KAiWEETS

User's Manual

Paint Thickness Meter KOTC02
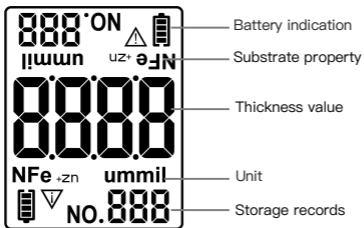

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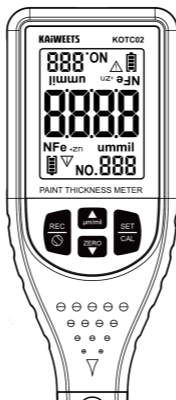
Introduction

Thank you for selecting the KAIWEETS KOTC02 paint thickness gauge.The gauge adopts the principle of electromagnetic induction and eddy current effect to distinguish the properties of the metal substrate precisely.

With the precision integrated probe, it can accurately measure the thickness of non-magnetic coatings on magnetic substrate surface (e.g. paint, rubber, enamel, etc.) and non-conductive coatings on non-magnetic metal substrate surface (e.g. paint, rubber, etc.). It can be used in all kinds of major industrial workshops, labs and outdoor environment.
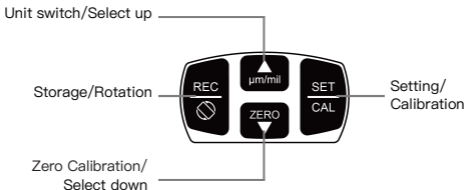
Features

- Touch to turn on the power
- 2-inch segment code screen
- 2-direction rotating screen
- Provide zero and multi-point calibration
- Data storage 30 sets
- Warning function of upper/lower limits
- 60 seconds of no operation automatic shutdown
- Battery indication
- Direct display of material and thickness on contact with the cover layer

Key and User Interface

Battery indication

Substrate property

Thickness value

Unit

Storage records

Note: Fe is for magnetic material, NFe is for non-magnetic material.

Unit switch/Select up

Storage/Rotation

Zero Calibration/
Select down

Setting/
Calibration

Home Screen

On the home screen, no shows on the upper left corner.	
SET CAL	Short press to set the warning value of upper limit "*UP*" or lower limit "*dn*" ; Long press for calibrating mode; During measuring process, short press the key to switch between single and continuous measuring mode.
▲ μm/mil	Short press to view the previous stored records; Long press to switch units between μm and mil.
ZERO ▼	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.
REC ○	Short press to save the current measured values; Long press to rotate the screen.

View Records Mode

On the home screen, short press the "**▲ μm/mil**" or "**ZERO ▼**"key to enter the view mode, on the upper left corner shows"*REC*" .	
SET CAL	Short press to delete the current set of datum; Long press to delete all datum with sounding "beep beep beep" .
▲ μm/mil	Short press to turn page forward.
ZERO ▼	Short press to turn page backward.
REC ○	Short press to exit this mode; Long press to rotate the screen.

Setting Alarm Limits

On the home screen, short press [SET CAL] key to set the upper or lower limit of warning value, on the upper left corner shows "UP" or "dn"	
[SET CAL]	Short press to save and go to next.
[▲ μm/mil]	Short press to increase warning value by 1; Long press to increase in succession.
[ZERO ▼]	Short press to decrease warning value by 1; Long press to decrease in succession.
[REC ⊘]	Short press to exit without saving; Long press to rotate the screen.

Calibrating Mode

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

Battery Notes

- The gauge can only be used with 1.5V AAA alkaline batteries.
- When the meter is not used for a long time, please remove the battery to avoid the battery corrosion from the meter.
- 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.

Power On and Off

Power on: Keep away from metal materials ≧ 5 cm then touch the probe to turn it on.

Power off: 60 seconds of no operation automatic shutdown.

Attention:

• When the instrument is turned on near the metal material, it will "beep...beep..." continuously alarm.

• Do not use this instrument in the vicinity of airplanes or medical equipment and in flammable or explosive environments.

Calibration Mode

The meter is calibrated at the factory according to standard substrates (random iron and aluminum blocks). User can also calibrate again before measurement.

Zero calibration

Zero calibration is to obtain a more accurate zero point.

Basic operations：

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

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

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

Multi-point calibration

By calibrating the substrate with different sizes of calibration tablets, it is possible to ensure the correctness of the data when the instrument is measured on substrates with different characteristics.

Basic operations:

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

a. Calibration mode
b. Corresponding thickness value
c. Calibration points
   1 (0μm) 2 (50μm) 3 (100μm)
   4 (250μm) 5 (500μm) 6 (1000μm)

Attention: All other points can be adjusted according to the value of the calibration sheet thickness except for the zero point.

2. 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 "bee–p" twice, then the zero–spot calibration is completed, and the meter goes to next calibration spot automatically.

3. At this moment, on the lower right corner of the screen shows "2", the main display area shows "50.0", and it means the second spot with 50μm is already calibrated. Put the calibration–film with 50μm thickness 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 50μm calibration, and the meter goes to next calibration spot automatically.

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

5. If just want to calibrate one of the six spots, then press the [SET CAL] key to switch the calibration spots in calibration mode. Press the [REC] key to exit the calibration mode.

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

Basic Measurement

Single measurement

1. Prepare the sample to be tested.

2. Place the meter in vacant space away from metal material for turning on.

3. Start to measure: Press slightly the meter vertically on the sample, the buzzer sounds"beep"once, 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.

Note: 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 [SET CAL] 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 closing: Press slightly the meter on the sample, and do not loose it, short press the [SET CAL] 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 Records

Memory records

A. Short press [REC] 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 [µm/mil ▲] or [µm/mil ▲] 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 [µm/mil ▲] or [ZERO ▼] key to view the last or next page record.

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

D. Short–press the [µm/mil ▲] or [ZERO ▼] key can not go to the view records mode if there are no stored records.

Delete records

Delete single record: In view records mode, short press [SET CAN] key to delete the datum of the current record number.

Delete all records: In view records mode, long press [SET CAN] key to clear the all records, and the buzzer sounds "beep"for three times to remind the operation is complete, then go back to the home screen.

Limit 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.

Note: The setting range of limiting values is from 0 to 2999μm.

A. On the home screen, short press ![SET ON] 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 ![μm/mil] key and ![ZERO ▼] key.

B. Short press ![SET ON] key to save the upper limit and go to the lower limit setting interface.

C. Short press ![SET CAL] key to save the lower limit and return to the home screen.

Unit Setting

1. There are two alternative units (μm,mil)
2. On the home screen, long press ![μm/mil] key to switch the unit quickly.
3. The conversion relationship:

1mil=25.4μm;

1μm=0.03937mil;

Screen Rotation

Long press ![REC ☉] key to flip the screen 180 degrees.

Specifications

Model	KOTC02
Measuring range	Magnetic material 0~2999µm; Non magnetic material 0~2999µm
Resolution	0.1µm@ (0~99.9µm) 1µm@(100~2999µm)
Accuracy	±(2+2%)µm @ (0~500µm) ±2.5%µm @ (500~2999µm)
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
Number of data storage	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	120x52x26mm

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.

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