Wireless Soil NPK Sensor

Wireless Network Based on LoRa Technology



R72632A01
Data Sheet

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Introduction

R72632A01 can detect and send soil nitrogen (N), phosphorus (P) and potassium (K) data. It is a wireless communication mode, adopts SX1276 wireless communication module.

The soil NPK sensor of R72632A01 has high precision, fast response, stable output and less affected by soil salt content. It is suitable for all kinds of soil and can be buried in the soil for a long time, resistant to long-term electrolysis, corrosion, vacuum filling and it is waterproof.

Note:

1. The device is suitable for measuring ordinary yellow-cinnamon soil, black soil, and terra rossa.
2. It is not applicable to saline-alkali land, sandy land, or other powdery objects with high salinity. The soil humidity shall be more than 25%

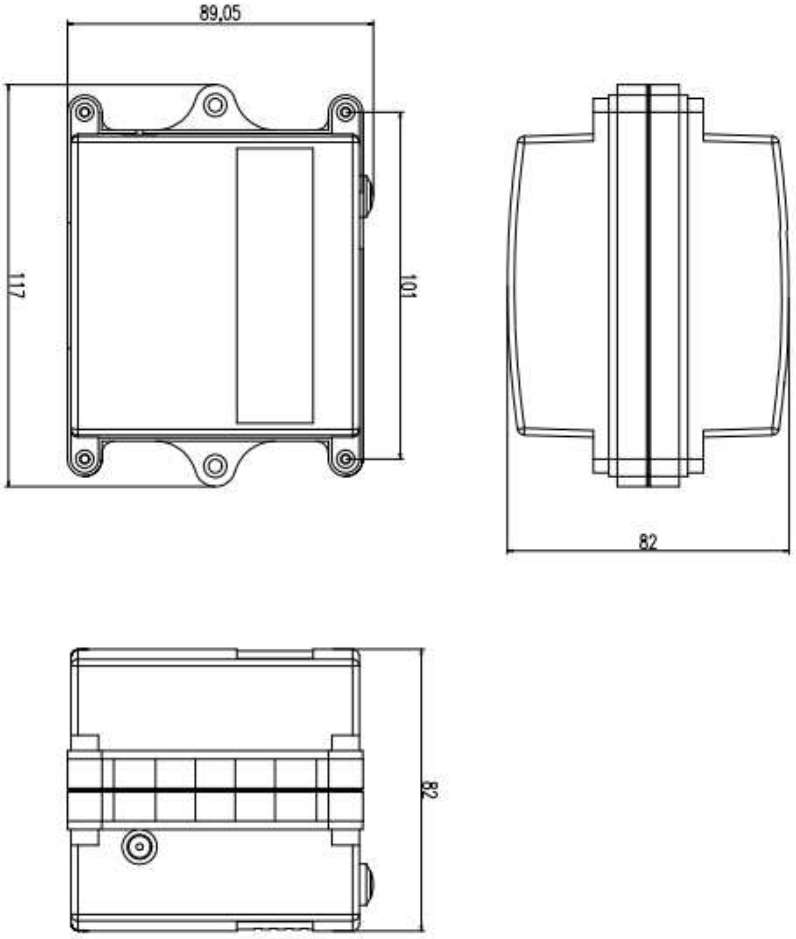
Main Characteristics

- Adopt SX1276 wireless communication module
- Soil nitrogen (N), phosphorus (P) and potassium (K) detection
- IP rating: Main body: IP65, Soil NPK Sensor: IP68
- Compatible with LoRaWAN™ Class A
- Frequency hopping spread spectrum technology
- Configuration parameters can be configured through a third-party software platform, data can be read and alerts can be set via SMS text and email (optional)
- Applicable to third-party platforms: Actility / ThingPark, TTN, MyDevices / Cayenne

Application

- Scientific experiment, greenhouse, flowers and vegetable, grassland and pasture, soil rapid measurement, plant culture etc.

Dimensions



Electrical Characteristics

Power Supply Mode	8 x ER14505 lithium batteries supply power, with a total battery capacity of 9600mAh
Battery Instructions	When the ER14505 lithium battery is used for the first time, it is necessary to ensure that the lithium battery has been activated, and the inactive lithium battery needs to be activated. Activation method: ER14505 single battery is connected in parallel with 67 ohm resistance for 8 minutes, and the load voltage is ≥ 3.2V, that is, it is determined that the activation is completed (the activation duration, load voltage value and resistance value parameters are related to the actual batteries of different brands).

Battery Life	1.39 years (Conditions: ambient temperature 25 ℃, preheating for 20 seconds, 60min report once, txpower = 20dbm, LoRa spreading factor SF = 10) The specific measurement shall prevail.
Power Supply Voltage	6.8VDC to 7.2 VDC
Low Voltage Alarm	6.8VDC
Sleeping Current	≤400uA
Battery Measurement Accuracy	± 0.1V

RH100 Module Characteristics

Wakeup Current	6.3mA/ 3.3V
RF Receiving Current	11mA/ 3.3V
RF Emission Current	120mA/ 3.3V

Soil NPK Sensor

Communication Mode	RS-485
Working Voltage	5V DC (special customization)
Detection Range of Soil NPK	0-1999 mg/kg
Detection Accuracy of Soil NPK	±2% F.s
Detection Resolution of Soil NPK	1mg/kg (mg/L)
Storage Environment	-20℃-60℃
Working Pressure Range	0.9 - 1.1 atm
Response Time	<1S
IP Rating	IP68
Installation	Fully embedded or probe fully inserted into the measured medium

Frequency

Frequency Range	863MHz-928MHz 470MHz-510MHz
Power Output	US915 20dbm; AS923 16dbm; AU915 20dbm; CN470 19.15dbm; EU868 16dbm; KR920 14dbm; IN865 20dbm;
Receiving Sensitivity	-136 dBm (LoRa, Spreading Factor=12, Bit Rate = 293bps) -121 dBm (FSK, Frequency deviation=5kHz, Bit Rate=1.2kbps)
Antenna Type	Built-in antenna
Communication Distance	Up to 10 km (visible linear obstacle-free transmission distance, actual transmission distance depends on the environment.)
Data Transfer Rate	0.3 kbps to 50 kbps (LoRaWan) 1.2 kbps to 300 kbps (FSK)
Modulation System Mode	LoRa/FSK (choose one of them)
Supportable LoraWAN Band	EU863-870,US902-928,AU915-928,KR920-923,AS923-1, AS923-2,AS923-3,IN865-867,CN470-510 (Note: optional, to be done in the factory configuration)

Physical

Size	Main Body: 117 mm x 89.05 mm x 82 mm NPK Sensor: 137mm x 45mm x 15mm
Sensor Wiring	1.25m
Ambient Temperature Range	-20°C ~ 55 °C
Ambient Humidity Range	<90% RH (no condensation)
Storage Temperature Range	-40 °C ~ 85 °C