

# **AMPROBE®**

## **DM-4 Power Quality Recorder**



*The DM-4 addresses the needs of the most demanding Power Quality professionals. The device incorporates full set of measuring features crucial for complete Power Quality analysis. An innovative Remote User Interface (PDA) allows safe, easy and convenient operation of the device remotely. The Remote User Interface (PDA) is also used for data viewing, analysis and transfer. Independently, the DM-4 can be used directly with the PC type of computer. Since the DM-4 does not have any control buttons on its enclosure, it is protected against setup changes by unauthorized persons while the device is recording.*



**Rugged Remote User  
Interface with Memory**

- True RMS (TRMS)
- Extremely easy to setup and operate
- Comes as a complete kit: carrying case, CTs, test leads, PC software & download cable, Remote User Interface (PDA) w/ protective hard case and interface cable are included with product
- Rugged Remote User Interface with memory for easy data downloads in the field and increased safety
- Works with single (two and three wire) and three phase systems (Y and Delta)
- Detects and records voltage spikes 100 nS or slower
- Detects and records voltage Sags and Surges
- Built in scope displays waveforms
- Records all parameters (single or three phase) simultaneously
- Manual and programmable recording start
- 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 with PC (Windows compatible software) or PDA (Palm OS)
- Line or battery powered
- Safety: CATIII, 600V



# **AMPROBE®** DM-4 Power Quality Recorder



| FEATURES                             | DM-4                                                                                                                                                                                      | ACCURACY                                       |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Supplied Current Transducer          | 1000A Standard CT,<br>2" internal diameter CT                                                                                                                                             | Input accuracy:<br>+/- (2% Rdg + 2 LSD)        |
| AC Current                           | <b>Standard CT (DM-CT-HTA):</b> 5 - 1000A<br>Or optional<br><b>Small size CT (DM-CT-100):</b> 1A - 100A<br>For more CT options visit <a href="http://www.Amprobe.com">www.Amprobe.com</a> |                                                |
| AC Voltage including Sags and Surges | From 20V - to 1000V                                                                                                                                                                       | +/- (3% Rdg + 2 LSD)                           |
| Voltage Transients                   | 200-6000Vpp<br>Duration > 100nS                                                                                                                                                           | ±10% Rdg                                       |
| Harmonics (Voltage and Current)      | THD, DC and individual up to 51th                                                                                                                                                         | +/- (5% Rdg + 2 LSD) @<br>DC to 25 harmonics** |
| Power                                | Working (W), Reactive (VAR) and Apparent (VA)                                                                                                                                             | +/- (3.0% Rdg + 2 LSD)                         |
| Energy                               | Working (kWh), Reactive (VARh) and Apparent (VAh)                                                                                                                                         | +/- (3.0% Rdg + 2 LSD)                         |
| Peak Demand                          | KW                                                                                                                                                                                        | +/- (3.0% Rdg + 2 LSD)                         |
| Power Factor (True and Displacement) | 0.00 - 1.00                                                                                                                                                                               | +/- 3%                                         |
| Phase sequence                       | 1 - 2 - 3                                                                                                                                                                                 |                                                |
| Selectable Fundamental Frequencies   | 50/60 Hz                                                                                                                                                                                  |                                                |
| Available Recording Time             | Several hours to several years depending on setup                                                                                                                                         |                                                |

| OPTIONAL ACCESSORIES              | PART NUMBER |
|-----------------------------------|-------------|
| 100A Compact Clamp (0.5A to 100A) | DM-CT-100   |
| USB-RS-232 Adapter                | RS-USB      |

| REPLACEMENT PARTS<br>(supplied with product)       | PART NUMBER                                                                                                              |
|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| 1000A Clamp                                        | DM-CT-HTA                                                                                                                |
| Remote user interface (PDA) with connection cables | Recommended Tungsten E2 Ordered through PALM retailers, visit <a href="http://www.palm.com">www.palm.com</a> for details |
| Remote user interface protective case              | DM-4CASE                                                                                                                 |
| Soft Carrying case                                 | HW1254A                                                                                                                  |
| External power supply 12VDC                        | DMT-EXTPS                                                                                                                |
| Test leads and alligator clips (set of 4)          | KITENERGY3                                                                                                               |
| PDA/DM-4 Interface Cable                           | RS-PDA                                                                                                                   |
| RS-232 Computer Cable                              | RS-232                                                                                                                   |
| PC Windows Software                                | <a href="http://www.amprobe.com">www.amprobe.com</a>                                                                     |
| Palm OS Software                                   | <a href="http://www.amprobe.com">www.amprobe.com</a>                                                                     |
| Instruction Manual                                 | <a href="http://www.amprobe.com">www.amprobe.com</a>                                                                     |

| Voltage Measurement |                          |            |                               |
|---------------------|--------------------------|------------|-------------------------------|
| Range               | Accuracy                 | Resolution | Input Impedance               |
| 20-370V             | $\pm(3\%+2\text{digit})$ | 0.1V       | 300k $\Omega$ (phase-neutral) |
| 310-635V            |                          | 0.1V       | 600k $\Omega$ (phase-phase)   |

| Voltage Anomalies Detection (Manual Selection of Range) Voltage |                          |            |                               |
|-----------------------------------------------------------------|--------------------------|------------|-------------------------------|
| Range                                                           | Accuracy                 | Resolution | Input Impedance               |
| 20-370V                                                         | $\pm(3\%+2\text{digit})$ | 0.1V       | 300k $\Omega$ (phase-neutral) |
| 310-635V                                                        |                          | 0.1V       | 600k $\Omega$ (phase-phase)   |

| Time                                            |                                    |
|-------------------------------------------------|------------------------------------|
| Accuracy (ref. to 60Hz)                         | Resolution                         |
| $\pm 8.33\text{ms}$ (1/2 period of fundamental) | 8.33ms (1/2 period of fundamental) |

| Current Measurement (Using external transducer)                 |              |            |                 |                              |
|-----------------------------------------------------------------|--------------|------------|-----------------|------------------------------|
| Range                                                           | Accuracy     | Resolution | Input Impedance | Protection against overloads |
| 0.005-0.26V                                                     | ±(2%+2digit) |            | 100kΩ           | 5V                           |
| 0.26-1V                                                         |              |            |                 |                              |
| Minimal Current measurable is equal to 0.5% of Clamp Full Scale |              |            |                 |                              |



| Power Measurement (cos $\Phi$ : 0.5c – 0.5i) |                                                             |                          |
|----------------------------------------------|-------------------------------------------------------------|--------------------------|
| Value                                        | Ranges                                                      | Accuracy                 |
| Active Power                                 | 0 – 999.9W<br>1KW – 999.9KW<br>1MW – 999.9MW                | $\pm(3\%+2\text{digit})$ |
| Reactive Power                               | 0 – 999.9VAR<br>1KVAR – 999.9KVAR<br>1MVAR – 999.9MVAR      |                          |
| Apparent Power                               | 0 – 999.9VA<br>1KVA – 999.9KVA<br>1MVA – 999.9MVA           |                          |
| Active Energy                                | 0 – 999.9Wh<br>1KWh – 999.9KWh<br>1MWh – 999.9MWh           |                          |
| Reactive Energy                              | 0 – 999.9VARh<br>1KVARh – 999.9KVARh<br>1MVARh – 999.9MVARh |                          |

| <b>Cos<math>\Theta</math> Measurement</b> |                   |                                        |
|-------------------------------------------|-------------------|----------------------------------------|
| <b>Cos<math>\Theta</math></b>             | <b>Resolution</b> | <b>Accuracy (expressed in degrees)</b> |
| 0.20                                      | 0.01              | 3°                                     |
| 0.50                                      |                   | 4°                                     |
| 0.80                                      |                   | 5°                                     |

| Measurement of Harmonics                                                          |                             |            |
|-----------------------------------------------------------------------------------|-----------------------------|------------|
| Voltage                                                                           |                             |            |
| Range                                                                             | Accuracy                    | Resolution |
| DC – 25h                                                                          | $\pm(5.0\%+2\text{digit})$  | 0.1V       |
| 26h – 33h                                                                         | $\pm(10.0\%+2\text{digit})$ |            |
| 34h – 51h                                                                         | $\pm(15.0\%+2\text{digit})$ |            |
| The voltage harmonics will be null under the following threshold:                 |                             |            |
| - <b>DC:</b> if <1V or <2% of 1 <sup>st</sup> harmonic                            |                             |            |
| - <b>1<sup>st</sup> harmonic:</b> if <2V                                          |                             |            |
| - <b>2<sup>nd</sup> - 51<sup>st</sup>:</b> if <1V or <2% 1 <sup>st</sup> harmonic |                             |            |

| Current                                                                                                                                                                                                                                                                                                                           |                             |            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------|
| Range                                                                                                                                                                                                                                                                                                                             | Accuracy                    | Resolution |
| DC – 25h                                                                                                                                                                                                                                                                                                                          | $\pm(5.0\%+2\text{digit})$  | 0.1A       |
| 26h – 33h                                                                                                                                                                                                                                                                                                                         | $\pm(10.0\%+2\text{digit})$ |            |
| 34h – 51h                                                                                                                                                                                                                                                                                                                         | $\pm(15.0\%+2\text{digit})$ |            |
| The voltage harmonics will be null under the following threshold:<br>- <b>DC:</b> if <2% of 1 <sup>st</sup> harmonic or < 0,2% of clamp full scale<br>- <b>1<sup>st</sup> harmonic:</b> if < 0,2% of clamp full scale<br>- <b>2<sup>nd</sup> - 51<sup>st</sup>:</b> if <2% 1 <sup>st</sup> harmonic or < 0,2% of clamp full scale |                             |            |

## **General Characteristics**

### **13.1.7 Temperature Drift**

**Temperature drift:** 0.1 x accuracy/K

### **13.1.8 Safety**

**Insulation:** Class 2

**Pollution:** 2

**Over-voltage category:** CAT III 600V~ (Phase-phase)  
CAT II 1000V~ (Phase-Phase)

### ***Mechanical Features***

**Dimensions:** 8.9" (L) x 4.1" (W) x 2.1" (H)  
225(L) x 104(W) x 54(H) mm

**Weight:** 3.3 Lb (1.5kg)

**Internal Power Supply:** 8 batteries 1.5V series AA

**Battery Life:** 3-hours

**External Power Supply:** Use only Amprobe power supply Adapter code DM4EXTPS

**Sampling Speed:** 83.33 usec at 60Hz.

**No. of Samples Per Period:** 128

### ***Clamp***

**Opening:** 2.15" (53 mm)

**Maximum Diameter of The Cable:** 2.00" (50 mm)

## **ENVIRONMENT**

### **Operating conditions**

**Reference Temperature:** 73°F ± 2°F (23°C ± 1°C)

**Operating Temperature:** 32°F to 122°F (0°C to 50 °C)

**Relative Humidity:** <70%

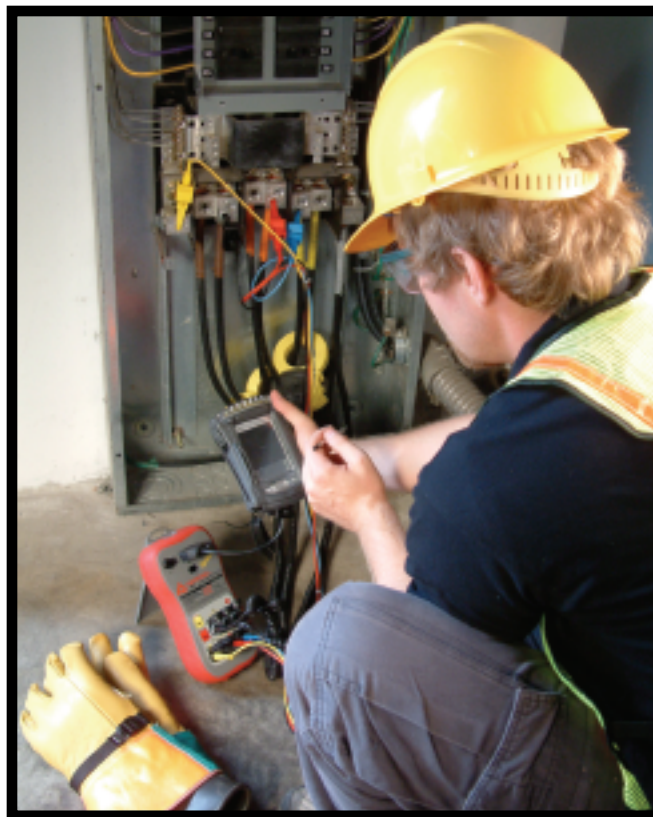
**Storage Temperature:** 14°F to 140°F (-10°C to 60 °C)

**Storage Humidity:** <80%



# AMPROBE®

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a business unit of **SPX** Corporation

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