



**Model Number**

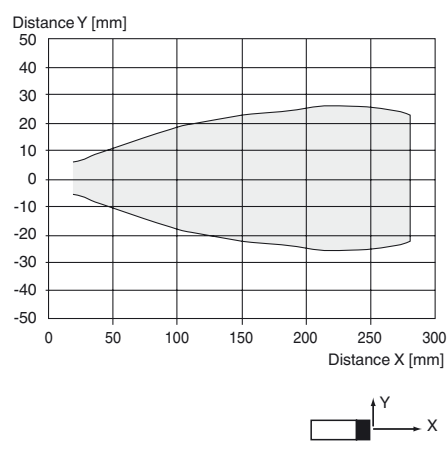
**UB250-F77-F-V31-Y307641**  
Ultrasonic direct detection sensor

**Features**

- Miniature design
- Frequency output
- NPN version
- Program input
- Degree of protection IP67


**Diagrams**

**Characteristic response curve**



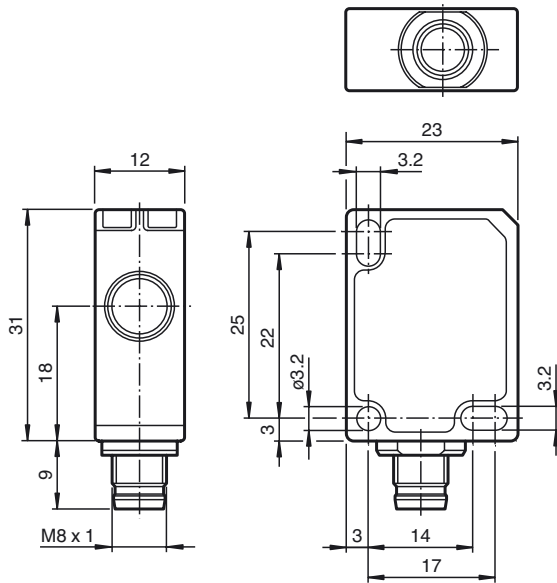
**Technical data**

<b>General specifications</b>	
Sensing range	35 ... 250 mm
Dead band	0 ... 35 mm
Standard target plate	20 mm x 20 mm
Transducer frequency	approx. 400 kHz
Response delay	≤ 50 ms
<b>Nominal ratings</b>	
Time delay before availability $t_v$	≤ 150 ms
<b>Limit data</b>	
Permissible cable length	max. 300 m
<b>Indicators/operating means</b>	
LED yellow	object inside the scanning range
<b>Electrical specifications</b>	
Rated operating voltage $U_e$	24 V DC
Operating voltage $U_B$	20 ... 30 V DC , ripple 10 % <sub>SS</sub> ; 12 ... 20 V DC sensitivity reduced to 90 %
No-load supply current $I_0$	≤ 20 mA
<b>Input</b>	
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
<b>Output</b>	
Output type	Frequency output , NPN
Rated operating current $I_e$	100 mA , short-circuit/overload protected
Resolution	Standard 2 Hz / mm
Repeat accuracy	± 2.5 %
Off-state current $I_r$	≤ 0.01 mA
Output frequency	frequency : 70 ... 500 Hz ( 35 ... 250 Hz ) , adjustable
Temperature influence	+ 0.17 %/K
<b>Ambient conditions</b>	
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
<b>Mechanical specifications</b>	
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
<b>Compliance with standards and directives</b>	
Standard conformity	
Standards	EN 60947-5-2:2007+A1:2012 IEC 60947-5-2:2007 + A1:2012
<b>Approvals and certificates</b>	
UL approval	cULus Listed, General Purpose
CCC approval	CCC approval / marking not required for products rated ≤36 V

**Safety Note**  

 The use of this device in applications, where the safety of persons depends from the devices function, is not allowed!

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**Dimensions**



**Description of 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.

**Description of the Frequency Selection**

Proceed as follows to select the frequency range:

**Standard frequency 70 ... 500 Hz**

1. Connect terminal ET to +U<sub>B</sub> or leave it open.
2. Switch on the operating voltage.
3. The sensor will be ready for operation after 3 seconds.

**Low frequency 35 ... 250 Hz**

1. Connect terminal (ET) to -U<sub>B</sub>.
2. Switch on the operating voltage.
3. The sensor will be ready for operation after 3 seconds.

ET	unusable area	Sensing range 35 ... 250 mm	> 250 mm or no object
Open or +U <sub>B</sub>	Undefined	70 ... 500 Hz	500 Hz
-U <sub>B</sub>	Undefined	35 ... 250 Hz	250 Hz

**Note:**

Switching the potential on ET during operation will not change the frequency range.

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