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COATING THICKNESS METER



User's Manual

G933 230715

USER INSTRUCTIONS

Please read this manual carefully before your first utilization

1>By any means, do not disassemble or repair the meter;re-forming illegally is not allowed. Keep it properly away from children and irrelevant people.

2>Do not use it nearby planes or medical instruments which could be interfered by electromagnetic radiation of this meter. Do not use it in combustible, explosive places.

3>Do not throw away the battery at the end of its working life with the normal household waste, please dispose it by nation or local related laws and regulations.

4>The broken-down meter which is beyond the warranty time could be handed over to the company for repairing according to its charging standards.

5>The warranty service is not available for any of the below situations: disassembling the product by yourself;transportation damage; improper safekeeping; all kinds of wrong operations without looking over the manual and altering warranty card.

6>If there are any troubles on quality, or any doubts about utilization, please contact the local agent or us, we will solve it as soon as possible.

Introduction

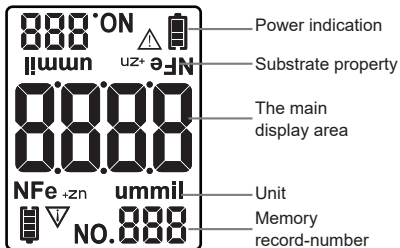
Based on the magnetism and the eddy current feature of metal substrate, the meter can distinguish the property of metal substrate precisely. With high-precise probe, the meter can accurately measure the non-magnetic coating thickness on magnetic substrate surface(like, the coating of painting, rubber and enamel, etc.), and the non-conducting coating thickness on non-magnetic metal substrate surface(like, the coating of painting, rubber, etc.).

Researched with constant testing and improvement, the basic standard of complex environments of all kinds of major industries, the end comes to the final meter, it can measure the coating thickness accurately, rapidly and un-harmfully, suitable for all kinds of major industrial workshops, labs and outside environment.

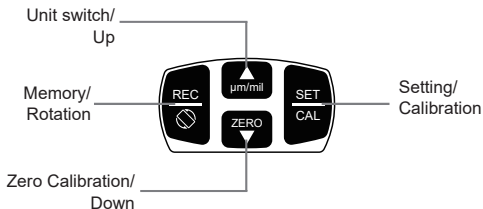
Features

- 2.0 inches large segment screen
- Rotatable display screen for different views of user during measuring of process.
- Simple operation, directly attach to the coating and on screen shows the property and thickness.
- Provide Zero and Multi-spots calibration, calibrating reliably and rapidly.
- Saving the measured datum up to 30 sets, power-off will not obliterate datum.
- Warning function of upper/lower limits
- Pressing for power-on, power-off automatically without any operations.
- Indication of lower power.





Functions introduction and keys









And Fe is for magnetic material, NFe is for non-magnetic material.








The home screen

On the home screen, no shows on the upper left corner.	
	Short press to set the warning value of Upper limit " <i>UP</i> " or lower limit " <i>dn</i> " ; Long press for calibrating mode; During measuring process, short press the key to switch between single measuring mode and continuous measuring mode.
	Short press to view the previous stored records; Long press to switch units between μm and mil.
	Short press to view the previous stored records; Long press to calibrate the zero-spot and save the current measured value as the thickness value of the zero-spot.
	Short press to save the current measured values; Long press to rotate the screen.






The view mode

On the home screen, short press the "  " or "  " key to enter the view mode, on the upper left corner shows " <i>REL</i> " .	
	Short press to delete the current set of datum; Long press to delete all datum with sounding "beep beep beep" .
	Short press to turn page forward.
	Short press to turn page backward.
	Short press to exit this mode; Long press to rotate the screen.

The warning value setting of upper or lower limit

On the home screen, short press  key to set the upper or lower limit of warning value, on the upper left corner shows "UP" or "dn".	
	Short press to save and go to next.
	Short press to increase warning value by 1; Long press to increase in succession.
	Short press to decrease warning value by 1; Long press to decrease in succession.
	Short press to exit without saving; Long press to rotate the screen.



The calibrating mode

On the home screen, long press the  key to enter the calibrating mode, on the upper left corner shows "CAL".	
	Short press to switch circularly calibrating spots and there six calibrating spots in all which are 1(0μm), 2 (50μm), 3(100μm), 4(250μm),5(500μm), 6(1000μm).
	Short press to increase thickness by 1.1
	Short press to decrease thickness by 1.
	Short press to exit this mode; Long press to rotate the screen.

The battery installation and replacement

- Open the cover of batteries on the meter's back, put batteries in according to the batteries' polarity indication, then put the cover back.
- Only 1.5v AAA alkaline battery is allowed to use in this meter.
- Take the batteries out without utilization for a long time to prevent galvanic corrosion from the meter.

Attention:

* If the power icon is  , it means the power is full, and the meter can work regularly and accurately. If the power icon is  , it means the power is low, please replace the batteries as soon as possible.

* * In low-power condition, the measured datum could be wrong.

The meter's ON and OFF



Figure 1 Turning it on nearby the metal substrate is not the right way.



Figure 2 Turning it on away from the metal substrate is the right way.

The least 5cm is necessary distance between the meter and the metal substrate for turning the meter on, or the other way is to lift the meter away from the metal substrate quickly after turning the meter on. The meter will sound the warning in succession "beep...beep...beep" if turning it on nearby the metal substrate. The operation of turn-on nearby the metal substrate could affect the meter's regular measuring, because the meter will go through the calibration balance the moment its turn-on.

The calibration

The meter is released with calibrated benchmark datum which is based on standard substrate (random iron and aluminum block). To the measuring of individual materials, please go through the Zero-spot calibration and calibration-film calibration over the to-be-tested substrate for accurate datum.


- Zero-spot calibration

This operation is to go through the zero calibration over the

substrate's zero-spot and aimed to get the more accurate zero-spot.

Basic operations:

A. Process single measuring over the substrate, a set of datum is showed on screen, the buzzer sound "beep".


B. Long press the  key, the main data returns to zero on screen, and the buzzer sound "beep" twice, and the calibration is completed.

C. Repeat the process A and B for more accurate calibrated datum.

●Calibration-film calibration

With different specification calibration-films, process multi-spots calibrations over the substrate to guarantee the validity of measured datum on different property substrates.

Basic operations:

A. Long press the  key, on the upper left corner of the screen shows "CAL", the meter is in calibration mode, see the figure below:

① calibration mode

② the corresponding thickness value of calibration spot



Attention: The thickness values of calibration spots, apart from the zero-spot, can be adjusted as a integral value according to the thickness value of calibration-film.

③ the calibration spot (six spots in all)



1 (0 μ m) 2 (50 μ m) 3 (100 μ m)
4 (250 μ m) 5 (500 μ m) 6 (1000 μ m)



B. At this moment, on the lower right corner of the screen shows "1", the main display area shows the standard thickness value which is "0.0", and it means the zero-spot is already calibrated. Measuring once over magnetic metal substrate or non magnetic, the meter sounds "beep" twice, then the zero-spot calibration is completed, and the meter goes to next calibration spot automatically.

C. At this moment, on the lower right corner of the screen shows "2", the main display area shows "50.0" (Attention: this value could be some one data from 45 to 55), and it means the second spot with 50 μ m is already calibrated. Put the calibration-film with 50 μ m thickness (the thickness could be around 50 μ m) on the substrate which is used to calibrate the zero-spot previously, first compare the meter's reading with the calibration-film thickness, if it's inconsistent, then press the  key or  key to adjust the reading till it is same with the calibration-film thickness, then measure again to complete the 50 μ m calibration, and the meter goes to next calibration spot automatically.

D. Refer to the previous step C, continue to calibrate the 3 (100 μ m), 4(250 μ m), 5(500 μ m), 6(1000 μ m). After the sixth spot is calibrated, the meter exits the calibration mode automatically.

E. If just want to calibrate one of the six spots, then press the  key to switch the calibration spots in calibration mode. Press  key to exit the calibration mode.

Attention:

1. Only use same one substrate for calibrating the six spots which forms a period one by one, changing the substrate during this process could cause the wrong datum.

2. Calibrating the non magnetic materials(such as aluminium), keeping the magnetic materials away is necessary for right datum.

Basic measurement

- Single measurement


A. Prepare the sample to be tested.


B. Place the meter in vacant space away from metal material for turn-on.

C. Start to measure: Press slightly the meter vertically on the sample, the buzzer sounds "beep" once, the measurement is completed, on the main display area shows the result data, move the meter away from the sample over 5cm quickly, and process next measurement after 1 second.

* * The single measurement is the default measuring way of the meter .


- Continuous measurement

The way of unlocking: Press slightly the meter on the sample, and do not loose it, short press the  key, on the upper left corner of the screen shows "5cn", the meter is in continuous measurement mode now. In this mode, just press slightly the meter on the sample, the reading will update itself automatically.

The way of locking: Press slightly the meter on the sample, and do not loose it, short press the  key, the icon "5cn" on the upper left corner disappears, the meter exits the continuous measurement mode and goes to the single measurement mode.



Memory/Delete record

- Memory


A. Short press  to save the datum after affirming the validity of it.

B. The meter will indicate "FUL" icon which means the capacity of memory is full when the stored datum are over 30 sets.

- View records


A. On the home screen, short press the  or  key to enter the memory mode, on the upper left corner of the screen shows “*REC*”, on the main display area shows the reading, material property and unit of the current record number.


B. Press the  or  key to view the last or next page record.

C. Short press the  key or process measurement directly to exit the memory mode.

D. Short-press the  or  key can not go to the memory mode if there are no stored records.

- Delete records




Delete single record: In view mode, short press the  key to delete the datum of the current record number.


Delete all records: In view mode, long press the  key to clear the all records, and the buzzer sounds “beep”third, then back to the home screen.


Limiting value measurement

The operation is for setting the upper and lower limit of the warning value. When the measured value is beyond the upper limit, on the upper left corner of the screen shows “*UP*”; when the measured value is below the lower limit, on the upper left corner of the screen shows “*dn*”; and also with indicating sound,press any one of keys to exit the warning condition.When the measured value is at the range of limits,the warning indication disappears automatically.

* * The setting range of limiting values is from 0 to 1999 μ m.


A. On the home screen, short press the  key for the upper limit setting interface, on the upper left corner of the screen shows "UP", on the main display area shows the current set value which could be adjusted by the  key and  key.

B. Short press the  key to save the upper limit and go to the lower limit setting interface.

C. Short press the  key to save the lower limit and return to the home screen.

Unit setting

There are two alternative units, user can choose appropriate unit according to the demands.

On the home screen, long press the  key to switch the unit quickly.

The conversion relationship:


$$1\text{mil}=25.4\mu\text{m};$$

$$1\mu\text{m}=0.03937\text{mil};$$

Auto-OFF

The meter provides the function of Auto-OFF for saving power. The meter will turn itself off without any operations in 60 seconds.

The screen rotation

Long press the  key to turn the screen over at a full 180-degree.

Specifications

Items	G933
Measuring range	Magnetic material 0~2999 μ m; Non magnetic material 0~2999 μ m
Resolution	0.1 μ m@ (0~99.9 μ m) 1 μ m@ (100~2999 μ m)
Indication error	$\pm(2+2\%*H)\mu$ m @ (0~500 μ m) $\pm(2.5\%*H)\mu$ m @ (500~2999 μ m)
Min measuring area	Magnetic material 25×25mm; Non magnetic material 25×25mm
Min curvature	Convexity 5mm; concave 30mm
Min substrate thickness	Magnetic material 0.2mm; Non magnetic material 0.05mm
Screen	Segment screen
Memory	30 sets
Battery specification	2x1.5V AAA
Working temp and humidity	0°C~50°C, 10%~80%RH
Storage temp and humidity	-10°C~60°C, 10%~70%RH
Dimension	120x52x27mm

General maintenance

- Keeping in high temp and humidity environment in the long run is not allowed; please put it inside the box and keep the box in dry and cool place.
- Please keep the surface clean, wipe the dust with wet soft cloth, do not use corrosive cleaning fluid.

Detail packing list

Please check if there are all appendixes according to the following list when purchase this meter.

Items	Name	Unit	Quantity	Remark
1	The meter	PC	1	
2	EVA soft bag	PC	1	
3	Sling	PC	1	
4	1.5V AAA battery	PC	2	
5	The manual	PC	1	
6	Color-box package	PC	1	
7	Iron substrate	PC	1	
8	Aluminium substrate	PC	1	
9	Calibration film	PC	5	

