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TMY02 IoT Wireless Device User Manual

1 Product Introduction

TMY02 is an IOT intelligent wireless communication terminal that includes 4G (LTE Cat M1 and NB1) with 2G(GPRS) fallback. TMY02 is built-in disposable lithium battery that can be up to 3 years. TMY02 is with ultra-low power consumption, long battery life that is widely used in the field of tracking valuable assets.

More details are as follows:

• Support global LTE Cat M1, NB1 and GPRS network global frequency band.

• Support terminal parameters configuration through SMS.

• Support TCP/IP, UDP connection.

• Support SSL/TLS encryption transmission protocol.

• Support GPS/BDS/Galilleo/GLONASS/LBS position.

• Ultra-long battery life: when reporting interval is 1 report every 24 hours, the battery can last more than 3 years.

• IP65 rating for waterproof capability.

• Easy installation without wires.

2 Function

➢ Location: The user can query the latest reported location of the targeted assets through mobile app or cloud service platform.

➢ Data Reporting: The user can set the reporting interval through platform. The device will connect the platform server to upload the location information according to the pre-configured reporting interval. The device report data every 24 hours by default.

➢ Battery Level Detection: The device will upload the low battery power alarm to platform when the battery power is less than 20%.

➢ Tamper Alarm: TMY02 has a built-in optical sensor. When the device is removed after installation, the optical sensor can be activated immediately and report the tamper alarm to platform.

➢ Wake-up Feature: The user can modify the schedule of the wake-up times of the device on the Platform to wake-up the device and report data at a fixed time.

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- ➢ Tracking: The user can set tracking time parameters through platform to realize real-time tracking of assets

- ➢ Working Mode: TMY02 has four working modes: Refresh Mode, Vibration Mode, Flight Mode, and Continuous working mode.

  - ● Refresh Mode: The device will wake up from the sleep state and report the data according fixed report interval.

  - ● Vibration Mode: The device will wake up from static state if continuous vibration/motion is detected by accelerator, report the data according to the preset reporting interval until the device stops moving for more than a certain working time.

  - ● Flight Mode: When the accelerometer detects that the device is in flight state (continuous motion), it will shut down the communication module until the device is in static state, returns to the timing report state.

  - ● Continuous working mode: Continuous working mode is needed when the device needs to be active all the time and upload the location data according to the user preconfigured interval.

3 Use Scenario

TMY02 is mainly for overseas markets, especially countries and regions that have stopped 2G service. The terminal is mainly used for daily position monitoring of valuable assets (such as vending machines, automobiles, mobile devices, etc.) and tracking of the transportation process of valuables. The terminal is generally installed inside the valuable assets or on the transport tray, pallet and loading box.

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4 Device Installation Guidance

The device parameters need to set and relevant information need to register on the platform before installation. Regarding parameter setting and platform data entry, please refer to the platform operation manual or consult our customer service personnel.

4.1 Get Started

To use the device, the user needs to open the top cover, insert the SIM card correctly, turn the power on, and install the device.

The user can open the top cover by hand. There are two LED indicators under the cover: the blue LED shows the GPS status, and the green LED shows the cellular connectivity status.

Please review the following diagram (need update the diagram) for the different LED combinations.

Terminology:

Fast blinking: The indicator light flashes 3-5 times in 1s.

Slow blinking: The indicator light flashes one times in 2s.

GPRS green LED

Off: Module off

Slow blink: GPRS connecting

Fast blink: GPRS connected

Solid on: platform connected

GPS blue LED

Off: Module off

Slow blink: GPS locating

Solid on: GPS located

4.2 SIM Card Installation

Open the SIM card holder cover, insert the SIM card into the SIM card holder.

Ensure that the SIM card is properly placed. Close the SIM card cover.

Please take note of the ICCID of the SIM card, and make sure that the SIM card has an active subscription for the required cellular connectivity.

4.3 Device Power Up

After the SIM card is installed, move the power switch to the ON position. When the blue LED starts blinking, the device is powered on.

Switch ON   Lock

4.4 Device Installation

Close the top cover after the device is powered up.

Peel one side of the supplied 3M double sided tape and place it in the white square area in the bottom of the device (optical sensor side).

Peel the other side of the tape and place and press down the TMY02 firmly over a clean flat surface area so that the 3M tape holds the TMY02 in place.

If the device is removed, the optical sensor can be activated immediately and trigger tamper alarm.

Notes:

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- The ideal installation direction of the terminal is that the top cover is facing the sky. To prevent the GNSS positioning signal from being blocked and unable to be located, it must be ensured that no metal barrier above the top cover. If the terminal cannot be installed face up due to the limitation of the installation environment, the top cover can also be installed in the horizontal direction.

- The installation position of the device shall be in the position without radio signal shielding. The installation surface shall be kept clean and free of oil and dust, which will affect the installation firmness.

- During the installation process, it is possible to trigger the optical sensor and activate the tamper alarm. If the fixed device is installed first and then turn on the battery switch, the alarm can be avoided.

5 Specification

More detailed specifications are as follows:

Table 1 – TMY02 Hardware Specification Table

Specification	Description	
Main control chip platform	STM32G070	
Communication module	BG96	
Cellular Network	GSM: 850/900/1800/1900MHz Cat M1/NB1 LTE FDD: B1/B2/B3/B4/B5B8/B12/B13/B18/B19/B20/B26/B28 LTE TDD B39	
Data Transmission	LTE features	Cat M1: 375Kbps DL; 375Kbps UL
	GSM features	EDGE: 296Kbps DL; 236.8Kbps UL
		GPRS: 107Kbps DL; 85.6Kbps UL
	GPS features	GPS/BDS/Galilleo/GLONASS
Size	80x38x34mm	
Weight	100g	
Battery capacity	1950mAh@6V	
IP Level	IP65	
Temperature	-20°C ~ 60°C	
Humidity	95%RH	
Storage temperature	-10°C ~ 45°C	

Notes:

1. It is recommended to deploy the equipment to the current network within 3 months after the arrival of the equipment, or store it in the following environment:

    - Temperature: -10～35 ℃

    - Relative humidity (RH): 30% RH ~ 85% RH

    - The storage environment should be equipped with temperature and humidity instruments and dehumidification equipment to monitor and adjust the temperature and humidity.

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2. Attention for battery：

- Replacement of a **battery** with an incorrect type than can defeat a **safeguard** (for example, in the case of some lithium **battery** types);

- Disposal of a **battery** into fire or a hot oven, or mechanically crushing or cutting of a **battery**, that can result an **explosion**;

- Leaving a **battery** in an extremely high temperature surrounding environment that can result in an **explosion** or the leakage of flammable liquid or gaps.

- A **battery** subjected to extremely low air pressure that may result in an **explosion** or the leakage of flammable liquid or gas.

Table 2 – TMY02 Software Specification Table

Specification	Description
Communication Protocol	Technical specification V01 for IOT terminal (battery powered) communication protocol
	Support customer OEM customization
Data Transmission	Support UDP / TCP client-side
	Support FTP client-side
	Support IPv4
	Support APN
	Support SMS
	Support SIM card
	Support SSL3.0/TLS1.2/TLS1.1/TLS1.0 (customized version)

6 Packing List

Item	Qty
TMY02 Terminal	1pcs
3M double sided tape	1pcs

7 Customer Service

The company provides free warranty for 1 year from the date of installation.

Notes:

- The parameter setting and installation of the device shall be completed by professional personnel.

- Regarding the operation method of platform, the installation and use instructions of app, please consult the customer service personnel.

8 Contact

URL：https://www.things-matrix.com/

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9 CE Statement

‣ EU Regulatory Conformance

Hereby, We, Manufacturer name declares that the radio equipment type TMY02 is in compliance with the Directive 2014/53/EU.

In all cases assessment of the final product must be mass against the Essential requirements of the Directive 2014/53/EU Articles 3.1(a) and (b), safety and EMC respectively, as well as any relevant Article 3.2 requirements.

The maximum antenna gain for is 2 dBi and the antenna separation distance is 20cm.

‣ Declaration of Conformity(should include manufacturer contact info.)

Please added certification standard in your user manual which depended on the test standards your device performed., If the DoC should be a simplified version, please take below as reference, The full text of the EU declaration of conformity is available at the following internet address: https://www.things-matrix.com/

TMY02 is in conformity with the relevant Union harmonization legislation: Radio Equipment directive 2014 / 53 / EU with reference to the following standards applied: Health (Article 3.1(a) of Directive 2014/53/EU)

Applied Standard(s): EN 62311 : 2008

Safety (Article 3.1(a) of Directive 2014/53/EU) Applied Standard(s):

EN 62368-1: 2018

Electromagnetic compatibility (Article 3.1 (b) of Directive 2014/53/EU) Applied Standard(s):

Draft EN 301 489-1　V2.2.1 /-52　V1.1.0

EN 301 489-19　V2.1.1　EN 55032:2015　EN 55035:2017

Radio frequency spectrum usage (Article 3.2 of Directive 2014/53/EU) Applied Standard(s):

EN 301 908-1 V11.1.1

EN 301 908-1 V11.1.2

EN 301 908-13 V13.1.1_11.1.4(Draft)

EN 301511 V12.5.1

EN 301 413 V1.1.1

10 Federal Communication Commission Interference 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, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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.

FCC Caution:
- ➢ Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.
- ➢ This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Radiation Exposure Statement:
This equipment complies with FCC 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.