MACROTESTG3
PROFESSIONAL MULTI-FUNCTION ELECTRICAL SAFETY TESTER

MACROTESTG3 is an innovative instrument capable of carrying out safety tests on civil and industrial electric systems in compliance with IEC/EN61557-1. Its capacitive 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. MACROTESTG3 allows saving all measures into an internal memory so transferring the saved data to a PC, a PDA or a smartphone by means of USB (provided as standard) or Wi-Fi (C2013 optional accessory) interfaces. The software supplied among standard accessories allows printing testing reports. MACROTESTG3 also drives the optional accessory IMP57 to carry out high resolution (0.1m) loop/line impedance measurements with prospective short-circuit current calculation. This allows accurate measurements even close to power stations enabling the user to correctly size the protection devices in any system. Further possible tests consist in checking breakdown current, tripping current, I2t relative to breakers (MCB) with curves B, C, D, K and fuses type gG as well as aM. Through optional clamp model HT96U it is possible to measure the leakage current. Optional clamp T2100 permits to quickly check the resistance of earth probes without disconnection from earth system.

FUNCTIONS

- Continuity of protection conductors with 200mA
- Insulation resistance with 50, 100,250,500,1000V DC
- Type A, AC, and B general, selective, and delayed RCDs up to 1000mA
- Line/fault impedance with prospective short circuit current calculation
- High resolution line/fault impedance (with IMP57 optional accessory)
- Curve B, C, D, and K MCBs and type gG and aM fuses
- Selection of length, type, and insulation of the cable under test
- Selection of tripping time of the protection device under test
- Earth resistance and soil resistivity with auxiliary rods
- Earth ground resistance (with T2100 optional accessory)
- Non-trip earth loop impedance
- Phase sequence indication
- Leakage current by means of the external transducer HT96U (optional)
- Environmental parameters (C/F, HR%, Lux) by means of optional probes
- TFT display with touch-screen
- Help on-line
- Internal memory
- USB interface to connect to the PC
- Wi-Fi (optional) interface to connect to PDAs, smart phones, etc.
- Rechargeable NiMH batteries (external battery charger)

GENERAL SPECIFICATIONS

Power supply:	6x1.2V type AA rechargeable batteries 6x1.5V type AA alkaline batteries
Display:	TFT, color, 320x240mm, with touch-screen
Internal memory:	999 locations, 3 marker levels
PC interface:	Optical/USB
Safety:	IEC/EN61010-1, IEC/EN61557-1
Insulation:	double insulation
Measurement category:	CAT III 240VAC (to ground) Max 415V between inputs
Dimensions (LxWxH):	225x165x105mm
Weight (battery included):	Approx. 1.2kg

ACCESSORIES	Code
Standard	
3-terminal cable with SHUKO plug	C2033X
Set of 4 cables + 4 alligator clips + 2 test leads	KITGSC5
Set of 4 cables + 4 metal earth probes	KITTERRNE
Carrying bag	BORSA2051
Stylus	PT400
Windows software + optical/USB cable	TOPVIEW2006
Switch probe	PR400
1.2V NiMH rechargeable batteries type AA, 6pcs	YABAT0001000
External battery charger	
ISO9000 calibration certificate	
Quick reference guide	
User manual on CD-ROM	
Optional	
Accessory for Loop impedance with high resolution	IMP57
Magnetic adapter for connection to screw heads	606-IECN
Transducer for 0÷1A, 0÷100A, 0÷1000A AC, diameter 54mm	HT96U
Clamp for probe earth resistance measurement	T2100
Temperature/Humidity probe	HT52/05
Illumination (Lux) probe	HT53/05
Hands-free kit	SP-0400
Optical/WiFi interface	C2013

NEW

With **HTANALYSIS** APP

(see pag. 4)

MACROTESTG3
HV005036

T2100 - Earth ground clamp meter

C2013 - Optical/WiFi interface

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1. ELECTRICAL SPECIFICATIONS

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

Voltage (RCD, LOOP, Phase sequence)

Range [V]	Resolution [V]	Accuracy
15 ÷ 460	1	±(3.0% rdg + 2dgt)

Frequency

Range [Hz]	Resolution [Hz]	Accuracy
47.0 ÷ 63.6	0.1	±(0.1% rdg + 1dgt)

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 ≤ V_0 ≤ 12V

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

Z Line (Line-Line, Line-Neutral, Line-PE)

Range [Ω]	Resolution [Ω]	Accuracy
0.00 ÷ 199.9 mΩ (*)	0.1 mΩ (*)	±(5.0% rdg + 1mΩ) (*)
200 ÷ 1999 mΩ (*)	1 mΩ (*)	
0.01 ÷ 9.99 Ω	0.01 Ω	±(5.0% rdg + 3dgt)
10.0 ÷ 199.9 Ω	0.1 Ω	

(*) By means of IMP57 optional accessory
Maximum test current: 5.81A (at 265V); 10.10A (at 457V)
Test voltage ranges: 100÷265V (Line-Neutral) / 100÷460V (Line-Line); 50/60Hz ± 5%
Protection type: MCB (B, C, D, K), Fuse (gG, aM)
Insulation materials: PVC, Rubber butyl, EPR, XLPE

First fault current (IT systems)

Range (mA)	Resolution (mA)	Accuracy
0.1 ÷ 0.9	0.1	±(5.0% rdg + 1dgt)
1 ÷ 999	1	±(5.0% rdg + 3dgt)

Limit contact voltage (ULIM) : 25V, 50V

RCD test (Molded case type)

RCD type:	AC (∿), A (⌒), B(⎓) – General (G), Selective (S) and Delayed (⏲)
Rated tripping currents (IΔN)::	10mA, 30mA, 100mA, 300mA, 500mA, 650mA, 1000mA
Line-PE, Line-N voltage:	100V ÷265V RCD type AC and A, 190V ÷265V RCD type B
Frequency:	50/60Hz ± 5%

RCD tripping current (Molded case type – RCD General)

RCD type	IΔN	Range IΔN [mA]	Resolution [mA]	Accuracy IΔN
AC, A	IΔN = 10mA	(0.3 ÷ 1.1) $I_{\Delta N}$	≤ 0.1 $I_{\Delta N}$	- 0%, +10%$I_{\Delta N}$
	10mA <IΔN ≤650mA			- 0%, +5%$I_{\Delta N}$
B	30mA ≤IΔN ≤100mA			

RCD Molded type tripping time range [ms] (TT/TN system)

		x 1/2			x 1			x 2			x 5			AUTO			▟		
	\	G	S	⏲	G	S	⏲	G	S	⏲	G	S	⏲	G	S	⏲	G	S	⏲
10mA	AC	999	999	999	999	999	999	200	250		50	150		✓	✓		310		
	A	999	999	999	999	999	999	200	250		50	150		✓	✓		310		
	B																		
30mA 100mA	AC	999	999	999	999	999	999	200	250		50	150		✓	✓		310		
	A	999	999	999	999	999	999	200	250		50	150		✓	✓		310		
	B	999	999	999	999	999	999										310		
300mA	AC	999	999	999	999	999	999	200	250		50	150		✓	✓		310		
	A	999	999	999	999	999	999	200	250		50	150		✓	✓		310		
	B	999	999	999	999	999	999												
500mA 650mA	AC	999	999	999	999	999	999	200	250		50	150		✓	✓		310		
	A	999	999	999	999	999	999	200	250								310		
	B																		
1000mA	AC	999	999	999	999	999	999	200	250										
	A	999	999	999	999	999	999												
	B																		

Resolution: 1ms, Accuracy: ±(2.0%rdg + 2dgt)

RCD Molded type tripping time range [ms] (IT system)

		x 1/2			x 1			x 2			x 5			AUTO			▟		
	\	G	S	⏲	G	S	⏲	G	S	⏲	G	S	⏲	G	S	⏲	G	S	⏲
10mA	AC	999	999	999	999	999	999	200	250		50	150		✓	✓		310		
	A																		
	B																		
30mA 100mA 300mA	AC	999	999	999	999	999	999	200	250		50	150		✓	✓		310		
	A																		
	B																		
500mA 650mA	AC	999	999	999	999	999	999	200	250		50	150		✓	✓		310		
	A																		
	B																		
1000mA	AC	999	999	999	999	999	999	200	250										
	A																		
	B																		

Resolution: 1ms, Accuracy: ±(2.0%rdg + 2dgt)

Test on earth leakage delay tester RCDs (with RCDX10 optional accessory)

RCD type: AC (∿), A (⌒), B(⎓) – General (G), Selective (S) and Delayed (⏲)
Rated tripping currents (IΔN):: 0.3A ÷ 10A
Line-PE, Line-N voltage: 100V ÷265V RCD type AC and A, 190V ÷265V RCD type B
Frequency: 50/60Hz ± 5%

Earth leakage delay tester RCDs tripping current (RCD General)

RCD type	IΔN	Range IΔN [mA]	Resolution [mA]	Accuracy IΔN
AC, A, B	300mA ≤IΔN ≤10A	(0.3 ÷ 1.1) $I_{\Delta N}$	≤ 0.1$I_{\Delta N}$	- 0%, +5%$I_{\Delta N}$

Earth leakage delay tester RCDs trip out time range [ms] (TT/TN system)

		x 1/2			x 1			x 2		x 5		AUTO					
	\	G	S	⏲	G	S	⏲	G	S	G	S	G	S	⏲	G	S	⏲
0.3A ÷ 1.0A	AC	999	999	999	999	999	999	200	250	50	150	✓	✓		310		
	A	999	999	999	999	999	999	200	250	50	150	✓	✓		310		
	B	999	999	999	999	999	999								310		
1.1A ÷ 3.0A	AC	999	999	999	999	999	999	200	250	50	150	✓	✓		310		
	A	999	999	999	999	999	999	200	250	50	150	✓	✓		310		
	B	999	999	999	999	999	999										
3.1A ÷ 6.5A	AC	999	999	999	999	999	999	200	250	50	150	✓	✓		310		
	A	999	999	999	999	999	999	200	250	50	150	✓	✓		310		
	B	999	999	999	999	999	999										
6.6A ÷ 10.0A	AC	999	999	999	999	999	999	200	250								
	A	999	999	999	999	999	999										
	B																

Resolution: 1ms, Accuracy: ±(2.0%rdg + 2dgt)

Earth leakage delay tester RCDs trip out time range [ms] (IT system)

		x 1/2			x 1			x 2		x 5		AUTO					
	\	G	S	⏲	G	S	⏲	G	S	G	S	G	S	⏲	G	S	⏲
0.3A ÷ 3.0A	AC	999	999	999	999	999	999	200	250	50	150	✓	✓		310		
	A																
	B																
3.1A ÷ 6.5A	AC	999	999	999	999	999	999	200	250	50	150	✓	✓		310		
	A																
	B																
6.6A ÷ 10.0A	AC	999	999	999	999	999	999	200	250								
	A																
	B																

Resolution: 1ms, Accuracy: ±(2.0%rdg + 2dgt)

R_A – Non-trip earth loop impedance

Test voltage: 100÷265V (Line-PE), 50/60Hz ± 5%

R_A – Systems with Neutral wire

Range [Ω]	Resolution [Ω]	Accuracy
0.01 ÷ 9.99	0.01	-0%, +(5.0% rdg + 0.1Ω)
10.0 ÷ 199.9	0.1	-0%, +(5.0% rdg + 1Ω)
200 ÷ 1999	1	-0%, +(5.0% rdg + 3Ω)

Test current: ~10mA

R_A – Systems without Neutral wire

Range [Ω]	Resolution [Ω]	Accuracy
1 ÷ 1999	1	-0%, +(5.0% rdg + 3dgt)

Test current: < ½ IΔN set

Contact voltage (RCD and Ra test)

Range [V]	Resolution [V]	Accuracy
0 ÷ Utlim	0.1	-0%, +(5.0% rdg + 3V)

Contact voltage (EARTH test – TT system)

Range [V]	Resolution [V]	Accuracy
0 ÷ 99.9	0.1	-0%, +(5.0% rdg + 3V)

Contact voltage (EARTH test – TN system)

Range [V]	Resolution [V]	Accuracy
0 ÷ 99.9	0.1	-0%, +(5.0% rdg + 3V)
100 ÷ 999	1	

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

Phase sequence rotation with 1-wire method

Voltage range P-N, P-PE[V]	Frequency range
100 ÷ 265	50Hz/60Hz ± 5%

Measurement is only carried out by direct contact with metal live parts **(not on insulation sheath)**

Voltage drop on main power lines (ΔV%)

Range (%)	Resolution (%)	Accuracy
0 ÷ 100	0.1	±(10.0% rdg + 4dgt)

Leakage current (by HT96U optional clamp transducer)

Range [mA]	Resolution [mA]	Accuracy
0.5 ÷ 999.9	0.1	±(5.0% rdg + 2dgt)

Environmental parameters (AUX function)

Parameter	Range	Resolution	Accuracy
Temperature [°C]	-20°C ÷ 80°C	0.1 °C	±(2.0%rdg+2dgt)
Temperature [°F]	-4°F ÷ 176°F	0.1 °F	
Relative humidity [%HR]	0 ÷ 100%HR	0.1% UR	
DC output voltage	0.1mV ÷ 1.0V	0.1mV	
Illuminance [Lux]	0.001Lux ÷ 20.00 Lux (*)	0.001 ÷ 0.02 Lux	
	0.1 Lux ÷ 2000 Lux (*)	0.1 ÷ 2 Lux	
	1 Lux ÷ 20 kLux (*)	1 ÷ 20 Lux	

(*) Accuracy of HT53 lux probe is according to Class AA

2. GENERAL SPECIFICATIONS

DISPLAY AND MEMORY:	
Features:	Touch screen, color graphic LCD, 320x240mm
Memory:	999 locations, 3 marker levels
Communication:	Optical-USB and WiFi (with C2013 optional accessory)
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
Insulation resistance:	IEC/EN61557-2
Earth resistance:	IEC/EN61557-5
Fault loop impedance:	IEC/EN61557-3
RCD test:	IEC/EN61557-6
Phase sequence:	IEC/EN61557-7
Multifunction:	IEC/EN61557-10
Prospective short circuit current:	EN60909-0
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 :	IP50
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

Technical specifications can be modified without preliminary notice.