

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.



Bluetooth®



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 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 lab 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 ± 9 °F (23 °C ± 5 °C), $\leq 85\%$ %RH (no condensation)
Operating altitude	0 to 2000 m
Pollution degree	2
Dust/water proof	IP 40
Drop proof	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 VAmass.
Battery life	3 hours with backlight off (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 (175 x 120 x 68 mm)
Weight:	Approx. 900 g (2.0 lb) 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 mV _{ac} / 300 A _{ac} (1.67 mV / A) 1000 A range: 500 mV _{ac} / 1000 A _{ac} (0.5 mV / A) 3000 A range: 500 mV _{ac} / 3000 A _{ac} (0.167 mV / A)	500 mV _{ac} / 1000 A _{ac} (0.5 mV / A)
Measuring range	300 A range: 30 A to 300 A (424 A _{peak}) 1000 A range: 100 A to 1000 A (1414 A _{peak}) 3000 A range: 300 A to 3000 A (4243 A _{peak})	0 to 1000 A (1850 A _{peak})
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 A _{ac} continuous (45 Hz to 65 Hz)	1300 A _{ac} continuous
Measurable conductor size	Max. 150 mm diameter	Max. 110 mm diameter
Head circumference	550 mm (21.65 in)	400 mm (15.75 in)
Head cable diameter	14.3 mm (0.56 in)	8.5 mm (0.33 in)
Cable length (head to electronics)	Approx. 2 m (6.56 ft)	Approx. 2.7 m (8.56 ft)
Cable length (output cable)	Approx. 1 m (3.28 ft)	Approx. 0.2 m (0.66 ft)
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 2000 m	0 to 2000 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. 950 g (2.1 lb)	Approx. 180 g (0.4 lb)

Features	Optional accessory - PC-5 AC Line Power Adaptor
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, fast-acting, Ø6.3 x 32 mm
Safety compliance	UL/IEC 61010-1
Certification	
Dimensions (L x W x D)	3.0 x 2.2 x 1.8 in (76 x 55 x 46 mm)
Weight	Approx. 115 g (2.0 lb) with batteries installed

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.

