



Ultrasonic sensor

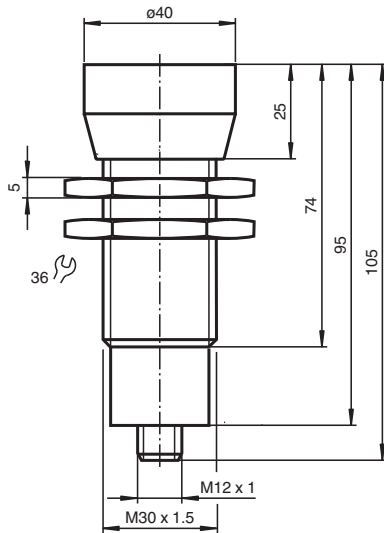
UB4000-30GM-H3-V1

- Separate evaluation
- Direct detection mode

Single head system



Dimensions



Technical Data

General specifications	
Sensing range	200 ... 4000 mm
Adjustment range	240 ... 4000 mm
Dead band	0 ... 200 mm ¹⁾
Standard target plate	100 mm x 100 mm
Transducer frequency	approx. 85 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	40 ... 600 μs (typ. 500 μs) ²⁾
Pause length	≥ 50 x pulse length

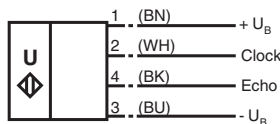
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Technical Data

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		
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	180 g	
Dimensions		
Length	93 mm	
Diameter	40 mm	

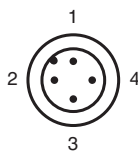
Connection Assignment

Standard symbol/Connection:



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

Connection Assignment



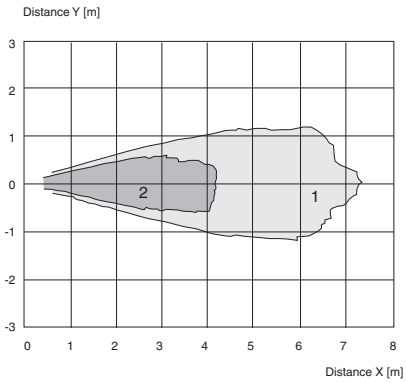
Connection Assignment

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



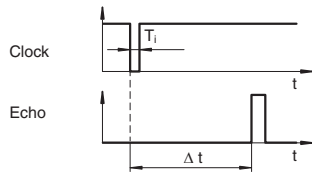
Curve 1: flat surface 100 mm x 100 mm
 Curve 2: round bar, Ø 25 mm

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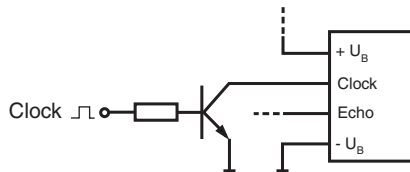
Function Principle

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.