

# Film / Coating Thickness Gauge User Manual



## Introduction

Film / Coating Thickness Gauge uses a dual function measurement method, it can automatically identify magnetic and non-magnetic substrate, and then use the appropriate test method, it can measure the thickness of the non-magnetic coating (such as aluminum, copper, enamel, rubber, paint, etc) or magnetic metal substrates (such as steel, iron, alloy and hard magnetic steel), and the non-conductive coating thickness on a non-magnetic metal substrate.

## 1. Features

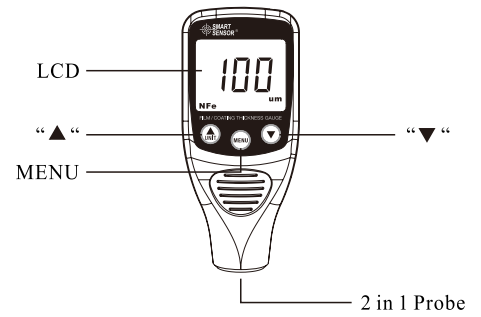
The instrument has advantages of high detection accuracy, reliable and easy to maintain, good stability, simple operation, etc. It can be widely used in manufacturing, metal processing industry, chemical industry, commodity inspection and testing fields.

Features Introduction:

- More widely measuring range : 0-1700μm
- Both with zero point calibration and multi-point calibration
- Automatically identify substrate material and display on the LCD
- Large screen, and with max 20 store data,
- Statistics display: Max, Min, Avg
- Button is simple, easy to operate, one-hand operation
- Convenient automatic calibration function
- Automatic correction function to prevent misuse calibration
- Dynamically adapt to environmental features
- V shaped groove suitable for measurements on cylindrical parts
- Special probe structure comes with better stability
- “Beep” sound when measurement or calibration is completed
- 180 degree flip for easy read data with top surface

## 2. Product Appearance

The top is the LCD, the middle are three buttons, “▲” “MENU” “▼”, on the bottom is the sensor.



## 3. Technical Parameters

- Measurement range: 0~1700μm, 0~67.8 mils
- Accuracy: ± (2μm +3%H), H-standard coating thickness
- Storage temperature: 10℃~60℃
- Operation temperature: 0℃~40℃
- Probe: built-in probe
- Power supply: 2 x 1.5V(AAA alkaline)
- Body size: 96\*50\*25mm
- Weight: 41 grams

## 4. Switching The Instrument ON/OFF

When the device is powered up, using your hand to press down the test probe and quickly leave, then the device will show “222” and a buzzer sound, “222” means the gauge automatically to make a detection by itself. After self-detection, it will show “---”, then the gauge are ready for measuring.

## 5. Handling Instruction

### 5.1 Switch the display unit

In standby or measuring mode, short press “▲” key to switch between units of um and mil. After switching units, all of the interface will display in the unit except multi-point calibration state.

### 5.2 Switching display mode

After the standby mode or the measurement, the short press “▼” key can be switched to flip the show the data on the display.

### 5.3 Measurement methods

Place the instrument sensor contacts to the material for tested and pressed, wait 1 to 2 seconds after buzzer short beep sound, the measured data will be displayed on the LCD screen.

Please don't put the gauge on the edge of the substrate, otherwise you will not get the correct readings.

### 5.4 Historical Data

In standby mode, press “MENU” button one time, you can enter to view the status of the historical data, instrument store up to 20 groups of historical data.

#### 5.4.1 View historical data

After short pressing the “MENU”, the screen will displays “NO 0.”, Then by a short press “▲”, “▼”, you can turn on the next turn data, the gauge could save up 20 data. “NO. X” indicates the most recent X time measurement data, the X greater, the data older.

#### 5.4.2 Delete the historical data

Delete current data: In View mode, press “▲”, “▼”, select the data you want to delete, long press the “▲” button.

Delete all: In View mode, long press the “▼” button, can delete all the data. After you removed all 20 sets of historical data show non-ferromagnetic 0.0um.

#### 5.4.3 View statistics

Enter the measuring status, continuous short press “MENU” key, can view the historical data in turn of maximum, minimum value, average value, then return to the measuring status. If you want to directly measure, only need to put the instruments on the surface which you want to measuring, it will automatically enter measurement mode.

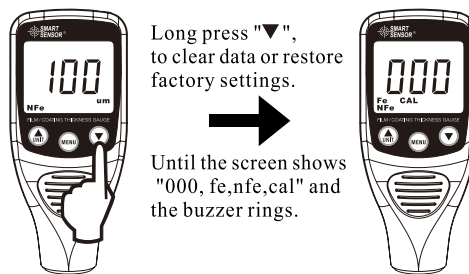
### 5.5 Switch back-light

In view statistics :Enter the maximum mode (bottom of the screen display MAX), press “▲”, you can open / close the back-light.

## 6. Restore Factory Setting

Restore factory settings also called initialization.

In standby or measuring mode, continues press “▼” key, the instrument will go to restore the factory operation. When the screen shows “000”, then “000, Fe, NFe, cal” and buzzer, keep press the key of “▼” for a while till all the character has been displayed on the screen, it means that the restore factory settings operation has been finished. At the same time, the historical data and the calibration value also has been cleared.



### Note 1:

In the whole process, we need to always keep pressing the key “▼”, if you don't keep pressing the “▼” key all the time during the whole process, please to make sure to redo the whole process again.

### Note 2:

Please ensure the instrument probe is not touched with any object when you doing the restore operate (the probe dangling).

## 7. Calibration

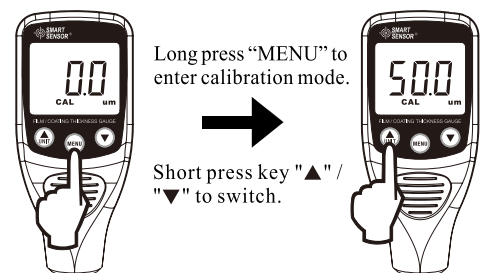
The device with 2 kinds of calibration mode, the two calibration models are very convenient, for different customers according to their own application to choose :

A: The standard calibration mode is provided with 0, 50, 100, 250, 500um calibration shim, it is more easy for new user, only need to choose the corresponding calibration mode and the right calibration shim, then to do the calibration, it is very easy and more convenient.

B: The Multi-point calibration which could according to customer different application of special thickness to do the calibration operation. For example, client has standard thickness of 80um, which different with our standard shims, then need calibration with multi-calibration mode.

### 7.1 Standard Calibration

Basic instruction : In the standby mode or measuring mode, long press “MENU” key to enter the film standard calibration status, when the display will show “CAL” icon, (the first screen will show of “0.0 cal” zero film calibration status), then there are 5 different calibration status, press “▲” or “▼” to switch. Five kinds of film calibration status will be display. Detail information as below.



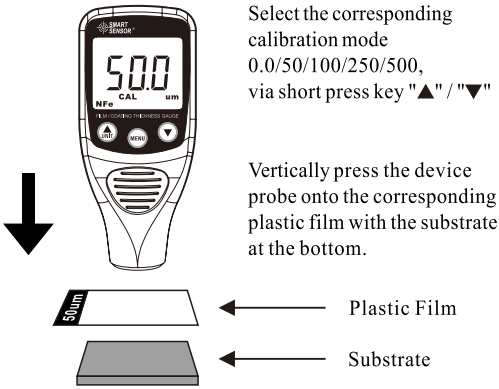
**Calibration operate :**

Firstly, long press "menu" to enter to the film calibration interface, then select the corresponding calibration mode of 0.0/50/100/250/500 ,via short press key "▲" / "▼" , then put the device on the corresponding film, vertically press the device probe on the film, and better to repeat pressing 2 or 3 times, every time of the calibration interval should be keep for several seconds and left the probe a little far from the substrate to ensure the accuracy.

The calibration operation can be repeated until it meets your desire.

**Exit the calibration :**

when calibration has complete, short press "MENU" to exit the calibration status ,then it will show us to the measuring status.



Note:It is important that measuring the standard film thickness with corresponding film calibration status . So when you find that you run this instrument calibration status with a mistake and some errors information shows on the display, we recommend to do the restore of factory operate .

**10. Key Description**

Key	Short press	Long press	Short press in calibration mode	Long press in calibration mode
▲	Switch unit	Multi-point calibration	Increase (Next)	Increase (Next)
MENU	Check History Record	Standard calibration	Enter (Exit)	Exit
▼	Flip Display Direction	Initialization	Decrease (Last)	Decrease (Last)

**11. Common Problem**

**Larger measurement Deviation**

The deviation maybe caused by the calibration error , or abnormal phenomenon shows FFF, please return to the factory after the re-calibration

**Battery alarm**

When the battery symbol appears, please replace the battery, otherwise the measurement accuracy will be affected. If you want to save battery power, you can turn off the back-light. Or remove it, when you don't use the device.

**Users have their own base material**

If the user has its own base material, the best way to calibrate with zero calibration first, then according to the detail desire to do the other thickness calibration operate.

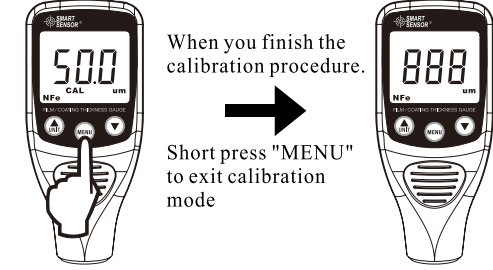
**Boot alarm**

The buzzer continue alarm, due to the probe need get away from the material object after power on.

Such as calibration 50um put the film as 100um, the machine will display E01, buzzer continuous ring alarm, when the sensor been lift and buzzer will stop ringing.

**7.2 Multi-point calibration**

When you have a standard shim which different with ours, firstly measure the shim on the Fe or NFe substrate, then get the in initial value , then lift the instrument , long press "▲" into the multi-point calibration interface, the screen shows "CAL". At this point, then short press "▲" or "▼" can adjust the measurement value, and the long press "▲" or "▼" to speed up the adjustment of 10 times. When you got the right data, then short press "MENU" key to exit, or directly to measuring the film, the calibration has been finished.



**8. Attentions**

- 8.1 Before make the measurement, zero calibration is very important to keep the gauge in high accuracy status, when you firstly use the gauge .
- 8.2 It is the best do the zero calibration of your own substrate, then to measuring the coating thickness .
- 8.3 If you calibration with wrong operate , the best way is restore factory with long press "▼".
- 8.4 When the screen appears battery flag alarm, suggest to replace the battery, otherwise it will impact of measurement accuracy, if the instrument will not work for a long time, remove the battery.

- 8.5 If the instrument has some unusual error, restore the gauge, it will be recover.
- 8.6 If the shim is too thin (less than 0.5mm), too small (less than 25X25mm), not recommended for measurement, the data will not be accurate.
- 8.7 When do the calibrate and measuring operate, please keep the probe vertically to the metal surface and during the interval, the best keep the probe far from the metal surface at least over 10 cm to keep the accuracy of the device.
- 8.8 On the edge of the measuring surface or measuring the curvature of the mask, it will affect the accuracy of the measurement.

**9. Cue Information**

No.	Symbol	Meaning	Operate
1	---	Standby state	Measurement/view
2	FFF	The measured value is greater than 1700um or substrate is not FE or NFE	
3	AVG	Mean value	
4	MAX	Maximum value	
5	MIN	Minimum value	
6	FE	Ferrous	
7	NFE	Non-Ferrous	
8	um	Micron (Metric length unit)	Short press "▲" switch to Mil
9	Mil	Military (British length unit)	Short press "▲" switch to um
10	CAL	Calibration state	Calibrate operate
11	⊖	Low battery voltage	Change battery
12	E01	Misplaced calibration shim	Replace the correct shim
13	222	Starting	Self-test processing
14	NO	Number symbol	Short press the "