

(This area contains horizontal lines for writing.)



Thank you for purchasing a **megohmmeter C.A 6541** or **C.A 6543**.

For best results from your instrument:

- **read** these operating instructions carefully,
- **comply** with the precautions for use.



WARNING, risk of DANGER! The operator must refer to these instructions whenever this danger symbol appears.



WARNING, risk of electric shock. The voltage applied to parts marked with this symbol may be hazardous.



Equipment protected by double insulation.



Earth.



Battery.



Fuse.



Information or useful tip.



The CE marking indicates compliance with the European Low Voltage Directive (2014/35/EU), Electromagnetic Compatibility Directive (2014/30/EU), Radio Equipment Directive (2014/53/EU), and Restriction of Hazardous Substances Directive (RoHS, 2011/65/EU and 2015/863/EU).



The UKCA marking certifies that the product is compliant with the requirements that apply in the United Kingdom, in particular as regards Low-Voltage Safety, Electromagnetic Compatibility, and the Restriction of Hazardous Substances.



The rubbish bin with lines through it indicates that, in the European Union, the product must undergo selective disposal in compliance with Directive WEEE 2012/19/EU. This equipment must not be treated as household waste.

Definition of measurement categories

- Measurement category IV corresponds to measurements taken at the source of low-voltage installations.
Example: power feeders, counters and protection devices.
- Measurement category III corresponds to measurements on building installations.
Example: distribution panel, circuit-breakers, machines or fixed industrial devices
- Measurement category II corresponds to measurements taken on circuits directly connected to low-voltage installations.
Example: power supply to electro-domestic devices and portable tools.

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1. PRECAUTIONS FOR USE

This instrument is compliant with safety standard IEC/EN 61010-2-034 and the leads are compliant with IEC/EN 61010-031, for voltages up to 600 V in category III.

Failure to observe the safety instructions may result in electric shock, fire, explosion, and destruction of the instrument and of the installations.

- The operator and/or the responsible authority must carefully read and clearly understand the various precautions to be taken in use. Sound knowledge and a keen awareness of electrical hazards are essential when using this instrument.
- Observe the conditions of use: temperature, humidity, altitude, degree of pollution and location of use.
- Do not use the instrument on networks of which the voltage or category exceeds those mentioned.
- Do not use the instrument if it seems to be damaged, incomplete, or poorly closed.
- Before each use, check the condition of the insulation on the leads, housing, and accessories. Any item of which the insulation is deteriorated (even partially) must be set aside for repair or scrapping. There is a risk of electric shock if the instrument is used without its battery compartment cover.
- Use only the leads and accessories supplied. The use of leads (or accessories) of a lower voltage rating or category limits the use of the combined instrument + leads (or accessories) to the lowest category and service voltage.
- When handling the leads, test probes, and crocodile clips, keep your fingers behind the physical guard.
- Please ensure you use the correct fuse rating and type, as failure to do so may damage the instrument and invalidate the warranty.
- Use personal protection equipment systematically.
- All troubleshooting and metrological checks must be done by competent, accredited personnel.

2. FIRST USE

2.1. STATE AT DELIVERY

C.A 6541

Supplied in a cardboard box with a shoulder bag containing:

- two safety leads, one red and one blue, each 1.5 metres long,
- one black guarded safety, 1.5 metres long,
- three crocodile clips – one red, one blue and one black –
- one black test probe,
- eight LR14 or C batteries,
- one multilingual quick start guide,
- one multilingual safety data sheet,
- one verification certificate.

C.A 6543

Supplied in a cardboard box with a shoulder bag containing:

- one cable DB9F-DB9F,
- one adapter DB9M-DB9M,
- two safety leads, one red and one blue, each 1.5 metres long,
- one black guarded safety, 1.5 metres long,
- three crocodile clips – one red, one blue and one black –
- one black test probe,
- one 2 m mains lead,
- one multilingual quick start guide,
- one multilingual safety data sheet,
- one verification certificate.

2.2. ACCESSORIES

- Remote control probe
- Set of 2 test probes (red + black)
- Set of 3 x 3 m safety leads (red + blue + black guarded)
- Serial printer (C.A 6543)
- Serial-to-parallel adapter (C.A 6543)

2.3. SPARES

- 3 x 1.5 m safety leads straight-straight (red + blue + black guarded)
- 4 x croc-clips (red, black, blue, green)
- Shoulder bag N° 6 for accessories
- F 2.5 A - 1200 V – time delay fuse - 15 kA - 8 x 50 mm (set of 5)
- F 0.1 A - 660 V – fast fuse - 20 kA - 6.3 x 32 mm (set of 10)
- 9.6 V – 2.4 AH – NiMH Rechargeable battery
- RS 232 PC cable DB 9F - DB 25F x2
- RS 232 printer cable DB 9F - DB 9M N°01
- Mains lead

For the accessories and spares, consult our web site:

www.chauvin-arnoux.com

2.4. FITTING THE BATTERIES INTO THE C.A 6541

Check that none of the terminals is connected and that the selector switch is definitely on OFF before accessing the battery compartment found inside the instrument.

- To open up the instrument, unscrew the 4 captive screws situated on the underside of the case.
- As soon as they turn freely, place the instrument on a table and press on the screws to extract the front panel.
- Turn over the instrument to entirely remove the front panel unit from the casing.
- Unscrew the two screws on the battery compartment cover.



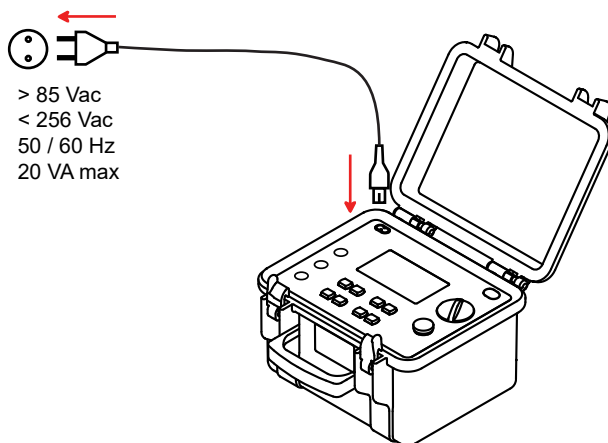
Take care not to damage the seal during removal and replacement of the front panel unit.

- Insert the 8 batteries into their compartments, ensuring the correct polarity.
- Refit the battery cover and ensure it is fully and correctly closed.
- Tighten the 2 screws on the battery cover.
- Refit the circuit board into the casing and tighten the 4 captive screws.

2.5. C.A 6543 BATTERY CHARGER

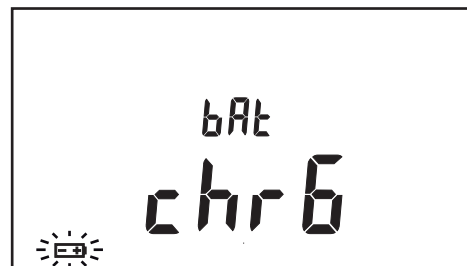
Before using the device for the first time, start by fully charging the battery. The battery must be charged at a temperature of between -10 and 40°C, and between 10 and 80 % HR.

Plug the supplied mains lead into the device and into the mains.



The device will start charging and the  symbol will flash:

- **bAt** on the small display and **chrG** on the main display means fast charging in progress.
- **bAt** on the small display and **chrG** flashing in the main display means slow charging (the fast charge will begin when the temperature conditions are appropriate).



- **bAt** on the small display and **FULL** in the main display means that charging is completed.



3. PRESENTATION

3.1. FUNCTIONS

The C.A 6541 and C.A 6543 megohmmeters are portable units, fitted into a rugged construction site casing with cover, operating on battery or line power. The C.A 6543 can also be powered directly from the mains. The instruments feature a large backlit LCD display showing measurements both numerically and as a bargraph.

They are used to measure:

- voltages,
- insulation,
- continuity,
- resistance,
- capacitance.

These megohmmeters help to ensure the safety of electrical installations and equipment.

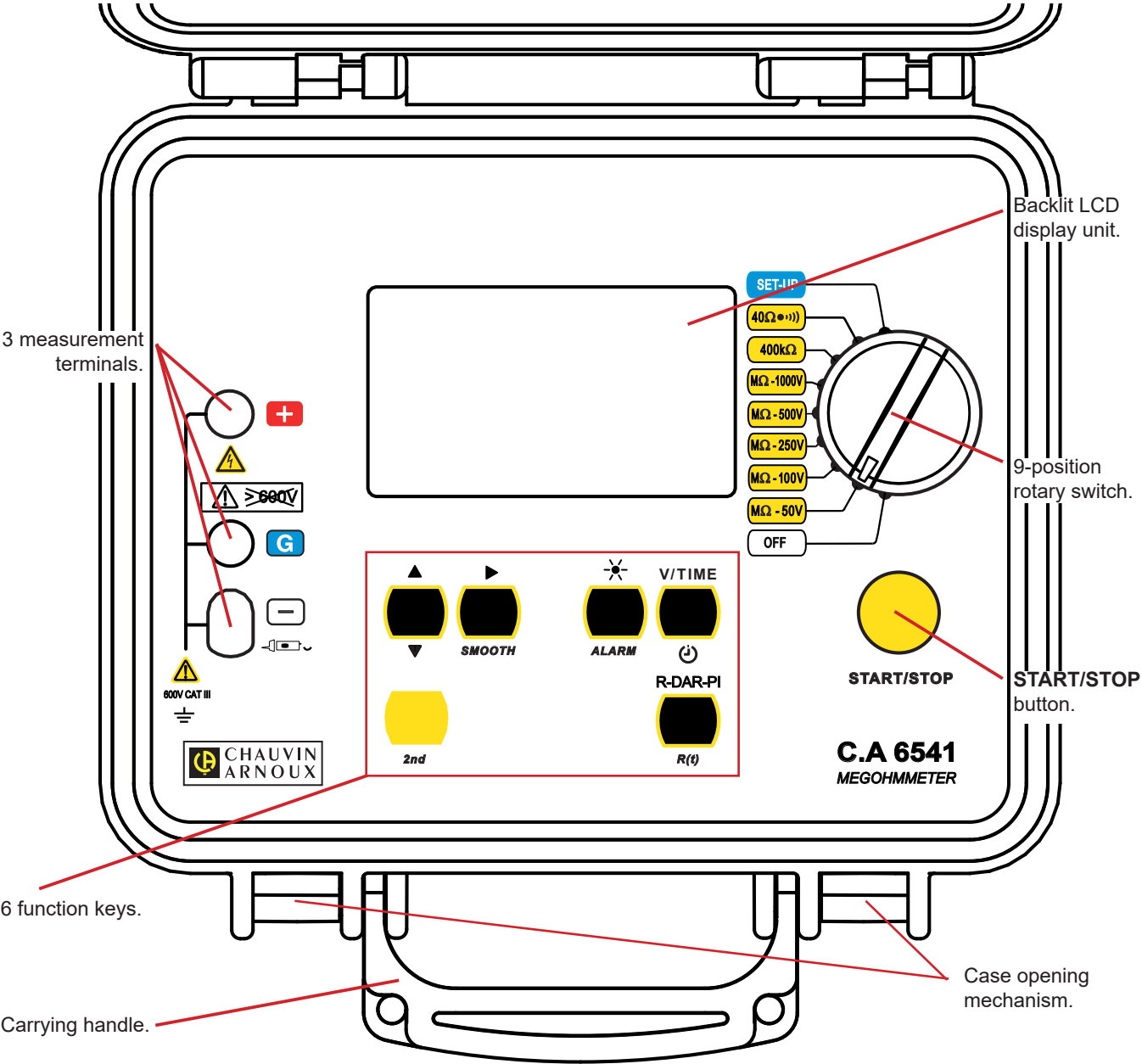
They offer a wide range of advantages such as:

- digital filtering of insulation measurements,
- automatic voltage measurement,
- automatic detection of the presence of AC or DC external voltage on terminals, before or during the measurements, which inhibits or stops the measurements,
- threshold programming, to trigger alarms using audible alarms,
- the timer for measurement time checks,
- protection of the device by fuse, with detection of defective fuses,
- operator safety by means of automatic discharge of the residual high voltage on the equipment tested,
- automatic power save mode of the device to save battery power.

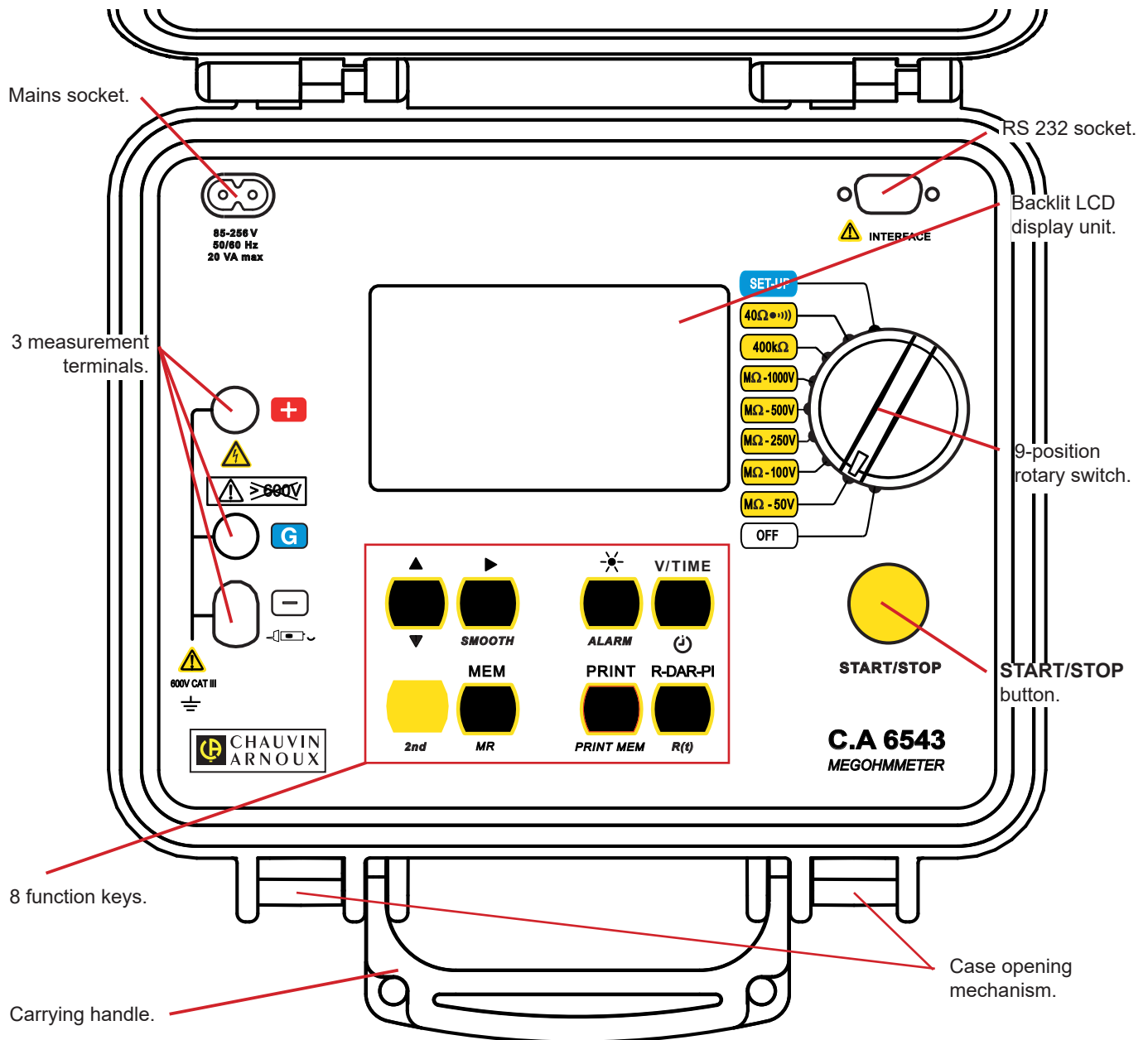
The C.A 6543 integrates the following additional functions:

- Measurement recording,
- Real-time clock,
- RS232 interface for connection to a PC or printer (RS232 or Centronics),
- PC control of the device (with the MEG software supplied),
- Sending the measurements to a PC.

3.2. VIEW OF THE C.A 6541



3.3. VIEW OF THE C.A 6543



3.4. ROTARY SWITCH

The rotary switch has 9 positions:

- OFF: switches off unit power
- MΩ - 50V: insulation measurement at 50 V up to 200 GΩ
- MΩ - 100V: insulation measurement at 100 V up to 400 GΩ
- MΩ - 250V: insulation measurement at 250 V up to 1 TΩ
- MΩ - 500V: insulation measurement at 500 V up to 2 TΩ
- MΩ - 1000V: insulation measurement at 1000 V up to 4 TΩ
- 400kΩ: resistance measurement
- 40Ω•••••): continuity measurement
- SET-UP: adjustment of unit configuration

3.5. KEYS

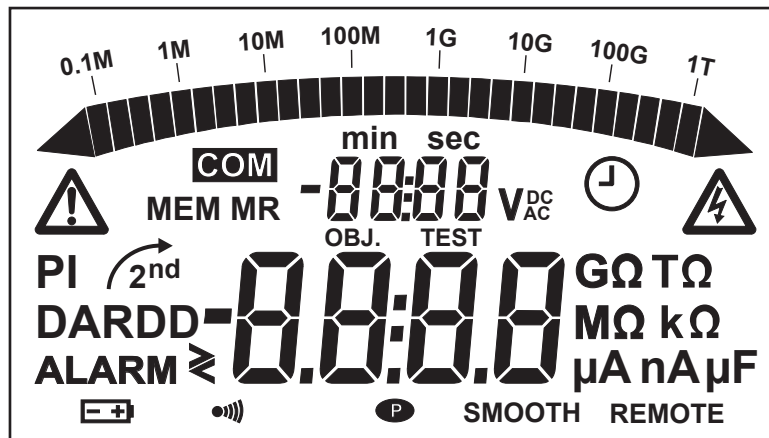
The **START/STOP** button: to start and stop the measurement

Each function key has a primary function (upper marking) and a secondary function (lower marking).

2nd	Selection of the second function (in yellow Italics above each key).
V / TIME 	Primary function In insulation, display of elapsed time from the beginning of measurement, then of exact voltage generated. In MR (memory recall) mode, display of the date and time of the stored measurement, of the exact test voltage and of the memory address OBJ:TEST. Secondary function Activation/deactivation of “programmed time test” mode.
R-DAR-PI R(t)	Primary function Before the insulation measurements, selection of required measurement type: normal measurement, calculation of dielectric absorption ratio (DAR) or calculation of polarisation index (PI). After the measurements, display of R, DAR, PI and capacitance (µF). Secondary function Display/no display of intermediate values of insulation resistance, test voltage and time stamp, following a programmed time test (the V/TIME and ▲▼ keys may also be used).
 ALARM	Primary function: ON/OFF of display backlight. Secondary function: activation/deactivation of alarms programmed in SET-UP.
 SMOOTH	Primary function: Select a parameter for modification. Secondary function: ON/OFF for display smoothing during insulation measurement.
▲ ▼	Primary function Increments the displayed flashing parameter. Browse the list of intermediate insulation results in the R(t) function. Secondary function Decrements the flashing parameter displayed. Browse the list of intermediate insulation results in the R(t) function.
MEM MR (C.A 6543)	Primary function: storage of measured values. Secondary function: recall of stored data.
PRINT PRINT MEM (C.A 6543)	Primary function: for the immediate printing of measurement results. Secondary function: for printing of memory contents.

If the ▲ and ▼ keys are pressed and held, the parameter changes faster.

3.6. DISPLAY



3.6.1. DIGITAL DISPLAY

The main digital display indicates the values for insulation measurement values: resistance, DAR PI or capacitance).

The small digital display indicates the voltage measured or applied by the instrument.

During the insulation measurement, the elapsed time or the output voltage is displayed.

After the recording of a group of data (C.A 6543), the small display also indicates the date and time in MR (Memory recall) mode. It is also used to indicate the memory address using the OBJ:TEST number.

3.6.2. BARGRAPH

The bargraph is active during insulation measurement (0.1 MΩ to 1 TΩ). It is also used, to indicate the battery charge, and the memory space, a segment representing approximately 100 sets of recorded values.

3.6.3. SYMBOLS

MEM/MR	Indicates the storage (MEM) or memory reading (MR) operations (C.A 6543).
OBJ:TEST	Memory address (C.A 6543): the number is displayed above, on the small digital display.
COM	Flashes on the screen when data is transmitted to the serial interface (C.A 6543) or remains permanently displayed if there is a problem during transfer
DAR/PI	Indicates the mode chosen before the insulation measurement or the results of these measurements.
	Voltage generated dangerous, $U > 120 \text{ Vdc}$.
	External voltage present, symbol is activated after pressing START/STOP button, if $U > 25 \text{ VAC} \pm 3 \text{ V}$ or $> 35 \text{ Vdc}$.
	Activation of the "Programmed-time test" mode or, on the SET-UP position of the switch, clock adjustment (C.A 6543). Flashes for each sample recorded.
	Indicates that the secondary function of a key will be used.
	Flashes if the battery voltage (C.A 6541) or the rechargeable battery (C.A 6543) is low. The voltage is displayed on the small digital display for 2 seconds whilst the instrument switches on (bAt).
	The audio warning is activated.
	Indicates that the automatic power save mode function is deactivated.
SMOOTH	Smoothing of insulation measurement display.
REMOTE	Remote control via interface (C.A 6543). In this mode, all keys and the rotary switch are inactive, except the OFF position

4. MEASUREMENT FUNCTIONS

4.1. AC/DC VOLTAGE

Any rotation of the switch on an insulation position sets the unit to automatic AC / DC voltage measurement. The voltage is measured continuously and indicated on the small display.

The start of the insulation measurements is inhibited if an excessively high external voltage is present on the terminals, before pressing the **START/STOP** button. Also, if an excessively high parasitic voltage is detected during these measurements, they are automatically stopped and the voltage is indicated.

4.2. INSULATION MEASUREMENTS

As soon as one of the MΩ positions has been selected, the main display shows - - - **MΩ** and the small display indicates the voltage present at the device's + and - terminals



If the external voltage present at the device's terminals exceeds the thresholds shown on the table below, then pressing the **START/STOP** button does not bring about insulation measurement but instead triggers a discontinuous audible signal and the ⚠ symbol flashes for 2 seconds, then the device goes back to automatic voltage measurement.

Test voltage	Maximum voltage allowed for measurement
50 V	8 V
100 V	16 V
250 V	50 V
500 V	50 V
1000 V	50 V

Pressing the **START/STOP** button immediately begins the measurement. The measurement value is displayed on the main digital display and on the bar graph. An audible beep is given out every 10 seconds to indicate that measurement is in progress.

If the generated voltage is > 120 V, the ⚠ symbol is displayed.

If, during insulation measurement, an external voltage > 25 V_{AC} $\pm$ 3 V or 35 V_{DC} is detected, the measurement is stopped as long as the voltage is applied to the instrument. The ⚠ symbol flashes and the voltage value is indicated on the small digital display.

If the measurements fluctuate greatly, it is possible to use the SMOOTH function (see § 5.5).

By pressing the V/TIME button during measurement you can alternate between displaying, on the small display, the duration of the measurement and the exact voltage generated (see § 5.2).

To stop the measurement, press the **START/STOP** button.

After the measurement has been stopped the main result remains displayed. It is possible to scroll down all the other results available on the main display using the **R-DAR-PI** key.

If the "Time-controlled test" mode has been selected, the **R (t)** key makes it possible to access all the saved interval measurements automatically (see § 5.3).

If the ALARM function is activated, an audible signal is triggered as soon as the measurement crosses the threshold programmed in the SET-UP configuration menu (see § 5.4).

Display of values after measurement

R-DAR-PI key		V/TIME key
Main display	Small display	Small display if the MR key is activated (C.A 6543)
Resistance DAR PI	duration (min. sec) duration (min. sec) duration (min. sec)	date, time, test voltage, OBJ:TEST date, time, test voltage, OBJ:TEST date, time, test voltage, OBJ:TEST
Capacitance * R(t)	duration (min. sec)	last test voltage

*: The capacitance measurement (μF) is displayed only after the measurement stops and the circuit has been discharged.

4.3. CONTINUITY AND RESISTANCE MEASUREMENT

Continuity measurement is carried out on the 40Ω current position with a test current $> 200 \text{ mA}$ up to 20Ω .

Resistance measurement on the $400 \text{ k}\Omega$ position with a test current $< 6 \text{ mA}$.

Once the rotary switch has been turned to one of these 2 positions, the main display indicates $---$ Ω (for continuity) or $---$ $\text{k}\Omega$ (for resistance) and the small display indicates the voltage present on the + and - terminals.

If the voltage is $> 3 \text{ VAC/DC}$ and the **START/STOP** button is pressed, the $\triangle$ symbol flashes and the audible signal gives out beeps (for 2 seconds) telling you that the measurement was denied, then the instrument goes back to its normal voltage measurement.

If the voltage is $< 3 \text{ VAC/DC}$ and the **START/STOP** button is pressed, the measurement goes ahead. The main display indicates the continuity or resistance value in progress and the small display indicates the voltage present on the + and - terminals.

R-DAR-PI, **V/TIME** and **SMOOTH** keys are not active for these functions.



There is no automatic polarity change for continuity measurement.

If, during continuity or resistance measurement, an external voltage $> 25 \text{ VAC} \pm 3 \text{ V}$ or 35 VDC is detected, the measurement is stopped as long as there is voltage present. The $\triangle$ symbol flashes and the voltage value is indicated on the small digital display.

If the ALARM function is activated, an audible signal is triggered as soon as the measurement crosses the threshold programmed in the SET-UP configuration menu.

5. SPECIAL FUNCTIONS

5.1. 2nd KEY

This key is used to select the secondary functions of the function keys. It is always related to the $\sqrt{\text{2nd}}$ symbol.

This symbol disappears as soon as the selected function key is pressed, unless the ▼ key is activated.

In this case, it disappears only if the **2nd** key is pressed again or if other function keys are pressed. This is used to rapidly decrement the parameters using the ▼ key without having to press the **2nd** key each time.

5.2. V/TIME/⌚ KEY

This key is only active for insulation measurement.

5.2.1. V/TIME FIRST FUNCTION

This key is used to show all available secondary information on the small display, during isolation measurement.

- Time elapsed since the beginning of the measurement,
- The voltage between the instrument's + and - terminals,
- Date, time, test voltage and OBJ:TEST number in memory recall mode (MR).

5.2.2. SECOND FUNCTION ⌚ (PROGRAMMED-TIME TEST)

- The small display shows the measurement duration programmed in the SET-UP, the symbol ⌚ is ON. Pressing the **START/STOP** button starts the measurement.
- By default, the measurement lasts 15 minutes.
- As soon as the measurement has started, the small display decrements the remaining time. When this time reaches zero, measurement stops.

During the running of a programmed-time test, intermediate samples (resistance/voltage values as a function of time) are automatically stored.

The time between samples is 30 s by default, but this value may be changed in the SET-UP menu.

The samples may be displayed using the R(t) function (see § 5.3) as long as a new measurement has not been launched. They are erased at each new measurement.

They are automatically stored with the final value of the resistance when using the MEM function.

If the position of the rotary switch is modified, or if the **START/STOP** button is pressed during the measurement, the measurement is aborted.

5.3. R-DAR-PI / R(t) KEY

5.3.1. R-DAR-PI FIRST FUNCTION

The R-DAR-PI key is used to calculate automatically the Polarisation Index (PI) and the Dielectric Absorption Ratio (DAR).

These two parameters are particularly useful for monitoring the ageing of the insulation of rotating machines or very long cables, for example.

On this type of component, the measurement is disturbed at the beginning due to interference currents (capacitive load current, dielectric absorption current) which decrease with time. To measure exactly the representative leak current of the insulation, it is therefore necessary to perform long duration measurements, to by-pass the parasitic currents present at the beginning of measurements.

Next we calculate the PI or DAR ratios:

$$PI = R_{10 \text{ min}} / R_{1 \text{ min}} \quad (2 \text{ values to be noted during a 10-min. measurement})$$

$$DAR = R_{1 \text{ min}} / R_{30 \text{ s}} \quad (2 \text{ values to be noted during a 1-min. measurement})$$

The quality of insulation depends on the results found.

DAR	PI	State of the insulation
< 1,25	< 1	Inadequate, even dangerous
	< 2	
< 1,6	< 4	Good
> 1,6	> 4	Excellent

5.3.2. USE OF THE R-DAR-PI FUNCTION

During or after a measurement, the **R-DAR-PI** key is used to scroll through the values:

- DAR (if measurement > 1 min)
- PI (if measurement > 10 min)
- Capacitance in μF (only after the measurement has stopped and the circuit has been discharged))
- Insulation resistance in $\text{M}\Omega$ or $\text{G}\Omega$ or $\text{T}\Omega$

Automatic DAR or PI measurement:

If the **R-DAR-PI** key is actuated during the voltage measurement before the start of a measurement, the display is as follows:



Depending on the choices (DAR or PI), the measurement goes as follows:

- a) **DAR**: press the **START/STOP** button: the **DAR** symbol flashes and the display indicates - - - as long as the calculation of the coefficient is impossible ($t < 1 \text{ min}$).

After 1 min. the measurement stops, the DAR symbol becomes steady and the main display automatically shows the DAR value if the calculation was possible.

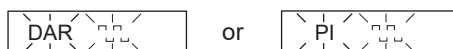
The **R-DAR-PI** key may be used during and after the measurement to see the insulation measurement performed, but it does not provide the PI value, since the measurement did not last long enough.

- b) **PI**: press the **START/STOP** button: the **PI** symbol flashes and the display indicates - - - as long as the calculation of the coefficient is impossible ($t < 10 \text{ min}$).

After 10 min. the measurement stops, the PI symbol becomes steady and the main display automatically shows the PI value if the calculation was possible.

During and after the measurement, the **R-DAR-PI** key is used to display the DAR (after 1 min), the PI (after 10 min.) and the insulation measurement.

Note: If during DAR or PI measurement (automatic or not), a high external interference voltage becomes present, or the insulation resistance goes off the device's measurement range, then the DAR or PI measurements are interrupted and the screen indicates:



Note: The 10 min/ 1 min measurement durations for PI calculation can be modified in the SETUP menu (see § 5.7), allowing adaptation to possible changes in standards or to suit a particular application.

5.3.3. SECONDARY FUNCTION $R(t)$

The **$R(t)$** key is used to access the intermediate insulation resistance values measured as a function of time, after a measurement in "Programmed-time test" ⌚ mode (see § 4.2).

The time between each stored samples is programmed in the SET-UP configuration menu.

This function is also available on model C.A 6541 that has no memory for the storage of measured data, or interface to recover this data from the instrument on a PC.

On the C.A 6541, up to 20 samples can be recorded by the instrument during ⌚ measurement when sampling at the rate chosen in SET-UP (the default value is 30 seconds). It is possible to save more than 20 samples, available processing memory space permitting.

On the C.A 6543, the number of samples that can be saved is only limited by the memory space available.

After pressing the **R(t)** key, the instrument switches to display mode:

- the small display indicates a time of 00:30 (if the sampling frequency is 30 s)
- the main display indicates the corresponding value R.

The **V/TIME** key is used to alternate between time and voltage (on the small display), with the value R on the main display.

The **▲ ▼** keys are used to scroll down through the all the samples saved during measurement. This makes it possible to read off the information in order to draw out R(t) and an V(t) graphs.

It is therefore possible to perform, on-site, an R(t) analysis with no PC.

Pressing the **R(t)** or the **R-DAR-PI** again exits from this function

5.4. ✖ / ALARM KEY

5.4.1. PRIMARY FUNCTION ✖

This function is used to activate or deactivate the backlight.

5.4.2. SECONDARY FUNCTION ALARM

Activation/deactivation of the ALARM function. The corresponding symbol is displayed when activated.

If this function is active and the limit programmed in the SET-UP menu is exceeded or fallen below during the measurement, the **ALARM** symbol will flash and the audible signal (if activated) will sound continuously.

It is possible to program a different limit for each test voltage, the limits will be stored even if the instrument is switched off.

5.5. ► / SMOOTH KEY

5.5.1. PRIMARY FUNCTION ►

Used to select a parameter for modification – the active parameter flashes. It may be modified using the **▲ ▼** keys.

5.5.2. SECONDARY FUNCTION SMOOTH

Used to activate a digital filter for insulation measurements. It affects only the display (which is smoothed) and not the measurements. This function is useful in case of high instability of the displayed insulation values, caused by a strong capacitive component of the part to be tested, for example.

5.6. ▲ ▼ KEYS

This function is used to modify the flashing parameters displayed, or to consult the R(t) values (see § 5.3).

In general, two figures (day, month, hour, min., sec., OBJ:TEST) flash.

The **▲** and **▼** functions have a “wraparound” mode: when the upper or lower modification limit is reached, the parameter to be modified automatically jumps to the other limit. .

5.6.1. PRIMARY FUNCTION ▲

A brief press increments the displayed number by one unit.

A longer pressure on this key will cause fast incrementation.

5.6.2. SECONDARY FUNCTION ▼

A brief press decrements the displayed number by one unit.

A long press, will cause rapid decrementation.

Contrary to all the secondary functions of the other keys, it is not necessary in this case to press the **2nd** key each time to access the function **▼**. The **2nd** symbol remains displayed and therefore valid (for the function **▼** only) as long as the user does not deactivate it by pressing the **2nd** key again or another key.

5.7. SET-UP FUNCTION (INSTRUMENT CONFIGURATION)

This function, located on the rotary switch, is used to change the configuration of the device by accessing directly the parameters to be modified.

After turning the rotary switch to the SET-UP position:

- all the segments of the display are activated for 1 second,
- the number of the software version is displayed
- the serial number of the device is displayed
- **PUSH** then appears on the small display and **btn** on the main display, to prompt you to press a key.

The SET-UP function is then used to access directly the parameters to be modified, by pressing the corresponding key:

- After pressing a key, the figures or symbols corresponding to the function selected appear on the screen.
- The modifiable figures or symbols will flash. The normal modification procedure using the ► and ▲▼ keys must be used.
- All the parameters are recorded immediately and permanently.

The following table defines the active keys in the SET-UP function and the corresponding display, with the possible adjustment ranges.

Parameters to be modified	Control key	Display			
		main	small	symbols	values
Test duration, in "Programmed-time test" mode			15:00	min:sec	01 - 59 min
1 st and 2 nd time for PI calculation	R-DAR-PI	second period (10:00)	first period (01:00)	min:sec	00:59
Time between samples in "Programmed-time test" mode	$R(t)$		00:30	min:sec	05 s - 59 min
Limit for M Ω - 50V	ALARM	50 k Ω	50 V	ALARM <	2 k - 200 G Ω and >>
Limit for M Ω - 100V	ALARM (2 nd press)	100 k Ω	100 V	ALARM <	4 k - 400 G Ω and >>
Limit for M Ω - 250V	ALARM (3 rd press)	250 k Ω	250 V	ALARM <	10 k - 1 T Ω and >>
Limit for M Ω - 500V	ALARM (4 th press)	500 k Ω	500 V	ALARM <	20 k - 2 T Ω and >>
Limit for M Ω - 1000V	ALARM (5 th press)	1000 k Ω	1000 V	ALARM <	40 k - 4 T Ω and >>
Limit for 400 k Ω	ALARM (6 th press)	100 k Ω	rES	ALARM <	0,01 - 400 k Ω and >>
Limit for 40 Ω	ALARM (7 th press)	2 Ω	Cont	ALARM <	0,01 - 40 Ω and >>
Time	V/TIME		12:55		hour (00-23) minute (00-59)
Date (Europe version)	V/TIME (2 nd press)	17.03	1999		dd.mm.yyyy
Version: USA, Europe	V/TIME (3 rd press)	USA/Euro			USA/Euro
Erase memory	MEM then MEM (2 s)	cLr	ALL	MEM	
Selective deletion of memory	MEM then ► and ▲▼ and MEM (2 s)	FrEE / OCC	OBJ:TEST number	MEM + OBJ:TEST	00 - 99
Baud	PRINT	9600	bAUd		300 - 9600 or parallel
Audible signal		On			On / OFF
Auto switch-off	(2 nd press)	On			On / OFF
Lead compensation	(3 rd press) then ▲ and START	- - - -	On		On / OFF and 0,01 - 5 Ω
Configuration by default	(4 th press) then START	DFLt	SEt		
Test voltage locking	(5 th press)	On	50 V		On / OFF
Test voltage locking	(6 th press)	On	100 V		On / OFF
Test voltage locking	(7 th press)	On	250 V		On / OFF
Test voltage locking	(8 th press)	On	500 V		On / OFF

Parameters to be modified	Control key	Display			
		main	small	symbols	values
Test voltage locking	 (9 th press)	On	1000 V		On / OFF

The values shown in this table, in the “main display” and “small display” columns, are default values programmed at the factory. In case they are accidentally changed, it is possible to get them back: see § 5.7.4.

5.7.1. MEMORY DELETION

In **SET-UP**, press the **MEM** key:

- The **MEM** symbol flashes,
- **ALL** is shown on the small display,
- The main display indicates **cLR**.

To delete the entire memory, press again on the **MEM** key for 2 seconds:

- The **MEM** symbol is displayed steady,
- The main display indicates **FrEE**.

To delete the content of a specific **OBJ:TEST**:

- Select the number using keys **►** and **▲▼**,
- **cLR** is shown on the main display,
- Press again on the **MEM** key for 2 seconds to delete:
 - The **OBJ:TEST** is indicated on the small display,
 - The main display indicates **FrEE**.

5.7.2. OUTPUT IN BAUDS

In **SET-UP**, press the **PRINT** key:

The main display indicates the output in bauds, i.e. 300, 600, 1200, 2400, 4800, 9600 or Parallel.

On the small display, **baud** appears. The value may be modified using the **▲** and **▼** keys.

The display of **Parallel** means that parallel mode has been selected, for printing on a parallel printer via the serial-to-parallel adapter (RS 232-Centronics).

5.7.3. LEAD RESISTANCE COMPENSATION

In **SET-UP**, press the  button three times:

The  symbol appears and the small display indicates **On**. It is possible to select **OFF** with the **▲** and **▼** keys. In this instance, the lead resistance will not be subtracted when carrying out continuity measurement.

To memorise the lead resistance:

- Connect them together and press the **START/STOP** button (in **SET-UP** position )
- The resistance of the leads will be memorised and indicated on the main display

Note:

- This value is stored in memory, even when the instrument is switched off.
- The lead compensation only comes into effect when carrying out continuity measurement.
- To activate/deactivate this function, simply select On or OFF on the small display with the **▲** and **▼** keys.
- The memorised value will be stored and displayed on the main display, but can be activated or deactivated, depending on what the small display indicates.
- Values between 0 and 5 Ω can be saved for leads compensation. Beyond this value, nothing is saved.

5.7.4. DEFAULT CONFIGURATION OF THE DEVICE

In **SET-UP**, 3rd press on the  key:

- The small display shows **SEt**,
- The main display shows **DFLt** (flashing).

Press the **START/STOP** button to reconfigure the device using the default parameters (see previous table).

5.7.5. TEST VOLTAGE LOCKING

This function limits the test voltage for the insulation measurement to the maximum value which is set here, if this function is enabled. This enables the device to be used by less experienced persons for specific applications (telephony, aerospace, etc.).

In the **SET-UP**, 5th press on the  key:

- The test voltages appear in succession on the small display with the  button and **On** or **OFF** on the main display.
- Choose On or OFF using the ▲ ▼ keys for each test voltage, to bar (OFF) or to reinstate (On) the access to the insulation tests at these voltages.

6. USE

6.1. MEASUREMENT PROCEDURE

- Start up the instrument by setting the switch to the desired measurement position. All the segments of the LCD screen are displayed, then the battery voltage.
- Connect the + and - leads to the measurement points.
- The input voltage is measured continuously and indicated on the small display.
If an external voltage higher than the authorised limit value (see § 4.2) is present, the measurement will be inhibited.
- A press on **START/STOP** button starts the measurement.
- Another press on **START/STOP** button stops the measurement. The last result remains displayed until the next measurement or the rotation of the switch.

If a voltage higher than the authorised limit value (see § 4.2) appears during all the measurements, the device will indicate this voltage on the small display using the flashing warning symbol and stop the measurement in progress.

Note: A certain number of special functions may be used (see § 5).

6.2. INSULATION MEASUREMENT

With this function, the instrument can measure insulation between 2 k Ω and 4 T Ω , according to the chosen test voltage among 50 - 100 - 250 - 500 and 1000 V.

- Set the switch to the M Ω position.
- Connect the device to the part to be tested.
If the voltage present is higher than the authorised limit value (see § 4.2) the measurement will be inhibited.
- Start the measurement and note the results.

It is possible to scroll through all the results on the main display using the **R-DAR-PI** key or on the small display using the **V/TIME** key.

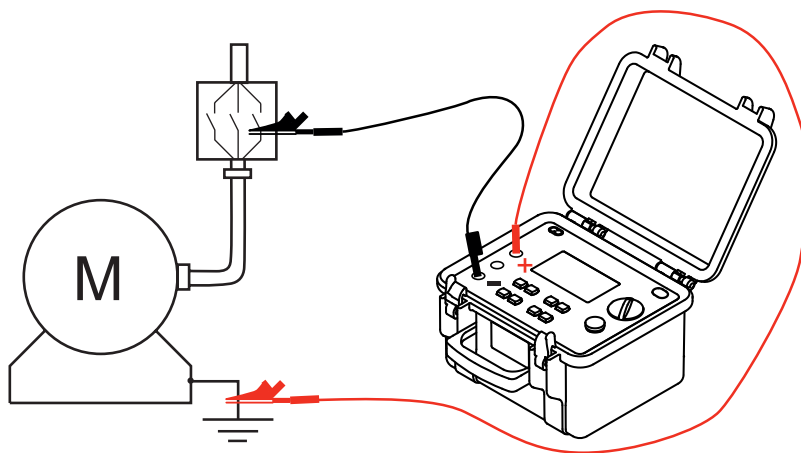
R(t) key is used to access the intermediate values measured and stored at a rate set in SET-UP, in "Programmed-time test" mode. These samples are available until the start of another measurement or until the next rotation of the switch.

To measure high insulation values (> 1 G Ω), you are advised to use the **G** guard terminal to remove the influence of surface leakage currents. The guard terminal should be connected to a surface where surface leakage currents may flow via dust and humidity: for example, the insulation surface of a cable or transformer, between two measurement points.



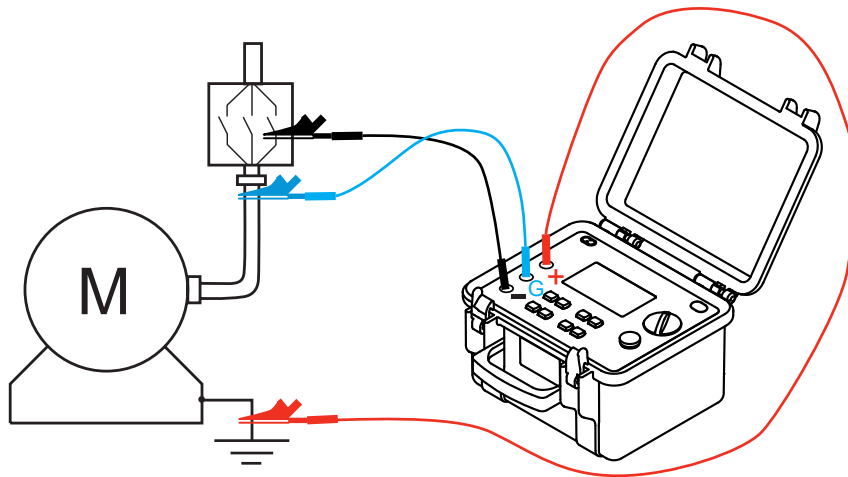
As soon as insulation measurements stop, the tested circuit is automatically discharged via an internal resistor of the device.

- **Connection diagram for measurement of low insulation values (example of a motor)**

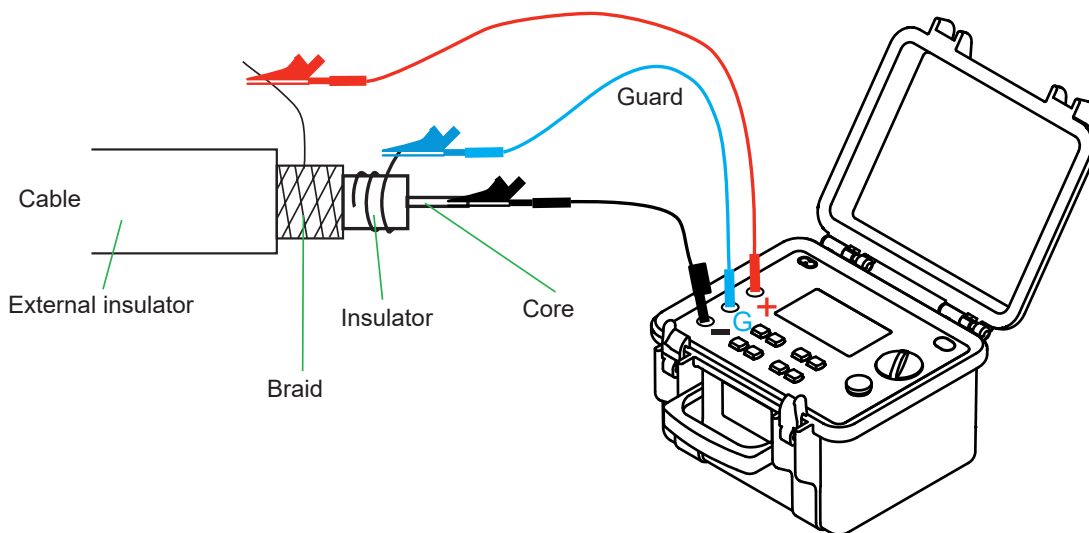


■ Connection diagram for measurement of high insulation values

a) Example of a motor (reduction of capacitive effects)



b) Example of a cable (reduction of surface leakage effects)



6.3. CONTINUITY MEASUREMENT

In this function, the measurement current is $> 200 \text{ mA}$ from 0 to 20Ω and $> 140 \text{ mA}$ from 20 to 40Ω . This measurement serves to test the low resistance of ground cables for example.

- Select 40Ω position with rotary switch.
- Connect the instrument to the test object. If the voltage present is $> 3 \text{ V}$, then measurement is prohibited.
- Start the measurement and read-off the results.

It is possible to compensate for the lead resistance (see § 5.7.3).

The **R-DAR-PI** and **V/TIME** keys are not active for this function.



There is no automatic polarity change in continuity measurement.

6.4. RESISTANCE MEASUREMENT

In this function, the measurement current is limited to 6 mA.

- Select 400 k Ω position with the rotary switch.
- Connect the instrument to the test object. If the voltage present is > 3 V, then measurement is prohibited.
- Start the measurement and read-off the results.

During measurement, the potential difference at the input is indicated on the small display (useful for measurement of multi-junction components: thyristors, high voltage diodes...).

The open circuit voltage is equal to the voltage of the battery (C.A 6541) or rechargeable battery voltage (C.A 6543).

The **R-DAR-PI** and **V/TIME** keys are not active for this function.

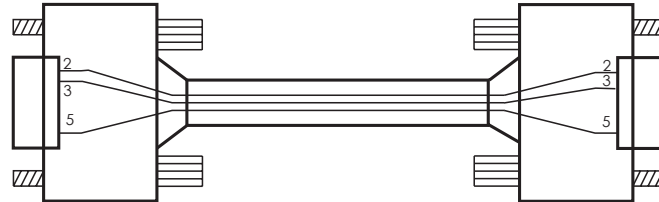
6.5. CAPACITANCE MEASUREMENT

Capacitance measurement is automatically carried out during insulation measurement, and is displayed after the measurement is stopped and the circuit is discharged, using the **R-DAR-PI** key.

7. MEMORY / RS232 (C.A 6543)

7.1. RS232 SPECIFICATIONS

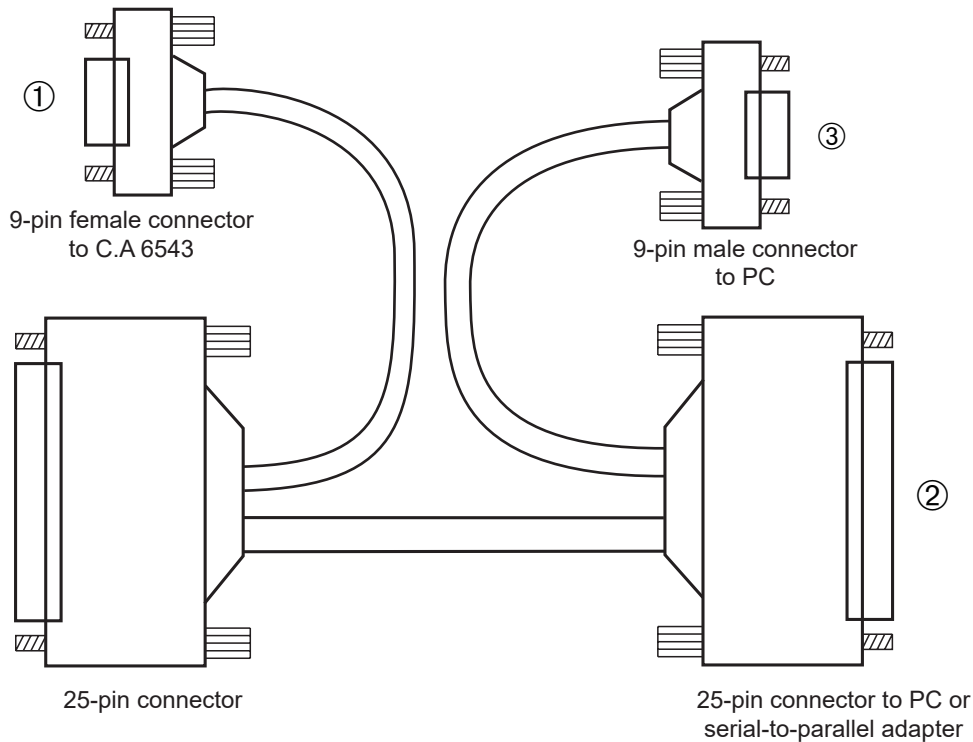
- The signalling speed in Bauds can be set to 300, 600, 1200, 2400, 4800, 9600, or **Parallel** for the printing of results on parallel printers via the optional serial-to-parallel adapter. This setting is carried out in the SET-UP menu.
- Data format: 8 data bits , 1 stop bit, without parity, Xon / Xoff protocol.
- Serial printer connection:



9-pin female connector
to C.A 6543

9-pin male connector
to serial printer

- Connection to a PC or to a parallel printer:



Required links DB9 → B25 (① → ②)

1 → 8	6 → 20
2 → 2	7 → 5
3 → 3	8 → 4
4 → 6	9 → 22
5 → 7	

Conversion DB25 → DB9 (② → ③)

2 → 3
3 → 2
7 → 5

7.2. RECORDING/PLAYBACK OF STORED VALUES

7.2.1. FIRST FUNCTION MEM

This function is used to record results in the instrument's memory.

These results can be recorded at an address identified by an object number (OBJ) and a test number (TEST).

An object represents a box in which 99 tests can be stored. An object can thus represent a machine or an installation on which a number of measurements (insulation, resistance, continuity) will be performed.

- When the key is activated, the **MEM** symbol flashes and the small display indicates the next free OBJ:TEST, for example, **02:01**. The main display indicates **FrEE**.
It is always possible to modify the OBJ:TEST using the ► and the ▲▼ keys.
If the user selects an already occupied memory address, **OCC** appears on the main display.
If a new OBJ is selected, TEST is set to 01.
- By pressing the **MEM** key again, the results of the present measurement will be recorded in the selected memory address (whether occupied or not). The **MEM** symbol no longer flashes and remains displayed. The time and date of this recording are stored with the data already available (R, U, t).

If the switch is turned before the second press of **MEM**, the record mode will be exited without the results being stored.

- If a programmed-time test was performed, intermediate measurements (samples) are available. They are automatically recorded under the same OBJ number: TEST as the final measurement.

Memory space available

This function is automatically activated when recording a result.

Press once on **MEM** to obtain the next free OBJ:TEST; the indication of the bargraph is proportional to the free memory available.

- If the entire memory is free, all the segments are activated.
- If the entire memory is full, the left-hand bargraph arrow flashes.
- When the recording is completed, the bargraph disappears.

7.2.2. SECOND FUNCTION MR

With the MR function it is possible to recall any saved data from the memory, no matter the position of the rotary selector switch.

- When the key is activated, the **MR** symbol is displayed (not flashing).
The small display indicates the last occupied OBJ:TEST, for example, 02:11.
"11" above the TEST symbol is flashing. Use the ► and the ▲▼ keys to select the desired OBJ:TEST.

If a new OBJ is selected, TEST is automatically set to the largest stored number.

The values at the address selected by OBJ:TEST are shown in the main display. Additional results can be viewed using the **R-DAR-PI** key.

- The **V/TIME** key is active and gives access to date, time, voltage, duration and OBJ:TEST number of each stored measurement. If the recording selected by the OBJ:TEST number corresponds to a programmed-time test ⌚, the R(t) values can be accessed by pressing the **R(t)** key. The small display changes and indicates **min:sec** (time of 1st sample) and the ⌚ symbol flashes on the screen. You can scroll through the other samples with the ▲ and ▼ keys.

To exit the R(t) mode and return to the normal memory recall condition (OBJ:TEST), press the **R(t)** or **R-DAR-PI** key again.

To exit the MR function, press **MR** again or turn the switch.

7.3. PRINTING OUT MEASURED VALUES (C.A 6543)

If you use a serial printer, choose the appropriate communication speed in the SET-UP menu, between 300...9600 bauds, then program the printer to the format run by the instrument. If you are using a parallel printer, you should set the signalling speed to **Parallel** when in SET-UP and use the serial-to-parallel adapter that comes as an optional item (to plug in series the supplied cable + adapter + Centronics printer cable).

There are two different printing modes possible:

- Instantaneous printing of measurement (**PRINT**)
- Printing of recorded data (**PRINT MEM**)

If the data transmission to the printer is successful, the **COM** symbol flashes on the screen.
 If a problem is experienced, the **COM** symbol remains permanently on the LCD screen without flashing.

7.3.1. INSTANTANEOUS PRINTING OF MEASUREMENTS (PRINT KEY)

Following a measurement or after accessing values in MR mode, the PRINT function allows the measurement results to be sent via the RS232 connection.

Pressing the key sends to the printer:

- a set of measurements (U/R/DAR/PI/date/time) for normal tests,
- the R(t) values if the "time-controlled test"  has been used.

To stop printing, alter the position of the selector switch.

According to the function used, the following models are obtained:

■ Insulation measurement

CHAUVIN ARNOUX C.A 6543

Instrument number: 000 001

INSULATION RESISTANCE TEST

OBJECT: 01 TEST: 01 (only printed in MR mode)

Description:.....

.....

Date: 30.07.2026

Start time: 09:13:55

Test duration: 00:14:55

Temperature: °C °F

Relative humidity: %

Test voltage: 1000 V

Insulation resistance: 385 GOhm

DAR (R 1'/R 30"): 1,234

PI (R 10'/R 1"): 2,345

Comments:

.....

Date of next test: /.../.....

After a 'time-controlled test' other results are printed (interval samples):

Time	Resistance	Voltage
00: 30	35,94 GOhm	1005 V
01: 00	42,00 GOhm	1005 V
01: 30	43,50 GOhm	1005 V

etc.

A space for the operator to fill in their signature comes at the end of the printout.

■ Continuity or resistance measurement

CHAUVIN ARNOUX C.A 6543

Instrument number: 000 001

CONTINUITY TEST or RESISTANCE TEST

OBJECT: 01 TEST: 01 (only printed in MR mode)

Description:

.....

Date: 30.07.2026

Start time: 14:55:00

Test current: > 200 mA

Lead compensation: 0,12 Ω

Potential difference: 0,9 V

Continuity or Resistance: 0,45 Ω

Comments:

.....

.....

Date of next test: /.../.....

A space for the operator to fill in their signature comes at the end of the printout.

7.3.2. PRINTING OF MEMORISED DATA (*PRINT MEM* KEY)

This is used to send the content of the instrument's memory to the RS232 output.
The small display indicates **01: 01** for the OBJ: TEST number (print starting address).
The main display indicates the last record in the memory (end print address).

For example **12:06**.

"12" above OBJ symbol flashes. Use the ► and ▲ ▼ keys to define the start/end of printing addresses.

To exit without printing, change the position of the rotary switch.

To start printing, press again on the PRINT key.

To stop printing, change the position of the rotary switch.

The printing of each data group is limited to the main results.

Example:

CHAUVIN ARNOUX C.A 6543

Instrument number: 000 001

CONTINUITY TEST

OBJECT: 01 TEST: 01

Date: 31.03.2026

Start time: 14:55:00

Continuity: 0,45 Ω

CONTINUITY TEST

OBJECT: 01 TEST: 02

Date: 31.03.2026

Start time: 15:00:00

Continuity: 0,91 Ω

INSULATION RESISTANCE TEST

OBJECT: 01 TEST: 03

Description:.....

.....

Date: 31.03.2026

Start time: 09:13:55

Test duration: 00:15:10

Temperature °C

Relative humidity: %

Test voltage: 1000 V

Insulation resistance: 385 GOhm

DAR (R 1'/R 30"): 1,234

PI (R 10'/R 1"): 2,345

Comments:

.....

Date of next test:/.../.....

A space for the operator to fill in their signature comes at the end of the printout.

8. MEG APPLICATION SOFTWARE (C.A 6543)

8.1. FUNCTIONS

The MEG (Megohmmeter Transfer) application software is used to:

- configure the instrument,
- transfer the data recorded in the instrument to a PC,
- make instant acquisitions,
- export this measurement data to an Excel spreadsheet or to DataView®.

8.2. OBTAIN THE MEG SOFTWARE

You can download the latest version from our web site:

www.chauvin-arnoux.com

Search for the name of your instrument.

Once on the page, you will find **Support** tag at the bottom of the page.

Download the zip file and unzip it.

8.3. INSTALLING MEG

To install the software, run the **set-up.exe** file, then follow the on-screen instructions



You must have administrator privileges on your PC to install the MEG software.



Do not connect the instrument to the PC until the software and the driver have been installed.

Connect the device to your PC using the RS232 communication cable supplied.

Switch the instrument on by turning the rotary switch and wait for your PC to detect it.

All measurements recorded in the instrument can be transferred to the PC. The transfer does not erase the data recorded.



To use MEG, refer to its help menu or to its manual.

9. SPECIFICATIONS

9.1. REFERENCE CONDITIONS

Influence quantities	Reference values
Temperature	23 ± 3 °C
Relative humidity	45 to 55 % RH
Supply voltage	9 to 12 V
Frequency range	DC and 15.3 to 65 Hz
Capacitance in parallel on resistance	0 µF
Electric field	nil
Magnetic field	< 40 A/m

The **intrinsic uncertainty** is the error specified for the reference conditions.

The **operating uncertainty** includes the intrinsic uncertainty plus variations of the quantities of influence (position, supply voltage, temperature, etc.) as defined in standard IEC-61557.

The uncertainties are expressed in % of the reading (L) and in number of display points (ct):
 $\pm (a \% L + b \text{ ct})$

9.2. CHARACTERISTICS PER FUNCTION

9.2.1. VOLTAGE

Specified measurement range	1...1000 V
Frequency range	DC and 16 ... 420 Hz
Resolution	1 V
Intrinsic uncertainty	1% L + 3 ct
Input impedance	approximately 750 kΩ

9.2.2. INSULATION RESISTANCE

Method: Voltage-current measurement per IEC 61557-2

Nominal output voltage (Un): 50, 100, 250, 500, 1000 Vdc

Off-load voltage: $\leq 1.1 \times U_n \pm 5 \text{ V}$

Nominal current: > 1 mAdc at the nominal voltage

Short-circuit current: < 6 mAdc

Max. overvoltage: $U_{\text{eff max.}} = 1200 \text{ V AC and DC for 10 seconds between the + and - terminals}$
 660 V AC and DC between the G and - or G and + terminals

■ Measurement ranges:

50 V: 2 kΩ ... 200 GΩ
 100 V: 4 kΩ ... 400 GΩ
 250 V: 10 kΩ ... 1 TΩ
 500 V: 20 kΩ ... 2 TΩ
 1000 V: 40 kΩ ... 4 TΩ

Specified measurement range	2...999 kΩ 1,000...3,999 MΩ	4,00...39,99 MΩ	40,0...399,9 MΩ	400...3999 MΩ 1,000...3,999 GΩ	4,00...39,99 GΩ	40,0...399,9 GΩ	400...3999 GΩ 1,000...3,999 TΩ
Resolution	1 kΩ	10 kΩ	100 kΩ	1 MΩ	10 MΩ	100 MΩ	1 GΩ
Voltage	50, 100, 250, 500, 1000 V	50, 100, 250, 500, 1000 V	50, 100, 250, 500, 1000 V	50, 100, 250, 500, 1000 V	50, 100, 250, 500, 1000 V	50, 100, 250, 500, 1000 V	250, 500, 1000 V
Intrinsic uncertainty	$\pm (5\% L + 3 \text{ ct})$						$\pm (15\% L + 10 \text{ ct})$

- **DC voltage measurement during or after insulation test**

Specified measurement range: 25 ... 1000 V

Resolution: 0.5% U_{DC}

Intrinsic uncertainty: $\pm (1\% L + 3 \text{ ct})$

- **Capacitance measurement (following the discharging of test object)**

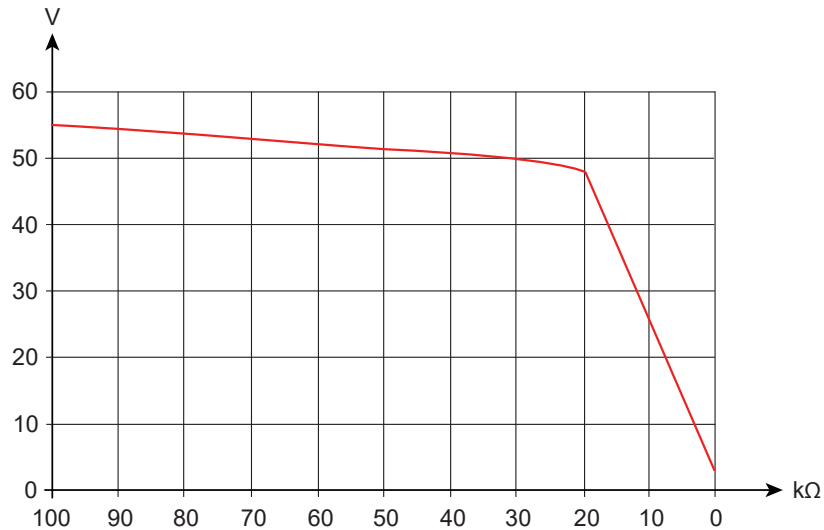
Specified measurement range: 0,005...4,999 μF

Resolution: 1 nF

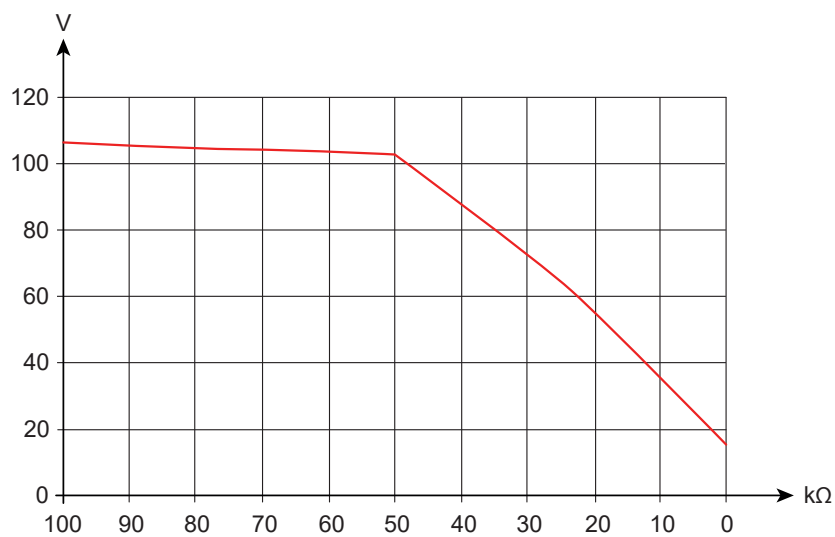
Intrinsic uncertainty: $\pm (10\% L + 1 \text{ ct})$

- **Graphs showing the typical changes in test voltage as a function of the load**

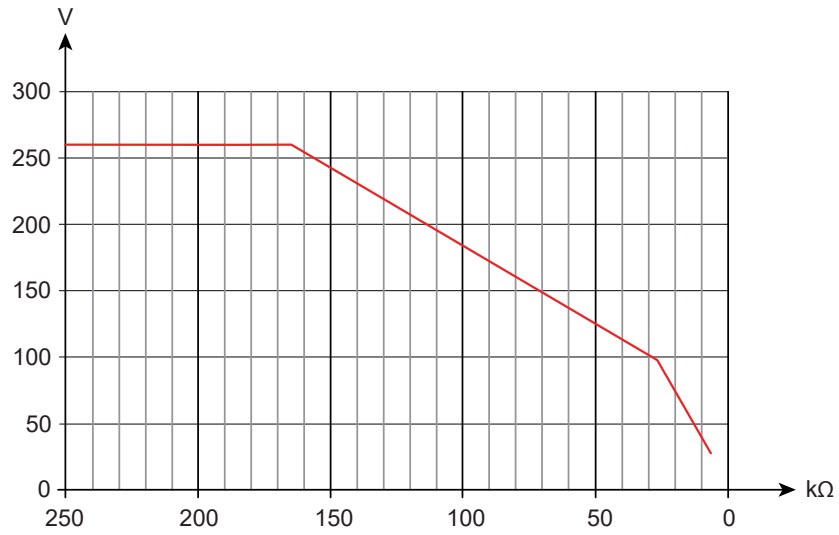
50 V test voltage



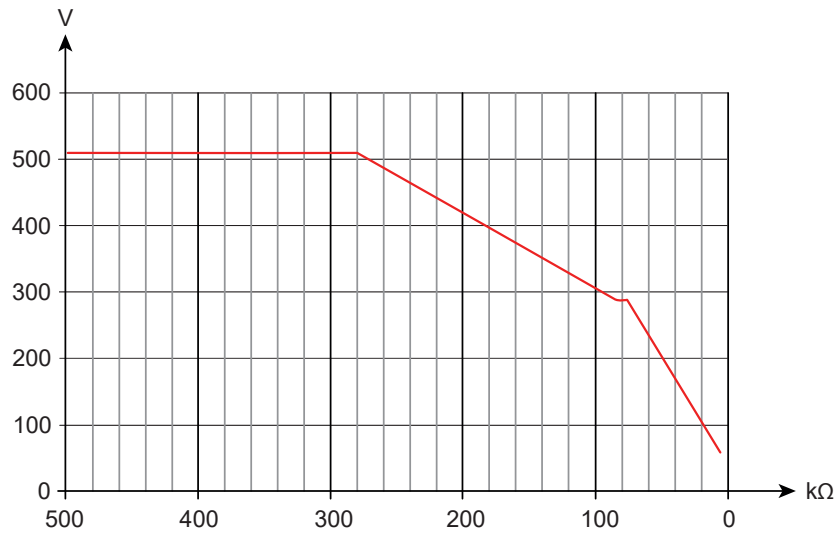
100 V test voltage



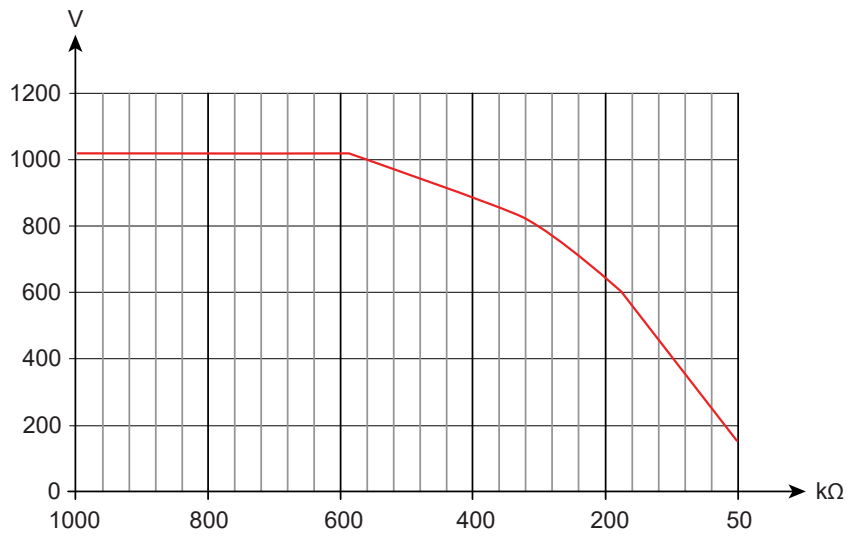
250 V test voltage



500 V test voltage



1000 V test voltage



■ Typical settling time of the measurement as a function of the elements tested

These values include the influences on the auto-range and supply voltage regulation system due to the charge of the capacitive component.

	Non-capacitive load	Load with 1 μ F capacitor
R = 1 M Ω	7 s	7 s
R = 500 G Ω	17 s	20 s

■ Discharge time of the tested element down to 25 V

Initial voltage	Discharge time
1000 V	2.8 s
500 V	2.2 s
250 V	1.7 s
100 V	1 s
50 V	0.5 s

■ Calculation of terms DAR and PI

Specified measurement range: 0.000 to 9.999

Intrinsic uncertainty: 5% L

9.2.3. CONTINUITY

Method: Voltage-current method according to IEC 61557-4

Open-circuit voltage: < 12.4 V_{DC} (< 15 V with external supply)

Short-circuit current: > 200 mA_{DC}

Max. overvoltage: U_{eff} max. = 1200 V AC and DC for 10 seconds between the + and - terminals

660 V AC and DC between the G and - or G and + terminals

Test lead compensation: limited to 5 Ω

R displayed = R measured - R compensation

Specified measurement range: 0.01 to 39.99 Ω

Resolution: 0.01 Ω

Operating current: > 200 mA from 0.01 to 20.00 Ω and > 140 mA from 20.01 to 39.99 Ω

Intrinsic uncertainty: $\pm$ (3% L $\pm$ 4 ct)

Max inductive load : 5 H without damage to the instrument

Max serial mode voltage: 3 V_{AC/DC}; measurement is prohibited above this value

9.2.4. RESISTANCE

Method : Voltage-current measurement

Open-circuit voltage: < 12.4 V_{DC} (< 15 V with external supply)

Short-circuit current : < 6 mA_{DC}

Max. overvoltage: U_{eff} max. = 1200 V AC and DC for 10 seconds between the + and - terminals

660 V AC and DC between the G and - or G and + terminals

Max serial mode voltage: 3 V_{AC/DC}; measurement is prohibited above this value

Specified measurement range	0.01...39.99 Ω	40.0...399.9 Ω	0.400...3.999 k Ω	4.00...39.99 k Ω	40.0...399.9 k Ω
Resolution	0.01 Ω	0.1 Ω	1 Ω	10 Ω	100 Ω
Intrinsic uncertainty	$\pm$ (3% L + 3 ct)				

9.3. MEMORY

Available memory for recordings: 120 kB out of 128 kB.

It is possible to record approximately 1,500 insulation measurements or approximately 4,000 resistance or continuity tests.

9.4. INTRINSIC UNCERTAINTY AND OPERATING UNCERTAINTY

The megohmmeters comply with standard IEC-61557, which requires that the operating uncertainty, called B, be less than 30%.

- In insulation measurements, $B = \pm (|A| + 1.15 \sqrt{E_1^2 + E_2^2 + E_3^2})$
with
A = intrinsic uncertainty
E₁ = influence of the reference position $\pm 90^\circ$.
E₂ = influence of the supply voltage within the limits indicated by the manufacturer.
E₃ = influence of the temperature between 0 and 35°C.
- In continuity measurement, $B = \pm (|A| + 1.15 \sqrt{E_1^2 + E_2^2 + E_3^2})$

9.5. POWER SUPPLY

The device supply is via:

- C.A 6541: 8 x 1.5 V LR 14 batteries
- C.A 6543: 9.6 V, 2.4 Ah rechargeable NiMH battery
Recharge: 85 to 256 V / 50-60 Hz (electrical safety: 256 V Cat. III)
Recharging time: 4.5 hours to reach 100% of its capacity (Max. recharge time: 6 hours)
0.5 hours to reach 10% of its capacity (gives battery life: approximately 1 day)
- Life between charges

	C.A 6541	C.A 6543
Insulation measurement	21, 000 x 5 s measurements with 20 s pause at normal load * (1)	5, 000 x 5 s measurements with 20 s pause at normal load * (2)
Continuity measurement	16 000 measurements lasting 5 s with pause of 20 s at nominal load * (1)	4 000 measurements lasting 5 s with pause of 20 s at nominal load * (2)

* Nominal load : 1000 V/1 mA

(1) For a 10 minutes long PI measurement, 5 times a day, the operating radius will be 67 days (or 10 weeks or 2.5 months)

(2) For a 10 minutes long PI measurement, 5 times a day, the operating radius will be 16 days (or 2.5 weeks or 0.5 months)

9.6. ENVIRONMENTAL CONDITIONS

For indoor and outdoor use without rain.

Specified operating range	-10 to +55 °C and 10 to 80 %RH
Storage range (without the batteries)	-40 to +70 °C and 10 to 90 %RH without condensation
Altitude	<2000m
Degree of pollution	2

9.7. MECHANICAL CHARACTERISTICS

Dimensions (L x W x H)	240 x 185 x 110 mm
Mass	approximately 3,4 kg

Ingress protection	IP 53 per IEC 60529
	IK 04 per IEC 62262

9.8. COMPLIANCE WITH INTERNATIONAL STANDARDS

The instruments are compliant with safety standard IEC/EN 61010-2-034 and the leads are compliant with IEC/EN 61010-031, for voltages up to 600 V in category III.

Double isolation ☐

The instruments are compliant per IEC 61557, parts 1, 2, 4 and 10.

9.9. ELECTROMAGNETIC COMPATIBILITY (EMC)

The instruments are compliant with standard IEC/EN 61326-1.

10. MAINTENANCE



Except for the batteries, the battery pack and the fuses, the instrument contains no parts that can be replaced by personnel who have not been specially trained and accredited. Any unauthorized repair or replacement of a part by an equivalent may gravely impair safety.

10.1. CLEANING

Disconnect the unit completely and turn the rotary switch to OFF.

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.

10.2. REPLACING THE BATTERIES (C.A 6541)

When the  symbol starts flashing on the display, you must replace all the batteries.

Refer to the battery replacement procedure in § 2.4.

Remove the used batteries and replace them with new LR14 or C batteries.



Spent primary and storage batteries must not be treated as ordinary household waste. Take them to the appropriate collection point for recycling.



If the instrument is not going to be used for a long period of time, remove the batteries

10.3. RECHARGING THE BATTERY (C.A 6543)

When the  symbol starts flashing on the display, you must recharge the battery.

Refer to the battery recharging procedure in § 2.5.

The battery may only be replaced by Manumasure or a repairer authorised by Chauvin Arnoux.

Changing the battery causes data to be lost from the memory. Press the **MEM / MR** button and **OFF** is displayed. Proceed with a total memory wipe in SET-UP (see § 5.7.1) so the MEM and MR functions can be used again.



If the instrument is not used for a prolonged period (more than two months), fully recharge the battery before using it.

10.4. REPLACING THE FUSES

If **FUS HI** or **FUSE -G-** flashes on the LCD when switching on or during continuity measurement, then change the corresponding fuse. Please refer to § 2.4 for instructions on opening the housing.

Exact types of fuses:

- + terminal fuse F1 (FUS HI): F 2,5 A - 1,2 kV - 8 x 50 mm - 15 kA
- G terminal fuse F2 (FUS G): F 0,1 A - 660 V - 6,3 x 32 mm - 20 kA

11. WARRANTY

Except as otherwise stated, our warranty is valid for **24 months** starting from the date on which the equipment was sold. The extract from our General Conditions of Sale is available on our website.

www.group.chauvin-arnoux.com/en/general-terms-of-sale

The warranty does not apply in the following cases:

- Inappropriate use of the equipment or use with incompatible equipment;
- Modifications made to the equipment without the explicit permission of the manufacturer's technical staff;
- Work done on the device by a person not approved by the manufacturer;
- Adaptation to a particular application not anticipated in the definition of the equipment or not indicated in the user's manual;
- Damage caused by shocks, falls, or floods.



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