

LANGRY®



Operating Instructions

EN

Instrucciones de Operación

ES

التشغيل تعليمات

AR

Manuel de l'utilisateur

FR

조작 설명서

KO

操作说明书

ZH

LR-G300

OPERATING INSTRUCTIONS



Content

EN

Chapter 1 Instrument Functions and Introduction.....	2
Chapter 2 Instrument Composition.....	5
Chapter 3 Instrument Operation Instructions.....	6
Chapter 4 Synchronous Display.....	22
Chapter 5 Online System Software.....	24

Chapter 1 Instrument Functions and Introduction

1.1 Instrument Introduction

LR-G300 Integrated Rebar Scanner is a portable intelligent Non-destructive testing equipment, mainly used for structural detection of reinforced concrete. It can detect the thickness of the rebar protective layer, rebar diameter and rebar spacing, and can accurately analyze the distribution of rebar. It is also suitable for the detection of magnetic body and conductive body in non-magnetic and non-conductive media.

1.2 Main Functions and Features

1. The instrument is equipped with a new high-precision sensor, which makes the protective layer thickness as accurate as 0.1 mm. And it supports multiple levels of stirrup and main rebar correction, which makes the detection results more accurate;

2. The plug-in battery compartment with dual power supply as standard can be quickly replaced, offering longer battery life;

3. The full-view and high-resolution color touch screen features a large screen-to-body ratio, with a variety of theme styles, enabling better display effects;

4. The optimization of the rebar judgment algorithm in various scan modes improves the identification of dense rebar, enabling more accurate values of protective layer thickness;

5. The instrument supports a variety of detection modes under complex conditions, including stirrup avoidance detection, concave surface detection, and convex surface detection;

6. The instrument is equipped with a synchronized display and wirelessly controlled host for synchronization of the detection screen and data, which makes it easy to complete overhead detection;

7. Four-beam laser positioning displays the position of the rebar and the centerline of the neighboring rebar in real time, with multiple reminders from the aiming box and indicators, facilitating rebar positioning, drilling, and coring;

8. The professional master computer software can generate 3D models, perform intelligent analysis and automatically generate test reports.

1.3 Specifications

Name		Technical Parameters
Applicable Range of Protective Layer Thickness (mm)		Φ6-Φ50
Maximum Range (mm)	First range	1~120
	Second range	1~210
Maximum Allowable Error of Protective Layer Thickness	±1 (mm)	1~80
	±2 (mm)	81~120
	±3 (mm)	121~160
	±4 (mm)	161-210
Applicable Range of Estimated Diameter (mm)		Φ6-Φ50
Maximum Error of Estimated Diameter		±1 specification
Display Precision of Estimated Diameter (mm)		0.1

1.4 Performance Indicators

Performance Indicators of LR-G300 Integrated Rebar Scanner				
Quick Scan	Procedural Scan	Grid and Image	Wave Scan	Fine Scan
Yes	Yes	Yes	Yes	Yes
Complex Working Conditions	3D Imaging	Data Transfer Mode	Memory Component	Scanning Range
Yes	Yes	USB or Bluetooth	5000	Borderless
Data Correction	Power Supply Mode	Host Weight	Screen Size	Laser Positioning
Yes	Plug-in lithium battery	650g	3.5"	Four-beam
Screen Touch Operation	Charging Time	Battery Life	Host Dimension (mm)	Dot Matrix of the Screen
Yes	6 hours	24 hours	210×95×120mm	640×480pt

1.5 Precautions

1. Please read this manual carefully before using the instrument.

2. Requirements for working environment:

- ① Ambient temperature: -10℃~40℃
- ② Relative humidity: < 90% RH
- ③ Electromagnetic interference: no strong alternating electromagnetic field
- ④ Do not expose to sunlight for a long time
- ⑤ Corrosion resistance:

When the instrument is used in a humid, dusty and corrosive gas environment, it is important to take the necessary protective measures.

3. Requirements for storage environment:

- ① Ambient temperature: -20℃~50℃

② Relative humidity: < 90% RH

③ Please check and charge the instrument on a regular basis if it is not used for a long time. The instrument should be placed in a ventilated, cool, and dry place, and should not be exposed to direct sunlight for a long time.

4. Avoid water ingress, and avoid use in strong magnetic field environments, such as the vicinity with large electromagnets, transformers, frequency converters, etc.

5. Avoid vibration: In the process of use and handling, violent vibration and shock should be prevented.

6. Charging management: This instrument adopts rechargeable lithium battery for power supply, which means that the battery should be charged in time when the power is low to avoid damage to the battery. When charging, you can either charge the host or use the plug-in battery alone. The red indicator is always on when charging, and goes off when the battery is full. The special charger equipped with the instrument should be used for charging. Do not use other types of adapters or chargers to charge this instrument; otherwise, it may cause damage to the battery.

Note: Do not charge in a high-temperature environment. If the instrument is not used for a long time, the battery may suffer a slight power loss, resulting in a reduction in power. Recharge it before use. It is normal for the charger to heat up in the charging process, and the charging environment should be kept well ventilated to facilitate heat dissipation.

7. Maintenance: The instrument should be properly cleaned after each use to prevent dust from entering the instrument or inside the connector, which may lead to performance degradation or damage. As this instrument is not waterproof, do not use a wet cloth to scrub it! Do not use organic solvents to scrub the instrument and its accessories! Please use a clean, soft, and dust-free cloth to wipe the instrument and its accessories.

8. ⚠ The laser used in this instrument is Class 3R, so please take care during use and do not look directly into the instrument or violate any operation procedure.

1.6 Responsibilities

This instrument is a precision detection instrument, and the Company shall not be responsible for the following actions of the user.

1. Violation of the above working environment requirements or storage environment requirements.

2. Abnormal operations.

3. Opening the housing and disassembling any parts without permission.

4. Serious damage to the instrument caused by man-made or accidental accidents.

Chapter 2 Instrument Composition

2.1 Instrument Composition

The instrument consists of a host, a synchronous display, a charging adapter, a backup battery, and accessories.

2.1.1 Host

The appearance of the LR-G300 Integrated Rebar Scanner host is shown in Figure 2.1.

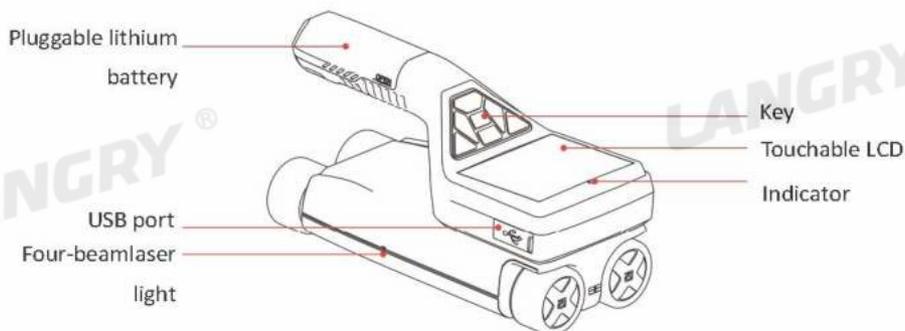


Figure 2.1

2.1.2 External Interface

USB port: It can be used as a data transfer interface or charging interface with the computer.

2.1.3 Key Descriptions

Key Symbol	Function Description
OK	<ol style="list-style-type: none">1. Confirm the current selection2. In grid scan mode, switch between horizontal and vertical directions
C/⏻	<ol style="list-style-type: none">1. Return to previous menu2. Press and hold: Turn on or off the instrument
▲	<ol style="list-style-type: none">1. Select the option upwards or adjust to increase the number2. Estimate the rebar diameter
▼	<ol style="list-style-type: none">1. Select the option downwards or adjust to decrease the number2. Perform equipment self-calibration
◀	<ol style="list-style-type: none">1. Select option towards the left2. Turn the page towards the left
▶	<ol style="list-style-type: none">1. Select option towards the right2. Turn the page towards the right
Fn	Multi-functional keys

Note:

Please refer to the relevant chapter for details on the functions of the specific keys; all operations are supported by keys and touch except in rare cases.

Chapter 3 Instrument Operation Instructions

3.1 Function Introduction

The instrument mainly implements relevant functions such as rebar detection, data viewing, data uploading, data deletion, and system setup. The main interface of the system is shown in Figure 3.1.



Figure 3.1 Main Interface

3.2 Rebar Detection

In the main interface, click [Scanning] to enter the rebar detection interface, as shown in Figure 3.2.



Figure 3.2 Main Interface for Rebar Detection

The main detection interfaces include six scan modes, such as quick scan, procedural scan, and complex condition scan. Press arrow keys to select one of the scan modes, and then press [OK] to enter the parameter setting interface of that scan mode.

3.2.1 Parameter Setting

The parameter setting is mainly used to set the parameters used in the current scan mode. The parameter setting interface is shown in Figure 3.3 (take the parameter setting interface of quick scan as an example).

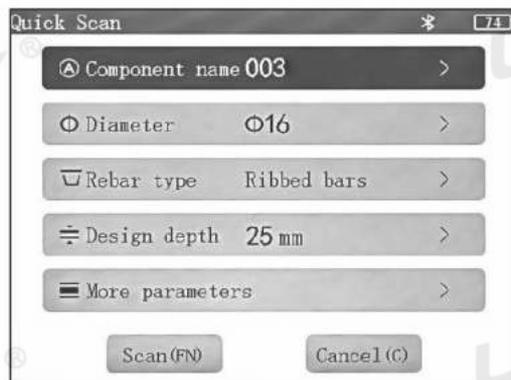


Figure 3.3 Parameter Setting Interface

Parameters that can be modified are as follows:

1) Component name

The component name consists of numbers, letters, and symbols. By default, the component name will be automatically deferred from the last stored name. Users can set the name by themselves according to their needs. Users can set up to 12 digits and at least 1 digit. The specific operations are as follows:

Press [OK] to enter the component name editing state. In the soft keyboard area, move the cursor, select a key to be executed, and then press [OK] to confirm or enter the multi-character selection field for that key. Move the cursor and press [OK] to select one of the characters.

2) Main rebar diameter

It is used to set the diameter of the rebar to be detected. The diameter can be selected in the range of 6, 8, 10, 12, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40, 50, in total 15 kinds of rebar specifications;

3) Rebar type

It is used to set the type of rebars to be detected. The options include deformed rebar and round rebar.

4) Design thickness

The design thickness setting interface allows the settings of the design thickness. The design thickness setting range is 1~210;

5) More parameters

More parameters include component type, main rebar spacing, stirrup diameter, stirrup spacing, and range selection.

① The component type can be selected from [Beam], [Slab], and [Custom].

② Main rebar spacing

It is used to set the main rebar spacing. The main rebar spacing can be set according to the actual situation, and can be set from 30 to >80 in mm.

③ Stirrup diameter

It is used to set the stirrup diameter. The stirrup diameter can be set according to the actual situation, and can be set to 6, 8, 10, 12, and 14 in mm.

④ Stirrup spacing

It is used to set the stirrup spacing. The stirrup spacing can be set according to the actual situation, and can be set to 40, 60, 80, 100, and > 120 in mm.

⑤ Range selection

Note: It is used to set the range. The range can be set according to the actual situation, and the range is divided into small range and large range.

1) The measurement of rebar protective layer thickness requires the pre-setting of rebar parameters. Only if the design parameters are set correctly can the measured protective layer thickness values be guaranteed to be accurate; otherwise deviations of varying degrees may occur.

2) The parameter settings of design thickness and component type are mainly used for the determination of qualified thickness of protective layer at measuring point in the measurement process. Unqualified measuring point values are displayed in red to show the difference.

3) The grid and image mode requires the settings of both the design diameter and the design thickness in the X and Y directions.

3.2.2 Signal Reset Calibration

When there is a change in the detection environment or a large deviation in the measured thickness value of the rebar protective layer compared with the design value, you need to rest and calibrate the instrument with the signal. In any of the measurement modes, press [▼] key to start the signal calibration function.

Note:

When the instrument is calibrated, it should be operated against the air and away from the ferromagnetic material. According to the interface prompt, press [OK] key to start the calibration process, and wait for the instrument to complete the self-calibration to exit.

An abnormal calibration signal indicates a calibration failure, in which case a new calibration is required.

3.2.3 Quick Scan

In the main interface of the rebar detection, select [Quick Scan] icon. After the scanning parameters are set up, press [Fn] key to enter [Quick Scan Detection] interface (you can refer to this method to enter other detection modes), as shown in Figure 3.4.

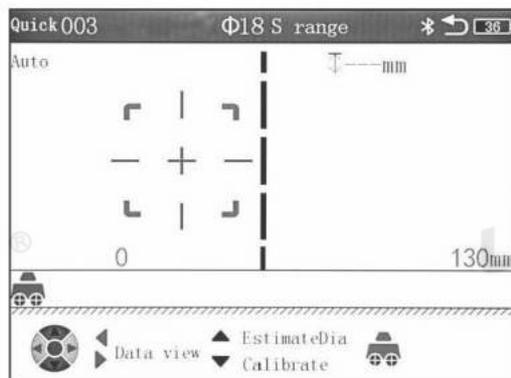


Figure 3.4 Display Interface for Quick Detection

In the lower left corner of the screen there is a key function prompt, which is automatically hidden when the measurement starts.

In [Quick Scan] interface, move the trolley slowly and evenly to the right to start measurement. When the trolley is close to the rebar, a green aiming box appears, and then you need to move the trolley slowly until the aiming box slowly moves close to the centerline. When the aiming box and the centerline overlap, the aiming box turns red, while the red indicator light

lights up, with a buzzer alert. The longitudinal laser light of the instrument emits a red vertical line, which indicates that the instrument detects the rebar at this time, located directly below the red line. If you set to auto storage mode, the thickness value of the protective layer is automatically saved. If you set to manual storage mode, it is necessary to press [Fn] key to save the thickness value. In this way, at the bottom of the screen, the thickness value appears. As the trolley moves away from the rebar, the aiming box moves away from the centerline. Until the trolley is moved beyond the effective detection range, the aiming box returns to the centerline position and appears in gray. When the trolley is in the middle of two rebars, the aiming box is in blue.

When you continue to move the trolley to the right to detect the next rebar, the instrument also displays the same prompt, at which time it shows both the protective layer thickness and the spacing from the previous rebar. As shown in Figure 3.5, the current protective layer thickness is 31 mm, the protective layer thickness of the previous rebar is 31 mm, and the spacing between the two bars is 93 mm.

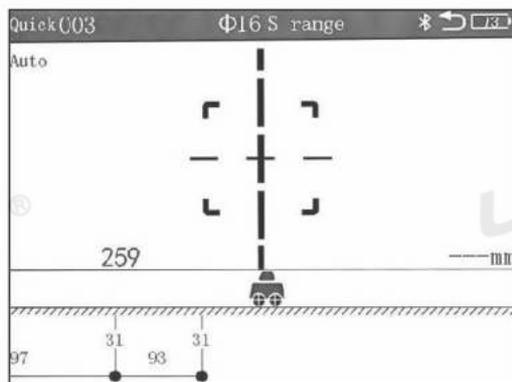


Figure 3.5 Quick Scan Interface

When the scanning distance exceeds the range displayed on the screen, the screen automatically turns the page, or you can press left and right keys to flip through. During the detection process, if it is found that the thickness of the rebar protective layer is abnormal, you can retract the trolley to re-measure. When the trolley is retracted to the left of the measurement point, the system automatically eliminates the measured measuring point data.

Note:

At the upper right of the detection interface, there is a detection limit setting to avoid the instrument scanning and identifying deep rebars. This parameter does not affect the detection data.

3.2.4 Procedural Scan

The procedural scan is a unique type of scanning method established for procedural requirements. The strict accordance with the procedure Technical Standards for the Detection of Rebar in Concrete (JGJ/T 152-2019) can implement a single-point re-testing of a rebar. Or the strict accordance with the Acceptance Specification for the Construction Quality of Concrete Structure Engineering (GB 50204-2015) can implement a three-point testing of a rebar. In

In addition, the two above-mentioned procedures enable the detection of any combination of measurement methods. The procedural scan is a common scan mode, which can measure the thickness and position of the rebar protective layer, rebar diameter, passing rate, and other information more accurately.

After entering the procedural scan mode, there are 6 types of procedural scan modes. You can select the detection mode according to your detection needs, as shown in Figure 3.6 below.

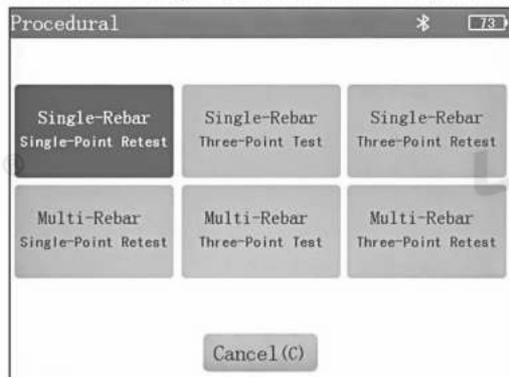


Figure 3.6 Selection Interface for Procedural Scan Detection Mode

After entering the detection interface, in the middle of the screen, the detection step prompt box pops up, where a rebar represents three parts, the line represents a rebar, and the dots on the line represent the part. Each point has three states: The blank point represents the part to be detected; the blue point represents the completion of the first data acquisition for that part; and the green point represents the completion of the second data acquisition for that part. After you enter the scan, the prompt box disappears.

In this chapter, we take single-rebar three-point re-test, and multi-rebar three point re-test as examples to illustrate Figure 3.7 shows the single-rebar three-point re-test interface.

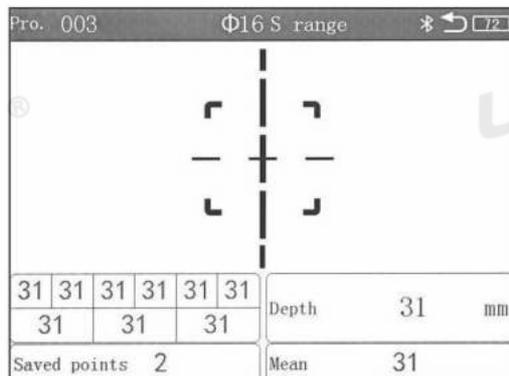


Figure 3.7 Interface for Single-Rebar Three-Point Re-test Scan

When detecting, move the trolley slowly. Until the trolley is moved above the rebar, the aiming box turns red, the buzzer sounds, and the red indicator and laser light on. And the

interface displays the determined thickness value in real time. At this time, press [Fn] key to save the measuring point. Then, on that part of the rebar, perform a second scan. After the two measuring point values are stored, the instrument automatically calculates the average value of the part. Repeat the above steps. When all three parts are measured, the instrument automatically calculates the average protective layer thickness of the current rebar.

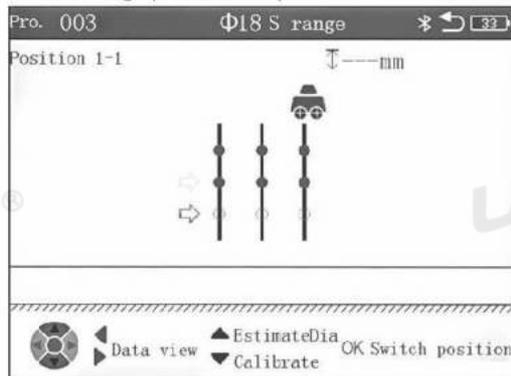


Figure 3.8 Scan Mode for Multi-Rebar Three-Point Re-test

The method of continuous scan is shown in Figure 3.8. The detection sequence is performed in accordance with the sequence of priority rebar, and then in accordance with the detection parts in turn. That is, to complete the first data acquisition of the Part 1 of all rebars in priority sequence, and then to perform the second data acquisition of the Part 1 of all rebars in sequence. In the same way, complete the first and second data acquisition for Part 2, and the first and second data acquisition for Part 3 in turn.

3.2.5 Wave Scan

The wave scan mode displays the waveform, position, protective layer thickness of the detected rebar, as well as the center distance of the adjacent rebars and estimated diameter in real time in the form of waveform graph. Users can also manually add and delete rebar measuring points according to the distribution pattern of the waveform. The wave scan interface is shown in Figure 3.9.



Figure 3.9 Wave Scan Interface

In wave scan interface, place the instrument on the surface of the object to be detected, and move it slowly to the right to start measurement. In this way, the screen displays the signal wave and the real-time displacement value at the bottom left of the screen. When the instrument is close to the rebar, the signal value starts to increase and the waveform curve slowly rises. When a wave peak appears, the thickness and position of the rebar protective layer are determined simultaneously. At this time, at the peak of the waveform, a white line appears to indicate that there is a rebar here. And Above the peak of the waveform, the thickness of the rebar protective layer appears. In the lower right corner, when the aiming box and centerline overlap, the aiming box turns red, while the red indicator lights on, with a buzzer alert. And the vertical laser light of the instrument emits a red vertical line, which indicates that the instrument detects the rebar at this time, located directly below the red line. When detecting multiple bars, the instrument automatically calculates the rebar spacing, and displays it below the waveform.

When the scanning distance exceeds the range of each screen displays, the instrument automatically flips the screen to display, with a maximum support of 10 m scanning range.

Suppose abnormal waveform signals or deviations in the rebar measurements are found during a detection. In that case, the waveform with deviations can be erased by backing up to the left and rescanned, or by pressing and holding the [Fn] key or touching the waveform display area on the screen to enter the interface of manually adding and deleting measuring points, as shown in Figure 3.10. This interface allows users to add and delete measuring points of rebar manually.



Figure 3.10 Wave Scan Interface for Adding and Deleting Measuring Points Manually

Once the user enters the function of manually adding and deleting measuring points in waveform scan mode, the instrument will no longer support to return to continue measuring this component.

3.2.6 Fine Scan

Quick and wave scans are not suitable for special scan scenarios such as high and low rebar and dense rebar because the position of the rebar has to be measured in real time. However, the fine scan is specifically designed for the special scenarios mentioned above. The fine scan interface is shown in Figure 3.11.

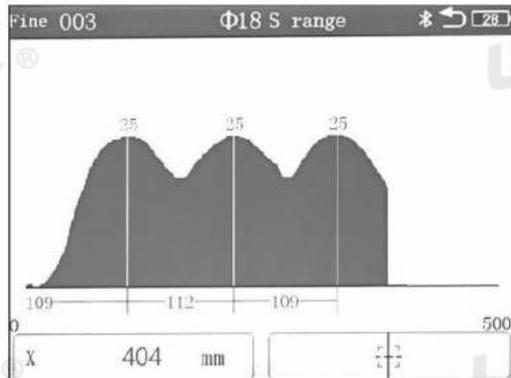


Figure 3.11 Fine Scan Interface

In fine scan interface, place the instrument on the surface of the object to be detected, and move it slowly to the right to start measurement. In this way, the screen displays the signal wave and the real-time displacement value at the bottom left of the screen. When the instrument is close to the rebar, the signal value increases and the waveform curve slowly rises. When the instrument is far from the rebar, the waveform curve slowly decreases, and a wave peak appears, of which the position is the position of the rebar. Then a white line is displayed at the wave peak to indicate a rebar and the protective layer thickness is displayed above the wave peak. When detecting multiple bars, the instrument automatically calculates the rebar spacing, and displays it below the waveform.

In the detection process, if there is a distribution of dense rebar spacing, the waveform signal becomes smoother and wider than the waveform of a single rebar, so the instrument needs to combine the changes in the waveform before and after to determine the rebar position, so there may be a delay in interpreting the rebar position. When measuring the dense rebar, the user needs to switch to the dense rebar mode by pressing the right arrow key in the detection interface. In the dense mode, the user must move the trolley slowly at a constant velocity to ensure detection accuracy. Press the right arrow key again to return to the fine mode. When the scanning distance exceeds the range of each screen displays, the instrument automatically flips the screen to display, with a maximum support of 10 m scanning range.

This mode supports manual addition and deletion of the rebar. Please see the manual addition and deletion introduction in Chapter 3.2.5 for specific operation steps.

Note:

Enter fine scan, and the default is the fine mode; fine mode is suitable for high and low reinforcements, a small part of dense reinforcements, and other special scenarios; pressing the right arrow key can be switched to dense rebar mode for the fine scan. This mode is suitable for most dense rebar scenarios. Dense rebar mode requires a uniform and slower scan speed to ensure the accuracy of the sampling data.

3.2.7 Grid and Image

After entering the grid and image scan mode, it is divided into grid scan and image scan, as shown in Figure 3.12.

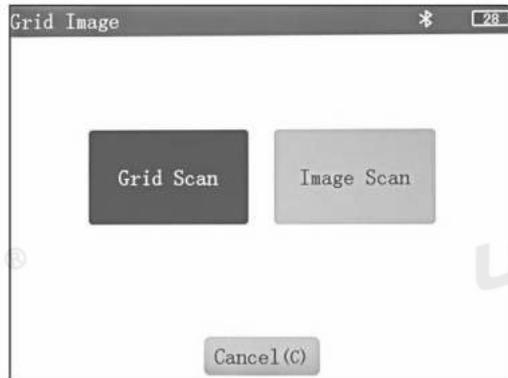


Figure 3.12 Interface of Grid and Image Mode Selection

3.2.7.1 Grid Scan

Grid scan is a measurement mode that displays the position of the measured rebar, the protective layer thickness, and the rebar spacing in the form of a grid diagram. Through the grid diagram displayed by the grid scan, the user can see the arrangement of the rebar.

The grid scan interface is shown in Figure 3.13.

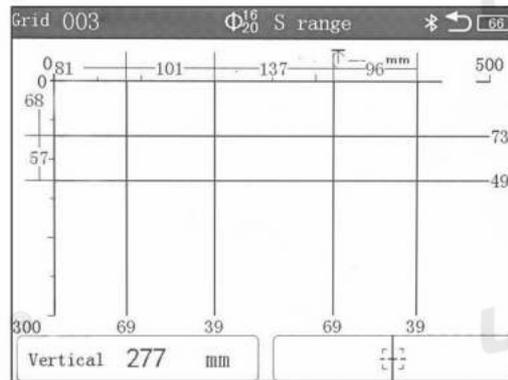


Figure 3.13 Grid Scan Interface

When entering the grid detection, first, the "grid horizontal" scan is performed by slowly moving the trolley; the bottom left position of the screen begins to record the displacement. When the rebar is detected, the instrument draws the measuring points of the rebar and protective layer thickness in the form of grid lines in the corresponding position, calculates, and displays the spacing of adjacent rebar. When the horizontal rebar scan is finished, press [OK] to switch to the "grid vertical" scan mode for continued detection. Press [C] to save the data and exit the grid detection after completing all detection.

3.2.7.2 Image Scan

Image scan mode is a measurement mode that combines fine scan and grid scan to perform comprehensive analysis by scanning horizontally and vertically in a specific area, which is suitable for the measuring environment with irregularly distributed rebar.

In the image scan, the user can scan in a maximum of 5x5 grid (also 2x2, 3x3, 4x4 grids), i.e., five horizontal scans and five vertical scans, of which the scan position can be selected arbitrarily, as shown in Figure 3.14.

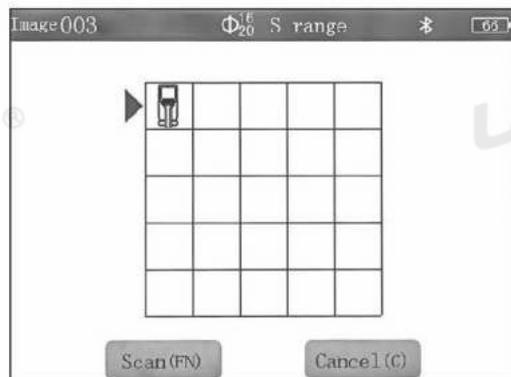


Figure 3.14 Interface of Image Scan Position Selection

The single-scan measurement of image scan also displays the measurement results in the form of waveform graphs. The detailed functions and operations are introduced in the chapter on the fine scan.

After completing all data collection, users can import the data into the computer for data analysis. At the same time, 3D graphics can be generated to display the distribution of rebar more visually.

Note:

The maximum distance for a single scan of the image scan mode is one meter;

The single scan of image scan mode does not support manually adding and deleting rebar measuring points.

3.2.8 Complex Working Conditions

Complex working conditions are a detection mode developed for the site's special environment, including detection for stirrup avoidance, convex surface, concave surface, etc. Later, other special conditions can be added to the complex working conditions detection.

3.2.8.1 Stirrup Avoidance Detection

Stirrup avoidance detection should be used for the case of the main rebar with a stirrup at the site. According to the site, enter the diameter of the rebar, the type of rebar, design thickness, component type, main rebar spacing, stirrup diameter, and stirrup spacing, as well as select the size range. After the parameters are set, next is the detection, of which the steps are the same as the quick scan.

3.2.8.2 Convex Surface Detection

Convex surface detection is appropriate for longitudinal rebar detection outside the pipe of cylindrical components. Entering the diameter and basic parameters of the cylindrical component, in turn, can start the measurement, with the instrument automatically correcting the error caused by the surface arc. The diameter of cylindrical components can be set to a minimum of 130 mm.

3.2.8.3 Concave Surface Detection

Concave surface detection is appropriate for longitudinal rebar detection inside the pipe of cylindrical components. Entering the diameter and basic parameters of the cylindrical component, in turn, can start the measurement, with the instrument automatically correcting the error caused by the surface arc. The diameter of cylindrical components can be set to a minimum of 100 mm.

3.2.8.4 High and Low Rebar Detection

This function is to solve the uneven distribution of the heights of the steel rebars to be tested on the site. After the related parameters are set according to the on-site conditions, you can perform detection in the steps the same as those of fine scanning.

3.2.9 Diameter Estimation

Each scan mode can be used to estimate the diameter of the rebar. When the diameter of the rebar needs to be estimated, move the trolley to the top of the rebar and press the [▲] key to estimate the diameter. Three seconds later, the measurement is completed. The interface of the instrument displays the estimated diameter and the estimated protective layer thickness. The display exits automatically in three seconds.

Note:

The diameter measurement should keep the instrument position constant. Otherwise, it causes deviation in measurement results.

Diameter measurement results are only for display and not for storage.

3.3 Data View

The instrument provides two viewing modes: component list and component detailed view. The detailed view of the components can be viewed in graphs and lists, which the user can select according to their needs. The default is in the form of graphs.

3.3.1 Component List Display

Entering the data view interface, the first level of data, i.e., the component list, is displayed as shown in Figure 3.15, which mainly displays component list information and data statistics of specified components.

Parameter modification: Press the [Fn] key to realize the parameter modification to modify the design thickness. The passing rate will be recalculated according to the new design thickness, not affecting the detection of the protective layer thickness.

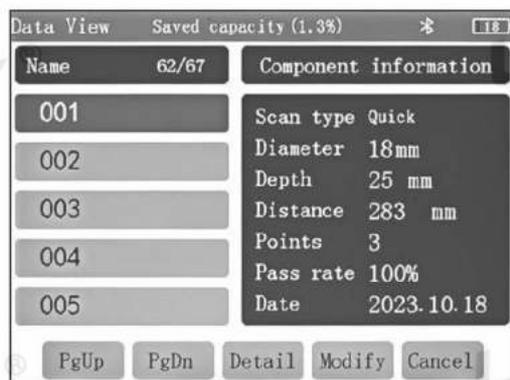


Figure 3.15 Data View Interface

Note: In accordance with the different scan modes of the components, the data statistics of the components show different contents:

Quick scan, wave scan, and fine scan display scan type, design diameter, and design thickness, distance, number of measuring points, passing rate, and test date.

Procedural scan displays the scan type, design diameter, design thickness, number of measuring points, passing rate, and test date.

Grid scan displays the scan type, design diameter X and Y, design thickness X and Y, scan distance X and Y, number of measuring points X and Y, passing rate X and Y, and test date.

Image scan displays scan type, design diameter X and Y, design thickness X and Y, and test date.

3.3.2 Graphic Display of Detailed View Data

Click [OK] to view the data of the selected component in detail.

The graphical interface display of the detailed view data mainly shows the measurement data of the current component utilizing graphics, which is clear and intuitive, and the graphical display interface of each scan mode is shown in the figure below.

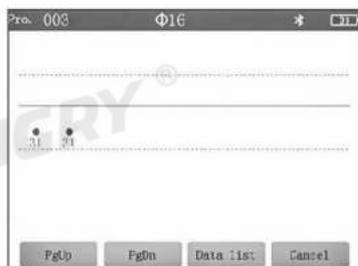


Figure 3.16 Procedural Scan

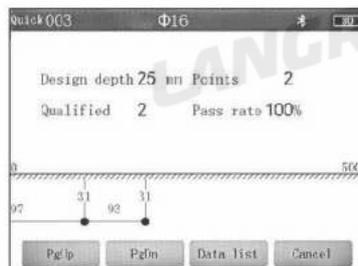


Figure 3.17 Quick Scan

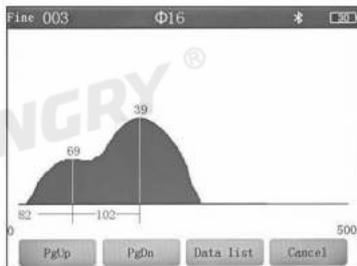


Figure 3.18 Fine Scan

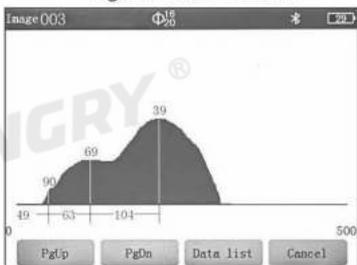


Figure 3.20 Image Scan

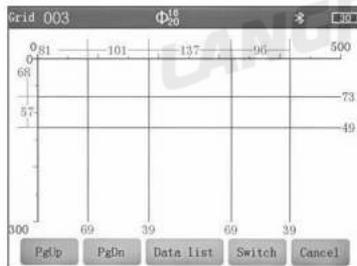


Figure 3.19 Grid Scan

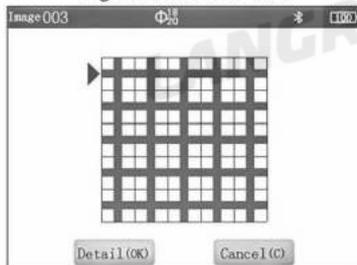


Figure 3.21 Image Scan to View Scan Position Interface

Note:

1. The title bar of the graphical display interface of the detailed view data mainly shows the scan type, component name, and design diameter of the current component. The graphical display area shows the measurement data in the form of graphical information such as position, thickness, and spacing of measuring points.

2. Entering the graphic display interface of the image scan data, it first displays the summary of all current measurements. The interface is shown in Figure 3.21. The user must first select the scan position to be viewed by pressing the direction key, then press [OK] to enter the graphic data viewing interface of the selected scan position.

3.3.3 List Display of Detailed Data

The list display interface of detailed view data mainly shows the measuring data of the current component by way of the data list. The list display interface of each scan mode is shown in the Figure.

No.	Depth	Deviation	No.	Depth	Deviation
	31/31	31	6		
1	31/31	31	6		
	31/31	31	6		
	31/31	31	6		
2	31/31	34	6		
	31/31	31	6		

Figure 3.22 Procedural Scan

No.	Displacement	Depth	Spacing	Deviation
1	97	31	97	6
2	190	31	93	6

Figure 3.23 Quick Scan

No.	Displacement	Depth	Spacing	Deviation
1	82	69	82	44
2	184	39	102	14

Figure 3.24 Fine Scan

X No.	Displacement	Depth	Spacing	Deviation
1	81	69	81	44
2	182	39	101	14
3	219	59	137	44
4	415	39	96	14

Figure 3.25 Grid Scan in Horizontal Direction

Y No.	Displacement	Depth	Spacing	Deviation
1	58	73	68	48
2	125	49	57	24

Figure 3.26 Grid Scan in Vertical Direction

No.	Displacement	Depth	Spacing	Deviation
1	49	90	49	55
2	112	69	63	44
3	216	39	104	14

Figure 3.27 Image Scan

Note: The meanings of the symbols in the detailed view data list display interface are explained as follows:

Serial number—the serial number of the current measuring point

Thickness—the measured thickness of the current measuring point

Thickness X—the measured thickness of the current measuring point in the X direction of the grid

Thickness Y—the measured thickness of the current measuring point in the Y direction of the grid

Displacement—the measured displacement of the current measuring point

Displacement X—the displacement of the current measuring point in the X direction of the grid

Displacement Y—the displacement of the current measuring point in the Y direction of the grid

Deviation—the difference between the thickness of the current measuring point and the design thickness

Spacing—Displacement difference between the current measuring point and the previous one

3.4 Data Deletion

The data deletion mainly realizes the manual data deletion operation. When entering the data deletion interface, the instrument prompts, "Do you want to delete the data? Yes (Y) No (N)". Press [OK] or touch the corresponding key on the screen to delete the data, and press [C] or touch the corresponding key on the screen to cancel the data deletion. The data deletion interface is shown in Figure 3.28.



Figure 3.28 Interface of Data Deletion Confirmation

Note:

1. Confirm whether the data has been uploaded to the computer before deleting the data. The data cannot be recovered after deletion.
2. The instrument does not support cancellation through key or touch operation during the data deletion.

3.5 System Setting

The system setting menu interface is used to realize the user's modification of system configuration parameters, mainly including power saving settings, sound settings, time settings, theme settings, display resolution, and language settings. It is shown in Figure 3.29.



Figure 3.29 System Setting Interface

3.5.1 Power Saving Setting

Users can set the backlight brightness, standby time, auto shutdown, and laser setting in the power saving setting. The factory setting of backlight brightness is 50% brightness; standby time is 10 minutes; auto shutdown time is 25 minutes; the horizontal and vertical laser is on; users can set them as needed.

3.5.2 Sound Setting

Sound settings include key sound, prompt sound, and touchscreen sound, which users can set as needed.

3.5.3 Time Setting

Set the system time, including year, month, day, hour, and minute.

3.5.4 Theme Setting

In the theme setting, the user can set the theme of the screen display according to the user's preference.

3.5.5 Display Accuracy

The user can change the display accuracy of the results in all detection modes, which shows in an integer by default.

3.5.6 Language Settings

Users can change the default language.

3.6 About the Device

The main relevant information used to display the machine includes the instrument model and name, firmware version number, instrument number, company contact number, and company's official website.

Chapter 4 Synchronous Display

4.1 Instrument Composition

The instrument is composed of the synchronous displays' host, extension rods, and other accessories. It is shown in Figure 4.1

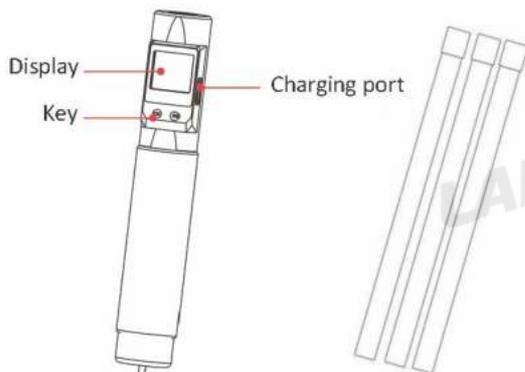


Figure 4.1 Synchronous Displays

4.2 Key Descriptions

Key	Function Description
 OK	<ol style="list-style-type: none">1. Press and hold to switch on/off;2. Confirm the saved detection data in the option and detection interface and the saved current measuring point in the procedural scan.
Fn	<ol style="list-style-type: none">1. Move the cursor down;2. Press and hold the detection interface without saving the data to return to the upper level.

4.3 Instrument Operation Instructions

4.3.1 Synchronous Display Boot

Press and hold **[OK]** to turn on the synchronous display; the rebar scanner is automatically connected to the synchronous display. It is shown in Figure 4.2.

Automatic connection requires the rebar scanner to turn Bluetooth on. If Bluetooth is off, the synchronous display shows "Connecting..." It is shown in Figure 4.3. Turn on the Bluetooth of the host; the synchronous display will be connected automatically.



Figure 4.2



Figure 4.3

4.3.2 Function Selection

In the main interface, press [OK] to enter the function selection interface, as shown in Figure 4.4. Press [Fn] to move down the cursor and select the desired detection mode in order of quick scan, procedural scan, fine scan, dense waveform, and grid scan. Press [OK] to enter the selected detection mode.



Figure 4.4

Note:

1. Detection parameter settings can only be set on the host side; the synchronous display does not support parameter settings.
2. Synchronous display does not support image scans.

4.3.3 Synchronous display

The data displayed on the synchronous display is consistent with the data detected by the host. During the detection, the host detection data is synchronously displayed in the synchronous display, which is shown in Figure 4.5 and Figure 4.6.

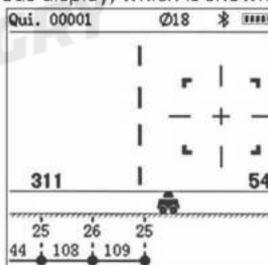


Figure 4.5

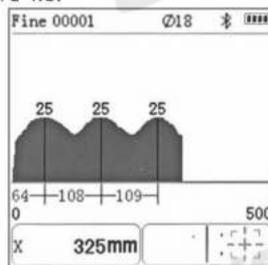


Figure 4.6