

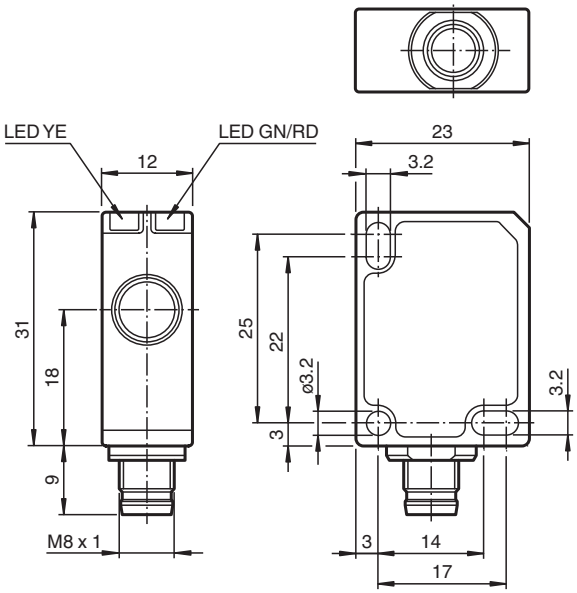
Ultrasonic sensor

UC400-F77-EP-IO-V31

- IO-Link interface for service and process data
- Programmable via DTM with PACTWARE
- Continuous distance value via IO-Link process data
- Selectable sound lobe width
- Synchronization options
- Temperature compensation
- Push-pull output

Single head system

Dimensions



Technical Data

General specifications		
Sensing range		30 ... 400 mm
Adjustment range		40 ... 400 mm
Dead band		0 ... 30 mm
Standard target plate		20 mm x 20 mm
Transducer frequency		approx. 310 kHz
Response delay		minimum : 10 ms factory setting: 37 ms
Sensor cycle time		≥ 10 ms (factory setting) ; programmable to 60 s
Memory		

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Technical Data

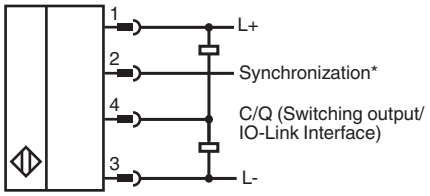
Non-volatile memory		EEPROM
Write cycles		300000
Indicators/operating means		
LED green		solid: power on flashing: standby mode or IO-Link communication
LED yellow		solid: object in evaluation range flashing: switch point programming, object detected
LED red		solid: error flashing: switch point programming, object not detected
Electrical specifications		
Operating voltage	U_B	10 ... 30 V DC , ripple 10 %$_{SS}$
No-load supply current	I_0	≤ 40 mA
Power consumption	P_0	≤ 400 mW
Time delay before availability	t_v	≤ 300 ms
Interface		
Interface type		IO-Link (via C/Q = Pin 4)
IO-Link revision		1.1
Device profile		Smart Sensor
Device ID		0x300301 (3146497)
Transfer rate		COM2 (38.4 kBit/s)
Min. cycle time		2.3 ms
Process data width		16 bit
SIO mode support		yes
Compatible master port type		A
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 rated operating current		current source < 2.5 mA
Pulse length		≥ 1 ms with external control, low active
Synchronization frequency		
Common mode operation		≤ 109 Hz
Multiplex operation		≤ 109 Hz / n , n = number of sensors , n ≤ 10
Output		
Output type		1 push-pull (4 in 1) output, short-circuit protected, reverse polarity protected
Rated operating current	I_e	100 mA , short-circuit/overload protected
Voltage drop	U_d	≤ 2.5 V
Repeat accuracy		≤ ± 0.1 % of full-scale value
Switching frequency	f	factory setting: 16 Hz programmable max. 35 Hz
Range hysteresis	H	1 % of the adjusted operating range (default settings), programmable , min. 1 mm
Temperature influence		≤ ± 0.75 % of the end value (with temperature compensation) from 10 minutes after switching on the sensor ; 0.17 %/K (without temperature compensation)
Compliance with standards and directives		
Standard conformity		
Standards		EN IEC 60947-5-2:2020 IEC 60947-5-2:2019 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		

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Technical Data

Connection type		Connector plug M8 x 1 , 4-pin
Degree of protection		IP67
Material		
Housing		Polycarbonate
Transducer		epoxy resin/hollow glass sphere mixture; polyurethane foam
Installation position		any position
Mass		9 g
Tightening torque, fastening screws		max. 0.2 Nm
Factory settings		
Output		near switch point: 40 mm far switch point: 400 mm Output mode: Window mode Output logic: normally open
Beam width		wide

Connection



*if not used connect to ground (0V)

Connection Assignment



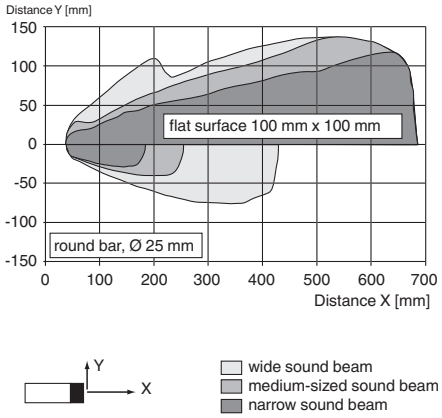
Wire colors in accordance with EN 60947-5-2

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

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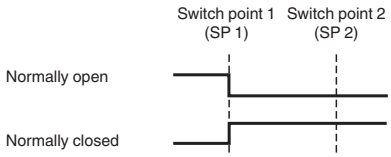
Characteristic Curve

Characteristic response curve

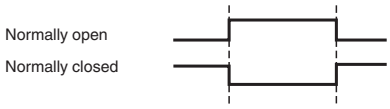


Switching output modes

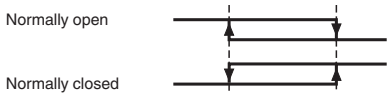
1. Switch point mode



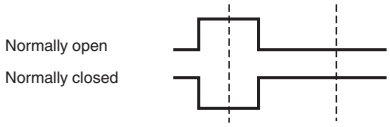
2. Window mode



3. Hysteresis mode



4. Retroreflective mode



Accessories

	**V31-GM-2M-PVC**	Female cordset single-ended M8 straight A-coded, 4-pin, PVC cable grey
	**V31-GM-1M-PVC-V1-G**	Cordset M8 socket straight to M12 plug straight A-coded, 4-pin, PVC cable grey
	**OMH-ML7-01**	Mounting aid for ML7 and ML8 series, Mounting bracket
	**OMH-ML7-02**	Mounting aid for ML7 and ML8 series, Mounting bracket
	**ICE2-8IOL-G65L-V1D**	EtherNet/IP IO-Link master with 8 inputs/outputs

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Accessories

	**ICE3-8IOL-G65L-V1D**	PROFINET IO IO-Link master with 8 inputs/outputs
	**ICE1-8IOL-G30L-V1D**	Ethernet IO-Link module with 8 inputs/outputs
	**ICE1-8IOL-G60L-V1D**	Ethernet IO-Link module with 8 inputs/outputs
	**ICE2-8IOL-K45P-RJ45**	EtherNet/IP IO-Link master with 8 inputs/outputs, DIN rail, push-in connectors
	**ICE2-8IOL-K45S-RJ45**	EtherNet/IP IO-Link master with 8 inputs/outputs, DIN rail, screw terminal
	**ICE3-8IOL-K45P-RJ45**	PROFINET IO IO-Link master with 8 inputs/outputs, DIN rail, push-in terminals
	**ICE3-8IOL-K45S-RJ45**	PROFINET IO IO-Link master with 8 inputs/outputs, DIN rail, screw terminal
	**IO-Link-Master02-USB**	IO-Link master, supply via USB port or separate power supply, LED indicators, M12 plug for sensor connection

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Function

Adjustment possibilities

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

- Using the sensor's programming button
- 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 button 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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