

Датчики сквозного луча

Технические характеристики

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Улан-Удэ (3012)59-97-51
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Through-beam ultrasonic barrier

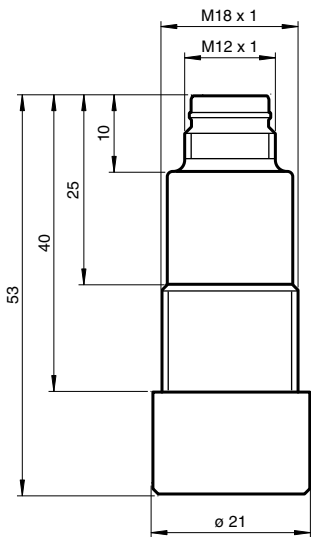
UBEC300-18GH40-SE2-V1



- Short design, 40 mm
- Stainless steel housing
- Chemical-resistant
- Switching output
- Program input



Dimensions



Technical Data

General specifications			
Sensing range			100 ... 300 mm
Standard target plate			100 mm x 100 mm
Transducer frequency			approx. 255 kHz
Electrical specifications			
Operating voltage	U _B	10 ... 30 V DC , ripple 10 % _{SS}	
No-load supply current	I ₀	≤ 20 mA	
Input			

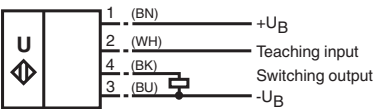
Technical Data

Input type		1 program input [receiver] switch point 1: $-U_B \dots +1\text{ V}$, switch point 2: $+6\text{ V} \dots +U_B$ input impedance: $> 4.7\text{ k}\Omega$ pulse duration: $\geq 1\text{ s}$ 1 test input [emitter] emitter deactivated: $+6\text{ V} \dots +U_B$ input impedance: $> 4.7\text{ k}\Omega$
Output		
Output type		PNP, NO
Rated operating current	I_e	200 mA , short-circuit/overload protected
Voltage drop	U_d	$\leq 3\text{ V}$
Switch-on delay	t_{on}	$< 5\text{ ms}$
Switching frequency	f	$\leq 100\text{ Hz}$
Compliance with standards and directives		
Standard conformity		
Standards		EN IEC 60947-5-2:2020 IEC 60947-5-2:2019
Approvals and certificates		
UL approval		cULus Listed, Class 2 Power Source
CCC approval		CCC approval / marking not required for products rated $\leq 36\text{ V}$
Ambient conditions		
Ambient temperature		$-25 \dots 70\text{ }^\circ\text{C}$ ($-13 \dots 158\text{ }^\circ\text{F}$)
Storage temperature		$-40 \dots 85\text{ }^\circ\text{C}$ ($-40 \dots 185\text{ }^\circ\text{F}$)
Mechanical specifications		
Connection type		Connector plug M12 x 1 , 4-pin
Housing diameter		18 mm
Degree of protection		IP68 / IP69K
Material		
Housing		Stainless steel 1.4435 / AISI 316L O-ring for cover sealing: EPDM
Transducer		PTFE (diaphragm surface)
Mass		25 g

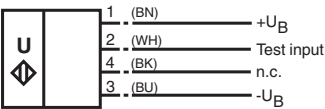
Connection

Standard symbol/Connection:
(version E2, pnp)

Receiver:

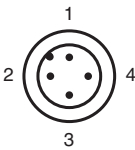


Emitter:



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

Connection Assignment

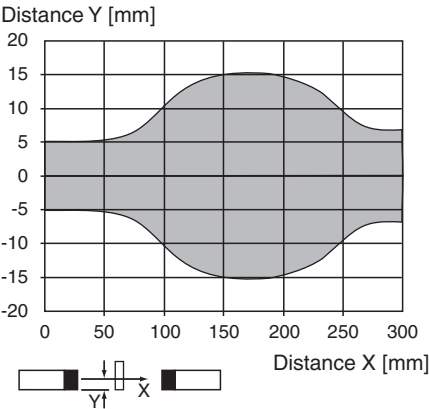


Wire colors in accordance with EN 60947-5-2

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

Characteristic Curve

Characteristic response curve



Obstacle: flat plate 100 mm x 100 mm

Accessories

	UB-PROG2	Programming unit
	V1-GV4A-2M-PVC	Female cordset single-ended M12 straight stainless steel 1.4404, A-coded, 4-pin, PVC cable grey
	V1-WV4A-2M-PVC	Female cordset single-ended M12 angled stainless steel 1.4404, A-coded, 4-pin, PVC cable grey

Additional Information

Function

A through-beam ultrasonic barrier always consists of a single emitter and a single receiver. The function of a through-beam ultrasonic barrier is based in the interruption of the sound transmission to the receiver by the object to be detected.

The emitter sends an ultrasonic signal that is evaluated by the receiver. If the signal is interrupted or muted by the object to be detected, the receiver switches.

No electrical connections are required between the emitter and receiver.

The function of through-beam ultrasonic barriers is not dependent on the position of their installation. We recommend, however, to install the emitter below in the case of vertical installations to prevent the accumulation of dust particles.

Startup and parameterising

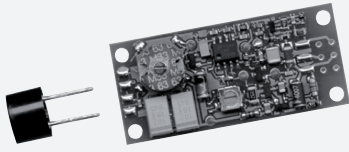
In the delivery status, the receiver is pr-configured for a 300 mm spacing between emitter and receiver. If the through-beam ultrasonic barrier is operated at different spacing, a TEACH-IN procedure has to be carried out.

TEACH-IN

1. Install both, emitter and receiver of the through-beam ultrasonic barrier at the desired positions.
2. Adjust both devices exactly to each other and fix the adjustment.
3. Remove all obstacles from between the emitter and the receiver.
4. Connect the TEACH input of the receiver with $-U_B$ for at least 2 s.
The receiver evaluates now the signal strength of the clear air path.
5. Place the object to be detected at the desired position between emitter and receiver.
6. Connect the TEACH input of the receiver with $+U_B$ for at least 2 s.
The receiver evaluates the signal strength of the attenuated air path and determines the optimal switching threshold. This switching threshold is then stored into the non-volatile memory of the receiver.
7. Disconnect the TEACH input from $+U_B$.

Ultrasonic sensor, transmitter

UBE15M-H1

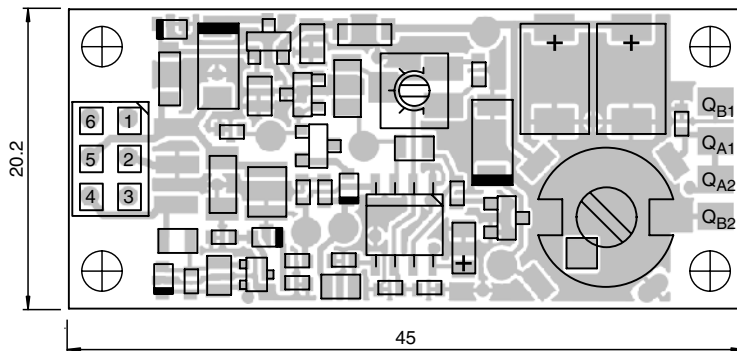


- Large sensing range
- Large possible lateral distance between emitter and receiver
- One or two transducers connectable
- Separate evaluation

Multi-head system



Dimensions



Technical Data

General specifications

Sensing range	0 ... 15000 mm , emitter - receiver synchronised
Transducer frequency	approx. 40 kHz
Angle of divergence	$\pm 45^\circ$ at -6 dB
Temperature drift of echo propagation delay	0.2 %/K

Electrical specifications

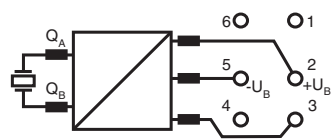
Operating voltage	U_B	16 ... 30 V DC , ripple 10 % _{SS} 8 V DC with reduced transmitting power
No-load supply current	I_0	≤ 10 mA (typ. 6 mA at $U_B = 24$ V DC)

Input

Technical Data

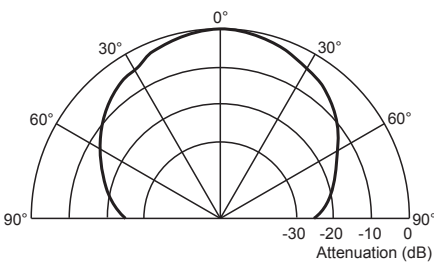
Input type	1 pulse input for transmitter pulse, activation through open collector npn < 1.5 V: emitter active, > 3.5 V: emitter inactive	
Pulse length		100 µs ... 10 ms
Pause length		≥ 50 x pulse length
Approvals and certificates		
UL approval		cULus Listed, General Purpose
CSA approval		cCSAus Listed, General Purpose
CCC approval		CCC approval / marking not required for products rated ≤36 V
Ambient conditions		
Ambient temperature		0 ... 50 °C (32 ... 122 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Mechanical specifications		
Degree of protection		IP00
Connection		Contact plugs and soldering surfaces
Mass		20 g
Dimensions		Printed circuit board: 45 mm x 20.2 mm (5 mm separable: 40 mm x 20.2 mm) overall height: 10 mm

Connection

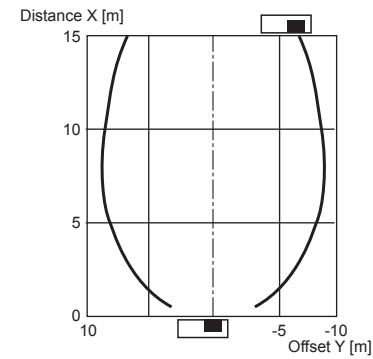


Characteristic Curve

Direction characteristics

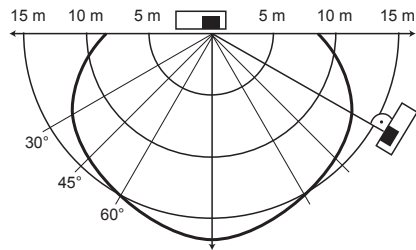


Characteristic response curve



Permissible distance (offset) between the optical axis of the emitter and receiver.

Characteristic response curve



Function

Function

The emitter is part of a complete system consisting of emitter, receiver and controller

Receiver: UBE15M-F54-H2-V1

Controller: UH3-16E4A-K15-R3

By means of using 2 ultrasonic transducers, aligned to different directions (practically 90° angular difference), the detection range and the angular tolerance can be increased anymore.

Caution:

When aligning both ultrasonic transducers in a parallel way, mutual interference effects can occur. This can cause local amplification respective attenuation of the ultrasonic sound strength.



Example of a customized solution with 2 ultrasonic transducers

In real operation, the transmitter and receiver will not be not aligned to each other. This will reduce the detection range.

The characteristic response curve to the side illustrates examples of the detection range of the system under the following operating conditions.

- The transmitter and receiver are arranged so they lie parallel opposite each other. The graph shows the detection range as a function of lateral offset.
- The receiver is arranged vertically downwards, while the emitter is arranged in the direction of the receiver. The graph shows the detection range as a function of the angle of incidence.

This makes it possible to evaluate the detection range of the system as a function of the positioning of the transmitter and receiver for conditions that will occur in practical usage.



Cable sockets with built-in indicator LEDs must not be used to connect this device!



Ultrasonic sensor, receiver

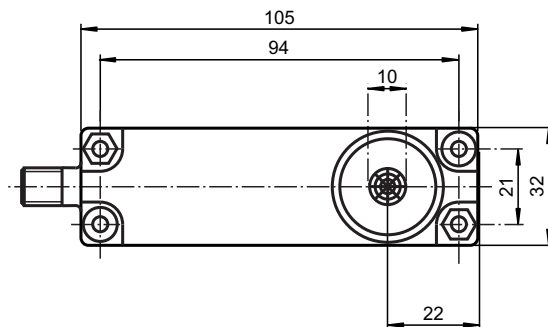
UBE15M-F54-H2-V1

- Large sensing range
- Large possible lateral distance between emitter and receiver
- Separate evaluation

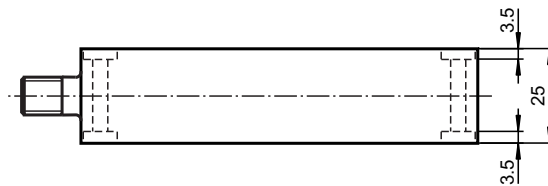
Multi-head system



Dimensions



Bore hole and countersinking
for screws/hexagon M4



Technical Data

General specifications

Sensing range	0 ... 15000 mm , emitter - receiver synchronised
Transducer frequency	approx. 40 kHz
Opening angle	$\pm 45^\circ$ at -6 dB
Temperature drift of echo propagation delay	0.2 %/K

Electrical specifications

Operating voltage	U_B	10 ... 30 V DC , ripple 10 % _{SS}
No-load supply current	I_0	≤ 15 mA (typ. 10 mA at $U_B = 24$ V DC)

Output

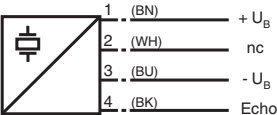
Technical Data

Output type		1 pulse output for echo run time, open collector NPN, short-circuit proof 0 level (active): $U_{OL} \leq 2\text{ V}$, $I_{OL} \leq 15\text{ mA}$ 1 level (inactive): $U_{OH} = U_B$ (pull-up R = 330 kOhm)
Compliance with standards and directives		
Standard conformity		
Standards		EN IEC 60947-5-2:2020 IEC 60947-5-2:2019
Approvals and certificates		
UL approval		cULus Listed, Class 2 Power Source
CCC approval		CCC approval / marking not required for products rated $\leq 36\text{ V}$
Ambient conditions		
Ambient temperature		0 ... 50 °C (32 ... 122 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Mechanical specifications		
Connection type		Connector plug M12 x 1 , 4-pin
Degree of protection		IP30
Material		
Housing		PBT
Mass		110 g
Dimensions		
Height		31 mm
Width		105 mm
Length		25 mm

Connection

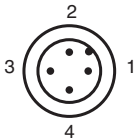
Standard symbol/Connection:

Receiver



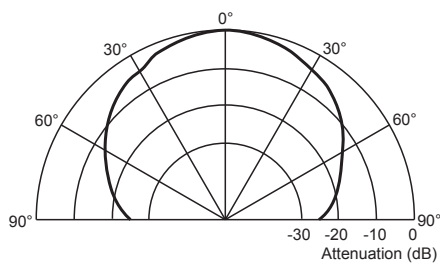
Core colours in accordance with EN 60947-5-2.

Connection Assignment

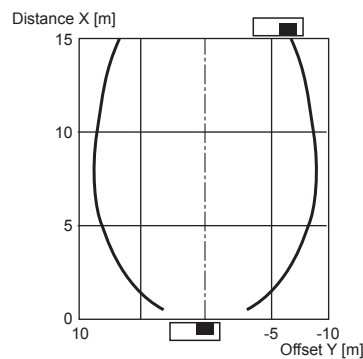


Characteristic Curve

Direction characteristics

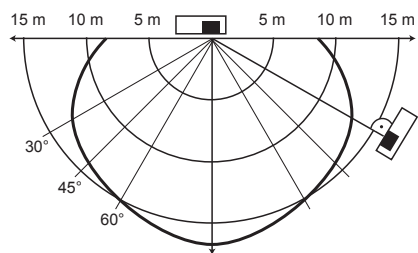


Characteristic response curve



Permissible distance (offset) between the optical axis of the emitter and receiver.

Characteristic response curve



Function

Function

The receiver is part of a complete system consisting of receiver, emitter, and controller

Transmitter UBE15M-F54-H1-V1

Controller: UH3-16E4A-K15-R3

In real mode, the transmitter and receiver will not be not aligned to each other. This reduces the detection range that can be achieved.

The characteristic response curve to the side illustrates examples of the detection range of the system under the following operating conditions.

- The transmitter and receiver are arranged so they lie parallel opposite each other. The graph shows the detection range as a function of lateral offset.
- The receiver is arranged vertically downward, while the emitter is arranged in the direction of the receiver. The graph shows the detection range as a function of the angle of incidence.

This makes it possible to evaluate the detection range of the system as a function of the positioning of the transmitter and receiver for conditions that will occur in practical usage.



Cable sockets with built-in indicator LEDs must not be used to connect this device!



Ultrasonic sensor, transmitter

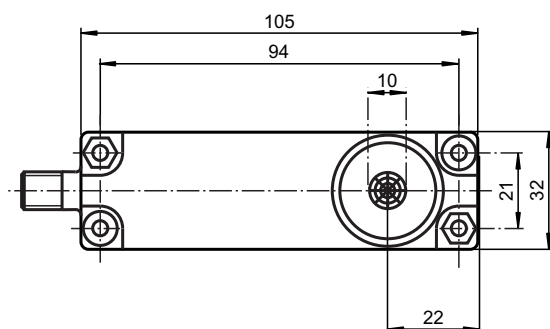
UBE15M-F54-H1-V1

- Large sensing range
- Large possible lateral distance between emitter and receiver
- Separate evaluation

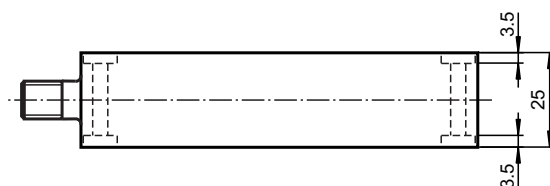
Multi-head system



Dimensions



Bore hole and countersinking
for screws/hexagon M4



Technical Data

General specifications

Sensing range	0 ... 15000 mm , emitter - receiver synchronised
Transducer frequency	approx. 40 kHz
Opening angle	$\pm 45^\circ$ at -6 dB
Temperature drift of echo propagation delay	0.2 %/K

Electrical specifications

Operating voltage	U_B	16 ... 30 V DC , ripple 10 % _{SS} 8 V DC with reduced transmitting power
No-load supply current	I_0	≤ 10 mA (typ. 6 mA at $U_B = 24$ V DC)

Input

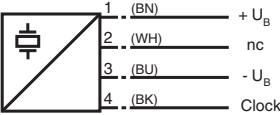
Technical Data

Input type	1 pulse input for transmitter pulse, activation through open collector npn < 1.5 V: emitter active, > 3.5 V: emitter inactive	
Pulse length		100 µs ... 10 ms
Pause length		≥ 50 x pulse length
Compliance with standards and directives		
Standard conformity		
Standards		EN IEC 60947-5-2:2020 IEC 60947-5-2:2019
Approvals and certificates		
UL approval		cULus Listed, Class 2 Power Source
CCC approval		CCC approval / marking not required for products rated ≤36 V
Ambient conditions		
Ambient temperature		0 ... 50 °C (32 ... 122 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Mechanical specifications		
Connection type		Connector plug M12 x 1 , 4-pin
Degree of protection		IP30
Material		
Housing		PBT
Mass		110 g
Dimensions		
Height		31 mm
Width		105 mm
Length		25 mm

Connection

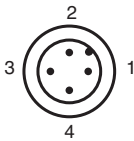
Standard symbol/Connection:

Emitter



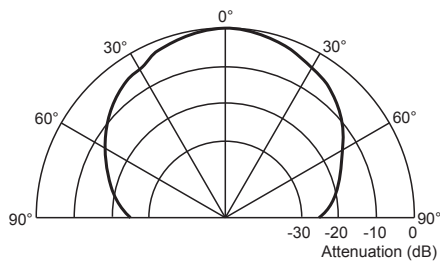
Core colours in accordance with EN 60947-5-2.

Connection Assignment

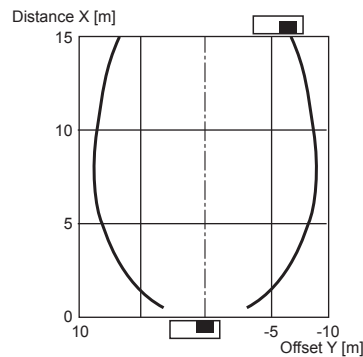


Characteristic Curve

Direction characteristics

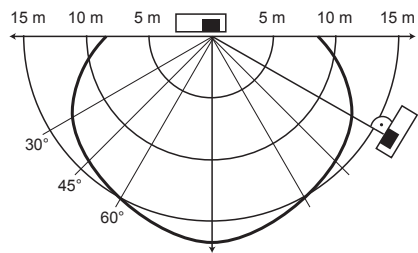


Characteristic response curve



Permissible distance (offset) between the optical axis of the emitter and receiver.

Characteristic response curve



Function

Function

The emitter is part of a complete system consisting of emitter, receiver and controller

Receiver: UBE15M-F54-H2-V1

Controller: UH3-16E4A-K15-R3

In real mode, the transmitter and receiver will not be not aligned to each other. This reduces the detection range that can be achieved.

The characteristic response curve to the side illustrates examples of the detection range of the system under the following operating conditions.

- The transmitter and receiver are arranged so they lie parallel opposite each other. The graph shows the detection range as a function of lateral offset.
- The receiver is arranged vertically downward, while the emitter is arranged in the direction of the receiver. The graph shows the detection range as a function of the angle of incidence.

This makes it possible to evaluate the detection range of the system as a function of the positioning of the transmitter and receiver for conditions that will occur in practical usage.



Cable sockets with built-in indicator LEDs must not be used to connect this device!

Through-beam ultrasonic barrier

UBE4000-30GM-SA2-V15

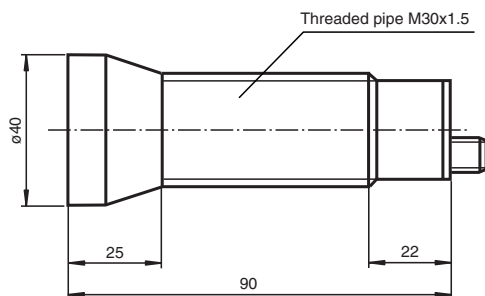


- Reliable detection of transparent materials
- High switching frequency
- Adjustable sensitivity
- Adjustable switch-on delay
- Small angle of divergence
- Protective functions
- Emitter and receiver included in the delivery package

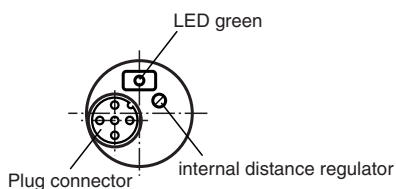


Dimensions

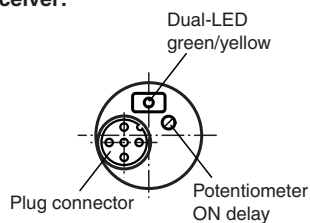
Dimensions:



Emitter:



Receiver:



Technical Data

General specifications

Sensing range	0 ... 4000 mm , distance emitter-receiver 500 mm ... 4000 mm
Through-beam mode	Single path ultrasonic switch
Reference target	receiver
Transducer frequency	85 kHz

Indicators/operating means

LED green	alignment aid OFF: no ultrasonic signal flashing: uncertain area ON: positive reception
LED yellow	switching state

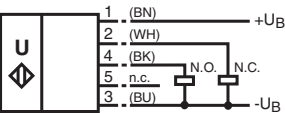
Technical Data

Electrical specifications		
Operating voltage	U _B	18 ... 30 V DC , ripple 10 % _{SS}
No-load supply current	I ₀	35 mA emitter 25 mA receiver
Output		
Output type		2 switch outputs PNP, normally open/closed (complementary)
Rated operating current	I _e	200 mA
Voltage drop	U _d	≤ 2.5 V
Switch-on delay	t _{on}	100 ... 3000 ms
Switching frequency	f	≤ 15 Hz
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		0 ... 60 °C (32 ... 140 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Mechanical specifications		
Connection type		Connector M12 x 1 , 5-pin
Degree of protection		IP65
Material		
Housing		nickel plated brass; plastic components: PBT
Mass		160 g each sensor

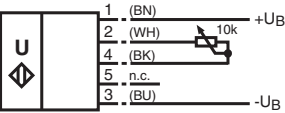
Connection

Standard symbol/Connection:
(version A2, pnp)

Receiver:

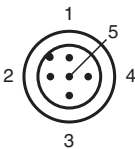


Emitter:



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

Connection Assignment

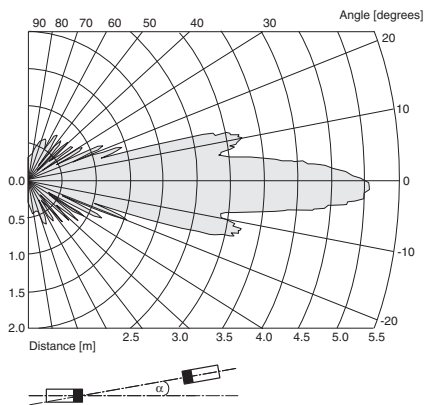


Wire colors in accordance with EN 60947-5-2

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

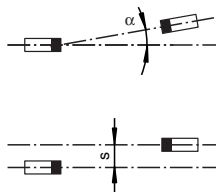
Characteristic Curve

Characteristic response curves



Installation Conditions

Alignment



Accessories

	BF 30	Mounting flange, 30 mm
	BF 5-30	Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm
	V1-G-2M-PVC	Female cordset single-ended M12 straight A-coded, 4-pin, PVC cable grey
	UVW90-M30	Ultrasonic -deflector

Accessories

	UVW90-K30	Ultrasonic -deflector
	M30K-VE	Plastic nuts with centering ring for the vibration-free mounting of cylindrical sensors
	V15-G-2M-PVC	Female cordset single-ended M12 straight A-coded, 5-pin, PVC cable grey

Additional Information

Description of the sensor functions

Remote potentiometer

The distance range of the through-beam ultrasonic barrier can be adjusted with the potentiometer integrated in the emitter, or via a remote potentiometer connected to the emitter.

The remote potentiometer simplifies the adjustment of the distance range if the sensors are installed in an inaccessible location. A 10 k Ω /0.3 W potentiometer serves as the remote potentiometer. The connection is realised using the plug connector pins 2 and 4 of the emitter (see: Electrical Connection).

The following distance ranges can be set using the remote potentiometer:

Adjustment of the internal distance regulator	Distance range adjustable via remote potentiometer
Minimum switching point	0 m ... 2 m
Maximum switching point	2 m ... 4 m

When operating without a remote potentiometer, the plug connector pins 2 and 4 must be bridged.

Adjustment

Turning the potentiometer on the emitter to the left (counterclockwise) causes a reduction of the transmission power. Thus, the through-beam ultrasonic barrier becomes more sensitive.

Note: If no remote potentiometer is connected and the connector pins 2 and 4 are not bridged, the emitter always operates at maximum transmission power. The through-beam ultrasonic barrier then has the lowest sensitivity. Turning the transmitter side potentiometer won't have an effect, then.

Alignment

When adjusting the emitter and receiver, take care to align them as precisely as possible.

Angular tolerance: $\alpha < \pm 2^\circ$

maximum offset: $s < \pm 5$ mm

A through-beam ultrasonic barrier consists of a single emitter and a single receiver.

Caution

Mount or replace emitter and receiver only in pairs. Both devices are optimally matched to each other by the manufacturer.

Through-beam ultrasonic barrier

UBE1000-18GM40-SE2-V1

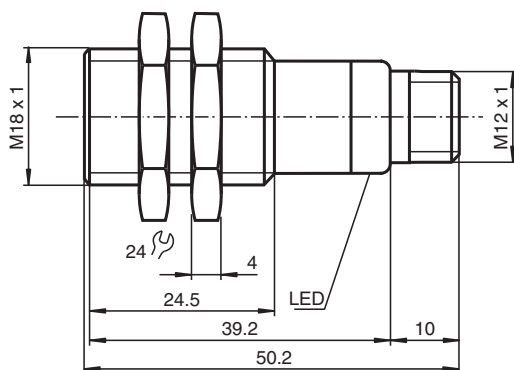


- Short design, 40 mm
- Function indicators visible from all directions
- Switching output
- Program input
- Integrated alignment aid

Single head system



Dimensions



Technical Data

General specifications

Sensing range	15 ... 1000 mm
Standard target plate	100 mm x 100 mm
Transducer frequency	approx. 255 kHz

Indicators/operating means

LED green	Power on
LED yellow	switching state
LED red	error, object uncertain

Electrical specifications

Operating voltage	U_B	10 ... 30 V DC , ripple 10 % _{SS}
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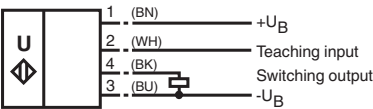
Technical Data

No-load supply current	I_0	$\leq 20\text{ mA}$
Time delay before availability	t_v	$\leq 200\text{ ms}$
Input		
Input type	1 program input free air path: $-U_B \dots +1\text{ V}$, object: $+6\text{ V} \dots +U_B$ input impedance: $> 4,7\text{ k}\Omega$ program pulse: $\geq 1\text{ s}$	
Output		
Output type	PNP, NO	
Rated operating current	I_e	200 mA , short-circuit/overload protected
Voltage drop	U_d	$\leq 3\text{ V}$
Switch-on delay	t_{on}	$< 5\text{ ms}$
Switching frequency	f	$\leq 100\text{ Hz}$
Compliance with standards and directives		
Standard conformity		
Standards		EN IEC 60947-5-2:2020 IEC 60947-5-2:2019
Approvals and certificates		
EAC conformity		TR CU 020/2011 TR CU 037/2016
UL approval		cULus Listed, Class 2 Power Source
CCC approval		CCC approval / marking not required for products rated $\leq 36\text{ V}$
Ambient conditions		
Ambient temperature		$-25 \dots 70\text{ }^\circ\text{C}$ ($-13 \dots 158\text{ }^\circ\text{F}$)
Storage temperature		$-40 \dots 85\text{ }^\circ\text{C}$ ($-40 \dots 185\text{ }^\circ\text{F}$)
Mechanical specifications		
Connection type		Connector plug M12 x 1 , 4-pin
Housing diameter		18 mm
Degree of protection		IP67
Material		
Housing		brass, nickel-plated
Transducer		epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Mass		25 g

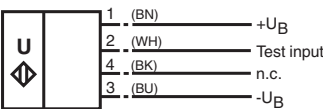
Connection

Standard symbol/Connection:
(version E2, pnp)

Receiver:

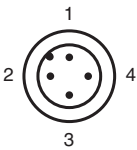


Emitter:



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

Connection Assignment

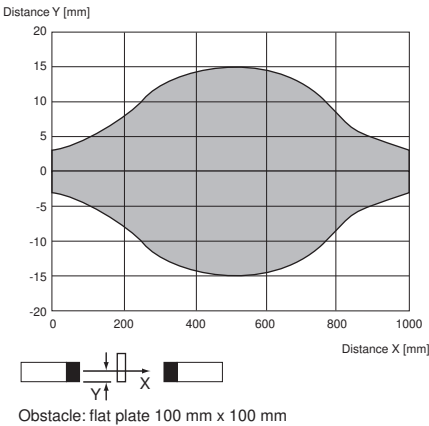


Wire colors in accordance with EN 60947-5-2

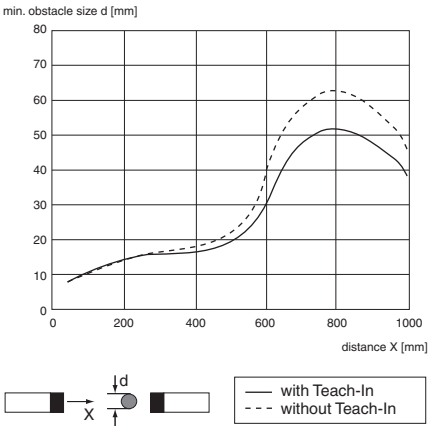
1	BN	(brown)
2	WH	(white)
3	BU	(blue)
4	BK	(black)

Characteristic Curve

Characteristic response curve



Obstacle size



Accessories

	UB-PROG2	Programming unit
	OMH-04	Mounting aid for round steel $\varnothing$ 12 mm or sheet 1.5 mm ... 3 mm

Accessories

	BF 18	Mounting flange, 18 mm
	BF 18-F	Plastic mounting adapter, 18 mm
	BF 5-30	Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm
	V1-G-2M-PVC	Female cordset single-ended M12 straight A-coded, 4-pin, PVC cable grey
	V1-W-2M-PUR	Female cordset single-ended M12 angled A-coded, 4-pin, PUR cable grey
	UVW90-K18	Ultrasonic -deflector
	M18K-VE	Plastic nuts with centering ring for the vibration-free mounting of cylindrical sensors

Additional Information

Function

A through-beam ultrasonic barrier always consists of a single emitter and a single receiver. The function of a through-beam ultrasonic barrier is based in the interruption of the sound transmission to the receiver by the object to be detected.

The emitter sends an ultrasonic signal that is evaluated by the receiver. If the signal is interrupted or muted by the object to be detected, the receiver switches.

No electrical connections are required between the emitter and receiver.

The function of through-beam ultrasonic barriers is not dependent on the position of their installation. We recommend, however, to install the emitter below in the case of vertical installations to prevent the accumulation of dust particles.

Startup and parameterising

For easy alignment of emitter and receiver towards each other, the receiver is equipped with an alignment aid. To activate the alignment aid, the TEACH-Input of the receiver (pin 2) has to be connected to ground ($-U_B$). The flashing frequency of the yellow LED indicates the strength of the received ultrasonic signal. The better the alignment, the stronger the signal.

LED yellow, flashing frequency	Description
slowly (appr. 1.5 Hz)	no signal
medium (appr. 3 Hz)	weak signal
fast (appr. 9 Hz)	strong signal

Simultaneously the ultrasonic barrier evaluates the signal strength of the unobstructed signal path and generates the optimal switching threshold. When disconnecting the TEACH-input from $-U_B$, this threshold is stored non-volatile in the receivers memory. In case of clear ultrasonic path (no object), only the receivers green LED is on.

TEACH-In of very small objects/obstacles

Like shown in the curve "obstacle size", the ultrasonic barrier offers the possibility to detect very small objects at a distance of more than 300 mm.

- place the object to be detected in the desired distance inside the ultrasonic path
- connect TEACH-input of the receiver to $+U_B$ (yellow LED flashes slowly)
- disconnect TEACH-input

In case of successful TEACH-IN (object is detected reliable), the yellow LED is on and the taught detection threshold is stored non-volatile to the receivers memory.

In case of unsuccessful TEACH-IN (object too small or too porous for ultrasonic sound), the red LED flashes 5 times and the ultrasonic barrier continues normal operation with unmodified detection threshold value.

Test function

For test purpose, the ultrasonic emitter is equipped with a test input. In normal operation mode (test input not connected or connected to $-U_B$), the green LED of the emitter is on. If the test input is connected to $+U_B$, the ultrasonic emitter gets deactivated and its LED changes into red. Simultaneously the receiver switches and its yellow LED goes on.

Through-beam ultrasonic barrier

UBE1000-18GM40A-SE2-V1

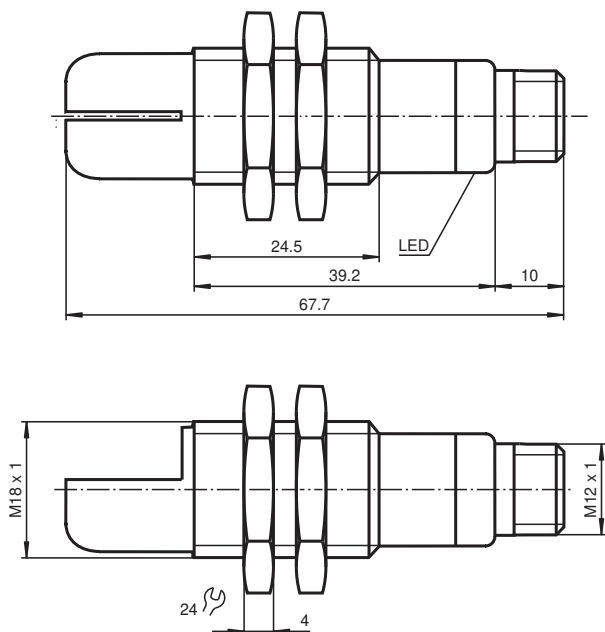


- Short design, 40 mm
- Function indicators visible from all directions
- Switching output
- Program input
- Integrated alignment aid

Single head system



Dimensions



Technical Data

General specifications

Sensing range	15 ... 1000 mm
Standard target plate	100 mm x 100 mm
Transducer frequency	approx. 255 kHz

Indicators/operating means

LED green	Power on
LED yellow	switching state
LED red	error, object uncertain

Electrical specifications

Operating voltage	U_B	10 ... 30 V DC , ripple 10 % _{SS}
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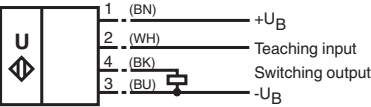
Technical Data

No-load supply current	I ₀	≤ 20 mA
Time delay before availability	t _v	≤ 200 ms
Input		
Input type	1 program input free air path: -U _B ... +1 V, object: +6 V ... +U _B input impedance: > 4,7 kΩ program pulse: ≥ 1 s	
Output		
Output type	PNP, NO	
Rated operating current	I _e	200 mA , short-circuit/overload protected
Voltage drop	U _d	≤ 3 V
Switch-on delay	t _{on}	< 5 ms
Switching frequency	f	≤ 100 Hz
Compliance with standards and directives		
Standard conformity		
Standards		EN IEC 60947-5-2:2020 IEC 60947-5-2:2019
Approvals and certificates		
UL approval		cULus Listed, Class 2 Power Source
CCC approval	CCC approval / marking not required for products rated ≤36 V	
Ambient conditions		
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)	
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Mechanical specifications		
Connection type		Connector plug M12 x 1 , 4-pin
Housing diameter	18 mm	
Degree of protection		IP67
Material		
Housing		brass, nickel-plated
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT	
Mass		25 g

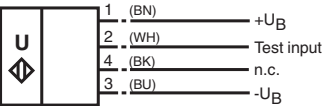
Connection

Standard symbol/Connection:
(version E2, pnp)

Receiver:

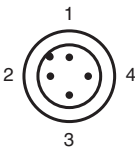


Emitter:



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

Connection Assignment

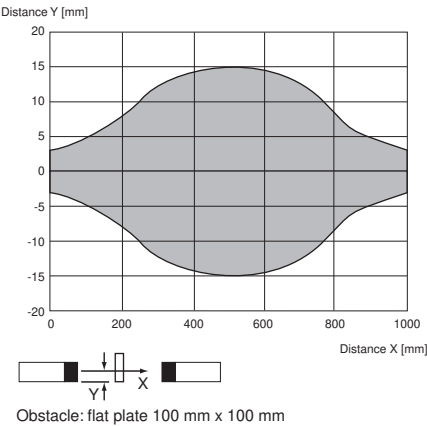


Wire colors in accordance with EN 60947-5-2

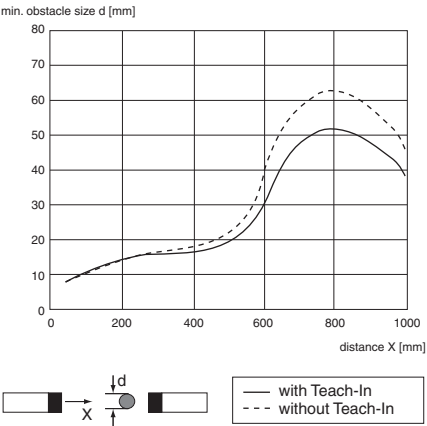
1	BN	(brown)
2	WH	(white)
3	BU	(blue)
4	BK	(black)

Characteristic Curve

Characteristic response curve



Obstacle size



Accessories

	UB-PROG2	Programming unit
	OMH-04	Mounting aid for round steel $\varnothing$ 12 mm or sheet 1.5 mm ... 3 mm

Accessories

	BF 18	Mounting flange, 18 mm
	BF 18-F	Plastic mounting adapter, 18 mm
	BF 5-30	Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm
	V1-G-2M-PVC	Female cordset single-ended M12 straight A-coded, 4-pin, PVC cable grey
	V1-W-2M-PUR	Female cordset single-ended M12 angled A-coded, 4-pin, PUR cable grey
	UVW90-K18	Ultrasonic -deflector
	M18K-VE	Plastic nuts with centering ring for the vibration-free mounting of cylindrical sensors

Additional Information

Function

A through-beam ultrasonic barrier always consists of a single emitter and a single receiver. The function of a through-beam ultrasonic barrier is based in the interruption of the sound transmission to the receiver by the object to be detected.

The emitter sends an ultrasonic signal that is evaluated by the receiver. If the signal is interrupted or muted by the object to be detected, the receiver switches.

No electrical connections are required between the emitter and receiver.

The function of through-beam ultrasonic barriers is not dependent on the position of their installation. We recommend, however, to install the emitter below in the case of vertical installations to prevent the accumulation of dust particles.

Startup and parameterising

For easy alignment of emitter and receiver towards each other, the receiver is equipped with an alignment aid. To activate the alignment aid, the TEACH-Input of the receiver (pin 2) has to be connected to ground ($-U_B$). The flashing frequency of the yellow LED indicates the strength of the received ultrasonic signal. The better the alignment, the stronger the signal.

LED yellow, flashing frequency	Description
slowly (appr. 1.5 Hz)	no signal
medium (appr. 3 Hz)	weak signal
fast (appr. 9 Hz)	strong signal

Simultaneously the ultrasonic barrier evaluates the signal strength of the unobstructed signal path and generates the optimal switching threshold. When disconnecting the TEACH-input from $-U_B$, this threshold is stored non-volatile in the receivers memory. In case of clear ultrasonic path (no object), only the receivers green LED is on.

TEACH-In of very small objects/obstacles

Like shown in the curve "obstacle size", the ultrasonic barrier offers the possibility to detect very small objects at a distance of more than 300 mm.

- place the object to be detected in the desired distance inside the ultrasonic path
- connect TEACH-input of the receiver to $+U_B$ (yellow LED flashes slowly)
- disconnect TEACH-input

In case of successful TEACH-IN (object is detected reliable), the yellow LED is on and the taught detection threshold is stored non-volatile to the receivers memory.

In case of unsuccessful TEACH-IN (object too small or too porous for ultrasonic sound), the red LED flashes 5 times and the ultrasonic barrier continues normal operation with unmodified detection threshold value.

Test function

For test purpose, the ultrasonic emitter is equipped with a test input. In normal operation mode (test input not connected or connected to $-U_B$), the green LED of the emitter is on. If the test input is connected to $+U_B$, the ultrasonic emitter gets deactivated and its LED changes into red. Simultaneously the receiver switches and its yellow LED goes on.

Through-beam ultrasonic barrier

UBE1000-18GM40A-
SE2-V1-Y205349

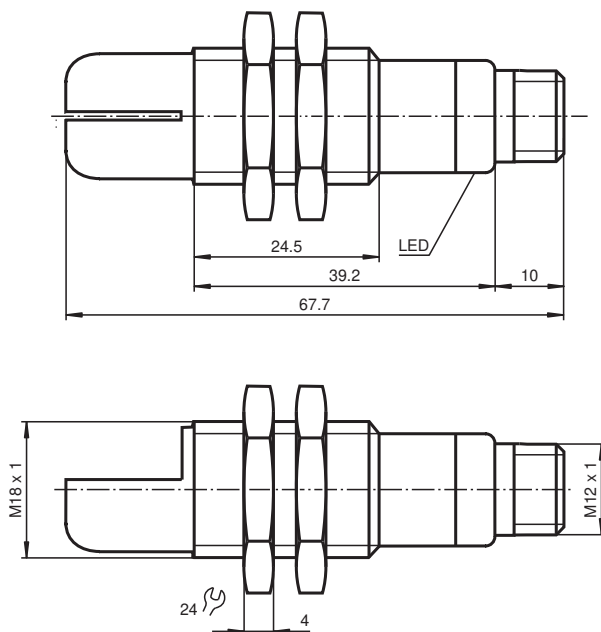


- Short design, 40 mm
- Function indicators visible from all directions
- Switching output
- Program input
- 58 mm pre-taught sensor spacing

Single head system



Dimensions



Technical Data

General specifications

Sensing range	15 ... 1000 mm
Standard target plate	100 mm x 100 mm
Transducer frequency	approx. 255 kHz

Indicators/operating means

LED green	Power on
LED yellow	switching state
LED red	error, object uncertain

Electrical specifications

Operating voltage	U_B	10 ... 30 V DC , ripple 10 % _{SS}
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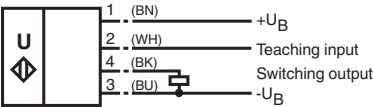
Technical Data

No-load supply current	I_0	$\leq 20\text{ mA}$
Input		
Input type		1 program input free air path: $-U_B \dots +1\text{ V}$, object: $+6\text{ V} \dots +U_B$ input impedance: $> 4,7\text{ k}\Omega$ program pulse: $\geq 1\text{ s}$
Output		
Output type		PNP, NO
Rated operating current	I_e	200 mA , short-circuit/overload protected
Default setting		emitter/receiver spacing = 58 mm
Voltage drop	U_d	$\leq 3\text{ V}$
Switch-on delay	t_{on}	$< 5\text{ ms}$
Switching frequency	f	$\leq 100\text{ Hz}$
Compliance with standards and directives		
Standard conformity		
Standards		EN IEC 60947-5-2:2020 IEC 60947-5-2:2019
Approvals and certificates		
EAC conformity		TR CU 020/2011 TR CU 037/2016
UL approval		cULus Listed, Class 2 Power Source
CCC approval		CCC approval / marking not required for products rated $\leq 36\text{ V}$
Ambient conditions		
Ambient temperature		$-25 \dots 70\text{ }^\circ\text{C}$ ($-13 \dots 158\text{ }^\circ\text{F}$)
Storage temperature		$-40 \dots 85\text{ }^\circ\text{C}$ ($-40 \dots 185\text{ }^\circ\text{F}$)
Mechanical specifications		
Connection type		Connector plug M12 x 1 , 4-pin
Degree of protection		IP67
Connection		V1 connector (M12 x 1), 4-pin
Material		
Housing		brass, nickel-plated
Transducer		epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Mass		25 g
Dimensions		
Length		40 mm
Diameter		18 mm

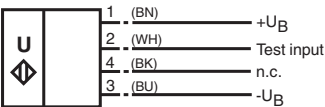
Connection

Standard symbol/Connection:
(version E2, pnp)

Receiver:

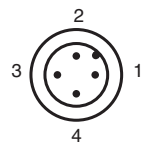


Emitter:



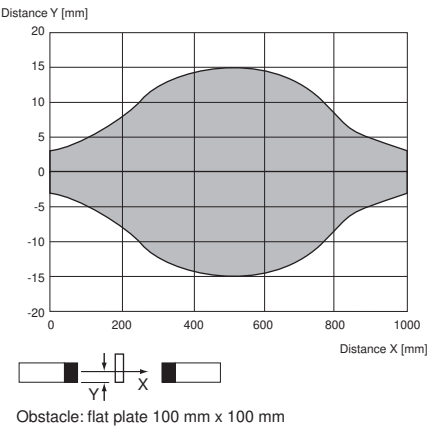
Core colours in accordance with EN 60947-5-2.

Connection Assignment

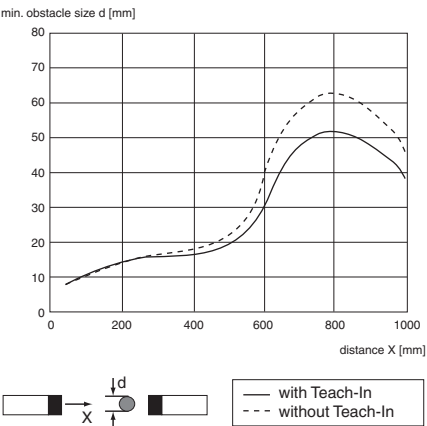


Characteristic Curve

Characteristic response curve



Obstacle size



Additional Information

Function

A through-beam ultrasonic barrier always consists of a single emitter and a single receiver. The function of a through-beam ultrasonic barrier is based in the interruption of the sound transmission to the receiver by the object to be detected.

The emitter sends an ultrasonic signal that is evaluated by the receiver. If the signal is interrupted or muted by the object to be detected, the receiver switches.

No electrical connections are required between the emitter and receiver.

The function of through-beam ultrasonic barriers is not dependent on the position of their installation. We recommend, however, to install the emitter below in the case of vertical installations to prevent the accumulation of dust particles.

Startup and parameterising

For easy alignment of emitter and receiver towards each other, the receiver is equipped with an alignment aid. To activate the alignment aid, the TEACH-Input of the receiver (pin 2) has to be connected to ground ($-U_B$). The flashing frequency of the yellow LED indicates the strength of the received ultrasonic signal. The better the alignment, the stronger the signal.

LED yellow, flashing frequency	Description
slowly (appr. 1.5 Hz)	no signal
medium (appr. 3 Hz)	weak signal
fast (appr. 9 Hz)	strong signal

Simultaneously the ultrasonic barrier evaluates the signal strength of the unobstructed signal path and generates the optimal switching threshold. When disconnecting the TEACH-input from $-U_B$, this threshold is stored non-volatile in the receivers memory. In case of clear ultrasonic path (no object), only the receivers green LED is on.

TEACH-In of very small objects/obstacles

Like shown in the curve "obstacle size", the ultrasonic barrier offers the possibility to detect very small objects at a distance of more than 300 mm.

- place the object to be detected in the desired distance inside the ultrasonic path
- connect TEACH-input of the receiver to $+U_B$ (yellow LED flashes slowly)
- disconnect TEACH-input

In case of successful TEACH-IN (object is detected reliable), the yellow LED is on and the taught detection threshold is stored non-volatile to the receivers memory.

In case of unsuccessful TEACH-IN (object too small or too porous for ultrasonic sound), the red LED flashes 5 times and the ultrasonic barrier continues normal operation with unmodified detection threshold value.

Test function

For test purpose, the ultrasonic emitter is equipped with a test input. In normal operation mode (test input not connected or connected to $-U_B$), the green LED of the emitter is on. If the test input is connected to $+U_B$, the ultrasonic emitter gets deactivated and its LED changes into red. Simultaneously the receiver switches and its yellow LED goes on.



Ultrasonic sensor, receiver

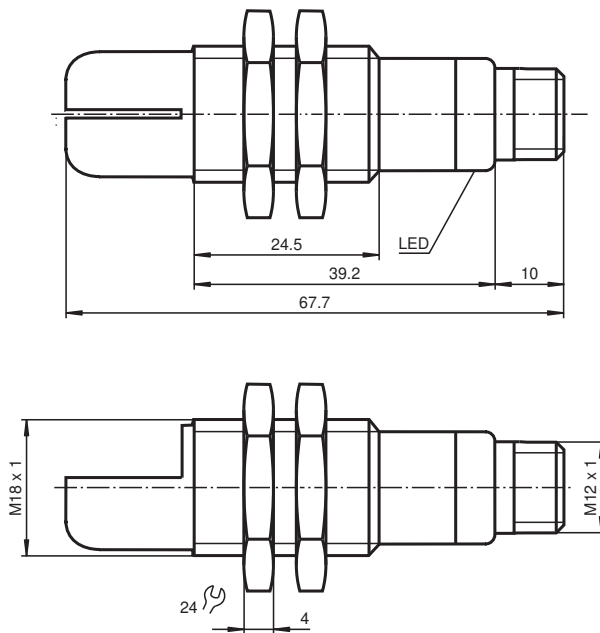
UBE500-18GM40A-E2-V1-Y220366

- Short design, 40 mm
- Function indicators visible from all directions
- Switching output
- Program input
- Stainless steel housing

Single head system



Dimensions



Technical Data

General specifications

Sensing range	100 ... 500 mm
Standard target plate	100 mm x 100 mm
Transducer frequency	approx. 390 kHz

Indicators/operating means

LED green	Power on
LED yellow	switching state
LED red	error, object uncertain

Electrical specifications

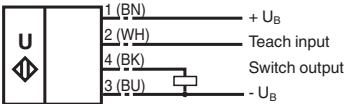
Operating voltage	U_B	10 ... 30 V DC , ripple 10 % _{SS}
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Technical Data

No-load supply current	I_0	$\leq 20\text{ mA}$
Input		
Input type		1 program input operating distance 1: $-U_B \dots +1\text{ V}$, operating distance 2: $+6\text{ V} \dots +U_B$ input impedance: $> 4,7\text{ k}\Omega$ program pulse: $\geq 1\text{ s}$
Output		
Output type		PNP, NO
Rated operating current	I_e	200 mA , short-circuit/overload protected
Voltage drop	U_d	$\leq 3\text{ V}$
Switch-on delay	t_{on}	$< 5\text{ ms}$
Switching frequency	f	$\leq 100\text{ Hz}$
Compliance with standards and directives		
Standard conformity		
Standards		EN IEC 60947-5-2:2020 IEC 60947-5-2:2019
Approvals and certificates		
UL approval		cULus Listed, Class 2 Power Source
CCC approval		CCC approval / marking not required for products rated $\leq 36\text{ V}$
Ambient conditions		
Ambient temperature		$-25 \dots 70\text{ }^\circ\text{C}$ ($-13 \dots 158\text{ }^\circ\text{F}$)
Storage temperature		$-40 \dots 85\text{ }^\circ\text{C}$ ($-40 \dots 185\text{ }^\circ\text{F}$)
Mechanical specifications		
Connection type		Connector plug M12 x 1 , 4-pin
Housing diameter		18 mm
Degree of protection		IP67
Material		
Housing		stainless steel V4A
Transducer		epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Mass		25 g

Connection

Standard symbol/Connections:
(Receiver, version E5, pnp)



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

Connection Assignment

Connector V1



Accessories

	UB-PROG2	Programming unit
	CPZ18B03	Mounting Bracket with swivel nut

Accessories

	OMH-04	Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm
	BF 18	Mounting flange, 18 mm
	BF 18-F	Plastic mounting adapter, 18 mm
	BF 5-30	Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm
	V1-G-2M-PVC	Female cordset single-ended M12 straight A-coded, 4-pin, PVC cable grey
	V1-W-2M-PUR	Female cordset single-ended M12 angled A-coded, 4-pin, PUR cable grey
	UVW90-K18	Ultrasonic -deflector
	M18K-VE	Plastic nuts with centering ring for the vibration-free mounting of cylindrical sensors

Additional Information

Function

A through-beam ultrasonic barrier always consists of a single emitter and a single receiver. The function of a through-beam ultrasonic barrier is based in the interruption of the sound transmission to the receiver by the object to be detected.

The emitter sends an ultrasonic signal that is evaluated by the receiver. If the signal is interrupted or muted by the object to be detected, the receiver switches.

No electrical connections are required between the emitter and receiver.

The function of through-beam ultrasonic barriers is not dependent on the position of their installation. We recommend, however, to install the emitter below in the case of vertical installations to prevent the accumulation of dust particles.

Startup and parameterising

For easy alignment of emitter and receiver towards each other, the receiver is equipped with an alignment aid. To activate the alignment aid, the TEACH-Input of the receiver (pin 2) has to be connected to ground ($-U_B$). The flashing frequency of the yellow LED indicates the strength of the received ultrasonic signal. The better the alignment, the stronger the signal.

LED yellow, flashing frequency	Description
slowly (appr. 1.5 Hz)	no signal
medium (appr. 3 Hz)	weak signal
fast (appr. 9 Hz)	strong signal

Simultaneously the ultrasonic barrier evaluates the signal strength of the unobstructed signal path and generates the optimal switching threshold. When disconnecting the TEACH-input from $-U_B$, this threshold is stored non-volatile in the receivers memory. In case of clear ultrasonic path (no object), all LEDs are off.

TEACH-In of very small objects/obstacles

Like shown in the curve "obstacle size", the ultrasonic barrier offers the possibility to detect very small objects at a distance of more than 300 mm.

- place the object to be detected in the desired distance inside the ultrasonic path
- connect TEACH-input of the receiver to $+U_B$ (yellow LED flashes slowly)
- disconnect TEACH-input

In case of successful TEACH-IN (object is detected reliable), the yellow LED is on and the taught detection threshold is stored non-volatile to the receivers memory.

In case of unsuccessful TEACH-IN (object too small or too porous for ultrasonic sound), the red LED flashes 5 times and the ultrasonic barrier continues normal operation with unmodified detection threshold value.



Ultrasonic sensor, transmitter

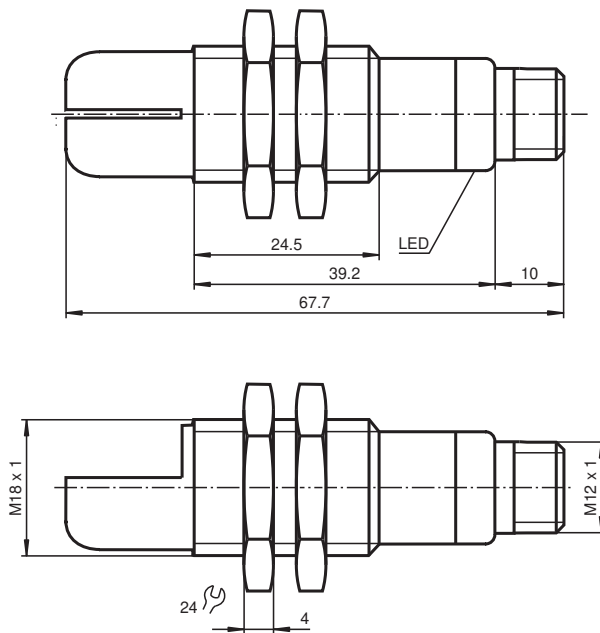
UBE500-18GM40A-V1-Y220367

- Short design, 40 mm
- Function indicators visible from all directions
- Test input
- Stainless steel housing

Single head system



Dimensions



Technical Data

General specifications

Sensing range	100 ... 500 mm
Standard target plate	100 mm x 100 mm
Transducer frequency	approx. 390 kHz

Indicators/operating means

LED green	Power on
LED red	Emitter deactivated

Electrical specifications

Operating voltage	U_B	10 ... 30 V DC , ripple 10 % _{SS}
No-load supply current	I_0	≤ 20 mA

Technical Data

Input		
Input type		1 Test input emitter deactivated: +6 V ... +U _B input impedance: > 4.7 kΩ
Compliance with standards and directives		
Standard conformity		
Standards		EN IEC 60947-5-2:2020 IEC 60947-5-2:2019
Approvals and certificates		
UL approval		cULus Listed, Class 2 Power Source
CCC approval		CCC approval / marking not required for products rated ≤36 V
Ambient conditions		
Ambient temperature		-25 ... 70 °C (-13 ... 158 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Mechanical specifications		
Connection type		Connector plug M12 x 1 , 4-pin
Housing diameter		18 mm
Degree of protection		IP67
Material		
Housing		stainless steel V4A
Transducer		epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Mass		25 g

Connection

Standard symbol/Connections:
(Emitter)



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

Connection Assignment

Connector V1



Accessories

	CPZ18B03	Mounting Bracket with swivel nut
	OMH-04	Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm
	BF 18	Mounting flange, 18 mm
	BF 18-F	Plastic mounting adapter, 18 mm

Accessories

	BF 5-30	Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm
	V1-G-2M-PVC	Female cordset single-ended M12 straight A-coded, 4-pin, PVC cable grey
	V1-W-2M-PUR	Female cordset single-ended M12 angled A-coded, 4-pin, PUR cable grey
	UVW90-K18	Ultrasonic -deflector
	M18K-VE	Plastic nuts with centering ring for the vibration-free mounting of cylindrical sensors



Through-beam ultrasonic barrier

UBE800-F77-SE2-V31

- Miniature design
- Highly visible LEDs for Power ON and switching state
- High switching frequency
- Program input
- Degree of protection IP67

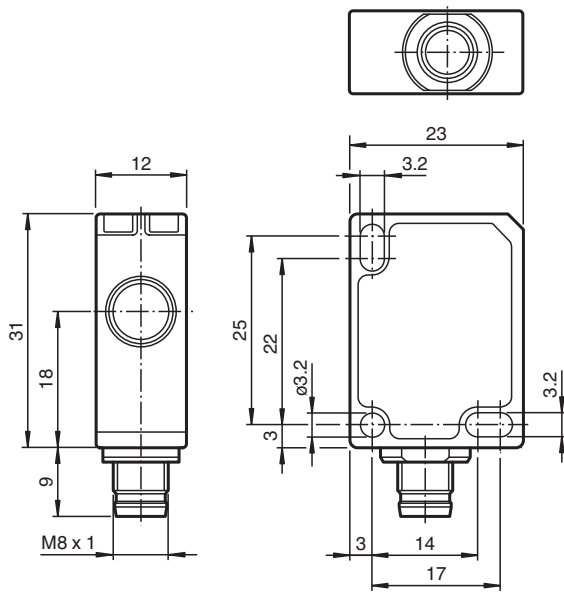
Through-beam ultrasonic barrier



Function

An ultrasonic thru-beam sensor always consists of an ultrasonic emitter and receiver. The working principle of the ultrasonic thru-beam sensor is based on the interruption of the transmission from the emitter to the receiver by the object to be detected (obstacle). The emitter produces an ultrasonic signal which is evaluated by the receiver. If the signal is damped or broken by the object being detected, the receiver switches state. No electrical connections are required between the emitter and receiver.

Dimensions



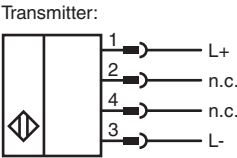
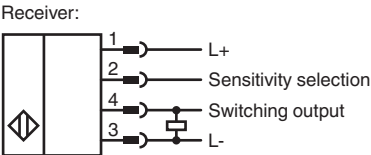
Technical Data

General specifications	
Sensing range	0 ... 800 mm emitter/receiver spacing
Standard target plate	see table
Transducer frequency	approx. 300 kHz
Response delay	≤ 5 ms

Technical Data

Limit data		
Permissible cable length		max. 300 m
Indicators/operating means		
LED green		Power on (emitter)
LED yellow		switching state (receiver)
Electrical specifications		
Rated operating voltage	U_e	24 V DC
Operating voltage	U_B	20 ... 30 V DC , ripple 10 % _{SS} ; 12 ... 20 V DC sensitivity reduced to 80 %
No-load supply current	I_0	≤ 20 mA
Time delay before availability	t_v	≤ 150 ms
Input		
Input type		1 program input (receiver)
Level		low level : 0 ... 0.7 V ; high level : > 14 V
Input impedance		16 kΩ
Pulse length		≥ 3 s
Output		
Output type		1 switch output PNP, NO
Rated operating current	I_e	200 mA , short-circuit/overload protected
Voltage drop	U_d	≤ 2 V
Switching frequency	f	100 Hz
Off-state current	I_r	≤ 0.01 mA
Compliance with standards and directives		
Standard conformity		
Standards		EN IEC 60947-5-2:2020 IEC 60947-5-2:2019
Approvals and certificates		
UL approval		cULus Listed, Class 2 Power Source
CCC approval		CCC approval / marking not required for products rated ≤36 V
Ambient conditions		
Ambient temperature		-25 ... 70 °C (-13 ... 158 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Shock resistance		30 g , 11 ms period
Vibration resistance		10 ... 55 Hz , Amplitude ± 1 mm
Mechanical specifications		
Connection type		M8 x 1 connector , 4-pin
Degree of protection		IP67
Material		
Housing		Polycarbonate
Transducer		epoxy resin/hollow glass sphere mixture; polyurethane foam
Installation position		any position
Mass		per 10 g
Tightening torque, fastening screws		max. 0.2 Nm

Connection



Connection Assignment



Wire colors in accordance with EN 60947-5-2

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

Commissioning

Adjustment possibilities
This sensor is an ultrasonic through-beam barrier consisting of a transmitter and a receiver. The receiver is equipped with a switching output. This switches when there is a sufficiently large object in the path between the transmitter and receiver. To adapt the ultrasonic through-beam barrier to different object sizes and/or distances between transmitter and receiver, the sensitivity can be configured via the „Sensitivity selection“ input on the receiver.

Further Documentation
For information on configuring the sensitivity via the „Sensitivity selection“ input you may refer to the commissioning instruction.

Accessories

	OMH-ML7-01	Mounting aid for ML7 and ML8 series, Mounting bracket
	V31-GM-2M-PVC	Female cordset single-ended M8 straight A-coded, 4-pin, PVC cable grey
	V31-WM-2M-PVC	Female cordset single-ended M8 angled A-coded, 4-pin, PVC cable grey



Through-beam ultrasonic barrier

UBE800-F77-SE3-V31

- Miniature design
- Highly visible LEDs for Power ON and switching state
- High switching frequency
- Program input
- Degree of protection IP67

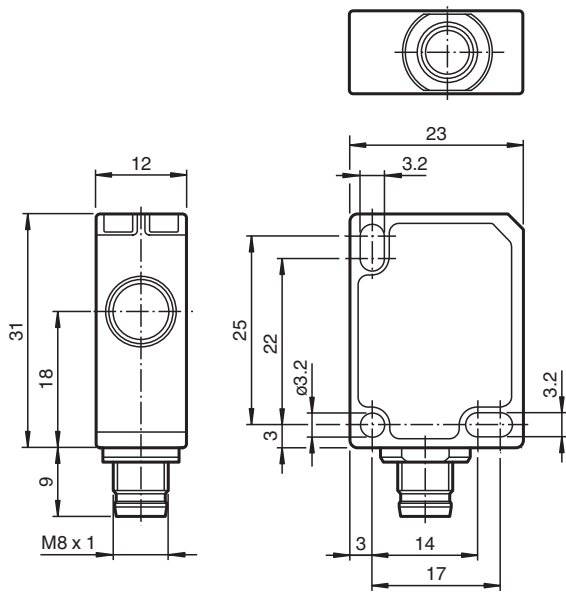
Through-beam ultrasonic barrier



Function

An ultrasonic thru-beam sensor always consists of an ultrasonic emitter and receiver. The working principle of the ultrasonic thru-beam sensor is based on the interruption of the transmission from the emitter to the receiver by the object to be detected (obstacle). The emitter produces an ultrasonic signal which is evaluated by the receiver. If the signal is damped or broken by the object being detected, the receiver switches state. No electrical connections are required between the emitter and receiver.

Dimensions



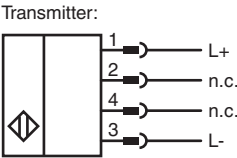
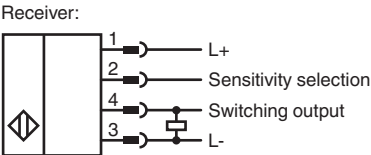
Technical Data

General specifications	
Sensing range	0 ... 800 mm emitter/receiver spacing
Standard target plate	see table
Transducer frequency	approx. 300 kHz
Response delay	≤ 5 ms

Technical Data

Limit data		
Permissible cable length		max. 300 m
Indicators/operating means		
LED green		Power on (emitter)
LED yellow		switching state (receiver)
Electrical specifications		
Rated operating voltage	U_e	24 V DC
Operating voltage	U_B	20 ... 30 V DC , ripple 10 % _{SS} ; 12 ... 20 V DC sensitivity reduced to 80 %
No-load supply current	I_0	≤ 20 mA
Time delay before availability	t_v	≤ 150 ms
Input		
Input type		1 program input (receiver)
Level		low level : 0 ... 0.7 V ; high level : > 14 V
Input impedance		16 kΩ
Pulse length		≥ 3 s
Output		
Output type		1 switch output PNP , NC contact
Rated operating current	I_e	200 mA , short-circuit/overload protected
Voltage drop	U_d	≤ 2 V
Switching frequency	f	100 Hz
Off-state current	I_r	≤ 0.01 mA
Compliance with standards and directives		
Standard conformity		
Standards		EN IEC 60947-5-2:2020 IEC 60947-5-2:2019
Approvals and certificates		
UL approval		cULus Listed, Class 2 Power Source
CCC approval		CCC approval / marking not required for products rated ≤36 V
Ambient conditions		
Ambient temperature		-25 ... 70 °C (-13 ... 158 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Shock resistance		30 g , 11 ms period
Vibration resistance		10 ... 55 Hz , Amplitude ± 1 mm
Mechanical specifications		
Connection type		M8 x 1 connector , 4-pin
Degree of protection		IP67
Material		
Housing		Polycarbonate
Transducer		epoxy resin/hollow glass sphere mixture; polyurethane foam
Installation position		any position
Mass		per 10 g
Tightening torque, fastening screws		max. 0.2 Nm

Connection



Connection Assignment



Wire colors in accordance with EN 60947-5-2

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

Commissioning

Adjustment possibilities
This sensor is an ultrasonic through-beam barrier consisting of a transmitter and a receiver. The receiver is equipped with a switching output. This switches when there is a sufficiently large object in the path between the transmitter and receiver. To adapt the ultrasonic through-beam barrier to different object sizes and/or distances between transmitter and receiver, the sensitivity can be configured via the „Sensitivity selection“ input on the receiver.

Further Documentation
For information on configuring the sensitivity via the „Sensitivity selection“ input you may refer to the commissioning instruction.

Accessories

	OMH-ML7-01	Mounting aid for ML7 and ML8 series, Mounting bracket
	V31-GM-2M-PVC	Female cordset single-ended M8 straight A-coded, 4-pin, PVC cable grey
	V31-WM-2M-PVC	Female cordset single-ended M8 angled A-coded, 4-pin, PVC cable grey



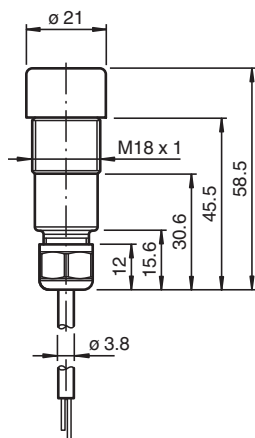
Through-beam ultrasonic barrier

UBEC300-18GH40-SE2-2M-Y274491

- Chemically highly resistant
- Short design, 40 mm
- Stainless steel housing
- PTFE connection cable
- Switching output
- Program input



Dimensions



Technical Data

General specifications

Sensing range	100 ... 300 mm
Standard target plate	100 mm x 100 mm
Transducer frequency	approx. 255 kHz

Electrical specifications

Operating voltage	U_B	10 ... 30 V DC , ripple 10 % _{SS}
No-load supply current	I_0	≤ 20 mA

Input

Input type	1 program input [receiver] switch point 1: $-U_B$... +1 V, switch point 2: +6 V ... $+U_B$ input impedance: > 4.7 k Ω pulse duration: ≥ 1 s 1 test input [emitter] emitter deactivated: +6 V ... $+U_B$ input impedance: > 4.7 k Ω
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Output

Output type		PNP, NO
Rated operating current	I _e	200 mA , short-circuit/overload protected
Voltage drop	U _d	≤ 3 V
Switch-on delay	t _{on}	< 5 ms

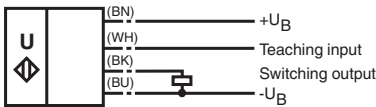
Technical Data

Switching frequency	f	≤ 100 Hz
Compliance with standards and directives		
Standard conformity		
Standards		EN IEC 60947-5-2:2020 IEC 60947-5-2:2019
Approvals and certificates		
UL approval		cULus Listed, Class 2 Power Source
CCC approval		CCC approval / marking not required for products rated ≤36 V
Ambient conditions		
Ambient temperature		-25 ... 70 °C (-13 ... 158 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Mechanical specifications		
Housing diameter		18 mm
Degree of protection		IP68 / IP69K
Connection		cable, PTFE coated, 2 m length
Material		
Housing		Stainless steel 1.4404 / AISI 316L O-ring for cover sealing: FFKM O-rong for cable sealing: FFKM, FEP coated
Transducer		PTFE (diaphragm surface)
Mass		220 g

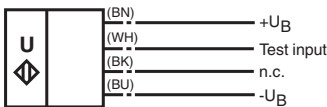
Connection

Standard symbol/Connection:
(version E2, pnp)

Receiver:



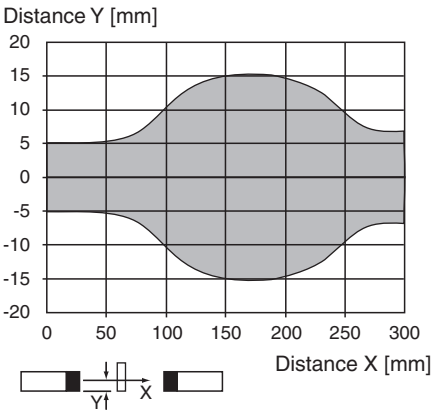
Emitter:



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

Characteristic Curve

Characteristic response curve



Additional Information

Safety Information



Attention

To guarantee that the sensor is impermeable, the cap nut for the cable gland is fitted with a defined torque at the factory. This torque must not be changed by the user. Otherwise, the impermeability of the sensor is not guaranteed and any guarantee or warranty claims on behalf of the user are void.

Function

An ultrasonic thru-beam sensor always consists of one emitter and one receiver. The functional principle of ultrasonic thru-beam sensors is based on the transmission of sound from the emitter to the receiver being interrupted by the object to be detected (obstacle).

The emitter generates an ultrasonic signal, which is analyzed by the receiver. If the ultrasonic signal is dampened or interrupted by the object to be detected, the receiver trips.

The emitter and the receiver do not have to be electrically connected.

Ultrasonic thru-beam sensors function regardless of their installation position. However, in order to avoid a build-up of dirt particles, it is recommended to install the emitter facing downwards if fitted vertically.

Commissioning and parameterization

On delivery, the receiver is preconfigured for a distance between the emitter and receiver of 300 mm. If the ultrasonic thru-beam sensor is to be used for other distances, a Teach-in must be performed.

Teach-in

1. Install the emitter and receiver for the ultrasonic thru-beam sensor at the required distance.
2. Align the emitter and receiver accurately with one another and fix the devices in place.
3. Remove all objects between the emitter and the receiver.
4. Connect the Teach-in input on the receiver to $-U_B$ for at least 2 seconds.
The receiver now detects the signal level in the clearance distance between the two units.
5. Position the obstacle to be detected at the required distance in the path of the ultrasonic signal.
6. Connect the Teach-in input on the receiver to $+U_B$ for at least 2 seconds.
The receiver now detects the signal level in the clearance distance between the two devices, which is dampened, and detects the optimum signal threshold. The signal threshold is now stored in the receiver in nonvolatile form.
7. Disconnect the receiver Teach-in input from $+U_B$.



Through-beam ultrasonic barrier

UBE800-F77-SE0-V31

- Miniature design
- Highly visible LEDs for Power ON and switching state
- High switching frequency
- Program input
- Degree of protection IP67

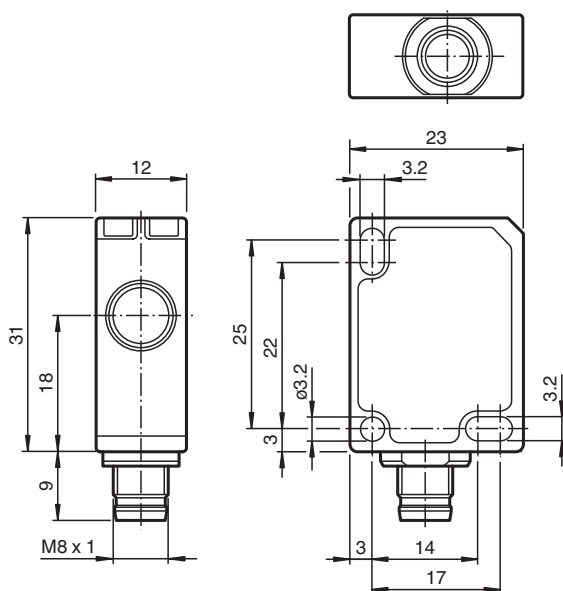
Through-beam ultrasonic barrier



Function

An ultrasonic thru-beam sensor always consists of an ultrasonic emitter and receiver. The working principle of the ultrasonic thru-beam sensor is based on the interruption of the transmission from the emitter to the receiver by the object to be detected (obstacle). The emitter produces an ultrasonic signal which is evaluated by the receiver. If the signal is damped or broken by the object being detected, the receiver switches state. No electrical connections are required between the emitter and receiver.

Dimensions



Technical Data

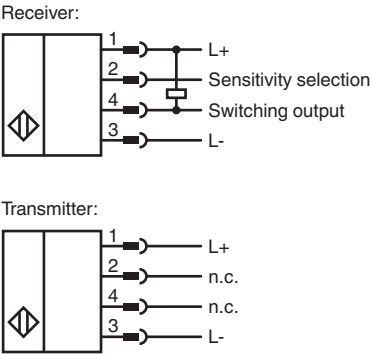
General specifications

Sensing range	0 ... 800 mm emitter/receiver spacing
Standard target plate	see table
Transducer frequency	approx. 300 kHz
Response delay	≤ 5 ms

Technical Data

Limit data		
Permissible cable length		max. 300 m
Indicators/operating means		
LED green		Power on (emitter)
LED yellow		switching state (receiver)
Electrical specifications		
Rated operating voltage	U_e	24 V DC
Operating voltage	U_B	20 ... 30 V DC , ripple 10 % _{SS} ; 12 ... 20 V DC sensitivity reduced to 80 %
No-load supply current	I_0	≤ 20 mA
Time delay before availability	t_v	≤ 150 ms
Input		
Input type		1 program input (receiver)
Level		low level : 0 ... 0.7 V ; high level : > 14 V
Input impedance		16 kΩ
Pulse length		≥ 3 s
Output		
Output type		1 switch output E0, NPN, NO
Rated operating current	I_e	200 mA , short-circuit/overload protected
Voltage drop	U_d	≤ 2 V
Switching frequency	f	100 Hz
Off-state current	I_r	≤ 0.01 mA
Compliance with standards and directives		
Standard conformity		
Standards		EN IEC 60947-5-2:2020 IEC 60947-5-2:2019
Approvals and certificates		
UL approval		cULus Listed, Class 2 Power Source
CCC approval		CCC approval / marking not required for products rated ≤36 V
Ambient conditions		
Ambient temperature		-25 ... 70 °C (-13 ... 158 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Shock resistance		30 g , 11 ms period
Vibration resistance		10 ... 55 Hz , Amplitude ± 1 mm
Mechanical specifications		
Connection type		M8 x 1 connector , 4-pin
Degree of protection		IP67
Material		
Housing		Polycarbonate
Transducer		epoxy resin/hollow glass sphere mixture; polyurethane foam
Installation position		any position
Mass		per 10 g
Tightening torque, fastening screws		max. 0.2 Nm

Connection



Connection Assignment



Wire colors in accordance with EN 60947-5-2

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

Commissioning

Adjustment possibilities
This sensor is an ultrasonic through-beam barrier consisting of a transmitter and a receiver. The receiver is equipped with a switching output. This switches when there is a sufficiently large object in the path between the transmitter and receiver. To adapt the ultrasonic through-beam barrier to different object sizes and/or distances between transmitter and receiver, the sensitivity can be configured via the „Sensitivity selection“ input on the receiver.

Further Documentation
For information on configuring the sensitivity via the „Sensitivity selection“ input you may refer to the commissioning instruction.

Accessories

	OMH-ML7-01	Mounting aid for ML7 and ML8 series, Mounting bracket
	V31-GM-2M-PVC	Female cordset single-ended M8 straight A-coded, 4-pin, PVC cable grey
	V31-WM-2M-PVC	Female cordset single-ended M8 angled A-coded, 4-pin, PVC cable grey



Through-beam ultrasonic barrier

UBE800-F77-SE1-V31

- Miniature design
- Highly visible LEDs for Power ON and switching state
- High switching frequency
- Program input
- Degree of protection IP67

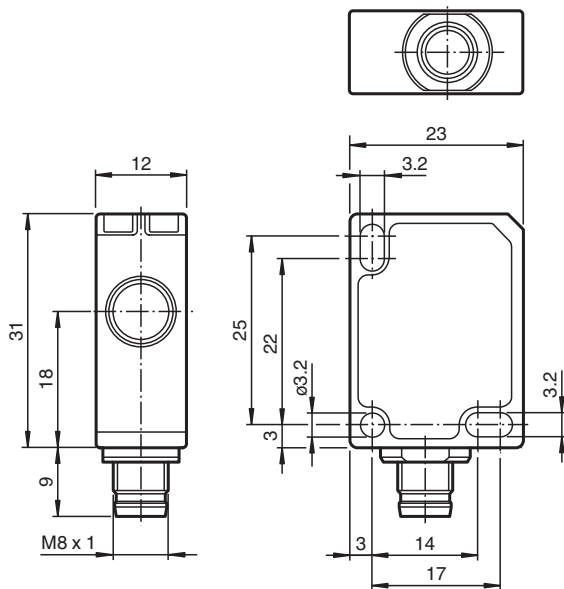
Through-beam ultrasonic barrier



Function

An ultrasonic thru-beam sensor always consists of an ultrasonic emitter and receiver. The working principle of the ultrasonic thru-beam sensor is based on the interruption of the transmission from the emitter to the receiver by the object to be detected (obstacle). The emitter produces an ultrasonic signal which is evaluated by the receiver. If the signal is damped or broken by the object being detected, the receiver switches state. No electrical connections are required between the emitter and receiver.

Dimensions



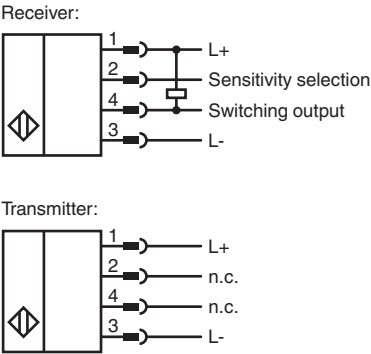
Technical Data

General specifications	
Sensing range	0 ... 800 mm emitter/receiver spacing
Standard target plate	see table
Transducer frequency	approx. 300 kHz
Response delay	≤ 5 ms

Technical Data

Limit data		
Permissible cable length		max. 300 m
Indicators/operating means		
LED green		Power on (emitter)
LED yellow		switching state (receiver)
Electrical specifications		
Rated operating voltage	U_e	24 V DC
Operating voltage	U_B	20 ... 30 V DC , ripple 10 % _{SS} ; 12 ... 20 V DC sensitivity reduced to 80 %
No-load supply current	I_0	≤ 20 mA
Time delay before availability	t_v	≤ 150 ms
Input		
Input type		1 program input (receiver)
Level		low level : 0 ... 0.7 V ; high level : > 14 V
Input impedance		16 kΩ
Pulse length		≥ 3 s
Output		
Output type		1 switch output E1, NPN, NC
Rated operating current	I_e	200 mA , short-circuit/overload protected
Voltage drop	U_d	≤ 2 V
Switching frequency	f	100 Hz
Off-state current	I_r	≤ 0.01 mA
Compliance with standards and directives		
Standard conformity		
Standards		EN IEC 60947-5-2:2020 IEC 60947-5-2:2019
Approvals and certificates		
UL approval		cULus Listed, Class 2 Power Source
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Shock resistance		30 g , 11 ms period
Vibration resistance		10 ... 55 Hz , Amplitude ± 1 mm
Mechanical specifications		
Connection type		M8 x 1 connector , 4-pin
Degree of protection		IP67
Material		
Housing		Polycarbonate
Transducer		epoxy resin/hollow glass sphere mixture; polyurethane foam
Installation position		any position
Mass		per 10 g
Tightening torque, fastening screws		max. 0.2 Nm

Connection



Connection Assignment



Wire colors in accordance with EN 60947-5-2

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

Commissioning

Adjustment possibilities
This sensor is an ultrasonic through-beam barrier consisting of a transmitter and a receiver. The receiver is equipped with a switching output. This switches when there is a sufficiently large object in the path between the transmitter and receiver. To adapt the ultrasonic through-beam barrier to different object sizes and/or distances between transmitter and receiver, the sensitivity can be configured via the „Sensitivity selection“ input on the receiver.

Further Documentation
For information on configuring the sensitivity via the „Sensitivity selection“ input you may refer to the commissioning instruction.

Accessories

	OMH-ML7-01	Mounting aid for ML7 and ML8 series, Mounting bracket
	V31-GM-2M-PVC	Female cordset single-ended M8 straight A-coded, 4-pin, PVC cable grey
	V31-WM-2M-PVC	Female cordset single-ended M8 angled A-coded, 4-pin, PVC cable grey

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