

Ultrasonic sensor

UB6000-F42-I-V1-Y220443

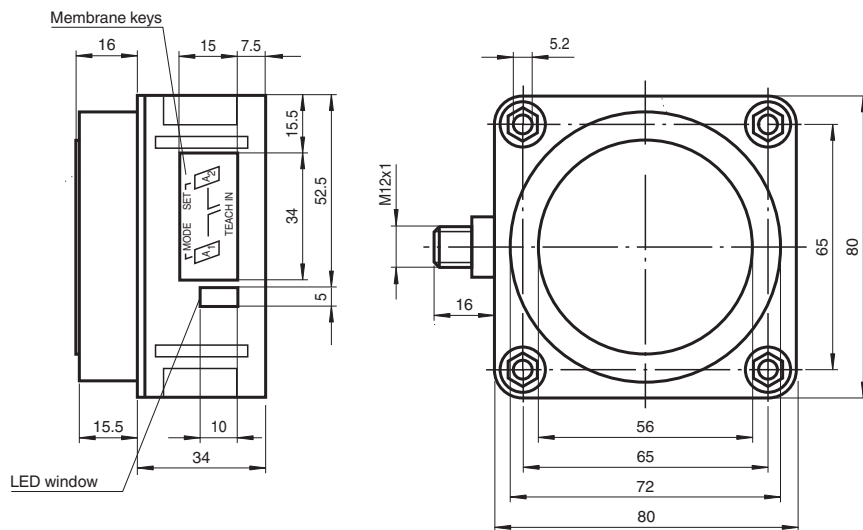


- Analog output 4 mA ... 20 mA
- Extremely small unusable area
- Temperature compensation
- Synchronization options

Single head system



Dimensions



Technical Data

General specifications

Measuring range	400 ... 6000 mm
Sensing range	350 ... 6000 mm
Dead band	0 ... 350 mm
Standard target plate	100 mm x 100 mm
Transducer frequency	approx. 65 kHz
Response delay	approx. 650 ms

Indicators/operating means

LED green	Power on
LED yellow	object in evaluation range
LED red	error

Electrical specifications

Operating voltage	U_B	10 ... 30 V DC , ripple 10 % _{SS}
No-load supply current	I_0	≤ 60 mA

Input/Output

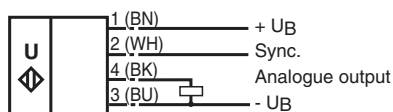
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Technical Data

Synchronization	bi-directional 0 level: $-U_B \dots +1 \text{ V}$ 1 level: $+4 \text{ V} \dots +U_B$ input impedance: $> 12 \text{ KOhm}$ synchronization pulse: $\geq 100 \mu\text{s}$, synchronization interpulse period: $\geq 2 \text{ ms}$
Synchronization frequency	
Common mode operation	max. 7 Hz
Multiplex operation	$\leq 7/n \text{ Hz}$, n = number of sensors
Output	
Output type	1 analog output 4 ... 20 mA
Resolution	0.7 mm
Deviation of the characteristic curve	$\pm 1 \%$ of full-scale value
Repeat accuracy	$\pm 0.1 \%$ of full-scale value
Load impedance	0 ... 300 Ohm
Temperature influence	$\pm 1 \%$ of full-scale value
Compliance with standards and directives	
Standard conformity	
Standards	EN IEC 60947-5-2:2020 IEC 60947-5-2:2019 EN 60947-5-7:2003 IEC 60947-5-7:2003
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
Degree of protection	IP67
Connection	4-pin, M12 x 1 connector
Material	
Housing	ABS
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Mass	330 g
Dimensions	
Height	80 mm
Width	80 mm
Length	50 mm
Factory settings	
Output	evaluation limit A1: 400 mm evaluation limit A2: 6000 mm rising ramp
Beam width	wide sound lobe

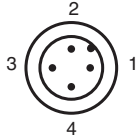
Connection Assignment

Standard symbol/Connections:



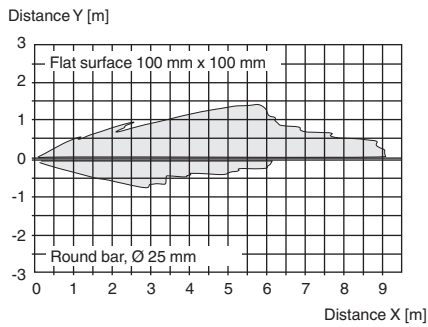
Core colours in accordance with EN 60947-5-2.

Connection Assignment

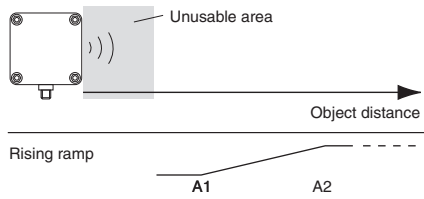


Characteristic Curve

Characteristic response curve



Analogue output programming



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Commissioning

Synchronization

This sensor features a synchronization input for suppressing ultrasonic mutual interference ("cross talk"). If this input is not connected, the sensor will operate using internally generated clock pulses. It can be synchronized by applying an external square wave. The pulse duration must be $\geq 100 \mu\text{s}$. Each falling edge of the synchronization pulse triggers transmission of a single ultrasonic pulse. If the synchronization signal remains low for ≥ 1 second, the sensor will revert to normal operating mode. Normal operating mode can also be activated by opening the signal connection to the synchronization input. (See note below)

If the synchronization input goes to a high level for > 1 second, the sensor will switch to standby mode, indicated by the green LED. In this mode, the outputs will remain in the last valid output state.

Note:

If the option for synchronization is not used, the synchronization input has to be connected to ground (0 V).

The following synchronization modes are possible:

1. Several sensors (max. number see technical data) can be synchronized together by interconnecting their respective synchronization inputs. In this case, each sensor alternately transmits ultrasonic pulses in a self multiplexing mode. No two sensors will transmit pulses at the same time. (See note below)
2. Multiple sensors can be controlled by the same external synchronization signal. In this mode the sensors are triggered in parallel and are synchronized by a common external synchronization pulse.
3. A separate synchronization pulse can be sent to each individual sensor. In this mode the sensors operate in external multiplex mode. (See note below)
4. A high level ($+U_B$) on the synchronization input switches the sensor to standby mode.

Note:

Sensor response times will increase proportionally to the number of sensors that are in the synchronization string. This is a result of the multiplexing of the ultrasonic transmit and receive signal and the resulting increase in the measurement cycle time.