大地电磁电导率仪

Electromagnetic Conductivity Meters

ADMT系列

ADMT EH Series

使用说明书

Instructions Manual

上海艾都慧测智能科技有限公司

Shanghai Aidu Intelligent Detection Technology Co. Ltd

Contents

Scope of Application

The models of the EH series of electromagnetic conductivity meters to which this user manual applies are: EH8, EH6, EH4, EH2, EH1.

User Instructions

Thank you for choosing the Geomagnetic Conductivity Meter equipment (hereinafter referred to as the "equipment") produced by Shanghai Aidu Intelligent Detection Technology Co., Ltd. Before using this product, please read this product manual carefully. This manual contains important information and data regarding the use of the product. Users must strictly follow the regulations outlined in this manual to ensure the proper operation of the equipment.

Manual Summary

This manual provides detailed instructions on operating and maintaining the equipment. It also explains the measurement principles, instrument components, and performance characteristics of the equipment. It serves as an accurate reference for technical personnel who have received specialized training or possess knowledge of instrument operation and control, such as automation technology.

Chapter	Contents
1. Measurement System Overview	To elaborate on the basic information of the instrument
2. Main Features of the Instrument	Key Technical Features of the Instrument
3. Introduction to the Operating Principle of the Instrument	Principle of Operation of the Instrument
4. Introduction and Technical Specifications of the Instrument	Components and Specifications of the Instrument
5. Introduction of the Software Interface Functions	Interface Functions and How to Log in and Register
6. Data Measurement Operations	Measurement Steps for the Instrument
7.Drawing operations methods	How to use data for plotting
8.Instrument field connection methods	Instrument Field Connection Methods
9.Precautions for Using Instruments	Precautions for Instrument Usage

1. Instrument Overview

The EH series of instruments for measuring electrical conductivity in the ground consists of five models: EH8, EH6, EH4, EH2, and EH1. These instruments are specifically designed for special magnetotelluric (MT) measurements at depths of 8000, 6000, 4000, 2000, and 1000 meters underground, respectively. They can measure both natural electromagnetic signals in the frequency range of 0.001 to 25 kHz and artificially induced electromagnetic signals to obtain the electrical structure beneath the measurement point. The EH8, EH6, EH4, EH2, and EH1 electromagnetic conductivity measurement systems measure the resistivity at different depths underground by simultaneously measuring the electric fields Ex , Ey and the electromagnetic fields Hx , Hy , Hz at different frequencies. The electric fields at different frequencies are captured through MN electrodes, while the

electromagnetic fields at different frequencies are captured through high-precision magnetic rods and pre-amplification circuits. After undergoing Fourier transformation, smoothing filtering, median correction, and other data processing techniques, the resistivity data for the measurement point is obtained.

Although field measurements may take several minutes to several tens of minutes, the obtained resistivity data can provide a reasonably accurate estimate of the underground electrical layering at the measurement point.

The measurement system of EH8, EH6, EH4, EH2, and EH1 earth electromagnetic conductivity meters consists of a wireless intelligent control host, a measurement host, electromagnetic sensors (probes), MN electrodes, and other accessories, These systems feature wireless connectivity via Wi- Fi and are designed to be waterproof. In some special applications, a transmitter can be added to improve data quality, especially in high-frequency bands where natural signals are typically weak.

The EH8, EH6, EH4, EH2, and EH1 electromagnetic conductivity measurement systems are capable of adjusting their configuration parameters automatically within the maximum depth range set by the system. This allows for selecting the desired exploration depth as per the requirements. These instruments are widely used in the survey and detailed investigation of groundwater, geothermal springs, metal minerals, oil and natural gas resources, as well as in engineering geophysics and geological hazard investigations. They offer advantages such as wireless connectivity, simple operation, real-time automatic mapping and analysis, and timely cloud backup of data. They also provide remote downloading, mapping, and analysis capabilities, along with real-time monitoring of data acquisition quality.

The core technology of the EH8, EH6, EH4, EH2, and EH1 electromagnetic conductivity measurement systems has obtained multiple invention patents (Patent Numbers: 201310205318.9, 201320054153.5, 201120214308.8, 201320303919.9).

They have been recognized as Shanghai High-tech Technology Achievement Transformation Projects. Over the past twenty years, extensive practical applications have demonstrated excellent consistency in anomaly curves compared to DC resistivity instruments within a depth of 1000 meters. Compared to similar imported products in the industry, these systems have significantly improved stability, reliability, and anti-interference capabilities, while significantly enhancing intelligence and simplicity. They have gained recognition and support from a wide range of customers.

2. Main Features

1) Real-time automatic mapping and analysis: The system integrates data acquisition, processing, and mapping capabilities, allowing for on-site real-time generation of depth profile curves, cross-sectional maps, and contour maps. The system provides instant analysis results and enables monitoring of data acquisition quality.

2)Intelligent and easy-to-use: The system optimizes instrument parameter settings, data acquisition, and processing, all of which are done intelligently. It offers a simple setup process, and after measurement, it provides effective data and images.

3)Adjustable depth: The measurement system allows for selecting the desired depth within the maximum depth range of the specific model.
4)Data sharing: The system enables data sharing between remote locations and on-site operations through various terminal devices such as smartphones, wireless intelligent control host, and PC hosts.

3. Instrument Working Principle Overview

The EH8, EH6, EH4, EH2, EH1, and other electromagnetic conductivity measurement systems utilize the magnetotelluric (MT) method, which utilizes the Earth's natural electromagnetic field as the working field source. This method is used to study the electrical structure of the Earth's interior. It is based on the principle that electromagnetic waves of different frequencies have different skin depths in conductive media.
By measuring the Earth's electromagnetic response sequence from high-frequency to low-frequency at the surface, the system analyzes the variations in electrical properties of geological bodies at different depths underground. This enables the determination of the occurrence status of subsurface geological bodies. The different skin depths associated with different frequencies provide insights into the electrical properties of subsurface geological structures.

3.1 Helmholtz equation

The Helmholtz equation is a partial differential equation commonly used in various fields, including electromagnetics. It describes the propagation of electromagnetic waves in a medium and is derived from the Maxwell's equations.
If we assume that the majority of the subsurface medium is non-magnetic and macroscopically homogeneous and conducting, with no charge accumulation, the Maxwell's equations can be simplified as follows:

$$\left.\begin{aligned}\nabla^2 H + k^2 H = 0\\ \nabla^2 E + k^2 E = 0\end{aligned}\right\} \qquad (1)$$

Here, K represents the wave number (or propagation coefficient).

$$k = [\omega^2 \mu\varepsilon - i\omega\sigma\mu]^{\frac{1}{2}} \qquad (2)$$

Considering that the propagation coefficient K is a complex number, let K = b + ia, where 'a' is the phase coefficient and 'b' is the absorption coefficient. The different models of EH8, EH6, EH4, EH2, EH1 are designed based on the maximum depth setting and the frequency response range of the electromagnetic sensors (probes). They incorporate reasonable adjustments to the instrument's amplification circuit, filtering, smoothing, and other data processing methods. The frequency range and core frequency points are optimized differently in various regions. The frequency

range typically spans from 0.001 Hz to 25 kHz.

3.2 Wavegroup impedance and resistivity

In the presence of a changing magnetic field induced by variations in the Helmholtz equation, there is a relationship between electric field and magnetic field, given by:

$$\frac{E}{H} = -\frac{i\omega\rho}{k} \qquad (3)$$

Surface impedance Z is defined as the ratio of the horizontal components of the electric field and magnetic field at the Earth's surface. In the case of a homogeneous Earth, this impedance is independent of the polarization of the incident field and depends on the electrical resistivity and the frequency of the electromagnetic field:

$$Z = \frac{E}{H} = \sqrt{\omega\mu\rho}e^{i\pi/4} \qquad (4)$$

Equation (4) can be used to determine the resistivity of the Earth:

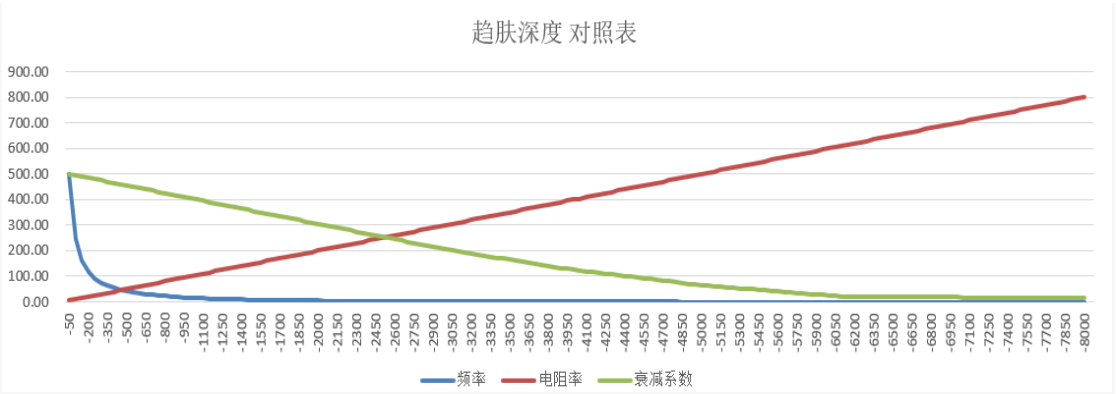
$$\rho = \frac{1}{5f}\left|\frac{E}{H}\right|^2 \qquad (5)$$

3.3 Skin Depth

In a non-magnetic medium, the formula for skin depth is given as:

$$\delta \approx 503\sqrt{\rho/f} \quad (m) \qquad (6)$$

From the above equation, it can be observed that the penetration depth of electromagnetic waves is influenced by frequency and resistivity. Moreover, as the depth increases, the attenuation becomes more significant. The approximate corresponding relationships are summarized in the table below.



Skin Depth Comparison Chart

4. Instrument Description and Technical Specifications

4.1 Instrument Components

Figure 4-1: 7-inch Control host

A: Hx interface
B: Hy interface
C: Hz interface

D: Ex Status Light
E: Ey Status Light
F: Hx Status Light
G: Hy Status Light
H: Hz Status Light
I: FGM Status Light

J: Switch
(including Status Light)
K: charging port
L: Ex interface
M: Ey interface
N: FGM interface
(Pending Development)

Figure 4-2: Measurement host

Figure 4-3: MN Electrode

Figure 4-3: Non-polarizing Electrode

MN Electrode: Specially designed alloy electrode, can be hammered, detached, and inserted.

Non-polarizing Electrode: Offers superior stability.

Alloy electrode hammer: Hammurable, withdrawable, can be used as a handheld electrode handle, and can be stepped on.

Figure 4-4: Alloy electrode hammer

Figure 4-5: MN Cable

Figure 4-6: Electromagnetic Sensor (Probe)

4.2 Main Technical

4.2.1 Wireless Intelligent Control Host Parameters

Parameter \ Model	ZJLY-7L
Display screen	7-inch IPS highlight touch screen, automatic switching between horizontal and vertical screens
Resolution	800*1280
Connection Method	Multi-functional magnetic suction connector (including charging, USB, signal input), WiFi, Bluetooth
Main Function	real-time 2D/3D mapping
Operating System	Android 13
CPU	RK3568 Quad-core
Memory	4GB
Storage	32GB
Battery	8.4V/6000mAH (can be connected to an external mobile power bank)
Power Consumption	6W
Charging	5V3A, compatible with most mobile phone chargers
Size	238*139*53mm
Weight	<1 kg
Working Environment	-20C° ~ +60C°, 95%RH

4.2.2 Measurement Host Parameters

Model / Parameter	EH1	EH2	EH4	EH6	EH8
Maximum Depth(m)	≤1000	≤2000	≤4000	≤6000	≤8000
Selectable Depth(m)	10~1000	10~2000	10~4000	10~6000	10~8000
Channel Mode	MN+TT				
Connection Method	WiFi				
Frequency Range	0.001~25000 Hz				
Measurement Accuracy	1%Fs				
Resolution	1uV				
Frequency-selective filter	Pre-set frequency and intelligent frequency selection, analog + digital filtering				
Input impedance	≥1M				
Suppression of 50Hz working interference	≥60dB				
Sampling Time	10~1380s				
Size	320*135*240mm				
Battery	12.6V/20000mAh				
Power Consumption	13W				
Weight	3.5kg				
Working Environment	-20℃~+60℃, 95%RH				

4.2.3 MN Cable Parameters

Model / Parameter	MN Cable
Adapter Host	EH series host
Cable Node	2 channels/lines
Matching electrodes	MN electrode, Non-polarizing electrode
Cable spacing	20 meters
Cable diameter	5mm
Weight	0.75kg/piece
Working environment	-20℃～+60℃, 95%RH

4.2.4 Electromagnetic Sensor (Probe)

The electromagnetic sensor (probe) of this instrument series is a precision device designed to accommodate different detection requirements at various depths, such as EH8, EH6, EH4, EH2, EH1, etc. Custom configurations are typically available based on specific user needs. EH8, EH6, and EH4 come standard with an ultra-low frequency electromagnetic probe ADEH-T7, while EH2 and EH1 come standard with an ultra-low frequency electromagnetic probe ADEH-T5.

Model / Parameter	ADEH-T5	ADEH-T7
Electromagnetic induction coil (mm/w)	450/12	450/12
Electromagnetic induction iron core (KmH/m)	400	500
Size	Φ7*102cm	Φ7*125cm
Weight	5.7kg	6.5kg
Working Environment	-20℃~+60℃, 95%RH	

5. Software Interface Functions' Introduction

5.1 Software Main Interface

After powering on the control console, the system initialization interface displays the following menus at the top of the screen: System Settings, File Browser, User Information. At the bottom of the screen, the menus are displayed as: Instrument Settings, Data Processing, Plot Analysis, New Measurement (as shown in Figure 5-1).

Figure 5-1: System Initialization Interface

① System Settings: Functions include cloud-based download of calibration coefficients (requires internet connection), enabling Wi-Fi hotspot and TCP server, etc.

② File Browser: View previously measured files, perform operations such as searching, backing up, deleting files, and confirming plots.

③ User Information: Register or log in to the "Aidu Detection" account. After registration, users can bind multiple devices for data sharing, data processing, and web-based mapping functions.

④ Battery Level: The device and instrument battery levels are alternately displayed. "SYSTEM: Battery Percentage" indicates the remaining power of the control console, and the instrument battery level is displayed after connecting to the device in the format: Instrument ID: Battery Value%.

⑤ Device Name and Model Display: After initializing and connecting a device, the last connected device's name and model will be displayed by default.

⑥ Instrument Settings: Configure "Filtering Method," "Measurement Starting Point," "Measurement Speed," "Measurement Increment," "Start Depth," "End Depth," "Overlay

Count," "EX, EY, HX, HY."

⑦ Data Processing.

⑧ New Measurement: Create a new project or continue measuring in an existing project.

5.2 System Settings

System Settings Interface (Figure 5-2)

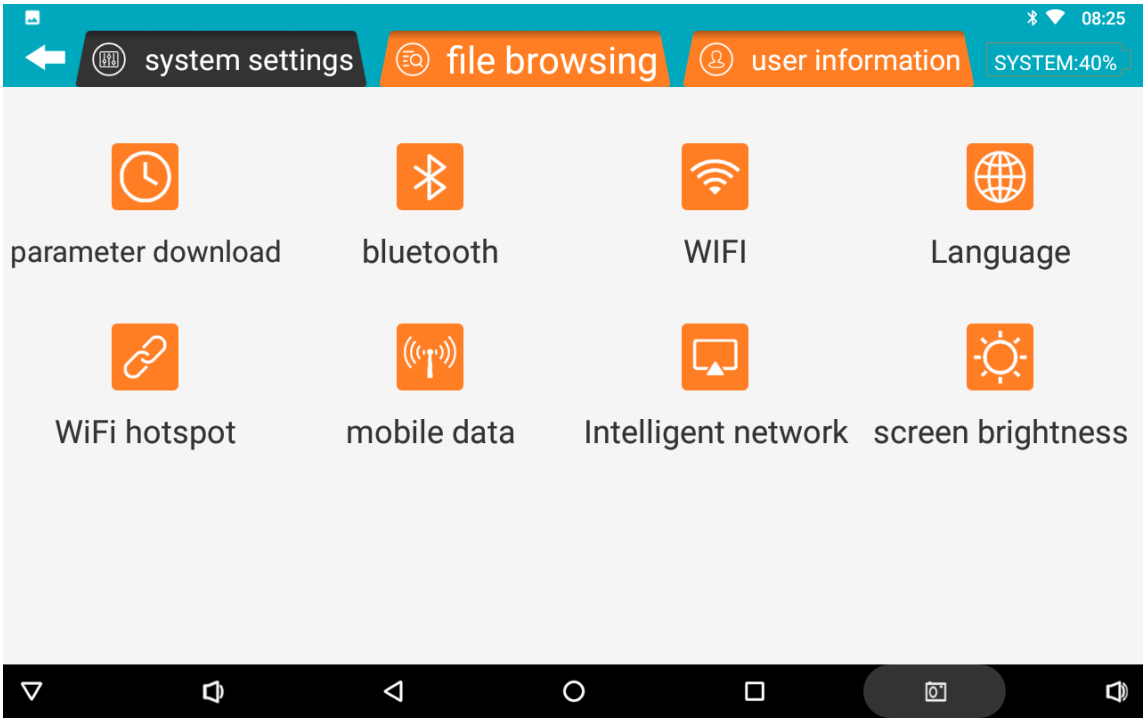


Figure 5-2: System Settings

- Parameter Download: Download data parameters for the device. Fill in the input box with the unique identifier of this instrument (as indicated on the product). Note: This function in the interface requires an internet connection to download parameters from the cloud server.
- Bluetooth: Used to enable the device's Bluetooth function and connect to Bluetooth devices.
- WiFi: Used to enable the WiFi function and connect to the internet.
- Language: Used to switch the software language.
- WiFi Hotspot: Used to enable the WiFi hotspot function and TCP server function of the control console. Note: The "WiFi" and "WiFi Hotspot" of the control console cannot be enabled simultaneously.
- Mobile Data: Mobile network data settings function.
- Wireless Display: Mirrors the screen of the control console onto other devices.
- Screen Brightness: Adjusts the screen brightness and screen-off time of the control console.

5.2.1 User Information

If the control console has a built-in 4G version, you can confirm whether the mobile data is turned on. If it does not have a 4G version, you can first connect to a nearby WiFi internet, then go back to the main interface and click "User Information" (as shown in Figure 5-3).

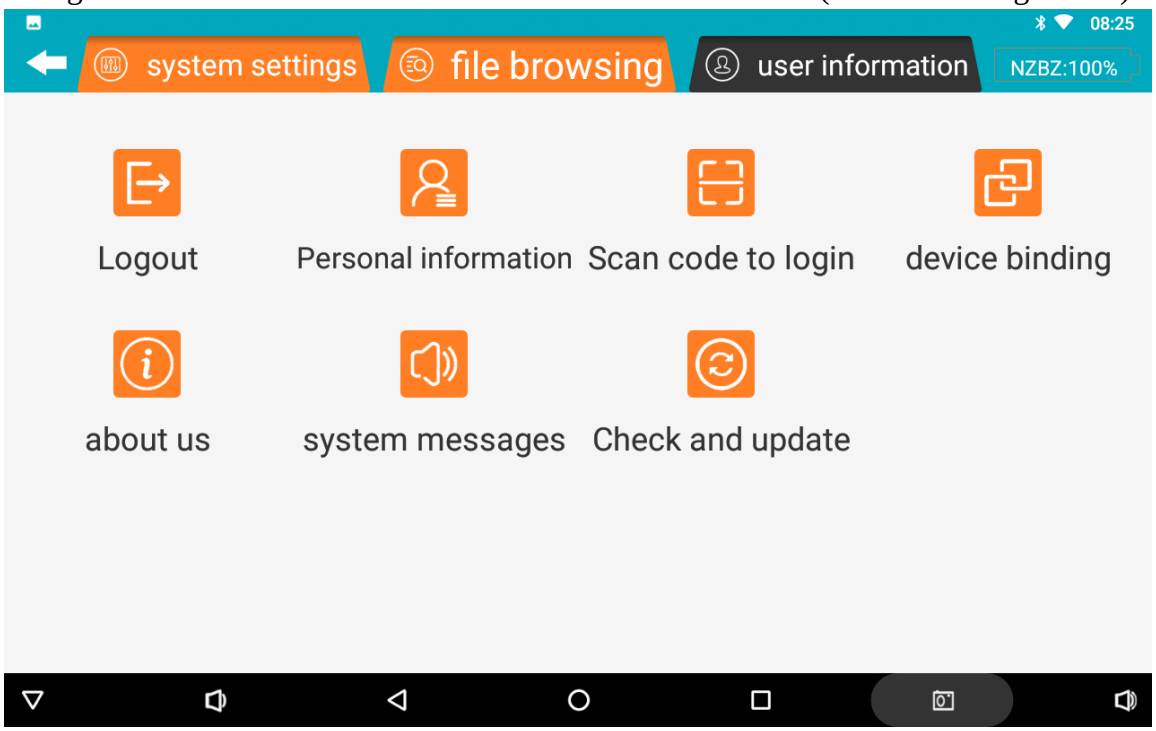


Figure 5-3: User Information

User Login: Login to the " Aidu Measure " account when using it for the first time. If you don't have an account, you can quickly register using your mobile phone number. After logging in, the device ID you purchased will be linked to your account.
User Logout: Log out of the current account.
Personal Information: View the information associated with the current account.
Scan Code Login: Use a control host with a camera, mobile phone or tablet to scan the code and log in to the Aidu data processing system http://web.aidush.com Please select 'Aidu Measure' when logging in ” Account.
Device binding: You can bind the connected instrument device model to the logged in account, or unbind it.
About us: Display the APP software version, user agreement, and privacy protection policy details.
System message: System messages can be queried.
Check for Updates: Check if there are any new software updates available and choose to update as per your requirement.

5.2.2 User Login and Registration System

For users who have already registered an Aidu Detection account, please follow the following steps (①) to log in.

For users who haven't registered an account, please follow the following steps (②) to register and then log in.

①: User Information → User Login → Enter account and login password → Click on Login.

②: User Information → User Login → Register Now → SMS Registration →

Enter mobile phone number → Set login password → Receive verification code and fill it in → Register Now → Return to login interface → Login with the account.

After logging in, users can bind multiple devices. Even if a device is not bound, they can still use other functions except for instrument settings and creating new measurements. When selecting "Device Binding," specific configuration parameters of the instrument will be synchronized. Through the account, users can access various functions such as data sharing, data processing, and web-based mapping. If you prefer not to bind, selecting "Only Synchronize Instrument Data" allows you to conduct measurements and perform plot analysis locally, without using the account-based features.

No	Function	Bindin	Not
1	Web Backend Data Download, Plotting, Processing, and All Other Functions	√	
2	Sharing data between accounts	√	
3	Cloud Backup of Data (Backup only, no download support)	√	√
4	Instrument Settings	√	√
5	Instrument Measure	√	√
6	Local Drawing	√	√

6. Data Measurement Operations

6.1 WiFi connection

On the main interface of the software, select System Settings ->WiFi ->Connect to Network Name: EH * (by instrument model, such as EH1) ->Password: 88888888->Connect ->Set Fixed IP: 192.168.8.8->Return to the previous interface ->Enable Services ->Complete. Successful connection may take 1-3 minutes.

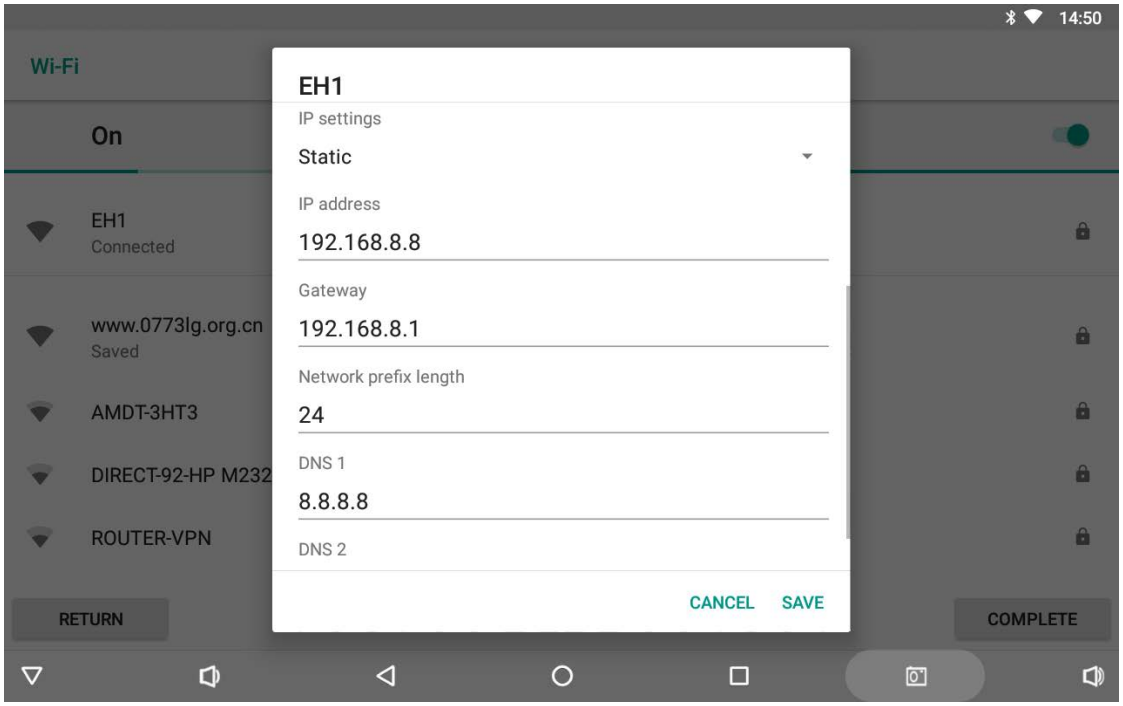


Figure 6-1

6.2 Instrument Setting

During actual measurement, start by opening "Instrument Settings" (Figure 6-2), where you can configure parameters such as "Start Depth" and "End Depth." After making the necessary adjustments, click on "Confirm," and a prompt will appear indicating that the settings have been successfully saved. Please note that settings will not be saved unless confirmed.

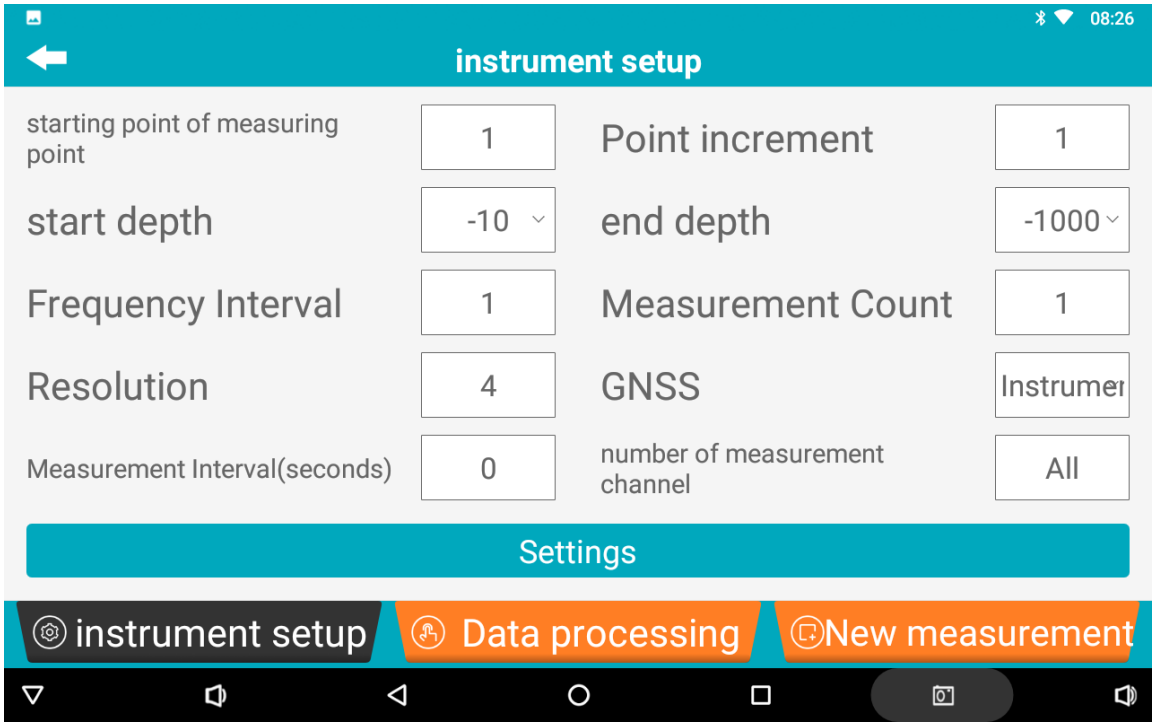


Figure 6-2

- start point of measuring point: Default "0", input range 0-10000, representing the starting number of incremental measurement points.
- Point increment: Default "1", input range ± 10000, positive numbers increase, negative numbers decrease; Add or subtract based on the starting point data of the next measurement point.
- start depth: Select the start depth.
- End depth: Select the end depth.
- Frequency Interval: default "1".
- Measurement Count: default "1".
- Resolution: Select the measurement resolution, send in combination with 1-0.001Hz+1Hz, 2-0.01HZ+1Hz, send separately with 3-0.1Hz, send separately with 4-1Hz, and send separately with 5-2Hz.
- GNSS: Select GNSS source, support controlling host source, instrument source, and manual input.
- Measurement interval: default '0'.
- number of measurement channels: default "all", optional "Ex", "Ey", "Hx", "Hy", "Hz", select at least one E and one H.

6.3 Create new measurement

- To create a new measurement, click on "New Measurement" to enter the measurement interface (Figure 6-3). Fields marked with an asterisk (*) are required.

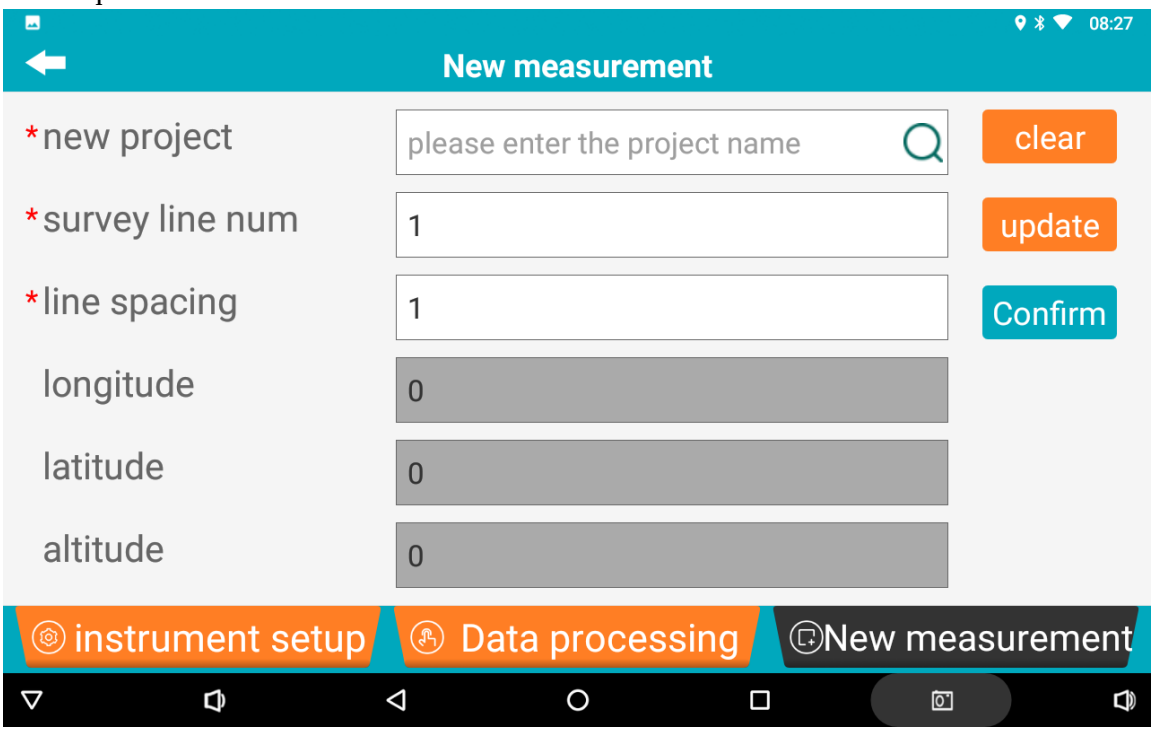


Figure 6-3

- New Project: Enter a new project name or click to select and load a previously saved file for continuation of the measurement. If you need to resume the previous measurement after exiting in the middle of the measurement, select the project file name to continue the measurement. Note: If there is already a project name in the project name field, you need to click on "Clear" before entering a new project name.
- Line Number: It represents the initial measurement line for a new project. For existing project files, if there is data available for the set measurement line, the measurement will start from the last data point of that line. If there is no data available for the set measurement line, a new measurement line will be created and the measurement will start from there.
- Line Spacing: It refers to the distance between two measurement lines. (Line Number = Line Spacing × Measurement Line Number; note: decimal values cannot be selected.)
- Clear: If there is already a project name in the project name field, click on "Clear" before creating a new project.
- Confirm: After setting the above options, click on "Confirm" to enter the measurement interface (Figure 6-4).

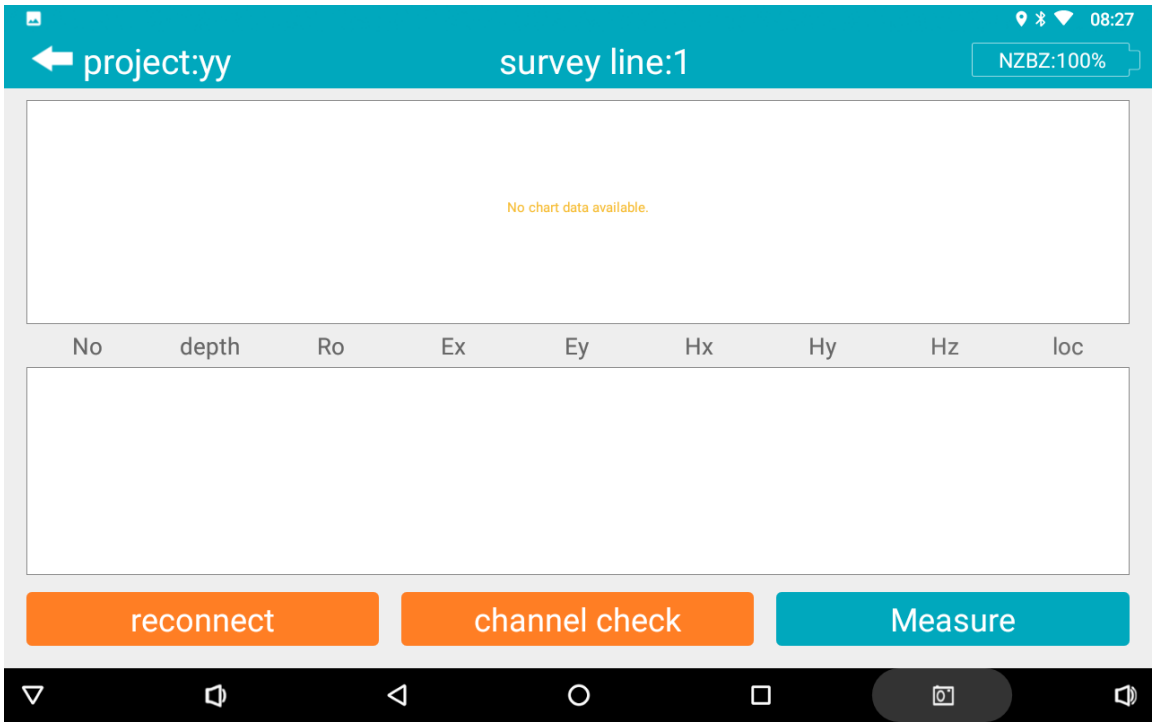


Figure 6-4

Before initiating the actual measurement, you can perform a "Check" to verify if the measurement data can be obtained. If there are no issues, click on "Measure" to start the survey (Figure 6-5).

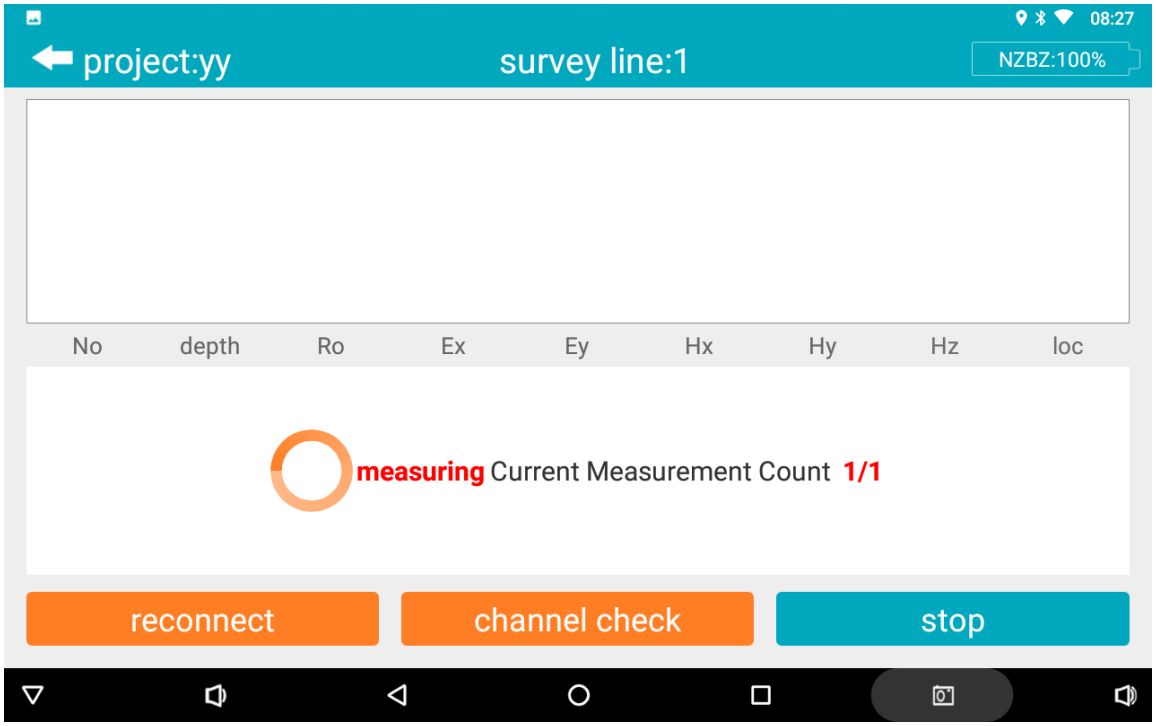


Figure 6-5

If during the measurement process you encounter a progress bar resetting to zero and displaying "Retry," it could indicate fluctuations in the WiFi signal. If you need to click

"Retry" multiple times, check if the connection is disrupted on the main interface. It is also recommended to restart the measurement host.

7. Plotting Operations

7.1 Entry mode of drawing function

There are three places to enter the drawing analysis function in Aidu detection APP. The first is to directly click the "auto draw" button to enter the drawing analysis function after reading the data in the "New Measurement" interface. The second is to directly click the "Drawing Analysis" button in the main interface of the software to enter the drawing analysis function. Third, on the file browsing page of the main interface of the software, select a file and click the "Drawing" button to enter the drawing analysis function.

7.2 vertical contour map

After entering the drawing function in the first and second modes, the "vertical contour map" (Figure 7-1) of the current latest file will be directly displayed. The "vertical contour map" in the upper right corner can be used to switch the "plane curve map, plane contour map" and other graphics, and the data processing switch in the upper left corner can also be used to switch the graphics before and after data processing. Tap Project to switch to a different project file.

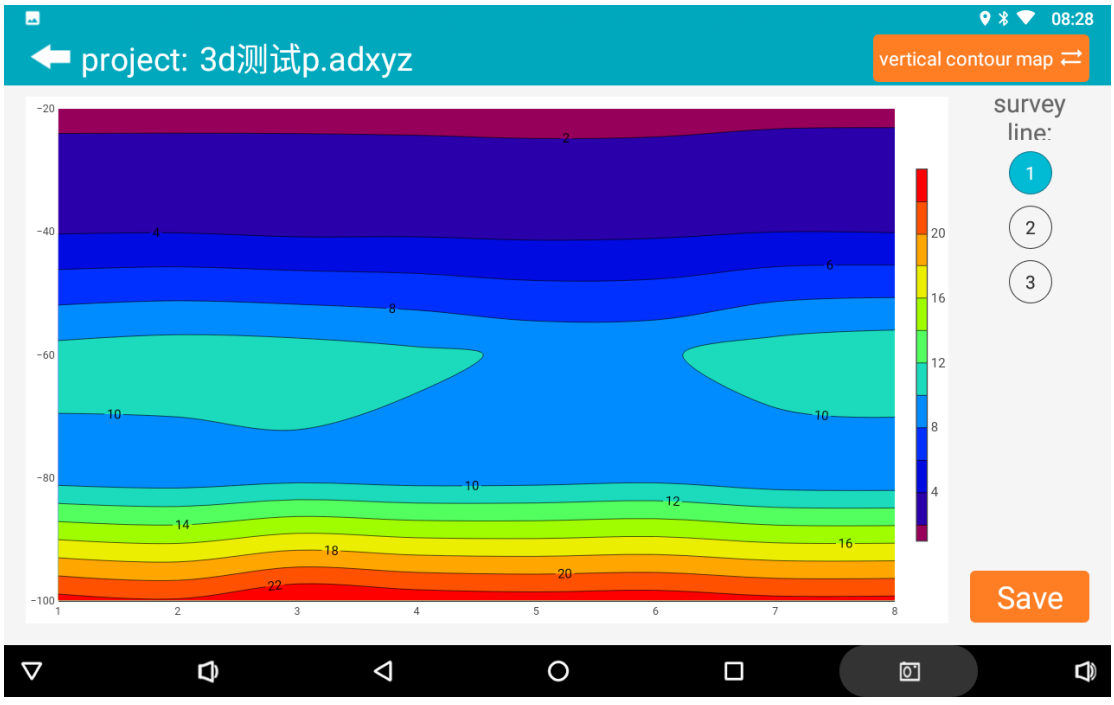


Figure 7-1

The vertical contour map of all survey lines in the current project file is displayed. You can select the survey line on the left side. Click in the contour map to display the XYZ

value at the clicked position (X-survey point number, Y-depth, Z-specific value). "Save" in the lower left corner can save the current image to the tablet or mobile phone. A minimum of one survey line is required, and a minimum of six survey points on each survey line are required for mapping.

7.3 Plane curve diagram

The specific depth data curve of all survey lines in the current project file is displayed (Figure 7-2). Different depths in the file can be selected on the left, and the current image can be saved by "Save" in the lower left corner.

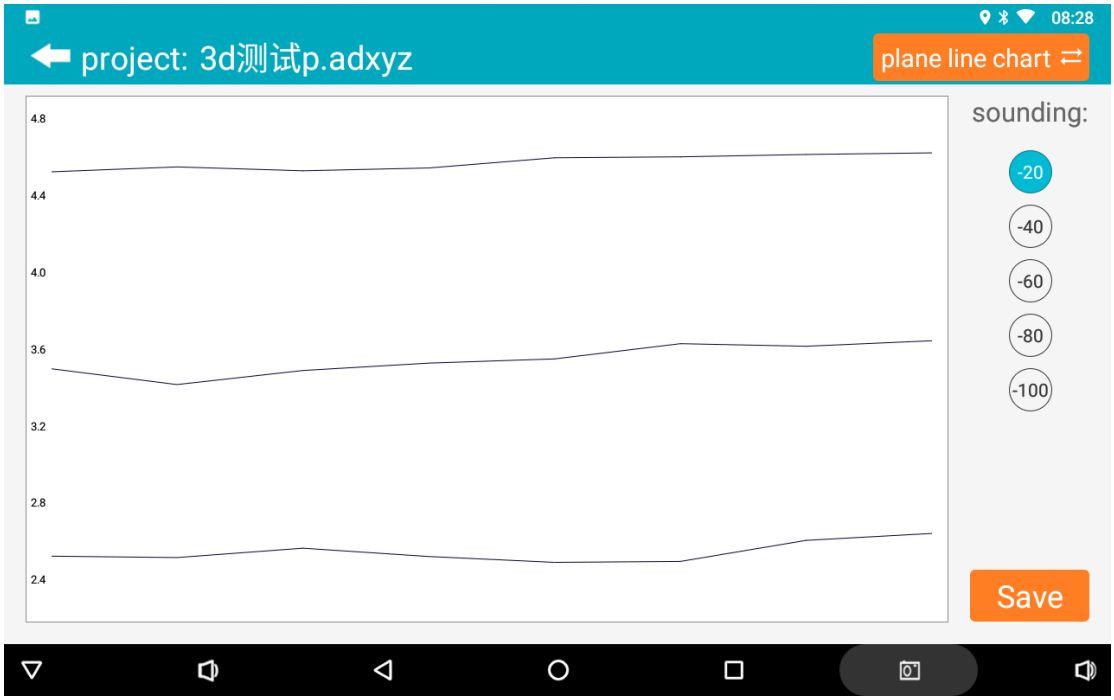


Figure 7-2

7.4 Plane contour map

The plane contour map (Figure 7-3) of all survey lines in the current project file is displayed. On the left side, you can select different depth maps under the file. XYZ values (X-survey point number, Y-survey line number, Z-specific value) will be displayed in the contour map. Save in the lower left corner saves the current image. Generally, at least 2 survey lines and at least 6 survey points for each survey line are required for the plane contour map.

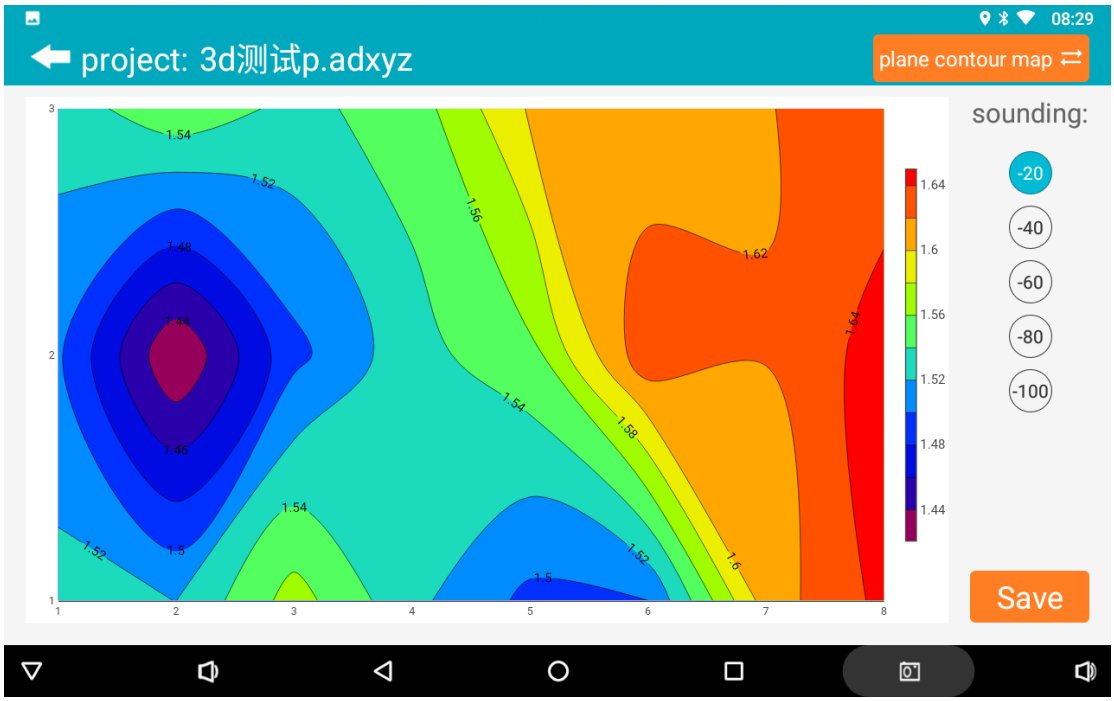


Figure 7-3

7.5 AI Automatic Analysis

After clicking "AI Analysis", the system will enter the result of AI analysis of the file data (Fig. 7-4), and the bottom will prompt "The black (red) box with the depth of XX-XX meters near the measuring point xx-xx is an abnormal area" and other prompts. This abnormal area is generally the routine abnormal judgment set by the instrument, and also the location or depth to guide you to drill. Generally, AI will prompt 1-2 areas for you to choose. You can make a comprehensive judgment and make a decision based on your experience and the actual hydrogeological environment.

At the same time, if you are not satisfied with the results, you can click the first operation icon at the bottom right of the screen to enter the AI analysis setting interface (Figure 7-5), click "Data Download" to download the latest AI analysis parameters, or click "Parameter Type" to select "Default" or "AI Recommendation". Among them, "default" is the ideal analysis parameter set for a certain type of product of the company, and "AI recommendation" is that after the AI analysis system establishes the data model according to the results of user feedback records, AI automatically learns and adjusts the generation of relevant analysis parameters, which in principle is closer to the real analysis. Of course, this needs to be determined by the accuracy of the data marked by the user himself and the number of marks.

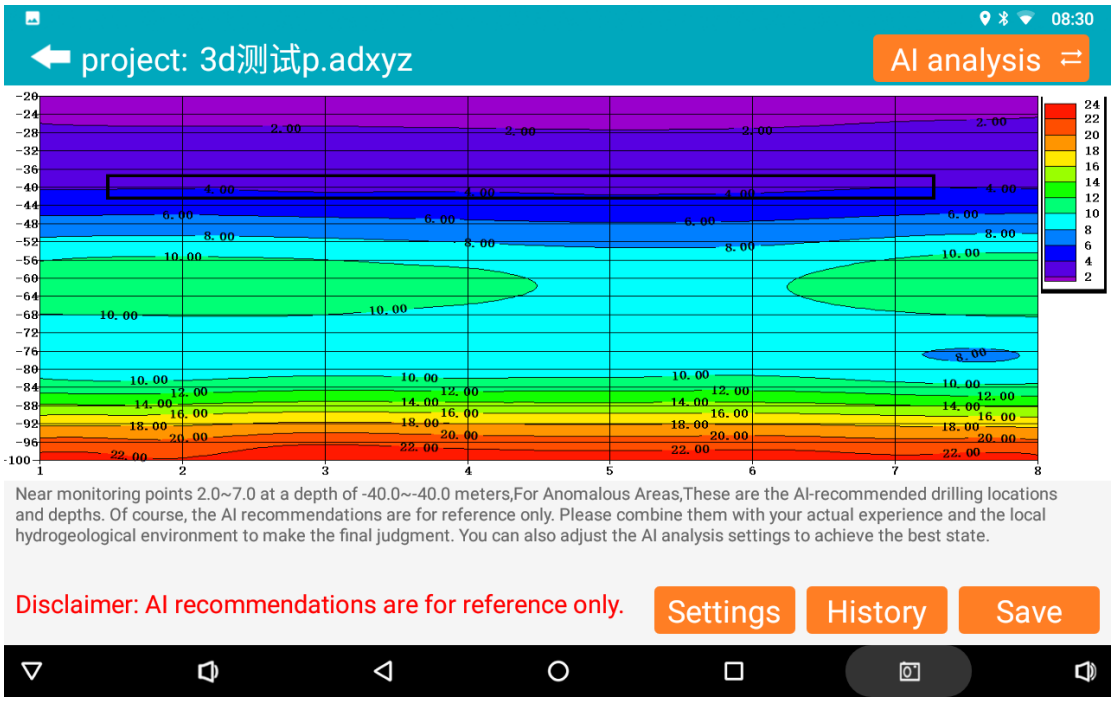


Figure 7-4

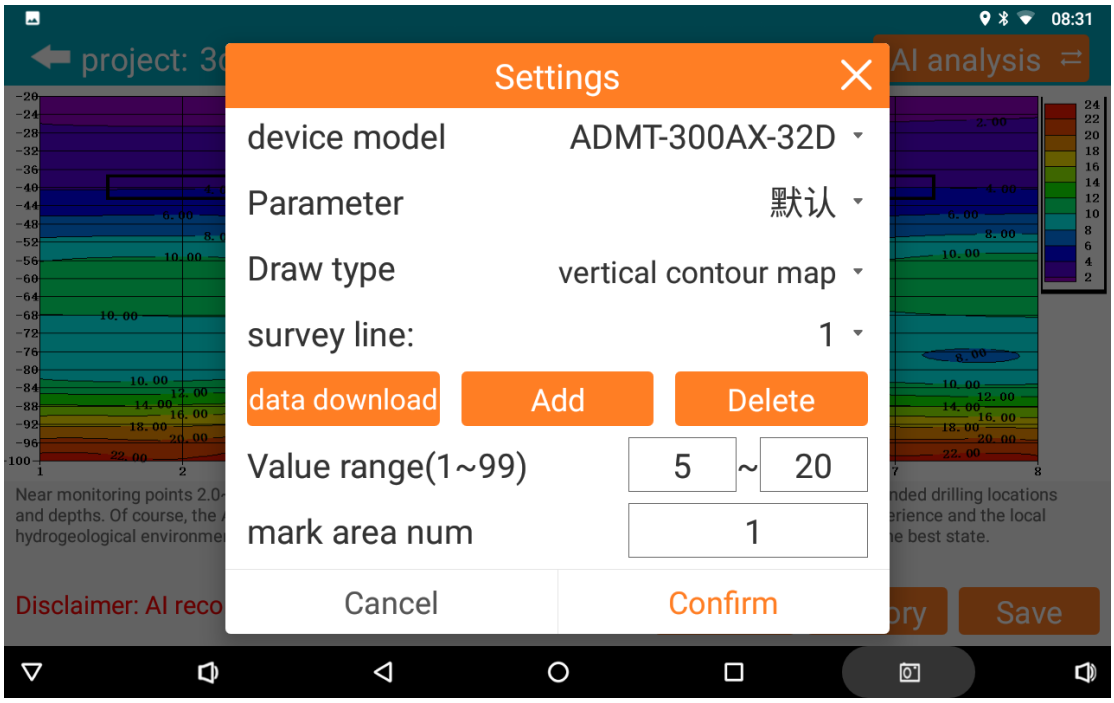


Figure 7-5

You can also select the "Add" function to manually add the AI analysis parameters belonging to your account. All our analysis algorithms have been concentrated on a percentage representation. You can manually slide the percentage of the value range left and right to adjust the AI analysis results. Generally, the smaller the percentage is, the lower the apparent resistivity will be displayed. The larger the percentage is, the higher the apparent resistivity will be displayed. It can also be an intermediate area, etc. By adjusting

this percentage, it can be displayed to the area you think is the most accurate. In this way, AI will analyze according to this setting later, which will be more accurate. You can also set the mark area to 1 so that only one optimal mark area is displayed.
This AI parameter setting generally requires very skilled use of this instrument, and has some practical experience and local data performance of this type of instrument as the basis for setting. If the primary use of this instrument, it is not recommended to use it.
Select Delete to delete this set of Set AI Analysis parameters.

7.6 Record AI analysis result feedback

AI analysis result feedback is very important, because AI is based on user feedback to machine learning, establish effective allocation rules, all AI automatic analysis is "the more accurate, the more feedback the more accurate".
In the AI analysis interface, click the second operation button at the bottom right of the screen to find the history interface (Figure 7-6). Select the "Default" button in the "Validity" column behind the analyzed data file. If the analysis result is consistent with the actual situation, click "Yes" (Figure 7-7). At this time, the system will record the valid data. AI analysis will be more and more accurate.
If not, click "No". After clicking "No", the drawing effect operation box (Figure 7-8) will pop up. The result of AI analysis can be adjusted by manually sliding the percentage range of the value range left and right. Generally, the smaller the percentage is, the lower the value area will be displayed, and the larger the percentage is, the higher the resistance area will be displayed. It can also be a certain value in the middle. Adjust the analysis result to be consistent with the actual result, and then mark it as valid, so as to increase the amount of data marked as valid. If it is not adjusted, it will not be recorded.

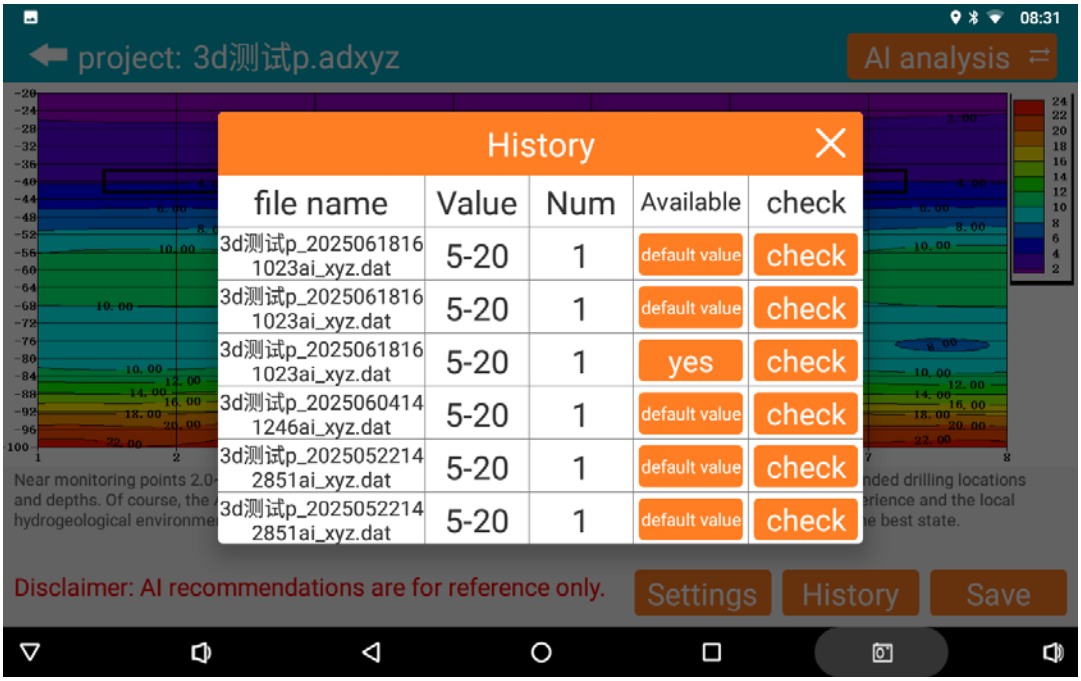


Figure 7-6

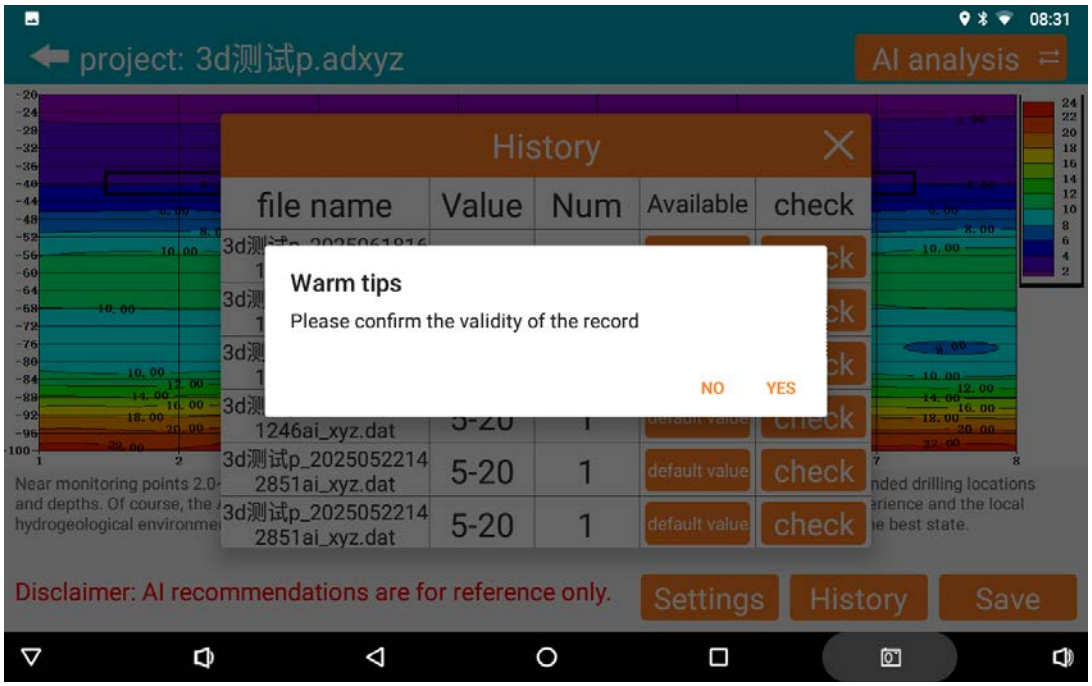


Figure 7-7

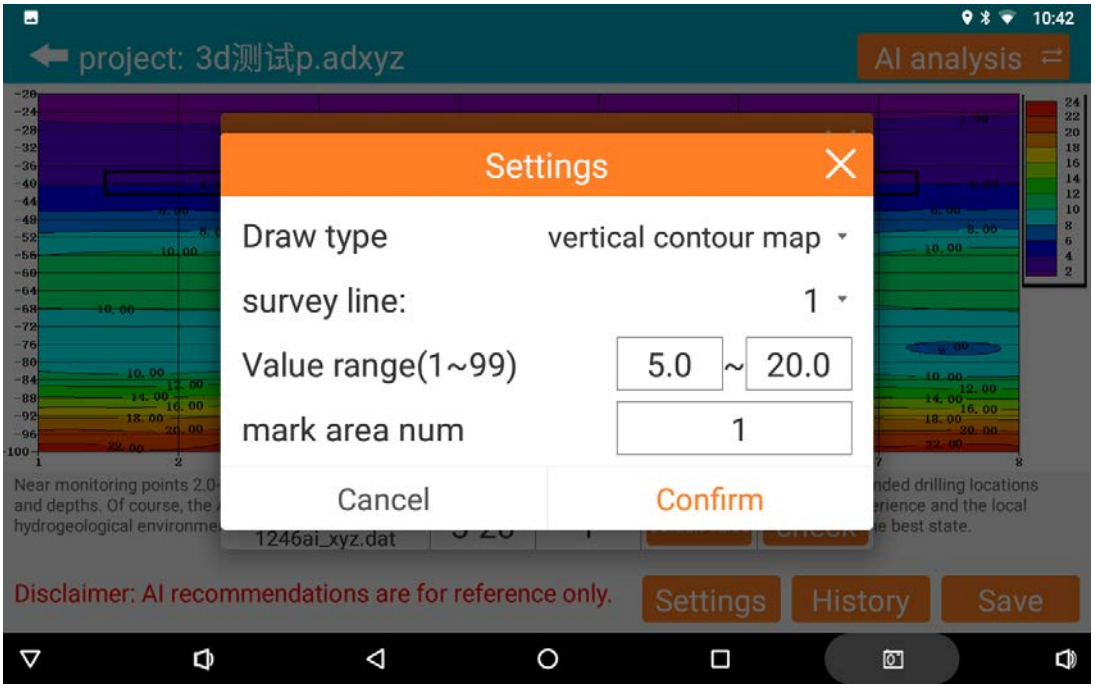


Figure 7-8

7.7 Save AI Analysis Results

In the AI analysis interface, click the third operation button at the bottom right of the screen (Figure 7-9) to save the images automatically analyzed by AI.

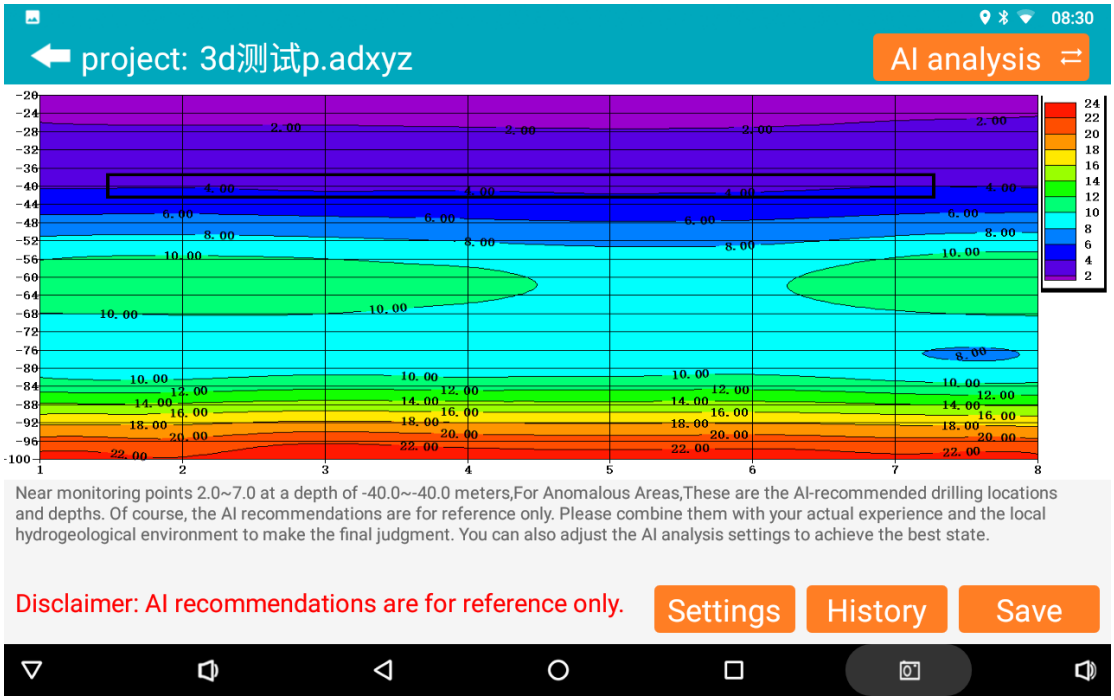


Figure 7-9

8. The field connection method

Set up the Ex and Ey channels: When starting the field setup, configure the Ex and Ey channels. Use an electrode hammer to drive the MN electrodes into the ground, with a distance of approximately 20 meters between them. Typically, bury the Hx and Hy electromagnetic sensors (probes) horizontally in the ground at a depth of 20-100cm (as shown in Figure 8-1).

Figure 8-1: Field setup diagram

During field usage, you can designate the east-west or south-north direction as the X direction, with the other direction becoming the Y direction (as shown in Figure 8-2 and Figure 8-3). After connecting the electrodes and cables, finally connect the measurement cables to the interfaces of the electromagnetic sensors and then connect them to the measurement host (as shown in Figure 8-4).

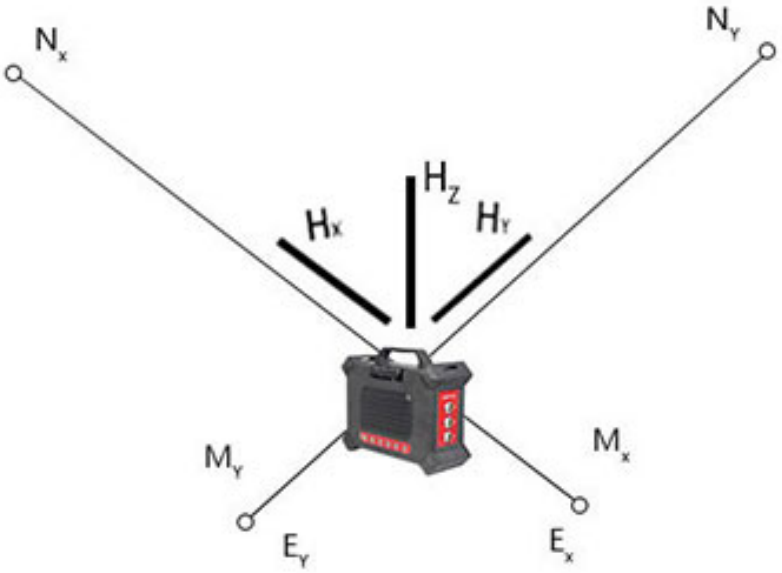


Figure 8-2: Field layout schematic

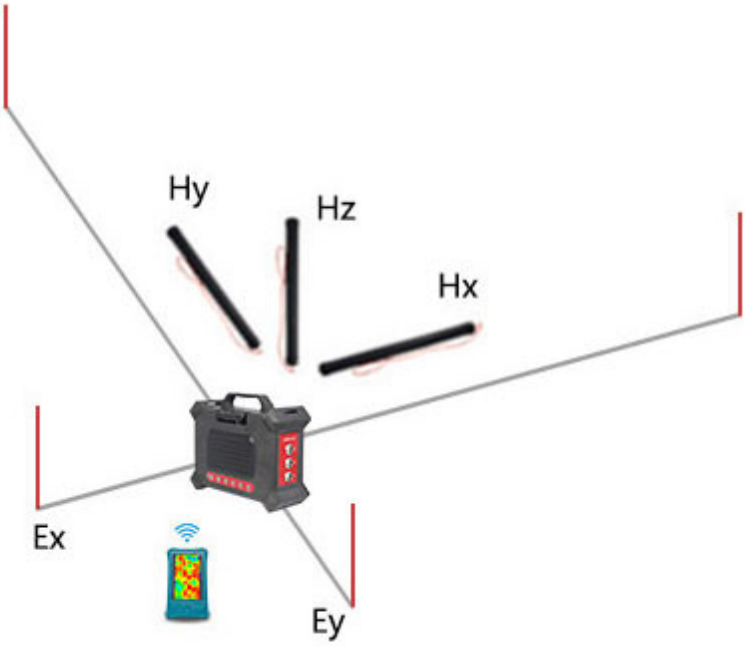


Figure 8-3: Field layout schematic(2)

A: Hx interface
B: Hy interface
C: Hz interface

D: Ex Status Light
E: Ey Status Light
F: Hx Status Light
G: Hy Status Light
H: Hz Status Light
I: FGM Status Light

J: Switch
(including Status Light)
K: charging port
L: Ex interface
M: Ey interface
N: FGM interface
(Pending Development)

Figure 8-4

9. Considerations for Using Instruments

1.Regularly check the battery level and recharge: It is important to periodically check the battery level of the equipment and ensure it is adequately charged. Maintain sufficient battery power during operation and remember to turn off the power promptly after use to prolong battery life.

2.Proper handling during transportation and use: Assign a designated person to handle and safeguard the equipment during transportation and use. Avoid subjecting the instrument to severe vibrations, impacts, or exposure to water and moisture.

3.Keep the equipment clean and store it in a well-ventilated, dry area: After each use, ensure the equipment is clean and free from debris. Store it in a well-ventilated and dry location to prevent moisture buildup or damage.

4.Pay attention to abnormal measurement data: If you encounter consistently low and similar measurement data at each measurement point, it may indicate a malfunction in the instrument. Cease using the equipment immediately and contact the after-sales support to seek confirmation and repair.

Note: The operational instructions defined in this product manual may be subject to changes due to product optimization and improvements by the company. Please refer to the latest electronic version of the manual for any updates.

大地电磁电导率仪操作手册

ADMT EH Series of Electromagnetic Conductivity Meters

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