# PE-455



## *INSULATION TESTER*

## ***SAFETY NOTES***

***Read the user's manual before using the equipment, mainly " SAFETY RULES " paragraph.***

***The symbol***  ***on the equipment means "SEE USER'S MANUAL". In this manual may also appear as a Caution or Warning symbol.***

***Warning and Caution statements may appear in this manual to avoid injury hazard or damage to this product or other property.***

# TABLE OF CONTENTS



English

# *INSULATION TESTER*
# ***PE-455***

## 1. GENERAL

### 1.1 Features

- Large LCD display.
- Three insulation test voltage: 250 V, 500 V, 1000 VDC.
- External voltage warning indication.
- Automatic circuit discharge.
- Test insulation at rated voltage into a 1 mA load.
- 200 mA continuity short circuit test current.
- AC voltage measurement.
- Fuse protection.
- Timer for test function (count 3 ~ 5 minutes).
- Data hold function.
- Auto power off function.

English

### 1.2 Specifications

**Insulation Resistance**

**Auto range** 20 MΩ / 200 MΩ / 2000 MΩ

| Range | Resolution | Accuracy |
|---|---|---|
| 20 MΩ | 10 kΩ | ± (1.5% rdg. + 5 dgt) |
| 200 MΩ | 100 kΩ | ± (2.5% rdg. + 3 dgt) |
| 2000 MΩ | 1 MΩ | ± (5% rdg. + 5 dgt) |

**Output current** 1 mA DC min. at 0.25 MΩ (250 V range)
1 mA DC min. at 0.5 MΩ (500 V range)
1 mA DC min. at 1 MΩ (1000 V range)

**Power consumption** Max. consumption current
Approximately 250 mA

**AC Voltage**

| | |
|---|---|
| **Range** | 0 – 600 V |
| **Resolution** | 1 V |
| **Accuracy** | ± 1.5% rdg. ± 3 dgt. |
| **Line frequency range** | 40 – 120 Hz |

**Resistance**

| Range | Min resolution | Accuracy |
|---|---|---|
| 20 MΩ | 0.1 | ± (1.5% rdg. + 3 dgt) |
| 200 MΩ | 0.1 | |
| 2000 MΩ | 1 | |

| | |
|---|---|
| **Open circuit terminal voltage** | 4 V DC min. |
| **Short circuit terminal current** | 210 mA DC min. |
| **Power consumption** | Max. consumption current<br>Approximately 160 mA |
| **Buzzer sounds** | Under 1 Ω |

**Auto power off** Timer about 5 ~ 10 minutes (current consumption: 10μA)

**Power supply** 9 V DC (6 x 1.5 V type R6)

**NOTE:** Equipment specifications are set in the following environmental operating conditions. Operation outside these specifications are also possible. Please check with us if you have specific requirements.

**Operating environmental conditions**

| | |
|---|---|
| **Altitude** | Up to 2000 m |
| **Temperature range** | From 0 to 40 °C |
| **Max. relative humidity** | 80% |
| **Storage temperature** | From 20 to -60 °C |

**Dimension** W. 90 x L. 205 x D. 55 (mm.)

**Weight** Approx. 600 g. (batteries included)

**Standard Accessories**

**PP010** Test leads with safety clamps
Fuse 0.5 A 250 V
User's Manual
Transport sutcase

**RECOMMENDATIONS ABOUT THE PACKING**

It is recommended to keep all the packing material in order to return the equipment, if necessary, to the Technical Service.

# 2. SAFETY RULES

## 2.1 General

* This equipment can be used in **Overvoltage Category III** installations and **Pollution Degree 2** environments.

* When using some of the following accessories **use only the specified ones** to ensure safety.

  Test leads

* Check **test leads** integrity before using them.

* Observe all **specified rating** both of supply and measurement.

* Remember that voltages higher than **60 V DC** or **30 V AC rms** are dangerous.

* Use this instrument under the **specified environmental conditions**.

* **The user is only authorised to** carry out the following maintenance operations:

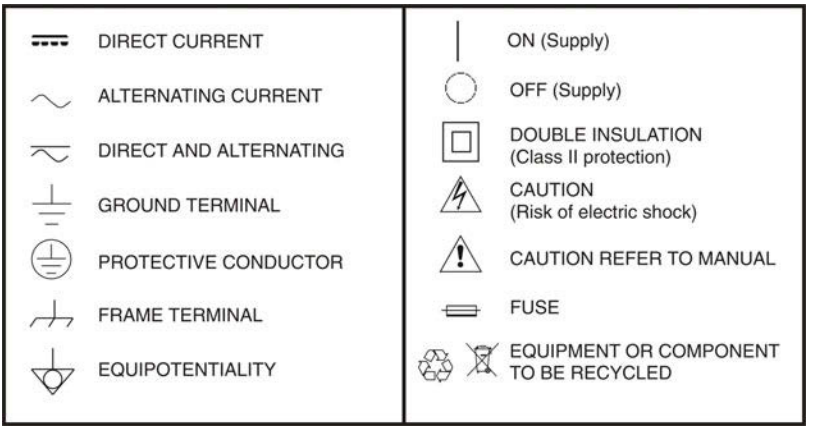
  Battery replacement.
  Fuse replacement.

  On the Maintenance paragraph the proper instructions are given.

  Any other change on the equipment should be carried out by qualified personnel.

* Follow the **cleaning instructions** described in the Maintenance paragraph.

* Symbols related with safety:




## 2.2 Descriptive Examples of Over-Voltage Categories

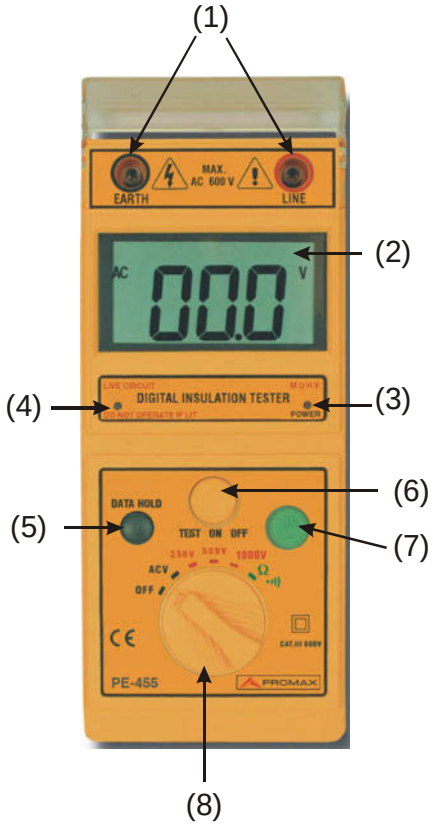
**Cat I** Low voltage installations isolated from the mains.

**Cat II** Portable domestic installations.

**Cat III** Fixed domestic installations.

**Cat IV** Industrial installations.

## 3. PRODUCT LAYOUT




1. **Terminals for connecting**
2. **LCD Display**
3. **Power indicator**
4. **External voltage indicator (LIVE CIRCUIT)**
5. **DATA HOLD button**
6. **TEST ON/OFF button**
7. **Rotary button for Zero adjustment**
8. **Function dial (FUNCTION)**

English

# 4. MEASURING METHODS

**OPERATION CAUTION**

Observe all safety precautions when the FUNCTION switch is set to 250 V, 500 V, 1000 V position. Connect the meter test leads to the circuit under test before operating the TEST button. Do not touch the paper clip ends of the test leads while is carrying out a measurement.

Some electrical equipment, especially cables, may retain an electrical change when disconnected from the line. It is good practice to discharge such equipment with grounding straps, or other suitable devices, before touching or making connections. The meter automatically discharge the test circuits when a test is completed.

**IMPORTANT**

Remove all power to the circuit under test when making resistance measurement. If any voltage is present in the test circuit, the indicator of external voltage (LIVE CIRCUIT) LED located on the meter front plate will light. Immediately disconnect the test leads and turn off power to test circuit.

- **Function Switch:**
  The FUNCTION switch is used to select the range, or function desired.
- **Test button:**
  The TEST button is normally OFF, press to start and to stop the test. When beginning the test, automatically will activate a timer from 3 to 5 minutes that will stop the measurement whenever the TEST button in not again pressed.
- Always check the following before testing:
  The message " Low Battery " does not appear on the LCD screen.
  There is no visual damage to the instrument or test leads.
- Test Lead Continuity
  Select the CONTINUITY function and Ω range. Short the test leads together.
  An over-range ("1") indication mean the leads are faulty or instrument fuse is blown. (See "Fuse Replacement" section).
- Insulation Resistance Testing

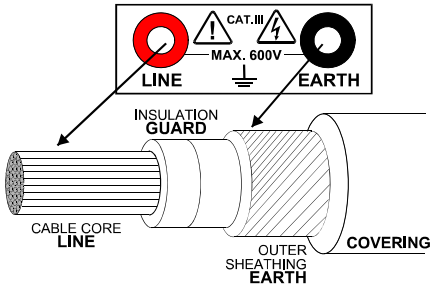
  **WARNING**: Insulation tests should be conducted on circuits that are de-energised. Ensure circuits are not live before commencing testing.

  – Select the required test voltage (250 V, 500 V or 1000 V) by rotating the FUNCTION switch.

  – Connect the test leads to the instrument and to the circuit to be tested. (See connect diagram). If the "LIVE CIRCUIT" is light, do not press the TEST button and disconnect the instrument from the circuit. The circuit is LIVE and should be de-energised before further testing.

English

– Press the TEST button. The value of insulation resistance in megohms will be displayed.




## Connect Diagram

**CAUTION**: Never turn the function dial while while a reading is being taken. This may damage the instrument. Never touch the circuit during insulation testing.

Only disconnect the test leads if you are sure that the test is completed. This is because the system may be charged up and it must be allowed to discharge through the tester's internal discharge resistor.

- Continuity discharge (Resistance tests)
  **WARNING**: Ensure circuit is not live before commencing testing.

  – Select the 200 Ω range by rotating the FUNCTION switch and connect the test leads to the instrument. Short the tips of the test leads. Press the button TEST to start the reading and the timer functions.
  The display will show the resistance of the test leads. Adjust the Ω Null control to set the reading to zero.

  – Connect the test leads to the circuit under test. Ensure the circuit is not live by checking that the live circuit indicator does not light. Read the value of resistance from the LCD.

- **AC voltage test:**
  Set the FUNCTION switch to ACV. Connect test leads to circuit being measured. Press TEST button and read the value of voltage from the LCD.

# 5. MAINTENANCE

## 5.1 Battery replacement

**ATTENTION**: Disconnect all the test leads before opening the cover to change the batteries.

1. Remove the battery cover and the batteries.
2. Replace with six 1.5 V R6 or LR6 batteries, taking care to observe correct polarity.
3. Replace the battery cover.

## 5.2 Fuse replacement

**ATTENTION**: Disconnect all the test leads before opening the cover to change the fuse.

The fuse is located in the enclosure. To replace the fuse, take the 4 screws out from the bottom case, then remove and replace the fuse. Make sure to place the fuse protection cover. (Small rubberised fuse cover). Only replace with the same specification fuse.

***FUSE TYPE SHOULD BE: 5 x 20 mm., et***

***0.5 A F 250 V***

***AVOIDING THESE DIRECTIONS COULD DAMAGE THE EQUIPMENT***

## 5.3 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.


**PROMAX ELECTRONICA, S. L.**