LRK-CXP50

Climbing automatic inclinometer robot

I. Equipment introduction

The climbing automatic inclinometer robot is a comprehensive measuring device for deep horizontal displacement data which can move probe, measure displacement automatically, record data automatically and upload records automatically. The device can be equipped with a solar charging panel to realize long-term monitoring of a single hole position; At the same time, the device is equipped with Bluetooth communication function and wireless charging module, which can realize the communication and separation between the host and the probe; The device can be divided into a host and a probe, and the probe is an exclusive matching probe and cannot be replaced. The data upload adopts the single point transmission mode of mobile Internet of Things, which has the characteristics of stability, economy, high efficiency and low efficiency. It is mainly used in the data collection and communication of excavation automation monitoring, high slope automation monitoring and ground disaster automation monitoring.

2, product characteristics

※ The measuring depth is set at will within the length of the synchronous belt, and the automatic displacement probe is used for measurement without manual intervention and data recording.

※ Built-in lithium battery and wireless charging function, with solar energy can achieve long-term monitoring;

※ Automatic timed boot mode; Can realize timing fixed frequency boot; Automatic sleep, long standby;

※ Single point data transmission; Built-in mobile iot card wireless transmission; Automatic record upload, remote monitoring;

※ The intelligent host will make a judgment on the current probe state during the process of pay-off/lifting, and avoid the stuck pipe phenomenon independently;

3. Technical parameters

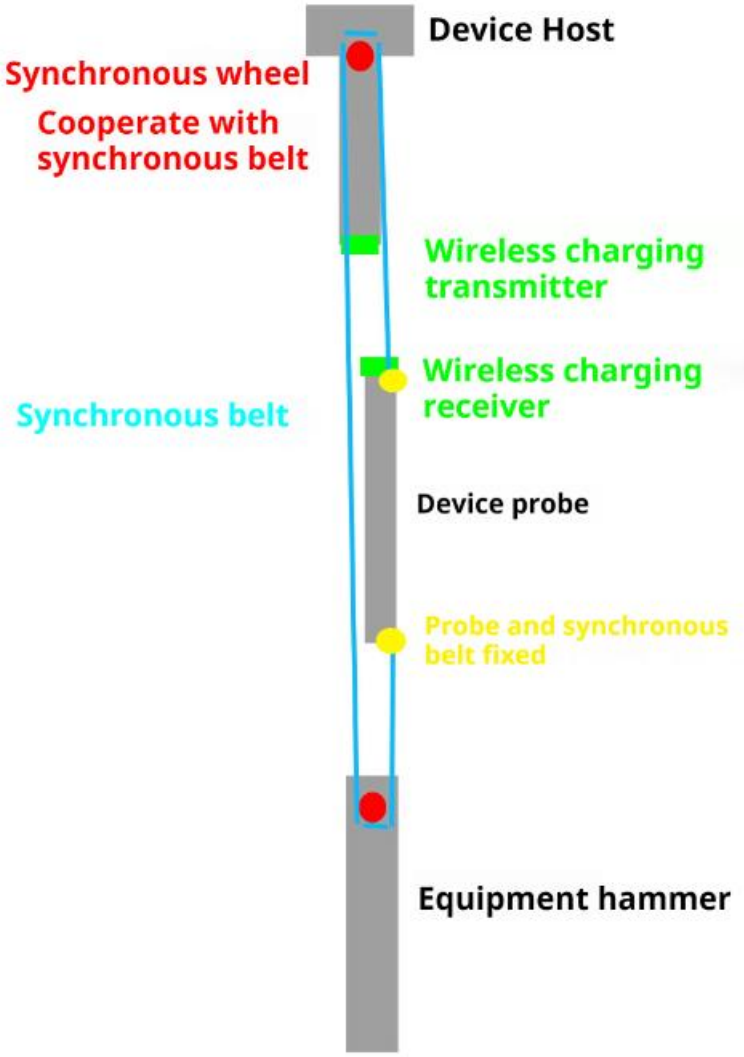
Project	Parameter
Model	LRK-CXP50
Effective measurement range	± 30 °
Measurement accuracy	not less than 0.25mm/m
Resolution	not less than 0.02mm/500mm
Measurement depth	no more than 0 30 meters, customizable depth
Communication method	4G NB-IOT
Installation method	Install the host at the pipe mouth, and arrange a synchronous belt in the inclinometer hole;
Charging method of the data collector	5V1 1A A adapter or external solar charging board
Power supply voltage	built-in lithium battery
External dimension: 80 * 80 * 1200mm	80 * 80 * 1200mm

4, equipment introduction and monitoring principle

4.1 Device Description:

The overall structure is shown in the figure: the loop is formed by the synchronization belt and the probe, which is rotated under the

action of the synchronization wheel of the main machine, so as to realize the probe moving up and down;



Each set of equipment is composed of three parts, the main machine, the probe, the weight, and the synchronization belt is connected; The main engine provides power, the probe collects data, and the synchronous belt is assisted by the vertical force of the weight; After the probe completes the collection, the data is

summarized to the host for uploading through Bluetooth communication; When the device does not work, the probe will be reset to the top for wireless charging. At this time, it is necessary to ensure that the external solar panel of the host is connected; When installing, it is necessary to pay attention to the holding of the synchronous belt to prevent the accidental fall of the heavy weight; Note that the probe x direction is towards the foundation pit; Note that the synchronization belt needs to be smooth and vertically stressed;

4.2 Data Collection:

The probe completes the data acquisition, and the data is summarized to the host via Bluetooth communication, and the host transmits the data through 4G communication

5. Installation specifications and operation

5.1 Installation process

5.1.1: Pass the synchronization belt through the weight (D1) and fix one end to the probe (C4);

5.1.2: Place the probe outside the inclination hole, put the weight into the inclination hole, gradually release the synchronization belt, and the weight will drop accordingly; (Hold on to the synchronization belt, beware of falling heavy weights)

5.1.3: When the weight hits the bottom and cannot continue to fall,

appropriately raise the weight height; (The synchronous belt needs to maintain vertical force)

5.1.4: Confirm the length of the current downhole synchronous belt to obtain the current measurable depth of the survey; (The standard synchronization belt is 100m, and the maximum measurement depth is 50m.)

5.1.5: After confirming the depth, reserve about 2m of the synchronization belt and cut off the excess part;

5.1.6: After passing the synchronization belt through the synchronization wheel on the main machine, bind it to the top of the probe (C1); (Note the direction of the synchronization wheel entering the main engine)

5.1.7: Place the probe into the inclination hole, and place the inclination main machine on the inclination hole;

5.1.8: Manually control the host of the device to confirm whether the inclinometer rod can move correctly and normally up and down;

5.1.9: If the upper and lower directions are opposite, it means that the direction of the synchronization belt into the synchronization wheel of the host is wrong, and it can be changed to the other side of the synchronization wheel;

5.1.10: If it cannot move up and down and the synchronization belt is loose, it indicates that the synchronization belt is too long,

resulting in no force, and it needs to continue to cut short, and then repeat step 5.1.6;

5.2. Precautions

5.2.1: During installation, pay attention to the orientation of the synchronous belt, which needs to be unified and the vertical force of the synchronous belt; 5.2.2: The X arrow on the probe should point to the direction of the foundation pit;

5.2.3: Hold the synchronization belt tightly during installation to prevent the accidental fall of the heavy hammer;

5.2.4: If the synchronization belt is too long, it may fail to measure. Cut the synchronization belt to match the inclination hole according to the actual situation; And the length of the synchronous belt is at least twice the measured depth; (60m synchronous belt is required for 30m measurement depth)

5.3. Equipment measurement operation

5.3.0: Manually control the up and down displacement of the probe to confirm that the actual displacement direction is consistent with the key;

5.3.1: After the displacement is correct, click reset to confirm that the probe can be lifted to the top position;

5.3.2: After the reset is complete, manually control the probe downward displacement to confirm that the probe can move to the

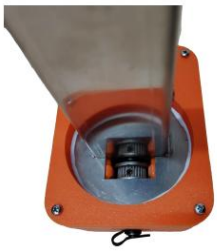
specified depth; 5.3.3: Reset to the top again;

5.3.4: Set the corresponding measurement depth, and then set the startup mode to automatic mode;

5.3.5: At this time, the screen will be turned off, and then the device will automatically measure and upload according to the setting information of the measurement depth and startup interval;

5.3.6: After the measurement is completed and the data is uploaded, repeat Step 5.3.4 for multiple measurements to confirm that the device works properly; Verify that the uploaded data is normal and complete the installation.

5.4 Installation Examples



6, precautions

6.1 Transportation: Precision instruments should be handled gently during transportation and use to avoid damage due to excessive impact and vibration.

6.2 Installation: Confirm the installation position before installing. Make sure the probe is facing correctly, as well as the timing belt is facing correctly; Make sure to hold the synchronization belt tightly

during installation; Make sure the synchronous belt is stressed vertically.

6.3 About use: The probe needs to be used with the device host for wireless charging, the device host needs to be charged in time, or connected to the solar panel, need to maintain more than 40% of the power to ensure data stability; When the device is faulty, contact the manufacturer to find out the cause of the fault. Do not disassemble the internal structure by yourself.

6.4 Platform setting: The probe is used with the host; The device number needs to be set on the platform; Make sure the number is set correctly; Settings such as collection interval can be delivered on the platform; Once this is done, the data can be queried on the platform.

7.After-sales service and warranty policy

1. The warranty period of the equipment is 12 months. During the warranty period, the supplier will repair and replace the parts damaged due to quality reasons free of charge. For the parts damaged outside the warranty period, the spare parts provided will only be charged at cost. The company provides users with a full range of technical services, in all stages of project implementation, the company's engineers will do their best to provide customers with quality service.

2, the company provides 7*24 hours of telephone service support, for the user's service request, the first technical support by telephone within 2 hours. If you need technical personnel to solve the problem, our technical personnel will arrange relevant technical personnel to solve the problem.