

MACROTESTG1

Innovative multifunction Earth Ground Resistance and Earth Resistivity tester with Touch-screen display



Innovative Design



MACROTEST G1 is an innovative multifunction installation tester capable of carrying out safety tests on civil and industrial electric systems in compliance with IEC/EN61557-1. Its resistive TFT color touch-screen display, its icon menu, its help-on-line and its user-friendly development make the instrument extremely intuitive even for unskilled users. Its numberless features grant the user a wide range of applications in the world of measurements. The multifunction installation tester MACROTEST G2 allows saving all measures into an internal memory so transferring the saved data to a PC by means of USB (provided as standard) or built in Wi-Fi interfaces with an iOS and Android smartphones or tablets. The software supplied among standard accessories allows printing testing reports. The multifunction installation tester MACROTESTG1 has as Optional clamp T2100 permits to quickly check the resistance of earth probes without disconnection from earth system.



New Icon
Menu

Easy to use
and to connect



Function

- Earth resistance and soil resistivity with 2/3/4 pole method
- Stackless earth ground resistance (with T2100 optional accessory)
- Power Analysis, Harmonic analysis up to 25th
- Continuity of protection conductors with 200mA
- Built-in WiFi interface to connect to iOS and Android devices
- USB interface to connect to the PC
- Color touch-screen display
- Help on-line
- Internal memory and Cloud Storage (through iOS or Android device)
- Rechargeable NiMH batteries (external battery charger)



More than one earth

The Macrotest Series easily measures **earth ground resistance** (2 and 3 Point Method) and **soil resistivity** (4 Point Method) with an easy to understand graphical user interface and color touchscreen. The meter can store internally up to **999** measurements. The included software enables easy data transfer to a computer, tablet or phone via built-in **Wi-Fi or USB** connection where it can be archived or used to generate **reports**. In addition to volt ampere method other testing modes can be adopted as follows:



The composite image consists of three parts:

- Top Left:** A screenshot of the device's menu interface. It shows a date and time of 22-04-2014 14:32. The main display shows R_A 1.16 Ω and 174 V. Below this, it shows R_S 90 Ω and R_H 87 Ω . There are also buttons for R_A 30mA, 150A, and 0.2s.
- Top Right:** A diagram of the 4-pole Wenner method. It shows four electrodes in a line, with the distance between each electrode labeled as 5D. The total distance between the outermost electrodes is labeled as D.
- Bottom Left:** A photograph of a person wearing a yellow glove using the orange clamp-on device on a red corrugated metal pipe. A white cable connects the device to a handheld meter.
- Bottom Right:** A photograph of the orange clamp-on device (T2100) with a handheld meter connected to it.

› Stackless earth ground resistance measurement with T2100 (optional)
 HT Macrotest Series adopts an innovative method for earth resistance measurement eliminating the worry of finding a place for auxiliary earth rods. Earth resistance measurement will be easier thanks to an **algorithm HTEarth** storing all measurements effected with clamp T2100 and calculating earth resistance value without disconnecting rods.

› Soil resistivity

It measures soil resistivity with 4-pole Wenner method.

Everything has an outcome.

OK or NOT OK

Continuity test

Test current >200mA



No old displays anymore

Now you can give a name to your measurements



Power Meter and Power Interface



Power and Load analysis

- Single Phase and Three Phase balanced systems
- Voltage, Current and Frequency measurement
- Active - Reactive - Apparent Power measurement
- Cosphi and Power Factor measurement
- THD% and Harmonics analysis up to 25th

App HTAnalysis will change your working concept

Wi-Fi Connection
Work Safely



Harmonics



WaveForms



V - I Vectors

App HTAnalysis and HTCloud

Thanks to the creation of **App HTAnalysis** it is possible to interface HT last generation instruments with tablets and smartphones. HTAnalysis is a professional software allowing to display and look at measurements or recordings on your devices then sharing them on **HTCloud database**.

It enables you to display all **Wave-Forms, Vector diagrams, Harmonics and Power** instantly.

During testing you can:

Dictate **comments** orally

Associate a **picture** or a **video** to each measurements

Review and **customize** your measurements

HTCloud will enable you to share your measurements with everybody



Report on your mobile device

TopView software



Creating a professional report
Reporting custom printing can also be exported in XLS and PDF.
USB interface to connect to the PC

STANDARD Accessory

- PT400 : Touch pen
- KITGSC5 : Set 4 cables + 4 alligator clips + 2 test leads
- KITTERNE : Set 4 cables + 4 metal probes
- **TOPVIEW2006** : Windows software + optical/USB cable C2006
- YABAT0003000 : NiMH rechargeable battery, type AA, 1.2V
- BORSA2051 : Soft carrying bag

OPTIONAL Accessory

- **PR400** : Remote lead per activation test
- **HT96U** : Rigid clamp 1-100-1000A AC, diameter 54mm
- **T2100** : The T2100 model is designed for the resistance ...

Essential Macrotest Accessories

- **T2100** Earth ground clamp transducer



- **PR400** Remote switch probe



- **HT96U** Transducer for AC currents
 $0 \div 1$, $0 \div 100$, $0 \div 1000A$ AC



Standards

EMC 2004/108/CE Directive

CE MARK

EN50522

IEC/EN 61010-032

IEC/EN 61010-1

IEC/EN61187

IEC/EN61557-1

IEC/EN61557-2

IEC/EN61557-3

IEC/EN61557-4

IEC/EN61557-5

IEC/EN61557-6

IEC/EN61557-7

LVD 2006/95/CE Directive

VDE 0100

Cross references

Functions	MACROTEST G1	MACROTEST G2
Insulation with 1000VDC test voltage		•
Insulation with 500VDC test voltage		•
Insulation with 250VDC test voltage		•
Insulation with 50, 100VDC test voltage		•
Continuity of earth conductors with 200mA	•	•
Earth resistance with 2-pole and 3-pole	•	•
Earth resistance with ring mode	•**	•**
Ground resistivity with 4-pole	•	•
Measurement of electrical parameters (V, A, W, VAR, VA, PF)	• ¹	• ¹
Harmonic analysis up to 25 th order and THD% calculation	• (25th) ¹	• (25th) ¹
Help on line	•	•
Internal memory to save measures	•	•
Optical/USB port for PC connection	•	•
Built-in WiFi communication interface	•	•
Hard carrying case	Optional	Optional



Kit MACROTEST G1

- Macrotest G1 ◀
- T2100 Clamp ◀
- VA504 Hard case ◀

Kit MACROTEST G2

- Macrotest G2 ◀
- T2100 Clamp ◀
- VA504 Hard case ◀





1. ELECTRICAL SPECIFICATIONS

Accuracy is indicated as \pm (% readings + no. of digits*resolution) at $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$, <80%HR

Continuity test on protective and equalizing conductors

Range [Ω]	Resolution [Ω]	Accuracy (*)
0.01 \div 19.99	0.01	$\pm(5.0\% \text{rdg} + 3\text{dgt})$
20.0 \div 99.9	0.1	

(*) calibrate the cables to null their resistance

Test current: > 200mA DC for $R \leq 5\Omega$ (calibration included) ; Resolution for DC current :1mA

Open-circuit voltage: $4V \leq V_0 \leq 24V$

Ground resistance with 3-wire method

Range [Ω]	Resolution [Ω]	Accuracy (*)
0.01 \div 9.99	0.01	$\pm(5.0\% \text{rdg} + 3\text{dgt})$
10.0 \div 99.9	0.1	
100 \div 999	1	
1.00k \div 49.99k	0.01k	

Test current: <10mA – 77.5Hz, Open-circuit voltage: < 20Vrms

(*) Add 5% to the accuracy if the probe resistances (R_s or R_h) > 100 x R_{meas}

Soil resistivity with 4-wire Wenner method

Range [Ωm]	Resolution [Ωm]	Accuracy (*)
0.06 \div 9.99	0.01	$\pm(5.0\% \text{rdg} + 3\text{dgt})$
10.0 \div 99.9	0.1	
100 \div 999	1	
1.00k \div 9.99k	0.01k	
10.0k \div 99.9k	0.1k	
100k \div 999k	1k	
1.00M \div 3.14M	0.01M	

(*) with distance $d=10\text{m}$, Distance "d" range: 1 \div 10m

Test current: <10mA – 77.5Hz, Open-circuit voltage: < 20Vrms



Measurement of main parameters and harmonics (PQA)

AC TRMS Voltage

Range [V]	Resolution [V]	Accuracy
15.0 ÷ 459.9	0.1V	±(1.0%rdg + 1dgt)

Allowed crest factor ≤ 1,5 ; Frequency: 42.5 ÷ 69.0 Hz

Frequency

Range [Hz]	Resolution [Hz]	Accuracy
42.5 ÷ 69.0	0.01	±(2.0%rdg + 2dgt)

Allowed voltage: 15.0 ÷ 459.9V ; Allowed current: 5%FS clamp ÷ FS clamp

AC TRMS Current

FS clamp	Range [A]	Resolution [A]	Accuracy
≤ 10A	5% FS ÷ 9.99	0.01	1Ph: ±(1.0%rdg + 3 dgt) 3Ph: ±(2.0%rdg + 5 dgt)
10A ≤ FS ≤ 200	5% FS ÷ 199.9	0.1	
200A ≤ FS ≤ 3000	5% FS ÷ 2999	1	

Range: 5 ÷ 999.9 mV; Values under 5mV are zeroed

Allowed crest factor ≤ 3; Frequency: 42.5 ÷ 69.0 Hz

Active power (@ 230V in 1Ph systems, 400V in 3Ph systems, cosφ=1, f=50.0Hz)

FS clamp	Range [kW]	Resolution [kW]	Accuracy
≤ 10A	0.000 ÷ 9.999	0.001	1Ph: ±(2.0%rdg + 5 dgt) 3Ph: ±(2.5%rdg + 8 dgt)
10A ≤ FS ≤ 200	0.00 ÷ 999.99	0.01	
200A ≤ FS ≤ 1000	0.0 ÷ 999.9	0.1	
1000A ≤ FS ≤ 3000	0 ÷ 9999	1	

Potenza Reattiva (@ 230V in 1Ph systems, 400V in 3Ph systems, cosφ=0, f=50.0Hz)

FS pinza	Range [kVAr]	Resolution [kVAr]	Accuracy
≤ 10A	0.000 ÷ 9.999	0.001	1Ph: ±(2.0%rdg + 7 dgt) 3Ph: ±(3.0%rdg + 8 dgt)
10A ≤ FS ≤ 200	0.00 ÷ 999.99	0.01	
200A ≤ FS ≤ 1000	0.0 ÷ 999.9	0.1	
1000A ≤ FS ≤ 3000	0 ÷ 9999	1	

Power factor (@ 230V in 1Ph systems, 400V in 3Ph systems, f=50.0Hz)

Range	Resolution	Accuracy
0.70c ÷ 1.00 ÷ 0.70i	0.01	±(4.0%rdg + 10dgt) if I ≤ 10%FS ±(2.0%rdg + 3dgt) if I > 10%FS

cosφ (@ 230V in 1Ph systems, 400V in 3Ph systems, f=50.0Hz)

Range	Resolution	Accuracy
0.70c ÷ 1.00 ÷ 0.70i	0.01	±(4.0%rdg + 10dgt) if I ≤ 10%FS ±(1.0%rdg + 7dgt) if I > 10%FS

Voltage harmonics (@ 230V in 1Ph systems, 400V in 3Ph systems, f=50.0Hz)

Range [%]	Resolution [%]	Order	Accuracy
0.1 ÷ 100.0	0.1	01 ÷ 25	±(5.0%rdg + 5dgt)

Frequency of fundamental: 42.5 ÷ 69.0 Hz, DC accuracy not declared

Current harmonics (f=50Hz)

Range [%]	Resolution [%]	Order	Accuracy
0.1 ÷ 100.0	0.1	01 ÷ 9	±(5.0%rdg + 5dgt)
		10 ÷ 17	±(10.0%rdg + 5dgt)
		18 ÷ 25	±(15.0%rdg + 10dgt)



2. GENERAL SPECIFICATIONS

DISPLAY AND MEMORY:

Features:	Touch screen, color graphic LCD, 320x240mm
Memory:	999 locations, 3 marker levels
Communication:	Optical-USB and WiFi integrated

POWER SUPPLY:

Batteries:	6 x 1.2V(rechargeable) type AA or 6 x 1.5V type AA
Battery life:	> 500 test for each funtions
Auto Power OFF:	after 5 min of idleness (disabled)

MECHANICAL FEATURES:

Dimensions (L x W x H):	225 x 165 x 75mm
Weight (included batteries):	1.2kg

WORKING ENVIRONMENTAL CONDITIONS:

Reference temperature:	23°C ± 5°C
Working temperature:	0° ÷ 40°C
Allowed relative humidity:	< 80% HR
Storage temperature:	-10 ÷ 60°C
Storage humidity:	< 80% HR

TEST VERIFIES REFERENCE STANDARDS:

Continuity test with 200mA:	IEC/EN61557-4
Earth resistance:	IEC/EN61557-5
Multifunction:	IEC/EN61557-10
Earth resistance on TN systems:	EN61936-1 + EN50522

GENERAL REFERENCE STANDARDS:

Safety of measuring instruments:	IEC/EN61010-1, IEC/EN61010-031, IEC/EN61010-2-032
Product type standard:	IEC/EN61557-1
Technical documentation :	IEC/EN61187
Insulation:	double insulation
Pollution degree:	2
Encapsulation :	IP40
Overvoltage category:	CAT III 240V~ (to ground), max 415V between inputs
Max height of use:	2000m

This instrument complies with the requirements of the European Low Voltage Directives 2006/95/EEC (LVD) and EMC 2004/108/EEC