



## OM 17

Field 10 A micro-ohmmeter for  
inductive and non-inductive  
resistance

Succeeding OM 16, OM 17 offers upgraded performances, in particular for inductive resistance measurements: Granted with a greater autonomy, OM 17 allows longer test campaigns to be performed at 10 A with continuous current (up to 60 min) and offers faster current loading of coil resistances (stabilization time < 2 s). Easy to use, it carries out 4-wire measurements of inductive and non-inductive resistance with a continuous or pulse current up to 10 A. Offering a high precision of 0.05% and a 0.1  $\mu\Omega$  resolution, it has a different ranges selectable from 5 m $\Omega$  to 2.5 k $\Omega$ .

## Description

Designed for field use -in workshops or outdoors-, OM 17 micro-ohmmeter is a field instrument, whose performances are as high as a laboratory instruments'. Succeeding OM 16, OM 17 offers upgraded performances, in particular for inductive resistance measurements: Granted with a greater autonomy, OM 17 allows longer test campaigns to be performed at 10 A with continuous current (up to 60 min) and offers faster current loading of coil resistances (stabilization time < 2 s). Easy to use, it carries out 4-wire measurements of inductive and non-inductive resistance with a continuous or pulse DC current up to 10 A. Offering a high precision of 0.05% and a 0.1  $\mu\Omega$  resolution, it has a different ranges selectable from 5 m $\Omega$  to 2.5 k $\Omega$ .

### Key features:

- 4-wire measurement of inductive and non-inductive resistance
- Continuous or pulse DC current, from 1 mA to 10 A
- Precision: 0.05% Reading
- Automatic EMF compensation
- Ambient temperature compensation (measured or programmed)
- Compensation of metal temperature coefficient
- Choice of reference temperature
- 2 programmable thresholds with visual and sound alarm
- Memory: 1,000 measurements identified
- Ideal for long tests at 10 A continuous over transformers

Easy to use, rugged and protected against rough environment (IP 53 when opened / IP 64 when closed, lockable measurement plugs), OM 17 is widely recommended for indoor and outdoor use in many industries:

- Aerospace
- Energy field
- Domestic electrical appliances
- Cable manufacturing
- Telecommunication
- Electronics
- Automotive industry
- Railway

## Various fields of applications

- Metallization and earth bonding control
- Welding quality control
- Contact resistance measurement (low voltage connectors, relays...)
- Test of electronic components
- Coil, transformer and motor resistance measurement, loss and heat rise calculation
- Non-twisted and twisted cable resistivity measurement and length calculation
- Railway and electric network maintenance

## Two current waveforms

### Continuous DC current

- Inductive resistance and coils
- Automatic trigger of measurements when using a trigger test probe
- EMF compensation before measurements

### Courant pulsé

- Non-inductive resistance
- Automatic trigger of measurements as continuity is established – 1 operator needed
- Automatic current shutdown at the end of a measurement
- EMF compensation before every measurement

## Configuration and display

All parameters are user-programmable, either directly through the instrument interface or via software (LOG OM, available in option) : Measuring current, range, resistance type, unit, reference temperature, alarm threshold value & status and calculation... OM 17 large display informs the operator in real time about the measurement itself and the measuring conditions. Any detection of range overshoot, open circuit or low battery is indicated by LEDs and message displayed on the screen. Before every measurement, EMFs are measured and automatically removed for a greater accuracy of measurements. For non-inductive resistances, a single operator is enough to perform the measurement since it will be automatically triggered once continuity is established between the two points. The user can also set the metal nature or its temperature coefficient, the reference temperature and the ambient temperature. The ambient temperature might be also measured by an external temperature probe. Battery-powered, OM 17 has a high storage capacity of 1,000 measurements to be read directly on the display or via Log OM software. Protection up to 250 V is ensured at every measurement terminal, while any overrange, open circuit or empty battery signal detected is notified by LEDs and messages displayed.

# Specifications

## Performances and technical specifications @23°C ±5°C

Uncertainty is given in % of reading + fixed value.

### Resistance measurement

| Measurement range | Resolution | Accuracy / 1 year (23°C ±5°C) | Measuring current | Voltage drop |
|-------------------|------------|-------------------------------|-------------------|--------------|
| 5 mΩ              | 0.1 μΩ     | 0.05 % + 1 μΩ                 | 10 A              | 50 mV        |
| 25 mΩ             | 1 μΩ       | 0.05 % + 3 μΩ                 | 10 A              | 250 mV       |
| 250 mΩ            | 10 μΩ      | 0.05 % + 30 μΩ                | 10 A              | 2.5 V        |
| 2500 mΩ           | 0.1 mΩ     | 0.05 % + 0.3 mΩ               | 1 A               | 2.5 V        |
| 25 Ω              | 1 mΩ       | 0.05 % + 3 mΩ                 | 100 mA            | 2.5 V        |
| 250 Ω             | 10 mΩ      | 0.05 % + 30 mΩ                | 10 mA             | 2.5 V        |
| 2500 Ω            | 100 mΩ     | 0.05 % + 300 mΩ               | 1 mA              | 2.5 V        |

Automatic or manual selection of measurement range Possible excess over the nominal range:

- 5 mΩ range: + 20 %
- 25 mΩ range: + 20 %

Maximum voltage between the terminals in an open circuit: 7 V Current waveform: Continuous or pulse DC current

### Ambient temperature measurement for Tref compensation

| Type  | Resolution | Precision / 1 year (23°C ±5°C) | Comment   |
|-------|------------|--------------------------------|---|
| Pt100 | 0.1°C      | 0.5°C                          | Measured with external Pt100 or value entered by keyboard |

### Typical measurement campaigns of inductive resistances (on rotors / stators 1-3 m<sup>3</sup>)

| Tested coil | Typical measured value (mΩ) | 1st measure delay (s) | Total campaign duration (minutes) | Nb measures executed | Configuration |
|-------------|-----------------------------|-----------------------|-----------------------------------|----------------------|---------------|
|             |                             |                       |                                   |                      |               |

| Type<br>sistance                  | Ré        | OM 17      | OM 16  | OM 17 | OM 16 | OM 17 | OM 16  | OM 17        | OM 16   | Rang<br>e   | Curre<br>nt |
|-----------------------------------|-----------|------------|--|-------|-------|-------|--|--------------|---|-------------|-------------|
| 1 rotor<br>phase<br>(~ 0,5<br>H)  | 1 mΩ      | 1.237<br>1 | 1.2371 <sup>(1)</sup><br>1.2382 <sup>(2)</sup> | < 1   | ~ 2   | > 20  | ~ 40<br>s <sup>(1)</sup> ~<br>20<br>s <sup>(2)</sup> | >10,0<br>00  | ~ 320 <sup>(1)</sup><br>~<br>150 <sup>(2)</sup> | 5 mΩ        | 10 A        |
| 1 stator<br>phase<br>(~ 0,5<br>H) | 3 mΩ      | 3.000<br>8 | 3.0008   | < 1   | ~ 2   | > 30  | < 1  | > 15,00<br>0 | < 500   | 5 mΩ        | 10 A        |
| Transf<br>o (~ 1<br>H)            | 150<br>mΩ | 150.1<br>3 | 150.13   | < 2   | ~ 3   | > 45  | < 2  | > 22,50<br>0 | < 1,000   | 250<br>mΩ   | 10 A        |
| 3 motor<br>phase<br>s             | 980<br>mΩ | 980.3      | 980.3  | < 1   | ~ 2   | > 10  | > 10   | > 5,000      | > 5,000   | 2,500<br>mΩ | 1 A         |

(1) Measurement at cold condition, at instrument start (2) Measurement at hot condition, after a 1st test campaign

## Further features

|  |  |
|--|--|
| Resistance types                               | <ul style="list-style-type: none"> <li>Inductive resistances: Coils, transformers, motor windings, twisted cables...</li> <li>Non-inductive resistances: Earth bonding, coating, contact résistances, non-twisted cables...</li> </ul>   |
| Measurement trigger conditions                 | Manual or automatic trigger allowing a single operator to be able to perform measurements  |
| EMFs   | Automatic compensation of EMF parasites before each measurement for a greater accuracy   |
| Temperature compensation                       | - Ambient temperature Tamb, measured with external Pt100 (or entered by the user -<br>Programmed reference temperature Tref, to which the measured value is converted: $R(T_{ref}) = [R(T_{amb}) * (1 + \alpha * T_{ref})] / [1 + \alpha * T_{amb}]$ - Metal material, whose temperature coefficient can be entered by the user ( $\alpha$ ) |
| Temperature coefficient beyond operating range | <10% accuracy/°C (from 0 to 18°C and from 28 to 50°C)  |
| Alarms   | 2 programmable thresholds with visuel and sound signal   |

## General specifications

|                     |   |
|---------------------|---|
| Size L x W x H      | 270 x 250 x 180 mm  |
| Weight              | 4 kg  |
| Power supply        | 100 to 240 V (50 / 60 Hz)   |
| Battery             | Type: Ni/Mh 8.5 Ah (Taille D) Charging time: 5 h<br>Battery life: > 5000 values (pulse current), > 60 min (10 A continuous current, 250 mΩ range) |
| Communication ports | RS 232  |
| Storage capacity    | 1,000 measurements identified by numbers<br>Memory reading directly on the display, via software or printer                                       |

## Environmental specifications

|                            |  |
|----------------------------|--|
| Reference range            | 23°C ± 5°C (RH: 45 to 75 % w/o condensing)           |
| Operating reference range  | 0 to 50°C (RH: 20 to 75 % w/o condensing)            |
| Limit operating range      | -10°C to +55°C (RH: 10 to 80 % w/o condensing)       |
| Storage temperature limits | -40°C to +60°C (-15°C to +50°C with battery charged) |
| IP protection              | IP53 opened / IP64 closed, according to EN 60529     |

## Safety specifications

### Protections

- Electronic protection up to 250 V for 'voltage' wires
- Fuse protection for 'current' wires
- Protection against 'current' circuit breaking during inductive resistance measurements

Rated voltage

60 V

Electric safety

EN 61010-1

EMC conformity

# Models and accessories

## Instrument:

OM17                      On-site micro-ohmmeter

*Supplied in standard with:*

- Standard mains supply cable to recharge the battery
- Quick start manual

## Clips and probes:

*Please note that 2 clips are needed per instrument.*

|        |   |  |
|--------|---|--|
| AMT005 | Long handspike, per unit                | Needle diameter: 3 mm, length without handle: 83 mm, total length: 215 mm, cable length: 5 m |
| AMT006 | Large kelvin clip, per unit             | Opening diameter: 25 mm, cable length: 5 m   |
| AMT011 | Small handspike, per unit               | Needle diameter: 3 mm, total length: 125 mm, cable length: 5 m                               |
| AMT012 | Small kelvin clip, per unit             | Opening diameter: 12 mm, cable length: 5 m   |
| AMT013 | Triggered handspike, per unit           | Needle diameter: 3 mm, length without handle: 83 mm, total length: 215 mm, cable length: 5 m |
| AMT008 | Extension lead, length: 20 m            | Triggering cable to be connected by RS 232   |
| AMT014 | External Pt100 temperature sensor       |  |
| AMT015 | Extension cable for AMT014, length: 2 m |  |

## Other accessories:

|        |   |
|--------|---|
| LOG OM | Configuration & exploitation software for OM 17 - Includes a F / F RS 232 cable |
| AN5909 | RS232 F / F cable (PC connection)   |
| AN5875 | RS232 F / M cable (Printer connection)  |

## Certification:

QMA11EN              COFRAC certificate of calibration

## Packing information:

|      |                    |        |      |
|------|--------------------|--------|------|
| Size | 270 x 250 x 180 mm | Weight | 4 kg |
|------|--------------------|--------|------|