



GENERATIONS AHEAD IN SONAR & ULTRASONIC TECHNOLOGY

Massa Model M3 and M3is Family of Wireless Ultrasonic Level Sensors

Standard and Intrinsically Safe Versions

The Massa Model M3 Family consists of battery operated wireless level sensors that intercommunicate using ZigBee RF Modules. Massa M3 Sensors produce detection ranges from as close as 4 inches (100 mm) to 35 feet (10.7 meters). Incorporating state-of-the-art ultrasonic technology, the sensors provide precision non-contact distance measurement for liquid level or industrial process control. The M3 Family of Wireless Level Sensors stands out over all other systems because of their affordability, extraordinary ease of operation, and ability to be installed and calibrated without using a target. They transmit narrow beam sound pulses, process return echoes, and report the distance to the target.

The M3 measures and stores information such as range, temperature, battery voltage, and other sensor parameters at user-set time intervals. An internal pushbutton switch is used to commission the sensor onto the ZigBee network, and an LED identifies the operating mode. The package is rated for immersion and high pressure washing in accordance with IP67. The batteries are accessible for replacement.

Sensors in the M3 Family are available in two versions. Standard M3 Sensors are designed for operation in typical industrial applications. For use in hazardous environments, intrinsically safe M3is Sensors are also available, which are certified by Factory Mutual as meeting the requirements of Class 1 Div 1 (C1D1), all groups.

All of the models in the M3 Family of Sensors include an advanced diagnostic feature that, when using the supplied Python code and software, will display the received ultrasonic waveform on a computer screen for analysis. This feature is very useful for debugging and correcting more difficult installations remotely and without the need for an oscilloscope.

Other features include a totally sealed PVDF housing, an industry standard 2 inch NPT fitting for mounting, operation from -30°C to 65°C, and a temperature probe for speed of sound compensation to improve range accuracy. For more information visit our web site at www.massa.com.

MASSA PRODUCTS CORPORATION

280 Lincoln Street, Hingham, MA 02043 U.S.A.
Tel: 781-749-4800 Fax: 781-740-2045
Toll Free in USA: 800-962-7543
sales@massa.com



FEATURES

- Wireless
- Intrinsically Safe Versions are Available (M3is Sensors)
- Low Power
- Rugged (IP67 Rated)
- 2" NPT Mounting Fitting
- All PVDF Construction
- Chemically Resistant
- Built-in Temperature/Sound Speed Compensation

APPLICATIONS

- Liquid Level Monitoring
- Portable 'Tote' Tanks
- Fixed 'Bulk' Tanks
- Chemical Tanks
- Fuel and Other Hazardous Liquid Level Monitoring
- 'Oil Patch' Tanks
- Bulk Solid Material Level Measurement



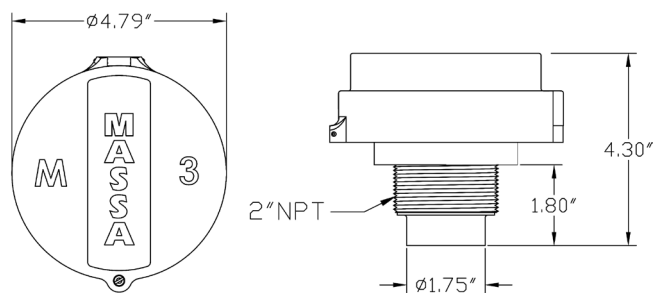
M3 and M3is SPECIFICATIONS

(Typical in 22°C and 50% RH air)

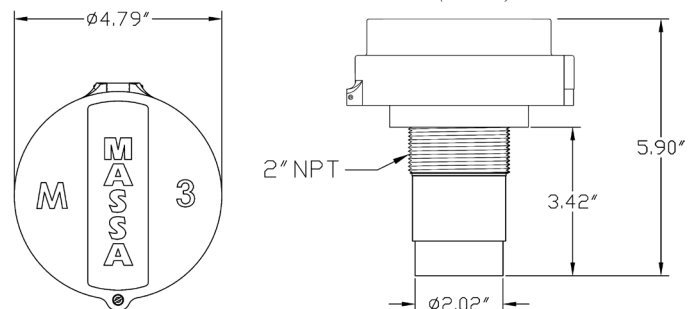
| | |
|---|---|
| Nominal Sensing Ranges: <i>(dependent on target)</i> | M3/150: 4 inches (100 mm) minimum, up to 7 feet (2.1 meters) maximum M3/95: 12 inches (300 mm) minimum, up to 13 feet (4 meters) maximum M3/50: 14 inches (350 mm) minimum, up to 35 feet (10.7 meters) maximum |
| Measurement Resolution: | M3/150 and M3/95: .01 inches (0.25 mm), M3/50: .02 inches (0.5 mm) |
| Measurement Accuracy: | +/- 0.1% of target range <i>(uniform temperature, all models)</i> |
| System Beam Angle: | 8 degrees conical |
| Operating Temperature: | -30°C to 65°C <i>(relative humidity in air 0 – 95%, non-condensing)</i> |
| Temperature Compensation: | Internal probe |
| Data Acquisition Interval: | Programmable from 1 event every 10 seconds to 1 event every 194 days |
| Saved Data Events: | Up to 111 events of sensor data saved in memory, including target range, temperature, battery voltage, sensor status, and an event number |
| LED: | Red and Green status indication |
| Switch for Provisioning: | Internal pushbutton switch for commissioning sensor onto the network |
| Radio Onboard: | North America version, 63mW; International (CE) version, 10mW |
| Power: | 3 Lithium Energizer model L91 AA size 1.5V batteries (included) NOTE: USE ONLY LITHIUM BATTERIES |
| Battery Life: | 3-5 years (4-12 data reports per day) <i>(Lifespan can be affected by temperature and reporting rate)</i> |
| Min. Battery Pack Voltage: | 3.1V <i>(Once the voltage of the Energizer L91 Battery Pack decreases to 3.6V, its capacity diminishes at an accelerated rate)</i> |
| Gateway Networking: | Connectivity by Digi® International ConnectPort® X2 or X4 Gateways (Zigbee) |
| Housing Material: | PVDF <i>(case and transducer)</i> |
| Housing Thread: | 2" NPT |
| Housing IP Rating: | IP67 |

All Specifications are Subject to Change Without Notice

Outline Drawing of All Versions
of M3/150 and M3/95 Sensors (inches)



Outline Drawing of All Versions
of the M3/50 Sensor (inches)



ORDERING INFORMATION

M3 (Standard)

| Order Code | Sensing Range | Radio |
|------------|---------------|---------------|
| M3/150 | 4" to 7' | North America |
| M3/150CE | 4" to 7' | International |
| M3/95 | 12" to 13' | North America |
| M3/95CE | 12" to 13' | International |
| M3/50 | 14" to 35' | North America |
| M3/50CE | 14" to 35' | International |

M3is, Class 1 Div 1 (C1D1), All Groups

| Order Code | Sensing Range | Radio |
|-------------|---------------|----------------------------|
| M3/150is | 4" to 7' | North America |
| M3/95is | 12" to 13' | North America |
| M3/150is-FL | 4" to 7' | Intrinsically Safe, Canada |
| M3/95is-FL | 12" to 13' | Intrinsically Safe, Canada |

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