

# LoRaWAN Soil Moisture & EC Sensor

## SE01-LB



## OVERVIEW:

The Dragino SE01-LB is a **LoRaWAN Soil Moisture & EC Sensor** for IoT of Agriculture. It is designed to **measure the soil moisture of saline-alkali soil and loamy soil**. The soil sensor uses FDR method to calculate the soil moisture with the compensation from soil temperature and conductivity. It also has been calibrated in factory for Mineral soil type.

It detects **Soil Moisture, Soil Temperature and Soil Conductivity**, and uploads the value via wireless to LoRaWAN IoT Server.

The LoRa wireless technology used in SE01-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.

SE01-LB supports **BLE configure** and **wireless OTA** update which make user easy to use.

SE01-LB is powered by **8500mAh Li-SOCI2 battery**, it is designed for long term use up to 5 years.

Each SE01-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
- Ultra-low power consumption
- Monitor Soil Moisture
- Monitor Soil Temperature
- Monitor Soil Conductivity
- Bands: CN470/EU433/KR920/US915/EU868/AS923/AU915/IN865
- Support BLE and LoRaWAN remote configure.
- Support wireless OTA update firmware
- AT Commands to change parameters
- Downlink to change configure
- IP66 Waterproof Enclosure
- 8500mAh Battery for long term use

## Order Info:

**Part Number: SE01-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

### Soil Moisture:

- Range: 0-100.00 V/V %
- Resolution: 0.01 V/V %
- Accuracy:  $\pm 3\%$  (0-53%),  $\pm 5\%$  (>53%)
- Measure Method: FDR , with temperature & EC compensate

### Soil Temperature :

- Range: -40 C ~ 85 C
- Resolution: 0.01 C
- Accuracy: -10 C ~ 50 C : <0.3 C , All other: <0.6 C
- Measure Method: RTD, and calibrate

### Soil Conductivity:

- Range: 0-20000  $\mu\text{S/cm}$  (25 C) (0-20.0EC)
- Resolution: 1  $\mu\text{S/cm}$
- Accuracy: 2%FS
- Measure Method: Conductivity , with temperature compensate

### LoRa Spec:

- Frequency Range, Band 1 (HF): 862 ~ 1020 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