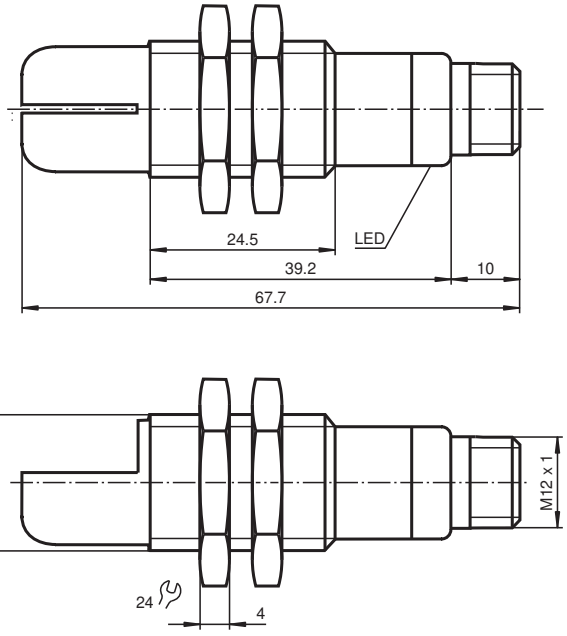
Ultrasonic sensor, receiver

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 %$_{SS}$

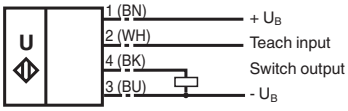
Release date: 2023-02-15 Date of issue: 2023-02-15 Filename: 220366_eng.pdf

Technical Data

No-load supply current	I_0	≤ 20 mA
Input		
Input type		1 program input operating distance 1: -U_B ... +1 V, operating distance 2: +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		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

Release date: 2023-02-15 Date of issue: 2023-02-15 Filename: 220366_eng.pdf

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

Release date: 2023-02-15 Date of issue: 2023-02-15 Filename: 220366_eng.pdf

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.

Release date: 2023-02-15 Date of issue: 2023-02-15 Filename: 220366_eng.pdf