

# LoRaWAN Leaf Moisture Sensor

## LMS01-LB



## OVERVIEW:

The Dragino LMS01-LB is a **LoRaWAN Leaf Moisture Sensor** for IoT of Agriculture. It is designed to measure the **leaf moisture and temperature**, so to send to the platform to analyze the leaf status such as : watering, moisturizing, dew, frozen. The probe is IP67 waterproof.

LMS01-LB detects **leaf's moisture and temperature use FDR method**, it senses the dielectric constant cause by liquid over the leaf surface, and cover the value to leaf moisture. The probe is design in a leaf shape to best simulate the real leaf characterizes. The probe has as density as 15 leaf vein lines per centimeter which make it can senses small drop and more accuracy.

The LoRa wireless technology used in LMS01-LB allows device to send data and reach extremely long ranges at low data-rates. It provides ultra-long range spread spectrum communication and high interference immunity whilst minimizing current consumption.

LMS01-LB supports **BLE configure** and **wireless OTA** update which make user easy to use.

LMS01-LB is powered by **8500mAh Li-SOCI2 battery**, it is designed for long term use up to 5 years.

Each LMS01-LB is pre-load with a set of unique keys for LoRaWAN registrations, register these keys to local LoRaWAN server and it will auto connect after power on.

## Features:

- LoRaWAN 1.0.3 Class A
- Bands: CN470/EU433/KR920/US915/EU868/AS923/AU915/IN865
- Ultra-low power consumption
- Monitor Leaf moisture
- Monitor Leaf temperature
- Monitor Battery Level
- Support pH calibration by end user
- Support BLE and LoRaWAN remote configure.
- Support wireless OTA update firmware
- AT Commands to change parameters
- Downlink to change configure
- IP66 Waterproof Enclosure
- IP67 rate for the Sensor Probe
- 8500mAh Battery for long term use

## Order Info:

**Part Number: LMS01-LB-XX**

**XX:** The default frequency band

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

## Specification:

**Common DC Characteristics:**

- Supply Voltage: 2.5v ~ 3.6v
- Operating Temperature: -40 ~ 85°C

**Leaf Moisture:**

- Range: 0~100%
- Resolution: 0.1 %
- Accuracy:  $\pm 3\%$ (0 ~ 50%);  $\pm 6\%$ (>50%)
- IP67 Protection
- Length: 3.5 meters

**Soil Temperature :**

- Range: -50 ~ 85 C
- Resolution: 0.1 C
- Accuracy:  $\leq \pm 0.5^{\circ}\text{C}$ (-10°C ~ 70°C),  $\leq \pm 1.0^{\circ}\text{C}$  (others)
- IP67 Protection
- Length: 3.5 meters

**LoRa Spec:**

- Frequency Range, Band 1 (HF): 862 ~ 1020 Mhz, Band 2 (LF): 410 ~ 528 Mhz
- Max +22 dBm constant RF output vs.
- RX sensitivity: down to -139 dBm.
- Excellent blocking immunity.

**Battery:**

- Li/SOCI2 un-chargeable battery
- Capacity: 8500mAh
- Self-Discharge: <1% / Year @ 25°C
- Max continuously current: 130mA
- Max boost current: 2A, 1 second

**Power Consumption:**

- Sleep Mode: 5uA @ 3.3v
- LoRa Transmit Mode: 125mA @ 20dBm, 82mA @ 14dBm