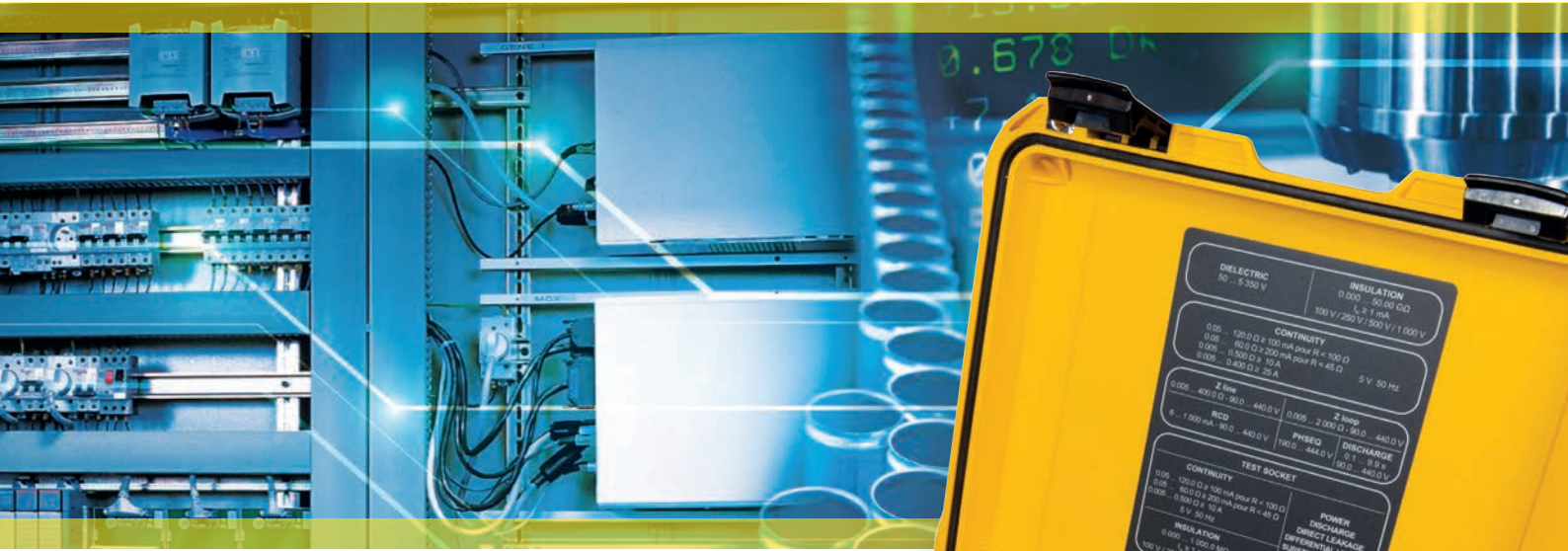


CA 6161 & CA 6163




Machine and electrical switchboard testers



Check the safety of your cabinets and electrical equipment during initial or periodic testing

- ▶ Tests according to the regulatory reference standards
- ▶ Automatic scripts & customizable visual inspections
- ▶ 3 kV / 5 kV dielectric testing, 50 GΩ insulation, 25 A continuity
- ▶ Direct, substitution, differential and touch leakage current
- ▶ RCD tests from 6 mA to 1 A
- ▶ Discharge time
- ▶ Automatic printing of Pass/Fail stickers
- ▶ Storage of up to 100,000 tests in memory
- ▶ PC software for analysis and report generation



600 V CAT III	AUTO SCRIPT	WIFI		IP 64		
IEC/EN 60204-1	IEC/EN 61439-1	IEC/EN 60335-1	IEC/EN 62368-1	IEC/EN 60598-1	IEC/EN 60974-4	EN 50699 EN 50678

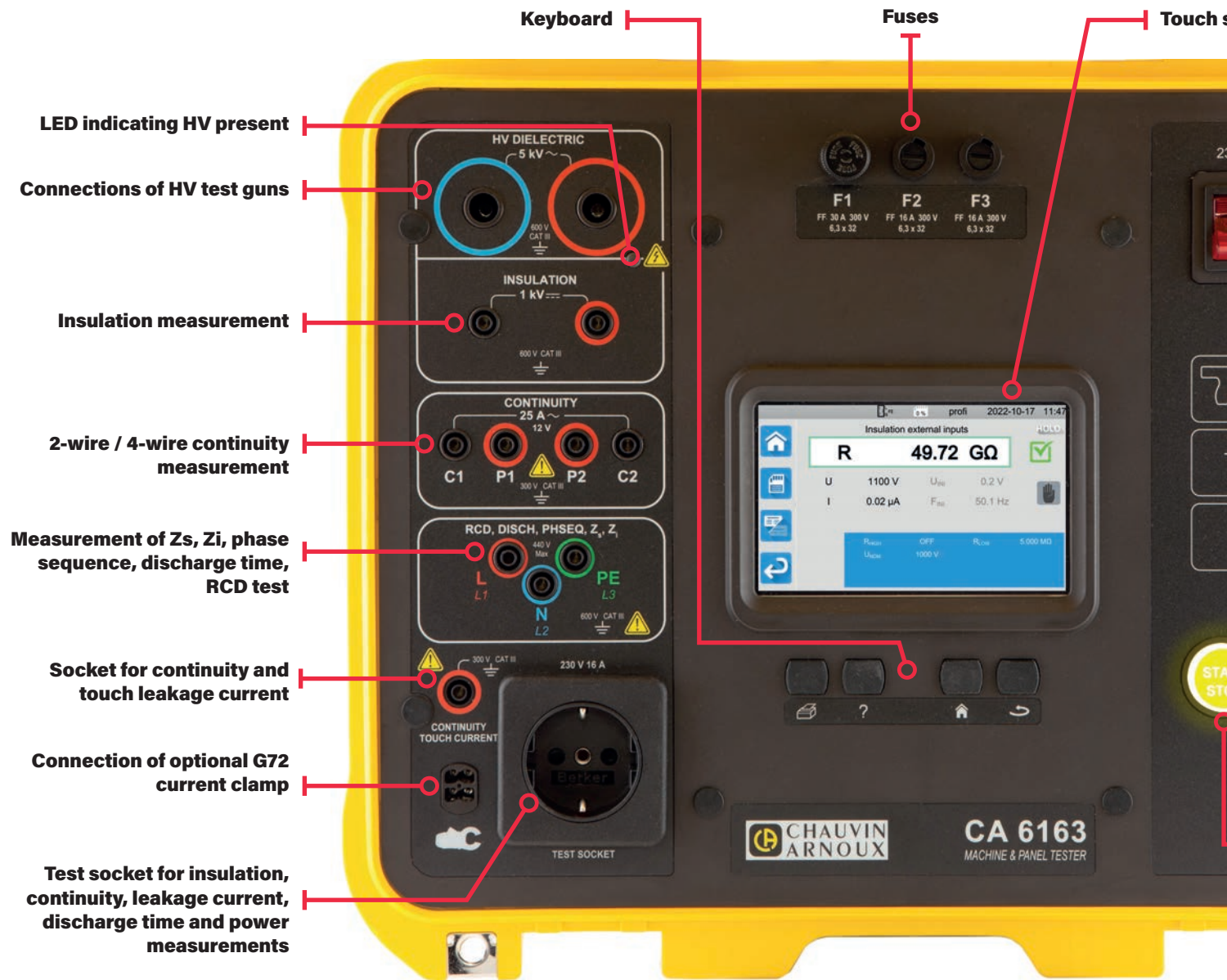
Measure up



APPLICATIONS & ERGONOMICS

The **CA 6161 & CA 6163** multifunction electrical equipment testers allow you to make all the measurements necessary to test the electrical safety of portable equipment, machines and electrical switchboards. This makes them ideal for checking and certifying the electrical safety of equipment in the context of conformity verification at the end of the production line, periodic testing or maintenance. In terms of applications, they will frequently be used by:

- ▶ Electrical machine and equipment manufacturers
- ▶ Switchboard manufacturers
- ▶ Industrial maintenance companies
- ▶ After-Sales service companies
- ▶ Test organizations for periodic testing
- ▶ Technical education



MEASUREMENTS PERFORMED BY THE CA 6161 - CA 6163



Visual inspections



Insulation



Dielectric test



Dielectric ramp test



RCD ramp test



RCD pulse test



Loop impedance



Line impedance



Single-phase and three-phase power



Power values and leakage (CA 6163)



2/4-wire continuity; 0.1 A, ΔU voltage drop, 25 A



Direct leakage current

ent manufacturers to check conformity ("CE" marking)

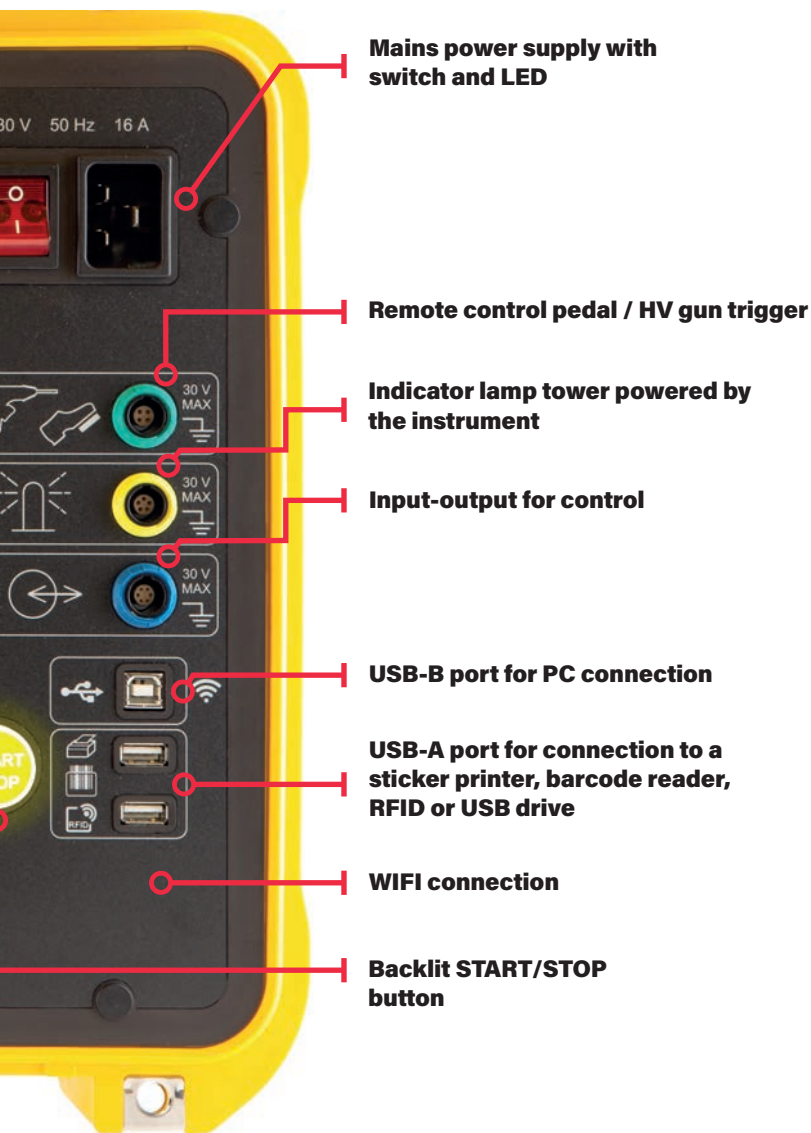
check the low-voltage cabinets

ies who need to check the conformity of the equipment in a fleet or on an installation

repairing and checking the conformity of appliances or equipment presenting an anomaly

checking

screen



e current

0.2 A, 10 A



Differential leakage current



Leakage current by substitution method (CA 6163)



Touch leakage current (CA 6163)



Discharge time



Phase rotation test



Door-open detection

SAFETY OF THE TESTS

As required by the IEC/EN 61010-031 and IEC/EN 61180 standards, the safety conditions for tests generating a High Voltage are fulfilled:

- Necessity of pressing the test trigger for a minimum time
- Visual indication of presence of high voltage
- Use when both hands are busy
- Automatic discharge of the object tested at the end of the test, thus ensuring that users will not be exposed to dangerous voltages.

DURATION OF THE TESTS AND MEASUREMENTS

Depending on the type of tests performed, it is possible to define the following modes:

- Automatic stop once the result has stabilized,
- Stop after a programmed duration (timer),
- Manual stop

LEAKAGE CURRENT MEASUREMENT WITH WEIGHTED NETWORKS

This measurement lets you determine the current which would flow through a human body if it was in contact with a touchable metal part and the earth, via a measuring network simulating the impedance of the human body as per the applicable standards. As the human body's response to the flow of a current depends on the circumstances, there are several "weighted" measuring networks simulating the various circumstances liable to occur.



Unweighted network



Weighted perception or reaction network



Weighted "let-go" network



HF weighted network

TOUCH LEAKAGE CURRENT ON WELDING MACHINE

For welding machines, the leakage current between the welding circuit and the terminal of the protective conductor must not exceed 10 mA. The measurement must therefore be performed using the measuring circuit described in the IEC/EN 60974-4 reference standard. It involves filtering with a fast time constant. A line-neutral reversal condition must also be provided.



Weighted welding machine network

ERGONOMICS

FOUR QUICK SHORTCUT KEYS

The **CA 6161** and **CA 6163** machine testers are equipped with a keypad with four keys offering quick access to certain functions, whatever the context: printing of a measurement on the sticker printer, display of the help screens for the selected function, return to main screen, and return to the previous menu. In particular, this enables you to return quickly to the main screen, wherever you may be located in the HMI tree-structure.



Keypad

DIRECT ACCESS TO THE FUNCTIONS

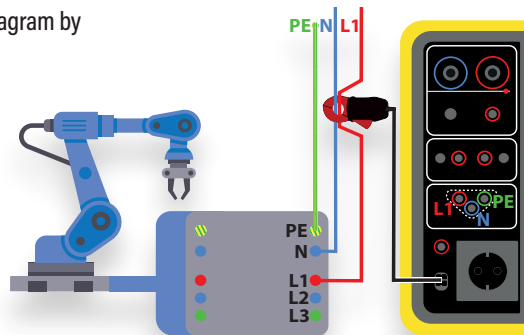


Examples of test selection screens

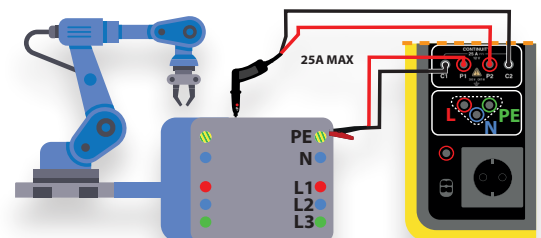
A single press on the relevant icon selects the test to be performed.

HELP SCREEN WITH CONNECTION DIAGRAM

You can display the connection diagram by pressing the HELP key.

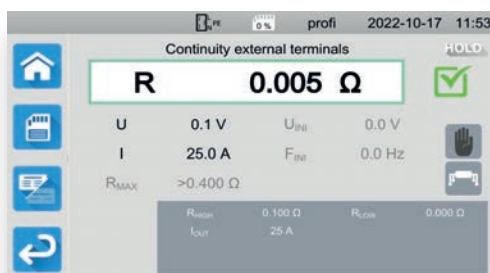


Help screen for differential leakage current measurement with the optional G72 clamp



Help screen for 4-wire continuity measurement at 25 A (CA 6163)

MEASUREMENT DISPLAY ADAPTED TO OPERATORS AND EXPERTS



Example of result screen for continuity measurement at 25 A with 4-wire connection (CA 6163) in detailed mode

The simple measurement display mode allows operators to view the main result alongside the sanction of the test performed.

It is possible to activate a detailed display mode which also shows all the secondary results. At the foot of the screen is the parameterization area for the test in progress or which has just been completed. It is possible to switch between the simple / detailed display modes dynamically during the test.

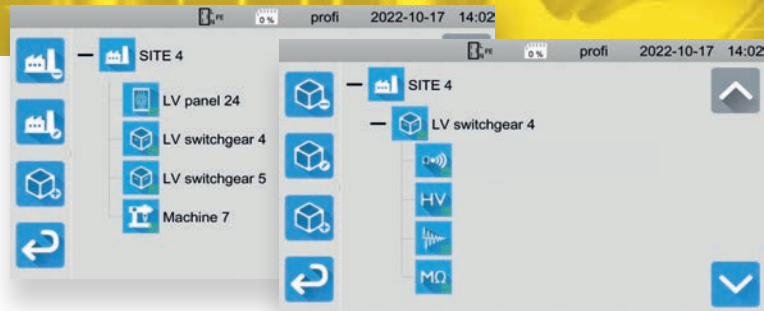
The test stop criterion icon is located to the right of the result screen: manual, automatic or timer.

Before starting the test, a single press on the parameterization area lets you modify the test criteria.

ERGONOMICS

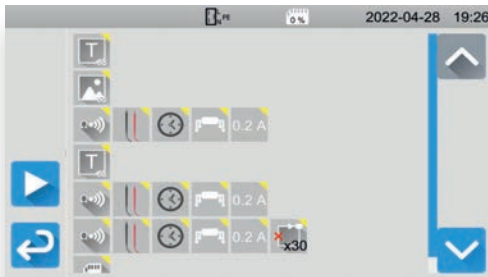
STORAGE OF UP TO 100,000 TEST RESULTS IN MEMORY!

When the test result is displayed, the test can be saved in a tree-structure by pressing the recording icon. When storing the data, it is possible to create a new site / object or rename an existing site / object. It is possible to assign an icon to the object selected: general, machine, switchboard. As well as a site name and object name, it is also possible to assign a barcode, an RFID tag, a serial number and a comment. You can store up to 100,000 tests there.



Once the tests have been saved, they appear under the object name when the recording memory is scanned

LIBRARY OF PREDEFINED AUTO-SCRIPTS & CREATION OF CUSTOMIZED SCRIPTS



Example of automatic script

Automatic scripts created in the MTT (Machine Tester Transfer) PC software can be transmitted to the **CA 6161 and CA 6163** to perform a series of predefined tests automatically. A library of customized automatic scripts is thus sent to the instrument for execution by the user. As well as test instructions, it is possible to display text or images and create repetitive loops. Instructions for recording and printing the script's status automatically may figure at the end of the AUTO-SCRIPT. An AUTO-SCRIPT is displayed on the instrument as a series of explicit icons, followed by the main parameters of the test concerned. This enables users to develop scripts quickly.

PROFILE MANAGEMENT

There may be several user profiles present in **CA 6161 and CA 6163** machine testers. A password-protected administrator profile can be used to manage specific rights such as: dielectric password modification or activation / deactivation of door contact processing. A user profile can create another user profile, but only the administrator profile can delete a profile. A full set of parameters saved in the instrument is assigned to each profile, so it is possible to distinguish between one user's usage and another's.



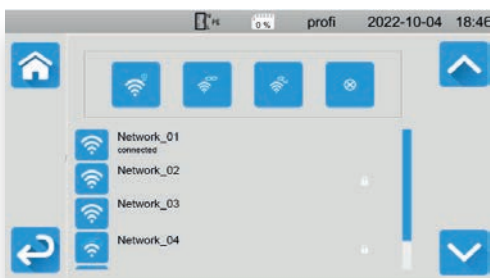
Rights of the different profiles

WIFI FOR REMOTE COMMUNICATION

The **CA 6161 and CA 6163** are equipped with a Wifi link for connection to a network present on the site.

It is possible to search for nearby Wifi networks, to connect to or disconnect from a Wifi network and to "forget" a Wifi network selected in the list of networks detected.

An active connection is identified with the network name displayed.



FIRMWARE UPGRADES

Firmware upgrades for the **CA 6161 and CA 6163** are very simple to implement, either using a PC via the active communication port, or using a simple USB drive containing the image if the new firmware connected to one of the USB-A ports. The firmware releases can be downloaded from the Chauvin Arnoux support site. The upgrade then only takes a few minutes.



Firmware upgrade via USB drive

MACHINE TESTER TRANSFER (MTT) PC SOFTWARE

The Machine Tester Transfer PC software connects to the machine tester via USB or Wifi and performs the following operations:

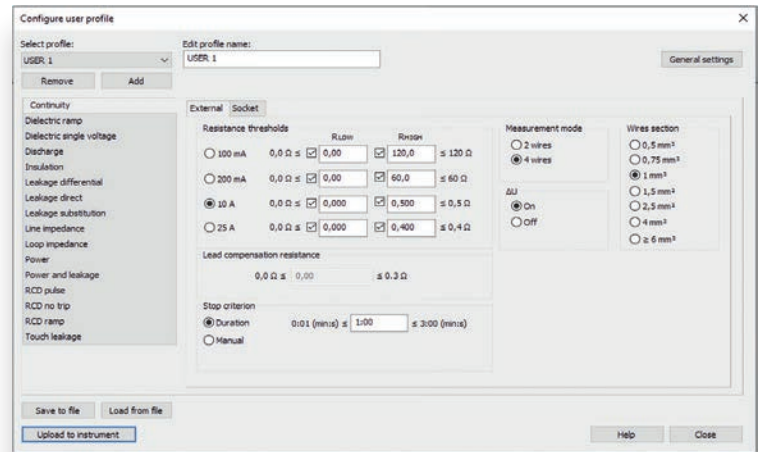
- ▶ Display of the user profiles and their complete configuration data sets
- ▶ Creation of customized visual inspections and transfer into the machine tester
- ▶ Creation of AUTO-SCRIPTS and transfer into the machine tester
- ▶ Recovery and display of the saved tests stored in the instrument
- ▶ Generation and printing of test reports
- ▶ "Remote display" of the test results in real time

DISPLAY OF THE PROFILES AND THEIR PARAMETER SETS

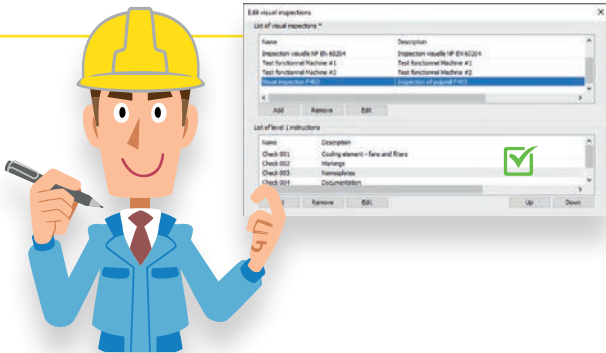


After connection, the MTT software displays all the profiles defined in the instrument. By pressing the configuration icon, you can display all the parameters of the selected profile and save them on PC. Any parameter modifications will be transmitted to the instrument.

It is possible to create and delete profiles with the password-protected administrator profile.



You can display the parameter set for the selected profile by pressing the parameterization icon.



AUTO SCRIPTS



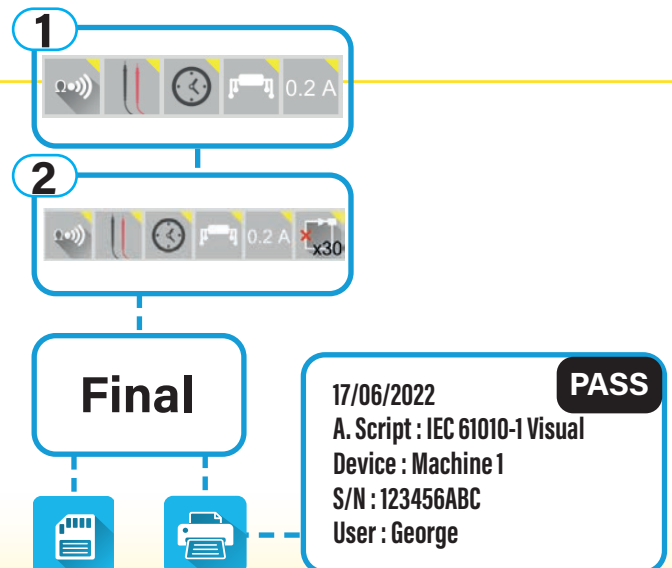
Automatic scripts composed of a series of test instructions can be created and transmitted to the machine tester. They can also include command instructions such as:

- Display of images and text
- Reading of a barcode or RFID tag
- Repetitive loops.

At the end of these automatic scripts, you can choose to save automatically and print out Pass/Fail stickers. A sequencer lets you modify the order of the tests in the auto-script.

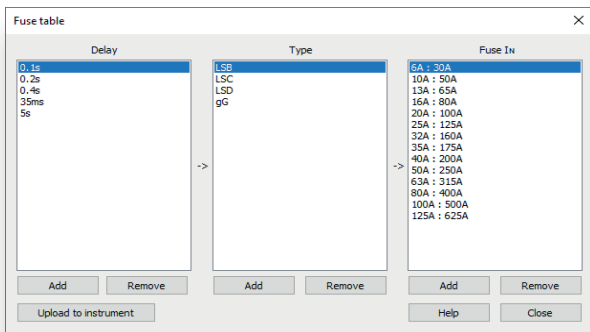
CUSTOMIZED VISUAL INSPECTIONS

In addition to the visual inspections defined in the reference standards, it is also possible to define customized visual inspections. The checklist can be totally modified by the user. This then makes it possible to align the checklist of inspection points with the specific features of the electrical equipment to be tested. In this way, it is possible to add to the visual inspection library and transfer it into the machine tester.



Automatic script

MACHINE TESTER TRANSFER (MTT)



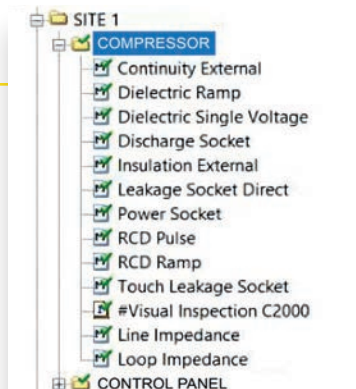
MODIFICATION OF THE FUSE TABLE

The fuse table integrated in the instrument allows you to choose a fuse in order to ensure the fuse's conformity according to the loop impedance measurement and the short-circuit current calculated. This table can be enriched with new fuses, with the operating time, the family and the rated value. The fuse table can thus be adapted to handle the local constraints of certain test environments.

RECOVERY AND DISPLAY OF SAVED MEMORY DATA



The time/date-stamped test results transferred into the MTT software are displayed in a tree-structure attached to the equipment involved. The equipment's global "pass/fail" status is indicated along with the status of each unitary test.



REMOTE DISPLAY MODE

A **Remote Display** mode lets you display test results remotely in real time so that an inspector can view the operations in a secure location outside the perimeter of the test zone.



Remote Display

REPORT GENERATION



The data from the test result analysis session can be customized for inclusion in the reports generated. The elements taken from the address book created beforehand include the operator, customer site and service provider information, as well as details of the inspection, with the order number, customer number and inspection number. These data are included in the first page of the report.

The reports generated are multi-object reports in portrait or landscape format and include all the machines and electrical equipment linked to the site.



ACCESSORIES

USE OF THE MACHINE TESTERS WITH PERIPHERALS

Practical! The accessories of the machine testers are recognized and managed as soon as they are hooked up to the instrument. This saves time because you don't have to configure anything!

Local test sockets*

Schuko



China Australia



Italia



Switzerland Type 23



UK Standard



Remote control pedal



4-lamp tower



Management of door opening



Barcode reader



RFID transponder



Sticker printer

*Not supplied, reference available for local sourcing

NEW DESIGN FOR SAFETY ACCESSORIES

Red High-Voltage test gun with built-in trigger: mandatory use of 2 hands



Press the trigger for more than 1s to start the HV test

Connect the HV gun trigger to the remote control input

ACCESSORIES

PHOTO	REFERENCE	DESCRIPTION	CA 6161	CA 6163	
	P01102193	Set of 2 HV guns	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	■ Included in the original state at delivery □ Optional accessories
	P01102195	cable length 3 m 15 m cable also available	<input type="checkbox"/>	<input type="checkbox"/>	
	P01295236	Double continuity cable length 3 m x 2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
	P01101784	25 A Kelvin crocodile clip cable length 2.5	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	P01102199	25 A Kelvin test gun cable length 3 m	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
	P01295499	Set of 2 elbowed-straight silicone cables, length 3 m	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	P01295398	2.5 m "tripod" cable with separate wires	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	P01295393	2.5 m "tripod" cable with Schuko plug	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	P01101922	Set of 3 crocodile clips Red, Blue, Green	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	P01101921	Set of 3 test probes Red, Blue, Green	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	P01295457Z	Set of 2 crocodile clips Black, Red	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	P01295454Z	Set of 2 test probes Black, Red	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	P01102201	1 bag of 3 extension connectors	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	P01295293	USB-A USB-B cable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	P01295234	2.5 m C19 mains power cable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	P01102191	Type 3 remote control pedal	<input type="checkbox"/>	<input type="checkbox"/>	
	P01102192	4 indicator-lamp tower Red, Green, Blue, Orange	<input type="checkbox"/>	<input type="checkbox"/>	
	P01102196	Barcode reader - USB	<input type="checkbox"/>	<input type="checkbox"/>	
	P01102904	Sticker printer	<input type="checkbox"/>	<input type="checkbox"/>	
	P01102197	RFID transponder	<input type="checkbox"/>	<input type="checkbox"/>	
	P01102198	Set of 100 RFID tags	<input type="checkbox"/>	<input type="checkbox"/>	
	P01102202	Three-phase adapter	<input type="checkbox"/>	<input type="checkbox"/>	

SPECIFICATIONS

		CA 6161	CA 6163	TEST POSSIBLE ON TEST SOCKET
HIGH VOLTAGE				
HIGH VOLTAGE		40 - 3,000 V	40 - 5,350 V	
Resolution / accuracy		10 V / $\pm(1\% R + 2 \text{ cts})$		
Max. current		200 mA		
I measurement ranges		100 mA / 200 mA		
Resolution / accuracy		0.1 mA - 1 mA / $\pm(2\% R + 2 \text{ cts})$		
INSULATION				
Test voltage		100 V / 250 V / 500 V / 1,000 V		■
Max. measurement		1,000 M Ω	50 G Ω^*	
Range		9.999 M Ω / 99.99 M Ω / 499.9 M Ω / 1,000 M Ω	9.999 M Ω / 99.99 M Ω / 999.9 M Ω / 50.00 G Ω	
Resolution / accuracy		1 k Ω - 10 k Ω - 100 k Ω / $\pm(2\% R + 2 \text{ cts})$ 100 k Ω / $\pm(10\% R + 2 \text{ cts})$	1 k Ω - 10 k Ω - 100 k Ω / $\pm(2\% R + 2 \text{ cts})$ 10 M Ω / $\pm(10\% R + 2 \text{ cts})$	
		Automatic discharge		
CONTINUITY				
Measurement current		0.1 A; 0.2 A; 10 A (voltage drop)		■
Measurement range		20 Ω / 120 Ω ; 2 Ω / 20 Ω / 60 Ω ; 0.5 Ω		
Resolution		0.01 Ω / 0.1 Ω ; 0.01 Ω / 0.01 Ω / 0.1 Ω ; 0.001 Ω		
Accuracy		$\pm(2\% R + 2 \text{ cts})$ / $\pm(3\% R + 3 \text{ cts})$		
Measurement current			25 A*	
Measurement range			0.005-0.400 Ω	
Resolution			0,001 Ω	
Accuracy			$\pm(2\% R + 2 \text{ cts})$	
Timer Max		03 min : 00s		
LEAKAGE CURRENT				
I-PE-direct & I-differential		Test socket: 30.00 mA / 0.01 mA / $\pm(2\% R + 2 \text{ cts})$; polarity reversal Clamp: 1 A-10 A-40 A / 0.1 mA-1 mA-10 mA / $\pm(2.5\% R + 2 \text{ cts})$		
I-substitution			Test socket: 50.00 mA / 0.01 mA / $\pm(2\% R + 2 \text{ cts})$	
Touch leakage			Socket and "tripod": 30.00 mA / 0.01 mA	
Measurement network			unweighted, weighted, L-N polarity reversal, welding machine	
LOOP / INTEGRATED FUSE TABLE				
Zs without trip (Zs & Rs)	Range / resolution	2 Ω ; 40 Ω ; 400 Ω ; 2,000 Ω / 0.01 Ω ; 0.01 Ω ; 0.1 Ω ; 1 Ω		
	Accuracy	$\pm(15\% R + 3 \text{ cts})$; $\pm(10\% R + 3 \text{ cts})$; $\pm(5\% R + 2 \text{ cts})$; $\pm(5\% R + 2 \text{ cts})$		
	Ik display range	12 kA		
ZS high current and Zi	Range / resolution	0.5 Ω ; 3.999 Ω ; 39.99 Ω ; 400.0 Ω / 0.001 Ω ; 0.001 Ω ; 0.01 Ω ; 0.1 Ω		
	Accuracy	$\pm(10\% R + 20 \text{ cts})$; $\pm(10\% R + 20 \text{ cts})$; $\pm(5\% R + 2 \text{ cts})$; $\pm(5\% R + 2 \text{ cts})$		
	Ik display range	20 kA		
Inductance	Range / resolution / accuracy	15.0 mH / 0.1 mH / $\pm(10\% R + 2 \text{ cts})$		
UF measurement	Range / resolution / accuracy	24.9 V; 70.0 V / 0.1 V; 0.1 V / $\pm(15\% R + 3 \text{ cts})$ / $\pm(5\% R + 2 \text{ cts})$		

*except with test socket

SPECIFICATIONS

	CA 6161	CA 6163	TEST POSSIBLE ON TEST SOCKET
RCD & PRCD			
Network voltage	440 VAC max		
Calibres	10 / 30 / 100 / 300 / 500 / 1,000 mA / Var (6 - 1,000 mA)		
Types of RCD	AC, A, F, B, B+; G, S		
Pulse test	x 0.5; x 1; x 2, x 4; x 5; x 10 (DC) I Δ n		
Tripping time Range / resolution / accuracy	300 ms / 0.1 ms / \pm 2ms		
Ramp test	10 / 30 / 100 / 300 / 500 / 1,000 mA, Var (6-1,000mA); 0.3 x I Δ n to I test max / 22 steps		
Tripping current Resolution / accuracy	0.1 mA; -0% + (7%R + 2 mA)		
UF measurement Range / resolution / accuracy	24.9 V; 70.0 V / 0.1 V / \pm (15% R + 3 cts) ; \pm (5% R + 2 cts)		
DISCHARGE TIME 34 V, 60 V, 120 V			
Time :	0.1 s - 9.9 s / 0.1 s / \pm (1% R + 1 ct)		■
Up voltage Range / resolution / accuracy	2070-375.0 / 0.1 V / \pm (2% R + 2 cts) & "Tripod": 1-650 V / 0.1 V / \pm (2% R + 2 cts)		
TEST SOCKET POWER VALUES			
Quantities	Socket : U, I, P, S, F, cos ϕ , Pf, THD U, THD I		■
Measurement range	265 VAC ; 16 A; 4.24 kW; 4.24 kVA; 45-55 Hz; (-1,+1); (-1,+1); 8.0 %; 100 %		
Range / resolution / accuracy	100 W; 1 kW; 4.24 kW / 0.01 W; 0.1 W; 1 W / \pm (2% R + 2 cts)		
POWER VALUES WITH "TRIPOD" + G72 CLAMP**			
Quantities	«Tripod» + single-phase/three-phase clamp: U, I, P, S, F, cos ϕ , Pf, THD U, THD I		
Measurement range	440 VAC; 16 A; 176 kW (1 ϕ) / 52.8 kW (3 ϕ); 176 kVA (1 ϕ) / 52.8 kVA (3 ϕ); 45-55 Hz; (-1,+1); 100 %; 100 %		
Accuracy for power	1 ϕ : 100 W; 1000 W; 10 kW; 176 kW / 0.01 W; 0.1 W; 1 W; 10 W / \pm (2% R + 2 cts)		
PHASE ROTATION			
Installation voltage and frequency	190.0 - 440.0 V; 45-55 Hz		
G72 CURRENT CLAMP**			
Measurement range	1 A / 10 A / 40 A		
Resolution / accuracy	0.1 mA; 1 mA; 10 mA / \pm (2.5% R + 3 cts) ; \pm (2.5% R + 2 cts) ; \pm (2.5% R + 2 cts)		
GENERAL SPECIFICATIONS			
Display	Colour touch screen; TN 800 x 480, 5"		
Data storage	100,000 tests		
Timer max.	40 min (depends on type of test)		
Communication	1 x USB-B; 2 x USB-A, Wifi		
Interfaces	START/STOP pedals, DOOR Open, HV gun trigger, 4 lamps, Barcode reader, RFID reader, sticker printer		
Power supply	230 VAC \pm 10%; 220 VAC -6% + 15 %		
Dimensions / weight	407 x 341 x 205 mm; 16 kg		
Temperature	OPERATION: 0; + 45 °C; STORAGE: - 30; + 60 °C		
Protection	IP 40 open / IP 64 closed; IK 08		
Electrical safety	IEC 61010-1; IEC 61010-2-030; IEC 61010-2-034; 300 V CAT II; 300V CAT III; 600V CAT III		
Standards	IEC 61557-1; -2; -3; -4; -6; -7; -10; -13; -14; -16 (partial)		

**optional accessory

STATE AT DELIVERY

CA 6161 & CA 6163

DELIVERED WITH A CARRYING BAG AND THE FOLLOWING ACCESSORIES:

- One C19 – Schuko mains cable, length 2.5 m
- One USB A/B cable
- Two high-voltage test guns (red and blue) with a 3 m cable
- Two elbowed-straight safety cables (red and black), length 3 m
- Three extension connectors (green, yellow, blue)
- Four test probes (black, red, green, blue)
- One "tripod"- cable - 3 safety cables, length 2.5 m
- One "tripod" – Schuko cable, length 2.5 m
- One multilingual Quick Start Guide
- One multilingual safety datasheet
- Test report with measurement values

ADDITIONALLY WITH THE CA 6161:

- Six crocodile clips (2 red, 2 black, 1 green and 1 blue)
- Two double continuity cables, length 3 m, 10 A

ADDITIONALLY WITH THE CA 6163:

- Three crocodile clips (red, green, blue)
- One 25 A Kelvin crocodile clip with a 2.5 m cable
- One 25 A Kelvin test gun with a 3 m cable

REFERENCES TO ORDER

- CA 6161 : P01145811
- CA 6163 : P01145831

Your Distributor

