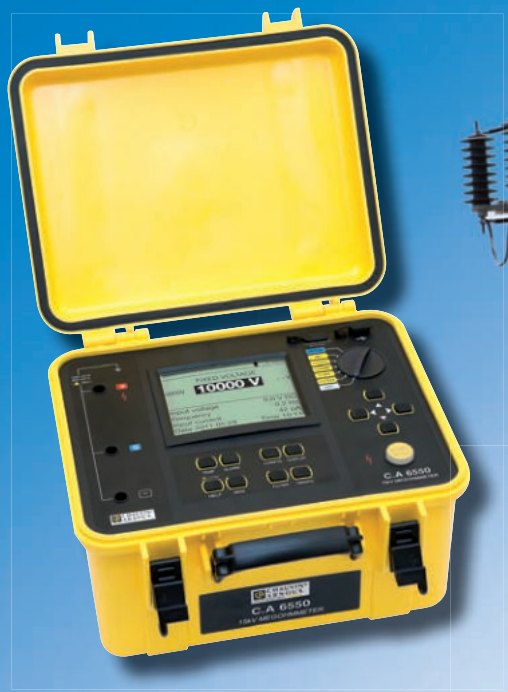
ICS SCHNEIDER MESSTECHNIK

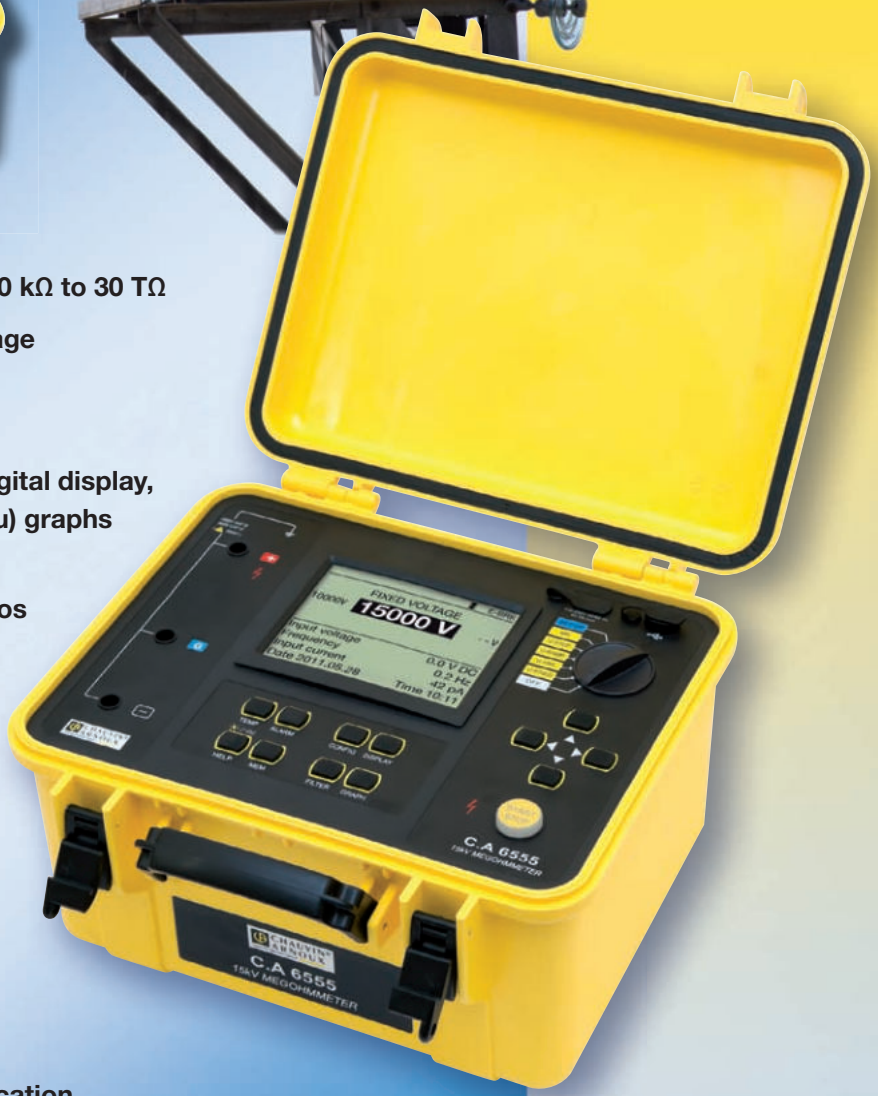
C.A 6550
C.A 6555

Insulation Measurement at 15 kV, a Job for Experts



10 kV / 15 kV Insulation Tester

1000 V CAT IV



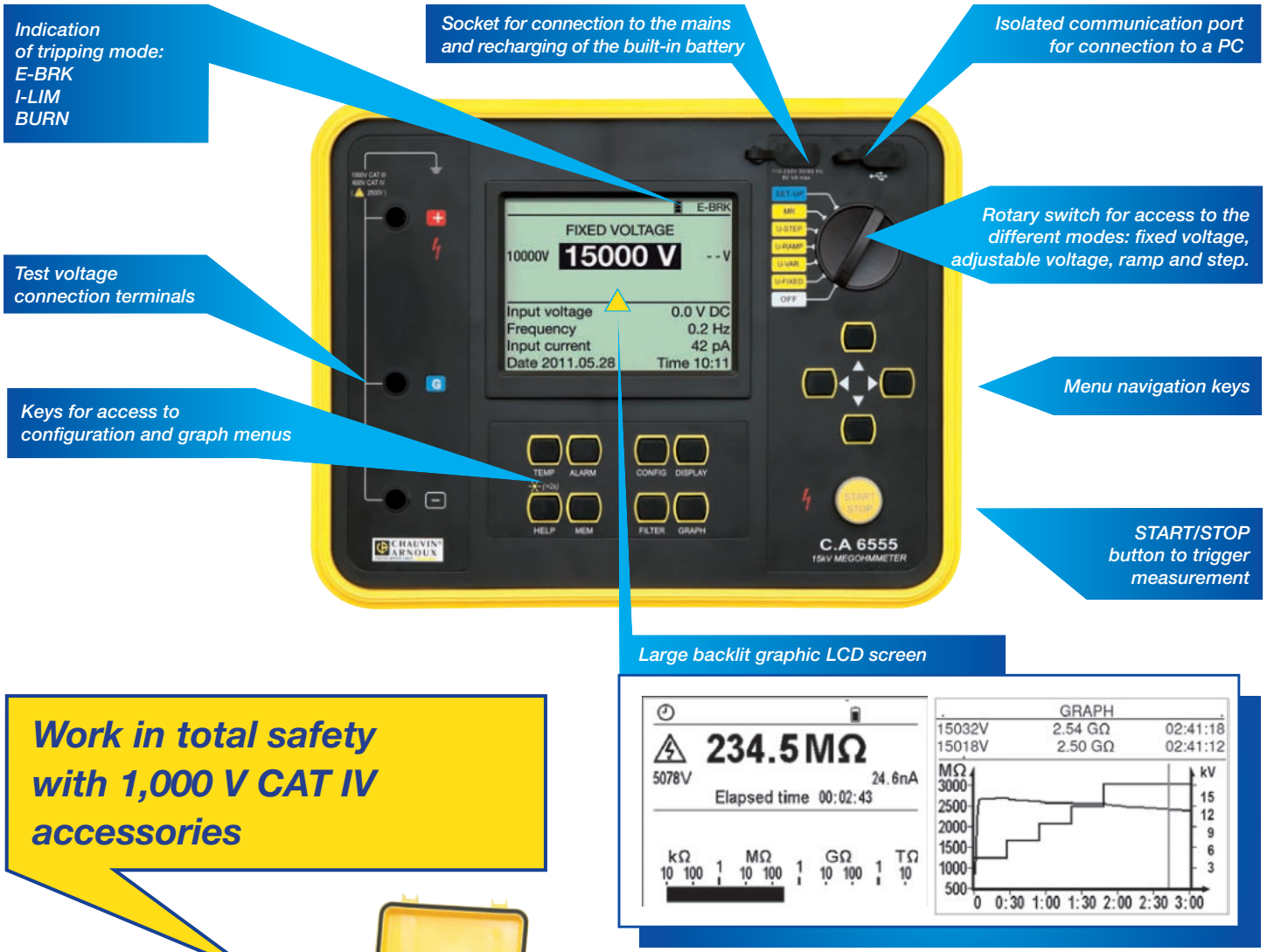
- Wide measurement range from 10 kΩ to 30 TΩ
- Fixed or programmable test voltage from 40 V to 10/15 kV
- 5 mA charging current
- Large backlit LCD screen with digital display, bargraph and R(t)+u(t) , i(t) and i(u) graphs
- Automatic calculation of DAR / PI / DD /ΔR (ppm/V) ratios
- Multiple test modes: voltage ramp and step with “burning”, “early break” and “I-limit” modes
- 3 filters to optimize measurement stability
- Calculation of R at a reference temperature
- Storage of 80,000 measurements and Real-time Clock
- Optically-isolated USB communication for transfer onto PC and report generation with the DataView® software

Performance & ergonomics

With their test voltages of up to 10 kV/15 kV, the C.A 6550 and C.A 6555 megohmmeters are expert tools for testing insulation safely and accurately. As they comply with the most recent recommended practice while taking into account future developments, they are ideal for use on rotating equipment and machinery operating at 12 kV or even higher.

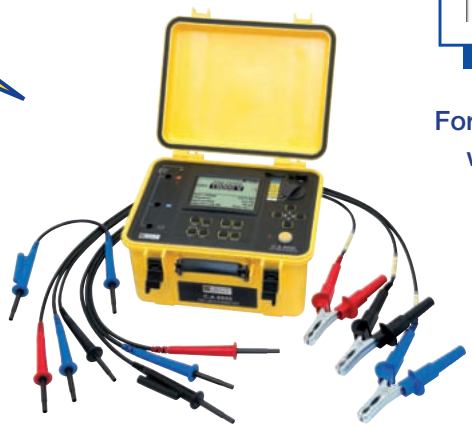
The multiple test modes mean that you can both assess the insulation in qualitative terms by non-destructive testing ("I-limit" and "early-break" modes) and use samples to investigate insulation ageing problems for preventive maintenance purposes ("burning" mode).

The C.A 6550 and C.A 6555 offer quick, effective checking of test execution by displaying the evolution of the test in progress in graphic form. Thanks to their large storage capacity, complete analysis of the test sessions performed on-site can be carried out with the DataView® software after transferring the data onto a PC.



Large backlit graphic LCD screen

Work in total safety with 1,000 V CAT IV accessories



For immediate use, the C.A 6550 and C.A 6555 are delivered with a bag for the 1,000 V CAT IV accessories: 2 leads and 1 guard test lead for high insulation measurements. 2 leads and 1 guard test lead terminated by crocodile clips are also available as an option.

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Applications & Functions

Thanks to their large measurement range, extending up to 30 TΩ, the C.A 6550 and C.A 6555 meet the requirements of companies manufacturing cables, transformers, rotating machinery and medium-voltage generators, as well as professionals in the Electricity Transmission and Distribution sector.

- **Insulation measurement at up to 10/15 kV** on LV/HV rotating machines, transformers, cables, high-voltage generators, overhead and underground electricity transmission and distribution networks, surge suppressors / spark arresters, measurement transducers, etc.

2 levels of diagnostics :

- "Go/No Go" test
- Qualitative measurement for preventive maintenance purposes:
- Test with programmable duration
- **Qualitative measurement:** Polarization Index (PI) ratio, dielectric absorption ratio (DAR) and dielectric discharge (DD) index for testing heterogeneous multi-layered insulation
- **Fixed voltage mode,**
- **Step, Ramp mode:** results independent of temperature, detection of insulant cracking and ageing
- **I-limit or dI/dt (early-break) trigger modes:** optimization of non-destructive tests (e.g. Varistor testing)
- **Burning mode (no triggering)**
- **Selectable voltage** from 40 V to 10,000 / 15,300 V
- **Graphic LCD display** of R(t) + u(t), I(t), I(u) (useful for testing semi-conductors)
- **Storage of results for export onto a PC** by means of analysis software to process the measurement logs.

Reduced insulation may be due to gradual deterioration over long periods or to sudden damage.

Analysis of the quality ratios (PI-DAR-DD) is a quick and reproducible way of revealing different types of phenomena involved in insulant deterioration. The presence of several digital filters with different time constants helps to improve noise immunity and a 5 mA charging current with a short discharge time means quicker measurement results.

Recent recommendations such as IEEE 43 suggest test voltages of up to 10 kV/15 kV for equipment and installations with a high operating voltage.

Various test modes, such as "burning", "I-limit" or dI/dt "early-break", allow targeted analyses ranging from periodic testing for preventive maintenance to investigation of samples in "burning" mode.

By archiving the results and monitoring the way the measured values evolve over time, you can gain precious guidance on the the action needed to reduce machine and installation downtimes.

POLARIZATION INDEX (PI) & DIELECTRIC ABSORPTION RATIO (DAR)

Insulation is affected by temperature and humidity variations.
Moreover, the appearance of disturbance currents means that the measurement is false right from the start. To eliminate these influences, you have to measure over the long term and calculate the PI and DAR coefficients in order to assess the quality and ageing of the insulants.

DIELECTRIC DISCHARGE (DD)

This test can be used to detect the presence of a faulty layer among other high-resistance layers.

$$DD = \frac{\text{Current measured after 1 min (mA)}}{\text{Test voltage (V) x Measured capacitance (F)}}$$

U-Var POSITION

To handle all measurement environments (electrical equipment, telecommunications installations, rotating machinery, etc.) and measure with the greatest possible accuracy, both instruments offer the U-Var rotary-switch position which allows users to select a voltage among 3 configurable values and then cause it to vary during the test from 40 to 10,000 V/15,000 V, in 10 V steps from 40 to 1,000 V and in 100 V steps above 1 kV.

PROGRAMMABLE ALARMS

An alarm threshold can be memorized. When there is an overrun, visual and audible alarms are triggered.

STORAGE

The C.A 6550 and C.A 6555 are equipped with internal memory capable of storing several tens of thousands of measurements. Two indices, OBJ (object) and TEST, are used to store the time/date-stamped results in an ordered way.

VOLTAGE RAMP and VOLTAGE STEP

The resistance of a faulty insulant falls as the test voltage increases. This test, which involves increasing the test voltage step by step, helps to assess the quality of the insulant by observing the curve R(Utest) and the result in ppm/V, which gives a quantitative indication of the curves slope. A ramp mode with a rise time between the two values is also available.

TEST WITH PROGRAMMABLE DURATION

Insulation measurements sometimes take a long time to stabilize because of transient disturbance currents. Insulant quality can be assessed more accurately by means of long-term measurements and analysis of the insulation's trend curve according to the time for which the test voltage is applied.

STOP TEST ON THRESHOLDS (I-lim or di/dt, EARLY-BREAK)

In order to cover non-destructive test applications, the C.A 6550 and C.A 6555 can be set up to stop the tests before breakdown if an insulation fault is detected. The breakdown limit may be a current (I-lim), or a di/dt value. For investigations on samples, a "burning" mode is provided to allow testing whatever the current reached.

GRAPH R(t)+u(t), i(t), i(u)

If a test with a programmed duration is run, the instruments automatically store the data at a rate chosen by the user.
The C.A 6550 and C.A 6555 can display the curves R(t)+u(t), i(t) and i(u) directly on the graphic screen. The curves can also be displayed on a PC screen with the DATAVIEW® software.

FILTER FUNCTION

When the measurements are unstable, the FILTER function uses the several filters included in the instrument to smooth the display of the insulation values so that you can read them more easily and interpret them more quickly.

REFERENCE TEMPERATURE

The value of an insulation resistance varies according to the temperature at the time of measurement. For precise, reliable monitoring, it is a good idea always to express the result of a measurement at a given temperature of reference. There is a special key to press to make the instrument perform the necessary calculation.

DATAVIEW® SOFTWARE

This software retrieves the data stored in the memory, plots the trend curve R(t), prints the customized test protocols and creates spreadsheet files. DataView® configures and controls the instrument via an optically-isolated link compatible with USB and RS232.

Technical specifications

		CA 6550	CA 6555
Test voltages		**10 kV**	**15 kV**
Test voltages	Ranges	500 V: 10 kΩ to 2 TΩ 1,000 V: 10 kΩ to 4 TΩ 2,500 V: 10 kΩ to 10 TΩ 5,000 V: 10 kΩ to 15 TΩ 10,000 V: 10 kΩ to 25 TΩ	
			15,000 V: 10 kΩ to 30 TΩ
	Fixed test voltages:	500 / 1,000 / 2,500 / 5,000 / 10,000 V	500 / 1,000 / 2,500 / 5,000 / 10,000 / 15,000 V
	Variable test voltages:	40 V - 10,000 V 3 presettable voltage values	40 V - 15,000 V 3 presettable voltage values
	Adjustment increment for variable voltages	Variable: 40-10 kV step : 40 V-1 kV: 10 V 1 kV-10 kV: 100 V	Variable: 40-15 kV step: 40 V-1 kV: 10 V 1 kV-15 kV: 100 V
	Ramp mode	3 presettable ramps: start voltage / end voltage / duration	
	Ramp configuration range	40-1,100 V / 500-10,000 V	40-1,100 V / 500-15,000 V
	Step mode	Up to 10 steps (value and duration configurable for each step)	
Voltage measurement after test		AC: 0 – 2,500 V / DC: 0 – 4,000 V	
Capacitance measurement		0.001-9.999 µF / 10.00-49.99 µF	
Leakage current measurement		0 - 8 mA	
Discharge after test		Yes / Automatic	
Additional test stop modes	I-limit	Programmable: 0.2-5 mA	
	Early-break	di/dt	
	Timer	Up to 99 minutes 59 seconds	
Burning mode	Burning	Constant testing	
Ratio calculation		PI, DAR, DD	
Calculation of R at ref. T°		Yes	
Measurement display filter		3 filters with 3 possible time-constant	
Graphs on display		R(t)+u(t); i(t); i(u);	
Storage		256 recordings, 80,000 points : R, U, I and date	
Communication		Optically-isolated port for USB and RS232 links	
PC software		DataView®	
Power supply		NiMH rechargeable batteries, 8x 1.2 V / 4,000 mAh charging by external voltage: 90-260 V 50/60 Hz	
Battery charging		Battery charging possible while performing insulation measurements	
Electrical safety		1,000 V CAT IV - IEC 61010-1 and IEC 61557	
EMC, mechanical protection, altitude		EN 61326-1 , IP54 , 3,000 m	
Dimensions and weight		LxWxH: 340 x 300 x 200 mm, 6.2 kg approx. (excluding accessories)	

State at Delivery:

C.A 6550 and **C.A 6555** delivered with a bag with 2 safety leads 3 m long equipped with an HV plug at each end (red / blue), 1 guard test lead 3 m long equipped with an HV plug at one end and an HV plug with rear connection at the other end (black), 3 crocodiles clips (red, blue, black), 2 CAT IV 1,000 V test probes (red/black) for voltage measurements, 1 blue lead with rear connection, 1 mains power cable 2 m long, DataView® software, 1 optical / USB communication lead, 1 operating manual in 5 languages on CD-ROM and 5 specification labels (1 per language).

DISTRIBUTOR

References:

C.A 6550	> P01139705
C.A 6555	> P01139706

Accessories / Replacement Parts

3 HV leads with croc. clips for 10/15 kV	> P01295466
Blue 8 m HV lead with croc. clips	> P01295468
Red 8 m HV lead with croc. clips	> P01295469
Black 8 m HV lead with croc. clips	> P01295470
Blue 15 m HV lead with croc. clips	> P01295471
Red 15 m HV lead with croc. clips	> P01295472
Black 15 m HV lead with croc. clips	> P01295473
3 x 3 m HV leads for 10/15kV	> P01295465
50 cm HV lead with rear connection	> P01295467
2 red/black test probes	> P01295454Z
3 crocodile clips: red/blue/black	> P01103062
Bag	> P01298066
C.A 861 thermocouple thermometer	> P01650101Z
C.A 846 thermohygrometer	> P01156301Z

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