

- MEGOHMMETRES
- MEGOHMMETERS
- MEGOHMMETER
- MEGAOHMMETRI
- MEGAÓHMETRO

**C.A 6521**  
**C.A 6523**  
**C.A 6525**



FRANÇAIS  
 ENGLISH  
 DEUTSCH  
 ITALIANO  
 ESPAÑOL

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

### Meaning of the symbol

**Warning !** Please refer to the User's Manual before using the instrument.

In this User's Manual, the instructions preceded by the above symbol, should they not be carried out as shown, can result in a physical accident or damage the instrument and the installations.

### Meaning of the symbol

This device is protected by a double insulation or by a reinforced insulation. No linking is required from the protection earth terminal to ensure the electrical security.

### Meaning of the symbol

**Warning !** Risk of electric shock.

The voltage of the parts marked with this symbol may be dangerous. For safety reasons, this symbol will light up on the LCD screen as soon as a voltage is generated.

Thank you for purchasing a **C.A 6521, C.A 6523 or C.A 6525 insulation tester.**

To get the best service from this instrument :

- **read** this user's manual carefully
- **respect** the safety precautions detailed

## PRECAUTIONS FOR USE

- Comply with the conditions for use : temperature, humidity, altitude, degree of pollution and place of use
- This instrument can be used on category II installations for voltages which do not exceed 300 V in relation to the earth. The equipment classified in category II is energy-consuming equipment, receiving its power supply from the fixed installation (cf. IEC 664-1, 1992 edition).
- Do not perform any insulation or resistance measurements when the presence of a voltage is indicated.
- Use connection accessories that comply with the applicable IEC safety standards, with a minimum voltage and voltage surge category at least equal to those that you use for your measurements.
- Respect the value and type of the fuse to avoid damaging the instrument and cancelling the warranty.
- Set the switch to OFF when the instrument is not in use.
- Check that none of the terminals is connected and that the switch is set to OFF before opening the instrument.

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# 1. PRESENTATION

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## Terminology

The term “continuity” will be used to mean a resistance measurement performed with a current of at least 200 mA (with the measured resistance lower than 20  $\Omega$ ) in accordance with the IEC 61557 norm, to distinguish it from a resistance measurement (C.A 6523 and C.A 6525) performed with a current that is not predefined.

## 1.1. General Presentation

### 1.1.1. The Megohmmeter

These portable instruments function with batteries or a rechargeable battery. They can be used to check the insulation, continuity and voltages and to measure resistances. They help to ensure the safety of electrical installations. The acquisition, processing and display of the measurements are managed by a microprocessor,

They offer a large number of advantages such as automatic detection of a dangerous voltage on the M $\Omega$  calibre terminals (with blocking of any insulation testing if  $V > 25$  V), protection of the instrument against external voltage surges, improved operator safety through automatic discharging of the high voltage from the equipment tested, automatic shutdown of the instrument to optimize the battery charge life, a large LCD display with a wide range of indicators that is very easy to read, etc. And, depending on the model, backlighting of the LCD (C.A 6523 and C.A 6525), programming of the thresholds (C.A 6523 and C.A 6525), the possibility of compensated leads for continuity (C.A 6523 and C.A 6525), and display of the duration of the measurement (C.A 6525).

### 1.1.2 Accessories

#### ■ **Shoulder bag** (*delivered with standard instrument, see § 10*)

When placed in the shoulder bag, the instrument can either be carried on the shoulder to transport it or around the neck for use. This leaves the users' hands free to perform the measurements. Since the instrument is perpendicular to the chest, it is easy to read.

At the bottom of the shoulder bag, underneath the instrument, there is a pocket for the leads, the touch prod, the crocodile clamp and the remote control probe.

#### ■ **Remote control probe** (*option, see § 10*)

This probe is used with the C.A 6523 and C.A 6525. These are equipped with the special connector required to connect it to the instrument.

It can be used for all the measurements, including activation of insulation testing, using the yellow button which works in exactly the same way as the button on the instrument.

A pushbutton on the back of the probe allows you to light the measuring point (lighting of approx. 500 lux). This function is very useful, since insulation testing is performed on installations with the power off!

## 2. DESCRIPTION

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### 2.1. Unit

See the diagrams of the instruments in § 10 (appendix at the end of this user's manual)

#### 2.1.1. C.A 6521

- ① 2 safety terminals, Ø 4 mm (marked “ + “ and “ - “)
- ② 5-way switch: OFF, MΩ - 250 V, MΩ - 500 V, 20 Ω +, 20 Ω -
- ③ Yellow key (to activate insulation measurement)
- ④ Liquid crystal display
- ⑤ Battery compartment + stand (not shown in the drawing)

#### 2.1.2. C.A 6523

- ① 2 safety terminals, Ø 4 mm (marked “ + “ and “ - “). Next to the “ - “ terminal, there are two additional contacts for connecting the remote control probe (3-point connector).
- ② 6-way switch : OFF, MΩ - 500 V, MΩ - 1000 V, 400 kΩ, 20 Ω +, 20 Ω -
- ③ Yellow keys (to activate insulation measurement), ALARM, ▲, ► and  etc.
- ④ Backlit liquid crystal display
- ⑤ Battery compartment + stand (not shown in the drawing)

#### 2.1.3. C.A 6525

- ① 2 safety terminals, Ø 4 mm (marked “ + “ and “ - “). Next to the “ - “ terminal, there are two additional contacts for connecting the remote control probe (3-point connector).
- ② 7-way switch : OFF, MΩ - 250 V, MΩ - 500 V, MΩ -1000 V, 400 kΩ, 20 Ω +, 20 Ω -
- ③ Yellow keys (to activate insulation measurement), ALARM, ▲, ►,  and TIMER.
- ④ Backlit liquid crystal display
- ⑤ Battery compartment + stand (not shown in the drawing)

### 2.2. Display

#### 2.2.1. Symbols

 Timer active (in TIMER mode)

**ALARM** Threshold active or threshold programming in progress

> Upper threshold

< Lower threshold



Dangerous voltage generated



See the user's manual

> 25 V Voltage > 25 V

→0← Compensated leads

•))) Buzzer active



Constant operation (no automatic shutdown)



Batteries flat



Fixed and Flashing :

incorrect compensation of the leads

### 2.2.2. Bargraph

▶ Insulation > 2 GΩ

◀ Insulation < 50 kΩ

### 2.2.3. Digital display

**BAT** Batteries low – must be changed

**OL** Range exceeded

--- Insulation < 50 kΩ at 250 V, < 100 kΩ at 500 V  
or < 200 kΩ at 1000 V

## 2.3. Control keyboard

### 2.3.1. Yellow key

When this yellow key is pressed, a high voltage is generated for insulation testing. However, if a voltage greater than 25 V has been detected, no insulation testing is allowed and the key becomes inactive.

In all cases, this key is only active for as long as it is pressed, except in the TIMER mode specific to the C.A 6525 (first press = activation, second press = deactivation).

### 2.3.2. ALARM key (C.A 6523 and C.A 6525)

The ALARM key can be used to activate/deactivate the alarm thresholds during insulation, resistance and continuity measurements.

When associated with the ▶ and ▲ keys, it can be used to program the values of these thresholds.

### 2.3.3. Key ▶ (C.A 6523 and C.A 6525)

When programming the alarm thresholds, the key ▶ makes the following elements flash in succession :

- the measurement unit digit (if there is one),
- the thousands digit,
- the hundreds digit,
- the tens digit,
- the units digit,
- the decimal separators,
- the type of threshold (upper or lower),
- and it then returns to the measurement units.

### 2.3.4. Key ▲ (C.A 6523 and C.A 6525)

When programming the alarm thresholds, the key ▲ can be used to scroll through the possible values, which flash, and then loop back to the beginning :

- MΩ or GΩ for insulation, kΩ or Ω for resistance, for the measurement units,
- 1,2, 3 or \_ for the thousands digit,
- 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9 for the hundreds, tens and units,
- “-.-.-” or “-.-.-” or “-.-.-” or “-.-.-” for the decimal separator,
- > or < for the upper or lower threshold.

### 2.3.5. Key ☼ (C.A 6523 and C.A 6525)

When the key is pressed, the backlighting of the display comes on. It will be turned off automatically one minute later. When it is lit, you can turn the backlighting off by pressing this key again.

### 2.3.6. TIMER key (C.A 6525)

This key can be used to activate/deactivate timed insulation measurement.

## 3. MEASUREMENT FUNCTIONS

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### 3.1. Insulation

The insulation measurements correspond to the MΩ positions of the switch.

#### 3.1.1. Safety checking

- ⚠ **The insulation measurement shall be performed when the equipment is idle.** The apparatus nevertheless automatically detects and indicates the presence of a voltage on its terminals.
- ⚠ **If the voltage present is less than 25 V**, the insulation can be tested, but the lower the test voltage (250 V, 500 V or 1000 V) the greater the possibility of error.
- ⚠ **If the voltage is greater than 25 V**, “⚠ > 25 V “ is displayed. Pressing the yellow key does not trigger insulation measurement, but causes a series of buzzes (buzz, buzz, buzz, ...) and makes the ⚠ symbol flash until the yellow key is released. These warnings only end if the voltage falls below 25 V (disconnect the apparatus and neutralise the voltage which is present on the network to be measured) or if the yellow key is released or, naturally, if you turn off the instrument by returning the switch to the OFF position.
- ⚠ **Should the voltage be greater than 600 V**, the digital display will indicate "OL".

### 3.1.2. Insulation measurement

If there is not a dangerous voltage (see § 3.1.1.), the user can then measure the insulation by pressing the yellow key. The high voltage is then generated between the terminals (marked + and -). The value of the measurement is shown on the logarithmic scale of the bargraph and on the digital display, with the corresponding M $\Omega$  or G $\Omega$  symbol. As soon as the yellow key is released, the instrument returns to voltage measurement mode.

 **If the voltage generated may be dangerous**, the  symbol is displayed.

 **The instrument indicates if the value measured is outside its measurement range.** If the insulation resistance is greater than 2 G $\Omega$ , the OL symbol is displayed on the digital measurement display. When the measurement is greater than 2 G $\Omega$ , the  symbol lights up on the right-hand side of the bargraph.

Similarly, if the insulation resistance is less than 50 k $\Omega$  at 250 V, 100 k $\Omega$  at 500 V or 200 k $\Omega$  at 1000 V, the digital measurement display indicates " - - - ". When the measurement is less than 50 k $\Omega$ , only the  symbol lights up on the left-hand side of the bargraph.

 **Specific remark concerning the C.A 6523 and C.A 6525 :**  
A programmed alarm threshold can activate itself (see § 4.5).

 **Specific remark concerning the C.A 6525 :**  
The measurement can be timed (see § 4.7).

### 3.2. Continuity

The continuity measurements correspond to the " 20  $\Omega$  + " or " 20  $\Omega$  - " switch positions.

The instrument takes a measurement at  $I \geq 200$  mA and the " $\Omega$ " symbol is displayed. If the threshold is active (ALARM function) with the buzzer on, the buzzing starts very quickly (tens of milliseconds); even before the measurement is displayed.

 **Between the " 20  $\Omega$  + " position and the " 20  $\Omega$  - " position, the direction of the current is inverted.** The result of the measurement is the mean (to be calculated by the user) of the value displayed in the " 20  $\Omega$  + " position and the value displayed in the " 20  $\Omega$  - " position.

 **Continuity measurements shall be performed on idle circuits.**

 **The fuse protecting against external voltages is checked when the apparatus is started up and at the end of each continuity measurement.**

 **The instrument indicates if the value measured is outside its measurement range.** If the resistance is greater than 20  $\Omega$ , the OL symbol is displayed on the digital measurement display.

 **Specific remarks concerning the C.A 6523 and C.A 6525 :**  
The resistance of the measurement leads can be compensated (see § 4.6).

A programmed threshold may trigger an alarm (see § 4.5).

 **Specific remark concerning the C.A 6521 :**

In continuity mode, a lower threshold of 2  $\Omega$  is constantly active. However, the buzzer can be deactivated by pressing the yellow key.

### 3.3 Resistance (C.A 6523 and C.A 6525)

Resistance measurement corresponds to the 400 k $\Omega$  position of the switch on the C.A 6523 or C.A 6525.

The  $\Omega$  symbol is displayed with the k symbol if necessary. The measurement is indicated on the digital measurement display.

 **The instrument indicates if the value measured is outside its measurement range.** If the resistance is greater than 400 k $\Omega$ , the OL symbol is displayed on the digital measurement display.

 **Resistance measurements shall be performed on idle circuits.**

 **A programmed threshold may trigger an alarm (see § 4.5).**

## 4. SPECIAL FUNCTIONS

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### 4.1. Start/stop

When you move the switch from the OFF position to one of the active positions, the battery voltage is applied to the circuit. The instrument starts up and all the display segments light up at the same time for 1 second. All the segments then go dark except, for 2 seconds, the ,  and  symbols which delimit the size of the bargraph. The bargraph indicates the battery charge life and the digital measurement display which indicates the charge life available (0 to 100%) for a battery voltage varying from 6.7 to 10 V.

The instrument can be shut down at any time by moving the switch to OFF, which cuts off the battery power supply to the whole instrument.

### 4.2. Automatic shutdown

After 5 minutes without any activity by the user on the instrument (key press on the keyboard or on the yellow key on the remote control probe or turn of the rotary switch), the instrument shuts down automatically. It is then on standby. When this is the case, to start up the instrument again, all you have to do is press one of the keys, turn the switch or press the yellow key on the remote control probe of the C.A 6523 or C.A 6525.

 **The automatic switch-off is inhibited during continuity testing as long as the measurement being made varies between a value (between 0 W and 20 W) and OL (which means that measurement is in progress).**

 **On the C.A 6525, in TIMER mode (see § 4.7), the five minutes before automatic shutdown only begin at the end of the maximum 15-minute measurement period.**

### 4.2.1. Deactivation of automatic shutdown function (C.A 6523 and C.A 6525)

Press the  button when switching on the device via the rotating switch. The  symbol is displayed, indicating that the automatic shutdown function has been deactivated.

To reactivate the automatic shutdown function, switch the instrument off (turn the switch to OFF) and then switch it back on again.

### 4.3. Power supply autotest

The power supply voltage is measured automatically once every second. The voltage range ensuring correct operation is between 7 V and 10 V. Depending on the result of the autotest, there are four possible cases :

- The voltage is correct :  
The  symbol is not displayed on the screen.
- The remaining charge life is close to the limit for correct. (< 7.1 V) : the  symbol flashes.
- Accurate measurement can no longer be guaranteed, change the batteries ( $V \leq 6.9$  V) : the  symbol remains lit continuously.
- The voltage is close to interrupting operation of the clock (< 6.7 V) : the digital display indicates BAT and then, after 5 seconds, the shutdown buzzer sounds and the automatic shutdown function is activated. The instrument shuts down.

### 4.4. Buzzer

#### 4.4.1. The different audible signals

When the  symbol is displayed, the buzzer is active. It gives out different audible signals, depending on the situation.

- Short buzz (65 ms at 2 kHz) in the following cases :
  - press on a key,
  - automatic shutdown,
  - lead compensation taken into account,
  - and after 30 s, 1 min and 10 min of insulation measurement in TIMER mode (C.A 6525).
- Continuous buzz (at 2 kHz) in the following cases :
  - when the measurement is lower than the minimum threshold,
  - when the measurement is higher than the maximum threshold.
- Short, higher buzz (65 ms at 4 kHz) in the following case when a deactivated key is pressed (except the yellow key).
- Repeated high buzzes (at 4 kHz) in the following case :  
if the voltage measured is greater than 25 V and the user is pressing the yellow key.

#### 4.4.2. Deactivation of the buzzer

- C.A 6521 : set the switch to continuity measurement ( $20\ \Omega +$  or  $20\ \Omega -$ ) and then press the yellow key. The buzzer is then deactivated and the symbol is no longer displayed. To reactivate the buzzer, press the yellow key again or switch the instrument off and then back on again.
- C.A 6523 and C.A 6525 : Press the ALARM button when switching on the device via the rotating switch. The symbol  $\bullet)))$  disappears from the screen.  
To reactivate the buzzer, turn off the device and switch on again.

### 4.5. Alarm thresholds (C.A 6523 and C.A 6525)

Each position of the switch corresponds to a high or low alarm threshold value. In the  $20\ \Omega +$  and  $20\ \Omega -$  position, the thresholds are identical and hence either one can be programmed in for these two positions. The thresholds can be either low or high. They can also be activated or inactivated and will be stored in memory even after the device has been switched off.

#### 4.5.1. Programming of the alarm thresholds

You can select the threshold programming mode by a long press on the ALARM key. The ALARM symbol is displayed and the value of the threshold corresponding to the switch position is indicated on the digital threshold display.

 **If no value was programmed previously**, the display indicates a default threshold :

- >  $0.25\ \text{M}\Omega$  for the  $\text{M}\Omega - 250\ \text{V}$  position
- >  $0.50\ \text{M}\Omega$  for the  $\text{M}\Omega - 500\ \text{V}$  position
- >  $1.00\ \text{M}\Omega$  for the  $\text{M}\Omega - 1000\ \text{V}$  position
- <  $10.00\ \text{k}\Omega$  for the  $400\ \text{k}\Omega$  position
- <  $2.00\ \Omega$  for the  $20\ \Omega +$  and  $20\ \Omega -$  positions

At this moment, it is possible to program the threshold using the (see § 2.3.3) and keys (see § 2.3.4). During this programming, the instrument continue measuring.

You can quit the programming mode and record the threshold by another long press on the ALARM key.

 **If the switch is activated before the second long press on ALARM**, the programming is not recorded.

 **If the programmed threshold is too high**, it is corrected when it is stored in the memory : the maximum value is entered. For example, for continuity measurement, a  $30.00\ \Omega$  threshold will be stored as  $20.00\ \Omega$  (max. value for continuity).  
If the threshold has been “wrongly” programmed, it is corrected when it is stored in the memory : For example,  $002\ \text{M}\Omega$  will become  $2.00\ \text{M}\Omega$ .

#### 4.5.2. Activation/deactivation of the alarm thresholds

The threshold corresponding to the switch position can be activated by a short press on the ALARM key.

The ALARM symbol, the < or > symbol, the programmed value of the threshold and the corresponding unit are then displayed on the digital threshold display.

The threshold can be deactivated by a second short press on the key. The ALARM symbol, the < or > symbol, the programmed value of the threshold and the corresponding unit disappear.

#### 4.5.3. Triggering of the alarm

If, during continuity measurement for example, a low threshold value of say 10  $\Omega$  is activated, then the device displays "ALARM < 10.00  $\Omega$ ". As soon as the measurement goes below this value, a continuous audible signal will be emitted to indicate the continuity, and all of the digital thresholds display will flash. Similarly, if during insulation testing for example, a high threshold of say 100 M $\Omega$  is activated, the device displays "ALARM > 100.0 M $\Omega$ ". As soon as the measurement exceeds this value, a continuous audible signal will be emitted to confirm the right insulation, and all of the digital thresholds display will flash.

If no threshold is activated, the threshold digital display turns itself off.

## 4.6 Compensation of measuring leads (C.A 6523 and C.A 6525)

Compensation for the resistance of the measuring leads can be accessed in continuity measurement mode (20  $\Omega$  + or 20  $\Omega$  - positions).

To compensate, simply short-circuit the leads and keep the  key pressed for some time (long press). When the measurement has been recorded, the buzzer sounds. From this moment onwards, the measurements displayed will be automatically reduced by the value recorded and the  $\rightarrow_0\leftarrow$  symbol will be displayed.

To cancel the compensation, leave the leads unconnected and press the  key for some time (long press). As soon as the instrument measures a value greater than 5  $\Omega$ , the lead compensation is cancelled and the  $\rightarrow_0\leftarrow$  symbol goes out.

Turning off the device also cancels the lead compensation.

In all cases, the maximum 20  $\Omega$  continuity measurement is reduced by the recorded compensation value.

 **Note** : when you change the leads, the measurement may become negative if the compensation is higher than the resistance measured + the resistance of the new leads. 0.00 is then displayed up to -0,02  $\Omega$  and the  $\rightarrow_0\leftarrow$  and  symbols flash to indicate that the lead compensation is not longer suitable and should be redone.

## 4.7. Timer (C.A 6525)

The timer function is available for insulation testing (MΩ positions).

When you press the TIMER key, the  symbol appears in front of the digital threshold display which indicates 0:00 (timer). If there was a programmed threshold displayed, it disappears.

An initial short press on the yellow key starts both the timer and insulation measurement. You do not have to keep the key pressed down.

A second press stops the timer and the measurement. The last value of the timer remains displayed and the instrument switches back to voltage measurement.

To perform another timed measurement, simply press the yellow key again. The timer is then reset to zero and restarts along with the measurement.

To quit the timer mode, simply press the TIMER key again or switch the instrument off and then on again. The  symbol is no longer displayed.

 After 30 seconds, 1 minute and 10 minutes, the instrument's buzzer sounds. This is to allow those users who require it to calculate the dielectric absorption rate (= measurement after 1 min / measurement after 30 s) and the polarization index (= measurement after 10 min / measurement after 1 min).

 **Reminder** : for acceptable insulation, they must be greater than 1.25 and 2, respectively.

 When measuring, if a threshold is exceeded, the buzzer sounds and display of the timer is interrupted to display the corresponding alarm message (see § 4.5.3).

 If you forget to stop the insulation test, the instrument automatically switches back to voltage measurement after 15 minutes and the TIMER remains blocked at 15:00.

## 5. USE

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In order to successively display the calibration date, the software version and the serial number of the apparatus, press the yellow key when turning the switch to start the apparatus up.

To start up the machine, set the rotary switch to the type of measurement to be performed and then connect the instrument to the installation to be tested. The unit is displayed and the calibre is selected automatically for the best reading.

The instrument can be shut down manually by setting the switch to OFF. Otherwise, the instrument will be shut down automatically after 5 minutes without any sign of the presence of a user (see § 4.2).

## 5.1. Insulation testing

(see § 10.1 Examples of applications)

- Start up the instrument by setting the switch to  $M\Omega$  which will provide the required voltage.
  - Connect the lead from the “ + ” terminal to the cold point and the lead of the “ - ” terminal or the remote control probe of the C.A 6523 or C.A 6525 to the hot point.
  - The instrument first checks that there is not a dangerous voltage between its terminals (see § 3.1.1).
  - On the C.A 6523 et C.A 6525, the user can control the display backlighting by pressing the key .
  - Then press the yellow key, keeping it pressed down until the measurement is displayed. The yellow key on the C.A 6523 and C.A 6525 remote control probe acts in exactly the same way as the yellow key on the instrument (see § 3.1.2).
  - Read off the displayed value. If the digital value varies greatly for high values ( $> 500 M\Omega$ ), then the load is highly capacitive. If this is the case, read the measurement off the bar graph.
  - After the measurement, let go of the yellow button and wait a couple of seconds whilst the test mechanism discharges (voltage  $< 25 V$ ) before disconnecting the leads.
-  On the C.A 6523 and C.A 6525, an alarm threshold can be activated using the ALARM key (see § 4.5).
-  On the C.A 6525, you can perform timed measurement using the TIMER key (see § 4.7).

## 5.2. Continuity measurements

- Start up the instrument by setting the switch to  $20 \Omega +$ .
  - On the C.A 6523 and C.A 6525, it is possible to compensate for the resistance of the measurement leads (see § 4.6).
  - Connect the + and - leads to the measurement points.
  - On the C.A 6523 et C.A 6525, the user can control the display backlighting by pressing the key .
  - Note the first value displayed (see § 3.2).
  - Then set the switch to the “  $20 \Omega -$  ” position.
  - Note the second value.
  - Then calculate the mean of the two values to obtain an accurate result (this continuity measurement mode with a current circulating in two different directions,  $20 \Omega +$  et  $20 \Omega -$ , is mainly interesting when there are self-inductive or capacitive elements in the circuit to be tested).
-  **Inductive load measurements are limited to 4 H**, beyond which the device risks being damaged.
-  On the C.A 6523 and C.A 6525, an alarm threshold can be activated using the ALARM key (see § 4.5).

### 5.3. Resistance measurements (C.A 6523 and C.A 6525)

- Start up the instrument by setting the switch to 400 k $\Omega$ .
- Connect the + and - leads to the measurement points.
- The user can control the backlighting as required by pressing the key .
- Note the resistance value displayed (see § 3.3).

 On the C.A 6523 and C.A 6525, an alarm threshold can be activated using the ALARM key (see § 4.5).

## 6. CHARACTERISTICS

The instrument displays a measurement every 400 ms, which corresponds to 2.5 measurements per second for the digital display. The bargraph is refreshed every 100 ms. The digital measurement is smoothed, while the bargraph always indicates the instantaneous measurement.

### 6.1. Reference conditions

Influence quantities	Reference conditions
Temperature	23 °C $\pm$ 3 K
Relative humidity	45 to 55 % RH
Supply voltage	8 V $\pm$ 0.2 V
Capacity in parallel on resistance	nil
Electrical field	nil
Magnetic field	< 40 A/m

### 6.2. Characteristics per function

#### 6.2.1. Voltage detection

This voltage detection is automatic before and after the insulation measurements have been performed.

Indicating range: 0...600 V AC/DC

#### 6.2.2. Insulation

Measurement range :

- C.A 6521 : at 250 V      50 k $\Omega$  to 2 G $\Omega$   
                  at 500 V      100 k $\Omega$  to 2 G $\Omega$
- C.A 6523 : at 500 V      100 k $\Omega$  to 2 G $\Omega$   
                  at 1000 V      200 k $\Omega$  to 2 G $\Omega$
- C.A 6525 : at 250 V      50 k $\Omega$  to 2 G $\Omega$   
                  at 500 V      100 k $\Omega$  to 2 G $\Omega$   
                  at 1000 V      200 k $\Omega$  to 2 G $\Omega$

Analogue calibre	50 k $\Omega$ ...2 G $\Omega$
Resolution	8 segments per 10-unit interval
Accuracy	5 % L $\pm$ 1 segment

Digital calibres	0.01 to 0.19 M $\Omega$	0.20 to 39.99 M $\Omega$	40.0 to 399.9 M $\Omega$	400 M $\Omega$ to 2 G $\Omega$
Resolution	10 k $\Omega$		100 k $\Omega$	1 M $\Omega$
Accuracy	3% R $\pm$ 5 ct	3% R $\pm$ 2 ct		

Test voltage	250 V	500 V	1000 V
Voltage at open circuit	< 300 V	< 600 V	< 1200 V
Test current	$\geq$ 1 mA for R $\leq$ 250 k $\Omega$	$\geq$ 1 mA for R $\leq$ 500 k $\Omega$	$\geq$ 1 mA for R $\leq$ 1 M $\Omega$
Short-circuit current	$\leq$ 3 mA		

Once the yellow key has been released, the residual voltage present on the terminals is discharged via the measuring cords through the apparatus at the speed of 1.5 s/ $\mu$ F and in an impedance of 300  $\Omega$ .

■ **Average charging time depending on the capacity in parallel on the resistance to be measured.**

	500 V	1000 V	
1 M $\Omega$	3 s	3 s	1 $\mu$ F
	3 s	6 s	5 $\mu$ F
100 M $\Omega$	6 s	6 s	1 $\mu$ F
	20 s	20 s	5 $\mu$ F

### 6.2.3. Continuity

Measurement range : 0 to 20  $\Omega$

Calibre	0.00...19.90 $\Omega$
Resolution	10 m $\Omega$
Accuracy	$\pm$ 3% L $\pm$ 1 pt
Measuring current	$\geq$ 200 mA
Voltage at open circuit	7 V $\leq$ V <sub>open</sub> $\leq$ 9 V

### 6.2.4. Resistance (C.A 6523 and C.A 6525)

Measurement range : 0 to 400 k $\Omega$

Calibres auto.	0.0...399.9 $\Omega$	400...3999 $\Omega$	4.00...39.99 k $\Omega$	40.0...399.9 k $\Omega$
Resolution	0.1 $\Omega$	1 $\Omega$	10 $\Omega$	100 $\Omega$
Accuracy	$\pm$ 3% L $\pm$ 5 pt	$\pm$ 3% L $\pm$ 1 pt		
Test current	55 or 550 $\mu$ A according to the measurement			
Voltage at open circuit	7 V $\leq$ V <sub>open</sub> $\leq$ 9 V			

### 6.2.5. Timer (C.A 6525)

Measurement range : 0 to 15 min

Calibre	0:00 to 15:00
Resolution	1 second
Accuracy	0.5 % L

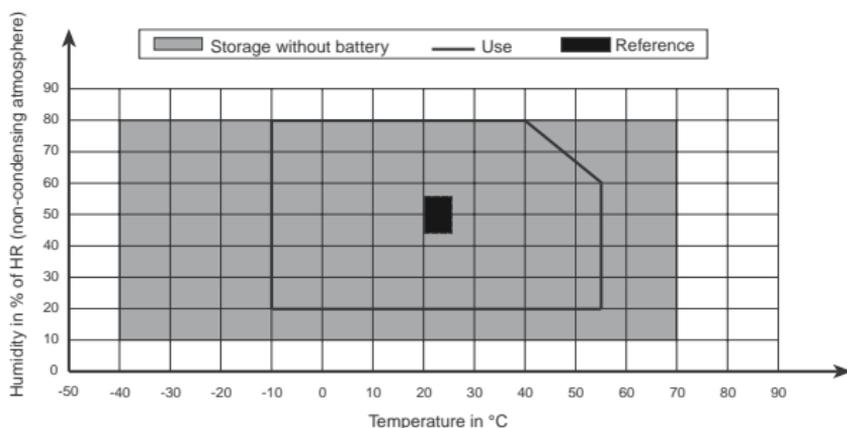
### 6.3. Power supply

The instrument is powered by 6 x 1.5 V alkaline batteries, type LR6.

Measurement consumption	Average* charge life	Average
Voltmeter	25 mA	57,600 5-second measurements
Resistance	50 mA	28,000 5-second measurements
Insulation 250 V (R = 250 kΩ)	160 mA	7,200 5-second measurements
Insulation 500 V (R = 500 kΩ)	200 mA	3,800 5-second measurements
Insulation 1000 V (R = 1000 kΩ)	350 mA	1,440 5-second measurements
Continuity	230 mA	3,300 5-second measurements

\* Add approximately 45 mA when the backlighting is on.

### 6.4. Climatic conditions



### 6.5. Variations in nominal field of use

Influence quantities	Range for use	Measurement variations	
		Typical	Maximum
Temperature	-10 to +55°C	(1% R ± 1 ct)/10°C	(2%R ± 2 ct)/ 10°C
Relative humidity	20 to 80% RH	2% R ± 2 ct	3% R ± 2 ct
Supply voltage	6.9 to 10 V	(1% R ± 1 ct)/V	(2 R ± 2 ct)/V
Capacity in parallel on the resistance	0 to 5 μF at the nominal current	Negligible	1% ± 1 ct

## 6.6. Limits

The three apparatuses are protected on all the nominal ranges against a voltage of 720 V AC/DC applied continuously between the two terminals.

The C.A. 6523 and C.A. 6525 models are protected on the M $\Omega$  nominal range for 1,200 V AC and DC for 10 seconds.

## 6.7. Construction specifications

- Dimensions of the display : 73 mm x 54.3 mm
- Overall dimensions of the unit (L x l x h) : 211 x 108 x 60 mm
- Weight : approx. 830 g
- Materials :
  - Polycarbonate casing
  - Crystal polycarbonate screen
  - Elastomer external mouldings
  - Silicon keyboard.
- Stand :

Enables the instrument to be tilted at 30°. It clips onto the bottom of the casing when not in use.

## 6.8. Compliance with international norms

- Electrical safety per IEC 1010-1 + A2 (Ed. 95), IEC 61557 (Ed. 97) and DIN EN 61557
- Dual insulation : 
- Pollution degree : 2
- Installation category : II
- Rated voltage : 300 V

### 6.8.1. Electromagnetic compatibility : EC compliance

- Emission : NF EN 55 081-1 (Ed. 92)
- Immunity : NF EN 55 082-2 (Ed. 98)

### 6.8.2. Mechanical protection

IP54 according to NF EN 60529 (Ed. 92)  
IK04 according to NF EN 50102 (Ed. 95)

## 7. MAINTENANCE

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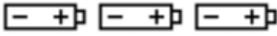
 **For maintenance, use only specified spare parts. The manufacturer will not be held responsible for any accident occurring following a repair done other than by its After Sales Service or approved repairers.**

### 7.1. Upkeep

#### 7.1.1. Replacing the batteries

Before performing any measurements, make sure that the  symbol does not appear on the display during the start-up phase. If it does appear, you must change all the batteries, taking all the necessary precautions when you open the instrument.

 **Check that none of the terminals is connected and that the switch is set to OFF before opening the battery compartment.**

The hatch is located on the back of the unit. It can be opened and closed using a coin or a large screwdriver (1/4-turn captive screw). To avoid errors, the  symbol on the power-supply board shows the direction in which the 2 x 3 LR6 1.5 V batteries should be mounted. Make sure that you put the hatch back properly and close it after changing the batteries.

### 7.1.2. Replacing the fuse

If “FUS” appears on the digital measurement display during the start-up phase or when measuring continuity, you must change the fuse, taking all the necessary precautions when opening the instrument.

 **Check that none of the terminals is connected and that the switch is set to OFF before opening the battery hatch on the back of the instrument.**

It can be opened and closed using a coin or a large screwdriver (1/4-turn captive screw). The fuse is placed on a fuse carrier welded to the power-supply board.

To avoid any errors, the text “F-0.63 A” is written next to the fuse carrier. Make sure that you replace the faulty fuse with fuse of the same rating and type and then replace and close the hatch.

Exact type of fuse : FF 0.63 A - 660 V - 6.3 x 32 mm - 30 kA (marked on the battery compartment label).

### 7.1.3. Cleaning

 **The instrument must be disconnected from any source of electricity.**

Use a soft cloth slightly moistened with soapy water. Rinse with a wet cloth and dry quickly with a dry cloth or pulsated air. Do not use alcohol, solvents or hydrocarbons.

### 7.1.4. Storage

If the instrument remains unused for an extended period (more than two months), remove the batteries and store them separately.

### 7.1.5. Calibration

 **It is essential that all measuring instruments are regularly calibrated.**

For checking and calibration of your instrument, please contact our accredited laboratories (list on request) or the Chauvin Arnoux subsidiary or Agent in your country.

## 7.2. Maintenance

Repairs under or out of guarantee: please return the product to your distributor

## 8. WARRANTY

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Our guarantee is applicable for **3 years** after the date on which the equipment is made available (extract from our General Conditions of Sale, available on request).

## 9. TO ORDER

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<b>C.A 6521</b> .....	<b>P01.1408.01</b>
<b>C.A 6523</b> .....	<b>P01.1408.02</b>
<b>C.A 6525</b> .....	<b>P01.1408.03</b>

*Each instrument is delivered with a shoulder bag for transport and hands-free use of the instrument and its accessories, 2 elbowed-straight safety leads (red +black), 1.5 m long  
1 red crocodile clamp, 1 black touch prod, 6 x LR6 batteries and this 5-language user's manual.*

### **Accessories :**

Remote control probe .....	<b>P01.1019.35</b>
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### **Spare parts :**

■ 2 elbowed-straight safety leads (red + black) 1.5 m long .....	<b>P01.2950.88</b>
■ 2 crocodile clamps (red + black) .....	<b>P01.1018.48</b>
■ 2 touch prods (red + black) .....	<b>P01.1018.55</b>
■ 1 shoulder bag for transport and hands-free use .....	<b>P01.2980.49</b>
■ 1 set of 5 fuses 0,63 A .....	<b>P01.2970.78</b>