

MB7066
MB7076

XL- MaxSonar® - WRL1™ (MB7066)

XL- MaxSonar® - WRLA1™ (MB7076)



Weather Resistant (IP67) Sonar Range Finder with High Power Output, Noise Rejection, Auto Calibration & Extra Long-Range (10m) Detection

This sensor provides very short to long-range detection and ranging, in a compact, robust PVC housing, designed to meet IP67 water intrusion, and matches standard electrical 3/4" PCV pipe fittings. This sensor has a new high power output along with real-time auto calibration for changing conditions (temperature, voltage or acoustic or electrical noise) that ensure you receive the most reliable (in air) ranging data for every reading taken. The low power 3.0V to 5.5V operation detects objects from 0-cm to 1068-cm (35 feet) and provides sonar range information from 20-cm out to 1068-cm with 1-cm resolution. Objects from 0-cm to 20-cm range as 20-cm. The interface output formats included are pulse width output (MB7066), real-time analog voltage envelope (MB7076), analog voltage output, and serial digital output.

Features

- Extended 10m range detection and outputs
- High acoustic power output
- Real-time auto calibration and noise rejection for every ranging cycle
- Precise narrow beam
- Continuously variable gain
- Object detection includes zero range objects
- 3.0V to 5.5V supply with very low average current draw
- Readings can occur up to every 100mS, (10-Hz rate)
- Free run operation can continually measure and output range information
- Triggered operation provides the range reading as desired
- All interfaces are active simultaneously
- Serial, 0 to Vcc, 9600 Baud 81N
- Analog, (Vcc/1024) / 2cm
- Pulse Width (MB7066)
- Real-time analog envelope (MB7076)
- Sensor operates at 42KHz

Benefits

- 1067cm maximum range
- Acoustic and electrical noise resistance
- Reliable and stable range data
- Sensor dead zone virtually gone
- Low cost IP67 sensor
- Quality narrow beam characteristics
- Very low power range finder suited for multiple sensor or battery based systems
- Ranging can be triggered externally or internally
- Sensor reports the range reading directly, frees up user processor
- Fast measurement cycle
- User can choose any of the sensor outputs
- No power up calibration required, perfect for when objects may be in front of the sensor during power up
- Easy hole mounting or mating with standard electrical fittings

Applications and Uses

- Tank level measurement
- Bin level measurement
- Proximity zone detection
- People detection
- Robot ranging sensor
- Autonomous navigation
- Environments with acoustic and electrical noise
- Multi-sensor arrays
- Distance measuring
- Long range object detection
- Users who prefer to process the analog voltage envelope (MB7076)
- Industrial sensor
- Physical drop-in upgrade for product, part numbers: MB7001, MB7060, MB7062, MB7070, MB7072
- -40°C to 65°C (85°C limited operation)

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Email: info@maxbotix.com

Web: www.maxbotix.com

Part Number: PD10431e

MB7066 & MB7076 Real-time Noise Rejection

While the XL-MaxSonar® is designed to operate in the presence of noise, best operation is obtained when noise strength is low and desired signal strength is high. Hence, the user is encouraged to mount the sensor in such a way that minimizes outside acoustic noise pickup. In addition, keep the DC power to the sensor free of noise. This will let the sensor deal with noise issues outside of the users direct control (in general, the sensor will still function well even if these things are ignored). Users are encouraged to test the sensor in their application to verify usability.

For every ranging cycle, individual filtering for that specific cycle is applied. In general, noise from regularly occurring periodic noise sources such as motors, fans, vibration, etc., will not falsely be detected as an object. This holds true even if the periodic noise increases or decreases (such as might occur in engine throttling or an increase/decrease of wind movement over the sensor). Even so, it is possible for sharp non-periodic noise sources to cause false target detection. In addition, *(because of dynamic range and signal to noise physics,) as the noise level increases, at first only small targets might be missed, but if noise increases to very high levels, it is likely that even large targets will be missed.

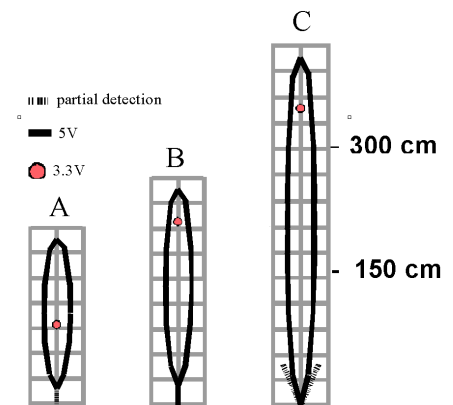
*In high noise environments, if needed, use 5V power to keep acoustic signal power high. In addition, a high acoustic noise environment may use some of the dynamic range of the sensor, this may decrease sensitivity.

MB7066 & MB7076 Beam Characteristics

The MB7066 & MB7070 are based upon MB7066 and MB7076 hardware. Modifications are made in order to enable the sensors to operate at to the full distance of 1068cm.

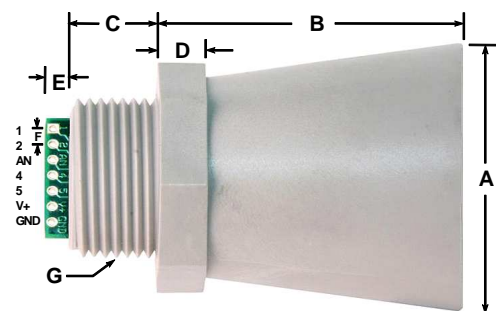
People detection requires high sensitivity, yet minimal side-lobes requires low sensitivity. The MB7066 and MB7076 balances the detection of people with minimal side-lobes. Larger objects are detected to 1068cm. Sample results for measured beam patterns are shown to the right on a 30-cm grid. The detection pattern is shown for;

- (A) 0.25-inch diameter dowel,
- (B) 1-inch diameter dowel,
- (C) 3.25-inch diameter dowel,



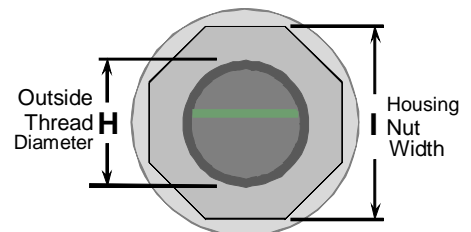
beam characteristics are approximate

MB7066 & MB7076 Mechanical Dimensions



A	1.72" dia.	43.8 mm dia.
B	2.00"	50.7 mm
C	0.58"	14.4 mm
D	0.31"	7.9 mm
E	0.23"	5.8 mm
F	0.1"	2.54 mm
G	3/4" National Pipe Thread Straight	
H	1.032" dia.	26.2 mm dia.
I	1.37"	34.8 mm
weight, 1.76 oz., 50 grams		

values are nominal

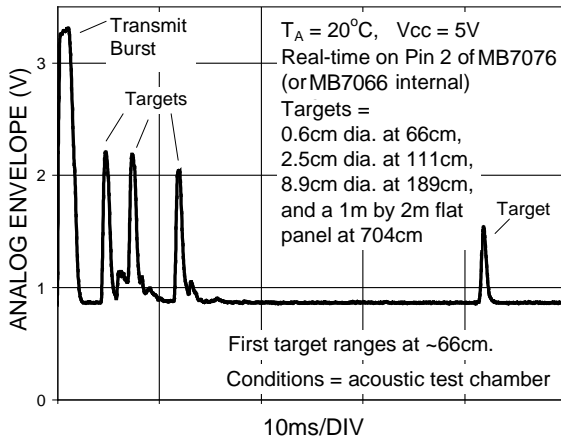


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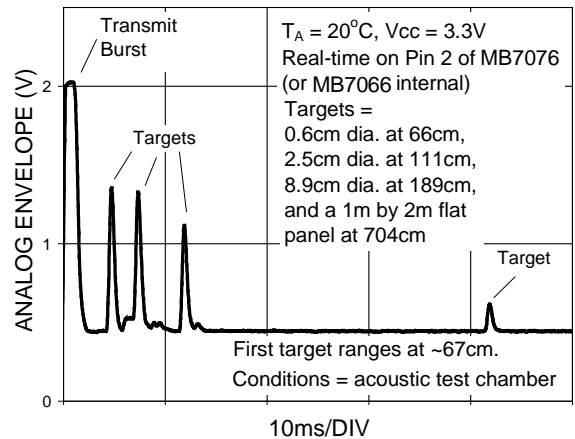
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Typical Performance to Targets

Analog Envelope Output (Dowels, 5V)

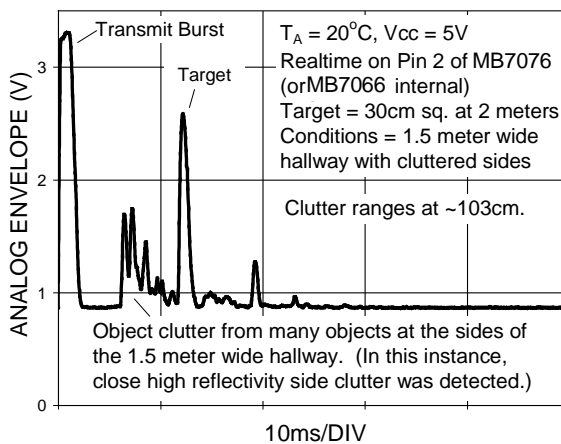


Analog Envelope Output (Dowels, 3.3V)

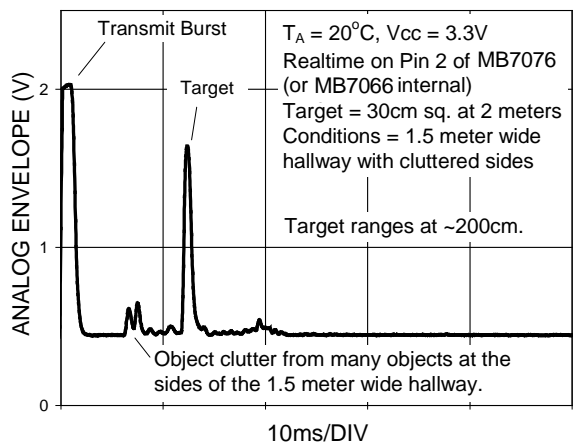


Typical Performance in Clutter

Analog Envelope Output (Clutter, 5V)



Analog Envelope Output (Clutter, 3.3V)



Product / specifications subject to change without notice. For more info visit www.maxbotix.com