

## Information

FULLTEST3 effects all tests required by IEC/EN60204-1:2006 and IEC/EN61439 in a simple, reliable and fast way. More than that the instrument carries out a considerable number of safety tests which makes it as a flexible solution also in compliance with other standards. Besides continuity of protection conductors, insulation and withstanding, FULLTEST3 tests type A, AC, and B general, selective and delayed RCDs, curve B, C, D, and K MCBs and type gG and aM fuses, line/fault impedance with standard or high resolution, non-trip earth loop impedance, leakage current, etc. FULLTEST3 is provided with innovative interfaces such as a colour touch-screen graphical display, 3 USB ports for PC connection, a USB memory stick, a USB printer and bar code readers. FULLTEST3 is the ideal partner for designers, manufacturers and installers.



## Function

- Continuity of protection conductors with 200mA
- Continuity of protection conductors with  $I > 10A$ ,  $V < 12V$  AC
- Continuity of protection conductors with  $I > 25A$ ,  $V < 12V$  AC
- Insulation resistance with 100,250,500,1000V DC
- Withstanding with programmable test voltage from 250V to 5100V AC
- Discharging time of internal capacitances and at the power input
- Leakage/absorbed current and power consumption at the built-in test socket
- Leakage current by means of the external transducer HT96U (optional)
- 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

- Test I<sub>2t</sub> for verifies of short circuit conditions
- Selection of length, type, and insulation of the cable under test
- Selection of tripping time of the protection device under test
- Non-trip earth loop impedance
- Phase sequence indication
- TFT display with touch-screen
- Programmable timer
- Programmable thresholds
- Internal memory
- USB interface for PC connection
- USB interface for keyboard, printer and barcode reader connection

## Accessories

### STANDARD

- Power cord
- Test cable red, 3m, 2 pcs
- Test cable blue, 3m
- Test cable green, 3m
- C2033X : Cable 3 wires with Shuko plug
- Cable with 5kV safety, 2 pcs
- Test lead CAT III, 3 pcs
- Test lead CAT II, 3 pcs
- Alligator clip, 3pcs

- TOPVIEW2007 : Windows software + USB cable C2007
- Carrying bag for accessories
- ISO9000 calibration certificate
- User manual

### OPTIONAL

- IMP57 : Accessory for high resolution Loop/Line Impedance
- HT96U : Rigid clamp 1-100-1000A AC, diameter 54mm

## Standards

EMC 2004/108/CE Directive  
 CE MARK  
 IEC/EN 61010-1  
 IEC/EN60204-1:2006  
 IEC/EN61187  
 IEC/EN61335-1  
 IEC/EN61439-1  
 IEC/EN61557-1

IEC/EN61557-13  
 IEC/EN61557-14  
 IEC/EN61557-2  
 IEC/EN61557-3  
 IEC/EN61557-4  
 IEC/EN61557-6  
 IEC/EN61557-7  
 LVD 2006/95/CE Directive

# 1. ELECTRICAL SPECIFICATIONS

Accuracy indicated as  $\pm$  [% readings + (number of digits \* resolution)] at 23°C  $\pm$  5°C <80%HR

## Continuity of protection conductor with I>200mA

Range ( $\Omega$ )	Resolution ( $\Omega$ )	Accuracy	Overload protection
0.00 $\div$ 19.99	0.01	$\pm(3.0\%rdg + 3dgt)$	CAT III 300V
20.0 $\div$ 199.9	0.1		

Standard test leads: cables 2.5mmq, 2m length  
 Output voltage: approx. 4.5V AC  
 Test current: >200mA DC (R < 20 $\Omega$  with standard test leads)  
 Timer on measure: 1s  $\div$  60min (in step of 1s)  
 Measure method: 2 wires

## Continuity of protection conductor with with I>10A

Range ( $\Omega$ )	Resolution ( $\Omega$ )	Accuracy	Overload protection
0.000 $\div$ 1.999	0.001	$\pm(3.0\%rdg + 3dgt)$	CAT III 300V
2.00 $\div$ 19.99	0.01		

Standard test leads: cables 2.5mmq, 2m length  
 Output voltage: approx. 4.5V AC  
 Test current: > 10A AC (R < 0.5 $\Omega$  with standard test leads)  
 Timer on measure: 1s  $\div$  60min (in step of 1s)  
 Measure method: 2 wires

## Continuity of protection conductor with I>25A

Range ( $\Omega$ )	Resolution ( $\Omega$ )	Accuracy	Overload protection
0.000 $\div$ 1.999	0.001	$\pm(3.0\%rdg + 3dgt)$	CAT III 300V
2.00 $\div$ 19.99	0.01		

Standard test leads: cables 2.5mmq, 2m length  
 Output voltage: approx. 4.5V AC  
 Test current: > 25A AC (R < 0.1 $\Omega$  with standard test leads)  
 Timer on measure: 1s  $\div$  60min (in step of 1s)  
 Measure method: 2 wires

## Continuity of protection conductor with – IEC/EN60204-1:2006

Range ( $\Omega$ )	Resolution ( $\Omega$ )	Accuracy	Overload protection
0.000 $\div$ 1.999	0.001	$\pm(3.0\%rdg + 3dgt)$	CAT III 300V
2.00 $\div$ 19.99	0.01		

Standard test leads: cables 2.5mmq, 2m length  
 Line impedance range: 0.001 $\Omega$   $\div$  2.000 $\Omega$  (in step of 0.001 $\Omega$ )  
 Section of PE conductor: 1, 2.5, 4, 6, 10, 16, 25, 35, 50, 70mmq  
 Type of protection devices: MCB (magnetothermal) Curve B, C, D, K, Fuses type gG, aM  
 Nominal current MCB: 6, 10, 13, 16, 20, 25, 32, 40, 50, 63A (Curve B)  
 0.5, 1, 1.6, 2, 4, 6, 10, 13, 16, 20, 25, 32, 40, 50, 63A (Curve C)  
 0.5, 1, 1.6, 2, 4, 6, 10, 13, 16, 20, 25, 32A (Curve D and Curve K)  
 Nominal current fuse: 2A  $\div$  1250A (Fuse gG) ; 2A  $\div$  6300A (Fuse aM)  
 Cable length range: 0.1  $\div$  999.9m  
 Type of cable selectable: Copper, Aluminum  
 Output voltage: approx. 4.5V AC  
 Test current: >10A AC  
 Timer on measure: 1s  $\div$  60min (in step of 1s)  
 Measure method: 4 wires

## Dielectric test

Nominal test voltage Un (V)	Resolution (V)	Accuracy	Overload protection
250 $\div$ 800	10	$\pm 3.0\%Un$	CAT III 300V
810 $\div$ 2500			
2510 $\div$ 5100			

Test voltage: 250V  $\div$  5100V AC, 50/60Hz programmable in steps of 10V  
 Measurement modes: Manual, Ramp, Timer, Burn  
 Timer on measure: 10s  $\div$  10min  
 Output power: 500VA at 5100V  
 Discharging current: selectable IAPP and IREAL modes

**Discharging current IAPP mode**

Measurement range (mA)	Resolution (mA)	Accuracy	Overload protection
0 ÷ 200	1	±3.0%rdg + 2mA	CAT III 300V

**Discharging current IREAL mode**

Measurement range (mA)	Resolution (mA)	Accuracy	Overload protection
0 ÷ 110	1	±3.0%rdg + 4mA	CAT III 300V

Discharging current threshold: 1 ÷ 110mA (adjustable in step of 1mA, for IAPP or IREAL modes)

Short circuit current: &gt; 200mA

**Insulation resistance**

Test voltage (V)	Range (MΩ)	Resolution (MΩ)	Accuracy	Overload protection
100	0.01 ÷ 9.99	0.01	±(3.0%rdg+3dgt)	CAT III 300V
	10.0 ÷ 19.9	0.1		
	20.0 ÷ 99.9		±5.0%rdg	
250	0.01 ÷ 9.99	0.01	±(3.0%rdg+3dgt)	
	10.0 ÷ 19.9	0.1		
	20.0 ÷ 99.9		±5.0%rdg	
	100 ÷ 249	1		
500	0.01 ÷ 9.99	0.01	±(3.0%rdg+3dgt)	
	10.0 ÷ 19.9	0.1		
	20.0 ÷ 99.9		±5.0%rdg	
	100 ÷ 499	1		
1000	0.01 ÷ 9.99	0.01	±(3.0%rdg+3dgt)	
	10.0 ÷ 19.9	0.1		
	20.0 ÷ 99.9		±5.0%rdg	
	100 ÷ 999	1		

Nominal test voltage: 100, 250, 500, 1000VDC  
 Accuracy test voltage: (-0% ÷ 25%) Unom  
 Test current: > 1mA (fino a Unom/1mA)  
 Short circuit current: <15mA  
 Measurement modes: Manual, Auto, Timer  
 Timer on measure: 5s÷10min (resolution 1s)

**Residual voltage – Modes INT and PLUG**

Range (s)	Resolution (s)	Accuracy	Overload protection
10 ÷ 460 V AC	1	±(3.0%rdg + 3V)	CAT III 300V
10 ÷ 650 V DC			

Nominal main voltage: 230V o 240V  
 Input voltage (UTRIG): 0 ÷ 460V V AC  
 Measurement modes: INT (4 wire connection, discharging time 1s or 5s, Linear, Not Linear)  
 PLUG (2 wire connection, discharging time 1s, Linear, Not Linear)  
 Limit value residual voltage: 60V TRMS  
 Range AC voltage: 0.0 ÷ 710V  
 Input impedance: 100MΩ (URES), 450kΩ (UTRIG)

**Leakage current on the test socket**

Range	Resolution	Accuracy	Overload protection
0.25mA ÷ 49.99mA	0.01mA	±(3.0%rdg + 3dgt)	CAT II 300V
0.05A ÷ 0.99A	0.01A		
1.0A ÷ 10.0A	0.1A		

Power supply: 195V ÷ 253V AC  
 Frequency range: 40Hz ÷ 100kHz  
 Limit value: 0.25mA ÷ 10.00mA selectable

**Absorbed current on test socket**

Range (A)	Resolution (A)	Accuracy	Overload protection
0.00 ÷ 0.99	0.01	±(3.0%rdg + 3dgt)	CAT II 300V
1.0 ÷ 20.0	0.1		

Power supply: 195V ÷ 253V AC  
 Frequency range: 15Hz ÷ 723Hz

**Active / Apparent power on test socket**

Range (W/VA)	Resolution (W/VA)	Accuracy	Overload protection
0.0 ÷ 99.9	0.1	±(5.0%rdg + 10dgt)	CAT II 300V
100 ÷ 999	1	±(5.0%rdg + 3dgt)	
1.00k ÷ 5.06k	10		

Power supply: 195V ÷ 253V AC  
 Frequency range: 15Hz ÷ 723Hz  
 Timer: 5s ÷ 60min (resolution 1s)  
 Limit value apparent power: 6VA ÷ 5.06kVA

**Power factor**

Range	Resolution	Accuracy	Overload protection
0.00 ÷ 1.00	0.01	See Papp, Pact	CAT II 300V

**Leakage current with external transducer clamp HT96U**

Selectable range	Measurement range	Resolution	Accuracy (*)	Overload protection
1A	0.0 ÷ 99.9mA	0.1mA	±(3.0%rdg + 3dgt)	Measurement lead connected to ground
	100mA ÷ 1000mA	1mA		
100A	0.00A ÷ 9.99A	0.01A		
	10.0A ÷ 100.0A	0.1A		
1000A	0.0A ÷ 99.9A			
	100A ÷ 1000A			

(\*) Accuracy of instrument without clamp

Type of clamp: HT96U (available ranges 1A, 100A, 1000A)  
 Transduced input voltage: 0 ÷ 1V AC  
 Input impedance: 1MΩ  
 Frequency range: 40Hz ÷ 100kHz

**Global earth resistance without RCDs tripping**

Idn (mA)	Measure range (Ω)	Resolution (Ω)	Accuracy	Overload protection
10	0 ÷ 1999	1	±(3.0%rdg + 1Ω)	CAT III 300V
30	0.0 ÷ 99.9	0.1		
	100 ÷ 1999	1		
100	0.0 ÷ 99.9	0.1	±(3.0%rdg + 3dgt)	
	100 ÷ 999	1		
300	0.0 ÷ 99.9	0.1		
	100 ÷ 299	1		
500	0.0 ÷ 99.9	0.1		
	100 ÷ 199	1		
650	0.0 ÷ 99.9	0.1		
	100 ÷ 149	1		
1000	0.0 ÷ 99.9	0.1		

Test current: Idn/2  
 P-N, P-PE / P-PP voltage: 100 ÷ 265V, 50/60Hz  
 Mains nominal voltage: 230V or 240V

**Contact voltage**

Range (V)	Resolution (V)	Accuracy	Overload protection
0 ÷ 100 (U <sub>lim</sub> = 50V)	1	±(3%rdg + 3V)	CAT III 300V
0 ÷ 50 (U <sub>lim</sub> = 25V)			

**Phase sequence rotation test**

Range (V)	Frequency	Overload protection
360 ÷ 460	50Hz/60Hz ±0.5Hz	CAT III 300V

Indication of test: 1.2.3. (correct), 2.1.3. (incorrect), 1.1.X (not defined)



## RCD Test

Nominal currents selectable:	10mA, 30mA, 100mA, 300mA, 500mA, 650mA, 1000mA
Type RCD:	AC, A, B, General, Selective, Delayed
Measurement modes:	x1/2, x1, x2, xK (K= 4 B type, K=5 AC, A type), Ramp, Auto (seq:x1/2, x1, xK), Ut
Range voltage / frequency:	100V ÷ 265V / (50Hz/60Hz) ±0.5Hz
Contact voltage limits:	25V, 50V selectable
Test current polarity:	0°, 180° selectable

**During of trip out test [ms] – TT/TN systems** (Resolution:1ms, Accuracy: ±(3.0%rdg+ 2ms)

	x 1/2			x1			x2			xK			AUTO			Rampa			
	G	S	R	G	S	R	G	S	R	G	S	R	G	S	R	G	S	R	
10mA 30mA 100mA	AC	1000	1000	1000	1000	1000	1000	1000	1000	200	250	50	150	✓	✓				320
	A	1000	1000	1000	1000	1000	1000	1000	1000	200	250	50	150	✓	✓				320
	B	1000	1000	1000	1000	1000	1000	1000	1000			200	250	✓	✓				320
300mA	AC	1000	1000	1000	1000	1000	1000	1000	1000	200	250	50	150	✓	✓				320
	A	1000	1000	1000	1000	1000	1000	1000	1000	200	250	50	150	✓	✓				320
	B	1000	1000	1000	1000	1000	1000	1000	1000										320
500mA	AC	1000	1000	1000	1000	1000	1000	1000	1000	200	250	50	150	✓	✓				320
	A	1000	1000	1000	1000	1000	1000	1000	1000	200	250								320
	B	1000	1000	1000															320
650mA	AC	1000	1000	1000	1000	1000	1000	1000	1000	200	250	50	150	✓	✓				320
	A	1000	1000	1000	1000	1000	1000	1000	1000	200	250								320
	B																		
1000mA	AC	1000	1000	1000	1000	1000	1000	1000	1000	200	250								320
	A	1000	1000	1000	1000	1000	1000	1000	1000										
	B																		

## Line / Loop Impedance P-P, P-N, P-PE

Range (Ω)	Resolution (Ω)	Accuracy	Overload protection
0.000 ÷ 2.000 (*)	0.1m	±(3.0%rdg + 3dgt)	CAT III 300V
0.00 ÷ 9.99	0.01		
10.0 ÷ 99.9	0.1		
100 ÷ 199	1		

(\*) Only with optional accessory IMP57

Measurement modes:	Loop/Ipsc, kA, I2t test, trip current, Ut (indirect contact)
Type of protection devices:	MCB (magneto-thermic) Curve B, C, D, K, Fuse type gG, aM
Corrente nominale MCB:	6, 10, 13, 16, 20, 25, 32, 40, 50, 63A (Curve B) 0.5, 1, 1.6, 2, 4, 6, 10, 13, 16, 20, 25, 32, 40, 50, 63A (Curve C) 0.5, 1, 1.6, 2, 4, 6, 10, 13, 16, 20, 25, 32A (Curve D and Curve K)
Nominal current fuses:	2A ÷ 1250A (Fuse gG) ; 2A ÷ 6300A (Fuse aM)
Breakdown current MCB/Fuses::	1kA ÷ 25kA selectable
Section of cable:	1 ÷ 70mmq selectable
Cable type:	Copper, Aluminum
Type of cable insulation:	PVC, Butyl rubber, EPR/XLPE
Number of parallel cables (I2t test):	1 ÷ 99
Trip out time of protection devices:	0.1s, 0.2s, 0.4s, 5s
P-N, P-PE / P-PP voltage:	100 ÷ 265V / 100 ÷ 460V
Frequency:	(50Hz/60Hz) ±0.5Hz

## 2. GENERAL SPECIFICATIONS

### POWER SUPPLY:

Main voltage:	207V ÷ 253V AC - 50/60Hz ±5%
Absorbed current:	16Amax

### MECHANICAL SPECIFICATIONS:

Dimensions (L x W x H):	400 x 300 x 170mm
Weight:	15kg

### MEMORY AND INPUT/OUTPUT INTERFACES

Internal memory:	999 locations (three levels structure)
PC interface:	USB type "B"
Keyboard, printer, pen drive, barcode:	2 x USB type "A"
Warning lamp:	for Dielectric test
Keyboard for remote controls	START/STOP/SAVE keys
Bluetooth interface	connection to mobile devices

**ENVIRONMENTAL CONDITIONS:**

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

**REFERENCE GUIDELINES**

Safety tests machines/switchboards/devices:	IEC/EN60204-1:2006 ; IEC/EN61439-1; IEC/EN60335-1
Literature:	IEC/EN61187
Instrument:	IEC/EN61557-1-2-3-4-6-13-14

**GENERAL CHARACTERISTICS:**

Display :	TFT, LCD, color 4.3" with capacitive touch screen
Instrument safety:	IEC/EN61010-1
Insulation:	double insulation
Pollution degree:	2
Measurement category:	CAT II 300V (I, Leak, Power), CAT III 300V (other tests)
Max. height of use:	2000m
Mechanical protection:	IP40
Input protections:	Fuses T16/250V, FF12.5A/500V, F20A/500V

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

*Technical specifications are subject to change without notice*