netvox™

Wireless Temperature And Humidity Sensor

DIREKTRONIK

Dataprodukter utöver det vanliga

Temperature And Humidity Sensor

R718AB

User Manual

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1. Introduction

R718AB, mainly used to detect the temperature and humidity. It collects data over LoRa network and sends it to devices to be shown, fully compatible with LoRa 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

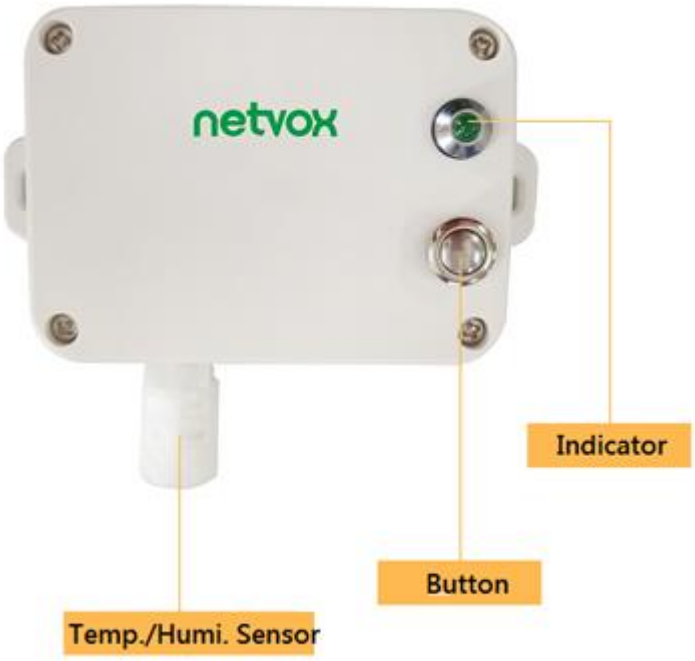


Fig.1 R718AB Appearance

3. Main Features

- Compatible with LoRa protocol.
- 2 x 3.6V ER14505 AA lithium batteries（3.6V/section）
- Capable to detect the temperature and humidity

4.Set up Instruction

4.1 Power on and Turn on / off

(1) **Power on:** open the battery cover; insert two sections of 3.6V ER14505 AA lithium batteries and close the battery cover.
(2) **Turn on:** the device (not in the network) is at off mode by default after inserting batteries. At this time, press and hold the function key (about 3 seconds) till the green light flashes once. The boot is successful.
(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 the device 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 press function key and insert batteries in the same time, otherwise, it will enter engineer testing mode.

4.2 Join Into Lora Network

To join R718AB into LoRa network to communicate with LoRa gateway.

The network operation is as following:
(1) If R718AB 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 not work.
(2) If R718AB had been joined into a LoRa network, remove and insert the batteries; it will repeat step (1).

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 which is in the network and the green indicator will flash once and the device 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 device sends data by default setting as below before any configuration.

Temperature default report value: mintime = maxtime = 15min, reportchange = 0x0064 (1℃),

Humidity default report value: mintime = maxtime = 15min, reportchange = 0x0064 (1%),
Battery voltage default report value: mintime = maxtime = 15min, reportchange = 0x01 (0.1V).

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

Remarks:
1. The device data sending cycle depends on the burning configuration before shipment.
2. The interval between two reports must be the minimum time.

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

Remarks: Min Interval depends on the real order.

5. Control Command

FPort：0x07

Bytes	1	1	Var(Fix =9 Bytes)
	CmdID	DeviceType	NetvoxPayLoadData

CmdID– 1 bytes
DeviceType– 1 byte – Device Type of Device
NetvoxPayLoadData– var bytes (Max=9bytes)

Description	Device	CmdID	Device Type	NetvoxPayLoadData				
Config ReportReq	R718AB	0x01	0x13	MinTime (2bytes Unit:s)	MaxTime (2bytes Unit:s)	Battery Change (1byte Unit:0.1v)	Temperature Change (2byte Unit:0.01℃)	Humidity Change （2byte Unit:0.01%）
Config ReportRsp		0x81		Status (0x00_success)	Reserved (8Bytes,Fixed 0x00)			
ReadConfig ReportReq		0x02		Reserved (9Bytes,Fixed 0x00)				
ReadConfig ReportRsp		0x82		MinTime (2bytes Unit:s)	MaxTime (2bytes Unit:s)	Battery Change (1byte Unit:0.1v)	Temperature Change(2byte Unit:0.01℃)	Humidity Change （2byte Unit:0.01%）

（1）**Command Configuration:**

MinTime = 1min、MaxTime = 1min、BatteryChange = 0.1v、TemperatureChange = 1℃、HumidityChange = 1%

Downlink： 0113003C003C0100640064 003C(H_{ex}) = 60(D_{ec}) 0064(H_{ex}) = 100(D_{ec})

Response：

81130000000000000000（Configuration success）

81130100000000000000（Configuration failure）

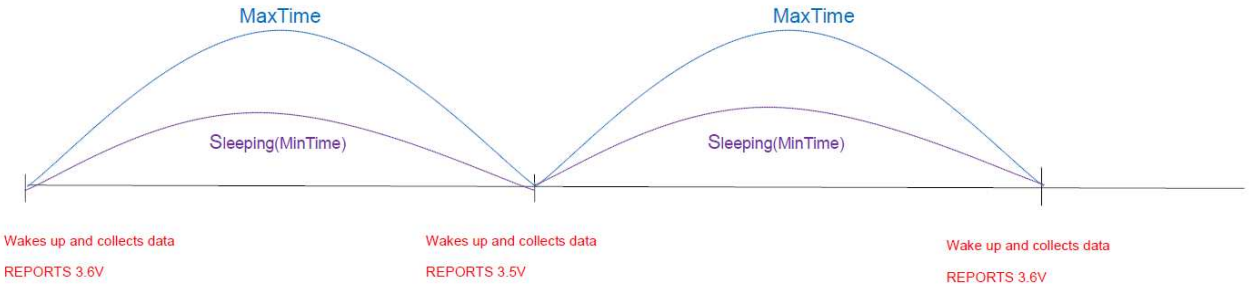
（2）**Read Configuration:**

Downlink： 0213000000000000000000

Response：

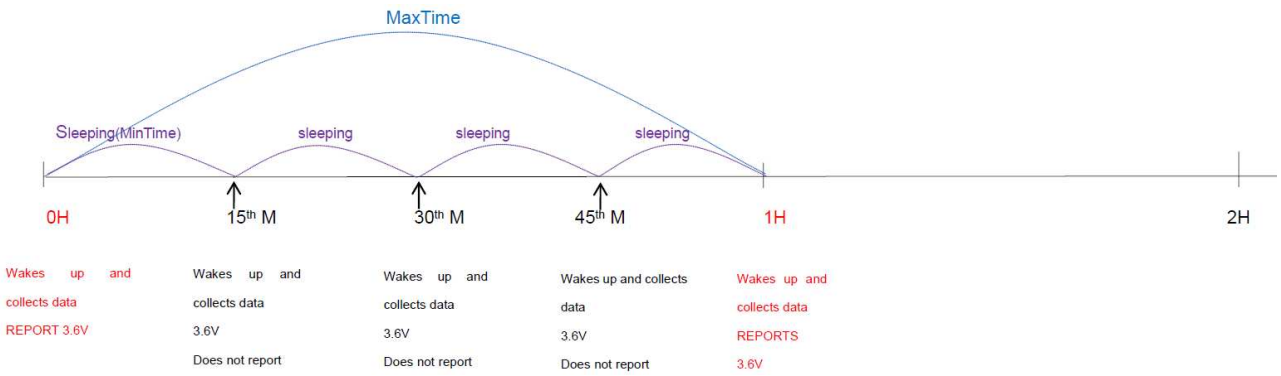
8213003C003C0100640064（Current configuration）

Example#1 based on
MinTime = 1 Hour, MaxTime= 1 Hour, Reportable Change i.e. BatteryVoltageChange=0.1V

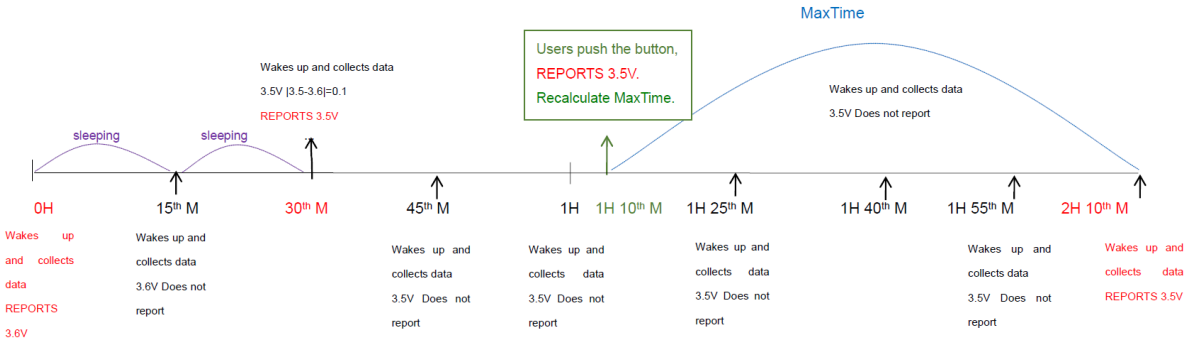


Note: MaxTime=MinTime. Data will only be report according to MaxTime (MinTime) duration regardless BtteryVoltageChange value.

Example#2 based on
MinTime = 15 Minutes, MaxTime= 1 Hour, Reportable Change i.e. BatteryVoltageChange= 0.1V.



Example#3 based on
MinTime = 15 Minutes, MaxTime= 1 Hour, Reportable Change i.e. BatteryVoltageChange= 0.1V.



Notes:

1) The device only wakes up and performs data sampling according to MinTime Interval. When it is sleeping, it does not collect data.
2) The data collected is compared with the last data reported. If the data change value is greater than the ReportableChange value, the device reports according to MinTime interval.
   If the data variation is not greater than the last data reported, the device reports according to MaxTime interval.
3) We do not recommend to set the MinTime Interval value too low. If the MinTime Interval is too low, the device wakes up frequently and the battery will be drained soon.
4) Whenever the device sends a report, no matter resulting from data variation, button pushed or MaxTime interval, another cycle of MinTime/MaxTime calculation is started.

6. Restore to Factory Setting

R718AB 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. R718AB will be at off mode by default setting after restoring to factory setting. Press function key to turn on R718AB and to join a new LoRa network.

Note: The device operation of turning off is the same as the device restore factory settings.

7. Sleeping Mode

R718AB is designed to enter sleeping mode for power-saving in some situations:

(A) While the device is in the network → the sleeping period is Min Interval. (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 → R718AB 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.

8. Low Voltage Alarming

The operating voltage threshold is 3.2V. If the voltage is lower than 3.2V, the device will send a low-power report to the Lora network.

9. Installation

This product comes with waterproof function. When using it, the back of it can be adsorbed on the iron surface, or the two ends can be fixed to the wall with screws.
Note: To install the battery, use a screwdriver or similar tool to assist in opening the battery cover.

10. 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 a 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.