Portable Bluetooth Inclinometer (Upgrade) manual

GH-CX-BT-001-D

Weihai Gemho Digital Mine Technology Co., Ltd.

http://www.minestar.cn/

Statement

This document provides information about Weihai Gemho Digital Mining Technology Co., Ltd. products. No license to any intellectual property rights is granted by this document, express or implied, or by hijacking or otherwise. Weihai Gremho assumes no responsibility other than those stated by Weihai Gemho in the terms and conditions of sale of its products. Moreover, Weihai Gemho does not make any express or implied warranties for the sale and use of Weihai Gemho products, including the suitability of the products for a particular purpose, merchantability or liability for infringement of any patent, copyright or other intellectual property rights, etc. Not guaranteed. Weihai Gemho products are not designed for medical, life-saving or life-sustaining use. Weihai Gemho may make changes to product specifications and product descriptions at any time without prior notice.

If you have any questions about this product, please contact us in time.

Contact as below:

http://www.minestar.cn Or call 0086-0631-5622515 for inquiries.

Contents

Chapter 1 Product Introduction

1、About the Inclinometer

The portable bluetooth inclinometer is a precision borehole inclinometer independently developed by Weihai Gemho Digital Mining Technology Co., Ltd. It is mainly used to measure the internal offset of deep holes such as deep foundation pits, slopes, and foundations. The basic configuration of a set of inclinometers includes the inclinometer probe, the winding reel, the control cable and the inclinometer reading APP. No wired power supply, no wired transmission, and no complicated operations. Install the APP software on your mobile phone, and you can connect and read with the inclinometer through Bluetooth. It is convenient and fast. Measurement data. It is very suitable for deep hole excursion monitoring in fields such as mine tailings dams, high-rise buildings, subways and other foundation pits, natural slopes, building slopes, etc.

2、Features

- ✧ Based on stable and reliable Bluetooth wireless communication technology, it is not restricted by cables, and it is convenient for measurement and stable in communication.
- ✧ Low cost, you can use the mobile phone to install the APP to measure and view the data, no special data acquisition instrument is required。
- ✧ Built-in high-capacity lithium battery, rechargeable, no need to manually replace the battery。

- ✧ The product adopts high-sensitivity digital probe with high precision, wide measurement range and small measurement error.。
- ✧ Cloud platform + APP software dual mode, easy to browse and set。
- ✧ Compared with the economic version, the product has added the function of automatic calibration, and users can realize self-calibration.
- ✧ Compared with the economic version, the product can measure the deflection in four directions (X positive and negative, Y positive and negative)。
- ✧ Industrial standard design and production, protection grade IP67。

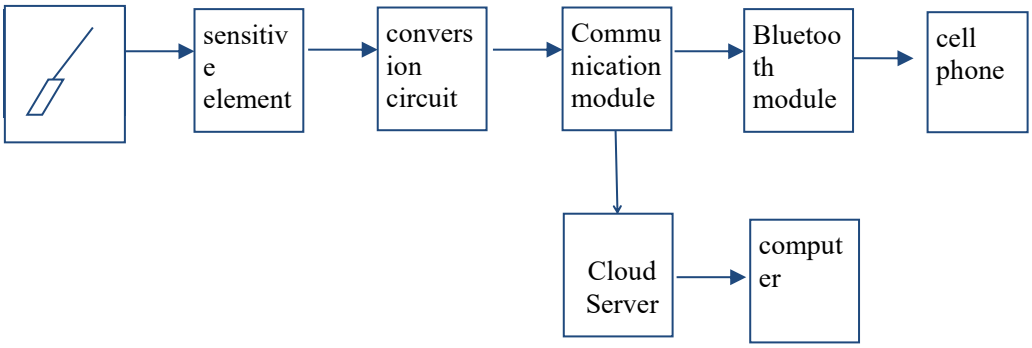
Chapter 1 Working Principle and Parameters

1、operating principle

The instrument uses the latest high-precision inclination sensor as a sensitive element. It is a force-balanced servo system. When the sensor probe is inclined relative to the direction of the earth's center of gravity, the sensitive element in the sensor swings an angle relative to the direction of the plumb due to gravity. , convert this angle into a signal through a highly sensitive microelectronic transducer, and transmit it to the connected mobile phone through Bluetooth. After analysis and processing, the tilt angle is

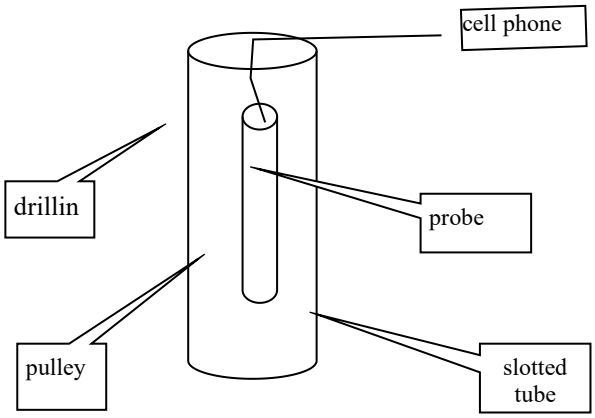
directly displayed on the mobile phone, and the data is stored in the mobile phone memory and synchronized. Uploaded to the cloud server, you can access the cloud database through the website anytime, anywhere.

The sensitive components of the instrument have the advantages of high precision, good stability, high repeatability and small drift. With the inclinometer tube, the inclination angle can be accurately measured. The inclinometer probe adopts industrial-grade waterproof and shockproof design, and adopts three-layer curing seal, which completely solves the problem of water inflow to the instrument. See the schematic diagram of the instrument (Figure 1)。



(Figure 1) Schematic diagram of the instrument

The instrument probe is made of all stainless steel, with a small outer diameter, which is easy to install and carry. The schematic diagram of the instrument installation is shown in (Figure 2)。



(Figure 2) Schematic diagram of inclinometer measurement

2. Equipment parameters

(1) Probe size: length 600mm, diameter Φ30mm, guide wheel spacing: 300mm;

(2) Angle measurement range: 0° ～±90° ;

(3) Probe waterproof and dustproof grade: IP67;

(4) Working voltage: built-in rechargeable lithium battery pack 12V;

(5) Working temperature: -10℃～+60℃;

(6) Communication method: Bluetooth wireless communication;

(7) Probe line length: 20 meters (can be customized);

(8) Measurement direction: 4 directions (positive and negative X axis, parallel to the pulley direction, Y axis positive and negative, perpendicular to the pulley direction);

Chapter 1 Overview of Measurement Methods

1. Precautions before measurement

- Check whether the pulley on the inclinometer probe is flexible and the structure is intact.
- Check whether the power of the inclinometer is sufficient.
- Always lower the probe to the reading depth from top to bottom. If the probe is accidentally put past the current reading depth, the probe can be lifted to the previous position first, and then placed in the current position. This technique ensures that the probe is stably fixed.
- Wait about 10 minutes for the probe to adjust to the temperature inside the borehole。
- Please measure in a networked environment (4G, wifi)
- Wait until the reading is stable. When the reading is stable within two units, save the reading, otherwise the data will be unstable.

2、Mobile phone connection device

①Turn on the power switch on the winding reel of the inclinometer, the blue light is on. Press and hold the red button above the battery indicator to view the current device battery level.

②Open the mobile APP, connect the scan code to connect the device.

③Turn the wheel frame of the inclinometer probe together with the guide wheel in the opposite direction, and insert the probe into the guide groove of the inclinometer tube and slowly put the probe to the measuring position. It is strictly forbidden to lower the probe violently.

3. Record data

① Click the "Start Measurement" button on the APP, the communication between the mobile phone and the inclinometer starts, and the monitoring value is continuously displayed on the mobile phone. When the value is stable and there is no significant change, click the "Save" button to save the record to cell phone. If the mobile phone is connected to the network, the data will also be uploaded to the cloud server at the same time.

② Lower the probe to the depth of the next measuring point, and then record after the reading is stable. Repeat this process until the bottom of the inclinometer tube.

③ If you feel it is necessary, you can perform multiple measurements again to ensure the accuracy of the data.

Chapter 1 Mobile Phone Software Operation Instructions

1. Mobile APP login interface

2.

illustrate:

① Theme switch button. Click to switch between different APP theme background images and colors.

② Device code input box. The unique code of the device is printed on the instrument, which is used as the APP login account.

③ Password box. The default password is 1. Use the default password to log in.

④ Login button. Click this button to log in to the main interface of the system。

⑤ Instruction button. Click this button to display the Operating Instructions page.

⑥ Scan the code to log in button. The system provides two login methods. Enter the instrument code to log in or scan the code to log in. Click this button to turn on the camera, scan the QR code on the instrument, and jump directly to the main interface of the system.

⑦ Switch device button. If there are multiple devices, you can click this button to switch between multiple devices.

2. System main interface

At the top of the interface is the button function area, which consists of buttons such as "Start Measurement", "History Record", "Print and Export", "Switch Device", "Device Notes", "Instructions for Use", and "About Us". Each

button corresponds to the corresponding function, which will be described in detail below.

In the middle of the page is the device parameter area. Displays the relevant parameters and information of the currently connected device. The parameters are already set at the time of exit and do not need to be changed.

At the bottom of the page is the instrument code of the instrument and the button to upload local data. Click this button to upload the data not uploaded to the cloud in the phone storage to the cloud storage.

At the bottom of the page is the function switching area, which can be used to switch back and forth between different pages.

3.Start measurement interface

1. Click the "Start Measurement" button to enter the measurement interface. After entering the interface, the Bluetooth of the mobile phone will automatically connect to the device according to the information when logging in.

After the connection is successful, the read data will be displayed in the "Current Reading" column. If it keeps showing "Searching for Bluetooth devices...", please click the "Reconnect" button and wait for 5-6 seconds to connect successfully.

2. After the connection is successful, place the inclinometer vertically to ensure its vertical state, click "Calibrate 90 degrees", the device can be automatically calibrated, and then measure after the calibration is completed.

3. Click the "Read New data" button to read new data. Since the inclinometer will shake in the process of lowering, after the inclinometer is stabilized, perform other operations after the data is stabilized and there is no big change

4. Enter the depth of this measurement. Note that this depth is not the depth of each lowering stage, but the total depth of the inclinometer from the orifice.

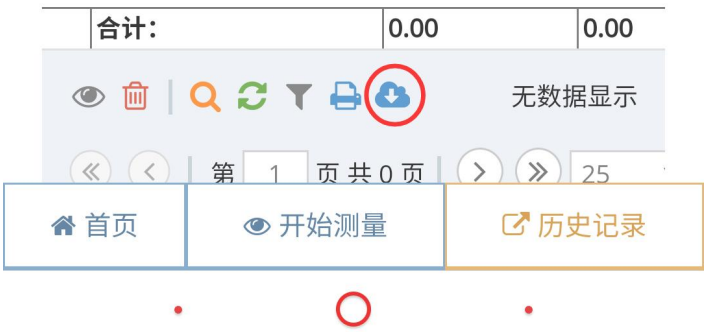
5. Then enter the drill number.

6. Then click the "Save this data" button to save the data displayed on the interface to the mobile phone, and the data can be viewed in the history record.

4. History interface

This interface lists all the measurement data in the cloud server, and can be queried according to the recording time, borehole number (using advanced search), etc. The "Export" button can export the historical data displayed on the interface to excel and download it to the mobile phone.

5. Print the export page



On this page, you can export data in any time interval, select the time interval, and click the "Search" button. Click the "Download Spreadsheet" button in the red circle icon above to convert the queried data into an excel sheet and download it to your phone. If the phone can be connected to a printer, click "Direct Print" to print the queried data directly.

6.Switch the device

Click the "Switch Device" button on the home page to directly jump to the login interface, and re-enter the device code in the login interface or scan the QR code to complete the device switching operation.

7.Equipment remarks

Remarks can be made on the device, such as remarks name or department of use.

8.Instructions for use

Click the "Instructions" button on the home page to view the help of the APP.

9. About us

Click the "About Us" button on the home page to jump to the Jinghe website.

Chapter 1 Maintenance

1. The instrument cable is reused, which is a part that is prone to failure. Be sure to pay attention to as little bending as possible at the contact part between the cable and the probe, and try to keep the connector in a natural state when packing.

2. The probe is strictly prohibited from strong collision, and the probe and instrument should not be exposed to the sun when the temperature is high.

3. The probe is made of stainless steel. The guide wheel part and the cable should be wiped clean after each test, and oil is applied to the guide wheel shaft and support spring to avoid rusting.

4. The meter uses lithium batteries, and the charging is automatically controlled by the circuit. Although there is a protection board, it can protect against overcurrent, overload, short circuit, etc., but this does not mean that it can be operated improperly for a long time. Clean the charging port regularly to prevent short circuit and open circuit.

5. Always pay attention to the power level to avoid long-term battery drain.

6. Handle the instrument gently and avoid violent shocks.

Chapter 1 Troubleshooting

① 1. The mobile phone software cannot read the data

② Check whether the switch of the inclinometer has been turned on, and whether the indicator light on the switch is on. If it does not light up, please confirm the switch status.

③ Check the power of the inclinometer to see if there is enough power. If not, please charge it in time.

④ Check whether the Bluetooth of the mobile phone is turned on and whether it has been successfully connected with the inclinometer.

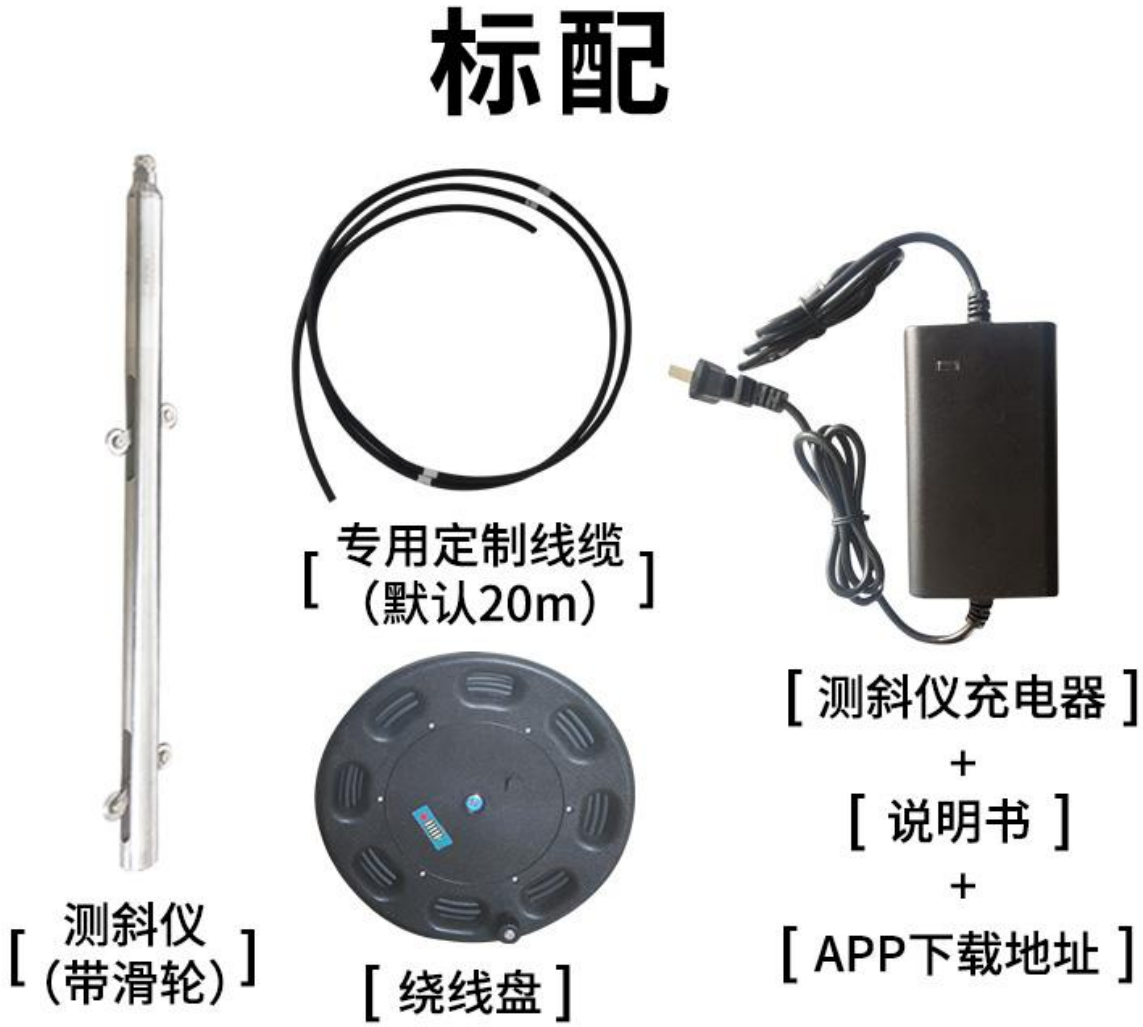
2、Can't view previous historical data

① Check whether the mobile phone network is normal.

② Determine whether the measured data has been uploaded.

③ Contact the manufacturer's technical staff.

Chapter 7 Configuration List



APP download address: http://cx2.jingkongyun.com:901/Gemho Reading InstrumentⅡ.apk
Note: Please copy all of them, open and download in the browser, this link only supports Android system installation