

Ultrasonic sensor

UB2000-30GM-H3-Y221102

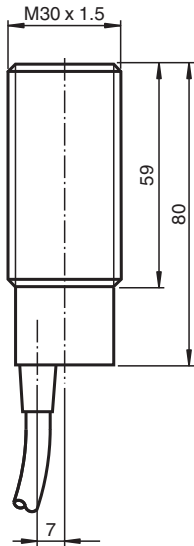


- Separate evaluation
- Direct detection mode
- With clock pulse output

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⁾

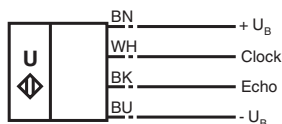
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Technical Data

Pause length		≥ 50 x pulse length
Impedance		10 kOhm internal connected to +U _B
Output		
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): ≥ (+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 ≤36 V
Ambient conditions		
Ambient temperature		-25 ... 85 °C (-13 ... 185 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Mechanical specifications		
Degree of protection		IP67
Connection		2 m PVC cable 0.34 mm ²
Material		
Housing		nickel plated brass; plastic components: PBT
Transducer		epoxy resin/hollow glass sphere mixture; polyurethane foam
Mass		195 g
Dimensions		
Length		80 mm
Diameter		30 mm

Connection Assignment

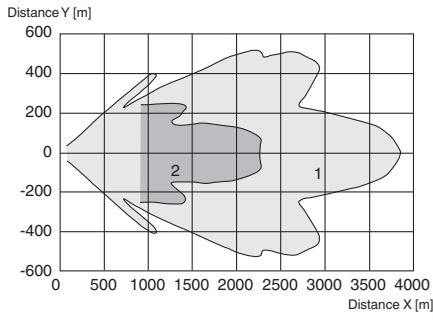
Standard symbol/Connection:
(Transceiver)



WH = Emitter pulse input
BK = Echo propagation time output

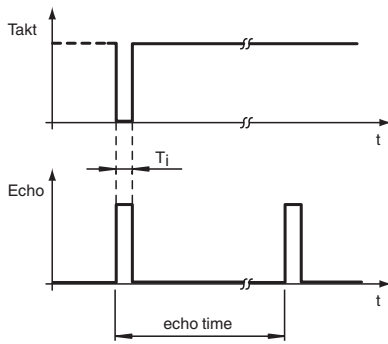
Characteristic Curve

Characteristic response curve



Curve 1: flat surface 10 mm x 10 mm
Curve 2: round bar, Ø 8 mm

Timing Diagram

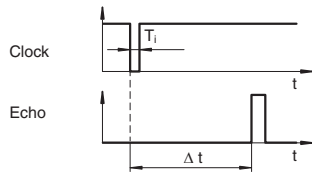


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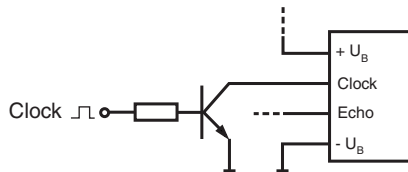
Function Principle

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 $0\text{ }^\circ\text{C}$, the BF30, BF30-F or BF 5-30 fixing clamp must be used.