# AMPROBE®

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

TRANSCAT® Visit us at Transcat.com!
35 Vantage Point Drive // Rochester, NY 14624 // Call 1.800.800.5001

LIMITED LIFETIME WARRANTY | CAT III 600V | TRUE RMS | CE

***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.

# AMPROBE®

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

CAT III 600V

| FEATURES | DM-III MULTITEST | DM-III MULTITEST F | ACCURACY |
|---|---|---|---|
| **Supplied Current Transducer** | DM-CT-DMA<br>1000A Standard CT,<br>2" internal diameter CT | AM-FLEX33<br>3000A Flexible<br>7" internal diameter CT | Input accuracy:<br>+/-(0.5% Rdg + 2 LSD |
| **AC Current** | ***DM-CT-100:*** 0.5A to 100A<br>***DM-CT-HTA:*** 5 - 1000A<br>***AM-FLEX33:*** Selectable:<br>5 – 1000A or 15 - 3000A | | |
| **AC Voltage including Sags and Surges** | 0 - 600V | +/-(0.5% Rdg + 2 LSD) | Input accuracy:<br>+/-(0.5% Rdg + 2 LSD) |
| **Harmonics** | THD, DC and individual<br>up to 49th | +/-(0.5% Rdg + 2 LSD) @ DC<br>to 25 harmonics** | Input accuracy:<br>+/-(0.5% Rdg + 2 LSD)<br>@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<br>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<br>49.9 -99.9M_ | +/- (2% Reading + 2 digits)<br>+/- (5% Reading + 2 digits) |
| Insulation resistance with 100 VDC test voltage | 0.01-19.99, 99.9<br>99.9 - 199.9M_ | +/- (2% Reading + 2 digits)<br>+/- (5% Reading + 2 digits) |
| Insulation resistance with 250 VDC test voltage | 0.01-19.99, 199.9, 249<br>249 - 499 M_ | +/- (2% Reading + 2 digits)<br>+/- (5% Reading + 2 digits) |
| Insulation resistance with 500 VDC test voltage | 0.01-19.99, 199.9, 499<br>499 - 999 M_ | +/- (2% Reading + 2 digits)<br>+/- (5% Reading + 2 digits) |
| Insulation resistance with 1000 VDC test voltage | 0.01-19.99, 199.9, 999<br>999 - 1999 M_ | +/- (2% Reading + 2 digits)<br>+/- (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<br>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<br>10.0 ÷ 99.9 | 0.01<br>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 | | |

| *INSULATION TEST* | | | |
|---|---|---|---|
| **TEST VOLTAGE [V]** | **RANGE [MΩ]** | **RESOLUTION [MΩ]** | **ACCURACY** |
| 50 | 0.01 ÷ 9.99<br>10.0 ÷ 49.9 | 0.01<br>0.1 | ±(2% Reading + 2 digit) |
| | 50.0 ÷ 99.9 | 0.1 | ±(5% Reading + 2 digit) |
| 100 | 0.01 ÷ 9.99<br>10.0 ÷ 99.9 | 0.01<br>0.1 | ±(2% Reading + 2 digit) |
| | 100.0 ÷ 199.9 | 0.1 | ±(5% Reading + 2 digit) |
| 250 | 0.01 ÷ 9.99<br>10.0 ÷ 199.9<br>200 ÷ 249 | 0.01<br>0.1<br>1 | ±(2% Reading + 2 digit) |
| | 250 ÷ 499 | 1 | ±(5% Reading + 2 digit) |
| 500 | 0.01 ÷ 9.99<br>10.0 ÷ 199.9<br>200 ÷ 499 | 0.01<br>0.1<br>1 | ±(2% Reading + 2 digit) |
| | 500 ÷ 999 | 1 | ±(5% Reading + 2 digit) |
| 1000 | 0.01 ÷ 9.99<br>10.0 ÷ 199.9<br>200 ÷ 999 | 0.01<br>0.1<br>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<br>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<br>20.0 – 199.9<br>200 - 1999 | 0.01<br>0.1<br>1 | ±(5% Reading + 3 digit) |
| **Test Current:** <10mA – 77.5Hz<br>**Open circuit Test Voltage:** <20V RM | | |

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

| *VOLTAGE MEASUREMENT – (AUTORANGE)* | | | |
|---|---|---|---|
| **RANGE [V]** | **RESOLUTION [V]** | **ACCURACY** | **INPUT IMPEDANCE** |
| 15 ÷ 310V | 0.2V | ±(0.5% Reading+2digit) | 300kΩ (Phase-Neutral)<br>300kΩ (Phase-Phase) |
| 310 ÷ 600V | 0.4V | | |

| *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) | 300kΩ (Phase-Neutral)<br>300kΩ (Phase-Phase) |
| 30 ÷ 600V | 0.4V | | | | |

| *CURRENT MEASUREMENT – STD & FlexEXTclamps* | | | | |
|---|---|---|---|---|
| **RANGE [V]** | **RESOLUTION [MV]** | **ACCURACY** | **INPUT IMPEDANCE** | **OVERLOAD PROTECTION** |
| 0.005 ÷ 0.26V | 0.1 | ±(0.5% Reading+2digit) | 200kΩ | 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<br>1 ÷ 999.9kW<br>1 ÷ 999.9MW<br>1000 ÷ 9999MW | ±(1.0%Reading+2digit) | 0.1W<br>0.1kW<br>0.1MW<br>1MW |
| REACTIVE POWER | 0 ÷ 999.9VAR<br>1 ÷ 999.9kVAR<br>1 ÷ 999.9MVAR<br>1000 ÷ 9999MVAR | | 0.1VAR<br>0.1kVAR<br>0.1MVAR<br>1MVAR |
| APPARENT POWER | 0 ÷ 999.9VA,<br>1 ÷ 999.9kVA,<br>1 ÷ 999.9MVA<br>1000 ÷ 9999MVA | | 0.1VA<br>0.1kVA<br>0.1MVA<br>1MVA |
| ACTIVE ENERGY<br>(Classe2 EN61036) | 0 ÷ 999.9Wh,<br>1 ÷ 999.9kWh,<br>1 ÷ 999.9MWh<br>1000 ÷ 9999MWh | | 0.1Wh<br>0.1kWh<br>0.1MWh<br>1MWh |
| REACTIVE ENERGY<br>(Classe3 IEC1268) | 0 ÷ 999.9VARh,<br>1 ÷ 999.9kVARh,<br>1 ÷ 999.9MVARh<br>1000 ÷ 9999MVARh | | 0.1VARh<br>0.1kVARh<br>0.1MVARh<br>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 |

| *VOLTANGE 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

**LowΩ (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***
**LowΩ:** ~ 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%