



AMPROBE®

DM-III Multitest & DM-III Multitest F Power Quality Recorders



Amprobe's full-featured Three-Phase Power Quality Recorders provide the essential functions and capabilities required to operate accurately and effectively in today's demanding electrical environments.

• POWER QUALITY ANALYZER/ DATA LOGGER

- True RMS (TRMS)
- Measures and Records Broad Spectrum of Power Quality Parameters: AC Current, AC Voltage to 600V including Sags and Surges, Harmonics (THD & individual up to 49th), Active, Reactive and Apparent Power & Energy, Peak Demand, Power Factor, Frequency measurement, Phase sequence
- Compatible with wide range of Current Transducers
DM-CT-100: 0.5A to 100A
DM-CT-HTA: 5 - 1000A (Supplied with DM-III Multitest)
AM-FLEX33: Selectable: 5 – 1000A or 15 - 3000A (Supplied with DM-III Multitest F)
- Comes as a complete kit; CTs, Voltage Leads, Ground Probes & Leads, PC software and download cable are included with this product.
- Works with single and three phase systems (Y and Delta)
- Detects and records voltage anomalies, Sags and Surges
- Built in scope displays waveforms
- Phase sequence indication
- Records up to 64 parameters (single or three phase) simultaneously
- Manual and programmable recording Start and/or Stop
- 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
- Download capabilities, Windows compatible PC software
- Displacement power factor for power factor correction determination
- Line or battery powered
- Safety: CATIII, 600V Phase to phase, CATIII, 300V Phase to ground, EN 61010-1+A2(1996)

• MEGOHMMETER FUNCTIONS:

- Tests insulation integrity 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 & RESISTIVITY FUNCTIONS:

- Three measuring modes;
 - a) 2 point continuity/resistance test
 - b) 3 point Fall of Potential test
 - c) 4 point Earth Resistivity measurement
- Automatic voltage measurement prevents false measurements
- Automatically applies three testing frequencies for the most accurate readings
- Accumulates the average of multiple tests and displays the individual test results and the number of tests.
- Detects faulty test conditions such as poor soil conditions and noise at the inputs.

• PHASE SEQUENCE

- Phase sequence indication
- Frequency measurement
- Phase – to – Phase voltage measurement.

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FEATURES	DM-III MULTITEST	DM-III MULTITEST F	ACCURACY
Supplied Current Transducer	DM-CT-DMA 1000A Standard CT, 2" internal diameter CT	AM-FLEX33 3000A Flexible 7" internal diameter CT	Input accuracy: +/- (0.5% Rdg + 2 LSD)
AC Current	DM-CT-100: 0.5A to 100A DM-CT-HTA: 5 - 1000A AM-FLEX33: Selectable: 5 - 1000A or 15 - 3000A		
AC Voltage including Sags and Surges	0 - 600V	+/- (0.5% Rdg + 2 LSD)	Input accuracy: +/- (0.5% Rdg + 2 LSD)
Harmonics	THD, DC and individual up to 49th	+/- (0.5% Rdg + 2 LSD) @ DC to 25 harmonics**	Input accuracy: +/- (0.5% Rdg + 2 LSD) @DC to 25 harmonics**
Power	Working (W), Reactive (VAR) and Apparent (VA)		+/- (1.0% Rdg + 2 LSD)
Energy	Working (kWh), Reactive (VARh) and Apparent (VAh)		+/- (1.0% Rdg + 2 LSD)
Peak Demand	KW		+/- (1.0% Rdg + 2 LSD)
Power Factor	0.00 - 1.00		
Frequency measurement	57 to 63.6 Hz at 60Hz fundamental 47 to 53 Hz at 50Hz fundamental		+/- (1.0% Rdg + 2 LSD)
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		
Insulation resistance with 50 VDC test voltage	0.01-19.99, 49.9 49.9 -99.9M_	+/- (2% Reading + 2 digits) +/- (5% Reading + 2 digits)
Insulation resistance with 100 VDC test voltage	0.01-19.99, 99.9 99.9 - 199.9M_	+/- (2% Reading + 2 digits) +/- (5% Reading + 2 digits)
Insulation resistance with 250 VDC test voltage	0.01-19.99, 199.9, 249 249 - 499 M_	+/- (2% Reading + 2 digits) +/- (5% Reading + 2 digits)
Insulation resistance with 500 VDC test voltage	0.01-19.99, 199.9, 499 499 - 999 M_	+/- (2% Reading + 2 digits) +/- (5% Reading + 2 digits)
Insulation resistance with 1000 VDC test voltage	0.01-19.99, 199.9, 999 999 - 1999 M_	+/- (2% Reading + 2 digits) +/- (5% Reading + 2 digits)
Low Resistance (without timer)	0.01-19.99, 99.9_	+/- (2% Reading + 2 digits)
Low Resistance (with timer)	0.01-9.99_	+/- (2% Reading + 2 digits)
GROUND RESISTANCE		
Ground resistance	0-19.99, 199.9, 1999 _	+/- (5% Reading + 3 digits)
Ground resistivity	0.6- 125.6 _m 0.125-1.256, 19.99, 199.9 k_m	+/- (5% Reading + 3 digits)



OPTIONAL ACCESSORIES	PART NUMBER
1000A Clamp (supplied with the DM-III Multitest)	DM-CT-HTA
3000A Flexible CT (supplied with the DM-III Multitest F)	AM-FLEX33
100A Compact Clamp (0.5A to 100A)	DM-CT-100
USB-RS-232 Adapter	RS-USB
Hard Case	CC-DM-III

REPLACEMENT PARTS (supplied with product)	PART NUMBER
1000A Clamp (supplied with the DM-III Multitest)	DM-CT-HTA
3000A Flexible CT (supplied with the DM-III Multitest F)	AM-FLEX33
Soft Carrying case	HW1254A
External power supply 12VDC	DMT-EXTPS
Complete set of voltage and megohmmeter test leads and alligator clips	MTL-VOLT
Carrying case containing: 4 earth rods and 4 test leads (banana – alligator clip)	MTL-EARTH
Special RS-232 Computer Cable	C-2001
PC Software	www.amprobe.com
Instruction Manual	www.amprobe.com

LOWΩ: 200mA CONTINUITY TEST (AUTO, RT+, RT- MODE)		
RANGE [Ω]	RESOLUTION [Ω]	ACCURACY(*)
0.01 ÷ 9.99	0.01	±(2% Reading + 2 digit)
10.0 ÷ 99.9	0.1	

(*) After Test leads calibration
Test Current: > 200mA DC per R≤5Ω (Test leads included)
Resolution for Test current: 1mA
Open Circuit Voltage: 4V ≤ V0 ≤ 24V

INSULATION TEST			
TEST VOLTAGE [V]	RANGE [MΩ]	RESOLUTION [MΩ]	ACCURACY
50	0.01 ÷ 9.99	0.01	±(2% Reading + 2 digit)
	10.0 ÷ 49.9	0.1	
	50.0 ÷ 99.9	0.1	±(5% Reading + 2 digit)
100	0.01 ÷ 9.99	0.01	±(2% Reading + 2 digit)
	10.0 ÷ 99.9	0.1	
	100.0 ÷ 199.9	0.1	±(5% Reading + 2 digit)
250	0.01 ÷ 9.99	0.01	±(2% Reading + 2 digit)
	10.0 ÷ 199.9	0.1	
	200 ÷ 249	1	±(5% Reading + 2 digit)
500	0.01 ÷ 9.99	0.01	±(2% Reading + 2 digit)
	10.0 ÷ 199.9	0.1	
	200 ÷ 499	1	±(5% Reading + 2 digit)
1000	0.01 ÷ 9.99	0.01	±(2% Reading + 2 digit)
	10.0 ÷ 199.9	0.1	
	200 ÷ 999	1	±(5% Reading + 2 digit)
1000	1000 ÷ 1999	1	±(5% Reading + 2 digit)

Open circuit Test Voltage: <1.3 x Nominal Test Voltage
Short Circuit Current: <6.0mA with 500V Test Voltage
Nominal Test Current: 500V >2.2mA with 230kΩ
other >1mA with 1kΩ*Vnom

FREQUENCY MEASUREMENT		
RANGE [HZ]	RESOLUTION [HZ]	ACCURACY
47.0 ÷ 63.6	0.1	±(0.1%Reading+1 digit)

RCD and LOOP function are active only for 50Hz ± 0,5Hz frequency

PHASE ROTATION : VOLTAGE MEASUREMENT		
RANGE [V]	RESOLUTION [V]	ACCURACY
0 ÷ 460V	1	±(3%Reading + 2digit)

GROUND TEST: RESISTANCE MEASUREMENT WITH EARTH RODS		
RANGE RE [Ω]	RESOLUTION [Ω]	ACCURACY
0.01 – 19.99	0.01	±(5% Reading + 3 digit)
20.0 – 199.9	0.1	
200 - 1999	1	
Test Current: <10mA – 77.5Hz		
Open circuit Test Voltage: <20V RM		

GROUND TEST: RESISTIVITY MEASUREMENT		
RANGE ρ	RESOLUTION	ACCURACY
0.60 ÷ 19.99 Ω m	0.01 Ω m	±(5% Reading + 3 digit)
20.0 ÷ 199.9 Ω m	0.1 Ω m	
200 ÷ 1999 Ω m	1 Ω m	
2.00 ÷ 99.99 k Ω m	0.01 k Ω m	
100.0 ÷ 125.6 k Ω m(*)	0.1 k Ω m	
(*) setting distance = 10m		
Test Current: <10mA – 77.5Hz		
Open circuit Test Voltage: <20V RMS		



VOLTAGE MEASUREMENT – (AUTORANGE)			
RANGE [V]	RESOLUTION [V]	ACCURACY	INPUT IMPEDANCE
15 ÷ 310V	0.2V	±(0.5% Reading+2digit)	300k Ω (Phase-Neutral)
310 ÷ 600V	0.4V		300k Ω (Phase-Phase)

VOLTAGE SAG AND SURGE DETECTION –(MANUAL RANGE)					
RANGE [V]	RESOLUTION (VOLTAGE)	RESOLUTION (TIME)	ACCURACY (VOLTAGE)	ACCURACY (RIF. 50HZ) (TIME)	INPUT IMPEDANCE
15 ÷ 310V	0.2V	10ms (_ period)	±(1.0% Reading+2digit)	± 10ms (_ period)	300k Ω (Phase-Neutral)
30 ÷ 600V	0.4V				300k Ω (Phase-Phase)

CURRENT MEASUREMENT – STD & FlexEXTclamps				
RANGE [V]	RESOLUTION [mV]	ACCURACY	INPUT IMPEDANCE	OVERLOAD PROTECTION
0.005 ÷ 0.26V	0.1	±(0.5% Reading+2digit)	200k Ω	5V
0.26 ÷ 1V	0.4			
(*) : Example: with a 1000A/1V full scale clamp, the instrument detect only current higher than 5A				

CURRENT MEASUREMENT – FlexINT clamp – 1000A Range					
CURRENT RANGE	INPUT VOLTAGE RANGE	RESOLUTION	ACCURACY	INPUT IMPEDANCE	OVERLOAD PROTECTION
5.00 ÷ 20.00A	425µV ÷ 1.7mV	0.850µV	± (4.0%rdg + 8.5µV)	9.166kΩ	5V
20.00 ÷ 99.99A	1.7mV ÷ 8.499mV	0.850µV	± (1.0% rdg + 8.5µV)		
100.0 ÷ 999.9A	8.5mV ÷ 84.99mV	8.5µV	± (1.0% rdg + 85µV)		

CURRENT MEASUREMENT – FlexINT clamp – 3000A Range					
CURRENT RANGE	INPUT VOLTAGE RANGE	RESOLUTION	ACCURACY	INPUT IMPEDANCE	OVERLOAD PROTECTION
15.00 ÷ 99.99A	1.27mV ÷ 8.499mV	0.850µV	± (1.0% rdg + 8.5µV)	9.7kΩ	5V
100.0 ÷ 270.0A	8.5mV ÷ 22.75mV	8.5µV	± (1.0% rdg + 42.5uV)		
270.0 ÷ 999.9A	22.75mV ÷ 84.99mV	8.5µV	± (1.0% rdg + 85uV)		
1.00 ÷ 3.00kA	85mV ÷ 255mV	850µV	± (0.5% rdg + 8.5mV)		

POWER MEASUREMENT – (AUTORANGE)			
QUANTITY	RANGE	ACCURACY	RESOLUTION
ACTIVE POWER	0 ÷ 999.9W	±(1.0%Reading+2digit)	0.1W
	1 ÷ 999.9kW		0.1kW
	1 ÷ 999.9MW		0.1MW
	1000 ÷ 9999MW		1MW
REACTIVE POWER	0 ÷ 999.9VAR		0.1VAR
	1 ÷ 999.9kVAR		0.1kVAR
	1 ÷ 999.9MVAR	0.1MVAR	
	1000 ÷ 9999MVAR	1MVAR	
APPARENT POWER	0 ÷ 999.9VA,	0.1VA	
	1 ÷ 999.9kVA,	0.1kVA	
	1 ÷ 999.9MVA	0.1MVA	
	1000 ÷ 9999MVA	1MVA	
ACTIVE ENERGY (Classe2 EN61036)	0 ÷ 999.9Wh,	0.1Wh	
	1 ÷ 999.9kWh,	0.1kWh	
	1 ÷ 999.9MWh	0.1MWh	
	1000 ÷ 9999MWh	1MWh	
REACTIVE ENERGY (Classe3 IEC1268)	0 ÷ 999.9VARh,	0.1VARh	
	1 ÷ 999.9kVARh,	0.1kVARh	
	1 ÷ 999.9MVARh	0.1MVARh	
	1000 ÷ 9999MVARh	1MVARh	

Cos j MEASUREMENT		
COS J	RESOLUTION	ACCURACY [°]
1.00 – 0.80	0.01	0.6
0.80 - 0.50		0.7
0.50 – 0.20		1.0

VOLTAGE AND CURRENT HARMONICS MEASUREMENT		
RANGE	ACCURACY	RESOLUTION
DC – 25H	±(5% + 2 digit)	0.1V / 0.1A
26H – 33H	±(10% + 2 digit)	
34H – 49H	±(15% + 2 digit)	

Harmonics values are null under fixed threshold:

- **DC:** its values is null if it is < 2% of Fundamental or is < 2% of Full Scale clamp
- **1st Current Harmonic:** its values is null if it is < 0.2% Full Scale clamp
- **2nd ÷ 49th:** its values is null if it is < 0.5% of fundamental or is < 0.1% of Full Scale clamp

GENERAL

Safety: EN 61010-1 + A2 (1997)

Protection Classification: Class 2 - Double Insulation

Pollution Degree: 2

Degree of Protection: IP50

Over-Voltage Category:

CAT II 600V~ / 350V~ (phase –earth)

CAT III 600V~ / 300V~ (phase –earth)

Usage: Indoor; max height 2000m

EMC: EN61326-1 (1997) + A1 (1998)

The Instrument complies with European Guidelines for CE mark

SAFETY TEST

Low Ω (200mA): IEC 61557-4

Insulation Test: IEC 61557-2

Phase Sequence: IEC 61557-7

Ground Test: IEC 61557-5

POWER QUALITY

Voltage Sag and Surge: EN50160

Alternating Current Static Watt-hour meters for

Active Energy: EN61036 (CLASS 2)

Alternating Current Static VAR-hour Meters for

Reactive Energy: IEC1268 (CLASS 3)

GENERAL SPECIFICATIONS

Mechanical Data

Dimensions: 225 (L)x165 (W) x 105 (H)mm

Weight: 1,2Kg approx

Power Supply

Batteries: 6 x 1.5-LR6-AA-AM3-MN 1500

Battery Life

Low Ω : ~ 800 test

Insulation Test: ~ 500 test

Ground Test: ~ 1000 test

Phase Sequence: ~ 1000 test

Power Quality (recording): ~20 hours

External Power Supply Adapter Code:

DMT-EXTPS (only for POWER QUALITY function)

Display

Display Type: Graphic with Backlight

Resolution: 128x128

Visible Area: 73mmx73mm

Memory

Safety Test Memory: 999 measurement

POWER QUALITY: 2MByte (with 63 channels select and Integration Period = 15min -> more than 30 days).

ENVIRONMENT

Reference Temperature: 23° ± 5°C

Working Temperature Range: 0° ÷ 40°C

Working Humidity: < 80%

Storage Humidity Range: -10 ÷ 60°C

Storage Humidity: < 80%



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