Microwave Radar Distance Sensor

OVERVIEW:

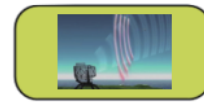The Dragino MR-XX series is a Microwave Radar distance sensor. It uses use Microwave Radar to detect the distance between sensor and different objects, and uploads the value via wireless to LoRaWAN, NB-IoT or CAT-M1 Service. Different from ultrosonic or Lidar measurement. Microwave Radar is more reliable for condensation / dusty environment. It can sense correct distance even there is water or think dust on top of the sensor.

The Dragino MR-XX series can be applied to scenarios such as horizontal distance measurement, parking management system, object proximity and presence detection, intelligent trash can management system, robot obstacle avoidance, automatic control, sewer, etc.

It supports BLE configure and wireless OTA update which make user easy to use.

The Dragino MR-XX series is powered by 8500mAh Li-SOCI2 battery or solar panel with Li-ion battery, it is designed for long-term use up to several years.
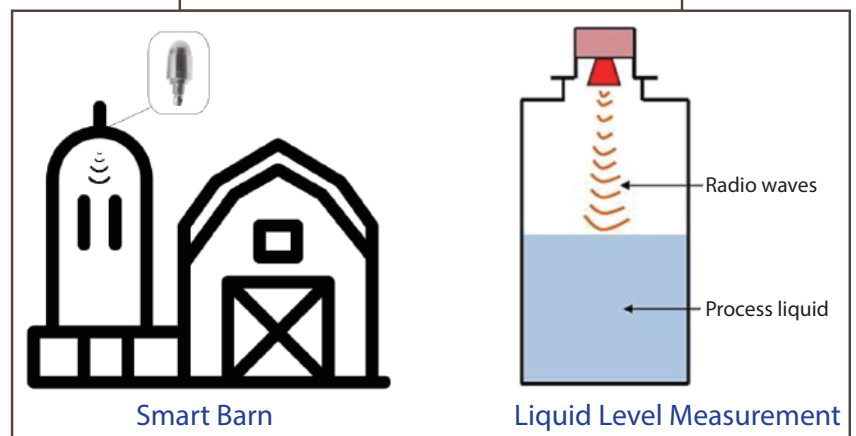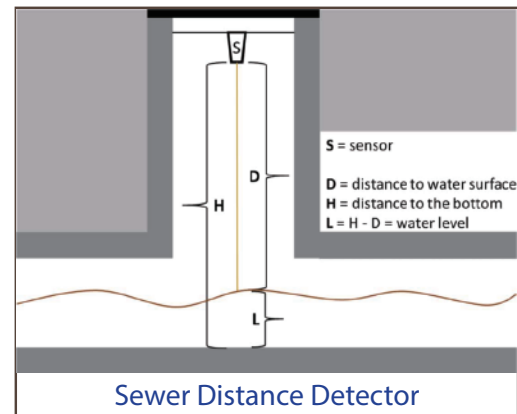

- ✅ microwave ridar sense area
- ✅ works with heavy moisture
- ✅ works with dusty, soil over
- ✅ works out of container, through wood,plastic

Applications:

Thickness: 5.5mm

Ø5mm
55mm
70mm
70mm

35mm
96mm
M20X1.5
M37X1.5
M12X0.75
Ø33.4mm
37mm
10mm
14.5mm
6mm
36.5mm
11mm 18mm

The standard wiring is 2 meters long

S = sensor
D = distance to water surface
H = distance to the bottom
L = H - D = water level

Sewer Distance Detector

Radio waves

Process liquid

Smart Barn

Liquid Level Measurement

Model Variants

Variants	MR-03/12/25-LB	MR-03/12/25-LS	MR-03/12/25-NB	MR-03/12/25-NS	MR-03/12/25-CB	MR-03/12/25-CS
Connectivity	LoRaWAN	LoRaWAN	NB-IoT	NB-IoT	NB-IoT LTE-M GNSS	NB-IoT LTE-M GNSS
Configure Method	TTL, BLE, LoRaWAN	TTL, BLE, LoRaWAN	TTL, BLE, NB-IoT	TTL, BLE, NB-IoT	TTL, BLE, NB-IoT, LTE-M	TTL, BLE, NB-IoT, LTE-M
Upgrade Method	TTL, BLE, LoRa	TTL, BLE, LoRa	TTL, BLE	TTL, BLE	TTL, BLE	TTL, BLE
Features	* Ultra-low power consumption		**Sensor /Probe:** * 80GHz Microwave Radar for distance detection * Measure Range: 3m: 200 ~ 3000mm; 12m: 200 ~ 12000mm; 25m: 200 ~ 25000mm * Accuracy: ±20mm * Resolution: 1mm * Measurement Angle: 7.6 degrees horizontal and 7.6 degrees vertical **General Features:** * Ultra-low power consumption * Support Bluetooth v5.1 remote configure and OTA update firmware * Uplink on periodically * GNSS for Location Report (for -CB & -CS models only) * Downlink to change configure			
Battery & Power	* 8500 mAh Li/SOCl2 Battery	* Solar + 3000 mAh Li-ion Battery	* 8500 mAh Li/SOCl2 Battery	* Solar + 3000 mAh Li-ion Battery	* 8500 mAh Li/SOCl2 Battery	* Solar + 3000 mAh Li-ion Battery
Power Consumption	* Sleep Mode: 5uA @ 3.3v * LoRa Transmit Mode: 125mA @ 20dBm, 82mA @ 14dBm	* Sleep mode: 74uA@3.8V * LoRa Transmit Mode: 206mA@14dBm, 236mA@20dBm	* Sleep mode: 14uA@3.3V * Max Transmit power: 350mA@3.3V	* Sleep mode: 74uA@3.4V * Max Transmit power: 350mA@3.4V	* Sleep mode: 14uA@3.3V * Max Transmit power: 350mA@3.3V	* Sleep mode: 74uA@3.4V * Max Transmit power: 350mA@3.4V
Supply Voltage	2.5v ~ 3.6v	3.7v ~ 4.2v	2.5v ~ 3.6v	3.7v ~ 4.2v	2.6v ~ 3.6v	3.7v ~ 4.2v
Operating Temperature	-40 ~ 85°C	-40 ~ 85°C	-40 ~ 85°C	-40 ~ 85°C	-40 ~ 85°C	-40 ~ 85°C

Battery & Enclosure Option:

Li-SOCl2 Battery & Enclosure:

- Li/SOCl2 un-chargeable battery
- Capacity: 8500mAh
- Self-Discharge: <1% / Year @ 25°C
- Max continuously current: 130mA
- Max boost current: 2A, 1 second

Solar Version & Enclosure:

- 3000mAh Re-chargeable battery
- 0.9W on board solar pannel Suitable to used in the place where sun is sufficient

- This icon means support location feature by: GPS/ GLONASS/BDS/Galileo/ QZSS

Wireless Option:

LoRaWAN®

- LoRaWAN 1.0.3 Class A
- Bands: CN470/EU433/KR920/US915/ EU868/AS923/AU915/IN865
- OTAA or ABP Mode.
- World Wide Unique LoRaWAN Key
- RX sensitivity: down to -139 dBm.
- Max +22 dBm - 100 mW RF output

NB-IoT

- CAT NB2 Bands:
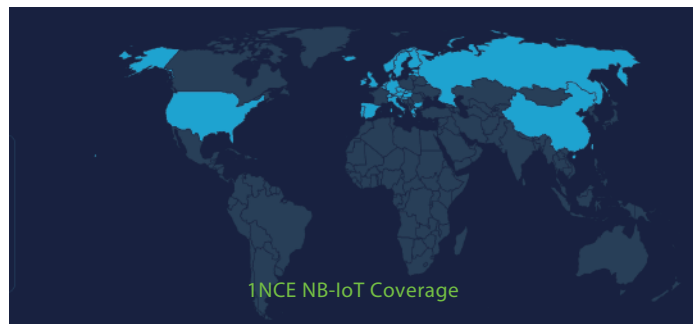 - For -NB & -NS: B1/B2/B3/B4/B5/B8/B12/B13/ B17/B18/B19/B20/B25/B28/B66/B70/B85
  - For -CB & -CS: B1/B2/B3/B4/B5/B8/B12/B13/ /B18/B19/B20/B25/B28/B66/B71/B85
- Uplink via MQTT, MQTTs, TCP, UDP or CoAP
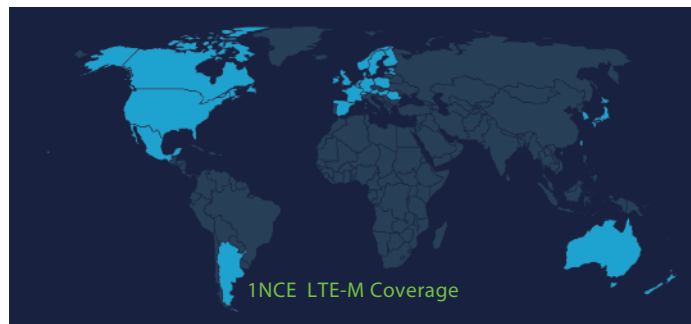- Multiply Sampling and one uplink

LTE-M

- CAT-M1 / LTE-M Bands: B1/B2/B3/B4/B5/ B8/B12/B13/B18/B19/B20/B25/B26/B27/ B28/B66/B85
- Uplink via MQTT, MQTTs, TCP, UDP or CoAP
- Multiply Sampling and one uplink

What is 1T version for NB-IoT version?

The 1T version of NB-IoT Microwave Radar Distance Sensor is with a) 1NCE SIM Card & 2) ThingsEye Pre-configured.
1NCE SIM Card (10 Years Cellular service with 500MB Data Traffic,Enough for devices to uplink 10 years at 1hour interval).

1NCE NB-IoT Coverage

1NCE LTE-M Coverage

NB-IoT Network : Austria, Belgium, Bulgaria, China, Croatia, Czech Republic, Denmark, Estonia, Finland, Germany, Great Britain, Greece, Hungary, Ireland, Italy, Latvia, Malta, Netherlands, Norway, Portugal, Puerto Rico, Russia, Slovak, Republic, Slovenia, Spain, Sweden, Switzerland, Taiwan, USA, US Virgin Islands.

LTE-M Network : Argentina, Austria, Australia, Belgium, Canada, Denmark, Estonia, Finland, France, Germany, Great Britain, Hungary, Ireland, Japan, Jersey, Korea, Repiblic of, Latvia, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Puerto Rico, Romania, Spain, Sweden, Switzerland, Taiwan, USA, US Virgin Islands.

ThingsEye.io platform:
1T version with ThingsEye IoT service pre-installed. This save a lot of work from user side to confgure IoT server.

Below is Dash Board is the demo in ThingsEye.io.

Order Info:

Part Number: MR-XX-LB-YY

- XX: Measure Range, options: 03: 3 meters; 12: 12 meters; 25: 25 meters.
- YY: Frequency Bands, options: EU433, CN470, EU868, IN865, KR920, AS923, AU915, US915

Part Number: MR-XX-LS-YY

- XX: Measure Range, options: 03: 3 meters; 12: 12 meters; 25: 25 meters.
- YY: Frequency Bands, options: EU433, CN470, EU868, IN865, KR920, AS923, AU915, US915

 NB-IoT

Part Number: MR-XX-NB-YY

- XX: Measure Range, options: 03: 3 meters; 12: 12 meters; 25: 25 meters.
- YY:
  - **GE:** General version (Exclude SIM card)
  - **1T:** with 1NCE* 10 years 500MB SIM card Pre-configure to ThingsEye server

Part Number: MR-XX-NS-YY

- XX: Measure Range, options: 03: 3 meters; 12: 12 meters; 25: 25 meters.
- YY:
  - **GE:** General version (Exclude SIM card)
  - **1T:** with 1NCE* 10 years 500MB SIM card Pre-configure to ThingsEye server

 NB-IoT **LTE-M** **GNSS**

Part Number: MR-XX-CB-YY

- XX: Measure Range, options: 03: 3 meters; 12: 12 meters; 25: 25 meters.
- YY:
  - **GE:** General version (Exclude SIM card)
  - **1T:** with 1NCE* 10 years 500MB SIM card Pre-configure to ThingsEye server

Part Number: MR-XX-CS-YY

- XX: Measure Range, options: 03: 3 meters; 12: 12 meters; 25: 25 meters.
- YY:
  - **GE:** General version (Exclude SIM card)
  - **1T:** with 1NCE* 10 years 500MB SIM card Pre-configure to ThingsEye server

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