

# Ultrasonic sensor

## UB2000-30GM-H3-Y48481

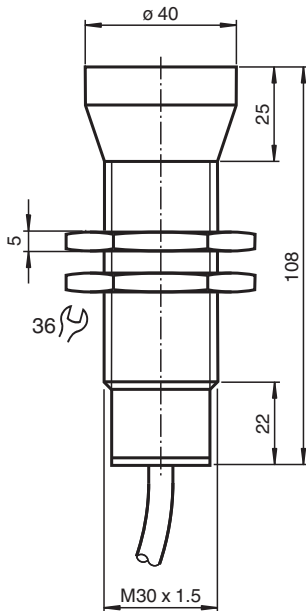


- Separate evaluation
- Direct detection mode

Single head system



### Dimensions



### Technical Data

#### General specifications

Sensing range	200 ... 2000 mm
Dead band	0 ... 200 mm
Standard target plate	100 mm x 100 mm
Transducer frequency	approx. 175 kHz

#### Electrical specifications

Operating voltage	$U_B$	10 ... 30 V DC , ripple 10 % <sub>SS</sub>
No-load supply current	$I_0$	≤ 30 mA

#### Input

Input type	1 pulse input for transmitter pulse, activation through open collector npn < 1 V: emitter active, > 4 V: emitter inactive
Pulse length	20 ... 200 μs
Pause length	≥ 50 x pulse length

#### Output

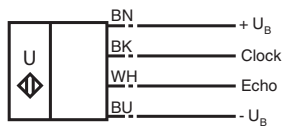
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## Technical Data

Output type	1 pulse output for echo propagation time, high-active, short-circuit proof
Signal level	1-level: $\geq U_B - 3 V$ ; $\leq 10 mA$ level 0: $\leq 1 V$ ; $\leq 0,1 mA$
Temperature influence	the echo propagation time: 0.17 % / K
<b>Compliance with standards and directives</b>	
Standard conformity	
Standards	EN IEC 60947-5-2:2020 IEC 60947-5-2:2019
<b>Approvals and certificates</b>	
UL approval	cULus Listed, General Purpose
CCC approval	CCC approval / marking not required for products rated $\leq 36 V$
<b>Ambient conditions</b>	
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Storage temperature	-40 ... 85 °C (-40 ... 185 °F)
<b>Mechanical specifications</b>	
Degree of protection	IP65
Connection	2 m PVC cable 0.75 mm <sup>2</sup>
Material	
Housing	nickel plated brass; plastic components: PBT
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Mass	300 g
Dimensions	
Length	93 mm
Diameter	30 mm

## Connection Assignment

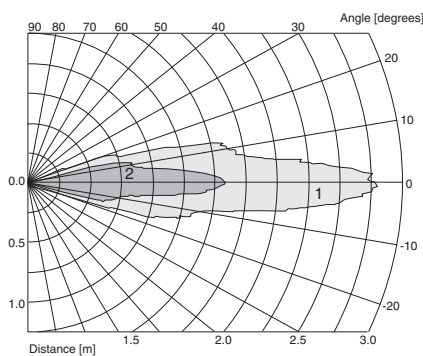
Standard symbol/Connection:  
(Transceiver)



BK = Emitter pulse input  
WH = Echo propagation time output

## Characteristic Curve

### Characteristic response curves



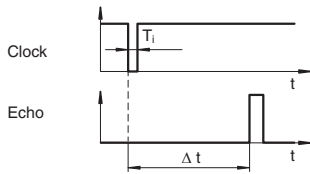
Curve 1: flat surface 100 mm x 100 mm  
Curve 2: round bar,  $\varnothing 25 mm$

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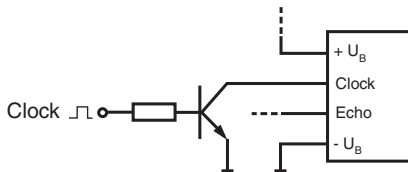
## Commissioning

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  $\Delta t$ . 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 +5 V 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 a pulse shorter than the typical pulse duration, the sensors detection range may be reduced.