Three-Phase Power Quality Analyzer
PowerPad®

Model 8335

Power Quality Analysis Made Easy!

Compact
Easy-To-Use
Shock-Resistant

▶ Direct access keys to display real-time waveforms, transients, inrush, harmonic bar graphs, events, trend recordings, power and energy statistics and much more

▶ Automatic probe recognition and scaling

▶ True RMS single-, split- and three-phase measurements, plus DC

▶ Includes DataView® software for data storage, analysis and report generation

Our products are backed by over 100 years of experience in test and measurement equipment, and encompass the latest international standards for quality and safety.

PowerPad® Model 8335

AmpFlex® flexible current sensors facilitate easy access to current carrying conductors.

The PowerPad® Model 8335 is a three-phase power quality analyzer that is easy-to-use, compact and shock-resistant. It is intended for technicians and engineers to measure and diagnose power quality work on single-, split- or three-phase networks.

The PowerPad® has additional 2GB of trend/monitoring memory with 12.5MB, conveniently partitioned to allow storage of four different types of data, synchronized or independent of each other. User can store up to 50 screen snapshots, up to 210 captured transients each containing four cycles for each active input up to one minute of inrush data, and 10,000 alarm events from up to 40 different parameters. Trend data can also be recorded for days, weeks or even months.

Direct access function buttons quickly display:

Power and Energy – Keep track of Watts, VAR, VA, Wh, VARh, VAh, Power Factor, Displacement Power Factor, Phase Angle and more. Also monitor total energy using the Start/Stop function.

Waveforms – Display Volts, Amps, THD and Crest Factor by phase or for all phases. User can display all voltage inputs on one screen, phase-to-phase or phase-to-neutral. Real-time phasor diagrams can be displayed for volts and amps, also by phase or for all phases including unbalance.

Harmonics – Display Harmonics out to the 50th for Volts, Amps and VA. Individual Harmonics are displayed as a percentage and value for Volts, Amps and VA. Harmonic direction and sequencing can also be displayed.

Alarms – Define threshold conditions and the start and stop times to capture and review out-of-tolerance events. Up to 40 different conditions can be tracked based on any of the parameters available for recording and up to 10,000 events can be recorded. Each alarm event will include time and date stamp, duration and maximum and minimum values.

Transients – Set, capture and display transients. Select the threshold and the number of transients to capture. The PowerPad® then captures four cycles of waveforms for each transient; the triggering waveform, as well as one pre-triggered and two post-triggered waveforms. As many as 210 transients, each consisting of 4 waveforms per channel for up to 8 channels, can be captured. Each waveform is sampled 256 times.

Inrush – Capture and display start up current of any electrical device. The triggering channel and threshold value are user-selectable as well as, start time and date and duration. The Model 8335 provides the following information from captured inrush data:

- Instantaneous value at the cursor position
- Maximum instantaneous current over the entire start up period
- Maximum half-period RMS value at the cursor position
- Maximum instantaneous value (Peak) of the start up period
- Start time and duration of inrush

Trend Recording – Record and display trend data at user-selectable sample rates from 1/sec to 1/15 minutes with user programmable recording periods into 2GB of memory on an internal SD card.

Monitoring – The monitoring feature allows for set up of a recording with selected parameters with specific user-defined pass/fail criteria. The objective is to set up a measurement chart of relevant parameters and monitor them to establish whether an electrical complex of source and loads is within control limits. Monitoring can also be set up without any thresholds for pass/fail criteria. The software structure of set up is flexible and allows full customization. The progress of the measurement can be viewed in real-time as the measurement is progressing. A customized report can automatically be generated at the end of the monitoring period.
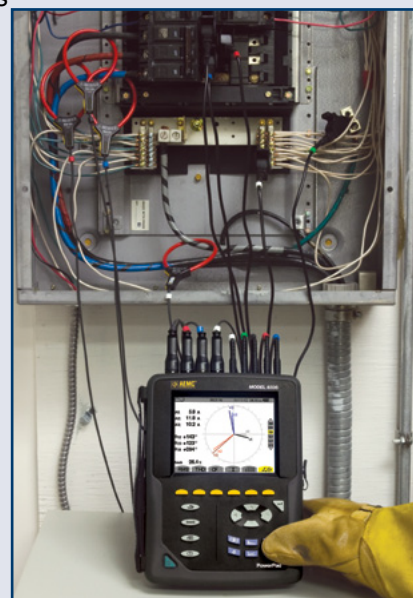
Real-time phasor diagram display.

AEMC® INSTRUMENTS

FEATURES & APPLICATIONS

► FEATURES

- ► Measurement of TRMS voltages up to 1000Vrms AC/DC for two, three, four or five-wire systems with programmable voltage ratios to accommodate up to 500kV

- ► Measurement of TRMS currents up to 6500Arms (sensor dependent) with programmable current ratios, on select probes, to accommodate up to 60kA

- ► Measurement of DC current up to 1400A$_{DC}$ (probe dependent)

- ► Automatic probe detection and calibration with independent probe to channel selection

- ► Direct measurement of neutral current for WYE configurations

- ► Record and display trend data as fast as once per second for one month. Up to 25 variable storage rates and lengths are user programmable

- ► Energy assessments

- ► Transient detection on all V and I inputs with independent trigger point selection by channel or group channels

- ► Inrush current measurement

- ► Color-coded input ID markers to identify voltage and current inputs to local standards

- ► Calculation of Crest Factors for current and voltage

- ► Calculation of the K-Factor for transformers

- ► Calculation of short-term flicker for voltage

- ► Calculation of the phase unbalance for voltage and current (3 phase only)

- ► Measurement of harmonic angles and rates (referenced to the fundamental or RMS value) for voltage, current or power, up to 50th harmonic

- ► Display of harmonic sequencing and direction

- ► Calculation of overall harmonic distortion factors

- ► Real time display of Phasor diagrams including values and phase angles

- ► Monitoring of the average value of any parameter, calculated over a period running from 1 sec to 2 hrs

- ► Measurement of active, reactive and apparent power per phase and their respective sum total

- ► Calculation of power factor, displacement power factor and tangent factor

- ► Total power from a point in time, chosen by the operator

- ► Recording, time stamping and characterization of disturbance (swells, sags and interruptions, exceedence of power and harmonic thresholds)

- ► Detection of transients and recording of associated waveforms

- ► 2GB SD card Trend Recording memory; Alarm, Photo, Inrush and Transient recorded on separately partitioned memories

- ► Record to PC provides an option to send data to PC memory extending recording time

- ► Supports 25+ different languages

- ► DataView® software included for downloading measurements, storage, and analysis and report generation

- ► EN 61010-1, 600V CAT IV[2], 1000V CAT III

Power quality analysis on a three-phase panel using the AmpFlex® flexible current probes.

► APPLICATIONS

- ► Verification of power distribution circuits

- ► Measurement and recording of power system quality (kW, VA, VAR)

- ► Energy metering (kVAh, VARh, kWh)

- ► In-plant troubleshooting of power distribution panels and individual machinery

- ► Monitor pad mount transformers and phase unbalances

- ► Determine harmonic problems originating from source or load

- ► Determine transformer K-Factor

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SPECIFICATIONS

ELECTRICAL	
Sampling Frequency	256 samples per cycle
Data Storage	2GB SD card for trend recording plus 12MB internal memory-partitioned for snapshot, transients, inrush & alarms
Trend Recording	User selectable storage rates from one per second to one every fifteen minutes. User programmable start times and dates. Up to 22 user selectable parameters can be recorded. Recording all 22 parameters at one per second will provide one month of recording.
Transient Capture	Stores up to 210 event waveforms consisting of the triggered waveform and one pre and three post waveforms. All active channels are captured for each event.
Inrush	Capture up to one minute of inrush current with user selectable current thresholds. All current channels are captured and recorded waveforms and measurement statistics can be displayed.
Waveform Capture	Up to 50 user initiated screen captures can be stored.
Alarms	Up to 10,000 events can be recorded from any of the 40 user selectable parameters by means of user selectable thresholds; results are displayed in a tabular form including value, time and event duration.
Current (TRMS)	SR Clamp: 0 to 1200A MN Clamp: 0 to 6A/120A, 0 to 240A AmpFlex®: 10 to 6500A MR Clamp: 0 to 1000A_{AC}, 0 to 1200A_{DC} SL Clamp: 10A to 100A_{AC/DC} MiniFlex®: 10 to 1000A

MEASUREMENT	RANGE	RESOLUTION	* ACCURACY (% of Reading)
Single-Phase RMS Voltages	1 to 1000V	0.1V	±0.5% ± 2cts
Phase-to-Phase RMS Voltages	1 to 2000V	0.1V	±0.5% ± 2cts
DC Voltage Component	1 to 1000V	0.1V	±1% ± 5cts
Single-Phase Peak Voltages	1 to 1414V	0.1V < 1000V, 1V > 1000V	±(1% + 1V)
Phase-to-Phase Peak Voltages	1 to 1414V	0.1V < 1000V, 1V > 1000V	±(1% + 1V)
Frequency (Hz)	40 to 69Hz	0.01Hz	±0.01Hz
Current Probes (Arms) SR193 Probe	1 to 1200A	0.1A; A < 1000A	±(0.5% + 0.2A)
MR193 AC Probe	1 to 1200A	0.1A; A < 1000A	±(0.5% + 1A)
MR193 DC Probe	1 to 1200A	0.1A; A < 1000A, 1A; A ≥ 1000A	±(0.1% + 1A)
MN93 AC Probe	0.2 to 240A	0.1A	±(0.5% + 0.2A)
SL261 (10mV/A) AC Probe	0.1 to 120A	0.01A; A < 100A	±(0.5% + 0.02A)
SL261 (10mV/A) DC Probe	0.1 to 169.7A	0.1 to 169.7A	±(0.1% + 0.1A)
SL261 (100mV/A) AC Probe	0.01 to 12A	0.001A; A < 10A, 0.01; A ≥ 10A	±(0.5% + 0.01A)
SL261 (100mV/A) DC Probe	0.01 to 16.97A	0.01 to 16.97A	±(1% + 0.1A)
MN193 (5A) Probe	0.005 to 6A	0.001A	±(0.5% + 0.002A)
MN193 (100A) Probe	0.1 to 120A	0.01A; A ≥ 100A	±(0.5% + 0.1A), ±(0.5% + 0.002A)
AmpFlex® Sensor	10 to 6500A	0.1A; A < 1000A	±(0.5% + 1A)
MiniFlex® Sensor	10 to 6500A	1A; A ≥ 1000A	±(0.5% + 1A)
Active (Real) Power (kW)	0 to 9999kW	4 digits (10,000ct)	±1% ± 1ct @ PF ≥0.8
Reactive Power (kVAR)	0 to 9999kVAR	4 digits (10,000ct)	±1% ± 1ct @ PF ≤0.8
Apparent Power (kVA)	0 to 9999kVA	4 digits (10,000ct)	±1% ± 1ct
Power Factor (PF & DPF)	-1.000 to 1.000	0.001	±(1.5% + 10cts)
Active Energy (kWh)	0 to 9999MWh	4 digits (10,000ct)	±1% ± 1ct @ PF ≥0.8
Reactive Energy (kVARh)	0 to 9999MVARh	4 digits (10,000ct)	±1% ± 1ct @ PF ≤0.8
Apparent Energy (kVAh)	0 to 9999MVAh	4 digits (10,000ct)	±1% ± 1ct
Unbalance (V & A)	0 to 100%	0.1%	±1% ± 1ct
Phase Angle (V–A, A–A, V–V)	-179° to +180°	1°	±2° ± 1ct
Harmonics (1st to 50th), F = 40 to 69Hz (V ≥ 50V, A > nom/100)	0 to 999%	0.1%	±1% + 5cts
Total Harmonic Distortion (V & A)	0 to 999%	0.1%	±1% + 5cts
K-factor (Akf)	1 to 99.99	0.01	±5% ± 1ct
Flicker (Pst)	0.00 to 9.99	0.01	–
Power Source	9.6V NiMH rechargeable battery pack; external AC supply: 110/230V_{AC} ±10% (50/60Hz)		
Battery Life	10 hrs completely charged, 35 hrs recording in progress (charge time 5 hours max)		

MECHANICAL	
Communication Port	Optically isolated USB
Dimensions/Weight	9.8 x 7.9 x 2.6" (250 x 200 x 67mm) / 4.3 lbs (1.95kg) with batteries

DISPLAY	
Display Type	¼ VGA (320 x 240) color LCD; display adjustable with brightness and contrast

ENVIRONMENTAL	
Operating/Storage Temperatures	32° to 122°F (0° to 50°C) / -4° to +122°F (-20° to +50°C)

SAFETY	
Safety Rating/Double Insulation/CE	EN 61010-1, 600V CAT IV[2], 1000V CAT III, Pollution Degree 2 / Yes / Yes

[1]Crest Factor at 6500A = 1   [2]When used with SR193, MiniFlex® or AmpFlex® probes. 600V CAT III with MN193 or MR193 probes.   * Meter

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A complete family of current measurement probes to meet most AC (or DC) measurement applications up to 6500Arms.

	Probe/Sensor Type	TRMS Current	Max Conductor Size	Accuracy on IRMS	Accuracy on Φ	Safety
	SR193-BK (1000A) Catalog #2140.33 AC Current Probe with 10 ft lead	1A - 3A	2.05" (52mm)	±0.8%	–	EN 61010-2-032, Pollution Degree 2, 600V CAT IV, 1000V CAT III
		3A - 10A			±1°	
		10A - 100A		±0.8%	±0.5°	
		100A - 1200A		±0.8%	±0.3°	
	MR193-BK (1000A_{AC}/1400A_{DC}) Catalog #2140.28 AC Current Probe with 10 ft lead	1A - 10A	1.6" (41mm)	±(1.5% + 1A)	–	EN 61010-2-032, Pollution Degree 2, 300V CAT IV, 600V CAT III
		10A - 100A			±2°	
		100A - 800A		±3%	±1.5°	
		800A - 1200A		±5%		
		1200A - 1400A				
	MN93-BK (200A) Catalog #2140.32 AC Current Probe with 10 ft lead	0.5A - 2A	0.78" (20mm)	±(3% + 1A)	–	EN 61010-2-032, Pollution Degree 2, 300V CAT IV, 600V CAT III
		2A - 10A			±6°	
		10A - 100A		±(2.5% + 1A)	±3°	
		100A - 240A		±(1% + 1A)	±2°	
*	**SL261 (10A/100A_{AC/DC})** Catalog #1201.51 AC/DC Current Probe with 6.5 ft lead	0A - 10A	0.46" (11.8mm)	±(1.5% + 50mA)	±1°	EN 61010-2-032, Pollution Degree 2, 600V CAT III
		0A - 40A		±(2% + 50mA), ±5%	±0.5°	
		40A - 100A				
	MN193-BK (100A) Catalog #2140.36 AC Current Probe with 10 ft lead	100mA - 300mA	0.78" (20mm)	±(0.7% + 2mA)	–	EN 61010-2-032, Pollution Degree 2, 300V CAT IV, 600V CAT III
		300mA - 1A			±1.5°	
		1A - 120A		±0.7%	±0.7°	
	MN193-BK (5A) Catalog #2140.36 AC Current Probe with 10 ft lead	5mA - 50mA		±(1% + 0.1mA)	±1.7°	
		50mA - 500mA		±1%	±1°	
		500mA - 6A		±0.7%		
	AmpFlex® 193-24-BK (6500A) Catalog #2140.34 Flexible Current Probe with 24" sensors & 10 ft lead	10A - 100A	7.64" (190mm)	±3%	±1°	EN 61010-2-032, Pollution Degree 2, 600V CAT IV, 1000V CAT III
		100A - 6500A		±2%	±0.5°	
	AmpFlex® 193-36-BK (6500A) Catalog #2140.35 Flexible Current Probe with 36" sensors & 10 ft lead	10A - 100A	11.46" (290mm)	±3%	±1°	EN 61010-2-032, Pollution Degree 2, 600V CAT IV, 1000V CAT III
		100A - 6500A		±2%	±0.5°	
	MiniFlex® MA193-10-BK (1000A_{AC}) Catalog #2140.48 MiniFlex® Sensor with 10" Sensor & 5 ft lead	10A - 100A	2.75" (70mm)	±3%	±1°	EN 61010-2-032, Pollution Degree 2, 600V CAT IV, 1000V CAT III
		100A - 1000A		±2%	±0.5°	

CE ▣ *All probes and sensors.   For system accuracy calculations, add the probe accuracy to the meter accuracy.*
* Requires BNC adapter Catalog #2140.40

# ACCESSORIES

5A Adapter Box - Special Order Only
Catalog #2140.17

AC/DC Current Probe BNC Adapter
for Model SL261 only
Catalog #2140.40

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FUNCTIONAL DISPLAYS

A sampling of PowerPad® data and waveform screen displays – available at the press of a button.

The PowerPad® has a direct access system that displays important information at the press of a button. Quickly review waveforms, harmonics, transients, inrush, alarms and recorded data on the screen. Setup is straightforward using a combination of graphic and text prompts to quickly configure the PowerPad® for the job site.

Configuration
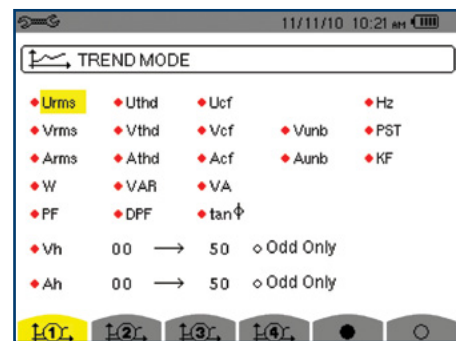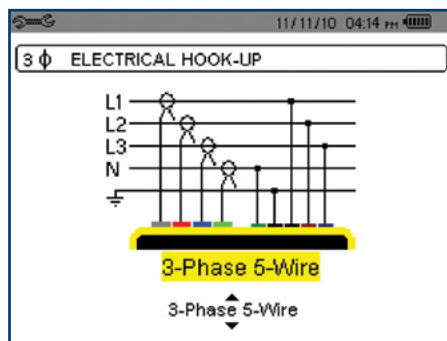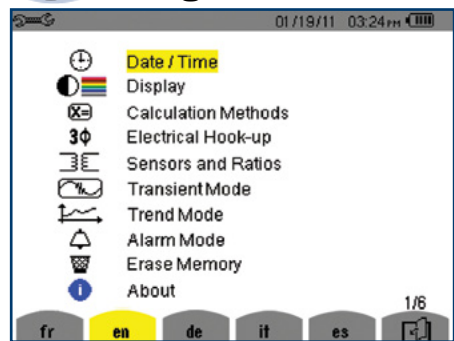
Configuration is simple and straightforward. Simply press the setup button and select the desired function to configure. For example, to configure the input, select the desired hookup from the graphical choices for single-, split- and three-phase. Neutral current is calculated in the 4-wire hookup.

Snapshot Mode
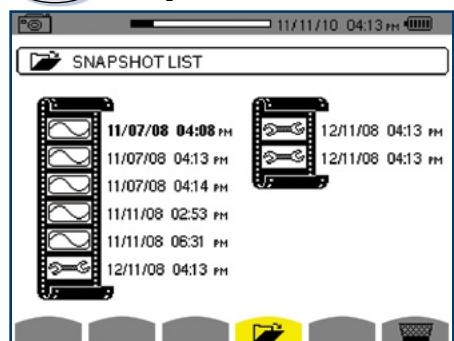
Store up to 50 screen snapshots simply by pressing the camera button while the desired information from any of the instrument's modes is on the display. Any of the stored snapshots can be selected and displayed by selecting it from the list.

Transient Mode
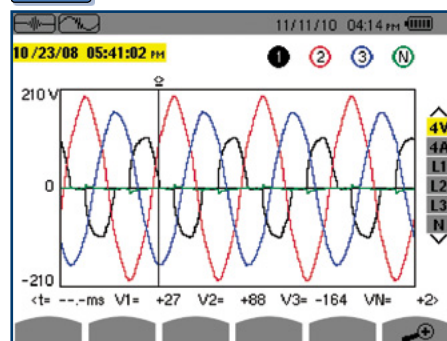
Display transients that were captured, each transient consisting of one pre-triggered cycle, the triggered cycle and two post-triggered cycles. All inputs are stored when a transient is captured. Up to 210 transients can be stored, each consisting of four cycles and up to six inputs for a total of 1200 transient waveforms.

Inrush Mode
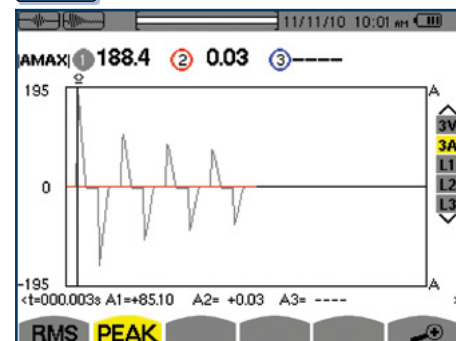
The inrush mode enables the recording of the trend of the true half period value of current. Both RMS and peak trend values can be displayed. Moving the vertical cursor displays instantaneous values at the cursor position, including time. Individual phases or total can be selected.

Harmonics Mode
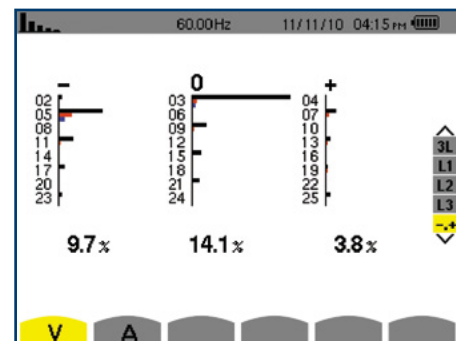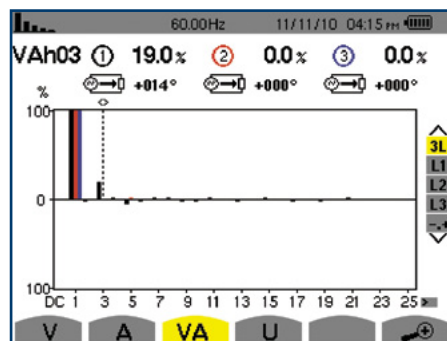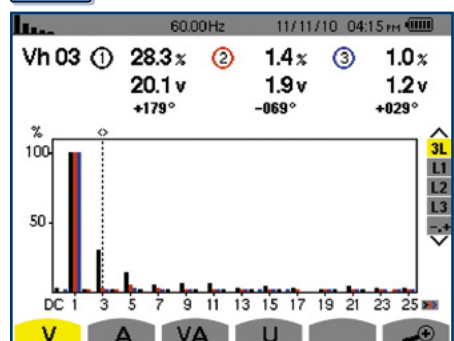
Voltage, current and power harmonics can be displayed in real-time, in bar graph and text form, and stored in memory. Individual harmonics can be analyzed by moving the horizontal cursor to that harmonic. Harmonic direction (source-to-load or load-to-source) can be displayed for power harmonics. Harmonic sequencing (negative, zero and positive) can be displayed for volts or amps for all phases.

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FUNCTIONAL DISPLAYS

Waveform Mode

Phasor Diagram

Alarms Mode
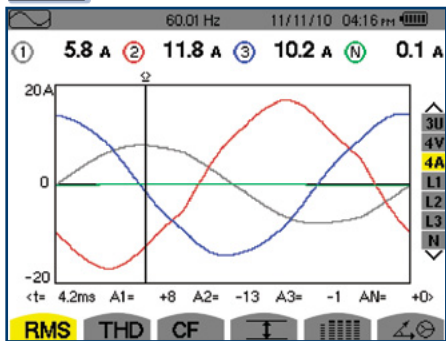
Real-time waveforms can be displayed for any and all inputs. In RMS, THD and Crest Factor presentations, Phasor Diagrams can be displayed graphically, showing the phase relationship as well as actual values for phase-to-phase voltage and current. Percent unbalance is also displayed.

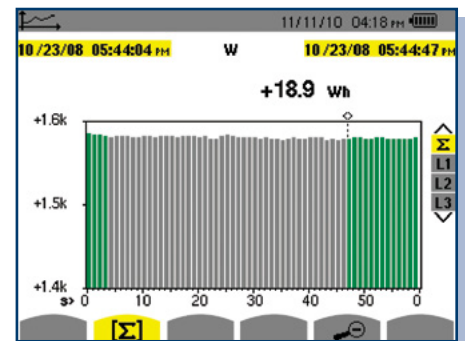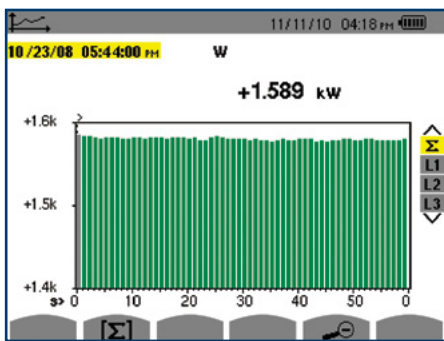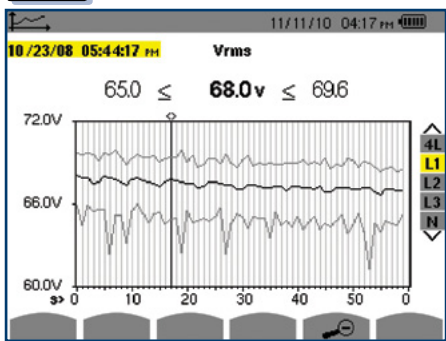Up to 10,000 alarm conditions can be recorded and displayed. Each alarm shows date, time, function, value and duration (down to 10ms).

Recording Mode

Trend recording from 1 to 22 variables and from 1 to 6 inputs can be programmed, stored and displayed at storage rates between 1 second and 15 minutes. Data can be analyzed on screen by moving the horizontal cursor to see MIN, MAX and instantaneous values, as well as time and date. The time axis can be zoomed in or out. Power and energy consumption can also be recorded and displayed.

Power & Energy Mode
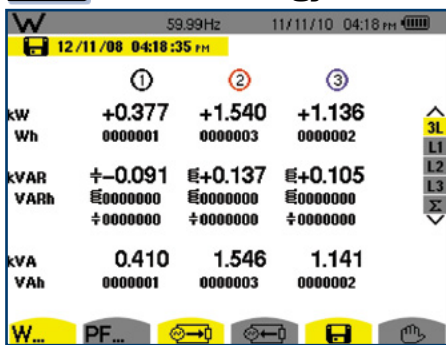
Power and Energy can be displayed by phase or total (Σ), including kW, Watt-hours, VAR hours, VA and VA hours. The energy can be totalized and the inductive and capacitive components are also displayed.

Mode

Date and time

Battery status

Graph legend

Scale

Display choices

Function buttons specific to the screen in use

Vertical cursor

Graph of real-time data

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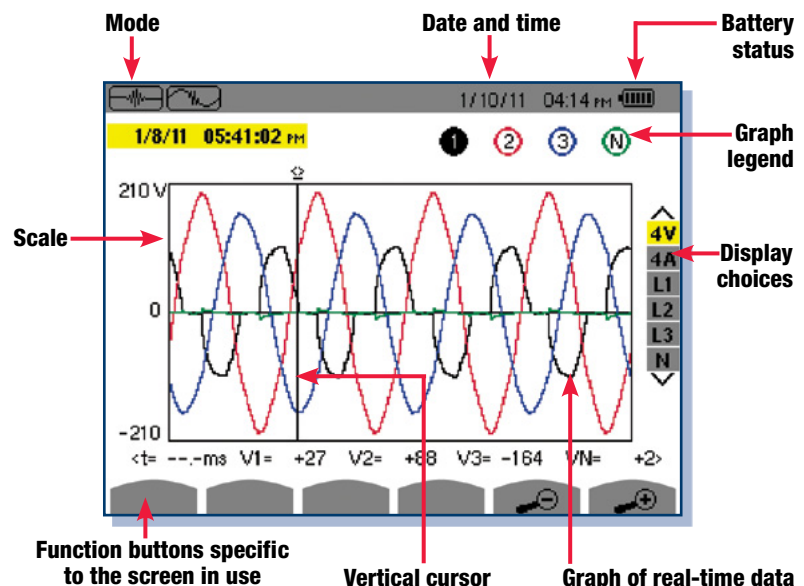
Data*View*® Data Analysis and Reporting Software
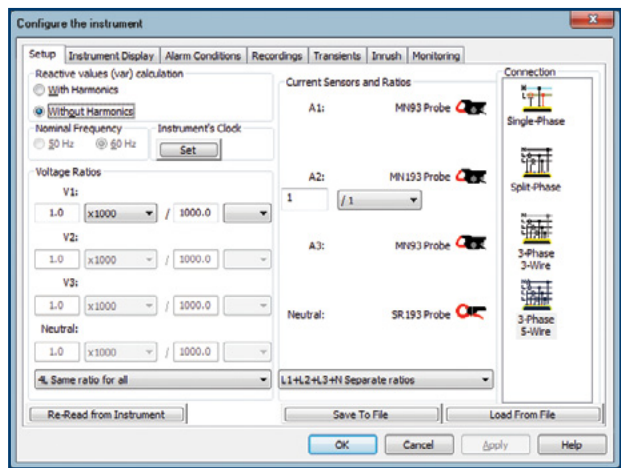
Clear and easy setup of all functions from one tabbed dialog box.
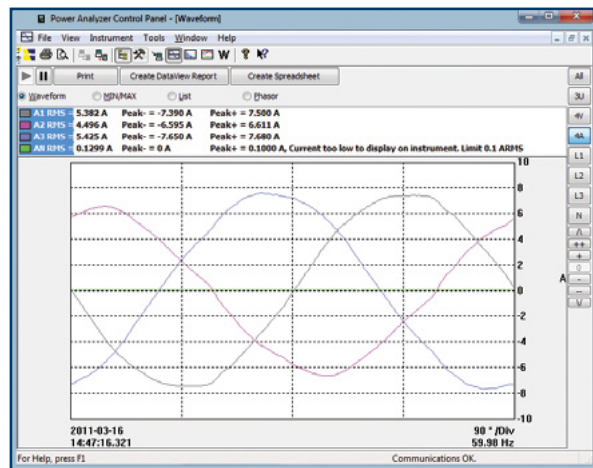
Display real-time waveforms by phase, parameter or total.
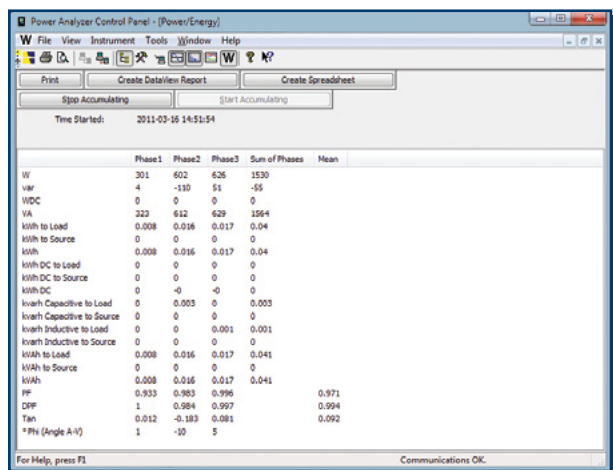
Display power and energy parameters – both instantaneous and total.
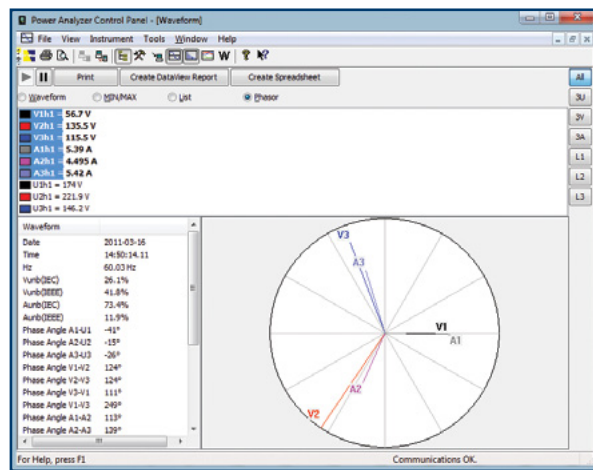
Display real-time phasor diagrams. Includes unbalance for both voltage and current.
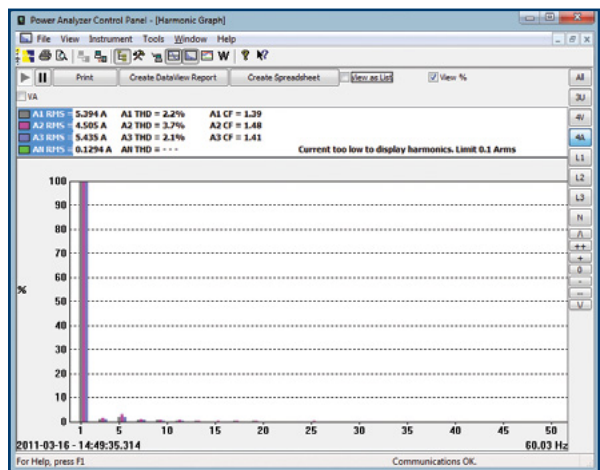
Display all harmonics from 1st to 50th in bar graph form for voltage, current and power.
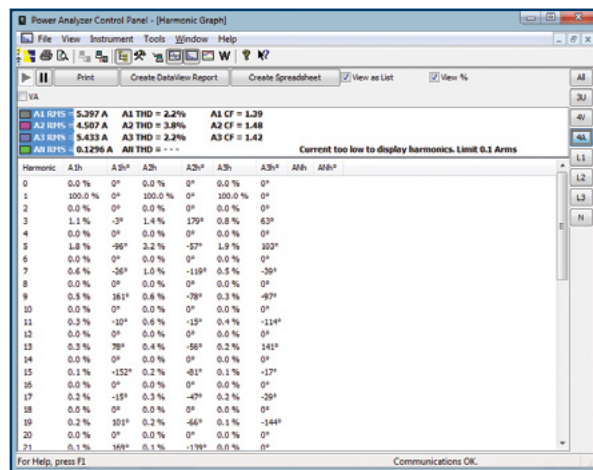
Display harmonics in a text table from harmonic 0 (DC) through the 50th.

▶ The analysis screens shown for Model 8335 used DataView® Software Version 3.06.0015 and Firmware Version 2.6

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Data*View*®
Data Analysis and Reporting Software
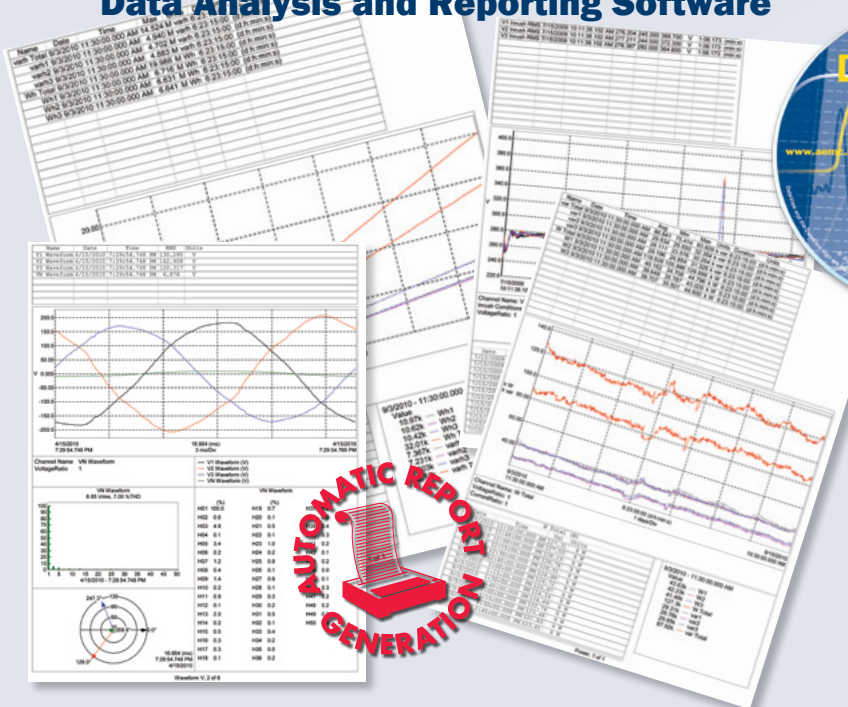
DataView® is included with the PowerPad® Model 8335.

Reports can be displayed on a PC and printed. Each report includes all test results in a tabular and graphic format, as well as operator and test site information. Comments typed by the operator will also be included.
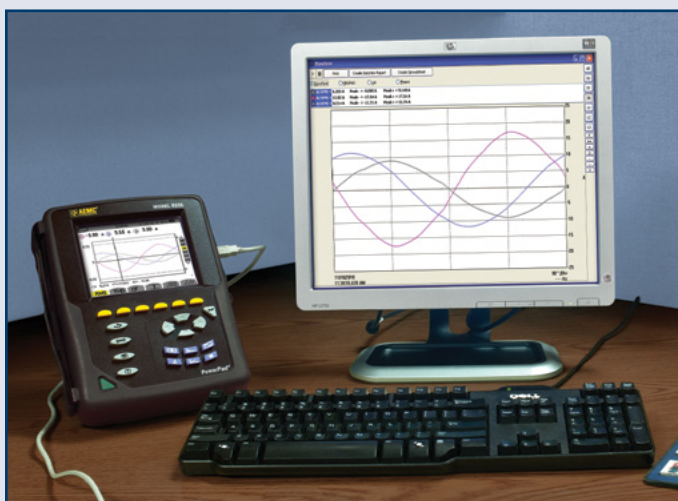
Display waveforms in real time on your computer.

DataView® software provides a convenient way to configure and control power analysis tests from a computer. Through the use of clear and easy-to-use tabbed dialog boxes, all PowerPad® functions can be configured and tests can be initiated. Results can be displayed in real-time and stored on a PC. Reports may be printed along with the operator's comments and analysis.

Configure all functions of the PowerPad® Model 8335

► Display and analyze real-time data on a PC

► Configure all PowerPad® functions and parameters from your PC

► Record trend data directly to the PC

► Customize views, templates and reports to meet specific needs

► Create and store a complete library of configurations that can be uploaded to the PowerPad® as needed

► Zoom in and out and pan through sections of the graph to analyze the data

► Display waveforms, trend graphs, harmonic spectrums, text summaries, transients, event logs and stored alarms

► Print reports using standard or user designed custom templates

► Selectively review individual channels, phases on total network recordings

► Keep track of accumulated energy over time

► Create user-specific cover sheets for reports that identify specific data that includes operator, tests site and narrative associated with the data

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Data*View*®
Data Analysis and Reporting Software

The DataView® Control Panel

The monitoring feature allows the user to set up a recording with selected parameters for which specific user-defined pass/fail criteria can be applied. The objective is to set up a measurement chart of relevant parameters and monitor them to establish whether an electrical complex of source and loads is within control limits. Monitoring can also be set up without any thresholds for pass/fail criteria. The software structure of set up is flexible and allows the user full customization. The progress of the measurement set up can be viewed in real-time as the measurement is progressing. A customized report can automatically be generated at the end of the monitoring.
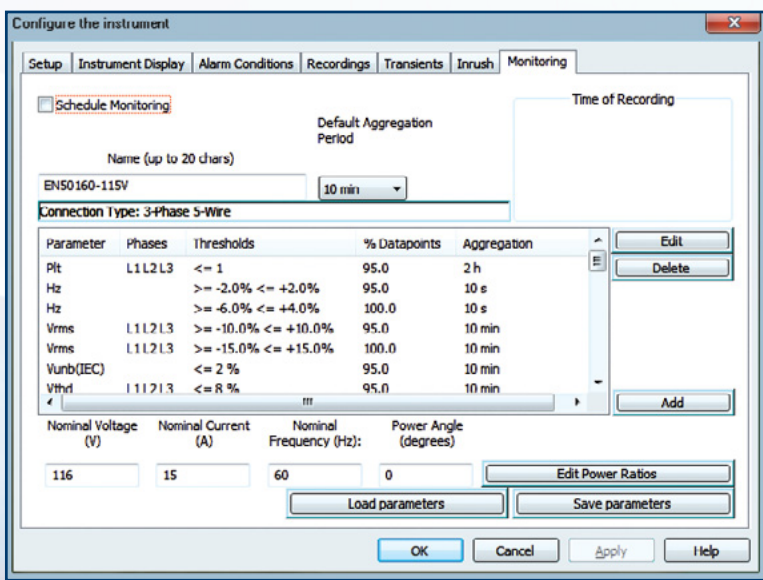
Monitoring tab allows complete control of Monitoring conditions.

The User Can:

► Name the Monitoring
► Select Aggregation period from 1s to 2 hours
► Schedule Monitoring by selecting Start and Stop Date/Time
► Load Parameters from a file
► Save all the Parameters to re-load later
► Edit Power Ratios
► Add to the Parameter list
► Edit conditions for any Parameter
► Delete a given Parameter from the list
► Monitor an active recording session or a saved session
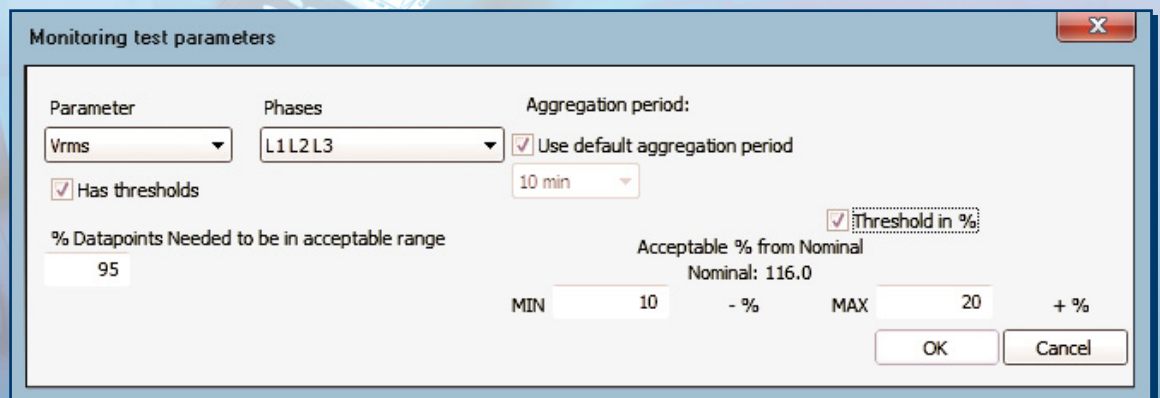
Select Parameters and Monitoring conditions.

Technical Assistance (800) 343-1391

AEMC® INSTRUMENTS

CONTROL FUNCTIONS

Four current inputs

Five voltage inputs

The color-coded input ID markers provide dedicated current probe inputs and voltage inputs.

Color LCD display ¼ VGA (320 x 240")

Hand strap

Six variable function buttons

Enter button

Menu return button

Cursor movement, browsing & selection buttons

Instrument configuration button (SET-UP)

Snapshot button

Direct display mode buttons

Help button

ON/OFF button

Dirt resistant over molded case

Optically coupled bidirectional USB port

SAFETY 600V CAT IV RATING

SAFETY 1000V CAT III RATING

Charger port
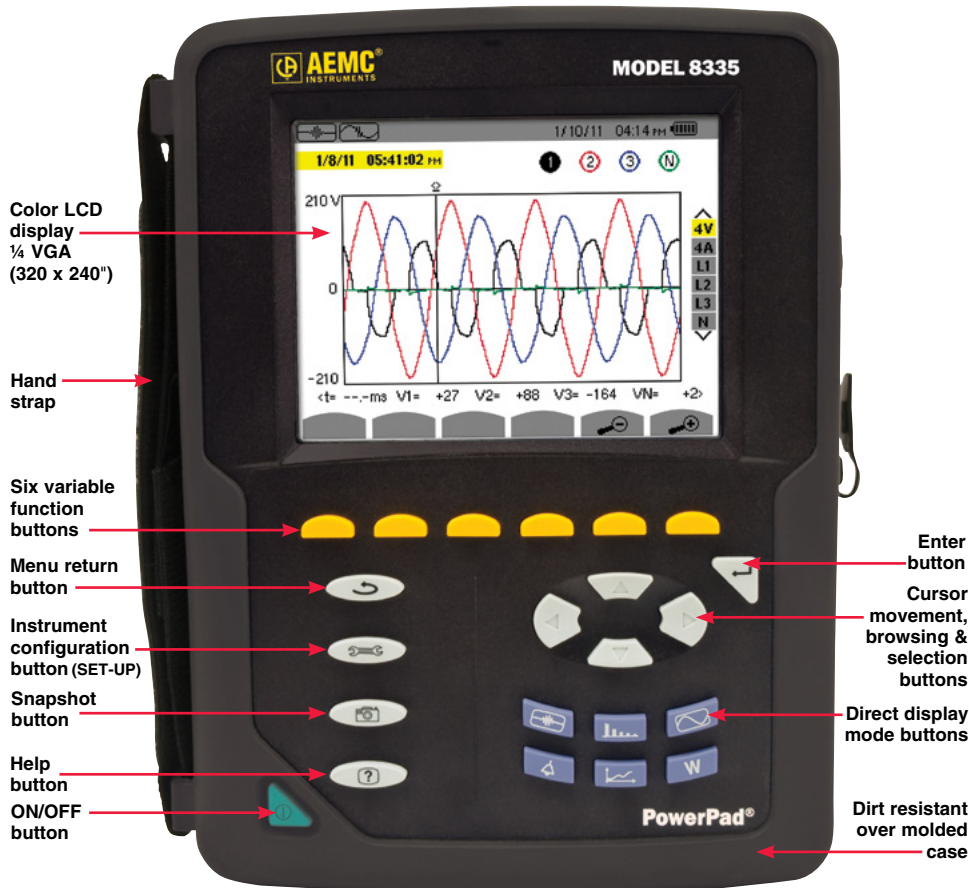
The connections located on the side of the Model 8335 provide USB cable and DC recharge voltage supplied from external charger.

Technical Assistance (800) 343-1391

AEMC INSTRUMENTS

ORDERING INFORMATION

DESCRIPTION	CATALOG NO.

Model 8335 and all kits include: five 10 ft black voltage leads, five black alligator clips, twelve color-coded input ID markers, USB cable, NiMH battery, 110/240V power adapter with US power cord, DataView® software, extra large classic tool bag, soft carrying pouch and user manual.

PowerPad® Model 8335 (no probes) . . . . **Cat. #2136.20**

PowerPad® Model 8335 w/4 MN93-BK . . . . **Cat. #2136.21**
Includes the PowerPad® Model 8335 and four MN93-BK (200A) probes

PowerPad® Model 8335 w/4 SR193-BK . . . . **Cat. #2136.22**
Includes the PowerPad® Model 8335 and four SR193-BK (1200A) probes

PowerPad® Model 8335 w/4 24" AmpFlex® 193-24-BK . . . . **Cat. #2136.23**
Includes the PowerPad® Model 8335 and four 24" AmpFlex® 193-24-BK (6500A) sensors

PowerPad® Model 8335 w/4 36" AmpFlex® 193-36-BK . . . . **Cat. #2136.24**
Includes the PowerPad® Model 8335 and four 36" AmpFlex® 193-36-BK (6500A) sensors

PowerPad® Model 8335 w/4 MR193-BK . . . . **Cat. #2136.25**
Includes the PowerPad® Model 8335 and four MR193-BK (1000A$_{AC}$/1400A$_{DC}$) probes

PowerPad® Model 8335 w/4 MN193-BK . . . . **Cat. #2136.26**
Includes the PowerPad® Model 8335 and four MN193-BK (5A/100A) probes

PowerPad® Model 8335 w/4 MA193-10-BK. . . . . **Cat. #2136.27**
Includes the PowerPad® Model 8335 and four MA193-10-BK (1000A) probes

PowerPad® Model 8335 w/3 193-24-BK and 1 MN193-BK. . . . . **Cat. #2136.28**
Includes the PowerPad® Model 8335 and three 24" AmpFlex® 193-24-BK (6500A) sensors and one MN193-BK (5A/100A) probe

Accessories (Optional)

AC/DC Current Probe Model SL261 (10A-100mV/A, 100A-10mV/A, AC/DC, BNC). . . . . **Cat. #1201.51**
Adapter – BNC Adapter for use with AC/DC Current Probe Model SL261 . . . . **Cat. #2140.40**
Extra Large Classic Tool Bag . . . . **Cat. #2133.73**
Replacement - Soft Carrying Pouch . . . . **Cat. #2140.15**
5A Adapter Box (special order only) . . . . **Cat. #2140.17**
Replacement - Battery 9.6V NiMH . . . . **Cat. #2140.19**
AC Current Probe Model MR193-BK (1000A$_{AC}$/1400A$_{DC}$) with 10 ft lead . . . . **Cat. #2140.28**
AC Current Probe Model MN93-BK (200A) with 10 ft lead . . . . **Cat. #2140.32**
AC Current Probe Model SR193-BK (1000A) with 10 ft lead. . . . . **Cat. #2140.33**
AmpFlex® Sensor Model 193-24-BK 24" (6500A) with 10 ft lead . . . . **Cat. #2140.34**
AmpFlex® Sensor Model 193-36-BK 36" (6500A) with 10 ft lead. . . . . **Cat. #2140.35**
AC Current Probe Model MN193-BK (5A/100A) with 10 ft lead . . . . **Cat. #2140.36**
Replacement - Set of 5, 10 ft (3m) black leads w/5 black alligator clips. . . . . **Cat. #2140.43**
Lead, one 10 ft (3m) black lead w/black alligator clip . . . . **Cat. #2140.44**
Replacement - Set of 12 Color-coded input ID markers. . . . . **Cat. #2140.45**
Replacement - 5 ft USB cable. . . . . **Cat. #2140.46**
MiniFlex® Sensor 10" Model MA193-10-BK (1000A) . . . . **Cat. #2140.48**

AEMC ONE SOURCE®
For All Your Electrical Test & Measurement Instruments