

# Wireless Soil Moisture \Temperature \ Electrical Conductivity

## R718PB14 Data Sheet

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Wireless Sensor Network Based on LoRa Technology



R718PB14

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## Wireless Soil Moisture \Temperature \Electrical Conductivity

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### General Description

The device is a wireless communication device that detects soil temperature and moisture content and soil electrical conductivity, and transmits the detected data to other devices through LoRa network. The SX1276 wireless communication method is adopted.

### Main Characteristics

- Adopt SX1276 wireless communication module
- 2 ER14505 batteries AA SIZE (3.6V / section) parallel power supply
- Protection class IP65
- The base is attached with a magnet that can be attached to a ferrous object
- Soil moisture content detection
- Soil temperature detection
- Soil conductivity

### Example Applications

- Soil moisture content detection
- Soil temperature detection
- Soil electrical conductivity
- Other

### Features of NETVOX Sensors

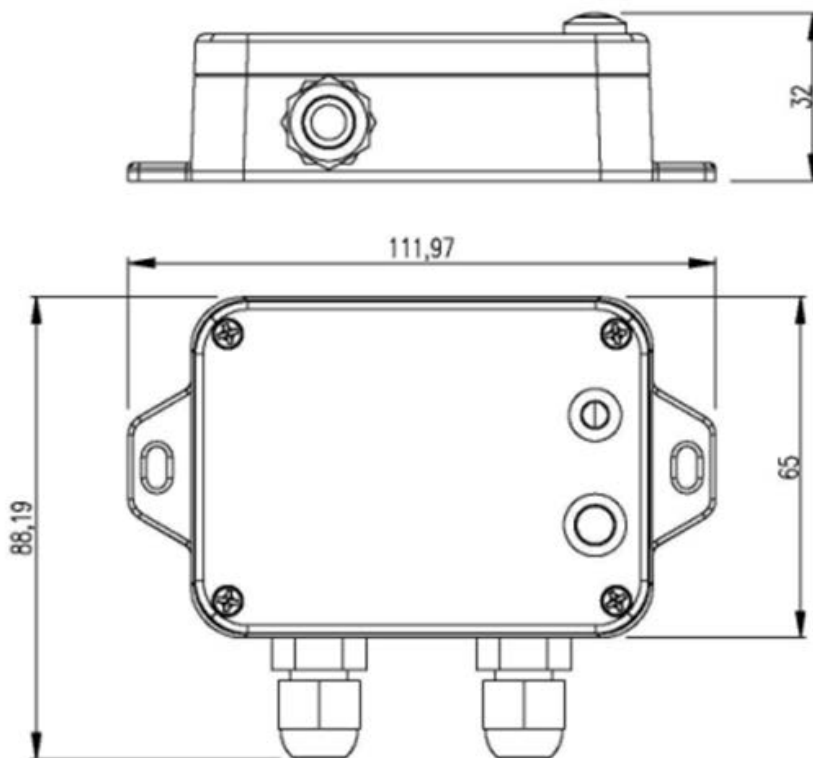
- Frequency Hopping Spread Spectrum (FHSS)
- Improved interference immunity
- Improved power management for longer battery life
- Encrypt-RF™ Security (Diffie-Hellman Key Exchange + AES-128 CBC for sensor data messages)
- Battery Life\*2:
  - Please refer to web: [http://www.netvox.com.tw/electric/electric\\_calc.html](http://www.netvox.com.tw/electric/electric_calc.html)
  - At this website, users can find battery life time for varier models at different configurations.
- Over-the-air updates (future)
- Third-Party online wireless sensor monitoring and notification system to configure sensors, view data and set alerts via SMS text and email (optional)
- Available third-party platform: Actility/ThingPark, TTN, MyDevices/Cayenne

\*1. Actual range may vary depending on environment.

\*2. Battery life is determined by sensor reporting frequency and other variables

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Technical Specifications



(Uni. mm)

Electric

Power Supply	2 ER14505 batteries AA SIZE (3.6V / section) parallel power supply
Battery Life Time	Battery life is about 3.4 years (Condition: ambient temperature 25 ° C. Report once every 15 minutes. Txpower = 20 dBm. LoRa spread factor SF = 10)
Sleeping Mode	36uA
Wake up Mode	6.3mA@3.3V
Receiving Current (RX)	11mA @3.3V
Transmitting Current (TX)	120mA/3.3V
Battery Voltage Measurement Accuracy	±0.1V

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## Frequency

TX Power	US915 20dbm ; AS923 16dbm ; AU915 20dbm ; CN470 19.15dbm ; EU868 16dbm ; KR920 14dbm ; IN865 20dbm ;
Rx Sensitivity	-136dBm (LoRa, Spreading Factor=12, Bit Rate=293bps ) -121dBm (FSK,Frequency deviation=5kHz, Bit Rate=1.2kbps)
Antenna Type	Build-in antenna
Communication Range	Up to 10 km, the actual transmission distance depends on the environment.
Data Transfer Rate	0.3kbps~50kbps
Spread Technique	LoRa/FSK
Available Frequency	EU863-870, US902-928, AU915-928, KR920-923, AS923, CN470-510 Configured before shipment

## Physical

Dimension	L:112mm*W:88.19mm*H:32mm
Weight	160g
Working Temp	-20° C ~ +55° C
Storage Temp	-40°C ~ +85°C
Humidity Detecting Range	<90%RH

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## 5TE Sensor

Volumetric Water Content (VWC)	
Mineral soil calibration	0.0–1.0 m <sup>3</sup> /m <sup>3</sup>
Soilless media calibration	0.0–1.0 m <sup>3</sup> /m <sup>3</sup>
Apparent dielectric permittivity ( $\epsilon_a$ )	1 (air) to 80 (water)
Resolution	0.0008 m <sup>3</sup> /m <sup>3</sup> from 0%–50% VWC
Accuracy	
Generic calibration	$\pm 0.03$ m <sup>3</sup> /m <sup>3</sup> typical
Medium-specific calibration	$\pm 0.02$ m <sup>3</sup> /m <sup>3</sup>
Apparent dielectric permittivity ( $\epsilon_a$ )	1–40 (soil range), $\pm 1$ $\epsilon_a$ (unitless) 40–80, 15% measurement
Temperature	
Range	–40 to +60 °C
Resolution	0.1 °C
Accuracy	$\pm 1$ °C
Bulk Electrical Conductivity (EC)	
Range	0–23 dS/m (bulk)
Resolution	0.01 dS/m from 0–7 dS/m 0.05 dS/m from 7–23 dS/m
Accuracy	$\pm 10\%$ from 0–7 dS/m User calibration required from 7–23 dS/m
Supply Voltage (VCC to GND)	
Minimum	3.6 VDC
Maximum	15.0 VDC

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