

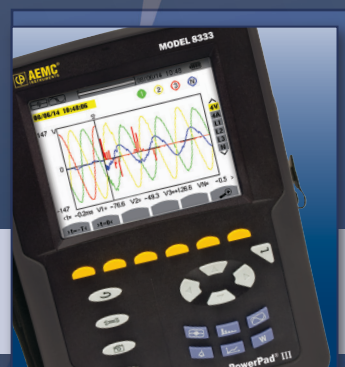
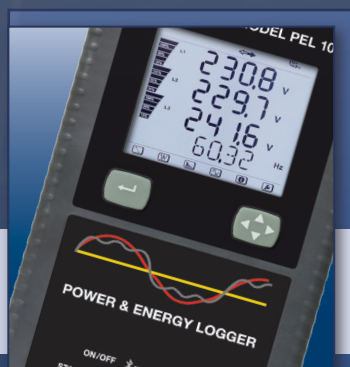
POWER QUALITY

For all of your Power Quality needs...

A Family of Power Quality Analyzers, Loggers & Meters to Choose From

We offer an extensive line of portable instruments to accommodate a wide range of applications. Electrical monitoring, harmonic detection & analysis, utility testing, energy management, power factor analysis and correction, power demand and consumption, kW measurement, industrial power systems, commercial maintenance and troubleshooting.

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



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.

 **Technical Hotline: (800) 343-1391**
 **www.aemc.com**

 **AEMC**®
INSTRUMENTS
CHAUVIN ARNOUX GROUP

Power & Energy Loggers



Models PEL 102, PEL 103 & PEL 105

Power & Energy Loggers PEL 100 Series

Monitor your power & energy usage and costs locally or from anywhere in the world!



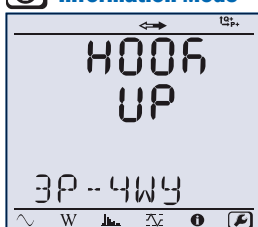
*for Model PEL 105

*for Models PEL 102 & PEL 103



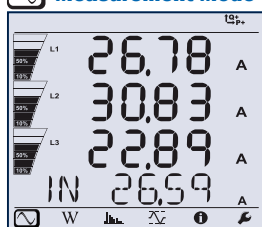
*for all PEL 100 Models

Information Mode



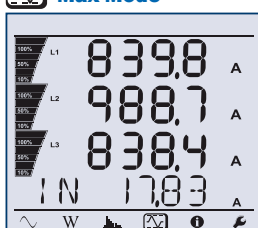
Hook up, voltage and current ratios and aggregation period can be configured from the front panel of the PEL 103.

Measurement Mode



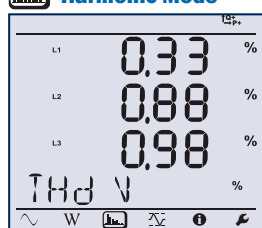
Real-time updates are displayed for voltage, current, power, frequency, power factor and tangent.

Max Mode



Max values for voltage, current (including neutral current), power and harmonics.

Harmonic Mode



Total Harmonic Distortion (THD) can be displayed by phase or phase to phase. Neutral current THD can also be displayed.

FEATURES

- ▶ Energy measurements VAh, Wh (source/load indication) and varh (including quadrant indication)
- ▶ Power measurements: VA, W and var
- ▶ Automatic recognition of the connected current sensors/probes
- ▶ PF, CF, Cos (ϕ), Tan (ϕ), DPF, THD and Hz
- ▶ Harmonics up to the 50th order for 50/60Hz voltages and currents and 7th order for 400Hz
- ▶ Simultaneous RMS measurements of each phase at 128 samples/cycle and DC
- ▶ AC current measurements from 200mA up to 10,000A using flexible current sensors
- ▶ AC/DC Current Probe, Model J93, is available for measuring current up to 5000ADC & 3500AAC
- ▶ Provides all the necessary functions for power and energy data logging for 50Hz, 60Hz, 400Hz & DC distribution systems
- ▶ Simple-to-use, single-, dual- (split-phase) and three-phase (Y, Δ) power and energy loggers
- ▶ Designed to work in 1000V CAT III and 600V CAT IV environments and fits in many distribution panels
- ▶ Configure current and voltage ratios to match PT and CT ratios
- ▶ Power adapter allows the PEL to be powered from a phase input
- ▶ PEL 103 & PEL 105 can be configured from the front panel, DataView® control panel or the Android App (available through Google Play)
- ▶ Updated features in the DataView® software
- ▶ USB, LAN, Ethernet, Bluetooth (Class 1 wireless communication, up to 300 feet away, line of sight), and Wi-Fi (PEL 105 only)
- ▶ Satisfies the monitoring requirements of NEC 220.87
- ▶ Record cost of energy usage including time of use
- ▶ Bright blue, four line LCD on the Model PEL 103
- ▶ Storage of measured and calculated values on an SD-Card or SDHC-Card (accepts 2GB to 32GB)
- ▶ Includes DataView® software for data downloading and storage, real-time display, analysis & report generation with supplied pre-defined or custom templates
- ▶ Pole mountable (PEL 105)

PEL 102 & PEL 103 INCLUDE

Small classic tool bag, 5 ft USB cable, four 10 ft black voltage leads and alligator clips, power cord, 12 color-coded ID markers, MultiFix mounting system, safety card for the PEL, 8.4V NiMH battery, sensor compliance sheet, 8GB SD-Card with USB SD-Card reader, quick start user guide and USB drive supplied with DataView® software and user manual.



See page 4 for ordering information.

Power & Energy Loggers

ANDROID™ APP For PEL 100 SERIES



Android is a trademark of Google Inc. The Android robot is reproduced or modified from work created and shared by Google and used according to terms described in the Creative Commons 3.0 Attribution License.

- Configure
- Display data in real-time
- For use on most devices with an Android platform

POWER ADAPTER for PEL 102 & PEL 103*

- Powers from phase to neutral (110 to 277VAC) or phase to phase (110 to 480VAC)
- Provides isolation between measurement and instrument power



* Sold as an accessory
Cat. #2137.77

POLE MOUNTING KIT for PEL 105*

- Set of two, with hardware



* Sold as an accessory
Cat. #2137.82

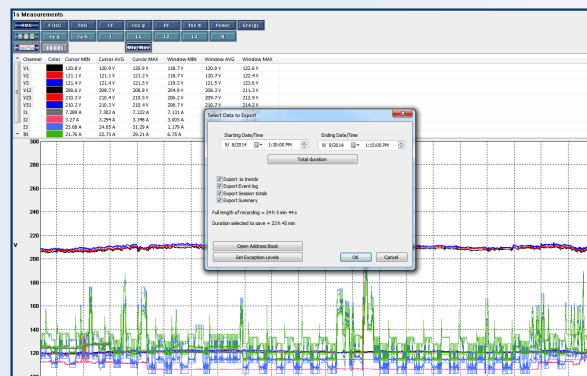
PEL 105 INCLUDES

Extra-large tool bag, accessory pouch, 5 ft USB cable, five 10 ft black voltage leads (waterproof cap) with alligator clips, power adapter 110/230V with US power cord, four water-tight AmpFlex® 196A-24-BK (included with Cat. #2137.59 only), 9.6V NiMH battery, 8GB SD-Card, USB SD-Card reader, twelve color-coded input ID markers, quick start guide, and a USB drive supplied with DataView® software and user manual.

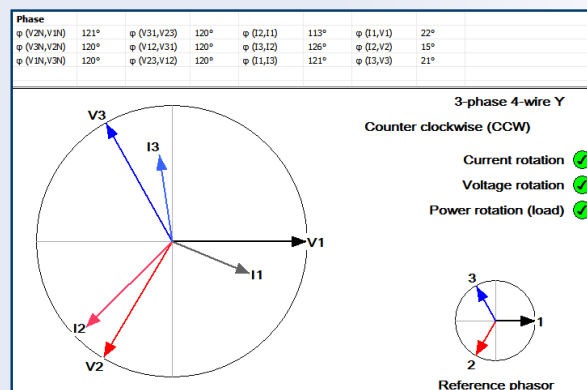
(See page 14 for optional current probes.)



PEL 103 & PEL 105 can be configured directly from the front panel, DataView® control panel or the Android App.



Export 1 Sec Data: Create DataView® reports from 1 sec data (200 ms for PEL 105), as well as aggregate data



Updated Phasor Diagram Screen: Now shows actual and reference diagrams and indicates whether voltage, current and/or power orientations are as expected

Options							
Default Tariffs for new sessions							
Default Tariffs for new sessions							
<input checked="" type="checkbox"/> Currency symbol first <input type="checkbox"/> Space between symbol and value <input type="text" value="2"/> Decimal places							
<input checked="" type="checkbox"/> Enable tariff for P Load (Wh)							
Override base	Start time	End time	New Tariff	Monday	Tuesday	Wednesday	
<input checked="" type="checkbox"/>	12:00 AM	7:59 AM	0.10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	7:01 AM	6:00 PM	0.10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Time of Use Selection: Program up to 8 different tariffs for energy cost based on day of week and time of day

► For more information about the PEL 100 Series...Visit WWW.PEL100.US

Power & Energy Loggers

MODELS PEL 102, PEL 103 & PEL 105

GENERAL				
Sampling Frequency		128 samples per cycle; 50/60Hz (16 samples/cycle 400Hz)		
Data Storage Rate		1 per second (200ms also available on PEL 105)		
Demand Period Storage Rate		User selectable (1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30 and 60 minutes)		
Recorded Parameters (Single- and Poly-Phase)		V, I, W, VA, var, PF, Tan, Wh, VAh, varh, THD (V and I), Individual harmonics (from 1 through 50 per phase); Crest Factor (CF), Cos ϕ / DPF		
Front Panel Indicator LEDs		Bluetooth active, recording in progress, phase connection reversal, overload, battery charging and SD-Card status		
Storage Capacity		8GB SD-Card included / SD-Cards up to 32GB formatted FAT32 are supported		
INPUTS	Voltage	PEL 102/103 – 3 input channels; PEL 105 – 4 input channels via 4mm safety banana jacks		
	Current	PEL 102/103 - 3 input channels; PEL 105 – 4 input channels via custom 4 pin jacks that accept AEMC® probes and sensors		
ELECTRICAL				
Voltage Measurement		RANGE	RESOLUTION*	ACCURACY*
50/60Hz		42.5 to 69Hz	—	±0.1Hz
Single-Phase RMS Voltages		10 to 1000Vrms	0.1V	±0.2% Rdg ±0.2V
Phase-to-Phase RMS Voltages		17 to 1700Vrms	0.1 to 1V	±0.2% Rdg ±0.4V
400Hz		340 to 460Hz	—	—
Single-Phase RMS Voltages		10 to 600Vrms	0.1V	±1% Rdg ±1V
Phase-to-Phase RMS Voltages		17 to 1200Vrms	0.1 to 1V	±1% Rdg ±1V
DC		100 to 1000V	0.1V	±1% Rdg ±3V (typical)
PT Ratios		from 1:1 (50V:50V) to 13,000:1 (650,000V:50V)	0.01 to 0.1V	—
Current Measurement		A193*** (PEL 102/103)	A196*** (PEL 105)	
Nominal range for current probes supplied with kit		200mA to 10,000A	200mA to 10,000A	—
CT Ratios		Programmable from 1:1 to 25,000:1 (probe dependent)		
Power Measurements		RANGE	RESOLUTION*	ACCURACY*
Active Power (P)*		-2 to 2GW	0.001W	±0.5% Rdg ±0.005% Pnom
Reactive Power (Q)*		-2 to 2Gvar	0.001var	±1% Rdg ±0.01% Qnom
Apparent Power (S)*		0 to 2GVA	0.001VA	±0.5% Rdg ±0.005% Snom
Power Factor		-1 to 1	0.001	±0.05
Tangent ϕ (active/reactive power ratio)		-3.2 to 3.2	0.001	±0.02
Energy Measurements		RANGE	RESOLUTION*	ACCURACY*
Active Energy (EP)		0 to 4 x 10 ⁹	1Wh	±0.5% Rdg
Reactive Energy (EQ)		0 to 4 x 10 ⁹	1varh	±2% Rdg
Apparent Energy (ES)		0 to 4 x 10 ⁹	1Vah	±0.5% Rdg
THD		±655%		
Individual Harmonics		1 to 50 displayed in percentage; 1 to 7 at 400Hz		
External Supply		110V/250V (10%) @ 50/60Hz; 400Hz		
Power From Phase Measurement		Requires external Power Adapter Cat #2137.77; powers from 100 to 480Vac (PEL 102 & PEL 103); Powers from up to 1000Vac through voltage inputs (PEL 105)		
Back-Up Power Source/Charge Time		Rechargeable 8.4V NiMH battery pack / Approximately 5 hours / 9.6V (PEL 105)		
Battery Life		30 minutes minimum, 60 minutes typical		
MECHANICAL				
Communication Ports		USB 2.0, Ethernet (RJ45), Wireless Bluetooth Class 1 **/ Wi-Fi (PEL 105 only)		
Dimension/Weight		10.08 x 4.92 x 1.46" (256 x 125 x 37mm) / 2.20lbs (1kg) (PEL 102 & PEL 103); 9.8 x 7.8 x 2.6" (250 x 200 x 67mm) / 8.8lbs (4kg) (PEL 105)		
Case		Double insulated, rubber over-molded, polycarbonate UL94 V1 rated (PEL 102 & PEL 103)		
MISCELLANEOUS				
Safety Rating/CE Rating		Complies with IEC 61010-1: Ed3, and IEC 61010-2-030: Ed1 for 1000V CAT III / 600V CAT IV (PEL 102 & PEL 103) & 1000V CAT IV (PEL 105), Pollution Degree 2 / Yes		
Display Type for Model PEL 103 / PEL 105		2.63 x 2.16" (67 x 55mm), four line, monochrome, backlit LCD with adjustable brightness and contrast		

* Maximum value is current probe dependent.

** Computers with Class II Bluetooth will restrict range to 40ft. Computers without Bluetooth will require a Class I or Class II Bluetooth radio adapter.

*** Maximum current reduced by a factor of 2 for 400Hz fundamental frequency.

MODELS PEL 102, PEL 103 & PEL 105 ORDERING INFORMATION

CATALOG NO.

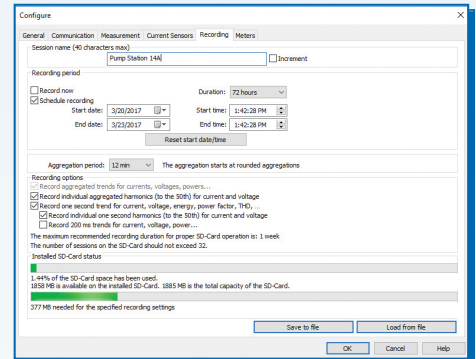
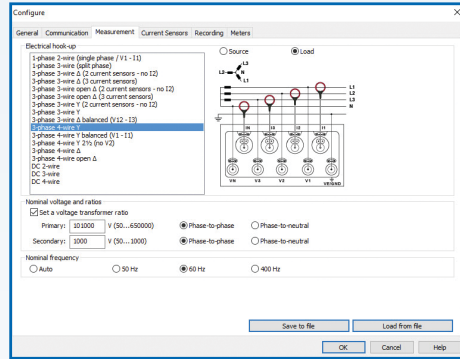
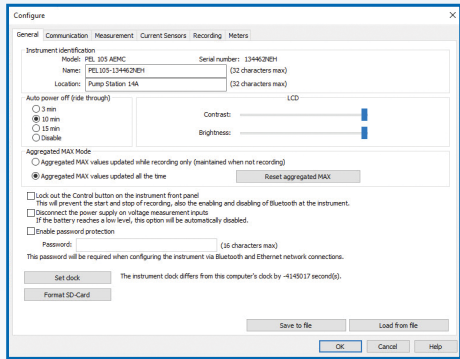
Power & Energy Logger Model PEL 102 (no LCD w/3 MA193-10-BK Sensors)	2137.51
Power & Energy Logger Model PEL 103 (with LCD w/3 MA193-10-BK Sensors)	2137.52
Power & Energy Logger Model PEL 105 w/o Sensors (Waterproof IP67)	2137.57
Power & Energy Logger Model PEL 105 w/4 196A-24-BK (AmpFlex® – Waterproof IP67)	2137.59
Power & Energy Logger Model PEL 102 (no LCD or Sensors)	2137.61
Power & Energy Logger Model PEL 103 (with LCD, no Sensors)	2137.62

See page 14 for other current probes available.

DataView® Software Included

DataView®

Data Analysis and Reporting Software For the Power & Energy Loggers



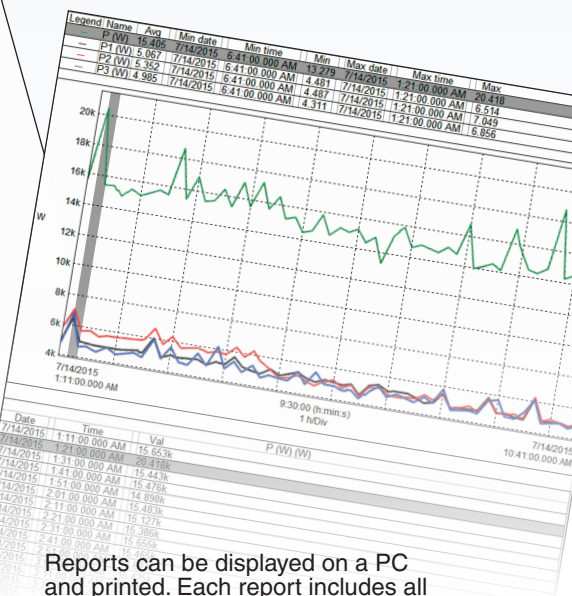
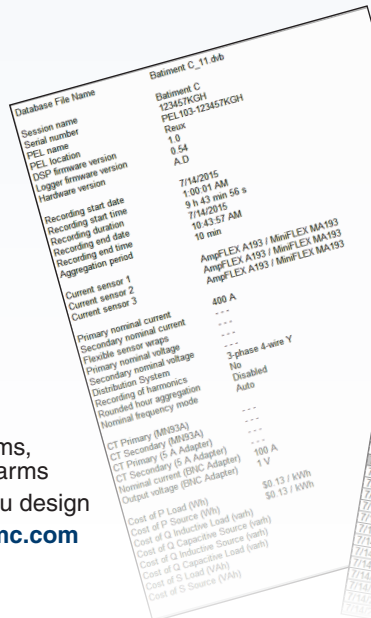
Basic information regarding Auto Power Off, instrument name and location, display contrast and brightness (Models PEL 103 & PEL 105), setting of the real-time clock and SD-card formatting is easily accomplished from the General tab.

The Measurement tab specifies the electrical distribution system, voltage ratios, nominal frequency and current probe options and ratios.

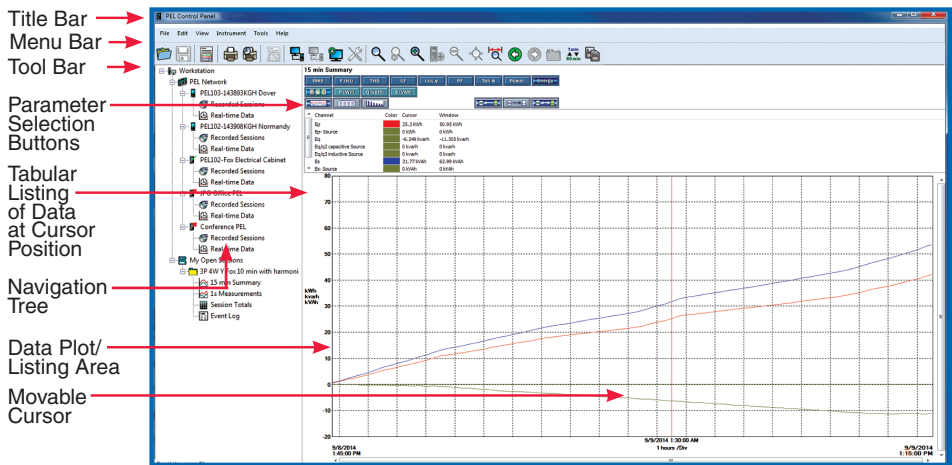
In the Recording tab, configure the instrument to measure (and record) over a user selectable recording period. Select demand intervals and view available memory for data storage.

Configure all functions of the PEL

- Display and analyze real-time data on your PC
- Configure functions and parameters from your PC
- Customize views, templates and reports to your exact needs
- Create and store a complete library of configurations that can be uploaded as needed
- Zoom in and out and pan through sections of the graph to analyze the data
- Download, display and analyze recorded data
- Display waveforms, trend graphs, harmonic spectrums, text summaries, transients, event logs and stored alarms
- Print reports using standard or custom templates you design
- Free updates are available on our website www.aemc.com



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.



Typical DataView® Functional, Digital & Graphical Display

Control Panel Trend View

In the PEL Control Panel you will find all the necessary tools and selection buttons to review recorded data as trend plots or tabular lists.



Technical Assistance (800) 343-1391

www.aemc.com 5

Three-Phase Power Quality Analyzers



PowerPad® III Model 8435

Four Voltage and Four Current Inputs

SD-Card memory capacity up to 32GB for trend data storage. Up to 50 captured snapshots, 210 captured transients, 1 inrush and 10,000 alarm events.



MODEL 8435	
ELECTRICAL	
Sampling Frequency	256 samples/cycle
Data Storage	SD-Card for trend recording; Additional separate 12.5MB partitioned memory for snapshots, transient/inrush & alarms
Voltage (TRMS)	Phase-to-Phase: 2000V Phase-to-Neutral: 1000V Voltage Ratio: up to 100,000 : 1
Current (TRMS)	MN Clamp: 5mA to 6A/120A or 1 to 240A SR Clamp: 0 to 1200A MR Clamp: 0 to 1000Aac, 0 to 1400Aac MiniFlex®: 10 to 3000A AmpFlex®: 10 to 10kA SL261 Clamp: 50mA to 100Aac/dc J93: 50 to 3500Aac/dc Current Ratio: 10mA to 50kA
Frequency (Hz)	40 to 69Hz
Other Measurements	kW, kvar, kVA, PF, DPF, kWh, kvarh, kVAh, K-Factor, Flicker
Harmonics	1 st to 50 th , Direction, Sequence
Power Source	9.6V NiMH rechargeable battery pack (included) External AC supply: 110/230Vac ±10% (50/60Hz)
Battery Life	≥8 hours with display on; ≤35 hours with display off (record mode)
MECHANICAL	
Communication Port	Optically isolated USB
Display	¼ VGA (320 x 240) color LCD display with adjustable brightness & contrast
Dimensions	10.6 x 9.8 x 7.1" (270 x 250 x 180mm)
Weight	8.2lbs (3.7kg) with batteries
Safety Rating	EN 61010, 600V CAT IV ⁽¹⁾ , 1000V CAT III, Pollution Degree 2

⁽¹⁾When used with SR193 or AmpFlex® probes.
600V CAT III with MN193 or MR193 probes.

FEATURES

- ▶ Measurement of TRMS voltages up to 1000Vrms AC/DC for two-, three-, four- or five-wire systems
- ▶ Measurement of TRMS currents up to 10KArms (sensor dependent)
- ▶ Direct measurement of neutral current & voltage
- ▶ Frequency measurement (40 to 69Hz systems)
- ▶ Record and display trend data as fast as once per second for one month for up to 25 variables
- ▶ Transient detection on all V and I inputs (up to 210)
- ▶ Selectable PT and CT ratios
- ▶ Inrush current measurement
- ▶ Calculation of Crest Factors for V and A
- ▶ Calculation of the K-Factor for transformers
- ▶ Calculation of short-term flicker and three-phase voltage unbalance
- ▶ Measures harmonics (referenced to the fundamental or RMS value) for voltage, current or power, up to 50th harmonic
- ▶ Displays of harmonic sequencing and direction and calculation of overall harmonics
- ▶ Real-time display of phasor diagrams including values and phase angles
- ▶ Measurement of active, reactive and apparent power per phase and their respective sum total
- ▶ Calculation of power factor, displacement power factor and tangent factor
- ▶ Recording, time stamping and characterization of disturbance (swells, sags and interruptions, exceedance of power and harmonic thresholds)
- ▶ 12.5MB internal memory; Alarm, Snapshot and Transient/Inrush memories are separate
- ▶ Measurement of energy kVAh, kvarh & kWh
- ▶ The Max and Min RMS measurements are calculated every half-period
- ▶ Includes DataView® software for configuring, real-time display, analysis and report generation
- ▶ 65µs/sample transient recording

MODEL INCLUDES

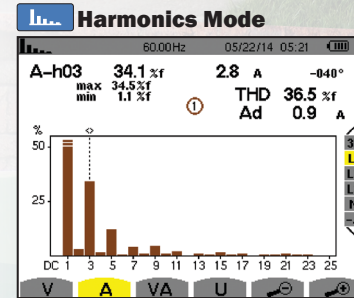
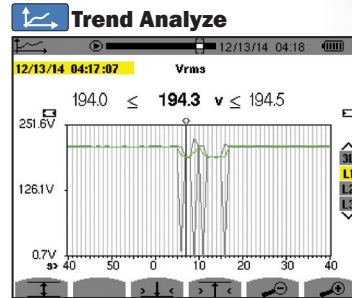
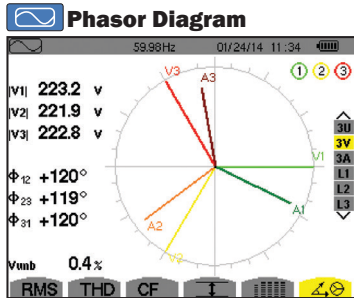
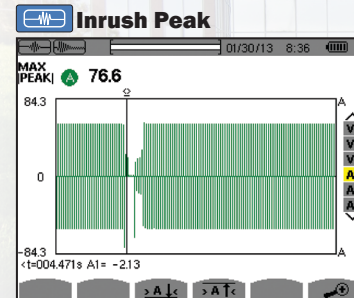
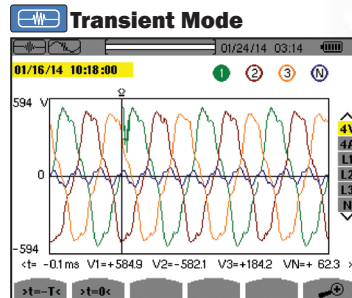
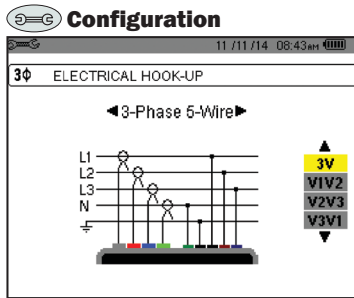
Includes extra large tool bag, accessory pouch, 5 ft USB cable, five 10 ft black voltage leads with alligator clips, 110V US power cord, four water-tight AmpFlex® 196A-24-BK (included with Cat. #2136.42 only), NiMH battery, SD-Card, twelve color-coded input ID markers, quick start guide, and a USB drive containing DataView® software and user manual.

(See page 14 for optional current probes.)



* Registration must be done within 30 days of the date of purchase.

Three-Phase Power Quality Analyzers



Watertight!



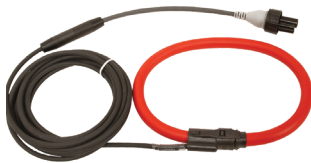
10 ft Lead with Alligator Clip and Watertight Connector
Cat. #2140.73



The voltage and current inputs, as well as the power cord connection, are constructed with screw on, watertight connectors rated to IP67.



24" Watertight AmpFlex Current Sensor
Cat. #2140.75
For use with Model 8435 only,
included with Cat. #2136.42



Installation of the Leads & Current Sensors
Color-coded ID markers are supplied with the PowerPad® III to identify the leads and input terminals.

ID Markers – Cat. #2140.45



Power Cord
Cat. #5000.63

MODEL 8435 ORDERING INFORMATION

PowerPad® III Model 8435 (No Sensors - Waterproof IP67)	2136.41
PowerPad® III Model 8435 w/4 196A-24-BK (AmpFlex® – Waterproof IP67).....	2136.42
Lead – One 10 ft (3M) black lead (waterproof cap) {rated 1000V CAT IV} & one black alligator clip	2140.73

CATALOG NO.

Three-Phase Power Quality Analyzers

PowerPad® III Model 8333

Four Voltage and Three Current Inputs

Memory partitioned for trend recordings, and up to 12 snapshot, 51 captured transients/inrush and 4000 alarm events



MODEL 8333	
Input Terminals	4 Voltage / 3 Current
Inputs	3 Voltage / 3 Current
Voltage (TRMS AC+DC)	2 to 1000V
Voltage Ratio	Phase-to-Phase: 2000V; Phase-to-Neutral: 1000V; Voltage Ratio: up to 100,000 : 1
Current (TRMS AC+DC)	MN93: 500mA to 200Aac; MN193: 0.005 to 100Aac SR193 Clamp: 1A to 1000Aac AmpFlex® or MA193 Clamps: 100mA to 10000Aac MR193 Clamp: 1A to 1300Aac/dc SL261 Clamp: 50mA to 100Aac/dc J93: 50 to 3500Aac/dc Current Ratio: up to 60kA
Frequency (Hz)	40 to 69Hz
Distribution Systems	1P 2W, 1P 3W, 2P 2W, 2P 3W, 2P 4W, 3P 3W, 3P 4W, 2 ½ Element & Aron meters
Power Values	W, VA, var, VAD, PF, DPF, cos φ, tan φ
Energy Values	Wh, varh, VAh, VADh
Harmonics	1 st to 50 th , Direction, Sequence; THD: 0 to 50, phase
Transient Mode	Up to 51
Flicker (Pst)	Yes
Unbalance	Yes
Recording	Yes
Alarm Mode	10 types; 4,000 recorded; 2 sessions
Waveform Mode	Calculated: AN (RMS, DC, CF, PK+/-) and FK
Peak	Yes
Phasor Display	Automatic
Snapshots	12
Sampling Frequency	256 samples/cycle for trend recording
Data Storage	SD-Card + 4MB partitioned for snapshot, transients, alarms and trend recording
Other Measurements	kW, kVAR, PF, DPF, kWh, kvarh, kVAh, K-Factor, Flicker
Communication Interface	USB
Languages	more than 27
Display	¼ VGA (320 x 240) color LCD w/ adjustable settings
Power Source	9.6V NiMH rechargeable battery pack (included) External AC Supply: 110/230Vac ±20% (50/60Hz)
Battery Life	≥8 hrs w/ display on; ≤35 hrs w/ display off (record mode)
Electrical Safety	IEC 61010, 1000V CAT III / 600V CAT IV
Protection	IP53
Dimensions / Weight	9.8 x 7.9 x 2.6" (240 x 180 x 67mm) / 4.3 lbs (1.95kg)

FEATURES

- ▶ True RMS single-, two- and three-phase measurements at 256 samples/cycle, plus DC
- ▶ Real-time color waveforms
- ▶ Easy-to-use on-screen setup
- ▶ Automatic current probe recognition and scaling
- ▶ True RMS voltage and current measurement
- ▶ Measures DC volts, amps and power
- ▶ Displays and captures voltage, current and power harmonics to 50th order, including direction, in real-time
- ▶ Captures transients down to 1/256th of a cycle
- ▶ Stores comprehensive data base of logged data
- ▶ Phasor diagram display
- ▶ VA, var and W per phase and total
- ▶ kVAh, varh and kWh per phase and total
- ▶ Neutral current calculated and displayed for three-phase
- ▶ Transformer K-factor display
- ▶ Power Factor, displacement PF display
- ▶ Captures up to 51 transients
- ▶ Short term flicker display
- ▶ Phase unbalance (current and voltage)
- ▶ Harmonic Distortion (total and individual) from 1st to 50th
- ▶ Alarms, surges and sags
- ▶ Screen snapshot function captures waveforms or other information on the display
- ▶ Includes FREE DataView® software for configuring data storage, real-time display, analysis and report generation

MODEL INCLUDES

Carrying bag, soft carrying pouch, three current probes, four black 10 ft voltage leads, 5 ft USB cable, four black alligator clips, twelve color-coded input ID markers, NiMH battery, 110/230V power adapter with US power cord, SD-Card, and USB drive supplied with product user manual and DataView® software. Additional test kits are available.



PHASE POWER ADAPTER FOR 8333 & 8336



* Sold as an accessory
Cat. #2140.77

KITS INCLUDE



3 AmpFlex® Flexible Sensors
24" long measures up to 10,000A

3 MN193
Dual range 100/5A current probes

* Registration must be done within 30 days of the date of purchase.
See page 10 for ordering information.

Three-Phase Power Quality Analyzers



PowerPad® III Model 8336

Five Voltage and Four Current Input Terminals

SD-Card for trend data storage and additional memory for: up to 50 snapshots, 210 captured transients/inrush and 10,000 alarm events

- ▶ **TFT Color Display!**
- ▶ **Meets IEC 61000-4-30 Class B Standard Specifications**



MODEL 8336	
Input Terminals	5 voltage / 4 current
Inputs	4 voltage / 4 current
Voltage (TRMS AC+DC)	2 to 1000V
Voltage Ratio	up to 100,000 : 1
Current (TRMS AC+DC)	MN93: 500mA to 200Aac; MN193: 0.005 to 100Aac SR193 Clamp: 1A to 1000Aac AmpFlex® or MA193 Clamps: 100mA to 10000Aac MR193 Clamp: 1A to 1300Aac/dc SL261 Clamp: 50mA to 100Aac/dc J93: 50 to 3500Aac/dc Current Ratio: up to 60,000 : 1
Frequency (Hz)	40 to 69Hz
Distribution Systems	1P 2W, 1P 3W, 2P 2W, 2P 3W, 2P 4W, 3P 3W, 3P 4W and 3p 5W, 2 1/2 Element & Aron meters
Power Values	W, VA, var, VAD, PF, DPF, cos φ, tan φ
Energy Values	Wh, VARh, VAh, VADh
Harmonics	1 st to 50 th , Direction, Sequence; THD: 0 to 50, phase
Transients	up to 210
Flicker (Pst & Plt)	Yes
Inrush Mode	Yes, >10 min
Unbalance	Yes
Recording	Yes
Alarm Mode	40 types; 10,000 recorded
Peak	Yes
Phasor Display	Automatic
Data Storage	8GB SD card for storing trend data, 12.5MB internal memory for storing snapshot, transient, alarm and InRush data.
Display	Color 1/4 VGA TFT screen (320 x 240) diagonal 148mm
Snapshots	50
Electrical Safety	IEC 61010, 1000V CAT III / 600V CAT IV
Protection	IP53
Languages	more than 27
Communication Interface	USB
Battery Life	>13 hrs, 25 hrs in Record Mode
Power Supply	9.6V NiMH rechargeable battery pack (included) or external charger
Dimensions / Weight	9.8 x 7.9 x 2.6" (250 x 200 x 67mm) / 4.3 lbs (1.95kg)

FEATURES

- ▶ Measurement of TRMS voltages up to 1000Vrms AC/DC for two-, three-, four- or five-wire systems
- ▶ Measurement of TRMS currents up to 10,000Arms (sensor dependent)
- ▶ Direct measurement of neutral current & voltage
- ▶ Frequency measurement (40 to 69Hz systems)
- ▶ Record and display trend data as fast as once per second for one month for up to 25 variables
- ▶ Transient detection on all V and I inputs (up to 210)
- ▶ Selectable PT and CT ratios
- ▶ Inrush current measurement
- ▶ Calculation of Crest Factors for V and A
- ▶ Calculation of the K-Factor for transformers
- ▶ Calculation of short-term and long-term flicker
- ▶ Calculation of the Three-Phase voltage unbalance
- ▶ Harmonic measurements (referenced to the fundamental or RMS value) for voltage, current or power, up to 50th harmonic
- ▶ Displays of harmonic sequencing and direction and calculation of overall harmonics
- ▶ Real-time display of Phasor diagrams including values and phase angles
- ▶ Monitors the average value of any parameter, calculated for a period from 1 sec to 15 min
- ▶ Measurement of active, reactive and apparent power per phase and their respective sum total
- ▶ Calculation of power factor, displacement power factor and tangent factor
- ▶ Recording, time stamping and characterization of disturbances (swells, sags and interruptions, exceedence of power and harmonic thresholds)
- ▶ Internal Trend Recording memory; Alarm, Photo and Transient Inrush memories are separate
- ▶ Measurement of energy VAh, varh, Wh & VADh
- ▶ The Max and Min RMS measurements are calculated every half-period
- ▶ 65µs/sample trend recording
- ▶ Includes FREE DataView® software for configuring data storage, real-time display, analysis and report generation

MODEL INCLUDES

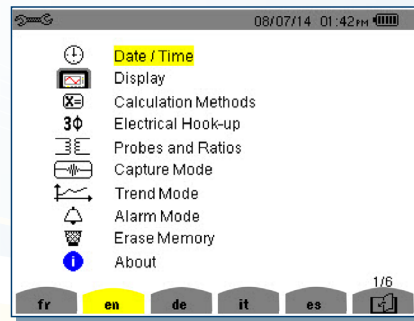
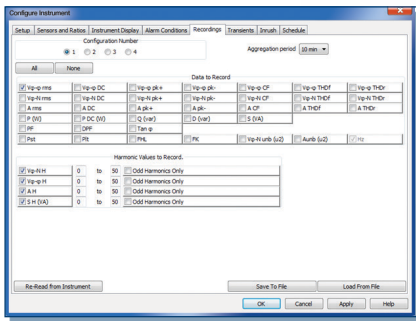
Large classic tool bag, soft carrying pouch, four current probes, five black 10 ft voltage leads, five black alligator clips, twelve color-coded input ID markers, USB cable, NiMH battery, 110/230V power adapter with US power cord, quick start user guide, SD-Card, and USB drive supplied with product user manual and DataView® software. Additional test kits are available.



* Registration must be done within 30 days of the date of purchase.
See page 10 for ordering information.

Model 8333 & 8336 Functional Displays

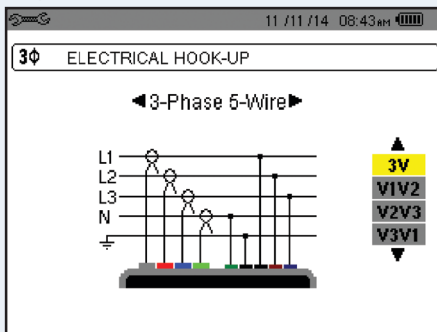
Quick & Easy Set Up From Front Panel or Computer



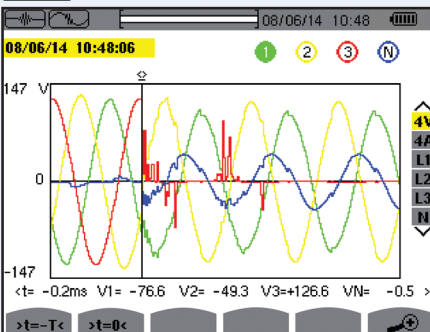
Configuration menu
provides direct access to all
configurable parameters on
the screen or from a computer.

PowerPad® III Large Functional Displays

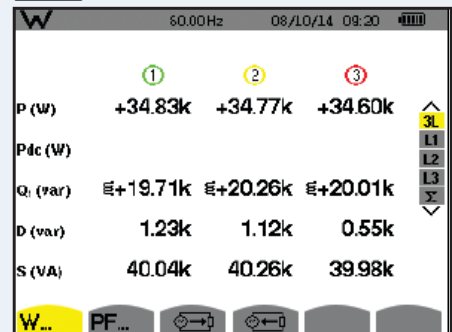
Configuration



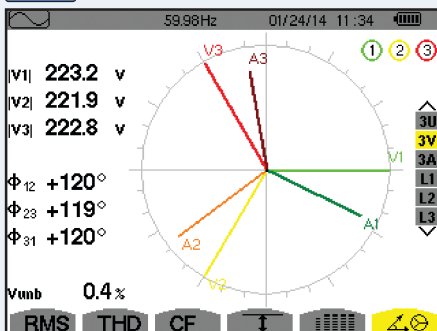
Transient Mode



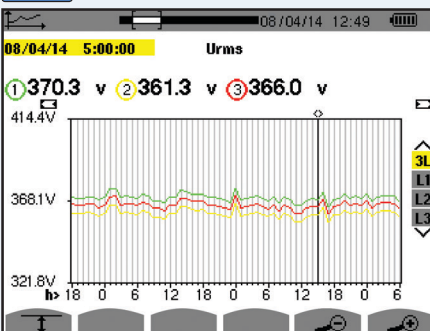
Power and Energy Mode



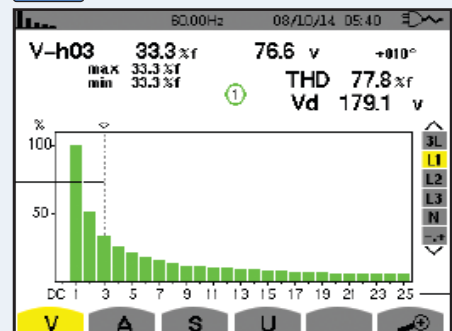
Phasor Diagram



Recording Mode



Harmonics Mode



MODELS 8333 & 8336 ORDERING INFORMATION

CATALOG NO.

PowerPad® III Model 8333 (No Probes).....	2136.10
PowerPad® III Model 8333 w/3 193-24-BK AmpFlex® Sensors	2136.11
PowerPad® III Model 8333 w/3 MN193-BK Probes.....	2136.12
PowerPad® III Model 8336 (No Probes).....	2136.30
PowerPad® III Model 8336 w/4 193-24-BK AmpFlex® Sensors	2136.31
PowerPad® III Model 8336 w/4 MN193-BK Probes.....	2136.32
Lead – 1 10 ft (3M) black lead w/black alligator clip.....	2140.44
Phase Power Adapter for Models 8333 & 8336 (accessory)	2140.77

See page 14 for other current probes available.

Power Quality Meter



Model 8220

A measurement tool for single-phase electrical parameters and distribution network disturbances



FEATURES

- ▶ Measures up to 660Vrms or VDC
- ▶ Measures up to 6500AAC or 1400ADC (probe dependent)
- ▶ Displays Min, Max and Average Volts and Amps, Crest Factor, Peak Value and K-Factor
- ▶ Calculates and displays Watts, var and VA, Power Factor and Displacement Power Factor for single-phase and balanced three-phase
- ▶ Measures power systems (kW, VA, kvar)
- ▶ Energy metering (kAh, varh, kWh)
- ▶ Displays total harmonic distortion (THD-F and THD-R) for voltage and current
- ▶ Displays individual harmonic values and % for volts and amps through the 50th harmonic
- ▶ The Max and Min RMS measurements are calculated every half-period
- ▶ Captures and displays inrush current
- ▶ Calculates and displays phase rotation and RPM
- ▶ Displays temperature in both °F and °C
- ▶ Displays resistance up to 2000Ω
- ▶ Conducts continuity and diode tests
- ▶ Stores up to nine complete sets of readings for all volt, amp, power and harmonic measurements
- ▶ Operates on batteries or optional power adapter
- ▶ Download stored data snapshots to DataView® software via optical USB port (included)
- ▶ Includes FREE DataView® software for configuring data storage, real-time waveform display, analysis and report generation

MODEL 8220	
ELECTRICAL	
Voltage (TRMS)	Phase-to-Phase: 660V, Phase-to-Neutral: 600V
Current (TRMS)	MN Clamp: 5mA to 6A/120A or 2 to 240A MR Clamp: 10 to 1000Aac/10 to 1400Aac SR Clamp: 3 to 1200A MiniFlex®: 10 to 1000A AmpFlex®: 10 to 6500A
Frequency (Hz)	40 to 70Hz
Other Measurements	kW, kvar, PF, DPF, Phase Rotation Temperature, RPM, Resistance, Continuity and Diode Test
Harmonics	1 st to 50 th
Power Source	Six 1.5V AA Alkaline batteries
Battery Life	≤8 hours with display on; ≤40 hours with display off (record mode)
Sampling Frequency	256 samples/cycle
Data Storage	Stores nine sets of readings for volts, amps, power and harmonics
MECHANICAL	
Communication Port	Optically isolated USB
Display	Three-line backlit color LCD digital display with custom icons, adjustable brightness and contrast
Dimensions	8.3 x 4.3 x 2.4" (211 x 108 x 60mm)
Weight	1.9 lbs (0.88kg)
Safety Rating	EN 61010, 600V CAT III, IP 54, Pollution Degree 2



MODEL INCLUDES

Carrying bag, black and red 10 ft voltage leads with alligator clips, optical USB cable, six 1.5V batteries, two safety test probes, and USB drive supplied with DataView® software and user manual.

MODEL 8220 ORDERING INFORMATION

Model 8220 (No Probes)	2130.90
Model 8220 w/MN93-BK	2130.91
Model 8220 w/24" AmpFlex® 193-24-BK	2130.93
Model 8220 w/MN193-BK	2130.96
Adapter 110V outlet w/4mm Banana Plug	2118.49
Multipurpose Carrying Pouch	2119.48
US 110V Power Adapter	2140.37
220V Power Adapter	2140.38

CATALOG NO.

See page 14 for other current probes available.



Technical Assistance (800) 343-1391

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Single-Phase Power Quality Analyzer



PowerPad® Jr. Model 8230

Measure and carry out diagnostic and power quality work on single- or three-phase balanced load networks



FEATURES

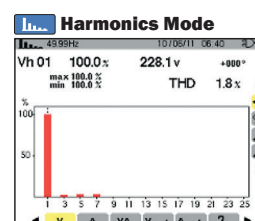
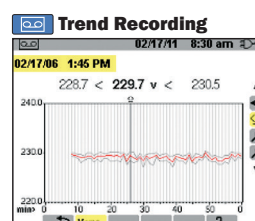
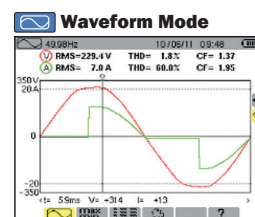
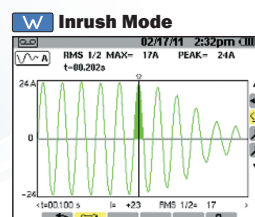
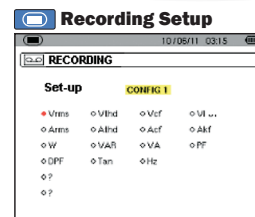
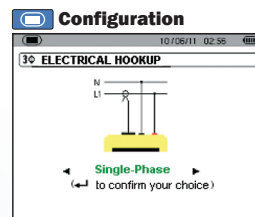
- ▶ Measures up to 660Vrms or VDC
- ▶ Measures up to 6500AC or 1400ADC (probe dependent)
- ▶ Displays Min, Max and Average Volts and Amps, Crest Factor, Peak value and K-Factor
- ▶ Calculates and displays Watts, var and VA, Power Factor and Displacement Power Factor for single-phase and balanced three-phase
- ▶ Measures and records power systems (kW, VA, kvar)
- ▶ Energy metering (kAh, varh, kWh)
- ▶ Configurable from DataView® software or front panel
- ▶ Displays total harmonic distortion (THD-F and THD-R) for voltage and current
- ▶ Displays individual harmonic values and % for Volts and Amps through the 50th harmonic
- ▶ Captures, displays and stores inrush current waveforms and statistics
- ▶ Stores up to eight screen captures
- ▶ Stores up to 1MB of trend recorded data
- ▶ Download stored data to DataView® software via optical USB port (included)
- ▶ Captures up to 4096 alarm events from up to 10 different thresholds
- ▶ The Max and Min RMS measurements are calculated every half-period
- ▶ Displays and records up to 17 different power quality parameters
- ▶ Includes FREE DataView® software for configuring data storage, real-time waveform display, analysis and report generation



MODEL INCLUDES

Carrying bag, black and red 10ft voltage leads with alligator clips, optical USB cable, set of six 1.2V AA NiMH battery, 110V US wall charger, and USB drive supplied with DataView® software and user manual.

MODEL 8230	
ELECTRICAL	
Voltage (TRMS)	Phase-to-Phase: 660V, Phase-to-Neutral: 600V
Current (TRMS)	MN Clamp: 5mA to 6A/120A or 2 to 240A MR Clamp: 10 to 1000AC/10 to 1400ADC SR Clamp: 3 to 1200A MiniFlex®: 10 to 1000A AmpFlex®: 10 to 6500A
Frequency (Hz)	40 to 70Hz
Other Measurements	kW, kvar, PF, DPF, kWh, kvarh, kVAh, K-Factor, Flicker, Harmonic Phase Shift and Phase Rotation
Harmonics	THD-R, THD-F, V, A, VA, 1st to 50th, Direction and Sequence
Sampling Frequency	256 samples/cycle
Data Storage	1.5MB partitioned for waveforms, alarms and trend recording
Power Source	7.2V NiMH rechargeable battery pack (included), AC Supply: 120/230VAC (50/60Hz)
Battery Life	≤8 hours with display on; ≤40 hours with display off (record mode)
MECHANICAL	
Communication Port	Optically isolated USB
Display	¼ VGA (320 x 240) color LCD with adjustable brightness and contrast
Dimensions	8.3 x 4.3 x 2.4" (211 x 108 x 60mm)
Weight	1.9 lbs (0.88kg)
Safety Rating	EN 61010, 600V CAT III, Pollution Degree 2



MODEL 8230 ORDERING INFORMATION

Model 8230 (No Probes)	2130.81
Model 8230 w/MN93-BK	2130.82
Model 8230 w/MN193-BK	2130.87
Adapter 110V outlet w/4mm Banana Plug	2118.49
Multipurpose Carrying Pouch	2119.48
220V Power Adapter	2140.38

CATALOG NO.

See page 14 for other current probes available.



DataView®

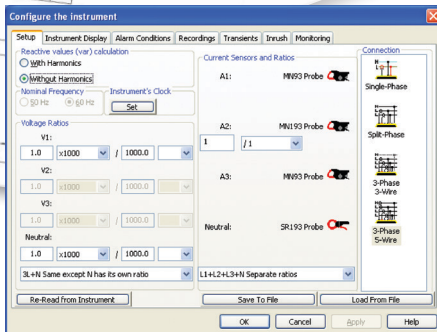
Data Analysis and Reporting Software For Power Quality Meters



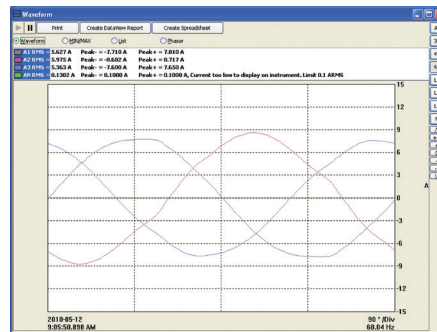
Configure all functions of the Power Quality Meters

- Display and analyze real-time data on your PC
- Configure all functions and parameters from your PC
- Customize views, templates and reports to your exact needs
- Create and store a complete library of configurations that can be uploaded as needed
- Zoom in and out and pan through sections of the graph to analyze the data
- Download, display and analyze recorded data
- Display waveforms, trend graphs, harmonic spectrums, text summaries, transients, event logs and stored alarms
- Print reports using standard or custom templates you design
- Free updates are available on our website www.aemc.com

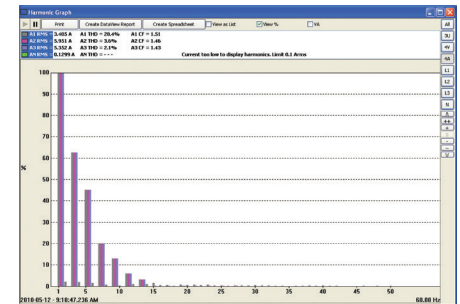
Typical DataView® Functional, Digital & Graphical Displays



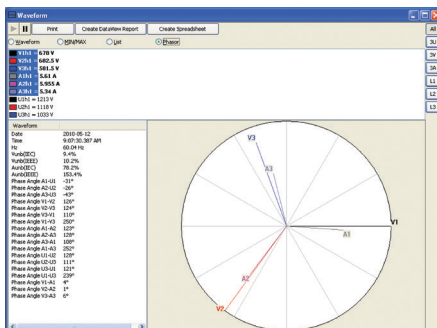
Clear and easy setup of all functions from one tabbed dialog box.



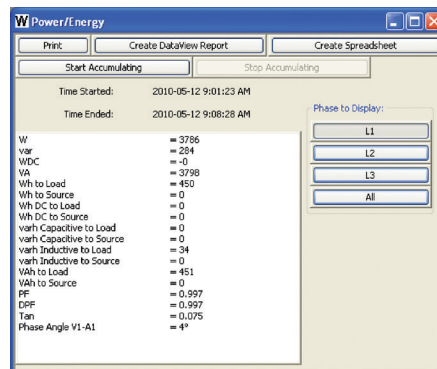
Display real-time waveforms by phase, parameter or total.



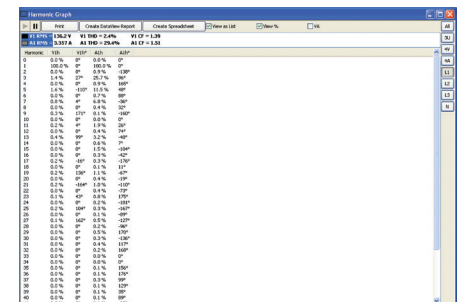
Display all harmonics from 1st to 50th in bargraph form for voltage, current and power.



Display real-time Phasor diagrams. Includes unbalance for both voltage and current.

































Display power and energy parameters – both instantaneous and total.



Display harmonics in a text table from harmonic 0 (DC) through the 50th.

Current Probes & Sensors

Refer to the power meter's product user manual for complete specifications.

SENSOR TYPE	CURRENT RANGE	ACCURACY (TYPICAL)	TYPICAL ERROR ON Φ AT 50/60HZ	MAX CONDUCTOR SIZE	USED WITH MODEL	LIMITED RANGE IF USED WITH MODEL	CATALOG # AND DESCRIPTION
MiniFlex® MA193*    	100mA to 3000Aac	±1%	0°	2.75" (70mm)	PEL 102 PEL 103 PEL 105** 8333 8336	8220 8230 8435	(10") MA193-10-BK Cat #2140.48 (14") MA193-10-BK Cat #2140.50
MR193    Battery operated	1 to 1000Aac 1 to 1300Adc	±2.5%	-0.80°	1.6" (41mm)	8220 8230 PEL 102 PEL 103 PEL 105**	N/A	MR193-BK w/ 10 ft leads Cat #2140.28
SR193   	1 to 1200Aac	±0.3%	+0.2°	2.05" (52mm)	8333 8336 8435**		SR193-BK w/ 10 ft leads Cat #2140.33
AmpFlex® 193*   	100mA to 12,000Aac	±1%	0°	7.64" (190mm) or 11.46" (290mm)	PEL 102 PEL 103 PEL 105** 8333 8336	8220 8230 8435	(24") 193-24-BK w/ 10 ft leads Cat #2140.34 (36") 193-36-BK Cat #2140.35
MN93   	0.5 to 240Aac	±1%	+0.8°	0.78" (20mm)	PEL 102 PEL 103 PEL 105** 8333 8336 8435**	8220 8230	MN93-BK w/ 10 ft leads Cat #2140.32
MN193   	100A	200mA to 120Aac	±1%	+0.75°	0.78" (20mm) PEL 102 PEL 103 PEL 105** 8333 8336 8435**	8220 8230 N/A	MN193-BK w/ 10 ft leads Cat #2140.36
	5A	5mA to 6Aac	±1%	+1.7°			
SL261**    Battery operated	100A	5 to 100Aac/dc	±4%	±0.5°	0.46" (11.8mm) PEL 105** 8333 8336 8435**	N/A	SL261 Cat #1201.51
	10A	50mA to 10Aac/dc	±3%	±1°			
J93     Battery operated	50 to 3500Aac 50 to 5000Adc	±1%	±1°	2.83" (72mm) Busbar: 5 x 1.69" (127 x 43mm)	PEL 102 PEL 103 PEL 105** 8333 8336 8435**	N/A	J93-BK Cat #2140.49
196A-24    	100mA to 12,000Aac	±2%	0°	5.73" (145mm)	PEL 105 8435	N/A	(24") Waterproof- IP67 196A-24-BK w/ 10 ft leads Cat #2140.75

* Maximum current reduced by a factor of 2 for 400Hz fundamental frequency.

** Not waterproof with Model 8435 & PEL 105.

Note: Refer to the Power Meter's product user manual for complete specifications.

All current sensors can be used with the Models 8435 and PEL 105.

However, only the 196A flexible sensors are waterproof.

Power Adapter for
Models PEL 102 &
PEL 103 only
Catalog #2137.77



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



Bluetooth Power & Harmonic Clamp-On Meters



Models 407 & 607 Clamp-On Meters



Users can be sure of working
in a higher degree of safety
with 1000V CAT IV rated meters



MODELS INCLUDE

Hard carrying case, set of two color-coded, silicone test leads, test probes and alligator clips, Bluetooth USB adapter, four 1.5V AA batteries, safety information sheet, USB drive supplied with DataView® software and user manual



ANDROID™ APP:

- Configures and stores data
- Displays data in real-time
- For use on any device with an Android platform

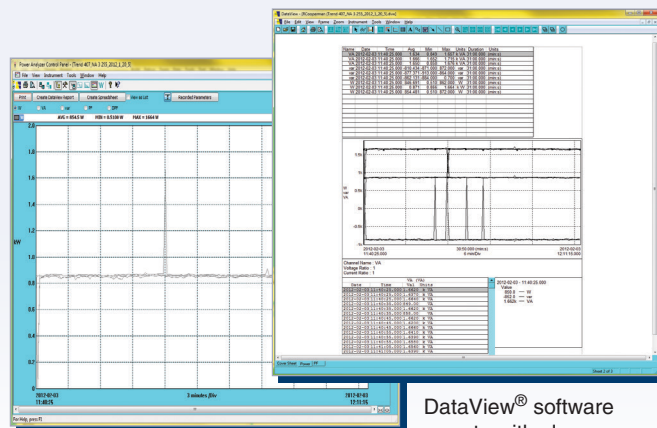


FEATURES

- 1000V CAT IV; IP54 Rated
- UL 94 VI flame retardant self-extinguishing
- 10,000 count blue electroluminescent backlit display
- Measures up to 1000VAC (1400V peak), 1000VDC & AC+DC with resolution to 10mV
- Measures up to 2000AAC and 3000ADC (Model 607)
- Measures W, VA, var and PF for 1Φ & 3Φ balanced systems
- Measures single- and three-phase power (real, reactive & apparent) up to 3MW with resolution to 1W
- Measures frequency to 20kHz with 0.1Hz resolution
- Auto selects AC or DC measurement
- True InRush® current measurement with 3ft (1m) capture
- Measures harmonics up to the 25th
- Records up to 1000 measurements
- Bluetooth communication up to 30 ft (10m)
- Jaw opening up to 1.89" (4.8cm) in 400 series and up to 2.36" (6cm) in 600 series
- Leads are constructed with a flexible silicone material
- Includes DataView® software for download and report generation. Print reports using the default templates or custom templates you design

MODELS	407 TRMS	607 TRMS
Current AC (rms)	1000A	2000A
Current DC	1500A	3000A
Current AC+DC	1500A Peak	3000A Peak
Voltage AC (rms)	1000V	1000V
Voltage DC	1000V	1000V
Voltage AC+DC	1000V	1000V
Ohms	100kΩ	100kΩ
Continuity (Buzzer)	Yes (< 40Ω)	Yes (< 40Ω)
Total Harmonic Distortion	Yes	Yes
Individual Harmonics (to 25 th)	Yes	Yes
Single- and 3-Phase Real Power (AC, DC, AC/DC)*	1000kW 3000kW	2000kW 6000kW
Single- and 3-Phase Reactive Power (AC, DC, AC/DC)*	1000kvar 3000kvar	2000kvar 6000kvar
Single- and 3-Phase Apparent Power (AC, DC, AC/DC)*	1000kVA 3000kVA	2000kVA 6000kVA
Voltage Frequency (Hz)	20kHz	20kHz
Current Frequency (Hz)	2kHz	2kHz
Power Function (W, Var, VA)	Yes	Yes
Power Factor	Yes	Yes
THD-r/THD-f	Yes	Yes
Auto AC/DC	Yes (V & A)	Yes (V & A)
Auto-Off Power	Yes	Yes
Hold Button	Yes	Yes
Backlight Button	Yes	Yes
Min/Max Button	Yes	Yes
True InRush® Function	Yes	Yes
Peak ± Function	Yes	Yes
Harmonics Function	Yes	Yes
Rec (Record) Function	Yes	Yes
Wireless BT (Bluetooth) Function	Yes	Yes
Record (Recordings)	1000	1000
Hz Button	Yes	Yes
Jaw Opening Size (Diameter)	1.89" (4.8cm)	2.36" (6cm)

*3-phase measurements assume balanced load



DataView® software reports with clean, easy-to-read test results.

MODELS 407 & 607 ORDERING INFORMATION

Power Clamp-On Meter Model 407 (TRMS, 1000VAC/DC, 1000AAC/1500ADC, Ohms, Continuity, Energy, Harmonics, Power, THD, Recording)	2139.51
Power Clamp-On Meter Model 607 (TRMS, 1000VAC/DC, 2000AAC/3000ADC, Ohms, Continuity, Energy, Harmonics, Power, THD, Recording)	2139.61
Replacement – Hard Carrying Case	2139.73
Lead Set of 2, Color-coded (Red/Black) Silicone Leads, Test Probes and Alligator Clips (Rated 1000V CAT IV)	2152.05

CATALOG NO.



Technical Assistance (800) 343-1391

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