

## Wireless Network Based on LoRa Technology



Figure 1 Appearance of R718PB15 (subject to the actual object)

### **Copyright©Netvox Technology Co., Ltd.**

This document contains proprietary technical information which is the property of NETVOX Technology and is issued in strict confidential and shall not be disclosed to others parties in whole or in parts without written permission of NETVOX Technology.

The specifications are subjected to change without prior notice.

## History

<b>Version</b>	<b>Date</b>	<b>Note</b>
0.1	2019-09-09	Initial Release
0.2	2019-09-11	Modify the main features (main unit protection level IP65)

### 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
- The base is equipped with a magnet that can be attached to a ferrous object ( optional )
- 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](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
- Other

## Dimensions

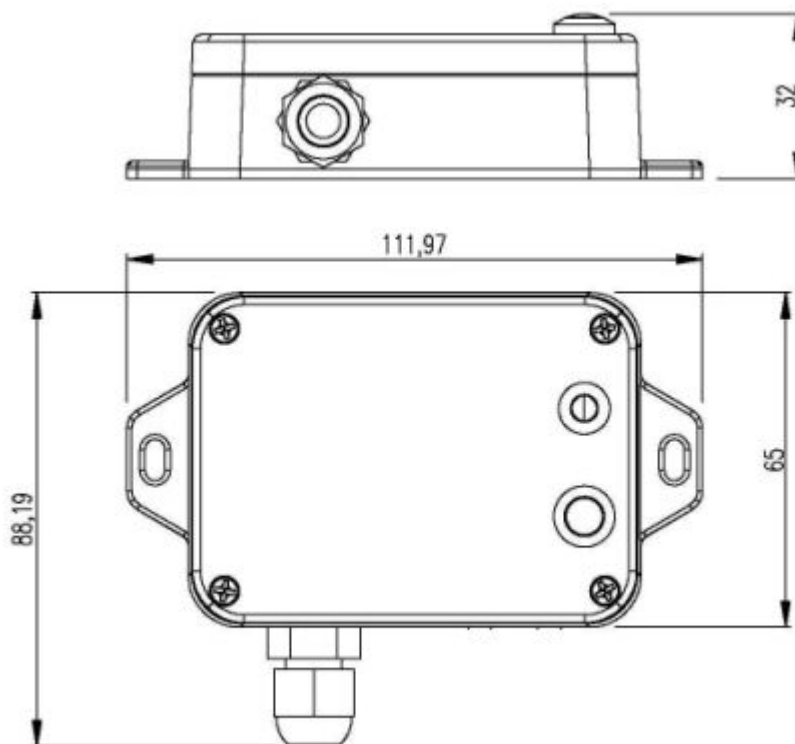


Figure 2 Main unit housing size chart

Main unit case size: 112 mm x 88.19 mm x 32 mm

## 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-136dBm (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: You can 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%;
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 10000-20000us/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**

Size	L: 112 mm*W: 88.19 mm*H: 32 mm,
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