ISOTest

MA 2060

Instruction manual

Code No. 20 750 358

METREL®

Distributor:

Manufacturer:

METREL d.d.
Ljubljanska cesta 77
1354 Horjul
Slovenia

web site: http://www.metrel.si
e-mail: metrel@metrel.si

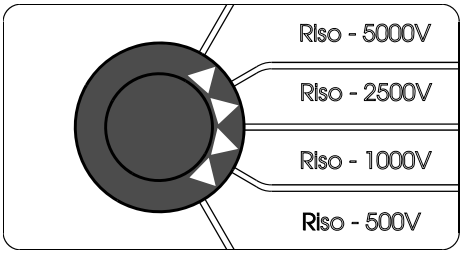
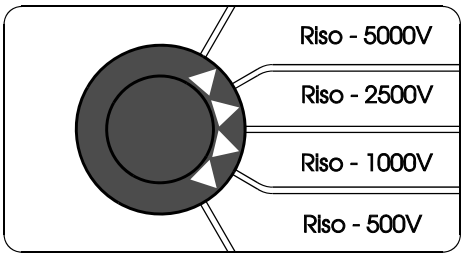
CE Mark on your equipment certifies that this equipment meets the requirements of the EU (European Union) concerning safety and interference causing equipment regulations

1. Introduction

The MA 2060 Meter is a professional instrument intended for the measurement of insulation resistance from 500 kΩ to 500 GΩ using dc test voltages of 500 V, 1000 V, 2500 V and 5000 V and also for the measurement of dc and 50 Hz ac voltages up to 600 V.

The instrument is incorporated into a robust portable plastic casing which ensures its insensibility to mechanical strains as well as its safe operation. It is battery powered (4 x 1.5 V dc IEC R20) for autonomous operation. Its logarithmic scale provides an easy and accurate reading of the measurement results.

2. List of measurements the instrument can do

Rotary switch and START key position		Function
		**Insulation resistance measurement** **500 V, 1000 V, 2500 V, 5000 Vdc**
		AC / DC voltage measurement

3. Technical specifications

Insulation resistance

Measuring range:	500 kΩ ÷ 500 GΩ
Measuring voltage:	500 V, 1000 V, 2500 V, 5000 Vdc
Short circuit measuring current:	approx. 1,3 mA
Scale:	logarithmic, l=90 mm
Accuracy:	± 2 mm
START HOLD system:	included
Discharging of line:	automatic, when START key is not pressed

Voltage

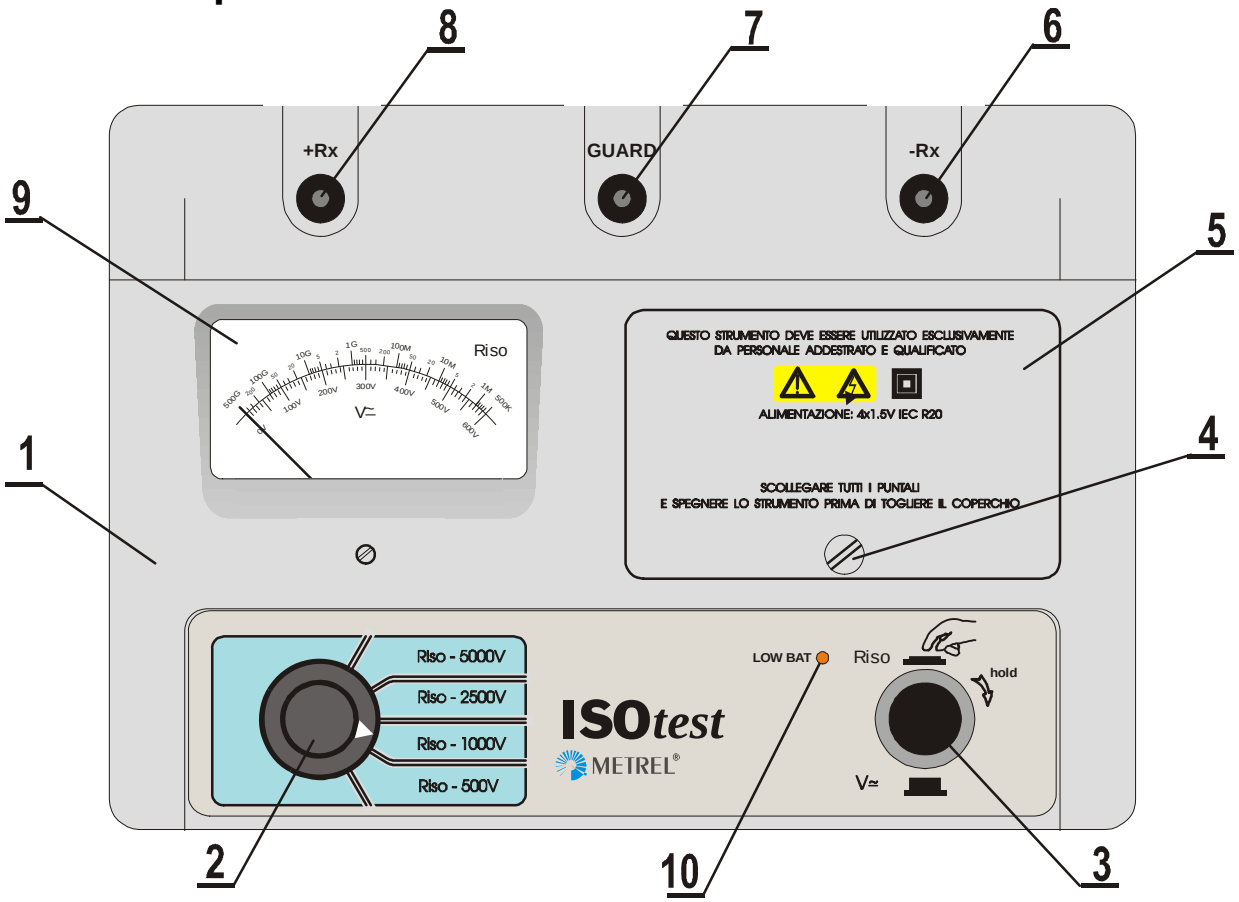
Measuring range:	0 - 600 Vac/dc
Input resistance DC voltage:	3 MΩ
Input resistance AC voltage:	1,35 MΩ
Scale:	linear, l=90 mm
Accuracy:	± 2 % of full scale

General

Power supply:	batteries 4 x 1,5 Vdc IEC R20
LOW BAT indicator:	red LED
Dimensions (WxHxL):	345 x 130 x 250 mm
Case:	robust, plastic
Working temp. range:	0 - 40 °C
Nominal temp. range:	10 - 30 °C
Mass:	4,5 kg

4. Instrument description

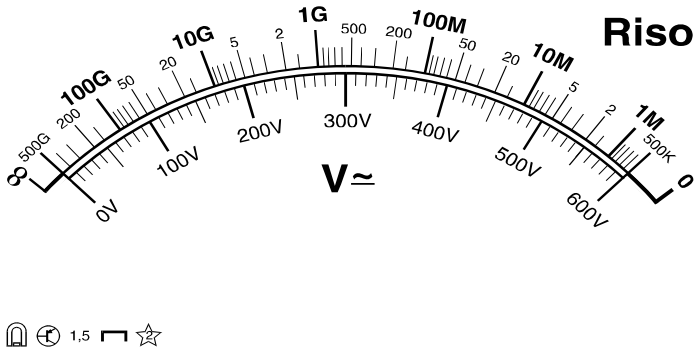
4.1. Front panel



Legend:

1	Front panel, plastic
2	Test voltage selector switch
3	START key
4	Battery cover fastening
5	Battery cover
6	- Rx terminal
7	GUARD terminal
8	+ Rx terminal
9	Pointer instrument
10	LOW BAT indication

4.2. Scale of the Instrument



1,5

Legend:

1. Insulation resistance scale
2. dc. or ac. voltage scale

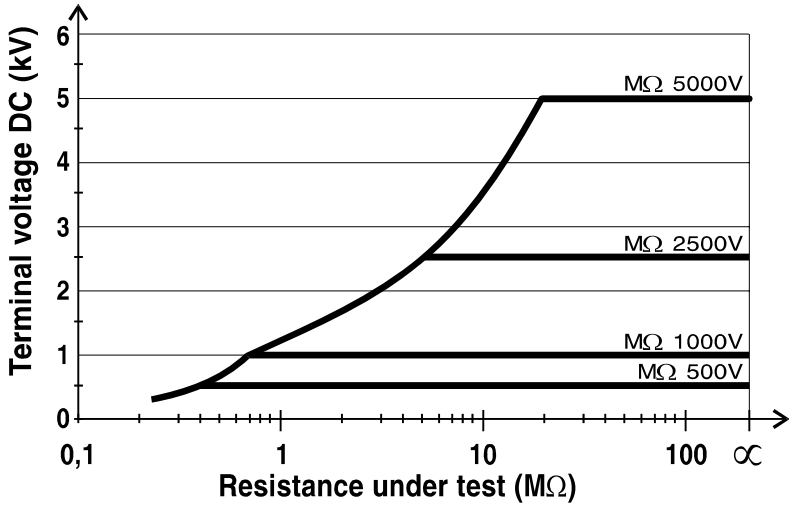
5. Instruction for use

5.1 Measurement of Insulation Resistance

Warnings:

1. Don't connect the test piece to a power source.
2. Before connecting the instrument to the test piece, make sure the instrument is not switched-on in order to prevent contact with live terminals; the voltage can be as high as 5 kV.
3. Should a capacitive test piece be disconnected during the measurement, it remains charged and has to be discharged before touching it.
4. When performing a long-duration test (START key is blocked), check every 5 minutes the test piece for insulation breakdown. If you detect a breakdown, switch off the instrument to avoid any useless discharge of batteries.
5. The lasting maximum voltage at the test terminals (V-meter) is 1000 V dc or 1000 V ac peak value. As a general rule, disconnect the instrument immediately from the test piece as soon as the voltage exceeds 600 V.
6. During the measurement of the insulation resistance check the condition of batteries (the red LED should not light).

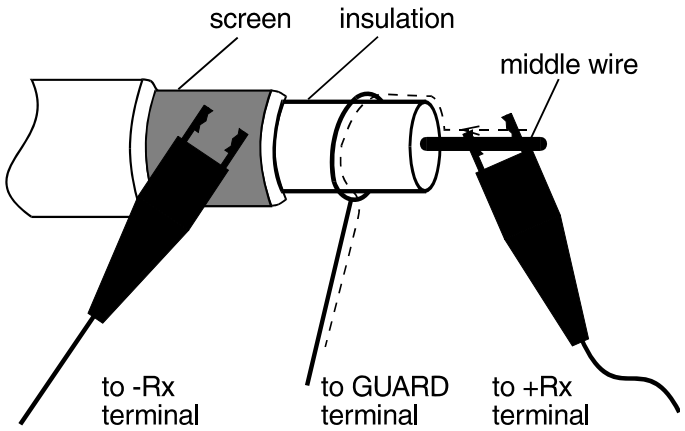
Test voltage:



Typical diagram of test voltages

The usage of GUARD terminal:

For the most part the measurements of insulation resistance are carried out without using the GUARD terminal. If e.g. a coaxial cable is being tested, the test result can be the consequence of both insulator's conductivity and of insulator's surface conductivity. If you want to eliminate the influence of the surface conductivity (which appears either due to humidity in the atmosphere or because of dirt) the terminal GUARD should be used as shown in figure below:



5.2. Measurement of DC or AC Voltage

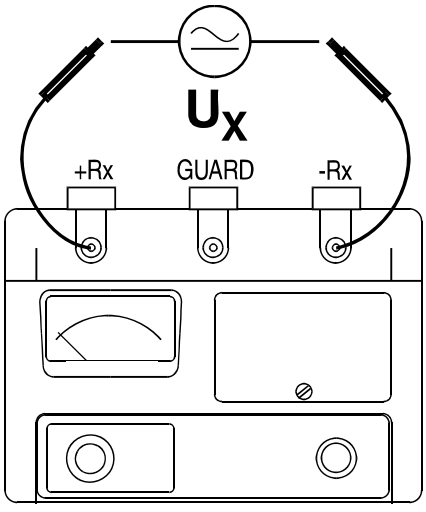
Warnings:

1. For voltage measurements you don't need to insert the batteries or to test the batteries condition.

2. The lasting maximum voltage at the test terminals (V-meter) is 1000 V dc or 1000 V ac peak value. As a general rule, disconnect the instrument immediately from the test piece as soon as the voltage exceeds 600 V.

3. Before connecting the instrument to the test piece, make sure the instrument is not switched-on in order to avoid contact with live terminals; the voltage there can be as high as 5 kV.

Connect the test wires to the test voltage as shown in figure below:



The instruments indicates the value of dc voltage or rms ac voltage (50Hz) without depressing START key.

5.3. Replacement of Batteries

If the red LED starts lighting during the insulation resistance measurement, this indicates that the batteries are used up and should be replaced. The accuracy of the test results when the red LED is lit cannot be guaranteed.

ATTENTION

- Turn power off and disconect any measurement accessory connected to the instrument before opening battery cover.
- If you intend not to use the instrument for a longer time period, it is advisable to remove the batteries from it to avoid a possible leakage flow of acid.
- Use the batteries of IEC R20 type (4 x 1.5 V dc).
- Always replace all four batteries at one time.

5.4. Cleaning

Use soft patch moisten by water or alcohol, and leave the instrument to dry totally after the cleaning.
Do not use based petrol!
Do not spill cleaning liquid over the instrument!

6. Standard set

- Instrument MA 2060
- Measuring lead, black, safety banana / safety banana, 2 m
- Measuring lead, red, safety banana / safety banana, 2 m
- Measuring lead, black, banana / crocodile, 2 m
- Safety crocodile, 2 pieces
- Instruction manual.