

# Ultrasonic sensor

## UC1000-18GM90-E2-IO-V1



- IO-link interface for service and process data
- Switch output
- Temperature compensation

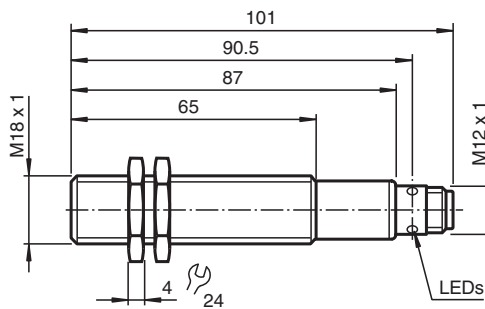
Single head system



### Function

This ultrasonic sensor is a contactless distance sensor based on the echo run time principle. It is suitable for the detection of solid, liquid or powder sound-reflecting objects. The IO-Link interface makes it ideally suited to applications in which the consistent communication of process, parameter and diagnostic data through to sensor level plays an important role.

### Dimensions



### Technical Data

#### General specifications

Sensing range	100 ... 1000 mm
Adjustment range	110 ... 1000 mm
Dead band	0 ... 100 mm
Standard target plate	100 mm x 100 mm

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Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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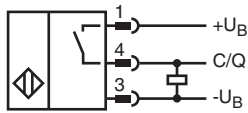
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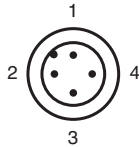
## Technical Data

Transducer frequency		approx. 200 kHz
Response delay		approx. 100 ms
Linearity		frontal
<b>Nominal ratings</b>		
Linearity error		$\leq \pm 2$ mm
Temperature drift		$\leq \pm 2.5$ %
Time delay before availability	$t_v$	$\leq 120$ ms
<b>Limit data</b>		
Permissible cable length		max. 20 m
<b>Indicators/operating means</b>		
LED green		flashes: IO-Link ON
LED yellow		on: object within measuring range
<b>Electrical specifications</b>		
Rated operating voltage	$U_e$	24 V DC
Operating voltage	$U_B$	12 ... 30 V DC (including ripple)
Ripple		$\leq 10$ %
No-load supply current	$I_0$	$\leq 50$ mA
<b>Interface</b>		
Interface type		IO-Link
<b>Switching output</b>		
Output type		1 switch output PNP, NO SIO mode
Operating current	$I_L$	$\leq 200$ mA , short-circuit/overload protected
Switching frequency		5 Hz
Voltage drop		$\leq 2$ V
Off-state current		$\leq 0.01$ mA
Switch-on delay		$\leq 100$ ms
<b>Compliance with standards and directives</b>		
Standard conformity		
Standards		EN 60947-5-2:2007+A1:2012 IEC 60947-5-2:2007 + A1:2012
<b>Approvals and certificates</b>		
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)
Shock resistance		30 g , 11 ms period
Vibration resistance		10 ... 55 Hz , Amplitude $\pm 1$ mm
<b>Mechanical specifications</b>		
Connection type		Connector M12 x 1 , 4-pin
Degree of protection		IP67
Material		
Housing		brass, nickel-plated
Transducer		epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Installation position		any position
Mass		90 g
Mounting		max. tightening torque: : 60 Nm

## Connection



## Connection Assignment

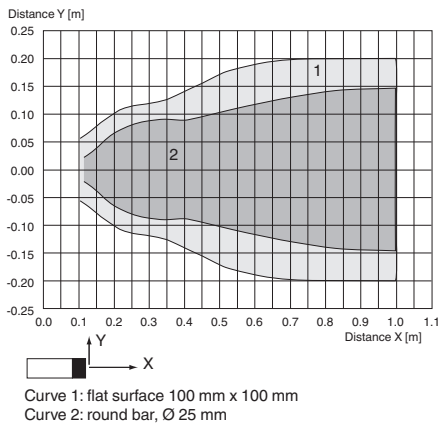


Wire colors in accordance with EN 60947-5-2

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

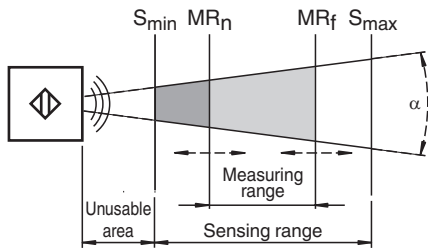
## Characteristic Curve

### Characteristic response curve











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**Area definitions**



**Accessories**

	<b>OMH-04</b>	Mounting aid for round steel $\varnothing$ 12 mm or sheet 1.5 mm ... 3 mm
	<b>BF 18</b>	Mounting flange, 18 mm
	<b>BF 18-F</b>	Plastic mounting adapter, 18 mm
	<b>BF 5-30</b>	Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm
	<b>UVW90-K18</b>	Ultrasonic -deflector
	<b>V1-G-2M-PVC</b>	Female cordset single-ended M12 straight A-coded, 4-pin, PVC cable grey
	<b>V1-G-2M-PUR</b>	Female cordset single-ended M12 straight A-coded, 4-pin, PUR cable grey
	<b>V1-W-2M-PUR</b>	Female cordset single-ended M12 angled A-coded, 4-pin, PUR cable grey

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**Additional Information**

**Description of the sensor functions**

The C/Q connection of this sensor provides double function. If the sensor recognizes a connected IO-Link master and receives a communication protocol directly after power on, the sensor turns into IO-Link communication mode. If the communication protocol is missing after power on, the sensor turns into SIO mode. In this case at this pin a conventional switching signal is provided.

**SIO Mode (standard switching output)**

Object position	Output state
Object in unusable area	undefined
Object in sensing range but not in programmed measuring range	off
Object in programmed measuring range	on

Communication in IO-Link mode  
 Example parametrization for variable parameters

Process data	Object position [mm]
undefined	$0 \leq \text{object distance} < 100$
-1	$100 \leq \text{object distance} < 110$
-2	$110 \leq \text{object distance} < MR_n$
Object distance [mm]	$MR_n \leq \text{object distance} < MR_f$
-3	$MR_f \leq \text{object distance} < 1000$
-4	unknown object distance

Device ID	M18	30 02 00 hex	
Informational data (read only)	Value range	Sub-index	
Interne Temperatur:	-25 °C ... 105 °C	1	
Parameter data (read / write)	Value range	Sub-index	Default value
Start of measuring range $MB_n$	110 mm ... $MR_f$	7/8	110 mm
end of measuring range $MB_f$	$> MR_n$ ... 1000 mm	9/10	1000 mm
Filter depth for averaging	0 ... 255	2	3

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