



MCT 801

Coating Thickness Gauge

Instruction Manual



Disclaimer

The manufacturer assumes no responsibility for any consequences resulting from the use or misuse of this product. Product specifications and manual content are subject to change without prior notice.

Part Number: 7603271

GTIN: 6298043998154



Part Number: 7603271

GTIN: 6298043998154

A. Product Description

Marmonix MCT 801 enables fast and reliable measurement of non-metallic coating thickness on non-magnetic metal substrates, as well as non-magnetic coating thickness on magnetic metal substrates. It automatically distinguishes between magnetic and non-magnetic bases, ensuring accurate results. The instrument is widely applied in automotive manufacturing, metal processing, chemical industries, and commodity inspection.




Product Specifications:

Measurement ranges	0 ~ 1800 μ m/70.8mil/1.8mm
Resolution	(0.1 μ m(<100 μ m), 1 μ m(\geq 100 μ m))/ 0.1mil/0.001mm
Measuring error	\leq 150 μ m, \pm 5 μ m >150 μ m, \pm (3%H+1 μ m)
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 $^{\circ}$ 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

- Measures the thickness of non-magnetic coatings on magnetic metal substrates.
- Measures the thickness of non-metallic coatings on non-magnetic metal substrates.
- Automatically distinguishes between magnetic and non-magnetic substrates.
- Supports single, continuous, and differential measurement modes.
- Provides zero-point, offset, and basic calibration options.
- Offers metric and imperial measurement units.
- Equipped with an LCD backlight for clear visibility.
- Features automatic shutdown to conserve power.

C. Buttons Functions

Buttons	Name	Functions
	UNIT / UP	Short press this button to switch among μ m, 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 power on; the device automatically powers off after 1 minute of inactivity.

If the probe is placed on a metal substrate during startup, the LCD displays [Err6/Err7] after the initial full-screen display, indicating incorrect power-on operation. To resolve, remove the probe from the metal substrate and press the "MODE" power button for 3–4 seconds. The device will then restart automatically.

2. MODE

Short-press "MODE" the MODE button to select the measurement mode. Three modes are available:

- **Single Measurement (SNG):** Records one value per measurement.
- **Continuous Measurement (CTN):** While the probe remains on the substrate, the instrument continuously measures.
- **Difference Measurement (DIF):** Displays the difference between the current value and the previous measurement.

3. UNIT

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

4. LCD Backlight

Short-press "CAL" the BACKLIGHT button to turn the display backlight on or off.

5. Screen Flip

Long-press "MODE" the FLIP button to rotate the screen display orientation.

6. Measurement

Lightly press the probe on the coated metal substrate. The device emits two BI-BI beeps, and the measured coating thickness is displayed on the LCD, along with the coupling icon [] and substrate type (Fe/nFe). After measurement, remove the probe; the icon [] disappears, and the device is ready for the next measurement.

E. Calibration Operation

• Basic Calibration

Long-press the "CAL" button to enter or exit basic calibration. When activated, the [CAL] icon appears on the screen, along with the coupling icon [], indicating readiness for substrate calibration. The icon [] disappears after pressing the substrate. Lift the probe and continue calibration on each reference point until [] icon reappears, completing the sequence at: 0.0 μm , 50.0 μm , 100 μm , 250 μm , 500 μm , 1000 μm , 1500 μm .

Note: If there is a difference between the calibration points and the calibration sheet, short-press the [MODE/UNIT] button to match the calibration sheet. After completing the 1500 μm point, the screen displays [OVER], signaling the end of the process. Lift the instrument; the [CAL] icon disappears. Calibration ends automatically, and normal measurement can resume.

Important: Calibration must be performed separately for Fe and nFe substrates.

• Zero-Point Calibration

When measuring an uncoated substrate, ensure the instrument remains firmly on the base. Short-press [CAL] the ZERO button to complete zero-point calibration.

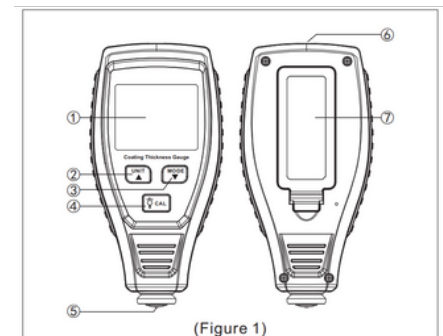
• Offset Calibration

Set the device to single measurement mode. Place the probe on a high-thickness calibration sheet, keeping the instrument steady on the base. Short press the button [MODE/UNIT] to align the displayed thickness with the actual sheet thickness. Lift the instrument from the base to complete offset calibration.

F. Component And LCD Display

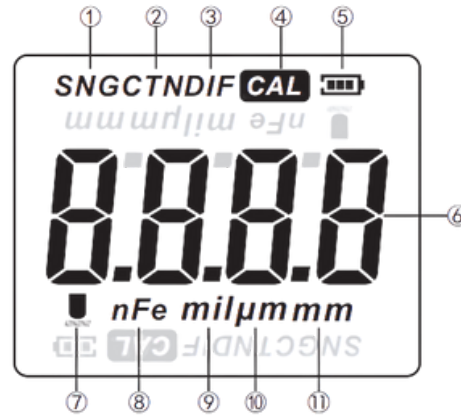
1. Components (Refer to Figure 1 on page 4)

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



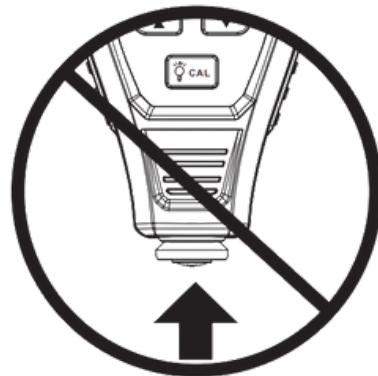
2. LCD Display (Refer to Figure 2 on page 5)

1. **SNG**: Single measurement mode
2. **CTN**: Continuous measurement mode
3. **DIF**: Differential measurement mode
4. **CAL**: Calibration state indicator
5. [🔋] **Battery Icon**: Remaining battery power
6. **Numeric Display**: Indicates measured value
7. [C] **Coupling Icon**: Measurement coupling status
8. **nFe**: Non-magnetic metal substrate
Fe: Magnetic metal substrate
9. **mil**: Imperial unit (1 mil = 0.0254 mm = 25.4 μm)
10. **μm** : Metric unit (1 mm = 1000 μm)
11. **mm**: Metric unit



G. Attention

- Keep the probe separated from the substrate during startup.
- The “-OL-” symbol indicates the measured value is beyond the instrument’s range.
- Do not apply pressure to the sensor with a finger or any object, as this may damage the sensor assembly and the instrument (Figure 3).




(Figure3)

H. Other

Factors Affecting Measurement Accuracy and Their Description:

1. **Magnetic Property of Substrate Metal**: Thickness measurement by magnetic method is influenced by variations in the magnetic properties of the substrate. In practice, the variation in low-carbon steel is minimal. To eliminate errors from thermal treatment or cold working, calibration should be performed on ferrous substrates identical to the material under test, or on the actual uncoated metal prior to coating application.
2. **Thickness of Substrate Metal**: Each gauge has a specified minimum critical substrate thickness. Measurements are unaffected when the substrate exceeds this critical value. Refer to the product specifications; for this instrument, the required critical thickness is ≥ 0.5 mm.
3. **Edge Effect**: The gauge is sensitive to abrupt surface transitions. Measurements taken near edges or inner corners of the substrate are unreliable.
4. **Curvature**: Substrate curvature directly affects accuracy. The influence increases as the radius of curvature decreases.
5. **Surface Roughness**: Both substrate and coating roughness impact measurement. Greater roughness increases systematic and occasional errors. To minimize these, multiple measurements should be taken at each location. For rough substrates, zero-point calibration must be performed on several uncoated areas of similar roughness, or the coating should be safely removed with a non-corrosive solvent before calibration.
6. **Magnetic Field**: Strong external magnetic fields from nearby electrical equipment can severely interfere with magnetic thickness measurements.
7. **Surface Cleanliness**: Before measurement, remove dust, grease, and corrosive residues from the surface. Do not remove any part of the coating layer.

Battery Replacement

When the battery icon appears [], replace the battery immediately to ensure reliable operation.

Disclaimer

The manufacturer assumes no responsibility for any consequences resulting from the use or misuse of this product. Product specifications and manual content are subject to change without prior notice.

