

DM-5 Power Quality Analyzer

With Feature Packed Software, most Compact High Performance Power Quality Analyzer in its Class

Poor power quality is costly – not only can it drive up energy bills with excessive power usage, but equipment failure or damage caused by poor power quality is expensive and time-consuming to diagnose and repair. Productivity and process also suffer with faulty equipment or unscheduled outages. The new Amprobe DM-5 Power Quality Analyzer allows you to easily and quickly discover the source and magnitude of power quality issues.

At half the size of previous models, the compact DM-5 brings speed and efficiency to power quality jobs ranging from routine maintenance to in-plant troubleshooting of individual machinery and power distribution panels. Built for use in even the largest facilities, the DM-5 is safety tested to meet the world's most prestigious safety standards and is rated to CAT IV 300 V, CAT III 600 V, CAT II 1000 V.

DM-5 Highlights

- **Feature packed Software** Quickly analyze your recorded data to identify potential issues with data visualization. See how data relates between different visualizations.
- **Simultaneously measures** power, harmonics, waveform, power quality (voltage: 3-channel, current: 4-channel)
- **Measures single and three-phase** power system with 10 selectable wiring connection settings
- **Test parameters** voltage, current, active/reactive/apparent power, PF and frequency all on one screen
- **Quick start mode**, wiring check and auto current sensor detection for quick, accurate measurements
- **Automatic recording** with memory for up to 1,000 parameters at user defined intervals
- **Includes thin flex current sensor** with user selectable input ranges of 300 A, 1000 A, or 3000 A
- **Energy consumption check:** Trend and demand graphs for easy view
- **Power quality events:** Swell, Dip, Interruption, transients, Inrush current, and flicker
- **Real-time remote monitoring** on compatible PC devices via Bluetooth communication
- **Comes complete with measurement accessories**, PC software, and large carrying case



- Wireless control for remote checks and adjustments
- Bluetooth®
- Large, full-color screen with step-by-step Quick Start Guide
- High performance processor for accurate, detailed data recordings



Easy to use Software

Download Suite 3.0.1.1 features a wide range of visual tools to view data quickly and easily. Multiple data visualization options allow you to quickly visualize your recorded data to identify potential issues.



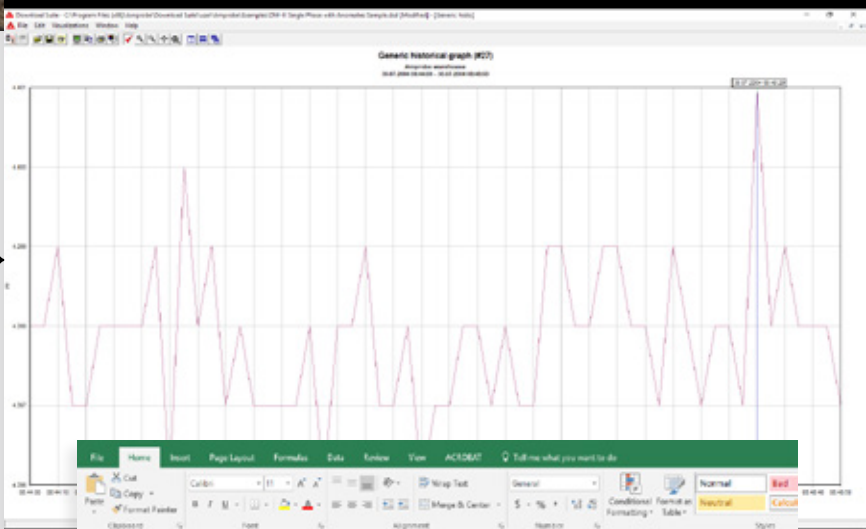


Full Analysis with easy to use software

Quickly analyze your recorded data to identify potential issues with customizable data visualizations.

Graph peak energy demand

See data over an extended time frame. Using the historical graph, you can graph peak energy demand. Zoom in and out to see the data in different views.



Copy and paste raw data and charts

Download Suite 3.0.1.1 allows you to copy and paste data and graphs easily. Simply export raw data into an excel document or copy and paste graphs to print.

| Time & date | Type | Phase | Magnitude (V) | Duration (s) |
|------------------------|-------|-------|---------------|--------------|
| 36.07.2004 8:44:00.817 | Surge | Ø1 | 122.18 | 0.675 |
| 36.07.2004 8:44:00.233 | Surge | Ø1 | 122.18 | 0.629 |
| 36.07.2004 8:44:00.400 | Surge | Ø1 | 121.94 | 0.608 |
| 36.07.2004 8:44:00.417 | Surge | Ø1 | 122.18 | 0.542 |
| 36.07.2004 8:44:00.600 | Surge | Ø1 | 122.20 | 0.542 |
| 36.07.2004 8:44:00.762 | Surge | Ø1 | 122.67 | 0.676 |
| 36.07.2004 8:44:00.892 | Surge | Ø1 | 122.60 | 0.583 |
| 36.07.2004 8:44:00.992 | Surge | Ø1 | 121.98 | 0.650 |
| 36.07.2004 8:44:01.192 | Surge | Ø1 | 122.18 | 0.617 |
| 36.07.2004 8:44:01.258 | Surge | Ø1 | 122.43 | 0.583 |
| 36.07.2004 8:44:01.483 | Surge | Ø1 | 122.75 | 0.125 |
| 36.07.2004 8:44:01.719 | Surge | Ø1 | 122.67 | 0.608 |
| 36.07.2004 8:44:01.883 | Surge | Ø1 | 122.35 | 0.125 |
| 36.07.2004 8:44:02.033 | Surge | Ø1 | 122.33 | 0.608 |
| 36.07.2004 8:44:02.183 | Surge | Ø1 | 122.38 | 0.625 |

Visualize data measurements separately and together

See how data relates between different visualizations, view many different visualizations at once with Download Suite 3.0.1.1. Hovering the cursor above a certain time period in one visualization will cause the other visualizations to indicate the corresponding measurements automatically.

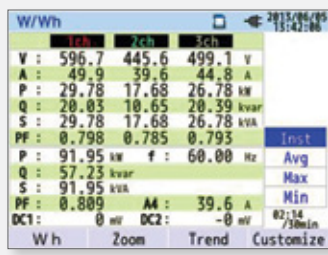


Viewing Measurements

Press the indicated buttons to view real time readings. You can do this before, during or after recording.

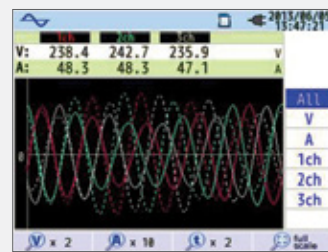
Inst / Integration / Demand

- Display average/min/max instantaneous values of current/voltage/active power/apparent power/reactive power
- View integration values by switching screens
- Check demand values with the preset target



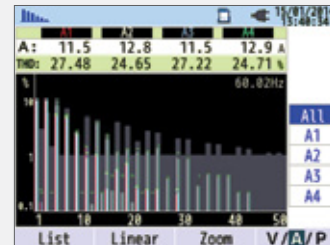
Waveform

Read waveforms of voltage and current per CH with a colored graph



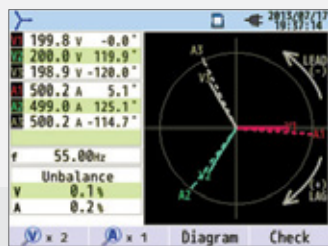
Harmonic Analysis

Read harmonic components of voltage and current per CH with a colored graph



Vector and Wiring Check

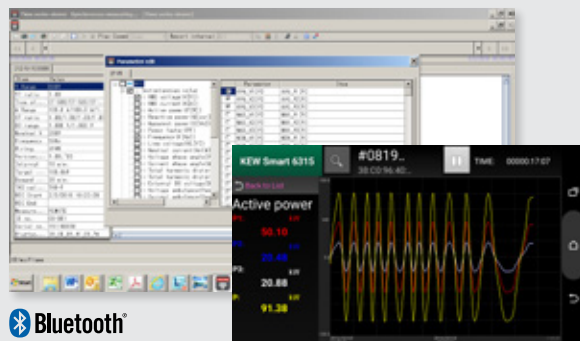
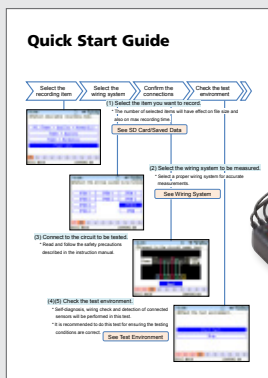
- Read vectors of voltage and current per CH on a large, color LCD screen
- Perform wiring checks



Configure advanced functions such as nominal voltages and transient limits or check for available memory by pressing the SET UP button

Additional References

- Test leads and cord connections
- Quick start guide



Bluetooth®

Software to control, analyze and download data is included at no additional cost.

- PC software includes data transfer via memory card, USB cable and Bluetooth.

Key Features



Real-Time Checks with Large, Full-Color Screen. During and after measurements, the on-board screen displays data graphs and values in full color for easy comparison. Additionally, the Print Screen quick-button makes it simple to save momentary readings for later comparison.



Quick Setup with On-Screen Guide. A step-by-step setup guide helps ensure you capture the right measurements. Simply select the parameters to test, follow the on-screen guide for wiring configuration, and be alerted to any incorrect settings before testing begins.



Wireless Control for Remote Checks and Adjustments. Adjust settings and transfer data remotely by connecting the DM-5 to compatible Bluetooth® enabled Windows® devices. This provides added convenience and safety, allowing for easy testing modifications even when the main unit is in difficult to access locations.



Complete Power Quality Kit.

The DM-5 comes complete with the accessories needed to quickly get to work, including light weight flex clamps with user selectable input ranges of 300 A, 1000 A, or 3000 A.

Applications

Harmonics

Harmonics often cause tripped circuit breakers, blown fuses, irregular electrical noises and overheating of electrical systems. Use the DM-5 to identify problematic harmonics, evaluate both the magnitude of harmonic frequencies present and the amount of total harmonic distortion.

Analyze Power Efficiency

With the DM-5, you can simultaneously measure up to 1,000 parameters to analyze wherever excessive power loss or other power problems may exist.

Pinpoint Transients

Transients can cause problems ranging from simple equipment malfunction to full equipment failure. Recording data over a prolonged period can help isolate when and where infrequent transients occur, helping identify root causes ranging from nearby lightning strikes to the switching of loads.

Capture Sags and Swells

The high performance processor of the DM-5 captures sags and swells, common causes of equipment failure and irregular electrical noises.

Monitor Voltage Unbalance

Monitoring for unbalance with the DM-5 can help identify issues before they result in costly equipment damage. Unbalance often causes excessive overheating, leading to motor failure and other problems within distribution systems.

Specifications




| Features | DM-5 Power Quality Analyzer |
|-----------------------------|--|
| Wiring connection | 1P2W, 1P3W, 3P3W, 3P4W |
| Measurements and parameters | Voltage, current, frequency, active power, reactive power, apparent power, active energy, reactive energy, apparent energy, power factor (cos ϕ), neutral current, demand, harmonics, quality (swell/dip/interruption, transients/overvoltage, inrush current, unbalance rate), capacitance calculation for PF correction unit, flicker |
| Voltage (rms) | Range: 600.0 / 1000 V Accuracy: $\pm 0.2\% + 0.2\% \text{ f.s.}$ (sine wave, 40 Hz to 70 Hz) Allowable input: 1% to 120% of each range (rms). 200% of each range (peak) Display range: 0.15% to 130 % of each range Crest factor: 3 or less Sampling speed of voltage transient: 24 μs Input impedance: approx. 1.67 M Ω |
| Current (rms) | Accuracy: $\pm 0.2\% + 0.2\% \text{ f.s.}$ + accuracy of flex current sensor (sine wave, 40 Hz to 70 Hz) Allowable input: 1% to 110% of each range (rms). 200% of each range (peak) Display range: 0.15% to 130 % of each range Crest factor: 3 or less Input impedance: approx. 100 k Ω |
| Swell / dip / interruption | Range: same as Voltage (rms) Accuracy: $\pm 1.0\%$ of nominal voltage Threshold value: In percentage of nominal voltage value |
| Power and energy | CT-53 flex current sensor (3-ch): max. 6000 kW CT-500 flex current sensor (1-ch): max. 1000 kW Active power accuracy: $\pm 0.3\% + 0.2\% \text{ f.s.}$ + accuracy of flex current sensor (PF 1, sine wave, 40 Hz to 70 Hz) Influence of power factor: $\pm 1.0\%$ (PF 0.5, 40 Hz to 70 Hz) Wh: 0.00000 mWh to 9999.99 TWh VAh: 0.00000 VAh to 9999.99 TVAh varh: 0.00000 varh to 9999.99 Tvarh |
| Power factor | Display range: -1.000 to 0.000 to 1.000 Accuracy: $\pm 1 \text{ dgt}$ against each calculated value (for sum: $\pm 3 \text{ dgt}$) |
| Harmonics | Harmonics order (n): 1 to 50th Inter-harmonics order (n): 1 to 50th Volts: 0.0% to 100.0%, accuracy ($\geq 3\%$ at 100 V nominal voltage): $\pm 10\%$ accuracy ($< 3\%$ at 100 V nominal voltage): $\pm 0.3\%$ of nominal voltage accuracy (1000 V range): $\pm 0.2\% + 0.2\% \text{ f.s.}$ Amps: 0.0% to 100.0%, accuracy ($\geq 10\%$ to max. input range): $\pm 10\%$ + flex current sensor. accuracy ($< 10\%$ to max. input range): $\pm 1.0\%$ + flex current sensor Watts: 0.0% to 100.0%, accuracy: $\pm 0.3\% + 0.2\% \text{ f.s.}$ + accuracy of flex current sensor (PF 1, sine wave, 50/60 Hz) THD: 0.0% to 100.0%, Phase angle: 0.0° to $\pm 180^\circ$ |
| Flicker | Displayed items: Pst(1min), Pst, Plt, Max Pst, Max Plt, V, time left Measurement method: Complied with IEC 61000-4-30 and IEC 61000-4-15 Ed.2 Accuracy: Pst (max.20): $\pm 10\%$ according to IEC 61000-4-15 |
| Unbalance | Volts: 0.00% to 100.00%, accuracy: $\pm 0.3\%$ at 50/60 Hz, sine wave (0.00% to 5.00% according to IEC 61000-4-030) Current: 0.00% to 100.00% |
| Transient | Approx. 40.96 ksps (every 2.4 μs) Range: 50 V to 2200 Vdc Accuracy: $\pm 0.5\%$ at 1000 Vdc |
| Inrush current | Range: same as Current (rms) Accuracy: $\pm 0.4\% + 0.4\% \text{ f.s.}$ + accuracy of flex current sensor Threshold value: In percentage of the measurement range |
| Capacitance | Range: 0.000 nF to 9999 F, 0.000 kvar to 999 kvar |

| General Specifications | |
|------------------------------------|---|
| Display | 3.5inch, TFT, QVGA(320xRGBx240) |
| Display update | Every 1 second* *There may be time lag in display update (max. 2 seconds) due to arithmetic processing. However, no time lag between the recorded data and the time stamp. |
| Operating temperature and humidity | 32°F to 104 °F (0 °C to 40 °C), $\leq 85\%$ RH (no condensation) Guaranteed accuracy at 73 °F ± 9 °F (23 °C ± 5 °C), $\leq 85\%$ RH (no condensation) |
| Operating altitude | 0 to 6,561 ft (0 to 2,000 m) |
| Pollution degree | 2 |
| Dust/water proof | IP 40 |
| Drop proof | 3.3 ft (1 m) |
| Storage temperature and humidity | -4 to 140 °F (-20 °C to 60 °C), $\leq 85\%$ RH (no condensation) |
| Power supply | Battery: 6 x AA 1.5 V Alkaline battery (LR6) AC power supply: AC100 V to AC 240 V, 50 Hz to 60 Hz, 7 VAmx. |
| Battery life | 3 hours (typical) Current consumption: 1.0 A at 3.0 Vdc (typical) |
| EMC | Meets EN 61326-1 |
| Safety compliance | UL/IEC 61010-1, IEC 61010-031, IEC 61010-2-030 |
| Power quality measurement | Complies with IEC 61000-4-030 ed.2 Class S |
| Certification | |
| Dimensions (L x W x D): | 6.9 x 4.7 x 2.7 in (17.5 X 12 X 6.8 cm) |
| Weight: | Approx. 2.0 lb (900 g) with batteries installed |


Accessories included: Test leads with alligator clips (4), US power cord, CT-53 flex AC current clamp, CT-500 flex AC current clamp, SD card, User manual, PC software, AA batteries (6)



Specifications

| Features | CT-53 Flex Current Sensor | CT-500 Flex Current Sensor |
|--|---|---|
| Current ranges | 300 A / 1000 A / 3000 A, AC rms | 1000 A, AC rms |
| Output voltage | 300 A range: 500 mVac / 300 Aac (1.67 mV / A) 1000 A range: 500 mVac / 1000 Aac (0.5 mV / A) 3000 A range: 500 mVac / 3000 Aac (0.167 mV / A) | 500 mVac / 1000 Aac (0.5 mV / A) |
| Measuring range | 300 A range: 30 A to 300 A (424 Apeak) 1000 A range: 100 A to 1000 A (1414 Apeak) 3000 A range: 300 A to 3000 A (4243 Apeak) | 0 to 1000 A (1850 Apeak) |
| Accuracy (sine wave) | ±1.0% (45 Hz to 65 Hz) | ±0.8% ± 0.2 mV (45 Hz to 65 Hz) ±1.5% ± 0.2 mV (40 Hz to 1 kHz) |
| Phase characteristics | Within ±1° 300 A range: 30 A to 300 A (45 Hz to 65 Hz) 1000 A range: 100 A to 1000 A (45 Hz to 65 Hz) 3000 A range: 300 A to 3000 A (45 Hz to 65 Hz) | 45 Hz to 65 Hz within ±2° 40 Hz to 1 kHz within ±3° |
| Working voltage | 600 Vac rms | 600 Vac rms |
| Max allowed input | 3600 Aac continuous (45 Hz to 65 Hz) | 1300 Aac continuous |
| Measurable conductor size | Max. 5.9 in (15 cm) diameter | Max. 4.3 in (11 cm) diameter |
| Head circumference | 21.65 in (55 cm) | 15.75 in (40 cm) |
| Head cable diameter | 0.56 in (14.3 mm) | 0.33 in (8.5 mm) |
| Cable length (head to electronics) | Approx. 6.56 ft (2 m) | Approx. 8.56 ft (2.7 m) |
| Cable length (output cable) | Approx. 3.28 ft (1 m) | Approx. 0.66 ft (0.2 m) |
| Output terminal | Mini-DIN-6 connector | Mini-DIN-6 connector |
| Output impedance | 100 Ω or less | 100 Ω or less |
| Current consumption (at power supply 3 V) | 15 mA (typical) | Max. 2 mA (typical) |
| Operating temperature and humidity | 32 °F to 122 °F (0 °C to 50 °C), ≤85 %RH (no condensation) Guaranteed accuracy at 73 °F ± 9 °F (23 °C ± 5 °C), ≤85 %RH (no condensation) | 14 °F to 122 °F (-10 °C to 50 °C), ≤85 %RH (no condensation) Guaranteed accuracy at 73 °F ± 9 °F (23 °C ± 5 °C), ≤85 %RH (no condensation) |
| Storage temperature and humidity | -4 to 140 °F (-20 °C to 60 °C), ≤ 85 % RH (no condensation) | -4 to 140 °F (-20 °C to 60 °C), ≤ 85 % RH (no condensation) |
| Operating altitude | 0 to 6,561 ft (0 to 2,000 m) | 0 to 6,561 ft (0 to 2,000 m) |
| EMC | EN 61326 | EN 61326 |
| Safety compliance | UL/IEC 61010-1, IEC 61010-2-030, IEC 61010-2-032 Measurement CAT III 600 V, Pollution degree 2 | UL/IEC 61010-1, IEC 61010-2-030, IEC 61010-2-032 Measurement CAT III 600 V, CAT IV 300 V, Pollution degree 2 |
| Certification | (UL tested with DM-5)    | (UL tested with DM-5)    |
| Weight | Approx. 2.1 lb (950 g) | Approx. 0.4 lb (180 g) |



| Optional Accessories | PC-5 AC Line Power Adaptor | CC-5 Carrying Case with Magnet |
|-------------------------------|---|--|
| Rated voltage | 100 Vac to 240 Vac rms, 45 Hz to 60 Hz | - |
| Max. input voltage | 240 Vac rms | - |
| Fuse | AC 500 mA / 600 V min., fast-acting, Ø6.3 x 32 mm | - |
| Safety compliance | UL/IEC 61010-1 | - |
| Certification |  (UL tested with DM-5) | - |
| Dimensions (L x W x D) | Approx. 3.0 x 2.2 x 1.8 in (7.6 x 5.5 x 4.6 cm) excludes the cord and plug | 5.3 X 3 X 5.4 in. (13.5 X 7.5 X 13.7 cm) |
| Weight | Approx. 0.26 lb (0.12 kg) | 14 oz (400 g) |

All Amprobe tools, including the Amprobe DM-5, are rigorously tested for safety, accuracy, reliability and ruggedness in our state-of-the-art Fluke test lab. In addition, Amprobe products that measure electricity are listed by a 3rd party safety lab, either UL or CSA. This system assures that Amprobe products meet or exceed safety regulations and will perform in a tough, professional environment for many years to come.

