

# POWER QUALITY/ENERGY ANALYZERS, METERS & LOGGERS

## THREE-PHASE POWER QUALITY ANALYZERS

### POWERPAD® III MODEL 8436

Supplied with an 8GB SD card for storing up to 2GB trend recordings

(4) current and (5) voltage input terminals

### SPECIFICATIONS

MODEL	8436
<b>ELECTRICAL</b>	
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 500kV
Current (TRMS)	MN Clamp: 0 to 6A/120A or 0 to 240A SR Clamp: 0 to 1200A MR Clamp: 0 to 1000AAC, 0 to 1400Adc MiniFlex®: 10 to 3000A AmpFlex®: 10 to 10kA(1) SL261 Clamp: 50mA to 100AAC/dc J93: 50 to 3500AAC/dc Current Ratio: 10mA to 60kA
Frequency (Hz)	40 to 69Hz
Other Measurements	kW, kvar, kVA, PF, DPF, kWh, kvarh, kVAh, Factor K, Flicker
Harmonics	1st to 50th, Direction, Sequence
Power Source	9.6V NiMH rechargeable battery pack (included) 110V to 1000V DC to 400Hz
Battery Life	≤10 hours with display on; ≥15 hours with display off (record mode)
<b>MECHANICAL</b>	
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
<b>SAFETY</b>	
Safety Rating/IP	EN 61010, 600V CAT IV(2), 1000V CAT III, IP 67 Pollution Degree 2

(1) Crest factor at 6500=1 Consult factory for NIST Calibration prices

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

### PRODUCT INCLUDES

#### 8436 KIT CATALOG #2136.44

Extra large tool bag, accessory pouch, 5 ft USB cable, (5) 10 ft black voltage leads with alligator clips, 110V US power cord, line power cord 110-1000V DC to 400Hz, (12) color-coded input ID markers, (4) water-tight AmpFlex® 196A-24-BK sensors (2136.44 only), 9.6V NiMH battery, SD card, printed quick start guide and high-voltage warning card, and a USB drive with DataView® software and a user manual.



\* SEE NOTE  
AT BOTTOM  
OF PAGE

Captures & Records  
Transients, Events &  
Waveforms  
Simultaneously



DataView®



cover closed

### 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)
- 65µs sample rate
- Direct measurement of neutral current and voltage
- 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 Factor K for transformers
- Calculation of short and long term flicker and three-phase voltage unbalance
- Measures harmonics (referenced to the fundamental or RMS value) for voltage, current or power, up to 50<sup>th</sup> 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)
- 2GB Trend Recording 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

\* 3 YEAR WARRANTY ONLY APPLIES WHEN METER IS REGISTERED WITHIN 30 DAYS OF PURCHASE

# POWER QUALITY/ENERGY ANALYZERS, METERS & LOGGERS

## THREE-PHASE POWER QUALITY ANALYZERS

### MODEL 8436

### Large Color Functional Displays

#### INSTALLATION OF THE LEADS AND CURRENT SENSORS

Color-coded ID markers are supplied with the PowerPad® III to identify the leads and input terminals.



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



**LEAD & ALLIGATOR CLIP**  
Catalog #2140.73

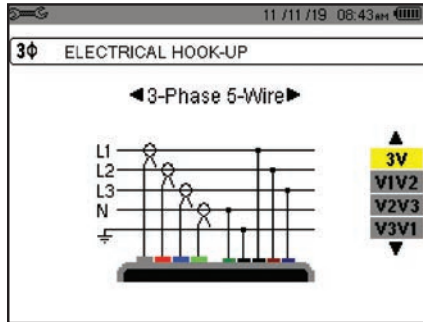
**POWER CORD**  
Catalog #5000.63

**AMPFLEX® SENSORS**  
Catalog #2140.75  
(Included with  
Cat. #2136.44 only)

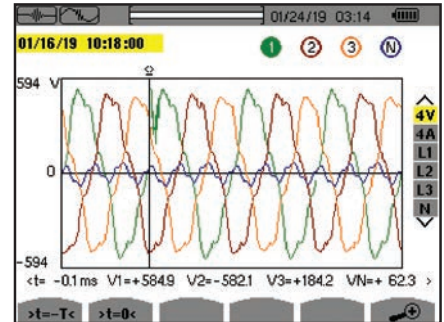
**LINE POWER ADAPTER**  
Catalog #5000.89

**POLE MOUNTING KIT**  
Catalog #2137.82

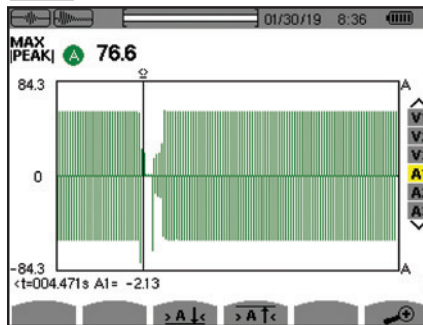
#### Configuration



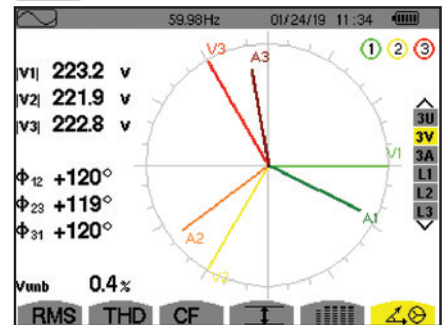
#### Transient Mode



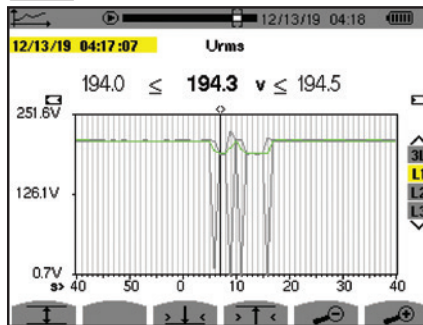
#### Inrush Peak



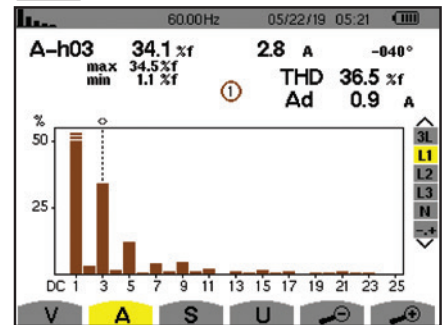
#### Phasor Diagram



#### Trend Analysis



#### Harmonics Mode



### ACCESSORIES/REPLACEMENTS

**CATALOG #2133.73** Extra Large Classic Tool Bag (18 x 9 x 12")

**CATALOG #2137.82** Pole Mounting Kit

**CATALOG #2140.19** Replacement - 9.6V NiMH Rechargeable

**CATALOG #2140.45** Set of 12, Color-coded Input ID Markers

**CATALOG #2140.73** (1) 10 ft (3M) Black Lead (Waterproof cap) (Rated 1000V CAT IV) and (1) Black Alligator Clip (Rated 1000V CAT IV, 15A, UL)

**CATALOG #2140.75** AmpFlex® Sensor 24" Model 196A-24-BK (waterproof - IP67)

**CATALOG #2140.79** MiniFlex® Sensor 14" Model MA196-14-BK (waterproof - IP67)

**CATALOG #5000.43** Probe - Set of 2, Color-coded (Red/Black) Magnetized Voltage Probes (Rated 600V CATIV, 1000V CATIII)

**CATALOG #5000.63** Power Cord 110V for use only with Models 8435 and 8436

**CATALOG #5000.77** Cable Reeling Box



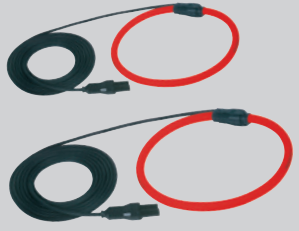

**CATALOG #5000.89** Line Power Adapter 110-1000V DC to 400Hz (Replacement - for use only with Model 8436)

CATALOG NO.	DESCRIPTION
2136.43	PowerPad® III Model 8436 (No Sensors - Waterproof IP67)
2136.44	PowerPad® III Model 8436 w/4 196A-24-BK (AmpFlex®- Waterproof IP67)



# POWER QUALITY/ENERGY ANALYZERS, METERS & LOGGERS

## OPTIONAL ACCESSORIES

SENSOR TYPE	CURRENT RANGE	ACCURACY (TYPICAL)	TYPICAL ERROR ON $\Phi$ AT 50/60 HZ	MAX CONDUCTOR SIZE	USED WITH MODEL	CATALOG NUMBER
<b>MiniFlex® MA193-BK*</b>  10,14 or 24" sensor	100mA to 12,000Aac <sup>(1)</sup>	±1%	0°	2.75" (70mm) (10" sensor)	PEL 102 PEL 103 PEL 105 8333 8336	2140.48 (10" sensor)
				3.94" (100mm) (14" sensor)		2140.50 (14" sensor)
				7.64" (190mm) (24" sensor)		2140.78 (24" sensor)
<b>MR193-BK</b>  Battery operated	1 to 1000Aac 1 to 1300Aac	±2.5%	-0.80°	1.6" (41mm)	PEL 102 PEL 103 PEL 105 8333 8336	2140.28
<b>SR193-BK</b> 	1 to 1200Aac	±0.3%	0.2°	2.05" (52mm)	PEL 102 PEL 103 PEL 105 8333 8336	2140.33
<b>AmpFlex® 193-BK*</b>  24" or 36" sensor	100mA to 12,000Aac <sup>(1)</sup>	±1%	0°	7.64" (190mm) (24" sensor)	PEL 102 PEL 103 PEL 105 8333 8336	2140.34 (24" sensor)
				11.46" (290mm) (36" sensor)		2140.35 (36" sensor)
<b>MiniFlex® 196-BK*</b>  Waterproof, IP67 14 or 24" sensor	100mA to 12,000Aac <sup>(1)</sup>	±1%	0°	3.9" (100mm) (14" sensor)	PEL 105 8436	2140.79 (14" sensor)
				7.64" (190mm) (24" sensor)		2140.75 (24" sensor)




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

All current sensors can be used with Models PEL 105, 8435 and 8436. However, only the MA196-14-BK and 196A-24-BK flexible sensors are waterproof.

(1) Current range may be limited by sensor size or meter type.

Consult factory for NIST Calibration prices

# POWER QUALITY/ENERGY ANALYZERS, METERS & LOGGERS OPTIONAL ACCESSORIES

SENSOR TYPE	CURRENT RANGE		ACCURACY (TYPICAL)	TYPICAL ERROR ON $\phi$ AT 50/60HZ	MAX CONDUCTOR SIZE	USED WITH MODEL	LIMITED RANGE IF USED WITH MODEL	CATALOG NUMBER
MN93-BK 	0.5 to 240Aac		$\pm 1\%$	$0.8^\circ$	0.78" (20mm)	PEL 102 PEL 103 PEL 105 8333 8336	N/A	2140.32
MN193-BK 	100A	200mA to 120Aac	$\pm 1\%$	$0.75^\circ$	0.78" (20mm)	PEL 102 PEL 103 PEL 105 8333 8336	N/A	2140.36
	5A	5mA to 6Aac	$\pm 1\%$	$1.7^\circ$				
SL261 	100A	5 to 100Aac/dc	$\pm 4\%$	$\pm 0.5^\circ$	0.46" (11.8mm)	PEL 102 PEL 103 PEL 105 8333 8336	N/A	1201.51
	10A	50mA to 10Aac/dc	$\pm 3\%$	$\pm 1^\circ$				

All current sensors can be used with models PEL 105 and 8436. However, only the MA196-14-BK and 196A-24-BK flexible sensors are waterproof. Consult factory for NIST Calibration prices

## ACCESSORIES/REPLACEMENTS

### CATALOG #1201.51

AC/DC Current Probe  
Model SL261 (BNC)



### CATALOG #2137.83

600V Power Adapter for use with  
Models PEL 102 and PEL 103 only



### CATALOG #2140.28

AC/DC Current Probe  
Model MR193-BK



### CATALOG #2140.32

AC Current Probe  
Model MN93-BK



### CATALOG #2140.33

AC Current Probe  
Model SR193-BK



### CATALOG #2140.34

AmpFlex® Sensor 24"  
Model 193-24-BK



## ACCESSORIES/REPLACEMENTS

### CATALOG #2140.35

AmpFlex® Sensor 36"  
Model 193-36-BK



### CATALOG #2140.36

AC Current Probe  
Model MN193-BK



### CATALOG #2140.40

BNC Adapter for AC/DC Current Probe  
Model SL261



### CATALOG #2140.48

MiniFlex® Sensor 10" Model MA193-10-BK

### CATALOG #2140.50

MiniFlex® Sensor 14" Model MA193-14-BK

### CATALOG #2140.78

MiniFlex® Sensor 24" Model MA193-24-BK



### CATALOG #2140.75

AmpFlex® Sensor 24" (Waterproof - IP67)  
Model 196A-24-BK

### CATALOG #2140.79

MiniFlex® Sensor 14" Waterproof - IP67  
Model MA196-14-BK



# POWER QUALITY/ENERGY ANALYZERS, METERS & LOGGERS SELECTION CHART

AEMC MODEL NUMBER	AEMC CATALOG NUMBER	INPUT TERMINALS	CHANNELS	RMS VOLTAGE MAX PHASE-TO-NEUTRAL	RMS VOLTAGE MAX PHASE-TO-PHASE	PEAK VOLTAGE MAX PHASE-TO-NEUTRAL	PEAK VOLTAGE MAX PHASE-TO-PHASE	DC VOLTAGE MAX	AC CURRENT MAX (PROBE DEPENDENT)	DC CURRENT MAX (PROBE DEPENDENT)	RATIOS VOLT	RATIOS AMPERE
8333	2136.10	4V/3I	3V/4I	1000Vrms	2000Vrms	1414Vpk	2828Vpk	1200Vdc	10,000AAC	5000Adc		Yes
8336	2136.30	5V/4I	4V/4I	1000Vrms	2000Vrms	1414Vpk	2828Vpk	1200Vdc	10,000AAC	5000Adc		Yes
8436	2136.43	5V/4I	4V/4I	1000Vrms	2000Vrms	1414Vpk	2828Vpk	1200Vdc	10,000AAC	5000Adc		Yes
PEL 102	2137.51	4V/3I	3V/3I	1000Vrms	1700Vrms	1414Vpk	2400Vpk	1000Vdc	10,000AAC	5000Adc		Yes
PEL 103	2137.52	4V/3I	3V/3I	1000Vrms	1700Vrms	1414Vpk	2400Vpk	1000Vdc	10,000AAC	5000Adc		Yes
PEL 105	2137.57	5V/4I	4V/4I	1000Vrms		1414Vpk	2400Vpk	1000Vdc	10,000AAC	5000Adc		Yes

AEMC MODEL NUMBER	AEMC CATALOG NUMBER	DISTRIBUTION SYSTEMS	PHASE ROTATION	WAVEFORM MODE	TRANSIENT MODE	TRUE INRUSH MODE/TYPE/DURATION	ALARM MODE	SNAPSHOT MODE	HARMONIC MODE	TYPE LCD	POWER SOURCE
8333	2136.10	1P-2W, 2P-3W, 3P-3W, 3P-4W		Yes		No	10 types/ up to 2 active/ 4662 recorded	Yes (12)	Yes	TFT - 5.7" diagonal 320 x 240 resolution	External adapter with internal NiMH battery pack
8336	2136.30	1P-2W, 1P-3W, 2P-2W, 2P-3W, 2P-4W, 3P-3W, 3P-4W, 3P-5W		Yes		Yes (RMS+PEAK & RMS) up to 1 & 10 mins	40 types/ up to 7 active/ 16,362 recorded	Yes (50)	Yes	TFT - 5.7" diagonal 320 x 240 resolution	External adapter with internal NiMH battery pack
8436	2136.43	1P-2W, 1P-3W, 2P-2W, 2P-3W, 2P-4W, 3P-3W, 3P-4W, 3P-5W		Yes		Yes (RMS+PEAK & RMS) up to 1 & 10 mins	40 types/ up to 7 active/ 16,362 recorded	Yes (50)	Yes	TFT - 5.7" diagonal 320 x 240 resolution	Line Power with internal NiMH battery pack
PEL 102	2137.51	1P-2W, 1P-3W, 3P-3W D2, 3P-3W O2, 3P-3W Y2, 3P-3W D3, 3P-3W O3, 3P-3W Y, 3P-3W DB, 3P-4W Y, 3P-4W YB, 3P-4W Y2 1/2, 3P-4W D, 3P-4WOD, DC-2W DC-3W, DC-4W	Yes			No			Yes	None	Line Power with internal NiMH battery pack
PEL 103	2137.52		Yes			No			Yes	Mono-chrome LCD	Line Power with internal NiMH battery pack
PEL 105	2137.57		Yes			No			Yes	Mono-chrome LCD	Power phase input or external adapter with internal NiMH battery pack