Wireless Water Leak Detector with Rope Sensor

R718WB User Manual

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1. Introduction

R718WB is a LoRaWAN device compatible with LoRaWAN protocol (ClassA). When the R718WB sensor detects a leak, it will send an alarm message to the gateway. When the sensor detects no leaks, it will send a message that shows no leak to the gateway.
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

3. Main Features

- Apply SX1276 wireless communication module
- 2 ER14505 battery AA SIZE (3.6V / section) parallel power supply
- Voltage value and water leakage status detection
- The base is attached with a magnet that can be attached to a ferrous object
- Protection class IP65
- Compatible with LoRaWANTM Class A
- Frequency hopping spread spectrum
- Configuration parameters can be configured via 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/Cayenne
- Low power consumption and long battery life
  Note*: Battery life is determined by the 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

4. Set up Instruction

On/Off

Power on	Insert batteries. (users may need a flat blade screwdriver to open)
Turn on	Press and hold the function key for 3 seconds till the green indicator flashes once.
Turn off (Restore to factory setting)	Press and hold the function key for 5 seconds till the green indicator flashes for 20 times.
Power off	Remove Batteries.
Note:	1. Remove and insert the battery; the device is at off state by default. 2. On/off interval is suggested to be about 10 seconds to avoid the interference of capacitor inductance and other energy storage components. 3. Five seconds after power on, the device will be in engineering test mode.

Network Joining

Never joined the network	Turn on the device to search the network. The green indicator stays on for 5 seconds: success The green indicator remains off: fail
Had joined the network (Not yet restore to factory setting)	Turn on the device to search the previous network. The green indicator stays on for 5 seconds: success The green indicator remains off: fail
Fail to join the network (when the device is on)	First two mins: wake up every 15 seconds to send request. After two mins: enter sleeping mode and wake up every 15 minutes to send request. Note: Suggest to remove batteries if the device is not used to save power. Suggest to check the device verification information on the gateway or consult your platform server provider.

Function Key

Press and hold for 5 seconds	Restore to factory setting / Turn off The green indicator flashes for 20 times: success The green indicator remains off: fail
Press once	The device is in the network: the green indicator flashes once and sends a report The device is not in the network: the green indicator remains off

Sleeping Mode

The device is on and in the network	Sleeping period: Min Interval. When the reportchange exceeds setting value or the state changes: send a data report according to Min Interval.
The device is on but not in the network	First two mins: wake up every 15 seconds to send request. After two mins: enter sleeping mode and wake up every 15 minutes to send request. Note: Suggest to remove batteries if the device is not used. Suggest to check the device verification information on the gateway or consult your platform server provider.

Low Voltage Warning

Low Voltage	3.2V

5. Data Report

When the device is turned on, it will immediately send a version package and a data report of water leakages/voltage.
Data will be reported once per hour by default setting.
(If there is special customized inquiry, the setting is changed according to customer requirements.)
Maximum time: 3600s
Minimum time: 3600s
Default reportchange:
Battery ---- 0x01 (0.1V)
R718WB sensor is triggered:
When the R718WB status changes, it will send warning report.
No water leak:0
Water leak:1

The reported data is decoded by the Netvox LoRaWAN Application Command document and http://www.netvox.com.cn:8888/page/index

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

Report configuration instruction:

ConfigReportReq	R718WB	0x01	0x12	MinTime (2bytes Unit:s)	MaxTime(2bytes Unit:s)	BatteryChange(1byte Unit:0.1v)	Reserved (4Bytes,Fixed 0x00)
ConfigReportRsp		0x81		Status(0x00_success)	Reserved (8Bytes,Fixed 0x00)		
ReadConfigReportReq		0x02		Reserved (9Bytes,Fixed 0x00)			
ReadConfigReportRsp		0x82		MinTime (2bytes Unit:s)	MaxTime(2bytes Unit:s)	BatteryChange(1byte Unit:0.1v)	Reserved (4Bytes,Fixed 0x00)

(1) Configure device parameters MinTime = 1min, MaxTime = 1min, BatteryChange = 0.1v

Downlink: 0112003C003C0100000000

The device returns:

811200000000000000000 (configuration is successful)

811201000000000000000 (configuration failed)

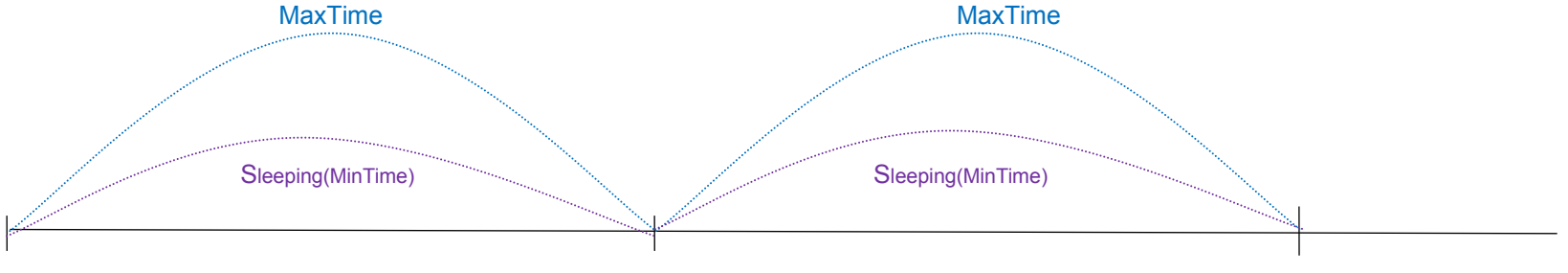
(2) Read device parameters

Downlink: 021200000000000000000

The device returns:

8212003C003C0100000000 (device current parameter)

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



Wakes up and collects data

REPORTS 3.6V

Wakes up and collects data

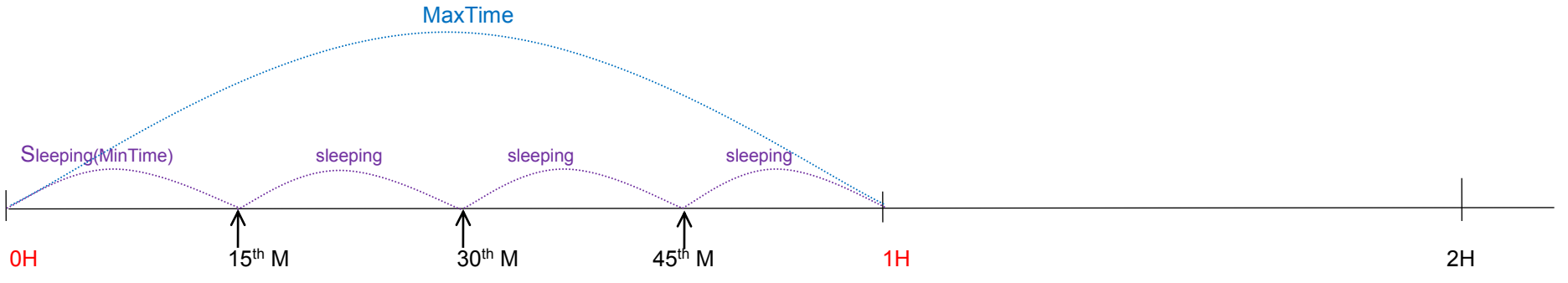
REPORTS 3.5V

Wake up and collects data

REPORTS 3.6V

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.**



Wakes up and collects data

REPORT 3.6V

Wakes up and collects data

3.6V

Does not report

Wakes up and collects data

3.6V

Does not report

Wakes up and collects data

3.6V

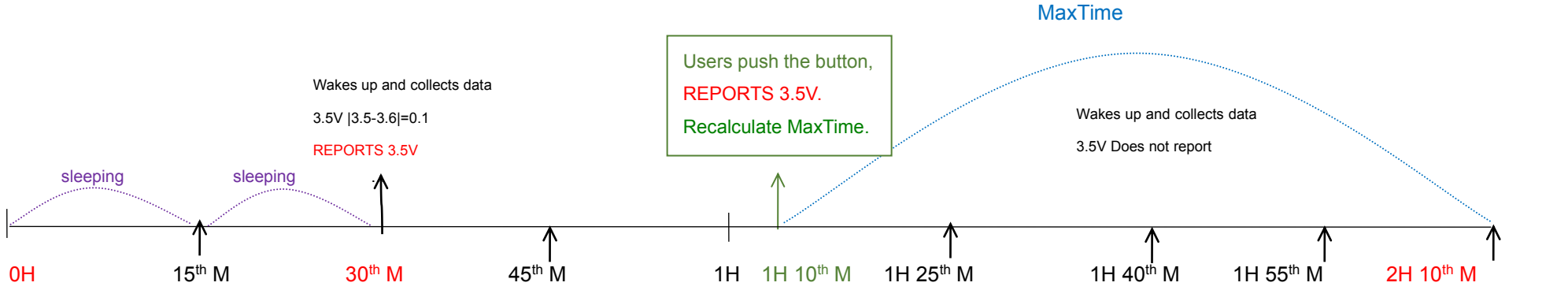
Does not report

Wakes up and collects data

REPORTS

3.6V

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



Wakes up and collects data

REPORTS

3.6V

Wakes up and collects data

3.6V Does not report

Wakes up and collects data

3.5V Does not report

Wakes up and collects data

3.5V Does not report

Wakes up and collects data

3.5V Does not report

Wakes up and collects data

3.5V Does not report

Wakes up and collects data

REPORTS 3.5V

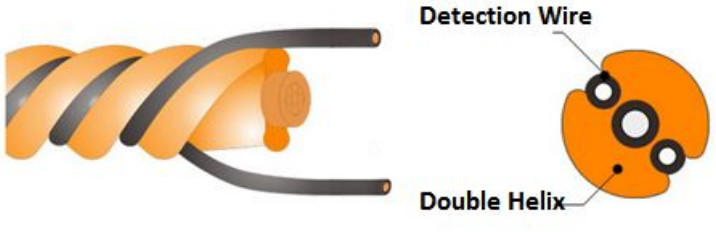
Notes :

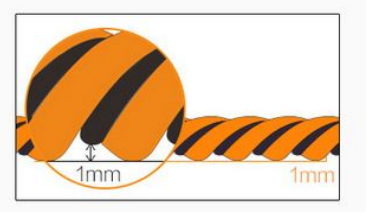
1) The device only wakes up and performs data sampling according to MinTime Interval. When it is sleeping, it does not collect data.
2) The data collected is compared with the last data reported. If the data variation is greater than the ReportableChange value, the device reports according to MinTime 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. Installation

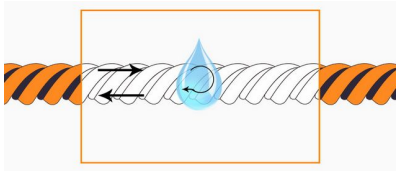
This product comes with waterproof function. When using it, the back of it can be adsorbed on the iron surface, or the two ends can be fixed to the wall with screws.
Note: When installing the battery, use a screwdriver or similar tool to assist in opening the battery cover.

Waterline Structure:





Water line: up to 300m* Water contact alarm: recommended at least 3cm line length Alert: Instant report (within 10 seconds)



The length of the accessory water measuring line has been setted at the factory. If the water measuring line setting is manual, users need to set the water line length in the host before using it.

Installation Suggestions and Examples

Dedicated line card fix (Standard)

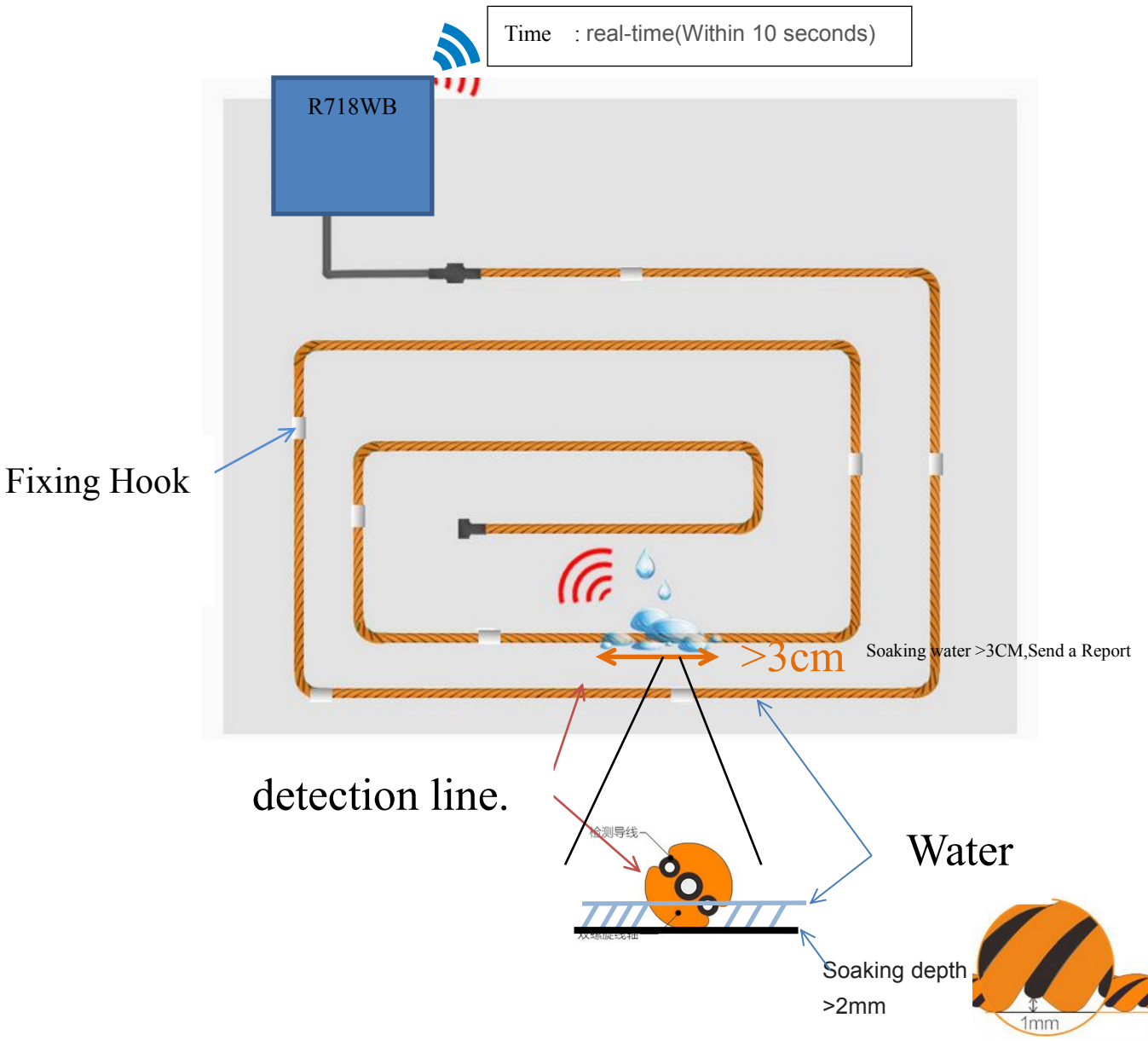
Tape fix (Standard)

Fix along the pipeline (Standard)

Glue fix (Damage the cable)

Metal bind fix (Interference)

Face to air-con outlet (False alarm due to humidity)



7. 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.