ToF Laser Distance Sensor

EM400-TLD



EM400-TLD is a distance sensor based on ToF (time of flight), which is mainly used for detecting the fill level and position status. With an appropriate FOV with the maximum field angle of 27°, it has almost no blind spot when installed on small-sized waste bins or containers. The embedded temperature sensor enables it to monitor whether the containers are burning for security reasons.

With IP67 waterproof rating and internal damp-proof coating, it is suitable for outdoor applications. Besides, EM400-TLD is equipped with 3-axis accelerometer to detect the status of container lid.

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-TLD is specifically designed for small trash cans.

◆ Features

Shared Values

- 2-350 cm wide detection range with extremely short blind zone
- Easy to install, especially suitable for small-size waste bins or containers
- 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

- 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 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	
ToF FoV	27°
Detection Range	2 ~ 350 cm
Detection Accuracy	±2 cm (- 20°C ~ 70°C)
Detection Resolution	1 mm
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), Threshold Alarm, Tilt & Distance Switch
Physical Characteristics	
Power Supply	2 x 9000 mAh ER26500 Li-$SOCL_2$ Batteries
Battery Life[1]	**LoRaWAN® Version:** Standard mode: Around 10 years (10 min interval, 25°C) Bin mode: Around 10 years (20 min interval, 25°C) **NB-IoT/Cat.M Version:** 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]
Operating Temperature	- 30°C ~ 70°C
Relative Humidity	≤95% (non-condensing)
Ingress Protection	IP67
Dimension	118 × 65 × 30 mm
Housing & Color	ABS + PC (UL94 V0), Black gray
Weight	208.3g (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)

