iCoat-100
Coating Thickness Gauge

Instruction Manual

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Contents

1.Product Introduction

This instrument is a portable coating thickness gauge for both iron and aluminium, adopting magnetic induction and eddy current automatic conversion technology. It can automatically identify non-metallic shell, iron powder putty layer and iron galvanised layer. It can quickly, non-destructively and precisely measure the thickness of coating and plating layers, and can be used in both test labs and engineering sites. This instrument is widely used in manufacturing industry, metal processing industry, chemical industry, commodity inspection and other testing fields, is a necessary instrument for material protection.

●Good accuracy for light touch measurement.

●No need to calibrate, only zero.

●Wide measuring range and high resolution.

●Measurement velocity is up to 0.2 seconds / time.

●Integrated structure, small size and light weight.

●Can quickly and automatically identify magnetic or non-magnetic substrates.

●The instrument has the function of identifying iron powder putty layer and iron galvanised layer.

●Equipped with automatic sleep and shutdown, it realises power-saving function.

●The wear resistance of zirconia probes ensures that the instruments are used effectively for long time.

●Uses both Hall and Eddy Current thickness measurement methods. It can non-destructively measure the thickness of non-magnetic coverings (e.g. aluminium, chromium, copper, zinc, enamel, rubber, paint, powder, etc.) on magnetic metal substrates (e.g. steel, iron, alloys and hard magnetic steel, etc.) and the thickness of non-conductive coverings (e.g. enamel, rubber, paint, plastic, etc.) on non-magnetic metal substrates (e.g. copper, aluminium, zinc, tin, etc.)

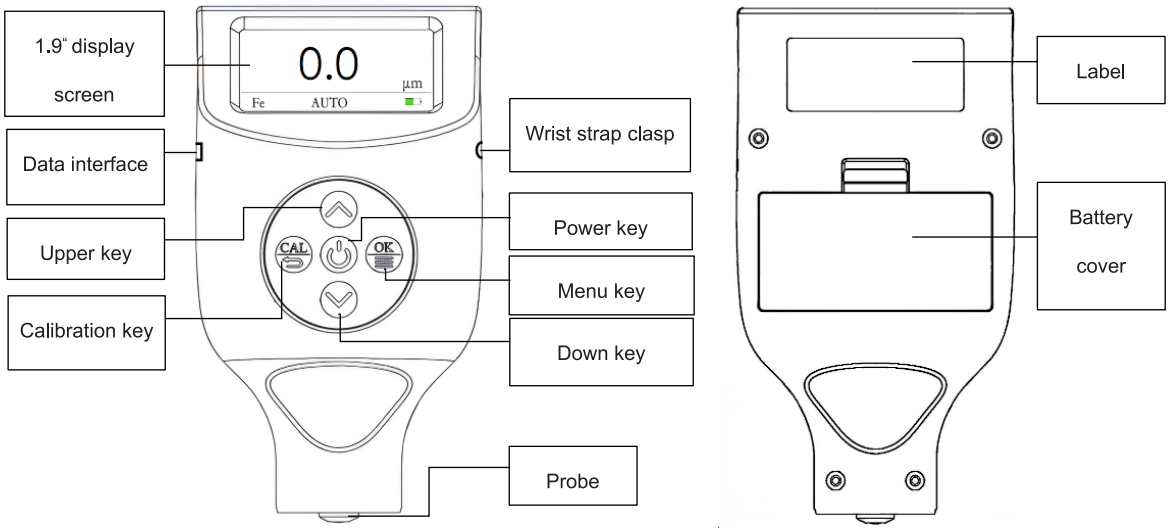
1.Product Introduction

1.1 Specification

Resolution	Auto (0.1μm/1μm/0.01mm)
Measurement Range	0.0-3500μm
Measurement Accuracy	0–100μm:≤±(1%H+2μm),H is standard value 100–1000μm:≤±(2%H+2μm),H is standard value 1000–3500μm:≤±(3%H+3μm),H is standard value
Measurement Interval	0.2s
Substrate Indication	Iron, aluminium, iron zinc, iron powder putty
Minimum Measuring Area	Ø = 25mm
Minimum Curvature Radius	convex:5mm / concave:25mm
Minimum Substrate Thickness	Fe:0.2mm / NFe:0.05mm
Probe Type	Built-in one piece
Measuring Principle	Iron: Hall effect / Aluminium: Eddy current
Probe Tip	Zirconium oxide
View Mode	Normal/ Maximum/ Difference
Measurement Mode	Continuous / Single
Memory	Automatic / manual
Auxiliary Function	Auto Power Off, Theme Switching, Backlight Adjustment, Screen Flip, Metric/English Switching
Unit	Micrometre / Millimetre
Display	320×170 IPS_LCD display screen
Power Supply	AAA alkaline battery
System Language	Chinese / English
Host Size	112mm×63mm×29mm
Energy Consumption	20mA 60mW
Operating Temperature Range	-20℃–50℃
Storage Temperature Range	-30℃–60℃
Weight (Including Battery)	85g

2.Basic Operating Instructions

2.1Keyboard Function



2.2 Power on/ off/ sleep

Power on: Short press the upper key to power on the instrument and enter the historical data interface of the latest recording.

Power off: Long press the upper key to turn off the instrument; or the instrument will turn off automatically if no key operation within 2 minutes.

Sleep: The instrument enters into low-power sleep mode after 30 seconds of no operation, press any key to wake up the instrument.

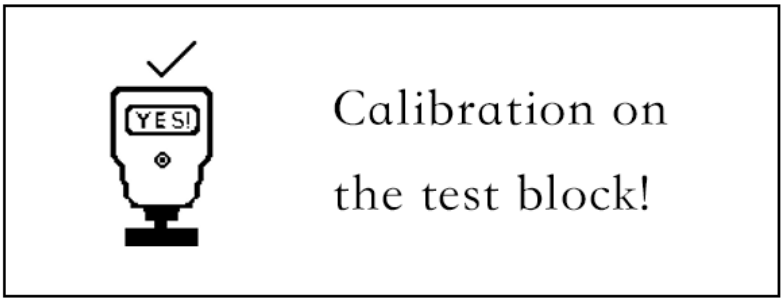
2.3 Zero calibration

When the instrument is used for the first time, after changing the battery, changing the measuring material or environmental temperature .In order to reduce the error , it should zeroing operation, use the iron base zeroing plate and the aluminium base zeroing plate to zero respectively. It is strongly recommended to use the same uncoated surface of the workpiece for zeroing (because there may be differences in physical properties such as magnetic or conductive properties between the material and the zeroing plate). If you do not have an uncoated workpiece, you can use the supplied aluminium zeroing plate and iron zeroing plate for zeroing, so please choose the correct one according to the different

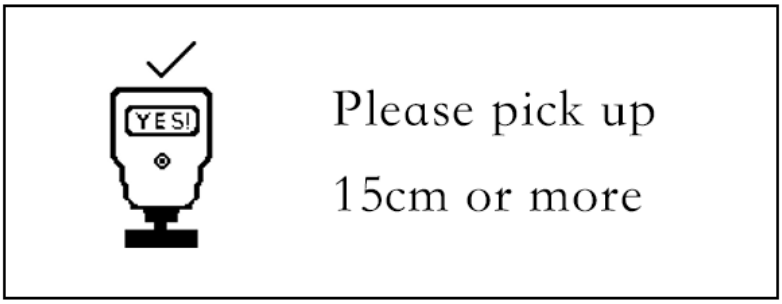
measured materials.

1.Use the instrument to measure the zeroing plate or the uncoated workpiece (substrate), the instrument will then display the measured value (press the instrument probe vertically to the centre of the zeroing plate or substrate when measuring, keep the probe stable, do not tilt or shake).

2.Press the key CAL in the measurement interface to enter the zero calibration interface, the instrument will prompt "Calibration on the test block!" (as shown in the figure below).



3.After hearing the buzzer, the instrument will prompt "Please pick up 15cm or more"(as shown in Figure below), release the key, lift the probe and move it away from the zeroing plate or the substrate for more than 15cm.



4.After hearing the buzzer again, the display will show "SUCCEED". The calibration is complete.

2.Basic Operating Instructions

5.After the zeroing is completed, the test piece marked with the standard value is placed on the zeroing board or the substrate to measure, if the value is stable and consistent with the standard piece of the calibrated value (error within ± 5 microns), it means that the instrument can be used normally.

Note: Due to the roughness of the workpiece surface, dust, scratches and other reasons, after zeroing, and then measuring the same position is not necessarily show 0 microns. The instrument should be operated correctly and skilfully, otherwise it will also lead to unstable measurement values.

2.4 Menu interface

Pressing the key OK on the Measurement screen enters the Menu screen. There are several parameter adjustment options in this menu screen, including Measurement Mode, Detection Principle, View Mode, Memory, Units, Denoise, Compensate, Bluetooth Setting, Beep, Backlight Brightness, System Language, System Theme, Parameter Setting, About This Unit, and Reset. Refer to Figure below:

2.Basic Operating Instructions

MeasMode	SGL
Principle	AUTO
View Mode	NOMAL
Memory	AUTO
Units	μm
Denoise	ON
Compensate	OFF
Bluetooth	OFF
Beep	ON
Backlight	L3
Language	EN
Theme	DARK
ParamSet	<<<
About	<<<
Reset	<<<

1.Short press the key OK on the measured value page to display the menu screen.

2.Short press the key OK on the menu page for quick parameter switching.

3.Short press the key ∧∨ to move the cursor to the position of the adjusted parameter.

4.Short press the key ⏻ to select/exit parameter adjustment.

5.Parameter value display "<<<" indicates that it is a menu parameter. Short press the key ⏻ to enter submenu, short press the key CAL to exit submenu.

6.After the parameter is selected, press the key ∧ ∨ to switch parameter value.

Short press the key CAL to return to the main menu screen.

View Mode — There are three viewing modes: Normal, Difference and Maximum Capture. This parameter can be used to switch between the three modes, and the viewing mode can be switched by long pressing key ∧∨ in the measurement interface.

Memory — The instrument has a data recording function, which can record 16 groups of measurement values, and can be set in automatic and manual modes. In the measured value interface short press key ∧∨ to view the corresponding measured value and the substrate material of the recorded point.

Auto Mode: In automatic mode, each measurement automatically switches to record the measured values from 1 to 16 and the substrate material. As show in Figure 1.

Manual Mode: In manual mode, to update the measured value of the currently set point and the substrate material, switch the point with the key ∧∨ . Below Figure 2 shows "NO.1" (the set point) during measurement in manual mode

2.Basic Operating Instructions

Figure1 Memory-Automatic mode

Figure2 Memory-Manual mode

Unit Setting — Set the unit of measurement to metric/ imperial.

Denoise — It can improve the stability of the measured value. Once turned on, the measured value will be displayed in green (the difference value will be green in difference mode), as shown in Figure 3. But when the measured value exceeds the alarm value, it will display the red alarm value.

Compensate—When the environment temperature changes greatly, it is recommended to enable the auto-correction function to avoid the measurement error. The main interface will display an icon after turn the function, as shown in Figure 3.

Figure 3 Denoise,Compensate and Bluetooth Setting

Sound Setting — Set the buzzer on or off.

Backlight Brightness — Set the screen brightness with five levels of energy saving, eye protection, standard, outdoor and high brightness. To adapt to the working environment under different light conditions.

System Language — Set the language. Chinese and English are available.

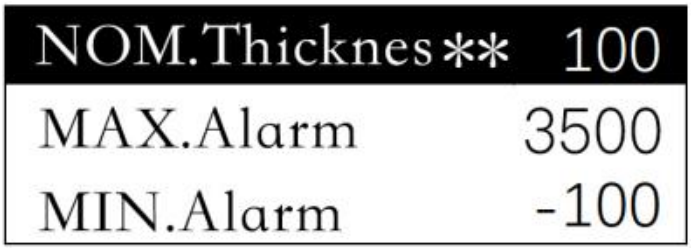
System Theme — There are two theme colours, dark and light.

2.Basic Operating Instructions

Figure4 Light mode

Figure5 Dark mode

Parameter Setting — Set nominal thickness and alarm value range. Three stepping modes can be selected.Step is 1mm when the parameter name does not show "*". Step is 10mm when "*" is shown after the parameter name. Step is 100mm when "**" is shown after the parameter name. For example, in below Figure, the parameter step is 100mm.

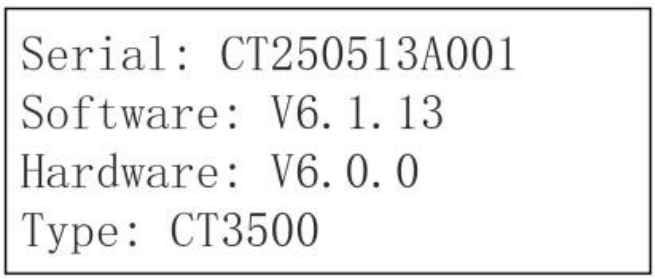


Nominal Thickness: Set the nominal thickness value, the setting range is 0.0~3500mm. Refer to the introduction of Difference Mode for specific application.

Alarm upper limit: Set the upper limit of the alarm value, the setting range is 0.0~3500mm, the alarm mode is only valid for single measurement mode. Measured value exceeding the alarm range will be displayed in red.

Alarm lower limit: Set the lower limit of the alarm value, the setting range is -100.0 to upper limit of the alarm value.

About This Unit — View the unit's parameter configuration.



Factory Setting — Restore the unit's factory settings.

2.Basic Operating Instructions

2.5 Numerical Interface

There are three viewing modes: Normal, Difference and Maximum. The shortcut keys for switching can be selected from the menu "View Mode" or by pressing the long key in the screen of the measurement. Short press key in the numerical interface to enter the menu interface, long press key to switch the measurement mode; short press key to enter the calibration interface; short press key to flip the screen.

2.5.1 Normal Mode

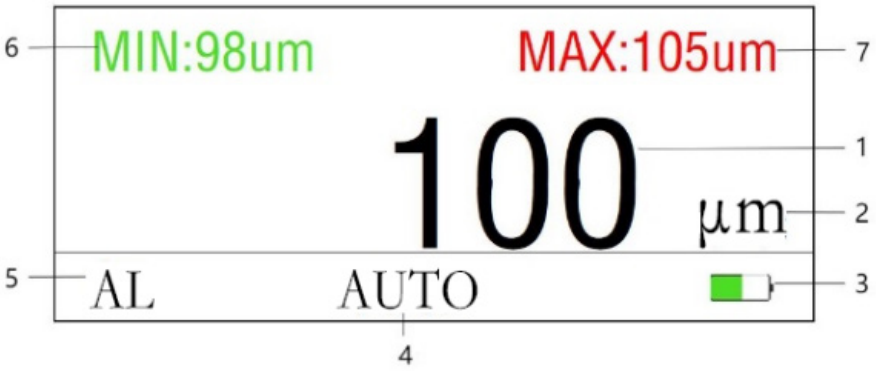
Normal Mode — The default screen, this screen displays the current effective thickness value in large font as in below Figure.

1-Measurement reading
2-Measurement unit
3-Battery level indication
4-Memory mode
5-Substrate indication

2.5.2 Maximum Value Capture Mode

Minimum Capture Mode — This mode captures the minimum and maximum measured values in real time as the user continuously checks the thickness of the material.This screen shows the minimum and maximum thicknesses detected during the inspection, as well as the current measurement value. Long press to reset the maximum and minimum values.

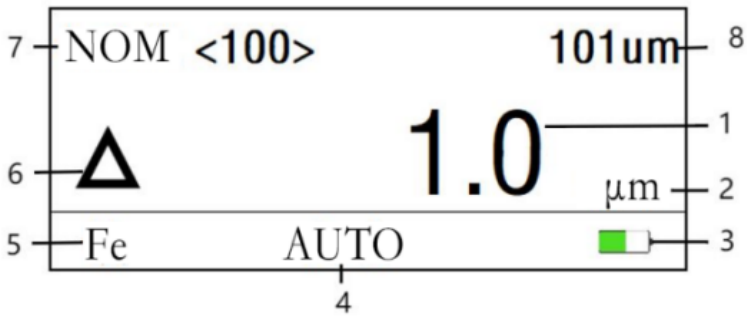
2.Basic Operating Instructions



1-Measurement reading
2-Measurement unit
3-Battery level indication
4-Memory mode
5-Substrate indication
6-Minimum detected value
7-Maximum detected value

2.5.3 Difference Mode

Difference Mode — This screen displays the difference (the difference between the measured thickness value and the nominal thickness) and also shows the current measured value. Before measuring thickness in Difference Mode, the nominal thickness must be set, as described in section 2.4, and "- - -" is displayed on the measurement reading when the difference deviates from the nominal value by more than 1000.



1-Difference reading (measured value minus nominal value)
2-Measuring unit
3-Battery level indication
4-Memory mode
5-Substrate indication
6-Deviation marker
7-Nominal value
8-Measurement reading

3.Replace Battery

1.The power symbol"  "on the display indicates that the power is sufficient,

"  "indicates that the power is half remaining,"  "indicates that the power is low, and

"  "indicates that the power is exhausted. The battery needs to be replaced at this time.

2.Open the battery cover and remove the battery.

3.Install the batteries correctly as indicated by the symbols in the battery compartment of the instrument.

4.If the instrument will not be used for an extended period of time, remove the batteries to prevent them from rotting and damaging the instrument.

4.Other Precautions

1.In order to reduce the influence of the measuring substrate material on the accuracy, it is recommended to use an uncoated measuring substrate or a test block made of the same material as the substrate of the product to be measured as the calibration reference block.

2.When measuring ultra-thin coated layers (10μm or less), be sure to calibrate on the uncoated substrate of the measured product to ensure accurate results.

3.When the measurement is finished, press and hold the keyfor 1 second to switch off the instrument or leave it for 2 minutes and then the instrument will switch off automatically. If the instrument is not used for a long time, it is recommended to apply a little grease on the contacts of the measuring head and the reference block to prevent rust.

4.The instrument should be prevented from violent vibration, impact. After use, the instrument should be wiped clean the surface oil into the instrument box for proper storage.

5.Do not slide the measurement, knock or collide the probe to avoid affecting the performance of the probe.

5.Packing List

Host	1
Iron based test block	1
Aluminum based test block	1
AAA alkaline battery	2
Calibration block	1
Manual	1
Certificates of Conformity & Warranty Card	1

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