Radar Distance/Level Sensor

IOT-S510RDL

IOT-S510RDL is a non-contact Radar Distance/Level Sensor that adopts Millimeter Wave Radar technology. By measuring millimeter-wave signals at higher frequencies, it provides more stable performance over longer distances, and is less affected by environmental conditions. It can detect the distance between the sensor and liquid of various types, unaffected by temperature, dust, condensate etc. With IP68 waterproof and sealed enclosure, it can withstand the worst environment, while maintaining the measurement accuracy, and does not require routine maintenance.

Linovision offers LoRaWAN® version and Cellular version to meet different communication needs. The LoRaWAN® version can be integrated with Linovision LoRaWAN® gateway and Linovision Development Platform, enabling remote and visual management of all sensor data. The Cellular version supports multiple application modes to be compatible with IoT platforms.

IOT-S510RDL can used in sewers, rivers, impounding reservoir, storage tanks and other locations that require to measure distance and level.

◆ Features

- 8° Radar beam angle can be focused on the target fluid, enabling accurate measurement of liquid level
- Wide measuring range of 0.3m to 12m with small blind zone
- Not affected by dust, condensate, temperature, acoustic noise, etc
- Non- invasive liquid level monitoring, can detect hazardous or non-hazardous liquids
- External antenna or internal antenna versions are optional for various applications
- Built-in 3-axis accelerometer sensor to monitor device tilt status
- Support to check radar-echo curve and one-click diagnostic to calibrate the distance, ensuring the accurate measurement under different environments
- Support blind zone alarm when the ranging results are within the blind zone
- Adopt PVDF material, offering excellent corrosion resistance, wear resistance and compressive strength for harsh environments
- IP68 waterproof design, resistant in fresh water to a maximum depth of 1m for up to 48 hours
- Thread design for common tank installation without extra accessories needed
- Store up to 2,000 historical records locally and support retransmission to prevent data loss
- Easy configuration via NFC and Bluetooth
- Support management and OTA upgrade via Milesight Development Platform

LoRaWAN® Version Only

- Function well with standard LoRaWAN® gateways and network servers

Cellular Version Only

- Support multiple network protocols to be compatible with IoT platforms

◆ Specifications

Measurement	
Distance	
Technology	Millimeter Wave Radar
Target	Liquids or Smooth Surface Solid
Radar Frequency Band	60GHz
Detection Angle	8°
Detection Distance	0.3m ~ 12m
Accuracy	Up to ± 2mm[1]

Resolution	1mm
Device Position	
Status	Normal/Tilt
Wireless Transmission	
LoRaWAN® Version	
Frequency	CN470/IN865/EU868/RU864/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
Antenna	Internal Antenna or External Antenna (Hardware Optional) External Antenna (EA) Version: 1 × 50 Ω SMB Male Connector
Cellular Version	
Frequency Band	LTE (CAT 1): B1/B3/B5/B7/B8/B20/B28 for EMEA/Australia/New Zealand
SIM Slot	1 x Nano SIM (4FF) Slot
Application Mode	TCP/UDP/MQTT/AWS/Milesight Development Platform
Antenna	Internal Antenna or External Antenna (Hardware Optional) External Antenna (EA) Version: 1 × 50 Ω SMB Male Connector
Others	
LED Indicator	1 × LED indicator (Internal)
Configuration	Mobile App via NFC or Bluetooth
Advanced Feature	Distance Threshold Alarm, Distance Change Alarm, Blind Zone Alarm, Radar-echo Curve, Diagnostic, Data Storage, Data Retrievability (LoRaWAN® Version), Data Retransmission
Physical Characteristics	
Power Supply	1 × 19000 mAh ER34615 Li-SOCL$_2$ Battery
Battery Life[2]	**LoRaWAN® Version**: Around 7 Years **Cellular Version:** Around 5 Years (15-min collection Interval+1440-report interval, 25°C)
Operating Temperature	**LoRaWAN® Version**: -40°C ~ 70°C **Cellular Version:** -35°C ~ 70°C
Relative Humidity	0 ~ 100% (non-condensing)
Ingress Protection	IP68 (1m underwater, 48 hours)
Dimension	Φ 100 × 92.2 mm (Φ 3.94 × 3.63 in)
Weight	400g

Color & Material	Blue + Grey, PVDF
Supported Tank Thread	G1 ½”, G2 ½”
Installation	Wall Bracket Mounting, Pole Bracket Mounting, Tank Threaded Installation

[1] Perfectly smooth flat-surfaced solid, or still liquid surface.

[2] Tested under laboratory conditions and for guideline purposes only.