

PQWT[®]

PQWT-GT Series Auto-analysis Geophysical Detector

Operation Manual

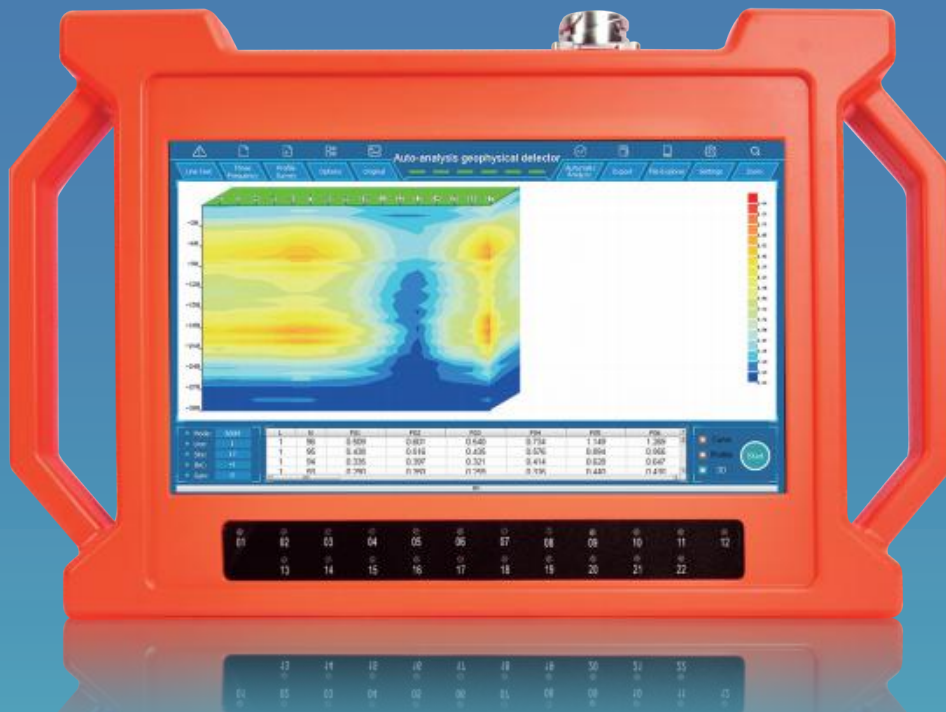


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1. Product Description

PQWT-GT Auto-analysis Geophysical Detector is the eighth-generation of multi-channel prospecting instrument newly developed by Hunan Puqi Geologic Exploration Equipment Institute and Hunan Puqi Water Environment Institute Co. Ltd., it is based on the principle of natural electric field frequency selection method. It is widely used in underground water sources, geological structures, mine veins, mine tunnels, cavities, karst caves, ant holes, mined-out areas, dam pipe surge, landslides and other fields.

This series of instruments integrates 5 independent invention patents of PQWT, including data acquisition system, data processing system, automatic mapping system, automatic analysis system and circuit system. It realizes the simultaneous data acquisition of multi-channel and multi-frequency, completely solves the influence of unstable factors caused by the time difference of the natural electric field source, and greatly improves the accuracy and work efficiency. The instrument can process the collected data, automatically draw curve map, profile map, and 3D renderings in real time, and automatically analyze abnormal areas, so as to provide scientific basis for analyzing geological structures quickly and effectively.

2. Product Features

Automatic analysis: The instrument analyzes the abnormal area with one click.

Automatic mapping: Automatically draw curve map, profile map, and 3D renderings.

Stable and reliable: Collect 18 points data with one-time wiring.

Increment function: The extension of geological structure can be analyzed by making supplementary measurement in front and rear of the survey line.

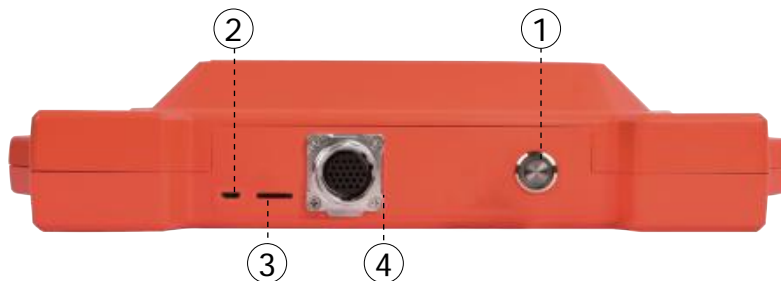
Data storage: It can store curve map, profile map, and 3D renderings of more than 999 survey lines to facilitate the production of geophysical exploration reports.

3.Product Components

(1)Accessories (host machine, cable, electrode rod, ch-arger, battery, etc.)



- ① **Host machine:** Collect and process data.
- ② **Tool bag:** Store tools.
- ③ **Electrode rod:** Connect the cable and the ground to be tested.
- ④ **Battery:** To supply power to the host.
- ⑤ **Cable:** Connect the host.
- ⑥ **Charging stand:** Charge the battery.
- ⑦ **Charger:** Connect the charging stand.
- ⑧ **Charger (car) :** Car charger.
- ⑨ **Data cable:** Connect host machine and computer.
- ⑩ **Strap:** Connect the handles on both sides of the host machine.



(2)Instrument interface

- ① **Switch button:** self-locking button, press to turn on, bounce to turn off.
- ② **mic 5P interface:** connect to the computer cable.
- ③ **storage card slot:** place the storage card.
- ④ **Aviation port:** Connect the cable aviation plug.

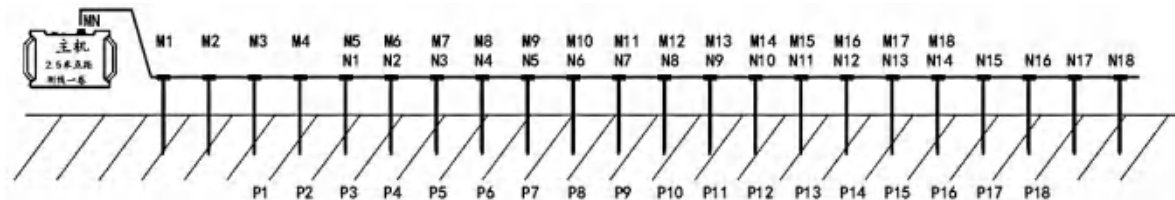
4. Main Parameter Description

Model No	PQ-GT150A	PQ-GT300A	PQ-GT500A	PQ-GT1000A	PQ-GT1500A	PQ-GT2000A	PQ-GT3200A
Optional depth	150m	150m 300m	150m 300m 500m	500m 800m 1000m	500m 1000m 1500m	500m 1000m 1500m 2000m	500m 1000m 1500m 2000m 3200m
Measuring time	5-6min	6-8min	8-10min	10-15min	15-20min	20-25min	
Maximum number of channels	18 channels						
Minimum resolution	0.001mv						
Points selection	Points selection 1-18 points optional						
Controller	32-bit high-speed CPU						
A/D conversion	16 bits 1Msps						
Working temperature	-20℃~50℃						
Power consumption	9W						
Measurement data unit	Electric field components of different frequencies of magnetotelluric field Vs (mV)						
display screen unit	10.1 inch industrial-level high-definition display (resolution 1024*600)						
Standby time	8h						
Cable	2.5m point pitch, 10m line pitch, 54.7m in total length						
Electrode	Each comes standard with 22 pieces						
Host weight	1.95kg						

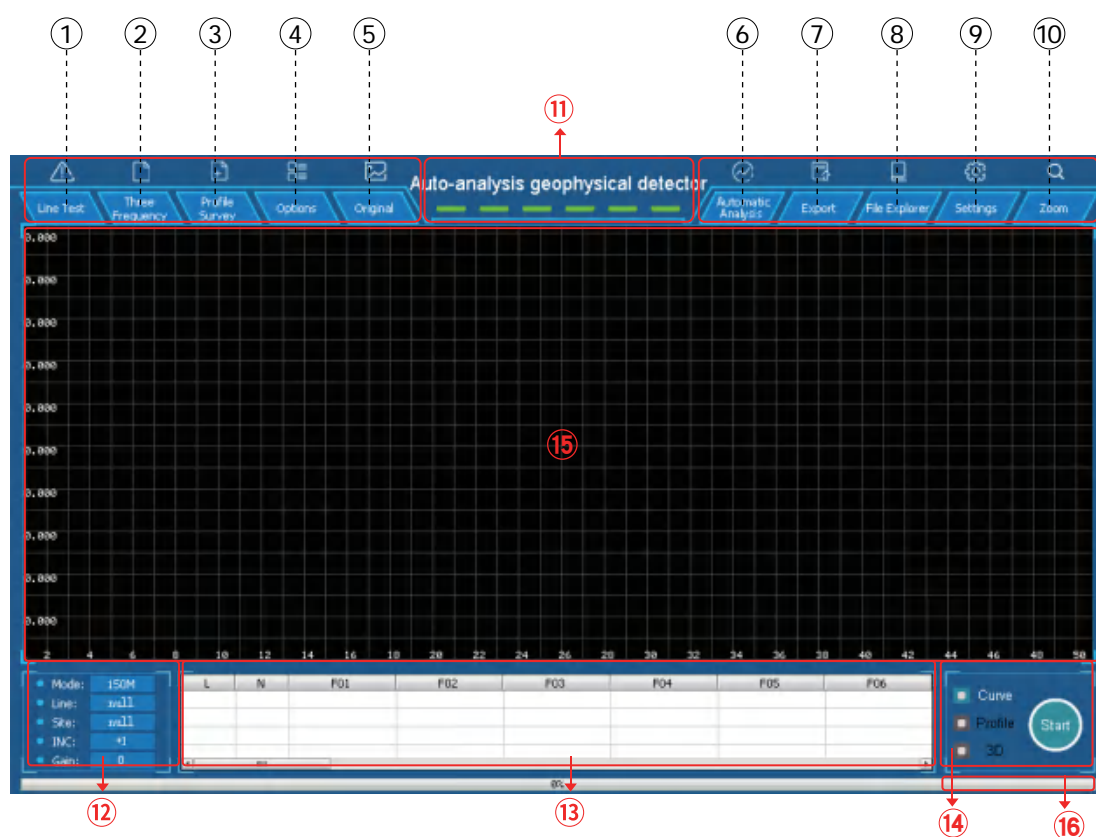
5. Wiring Method Description

Carry out linear wiring in the area to be measured, place cable and electrode rod according to the number of selected measurement points, keep electrode rod and cable in good contact, and the electrode is properly grounded. Number of measuring points = electrode rod -4. When 10 measuring points need to be measured, 14 electrode rods need to be placed. As shown in the figure: The data collected by the host machine is the central points of M pole and N pole, and the central point

of M1 and N1 is the first measuring point P1, which is the position of the third electrode rod. The center point of M2 and N2 is the second measuring point P2, which is the position of the fourth electrode rod, and so on.



6. Main Interface Introduction



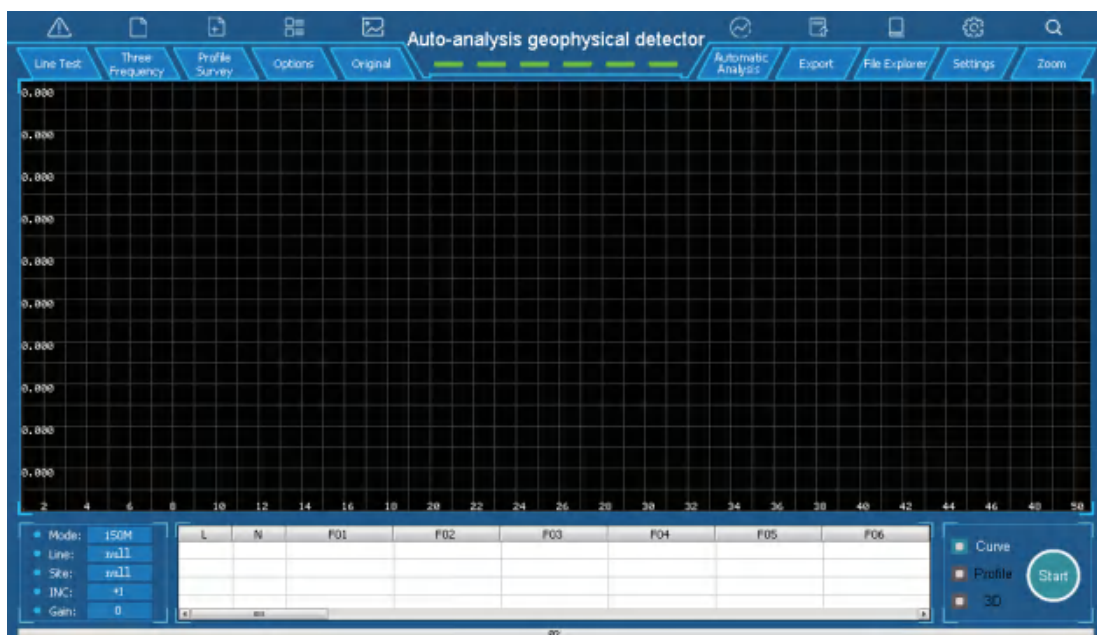
- ① **Line Test:** Check the connection status of all electrode rods and cables.
- ② **Three Frequency:** Perform three-frequency collection test (170Hz, 67Hz, 25Hz). Only the curve graph is displayed in this mode.
- ③ **Profile Survey:** Perform a profile map collection. Curve graphs, profile map, and 3D renderings can be displayed in this mode.
- ④ **Options:** Set the line, start point, points, increment and gain .
- ⑤ **Original Map/Process Map:** Used to switch between original map and process map.

- ⑥ **Automatic analysis:** Analyze abnormal areas.
- ⑦ **Export:** Export graphics to memory card.
- ⑧ **File explorer:** manage data and connect to a computer.
- ⑨ **Settings:** adjust screen brightness, select language, view other instrument information.
- ⑩ **Zoom:** amplify and lessen the graph.
- ⑪ **Power Display:** When fully charged, there are six grids.
- ⑫ **Parameter display area:** Display the measurement parameters of the current mode (three-frequency or profile).
- ⑬ **Data display area:** display the data of the current survey line.
- ⑭ **Graphics switching and collection:** switch between curve graphs, profile map, 3D renderings and data collection.
- ⑮ **Graphic display area:** Display curve graphs, profile map, and 3D diagrams.
- ⑯ **Progress bar:** Displays the current operation progress.

7.Measurement Operation

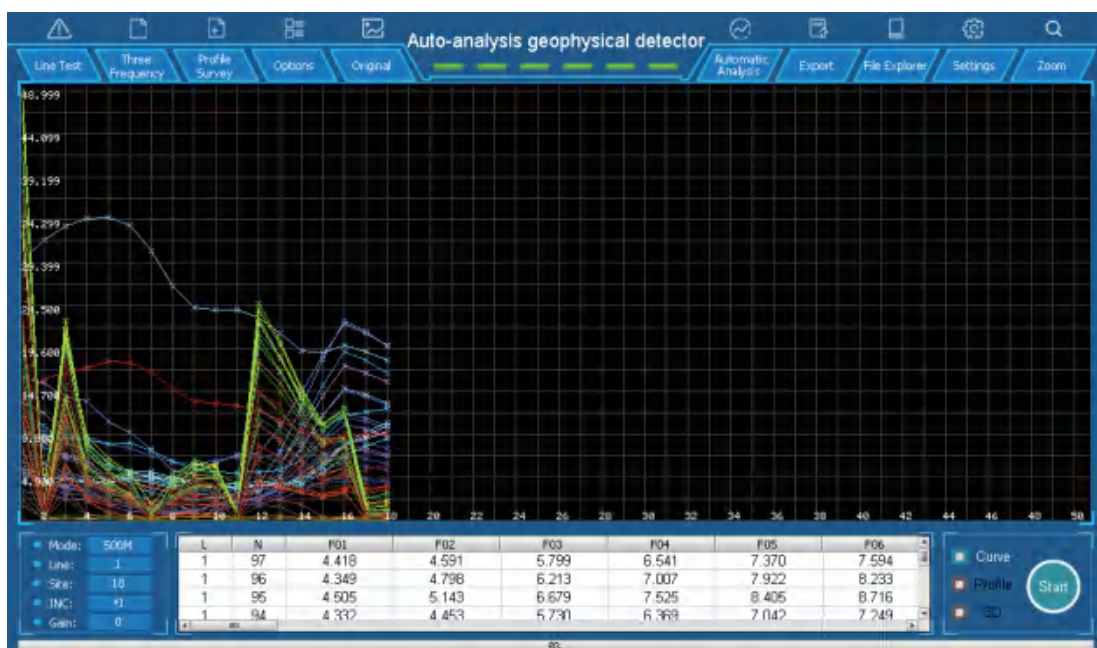
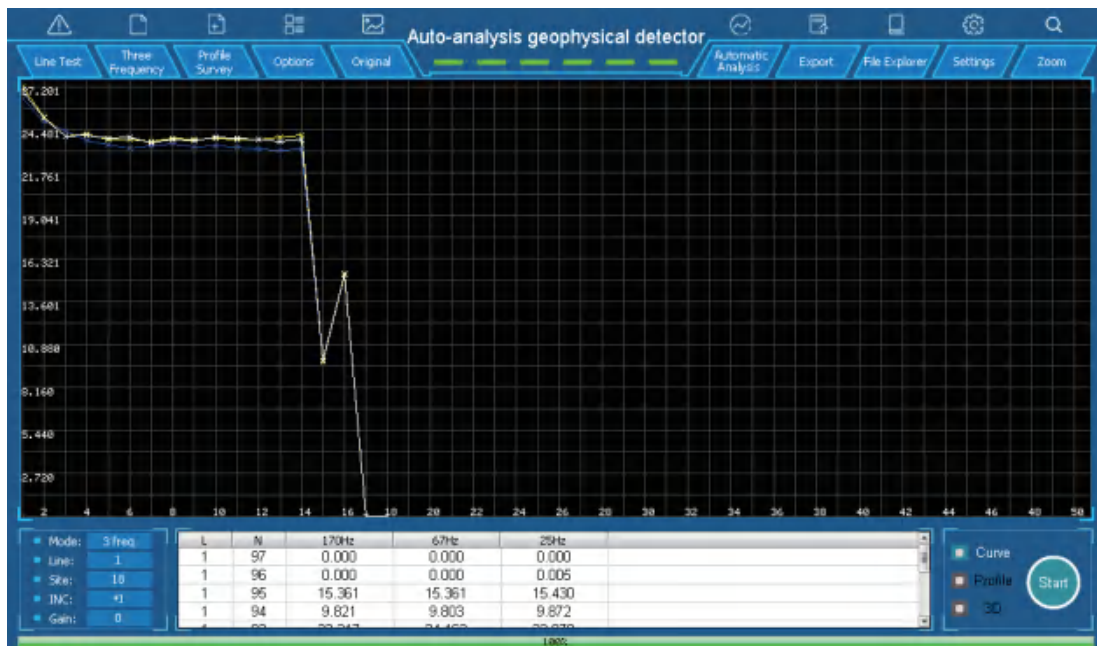
(1)Line Test

Press and hold the line detection button and observe the indicators at the bottom of the screen. All lights up, indicating that the line connection is normal.



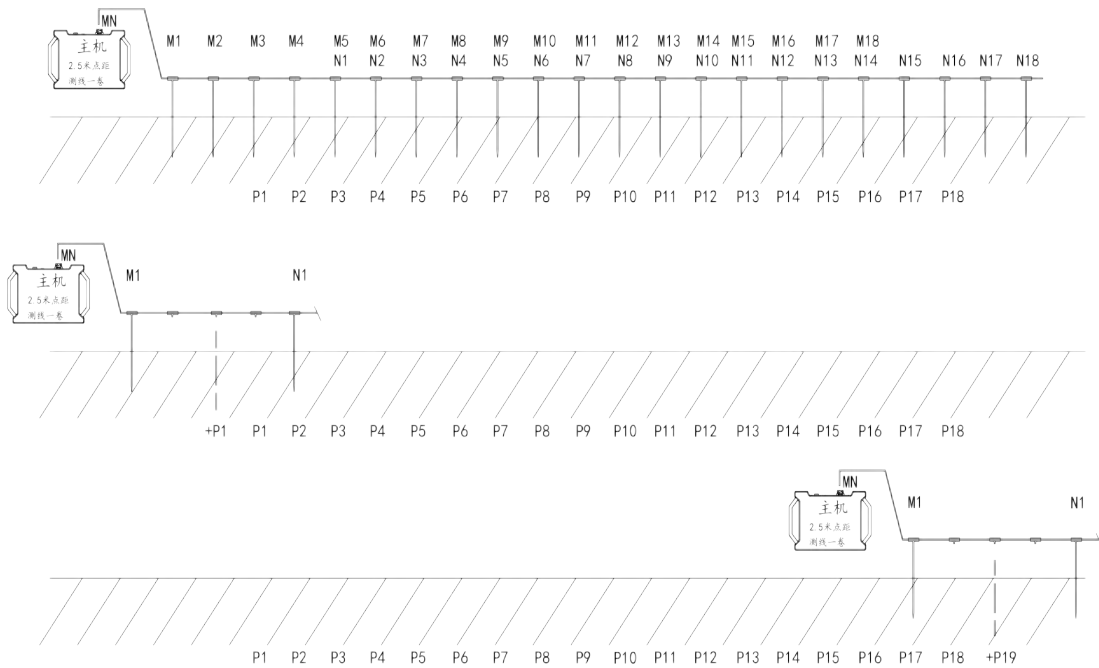
(2)New measurement

Click the measurement parameters in three-frequency or profile mode, and edit the number of line, start point, points, increment and gain .Depth can be selected in section mode.



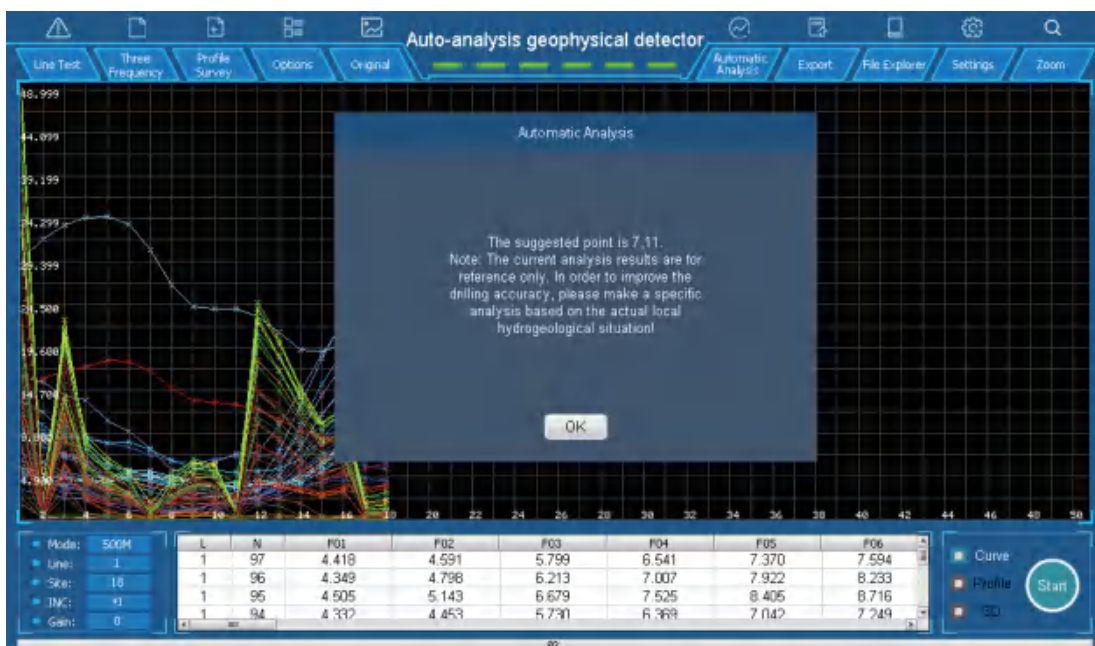
(3) Increment

You can make supplementary measurements on the original measurement line before and after the measurement points. Increment +1 means backward supplementary measurement, increment -1 means forward supplementary measurement, you can choose between 1-18 measuring points. After setting, you need to place the corresponding cable length and electrode rod number according to the incremental direction and points, and then click collect.



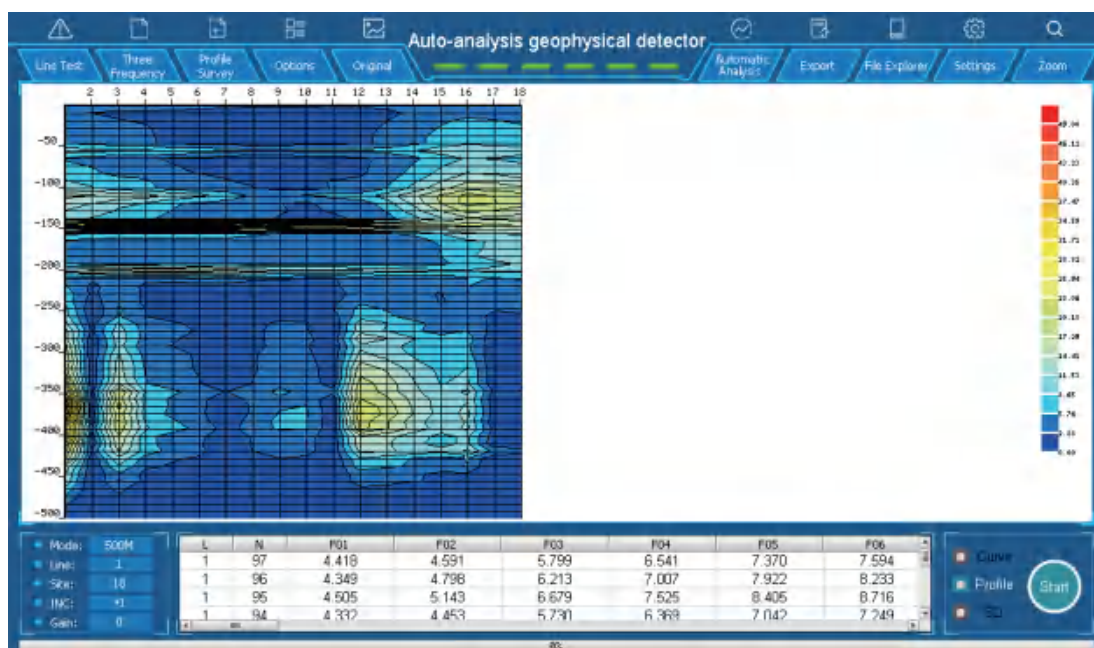
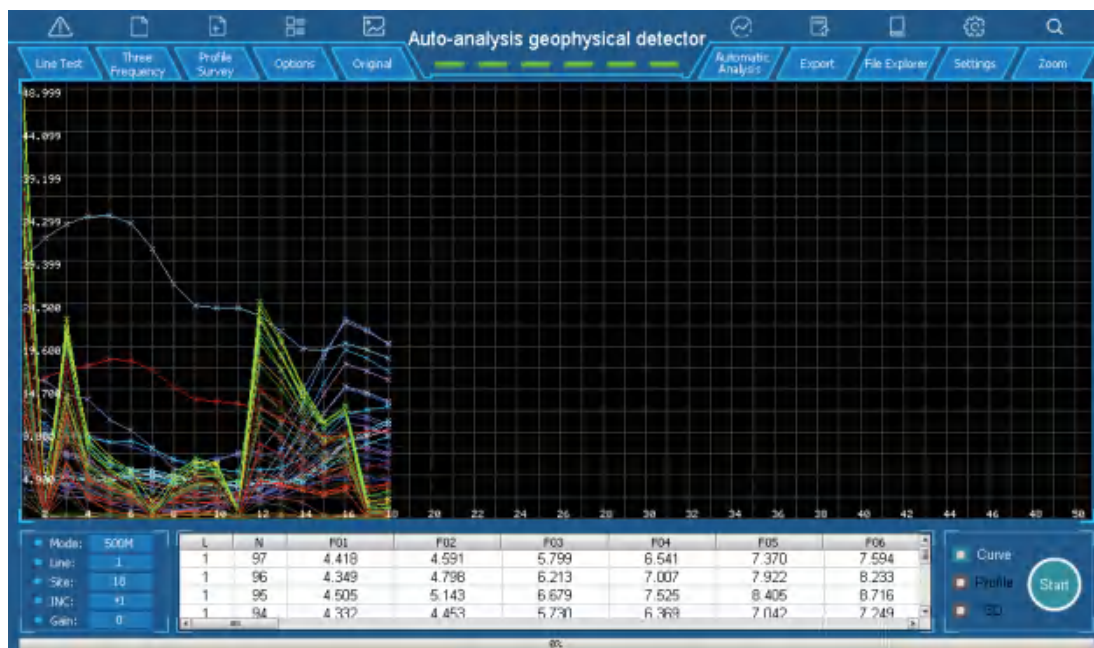
(4) Automatic analysis

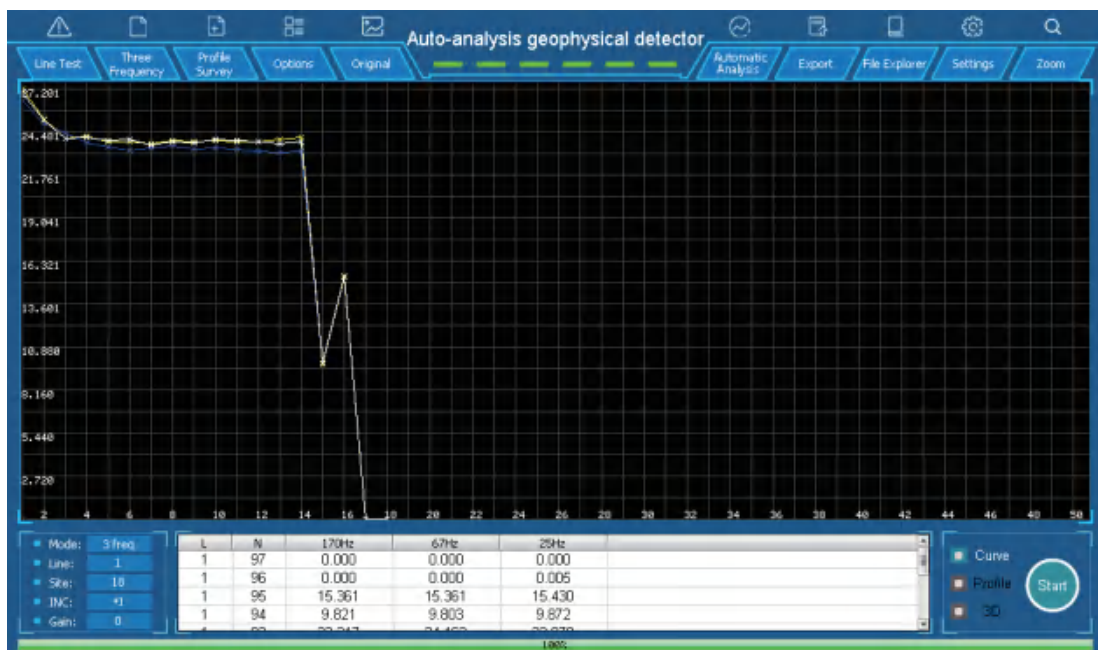
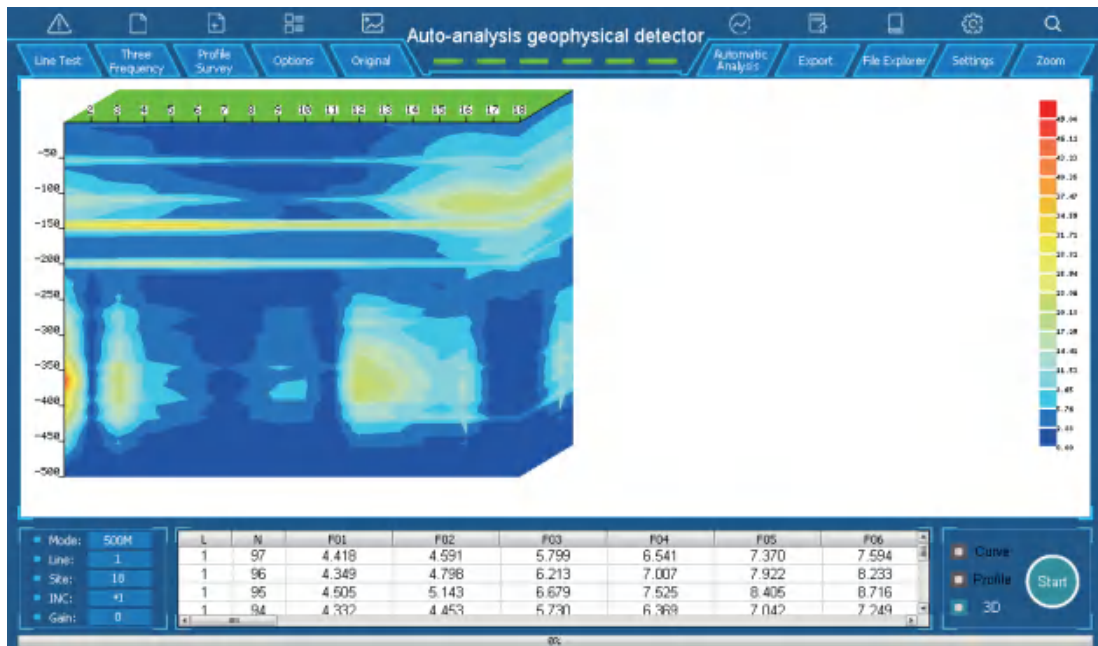
Analyze abnormal areas.



8. Graphics switching

After the instrument is collected, the curve graph can be viewed and switched as needed. Click the curve graphs, profile map, 3D renderings display buttons in the lower right corner to choose to observe different graphics. Click the original picture/processed picture to switch to the corresponding graphic screen.



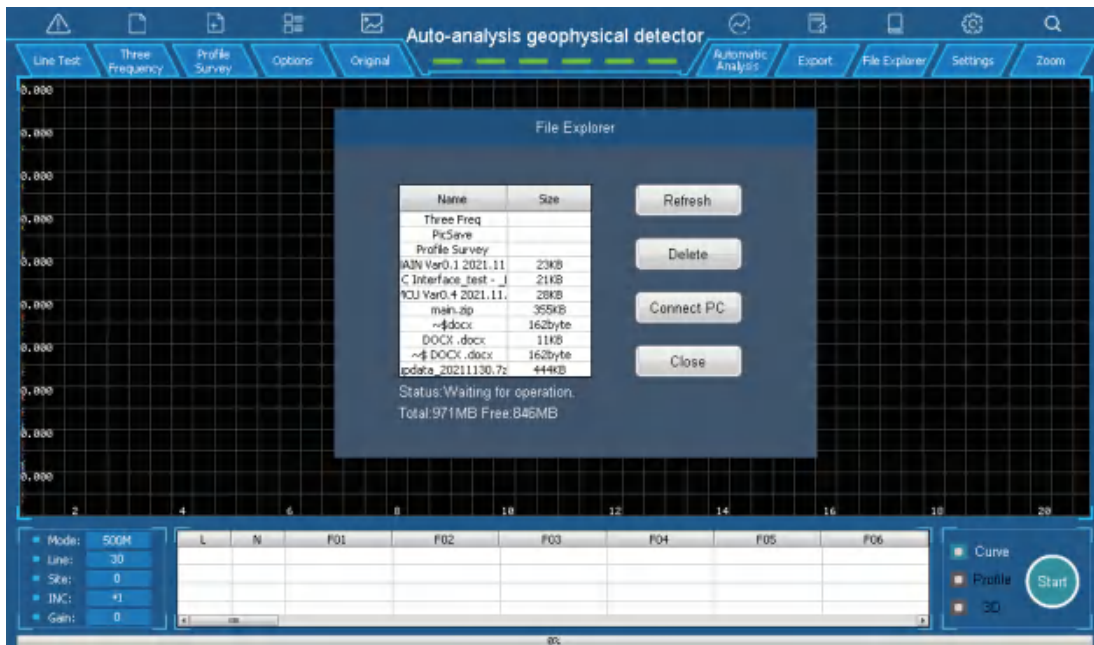


9.Export

Click export button to export current graphics to memory card.

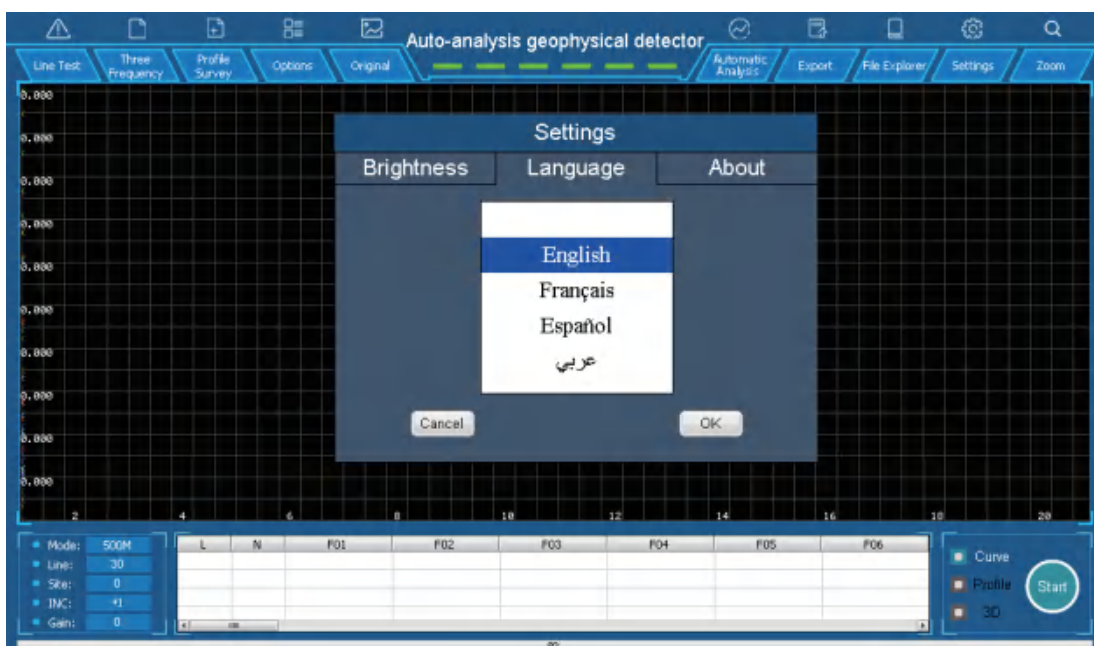
10.Data Storage Operation

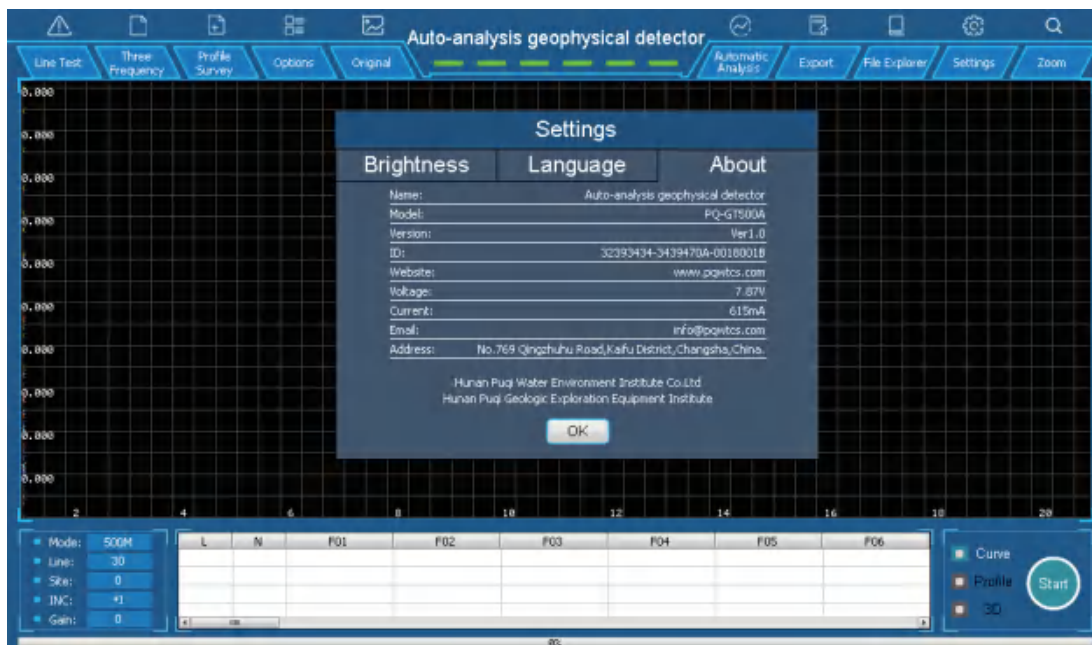
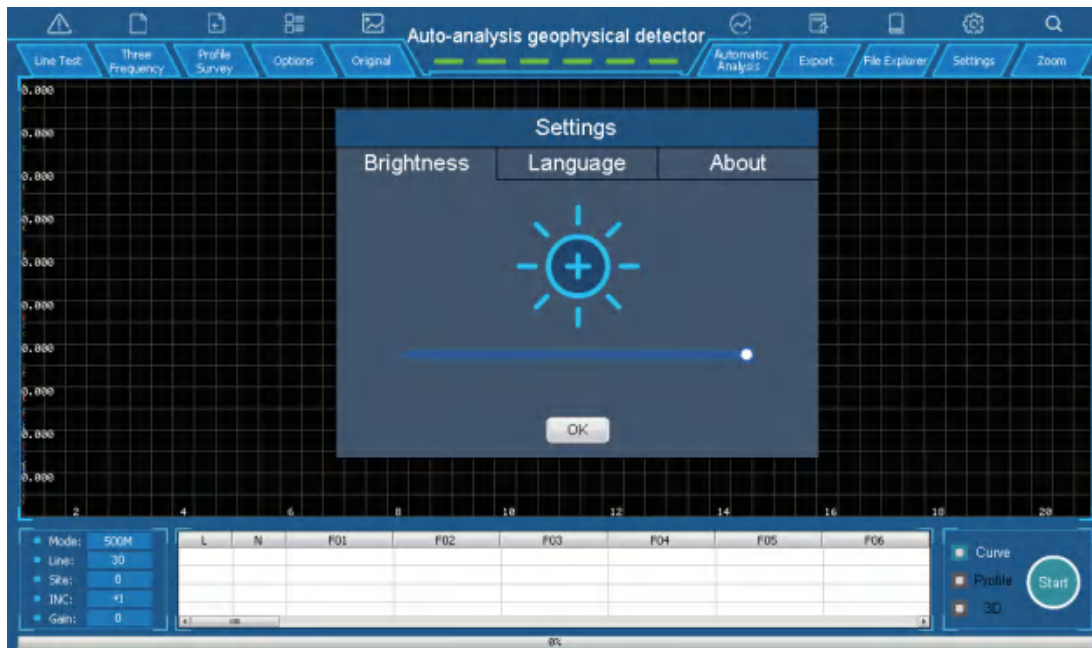
Connect the host machine and the computer with a dedicated data cable, and click the connect computer button to manage the folders on the computer.



11.System setting operation

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



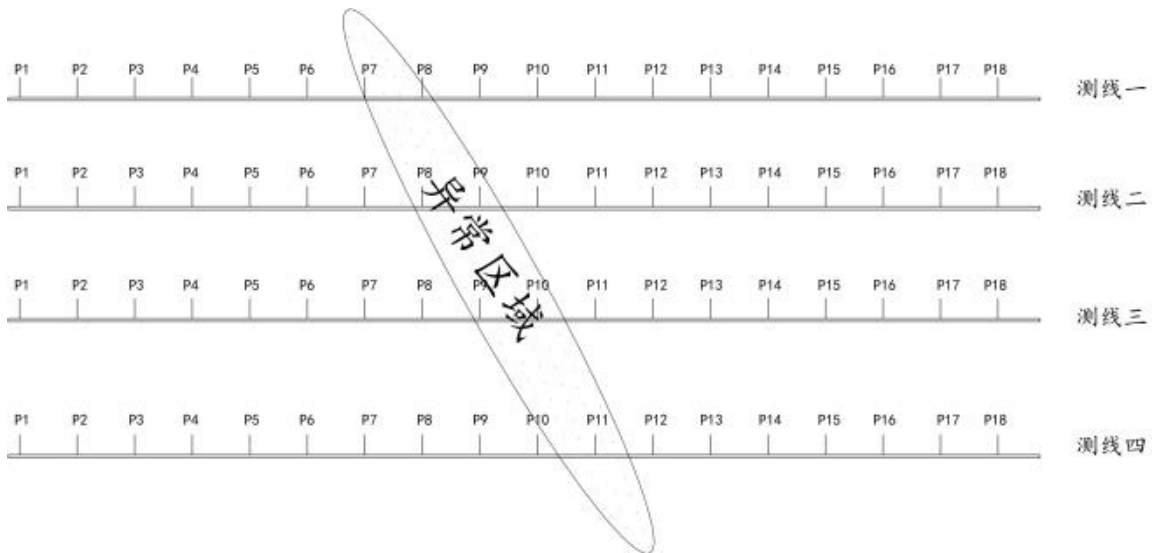


12. Multi-Instrument Wiring Operation

When measuring on open ground, several auto-analysis geophysical detector can be used for testing.

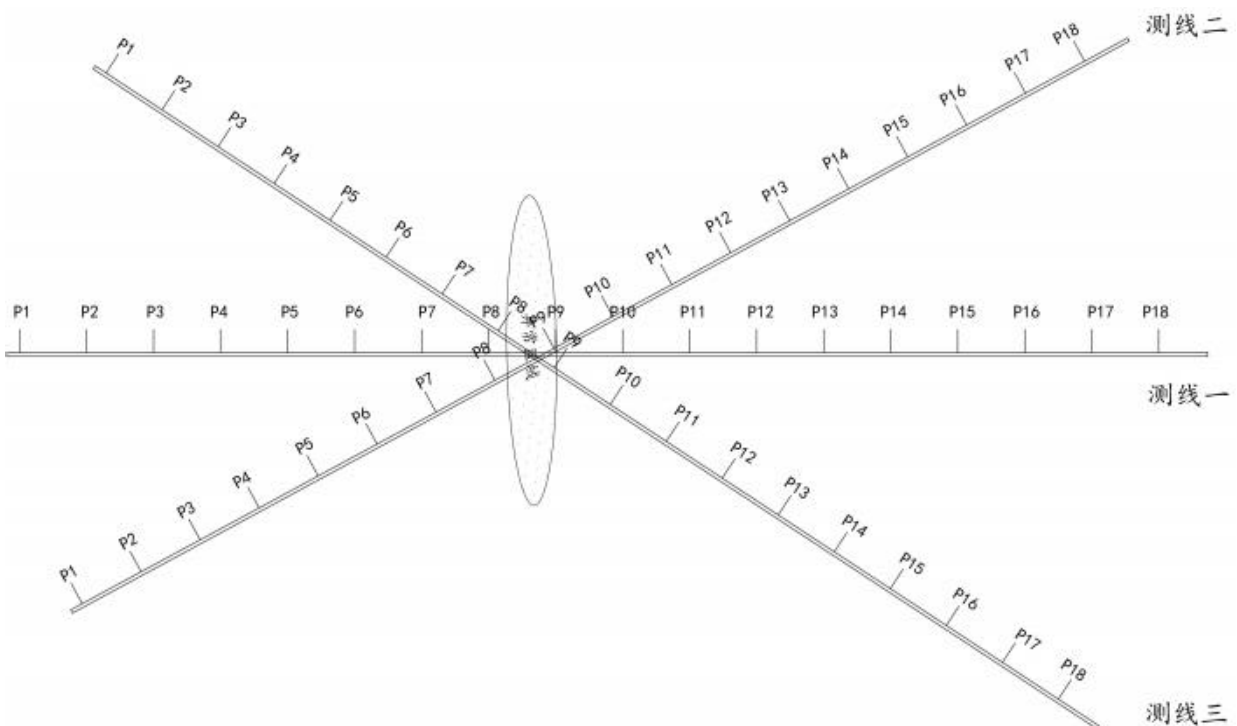
(1) Parallel wiring

This method is suitable for situations where the terrain is relatively open and flat, and 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 detect subsurface structural fracture zones.



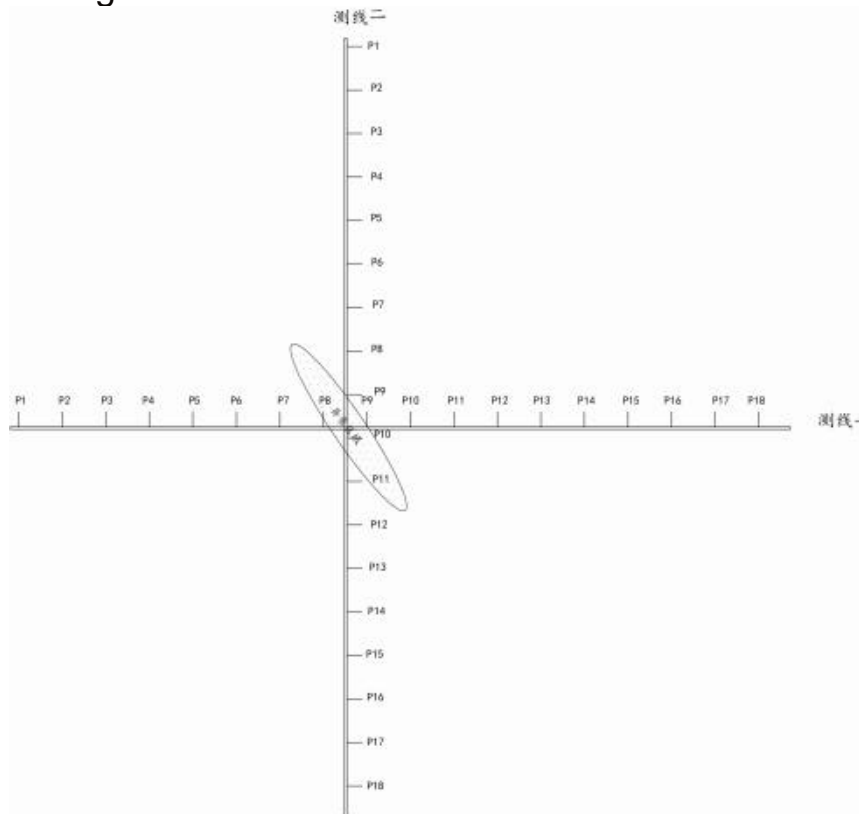
(2) Cross wiring one

It is suitable for situations where underground faults or fissures generally develop along the direction of valley extension. Cross-wiring method can be used, diagonal through the valley wiring, lateral intercept construction as soon as possible.



(3)Cross wiring two

Same as cross wiring one.



13. Battery Management Operation

When placing the battery, place the positive and negative poles of the battery and the positive and negative poles of the battery box correspondingly.



14. Precautions

- (1) Pay attention to the correct operation method when using the instrument. The correct use will prolong 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 hard, do not expose the LCD 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 lead to instrument data error or system crash.

15. After-Sales Service Guide

(1) Free maintenance

- 1) The host machine is guaranteed for two years, the cable is guaranteed for one year, the charger and charging stand are guaranteed for one month, and the battery 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.

(2) Charged maintenance service

The chargeable 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 or maintenance.
 - 3) Product failure or damage caused by disassembling the device by yourself.
 - 4) Damage caused by force majeure.
-

(3)After-sales service process

1)Please contact the relevant sales staff to confirm the problem.

2)If the instrument needs to be returned to the factory for maintenance, the user shall bear the delivery cost. When sending the instrument back to the factory, please specify: purchase time, fault conditions, return address, contact name, contact number and the salesperson, and send back the warranty card together.