LS223 coating thickness gauge

User Manual V1.2

I. Product introduction

The LS223 coating thickness gauge can be used not only to measure non-magnetic coatings such as paint, varnish, enamel, chrome and galvanizing on ferromagnetism metal substrates such as steel or iron, but also measure Non-conductive coatings such as paint, anodized layers or ceramic on non-magnetic metal substrates such as copper, aluminum, die cast zinc, brass etc. The gauge automatically identify the substrate and switch measurement mode. It is widely used in manufacturing, metal processing, chemical industry, commodity inspection and other fields.

Standards for the product:

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

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

II. Technical parameters

Probe tip	Ruby fixed
Measuring principle	Fe: Hall Effect / NFe: Eddy current
Probe type	F5N3 Probe / F3N3 Probe
Measuring range	F5N3 Probe: Fe: 0.0-5000μm/ NFe:0.0-3000μm F3N3 Probe: Fe: 0.0-3000μm/ NFe:0.0-3000μm
Resolution	0.1μm:（0μm - 99.9μm） 1μm:(100μm - 999μm) 0.01mm:(1.00mm - 5.00mm)
Accuracy	≤±(3% reading+2μm): 0-3000μm ≤±(5% reading+2μm): 3000-5000μm
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	128×64 dot matrix LCD
Power supply	2pcs of 1.5V AA alkaline battery
Range of operation temperature	0℃-50℃
Storage temperature range	-20℃-60℃
Host size	126*66*35 mm

Probe size	22*26*55 mm
Weight(with battery)	160g

III. Product advantages

1. No calibration, just zero adjustment.
2. One hand operation, only one button.
3. Fast measurement, 0.5s measuring interval.
4. Ultra-large range. The maximum thickness reach 5mm.
5. Wear-proof ruby probe tip for long-term use.
6. The gauge automatically identify the substrate and switch measurement mode rapidly.
7. "Fe", "NFe", "Fe/NFe" three measurement modes can be set.
8. Measuring non-magnetic coatings on steel or iron and measure Non-conductive coatings on non-magnetic metal substrates in one gauge.
9. Thanks to the use of the most-advanced digital probe technology, these sensors are unsusceptible to interference and provide an excellent measuring accuracy. Even variations in temperature will not affect measurement and readings remain stable to ensure a very good reproducibility over the complete measuring range.

IV. Operation

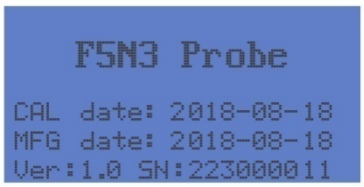
1. On/Off

On:

Method 1) the gauge turn on automatically during the probe test and display the testing result directly.

Method 2) the gauge can be turned on by a short press on the button. Host parameters, probe parameters and the recorded data of last measurement are displayed after the gauge is turned on. See below pictures:

Host parameters



Probe parameters

Recorded data of last measurement

Off: The gauge can be turned off by long pressing the button or automatically turned off in 1 minute after no operation.

2. Settings

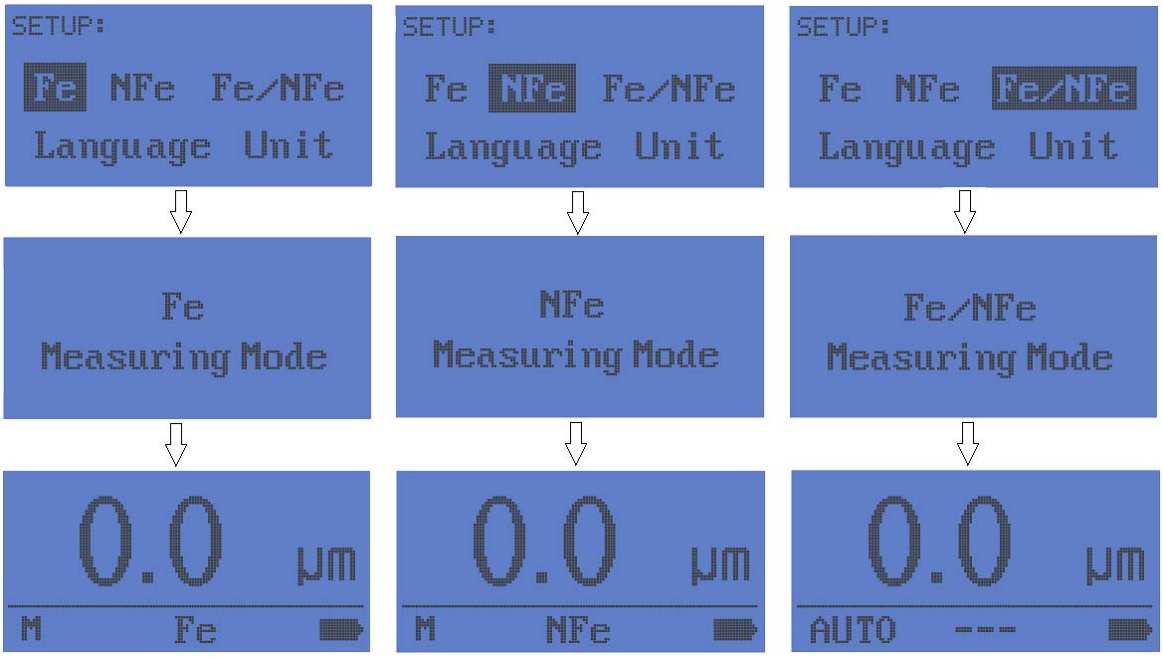
In the off state, press and hold the red button for 3 seconds to enter the setting interface.

Pressing key within the 2 seconds is selection function. If the button is pressed for more than 2 seconds without further operation, it will be considered as confirmation for current operation.

2.1 Selection of measurement substrates

It has three measurement modes: iron-substrate measurement mode (Fe), non-ferrous substrate measurement mode (NFe) and automatic identification mode (Fe/NFe). In general, the Fe/NFe automatic identification mode can be used. For application with clearly indicated substrate, the Fe or NFe mode can be set as a fix mode.

Press the red button quickly (press it within 2 seconds) to select the substrate to be measured. After a short pause (more than 2 seconds), the gauge automatically confirms the selection result and enters the measurement state.



2.2 Language settings

The gauge has two languages: Chinese and English, and the factory default is Chinese. Setting method: Press and hold the red button in the off state to enter the setting interface. Press the button to select “Language”. After a short pause (more than 2 seconds), the Chinese and English selection interface will be displayed. Press the button to select the language, and the setting will be confirmed after a few seconds. Enter the measurement interface.

Setting interface　　Language selection　　Language confirmation

2.3 Unit settings

The gauge may be set metric or imperial unit. The factory default is metric unit, μm. Setting method: Press and hold the red button in the off state to enter the setting interface. Press the button to select “Unit”. After a short pause (more than 2 seconds), the unit selection interface will be displayed. Press the button to select the unit, and the setting will be confirmed after a few seconds. Enter the measurement interface.

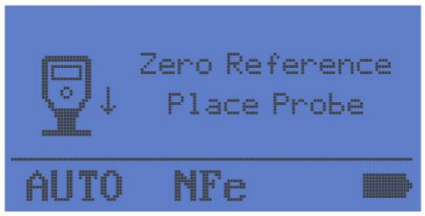
Setting interface　　Unit selection　　Unit confirmation

3. Zero adjustment

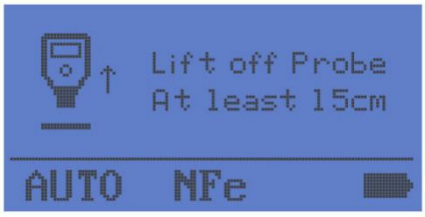
A zero-adjustment is required when using the gauge for the first time, after inserting new batteries, working with different materials or ambient temperature changes. We strictly recommend carrying out the reference check on the uncoated original substrate, due to the difference of magnetic and conductive properties of the material, some measurement deviation will be caused. if this is not possible ,please use the zero reference plates supplied with in the case，there are aluminum plate and iron 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，pressing the red button, a buzzer sound will be heard. The gauge will display “zero reference place probe” (as shown in below picture).



3.3 Wait until the gauge display “Lift off probe at least 15 cm” (as shown in below picture). Lift the probe away from the plate（substrate）for at least 15 cm.



3.4 The zero adjustment is 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 ±1μm, the gauge can be used normally.

Note: When repeating measurement on the same spot, the reading may not always be 0μm, since surface roughness, dirt, scratches etc. 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) Use fingers to hold probe where there is non-slip groove.

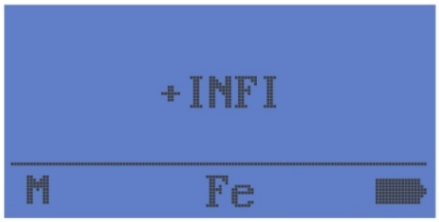
2) Press the probe vertically on the surface of the object to be measured. Keep the probe steady and

do not tilt or shake it. The result will be shown on the screen, and there will be a buzzer.

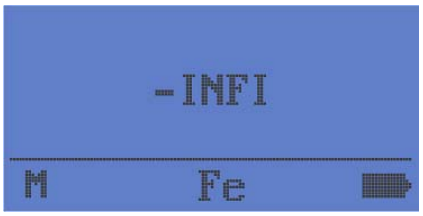
3) To continue measuring, lift the probe away from the object. Repeat the operation of step 2).

When measuring, the following interfaces may appear

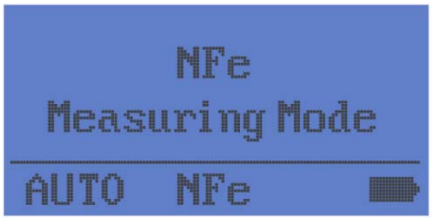
- +INFI: The valid measurement range is exceeded, or the probe fix measurement mode does not match the measured substrate



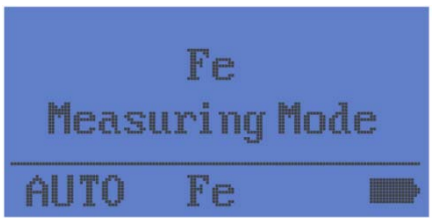
- -INFI: The measured value is less than-100 μm. The instrument needs zero adjustment.



- In the automatic identification mode, When Fe substrate is changed to NFe substrate, the interface is: NFe measuring mode.



- In the automatic identification mode, When NFe substrate is changed to Fe substrate, the interface is: Fe measuring mode.



5. Check measurement records

In measurement mode, press the red button to check historical data. The gauge stores 9 sets of data. When more than 9 sets of data are stored, the oldest recorded value is automatically deleted, and No. 1 is the last test data. Recorded data will not be lost when the gauge is turned off.

6. Connection method of host, connecting line and probe

The host and connecting line, connecting line and probes are all connected by aviation plugs. The aviation plugs have spring limit positions and cannot be violently rotated and pulled. The method of plugging and unplugging is shown in the picture below:

V. Matters need attention

1. The measurement should be point contact. It is strictly forbidden to slide the probe on the surface of the object.
2. During the measurement, the probe should be kept at the center of the point to be measured.
3. Keep away from strong magnets (magnets, stereos, etc.) and strong electromagnetic fields (transformers, induction cookers, etc.).
4. Zero adjustment is recommended before the instrument is used
5. Please ensure that the surface of the object under test is clean，Dust and dirt on the surface to be tested will affect the measurement accuracy.
6. When the screen display low battery, new battery should be used.

VI. Packing list

No.	Item	Quantity	Unit
1	LS223 coating thickness gauge	1	Set
2	Fe plate of zero adjustment	1	Pcs
3	NFe plate of zero adjustment	1	Pcs
4	Standard film	1	Pcs
5	Instruction manual	1	Pcs
6	Certificate / Warranty card	1	Pcs
7	1.5V AA alkaline battery	2	Pcs

VII. 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 meter calibration service
4. Free technical support for long term

Manufacturer: Shenzhen Linshang Technology Co., Ltd. Website: www.linshangtech.com
Service hotline: 0755-86263411 Email: sales21@linshangtech.com