

- MEGOHMMÈTRE
- MEGOHMMETER
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- MEGAOHMETRO

**C.A 6511**  
**C.A 6513**

**MEGOHMMETER**



FRANÇAIS  
ENGLISH  
DEUTSCH  
ITALIANO  
ESPAÑOL

Notice de fonctionnement  
User's manual  
Bedienungsanleitung  
Libretto d'Istruzioni  
Manual de Instrucciones

*English*



## SAFETY PRECAUTIONS



- Before any measurement check that there is no voltage present on the circuit to be tested.
- Use the appropriate leads supplied with the instrument.
- At rest, the needle must indicate 0 on the voltmeter scale. If not, adjust it by means of the central (6) zero reset screw.
- When the insulation measurement is finished, leave the instrument connected for a few seconds to allow automatic discharge of the high tension of the device tested.
- During measurement of continuity or resistance, the voltage should be measured first. The presence of a voltage can activate protection and necessitate changing the fuses.

On the  $-10\Omega$   $+10\Omega$  and  $1000\Omega$  ranges, the instrument is protected by an HBC fuse. On the other ranges the instrument is statically protected on all the ranges from a voltage of 600V rms applied permanently between the terminals and from a voltage of 1000V rms accidentally applied for less than 15 seconds between the terminals.

- Position the switch in the OFF position when the instrument is not used.

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
## DESCRIPTION

See page 51 and page 52.

- ① - Measurement terminals colour marked
- ② - Log scale on yellow background 0.1 to 1000 M $\Omega$  : Insulation measurement.
- ③ - Linear scale 0 to 10  $\Omega$  : Continuity measurement  
Resistance measurement (C.A 6513 only)
- ④ - Linear scale 0 to 600 V AC : Voltage measurement
- ⑤ - Red / green scale : battery test
- ⑥ - Screw to reset needle to mechanical zero
- ⑦ - Rotary switch : 4 positions (C.A 6511)  
6 positions (C.A 6513)
- ⑧ - Press button

## USE

### BATTERY TEST


Before starting a series of measurements, check that the batteries powering the instrument are good. Place the switch in the OFF position, press the yellow button, and display the condition of the batteries on the  scale of the galvanometer :

- if the needle is in the green zone, the batteries are good
- if the needle is in the red zone, change the four batteries

### INSULATION/VOLTAGE MEASUREMENT

Once you are sure the power supply is good (see "Battery test"), you can proceed with insulation measurements.

Connect the instrument to the installation to be tested using the accessories supplied (leads and crocodile clip). It is preferable that the "+" is connected to the earth. Select an insulation measurement position with the switch (500 V for the C.A 6511, 500 or 1000 V for the C.A 6513).

 At this stage, the instrument is thus automatically set to AC voltmeter. The instrument makes a voltage measurement between the + and - terminals (scale of voltages up to 600 V AC).

- If the instrument does not indicate any voltage present, the insulation measurement can be made.

- If the instrument indicates the presence of voltage on the circuit to be measured, insulation measurement must not be made. Find the source of this voltage and suppress it. Insulation measurements can only be done on this condition.

Proceed with the insulation measurement, by pressing the yellow button. The instrument generates a high voltage between the + and - terminals. The reading is done on the yellow log scale 0.1 to 1000 M $\Omega$ . As soon as the button is released, the instrument switches to voltage measurement. The high tension present on the tested device is discharged via the leads of the instrument. You must therefore leave the instrument connected for a few seconds once the measurement is finished (needle returns to 0 V).

## CONTINUITY MEASUREMENT

After having connected the instrument to the installation to be tested, you must check that no voltage is present (see "Insulation measurement/voltage").

Set the switch to the "10 Ω" position.

The measurement is done automatically without having to press the yellow button. Read the value on the white scale 0 to 10 Ω. Then set the switch to the "-10 Ω" position and check that the needle of the instrument indicates the same continuity value. If this second value is different from the preceding one you must make the following calculation :

$$R_{\text{continuity}} = \frac{R_{+10 \Omega} + R_{-10 \Omega}}{2}$$

To have a better measurement accuracy on the +10 Ω and -10 Ω ranges, measure the resistance of the leads by short-circuiting them. Then subtract this value from the measured resistances.

**Remarks :** - In order to save battery power, it is preferable to disconnect the leads once the continuity measurement has been finished.  
- If the instrument, on continuity measurement, is not connected, or is badly connected, the needle then positions itself to the far right.

## RESISTANCE MEASUREMENT (C.A 6513 only)

After having connected the instrument to the installation to be tested, you must check that no voltage is present (see "Insulation measurement/voltage").

Set the switch to the "1000 Ω" position.

The measurement is done automatically without the need to press the yellow button.

Read the value on the white scale 0 to 10 Ω, applying a coefficient x100.

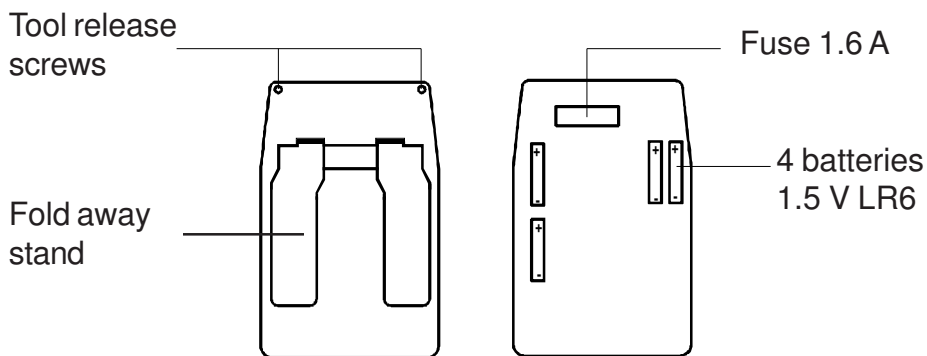
**Remarks :** - If the instrument, on resistance measurement, is not connected, or is badly connected, the needle then positions itself to the far right.  
- In order to save battery power, it is preferable to disconnect the leads once the resistance measurement is finished.

## MAINTENANCE

### CHANGING THE BATTERIES / FUSE

Check that no terminals are connected and that the switch is in the OFF position before opening the instrument for safety, the instrument can only be opened if the leads are disconnected from the terminals. Access to the fuses and the batteries is by opening the back of the case.

Remove the shockproof case if there is one, then undo the tool release screws with a screwdriver and the back of the case is open.



### FITTING THE SHOCKPROOF CASE

In order not to damage the window protecting the display, it is preferable to first engage the upper part of the instrument in the case, then to push the lower part in.

### CLEANING

Use a soft cloth, dampened with soapy water. Rinse with a damp cloth and dry rapidly with a dry cloth or forced air. Do not use alcohol, solvents, or hydrocarbons.

### METROLOGICAL CHECK

Like all measuring or testing devices, the instrument must be checked regularly.

This instrument should be checked at least once a year. For checks and calibrations, contact one of our accredited metrology laboratories (information and contact details available on request), at our Chauvin Arnoux subsidiary or the branch in your country.

### REPAIRS-MAINTENANCE

For all repairs before or after expiry of warranty, please return the device to your distributor.

## SPECIFICATIONS

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### FUNCTIONAL SPECIFICATIONS

#### Insulation

Measurement range : 0.1 to 1000 M $\Omega$

<b>Scale</b>	0,1 M $\Omega$ to 1000 M $\Omega$
<b>Accuracy</b>	$\pm$ 5% of the measurement

<b>Range</b>	500 V	1000V*
<b>Empty voltage</b>	600V	1200V
<b>Test current</b>	$\geq$ 1 mA for R $\leq$ 500 k $\Omega$	$\geq$ 1 mA for R $\leq$ 1 M $\Omega$
<b>Short circuit current</b>	$\leq$ 6 mA	$\leq$ 6 mA

\* C.A 6513 only

The time required for the voltage present on the terminals to decrease by 90% of its value, once the M $\Omega$  button is released (= discharge time), is 1s/ $\mu$ F.

#### Continuity

Measurement range : 0 to 10  $\Omega$  with reversal of the measurement current

<b>Scale</b>	0 - 10 $\Omega$
<b>Accuracy</b>	$\pm$ 3% of end of scale
<b>Short circuit current</b>	$\geq$ 200 mA
<b>Empty voltage</b>	4.5 V $\leq$ V $\leq$ 6.5 V

#### Resistance (C.A 6513 only)

Measurement range : 0 to 1000  $\Omega$

<b>Scale</b>	0 - 1000 $\Omega$
<b>Accuracy</b>	$\pm$ 3% of end of scale
<b>Short circuit current</b>	$\geq$ 2mA
<b>Empty voltage</b>	4.5 V $\leq$ V $\leq$ 6.5 V

### Voltage

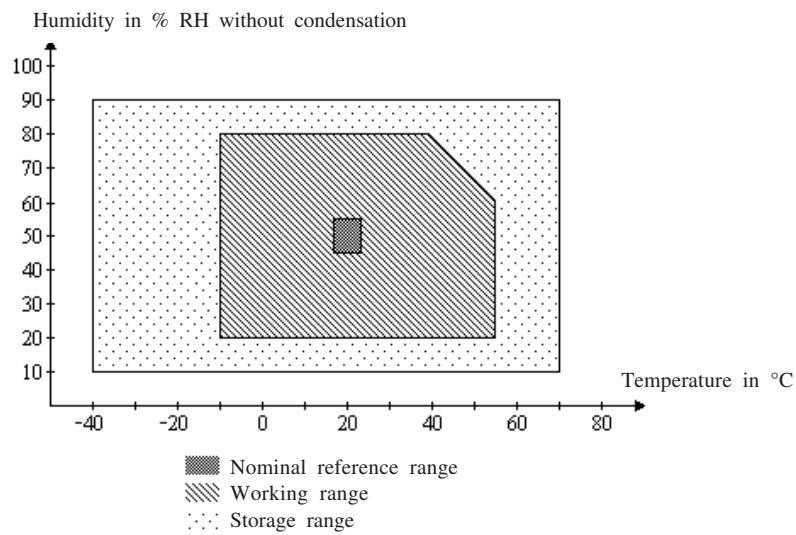
Measurement range : 0 to 600 V AC

<b>Scale</b>	0 - 600 V
<b>Accuracy</b>	± 3% of end of scale
<b>Input impedance</b>	300 kΩ

### Reference conditions

<b>Distortion quantities</b>	<b>Reference conditions</b>
Temperature	20 °C ± 3K
Relative humidity	45 to 55 % RH
Supply voltage	5.5 V ± 0.2 V
Voltage frequency	45 Hz to 65 Hz
Electric field	< 1 V/m
Magnetic field	< 40 A/m
Position	Horizontale ± 5°

### Climatic conditions





### Variations in the nominal working range.

Distortion quantities	Limits of working range	% variation of the measurement	
		Typical	Max.
Operating position	0 + 90 ° 0 - 90 °	- -	≤ 5 % of the measurement
Temperature	-10 to + 55 °C	3 % / 10°C (1)	5 % / 10°C (1)
Humidity	20 to 80 % RH (2)	5 % of the measurement	10 % of the measurement
Supply voltage	4.5 to 6.5 V	0.1 % of the measurement	0.2 % of the measurement
Frequency (on voltmeter)	45 to 400 Hz	-	≤ 0.1 % of the measurement
Electromagnetic field	0 to 400 A/m (3)	-	1/2 class

- (1) For measurements in MΩ, it is a % of the measurement.  
For the other measurements, it is end of scale.
- (2) For insulation measurements from 0.1 to 100 MΩ, voltage measurements from 0 to 600 V, continuity measurements from 0 to ± 10 Ω and resistance measurements from 0 to 1000 Ω.
- (3) The magnetic fields envisaged are fields with stable amplitude and direction, and of frequency between 0 and 60Hz.

## ELECTRICAL SPECIFICATIONS

### Power supply

The instrument is powered by 4 batteries 1.5V type R6 alkaline  
 The voltage range ensuring correct operation is from 4.5V to 6.5V  
 Check correct operation by testing the battery (see "Use").

Consumption is approximately :

300mA for R = 0.5 MΩ on the MΩ 500V range  
 600mA for R = 1 MΩ on the MΩ 1000V range (C.A 6513 only)  
 200mA on continuity on the +10 Ω and -10 Ω ranges  
 10mA on ohmmeter on the 1kΩ range (C.A 6513 only)

The average service life is :

1000 insulation measurements of 10s on the MΩ 500 V range for R = 500 kΩ,  
 200 insulation measurements of 10s on the MΩ 1000 V range for R = 1 MΩ (C.A 6513 only)  
 1500 continuity measurements of 10s on the 10 range.

**Electrical safety**

Dual insulation instrument in accordance with standard EN61010-1, for a set live-earth voltage of 600 V, installation category III, and degree of pollution 2.

**Reminders of definitions :**

- Installation category : classification of installations in accordance with standardised limits  
for transient access voltages depending on the nominal voltage of the network in relation to ground.
- Degree of pollution : classification of micro-environments.
- Set voltage : nominal voltage in relation to the earth.

**ELECTROMAGNETIC COMPATIBILITY**

Emissions and immunity in an industrial setting compliant with EN61326-1.  
Special precautions must be taken in a difficult EMC environment.

**MECHANICAL SPECIFICATIONS**

Dimensions : 167 x 106 x 55mm

Weight : 500g approx/650g with sheath (batteries included)