

## Product Datasheet - Technical Specifications



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# SEFELEC MGR10

## Programmable Microhmmeter

Thanks to its very good accuracy and its rugged construction, this microhmmeter can be used in laboratories as well as in industry. Its main applications are measurements on : transformers, chokes, electrical motors, cables, switches, circuit breakers, relays, fuses surface, contact ground or earth and connection resistances.

“ Manual or automatic temperature compensation can be done according to copper or aluminium, but also any other kind of metal”

### TECHNICAL CHARACTERISTICS

- Measuring from 0.1  $\mu\Omega$  to 30 k $\Omega$
- Measuring current up to 10 Amp
- Accuracy < 0.03 %
- Manual / Automatic range
- Memory of 4000 readings
- Battery (MGR10A) and mains supply (MGR10) versions
- RS232C, PLC or IEEE488-2 interfaces

### LOW RESISTANCE MEASUREMENT

#### Resistance

- 8 Measurement ranges :  
3 m $\Omega$ , 30 m $\Omega$ , 200 m $\Omega$ , 3  $\Omega$ , 30  $\Omega$ ,  
300  $\Omega$ , 3 k $\Omega$ , 30 k $\Omega$
- Resistance measurement :  
From 0.1  $\mu\Omega$  to 30 k $\Omega$
- Accuracy:  $\pm 0.03$  % reading +  
0.1 % full scale
- Auto or manual range selection  
with current adjustable by range

#### Current and voltage

- Measurement current : From 1  $\mu\text{A}$  to  
10 A according to range and manually  
adjustable in %
- Accuracy :  $\pm 0.1$  % (pulsed in battery  
mode, pulsed or DC with mains  
charger)
- Current direction : Manual or  
continued with the selection of the  
current +VE, -VE, or +VE and -VE with  
the average calculated

This latter option removes thermal EMF errors from the measurements

- Voltage in open circuit : 20 mV and  
50 mV with protection against the  
inductive charges and the over voltage  
(415 V)

#### Compensation

- Temperature measurement : From 0 to  
100° C  
Displayed in deg C, F, K  
Compensation according to the resistance  
materials (copper, aluminium...)
- Length of cable : Values can be displayed  
in  $\Omega$ ,  $\Omega/\text{Km}$  or Km

#### Signals

- Measurement threshold adjustable with  
low and high limits
- Visual (red/green leds) and audible  
signals for results

#### Data logging

- 4000 measurement memories with  
measurement results date and time

#### Connection

- 4 banana plugs 4 mm on the front panel
- RS232 interface between PC and MGR10  
connection

#### Display

- 240x64 LCD matrix display with backlight
- LCD numerical screen with 30.000 digits  
resolution

#### Battery (MGR10A only)

- Operating time : 11 hours or 6000  
measurements at 10 A

### GENERAL CHARACTERISTICS

#### MGR10 presentation

- Bench style metal case

#### Dimensions

- Height : 131 mm
- Width : 344 mm
- Depth : 332 mm

#### Weight

- 9.8 kg mains type
- 12 kg battery type (MGR10A)

#### Power

- 115/230 V, 50/60 Hz

#### Operating temperature

- 0° C to + 45° C  
Rel. humidity up to 80 % none condensing

#### Storage temperature

- -10° C to + 60° C

#### Pollution Degree

- Pollution 2 : conducting pollution caused  
by condensation

#### Overload category

- CAT II

#### Safety Class

- Connected to the ground by power cord

#### International standards

- MGR10-B Complies with NFC 93050



# SEFELEC MGR10

## Programmable Microhmmeter

### MGR10 & MGR10A

Resistance		Current (Precision: $\pm 0.1\%$ )			Measurement accuracy
Range	Resolution	Max Current	Min Current	Resolution	
30 k $\Omega$	1 $\Omega$	100 $\mu\text{A}$	10 $\mu\text{A}$	1 $\mu\text{A}$	0.03% Rdg + 0.02% FS
3 k $\Omega$	100 m $\Omega$	1 mA	100 $\mu\text{A}$	10 $\mu\text{A}$	0.03% Rdg + 0.01% FS
300 $\Omega$	10 m $\Omega$	10 mA	1mA	100 $\mu\text{A}$	0.03% Rdg + 0.01% FS
30 $\Omega$	1 m $\Omega$	100 mA	10mA	1 mA	0.03% Rdg + 0.01% FS
3 $\Omega$	100 $\mu\Omega$	1 A	100mA	10 mA	0.03% Rdg + 0.01% FS
200 m $\Omega$	10 $\mu\Omega$	10 A	1A	100 mA	0.03% Rdg + 0.01% FS
30 m $\Omega$	1 $\mu\Omega$	10 A	1A	100 mA	0.03% Rdg + 0.01% FS
3 m $\Omega$	0,1 $\mu\Omega$	10 A	1A	100 mA	0.03% Rdg + 0.02% FS

### MGR10B

Resistance		Current (Precision: $\pm 0.1\%$ )			Measurement accuracy
Range	Resolution	Max Current	Min Current	Resolution	
30 k $\Omega$	1 $\Omega$	100 $\mu\text{A}$	10 $\mu\text{A}$	1 $\mu\text{A}$	0.03% Rdg + 0.02% FS
3 k $\Omega$	100 m $\Omega$	1 mA	100 $\mu\text{A}$	10 $\mu\text{A}$	0.03% Rdg + 0.01% FS
300 $\Omega$	10 m $\Omega$	10 mA	1mA	100 $\mu\text{A}$	0.03% Rdg + 0.01% FS
30 $\Omega$	1 m $\Omega$	100 mA	10mA	1 mA	0.03% Rdg + 0.01% FS
3 $\Omega$	100 $\mu\Omega$	100 mA	10mA	1 mA	0.05% Rdg + 0.01% FS
200 m $\Omega$	10 $\mu\Omega$	100 mA	10mA	1 mA	0.05% Rdg + 0.01% FS

### MGR10C

Resistance		Current (Precision: $\pm 0.1\%$ )			Measurement accuracy
Range	Resolution	Max Current	Min Current	Resolution	
30 k $\Omega$	1 $\Omega$	10 $\mu\text{A}$	10 $\mu\text{A}$	NA	0.05% Rdg + 0.02% FS
3 k $\Omega$	100 m $\Omega$	100 $\mu\text{A}$	100 $\mu\text{A}$	NA	0.05% Rdg + 0.01% FS
300 $\Omega$	10 m $\Omega$	1mA	1mA	NA	0.05% Rdg + 0.01% FS
30 $\Omega$	1 m $\Omega$	10 mA	10 mA	NA	0.05% Rdg + 0.01% FS
3 $\Omega$	100 $\mu\Omega$	10 mA	10 mA	NA	0.05% Rdg + 0.01% FS

# SEFELEC MGR10

## Programmable Microhmmeter

### Versions

#### MGR10A

- Battery and mains supply version

#### MGR10B

- This version is especially dedicated for measuring contact resistance according to the NFC 93050 standard

#### MGR10C

- This version is especially dedicated for pyrotechnic environment

### OPTIONS

#### MGR10-04

- PT100 temperature probe

#### MGR10-05

- Rear panel output deconnectable - through a six points connector
- female connector is provided, output cables are provided and built by the user

#### MGR10-09

- Possibility to display the resistance in ohm / km

#### SYWINPASS-MX

- Winpass MX software, works with Ethernet, RS232 or GPIB interface
- only works under Windows™ XP PRO SP3 and Windows™ 7 32/64 bits

### Interface

#### MGR10-01

- RS232C interface (talker-listener); provided with RS232 cable

#### MGR10-02

- PLC Interface
- Cycle start contact
- GOOD and BAD contacts
- END CYCLE contact
- WORKING ERROR contact

#### MGR10-06

- IEEE488-2 (talker-listener)

### MK series

1 meter cable & wire measuring device (clamping device) - 2 CO183 can be used to connect MK to MGR10

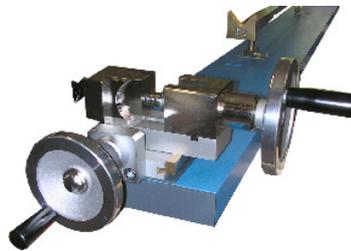
#### MK1

- 1 meter linear measurement guide to measure cable sections from 0,1 mm<sup>2</sup> up to 100 mm<sup>2</sup>



#### MK2

- 1 meter linear measurement guide to measure cable sections from 1 mm<sup>2</sup> up to 1000 mm<sup>2</sup>

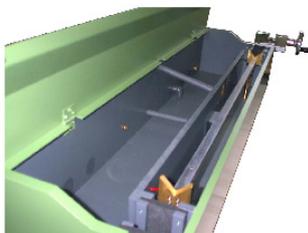


#### MK2 - SB

- 1 meter linear measurement guide to measure cable sections from 1 mm<sup>2</sup> up to 2500 mm<sup>2</sup>

#### MK4

- 1 meter linear measurement guide to measure cable with section from 1 mm<sup>2</sup> up to 1000 mm<sup>2</sup>, with water tank and water pump



### AVAILABLE ACCESSORIES

#### Kelvin Tips

##### TE81

- Length : 1.80, 5 and 10 meters
- Starting : 2 pins male plug
- Ending : cable ending with a probe with a remote control button and green/red leds
- Type : 2 wires lead (this has to be ordered with an other 2 wires lead accessory)
- Most common application : especially made for a manual use to test several points



#### CO184

- Length : 1.80 meters
- Starting : 2 pins male plug
- Ending : retractable tip probe
- Type : 2 wires lead (this has to be ordered with an other 2 wires lead 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



#### CO226

- Length : 1.80 meters
- Starting : 2 pins male plug
- Ending : big crocodile clip (max opening dimension 41mm)
- Type : 4 wires lead
- Most common application : especially made to crimp on big cable sections

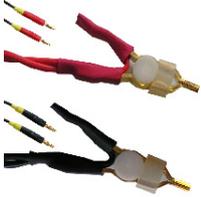


# SEFELEC MGR10

## Programmable Microhmmeter

### CO64

- Length : 1 and 5 meters
- Starting : 2 pins male plug
- Ending : small sized Kelvin clip
- Type : 4 wires lead
- Most common application : especially made to crimp on small connection points



### Kelvin Clips

#### CO183

- Length : 1.80, 5 or 10 meters
- Starting : 2 pins male plug
- 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 (this has to be ordered with an other 2 wires lead 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)...



### CO197

- Length : 10 meters
- Starting : 2 pins male plug
- Ending : big crocodile Kelvin clip (max opening dimension 30mm)
- Type : 2 wires lead (this has to be ordered with an other 2 wires lead accessory)
- Most common application especially made to crimp on big cable sections



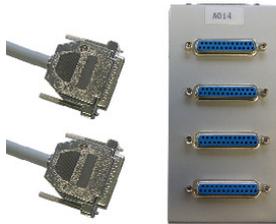
### TC001-00-L02

- Remote control foot switch : 2.5 meters, requires MGR10-02



### A014

- Interconnection 25 pin box to use simultaneously accessories



### CO160

- Red-Green lamp

### KT-002-00

- 19 inch rack mounting adaptation

### CALIBRATION

#### MG91-OHM

- calibration kit for the MGR10



### KW

- Low value standard resistors, from 1 mΩ to 10 kΩ

