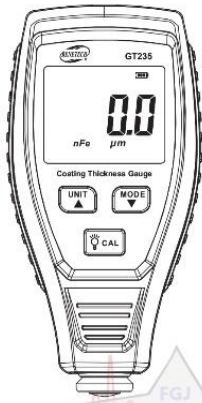




Model:GT235

Coating Thickness Gauge Instruction manual



Standard:Q/GMY 004-2019
Version:GT235-EN-00

A. Product Description

This device can make a quick and effective measurement of the thickness of the non-metallic coating on the non-magnetic metal substrate and the thickness of the non-magnetic coating of the magnetic metal substrate, it can also automatically identify the magnetic metal substrate and non-magnetic metal substrate. It is widely used in the inspection field of automobile manufacturing, metal processing industry, chemical industry, commodity inspection, etc.

Product Specifications:

Measurement ranges	0 - 1800µm/70.8mil/1.8mm
Resolution	(0.1µm(<100µm), 1µm(≥100µm))/ 0.1mil/0.001mm
Measuring error	≤150µm, ±5µm >150µm, ±(3%H+1µm)
Minimum diameter of magnetic substrate	12mm
Minimum thickness of magnetic substrate	0.5mm
Minimum curvature radius of convex magnetic substrate	2mm
Minimum curvature radius of concave magnetic substrate	11mm
Minimum diameter of non-magnetic substrate	50mm
Minimum thickness of non-magnetic substrate	0.5mm
Operating temperature range	-20~40°C (It is recommended to calibrate it again when use in different environments, especially for large temperature difference)
Operating humidity	10~95%RH
Power supply	2*1.5V AAA batteries
Overall dimensions	62*27*121.5mm
Weight	105.03g

B. Product Functions

- 1.Measuring the thickness of non-magnetic coating on the magnetic metal substrate.
- 2.Measuring the thickness of the non-metallic coating on the non-magnetic metal substrate.
- 3.Automatically identifying the non-magnetic metal substrate and magnetic metal substrate.
4. Single measurement, continuous measurement and differential measurement available.
- 5.Zero-point calibration, Offset Calibration and basic calibration available.
- 6.Metric and imperial units of measurement optional.
- 7.LCD backlight.
8. Automatic shutdown.

C. Buttons functions

Buttons	Name	Functions
	UNIT / UP	Short press this button to switch among µm, mil, mm in turn. Calibration data increase button.
	MODE / Screen flip / DOWN	Short press this button to switch among SNG, CTN, DIF in turn. Long press this button to flip the screen display. Calibration data reduction button.
	Backlight / Calibration button	Short press this button to turn on/off backlight. Long press this button to enter/exit calibration

D. Measurement of Coating Thickness

- 1.ON/OFF:
Lightly press the probe to turn on, and it will automatically turn off after 1 minute of no operation.
If you put the probe on a metal substrate and turn it on, the LCD will display [Err6/Err7] after the full LCD display, indicating that the power-on method is incorrect. At this time, stay away from the metal substrate and press "UNIT" button for about 3~4 seconds, and the product will automatically restart.

2.MODE:

Short press "MODE" button to select measurement mode. There are three measurement modes: single measurement, continuous measurement, and difference measurement.

- (1) Single measurement(SNG), measuring one data for each measurement.
- (2) Continuous measurement(CTN): As long as the probe remains on substrate surface, the instrument keeps measuring.
- (3) Difference measurement(DIF): the difference between this measurement and the last measurement.

3.UNIT:

Short press "UNIT" button to select measurement units: µm, mil, mm.

4.LCD backlight:

Short press "CAL" button to turn on/off backlight.

5.Screen flip:

Long press "MODE" button to flip the screen display.

6. Measurement:

Press the probe lightly on the coated metal substrate, the machine emits BI-BI two beeps, the measured coating thickness value is displayed on the LCD, and the LCD displays [] (coupling icon) and the substrate material (Fe/nFe). After the measurement is completed, remove the probe and [] disappears before the next measurement can be performed.

E. Calibration Operation

1. Basic calibration:

Long press "CAL" button to enter/exit basic calibration. At this time, icon [CAL] will be displayed on the screen, which indicates entering calibration state, with coupling icon [] will be displayed at the same time, indicating that the substrate can be calibrated; [] will disappear after pressing substrate. Probe should be lifted from the substrate, and perform the next calibration on calibration point until [] appears, so as to calibrate in sequence: seven points 0.0µm, 50.0µm, 100µm, 250µm, 500µm, 1000µm, 1500µm (Note: if

- 1 -

- 2 -

- 3 -

- 5 -

there is difference between calibration points and calibration sheet, short press "MODE"/"UNIT" button to set it the same as the calibration sheet), the screen will display [OVER] after calibrating 1500µm point. At this time, lift up the instrument, [CAL] disappears, calibration state automatically ends, and normal measurement can be continued.

(Note: for Fe and nFe substrate, separate calibration is necessary).

2. Zero point calibration:

when measuring uncoated substrate (be careful not to lift up instrument from the base), short press "CAL" button to complete the zero point calibration.

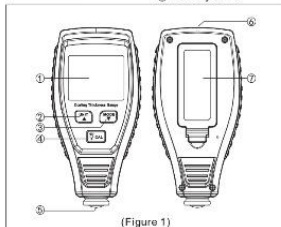
3. Offset calibration:

set measurement mode as single measurement, measure high-thickness sheet (be careful not to lift up instrument from the base), short press "MODE"/"UNIT" to adjust displayed thickness to the thickness of actual measurement sheet, lift the instrument from the base to complete offset calibration.

F. Component and LCD display

1. Component(Figure 1)

- ① LCD display
- ② Unit button / Up
- ③ MODE / Screen flip / Down button
- ④ Light / Calibration button
- ⑤ Probe
- ⑥ Lanyard hole
- ⑦ Battery cover



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2.LCD display(Figure 2)

- ① SNG : Single measurement
- ② CTN : Continuous measurement
- ③ DIF : Differential measurement
- ④ CAL : Enter calibration state
- ⑤ [] : Remaining battery power
- ⑥ [] : Indicates the measured value
- ⑦ [] : Coupling icon.
- ⑧ nFe: Icon for non-magnetic metal substrate;
- ⑨ Fe: Icon for magnetic metal substrate.
- ⑩ mil : An imperial unit (1mil=0.0254mm=25.4µm)
- ⑪ µm : A metric unit (1mm=1000µm)
- ⑫ mm : A metric unit.



Figure 2

G.Attention

- 1.Keep the probe away from the measured substrate when starting up.
- 2."-OL-"indicates that the value exceeds measurement range.
- 3.Do not press the sensor with your finger or other object into the instrument, because this operation may damage the sensor parts and the instrument.(Figure 3)



(Figure 3)

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H.Other

1. Factors affecting measuring accuracy and their description:

- a. Magnetic property of substrate metal: Thickness measurement by magnetic method is affected by magnetic variation of the substrate metal (magnetic variation of low-carbon steel may be considered as minor in actual application). To avoid effect from thermal treatment and cold working, ferrous substrates made of a material identical to the substrate metal to be measured should be used for calibration of the thickness gauge, or the metal to be applied with coatings can be used for calibration.
- b. Thickness of substrate metal: Each type of thickness gauge has a permissible critical thickness of substrate metal. Measurement is not affected by any thickness of substrate metal that is greater than this critical thickness. See Product Specification for the critical substrate thickness required (≥0.5mm) for this thickness gauge.
- c. Edge effect: This gauge is sensitive to abrupt change of surface shape on the measured substrate. Therefore, measurement near the edge or inner corner of the measured substrate is unreliable.
- d. Curvature: Curvature of the measured substrate has an effect on measurement. This effect always increases with the decrease of the radius of curvature.
- e. Surface roughness: The surfaces of both the substrate metal and its coating have an effect on measurement. This effect rises with the increase of the roughness. Surface roughness will lead to system errors and occasional errors. Therefore in each measurement, it is needed to increase the number of measurements at each position so as to overcome these occasional errors. If the substrate metal is rough, zero-point calibration of the gauge must be carried out at several positions on the substrate metal with similar roughness which has not been coated, or a solvent without corrosion to the substrate metal should be used to dissolve the coating before zero-point calibration of the gauge.

f. Magnetic field: Strong magnetic field of various adjoining electrical equipment will seriously interfere with magnetism based thickness measurement.

g. Surface cleanliness: Prior to measurement, clear away any substances on the surface, such as dust, grease and corrosive substances, but do not remove any coating substance.

2. If this battery volume icon shows as [], replace the battery immediately.



+982165565901

+982144584619

+989034119385

Tehran, Tehransar

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