

Multifunctional Ultrasonic Distance Sensor EM400-MUD



Milesight



EM400-MUD is a multifunctional ultrasonic distance sensor designed to detect small-range areas and small blind spots. It features switchable pre-set modes for different applications. EM400-MUD is also equipped with a 3-axis accelerometer and temperature sensor to detect device status. With high protection IP rating and waterproof enclosure, EM400-MUD can withstand harsh environments and operate up to 10 years using two 9000 mAh batteries.

Milesight offers LoRaWAN[®] version and NB-IoT/Cat.M version to meet different communication needs. The LoRaWAN[®] version can be integrated with Milesight LoRaWAN[®] gateway and Milesight IoT Cloud solution, enabling remote and visual management of all sensor data. The NB-IoT/Cat.M version not only supports multiple application modes to compatible with IoT platforms, but also is equipped with GNSS for tracking and security purposes.

EM400-MUD is specifically designed for medium or large trash bins and parking lot.

◆ Features

Shared Values

- 3-450 cm wide detection range with small blind zone
- Equipped with NTC temperature sensor for the detection and alarm of trash burning
- Built-in 3-axis accelerometer sensor to monitor device tilt status
- Damp-proof coating inside and IP67 waterproof enclosure for outdoor applications
- Two built-in 9000 mAh replaceable batteries that work for up to 10 years without replacement

- Equipped with NFC for one touch configuration, support card emulation mode

LoRaWAN® Version Only

- Equipped with three pre-set modes for different applications: standard mode, bin mode, Parking lot mode
- Ultra-wide-distance wireless transmission up to line of sight of 15 km
- Function well with standard LoRaWAN® gateways and network servers
- Compatible with Milesight IoT Cloud for remote management

NB-IoT/Cat.M Version Only

- Equipped with two pre-set modes for different applications: standard mode, bin mode
- Equipped with GNSS positioning for tracking
- Support cumulative number report function for power saving
- Support multiple network protocols to be compatible with IoT platforms

◆ Specifications

Wireless Transmission

LoRaWAN® Version

| | |
|-------------|---|
| Frequency | CN470/IN865/RU864/EU868/US915/AU915/KR920/AS923-1&2&3&4 |
| Tx Power | 16 dBm (868 MHz)/20 dBm (915MHz)/19 dBm (470MHz) |
| Sensitivity | -137dBm @300bps |
| Mode | OTAA/ABP Class A |

NB-IoT/Cat M Version

| | |
|---------------|---|
| Cellular Band | Cat M1: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26/B27/B28/ B66/B85 Cat NB2: B1/B2/B3/B4/B5/B8/ B12/B13/B18/B19/B20/B25/B28/ B66/B71/B85 |
|---------------|---|

| | |
|----------|-------------------------|
| SIM Slot | 1 (Micro SIM-3FF), 1.8V |
|----------|-------------------------|

| | |
|------------------|------------------|
| Application Mode | TCP/UDP/MQTT/AWS |
|------------------|------------------|

Measurement

Distance

| | |
|----------------------|--|
| Detection Range | 3 ~ 450 cm |
| Detection Accuracy | ± (1+0.3%*S) cm, S=distance (-15°C ~ 60°C) |
| Detection Resolution | 1 mm |

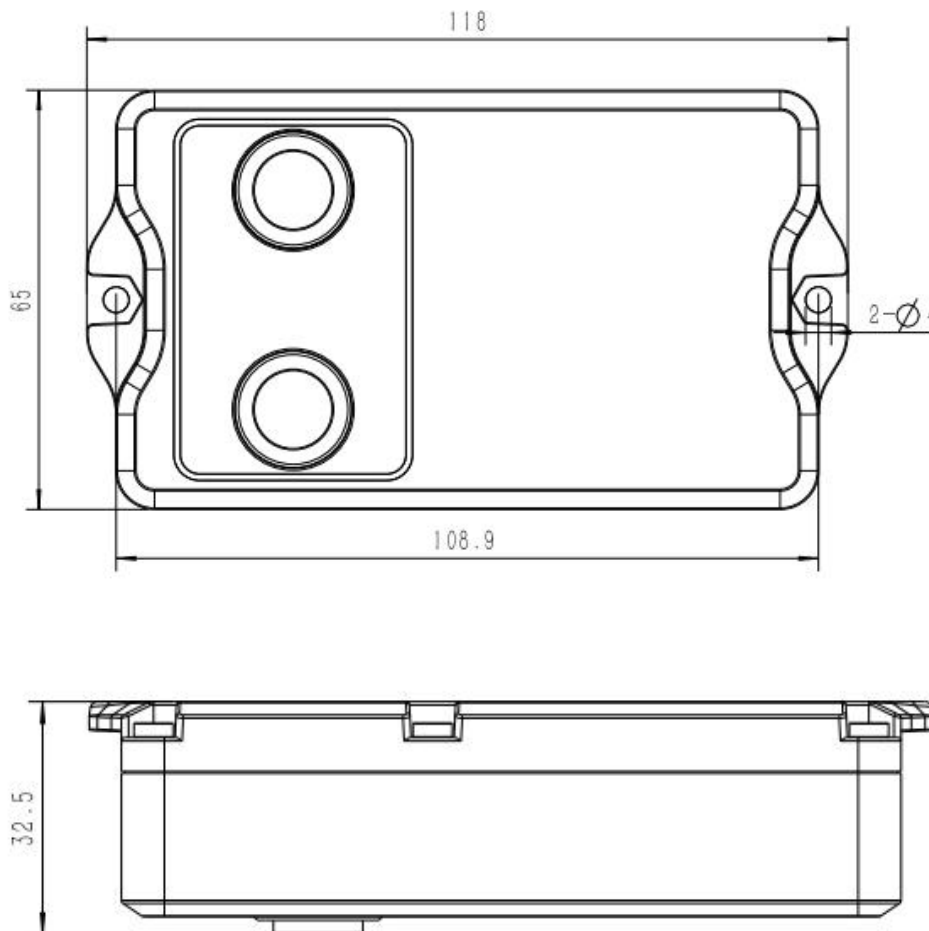
| | |
|---|---|
| Beam Angle | 60° |
| Device Position | |
| Status | Normal/Tilt |
| Temperature | |
| Range | -40 ~ 125°C |
| Resolution | 0.1°C |
| GNSS Positioning (NB-IoT/Cat M Version Only) | |
| Parameters | Longitude/Latitude |
| Resolution | 0.000001 |
| Others | |
| LED | 1 × LED Indicator (Internal) |
| Button | 1 × Power/Reset Button (Internal) |
| Software | |
| Power On & Off | NFC, Power Button (Internal) |
| Configuration | Mobile App (via NFC), Downlink |
| Advanced Features | Cumulative Report (NB Version), Calibration, Threshold Alarm, Tilt & Distance Switch |
| Physical Characteristics | |
| Power Supply | 2 x 9000 mAh ER26500 Li-SOCl ₂ Batteries |
| Battery Life ¹ | <p>LoRaWAN® Version:</p> <p>Standard mode: > 10 years (10 min interval, 25°C)</p> <p>Bin mode: > 10 years (20 min interval, 25°C)</p> <p>Parking lot mode: 5 years (12 triggers per day, 25°C)</p> <p>NB-IoT/Cat.M Version:</p> <p>TCP/UDP—Around 10 Years, MQTT/AWS—Around 5 Years (4 Times Report per Day, per Report Includes 12 Packages with 30-min Collection Interval, 25°C)²</p> |
| Operating Temperature | - 30°C ~ 70°C |
| Relative Humidity | ≤95% (non-condensing) |
| Ingress Protection | IP67 |
| Dimension | 118 × 65 × 32.5 mm |
| Housing & Color | ABS + PC (UL94 V0), Black gray |

| | |
|------------------|----------------------------------|
| Weight | 181.4g (Batteries included) |
| Installation | On the Flat Surfaces with Screws |
| Approvals | |
| Regulatory | CE, FCC |
| Environmental | RoHS |

¹ Tested under laboratory conditions and for guideline purposes only.

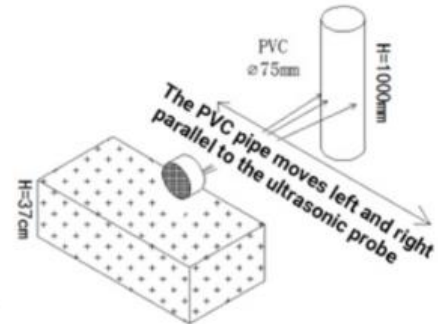
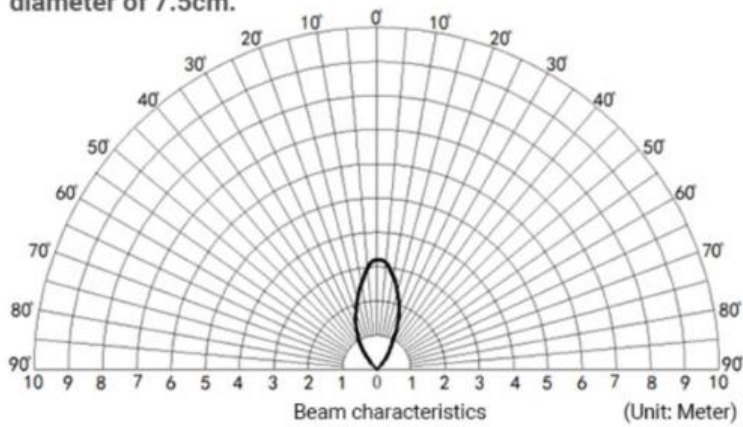
² PSM is required for SIM card and will be impacted by cellular base station signals.

◆ Dimensions (mm)



◆ Beam Pattern

(1) The tested object is a white cylindrical tube made of PVC material, with a height of 100cm and a diameter of 7.5cm.



(2) The tested object is a corrugated box perpendicular to the 0° central axis, with a length * width of 60cm*50cm.

