**MACROTEST G2** 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 MACROTESTG2 has as Optional clamp T2100 permits to quickly check the resistance of earth probes without disconnection from earth system.



## Function

- Earth resistance and soil resistivity with 2/3/4 pole method
- Stackless earth ground resistance (with T2100 optional accessory)
- Insulation resistance with 50, 100, 250, 500,1000V DC
- 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 (trough iOS or Android device)
- Rechargeable NiMH batteries (external battery charger)

## Accessories

**STANDARD**

- PT400 : Touch pen
- KITGSC5 : Set 4 cables + 4 alligator clips + 2 test leads
- KITTERRNE : 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**

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

## Standards

EMC 2004/108/CE Directive
16th edition
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

# 1. ELECTRICAL SPECIFICATIONS

Accuracy is indicated as ± (% readings + no. of digits*resolution) at 23°C ± 5°C, <80%HR

**Continuity test on protective and equalizing conductors**

| Range [Ω] | Resolution [Ω] | Accuracy (*) |
|---|---|---|
| 0.01 ÷ 19.99 | 0.01 | ±(5.0%rdg + 3dgt) |
| 20.0 ÷ 99.9 | 0.1 | |

(*) calibrate the cables to null their resistance
Test current: > 200mA DC for R≤5Ω (calibration included) ; Resolution for DC current :1mA
Open-circuit voltage: $4V \le V_0 \le 24V$

## Insulation resistance (DC voltage)

| Test voltage[V] | Range [MΩ] | Resolution [MΩ] | Accuracy |
|---|---|---|---|
| 50 | 0.01 ÷ 9.99 | 0.01 | ±(2.0%rdg + 2dgt) |
| | 10.0 ÷ 49.9 | 0.1 | |
| | 50.0 ÷ 99.9 | 0.1 | ±(5.0%rdg + 2dgt) |
| 100 | 0.01 ÷ 9.99 | 0.01 | ±(2.0%rdg + 2dgt) |
| | 10.0 ÷ 99.9 | 0.1 | |
| | 100.0 ÷ 199.9 | 0.1 | ±(5.0%rdg + 2dgt) |
| 250 | 0.01 ÷ 9.99 | 0.01 | ±(2.0%rdg + 2dgt) |
| | 10.0 ÷ 99.9 | 0.1 | |
| | 100 ÷ 499 | 1 | ±(5.0%rdg + 2dgt) |
| 500 | 0.01 ÷ 9.99 | 0.01 | ±(2.0%rdg + 2dgt) |
| | 10.0 ÷ 199.9 | 0.1 | |
| | 200 ÷ 499 | 1 | |
| | 500 ÷ 999 | 1 | ±(5.0%rdg + 2dgt) |
| 1000 | 0.01 ÷ 9.99 | 0.01 | ±(2.0%rdg + 2dgt) |
| | 10.0 ÷ 199.9 | 0.1 | |
| | 200 ÷ 999 | 1 | |
| | 1000 ÷ 1999 | 1 | ±(5.0%rdg + 2dgt) |

Open-circuit voltage: nominal test voltage –0% +10%
Short circuit current: <6.0mA at 500V test voltage
Nominal test current: >1mA if load= 1kΩ*Vnom (Vnom=50V, 100V, 250V, 500V, 1000V)
Safety protection: the display shows an error message for input voltage >10V

## Ground resistance with 3-wire method

| Range [Ω] | Resolution [Ω] | Accuracy (*) |
|---|---|---|
| 0.01 ÷ 9.99 | 0.01 | ±(5.0% rdg + 3dgt) |
| 10.0 ÷ 99.9 | 0.1 | |
| 100 ÷ 999 | 1 | |
| 1.00k ÷ 49.99k | 0.01k | |

Test current: <10mA – 77.5Hz, Open-circuit voltage: < 20Vrms
(*) Add 5% to the accuracy if the probe resistances (Rs or Rh) > 100 x Rmeas

## Soil resistivity with 4-wire Wenner method

| Range [Ωm] | Resolution [Ωm] | Accuracy (*) |
|---|---|---|
| 0.06 ÷ 9.99 | 0.01 | ±(5.0% rdg + 3dgt) |
| 10.0 ÷ 99.9 | 0.1 | |
| 100 ÷ 999 | 1 | |
| 1.00k ÷ 9.99k | 0.01k | |
| 10.0k ÷ 99.9k | 0.1k | |
| 100k ÷ 999k | 1k | |
| 1.00M ÷ 3.14M | 0.01M | |

(*) with distance d=10m, Distance "d" range: 1 ÷ 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)<br>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)<br>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)<br>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<br>±(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<br>±(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**