

AMPROBE® MT-2000 MultiTest 2000

Power Quality / Megohmmeter / Ground Resistance Tester



Multitesting Device: Power Quality, Megohmmeter & Ground Resistance Tester

Single phase Power Quality functions:

- ▶ Detects and records voltage transients, sag and surges with sampling rate of 130 μ s
- ▶ Built in scope displays waveforms
- ▶ Records up to 64 parameters simultaneously
- ▶ Manual and programmable recording start
- ▶ Password protection
- ▶ Selectable fundamental frequency of 50 or 60 Hz
- ▶ Special data compression system and user selectable rates allow recording from several hours to several years
- ▶ Outlet or battery powered

Megohmmeter functions:

- ▶ Tests insulation of wires, cables, transformers and electrical motors
- ▶ Selectable test voltages up to 1000V
- ▶ Programmable timer to perform the Dielectric Absorption Ratio Test
- ▶ Sensitive Ohmmeter for checking resistance of motor windings
- ▶ Selectable polarization of ohmmeter for checking grounding continuity
- ▶ Automatic voltmeter protects against misuse on hazardous energized systems

Ground Resistance and Resistivity functions:

- ▶ Measures Earth ground resistance - 3 point (fall of potential) or 2 point tests
- ▶ Automatically calculates resistivity - 4 point test
- ▶ Automatic voltage measurement prevents false measurements
- ▶ Automatically applies three testing frequencies for the most accurate readings
- ▶ Test leads, auxiliary electrodes, PC software and CT are included for a complete instrument
- ▶ Auto ranging
- ▶ 2MB of internal memory to store measurements
- ▶ RS-232 download to a personal computer
- ▶ Safety: CATIII 600V phase to phase, CAT III 300V Phase to ground

Optional Accessories	Part Number
3000A AC Flexible Clamp-on Attachment	ACF-3000SR
Temperature and Humidity Probe	TH-ACC
Multi range luminance probe	LM-ACC
Sound level meter	SM-ACC
Leakage current probe	CT-LEA
USB to RS-232 Adapter	RS-USB

Replacement Parts (supplied with product)	Part Number
Instrument carrying case	CC-MT1
Carrying case containing: 4 earth rods and 4 test leads (banana - alligator clip)	GP-2CON
Special download cable	C2001
Test leads set (4 test leads, 4 alligator clips, 2 test probes)	MTL-MT1
PC Software Toplink	www.amprobe.com
Instruction Manual	www.amprobe.com
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AMPROBE®**MT-2000 MultiTest 2000****Power Quality / Megohmmeter /
Ground Resistance Tester****POWER QUALITY**

Features	Range & Resolution	Basic Accuracy
AC Voltage including Sags and Surges	0 - 600V	+/- (3% Reading + 2 digits)
AC Current	5 - 1000A (expandable to 3000A with optional CT's)	Instrument Input: +/- (0.5% Reading + 2 digits)
Power	Working (W), Reactive (VAR) and Apparent (VA)	+/- (1% Reading + 2 digits)
Energy	Working (kWh), Reactive (VARh) and Apparent (VAh)	+/- (1% Reading + 2 digits)
Peak Demand	kW	+/- (1% Reading + 2 digits)
Frequency measurement	47.0 to 63.6 Hz	+/- (1% Reading + 1 digit)
True and Displacement Power Factor	0.00 - 1.00	
Harmonics	Up to 49th	
Phase sequence	1 - 2 - 3	
Co-generation	Computes incoming and outgoing energy	
Selectable Fundamental Frequencies	50/60 Hz	
Available Recording Time	Several hours to several years depending on setup	

MEGOHMMETER

Features	Range & Resolution	Basic Accuracy
Insulation resistance with 50 VDC test voltage	0.01-19.99, 49.9	+/- (2% Reading + 2 digits)
	49.9 - 99.9M Ω	+/- (5% Reading + 2 digits)
Insulation resistance with 100 VDC test voltage	0.01-19.99, 99.9	+/- (2% Reading + 2 digits)
	99.9 - 199.9M Ω	+/- (5% Reading + 2 digits)
Insulation resistance with 250 VDC test voltage	0.01-19.99, 199.9, 249	+/- (2% Reading + 2 digits)
	249 - 499 M Ω	+/- (5% Reading + 2 digits)
Insulation resistance with 500 VDC test voltage	0.01-19.99, 199.9, 499	+/- (2% Reading + 2 digits)
	499 - 999 M Ω	+/- (5% Reading + 2 digits)
Insulation resistance with 1000 VDC test voltage	0.01-19.99, 199.9, 999	+/- (2% Reading + 2 digits)
	999 - 1999 M Ω	+/- (5% Reading + 2 digits)
Low Resistance (without timer)	0.01-19.99, 99.9 Ω	+/- (2% Reading + 2 digits)
Low Resistance (with timer)	0.01-9.99 Ω	+/- (2% Reading + 2 digits)

GROUND RESISTANCE

Features	Range & Resolution	Basic Accuracy
Ground resistance	0-19.99, 199.9, 1999 Ω	+/- (5% Reading + 3 digits)
	0.6- 125.6 Ω m	
Ground resistivity	0.125-1.256, 19.99, 199.9 k Ω m	+/- (5% Reading + 3 digits)

AMPROBE®**MT-2000 MultiTest 2000****Power Quality / Megohmmeter /
Ground Resistance Tester****TECHNICAL SPECIFICATIONS****TECHNICAL FEATURES**

Accuracy is indicated as [% of reading + number of digits]. It refers to the atmospheric conditions listed in the "ENVIRONMENT" paragraph.

Test Mode	Measuring range (Ω)	Resolution (Ω)	Accuracy
AUTO, R+ TIMER, R- TIMER	0,01 – 19,99	0,01	$\pm(2\% \text{ rdg} + 2 \text{ dgt})$
	20,0 – 99,9	0,1	

Test current > 200mA DC up to 5W (include the resistance of the calibration)

Test current resolution 1mA

Open circuit Test Voltage $6V < V_0 < 12V$

Insulation Resistance (R_{ISO})

Test Voltage	Measuring Range (Ω)	Resolution (Ω)	Accuracy
50	0,01 - 19,99	0,01	$\pm(2\% \text{ rdg} + 2 \text{ dgt})$
	20,0 - 49,9	0,1	
	50,0 - 99,9	0,1	
100	0,01 - 19,99	0,01	$\pm(2\% \text{ rdg} + 2 \text{ dgt})$
	20,0 - 99,9	0,1	
	100,0 - 199,9	0,1	
250	0,01 - 19,99	0,01	$\pm(2\% \text{ rdg} + 2 \text{ dgt})$
	20,0 - 199,9	0,1	
	200 - 249	1	
500	250 - 499	1	$\pm(5\% \text{ rdg} + 2 \text{ dgt})$
	0,01 - 19,99	0,01	
	20,0 - 199,9	0,1	
1000	200 - 499	1	$\pm(5\% \text{ rdg} + 2 \text{ dgt})$
	500 - 999	1	
	0,01 - 19,99	0,01	
	20,0 - 199,9	0,1	
	200 - 999	1	
	1000 - 1999	1	$\pm(5\% \text{ rdg} + 2 \text{ dgt})$

Automatic selection of the measuring range

Open circuit voltage

Short circuit current

Rated measuring current

Rated voltage test $-0\% + 10\%$

< 6,0mA with 500V set

> 2,2mA with 500V on 230kW

1mA a 1KW x VNOM (π 500 V)

AC Voltage

Measuring range (V)	Resolution (V)	Accuracy
0 ÷ 460	1	$\pm(3\% \text{ rdg} + 2 \text{ dgt})$

Earth resistance measurement with voltamperometric method

Measuring range (V)	Resolution (V)	Accuracy
0,01 ÷ 19,99	0,01	$\pm(5\% \text{ rdg} + 3 \text{ dgt})$
20,0 ÷ 199,9	0,1	
200 ÷ 1999	1	

Test current

< 10mA 77,5Hz

Open load test voltage

< 20V RMS

Earth resistance measurement with voltamperometric method

Measuring range (V)	Resolution (V)	Accuracy
0.06 ÷ 19,99 Wm	0,01 Ω m	$\pm(5\% \text{ rdg} + 3 \text{ dgt})$
20.0 ÷ 199.9 Wm	0.1 Ω m	
200 ÷ 1999 Wm	1 Ω m	
2,00 ÷ 19,99 kWm	0.01 k Ω m	
20.0 ÷ 125,5 kWm (*)	0.1 k Ω m	

Test current

< 10mA 77,5Hz

Open load test voltage

< 20V RMS

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SAFETY STANDARDS

The instrument complies with:
Product norms:
Insulation:
Pollution level:
Inside use; max height:
Overvoltage category:

EN 61010-1 + A2(1997)
IEC61557-1, -2, -3, -4, -5, -6
Class 2, double insulation
2
2000m
CAT III 460V~ T1-T2-T3-T4 / 265V~ to earth

GENERAL SPECIFICATIONS

Mechanical features
Dimensions:
Weight (batteries included):

222(L) x 165(La) x 105(H)mm
approx.1200g

POWER SUPPLY

Battery type:
Low battery indication:
Battery life:
500 LowW tests or
250 RISO tests 500V/500kW or
1000 Loop, phase sequence tests
300 Earth or r tests.

6 batteries 1.5 V – LR6 – AA – AM3 – MN 1500
The symbol is displayed when the battery voltage is too low.
About 40 hours in stand-by or

Display:

LCD custom 65mmx65mm

Memory:

350 tests

Serial interface:

opto-isolated RS232 to download stored data to a PC.

ENVIRONMENTAL WORKING CONDITIONS

Reference temperature:
Working temperature:
Relative humidity allowed:
Storage temperature:
Storage humidity:

23° ± 5°C
0°C ÷ 40 °C
<80%
-10 ÷ 60 °C
<80%

EMC

This instrument was designed in compliance with the EMC standards in force and its compatibility has been tested for EN61326-1 (1998) + A1 (1999).

This instrument conforms to directive for CE standards.

THIS INSTRUMENT COMPLIES WITH THE REQUIREMENTS OF THE LOW VOLTAGE
DIRECTIVES 73/23/CEE AND EMC 89/336/CEE, AMENDED WITH 93/68/CEE.

SPX

ATP
ADVANCED TEST PRODUCTS

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