

FULLTEST3

Rel. 1.08 of 26/04/21

Professional meter for safety tests on device/switchboards

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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 (Ω) | Resolution (Ω) | 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 Ω 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 (2-wire)

| Range (Ω) | Resolution (Ω) | 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 Ω with standard test leads)
 >10A AC (R < 0.5 Ω 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 (4-wire)

| Range (Ω) | Resolution (Ω) | 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 Ω with standard test leads)
 >10A AC (R < 0.5 Ω with standard test leads)
 Timer on measure: 1s \div 60min (in step of 1s)
 Measure method: 4 wires

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

| Range (Ω) | Resolution (Ω) | 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 Ω \div 2.000 Ω (in step of 0.001 Ω)
 Section of PE conductor: 1, 2.5, 4, 6, 10, 16, 25, 35, 50, 70mmq
 Type of protection devices: MCB (magnetothermic) 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



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 | ±5.0%rdg | |
| | 20.0 ÷ 99.9 | | | |
| 250 | 0.01 ÷ 9.99 | 0.01 | ±(3.0%rdg+3dgt) | |
| | 10.0 ÷ 19.9 | 0.1 | ±5.0%rdg | |
| | 20.0 ÷ 99.9 | | | |
| | 100 ÷ 249 | 1 | | |
| 500 | 0.01 ÷ 9.99 | 0.01 | ±(3.0%rdg+3dgt) | |
| | 10.0 ÷ 19.9 | 0.1 | ±5.0%rdg | |
| | 20.0 ÷ 99.9 | | | |
| | 100 ÷ 499 | 1 | | |
| 1000 | 0.01 ÷ 9.99 | 0.01 | ±(3.0%rdg+3dgt) | |
| | 10.0 ÷ 19.9 | 0.1 | ±5.0%rdg | |
| | 20.0 ÷ 99.9 | | | |
| | 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)

Dielectric test

| Nominal test voltage Un (V) | Resolution (V) | Accuracy | Overload protection |
|-----------------------------|----------------|----------|---------------------|
| 250 ÷ 800 | 10 | ±3.0%Un | CAT III 300V |
| 810 ÷ 2500 | | | |
| 2510 ÷ 5100 | | | |

Test voltage: 250V ÷ 5100V AC, 50/60Hz programmable in steps of 10V
 Measurement modes: MANUAL, RAMP, TIMER, BURN
 PULSE: (duration 3 measurement cycles: 60ms@50Hz, 50ms@60Hz)
 Timer on measure: 1s ÷ 10min in step of 1s
 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: > 200mA

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 (optional accessory)

| 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 | 1A | | |
| | 100A ÷ 1000A | | | |

(*) Accuracy of instrument without clamp
 Type of clamp: HT96U optional accessory (available ranges 1A, 100A, 1000A)
 Transduced input voltage: 0 ÷ 1V AC
 Input impedance: 1MΩ
 Frequency range: 40Hz ÷ 100kHz



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 | AC | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 200 | 250 | 50 | 150 | ✓ | ✓ | 320 | | |
| | 30mA | A | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 200 | 250 | 50 | 150 | ✓ | ✓ | 320 | | |
| | 100mA | B | 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/lpsc, kA, I2t test, trip current , Ut (indirect contact) |
| Type of protection devices: | MCB (magnetothermic) 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 |

Prospective short circuit current (Ipsc)

| Range (A) | Resolution (A) | Accuracy | Overload protection |
|----------------|----------------|--|---------------------|
| 0.05 ÷ 0.99 | 0.01 | Depending on the accuracy of Z measure | CAT III 300V |
| 1.0 ÷ 99.9 | 0.1 | | |
| 100 ÷ 999 | 1 | | |
| 1.00k ÷ 46.00k | 0.01k | | |



Global earth resistance without RCDs tripping

| Idn (mA) | Measure range (Ω) | Resolution (Ω) | Accuracy | Overload protection |
|----------|----------------------------|-------------------------|---------------------------|---------------------|
| 10 | 0 ÷ 1999 | 1 | $\pm(3.0\%rdg + 1\Omega)$ | CAT III 300V |
| 30 | 0.0 ÷ 99.9 | 0.1 | | |
| | 100 ÷ 1999 | 1 | | |
| 100 | 0.0 ÷ 99.9 | 0.1 | $\pm(3.0\%rdg + 3dgt)$ | |
| | 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: $I_{dn}/2$
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 _{lim} = 50V) | 1 | $\pm(3\%rdg + 3V)$ | CAT III 300V |
| 0 ÷ 50 (U _{lim} = 25V) | | | |

Phase sequence rotation test

| Range (V) | Frequency | Overload protection |
|-----------|-----------------------|---------------------|
| 360 ÷ 460 | 50Hz/60Hz $\pm 0.5Hz$ | CAT III 300V |

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



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°C ÷ 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; IEC/EN61439-1-2; 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 2014/35/EU (LVD) and EMC 2014/30/EU

This instrument satisfies the requirements of 2011/65/EU (RoHS) directive and 2012/19/EU (WEEE) directive