Ultrasonic sensor

UC1000-18GS-IUEP-IO-V15

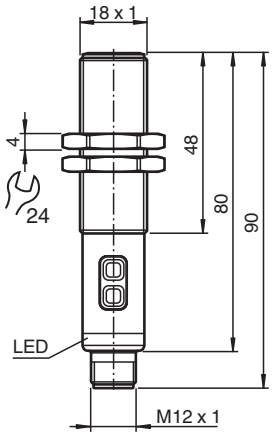
- IO-Link Interface for process data, parameterization and diagnosis
- Programmable via DTM with PACTWARE
- Programmable via IrDA (infrared interface)
- Selectable sound lobe width
- Synchronization options
- Enhanced temperature compensation adjustable, stable measuring values already 2 min after switching on
- Push-pull output
- Analog output

Single head system

Function

The UC*-18GS*IO* series ultrasonic sensor combines versatility with a compact housing. All functions can be conviently parameterized via IO-Link or IrDa interface.
A precise interference suppression and the adjustable sound beam width allow an optimal adaptation to your application.
The output configuration as well as the sound beam width can also be set directly on the sensor via programming buttons.
Process and service data can be transmitted via IO-Link, allowing easy integration into Industry 4.0 applications.

Dimensions



Technical Data

General specifications	
Sensing range	70 ... 1000 mm
Adjustment range	90 ... 1000 mm
Dead band	0 ... 70 mm
Standard target plate	100 mm x 100 mm
Transducer frequency	approx. 255 kHz
Response delay	minimum : 28 ms factory setting: 56 ms
Sensor cycle time	≥ 14 ms (factory setting) ; programmable to 60 s
Temperature influence	with temperature compensation: ≤ ± 0.75% of the end value 10 min after switching on the sensor (factory setting) with enhanced temperature compensation: ≤ ± 0.75% of the end value 2 min after switching on the sensor without temperature compensation: 0.17 %/K

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Technical Data

Memory		
Non-volatile memory		EEPROM
Write cycles		300000
Indicators/operating means		
LED green		solid: power on flashing: standby mode or IO-Link communication
LED yellow		solid: object in evaluation range flashing: switch point programming, object detected
LED red		solid: error flashing: switch point programming, object not detected
Electrical specifications		
Operating voltage	U_B	10 ... 30 V DC , ripple 10 $\%_{SS}$
No-load supply current	I_0	≤ 60 mA
Power consumption	P_0	≤ 1000 mW
Time delay before availability	t_v	≤ 300 ms
Interface 1		
Interface type		IO-Link (via C/Q = Pin 4)
IO-Link revision		1.1
Device profile		Smart Sensor Profile 2
Process data width		32 bit
Device ID		0x300604 (3147268)
Transfer rate		COM2 (38.4 kBit/s)
Min. cycle time		3 ms
SIO mode support		yes
Compatible master port type		Class A Class B (use 3-pole adapter or 3-wire cable)
Interface 2		
Interface type		IrDA (infrared interface)
Mode		point-to-point connection
Transfer rate		115.2 kBit/s
Maximum communication distance		5 cm
Input/Output		
Input/output type		1 synchronization connection, bidirectional
0 Level		0 ... 1 V
1 Level		2.5 V ... U_B
Input impedance		> 22 kΩ
Output current		current source < 2.5 mA
Pulse length		≥ 1 ms with external control, low active
Synchronization frequency		
Common mode operation		≤ 71 Hz
Multiplex operation		≤ 71 Hz / n , n = number of sensors , n ≤ 10
Switching output		
Output type		1 push-pull output , short-circuit protected , reverse polarity protected
Rated operating current	I_e	100 mA , short-circuit/overload protected
Switching frequency		factory setting: 10 Hz programmable to 23 Hz
Voltage drop		≤ 2.5 V
Repeat accuracy		≤ ± 0.1 % of full-scale value
Range hysteresis		1 % of the adjusted operating range (default settings), programmable , min. 1 mm
Off-state current		≤ 100 µA
Analog output		
Output type		1 analog output 0 (4) ... 20 mA or 1 analog output 0 ... 10 V
Resolution		current output: evaluation range [mm]/3200 but ≥ 0.35 mm voltage output: evaluation range [mm]/4000 but ≥ 0.35 mm
Deviation of the characteristic curve		≤ ± 1 % of full-scale value

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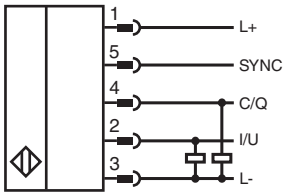
Technical Data

Repeat accuracy	≤ ± 0.1 % of full-scale value
Load resistor	current output: ≤ 500 Ω voltage output: ≥ 1000 Ω
Compliance with standards and directives	
Standard conformity	
Standards	EN IEC 60947-5-2:2020 IEC 60947-5-2:2019 EN 60947-5-7:2003 IEC 60947-5-7:2003 IEC 61131-9:2013
Approvals and certificates	
UL approval	cULus Listed, Class 2 Power Source
CCC approval	CCC approval / marking not required for products rated ≤36 V
Ambient conditions	
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Storage temperature	-40 ... 85 °C (-40 ... 185 °F)
Mechanical specifications	
Connection type	Connector plug M12 x 1 , 5-pin
Degree of protection	IP67
Material	
Housing	stainless steel (1.4305 / AISI 303)>BR>PA, PC, POM and PBT plastic parts
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Installation position	any position
Mass	45 g
Tightening torque, fastening screws	max. 30 Nm
Dimensions	
Length	90 mm
Diameter	18 mm
Factory settings	
Output 1	near switch point: 90 mm far switch point: 1000 mm Output mode: Window mode output behavior: NO contact
Output 2	near limit: 90 mm far limit: 1000 mm Output mode: rising ramp output behavior: Current output 4 mA ... 20 mA
Beam width	wide

Connection Assignment



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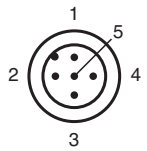
Connection Assignment

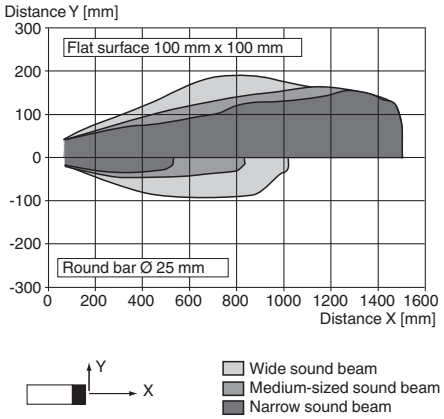


Wire colors in accordance with EN 60947-5-2

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

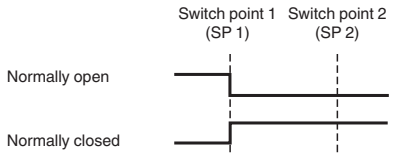
Characteristic Curve

Characteristic response curve

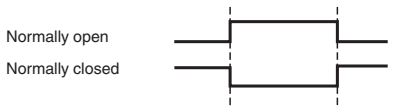


Switching output modes

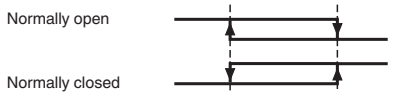
1. Switch point mode



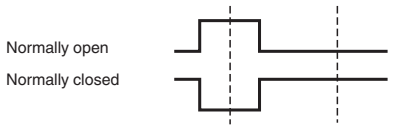
2. Window mode



3. Hysteresis mode



4. Retroreflective mode



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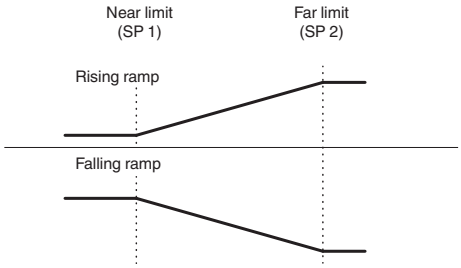
Characteristic Curve

Analog output modes



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Function

Adjustment possibilities

The sensor features a switching output with 2 programmable switch points and an analog output with 2 programmable limits. Programming the switch points, the limits, the output mode, the output logic and the beam width can be done in two different ways:

- Using the sensor's programming buttons
- Using the IO-link interface of the sensor. This method requires an IO-link master (e.g. IO-link-Master02-USB) and the associated software. The download link is available on the product page for the sensor at www.pepperl-fuchs.

Synchronization

The sensor features a synchronization input for suppressing ultrasonic mutual interference („cross talk").
The following synchronization modes are available:

1. Automatic multiplex mode.
2. Automatic common mode
3. Externally controlled synchronization

Further Documentation

- For information on programming via programming buttons and synchronisation you may refer to the commissioning instruction.
- For detailed information on application and programming via IO-Link we provide a manual.

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