LANGRY®

LR-FK202
Crack Width Detector
Operating Instructions

Contents

1 Instrument function and introduction

1.1 Instrument introduction

LR-FK202 Crack Width Detector adopts wireless connection mode and is widely used in quantitative detection of crack width of bridges, tunnels, building main body, concrete pavement, metal surface, etc.

The instrument consists of a tablet computer and a microscopic probe,During measurement, the microscopic probe will collect the crack image in real time and transmit it to the tablet computer through wireless mode. The tablet computer will display the received crack image in real time and automatically capture the crack and display the crack width value through the built-in program.

1.2 Features

LR-FK202 Crack Width Detector can realize the measurement of crack width, its main functions are as follows:

1.The instrument adopts wireless connection mode, which is convenient to use and flexible to operate.

2. Whether it is vertical crack or inclined crack, it can easily and automatically capture and display the crack width in real time.

3.The cursor position can be manually adjusted to easily complete the manual reading crack width value.

4. Professional data analysis software, can realize data transmission between the instrument and computer, and test data analysis, generate test report.

1.3 Technical parameters

1. Test range: 0 -10mm.

2. Test accuracy: ±0.01mm.

3. Storage capacity: 64GB, and supports the maximum 512GB of extended memory.

4. Power supply: rechargeable lithium battery.

1.4 Matters needing attention

1. Please read this instruction carefully before using this instrument.

2. Working environment requirements:

Ambient temperature: 0℃- 40℃, relative humidity: < 90% RH

3. Storage environment requirements:

Ambient temperature: -20℃- 60℃, relative humidity: < 90% RH

It should be kept in a ventilated, cool and dry environment without direct sunlight for a long time. If it is not used for a long time, it should be checked and charged regularly.

4. This instrument has no waterproof function.

5. In the use process and carrying process should avoid violent vibration and shock.

6. Do not open the instrument case without permission, otherwise the consequences will be borne.

2 Instrument Composition

The instrument consists of microscopic probe and tablet computer. As shown in Figure 2.1 below:

Figure 2.1

3 Instrument operation instructions

3.1 Description of microscopic probe keys

【power】： Power switch

【photo】： When in the crack detection interface, take the current image

3.2 Operating instructions

3.2.1 Starting up

First, start the microscopic probe: long press the【Power】button on the microscopic probe to start up, and the【light】will be yellow and steady on after successful startup; If the indicator light is in the state of stroboscopic, it means that the microprobe power is insufficient, it is recommended to charge it in time before use.

Note: The microprobe cannot be turned on when the charge is too low.

Second, turn the tablet on and turn on its WiFi, Bluetooth and GPS.

3.2.2 Crack width detector software

Click the langry crack width detector icon in the tablet to start the langry crack width detector software. After the startup screen is completed, you can enter the main interface of the software (as shown in Figure 3-1); The main interface consists of two parts: blue area and white area. The blue area is the display area of date, time, micro probe battery symbol, tablet computer battery symbol and instrument name. The probe battery symbol is filled and displayed with a short vertical bar, and the tablet computer battery symbol is filled and displayed with a solid; The white area is the entrance of each functional interface, including Crack Width Detection, Data Management, Parameter Setting and Calibration.

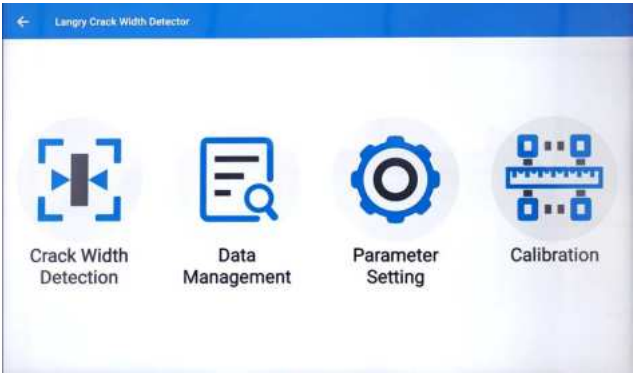


Figure 3-1

3.2.2.1 Crack detection

Click the "Crack Width Detection" icon, the tablet computer will automatically connect with the microscopic probe, and enter the crack detection interface after the successful connection (as shown in FIG.

3-2).

Note: Before clicking the "Crack Width Detection" icon, please ensure that the microscopic probe is turned on and the Bluetooth, WiFi and location information (GPS) of the tablet are turned on.

If the connection fails, click the reconnect button at the bottom of the page after 10 seconds. It is recommended that the microscopic probe be turned on for 15 seconds before clicking the "Crack Width Detection" icon.

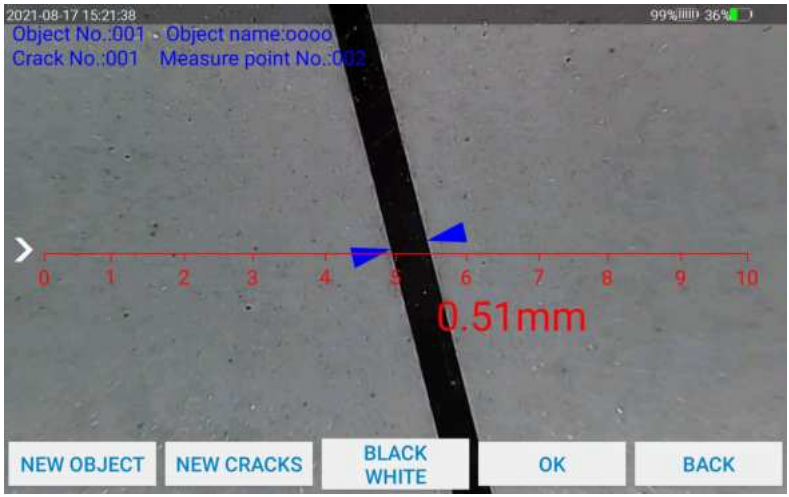


Figure 3-2

The crack detection interface consists of three parts: parameter area, display area and operation area.

(1) Parameter area

Click the white arrow on the left side of the screen to pop up the parameter area. The main information includes delegate No., project

name, experiment No., component name, etc., of which delegate No. is required. Click other areas outside this area to stow the parameter area.

(2) Display area

The crack width screen is displayed in real time in this area, and the object No., object name, crack No. and measuring point No. are displayed at the top of the screen. When entering the crack detection interface each time, the system will continue the measurement by adding 1 to the last measurement point in the last measurement by default.

When the crack width is detected, the probe is placed vertically on the surface to be measured, and the midline of the probe is pressed near the center of the crack to be measured, so that the center of the crack is located in the middle of the screen. When the picture is stable, click the "OK" button or the "photo "button on the probe to lock the picture; If you need to manually determine the crack boundary, click and drag the blue boundary arrow. Finally, click "Save" to complete the crack width detection of this measurement point.

(3) Operation area

This area is located at the bottom of the screen and consists of five function buttons, namely New Object, New cracks, Black&White, Ok and Back.

By default, when continuous crack detection is performed, the system increments the point number by 1. If the next object or crack detection is required, click new object or new crack.

Click the "Black&White "button to switch the display area into the black and white picture screen; Click the "Original drawing " button to return to the Original drawing screen; If you click the save button in the state of" Black&White", the saved picture will also have the effect of black and white picture.

Click "OK" or the "Photo" button on the probe to lock the screen in

the display area, and the screen is static; Click "Cancel" and the screen returns to dynamic effects.

Click "Back" to exit the crack detection interface and return to the main interface.

3.2.2.2 Data Management

In the main interface, click the "Data management" icon to enter the data management interface (as shown in Figure 3-3).

Figure 3-3

The data management interface consists of two parts: data list area and data operation area.

The delegate No. is on the left of the data list area. The selected delegate No. is in dark blue;

On the right is the saved object data under the selected delegate No.. The data is displayed in reverse order according to the observation date of the object. The data content includes project name, object No., object name, crack quantity, crack average width and maximum width, etc; At the same time, click the drop-down arrow of the object to view all the saved crack data under the object

(as shown in Figure 3-4).Click any crack data to view the measurement point data under the crack (as shown in Figure 3-5). Double click the picture to zoom in.There is a select symbol "□" in the upper right corner of each object data. Click the select symbol to select the data, and click again to deselect the data.

Figure 3-4

Figure 3-5

The data operation area is located at the right of the screen and consists of six data operation buttons, namely "Select All","Select Invert", "Delete", "Export USB" , "Export PC",and "Back".The "Delete" button deletes the selected object data.Use the link line to connect the tablet computer and the USB flash drive. Click "Export USB drive" to export the selected object data from the tablet computer to the USB drive.Click the "Back" button to exit the data management interface and return to the main interface.

Note: Only one delegate No. can be exported to the USB flash drive at a time, and the USB flash drive only stores the last exported data.

3.2.2.3 Data upload

There are two ways to upload data:

(1)After the data is exported to the USB flash drive, the USB flash drive is inserted into the computer, and the online system management software installed on the computer is opened to complete the data uploading.

(2)After the measurement is completed, connect the tablet computer to the computer with the data cable, and open the online system management software installed on the computer to complete the data uploading.

See the appendix for online system management software operations.

3.2.2.4 Parameter setting

In the main interface, click the "Parameter Setting" icon to enter the parameter setting interface (as shown in Figure 3-6).

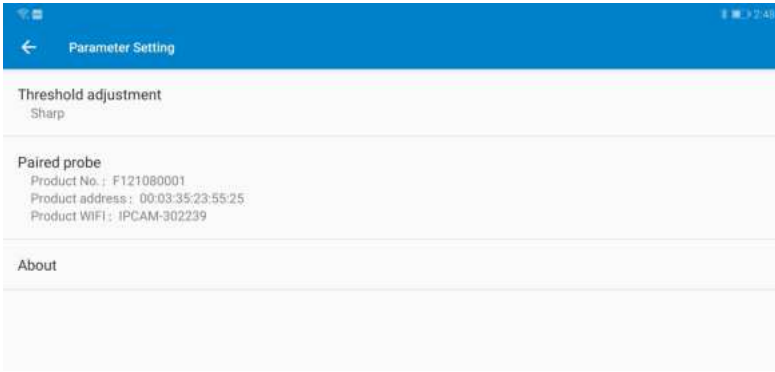


Figure 3-6

The parameter setting interface consists of three parts: threshold adjustment, paired probe and about.

Click the threshold adjustment area to set the threshold to sharp, standard or vague; By setting the threshold value, you can adjust the boundary standard when the system automatically determines the crack width (as shown in Figure 3-7). The default threshold is standard.

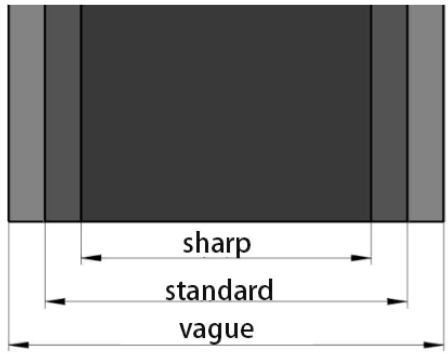


Figure 3-7

Click the paired probe to pair the tablet with the probe or unpair the tablet with the probe.

After entering the pairing interface, the system will search automatically. When the product number of the instrument is found (see

the labeling area of the micro probe nameplate, as shown in Figure 3-8), click the number (if the product number is not found, click "Search equipment" on the right of the interface to search again), and the system will automatically match the probe. If the pairing fails, repeat the preceding operations.

Figure 3-8

Note: By pairing and unpairing, the tablet can work with different probes; The instrument needs to be calibrated again with different probes.

Click "About" to view the product model, software version and upgrade the probe firmware; The software and probe firmware need to be connected to the Internet when upgrading.

3.2.2.5 Instrument calibration

In the main interface, click the icon "Calibration" and enter the password "8888" to enter the instrument calibration interface (as shown in Figure 3-9).

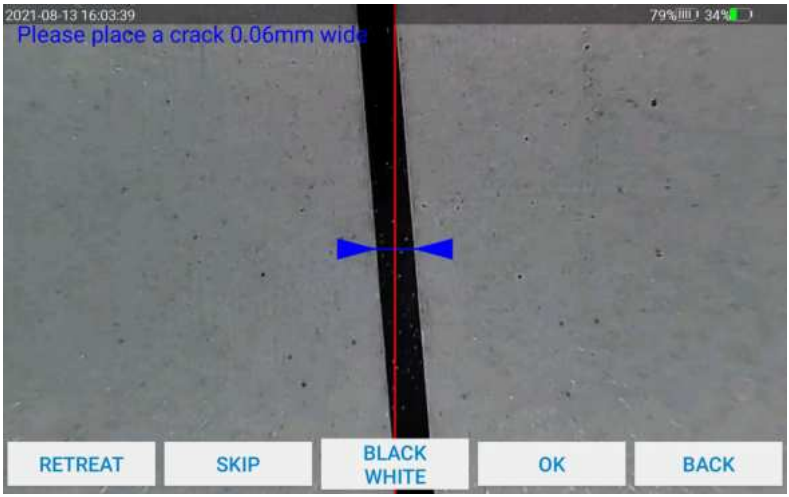


Figure 3-9

The top of the instrument calibration interface is the prompt of calibration steps.such as please place a standard scale line with a width of 1.00mm;When the crack is captured, the blue cross cursor and the red crack center line are displayed on the interface. During calibration, the probe should be moved to make the red crack center line coincide with the blue cross cursor. After the coincidence and the picture is stable, click the "OK" button to lock the picture, and click "Save" to complete the calibration of this width.

The user can calibrate the width as required or select skip or retreat. If skip is selected, the width will not be calibrated this time, and the last calibration result of the width will continue to be used; When the previous width needs to be recalibrated, you can select retreat. When the system prompts that the calibration is completed, the calibration is completed and the calibration results are automatically saved.

Note: If you click "Back "before the system prompts the end of

calibration, the system will not save the calibration results of any width of this calibration.

3.2.2.6 Shutdown

Long press the "Power" button on the probe, until the indicator light is off, the probe is shut down. See the Tablet user guide for how to shut down the tablet.

4 Maintenance

4.1 Check before use

Check the power of tablet computer and micro probe before use. If the power is too low, please charge it in time before use.If the indicator light flashes when the micro probe is started, it means that the power is insufficient. It is recommended to use it after charging in time.

4.2 Clean

This instrument has no waterproof function. Do not wipe it with a wet cloth! Do not scrub the instrument and accessories with organic solvent! Please wipe the instrument and accessories with a clean and soft dust-free cloth.

4.3 Battery

The microprobe is powered by rechargeable lithium battery, which can work continuously for about 8 hours even when fully charged.When using, please pay attention to the power indication. If the power is insufficient, the instrument should be charged as soon as possible.To ensure that the probe is fully charged, keep charging continuously for 4 to 5 hours, and do not charge at high temperature.

Note:

If the instrument is not used for a long time, the battery will have a slight loss of power, resulting in a decrease in power, so it should be recharged before use.It is normal for the power adapter to get hot during charging. Keep the charging environment well ventilated for heat dissipation.The charger matching with this machine should be used for charging.Using other charger models may cause damage to the instrument.

4.4 Probe

Strong impact or vibration may degrade or damage the performance of the probe, so pay attention to the protection of the probe at any time.

Appendix Description of on-line system management software of crack width detector

1. Introduction

The on-line system management software of crack width detector is a multifunctional analysis software for crack width data processing launched by Jinan Langrui Detection Technology Co., Ltd

This software can run in Win 9X/NT/XP/ Win7 (including 64-bit) operating system, friendly interface, easy to operate, specially designed for engineering testing personnel. This software has the following functions:

1) Manage all object information and crack width data of each measurement point;

2) Multiple data files can be combined into one file; object data can be easily added or removed;

3)Print preview and print out the processing results;

4) The software can be used to easily import the crack width data in the tablet computer into the computer for further analysis and archiving;

5) Automatically generate word test report documents.

The extension name of the data file saved by the software is.xcky, the extension name of the image file is.png, and the extension name of the word detection report file automatically generated is.doc.

2. Install the software

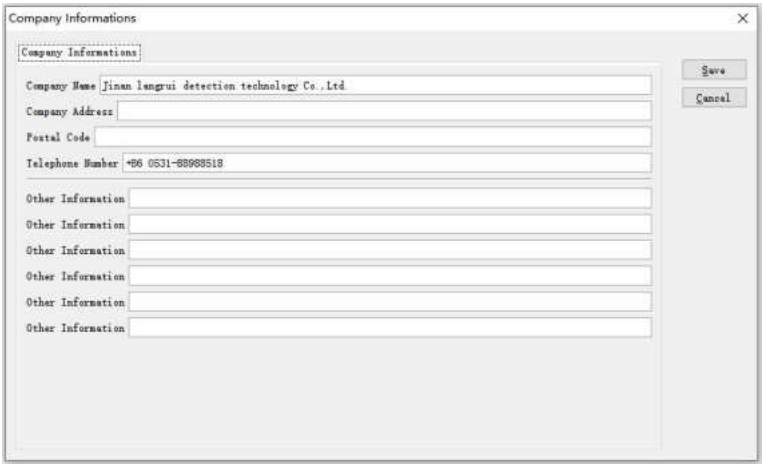
The crack width detector is equipped with a program USB disk,

before use, please put the USB disk in the idle USB port on the computer, open the USB disk, find the "crack width observer online system" folder and open, double-click the installation program "setup" to open the installation boot program, please complete the installation and run according to the prompts.

3. System Setting

Company Information

Click the menu item "Tool (T) → Company Information", and the company information TAB will pop up, as shown in the following figure. The company information filled in in the following figure will be displayed in the corresponding page of the detection report.



4. Receive object data

4.1 Exporting USB flash disk

Use the link line to connect the tablet and USB drive, select the data to be exported, and click "export USB drive" on the main interface of the crack width detector software of the tablet to save the crack width

data in the tablet to the USB drive.

4.2 Uploading Data

Insert the USB flash drive into the computer, click "Crack Width Detector (M)", select "Import from USB Drive " from the drop-down list, and click to complete data uploading.

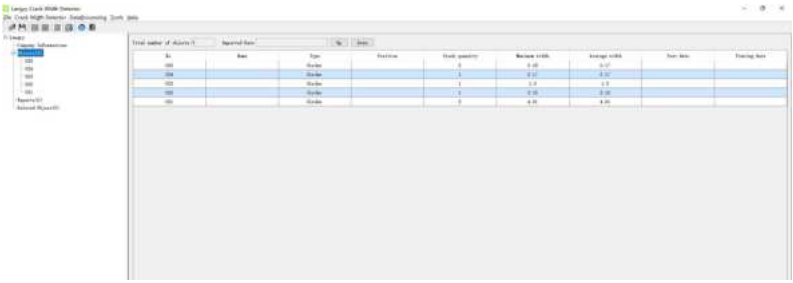
Connect the tablet computer to the computer through the data cable, set the USB connection mode to "Transfer file", click the title bar "Crack Width Detector (M)", select "Import from Drive" from the drop-down list, and click to complete data uploading.

The data stored in the tablet won't be lost when the data is sent to the computer.

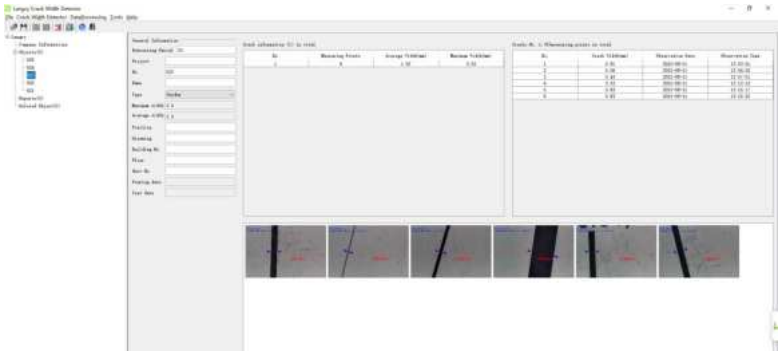
5. Data processing

5.1 Viewing Data

After the data is uploaded, the system selects Detect object data in the object list area by default. The interface is as shown in the following figure:



Click any object in the object list area to view the detailed Crack width data of the object, as shown in the figure below:



Click to select any measuring point in the measuring point list area, as shown in the figure below, and the picture of the measuring point will be automatically selected in the form of blue border in the measuring point picture area; Double click the picture to zoom in.