AMPROBE®

Data Sheet

DM-III MULTITEST F
Power Quality Recorder

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 & Records Broad Spectrum of Power Quality Parameters**
    - **AC Current**
    - **AC Voltage to 600 V**
    - **Sags and Surges**
    - **Harmonics**
    - **Active, Reactive and Apparent Power**
    - **Peak Demand**
    - **Power Factor**
    - **Frequency**
    - **Phase Sequence**
  - **Compatible with wide range of current transducers**
  - **Works with single and three phase**
  - **Detects & records Sags and Surges**
  - **Displacement power factor for power factor correction determination**
  - **Built in scope displays waveforms**
  - **Phase sequence indication**
  - **Records up to 64 parameters**
  - **Selectable fundamental frequency**
  - **Special data compression system**
  - **Download capabilities, Windows compatible**
  - **A complete kit: 3000A Flexible CT, 1000A Clamp, Voltage Leads, Ground Probes & Leads, PC software & cable**

continued on next page ▶

No hassle warranty

No waiting.

No shipping charges.

Our commitment to high-quality products and customer service is demonstrated by our industry exclusive "No Hassle" warranty. In the unlikely event that an Amprobe Test Tool requires warranty service, any of our local dealers are authorized to replace it, on the spot.

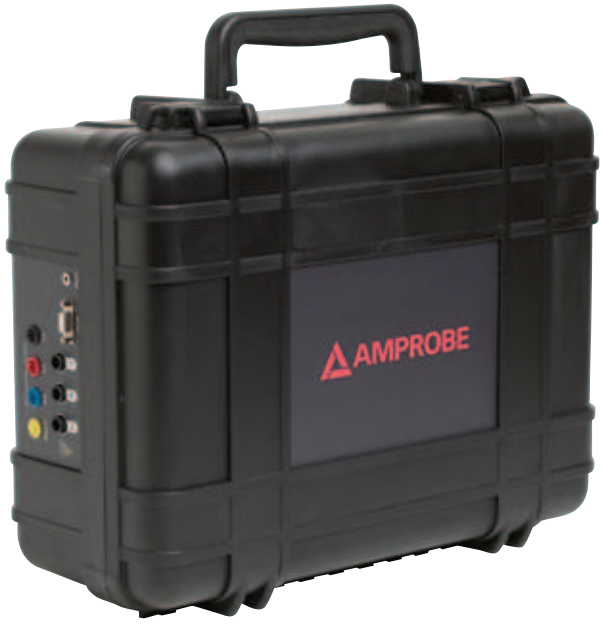
(note: $500 MSLP limit)

CAT III 600V N10140 CE

AMPROBE®

Data Sheet

- **INSULATION TESTER FUNCTIONS:**
  - Tests insulation integrity of wires, cables, transformers & electrical motors
  - Selectable test voltages up to 1000 V
  - 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:
    - 2 point continuity/resistance test
    - 3 point Fall of Potential test
    - 4 point Earth Resistivity measurement
  - Automatic voltage measurement prevents false measurements
  - Automatically applies three testing frequencies for the most accurate readings
  - Detects faulty test conditions such as poor soil conditions and input noise
- **PHASE SEQUENCE**
  - Phase sequence indication
  - Frequency measurement
  - Phase-to-Phase voltage measurement



AMPROBE®

Data Sheet

DM-III MULTITEST F Power Quality Recorder

Specifications

Supplied Current Transducer	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	±(0.5% Rdg + 2 LSD)
Harmonics	±(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	Range	Accuracy
Insulation resistance with 50 VDC test voltage	0.01 – 19.99, 49.9 49.9 – 99.9MΩ	± (2% Reading + 2 digits) ± (5% Reading + 2 digits)
Insulation resistance with 100 VDC test voltage	0.01 – 19.99, 99.9 99.9 – 199.9MΩ	± (2% Reading + 2 digits) ± (5% Reading + 2 digits)
Insulation resistance with 250 VDC test voltage	0.01 – 19.99, 199.9, 249 249 – 499 MΩ	± (2% Reading + 2 digits) ± (5% Reading + 2 digits)
Insulation resistance with 500 VDC test voltage	0.01 – 19.99, 199.9, 499 499 – 999 MΩ	± (2% Reading + 2 digits) ± (5% Reading + 2 digits)
Insulation resistance with 1000 VDC test voltage	0.01 – 19.99, 199.9, 999 999 – 1999 MΩ	± (2% Reading + 2 digits) ± (5% Reading + 2 digits)
Low Resistance (without timer)	0.01 – 19.99, 99.9Ω	± (2% Reading + 2 digits)
Low Resistance (with timer)	0.01 – 9.99Ω	± (2% Reading + 2 digits)

Ground Resistance	Range	Accuracy
Ground resistance	0 – 19.99, 199.9, 1999 Ω	± (5% Reading + 3 digits)
Ground resistivity	0.6 – 125.6 Ωm 0.125 – 1.256, 19.99, 199.9 kΩm	± (5% Reading + 3 digits) ± (5% Reading + 3 digits)

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	±(2% Reading + 2 digit)
	(*) 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	

Data Sheet

DM-III MULTITEST F Power Quality Recorder

Specifications (continued)

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	±(2% Reading + 2 digit)
	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	±(2% Reading + 2 digit)
	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	±(2% Reading + 2 digit)
	200 – 249	1	±(2% Reading + 2 digit)
	250 – 499	1	±(5% Reading + 2 digit)
500	0.01 – 9.99	0.01	±(2% Reading + 2 digit)
	10.0 – 199.9	0.1	±(2% Reading + 2 digit)
	200 – 499	1	±(2% Reading + 2 digit)
	500 – 999	1	±(5% Reading + 2 digit)
1000	0.01 – 9.99	0.01	±(2% Reading + 2 digit)
	10.0 – 199.9	0.1	±(2% Reading + 2 digit)
	200 – 999	1	±(2% Reading + 2 digit)
	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 + 2 digit)

Ground Test: Resistance Measurement With Earth Rods

Range RE [Ω]	Resolution [Ω]
0.01 – 19.99	0.01
20.0 – 199.9	0.1
200 - 1999	1
Accuracy	±(5% Reading + 3 digit)
Test Current	<10mA – 77.5Hz
Open circuit Test Voltage	<20V RM

AMPROBE®

Data Sheet

DM-III MULTITEST F Power Quality Recorder

Specifications (continued)

Ground Test: Resistivity Measurement	
Range p	Resolution
0.60 – 19.99 Ωm	0.01 Ωm
20.0 – 199.9Ωm	0.1Ωm
200 – 1999Ωm	1 Ωm
2.00 – 99.99kΩm	0.01 kΩm
100.0 – 125.6kΩm(*)	0.1 kΩm
	(*) setting distance = 10m
Accuracy	±(5% Reading + 3 digit)
Test Current	<10mA – 77.5Hz
Open circuit Test Voltage	<20V RMS

Voltage Measurement – (Autorange)	
Range [V]	Resolution [V]
15 – 310V	0.2V
310 – 600V	0.4V
Accuracy	±(0.5% Reading+2digit)

Voltage Sag And Surge Detection –(Manual Range)	
Range [V]	Resolution (Voltage)
15 – 310V	0.2V
30 – 600V	0.4V
Resolution (Time)	10ms (_ period)
Accuracy (Voltage)	±(1.0% Reading+2digit)
Accuracy (Rif. 50hz) (Time)	10ms (_ period)
Input Impedance	300kΩ (Phase-Neutral); 300kΩ (Phase-Phase)

Current Measurement – STD & FlexEXTclamps	
Range [V]	Resolution [Mv]
0.005 – 0.26V	0.1
0.26 – 1V	0.4
(*): Example: with a 1000A/1V full scale clamp, the instrument detect only current higher than 5A	
Accuracy	±(0.5% Reading+2digit)
Input Impedance	200kΩ
Overload Protection	5V

Current Measurement – FlexINT clamp – 1000A Range			
Current Range	Input Voltage Range	Resolution	Accuracy
5.00 – 20.00A	425µV – 1.7mV	0.850µV	± (4.0%rdg + 8.5µV)
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)
Input Impedance	9.166kΩ		
Overload Protection	5V		

DM-III MULTITEST F Power Quality Recorder

Specifications (continued)

Current Measurement – FlexINT clamp – 3000A Range			
Current Range	Input Voltage Range	Resolution	Accuracy
15.00 – 99.99A	1.27mV – 8.499mV	0.850µV	± (1.0% rdg + 8.5µV)
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)
Input Impedance	9.7kΩ		
Overload Protection	5V		

Power Measurement – (Autorange)		
Quantity	Range	Resolution
Active Power	0 – 999.9W	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
Accuracy	±(1.0%Reading+2digit)	

Cos j Measurement	
Cos J	Accuracy [°]
1.00 – 0.80	0.6
0.80 - 0.50	0.7
0.50 – 0.20	1.0
Resolution	0.01

Voltage and Current Harmonics Measurement	
Range	Accuracy
DC – 25H	±(5% + 2 digit)
26H – 33H	±(10% + 2 digit)
34H – 49H	±(15% + 2 digit)
Resolution	0.1V / 0.1A
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	

AMPROBE®

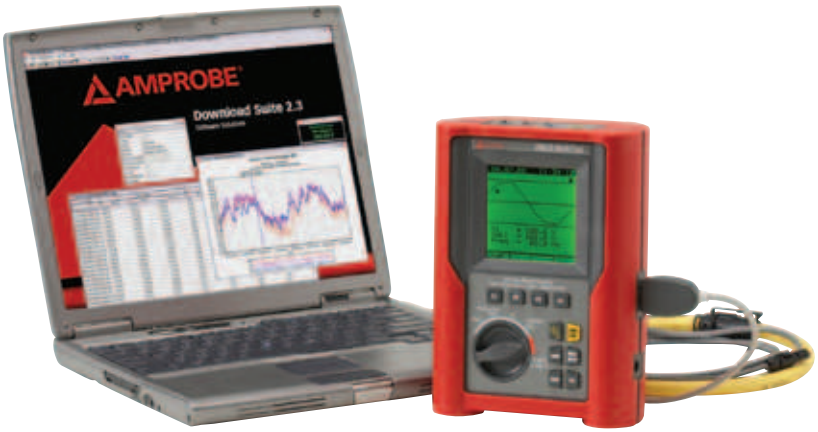
Data Sheet

DM-III MULTITEST F Power Quality Recorder

Technical Data – General Information

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		
Low½ (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	6 x 1.5-LR6-AA-AM3-MN 1500 batteries	
Battery Life		
Low½	~ 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%	

Data Sheet



Includes Amprobe's Download Suite Software

Replacement Parts (supplied with product)

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

Optional Accessories

DM-CT-HTA	1000A Clamp
DM-CT-100	100A Compact Clamp (0.5Ato 100A)
RS-USB	USB-RS-232 Adapter
CC-DM-III	Hard Case

Amprobe® Test Tools
website: www.Amprobe.com
email: info@amprobe.com
Everett, WA 98203
Tel: 877-AMPROBE

Amprobe® Test Tools Europe
Amprobe Test Tools Europe
Beha-Amprobe GmbH
In den Engematten 14
79286 Glottertal, Germany
Tel.: +49 (0) 7684 8009 - 0

04/2009 3465348 Rev A