

## **T-235M User Manual**

**Sinocastel**  
Make your car talk...

May, 2020

## Regulatory Compliance

### FCC Regulations

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 device 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.

Caution: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

### RF Exposure Information

This device complies with FCC radiation exposure limits set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20cm (8 inches) during normal operation.

## 1、Introduction

### 1、Description

T-235M is a long standby asset tracker with built in rechargeable 10000mAH battery and 4G connectivity. It comes with cost effective solutions for wide range of applications such as fleet management, container and trailer tracking, valuable asset tracking, auto finance and car rental etc.

**Packing List**

Parts Name		quantity	Remark
T-235M Terminal		1	•
USB data cable		1	•
Power Cable		1	•

## 2、Technical Specification

### 1. Profile



## 2. Technical Specification

Mechanical	Size	108mm (L) x 65mm (W) x 35mm (H)	
	Weight	200g	
Interface	M16-12 male connector	3 digital inputs 2 analog inputs 3 digital outputs 1 RS-485 interface with voltage output	
	Magnetic 4 pin port	Charging and configuration	
Data transmission		LTE and SMS	
Positioning method		GNSS/A-GNSS/LBS	
Storage		8MB FLASH	
Power	Working Voltage	9-36VDC	
	Working Current	Average: <100mA Sleep mode: <10mA	
	Backup battery	Rechargeable lithium battery, 10000mAH/3.7V	
GNSS		System: GPS/BDS/GLONASS/Galileo Channels: 66 Sensitivity: -165dBm Accuracy: 2.5m CEP Time to first fix: Cold start: <35s Hot start: <1s	
Cellular		<b>T-235M</b> (LTE Cat M1/Cat NB2, Global) LTE Cat M1: B2/B4/B12/B13/B25/B26	

		LTE Cat NB2: B2/B4/B5/B12/B13/B71 GSM/GPRS: 850/1900MHz
Bluetooth		BLE 5.3, universal BLE sensor support
Light sensor		Removal detection
3-axis Accelerometer		Motion detection, driving behavior detection
LED Indication		GNSS/Cellular/Battery indication
Antenna	Cellular	Internal
	GNSS	Internal
	Bluetooth	Internal
Optional accessories		Relay Ultrasound fuel sensor BLE tag BLE temperature sensor BLE relay
Environment	Working Temperature	-30°C ~ +70°C
	Storage Temperature	-40°C ~ +85°C
	Humidity	5% ~ 95% (no fog)

### 3、Device Configuration

#### 3.1、Driver Installation

After downloading the driver, select the appropriate installation program according to your computer's operating system to install the driver.

#### 3.2、PC Tool Configuration

Download PC Tool from <https://www.sinocastel.com/support> and install them. Connect the terminal and computer via the USB setting cable. Open the OBD PC Tool and click "Help->User Manual" to set relevant parameters according to the user manual.

### 4、SMS Instructions

SMS command is mainly for remote maintenance. The message content is text format. Default secret key is the last 6 digits of the device ID. The key can only be changed through PC Tool, SMS format is defined as follows.

No.	Description	SMS Command Format
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1	Set Server network Parameters (IP model)	<p>Send: *SecretKey#set gprs#APN,User,Password,IP,Port* e.g.: *123456#set gprs#cmnet,,,172.18.2.106,8008* secret key=123456, IP address= 172.18.2.106, port=8008, APN=cmnet, username and password are empty.</p> <p>Response: *set gprs#ok* :success *set gprs#fail* : failed</p>
2	Get Server network Parameters (IP model)	<p>Send: *SecretKey#get gprs#*</p> <p>Response: *get gprs#APN,User,Password, IP,Port* E.g.: *123456#get gprs#*</p>
3	Set Server network Parameters (Domain model)	<p>Send: *SecretKey#set domain#APN,User,Password,IP,Port*</p> <p>Response: *set domain#ok* or *set domain#fail* E.g.: *123456#set domain#cmnet,,,OBD.livetelematics.com,11088* *set domain#ok* or *set domain#fail*</p>
4	Get Server network Parameters (Domain model)	<p>Send: *SecretKey#get domain#*</p> <p>Response: *get domain#APN,User, Password, domain, Port* E.g.: *123456#get domain#*</p>
5	Get Current Location	<p>Send: *SecretKey#position#*</p> <p>Response: *position#http://maps.google.com/?q=latitude,longitude*</p> <p>E.g.: *123456#position#*123456#position#*http://maps.google.com/?q=2 2.536934,114.021425*</p>
6	FTP remote upgrade	<p>Send SMS command: *SecretKey#upgrade#username,password,url*</p> <p>The correct format terminal response: *upgrade#ready/fail*</p> <p>End of the upgrade terminal response: *upgrade#done/fail*</p> <p>For example: *123456#upgrade#admin,123456,ftp://58.58.58.58/IDD-213L/IDD-213L_V1.0.0.tb*</p>
7	Restart	<p>Send SMS command: *SecretKey#restart#*</p> <p>Correctly formatted terminal response: *restart#ready*</p> <p>The terminal responds when it is in the upgrade downloading state: *restart#fail*</p> <p>Response after restart: *restart#ok*</p> <p>Example: *123456#restart#*</p>
8	Remote recovering engine cut	<p><b>Send the SMS command: *SecretKey #restore fuel#*</b> <b>The terminal response: *restore fuel#ok/fail*</b></p>
9	Remote engine cut	<p><b>Send the SMS command: *SecretKey #cut fuel#*</b> <b>The terminal response: *cut fuel#ok/fail*</b></p>

## 5、Installation Instruction

### 5.1 SIM Card Installation

- 1、Remove the 4 screws from the back cover and open the front cover.
- 2、Push the SIM card cover to open it.
- 3、Insert the SIM card according to the direction of the card slot.
- 4、Restore card position.



## 5.2 Device Activation

1. Toggle the switch of the device to activate it. In this state, you can set the device's IP and port as well as the time interval for uploading data via SMS within 5 minutes. After 5 minutes, the device will enter sleep mode. The setting SMS sent in sleep mode will take effect only after the device exits sleep mode.



## 5.3 Install Terminal

1. Before installing the terminal, ensure that the network parameters, working mode and other parameters are configured correctly.
2. Remove the label on the back of the device to detect changes in light sensitivity and generate an alarm (anti-removal alarm).



**Notice :**

**\*If the GPS cannot locate the device for a long time after it is turned on ,**  
please fix the device in a suitable position to ensure good GPS signal reception.

## 6、Function

### 6.1 Standard Features

Function Type	Function Name	Functional Description	Remark
Network connection	Log in	After the terminal establishes a connection with the platform, it needs to send a login package immediately. After receiving the login package, the platform replies with a login response package.	
	Socket connection detection	1 In the logged-in state, the terminal sends a heartbeat packet every 2 minutes. After receiving the heartbeat packet, the platform returns a heartbeat response packet to the terminal. 2 If no valid data is received from the platform within 6 minutes, the terminal will actively close the connection and start reconnecting.	
	Re-connection strategy	After the trip begins, if any abnormal network disconnection occurs, the system will try to reconnect after 6 minutes.	
	Logout	When the terminal enters sleep mode or shuts down, it needs to send a logout	

		packet to the platform and actively close the connection.							
	APN automatic identification	It can automatically identify the APN of mainstream operators around the world.							
	The interactive data between the terminal and the platform can be transmitted in encrypted form.								
	Encryption Algorithm	AES-256 CBC mode							
Data encryption	Key Generation and Synchronization	<ol style="list-style-type: none"> <li>1 The key is generated by the terminal and can be generated randomly or set through PC tools.</li> <li>2 The key must be encrypted before being transmitted to the platform, and the encryption uses the RSA algorithm.</li> <li>3 Before transmitting the key, the terminal requests the RSA public key from the platform, encrypts it and transmits it to the platform. The platform uses the RSA private key to decrypt the key.</li> <li>4 The terminal must apply for an RSA public key at least once before each login.</li> <li>5 RSA public and private keys are generated by the platform.</li> </ol>							
Time calibration	RTC time calibration	<ol style="list-style-type: none"> <li>1 After the terminal is powered on, it sends a login request to the platform and waits for the login response from the platform. It corrects the system RTC time according to the time of the login response packet, or corrects the time through GNSS or base station. After the correction is completed, it starts recording travel data. No travel data is generated before the RTC time is corrected.</li> <li>2 the terminal wakes up (ignition, vibration, alarm) , it first sends a login request to the platform, and corrects the system RTC time according to the time of the login response packet, or corrects the time through GNSS or base station .</li> </ol>							
Location information query	Vehicle roll call	<ol style="list-style-type: none"> <li>1 The terminal receives the "vehicle roll call" command issued by the platform and uploads the GNSS data packet once.</li> <li>2 The terminal receives the "location query" command sent by the preset user's mobile phone number and replies with the location information via SMS.</li> </ol>							
Network fixed upload	GNSS data	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">timing</td> <td>In the trip mode, the terminal collects and uploads GNSS data according to the set collection time interval and upload packet number.</td> </tr> <tr> <td>Distance</td> <td>In the travel mode, the terminal collects and uploads GNSS data according to the set collection distance interval and upload packet number.</td> </tr> <tr> <td>Fixed Angle</td> <td>In the travel mode, the terminal collects and uploads GPS data according to the set collection angle change interval and upload packet number.</td> </tr> </table>	timing	In the trip mode, the terminal collects and uploads GNSS data according to the set collection time interval and upload packet number.	Distance	In the travel mode, the terminal collects and uploads GNSS data according to the set collection distance interval and upload packet number.	Fixed Angle	In the travel mode, the terminal collects and uploads GPS data according to the set collection angle change interval and upload packet number.	Multiple upload methods can be effective at the same time
timing	In the trip mode, the terminal collects and uploads GNSS data according to the set collection time interval and upload packet number.								
Distance	In the travel mode, the terminal collects and uploads GNSS data according to the set collection distance interval and upload packet number.								
Fixed Angle	In the travel mode, the terminal collects and uploads GPS data according to the set collection angle change interval and upload packet number.								

	G-Sensor Data	After the trip begins, the terminal collects and uploads G-Sensor data according to the set collection time interval and upload packet number.	
<b>mileage</b>	The current mileage value is calculated by accumulating GNSS speed.		
<b>Data storage</b>	When the communication network is abnormal or in a communication blind spot, the GNSS data and alarm data need to be stored in the Flash data area, and then uploaded to the platform when the communication network is normal. The data storage adopts circular storage . When the communication network is abnormal or in a communication blind spot, GNSS data needs to be stored regardless of whether GNSS is positioned. When the terminal is not positioned, the date, time, longitude and latitude of the GNSS data in the 0x4001 package are the last valid positioning data, the speed and direction are 0, and the positioning flag is not positioned.		
<b>Driving behavior detection</b>	The terminal uses a built-in 3-axis acceleration sensor to monitor driving behaviors such as sudden acceleration/sudden deceleration/ <b>sharp turn/Quick Lane Changes/</b> collisions in real time and uploads them to the service platform.		<b>No support for sharp turns/Quick Lane Changes</b>
<b>Working mode selection</b>	The terminal supports only the Tracker working mode .		
<b>Ignition on/Ignition off Detection</b>	The terminal combines multiple mechanisms to judge ignition on and ignition off The judgment mechanisms include voltage jump, ACC line, G-Sensor vibration, etc. If the ACC line is connected, ACC will be used first to judge ignition on and ignition off.		
<b>Motion/Standstill Detection</b>		The built-in acceleration sensor detects the movement and stillness of the terminal.	
<b>Terminal sleep</b>		When there is external power, the terminal enters sleep mode after detecting that the engine is turned off. When there is no external power, inactivity is detected and the terminal enters sleep mode. 1 Before entering sleep mode, if there is data to be re-uploaded in the Flash, the re-upload time is up to 5 minutes. 2 According to the set time, GPRS/GSM/GNSS is turned off with delay, and platform instructions or SMS instructions can be responded to during the delay waiting period. 3 In the sleep state, the terminal wakes up regularly, detects the voltage, and determines whether there is a ignition event. 4 In sleep mode, it will detect and report low voltage, vibration, towing and other	235M does not support towing Dormant reporting uses 4001

		<p>alarms. The time for uploading alarms is less than 5 minutes (including login, logout, etc.). If you have not logged in to the platform within 5 minutes, you will no longer be logged in.</p> <p>5 In sleep mode, the device wakes up and uploads GNSS information according to the set time interval. The upload time is less than 5 minutes, including positioning, login, and logout.</p> <p>6 The sleep mode wake-up sources include: RTC , G-Sensor interrupt .</p>	
Charging Management		<p>1 When there is external power, the built-in battery is charged through external power. If the battery voltage is detected to be lower than 3.7V, charging will start. If it is detected that charging is completed, charging will be stopped. The built-in battery will only be charged after ignition is detected.</p> <p>2 The built-in battery is charged by an external charger with a charging voltage of 5 V.</p>	
External power and internal battery monitoring		The bit information uploaded in real time contains real-time voltage or power.	
Terminal internal temperature monitoring		Upload real-time temperature along with positioning information.	
APN automatic identification		Built-in global APN list, automatically identifies operators and their APN based on SIM card information, and the APN list can be updated via PC-Tool.	
Territory Management		Can set, query and delete areas, support up to 64 circular areas or rectangular areas ( requires platform support )	
System operation monitoring data		The system operation monitoring data is 8 bytes and is stored in STAT_DATA .	
Police incidents and events	Ignition on Event	The ignition event is triggered when the engine ignition is detected.	
	Ignition off event	Detection of engine stall triggers a stall event.	
	Speeding alarm	The alarm is triggered when the vehicle speed exceeds the set threshold. The alarm information includes the instant vehicle speed and alarm threshold when the alarm occurs.	Trigger/eliminate report
	Low power alarm	It is triggered when the voltage is lower than the set threshold. The alarm information includes the instantaneous voltage and alarm threshold when the alarm occurs.	Trigger/eliminate report

	Built-in battery low voltage alarm	The built-in voltage is triggered when it is lower than the set threshold. The alarm information includes the instantaneous voltage and alarm threshold when the alarm occurs.	Support when external power is disconnected
	Hard acceleration alarm	The alarm is triggered when the forward acceleration is higher than the set threshold. The alarm information includes the instant acceleration and alarm threshold when the alarm occurs.	Trigger report
	hard brake alarm	The alarm is triggered when the reverse acceleration is higher than the set threshold. The alarm information includes the instant acceleration and alarm threshold when the alarm occurs.	Trigger report
	crash Alarm	Forward (backward) acceleration/lateral acceleration , combined with time and threshold judgment .	Trigger report
	Vibration alarm	When the engine is off (stationary) , it is triggered when the acceleration is greater than the set threshold.	Trigger report
	Towing alarm	the off (stationary) state, it is triggered when the vehicle's tilt angle changes by more than 15° for 3 minutes.	Not supported
	Power-on alarm	The terminal starts when it is connected to external power or the battery switch is turned on .	Trigger report
	Power-off alarm	Triggered when the external main power is lower than 5V.	
	Area alarm	Supports up to 6 4 circular or rectangular areas, triggered when entering or leaving the area. ( Platform support required )	Trigger report
	SOS alarm	SOS When the button is pressed for more than 2 seconds, the emergency alarm is triggered.	Triggering the report requires the support of the SOS button accessory. The sleep state takes longer, adding 1-2 seconds
	Fatigue Driving alarm	1 Triggered when the continuous driving time exceeds the set threshold, the alarm information includes the fatigue driving time and the alarm threshold. 2 Definition of continuous driving time: the sum of driving time between adjacent parking and rest periods that last more than 20 minutes. Rest time that does not	

		exceed 20 minutes is classified as continuous driving time.	
	User alarm	If the user's mobile phone number is set and the SMS alarm function is turned on, the alarm information will be sent to the user's mobile phone via SMS when it is uploaded to the platform.	
	Alarm rules	<ol style="list-style-type: none"> <li>1 After an alarm is generated, if the network is disconnected, the alarm will be stored first and then uploaded when the network is restored. It can be uploaded up to 3 times with an interval of 5s.</li> <li>2 Low voltage alarm, high water temperature alarm and fatigue driving alarm can be reported across trips.</li> </ol>	
	Alarm prompts in Chinese and English	<ol style="list-style-type: none"> <li>1 OBD123456, 点火! OBD123456, ignition on!</li> <li>2 OBD123456, 熄火! OBD123456, ignition off!</li> <li>3 OBD123456, 超速! (30KM/H) OBD123456, speeding!(30KM/H)</li> <li>4 OBD123456, 低电压! (9.6V) OBD123456, low power!(9.6V)</li> <li>5 OBD123456, 电池电压低! ( 3.6V ) OBD123456, low battery !( 3.6V )</li> <li>6 OBD123456, 急加速! (0.5g) OBD123456, hard acceleration! (0.5g)</li> <li>7 OBD123456, 急减速! (0.5g) OBD123456, hard brake!(0.5g)</li> <li>8 OBD123456, 急转弯! (0.5g) OBD123456, sharp turn!(0.5g)</li> <li>9 OBD123456, 急变道! (0.5g) OBD123456, quick lane change!(0.5g)</li> <li>10 OBD123456, 碰撞! (0.5g) OBD123456, crash!(0.5g)</li> <li>11 OBD123456, 震动! (0.1g)</li> </ol>	<p>The device over-temperature alarm is not currently supported</p>

		<p>OBD123456, vibration!(0.1g)</p> <p>12 OBD123456, 疲劳驾驶! (240Min)</p> <p>OBD123456, fatigue driving!(240Min)</p> <p>13 OBD123456, 紧急报警!</p> <p>OBD123456 , SOS !</p> <p>14 OBD123456, 上电!</p> <p>OBD123456, device power on!</p> <p>15 OBD123456, 断电!</p> <p>OBD123456, device power down!</p> <p>16 OBD123456, 拖吊!</p> <p>OBD123456, towing!</p> <p>17 <b>OBD123456, 设备温度过高!(80 °C )</b> <b>OBD123456, device high temperature!(80 °C )</b></p> <p>The license plate number can be replaced according to the different settings , and the alarm value in brackets can be replaced according to the different alarm values.</p>	
Terminal management and maintenance	Restore factory settings	<p>When setting the serial port, all parameters except the terminal serial number, IMEI code, mileage and date are restored to factory settings, and the SMS maintenance key is restored to the last 6 digits of the serial number.</p> <p>When setting up the platform, all parameters except the terminal serial number, IMEI code, network parameters, mileage, and date are restored to factory settings, and the SMS maintenance key is restored to the last 6 digits of the serial number.</p>	Serial port settings, platform settings
	Query the device software version	EV-228QB_S V1.0.0	Serial port reading, platform reading
	Query the device hardware version	EV-228QB_H V1.00	Serial port reading, platform reading
	Terminal serial number	The terminal serial number is up to 20 digits long. The terminal serial number setting function is only used for production and is not open to users in principle.	Serial port settings, serial port reading Platform

			Reading
IMEI code	15-digit mobile device identification code, uniquely identifies the communication module, can only be read but not set.		Serial port reading, platform reading
IMSI code	The mobile user identification code is no more than 15 digits and is stored in the SIM card. It can only be read but not set.		Serial port reading, platform reading
ICCID	20-digit SIM card identification code, can only be read, cannot be set		Serial port reading, platform reading
Phone Book	5 user mobile phone numbers can be set to receive SMS alarms .		Serial port settings, serial port reading Platform settings, platform read
Terminal language category	The language type of SMS alarm information, Chinese or English, the default is English.		Serial port settings, serial port reading Platform settings, platform read
SMS Maintenance Key	The SMS maintenance key defaults to the last 6 ASCII characters of the terminal serial number. This parameter is used for SMS maintenance commands.		Serial port settings, serial port reading Platform settings, platform read
License plate number	The default value is "OBD", and the maximum length is 25 characters.		Serial port settings, serial

							port reading Platform settings, platform read
Alarm parameters	name	Default Threshold	Threshold range	Alarm switch	Sound switch		Serial port settings, serial port reading Platform settings, platform read
	ignition on	-	-	Open	closure		
	ignition off	-	-	Open	closure		
	speeding alarm	120km/h	<300km/h	Open	closure		
	Low power alarm	11.5V	9-36V	Open	closure		
	Low battery alarm	3.7V	3-4.5V	Open	closure		
	Hard acceleration alarm	0.4g	0.2-0.8g	Open	closure		
	hard brake alarm	0.6g	0.3-1.0g	Open	closure		
	Sharp turn alarm	0.5g	0.3-0.9g	Open	closure		
	quick lane change alarm	0.4g	0.2-0.8g	Open	closure		
	Vibration alarm	0.05g	0.03-0.2g	Open	closure		
	crash Alarm	1.5g	1.0-2.0g	Open	closure		
	Towing alarm	-	-	Open	closure		
	device power on alarm	-	-	Open	closure		
	device power down alarm	-	-	Open	closure		
Network parameters	SOS Alarm	-	-	Open	closure		Serial port settings, serial port reading
	Fatigue driving alarm	240min	1-480min	Open	closure		
	device high temperature alarm	60 °C	0 ~ 100 °C	closure	closure		
	Area alarm	-	-	-	-		
	Parameter name	Default Settings		Setting Range			
	Dial method	Domain dialing		IP/Domain dialing			Serial port settings, serial
	domain name	service.easytaxi.hk		Maximum length: 50 bytes			

		IP address	47.243.112.208	-	port reading Platform settings, platform read SMS settings, SMS reading
		Port Number	22122	-	
		APN	null	Maximum length is 50 bytes	
		APN Username	null	Maximum length is 50 bytes	
		APN User Password	null	Maximum length is 20 bytes	
		Second server function switch	closure	On/Off	
		Secondary Server - IP address or domain name	null	Maximum length is 50 bytes	
		Second server-port number	null	0 - 65535	
		A-GNSS function switch	Open	On/Off	Serial port settings, serial port reading Platform settings, platform read
		A-GNSS Download Link	http://eugw.litguardian.com:1888/	Maximum length is 64 bytes	
BT Parameters		Parameter name	Default Settings	Setting Range	Serial port settings, serial port reading Platform settings, platform read
		B T switch	Open	On/Off	
		MAC Address		6 bytes	
		BT Name	SMBLE-XXXXXX	Maximum length is 32 bytes	
		BT pairing key	0000	Maximum length is 6 bytes	
Working Parameters		Parameter name	Default Settings	Setting Range	Serial port settings, serial port reading Platform settings, platform read
		GNSS scheduled upload switch	Open	-	
		GNSS collection time interval	30s	1-600s	
		GNSS fixed distance upload switch	closure		
		GNSS collection distance interval	500m	50-5000m	

	GNSS fixed angle upload switch	Open		
	GNSS acquisition angle change interval	20°	5-90°	
	Number of GNSS upload packets	1 pack	1-30 packs	
	G-Sensor upload switch	Open	-	
	G-Sensor collection time interval	1000ms	200-6000ms	
	Number of G-Sensor upload packets	100 packs	50-100 packs	
	Working Mode	Tracker Mode	Passenger car/commercial vehicle/Tracker mode	
	Mileage	-	0-0xffffffff	
	SMS alarm switch	closure	-	
	Device time	-	-	
	Voltage start threshold (12V)	13V	12-14V	
	Voltage start threshold (24V)	26V	24-28V	
	Sleep upload switch	Open	-	
	Sleep upload interval	60min	10-1440min	
	GPRS delay off switch	closure	-	
	GPRS delay off time	60min	5-120min	
	GSM delay off switch	closure	-	
	GSM delay off time	720min	5-7200min	
	GNSS delay off switch	closure	-	
	GNSS delay off time	720min	5-7200min	
Firmware Upgrade	firmware upgrades through PC tools, platforms , and SMS . The original parameter settings should be maintained after remote upgrades through the platform.			Serial port upgrade, platform upgrade SMS upgrade

## 7. Technical specifications

### 7.1. USB interface

Interface Type	Pinout	Function Definition
	1	+5V ( USB_5V_OUT )
4P magnetic suction	2	USB_DM
	3	USB_DP
	4	G

### 7.2 SIM card interface

Interface type: Micro-Sim, flip-top

### 7.3 I/O Definition of an I/O interface

Interface Type		1x12P connector	
PIN	Definition	PIN	Definition
1	VIN	7	RELAY/DOUT1
2	ACC/DIN	8	GND

3	DIN2/AIN1	9	RS485A
4	DIN3/AIN2	10	GND
5	DOUT3	11	RS485B
6	DOUT2	12	VOUT

#### 7.4 Indicator Lights

Indication type	color	Working status	Remark
LTE	blue	Flashing quickly (on for 0.5s, off for 0.5s): No SIM card detected or no network registered Slow flashing (on for 0.5s, off for 2.5s): Registered with the network Always on: Successfully logged into the service platform Off: LTE is off	
GNSS	green	Flashing (on for 1s, off for 1s): GNSS signal is good Steady on: Searching for GNSS signals Off: GNSS off	
Power	red	Flashing quickly (on for 0.5s, off for 0.5s): Normal operation, continuous reporting Slow flash 1 (on for 1 s, off for 1 s): Sleep charging Slow flash 2 ( on for 1 s, off for 4 s ): low battery voltage Steady on: Sleep charging is complete Off: Sleep	

## 8、Disclaimer

The user manual only applies to T-235M device.

The GPS function may be affected in electromagnetic shielding area or bunker place.

The device has a built-in cellular module. It should be used as far as possible away from fuel depots, chemical plants and other areas could cause an explosion. Most sensitive to external RF sites (such as gas stations, hospitals and school, etc.) may be equipped with radio frequency jamming equipment; some functions may be affected in the interference area.

As the device transmits data via cellular, please use the SIM card which supports data service and make sure that the account balances is sufficient. Do not use any SIM card which is restricted by region.

To make sure the products works well, please use the original accessories.

This manual is based on the “as-is” situation. Sinocastel will not guarantee the accuracy, reliability and content of the handbook. Also Sinocastel reserves the right to amend or withdrawn this manual without any prior notification.

## 9、Installation requirements

1. The device should be installed firmly in a concealed and moisture-proof place. At the same time, the installation needs to avoid the high temperature area (such as: car exhaust pipe) and away from the magnetic field (such as: car CD, speaker, car computer, etc.). In addition, considering that the GPS antenna is located within the device, it should be noted that the device should not be placed under any metal object or metal explosion-proof film.
2. Attach the device to the surface of the object and clean the surface before attaching the Velcro. Or attach the device to the body using random magnets.

## 10、troubleshooting

When a problem occurs, you can follow the solutions below to troubleshoot. If the problem persists, please contact us immediately.

Common Issues	Possible Causes	Solution
Poor signal	The device is used in an area where radio waves are hard to reach, such as near high-rise buildings or in abasement.	Try it in a place where Satellite signals can be well received .

Power-on failure	Battery switch is not set to ON.	Slide the battery switch to ON.
	The battery is exhausted	Charge the battery
Failed to access the network	The SIM card may be attached improperly.	Check the SIM.
	The metal side of the SIM The card is stained.	Wipe it with a clean cloth
	The SIM is invalid.	Please contact your net work service provider
	The device is out of service areas.	Try it in a service area
	The signal is extremely weak.	Try it in an area with strong signals.
Failed to query a location	The SIM is not activated with data service.	Please contact your net work service provider and activate the data service.

## 11、Warranty

If product got quality problem within the warranty period, please bring the product together with a valid warranty card and purchase invoice to the dealer for checking. Please do not disassemble this product, this may result in damage, Sinocastel will not be responsible for those problem.

1 year of warranty since purchase time and life-long maintenance. For Failure or damage due to incorrect operation or not following the instruction, Sinocastel will provide paid maintenance within warranty period.

User name: \_\_\_\_\_

Contact number: \_\_\_\_\_

Address: \_\_\_\_\_

Post code: \_\_\_\_\_

Purchasing date: \_\_\_\_\_

Serial number: \_\_\_\_\_

Remark: \_\_\_\_\_

Please keep this card carefully in order to better serve you.

Distributor (Company Chop):

### Maintenance Records

Product Model:

Date	Faults and maintenance of records		Maintenance (Signature)	User (Signature)
	Fault Description	Maintenance		

Note: This form must be carefully completed.

## 12、Statement

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