Model：R712

netvox™

Wireless Outdoor Temperature And Humidity Sensor

Outdoor Temperature and Humidity Sensor

User Manual

Table of Content

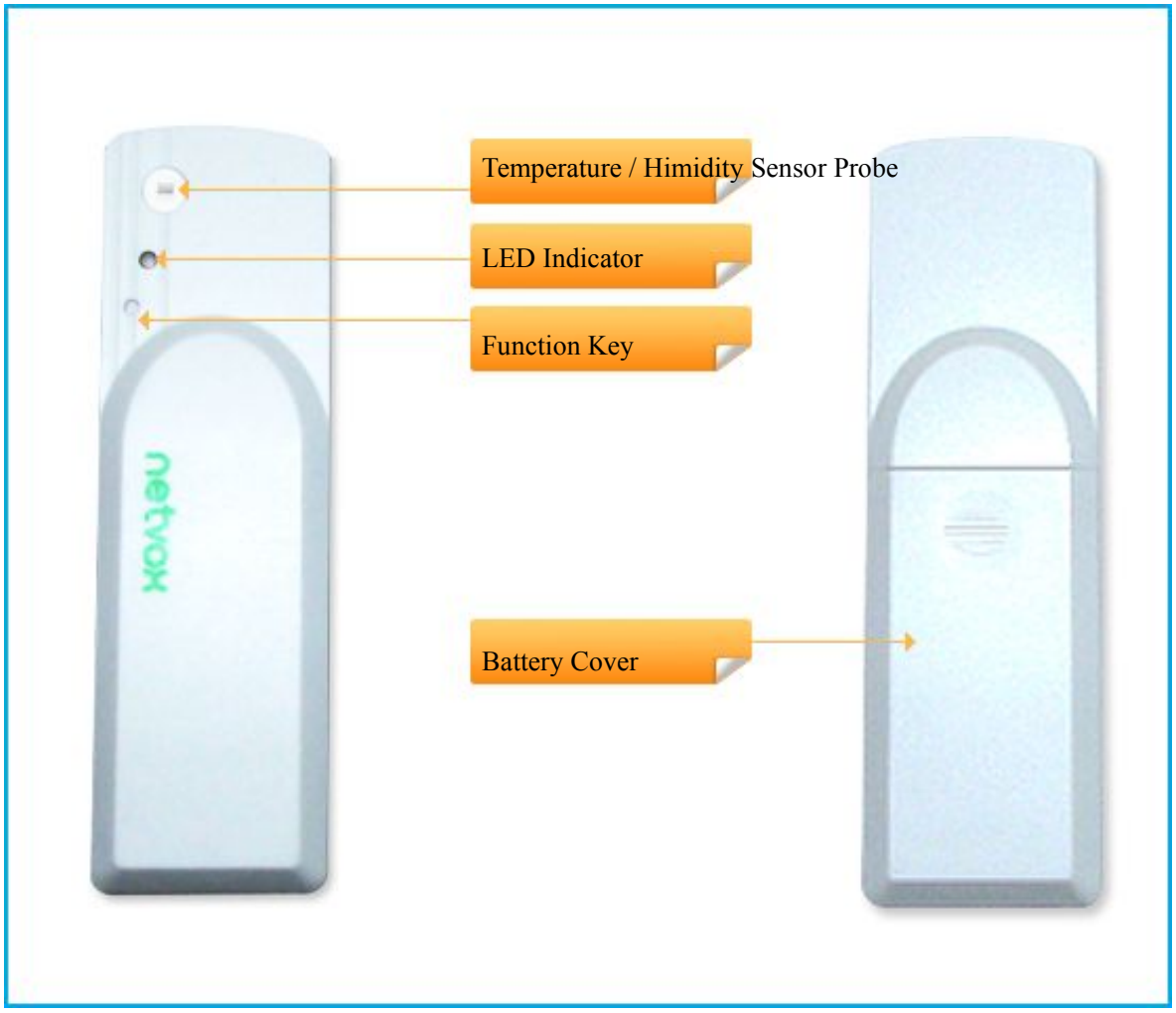
1. Introduction

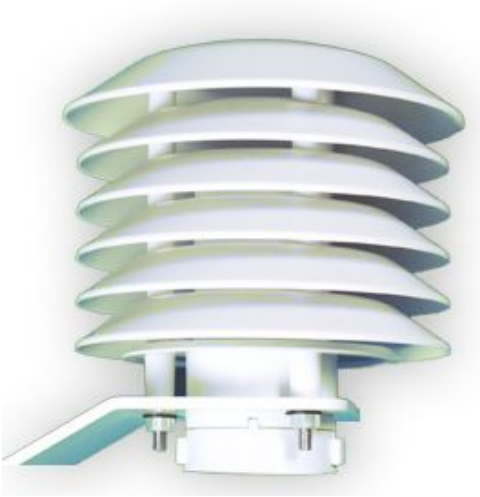
R712 is a long-range wireless temperature and humidity device based on the LoRaWAN open protocol (Class A). The R712 is mainly used to detect the temperature and humidity in outdoor air, and also carrying a waterproof housing. It collects data over LoRa network and sends it to devices to be shown, fully compatible with LoRaWAN protocol.

LoRa Wireless Technology:
LoRa is a wireless communication technology dedicated to long distance and low power consumption. Compared with other communication methods, LoRa spread spectrum modulation method greatly increases to expand the communication distance. Widely used in long-distance, low-data wireless communications. For example, automatic meter reading, building automation equipment, wireless security systems, industrial monitoring. Main features include small size, low power consumption, transmission distance, anti-interference ability and so on.

LoRaWAN:
LoRaWAN uses LoRa technology to define end-to-end standard specifications to ensure interoperability between devices and gateways from different manufacturers.

2. Appearance





Waterproof shell appearance

3. Main Features

- Compatible with LoRaWAN
- 2 section 1.5V AA Alkaline battery
- Report voltage status, temperature and humidity of outdoor air
- Easy set up and installation

4.Set up Instruction

4.1 Power on and Turn on / off

(1) **Power on:** Insert batteries: open the battery cover; insert two sections of 1.5V AA batteries and close the battery cover.
(2) **Turn on:** If the device had never joined in any network or at factory setting mode, after powering on, the device is at off mode by default setting. Press function key and release to turn on the device. The green indicator will flash once to show that R712 is turned on.
(3) **Turn off:** Press and hold function key for 5 seconds till the green indicator flashes quickly and release. The green indicator will flash 20 times to show that R712 is turned off.

Note:
(1) The interval between shutting down twice or power off/on is suggested to be about 10 seconds to avoid the interference of capacitor inductance and other energy storage components.
(2) Do not power on the device and press any function key at the same time, otherwise it will enter engineering test mode.

4.2 Join Into Lora Network

To join R712 into LoRa network to communicate with LoRa gateway (OTAA network mode by default).
The network operation is as following:
(1) If R712 had never joined any network, turn on the device; it will search an available LoRa network to join. The green indicator will stay on for 5 seconds to show it joins into the network, otherwise, the green indicator will be off.
(2) If R712 had been joined into a LoRa network, remove and insert the batteries; the green indicator will stay on for 5 seconds to show it joins into the network.

4.3 Function Key

(1) Press and hold function key for 5 seconds to reset to factory setting. After restoring to factory setting successfully, the green indicator will flashes quickly 20 times.

(2) Press function key to turn on the device and it will send a data report.

4.4 Data Report

When the device is turned on, it will immediately send a version package and a data report of temperature/humidity/voltage. The transmission frequency of data report is once every hour.
Temperature default report value: mintime = maxtime = 3600s, reportchange = 0x0064 (1 ℃),
Humidity default report value: mintime = maxtime = 3600s, reportchange = 0x0064 (1%),
Battery voltage default report value: mintime = 3600s maxtime = 3600s, reportchange = 0x01 (0.1V).

Note: MinInterval is the sampling period for the Sensor. Sampling period >= MinInterval.

Data report configuration and sending period are as following:

Min Interval (Unit:second)	Max Interval (Unit:second)	Reportable Change	Current Change≥ Reportable Change	Current Change < Reportable Change
Any number between 1~65535	Any number between 1~65535	Can not be 0.	Report per Min Interval	Report per Max Interval

5. Restore to Factory Setting

R712 saves data including network key information, configuration information, etc. To restore to factory setting, users need to execute below operations.
1. Press and hold function key for 5 seconds till the green indicator flashes and then release; LED flashes quickly 20 times.
2. R712 will stay off after restoring to factory setting. Press function key to turn on R712 and to join a new LoRa network.

6. Sleeping Mode

R712 is designed to enter sleeping mode for power-saving in some situations:

(A) While the device is in the network → the sleeping period is 3 minutes. (During this period, if the reportchange is larger than setting value, it will wake up and send a data report).
(B) When it is not in the network → R712 will enter sleeping mode and wake up every 15 seconds to search a network to join in the first two minutes. After two minutes, it will wake up

every 15 minutes to request to join the network.

If it's at (B) status, to prevent this unwanted power consumption, we recommend that users remove the batteries to power off the device.

7. Low Voltage Alarming

The operating voltage threshold is 2.4V. If the voltage is lower than 2.4V, R712 will send a low-power report to the Lora network.

8. Important Maintenance Instruction

Your device is a product of superior design and craftsmanship and should be used with care. The following suggestions will help you use the warranty service effectively.

- Keep the equipment dry. Rain, moisture, and various liquids or moisture may contain minerals that can corrode electronic circuits. In case the device is wet, please dry it completely.
- Do not use or store in dusty or dirty areas. This can damage its detachable parts and electronic components.
- Do not store in excessive heat. High temperatures can shorten the life of electronic devices, destroy batteries, and deform or melt some plastic parts.
- Do not store in excessive cold place. Otherwise, when the temperature rises to normal temperature,

moisture will form inside, which will destroy the board.

- Do not throw, knock or shake the device. Rough handling of equipment can destroy internal circuit boards and delicate structures.
- Do not wash with strong chemicals, detergents or strong detergents.
- Do not apply with paint. Smudges can block debris in detachable parts and affect normal operation.
- Do not throw the battery into a fire to prevent the battery from exploding. Damaged batteries may also explode.

All of the above suggestions apply equally to your device, battery and accessories. If any device is not working properly.

Please take it to the nearest authorized service facility for repair.

9. FCC Statement

The OEM integrator has to be aware of not to providing information to end users regarding how to install or remove this RF module in the user manual of the end product.The user manual which is provided by OEM integrators for end users must

Include the following information in a prominent location.

" To comply with FCC RF exposure compliance requirement, the antenna user for this transmitter must be

installed to provide a separation distance of at least 20cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter .”

Label for the end product must include “Contains FCC ID :NRH-ZB-Z100B”or “A RF transmitter inside,FCC ID :NRH-ZB-Z100B”.

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is to the following two conditions:(1)this device may not cause harmful interference and (2)this device must accept any interference received, including interference that may cause undesired operation.

FCC RF Radiation Exposure Statement:

1This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

2.This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.