LIST OF PRODUCTS

- ✶ Digital Multimeter
- ✶ Digital AC & AC/DC Clampmeter
- ✶ AC Clamp Adaptor
- ✶ AC/DC Current Adaptor
- ✶ Thermo Anemometer
- ✶ Thermo Hygrometer
- ✶ Distance Meter
- ✶ Digital Lux Meter
- ✶ Network Cable Tester
- ✶ Power Factor Regulator
- ✶ Earth Resistance Tester
- ✶ Digital Panel Meters
- ✶ DC Power Supplies
- ✶ High Voltage Detector
- ✶ Calibrators
- ✶ Gas Analysers
- ✶ Frequency Counter
- ✶ Function Generator
- ✶ Phasing Sticks
- ✶ Battery Tester
- ✶ Waterproof Pen Testers
- ✶ Solar Power Meter
- ✶ EMF Detector
- ✶ Wood, Paper & Grain Moisture Meter
- ✶ Transistorised Electronic Analog & Digital Insulation Resistance Testers(upto 10 KV)
- ✶ Digital Sound Level Meter & Sound Level Calibrator
- ✶ Digital contact & Non-contact Type Tachometer
- ✶ Digital Non-contact (infrared) Thermometer
- ✶ Maximum Demand Controller/Digital Power Meter
- ✶ Digital Hand Held Temperature Indicators

KUSAM-MECO®

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KUSAM-MECO®

AN ISO 9001:2008 COMPANY

DIGITAL COATING THICKNESS GAUGE

MODEL - KM 117A

OPERATION MANUAL

KUSAM-MECO®

DIGITAL COATING THICKNESS GAUGE MODEL - KM 117A

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TABLE OF CONTENTS

I. INTRODUCTION :

KM 117A is a ferrous coating thickness gauge designed for simply one hand operation.

II. FEATURES :

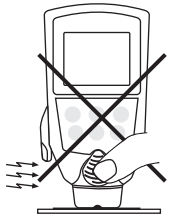
1. LED backlight.
2. LCD display reverse.
3. Auto power off.
4. Low-battery indicator.
5. Calibration for normal use.
6. Data logging function.
7. Warning beeper triggers by hi/lo limit settings.
8. Inch and Metric measurement options.
9. Zeroing Plate and Standard Coating Plate.
10. Attached with carrying strap.
11. Soft carrying case.

III. SAFETY INFORMATION :

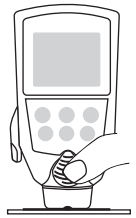
It is recommended that you read the safety and operation instructions before using the coating thickness gauge.

1. CAUTION :

1. Do not use the unit near any device which generates strong electromagnetic radiation or near a static electrical charge, as these may cause errors.
2. Do not use the unit where it may be exposed to corrosive or explosive gases. The unit may be damaged, or explosion may occur.



3. 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.
4. Do not place the meter on or around hot objects (70°C/158°F). It may cause damage to the case.
5. If the meter is exposed to significant changes in ambient temperature, allow 30 minutes for temperature stabilization, before taking measurement.
6. 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.
7. This unit is not constructed to be waterproof and dustproof. Do not use it in a wet or very dusty environment.
8. In order to take accurate measurement, make sure the sensing tip contacts the coated surface tightly without tilting.
9. Please make sure there is no air bubbles between substrate and coating.



10. **Substrate zeroing calibration must be implemented for each use.**
11. **Two point calibration is suggested to implement for frequent testing points to increase measuring accuracy.**

2. WARNING :

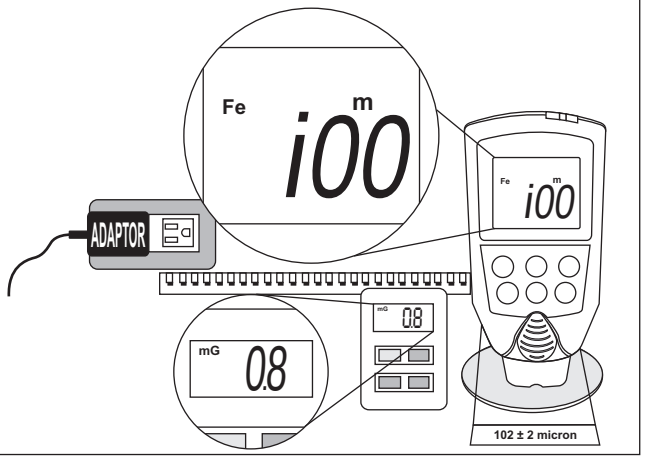
A. Electromagnetic Field Interference :

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.

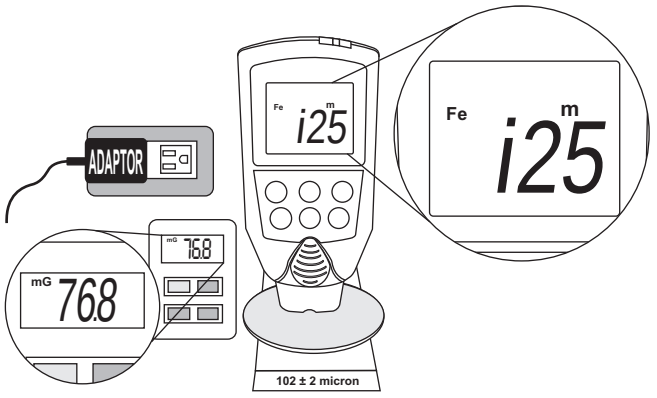
B. Electromagnetic Field Strength : (✪ unit = mini Gauss)

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)



IV. SPECIFICATIONS :

1. General Specifications :

Operating Temperature : 0°C~50°C (32°F to 122°F) at < 75% RH
Storage Temperature : -20°C~60°C (-4°F to 140°F) at < 80% RH (with battery removed)
Temperature Coefficient : Nominal 0.1 x (specified accuracy)/ °C @ (< 18°C or > 28°C)
Standby Consuming Current : < 6 A.
Auto Power Off : 30 seconds.
Power Supply : 1.5V (AAA Size) Battery X 2
Battery Life : 32 hours continuity use typical alkaline.
Low Battery Indication : The "⊏+" is displayed when the battery drops below the operating level.
Dimension : 105(H) x 55(W) x 27(D)mm
Weight : Approx. 80 g (Including battery).
Accessories : User Manual, Battery & carrying case.

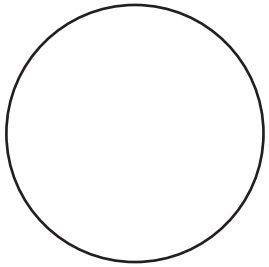
2. Electrical Specifications :

Detectable Substrate Material : Ferrous metal (iron, steel).
Thickness Range : 0 ~ 80.0mils (0 ~ 2000 m).
Display Resolution : 0.1mils/1 m.
Accuracy : ±4dgts on 0 to 7.8mils
±(3%+4dgts) on 7.9mils to 39.0mils
±(5%+4dgts) on 39.1mils to 80mils
±10dgts on 0 to 199 m
±(3%+10dgts) on 200 m to 1000 m
±(5%+4dgts) on 1001 m to 1999 m
Response Time : 1 second.

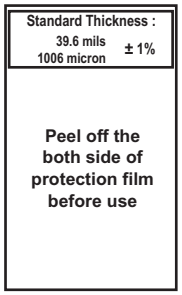
V. PRODUCT USE :

1. Definition :

Zeroing Plate

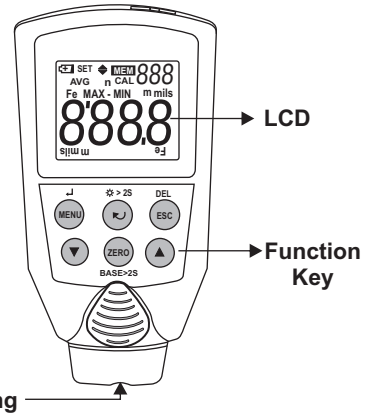


Standard Coating Plate

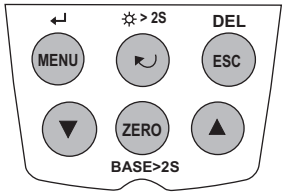


✪ **Peel off the protection films from foil before first use.**

2. The Product :



3. Buttons :



Buttons	Function
MENU	Press the button to enter MENU/ selecting.
> 2S	Press the button to reverse the display. Press the button for 2 seconds to turn on or off backlight.
DEL ESC	Jumped off & return of the previous mode.
▼ ▲	Up/down adjusting, (select function-value)
ZERO BASE>2S	Press the button to substrate Zeroing calibration. Press the button for 2 seconds to clear Calibrating Point.

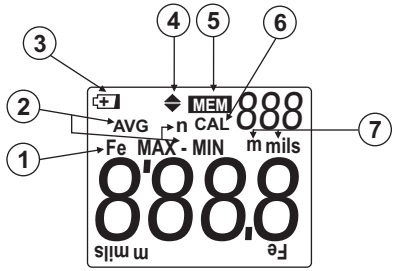
✪ **During measure mode :**

DEL ESC ▼ ▲ **The three buttons are disabled.**

✪ **During setting mode :**

> 2S ZERO BASE>2S **The two buttons are disabled.**

4. The Display :



No.	Symbol	Meaning
1	Fe	Ferrous
2	MAX	Maximum reading
	MIN	Minimum reading
	MAX - MIN	Maximum - Minimum reading
	AVG	Average reading
	n	Number of the reading
3	🔋	Low battery
4	▲ , ▼	Alarm indicator
5	MEM	Record is activated
6	CAL	Calibration is activated
7	mm, mils	Measurement units

VI. MEASUREMENTS :

1. Auto Power Off (APO) :

Leave the gauge without operation for 30 seconds, power turns off automatically.

✪ **During set mode, Auto Power Off function will be inactivated.**

Measuring :

1. Gauge automatically powers up and Measuring when probe is pressed.
2. Put the probe to contact coated surface tightly, wait for the reading to appear and measurement is completed. (One sound "Beep" announced)
3. If the coating thickness is out of range, the meter shows "----".
4. When the alarm is activated, measured exceed "Hi Limits" or "Lo Limits", LCD display (updated) the measured value will be lit up along with pressing ▲ or ▼ symbol, the beeper emits a continuous or pulsed tone, warm users exceeds the Hi or Lo Limits value.

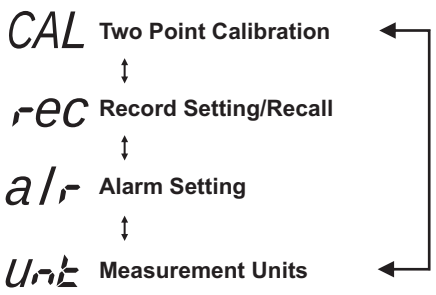
CAUTION :

Keep the sensing tip of the meter away from any substrate or any magnetic field.

2. Menu :

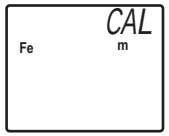
In measuring mode, press MENU button to enter menus, *CAL* will blink.

With ▼ and ▲ button to select the function, browse the menus :



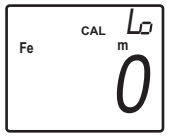
CAL Two Point Calibration :

- ✪ **During two point calibration, the foil and standard coating plate 1006 m can be replaced by uncoated substrate and a standard coating plate with known-thickness.**
- ✪ **When it is calibrated by user, its max calibrated value is 1100 m (43.3 mils),**



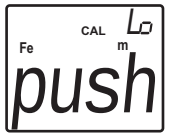
In this mode, press MENU button to enter two point calibration.

↓



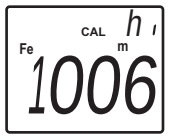
Into “low” value adjustments of the two point calibration, press ▲ or ▼ button to adjust reading, when it displays the desired value, press MENU button to confirm.

↓



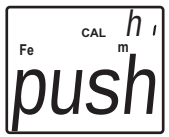
Press the tip of the Gauge to contact coated surface tightly (Zeroing plate or uncoated substrate). Wait for one “Beep” sound announces.

↓



Into “Hi” value adjustments of the two point calibration, press ▲ or ▼ button to adjust reading, when it display the desired value, press MENU button to confirm.

↓

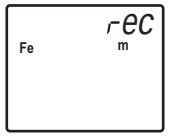


Press the tip of the Gauge to contact coated surface tightly (Standard coating plate 1006 m or standard coating plate), wait for one “Beep” sound announces, exit two point calibration and return to measuring mode.

Before users finish two point calibration, if press DEL ESC button to exit two point calibration, since the calibration is not finished, it will not record its previous calibrated value.

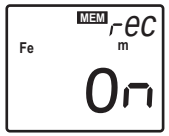
rec Record Setting/Recall :

The product can record 255 samples.
Stop recording after the 255th measured value.



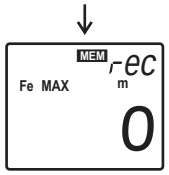
In this mode, press MENU button to enter recording setting.

↓



Press ▲ or ▼ button to select the record on or off.

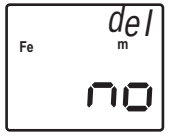
After it’s selected, press MENU button to confirm.



A. Recalling previous records :

To exit this mode, press MENU button. Press ▼ or ▲ button to browse previous records, its sequence as follows :

MAX (Maximum reading)
↕
MIN (Minimum reading)
↕
MAX-MIN
(Maximum - Minimum reading)
↕
AVG (Average reading)
↕
n Number of the recorded data
↕
n The first data
:
n The 255th data



B. To delete all recorded data :

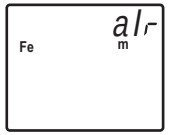
Press MENU button for five seconds.

Press ▼ or ▲ button to select the delete no or *yes*.

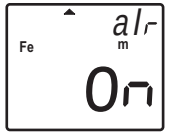
no, press MENU button to return to browse previous records.

yes, press MENU button to delete record and return to the measuring mode.

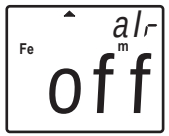
alr Alarm Setting :



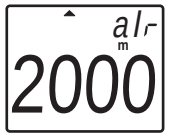
In this mode, press MENU button to enter the “Hi Limits” alarm setting mode.



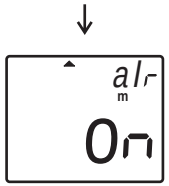
Press ▲ or ▼ button to turn on or off the “Hi Limits” alarm.



After it’s selected, press MENU button to enter the “Hi Limits value” alarm setting mode.

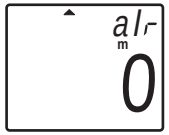


Press ▲ or ▼ button to adjust reading. When it displays the desired value, press MENU button to confirm the “Hi Limits” alarm, and enter the “Lo Limits” alarm mode setting.



Press ▲ or ▼ button to turn on or off the “Lo Limits” alarm.

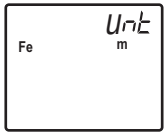
After it’s selected, press MENU button to enter the “Lo Limits value” setting.



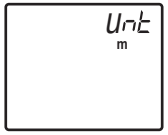
Press ▲ or ▼ button to adjust reading, to meet the desired value, press MENU button to confirm the “Hi Limits” alarm, and return to measuring mode.

Alarm setting : Maximum is 2000 m (78.7 mils), Minimum is 0 m (0 mils).

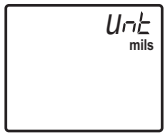
Unit Selecting :



In this mode, press MENU button to enter to unit selecting.

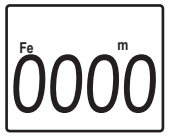


Press ▲ or ▼ button to select the m or mils.



After it’s selected, press MENU button to exit the unit selecting and return to measuring mode.

Calibrating Point Clearance :



In measuring mode, press ZERO BASE>2S button over 2 seconds to clear Calibrating Point. LCD will display “0000”. When calibration is not operated properly, the clearance function helps users to start it again.

3. Operation :

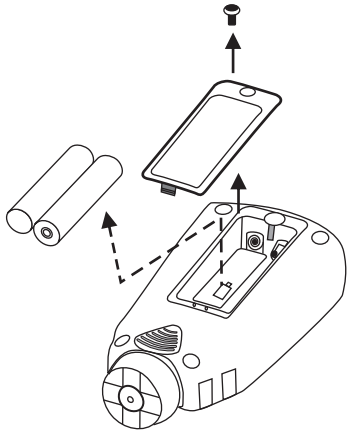
(1) Keep the meter away any substrate or any magnetic field.

(2) Put the sensing tip to contact coated surface tightly until for the bleep to sound and reading appears.

(3) If the coating thickness is out off range, the meter shows “----”.

VII. 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.

KUSAM-MECO®

MUMBAI

TEST CERTIFICATE

DIGITAL COATING THICKNESS GAUGE

This Test Certificate warrantees that the product has been inspected and tested in accordance with the published specifications.

The instrument has been calibrated by using equipment which has already been calibrated to standards traceable to national standards.

MODEL NO. **KM 117A**

SERIAL NO. _____

DATE: _____

ISO 9001
REGISTERED

QC
KUSAM-MECO
PASS

KUSAM-MECO®

WARRANTY

Each “KUSAM-MECO” product is warranted to be free from defects in material and workmanship under normal use & service. The warranty period is one year (12 months) and begins from the date of despatch of goods. In case any defect occurs in functioning of the instrument, under proper use, within the warranty period, the same will be rectified by us free of charges, provided the to and fro freight charges are borne by you.

This warranty extends only to the original buyer or end-user customer of a “KUSAM-MECO” authorized dealer.

This warranty does not apply for damaged Ic’s, fuses, burnt PCB's, disposable batteries, carrying case, test leads, or to any product which in “KUSAM-MECO’s” opinion, has been misused, altered, neglected, contaminated or damaged by accident or abnormal conditions of operation or handling.

“KUSAM-MECO” authorized dealer shall extend this warranty on new and unused products to end-user customers only but have no authority to extend a greater or different warranty on behalf of “KUSAM-MECO”.

“KUSAM-MECO’s” warranty obligation is limited, at option, free of charge repair, or replacement of a defective product which is returned to a “KUSAM-MECO” authorized service center within the warranty period.

THIS WARRANTY IS BUYER’S SOLE AND EXCLUSIVE REMEDY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. “KUSAM-MECO” SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES, INCLUDING LOSS OF DATA, ARISING FROM ANY CAUSE WHATSOEVER.

All transaction are subject to Mumbai Jurisdiction.