PQWT-GT

Multichannel geophysical detector Operation Manual

1. Product Description

PQ-GT series multichannel natural electric field geophysical detecotr is an intelligent instrument newly developed by our institute that integrates data acquisition and automatic mapping. It is mainly used in geological prospecting fields such as water prospecting, ore prospecting, and caverns prospecting. The device can collect the potential difference data of 18 measuring points at the same time. The collected data will be transmitted to the host, and the host will process and save the data, and then automatically display it on the screen, with functions such as 3D drawing effects. At the same time, it solved the shortcoming that the natural electric field can change at any time, and obtain relatively stable data, the retest consistency is high.

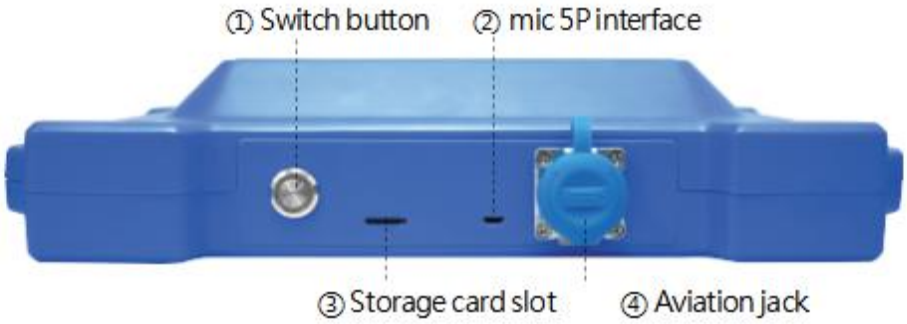
2、 Product Features

One Time Wiring: Equipped with a 10.1-inch touch screen, it can collect data from up to 18 measuring points at the same time. After the data is collected, the graph is automatically formed, which shortens the measurement time.

Stable and reliable: The simultaneous measurement of 18 measuring points can effectively avoid unstable signal caused by natural electric field changes or other interference sources, the accuracy rate is significantly improved, and the re-measurement patterns are basically the same.

1. Host: Collect and process data
2. Hand hammer: hammer the electrode rod
3. Electrode: connect the main line and the ground to be tested
4. Screwdriver: Open the back cover of the host
5.Battery: power supply to the host
6. Winding frame: fixed main line
7. Main line: transfer data to the host
8. Charging holder: charge the battery
9. Charger: connect to the charging holder
10. Charger (car): car charger
11. Data line: connect host and computer
12. Strap: connect the handles on both sides of the host

Instrument interface description



① Switch Button: Self-locking button, press to turn on, and bounce to turn off.
② mic 5P interface: connect to the computer cable.
③ Storage card slot: place a storage card.
④ Aviation socket: connect to the main line aviation socket.

Model	PQ-GT150A	PQ-GT300A	PQ-GT500A	PQ-GT1000A	PQ-GT1500A	PQ-GT2000A	PQ-GT3200A
Optional depth	150m	150m 300m	150m 300m 500m	1000m 800m 500m	1500m 1000m 500m	2000m 1500m 1000m 500m	3200m 2000m 1500m 1000m 500m
Measure Time	5-6min	6-8min	8-10min	10-15min	15-20min	20-25min	/
Channel	18 channel						
Mini resolution	0.001mv						
Controller	32-bit high-speed CPU						
Measure Point Select	1-18 measuring points are optional						
A/D conversion	16-bit 1Msps						
Working Temperature	-20℃--50℃						
Power Consumption	9W						
Measurement Data Unit	The electric field component Vs (mv) of different frequencies of the magnetotelluric field						
Display Screen	10.1 inch industrial-grade high-definition display (resolution 1024*600)						
Standby time	8 hours						
Main line	2.5 meters, 10 meters, 54.7 meters in total length						
Electrode rods	25 pieces for each standard						
Host weight	1.95Kg						

Main Parameter Description

Wiring Method Description

When wiring in the field, place the length of the main line and the number of electrode rods appropriately according to the number of selected measuring points, and finally connect the placed electrode rods and the main line interface together. One measuring point corresponds to two electrode channels. For example: when 10 measuring points need to be measured, 14 electrode rods and their corresponding main line lengths need to be placed; When 15 measuring points need to be measured, 19 electrode rods and their corresponding main line lengths need to be placed. When 18 measuring points need to be measured, 22 electrode rods and their corresponding main line

lengths need to be placed. (Note: The two poles of the M pole and the N pole of the measuring line. The first measuring line is between M1 and N1. The data collected by the host is the data between the M pole and the N pole, that is, the data at point P. P1 is the first point.) When placing the electrode, keep vertical contact with the main line interface to ensure good contact.

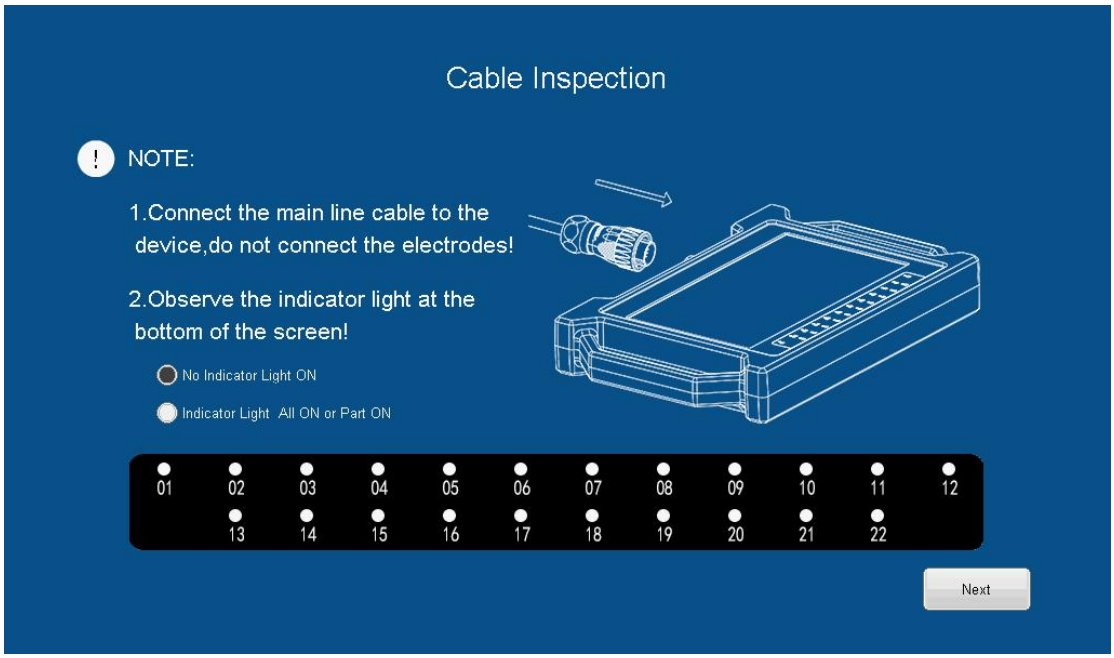
Main Interface Introduction

① Line Test：Check the connection status of all the electrodes and the main line interface.
② Three Frequency：Perform three-frequency collection test (170Hz, 67Hz, 25Hz). Only the graph is displayed in this mode.
③ Profile：Perform a profile collection test. Curve graphs, cross-sectional graphs, and 3D graphs can be displayed in this mode.
④ Survey Parameters：Set the survey line, point number, increment, and gain.
⑤ Original Map/Process Map：Used to switch original map and process map.
⑥ Export：Export data to the memory card.
⑦ Data Management：View and delete data.
⑧ System Setting：Adjust screen brightness, select language, view other information of the instrument.
⑨ Return：Return to the previous interface.
⑩ Power Display：When fully charged, there are six grids.
⑪ Parameter mode display area：Display the measurement parameters of the current mode (tri-frequency or profile).
⑫ Collected data display area：Display the data value of potential difference collected by each measuring point.
⑬ Graphics conversion and collection：Perform curve, profile, and 3D diagram conversion and collection.
⑭ Graphic display area：Display curve diagrams, profile, and 3D diagrams.

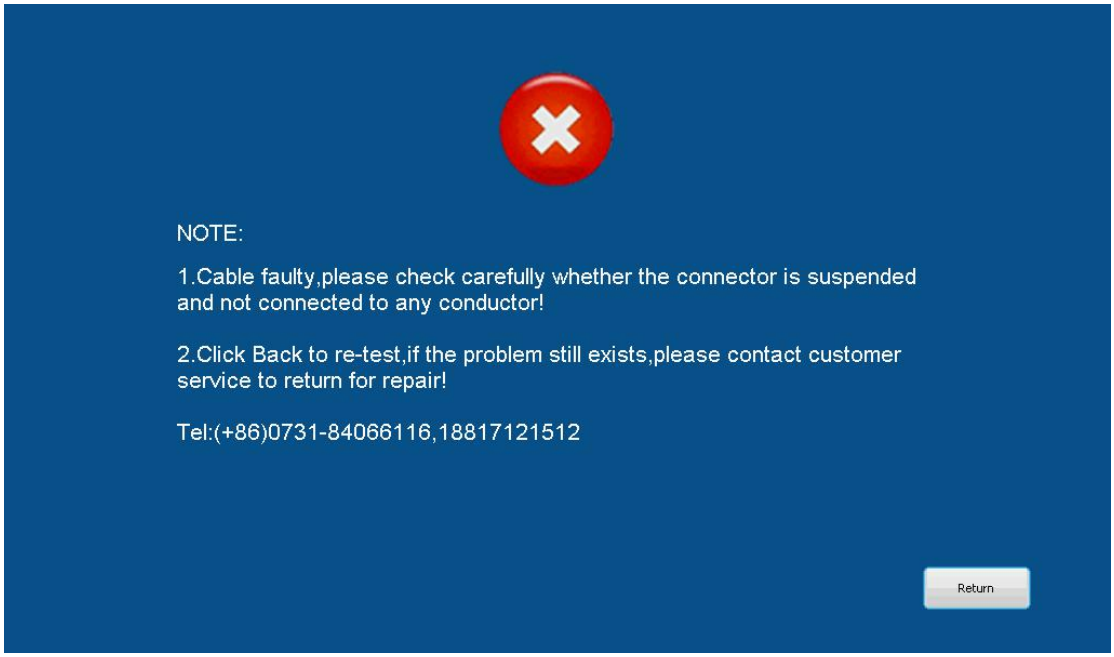
Measurement Operation

Line Test

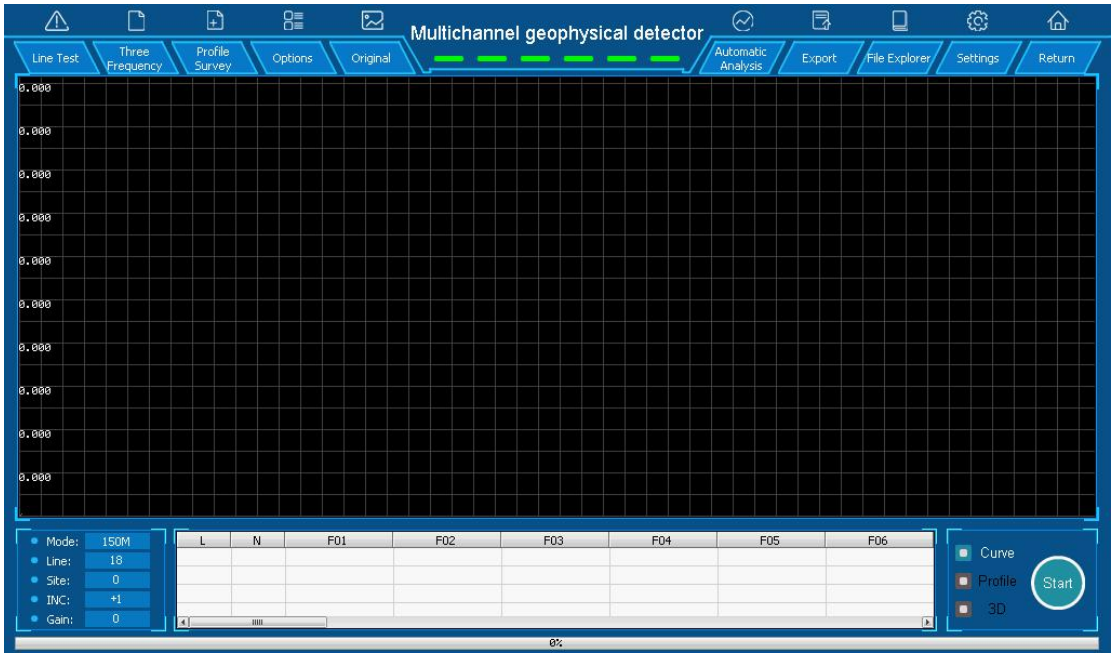
After booting, enter the main line cable detection interface.



According to the interface note，observe the indicator light at the bottom of the screen：All lights are off, indicating that there is no problem with the main line cable, you can click Next Step to enter the main interface; If all or part of the light is on, it means there is a problem with the main line cable. Click Next Step to view the solution.



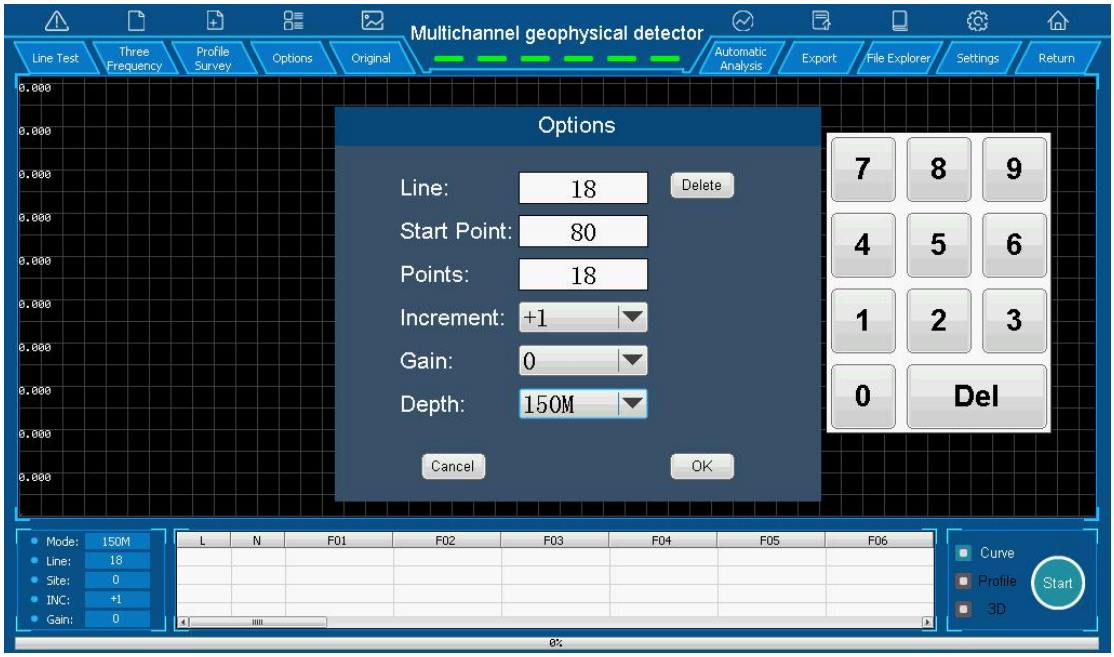
After the main line cable Inspection is completed, connect the main line and the collection stick, and click Next Step to enter the main interface.



In the main interface, press the Line Test button, observe the indicator light at the bottom of the screen if light up, If all lights up, it means there is no problem with the line; If there are individual indicators that do not light up, please check whether the main line connection with the corresponding label is properly connected to the electrode. If the connection is normal but some indicators still fail to light up, it indicates that there is a fault in the line. Please contact the manufacturer to solve it.

7.2 New measurement

In the main interface, click Survey Parameters in the Three Frequency or Profile Mode will pop up a small keyboard, you can edit the number of the survey line, the number of the starting point and the number of survey points. The measurement parameters in the Three Frequency mode will display three specific frequencies. There will be depth options in section mode. For example:



The survey line in the figure is the number of the survey line to be measured, the point number is the starting point of the survey point, and the points is the number of optional survey points. You can choose between 1-18 measuring points. If you select more than 18 measuring points, the measurement will be carried out according to 18 measuring points. If the measurement data is too small, you can select gain +1 or gain + 2 gears for re-measurement. It can store up to 999 survey lines, and each survey line can store up to 999 points. Click the measurement parameter in the measurement parameter interface to select the measurement line and re-check the data.（The Del on the keypad is the delete key）

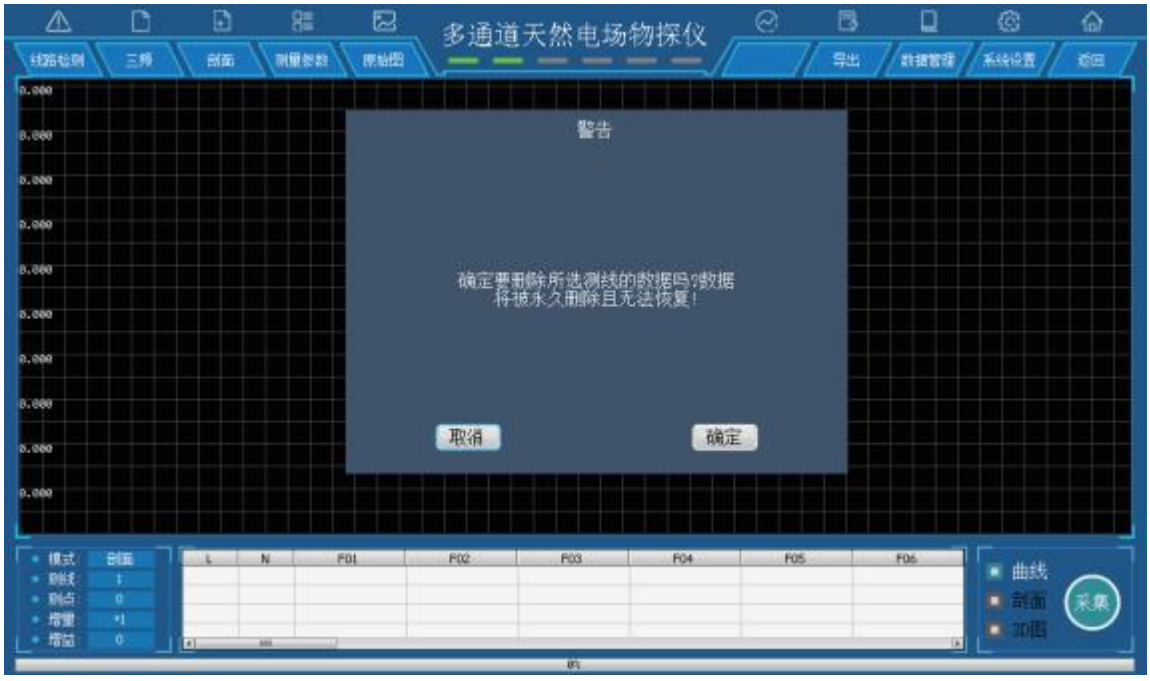
7.3 Supplementary test

It is possible to make supplementary measurements of the front and back measurement points on the original measurement line. The instrument automatically sets the initial point number is 80, and the number of measuring points can be increased forward or backward, when increasing the number of measuring points forward, because the initial point number is 80, it can increase to 80 points, and it can increase to 999 backwards. Increment +1 means backward supplementary measurement, and increment -1 means forward supplementary measurement. You can choose between 1-18 measuring points. After the setting is completed, you need to place the corresponding main line length and the number of test rods according to the direction of increment and the number of points, and then click Collection.

7.4 Delete survey line

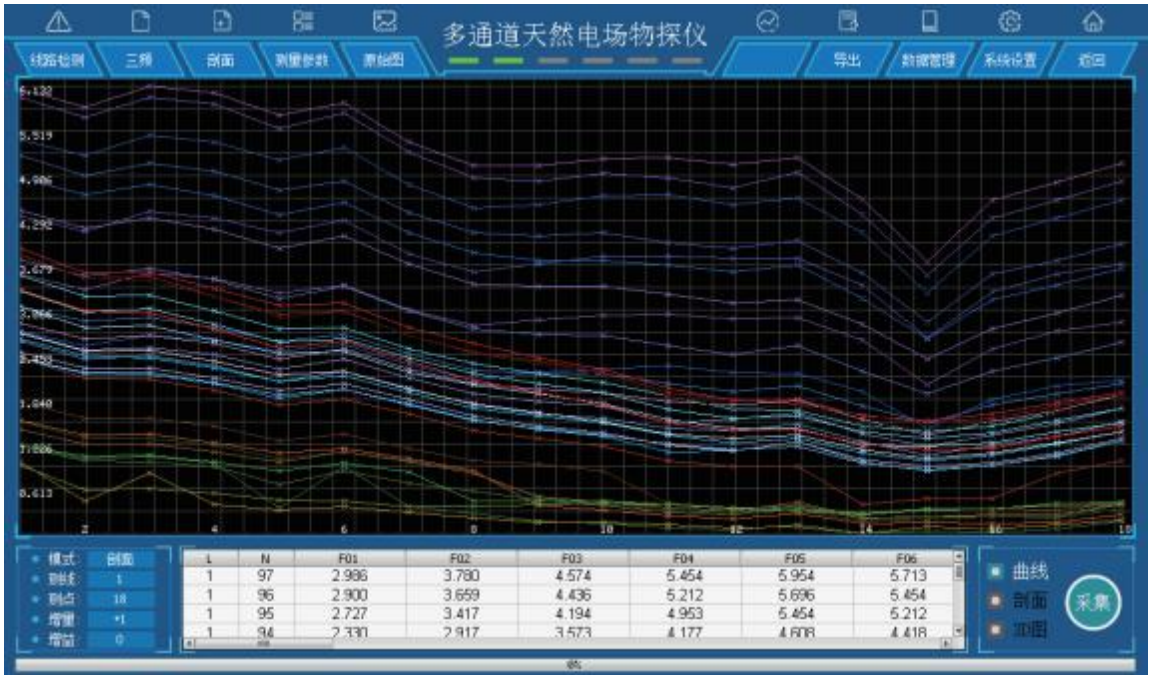
On the corresponding tri-frequency and profile operation interface, click the measurement parameter, select the number of the survey line to be deleted,

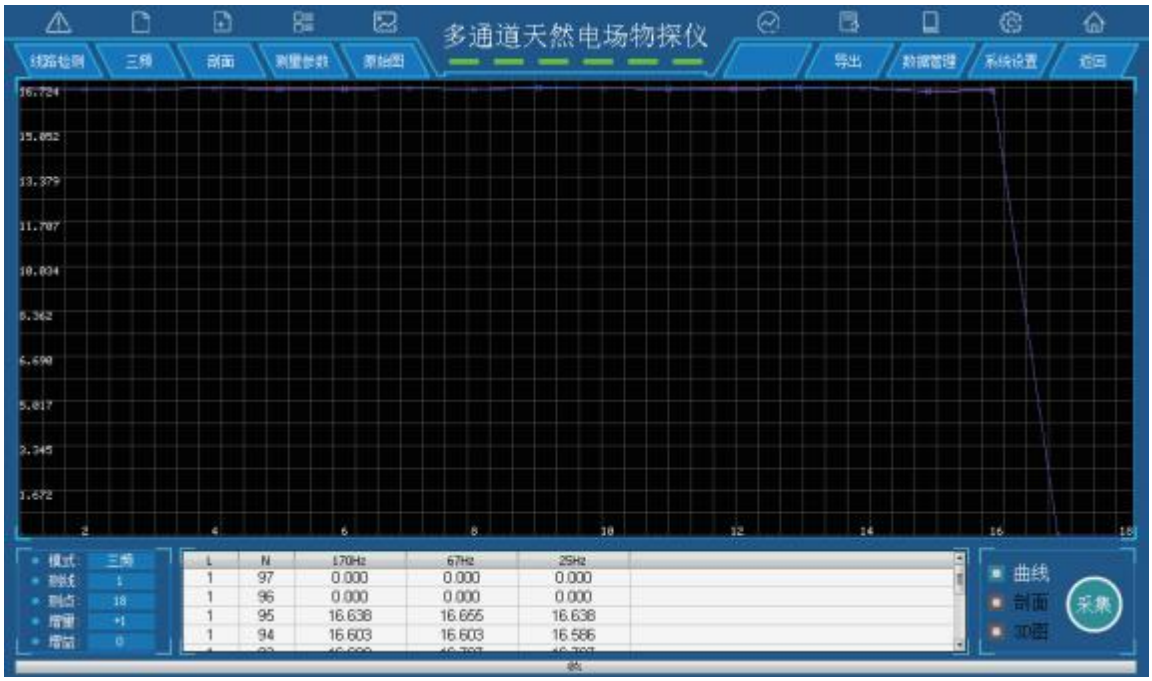
and click Delete to delete the survey line data.

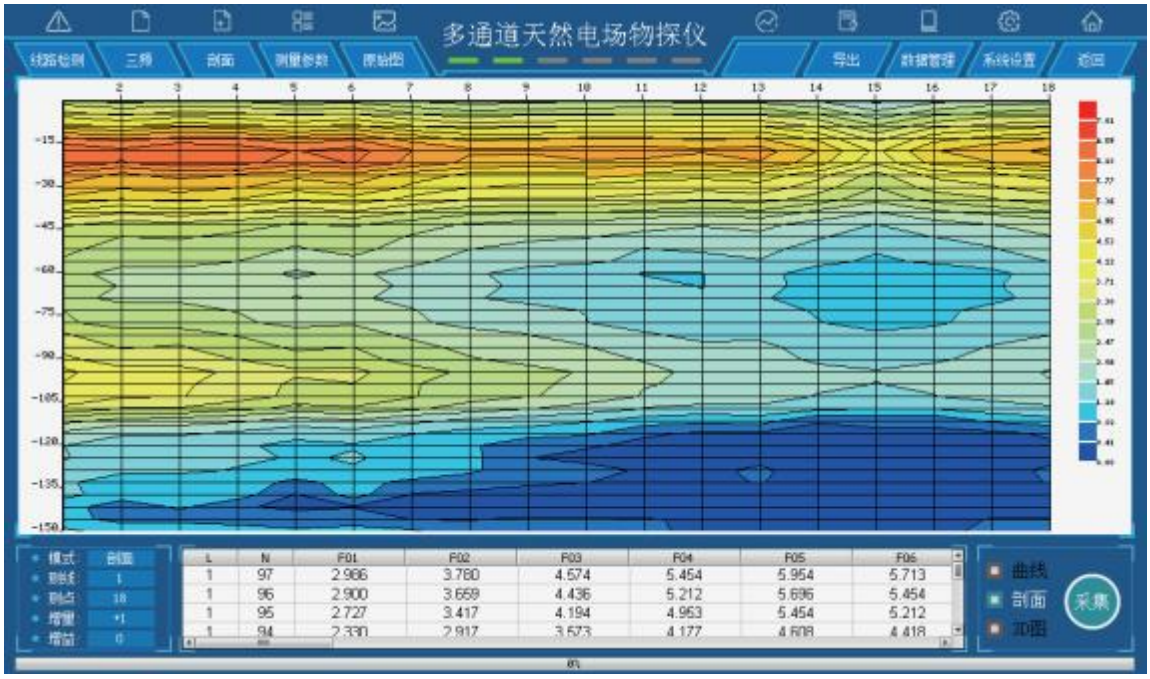


Drawing Operation

After the instrument collection is completed, the curve graph will be displayed on the main interface immediately, click the curve, profile survey, and 3D graph display buttons in the lower right corner to choose to observe different graphs. Click the original map/process map to switch to the corresponding graphic screen.（Note: There are only curve graphs and original graphs in tri-frequency mode ）



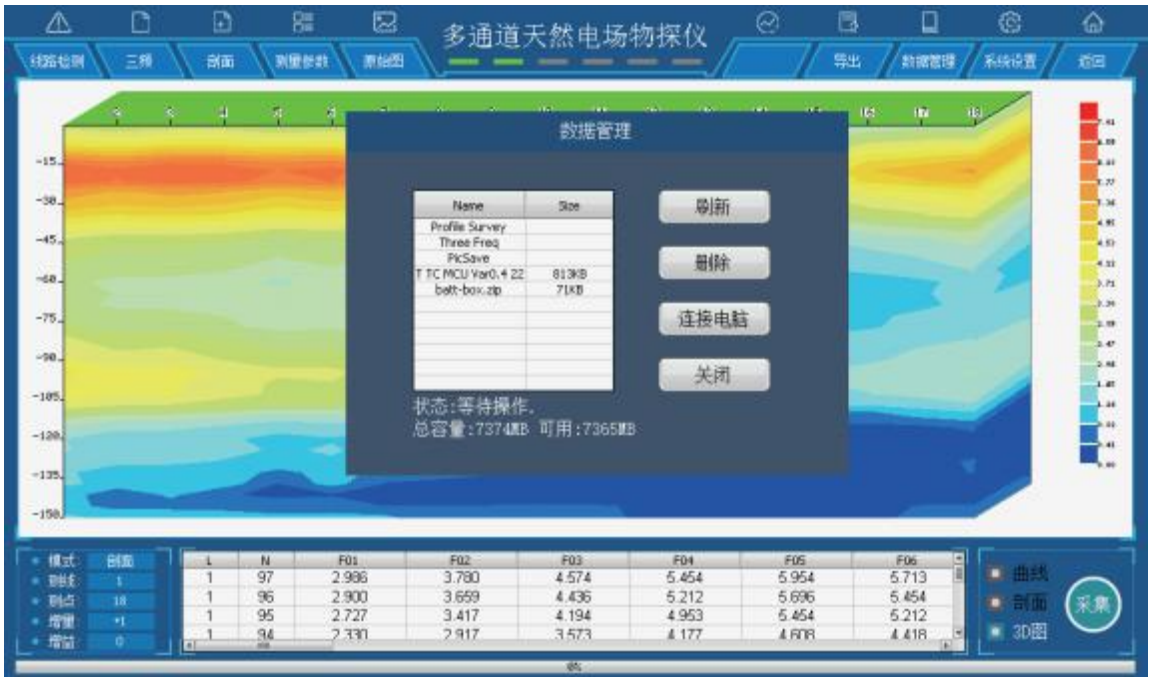




Data Storage Operation

9.1 File Export

Click the Export button in the main interface to save the measured graphics to the memory card, and click the Data Management button to view the saved graphics and data.

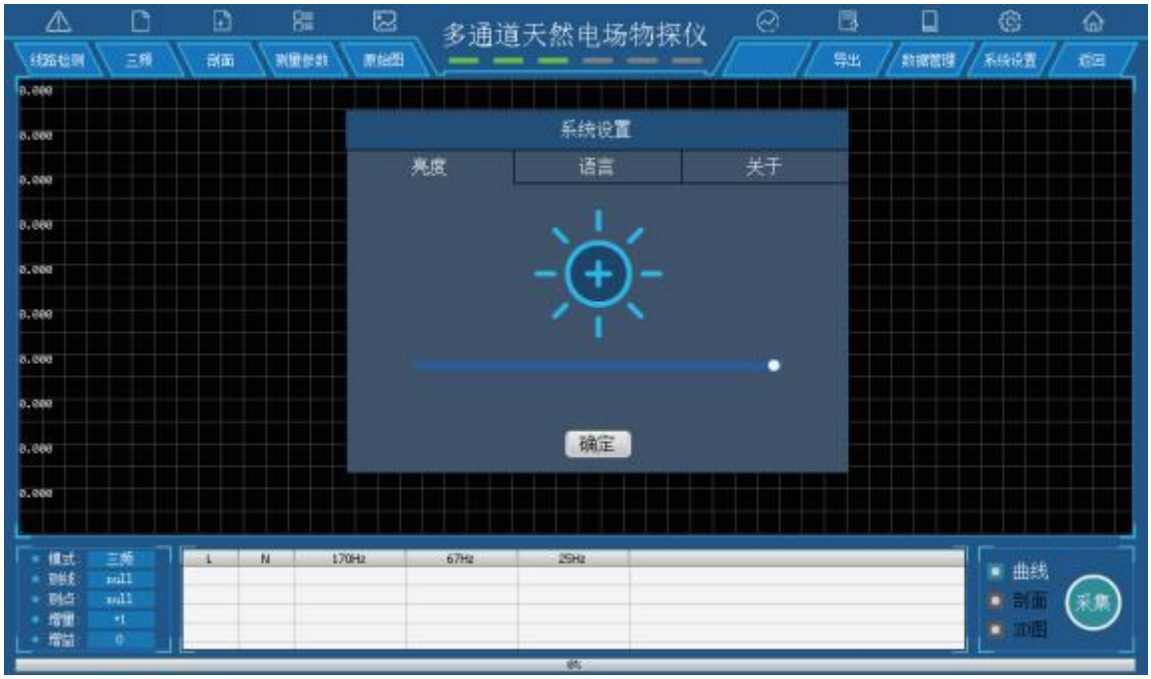


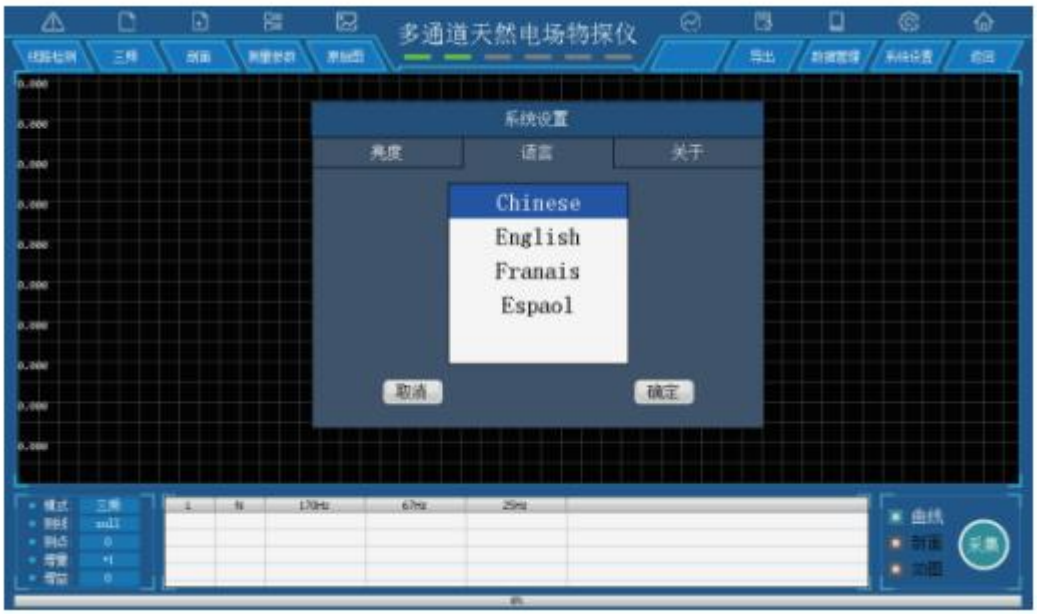
Connect to the computer

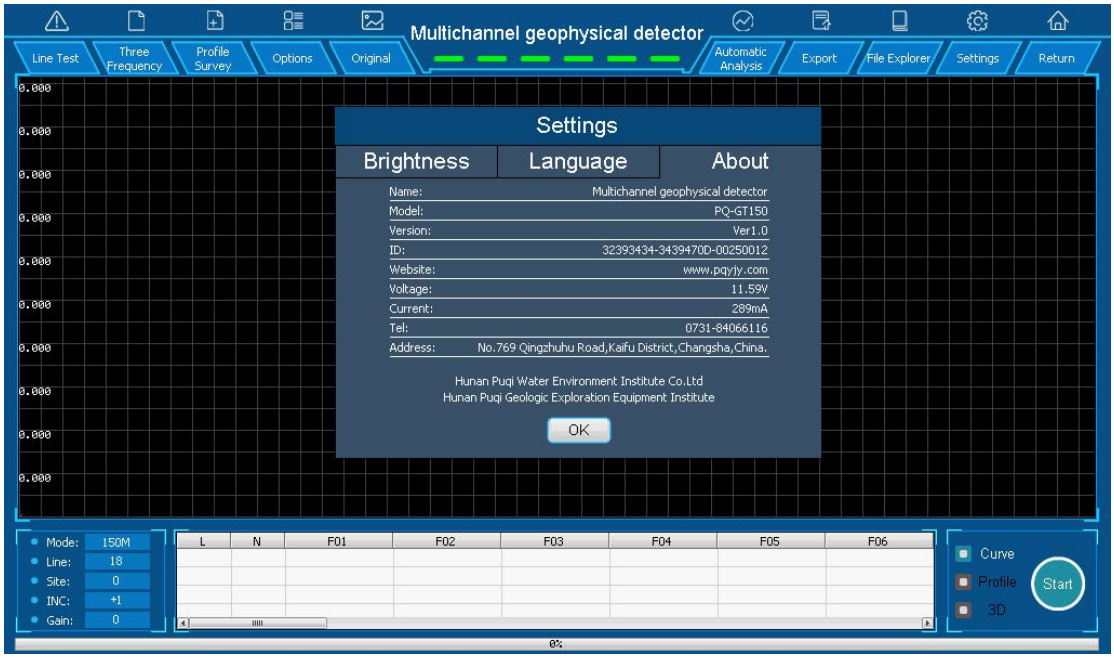
Connect the host and the computer with a dedicated data cable, and click the Connect Computer button to manage the folders on the computer.

10、System setting operation

In the system settings, you can adjust the screen brightness, select the language, and view other related information of the instrument.



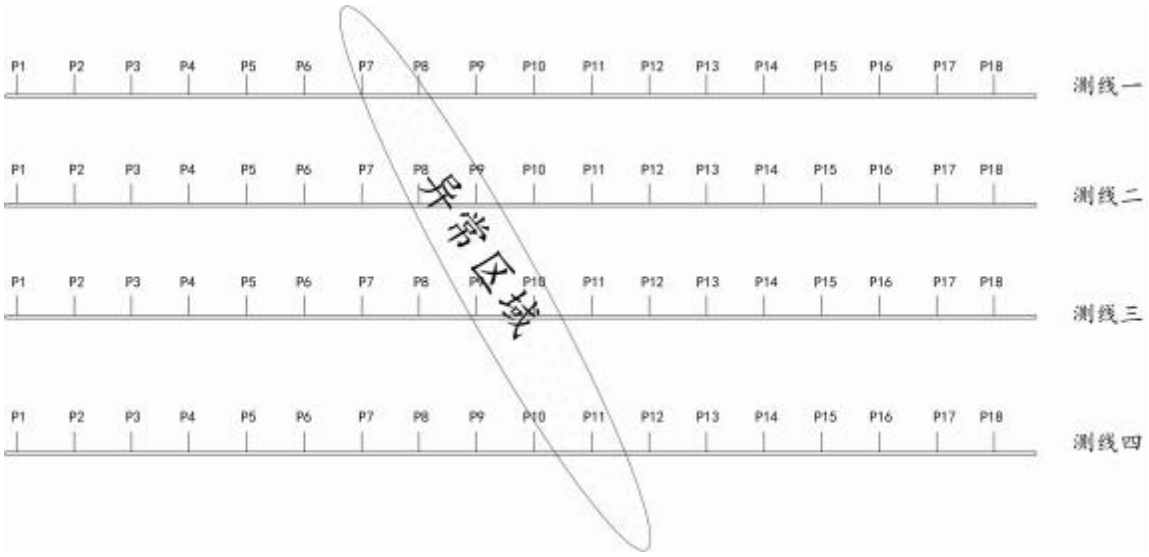




11、Multi-Instrument Wiring Operation

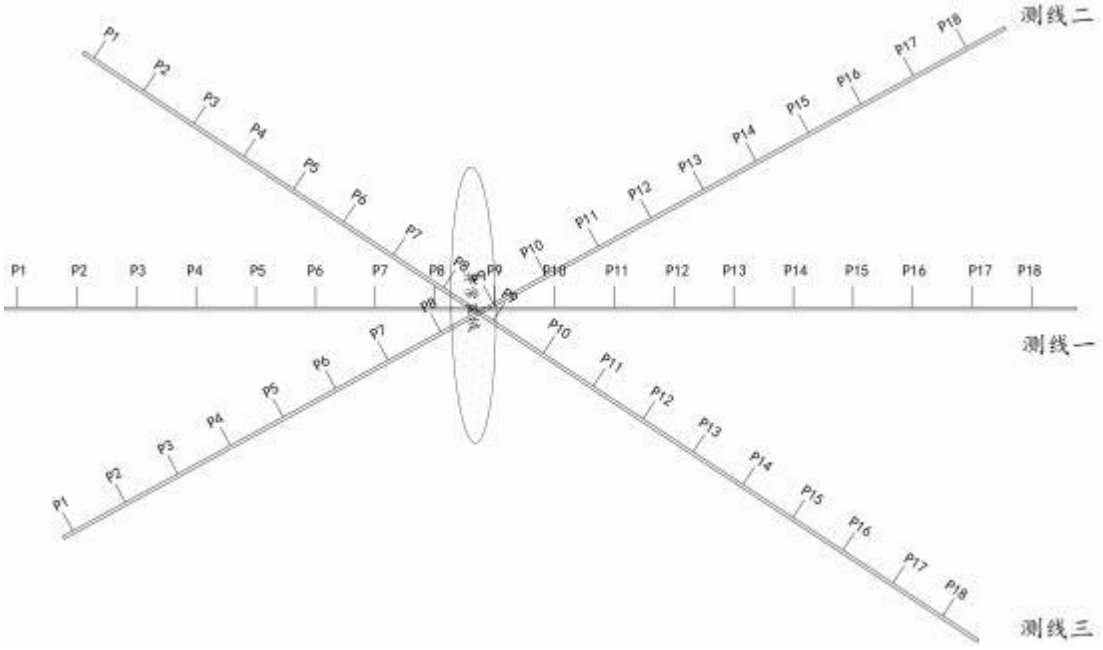
When measuring in open ground, you can use multiple multi-channel natural electric field geophysical probes for testing.

11.1Parallel wiring



This method is suitable for situations where the terrain is relatively open and flat, there is no obvious valley reference and judgment on the ground, and the direction of the underground structure cannot be judged intuitively. Parallel wiring can be used to explore the underground structure broken zone.

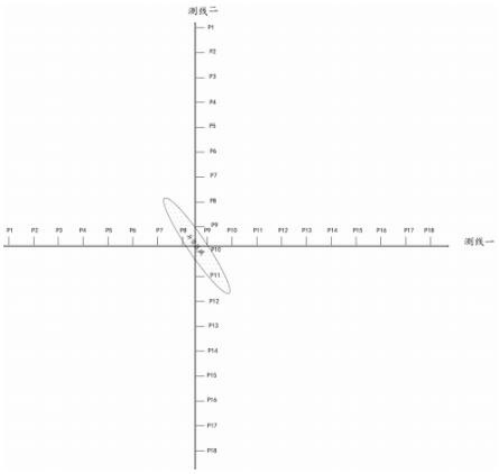
Cross Wiring One



It is suitable for situations where underground faults or fissures develop along the direction of valley extension. The method of cross wiring can be used, and the wiring can be diagonally crossed through the valley, and the structure can be intercepted horizontally as soon as possible.

11.3 Cross Wiring Two

Same as cross wiring one.



12、Battery Management Operation

12.1 Battery Usage

This instrument uses three sets of 21700 batteries for power supply. You can use one set, two sets, or three sets. When placing the battery, place the positive and negative poles of the battery and the positive and negative poles of the battery box correspondingly.

12.2 Battery charging method

The instrument does not have a charging port on the host. When charging, you need to open the back cover of the host and use a special charging stand to charge after taking out the battery.

步骤一：打开后盖　　步骤二：取出电池　　步骤三：用充电座充电

13、Precautions

1、When using the instrument, pay attention to the correct operation method. Do not drop the instrument deliberately. Correct use will extend the life of the

instrument.
2、The instrument is not waterproof, please do not immerse the instrument in water or operate it in rain.
3、Do not knock the LCD screen hard, do not expose the screen to direct sunlight for a long time, if there is a touch failure, please shut down and restart it.
4、After use, please clean it and put it in the special outer box, and put it in the corresponding position when loading it, and don't crush the screen.
5、Please place the instrument in a cool and dry place.
6、Do not disassemble the instrument without authorization, otherwise it will cause instrument data error or system collapse.
7、When reinstalling the battery, place it strictly in accordance with the instructions on the battery board.

14、After-Sales Service Guide
14.1 Free maintenance
1. The host is guaranteed for two years, the electrode rod is guaranteed for two years, the main line is guaranteed for one year, and the charger and charging stand are guaranteed for one month. The battery, manual hammer, screwdriver, data cable and other accessories are not guaranteed.
2. During the warranty period, if there is an abnormal product function caused by non-human factors, you can enjoy free maintenance services.

14.2 Charged maintenance service
The fee-for-service terms apply to any of the following situations and are charged according to the actual maintenance cost.
1.Products without valid shopping vouchers, products purchased through unauthorized channels.
2.Product failure or damage caused by improper use.
3.Disassembling the device by yourself may cause product failure or damage.
4.Damage caused by force majeure.

14.3 After-sales service process
1.Please contact the relevant sales staff to confirm the problem.
2. If the equipment needs to be returned to the factory for repair, the user shall bear the shipping cost. When sending the equipment back to the factory, please specify: the purchase time of the equipment, the failure situation, the return address, the name of the contact person, the telephone number, the salesperson, and the after-sales warranty card should also be sent back together.