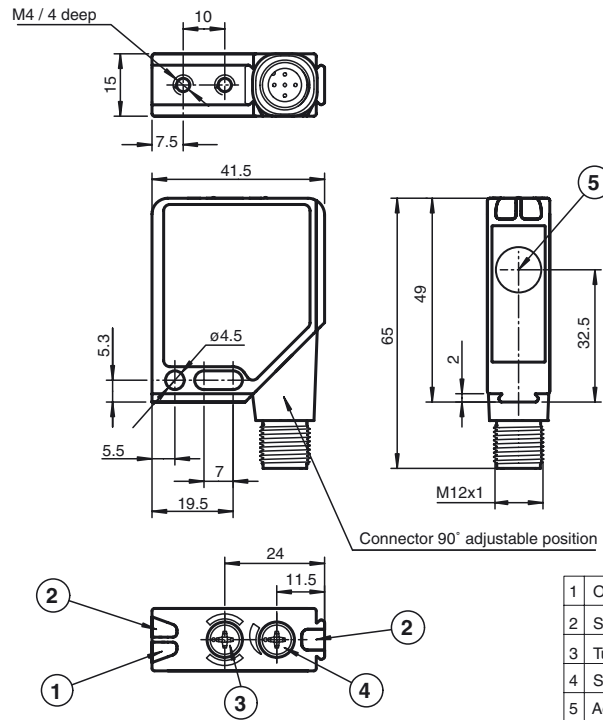
Standard symbol/Connections:
(version EP, pnp/npn)

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.

Connector V15

Dimensions

Connector 90° adjustable position

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

Technical data

$C\,\epsilon$ $_c(UL)_{us}$

General specifications
Sensing range	30 ... 800 mm
Adjustment range	50 ... 800 mm
Unusable area	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
LED red	permanent: stop plate switch point adjuster
	flashing: error

Electrical specifications
Operating voltage	10 ... 30 V DC , ripple 10 %$_{SS}$
No-load supply current I_0	$\leq$ 25 mA

Input/Output
Synchronisation	1 synchronous input, bi-directional
	0-level: -U_B...+1 V
	1-level: +4 V...+U_B
	input impedance: > 12 kΩ
	synchronisation pulse: $\geq$ 100 μs, synchronisation interpulse period: $\geq$ 2 ms
Synchronisation frequency	
Common mode operation	$\leq$ 45 Hz
Multiplex operation	$\leq$ 45/n Hz, n = number of sensors

Input
Input type	1 Beam input
	small sound beam: -U_B ... +1 V
	wide sound beam: +4 V ... +U_B or open input
	input impedance: > 4.7 kΩ
	switching delay: 1 s

Output
Output type	Push-pull output, short-circuit proof, protected against reverse polarity
Repeat accuracy	$\leq$ 1 %
Rated operational current I_e	200 mA , short-circuit/overload protected
Voltage drop U_d	$\leq$ 3 V
Switching frequency f	max. 4 Hz
Range hysteresis H	1 % of the set operating distance
Temperature influence	± 1.5 % of full-scale value

Standard conformity
UL	$_c(UL)_{us}$ LISTED
	Power from Class 2 Power Source
	IND.CONTR.EQ 57M3
Standards	EN 60947-5-2

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

Mechanical specifications
Connection	connector V15 (M12 x 1), 5 pin
Material	
Housing	Frame: die-cast zinc, nickel-plated
	Laterals: plastic PC, glass-fiber reinforced
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Mass	60 g

Subject to reasonable modifications due to technical advances.   Printed in Germany

Sensotronik AB   •   Tel.: +46 44 200 800   •   Fax +46 44 200 899   •   E-mail info@sensotronik.se   •   Internet http://www.sensotronik.se

UB800-F12P-EP-V15

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 with the option of autosynchronisation. These sensors 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 synchronisation 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	

Characteristic curves/additional information

Characteristic response curve
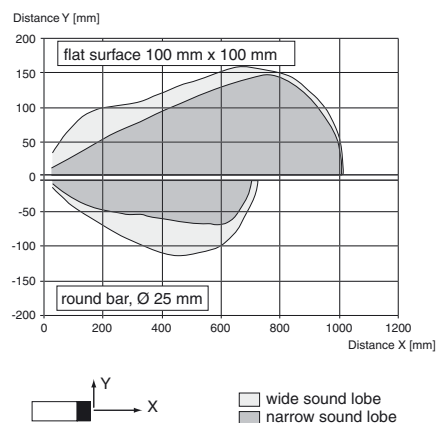
Switching output function

1. normally open function Q

object distance

2. normally closed function $\overline{Q}$
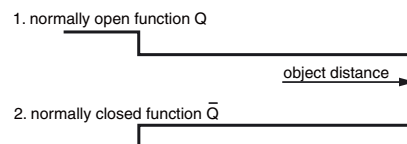
Accessories

Mounting aids/fixing flanges

OMH-K01, OMH-K02, OMH-K03
OMH-01
OMH-06
OMH-MLV12-HWG
OMH-MLV12-HWK

Cable sockets[*)]

V15-G-2M-PVC
V15-W-2M-PUR

[*)] For additional cable sockets see section „Accessories".