Microwave Radar Distance Sensor
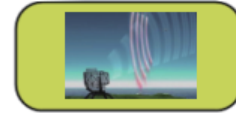
OVERVIEW:

The Dragino MDS120 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 Server. 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 MDS120 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 MDS120 series is powered by 8500mAh Li-SOCI2 battery or solar panel with li-on battery, it is designed for long-term use up to several years.

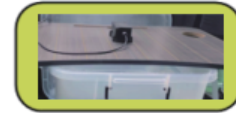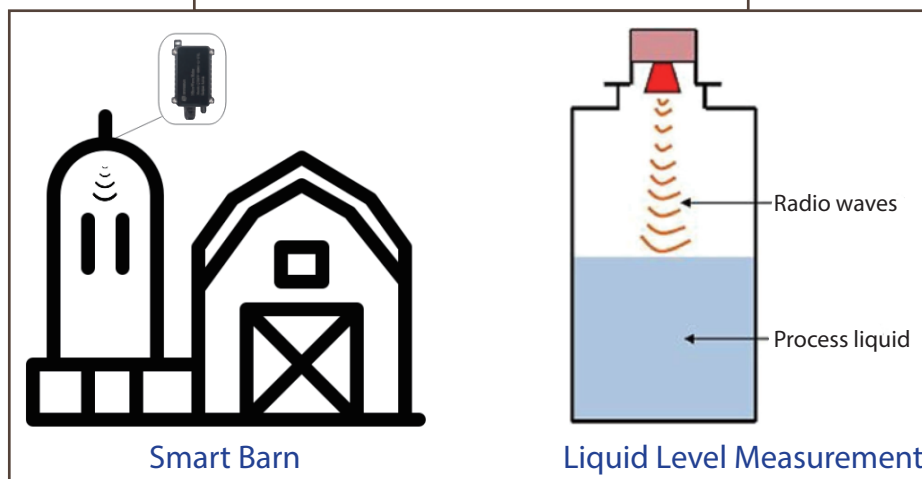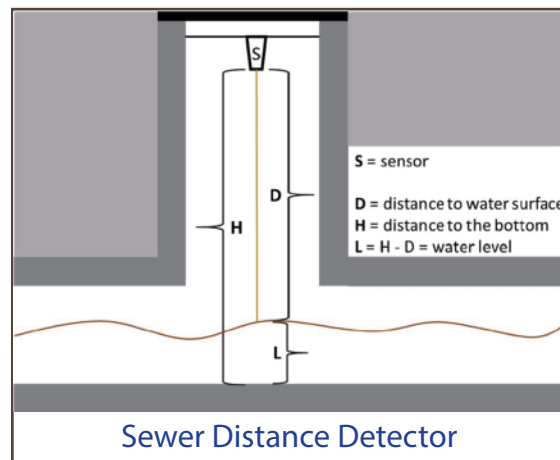- microwave ridar sense area
- works with heavy moisture
- works with dusty, soil over
- works out of container, through wood,plastic

Applications:

S = sensor

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

Sewer Distance Detector

Smart Barn

Radio waves

Process liquid

Liquid Level Measurement

Dragino Technology Co., Limited

Room 202, Block B, BCT Incubation Bases (BaoChengTai), No.8 CaiYunRoad
LongCheng Street, LongGang District ; Shenzhen 518116,China
Direct: +86 755 86610829 |Fax: +86 755 86647123

WWW.DRAGINO.COM
sales@dragino.com

Model Variants

Variants	MDS120-LB	MDS120-LS	MDS120-NB	MDS120-NS	MDS120-CB	MDS120-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	**Sensor /Probe:** * 60Ghz Microwave Radar for distance detection * Measure Range: 15 - 1200cm * Accuracy: ±(2cm+S×0.3%). S: Measure Value * Resolution: 1cm * Measurement Angle: 25 degrees horizontal and 23 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-on Battery	* 8500 mAh Li/SOCl2 Battery	* Solar + 3000 mAh Li-on Battery	* 8500 mAh Li/SOCl2 Battery	* Solar + 3000 mAh Li-on 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℃	-40 ~ 85℃	-40 ~ 85℃	-40 ~ 85℃	-40 ~ 85℃	-40 ~ 85℃

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.
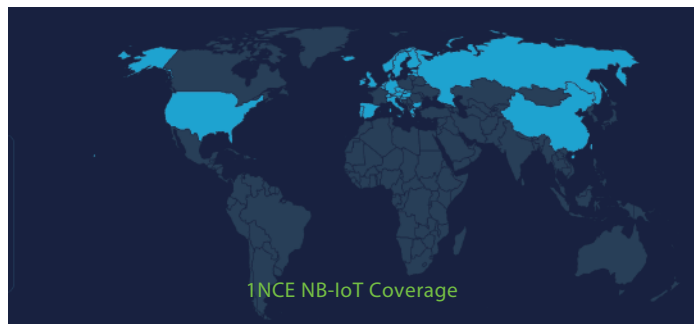* Max +22 dBm - 100 mW RF output

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
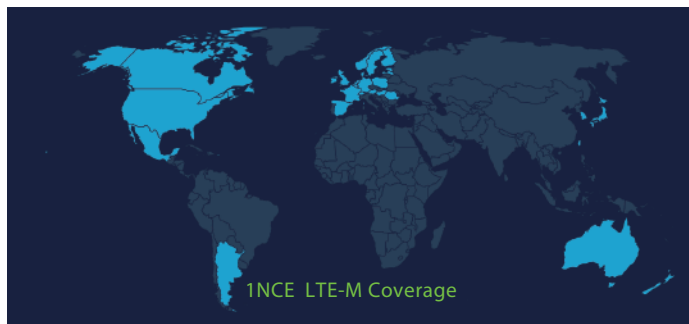* Multiply Sampling and one uplink

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.
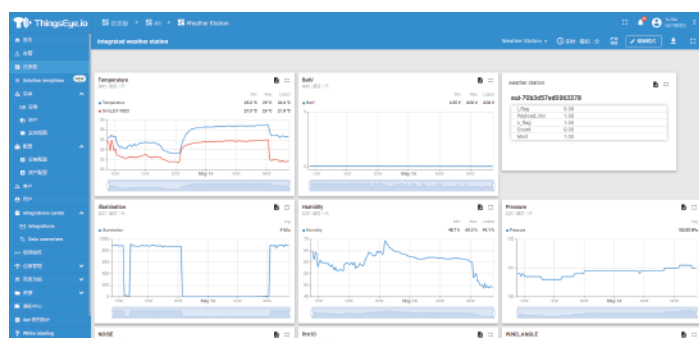
LTE-M Network : Argentina, Austria, Australia, Belgium, Canada, Denmark, Estonia, Finland, France, Germany, Great Britain, Hungary, Ireland, Japan, Jersey, Korea, Repiblic of, Latvia, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Puerto Rico, Romania, Spain, Sweden, Switzerland, Taiwan, 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: MDS120-LB-XX

XX: The default frequency band

- XX: Frequency Bands, options: EU433,CN470, EU868,IN865,KR920,AS923,AU915,US915

Part Number: MDS120-LS-XX

XX: The default frequency band

- XX: Frequency Bands, options: EU433,CN470, EU868,IN865,KR920,AS923,AU915,US915

Part Number: MDS120-NB-XX

XX:

- **GE:** General version (Exclude SIM card)
- **1T:** with 1NCE* 10 years 500MB SIM card Pre-configure to ThingsEye server

Part Number: MDS120-NS-XX

XX:

- **GE:** General version (Exclude SIM card)
- **1T:** with 1NCE* 10 years 500MB SIM card Pre-configure to ThingsEye server

Part Number: MDS120-CB-XX

XX:

- **GE:** General version (Exclude SIM card)
- **1T:** with 1NCE* 10 years 500MB SIM card Pre-configure to ThingsEye server

Part Number: MDS120-CS-XX

XX:

- **GE:** General version (Exclude SIM card)
- **1T:** with 1NCE* 10 years 500MB SIM card Pre-configure to ThingsEye server