

Digital Microhmmeter

MGR10

The most versatile Ohmmeter available



Standard model

MGR10

- ▶ resistance range from $0.1 \mu\Omega$ to $30 \text{ k}\Omega$
- ▶ accuracy $< 0.03 \%$
- ▶ current range from $10 \mu\text{A}$ up to 10 A
- ▶ temperature compensation

Additional models



MGR10A Battery version

- ▶ built-in rechargeable batteries
- ▶ same specifications as the MGR10

Additional models

MGR10B Contact Resistance

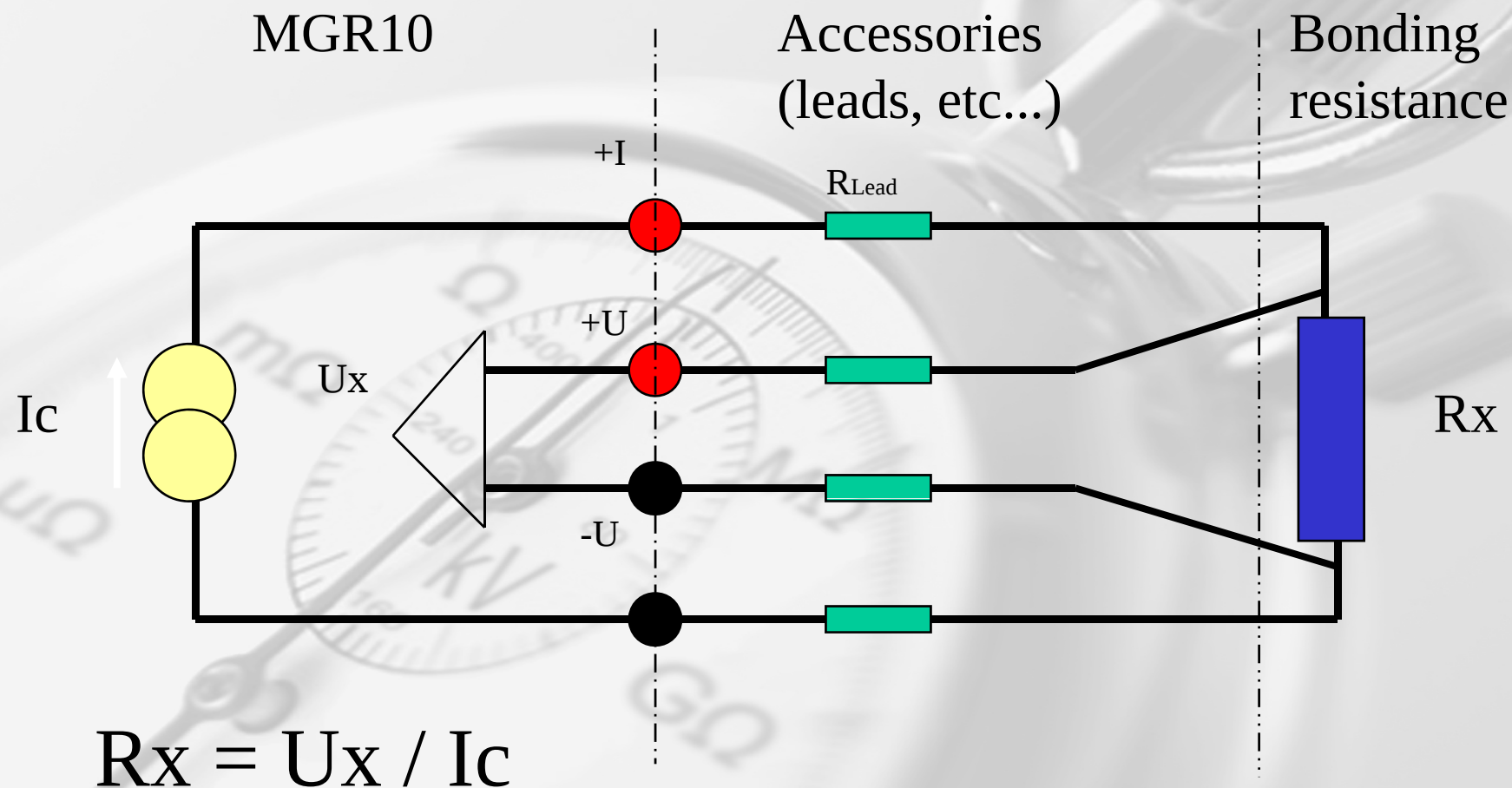
- ▶ measuring voltage limited to either 20mV or 50mV, and limited currents
- ▶ conform with standard NFC93050 (measurement of switch contact resistance)
- ▶ resistance range from 10 $\mu\Omega$ to 30 k Ω
- ▶ accuracy < 0.03 %
- ▶ current range from 10 μA up to 100 mA
- ▶ temperature compensation

Additional models

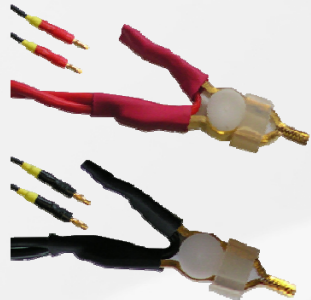
MGR10C Pyrotechnic version

- ▶ total energy, measuring current and voltage are limited
- ▶ the open circuit voltage between any of the 4 measuring terminals will not exceed 2 Volts
- ▶ resistance range from 1 m Ω to 30 k Ω
- ▶ accuracy < 0.03 %
- ▶ current range from 10 μ A up to 10 mA
- ▶ temperature compensation

Kelvin Method



Accessories



KELVIN CLIPS CO64

Product details :

- ▶ Length : 1.80 and 5 meters
- ▶ Ending : small sized Kevin clip
- ▶ Type : 2 wires lead (to order with an other 2 wire leads accessory)
- ▶ Most common application : especially made to crimp on small connection points



KELVIN CLIPS CO197

Product details :

- ▶ Length : 5 meters
- ▶ Ending : big crocodile clip with max opening dimension 30 mm (and inside opening dimension for max 50 mm² cables)
- ▶ Type : 2 wires lead (to order with an other 2 wire leads accessory)
- ▶ Most common application : especially made to crimp on big cable sections



KELVIN CLIPS CO226

Product details :

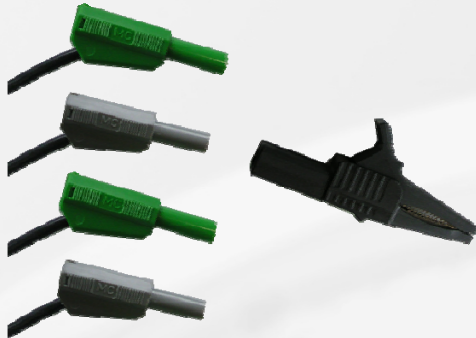
- ▶ Length : 5 meters
- ▶ Ending : big crocodile clip with max opening dimension 41 mm
- ▶ Type : 2 wires lead (to order with an other 2 wire leads accessory)
- ▶ Most common application : especially made to crimp on big cable sections

Accessories

KELVIN CLIPS CO183

Product details :

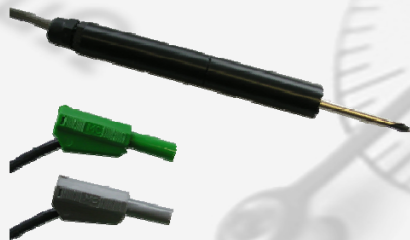
- ▶ Length : 1.80, 5 or 10 meters
- ▶ Ending : cable ending with small crocodile clip (the green banana goes into the grey banana, and this goes to the crocodile clip)
- ▶ Type : 2 wires lead (to order with an other 2 wire leads accessory)
- ▶ Most common application : especially made for the return lead (this can be connected to a test box : in the case you test equipment with a mains socket) ; on the other side, a test probe can be connected (for multi point continuity for instance)



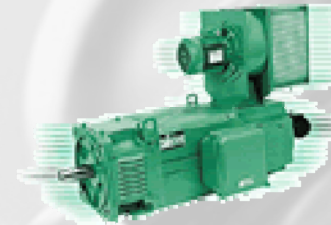
KELVIN TIPS CO184

Product details :

- ▶ Length : 1.80 meters
- ▶ Ending : cable ending with retractable tip probe
- ▶ Type : 2 wires lead (to be order with an other 2 wire leads accessory)
- ▶ Most common application : especially made for a manual use to test the ground point (for multi point ground continuity, TE81 is better adapted), the retractable tip probe will make a contact with the 2 pins when pushed by the operator hand



Motor testing



D.C. motors

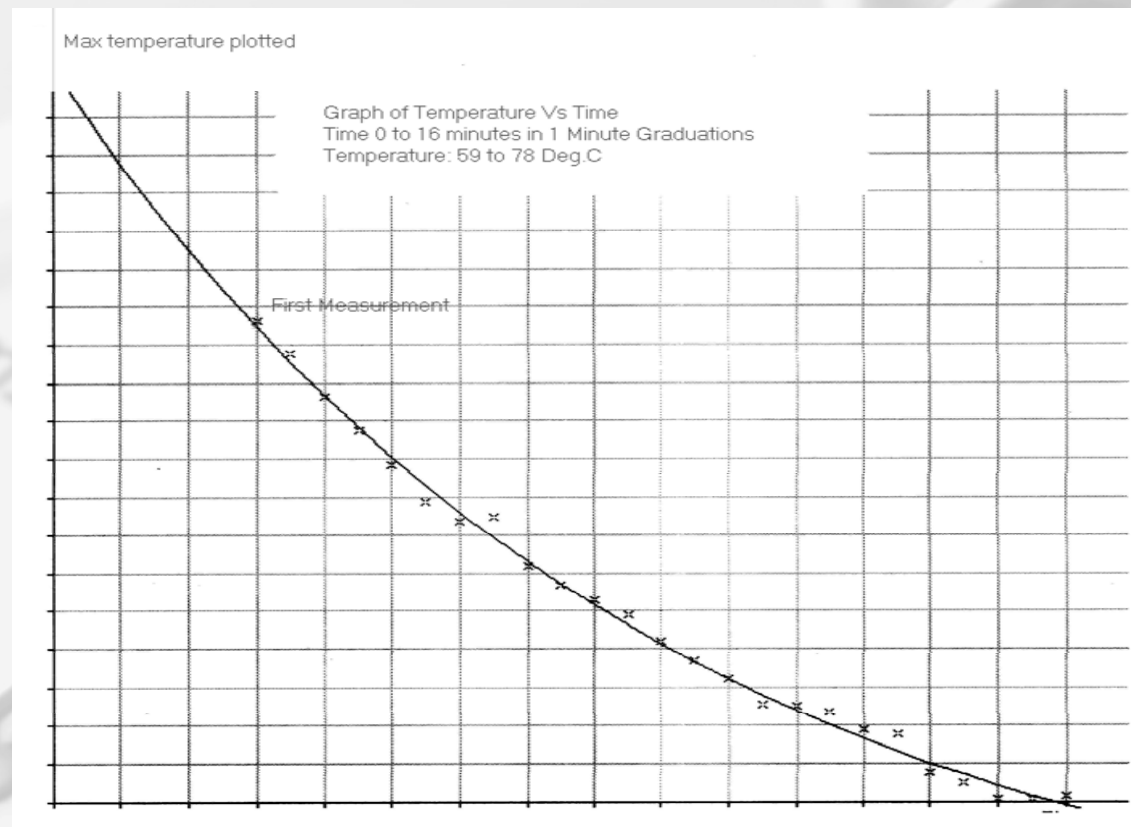
The measurement of electric motor and generator windings, is primarily used to determine the temperature rise of a machine operating under full load. The winding is first measured with the machine at ambient temperature and the resistance value and ambient temperature noted.

The machine is then run at full load for a specified period, then unit is then switched off and brought to rest and the winding resistance and ambient temperature noted again. It is important to take the first resistance reading as quickly as possible this is followed by readings at set time intervals the values being recorded. The measure hold key of the MGR10 is very useful here readings can be held on the display and read before triggering the next reading.

From the series of readings taken it will be possible to draw a cooling curve and extrapolate back to the maximum temperature of the motor under full load.

Applications

Motor testing



Sample temperature rise chart

Cable testing



Electric cable testing is another very important application for the MGR10, when, for example, drawing copper cables the manufacturer must ensure that the resistance per meter of the cable conforms to the published specification and any international standards that may apply. It is very important that the maximum resistance per meter is achieved, the higher the resistance the hotter the cable will become with a set current flowing through it. From the manufacturers point of view the lower the resistance value per meter the larger the diameter of the cable and hence the greater amount of copper that is used. Copper is expensive and is the main contributor to the cables cost the minimum copper used the higher the manufacturers profit.

Accurate and reliable resistance measurements enable the cable manufacturer to achieve the minimum cable diameter whilst remaining within the declared specification. This is a very powerful argument for good resistance measurements in the cable industry. The accepted method of measuring meter lengths is to use a 1 metre cable clamp.

For these applications the temperature compensation facility enables all values to be referenced to 20 Deg. C

Applications

Cable testing

1 Meter Cable Clamp



Component testing



Component testing is another important application for the MGR10 this may be to test as a sample by the quality control department

Typical components include:-

- SWITCHES..... Contact resistance between switch stud and wiper
- RELAYS..... Resistance between relay contacts
- CONNECTORS... Resistance between male and female pins
- RESISTORS..... The actual resistance value to ensure within specified tolerance

Component testing

- FUSES..... Resistance of fuse elements
- DETONATORS... Resistance of air bag and seat belt detonators
- COILS..... Resistance of coils used in electricity meters
- AIRCRAFT..... Measurement of bonding resistance between airframe components
- RAILWAYS..... Measurement of Power Distribution cable joints, Rail track weld resistance, signaling elements.
- WELDING..... Resistance of welding cables, as the cables are used they become higher resistance due to wear and the annealing effect of the current warming them up. As they become higher in resistance the less current flows and the poorer the quality of the welded joint.