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AN ISO 9001:2008 COMPANY

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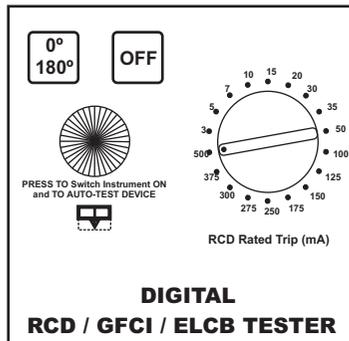
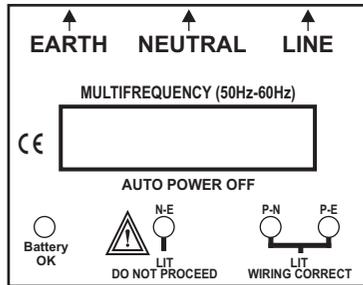
## DIGITAL ELCB TESTER

### MODEL - KM 1812EL

### OPERATION MANUAL

**KUSAM-MECO**

# DIGITAL ELCB TESTER MODEL - KM 1812EL



Version A = 240Vac    Version B = 230Vac  
Version C = 220Vac    Version D = 110Vac

**KUSAM-MECO**

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### Observe the International Electric symbols listed below.

-  Meter is protected throughout by double insulation or reinforced insulation.
-  Caution! Refer to this manual before using the meter.
-  Warning! Risk of electric shock.

**1. SAFETY PRECAUTIONS :**

Electricity can cause severe injuries even with low voltage 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. We 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 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. Be careful of the voltage presented above 24V as these pose a shock Hazard.
- 1.6 Pay attention to cautions and warnings which will inform you of potentially dangerous procedures.
- 1.7 Rated environmental conditions :
  - (1) Indoor use.
  - (2) Installation Category III.
  - (3) Pollution Degree 2.
  - (4) Altitude up to 2000 Meters.
  - (5) Relative Humidity 80% Maximum.
  - (6) Ambient Temperature 0-40°C.

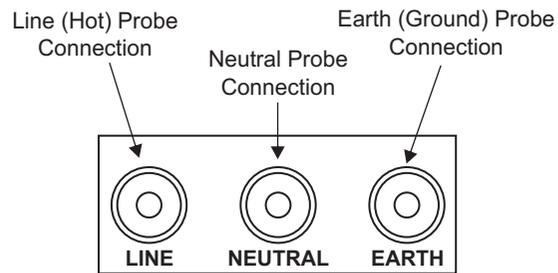
**2. SPECIFICATIONS :**

|                                      |                                                                                                                            |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| Current Settings                     | 3ma, 5mA, 7mA, 10mA, 15mA, 20mA, 30mA,35mA, 50mA, 100mA, 125mA, 150mA, 175mA, 250mA, 300mA, 375mA, 500mA.<br>Rotary Switch |
| Current Selection                    | Referenced to Earth                                                                                                        |
| Phase Start Selection                | Yes                                                                                                                        |
| 0° and 180°                          | Yes (3 sensors)                                                                                                            |
| Over-Temperature Protection          | Yes (LEDs)                                                                                                                 |
| Wiring Correctness indication        | Yes (LCD)                                                                                                                  |
| Trip Indicator                       | Yes (LCD)                                                                                                                  |
| Phase Polarity Trip Indicator        | Referenced to Earth                                                                                                        |
| Operating Voltage (L-E) 50Hz or 60Hz |                                                                                                                            |
| 1812EL-A                             | 240Vac                                                                                                                     |
| 1812EL-B                             | <b>230Vac</b>                                                                                                              |
| 1812EL-C                             | <b>220Vac</b>                                                                                                              |
| 1812EL-D                             | <b>110Vac</b>                                                                                                              |
| Voltmeter (L-E)                      | <b>20Vac-280Vac</b>                                                                                                        |
| Timer Resolution                     | <b>1mS (max time= 2.999S)</b>                                                                                              |
| Timer Accuracy                       | <b>±2% rdg ±2mS</b>                                                                                                        |
| Current Accuracy                     | <b>±5% ±1mA</b>                                                                                                            |
| Voltmeter Resolution                 | <b>1Vac</b>                                                                                                                |
| Voltmeter Accuracy                   | <b>±2% ±1Vac</b>                                                                                                           |
| Operating Temperature                | <b>-5°C to 45°C</b>                                                                                                        |
| Storage Temperature                  | <b>-10°C to 85°C</b>                                                                                                       |
| Battery                              | <b>8 AA batteries</b><br><b>Bat OK Led = Vbat &gt;7.5v</b><br><b>Measure battery voltage at start up</b>                   |
| Current Specified at                 | <b>Operating voltage</b>                                                                                                   |

**3. FEATURES :**

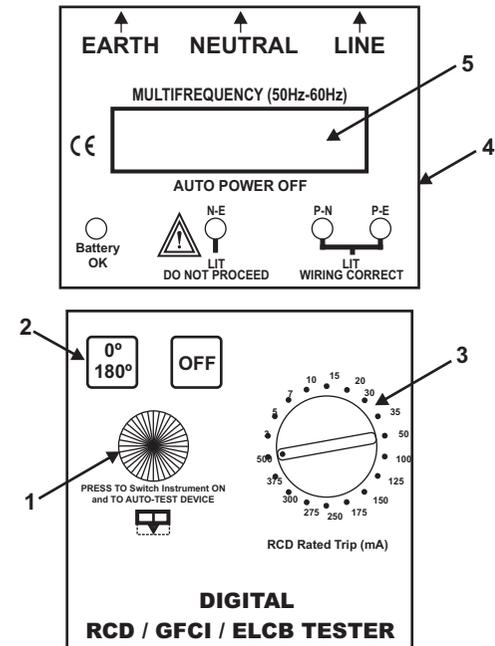
- ❖ 2 Lines 16 Characters Liquid Crystal Display.
- ❖ Very low consumption.
- ❖ Microprocessor controlled.
- ❖ Two years factory warranty.
- ❖ Menu driven.
- ❖ Accurate digital readout of disconnection time.
- ❖ Automatic data hold function.
- ❖ Zero crossing circuitry permit testing at 0° or 180°.
- ❖ Disconnection phase polarity shown on L.C.D. display.
- ❖ Auto-off and off override.
- ❖ Polarity trip indicator (Positive or Negative phase)
- ❖ Wiring polarity indicator.
- ❖ Measure voltage between Line and Earth before testing.

**4. CONNECTIONS :**



apply only  
Operating Voltage ±10% / 50Hz or 60 Hz.

**5. INSTRUMENT LAYOUT :**



1. On Switch.  
Test Button Switch.
2. Selection Switch.  
0° -160°
3. Current Selection Rotary Switch.
4. Intelligent L.C.D.
5. Wiring Check / Indicator.

**LID INSTRUCTIONS :**

**INSTRUCTIONS DIGITAL RCD / GFCI / ELCB TESTER**

**IMPORTANT**

1. The tester check the time taken for a given selected current to trip the breaker under test. The test show the phase at tripping (related to the earth terminal).
2. The ELCB Test operates between Line & Earth. Ensure that you operate on operating Voltage (Version A, B, C or D).
3. The tester is protected against over-temperature. If over-temperature message appears, allow time for instrument to cool down. During the cool down period, the instrument switch off automatically to save battery life.

**TRIPPING TIME TEST**

- A preselected current is injected L-E. The value of the current may be selected with the rotary switch. Once the instrument is switched "ON", the display show the battery voltage for about two seconds.
- Thereafter, the display is ready to wait for phase selection and to measure the voltage L-E...
- **THE "TEST" BUTTON CAN BE DEPRESSED.** Once the phase selection has been done and the voltage has been detected L-E...

**Version A = 240Vac  
Version B = 230Vac  
Version C = 220Vac  
Version D = 110Vac**

- Once Test is depressed, the tester will automatically start the test. The instrument displays :
  1. The Tripping time (mS) of the RCD (time to break under fault level)
  2. The Phase when tripping occurred.
  3. The Voltage (Vac) L-E at the start of the test.
  4. The approximative percentage error of the current injected.

**Should the RCD not trip within the testing time capability of the instrument, the display will show T=2.999S and "Hold >OVER", meaning the RCD did not trip below 19,999S. The tripping point is out of the Range of the instrument (or RCD faulty).**

**TEST PROCEDURE**

1. Insert the leads into Instrument.
2. Switch Instrument "ON".
3. Select the current using the rotary switch.
4. Select positive (0°) or negative (180°) edge to start.
5. Connect the tester to the circuit under test.
6. The tester measures and display the voltage L-E.
7. Check wiring. Proceed only if wiring is correct.
8. Depress "Test" button to automatically test.

**Once "Test" button is depressed :**

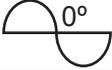
- Test start immediately if voltage is present.
- The test stops automatically when Breaker trips.
- Test results are shown on the display.
- When Instrument is utilized on two wires (L-E), wiring check must be disregarded.
- This instrument is "Domestic rated".

**6. RCD TEST - TIME DELAY :**

Turn instrument "ON" by pressing the "TEST-ON" button. The L.C.D. display will come to the following Screen :

**Battery Voltage  
12Vdc**

The instrument will detect and show the battery voltage when power ON.

 **Vac L-E=000V**

The tester wait for voltage to be measured and phase selection can be changed.

 **Vac L-E=000V**

Phase selection has been changed so that testing will start on a negative going edge.

 **Vac L-E=234V**

The leads have been connected and the voltage between L-E is 234Vac (version B shown in this example).

**234V T=2.999s  
Test in Progress**

"Test" button has been depressed. Test in progress since 2.999s. The voltage between L-E was 234V before testing started.

**234V T=2.999s  
180° Hold TRP < 2%**

"TRP < 2%" It means the voltmeter.

**Accuracy : ± 2% ±1V AC**

**TRP = Tripped, Display on Hold**  
at 2.999s Tripped on + edge of signal (180°).

**7. PREPARATION FOR MEASUREMENT :**

**Before testing always check the following :**

- ❖ The BAT OK led lights at power ON. If the BAT OK led does not light, replace batteries with the same Specification.
- ❖ Check the battery voltage on the LCD display.
- ❖ There is no visual damage to the Instrument or test leads.
- ❖ Test lead continuity with a continuity meter.

**8. BATTERY REPLACEMENT :**

1. The BAT OK led lights constantly while instrument power is on. If not, please replace batteries with the same specification.
2. Your digital RCCB / ELCB tester's batteries are situated under the tester. Disconnect the test leads from the Instrument, remove the battery cover and the batteries.
3. Replace with eight 1.5V R6 or L6 batteries, taking care to observe correct polarity.
4. Replace the battery cover.

**9. FUSE REPLACEMENT :**

1. The fuse is located in the battery compartment. To replace the fuse, proceed as per **Battery Replacement** Section to open the battery cover, then remove and replace the fuse located on the side of the batteries.
2. Make sure to place the fuse protection cover (small rubberized fuse cover).
3. Only replace with the same specification fuse (1A fast blow).

**10. 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 and CHECKED every year by a professional workshop

**11. CLEANING AND STORAGE :**

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

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

**WARNING**

**TO AVOID ELECTRONIC SHOCK OR DAMAGE TO THE METER, DO NOT GET WATER INSIDE THE CASE.**

MUMBAI

**TEST CERTIFICATE**  
**DIGITAL ELCB 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. \_\_\_\_\_

SERIAL NO. \_\_\_\_\_

DATE: \_\_\_\_\_

**ISO 9001**  
**REGISTERED****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.