

Wireless Network Based on LoRa Technology



Figure 1 Appearance of R718PB15A (subject to the actual object)

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Notes:

Hardware Version
61R718p6801V0.4

Overview

The device is a wireless communication device that detects soil temperature and moisture content and soil conductivity, and transmits the detected data to other devices through a wireless 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
- Main unit protection level IP65/IP67 (optional)
- The base is equipped with a magnet that can be attached to a ferrous object
- Soil moisture content detection
- Soil temperature detection
- Soil conductivity
- 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 / Cayenn
- Low power consumption, longer battery life support *:
- Battery life is determined by sensor reporting frequency and other variables , please refer to http://www.netvox.com.tw/electric/electric_calc.html
On this website, users can find battery life of various models in different configurations.

Application scenario

- Soil moisture content detection
- Soil temperature detection
- Soil conductivity
- Golf course moisture detection
- Other

Dimensions

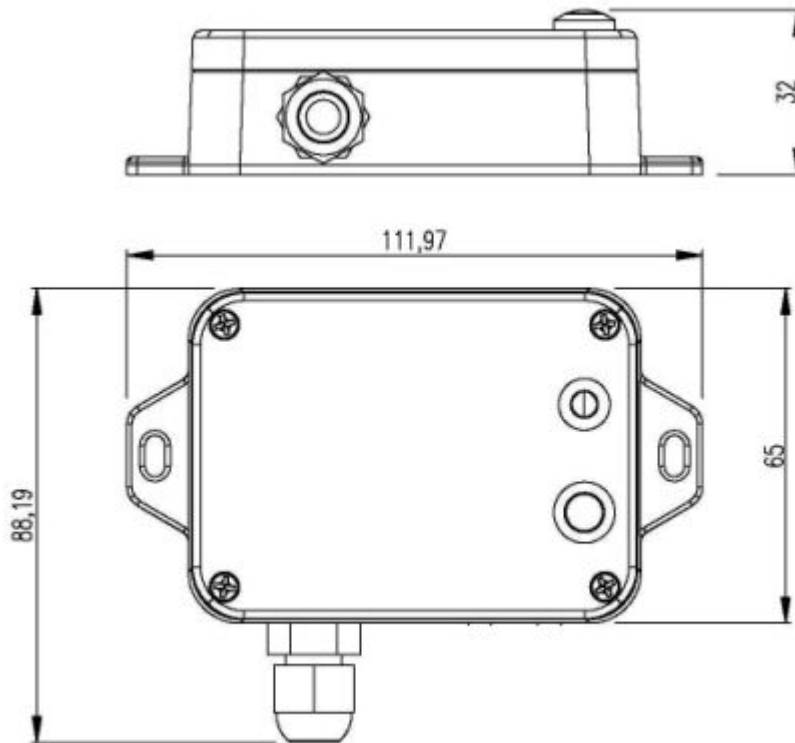


Figure 2 Main unit housing size chart

Main unit case size: 112mm x 65mm x 32mm

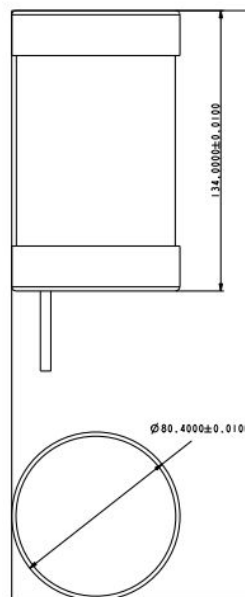


Figure 2 Cylinder size

Cylinder size: \varnothing 80mm, length 134mm.

Electrical characteristics

Power supply	2 ER14505 lithium batteries (3.6 V, 2400mAh / section) in parallel
Battery life	Battery life is about 5 years (condition: ambient temperature 25 ° C, 15 min report once, txpower = 20 dBm , LoRa spreading factor SF = 10)
Sleep current	20 uA
Awakening current	6.3mA @3.3V
RF emission current	120mA @3.3 V
RF receiving current	11 mA @3.3V
Battery measurement accuracy	± 0.1V

* Specific electrical characteristics will vary depending on the power supply voltage

LoRa frequency characteristics

Frequency range	863MHz-928MHz 470MHz-510MHz
Power output	19 dBm ±1dBm
Receiving sensitivity	-136dB (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	0.3kbps to 50k bps
Modulation system mode	LoRa/FSK (Note: choose one of them)
Supportable LoRaWAN band	EU863-870, US902-928, AU915-928, KR920-923, AS923, CN470-510 (Note: The frequency band is optional and needs to be configured shipment)

Conductivity / Soil temperature / moisture three-in-one sensor parameters

Rated power supply	5 VDC -30VDC
Soil temperature resolution	0.1 ° C
Soil temperature measurement accuracy	±0.5°C
Soil temperature range	-40~80°C
Soil moisture content resolution	0.03% within 0-50%, 1% within 50-100%
Soil moisture content accuracy	2% within 0-50%, 3% within 50-100%;

Wireless Soil Volume Water Content\Temperature\ Electrical Conductivity

Soil water component	0-100%
Soil moisture sensing range	The Sensing range of the Sensor is approximately 20 cm in radius, ie water penetration within a radius of 20 cm, and the soil moisture percentage will vary significantly.
Conductivity resolution	10us/cm in 0-10000us/cm; 50us/cm in 100000-20000us/cm
Conductivity accuracy	±3% in the range of 0-10000us/cm; ±5% in the range of 10000-20000us/cm
Conductivity range	Range: 0-20000us/cm

Physical characteristics

Main unit size	L:112mm*W:65mm*H:32mm
Cylinder size	∅ 80mm, length 134mm
Ambient temperature range	-20°C to 55 °C
Body weight	About 160g
Ambient humidity range	<90% RH (no condense)
Storage temperature range	-40 °C ~ 85 °C