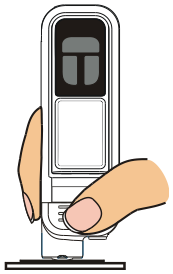
OPERATING INSTRUCTIONS
MODEL: ET-111S CE
2 IN 1 COATING THICKNESS GAUGE

INTRODUCTION
This instrument is a 4 digit, portable, easy to use and compact-sized digital “ferrous” or “non-ferrous” coating designed for simply one hand operation. Meter comes with backlight LCD display and Auto Power Off (60 seconds approx.) to extend battery life.

SAFETY INFORMATION
It is recommended that you read the safety and operation instructions before using the coating thickness gauge.

CAUTION


- Do not use the unit near any device which generates strong electromagnetic radiation or near a static electrical charge, as these may cause errors.
- Do not use the unit where it may be exposed to corrosive or explosive gases. The unit may be damaged, or explosion may occur.
- Do not keep or use this unit in an environment where it will be directly illuminated by sunshine, or where it condenses. If you do, it may be deformed, its insulation may be damaged, or it may no longer function according to specification.
- Do not place the meter on or around hot objects (70°C/158°F). It may cause damage to the case.
- If the meter is exposed to significant changes in ambient temperature, allow 30 minutes for temperature stabilization, before taking measurement.



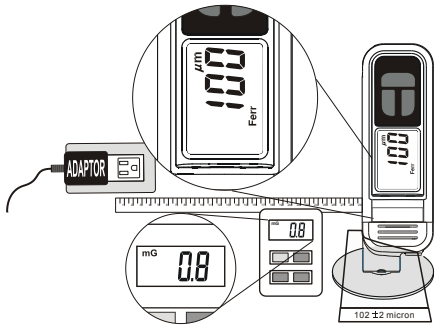
- Condensation may form on the sensor when going from a cold to hot environment. Wait for 10 minutes for condensation to dissipate before taking measurements.
- This unit is not constructed to be waterproof and dustproof. Do not use it in a wet or very dusty environment.
- In order to take accurate measurement, make sure the sensing tip contacts the coated surface tightly without tilting.
- Please make sure there is no air bubbles between substrate and coating.
- The enclosed zeroing plates are only suitable for the use of calibration of coating thickness meter itself. Apart from that, **to get accurate readings before use**.
- Not a toy, the use of measuring instruments is to supervise by trained personnel.
- Before the first use and after prolonged use, the device must be re-calibrated to get more accurate measure results. ●The zeroing on specific material substrate still needs to be done before taking formal measurements, such as Iron, Steel, Bronze, Copper, Nickel, Zinc, SUS304 and so on, which is to avoid the measuring errors that are caused by the difference of individual substrates. The end users can get much more accurate measuring readings on the specific metal under test by doing calibration.
- The device is not intended for production purposes. For further damages we do not assume any liability! In case of damage by disregarding this manual the warranty will void!
- ●For material damage or personal injury, caused by improper use or disregard of the safety instructions we do not assume any liability!

WARNING
ELECTROMAGNETIC FIELD INTERFERENCE
This instrument uses magnetic field method to measure the coating thickness on ferrous metal base. If this meter was placed in the environment with 20mG (mini Gauss) or above, the accuracy would be affected. Suggest that the meter should to put far away from the interfered source at least 30cm.

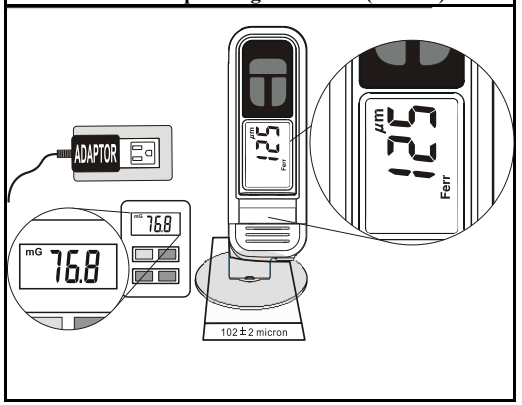
Electromagnetic field strength:(❋unit = mini Gauss)

Electromagnetic Source	0cm	30cm
Cellular Phone Charger	50 ~ 500	< 1
Notebook Power Supply	100 ~ 1000	< 5
LCD Display	10 ~ 100	< 1
Fan	100 ~ 1000	< 5
Reading Lamp	400 ~ 4000	< 10
❋Any product with coil inside should be considered.		

Recommended operating conditions (>30cm)



Abnormal operating conditions (<30cm)



SPECIFICATION
ELECTRICAL

Detectable Substrate Material: Ferrous metal (iron, steel)
and Non-Ferrous metal (copper, aluminum, zinc, bronze, brass, etc.)

Ferrous Thickness Range: 0 to 2000µm,
0 to 80.0mils

Non-Ferrous Thickness Range: 0 to 1000µm,
0 to 40.0mils

Display Resolution: 0.1mils/1µm

Response Time: 1 second

Ferrous Accuracy:
10µm on 0 to 199µm
±(3%+10µm) on 200µm to 1999µm

±0.4mils on 0 to 7.8mils
±(3%+0.4mils) on 7.9mils to 80.0mils

Non-Ferrous Accuracy:
±10µm on 0 to 199µm
±(3%+10µm) on 200µm to 1000µm

±0.4mils on 0 to 7.8mils
±(3%+0.4mils) on 7.9mils to 40mils

GENERAL
Operating Environment:
-13°F to 122°F (-25°C to 50°C) at < 75% R.H.

Storage Temperature: -13°F to 140°F (-25°C to 60°C), 0 to 80% R.H. with battery removed from meter

Temperature Coefficient: 0.1x (specified accuracy) / °C (< 18°C or > 28°C)

Auto Power Off: 1 minute

Standby Consuming Current: < 6µA

Battery: 1.5V (AAA size) x 2pcs

Battery Life: 17 hours (continuity) typical with alkaline battery

Low Battery Indication: The “ ” is displayed when the battery voltage drops below the operating level

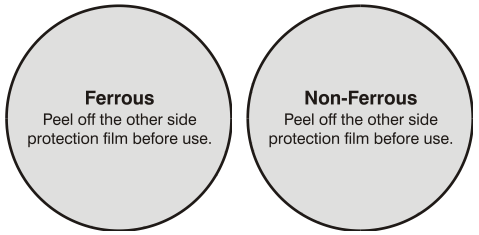
Dimensions: 120mm (H) x 40.4mm (W) x 29.2mm (D)

Weight: Approx. 78g (including battery)

DEFINITION

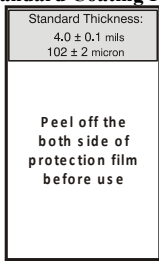
Zeroing Plate

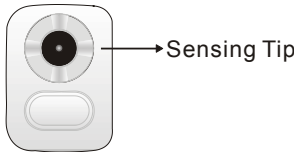
Ferrous is steel plate **Non-ferrous is Aluminum plate**

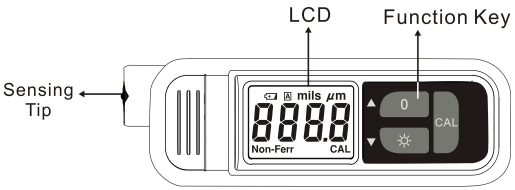


□Peel off the protection films from plate before first use.

Standard Coating Foil







FUNCTION BUTTON

"☼"

1. Press "☼" button to turn on or off backlight function. It can benefit users for reviewing display in dark environment.
2. Press "☼" button until the display switches between mils and μm. (1 mils = 25.4 μm)

"0"

Press **"0"**button until the LCD-Display shows "oooo", to clear Calibrating Point.

Quickly press "0" button for substrate zeroing calibration.

"CAL"

1. When power is on, press "**CAL**" button more than 3 seconds to start calibration.
2. In calibration mode, when you finish calibrating, press "**CAL**" button to complete calibrating procedure.

"▲"

1. In calibration mode, press "▲" button to increase Display's values.

"▼"

1. In calibration mode, press "▼"button to decrease Display's values.

INSTRUCTION

Power on and off:

1. Keep the sensing tip of the meter away from any substrate or any magnetic field.
2. Gage automatically powers up and Measuring when probe is pressed.
3. Auto Power Off (APO):
   Leave the gauge without operation for 1 minute, power turns off automatically.

Measuring:

1. Press the sensing tip of the gauge to contact coated surface tightly, wait for the reading to appear and measurement is completed. (One "Beep" sound announced)
2. If the coating thickness is out of range, the meter shows "----".

CALIBRATION

□During calibration, Auto Power Off function will be inactivated. If the LCD display "----", it can not zero the substrate, calibration steps.

□When it is calibrated by user, its max calibrated value is 43.3 mils /1100μm.

□During calibration, the foil and standard coating plate 4.0 mils / 102μm can be replaced by uncoated substrate and a standard coating plate with known-thickness.

Calibration Steps:

(Peel off the protection films from the Zeroing Plate before first use)

1. **Press the sensing tip on the** Zeroing **Plate** to contact surface tightly, wait for the reading to appear and measurement is completed
   (one "Beep" sound announced)
   Press "0" button (**no longer than 2 seconds**) to calibrate Zeroing Plate.
   LCD Display show **0μm.**

2. **Put** the Standard Coating **Foil on** the Zeroing **Plate**.
   Press the **sensing tip** on the Standard Coating **Foil**, wait for the reading to appear and measurement is completed (one "Beep" sound announced), then you can move the Gauge away.

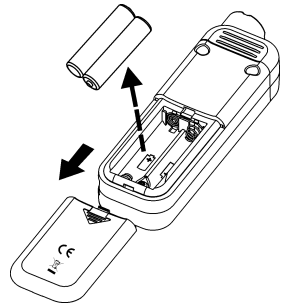
   Press "**CAL**" button more than 3 sec to enter calibration mode. LCD-Display will show "**CAL**" blinking.
3. In calibration mode, use ▲ or ▼ button to adjust readings until it matches the standard's thickness (102μm).
4. Press "**CAL**" button to exit calibration and return to measuring mode. Ready.

Reset - Restore factory settings:

1. Press the sensing tip to turn on the device.
2. Press "0" button more than 3 seconds, LCD-Display will show **"oooo."** The Reset function restores the factory setting.

MAINTENANCE

Installing and Replacing Battery



1. Power is supplied by 2pcs 1.5V (AAA SIZE).
2. The "+-" appears in the display when battery replacement is needed.
3. Remove the battery cover by gently sliding it onwards the bottom of the meter.
4. Remove the batteries from battery compartment.
5. Replace with 2 new AAA batteries with polarity as indicated on the bottom of Battery Compartment.
6. Replace the Battery Cover.

CAUTION: When not in use for long periods remove battery. Do not store in locations with high temperatures, or high humidity.

Cleaning

Periodically wipe the case with a damp cloth and detergent, do not use abrasives or solvents.