

Wireless intelligent instrument

Monitoring terminal

User manual

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1 Safety Guide

1.1 Security icon

In order for you to better apply this instruction and ensure your safety when debugging, operating and repairing this instrument, please note the following symbols:

symbol	The slogan	commentary
 warning	warning	A warning is an operation or procedure that, if improperly performed, can result in personal injury or safety. Please strictly abide by the rules and operate with care.
 Pay attention to	Pay attention to	If an operation or procedure is not performed properly, it can result in equipment operation failure or equipment damage. Please strictly follow the specification.
 prompt	prompt	If an operation or procedure is not performed properly, it will indirectly affect the operation of the device or trigger an unexpected response in a part of the device.

1.2 Safety Precautions

 prompt	<ol style="list-style-type: none"> 1、 The design of the equipment meets the advanced safety requirements, passing the factory test, the operation is safe and effective when leaving the factory. The equipment complies with relevant regulations and standards. 2、 The equipment manufacturer reserves the right to change the technical parameters without prior notice. 3、 Permitted storage, transportation and operating temperatures must be observed.
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| | <p>4、 The information contained in the warning signs, nameplates, and wiring diagrams attached to the device must be followed.</p> |
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1.3 Range of application

- ✓ The equipment is mainly used in water supply, drainage, fire water system, natural gas, oil pipelines related remote monitoring applications.



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| | <p>1、 Except for the scope of application specified in this manual, any other scope of application may pose a threat to the safety of personnel and the entire measurement system, and shall not be used.</p> <p>2、 The manufacturer shall not be liable for damage caused by improper operation or non-specified use.</p> |
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1.4 Install and debug operations



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| | <p>1、 The equipment can only be installed, connected, debugable and maintained by trained qualified professionals (such as electricians), and shall comply fully with the provisions of the User Manual, relevant application specifications, laws and regulations, and shall have the corresponding qualification certificates (related to the application conditions).</p> <p>2、 Before installing the equipment, the installer must read the User's Manual and understand and abide by the provisions therein.</p> <p>3、 The equipment shall not be modified or repaired unless</p> |
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	permitted by the User's Manual.
	4. Repairs to the equipment must be carried out with explicit permission and the use of the original spare parts.

2 An overview of the

IOT pressure temperature liquid level monitoring Terminal (hereinafter referred to as IOT monitoring terminal) is a low-power intelligent instrument with wireless communication power consumption. Relying on a mature NB-IoT (Narrow Band Internet Of Things) network, it can realize the wireless transmission Of field instrument data to cloud platform and mobile phone clients. The product can set pressure/temperature unit, range zero/range full, high/low alarm value, fluctuation threshold, upload time and other parameters on the terminal via USB, or remotely customize collection frequency through the cloud platform to view real-time data and historical data online, so that customers can accurately and timely grasp the on-site information.

The instrument adopts large capacity lithium battery to provide stable and reliable power supply for the product, making it run safely for more than 6 years (upload once per hour). Independent research and development of low power consumption system, not only can through the LCD screen to provide users with field data, but also can upload data through wireless module, the data even grafting to the user's own cloud platform, powerful control algorithm make the instrument signal automatic breakpoint continuingly, working mode switching and pressure fluctuations in real time the alarm, a key practical functions such as wake up.

2.1 Product features

Patent structure for wide application

The instrument orientation is optional at 330 degrees to better meet the installation requirements

Intelligent sensing, combined measurement

Intelligent combination of multiple sensors;

Multi-sensor combination for pressure, liquid level, temperature and humidity

Intelligent combination of sensors and cloud platform data

Mobile platform, cloud operation

Mobile APP, real-time data monitoring, real-time and remote configuration

Big data cloud platform, real-time status analysis and prediction, physical examination at

any time, real-time maintenance

The product specifications and models are as follows:

Internet of Things Intelligent pressure sensor selection table					
type	A subclass	Precision grade	Pressure type	range	Additional information
TP2401	V1.0	A	2	1.6 M	AA (AA and AF standing stock)
	V1.0: Waterproof, NBIOT	A: 0.5 on the Richter scale are unlikely	2: gauge pressure	1.6 M: 0-1.6 Mpa 2.5 M: 0-2.5 Mpa	AA: M20x1.5 male thread
	V1.0-ex: Explosion-proof, NBIOT	B: 0.25 on the Richter scale are unlikely	3: absolute pressure	600 k: 0-600 kpa 10 k: 0 to 10 kpa	AB: M16x1.5 male thread
	VL: Waterproof, LORA				AC: M14X1 male thread
	VI-ex: Explosion-proof, LORA				AD: M12X1 male thread
	V4.0: Waterproof, 4G				AE: G1/2 male thread
	V4.0-ex: Explosion-proof, 4G				AF: G1/4 male thread
					AG: G3/8 male thread
					AH: 1/2"NPT male thread
					AM: 1/4"NPT male thread
					AN: 1/8"NPT male thread
					A0: 3/8"NPT male thread
					CQ: Measure hydrogen pressure
					FC: strike
					GA: Four times overload pressure
					FZ: vibration

					GZ: other
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Internet of Things Intelligent temperature sensor selection table				
type	A subclass	Precision grade	Temperature measurement range	Additional information
TP2402	V1.0	A	- 200 ~ 200 °C	AA (AA and AF standing stock)
	V1.0: Waterproof, NBIOT	A: 0.5 on the Richter scale are unlikely	Split type - 200 ~ 860 °C	AA: M20x1.5 male thread
	V1.0-ex: Explosion-proof, NBIOT	B: 0.25 on the Richter scale are unlikely		AB: M16x1.5 male thread
	VL: Waterproof, LORA			AC: M14X1 male thread
	V1-ex: Explosion-proof, LORA			AD: M12X1 male thread
	V4.0: Waterproof, 4G			AE: G1/2 male thread
	V4.0-ex: Explosion-proof, 4G			AF: G1/4 male thread

Internet of Things Intelligent level sensor selection table				
type	A subclass	Precision grade	Measuring range	Additional information
TP2403	V1.0	A	0-2 meters	
	V1.0: Waterproof, NBIOT	A: 0.5 on the Richter scale are unlikely	2 m: 0 to 2 m 4 m: 0 to 4 m 6 meters: 0 to 6 m	
	V1.0-ex: Explosion-proof	B: 0.25 on the Richter	8 m: 0 to 8 m 10 meters: 0	

	f, NB-IoT	scale are unlikely	to 10 m Other range	
	VL: Waterproof, LORA			
	V1-ex: Explosion-proof, LORA			
	V4.0: Waterproof, 4G			
	V4.0-ex: Explosion-proof, 4G			

Intelligent TDS sensor Selection Table for Internet of Things

type	A subclass	Precision grade	Measuring range	Additional information
TP2404	V1.0	A	0-2000PPM	
	V1.0: Waterproof, NB-IoT	A:2%	0-2000PPM	
	V1.0-ex: Explosion-proof, NB-IoT			
	VL: Waterproof, LORA			
	V1-ex: Explosion-proof, LORA			
	V4.0: Waterproof, 4G			
	V4.0-ex: Explosion-proof, 4G			

Internet of Things intelligent temperature and humidity sensor selection table

type	A subclass	Precision grade	Measuring range	Additional information
TP2407	V1.0	A	0-100%; -40 ~ 80 °C	

	V1.0: Waterproof, NB-IOT	A:3% temperature, $\pm 0.5^{\circ}\text{C}$	0-100% - 40 ~ 80 $^{\circ}\text{C}$	
	VL: Waterproof, LORA			
	V4.0: Waterproof, 4G			

2.2 Data upload

2.2.1 Transmission interval

The upload time interval is the time interval for the instrument terminal to upload data regularly. This option includes 2min~1440min for the user to combine the actual demand and the product battery life Settings.

2.2.2 Fluctuation threshold

The function is to provide users with because of the pipe network pressure fluctuations beyond the threshold to the user push alarm information, real time control of the network to the user stress status, meter terminal menu you can set the pressure fluctuations of fluctuation threshold threshold, when the sampling pressure value and the last time the difference between the pressure of the fluctuations of the absolute value is greater than the setting threshold, will generate alarm, whereas less than or equal to does not generate alarm, if there is alarm last time, the fluctuation alarm condition has not been achieved, the alarm message will be removed.

2.2.3 Low alarm value

This function is to provide users with the monitoring function of pipe network under

pressure. When the pressure ratio menu of this test is set to pressure hour, alarm information will be triggered; on the contrary, if it is greater than or equal to, the last low report alarm will be cleared.

2.2.4 High alarm value

This function is to provide users with the monitoring function of pipe network overpressure. When the pressure in this test is higher than the pressure set in the menu, alarm information will be triggered. On the contrary, if it is less than or equal to, the last high alarm will be cleared.

2.2.5 Online data

Online data refers to the real-time data that can be seen in the cloud platform or APP. For example, when a user selects 5min to upload data, online data refers to the latest data collected every 5min seen by the cloud platform, uploaded to the cloud platform, and stored in real-time history.

2.2.6 Offline data and reissue

Offline data refers to the caching of field data when the device cannot upload data to the network normally. When the device fails to upload data, the device will cache the field data periodically according to the set upload time interval, and upload the cached offline data after the device's network condition is restored. In general, if the data is uploaded once an hour, offline data can be stored for 3-4 months without network.

2.2.7 The alarm information

ALM1: It is detected that the current real-time pressure value is higher than the high alarm value set in the menu, and sends high alarm information to the cloud platform

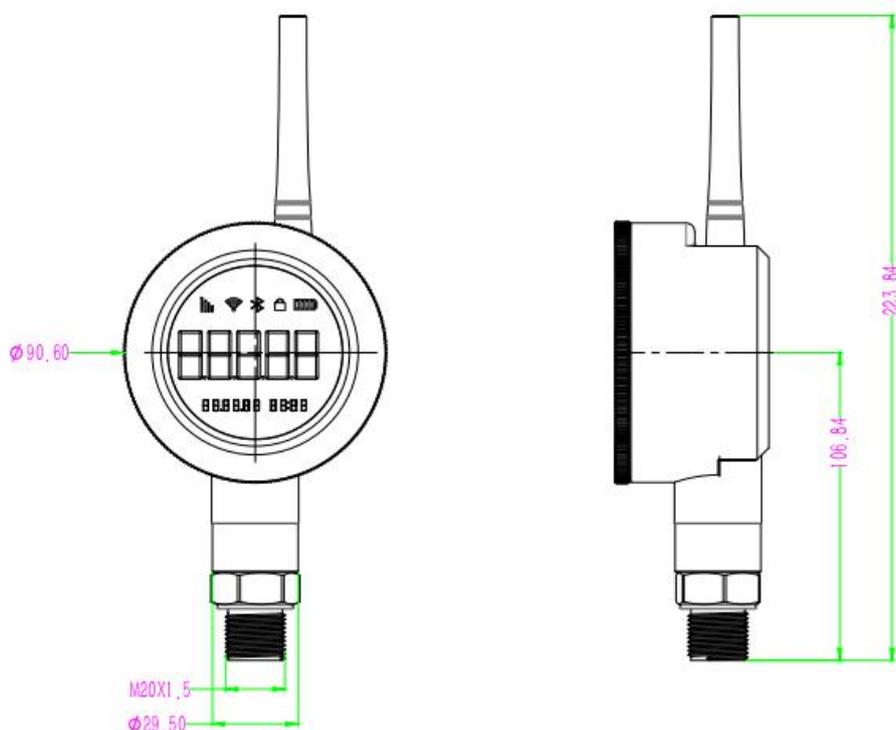
ALM2: Detects that the current real-time pressure value is lower than the low alarm value set in the menu, and sends low alarm information to the cloud platform

Wave warning: cloud platform or mobile APP can be checked

ERROP: When IOT monitoring terminal displays values that exceed the IOT monitoring terminal's display range, the first row of IOT monitoring terminal displays the word "999.99."The user can eliminate this alarm by changing the pressure unit to a larger unit.

3 The installation

3.1 Overall dimensions



Note: The sensor length is determined according to the user's actual selection

Figure 1: IOT pressure and temperature monitoring terminal Dimensions (Waterproof)

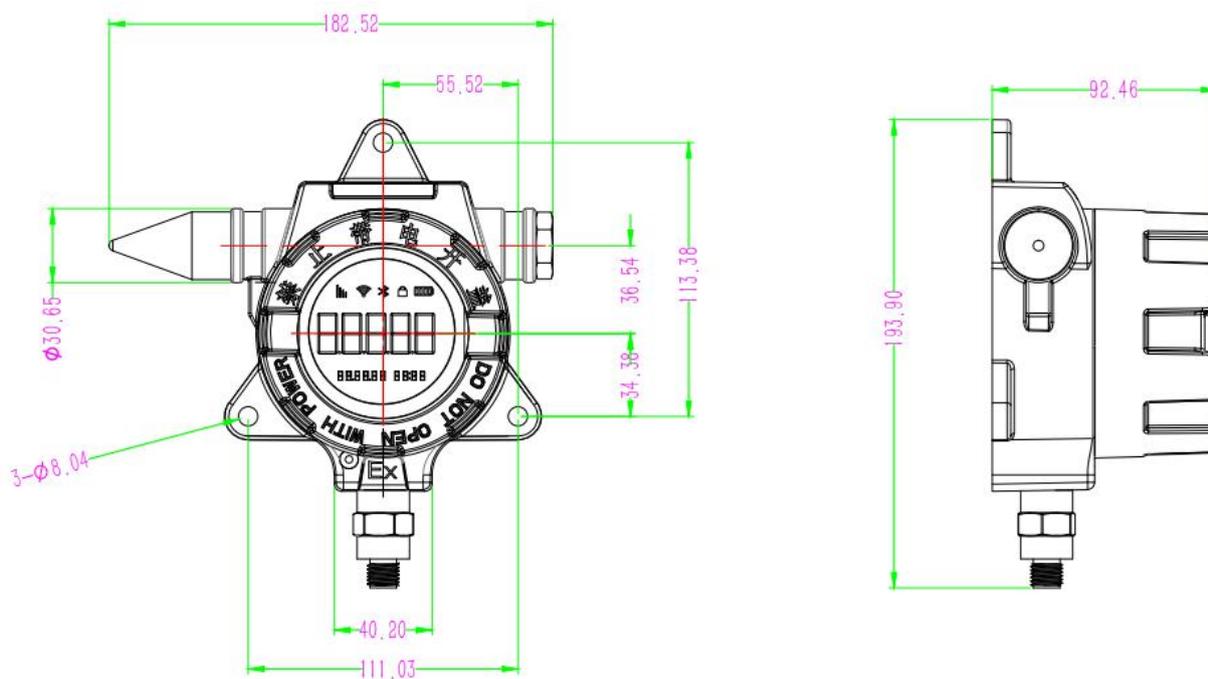


Figure 2: IOT pressure and temperature monitoring Terminal Dimensions
(explosion-proof)

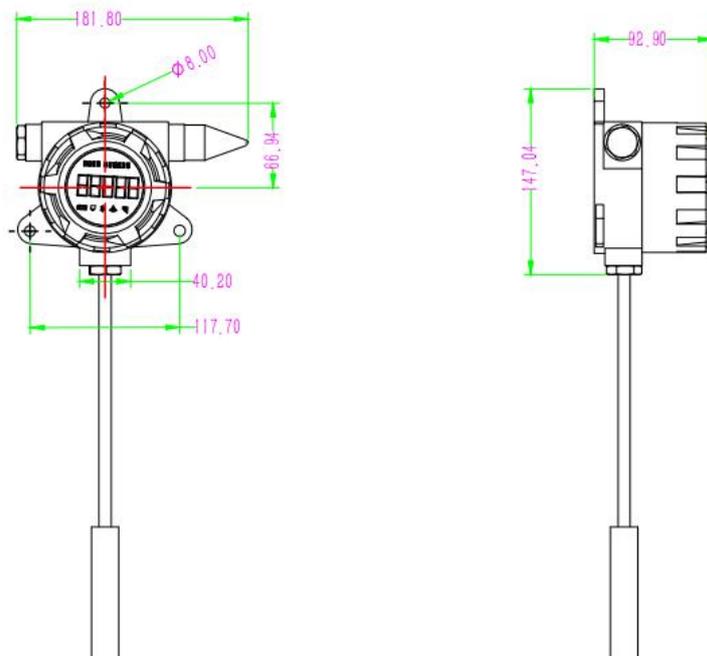


Figure 3: IOT liquid level monitoring Terminal Dimensions (explosion-proof)

3.2 Installation Precautions

The display housing can rotate about 330 degrees without affecting the performance and internal wiring. The installation is shown in the following figure:

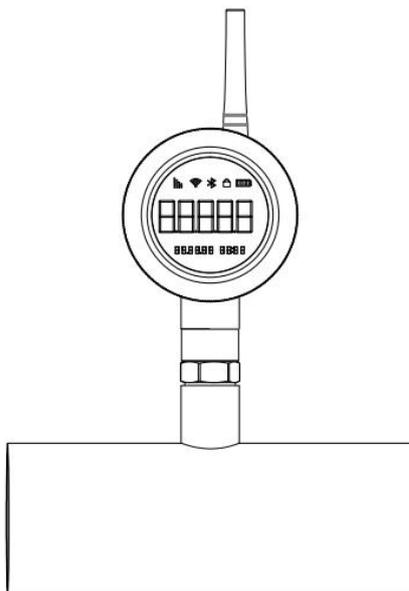


Figure 4: IOT pressure and temperature monitoring terminal Installation Diagram
(Waterproof)

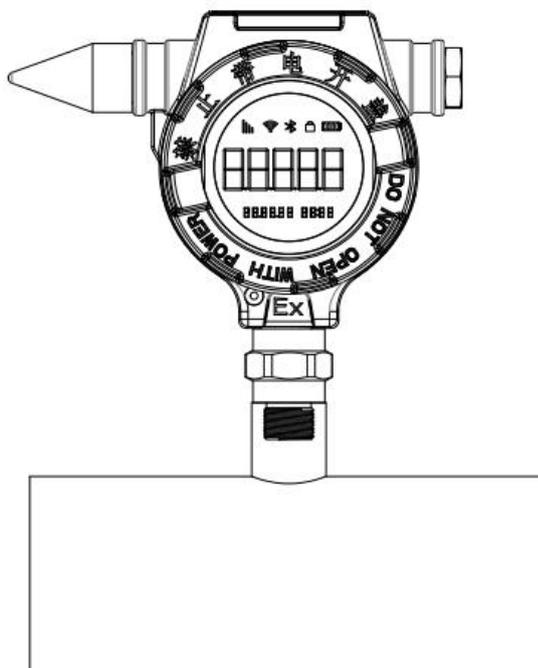


Figure 5: IOT pressure and temperature monitoring terminal Installation Diagram
(explosion-proof)

 Pay attention to	<ol style="list-style-type: none"> 1、 The sensor part is not forced to rotate, the maximum torque is 230N.M, and the influence amount of electronic circuit connection and output display reaches the minimum; 2、 Please use the wrench to twist the hexagon nut part during installation to avoid twisting the watch head to distort the structure of the watch.
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In order to install the piped smart meter correctly, the following points must be followed:

1. The pressure piping should be as short as possible and avoid sharp bending.
2. The installation slope of the pressure drawing pipe shall not be less than 1:12, so as not to cause precipitation.
3. The pressure line must be blown with compressed air, preferably washed with the tested medium, before being connected to the transmitter.
4. If the medium is liquid, vent the pressure line thoroughly.
5. The piping shall be arranged so that bubbles in the measured liquid or deposits in the measured gas can flow back into the process piping.
6. No leakage shall be allowed during installation of piping.
7. Please refer to IOT Intelligent Instrument Wall Mounting Instructions for installation.

 war ning	<p>To ensure the safety of operators as well as the plant, it is important that the installation is carried out by professionally trained personnel according to the technical data of the model.</p>
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4 debug

4.1 Keys and instructions

Opening the front cover of the watch head, the IOT monitoring terminal is configured with a mechanical button. The operation mode is divided into point pressing and long

pressing, which are explained as follows:

- 1) Click, press the button and then release, the button will spring up;
- 2) Long press, press the button for about 5 seconds and then release;

IOT monitor terminal panel all operations by the above button.

In addition, IOT monitoring terminal provides shutdown function. By pressing for about 5 seconds and then releasing, the IOT monitoring terminal will be shut down. In this state, the IOT monitoring terminal has the lowest power consumption but stops pressure collection and uploading. To exit the shutdown state, press for about 5 seconds and then release.

4.2 networking

Standard products have been connected to SMARTMETER's intelligent cloud platform. For the domestic version, you can add the device by scanning the two-dimensional code on the table with your mobile phone WeChat. For the overseas version, you need to download the APP and log in the account and password of the product, and then you can see the corresponding device. IOT monitoring terminal will connect to the Internet and send data according to the time interval set by the user. Once the data is successfully sent, it will display the temperature visually by pressing the button and automatically jump to display the pressure value. If the table fails to access the network after several attempts, the table will enter the low-power mode (the table will normally collect data), and the wireless icon will disappear from the screen.

4.3 Remote monitoring

Domestic version of the customer can directly use their phones to scan qr code on the meter (except LORA version), according to the prompts to register account, and then again WeChat qr code scanning equipment, can add equipment to the personal account, and realizes the remote monitoring, alarm equipment, such as remote configuration function, if you need the APP please refer to the overseas version of the instructions to download the APP.

Please scan the QR code of the corresponding APP with your mobile browser or the phone's own qr code scanning function, and login the account and password of the product directly. The APP supports switching between Chinese and English. Please switch according to your specific requirements.



Qr Code download for IOS APP (above)



Download QR Code from Android APP (above)

For computer users, please use your browser to log in to web.tline.io. Best use browsers: Google Browser, 360

Browser, Microsoft Edge

4.4 Install THE SIM card (* Do not ensure that the internal communication line is intact when opening the dial)

Domestic version of the standard SIM card when delivery, do not need to install the SIM card, simply operation, overseas edition users need to be dealt with in the local operators corresponding to the SIM card, and then to install, install the SIM card when the need to open the front cover, use the screwdriver to remove the dial of the 4 screws, gently remove the dial, can be seen on the back of the dial SIM card slot, installation fastening card after install the SIM card slot, and installed dial, installed after the SIM card, please restart your device.

4.5 Replace the battery

During normal shipment, the instrument has been equipped with standard battery. If the battery needs to be replaced, take out the dial, remove the battery fixing bracket and unplug the battery, take out the battery and replace it with a new one. Please choose the same type of battery and confirm whether the positive and negative electrodes of the battery are correct.

4.6 Modify key information such as remote IP address

Instrument, the delivery have been complete the configuration, such as more options for configuration, such as equipment remote server address and port number, or SIM card APN information such as account passwords, to contact billiton company technical support, or log in website www.toprie.com to download TP assistant configuration tool, please contact technical support, detailed configuration way please change under the technical guidance, in order to ensure the normal communication of instrument.

5 Transportation and storage

5.1 transport

After calibration, the instrument is packed in a carton (GB/T 13384-2008) to protect against damage.

5.2 storage

IOT monitor terminal will be placed clean, dry, and cool (preferably at +20 degrees or lower, but not more than +30 degrees) after shutdown.

5.3 Product identification

Product nameplate identification includes serial number, range, accuracy level, date of manufacture and other relevant information.

Important: Be sure to provide the meter serial number when inquiring

6 The warranty

Thank you for choosing IOT pressure and temperature monitoring terminal developed and manufactured by our company. This user manual records how to use this product correctly and safely. In order to prevent the damage of the instrument and give full play to the best performance and stable

- ✧ After reading this manual, please keep it properly and keep it with the meter.
- ✧ Please submit this manual to the end user technical department for preservation.
- ✧ The importance levels of the main safety items in this manual are classified by risk attention.

Pay



Failure to heed the warning may result in personal injury or damage to the instrument and other property.

dang



If this prompt warning is ignored and the wrong operation is carried out, it may cause personal injury or serious safety accident.

7 Fault diagnosis and troubleshooting

If there is an abnormal condition in the device, follow the following steps to remove it.

If the following steps do not resolve the problem, please contact the supplier.

Appendix Troubleshooting

The fault	To rule out
Data can be received by the operator's cloud platform, but not by the user's	Check to see if the operator's IP points and certificates are correct

private cloud	
The operator cloud platform does not receive data	<ol style="list-style-type: none"> 1) IOT monitor terminal menu server selects the cloud platform correctly 2) Is IMEI correctly registered on the operator platform 3) Telecom Cloud platform PROFILE and plug-ins are deployed correctly 4) IOT monitor terminal whether there is a signal, usually a signal value higher than 10DBM 5) Please check whether the IOT monitor terminal operating temperature is too low or too high 6) IOT will monitor whether the signal icon on the terminal screen disappears. If the signal disappears, it will take 5-15 minutes for the terminal to restart or wake up an alarm to report the data <p>If you do not receive the data, please check whether the TERMINAL operator SIM card is in arrears (usually no).</p>
Parameter cannot be set. Error appears on screen	If the unit switching data is too large or the setting parameters are unreasonable, please refer to the relevant section
Users upload more data on private cloud platforms	IOT monitoring terminal signal is unstable due to data retransmission. Please check user environment signal
User private cloud platforms upload less data	When the OT monitoring terminal signals are poor and the data link is disconnected, the terminal will transfer the uploaded data to the offline data. If the next connection is successful, the real-time and offline data will be subcontracted and uploaded

8 The warranty

- The product is under warranty for 12 months from the date of delivery, the battery is not included. During the warranty period, if you find any problem with the product, please contact us in time. If it is a product quality problem, we will repair it free of charge. If it is a product quality problem, our quality inspection department will faithfully determine it after inspection.
- No user can repair the parts by himself. In case of failure, please take good care of the faulty products and contact us in time to explain the failure phenomenon, use environment and conditions. We will solve the problem in time. Never repair by yourself.
- After the expiration of the service life of the product or due to too frequent data transmission, the internal battery will be too low. Users can tell whether the battery needs to be replaced by the cloud alarm or according to the service life of the instrument. As the instrument contains precise circuits, please complete the battery replacement through the manufacturer or under the guidance of the manufacturer.
- The following circumstances are not included in the free maintenance:
 1. Failure to install and use according to the requirements of this user manual may result in man-made damage to the product.
 2. The user repairs or modifies the product.
 3. The product sign is missing and the appearance of the product is badly damaged.
 4. There is no warranty for products whose serial Numbers have been changed, damaged or removed.
- Unless otherwise provided by law, the manufacturer shall not be liable to the customer for any other damages, such as damage occurring outside the instrument.