Model Number

UCC2000-30GH70-IE2R2-K-V15-Y252722

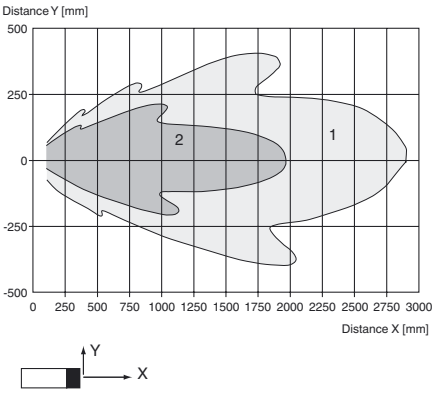
Ultrasonic diffuse sensor with separate transducer

Features

- **High chemical resistance through FEP coated transducer surface**
- **Analog output 4 ... 20 mA**
- **1 switch output**
- **Temperature compensation**
- **Synchronization options**
- **Can be parameterized via the ULT-RA-PROG-IR software and interface (accessories)**

Diagrams

Characteristic response curve



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

Danger!
Consider the Safety Manual which is available on www.pepperl-fuchs.com as an integral part of this product's documentation.

Technical data

General specifications	
Sensing range	120 ... 1000 mm
Unusable area	0 ... 120 mm
Standard target plate	100 mm x 100 mm
Transducer frequency	approx. 200 kHz
Response delay	≤ 100 ms
Nominal ratings	
Temperature drift	≤ ± 1.5 % of full-scale value
Time delay before availability t_v	≤ 125 ms
Limit data	
Permissible cable length	max. 300 m
Functional safety related parameters	
Safety Integrity Level (SIL)	SIL 1
$MTTF_d$	147 a
Mission Time (T_M)	10 a
Indicators/operating means	
LED yellow	switching state switch output
LED green/yellow	yellow: object in evaluation range green: Teach-In
Electrical specifications	
Rated operating voltage U_e	24 V DC
Operating voltage U_B	18 ... 32 V DC (including ripple) reduced sensitivity by 18 ... 20 V
Ripple	≤ 10 %
No-load supply current I_0	≤ 50 mA
Interface	
Interface type	Infrared
Mode	point-to-point connection
Input/Output	
Input/output type	1 synchronization connection, bidirectional (multiplex operation: automatic)
0 Level	≤ 3 V
1 Level	≥ 0.6 x U_B
Input impedance	typ. 900 Ω
Number of sensors	max. 2
Switching output	
Output type	1 switch output PNP, NO
Default setting	switch frames : 492 ... 508 mm
Repeat accuracy	± 3 mm
Operating current I_L	300 mA , short-circuit/overload protected
Switching frequency	≤ 4 Hz
Switching hysteresis	symmetrical: 1 mm
Voltage drop	≤ 3 V
Off-state current	≤ 10 µA
Analog output	
Output type	1 current output 4 ... 20 mA
Default setting	rising slope ; evaluation limit A1: 120 mm ; evaluation limit A2: 1000 mm
Load resistor	≤ 500 Ω
Standard conformity	
Electromagnetic compatibility	EN 50121-3-2 , except surge strength acc. to EN 61000-4-5
Standards	EN 60947-5-2:2007
Ambient conditions	
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 ± 1 mm
Mechanical specifications	
Connection type	Connector M12 x 1 , 5-pin
Protection degree	Ultrasonic transducer with connector : IP68 , sensor: IP67
Material	
Housing	High grade stainless steel
Cable	PVC
Transducer	FEP coated; epoxy resin/hollow glass sphere mixture; polyurethane foam
Installation position	any position
Mass	300 g
Construction type	Cylindrical
Cable length	200 mm

Approvals and certificates	
UL approval	cULus Listed, General Purpose
CSA approval	cCSAus Listed, General Purpose
CCC approval	CCC approval / marking not required for products rated ≤36 V

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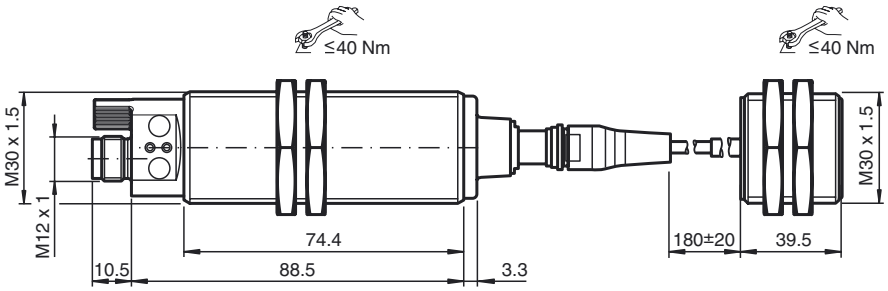
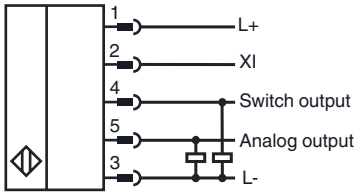
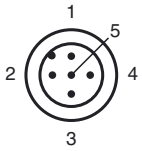
Dimensions



Electrical Connection



Pinout



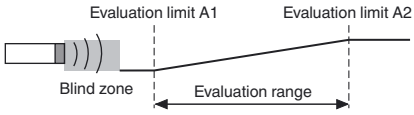
Wire colors in accordance with EN 60947-5-2

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

Additional Information

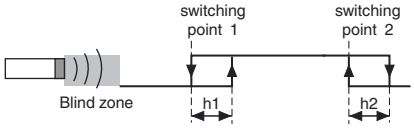
Analog output operating mode

Rising ramp



Switching output operating mode

Window operation mode



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Accessories

BF 30
Mounting flange, 30 mm

BF 5-30
Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm

V15-G-2M-PUR
Female cordset, M12, 5-pin, PUR cable

V15-W-2M-PUR
Female cordset, M12, 5-pin, PUR cable

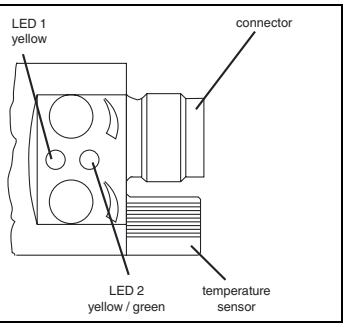
UC-18/30GM-IR
Interface cable

ULTRA-PROG-IR
Configuration software for ultrasonic sensors

Description of Sensor Functions

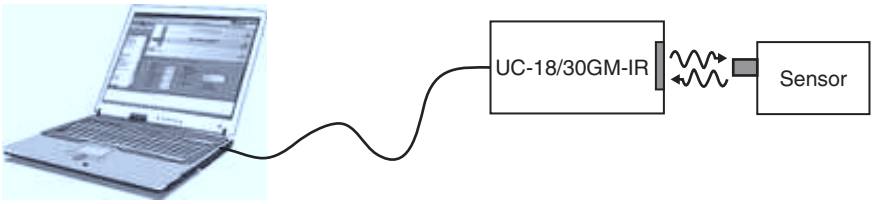
Displays

The sensor has two display LEDs.

LED 1 (yellow)	**On/off:** Switching state of switching output	
LED 2 (yellow)	**On:** Object between evaluation limit A1 and evaluation limit A2 in the analog evaluation range.	
LED 2 (green)	not activated	

Parameterization via ULTRA-PROG-IR

In order to be able to set the sensor parameters and adjust the sensor to the respective application, the sensor is able to communicate with a PC via the integrated infrared interface. The UC-18/30GM-IR interface cable is required to allow communication via this method. This cable is connected to an unused USB port on the PC.



The ULTRA-PROG-IR parameterization software is also required for setting the sensor parameters. The ULTRA-PROG-IR software can be downloaded for free from the **www.pepperl-fuchs.com** website. The software allows all open parameters to be set, including:

- All trip points and switching hystereses
- Output modes and behaviors
- Delay times
- Settings and setting ranges of the potentiometer
- Settings for teach-in and synchronization
- Definition of blind zones
- Sensor modes and measurement methods
- Filtering measurement values

The following service functions are also available:

- Observing and recording measurement values
- Diagnosing interference reflections

Error state display

Error statuses that occur are represented by fixed current values at the analog output. Once the cause of the error has been removed, the analog output will revert to operating within the normal current range.

Output current	Possible error causes
0 mA	- Wire break on the sensor connection line - Short circuit on switching output - Faulty sensor
2 mA	- Wire break on the connection line to the ultrasonic transducer - Wiring fault on the synchronization line (XI): Permanent connection to L- - Ambient temperature too high (> 75 °C +/- 5 K) - Faulty sensor

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Synchronization

The sensor is equipped with a function input (XI). This connection is used to synchronize up to two sensors. To do this, the function inputs of both sensors must be connected with one another. The sensors are synchronized according to the automatic multiplex mode principle. This operation ensures that the sensors emit their ultrasonic signal alternately to ensure that the two sensors do not influence one another. The sequence of the sensors is determined when they are started up. The sequence remains the same until one or both sensors are removed from the network or a sensor is added to the network. A sensor can be added to the network by supplying the sensor with power and connecting its function input to the function input of the network to be synchronized. If two sensors are synchronized, the cycle time of both sensors increases. The new cycle time is calculated by adding the cycle times of both sensors.

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