industrial micro-ohmmeters
OM 22

The OM22 micro-ohmmeter is used for four-wire resistance measurement of very low values (with a resolution of 0.1 Ω) up to 20 kΩ, with an excellent accuracy

OM22 is pre-configured for each user, making its principal characteristic simplicity of operation. The user has only to select one of 6 programmes (using AOIP's factory pre-sets or those set up by the user according to his own specification) to find the desired configuration.

It can be powered from mains or from rechargeable batteries.

The instrument is calibrated electronically, with no internal adjustment needed.

- Preconfigured
- One-button operation
- High resolution 0.1 µΩ
- Highly accurate 0.03%, 26 000 counts
- 1000 measurement memory
- RS232 / IEEE-488 programmable

Applications

OM22 is particularly suited to routine repetitive measurements, specifically in production testing. Some of its applications are listed below:

• Cable resistance and resistivity measurements
- High resolution,
- Compensation for sample temperature and thermal emfs,
- Display in Ω/km.

• Metallisation and ground continuity measurements
- GAM-EG13 standards,
- Pulsed or alternate current (10 A),
- Automatic compensation for thermal emfs.

• Contact resistance measurements (connectors, switches, relays)
- Standard NFC 93050, DIN/IEC,
- Maximum measurement voltage limited to 20 or 50 mV,
- Automatic compensation for thermal emfs.

• Inductive resistance measurement (motors, transformers, etc.)
- Total protection against over-voltages
- Direct current,
- Compensation for thermal emfs and for sample temperature,
- Automatic calculation of winding heating.

• Measurement of heat-sensitive devices (thermistors, temperature-sensitive components)
- Single-shot, pulsed current, very low power delivered.

general specifications

Programmes

OM22 is delivered with 6 pre-set programmes directly accessible by 6 push-buttons. These programmes are established according to user needs and are loaded into the instrument from a PC via RS232.
Each programme defines the range, current (type and value), number of measurements per cycle and timing, storage (or not) of values, temperature compensation if needed, calculations of heat-up in degrees, or calculation of line resistance in Ω/km, alarm values, maximum measurement voltage, analogue output.

The OM22 can be delivered programmed by AOIP to the user's specification. These programmes can also be loaded or modified by the user with a PC, and this task is facilitated by the programming software developed by AOIP.

Display .....
26 000 counts, 16-segment illuminated LCD, 11.5 mm high, alphanumeric characters for messages, measurement indication includes value and unit of measurement.
Incorrect connections or measurements going beyond range are indicated by an error message.

Four-wire measurement

Measurement time .....
< 1 second in continuous mode,
< 2 seconds in pulsed mode,
< 3 seconds in alternating pulsed mode.

Protection .....
• Electronic protection against break-off currents when measuring an inductive resistance,
• Possibility of limiting the voltage across the resistor terminals to 20 or 50 mV.

Environment .....
Nominal operating range: 0 to 50°C, 20 to 75% relative humidity.
Operating range limits: -10 to 55°C, 10 to 80% relative humidity.

Power supply .....
● 110/220 VAC ± 10%, 50/60 Hz,
● optional battery with built-in charger.

Presentation.....
Bench unit with optional rack mounting kit.
Dimensions: 225 x 88 x 310 mm.
Weight: 2 to 3 kg depending on options.

functions

All the functions and characteristics to be measured are set up by programme. For each application, the most appropriate parameters of measurement can be defined and then programmed, so that they are available for subsequent instant recall.

Range	Resolution	Measurement current	Voltage drops	Accuracy (1)
2 mΩ	0.1 µΩ	10 A	20 mV	0.05% + 0.3 µΩ
20 mΩ	1 µΩ	10 A	200 mV	0.05% + 2 µΩ
20 mΩ	1 µΩ	1 A	20 mV	0.05% + 3 µΩ
200 mΩ	10 µΩ	10 A	2 V	0.05% + 10 µΩ
200 mΩ	10 µΩ	1 A	200 mV	0.05% + 20 µΩ
200 mΩ	10 µΩ	100 mA	20 mV	0.03% + 30 µΩ
2 Ω	100 µΩ	1 A	2 V	0.05% + 100 µΩ
2 Ω	100 µΩ	100 mA	200 mV	0.03% + 200 µΩ
2 Ω	100 µΩ	10 mA	20 mV	0.03% + 300 µΩ
20 Ω	1 mΩ	100 mA	2 V	0.03% + 1 mΩ
20 Ω	1 mΩ	10 mA	200 mV	0.03% + 2 mΩ
20 Ω	1 mΩ	1 mA	20 mV	0.03% + 3 mΩ
200 Ω	10 mΩ	10 mA	2 V	0.03% + 10 mΩ
200 Ω	10 mΩ	1 mA	200 mV	0.03% + 20 mΩ
200 Ω	10 mΩ	100 µA	20 mV	0.03% + 30 mΩ
2 kΩ	100 mΩ	1 mA	2 V	0.03% + 100 mΩ
	100 mΩ	100 µA	200 mV	0.03% + 200 mΩ
20 kΩ	1 Ω	100 µA	2 V	0.03% + 1 Ω

(1) The accuracy is given as ±(% of the reading + counts) over 90 days at 23 ± 1°C.

Temperature coefficient .....
< 10% of the accuracy per degree Celsius.

Range .....
The instrument measures very low value resistances using a four-wire terminal method.
It has eight measurement ranges. For the same current, the range can be changed manually or automatically.
The user has a choice of three current values for each measurement range (except for extreme ranges).

Measurement current .....
• Amplitude selection (from 100 µA to 10 A,
• Waveform selection
  - continuous,
  - alternate pulses,
  - positive pulses,
• With each type of current, measurements can be single-shot or repetitive (possibility to select the repetition rate),
• Current may also be supplied from an external source.

Manual or automatic range change .....
Manual or automatic measurement triggering, with measurement rate programmable from one measurement per second to one per hour.

Automatic compensation for thermal electromotive forces (emfs).

Automatic temperature compensation ...
Automatic temperature compensation of the element measured for temperatures between 0°C and 100°C. The instrument calculates the resistance value at 20°C.
Element temperature is:
• either programmed,
• or is measured by a platinum resistance probe (Pt100).
Metal type, or its temperature coefficient, is indicated on the OM22.

Relative measurements .....
The instrument can display:
● either L = M-R,
● or L = (M-R)/R (i.e. direct readout in %)
(L = reading display, M = value measured, R = stored reference value).

Memory .....
Up to 1 000 measurements can be stored, along with their mean, minimum or maximum, and can be read back on the read-

out or through digital or analog interfaces. Two programmable thresholds with output on two relays (1 A/220 VAC).

Floating analog output of 0 to 2.5 V (load ≥ 2.5 kΩ, 10 mV resolution).
The origin and extent of the measurements can be programmed to get a "zoom" effect.

The measurement values stored in the memory can be extracted and output in the form of analogue voltages.

Calculations.....
OM22 can calculate automatically the heat-up of a motor or transformer. Similarly it can calculate the resistance per km of single core or multi-core cables.

RS 232 C and IEEE 488-2 interfaces.....
The standard RS 232C and optional IEEE 488-2 interfaces make it possible, by computer, to:
- program the instrument completely,
- analyze the measurements (curve plot, printout, etc.)
- calibrate the instrument.

software

The PC software allows programming of the OM21 or 22 from a compatible PC. It is menu-driven, with the operator completely guided by a question and answer system.
A second function of the software is to manipulate the stored readings; transfer into the PC's memory or onto a disk in a file which can be used for spreadsheets; presentation of the readings in the form of tables or graphs.

Labview driver .....
This driver, delivered, on request, free of charge with IEEE version, allows to connect OM with Labview, to command the microhmmeters (OM 21 or 22 with IEEE) from a PC and to process the data.

accessories

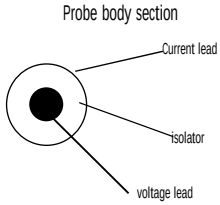
Kelvin lead set - AN 5806 .....
A pair of measurement leads, each with a KELVIN clip, 1.20 m of wire and two plugs. The KELVIN clip can be used for four-wire measurement because there is a perfect galvanic isolation between the current input and the voltage connector.
Gold-plated contacts.
Maximum opening: 1.2 cm.
Maximum current: 10 A.

Carrying case - AN 6901 .....
A soft carrying case designed for storage and transport of all bench type instruments.

Dimensions: 31 x 26 x 14 mm.

Large Kelvin clip - AMT 004.....
One measurement lead with a large Kelvin clip.
Length of wire: 3 m.
Equipped of two 4 mm security banana plugs.
Maximum opening of clip: 3 cm.
Maximum current: 10 A.

Kelvin test probe - AMT 003 .....
One measurement lead with a dual probe (concentric).
Length of rod: 85 mm.
Diameter of rod: 8 mm.
Length of wire: 3 m.
Equipped of two 4 mm security banana plugs.
Maximum current: 10 A.



Rack mounting kit AN 5884 .....
This kit allows rack mounting. It includes 2 brackets (AN5883) and a 19" rack panel (3U).

ordering instructions

RS 232 programmable micro-ohmmeter

Basic instrument 10 A	OM 22-1
Basic instrument 10 A + battery and charger	OM 22-2
Basic instrument 10 A + IEEE 488-2	OM 22-3
Basic instrument 10 A + IEEE 488-2 + battery	OM 22-4

Accessories.....

Kelvin lead set	AN 5806
Large Kelvin clip	AMT004
Kelvin micro probe	AMT003
Carrying case	AN 6901
Brackets for panel mounting	AN 5883
Accessory for rack mounting	AN 5884
RS 232 connector cable (9-25 pin, female) (1)	AN 5874
RS 232 connector cable(9-9 pin, female) (1)	AN 5875
RS 232 connector cable (9-25 pin male) (1)	AN 5876
PC 9/25 pin converter	AN 5894
IEEE 488 connector cable	AN 5836
Labview driver	OM2-LABV-DRIV
Clamping device	2381
For OM22-1 and 22-3: 3 V/10 A power supply	AMT002

(1) The RS232 connector for the OM 22 is a 9 pin female.

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