

# POWER QUALITY / ENERGY ANALYZERS, METERS & LOGGERS

**NEW**

## PowerPad® IV Model 8345

*The PowerPad® moves up a grade - Class A!*

**POWERPAD IV**  
Class A



DataView®



### SPECIFICATIONS

MODEL	8345
<b>ELECTRICAL</b>	
Inputs	5 x voltage / 4 x current, isolated
Voltage	(5 to 1,000) V <sub>AC</sub> and V <sub>DC</sub>
Harmonics Mode	DC to 63 <sup>rd</sup> order
Interharmonics Mode	0 to 62 <sup>nd</sup> order
Inrush & Transient Capture (number)	No maximum (limited by SD card)
Shockwaves (Fast transient)	Up to 12 kV sampled every 500 ns
Flicker (Pst)	< 0.1
Voltage Unbalance (u0,u2)	(0.5 to 5) % (absolute); ± 0.15 % (absolute)
Trend Recording	> 900 parameters 3 d with a sampling period of 200 ms 15 d with a sampling period of 1 s 45 d with a sampling period of 3 s
Sampling Rate	Voltage 400 kSps / Current 200 kSps / Surge 2 MSps
Alarm Mode (types / number)	52 / 20,000 with Email notifications
Real-time / Power / Energy / Unbalance Modes	Yes / Yes / Yes / Composite
Screenshots	No maximum (limited by SD card)
Power Supply	Power from phase from (100 to 1000) V AC/DC with external supply block (included)
Carrier Current Detection	Yes
Battery Life	Cartridge Li-ion – 5800 A-h battery pack (included) ≤ 6 h w/ display ON; ≤ 10 h w/ display OFF
<b>MECHANICAL</b>	
Data Storage	16 GB SD-Card (included) for snapshot, transients, alarms and trend recording
Display	7 in color LCD touch screen: 800 x 480 (WVGA)
Clock / GPS	Yes, built-in
Operating Temperature	(32 to 104) °F (0 to 40) °C
Communication	USB, Ethernet, Wi-Fi, Web server, IRD server, USB stick port (Type A)
Dimensions	(7.87 x 11.22 x 2.17) in (200 x 285 x 55) mm
Weight (meter only)	4.19 lb (1.9 kg)
<b>COMPLIANCE &amp; STANDARDS</b>	
Safety	IEC 61010 1000 V CAT IV
Environmental	IEC 61557-12 & IEC 62586
Measurement Standard	IEC 61000-4-30 (Ed 3) Class A (Full)
EN50160 Monitoring Mode	With PAT3 software
Warranty	*3 y (registration must be done within 30 d of the date of purchase)

Consult factory for NIST Calibration prices

CATALOG NO.	DESCRIPTION
2136.35	PowerPad® IV Model 8345 (no probes)
2136.36	PowerPad® IV Model 8345 w/4 194-24-BK MiniFlex® Sensors



### PRODUCT INCLUDES

CAT. # 2136.35 - POWERPAD IV MODEL 8345 (NO PROBES)

CAT. # 2136.36 - POWERPAD IV MODEL 8345 (WITH (4) MINIFLEX® MA194-24-BK FLEXIBLE CURRENT SENSORS )

Extra large tool bag, internal carrying pouch, hand strap, USB cable, (5) 10 ft black voltage leads with alligator clips, (12) color-coded input ID markers, power adapter (PA32ER) with US power cord, (2) 6 ft stackable leads, (2) 10 ft black voltage leads with alligator clips for power adapter PA32ER, (1) power plug adaptor for PA32ER, 5.8 A-h Li-ion battery pack, quick start guide, and a USB stick with DataView® software and user manual.



(4) MINIFLEX® MA194-24-BK FLEXIBLE CURRENT SENSORS (WITH CAT.# 2136.36)

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# POWER QUALITY/ENERGY ANALYZERS, METERS & LOGGERS FEATURES

## FEATURES

- Full compliance with IEC 61000-4-30 ed. 3.0 Class A functions
- Voltage quality diagnostics
- Real-time display of color waveforms (5 voltage/4 current) from 1 cycle to 10/12 cycles
- Calculation of unbalance (current and voltage)
- Automatic recognition of different current sensors
- Capture shockwaves up to 12 kV with a resolution of 500 ns
- Trend recording period from 200 ms to 2 h
- RMS and Peak InRush for up to 30 min
- Display of phasor diagrams
- Waveforms at 512 samples per cycle, with Min/Max 2.5  $\mu$ s
- True InRush capabilities to study loads during setup
- Parameterization with software for True RMS single-, two- and three-phase measurements at 512 samples/cycle, plus DC
- Records and stores hundreds of parameters in memory every 10/12 periods
- Measurements and recordings accessible on 7 inch color touch screen display
- True RMS voltage and current measurement
- Measurements on all installation types: three-phase, Aron connection, etc.
- Electrical network monitoring with setting of alarms
- Fast transient events are captured and stored in memory
- Communication options: Webserver, Wi-Fi, Ethernet and USB
- Power W, VA and var (P, N, Q1, S and D) measurements
- Measurement of energy values (total and per phase) with energy valuation
- PF, DPF, CF and THD calculations and measurements
- Calculation so Pst & Pft flicker and sliding Pst
- Harmonics (amplitude/phase shift) from DC to the 63<sup>rd</sup> order
- Inter-harmonic subgroups from 0 to the 62<sup>nd</sup> order
- Calculations of K factor & FHL
- 2 carrier current frequencies monitored

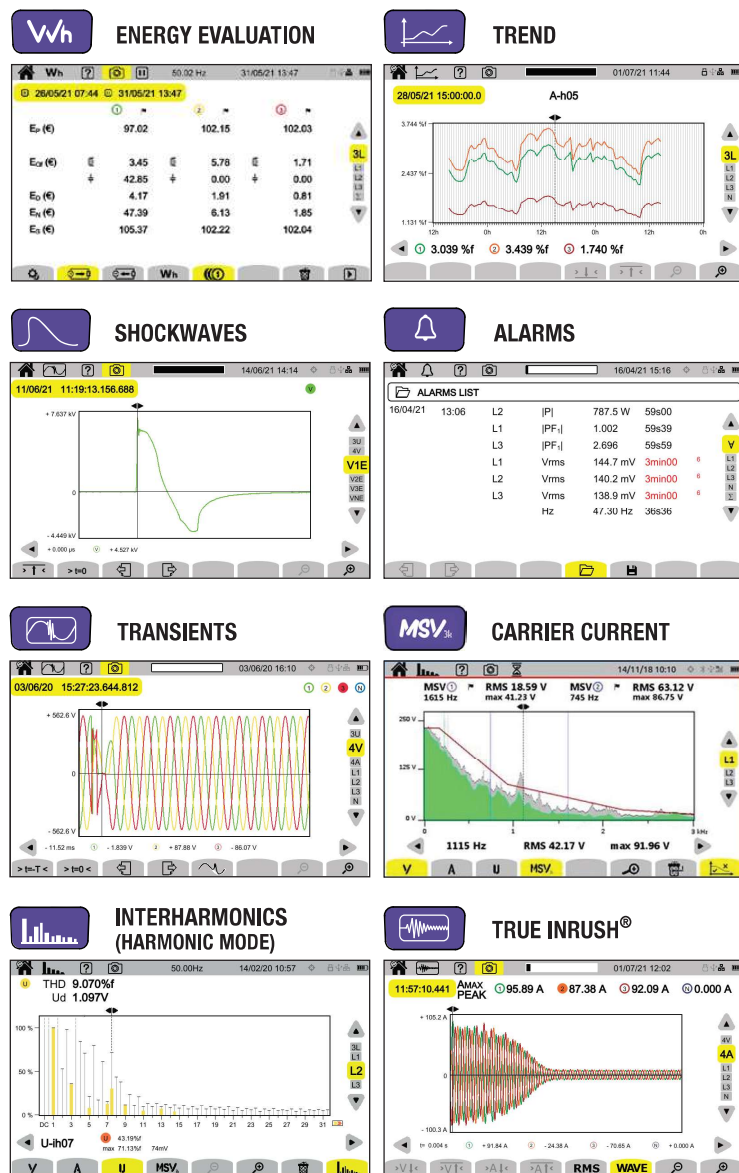
## ACCESSORIES/REPLACEMENTS

- 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 in Model 193-24-BK
- CATALOG #2140.35** AmpFlex® Sensor 36 in Model 193-36-BK
- CATALOG #2140.36** AC Current Probe Model MN193-BK
- CATALOG #2140.48** MiniFlex® Sensor 10 in Model MA193-10-BK
- CATALOG #2140.50** MiniFlex® Sensor 14 in Model MA193-14-BK
- CATALOG #5100.16** Magnetic Hook



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## Large Functional Displays



Includes **FREE DataView®** software for configuring, data retrieval, real-time display, analysis and report generation

- CATALOG #2133.76** Carrying Bag
- CATALOG #2140.43** Lead - Set of 5, 10 ft (3M) Black Leads w/5 Black Alligator Clips (Leads rated 600 V CAT IV 10 A, Clips rated 1000 V CAT IV 15 A, UL)
- CATALOG #2140.44** (1) 10 ft (3 M) Black Lead w/(1) Black Alligator Clip (Lead rated 1000 V CAT IV 15 A, Clip rated 1000 V CAT IV 15 A, UL)
- CATALOG #2140.46** Cable - Replacement 5 ft USB Cable
- CATALOG #2140.80** Sensor - MiniFlex® Sensor Model MA194-24-BK
- CATALOG #2960.47** Battery - Replacement 5.8 A-h 61.9 W-h Li-ion Battery Pack
- CATALOG #5100.14** Adapter - Replacement Power Plug Adapter for PA32ER
- CATALOG #5100.15** Adapter - Replacement 1000 V PA32ER Power Supply

# 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* &amp; MiniFlex® MA194-BK*</b>  10, 14 or 24 in sensor	100 mA to 12,000 Aac <sup>(1)</sup>	± 1 %	0 °	2.75 in (70 mm) (10 in sensor)	PEL 102 PEL 103 PEL 105 8333 8336 8436 8345	2140.48 (10 in sensor)
				3.94 in (100 mm) (14 in sensor)		2140.50 (14 in sensor)
				7.64 in (194 mm) (24 in sensor)		2140.80 (24 in sensor)
<b>MR193-BK</b>  Battery operated	(1 to 1000) Aac (1 to 1300) Aac	± 2.5 %	-0.80 °	1.6 in (41 mm)	PEL 102 PEL 103 PEL 105 8333 8336 8436 8345	2140.28
<b>SR193-BK</b> 	(1 to 1200) Aac	± 0.3 %	0.2 °	2.05 in (52 mm)	PEL 102 PEL 103 PEL 105 8333 8336 8436 8345	2140.33
<b>AmpFlex® 193-BK*</b>  24 in or 36 in sensor	100 mA to 12,000 Aac <sup>(1)</sup>	± 1 %	0 °	7.64 in (194 mm) (24 in sensor)	PEL 102 PEL 103 PEL 105 8333 8336 8436 8345	2140.34 (24 in sensor)
				11.46 in (291 mm) (36 in sensor)		2140.35 (36 in sensor)
<b>MiniFlex® 196-BK*</b>  Waterproof, IP67 14 in or 24 in sensor	100 mA to 12,000 Aac <sup>(1)</sup>	± 1 %	0 °	3.9 in (99 mm) (14 in sensor)	PEL 105 8436	2140.79 (14 in sensor)
				7.64 in (194 mm) (24 in sensor)		2140.75 (24 in sensor)




\*Maximum current reduced by a factor of 2 for 400 Hz 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 (50/60) HZ	MAX CONDUCTOR SIZE	USED WITH MODEL	LIMITED RANGE IF USED WITH MODEL	CATALOG NUMBER
MN93-BK 	(0.5 to 240) AAC		$\pm 1\%$	$0.8^\circ$	0.78 in (20 mm)	PEL 102 PEL 103 PEL 105 8333 8336 8345	N/A	2140.32
MN193-BK 	100 A	200 mA to 120 AAC	$\pm 1\%$	$0.75^\circ$	0.78 in (20 mm)	PEL 102 PEL 103 PEL 105 8333 8336 8345	N/A	2140.36
	5 A	5 mA to 6 AAC	$\pm 1\%$	$1.7^\circ$				
SL261 	100 A	(5 to 100) AAC/DC	$\pm 4\%$	$\pm 0.5^\circ$	0.46 in (12 mm)	PEL 102 PEL 103 PEL 105 8333 8336 8345	N/A	1201.51
	10 A	50 mA to 10 AAC/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 196 A-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 #2140.40

BNC Adapter for AC/DC Current Probe  
Model SL261



### CATALOG #2140.77

Phase Power Adapter for use with  
PowerPad Models 8333 & 8336



### CATALOG #2137.98

600 V CAT III 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



## ACCESSORIES/REPLACEMENTS

### CATALOG #2140.34

AmpFlex® Sensor 24 in  
Model 193-24-BK



### CATALOG #2140.35

AmpFlex® Sensor 36 in  
Model 193-36-BK

### CATALOG #2140.36

AC Current Probe  
Model MN193-BK



### CATALOG #2140.48

MiniFlex® Sensor 10 in Model MA193-10-BK

### CATALOG #2140.50

MiniFlex® Sensor 14 in Model MA193-14-BK

### CATALOG #2140.80

MiniFlex® Sensor 24 in Model MA194-24-BK



### CATALOG #2140.75

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

### CATALOG #2140.79

MiniFlex® Sensor 14 in (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	4 V/3 I	3 V/4 I	1000 Vrms	2000 Vrms	1414 Vpk	2828 Vpk	1200 Vdc	10,000 Aac	5000 Adc	Yes	Yes
8336	2136.30	5 V/4 I	4 V/4 I	1000 Vrms	2000 Vrms	1414 Vpk	2828 Vpk	1200 Vdc	10,000 Aac	5000 Adc	Yes	Yes
8345	2136.35	5 V/4 I	4 V/4 I	1000 Vrms	2000 Vrms	1414 Vpk	2828 Vpk	1200 Vdc	10,000 Aac	5000 Adc	Yes	Yes
8436	2136.43	5 V/4 I	4 V/4 I	1000 Vrms	2000 Vrms	1414 Vpk	2828 Vpk	1200 Vdc	10,000 Aac	5000 Adc	Yes	Yes
PEL 52	2137.71	2 V/2 I	2 V/2 I	660 Vrms	1200 Vrms	-	-	-	3600 Aac	-	No	Yes
PEL 102	2137.51	4 V/3 I	3 V/3 I	1000 Vrms	1700 Vrms	1414 Vpk	2400 Vpk	1000 Vdc	10,000 Aac	5000 Adc	Yes	Yes
PEL 103	2137.52	4 V/3 I	3 V/3 I	1000 Vrms	1700 Vrms	1414 Vpk	2400 Vpk	1000 Vdc	10,000 Aac	5000 Adc	Yes	Yes
PEL 105	2137.57	5 V/4 I	4 V/4 I	1000 Vrms		1414 Vpk	2400 Vpk	1000 Vdc	10,000 Aac	5000 Adc	Yes	Yes

AEMC MODEL NUMBER	AEMC CATALOG NUMBER	DISTRIBUTION SYSTEMS	PHASE ROTATION	WAVEFORM MODE	TRANSIENT MODE	TRUE INRUSH MODE/TIME/DURATION	ALARM MODE	SNAPSHOT MODE	HARMONIC MODE/INTERHARMONIC MODE	TYPE LCD	POWER SOURCE
8333	2136.10	1 P-2 W, 2 P-3 W, 3 P-3 W, 3 P-4 W		Yes		No	10 types/ up to 2 active/ 4662 recorded	Yes (12)	Yes / No	TFT - 5.7 in diagonal 320 x 240 resolution	External adapter with internal NiMH battery pack
8336	2136.30	1 P-2 W, 1 P-3 W, 2 P-2 W, 2 P-3 W, 2 P-4 W, 3 P-3 W, 3 P-4 W, 3 P-5 W		Yes		Yes (RMS+PEAK & RMS) up to 1 & 10 min	40 types/ up to 7 active/ 16,362 recorded	Yes (50)	Yes / No	TFT - 5.7 in diagonal 320 x 240 resolution	External adapter with internal NiMH battery pack
8345	2136.35	1 P-2 W, 1 P-3 W, 2 P-2 W, 2 P-3 W, 2 P-4 W, 3 P-3 W, 3 P-4 W, 3 P-5 W		Yes		Yes (RMS+PEAK & RMS) up to 10 & 30 min	40 types/ 20,000 w/ email notificatoins	Yes (no limit with SD card)	DC to 63 <sup>rd</sup> order; < 3 % U <sub>din</sub> / 0 to 62 <sup>nd</sup> order; < 0.5 % U <sub>din</sub>	7 in color LCD touch screen: 800 x 480 (WVGA)	External adapter with Li-ion battery pack
8436	2136.43	1 P-2 W, 1 P-3 W, 2 P-2 W, 2 P-3 W, 2 P-4 W, 3 P-3 W, 3 P-4 W, 3 P-5 W		Yes		Yes (RMS+PEAK & RMS) up to 1 & 10 min	40 types/ up to 7 active/ 16,362 recorded	Yes (50)	Yes / No	TFT - 5.7 in diagonal 320 x 240 resolution	Line Power with internal NiMH battery pack
PEL 52	2137.71	1 P-2 W, 2 P-3 W, 1 P-3 W	Yes			No			No / No	Monochrome LCD	Power phase input with internal NiMH battery pack
PEL 102	2137.51		Yes			No			Yes / No	None	Line Power with internal NiMH battery pack
PEL 103	2137.52	1 P-2 W, 1 P-3 W, 3 P-3 W D2, 3 P-3 W Y2, 3 P-3 W D3, 3 P-3 W O3, 3 P-3 W Y, 3P-3 W DB, 3 P-4 W Y, 3 P-4 W YB, 3 P-4 W Y2 1/2, 3 P-4 W D, 3 P-4 W OD, DC-2 W DC-3 W, DC-4 W	Yes			No			Yes / No	Monochrome LCD	Line Power with internal NiMH battery pack
PEL 105	2137.57		Yes			No			Yes / No	Monochrome LCD	Power phase input or external adapter with internal NiMH battery pack