

IOT vehicle terminal (TCE101)

Product specification

Content of this
TWO-DIMENSIONAL code:

I. Product description

Satellite position Tracker collects device status information through CAN bus and GPS positioning system, and then transmits the device status information and location information to the information server through LTE

network. Users can access the information center server through a computer browser or mobile APP to obtain the location and status of the device. In addition, users can manage and monitor the device through a computer browser or mobile APP.

This product has the following functions and features:

- realizes precise positioning function through GPS positioning system;
- supports CAN bus data acquisition function;.
- supports remote calling and remote locking;
- Supports heartbeat query function;
- supports GPS terminal remote upgrade;
- supports GPS terminal external power disconnect alarm;
- supports external switching signal acquisition function;
- Can set heartbeat reporting time and sleep interval reporting time;
- product protection grade: IP65, engineering plastic shell package;

1、GPS terminal parameters

2、Basic parameters

name	parameter	note
Working power supply	External storage battery	
Working voltage	12-24V	

Average operating current	<120mA@12V <60mA@24V	
Average sleep current of the device	<2.6mA@12V <6.6mA@24V	The GPS module is powered off and the GSM module is hibernated
Battery capacity	2000mAh	Wake up after hibernation A message is reported 8 hours a day for a month
Operation parameters	CPU: GD32F105VCT6 RAM: 96KB storage: 32MB	

3、 Positioning parameters

name	parameter	note
Positioning way	GPS/ Beidou dual mode positioning	
The GPS antenna	extraposition	
Center frequency	1575.42MHz;	
Location update rate	1Hz (The default) , The biggest 10Hz	
Speed precision	<0.1 m/s	
Time precision	<30ns	
Positioning time	<ul style="list-style-type: none"> ➤ recapture: Averages 1 second ➤ Hot start: <1 seconds ➤ warm initiation: 30 seconds ➤ Cold Start: 32 seconds 	
Dynamic condition	<ul style="list-style-type: none"> ➤ maximum height: 18000m ➤ maximum speed: 515 m/s ➤ maximum acceleration: 4G 	

The sensitivity	<ul style="list-style-type: none"> ➤ recapture sensitivity: -160dbm ➤ tracking sensitivity: -162dbm ➤ cold start sensitivity: -148dbm ➤ thermal starting sensitivity: -156dbm 	
-----------------	---	--

4、Communication parameters

name	parameter	note
Communication mode	SMS	
Communication mode	Working frequency band: LTE-FDD: B1/B3/B5/B8 LTE-TDD: B34/B38/B39/B40/B41	
data traffic	输出功率: Class 3 (23 dBm \pm 2 dB) for LTE-FDD bands Class 3 (23 dBm \pm 2 dB) for LTE-TDD bands Class E2 (27 dBm \pm 3 dB) for	

5、Shape mechanism parameters

name	parameter	note
Overall dimensions	108mm*80mm*35mm	As shown in figure 1
Installation dimensions	88mm*58mm	As shown in figure 2
Connector model	ITT 132015-0074	
Length of 16-core cable	500mm	
The shell material	Engineering plastics	
The shell assembly	The screw assembly	
installation	M4 Screw installation	



Figure 1

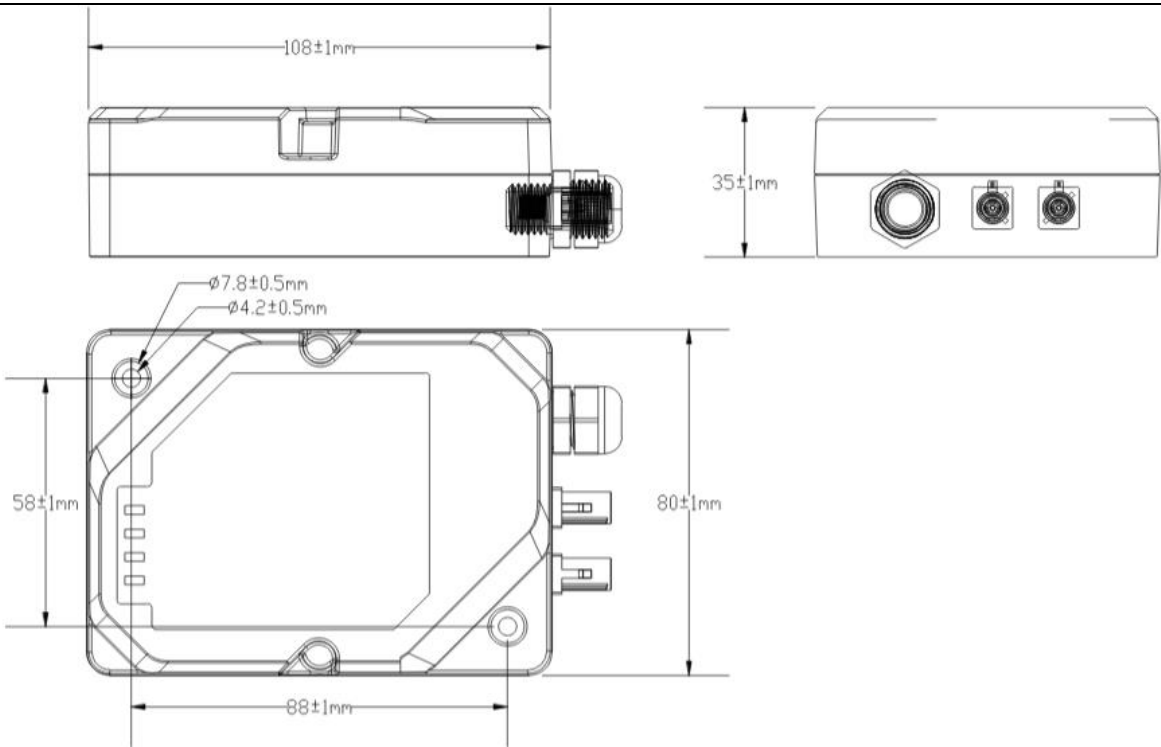


FIG. 2 Installation dimension diagram

6. Indicator definition parameter

The machine is in working condition, t-box indicator state

	color	state	instructions
Light is A	red	flashing	Indicates that the T-box is working and the internal battery is in charging state
		Normally on	Indicates that the t-box is working and the internal battery is fully charged
		Put out	Indicates the power supply is abnormal.
Light is B	red	Normally on	Obtaining the satellite location information
		flashing	Indicates that the satellite location is successful
		Put out	Indicates that the positioning system is abnormal
Light is C	green	Normally	Indicates that the mobile communication base station is being connected

		on	
		flashing	Indicates that the mobile communication base station is connected successfully
		Put out	Indicates that the communication system is abnormal
Light is D	green	Normally on	Indicates that the platform server is being connected
		flashing	Indicates that the platform server is successfully connected
		Put out	Indicates that the communication is normal but the connection to the platform server times out (the connection to the platform is interrupted within 10 minutes) or the communication system is abnormal
Note 1: indicators A, B, C and D are indicated according to the actual situation within 3min after the machine is shut down.			
Note 2: After the machine is shut down for 3min, t-box enters hibernation state, and indicators A, B, C and D are all off.			

T-box indicates the status of each indicator when it is in hibernation and waking state			
name	color	state	instructions
Light is A	red	Normally on	Indicates that the T-box is working
		Lights went out	Indicates the power supply is abnormal.
Light is B	red	Normally on	Indicates that the locating module is being located
		flashing	The location is successful.
		Put out	Indicates that the positioning system is abnormal
Light is C	green	Normally on	Indicates that the mobile communication base station is being connected
		flashing	Indicates that the mobile communication base station is connected successfully
		Put out	Indicates that the communication system is abnormal
Light is C	green	Normally on	Indicates that the platform server is being connected
		flashing	Indicates that the platform server is successfully connected
		Put out	Indicates that the communication is normal but the connection to

			the platform server times out (the connection to the platform is interrupted within 10 minutes) or the communication system is abnormal
--	--	--	---

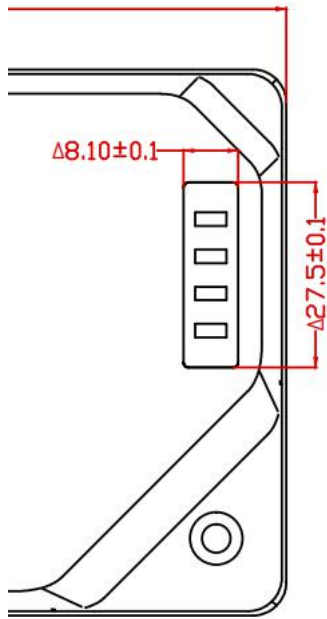


Figure 3 Schematic diagram of indicator position

6、 D Connector parameter definition table:

Connector pin definition							
Line no.	define	color	Wire	Line no.	define	color	Wire

			diameter				diameter
1	dynamo D+	blue	0.3mm ²	9	--	--	--
2	CAN2H	Yellow and white	0.3mm ²	10	RS232- TXD	purple	0.3mm ²
3	CAN2L	Red and white	0.3mm ²	11	RS232-RXD	orange	0.3mm ²
4	ACC	green	0.3mm ²	12	--	--	--
5	CANIL	brown	0.3mm ²	13	Loading bucket number signal	yellow	0.3mm ²
6	power supply—	black	0.3mm ²	14	The standby	pink	0.3mm ²
7	power supply+	red	0.3mm ²	15	Brake frequency signal	Green and yellow	0.3mm ²
8	CANIH	white	0.3mm ²	16	Calibration trigger signal	Black and white	0.3mm ²

Connector diagram:



7、 Other parameters

Storage temperature	—40℃～+80℃
Working temperature	—30℃～+70℃
Communication interface	CAN2. 0B

Power protection	Power supply reverse connection protection, power supply throw load protection
The product weight	<260g
Product protection grade	IP65

三、Troubleshooting for common faults:

1. No power supply:

Symptom: Indicators A, B, C, and D are off

Screening method:

1) Check the state of external battery and key:

The indicators A, B, C and D are not on, which may indicate that the GPS device is in hibernation state. Please turn on the vehicle battery and key switch to re-test. If the vehicle battery and key switch are turned on, but the GPS indicator is still off, go to the next step;

2) Check the external cable harness:

Check whether the external plug-in of the device is loose or the cable harness is damaged. If no, go to the next step;

3) Measure the supply voltage:

Use a multimeter to measure the power supply voltage, unplug the ITT plug connected to the GPS cable harness, and measure the voltage between the power cord of the ITT plug (female) of the

vehicle connected to the GPS. If the measured voltage is 0, it indicates that the cable harness connection is broken or disconnected. It is necessary to check that the vehicle is the GPS power supply line. If the measured voltage is less than 9V, it means that the vehicle storage battery is fed and needs charging and maintenance; If the measured voltage is normal, go to the next step;

4) Replace a new GPS device and re-test it.

1、 The device cannot go online:

Fault symptom: The monitoring platform cannot display the latest vehicle data normally, and indicator C does not blink at an interval of one second.

Screening method:

1) Check the power supply and working mode:

First check indicators A and B. If indicators A and B are off, the GPS device has no power supply. Refer to "Device Has no power supply". If indicator A is long on and indicator B, C and D are long off, it means that the GPS device is in hibernation state. Please turn on the vehicle key switch and re-check. Otherwise, go to the next step;

2) Check whether the SIM card is overdue:

Contact the monitoring management personnel to check whether the GPS terminal is shut down due to the SIM card installed inside

the terminal. If no, go to the next step;

3) Check the location of the vehicle to put LTE network:

Check mobile signal strength or LTE signal status through mobile phone.

4) Replace a new GPS device and re-test it.

2、 The device is not positioned:

The device is not located fault symptom: The monitoring platform shows that the GPS device is not located accurately, and indicator B is not flashing every one second.

Screening method:

1) Check the working mode of the device:

If indicator A is long on and indicator B, C, and D are long off, it indicates that the GPS device is in hibernation state. Please turn on the vehicle key switch and rectify the fault again. Otherwise, go to the next step;

2) Check whether the device location information is shielded:

GPS devices receive satellite signals, which are affected by related objects (such as metal, concrete walls, tunnels, buildings, etc.) and weather. If the device is not located, you can temporarily move the vehicle to an open area and wait about 5-10 minutes to check the positioning status again. If the fault persists, go to the next step;

3) Replace the GPS device and re-test it.

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, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Warning: 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, 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 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.

FCC 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.