

# DM-5 Power Quality Analyzer

## 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

- **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 and Android devices via Bluetooth communication
- **Comes complete with measurement accessories**, PC software, and large carrying case
- **Safety rated** CAT IV 300 V, CAT III 600 V, CAT II 1000 V



← . . . . Wireless control for remote checks and adjustments



← . . . . Large, full-color screen with step-by-step Quick Start Guide

← . . . . High performance processor for accurate, detailed data recordings



**CT-53**  
Flex Current Sensor



**DM-5**  
Power Quality Analyzer

## 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® and Android® devices. This provides added convenience and safety, allowing for easy testing modifications even when the main unit is in difficult to access locations.



**Full Analysis with Included Software**  
Quickly analyze your recorded data to identify potential issues with report generation and data visualization.



**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 $\phi$ ), 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 $\mu\text{s}$ Input impedance: approx. 1.67 M $\Omega$
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 $\Omega$
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 $\mu\text{s}$ ) 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 113 °F (0 °C to 40 °C), $\leq 85\%$ RH (no condensation) Guaranteed accuracy at 73 °F $\pm 9$ °F (23 °C $\pm 5$ °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
<b>Current ranges</b>	300 A / 1000 A / 3000 A, AC rms	1000 A, AC rms
<b>Output voltage</b>	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)
<b>Measuring range</b>	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)
<b>Accuracy (sine wave)</b>	±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)
<b>Phase characteristics</b>	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°
<b>Working voltage</b>	600 Vac rms	600 Vac rms
<b>Max allowed input</b>	3600 Aac continuous (45 Hz to 65 Hz)	1300 Aac continuous
<b>Measurable conductor size</b>	Max. 5.9 in (15 cm) diameter	Max. 4.3 in (11 cm) diameter
<b>Head circumference</b>	21.65 in (55 cm)	15.75 in (40 cm)
<b>Head cable diameter</b>	0.56 in (14.3 mm)	0.33 in (8.5 mm)
<b>Cable length (head to electronics)</b>	Approx. 6.56 ft (2 m)	Approx. 8.56 ft (2.7 m)
<b>Cable length (output cable)</b>	Approx. 3.28 ft (1 m)	Approx. 0.66 ft (0.2 m)
<b>Output terminal</b>	Mini-DIN-6 connector	Mini-DIN-6 connector
<b>Output impedance</b>	100 Ω or less	100 Ω or less
<b>Current consumption (at power supply 3 V)</b>	15 mA (typical)	Max. 2 mA (typical)
<b>Operating temperature and humidity</b>	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)
<b>Storage temperature and humidity</b>	-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)
<b>Operating altitude</b>	0 to 6,561 ft (0 to 2,000 m)	0 to 6,561 ft (0 to 2,000 m)
<b>EMC</b>	EN 61326	EN 61326
<b>Safety compliance</b>	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
<b>Certification</b>	(UL tested with DM-5)	(UL tested with DM-5)
<b>Weight</b>	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
<b>Rated voltage</b>	100 Vac to 240 Vac rms, 45 Hz to 60 Hz	-
<b>Max. input voltage</b>	240 Vac rms	-
<b>Fuse</b>	AC 500 mA / 600 V min., fast-acting, Ø6.3 x 32 mm	-
<b>Safety compliance</b>	UL/IEC 61010-1	-
<b>Certification</b>	(UL tested with DM-5)	-
<b>Dimensions (L x W x D)</b>	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)
<b>Weight</b>	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.

