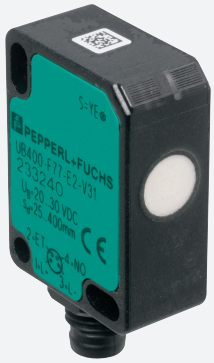


Ultrasonic direct detection sensor

UB400-F77-F-V31

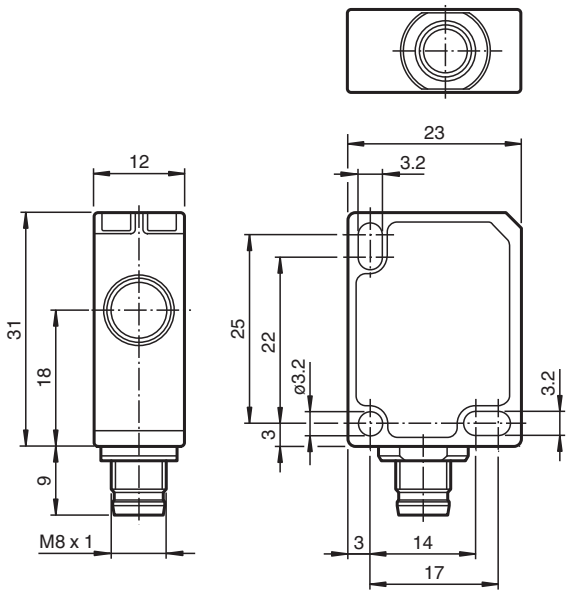
- Miniature design
- Frequency output
- Program input
- Degree of protection IP67
- Switching status indicator, yellow LED

Ultrasonic direct detection sensor

Function

The ultrasonic sensor transmits ultrasonic packages in quick succession and responds to their reflection off the detected object. It has a frequency output that delivers a square wave signal. The frequency of this signal changes linearly with the distance of the object. Two frequency ranges are available.

Dimensions



Technical Data

General specifications	
Sensing range	40 ... 400 mm
Dead band	0 ... 40 mm
Standard target plate	20 mm x 20 mm
Transducer frequency	approx. 300 kHz
Response delay	≤ 75 ms

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Technical Data

Limit data		
Permissible cable length		max. 300 m
Indicators/operating means		
LED yellow		object inside the scanning range
Electrical specifications		
Rated operating voltage	U_e	24 V DC
Operating voltage	U_B	20 ... 30 V DC , ripple 10 $\%_{SS}$; 12 ... 20 V DC sensitivity reduced to 90 %
No-load supply current	I_0	≤ 20 mA
Time delay before availability	t_v	≤ 150 ms
Input		
Input type		1 program input
Level		low level : 0 ... 0.7 V (Teach-In active) high level : U_B or open input (Teach-In inactive)
Input impedance		16 kΩ
Pulse length		≥ 3 s
Output		
Output type		Frequency output , PNP
Rated operating current	I_e	100 mA , short-circuit/overload protected
Voltage drop	U_d	≤ 2 V
Resolution		Standard: 2 Hz / mm , low: 1 Hz / mm
Repeat accuracy		± 2.5 %
Off-state current	I_r	≤ 0.01 mA
Output frequency		Standard: 80 ... 800 Hz , low (adjustable): 40 ... 400 Hz
Temperature influence		0.17 %/K
Compliance with standards and directives		
Standard conformity		
Standards		EN IEC 60947-5-2:2020 IEC 60947-5-2:2019
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)
Shock resistance		30 g , 11 ms period
Vibration resistance		10 ... 55 Hz , Amplitude ± 1 mm
Mechanical specifications		
Connection type		M8 x 1 connector , 4-pin
Degree of protection		IP67
Material		
Housing		Polycarbonate
Transducer		epoxy resin/hollow glass sphere mixture; polyurethane foam
Installation position		any position
Mass		10 g
Tightening torque, fastening screws		max. 0.2 Nm

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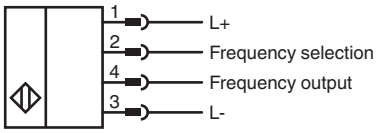
Connection



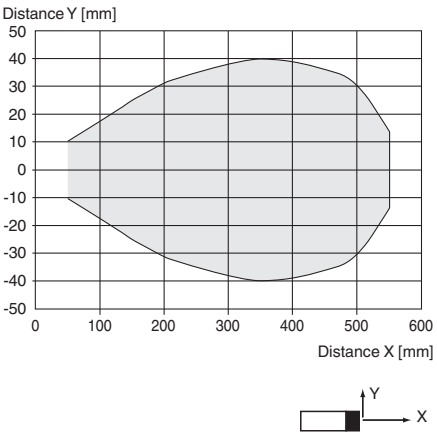
Connection Assignment

Wire colors in accordance with EN 60947-5-2

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

Characteristic Curve

Characteristic response curve



Commissioning

Adjustment Possibilities
The sensor is equipped with an analog frequency output. The frequency delivered at the analog output (square wave signal) changes linearly with the object distance. It is possible to select between two frequency ranges via the frequency selection input of the sensor.
Switching the potential at the frequency selection input during operation does not change the output frequency range.

Further Documentation
For information on programming the frequency selection input you may refer to the commissioning instruction.

Accessories

	**UB-PROG4-V31**	Programming unit for ultrasonic sensors with Teach-in input at pin 2

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Accessories

	**OMH-ML7-01**	Mounting aid for ML7 and ML8 series, Mounting bracket
	**V31-GM-2M-PVC**	Female cordset single-ended M8 straight A-coded, 4-pin, PVC cable grey
	**V31-WM-2M-PVC**	Female cordset single-ended M8 angled A-coded, 4-pin, PVC cable grey

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