

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
- * 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
- * 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

KUSAM-MECO

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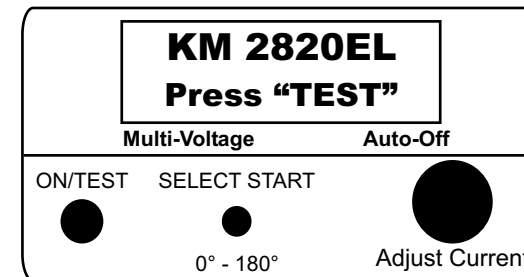
Fax : 91-22-2414 9659 **Email :** kusam_meco@vsnl.net

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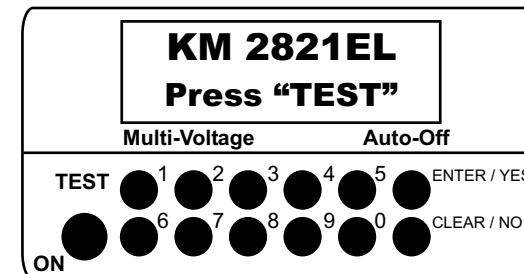
KUSAM-MECO

An ISO 9001:2008 Company

DIGITAL EARTH LEAKAGE TESTER Microprocessor Controlled



DIGITAL RCCB / ELCB TESTERS



INSTRUCTION MANUAL

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1. Safety Precautions.

Electricity can cause severe injuries even with low voltages or currents.

Therefore it is extremely important that you read the following information before using your Digital RCCB / ELCB Tester.

- 1.1 This instrument must only be used and operated by a competent trained person and in strict accordance with the instructions. The company will not accept liability for any damage or injury caused by misuse or non compliance with instructions and safety procedures.
- 1.2 Never open your Digital RCCB / ELCB Tester except for battery replacement. (See Battery replacement section).
- 1.3 Always inspect your Digital RCCB / ELCB tester and test leads before use for any sign of abnormality or damage. If any abnormal conditions exist (broken test leads, cracked case, display faulty etc...) Do not attempt to take any measurement or use the tester.

Return your Digital RCCB / ELCB tester to the company or your nearest distributor for service.
- 1.4 Never replace the protective fuse with any other than the specified or approved equivalent.
- 1.5 Your Digital RCCB / ELCB tester has been designed with your safety in mind. However, no design can completely protect against incorrect use. Electrical circuits can be dangerous and / or lethal when a lack of caution or poor safety practice is used. Use caution in the presence of voltage above 24V as these pose a shock hazard.
- 1.6 Pay attention to cautions and warnings which will inform you of potentially dangerous procedures.

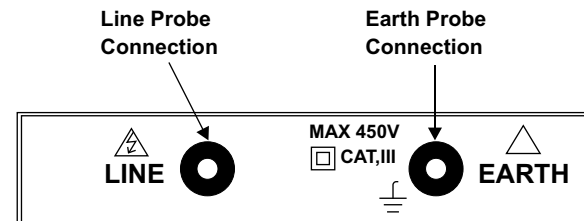
2. SPECIFICATIONS

Functions	KM 2820EL	KM 2821EL	
Current Settings	0-1000mA	Selectable	
Current Selection	Knob	Keypad	
Phase Start Selection			
	0°	Yes	Yes
	180°	Yes	Yes
Phase Polarity Trip Indicator	Yes	Yes	
Operating Voltage (L-E)	110Vac to 450Vac		
Timer Resolution	1mS		
Timer Accuracy	1mS		
Current Accuracy	1% & 2mA		
Current Resolution	1mA		
Voltmeter accuracy	5%		
Voltmeter Resolution	1V		
Operating Temperature	-5°C ~ 45°C		
Storage Temperature	-10°C ~ 50°C		
Battery	8 x AA batteries		
Maximum Current Specified at 317Vac			

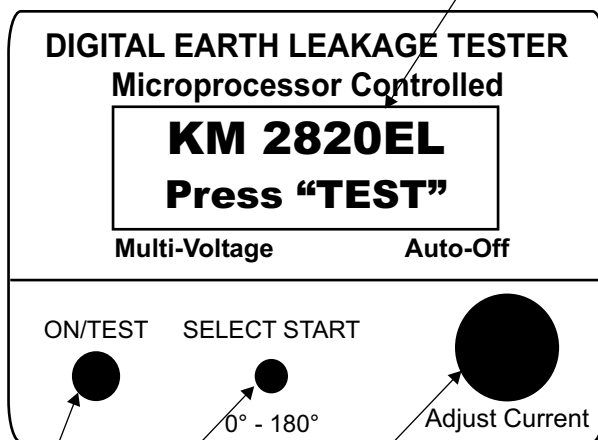
3. Features

- 2 Lines X 16 Characteres
 - Very Low Consumption.
 - Smart Microprocessor Controlled.
 - Auto Power Off.
 - Better than 2% accuracy. (Current)
 - Menu Driven.
 - Accurate Digital readout of Disconnection Time
 - Accurate Digital readout of Disconnection Sensitivity.
 - Data Hold Function
 - Zero Crossing Circuitry permit testing at 0° or 180°.
- Disconnection Phase Polarity Shown on L.C.D. Display.
Polarity Trip Indicator (Positive or Negative Phase)

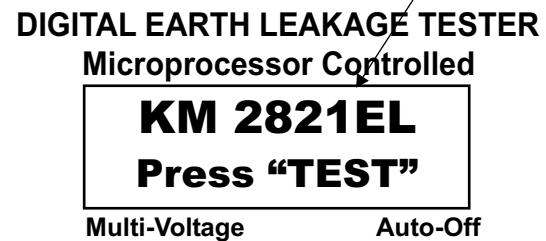
4. Connections



5. Instrument Layout



- 1- On Switch
Test Button Switch
- 2- Selection Switch.
0° - 180° Switch
- 3- Current Selection Knob
- 4- L. C. D.



- 1- On Switch
Test Button Switch
- 2- Selection Keypad.
- 3- Clear / No button.
- 4- Enter / Yes Button
- 5- L. C. D.

6. RCCB / ELCB Testing - Sensitivity-

KM 2820 EL

KM 2821 EL

Turn Instrument "ON" by pressing the "ON" button.
The L.C.D. Display will come to the following Screen.

*** - Instantaneous
- Time Delay**

Push Select to change Selection to instantaneous, then press "TEST"

**1 - Instantaneous
2- Time Delay**

Press 1 to select Instantaneous

**Dial Starting
Current. 123mA**

Dial the Starting Current of the Instantaneous Test using the Knob.

**Enter Starting
Current. 123mA**

Enter the Starting Current for the Test using the Keypad.



**Positive
Start Edge**

Select the positive or Negative Start Edge using the Select Button.



**Negative
Start Edge**

Select the positive or Negative Start Edge using any Number Button.

**Connect Leads
to Earth & Phase**

**Connect Leads
to Earth & Phase**

Connect Leads to Earth and Phase.
The Test will start Automatically.

Connect Leads to Earth and Phase.
The Test will start Automatically.

**V=317V
I=127mA**

**V=317V
I=127mA**

Test in Progress. The Voltage between leads is 317V and I=127mA

**V=317V T=4.023s
I=125mA**

**V=317V T= 4.023s
I=125mA**

Test in Progress since 4.023s. The Voltage between leads is 317V and Constant current is 125mA

**V=317V -
I=140mA Hold→TRP**

TRP=Tripped, Display on Hold at 140mA, Tripped on - edge of signal

**V=317V
I=999mA Hold→OVR**

OVR=OverRange Display on Hold at 999mA, Did not trip.

7. RCCB / ELCB Testing - Time Delay-

KM 2820 EL

KM 2821 EL

Turn Instrument "ON" by pressing the "ON" button.
The L.C.D. Display will come to the following Screen.

**- Instantaneous
*- Time Delay**

Push Select to change Selection to Time Delay, then press "TEST"

**1 - Instantaneous
2- Time Delay**

Press 2 to select Time Delay

**Dial Testing
Current. 125mA**

Dial the Testing Current of the Instantaneous Test using the Knob.

**Enter Testing
Current. 125mA**

Enter the Testing Current for the Test using the Keypad.



**Positive
Start Edge**

Select the Positive or Negative Start Edge using the Select Button.



**Negative
Start Edge**

Select the Positive or Negative Start Edge using any Number Button.

**Connect Leads
to Earth & Phase**

**Connect Leads
to Earth & Phase**

Connect Leads to Earth and Phase.
The Test will start Automatically.

Connect Leads to Earth and Phase.
The Test will start Automatically.

**V=317V
I=127mA**

**V=317V
I=127mA**

Test in Progress. The Voltage between leads is 317V and I=127mA

**V=317V T=4.023s
I=125mA**

**V=317V T= 4.023s
I=125mA**

Test in Progress since 4.023s. The Voltage between leads is 317V and Constant current is 125mA

**V=317V + T=12.435s
I=125mA Hold→TRP**

TRP=Tripped, Display on Hold at 12.435s, Tripped on + edge of signal

**V=317V T=99.999s
I=125mA Hold→OVR**

OVR=OverRange Display on Hold at 99.999s, Did not trip.

8. Preparation for Measurement.

8.1 Before testing Always Check the Following.

At Power "ON", read the display to make sure the "Replace Battery" message do not appears. There is no visual damage to the instrument or Test leads.

Test lead Continuity with a continuity meter.

9. Battery Replacement

Your Digital RCCB / ELCB Tester's battery is situateddc under the tester.

Your Smart-test display will indicate you when the battery need to be replaced.

Disconnect the Test leads from the instrument, remove the battery cover and the batteries.

Replace with eight 1.5V R6 or L6 batteries, taking care to observe correct polarity.

Replace battery Holder and the Battery cover.

10. Fuse Replacement

The Fuse is located under the Battery Holder. To replace the Fuse, proceed as per Battery replacement procedure to open the battery cover, then remove and replace the fuse located under the Battery holder.

Only replace with the same specification fuse. (2A Fast Blow)

11. Servicing and Calibration


Your Digital RCCB. ELCB tester has been factory Calibrated. However, it is of good practice to have your instrument "CERTIFIED" by a National Calibration Facility.

12. Safety Notes


Rated environmental conditions :

1. Indoor use.
2. Installation Category III
3. Pollution Degree 2.
4. Altitude upto 2000 Meter.
5. Relative Humidity 80% Max.
6. Ambient Temperature -5°C ~ 45°C

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.

13. 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.



MUMBAI

TEST CERTIFICATE

DIGITAL EARTH LEAKAGE TESTER

This Test Certificate warrants 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 2820EL / KM 2821EL

SERIAL NO. _____

DATE: _____

ISO 9001
REGISTERED



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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.

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