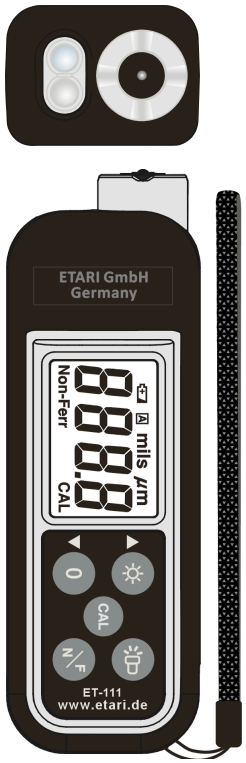
OPERATING INSTRUCTIONS
MODEL: ET-111
2 IN 1 COATING THICKNESS GAUGE



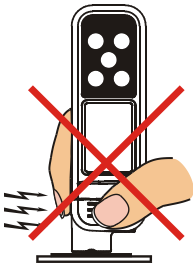
INTRODUCTION
This instrument is a 4 digit, portable, easy to use and compact-sized digital “ferrous” or “non-ferrous” coating designed for simply one hand operation. Meter comes with backlight LCD display and Auto Power Off (60 seconds approx.) to extend battery life.

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

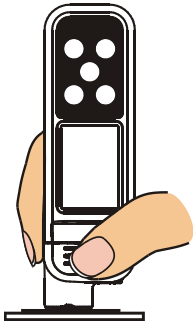
DANGER

When the UV LED function is turned on, it will radiate intense UV light during operation. Since UV light can be harmful to eyes, do NOT look directly into the UV light, even through an optical instrument. In case of the light reflection, UV protective glasses are required to use in order to avoid damage by the light.

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 condensation. 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.
- **Substrate Zeroing Calibration：Must be implemented for each use.**
- **Two point calibration：** Must implement for frequent testing points to increase measuring accuracy.
- The enclosed zeroing plates are only suitable for the use of calibration of coating thickness meter itself. Apart from that, the meter should be performed two point calibration methods to get accurate readings before use. The zeroing on specific material substrate still needs to be done before taking formal measurements, such as Iron, Steel, Bronze, Copper, Nickel, Zinc, and SUS304 and so on, which is to avoid the measuring errors that cause by the difference of individual substrates. The end users can get much more accurate measuring readings on the specific metal under test by doing two calibration methods.

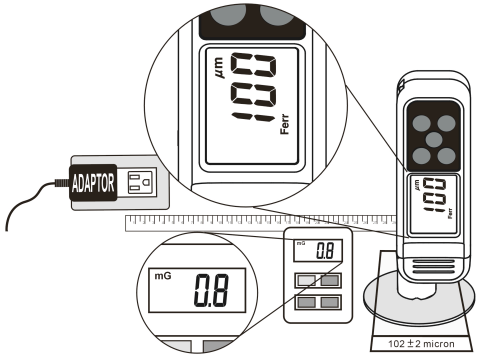
WARNING
ELECTROMAGNETIC FIELD INTERFERENCE

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.

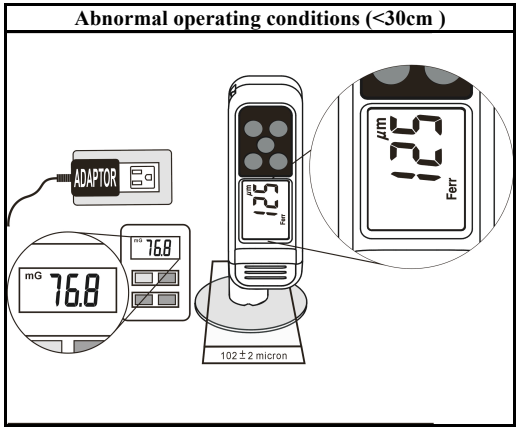
Electromagnetic field strength:(□unit = mini Gauss)

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 80.0mils, 0 to 2000µm.

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

Display Resolution： 0.1mils/1µm.

Ferrous Accuracy：
±4mils on 0 to 7.8mils.
±(3%+4mils) on 7.9mils to 80.0mils.
±10µm on 0 to 199µm.
±(3%+10dgts) on 200µm to 1999µm.

Non-Ferrous Accuracy：
±4mils on 0 to 7.8mils.
±(3%+4mils) on 7.9mils to 40mils.
±10µm on 0 to 199µm.
±(3%+10µm) on 200µm to 1000µm.

Response Time： 1 second.

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.

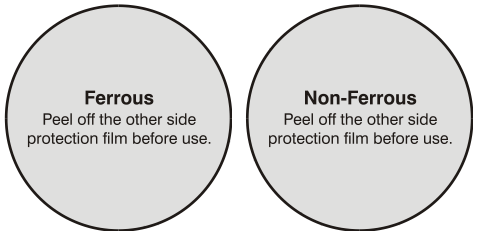
Dimensions： 120mm (H) x 40.4mm(W) x 29.2mm(D).

Weight： Approx. 100g (including battery).

DEFINITION

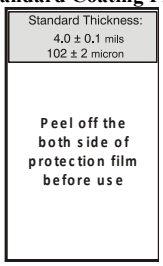
Zeroing Plate

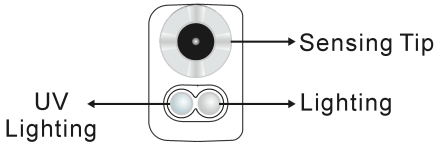
Ferrous is steel plate **Non-ferrous is Aluminum plate**

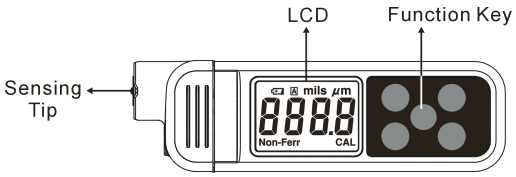


Peel off the protection films from foil before first use.

Standard Coating Plate







FUNCTION BUTTON

"☼"

Press "☼" button each time, the display changes in the following sequence：**Lighting → UV light →OFF,** it can be operated in ON or Off mode.

"☼"

1.Press "☼" button to turn on or off backlight function. It can benefit users for reviewing display in dark environment.
2.Press "☼" button **over 3** seconds to switch between mils and µm. (1 mils = 25.4 µm)

"F/N"

Press "F/N" button each time, the display changes in the following sequence: Auto → Ferrous→ Non-Ferrous (Auto Mode and Ferrous Fixed Mode and Non-Ferrous Fixed Mode.)

"0"

Quickly press "0" button for substrate zeroing calibration. Press **"0"**button **over 3** seconds to clear Calibrating Point..

"CAL"

1. When power is on, press "**CAL**" button **over 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.The Gauge 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 "----".

Attention!

The calibration and resetting to factory settings is only possible in automatic mode A

CALIBRATION

□During calibration, Auto Power Off function will be inactivated. If the LCD display "----", it can not zero the substrate, one point calibration or two-point calibration.
□**When it is calibrated by user, its max calibrated value is 43.3 mils /1100µm.**

Substrate Zeroing Calibration:

1. Press the sensing tip of the probe to contact **uncoated** surface tightly. Wait for the reading to appear and measurement is completed (one "Beep" sound anounced), then you can move the Gauge away. Press "0" button (no longer than 1 seconds) to calibrate substrate material or foil. LCD displays 0 µm.

One Point Calibration:

1.Press the sensing tip of the probe to contact **coated** surface tightly. Wait for the reading to appear and measurement is completed (one "Beep" sound announced), then you can move the Gauge away.
2.**Press** "**CAL**" button **over 3 sec** into calibration mode. LCD will blink "**CAL**" icon. .
3.In calibration mode, use ▲ or ▼ button to adjust readings until it matches **the known standard's thickness (4.0 mils / 102µm)**.
4.**Press** "**CAL**" button to exit one point calibration and return to measuring mode "**CAL**" off.

Two Point Calibration

(sufficient for calibration)

※ During two point 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.

1.**Press the sensing tip of the probe** to contact **Zeroing Plate uncoated** 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 substrate material or foil. LCD displays 0 µm.

2.**Press the sensing tip of the probe** to contact **Standard Coating plate 102µm,** coated surface tightly. Wait for the reading to appear and measurement is completed (one "Beep" sound announced), then you can move the Gauge away. Press "**CAL**" button **over 3 sec** to enter calibration mode. LCD will display **"CAL" blinking**.

3.In calibration mode, use ▲ or ▼ button to adjustreadings until it matches the standard's thickness (102 µm).
4.Press "**CAL**" button to exit two point calibration and return to measuring mode. "CAL" off.

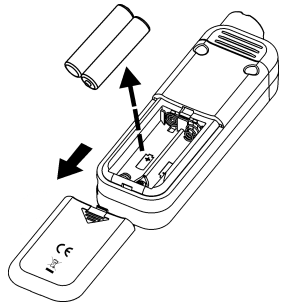
Reset to factory settings

Calibrating Point Clearance：

In measuring mode, **press "0"** button **over 4** seconds, LCD will display **"oooo"** and start cleaning and zeroing substrate, one point and two point calibration. When calibration is not operated properly, the clearance function helps users to start calibrating again.

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.