LIST OF PRODUCTS

- ✶ Digital Multimeter
- ✶ AC Clamp Adaptor
- ✶ Thermo Anemometer
- ✶ Distance Meter
- ✶ Network Cable Tester
- ✶ Earth Resistance Tester
- ✶ DC Power Supplies
- ✶ Calibrators
- ✶ Frequency Counter
- ✶ Phasing Sticks
- ✶ Waterproof Pen Testers
- ✶ EMF Detector
- ✶ Digital AC & AC/DC Clampmeter
- ✶ AC/DC Current Adaptor
- ✶ Thermo Hygrometer
- ✶ Digital Lux Meter
- ✶ Power Factor Regulator
- ✶ Digital Panel Meters
- ✶ High Voltage Detector
- ✶ Gas Analysers
- ✶ Function Generator
- ✶ Battery Tester
- ✶ Solar Power Meter
- ✶ 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®

Email : sales@kusam-meco.co.in

Website : www.kusamelectrical.com

KUSAM-MECO®

AN ISO 9001:2015 COMPANY

ANALOG EARTH RESISTANCE TESTER



MODEL - KM 1105ER

OPERATION MANUAL

INDEX PAGE

INTRODUCTION.....1

SAFETY NOTES.....2

FEATURES.....3

SPECIFICATIONS.....4

LAYOUT.....5

MEASURING METHODS.....6-9

MAINTENANCE.....10-11

TEST CERTIFICATE.....12

WARRANTY 13

KUSAM-MECO®

1. INTRODUCTION

NOTE

This meter has been designed and tested according to CE. IEC / EN 61010-1, EN 61326-1 and other safety standards. Follow all warnings to ensure safe operation.

- Application:
  Earth Resistance Tester is used to measure the ohms (Ω) of an earth grounding installation for buildings (residential, office, labs, hospitals), computer server rooms, military installations, cellular sites, radio and cable towers, etc.
  It is used to determine if the earth (or ground) is a good conductor of electricity.
- Purpose of Earth Grounding:
  (1) Avoid human and animal electrical shock.
  (2) Avoid unnecessary property and equipment damage.
  (3) Prevent fire or explosion.
  (4) Integrate electrical signal to attain proper operation or measuring purpose.
  (5) Provide a means of dissipation for power surges caused by lightning strikes, static charges, and other types of electrical interference.

2. SAFETY NOTES

- Read the following safety information carefully before attempting to operate or service the meter.
- Use the meter only as specified in this manual, otherwise the protection provided by the meter may be impaired.
- Rated environmental conditions:
  (1) Indoor and outdoor use.
  (2) Installation Category IV 30V.
  (3) Pollution Degree 2.
  (4) Altitude up to 2000 Meter.
  (5) Relative Humidity 80% Max.
  (6) Ambient Temperature 0℃ ~40℃ .
- Observe the International Electrical Symbols listed below:


Meter is protected throughout by double insulation or reinforced insulation.


Warning ! Risk of electric shock.


Caution ! Refer to this manual before using the Meter.

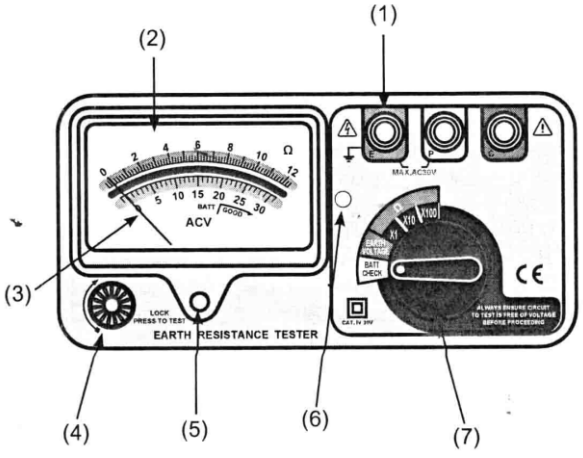
3. FEATURES

- Capable of measuring earth voltage.
- 2mA measuring current permits the testing of earth resistance without tripping earth leakage current breakers in the circuit under test.
- In addition to facilitating for precision measurement, test leads for simplified two-wire measuring system also are supplied as standard accessories.
- Battery operated.
- Battery life indicator.
- Designed to meet IEC / EN 61010-1 EN 61326-1 safety standard.
- Calibration performed with supplied test leads.

4. SPECIFICATIONS

Measuring Ranges	Earth Resistance 0-12Ω/0-120Ω/0-1200Ω Earth Voltage 0-30V ac (40-500Hz)
Accuracy	Earth Resistance ±3% of full scale Earth Voltage ±2.5% of full scale
Measuring System	Earth resistance by constant current inverter (Square Signal) 820Hz approx. 2mA
Power Source	1.5V (AA) x 8 or equivalent
Dimensions	175(L) x 85(W) x 75(D)mm
Weight	Approx. 600g (battery included)
Accessories	Test leads (AL-36 : red-15m, yellow-10m, green-5m) Simplified measurement probe. (AL-33) Auxiliary earth spikes. Shoulder belt. Instruction manual. Batteries.

5. LAYOUT



(1) Terminal
(2) Scale
(3) Pointer
(4) Test Button
(5) Zero adjust screw
(6) LED
(7) Function switch

6. MEASURING METHODS

BEFORE MEASURING, READ SAFETY NOTES ON PAGE 2.

⚠ WARNING

Before testing.

- Check to see if the meter pointer is adjusted exactly to the mechanical zero position of the Ω or V scale. If not, turn the zero adjust screw with a screwdriver.
- Rotate the function switch to the "BATT. CHECK" position and press to test. Battery voltage is sufficient when the meter pointer stays in "OK" position of the battery check scale. If not, replace with the new batteries.

(1) Earth Voltage Check

a. Test leads connection

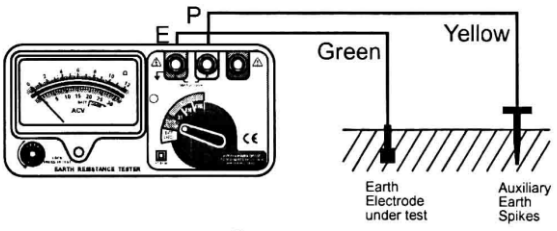


Fig.1

b. Rotate the function switch to "EARTH VOLTAGE" position and press to test. Earth voltage will be indicated on the ACV scale. When the earth voltage is more than 10V, it may result in errors in earth resistance measurement. Accurate earth resistance measurement may not be made.

(2) Earth resistance measurement

The measured results may be influenced by induction if measurements are made with the test leads twisted or connected to each other. When connecting the probes, they should be separated.

a. Connect green, yellow and red test leads to Instrument terminals E, P and C, with auxiliary earth spikes P_1, C_1.
Stick the auxiliary earth spikes P_1 & C_1 into the ground properly and deeply. Both of the P_1 & C_1 spikes should be aligned from the earthed electrode under test. The interal should be 5~10m(Fig.2).

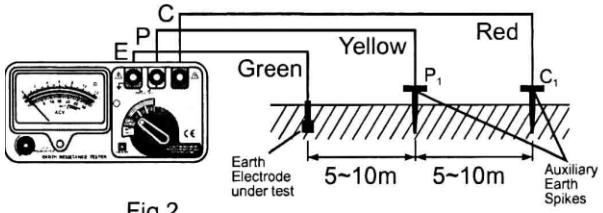


Fig.2

b. Rotate the function switch to proper range, then press the push-button to test and take the reading.

(3) Simplified earth resistance measurement method:

a. This method is recommended where an earth resistance higher than 10Ω is measured or where it is not possible to drive auxiliary earth spikes. An approximate value of earth resistance can be obtained by the two-wire system as shown in Fig.3.

b. Rotate the function switch to "EARTH VOLTAGE" position and press to test. Make certain that earth voltage is less than 10V.

c. First rotate the function switch to "x10" position and press to test. Read earth resistance. If the *meter pointer indicates over full scale, switch to* "x100" position and read earth resistance.

d. The reading obtained (Rx) is an approximate earth resistance value. There is no need for external shorting since P and C terminals are shorted by using the test leads specified for the simplified measurement.

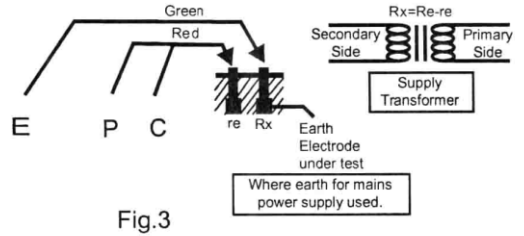


Fig.3

e. Rx = Re - re
Rx = True Earth Resistance
Re = Indicated Value
re = Earth Resistance or Earth Electrode.

f. Since the measuring current is as low as 2mA, the earth leakage breaker (ELCB) does not trip even if the earth side of the commercial power supply with an ELCB is used.

⚠ Press lamp switch to turn on the lamp. The lamp will automatically shut off after 10 seconds

⚠ Follow the proper connection as shown in Fig.2. The LED (red) indicator will be lit.
This proves that a correct current circulation is under its operation.

7. MAINTENANCE

- Battery replacement:
  When setting the function switch to the "BATT. CHECK" position and the meter pointer does NOT stay in "OK" position, replace the batteries as follows:
  (1) Disconnect the test leads from the instrument and turn off the power.
  (2) Use a screwdriver to unscrew the screw on back cover then slide away the cover out. Take out the batteries and replace with new batteries, type SUM-3 (R6P).
  (3) Place back cover and secure bay with screw.
- Cleaning and storage:

> ⚠ **WARNING**
> To avoid electrical shock or damage to the meter, do not get water inside the case.

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

If the meter is not to be used for periods of longer than 60 days, remove the batteries and store them separately.

CAT IV - Is for measurements performed at the source of the low-voltage installation.

CAT III - Is for measurements performed in the building installation.

CAT II - Is for measurements performed on circuits directly connected to the low-voltage installation.

CAT I - Is for measurements performed on circuits not directly connected to Mains.

Due to our policy of constant improvement and development, we reserve the right to change specifications without notice.

MUMBAI

TEST CERTIFICATE

ANALOG EARTH RESISTANCE TESTER

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 1105ER**

SERIAL NO. _____

DATE: _____

ISO 9001
REGISTERED

QC
KUSAM-MECO
PASS

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 & 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.