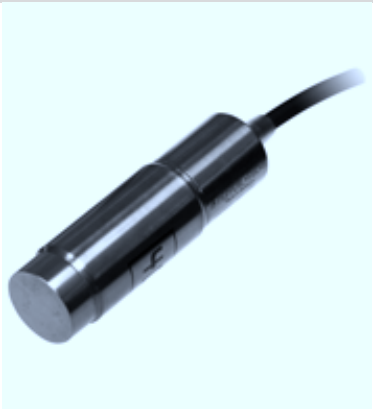


Model Number

UMC3000-30H-I-5M-FA

Single head system

Features

- **Front of converter and housing manufactured entirely from stain-less steel**
- **Hygienic design, easy to clean**
- **Degree of protection IP68 / IP69K**
- **Programmable via DTM with PACTWARE**

Description

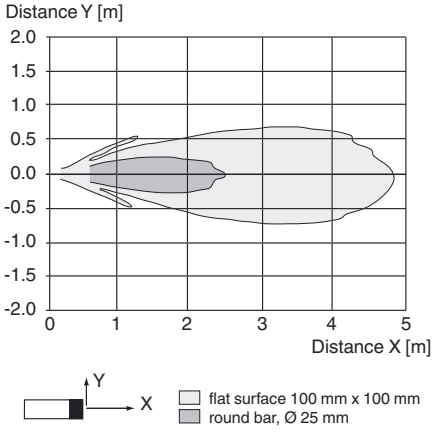
Functional description

The enclosure and converter of this ultrasonic sensor form a hermetically sealed unit. Due to its special design, this sensor is EHEDG compliant, and together with an appropriate end stop (see accessories) are especially suitable for applications where there are increased hygiene requirements, such as in the manufacture and handling of food.

For reliable operation, due to the special design of this sensor, only mounting accessories in the accessories list must be used, even in applications without special hygiene requirements.

Diagrams

Characteristic response curve



Technical data

General specifications	
Sensing range	200 ... 3000 mm
Adjustment range	240 ... 3000 mm
Unusable area	0 ... 200 mm
Standard target plate	100 mm x 100 mm
Transducer frequency	approx. 100 kHz
Response delay	≤ 200 ms
Indicators/operating means	
LED green	Operating display
LED yellow	object in evaluation range
LED red	error
Electrical specifications	
Operating voltage U_B	10 ... 30 V DC
No-load supply current I_0	≤ 50 mA
Time delay before availability t_v	≤ 400 ms
Input/Output	
Input/output type	1 synchronization connection, bidirectional
0 Level	0 ... 1 V
1 Level	4 V ... U_B
Input impedance	> 12 kΩ
Output rated operating current	< 12 mA
Pulse length	≥ 200 µs
Pulse interval	≥ 2 ms
Synchronization frequency	
Common mode operation	≤ 20 Hz
Multiplex operation	≤ 20/n Hz, n = number of sensors n ≤ 10 (factory setting: 5)
Input	
Input type	1 program input
Level (evaluation limit 1)	0 ... 1 V
Level (evaluation limit 2)	3 V ... U_B
Input impedance	> 12 kΩ
Pulse length	2 ... 5 s
Output	
Output type	1 analog output 4 ... 20 mA
Resolution	Evaluation range [mm]/3200, however ≥ 0.4 mm
Deviation of the characteristic curve	≤ 0.2 % of full-scale value
Repeat accuracy	≤ 0.1 % of full-scale value
Load impedance	≤ 500 Ω at U_B ≥ 14V ≤ 300 Ω at U_B < 14V
Temperature influence	≤ 1.5 % of full-scale value
Ambient conditions	
Ambient temperature	-25 ... 60 °C (-13 ... 140 °F)
Storage temperature	-40 ... 85 °C (-40 ... 185 °F)
Mechanical specifications	
Connection type	cable PUR , 5 m , With FDA approval
Core cross-section	5 x 0.5 mm²
Degree of protection	IP68 / IP69K
Material	
Housing	Stainless steel 1.4404 / AISI 316L LED window: VMQ Elastosil LR 3003/Shore 50 A
Transducer	Stainless steel 1.4435 / AISI 316L
Mass	425 g
Factory settings	
Output	evaluation limit A1: 240 mm evaluation limit A2: 3000 mm output function: rising slope
General information	
Supplementary information	Switch settings of the external programming adapter: "output load": pull-down "output logic": noninv
Compliance with standards and directives	
Standard conformity	
Standards	EN 60947-5-2:2007 IEC 60947-5-2:2007 EN 60947-5-7:2003 IEC 60947-5-7:2003
Approvals and certificates	
CCC approval	CCC approval / marking not required for products rated ≤36 V

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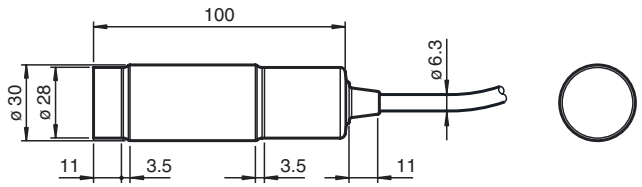
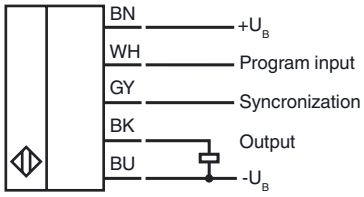
Dimensions



Electrical Connection



Accessories

UC-PROG1
Programming adapter

V15S-G-0,3M-PUR-WAGO
Male cordset, M12, 5-pin, PUR cable with WAGO terminals

MH-30H-01-FA
Mounting aid, 30 mm acc. to EHEDG

Mounting

Comply with the minimum permissible bending radius of 70 mm, if you install the connecting cable!

For reliable operation, you must use the included sensor mounting aid. This also applies for applications without special hygiene requirements.

Programming

The sensor can be adapted to specific application requirements by programming. There are two types of programming.

1. Basic functions can be configured using the teach-in process. These include the function for setting the measuring range limits and the output function. The teach-in process is connected either with $+U_B$ (1 level) or $-U_B$ (0 level)
2. Connecting a programming adapter (see Accessories) to the serial interface on the sensor provides an extensive range of configurable functions. Refer to the programming adapter description for instructions. A male cordset with WAGO terminals is required to connect the programming adapter (see Accessories).

Note:

- The sensor can only be programmed during the first 5 minutes after switching on. This time is extended during the actual programming process. The option of programming the sensor is revoked if no programming activities take place for 5 minutes.
- You have the option of aborting the programming process at any time without adopting the modified sensor settings. Simply discontinue programming. After 10 seconds, the sensor exits programming, switches to normal operating mode and adopts the previous valid settings.

Programming the evaluation limits

Note:
A flashing red LED during the programming process indicates unreliable object detection. In this case, adjust the alignment of the object until the yellow LED flashes. Only then are the settings stored in the memory of the sensor.

Teach-in of the evaluation limit (A1)

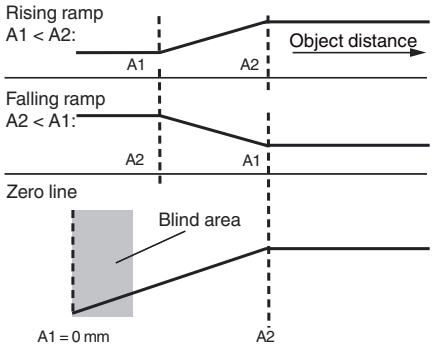
1. Position the target object at the evaluation limit (A1)
2. Connect the teach-in for > 2 sec with $+U_B$ or $-U_B$
3. Disconnect the teach-in process. The yellow LED begins to flash after 2 secs and the sensor is ready for teach-in*).
4. Connect the teach-in process within 8 secs for > 2 sec with -UB.
5. Disconnect the teach-in process within 8 secs. The green LED flashes three times briefly for confirmation. The evaluation limit (A1) has now been taught in.

Teach-in of the evaluation limit (A2)

1. Position the target object at the evaluation limit (A2)

Additional Information

Programming the evaluation limits



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Refer to "General Notes Relating to Pepperl+Fuchs Product Information".
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PEPPERL+FUCHS SENSING YOUR NEEDS

2. Connect the teach-in for > 2 sec with $+U_B$ or $-U_B$
3. Disconnect the teach-in process. The yellow LED begins to flash after 2 secs and the sensor is ready for teach-in*).
4. Connect the teach-in process within 8 secs for > 2 sec with +UB.
5. Disconnect the teach-in process within 8 secs. The green LED flashes three times briefly for confirmation. The evaluation limit (A2) has now been taught in.

*) If there are no objects within the sensor detection range while the sensor is ready for teach-in, this is indicated by fast flashing of the yellow LED. Teach-in is possible, however. In programming evaluation limit A1, this is set to 0 mm (zero line). In programming evaluation limit A2, this is set to the measurement range upper limit.

Programming the output function

You can choose between "rising ramp" and "falling ramp" for the output function of the sensor. The position of the programmed evaluation limits is critical here.
If the evaluation limit A1 is closer to the sensor than A2, the output function is"rising ramp"
If the evaluation limit A2 is closer to the sensor than A1, the output function is"falling ramp"

Display LEDs

The sensor features 3 display LEDs to indicate various operating modes

Operating mode	Green LED	Yellow LED	Red LED
Normal operation	Lights	Target within evaluation range	Unstable target
Programming the evaluation limits			
Target detected	Off	Flashes	Off
Unstable target	Off	Off	Flashes
Confirmation of successful programming	Flashes 3x	Off	Off

Synchronisation

The sensor has a synchronisation input for suppressing mutual interefence by third-party ultrasonic signals. If this input is not connected, the sensor works with internally generated clock pulses. It can be synchronised by connecting external rectangular pulses and through corresponding parameterisation via the DTM module for PACTware™. Each falling pulse edge triggers the sending of an individual ultrasonic pulse. If the signal at the synchronisation input carries ≥ 1 s low level, the sensor returns to normal, unsynchronised operating mode. This is also the case when the synchronisation input is disconnected from external signals (see note below).
If there is a high level > 1 s at the synchronisation input, the sensor enters standby mode. This is indicated by the flashing green LED. In this operating mode, the most recent output statuses are retained. For external synchronisation, please observe the software description.

Note:

- If the synchronisation option is not being used, the synchronisation input must be earthed (0 V).
- The synchronisation option is not available during programming, which means that the sensor cannot be programmed during synchronisation.

The following synchronisation methods are possible:

1. Multiple sensors (for max. number see Technical data) can be synchronised by simply connecting their synchronisation inputs. In this case, the sensors operate in a self-synchronised sequence in multiplex mode. Only one sensor transmits at any given time (see note below).
2. Multiple sensors (for max. number see Technical data) can be synchronised by simply connecting their synchronisation inputs. As a result of parameterisation via the DTM module for PACTware™, one of the sensors operates as a master and the others as slaves (see Interface description). In this case, the sensors operate synchronously, i.e. simultaneously in master/slave mode, whereby the master sensor performs the role of an intelligent external clock pulse generator.
3. Multiple sensors can be triggered jointly by an external signal. In this case, the sensors are triggered in parallel and operate synchronously, i.e. simultaneously. All sensors must be parameterised for external control by means of parameterisation via the DTM module for PACTware™ (see Software description).
4. Multiple sensors are triggered with a delay by an external signal. In this case, only one sensor operates with external synchronisation at any given time (see note below). All sensors must be parameterised for external control by means of parameterisation via the DTM module for PACTware™ (see Software description).
5. A high level ($+U_B$) or a low level ($-U_B$) at the synchronisation input puts the sensor in standby mode in the case of external parameterisation.

Note:

The response time of the sensors increases proportionally to the number of sensors in the synchronisation chain. Multiplexing means that the measurement cycles of the individual sensors run one after the other.

Note:

The synchronisation connection of the sensors delivers an output current at low level and an input impedance at high level. Please note that the synchronising device must have the following drive capability:
Drive current with $+U_B$: ≥ n * high level/input impedance (n = number of sensors to be synchronised)
Drive current with 0 V: ≥ n * output current (n = number of sensors to be synchronised)

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