TZONE TZ-Tag08 LoRa Wireless Temp Sensor User Guide

Contents

TZONE TZ-Tag08 LoRa Wireless Temp Sensor

Product Information

Specifications:

- **Item:** TZ-Tag08
- **Battery:** Built-in 4000mAh/3.6V
- **Measure Media:** Ambient air
- **Range of Temp Sensor probe Temperature:** -55°C to +125°C
- **Accuracy of Temp Sensor:** -30°C to +60°C; 5% RH to 95% RH (non-condensed)
- **RF Frequency:** 433/470/868/915MHz
- **Modulation:** LoRa
- **Transmit Power:** 20dbm (adjustable)
- **Maximum Range in Open Area:** 5KM
- **Transmit Interval:** 1min-1440mins (user definable)
- **Low Voltage Alarm:** Yes (user definable)
- **Temp/RH Alarm:** Yes (user definable)
- **Stand-by Current:** Low voltage mode > Normal mode

Product Usage Instructions

Setting Up the Device

To start using the TZ-Tag08 device, follow these steps:

1. Insert the built-in 4000mAh/3.6V battery into the device.
2. Place the device in the desired location where you want to monitor temperature and humidity.
3. Ensure the device is within the specified RF Frequency range for optimal performance.

Data Collection and Monitoring

The device collects data using the LoRa 18B20 temperature sensor and stores it in memory. Follow these steps to monitor the data:

1. You can set the data collection time from 1 minute to 1440 minutes based on your requirements.
2. The device has 3 working modes: Normal working mode, low voltage mode, and temperature alarming mode.
3. You can view the collected data, including temperature data, RSSI signal strength, and battery power on the LCD.

Device Status and Alerts
The device provides status indications through LED lights and LCD:

1. The green LED indicates normal operation, while the red LED signals issues like temperature exceeding limits or low voltage.
2. You can set alarms for low voltage and temperature/RH variations to receive timely alerts.

Button Functions
The buttons on the device serve the following functions:

1. 'Mode On' button: Press and hold for 3 seconds to turn on the device.
2. 'Mode Off' button: Press and hold for 3 seconds to turn off the device.
3. 'Data send' button: Press shortly to initiate data transmission.

Overview

LoRa Wireless Temp Sensor(TZ-Tag08) is a high quality product designed by Tzone Digital Technology Co., Ltd. Well overcome many shortcomings happened in similar products, with full consideration on the tough environment and more. It has features that include long range (5km), small volume (106mm*57mm*33mm), and long time using. Validated by many vital projects with stability and reliability features. LoRa Sensor can collect temp readings with preset interval and send out via LoRa communicating module, then the Gateway can translate raw data to temperature and battery voltage information. Real-time transmission and data storage functions can be implemented simultaneously. It is equipped with LCD, LED, and buzzer. For more intuitive viewing of temperature data, RSSI signal strength, battery power, sound, and light alarm, etc., it could be widely used in temperature monitoring applications with our gateway products.

Application

1. Freezer, refrigerator, etc.
2. Agricultural greenhouse
3. Plant and workshop
4. Cold chain reefer and refrigerated trailer
5. Pharmacy warehouse and laboratory

Feature

1. LoRa 18B20 temperature sensor, with reliable stability, large measure range and quick response.
2. LoRa communicating module uses the new generated LoRa chip from American Semtech, with strong sending power, powerful penetrability and low attenuation.
3. The data collecting time could be set by customers from 1 minute to 1441440 minutes with worldwide

replication.

4. The sensor has 3 working modes: Normal working mode, low voltage mode, and temperature alarming mode. To better track the ambient temperature change, the data collection time is different in each mode,
5. Built-in high performance Li-SOCL2 battery, long time standby and stable performance. The electricity is less than 5uA when in the sleep mode, it is equipped with a super capacitor to effectively realize the full utilization of the battery, and solve the problem of battery instability at high and low temperatures.
6. All the data collected by the transmitter can be stored in memory, and can be read out through USB.
7. Using FDMA, TDMA, and other technologies to avoid wireless conflict.
8. Ensure data is not lost with ACK.
9. When disconnect will automatically update the sending interval to reduce power consumption.
10. The sensor can receive a command from the gateway, the parameters can be set.
11. With LCD, the message(temperature data, RSSI signal strength, battery power, etc.)can be visually viewed.
12. The buzzer will alarm if the temperature exceeds the limit.

Specification

Item	**Feature**
Battery	Built-in 4000mAh/3.6V
Measure Media	Ambient air
Range of Temp Sensor probe	Temperature:-55℃ ~ +125℃
Accuracy of Temp Sensor	Temperature ±0.5℃(-10~85℃), ±1℃(other)
Operating Condition	-30℃~+60℃;5% RH ~ 95% RH (non-condensed)
RF Frequency	433/470/868/915MHz
Modulation	LoRa
Transmit Power	20dbm(adjustable)
Maximum Range in Open Area	5KM
Transmit Interval	1min-1440mins(user definable)
Low Voltage Alarm	Yes (user definable)
Temp/RH Alarm	Yes (user definable)
Stand-by Current	<5uA
IP Level	IP54
Memory Capacity	50000
Battery Life	3 years (in 15mins interval)
N.W.	135g
Dimension	106mm*57mm*33mm

Working Mode

Working Mode	Working Status
Normal Mode	LoRa Sensor will collect the Temp readings and send out as settings via t he LoRa communicating module.
Low voltage mode	Device will send data every 30 minutes (adjustable) after entering low volt age mode, voltage lower than 2.2V (adjustable), Please change the new one ASAP
Temp alarming mode	Device will send alarming readings in a shorter interval than the customer's settings (adjustable), to record the change of ambient temper ature.

P.S.: Priority: Temp alarming mode > Low voltage mode > Normal mode

Device status when sending data

The device will flash once when the device is sending a packet of data, and the LCD icon will be displayed.
LED bright status:

- Green: normal.
- Red: Something wrong with the device, such as temperature exceeding the limit, low voltage. LCD, please refer to 9. LCD indication

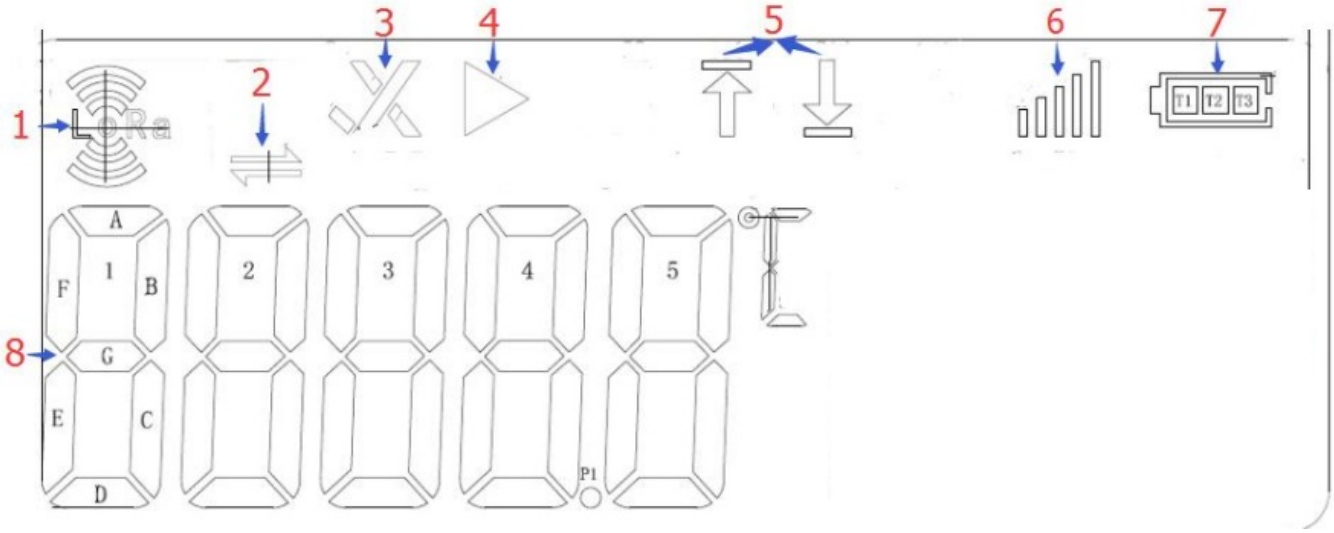
Function of Button

Mode	Operation	Device status	Indication
On	Keep button pr essed for 3s	1. The green LED bright in 5s 2. LCD turns on	The device starts sending data
Off	Keep button pr essed for 3s	1. The red LED bright in 5s 2. LCD turn off	The device stops sending data.
Data send	Press shortly	LED bright one time	Only valid in boot mode LED flash status: ab normal(red), normal(green)

LCD Display Indication

- **Shutdown mode:** the LCD is not displayed.
- **Boot mode:** the LCD is displayed.

LCD will display LORA icon, Send icon, Temperature alarm icon, Running status, Temperature icon, RSSI signal icon, Battery status, Temperature information.



NO	Function	Indication
1	LORA icon	LORA Sensor
2	Send icon	The device will flash when sending data,and then off
3	Temperature alarm icon	Normal：√ Alarm：×
4	Running status	▷ Start running
5	Temperature icon	Upper limit：↑ Lower limit：↓ Upper Lower limit：↑↓
6	RSSI signal icon	：[-80,0]; ：[-100,-80]; ：[-115,-100]; ：[-125,-115]; ：[-138,-125]; The RSSI value is updated every time the gateway response after receiving the data, so the RSSI value is not displayed,if you don't turn on ACK or no response
7	Battery status	：[3.2,3.6]; ：[3.0,3.2];
		：[2.8,3.0]; ：[2.5,2.8];
8	Temperature	℃,℉ could available (configuration by 09 instruction)unit 0.1,sensor abnormal display ------

Buzzer working mode

The buzzer will work when the temperature exceeds the limit, the buzzer will ring and then stop.

Open instruction:

1. 03 instruction
2. 36 instruction

How to close buzzer:

1. Temperature return to normal
2. Press button shortly
3. Enter configuration mode
4. Turn off
5. The USB sends a close instruction
6. The gateway sends a close instruction
7. The buzzer working time has ended

PS:

1. After the buzzer works once, it needs to happen again after the temperature is abnormal (the temperature should return to normal and then abnormal).
2. The device is a close buzzer function by default, please open this function if you need.
3. The buzzer with high power consumption will reduce battery li. Such an asset is this function according to your application.

Instructions

The factory setting of the device is off mode by default, Please refer to the button function after you get it, press and hold the button for 3s to start up, and the device will automatically send data to the gateway, The data transmission interval is 15 minutes by default, if you want to send data quickly, please press the button shortly.TZ-Tag08 is a data sender, which should work with our LoRa Gateway/LoRa Gateway_WIFI products. Please check the user guides or contact us directly.
After completing the above steps, you can query the data on our company's platform. If you want to configure parameters, please open the upper cover of the device, and insert our configuration line, at this time the green LED is bright, indicating the device has entered the configuration mode. For detailed configuration instructions and configuration methods, please refer to" TAG08" Configure Software Manual.

Notes

1. Being close to a metal object will interfere with the signal, causing the signal to weaken.
2. Please keep away from water and corrosive chemicals.
3. Please tell us your application and configuration requests, we will try to configure it well before delivery, and how to install properly.

FCC Statement

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

1. this device may not cause harmful interference
2. this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, under part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates and uses radio frequency energy, and, if not installed and used according to the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The device has been evaluated to meet general RF exposure requirement. The device can be used in a portable exposure condition without restriction.

ISED Statement

- This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) This device may not cause interference, and (2) This device must accept any interference, including interference that may cause undesired operation of the device.
- The digital apparatus complies with Canadian CAN ICES-3 (B)/NMB-3(B).

For Receiver:
This device meets the exemption from the routine evaluation limits in section 2.5 of RSS 102 and compliance with RSS 102 RF exposure, users can obtain Canadian information on RF exposure and compliance.

For Transmitter:
This device meets the exemption from the routine evaluation limits in section 2.5 of RSS 102 and compliance with RSS 102 RF exposure, users can obtain Canadian information on RF exposure and compliance.
This equipment complies with Canada radiation exposure limits set forth for an uncontrolled environment. The device is installed and operated without restriction.

Frequently Asked Questions (FAQ)

- **How do I change the data collection interval?**
  You can set the data collection time from 1 minute to 1440 minutes by adjusting the settings on the device.
- **What should I do if I receive a low voltage alarm?**
  When you receive a low voltage alarm, consider replacing or recharging the battery to ensure uninterrupted operation of the device.
- **How can I view the stored data from the transmitter?**
  You can read out the stored data from the transmitter through a USB connection for further analysis and monitoring.

Documents / Resources

	TZONE TZ-Tag08 LoRa Wireless Temp Sensor [pdf] User Guide TS3, 2BHCF-TS3, 2BHCFTS3, TZ-Tag08 LoRa Wireless Temp Sensor, TZ-Tag08, LoRa Wireless Temp Sensor, Wireless Temp Sensor, Temp Sensor, Sensor

References

- User Manual