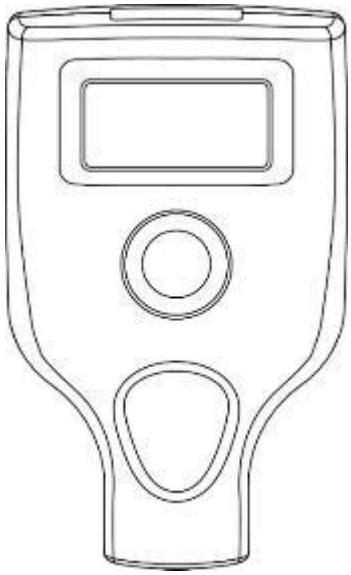
Coating Thickness Gauge

Model: LS236

User Manual V2.22

Please read this manual carefully before using and reserve it for reference.

I. Product Introduction



The coating thickness gauge is professionally used for measuring the thickness of car paint. The car body shell material is generally metal materials such as iron, aluminum and non-metallic materials such as carbon fiber, plastic, etc. The coating thickness gauge can measure the car paint thickness on iron and aluminum substrates. . Moreover, it can identify not only non-metal car bodies, but also the ferrous putty layer as well as the galvanized iron. The gauge has two displays on the front and the top separately. The two displays simultaneously display the test data. When measuring different positions of the car body, it is convenient to view the test data. Among them, the front display uses LCD, LCD ensures that the test results are clearly visible under strong light. The top display uses OLED, OLED ensures normal display in a low temperature environment of -40°C. It also features 3-color backlight display.

Standards for the product:

- *DIN EN ISO 2808 Paints and Varnishes-Determination of Film Thickness*
- *JJG-818-2005 Verification Regulation of Magnetic and Eddy Current Measuring Instrument for Coating Thickness*
- *GB/T 4956-2003 Non-magnetic Coatings on Magnetic Substrates-Measurement of Coating Thickness-Magnetic Method*
- *GB/T 4957-2003 Non-conductive Coatings on Non-magnetic Basis Metals-Measurement of Coating Thickness-Eddy Current*

II. Parameters

Probe tip	Ruby
Measuring principle	Fe: Hall Effect / NFe: Eddy current
Probe type	Built-in integrated probe
Measuring range	0.0-5000μm
Resolution	0.1μm/1μm/10μm
Accuracy	0-3000μm: ≤±(3%H+2μm), H is the standard value 3000-5000μm: ≤±(5%H+2μm), H is the standard value
Unit	μm / mil
Measuring interval	0.5s
Minimum measuring area	Ø = 25mm

Minimum curvature	Convex:5mm / Concave:25mm
Minimum substrate thickness	Fe:0.2mm / NFe:0.05mm
Display	Front: 128×48 dot matrix LCD, top: 128×64 dot matrix OLED
Power supply	2 pcs of 1.5V AAA alkaline battery
Operation temperature range	-40℃-50℃
Storage temperature range	-50℃-60℃
Gauge size	100*60*24 mm
Weight(with battery)	80g
Supply Voltage	DC3V
Operating Current	20mA
Operating Power Consumption	60mW

III. Features

1. No calibration, just zero adjustment.
2. Simple operation by pressing one button.
3. Fast measurement, 0.5s measuring interval.
4. Dual display design, display the measured value simultaneously. It is convenient to view the test data in real time when measuring at different angles.
5. Using LCD and OLED as display devices simultaneously, LCD ensures that the test results are clearly visible under strong light and OLED ensures normal display in a low temperature environment of -40°C.
6. The device can identify the ferrous putty as well as the galvanized iron substrate. It also features 3-color backlight display.
7. Wear-proof ruby probe tip for long-term use.
8. Dual-use probe for both iron and aluminum. The gauge can automatically identify the substrate and switch measurement mode rapidly.
9. The gauge can measure the non-magnetic coating thickness on metal substrates and non-conductive coating thickness on non-magnetic substrates.
10. Use advanced digital probe technology, these sensors are unsusceptible to interference and provide an excellent measuring accuracy. Even temperature change will not affect measurement and data remain stable to ensure a very good reproducibility over the complete measuring range.

IV. Operation

1. Power on/off

Power on:

Short press the power button to turn on the gauge. Display the version number and serial number, then the recorded data of last measurement are displayed after the gauge is turned on.

Power off:

Long press the button to shut down the gauge, or the gauge will automatically shut down in 3 minutes without any operation.

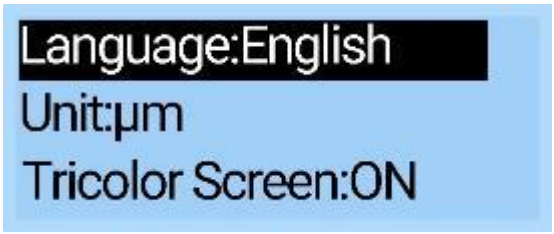
2. Device setting

In the off state, long press the button for 3s to enter the setting interface.After entering the setting interface, if there is no operation for more than 20 s, the gauge will automatically shut down.Short press the button can select the settings; Long press the button for 3 s and less than 5 s to confirm the settings; long press the button for 5 s, the gauge exits the setting and shuts down and the setting is invalid.

Language settings

The instrument is available in Chinese, English, Russian, Turkish, Ukrainian, German.

Setting method: In the main setting interface, short press power button to select "Language" option, long press the button for 3 seconds to confirm the selection, short press the button again to select the desired language, long press the button for 3 seconds to confirm the selection, and return to the main setting interface.

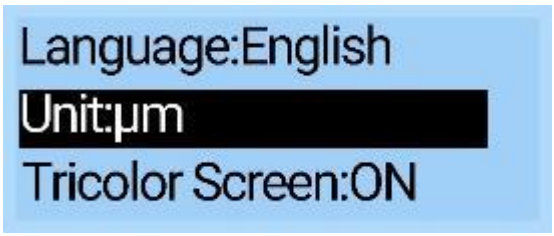


Setting interface

Unit setting

The device can be set to the metric or imperial unit, and the factory default is metric.

Setting method: In the main setting interface, shortly press the button to select “Unit”. Long press the button for 3s to confirm and then enter the unit selection interface. Shortly press the button to select your unit and long press the button for 3s to confirm and back to the main setting interface.

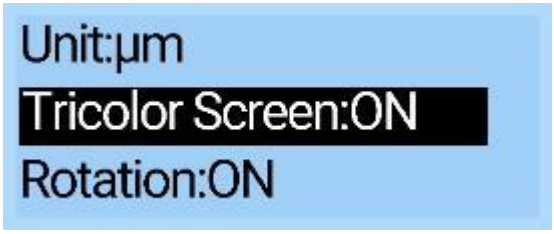


Main setting interface　　Unit selection interface

Tricolor Screen Setting

The instrument can be set to ON or OFF the three-color backlight of the screen. The default setting upon factory release is ON.

Setting method: On the settings main interface, press the button shortly to select 'Tricolor Screen.' Press and hold the button for 3 seconds to enter the selection interface. Then, press the button shortly to choose to turn it on or off. Hold the button for 3 seconds to confirm the selection and exit to the settings main interface.



Main setting interface　　Tricolor selection interface

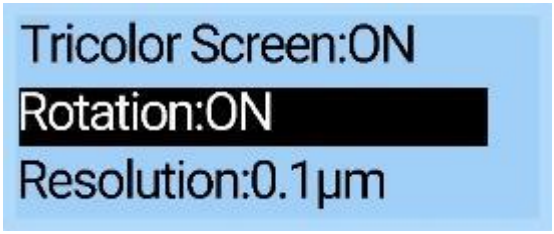
Rotation Setting

The instrument can be set to ON or OFF the screen rotation function. The default setting upon factory release is OFF.

Rotation ON: In measurement mode, the short button is for screen rotation without history record query function.

Rotation OFF: In measurement mode, the short button is for history record query without screen rotation function.

Setting method: On the settings main interface, press the button shortly to select 'Rotation'. Press and hold the button for 3 seconds to enter the selection interface. Then, press the button shortly to choose to turn it on or off. Hold the button for 3 seconds to confirm the selection and exit to the settings main interface.



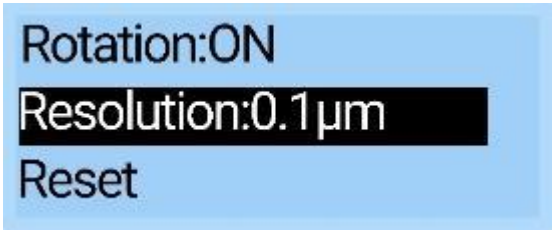
Main setting interface　　Rotation selection interface

Resolution Setting

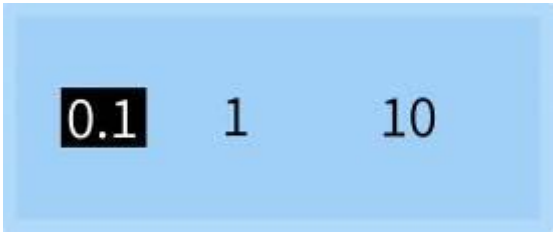
The instrument allows for resolution settings of 0.1μm, 1μm, and 10μm, and the factory default is 0.1um.

- 0.1μm Resolution: 0.1μm: (0μm – 999.9μm), 1μm: (1000μm –5000μm).
- 1μm Resolution: 1μm: (0μm - 5000μm).
- 10μm Resolution: 10μm: (0μm - 5000μm).

Setting Method: On the main settings interface, press the button shortly to select 'Resolution.' Press and hold the button for 3 seconds to enter the selection interface. Then, press the button shortly to choose the desired resolution. Hold the button for 3 seconds to confirm the selection and exit to the settings main interface.



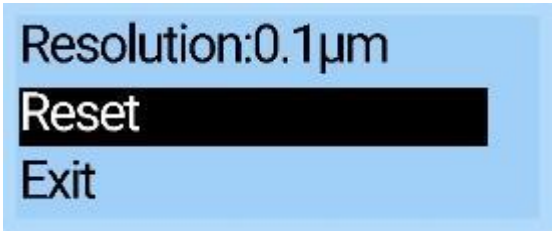
Main setting interface



Resolution selection interface

Reset

Setting Method: On the main settings interface, press the button shortly to select ‘Reset’. Press and hold the button for 3 seconds to enter the selection interface. Then, press the button shortly to choose the ‘Yes’ or ‘No’. Hold the button for 3 seconds to confirm the selection and exit to the settings main interface.



Main setting interface

Reset interface

After "Reset", the default parameters are as follows:

Item	Language	Unit	Tricolor Screen	Rotation	Resolution
Reset	No Reset	μm	ON	ON	0.1

Exit

In the main setting interface, short press power button to select "Exit", long press the button for 3 seconds to confirm and enter the measurement interface

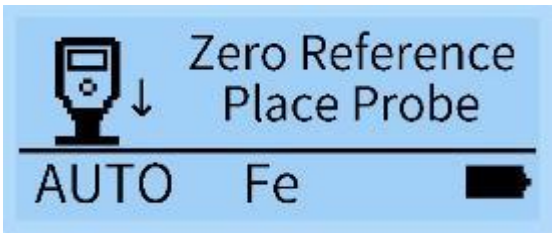
3. Zero adjustment

A zero-adjustment is required when using the gauge for the first time, after inserting new batteries, working with different materials or ambient temperature changes. We strictly recommend carrying out the reference check on the uncoated original substrate, due to the difference of magnetic and conductive

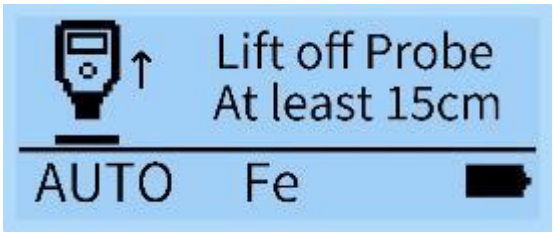
properties of the material, some measurement deviation will be caused. If this is not possible, please use the zero reference plates supplied by Linshang technology, there are Fe plate and NFe plate, please choose correctly according to the measuring materials.

3.1 Measuring the plate or uncoated original substrate, a measured value will be displayed on the gauge, please make sure the probe tip is placed perpendicularly and evenly on the surface.

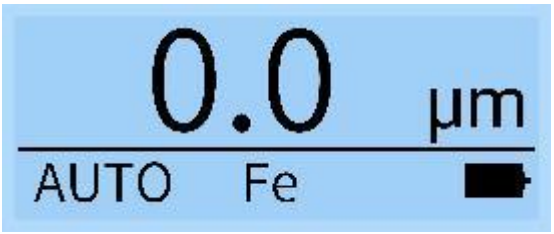
3.2 Hold the probe still, long press the button for 3s, the gauge will display “zero reference place probe” (as shown in below picture).



3.3 After hearing a buzzer sound, the gauge will display “Lift off probe at least 15 cm” (as shown in below picture), release the button and lift the probe away from the plate (substrate) for at least 15 cm.



3.4 The zero adjustment completed when there is the buzzer sound again, and the LCD screen displays 0.0.



3.5 After the zero adjustment is completed, place the standard film on the plate (substrate), if the measurement value is stable and deviation from standard value within ±3µm, the gauge can be used normally.

Note: After the zero adjustment completed，when repeating measurement on the same spot, the reading may not always be 0µm, since surface roughness, dirt, scratches etc. It might cause variances. The operation of the gauge should be correct and proficient; otherwise, it will lead to instability of the measured values.

4. Measurement

1) Hold the non-slip groove with your fingers.

2) Press the probe against the tested object surface vertically. Keep the probe stable, do not tilt or shake. Measurement value will appear on the display with buzzer alerts.

3) To continue the measurement, you can lift off the probe away from the object to be measured, and then follow step 2) again.

4) When the device identifies the ferrous putty, the interface of the device will prompt: “Ferrous putty”. When the device identifies the galvanized iron, the screen displays ' FeZn '.

5) Different color backlight according to the measured thickness:

- White backlight: The measured paint thickness is <170um;
- Yellow backlight: The measured paint thickness is between 170um - 350um;
- Red backlight: The measured paint thickness is >350um.

5. Check measurement records

In measurement mode, short press the button to check historical data. The gauge stores 9 sets of data. When more than 9 sets of data are stored, the earliest recorded value is automatically deleted, and “No.1” is the last test data. Recorded data will not loss after powering off.

V. APP Operation

The coating thickness gauge is equipped with built-in Bluetooth communication, which can be connected to the gauge through the mobile app.

1. Mobile APP installation and use

1) Mobile APP installation: Scan the QR code on the instrument with your cell phone's browser or the s ystem's own scanning function, and follow the instructions to download and install coating thickness gauge software; iPhones can be installed by searching for " Coating Thickness Gauge" in the App St ore. After installation, the icon of "Coating Thickness Gauge" will appear on the desktop of your cell phone as shown in the picture below.

2) Connect the device: Open the APP. If there is no bound Bluetooth device, then enter the Bluetooth setting interface. Click "Start Searching", prompt "Searching for device... " and list the available Bluetooth devices that are searched; click the "Stop Searching" button to stop searching for

Bluetooth devices. Selecting gauge serial number will bind the selected gauge (prompt: each gauge has a unique serial number). After the connection is successful, it will automatically enter into the main measurement interface and Bluetooth icon will be displayed at the bottom right of the gauge screen. If the APP has a bound Bluetooth device, automatically search and connect the bound Bluetooth device. When the connection is successful, it will automatically enter the “Measure” interface.

VI. Precaution

1. The device must be zero adjusted respectively with the iron-base and aluminum-base zero adjustment plates. Otherwise, there may be abnormal identifications of the ferrous putty and galvanized iron substrate.
2. Some car bodies may be misjudged as iron-zinc car bodies due to the base material.
3. It is strictly forbidden to slide the probe on the surface of the car body; otherwise both the car paint and device will be damaged.
4. Please ensure that the paint surface of the car body is clean. Dust, dirt and other foreign objects on the surface will affect the measurement accuracy.
5. When the device displays “Low Battery”, batteries should be replaced.

VII. Packing list

No.	Description	Quantity	Unit
1	Coating Thickness Gauge	1	Set
2	Fe zero-adjustment plate	1	pcs
3	NFe zero-adjustment plate	1	pcs
4	Standard film	1	pcs
5	User manual	1	pcs

VIII. Service

1. The gauge has one-year warranty. If the gauge works abnormally, please send the whole gauge to our company for maintenance.
2. Provide users with spare parts and lifelong maintenance services.
3. Provide the users with the gauge calibration service.
4. Free technical support for long term.

Manufacturer: Shenzhen Linshang Technology Co., Ltd.
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Service hotline: 086-755-86263411
Email: sales21@linshangtech.com