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 Detectors
* Gas Detectors
* Function Generator
* Battery Tester
* Solar Power Meter
* Discharge Rods(400 KV)
* Wood, Paper & Grain Moisture Meter
* Transistorised Electronic Analog & Digital Insulation Resistance Testers(upto 15 KV)
* Digital Sound Level Meter & Sound Level Calibrator
* Digital contact & Non-contact Type Tachometer
* Digital Non-contact (infrared) Thermometer/ Thermal Imaging Camera
* Maximum Demand Controller/Digital Power Meter
* Digital Hand Held Temperature Indicators

KUSAM-MECO®

OFFICE ADDRESS / SERVICE CENTER

Shop No.18, 1st Floor, CIDCO Shopping Complex, Plot # 9, Sector-7,
Rajiv Gandhi Marg, Sanpada, Navi Mumbai-400705.

Sales Direct : 09594058456, 09594057456

E-mail : sales@kusam-meco.co.in ; **Website :** www.kusamelectrical.com

Dt. 08/11/2024

KUSAM-MECO®

AN ISO 9001:2015 COMPANY

DIGITAL EARTH RESISTANCE TESTER

MODEL - KM 1521



USERS MANUAL

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1.Product Introduction

- Electronic Digital Earth Resistance Tester is direct replacement of the conventional hand generator type tester.
- It is designed for measurement of the resistance of earthing used in the electrical equipment as well as for measurement of ground resistivity.
- It can be used for measurements of the other low regular and liquid resistances, it can also be used for measurement of Voltage AC, Voltage DC and Resistance.
- This instrument finds wide application for testing earthing installation in power based industries, telecommunication networks and electrical traction systems etc.

2.Safety

2-1.Safety Symbols

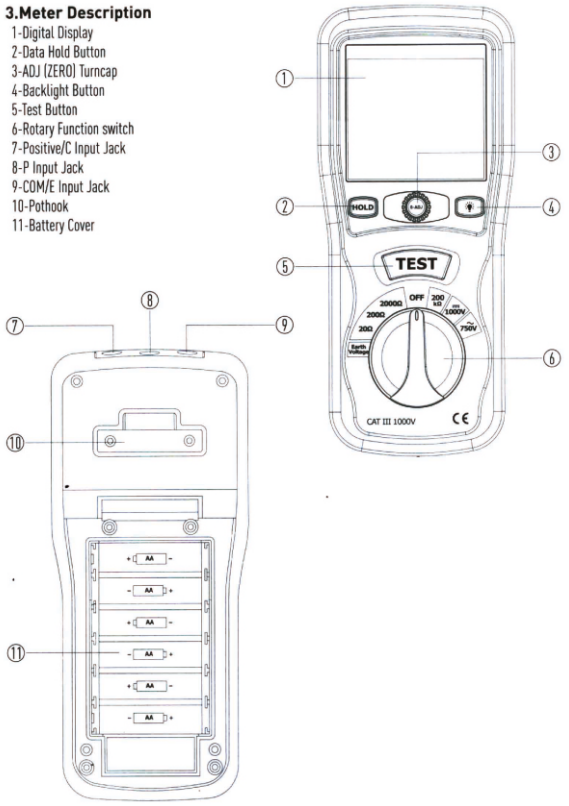
⚠ Caution refer to this manual before using the meter.
⚠ Dangerous voltages.
⧈ Meter is protected throughout by double insulation or reinforced insulation.
CE Comply with EN-61010-1

2-2.Safety Information

- Read the operating instructions before use and follow all safety Information.
- Read the following safety information carefully before attempting to operate or service the meter.
- To avoid damages to the instrument do not apply the signals which exceed the maximum limits shown in the technical specifications tables.
- Do not use the meter or test leads if they look damaged.
- Use extreme caution when working around bare conductors or bus bars, accidental contact with the conductor could result in electric shock.
- Use the meter only as specified in this manual, otherwise the protection provided by the meter may be impaired.
- Caution when working with voltages above 60V DC or 30V AC RMS, such voltages pose a shock hazard.
- Before taking resistance measurements or testing acoustic continuity, disconnect circuit from main power supply and all loads from the circuit.

3.Meter Description

1-Digital Display
2-Data Hold Button
3-ADJ (ZERO) Turncap
4-Backlight Button
5-Test Button
6-Rotary Function switch
7-Positive/C Input Jack
8-P Input Jack
9-COM/E Input Jack
10-Pothook
11-Battery Cover



4.Button Function Operation

4-1.Hold Function

- The hold function freezes the reading in the display.
- Press the **Data Hold** Button momentarily to activate or to exit the hold function.

4-2.Backlight

- Press the **Backlight** Button for to turn on the display backlight function.
- The backlight will automatically turn off after 15 seconds.

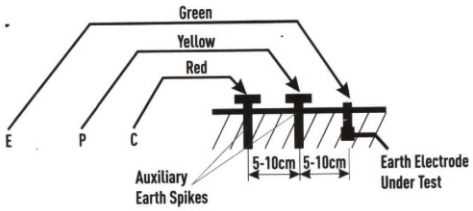
5.Operating Instructions

5-1.Measurement of Effective Resistance of Earth Electrodes

Note: Before proceeding measurement, read safety notes on page 4.

1.In proceeding with measurement, if "⊟" symbol appears on the display, replace with new batteries.
2.Short the tips of the leads and press the **TEST** Button.
3.Adjust the 0Ω **ADJ** Turncap control to set the reading of zero.
4.Rotary to function switch to **Earth Voltage** Position and press to test, Earth voltage will displayed on the LCD.
5.When earth voltage is more than 10V, it may result in errors in earth resistance measurement, accurate earth resistance measurement may not be made.
6.Precision earth resistance measurement method:

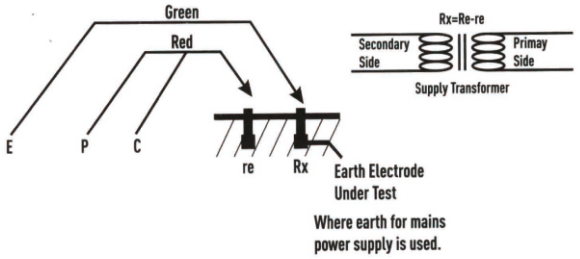
- Connect Green, Yellow and Red test leads to instrument terminals E, P and C with auxiliary earth spikes P1, C1 stuck into earth "In a straight line".
- Rotary the function switch to suitable range then press the pushbutton to test and take the reading.



7.Simplified earth resistance measurement method:

- 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.
- Rotary to function switch to **Earth Voltage** Position and press to test, make certain that earth voltage is less than 10V.

- First rotary the function switch to 200 Ω Position and press to test, read earth resistance, if the display shows "1"(MSD), switch to 2000 Ω Position and read earth resistance.
- The reading obtained (Rx) is an approximate earth resistance value, there is no need for external shorting as P and C terminals are shorted by using the test leads specified for the Simplified measurement.



Where earth for mains power supply is used.

- Rx=Re-re; Rx=True Earth Resistance; Re=Indicated Value; re=Earth Resistance of Earth Electrode
- Since 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.

5-2.DC/AC Voltage Measurement

1.Set the function switch to the highest **1000V DC** (⎓) or **750V AC** (~) Position.
2.Insert the black test lead banana into the **COM** Input Jack; Insert the red test lead banana into the **Positive** Input Jack.
3.Touch the black test probe tip to the negative side of the circuit; Touch the red test probe tip to the positive side of the circuit.
4.Read the voltage in the display.
Note: If the polarity is reversed, the display will show (-) minus before the value.

5-3.200kΩ Resistance Measurement

1.Set the function switch to the highest **200kΩ** Position.
2.Insert the black test lead banana into the **COM** Input Jack; Insert the red test lead banana into the **Positive** Input Jack.
3.Touch the test probe tips across the circuit or part under test, it is best to disconnect one side of the part under test so the rest of the circuit will not interfere with the resistance reading.
4.Read the resistance in the display.

6.Battery Replacement

1.When the low battery symbol "⊏±" appears on the LCD, the six 1.5V "AA" batteries must be replaced.
2.Turn the meter off and remove the test leads.
3.Unsnap the tilt stand from the rear of the meter.
4.Remove the four Phillips head screws holding the battery cover.
5.Remove the battery compartment cover.
6.Replace the batteries observing polarity.
7.Affix the rear cover and secure the screws.
8.Reattach the tilt stand.



7.Specifications

7-1.Technical Specifications

Function	Range	Resolution	Accuracy
Earth Resistance	20Ω	0.01Ω	±(2% + 10 digits)
	200Ω	0.1Ω	±(2% + 3 digits)
	2000Ω	1Ω	
Earth Voltage	200V	0.1V	±(3% + 3 digits)
OHMS	200kΩ	0.1kΩ	±(1% + 2 digits)
Overload Protection: 1000Vrms			
DC Voltage	1000V	1V	±(0.8% + 3 digits)
Input Impedance: 10MΩ			
Overload Protection: 1000Vrms			
AC Voltage (40Hz ~ 400Hz , 820Hz)	750V	1V	±(1.2% + 10 digits)
Input Impedance: 10MΩ			
Overload Protection: 750Vrms			

7-2. GENERAL SPECIFICATIONS

- **Meets IEC10101, CAT III 1000V**
- **Display : 3½ Digit 2000 Counts Large dual display with back light**
- **Test hold function for easy operation**
- **Zero adjustment**
- **Sampling Rate: 2.5 times per second**
- **Low Battery Indication**
- **Test Frequency : 820Hz**
- **Leakage Current : 2mA**
- **Operating Temperature :** 0ºC ~ 40ºC (< 80%R.H.)(32 ~ 104°F)
- **Storage Temperature :** -10ºC ~ 60ºC (< 70%R.H.) (14 ~ 140°F)
- **Power Source :** 1.5V "AA" battery x 6
- **Dimension :** Approx. 200(L) x 92(W) x 50(H)mm
- **Weight :** Approx. 700gm.(including battery)
- **Accessories :** "AA" Battery x 6, Rubber holster, 3-wire cable and iron rod x 2, Manual & carrying case.

MUMBAI

TEST CERTIFICATE

DIGITAL EARTH RESISTANCE TESTER

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

MODEL NO. **KM 1521**

SERIAL NO. _____

DATE: _____

ISO 9001:2015
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, 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.