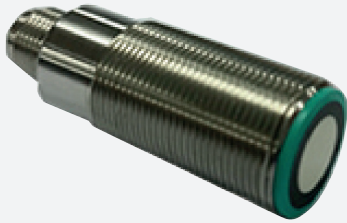


# Ultrasonic sensor

## UB300-18GM40-E5-V1-Y287031

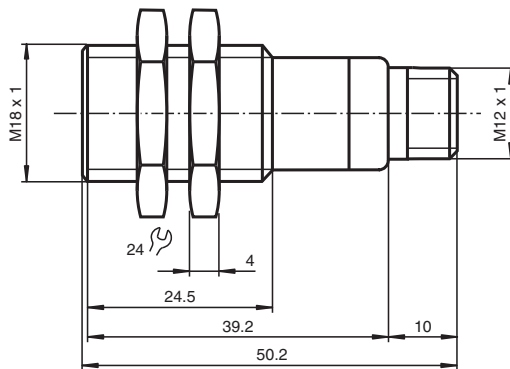


- Short design, 40 mm
- Switch output
- 5 different output functions can be set
- Program input
- Temperature compensation

Single head system



### Dimensions



### Technical Data

#### General specifications

Sensing range	35 ... 300 mm
Adjustment range	50 ... 300 mm
Dead band	0 ... 35 mm
Standard target plate	100 mm x 100 mm
Transducer frequency	approx. 390 kHz
Response delay	approx. 50 ms

#### Electrical specifications

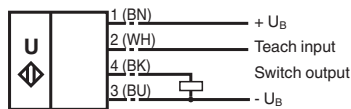
Operating voltage	$U_B$	10 ... 30 V DC , ripple 10 % <sub>SS</sub>
No-load supply current	$I_0$	≤ 20 mA

## Technical Data

<b>Input</b>	
Input type	1 program input operating distance 1: $-U_B \dots +1 \text{ V}$ , operating distance 2: $+6 \text{ V} \dots +U_B$ input impedance: $> 4,7 \text{ k}\Omega$ program pulse: $\geq 1 \text{ s}$
<b>Output</b>	
Output type	1 switching output E5, PNP NO/NC, programmable
Rated operating current	$I_e$ 200 mA , short-circuit/overload protected
Default setting	Switch point A1: 50 mm Switch point A2: 300 mm
Voltage drop	$U_d$ $\leq 3 \text{ V}$
Repeat accuracy	$\leq 1 \%$
Switching frequency	$f$ $\leq 13 \text{ Hz}$
Range hysteresis	H 1 % of the set operating distance
Temperature influence	$\pm 1.5 \%$ of full-scale value
<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>	
UL approval	cULus Listed, General Purpose
CSA approval	cCSAus Listed, General Purpose
CCC approval	CCC approval / marking not required for products rated $\leq 36 \text{ V}$
<b>Ambient conditions</b>	
Ambient temperature	$-25 \dots 70 \text{ }^\circ\text{C}$ ( $-13 \dots 158 \text{ }^\circ\text{F}$ )
Storage temperature	$-40 \dots 85 \text{ }^\circ\text{C}$ ( $-40 \dots 185 \text{ }^\circ\text{F}$ )
<b>Mechanical specifications</b>	
Connection type	Connector M12 x 1 , 4-pin , metal
Degree of protection	IP67
Material	
Housing	Stainless steel 1.4305 / AISI 303
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Mass	25 g

## Connection

**Standard symbol/Connections:**  
(version E5, pnp)



Core colours in accordance with EN 60947-5-2.

## Connection Assignment

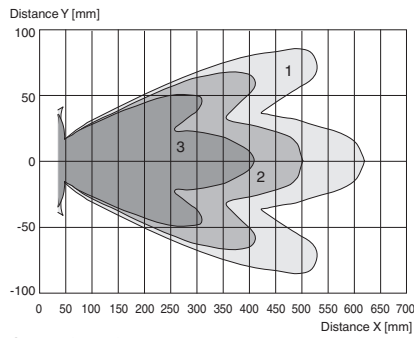
### Connector V1



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## Characteristic Curve

### Characteristic response curve



Curve 1: flat surface 100 mm x 100 mm  
 Curve 2: flat surface 10 mm x 10 mm  
 Curve 3: round bar, Ø 25 mm



## Programming

### Programmable output modes

1. Window mode, normally open mode  
 $A1 < A2$ : object distance →
2. Window mode, normally closed mode  
 $A2 < A1$ :
3. One switch point, normally open mode  
 $A1 \rightarrow \infty$ :
4. One switch point, normally closed mode  
 $A2 \rightarrow \infty$ :
5.  $A1 \rightarrow \infty, A2 \rightarrow \infty$ : Object presence detection mode  
 Object detected: Switch output closed  
 No object detected: Switch output open

## Accessories

	<b>UB-PROG2</b>	Programming unit
	<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>V1-G-2M-PVC</b>	Female cordset single-ended M12 straight A-coded, 4-pin, PVC 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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## Commissioning

### Adjusting the switching points

The ultrasonic sensor features a switch output with two teachable switching points. These are set by applying the supply voltage  $-U_B$  or  $+U_B$  to the TEACH-IN input. The supply voltage must be applied to the TEACH-IN input for at least 1 s.

Five different output functions can be set

1. Window mode, normally-open function
2. Window mode, normally-closed function
3. one switching point, normally-open function
4. one switching point, normally-closed function
5. Detection of object presence

#### TEACH-IN window mode, normally-open function

- Set target to near switching point
- TEACH-IN switching point A1 with  $-U_B$
- Set target to far switching point
- TEACH-IN switching point A2 with  $+U_B$

#### TEACH-IN window mode, normally-closed function

- Set target to near switching point
- TEACH-IN switching point A2 with  $+U_B$
- Set target to far switching point
- TEACH-IN switching point A1 with  $-U_B$

#### TEACH-IN switching point, normally-open function

- Set target to near switching point
- TEACH-IN switching point A2 with  $+U_B$
- Cover sensor with hand or remove all objects from sensing range
- TEACH-IN switching point A1 with  $-U_B$

#### TEACH-IN switching point, normally-closed function

- Set target to near switching point
- TEACH-IN switching point A1 with  $-U_B$
- Cover sensor with hand or remove all objects from sensing range
- TEACH-IN switching point A2 with  $+U_B$

#### TEACH-IN detection of objects presence

- Cover sensor with hand or remove all objects from sensing range
- TEACH-IN switching point A1 with  $-U_B$
- TEACH-IN switching point A2 with  $+U_B$

## Installation Conditions

If the sensor is installed at places, where the environment temperature can fall below 0 °C, for the sensors fixation, one of the mounting flanges BF18, BF18-F or BF 5-30 must be used.

In case of direct mounting of the sensor in a through hole using the steel nuts, it has to be fixed at the middle of the housing thread. If a fixation at the front end of the threaded housing is required, plastic nuts with centering ring (accessories) must be used.