



Ultrasonic sensor

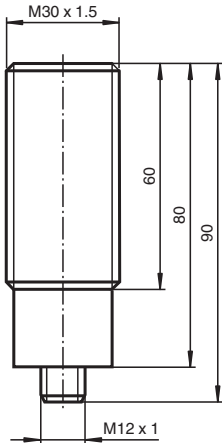
UB2000-30GM-H3-V1

- Separate evaluation
- Direct detection mode

Single head system



Dimensions



Technical Data

General specifications		
Sensing range		80 ... 2000 mm
Adjustment range		120 ... 2000 mm
Dead band		0 ... 80 mm ¹⁾
Standard target plate		100 mm x 100 mm
Transducer frequency		approx. 180 kHz
Electrical specifications		
Operating voltage	U _B	10 ... 30 V DC , ripple 10 % _{SS}
No-load supply current	I ₀	≤ 30 mA
Input		
Input type		1 pulse input for transmitter pulse (clock) 0-level (active): < 5 V (U _B > 15 V) 1-level (inactive): > 10 V ... +U _B (U _B > 15 V) 0-level (active): < 1/3 U _B (10 V < U _B < 15 V) 1-level (inactive): > 2/3 U _B ... +U _B (10 V < U _B < 15 V)
Pulse length		20 ... 300 μs (typ. 200 μs) ²⁾
Pause length		≥ 50 x pulse length
Impedance		10 kOhm internal connected to +U _B
Output		

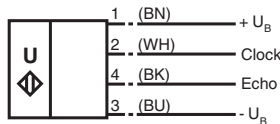
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Technical Data

Output type	1 pulse output for echo run time, short-circuit proof open collector PNP with pulldown resistor = 22 kOhm level 0 (no echo): $-U_B$ level 1 (echo detected): $\geq (+U_B-2 V)$	
Rated operating current	I_e	15 mA , short-circuit/overload protected
Temperature influence	the echo propagation time: 0.17 % / K	
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, General Purpose	
CCC approval	CCC approval / marking not required for products rated $\leq 36 V$	
Ambient conditions		
Ambient temperature	-25 ... 85 °C (-13 ... 185 °F)	
Storage temperature	-40 ... 85 °C (-40 ... 185 °F)	
Mechanical specifications		
Connection type	Connector plug M12 x 1 , 4-pin	
Degree of protection	IP67	
Material		
Housing	nickel plated brass; plastic components: PBT	
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam	
Mass	140 g	
Dimensions		
Length	80 mm	
Diameter	30 mm	

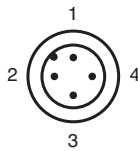
Connection Assignment

Standard symbol/Connection:



2 = Emitter pulse input
4 = Echo propagation time output
Core colours in accordance with EN 60947-5-2.

Connection Assignment

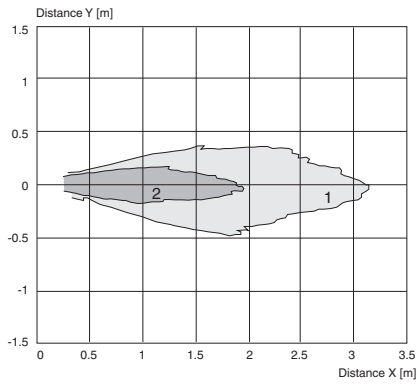


Wire colors in accordance with EN 60947-5-2

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

Characteristic Curve

Characteristic response curves



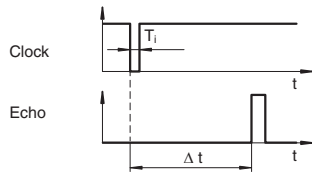
Curve 1: flat surface 100 mm x 100 mm
Curve 2: round bar, Ø 25 mm

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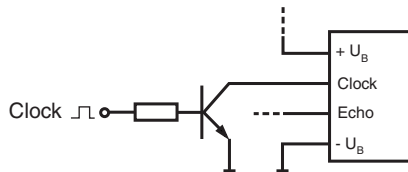
Function Principle

The sensing range is determined in the downstream evaluation electronics such as PLC modules or other existing evaluation units.

The object distance in pulse-echo mode is obtained from the echo time Δt . The emission of an ultrasonic pulse starts simultaneously with the falling slope of the clock input signal.



We recommend the usage of a npn-transistor to trigger the sensors clock input. The sensors clock input is connected to the $+U_B$ potential internally by means of a pull up resistor.



- 1) The unusable area (blind range) BR depends on the pulse duration T_i .
The unusable area reaches a minimum with the shortest pulse duration.
- 2) The sensors detection range depends on the pulse duration T_i .
With pulse duration < typical pulse duration, the sensors detection range may be reduced.

Installation Conditions

If the sensor is installed in places where the operating temperature can fall below 0 °C, the BF30, BF30-F or BF 5-30 fixing clamp must be used.