



**TOPFLYtech T-one**  
**BLE Temperature Sensor**

User Manual

20240205

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The sensor is using BLE 5.1 technology and could measure Temperature and send data to the tracker/Phone via BLE. It provides the customer with a cost-effective, efficient and safe environment remote monitoring method. It's suitable for using in commercial cold-chain transport/storage and other segments.

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## 1. Quick Reference



## 2. Product Specifications

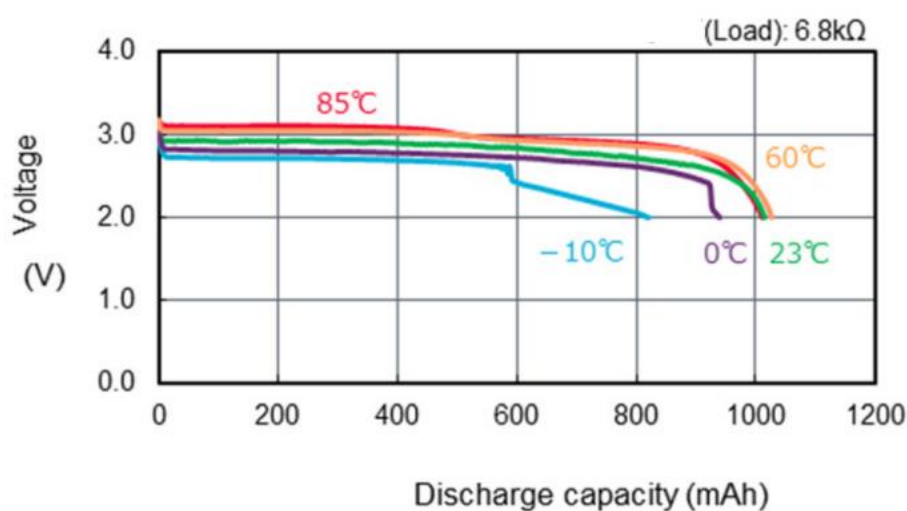
| General Specifications                                                            |                                                                                                                              |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Model Name                                                                        | T-one                                                                                                                        |
| Waterproof                                                                        | IP67                                                                                                                         |
| Dimensions                                                                        | 59.9mm*40.0mm*14.6mm (2.36" *1.57" *0.57")                                                                                   |
| Weight                                                                            | 59g (2.40 oz, battery and 1-meter probe included) / 36g (1.50 oz, probe not included)                                        |
| Battery                                                                           | Non-Replaceable CR2477 Battery (1000mAh)                                                                                     |
| Battery Life<br>*Refer to the 2.1 battery discharge curves                        | Only use TFT Eddystone (default enable)                                                                                      |
|                                                                                   | 1800 days @ interval: 10s & TX= 0 dBm & temperature = 25°C & Temperature on (default off)                                    |
|                                                                                   | 1650 days @ interval: 10s & TX= 4 dBm (default) & temperature = 25°C & Temperature on (default off)                          |
|                                                                                   | 1450 days @ interval: 10s & TX= 8 dBm & temperature = 25°C & Temperature on (default on)                                     |
|                                                                                   | 1450 days @ interval: 5s & TX= 0 dBm & temperature = 25°C & Temperature on (default on)                                      |
| Operating / Storage Temperature                                                   | 1200 days @ interval: 5s & TX= 4 dBm (default) & temperature = 25°C & Temperature on (default on)                            |
|                                                                                   | 1000 days @ interval: 5s & TX= 8 dBm & temperature = 25°C & Temperature on (default on)                                      |
|                                                                                   | Housing: -30°C ~ +80°C (-22°F ~ 176°F)<br>Probe: -55°C ~ +150°C (-67°F ~ 300°F)                                              |
| Probe Length                                                                      | 1 meter standard (5 / 10 / 15 meters optional)                                                                               |
| Temperature Measurement Accuracy<br>*Refer to the 2.2 temperature accuracy charts | Typic: $\pm 0.25(\pm 0.5^{\circ}\text{C})$ (0-65 °C , Long-term drift Typ. <0.02 °C/Y)                                       |
| Power Output(default)                                                             | 4 dBm and 10s broadcast                                                                                                      |
| Transmission Range (BLE 5.1)                                                      | Up to 200m (656 fts) (Open Field, Power: 4 dBm(default), BLE5.1)<br>Up to 400m (1312 fts) (Open Field, Power: 8 dBm, BLE5.1) |

| Protocols compatibility                                             |               |
|---------------------------------------------------------------------|---------------|
| TFT Eddystone                                                       | Yes (default) |
| Eddystone UID                                                       | Yes           |
| Beacon                                                              | Yes           |
| Protocols compatibility                                             |               |
| Front Light Sensor for Power on                                     |               |
| Installation Methods: Polyurethane glue, Screws, Cable zip tie      |               |
| Compatible with all TOPFLYtech trackers that have BLE functionality |               |

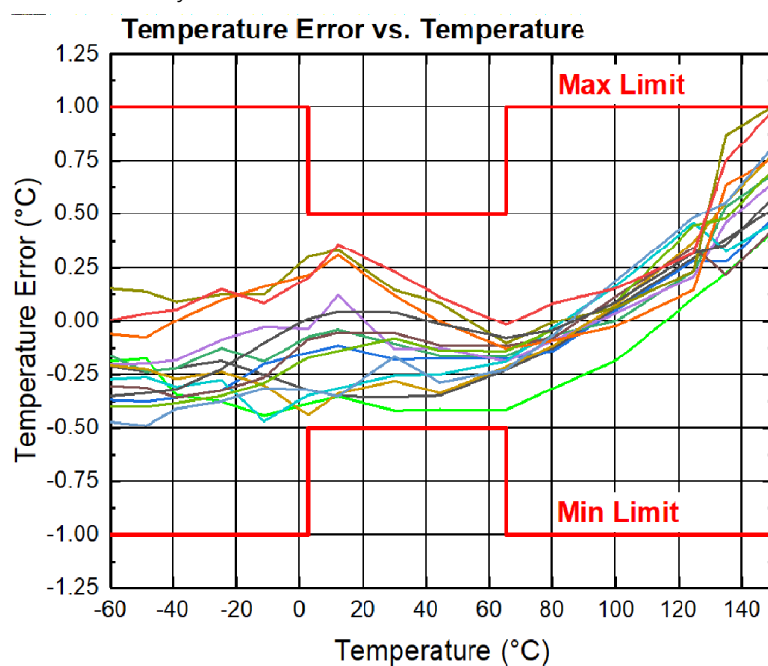
## 2.1 Battery discharge curves

### Discharge Characteristics by Temperature

Test Condition: constant discharge



## 2.2 Temperature accuracy chart



### 3. Start to use

#### 3.1 How to power on

- 3.1.1 Power on through phone's flashlight.
- 3.1.2 Turn on and keep the flashlight focused on the center of T-one for more than 3 seconds. As a result, the LED will blink, indicating that the device is powered on.

#### 3.2 How to power off

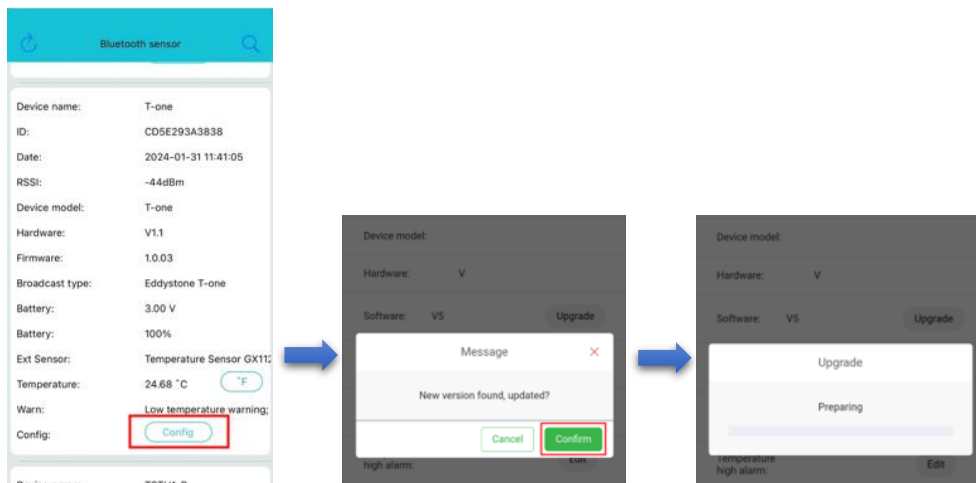
- 3.2.1 Install the app named "TFTBLE" from Google Play or App Store.
- 3.2.2 Turn on the cellphone Bluetooth.
- 3.2.3 Run "TFTBLE" app and allow all the permissions it needs.
- 3.2.4 Connect sensor via "TFTBLE" and config device (default password: 654321) click the shutdown button.

#### 3.3 How to read the sensor information through cellphone

- 3.3.1 Power on the sensor by following the steps in 3.1.
- 3.3.2 Find the device model which named as "T-one".
- 3.3.3 The sensor ID will be shown in the app. It also can be got by scanning the QR code on product label.

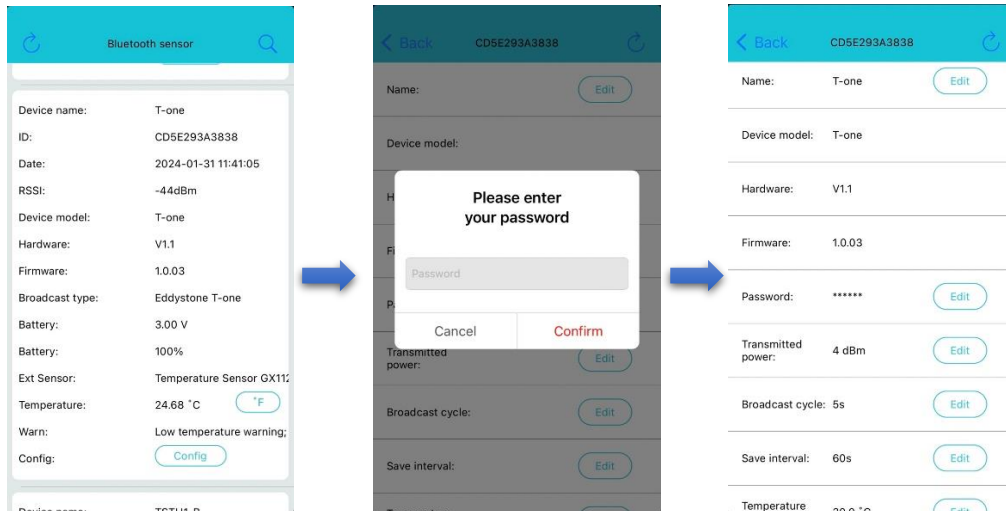
#### 3.4 How to upgrade the sensor firmware

- 3.4.1 Click "Config" button.
- 3.4.2 If there is a new version firmware, the app will give a popup notice.
- 3.4.3 Tap "Confirm" to upgrade the firmware.
- 3.4.4 Waiting for a while. In the process of updating, please keep the cellphone close to the sensor.



#### 3.5 How to configure the sensor by cellphone

- 3.5.1 Run TFTBLE app and click the "Config" button.
- 3.5.2 Input the password. The default password is 654321.
- 3.5.3 Then you can change any configuration.



### 3.6 How to connect the sensor to a TOPFLYtech tracker

- 3.6.1 The tracker must have BLE connectivity.
- 3.6.2 Get the sensor ID from TFTBLE app or scanning the QR code.
- 3.6.3 Add the sensor ID into tracker (TLW2-2/6/12BL, TLD2-L/D, TLP2-SFB, TLW2-12B).

|                    |                                                                                                                                                  |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| BLEIDA,0000,A,B,C# | Add a BLE sensor<br>A=sensor ID<br>B=sensor type (1=TSTH1-B, 2=TSMT1-B, 3=TSR1-B, 4=TPMS, 5=TZ T&H)<br>C=sensor nick name, optional, max len = 8 |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|

#### 3.6.4 Set the tracker reporting interval of sensor data.

|                   |                                                                                                                                                                                                                                                                |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TIMERTH,0000,A:B# | Define the tracker reporting rate of temperature & humidity sensor data<br>A, Ignition on uploading interval, range: 300/15 (TLP2-SFB/other)~65535, unit is second<br>B, Ignition off uploading interval, range: 300/15 (TLP2-SFB/other)~65535, unit is second |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### 3.6.5 On TLW2-2/6/12BL, TLD2-L/D, TLP2-SFB and TLW2-12B, the tracker BLE is enabled in default.

### 3.7 Connect the sensor to another 3<sup>rd</sup> party device

Please contact TOPFLYtech if you want to use this sensor with a 3<sup>rd</sup> party BLE device.

## 4. Local Storage

- 4.1 It requires the sensor fw version  $\geq$  V1.0.02. Connect the sensor via TFTBLE app
- 4.2 Tap "Start Record" to enable the local storage.
- 4.3 The sensor will save the data every 1 min in default. This time period is adjustable, range 60-600s, stepping every 10s.
- 4.4 The sensor can save 15,000 pieces of historical data. If the memory is full, new data will overwrite old data.

## 5. Other Settings

- 5.1 The default broadcasting cycle is every 10s.
- 5.2 The broadcasting cycle is adjustable, range 5 ~ 30s.

## 6. Quick Trouble Shooting

- 6.1 The APP shows "Loading" all the time
  - 6.1.1 Terminate the app.

- 6.1.2 Check the cellphone Bluetooth status and make sure it is on.
- 6.1.3 Make sure all the permissions of the APP are given to app. You can enter <Settings>-<Permissions> to manage it.
- 6.1.4 Put the sensor close to the cellphone then run TFTBLE APP again.

## 7. Setting Parameter Description

| Parameter              | Description                                                                   |
|------------------------|-------------------------------------------------------------------------------|
| Password               | Default Password Is 654321. It can be changed to any other 6 digits password. |
| Broadcast Cycle        | The sensor information broadcasting cycle.                                    |
| Temperature High Alarm | Sensor will broadcast an alarm message once meets the condition               |
| Temperature Low Alarm  | Sensor will broadcast an alarm message once meets the condition               |
| LED                    | Sensor LED light on/off                                                       |
| Reset Factory          | Reset all settings in the sensor                                              |

### NOTE:

- 1.This equipment complies with FCC/IC radiation exposure limits set forth for an uncontrolled environment.This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.
- 2.This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with 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 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.
- 3.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, and (2) this device must accept any interference received, including interference that may cause undesired operation.
- 4.Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment