TZ-Tag08L
---User Guide

1. Overview

LoRa Wireless Temp Sensor(TZ-Tag08L) is a high quality product designed by Tzone Digital Technology Co., Ltd. Well overcome many shortcomings happened in similar products, with full consideration on tough environment and more. It have features includes long range (5km), small volume (106mm*57mm*33mm), long time using.Validated by many vital projects with stability and reliance features. LoRa Sensor can collect temp readings with preset interval and send out via LoRa communicating module, then 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.

2. Application

1.Freezer, refrigerator, etc.

2.Agricultural greenhouse

3.Plant and workshop

4.Cold chain reefer and refrigerated trailer

5.Pharmacy warehouse and laboratory

3.Feature

1.Using PT100 temperature sensor, with large measure range, high precision 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 1440minute，with widely application.

4.The sensor have 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 stand-by 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 updates the sending interval to reduce power consumption.

10.The sensor can receive command from gateway,the parameters can be set.

11.With LCD display,the message(temperature data,RSSI signal strength,battery power etc.,)can be visually viewed.

12.The buzzer will alarming when the temperature exceed the limit.

4.Advantages of LoRa Technology

The wireless communication of the device is based on SEMTECH RF integrated chip SX127X RF module, which is a high-performance wireless transceiver for the Internet of things, the special LoRa debugging method can greatly increase the communication distance, so it can be widely used in various occasions, Compared with the traditional wireless communication, LoRa combines digital spread spectrum, digital signal processing and forward error correction coding technology, and has the advantages of small volume, low power consumption, long transmission distance and strong anti-interference ability. It uses spread spectrum modulation technology to demodulate noise less than 20dB, which ensures a high sensitivity and reliable connection while improving communication efficiency and eliminating interference. LoRa technology achieves the communication distance which is much longer than other wireless protocols, which makes the LoRa system can work well without a repeater, thus reducing the total cost of projects.

5.Specification

Item	Feature
Battery	Built-in 4000mAh/3.6V
Measure Media	Ambient air
Range of Temp Sensor probe	Temperature:-100°C ~ +70°C
Accuracy of Temp Sensor	Temperature ±0.5°C
Operating Condition	-30°C~+60°C
RF Frequency	433/470/868/915MHz
Modulation	LoRa
Transmit Power	20dbm(adjustable)
Maximum Range in Open Area	5KM
Transmit Interval	1min-1440mins(user definable),default 5mins
Low Voltage Alarm	Yes (user definable)
Temp/RH Alarm	Yes (user definable)
Stand-by Current	<5uA
IP Level	IP54
Memory Capacity	50000
Battery Life	1 years (in 5mins interval)
N.W.	135g
Dimension	106mm*57mm*33mm

6.Working Mode

Working Mode	Working Status
Normal Mode	LoRa Sensor will collect Temp readings and send out as settings via LoRa communicating module
Low voltage mode	Device will send data each 30mins (adjustable) after entering low voltage mode, voltage lower than 2.2V (adjustable), please change new one ASAP
Temp alarming mode	Device will send alarming readings in shorter interval than customers settings (adjustable), in order to record the change of ambient temperature

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

7. 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 device,such as temperature exceed the limit,low voltage.
LCD display please refer 9.LCD display indication
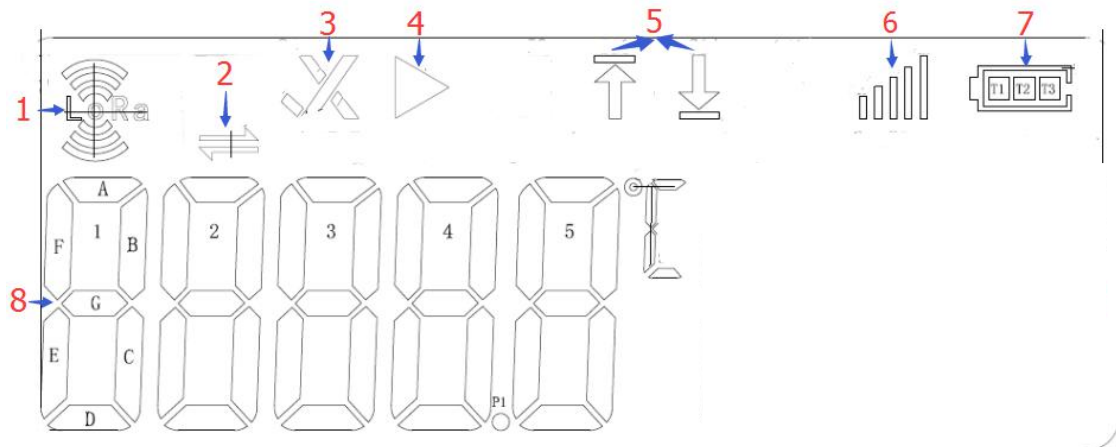
8. Function of Button

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

9.LCD Display Indication

Shutdown mode:the LCD is not display.
Boot mode:the LCD is display.
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 ------

10.Buzzer working mode

The buzzer will working when temperature exceed 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 are abnormal (the temperature should return to normal and then abnormal).
2.The device is close buzzer function by default ,please open this function if you need.
3.The buzzer with high power consumption,it will reduce battery life, Please set this function according to your application

11. 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 configure parameters , Please open the upper cover of device,and insert our configure line,at this time the green LED is bright which indicating the device has entered the configuration mode.For detailed configuration instructions and configuration methods,please refer to TAG08 Configure Software Manual.

12.Notes

1. Being close to a metal object will interfere with the signal, causing the signal to be 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 guide you how to install properly.