

# POWER QUALITY / ENERGY ANALYZERS, METERS & LOGGERS

PEL 110 SERIES



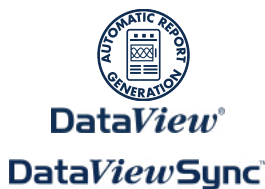
## MODEL PEL 112

*Supports Negative Temps!*  
*Great for use in Cold Rooms (Down to -4 °F)*



**Recordings Covering  
Several Months!**

**5x Faster!**  
*(Than the PEL 102)*



SCAN TO  
LEARN  
MORE

## FEATURES

- Simple-to-use, single-, dual- (*split-phase*) and three-phase (Y, Δ) power & energy loggers
- 3 voltage and 3 current channels with auto recognition of connected current sensors and probes
- 32 alarms can be configured to receive alerts and reports through email
- Multiple connectivity options supports USB, Ethernet, Wi-Fi, and remote access with DataViewSync™
- Secure SMTP e-mail transmission via DataViewSync™
- Remote access and real-time monitoring to view and analyze power consumption from anywhere
- Wide range of applications: predictive & preventive maintenance, energy audits, cost optimization and IT infrastructure maintenance
- Supports SD cards up to 32 GB
- Can be powered directly from the phases with PEL Adapter (*sold separately*)
- Compact and magnetized for mounting inside power panels
- Includes FREE DataView® software for configuring, data retrieval, real-time measurement display, data analysis and report generation

## PRODUCT INCLUDES

**PEL 112 (WITHOUT SENSORS)**  
CAT. #2137.63

Small classic tool bag, (4) 10 ft black test leads in reeling box, (4) black alligator clips, set of (12) color-coded input ID markers, 8 GB SD-card (*installed*), USB SD-card reader, USB type A to type B cable, 115 V power cord, NiMH AAA 8.4 V battery (*installed*), quick start guide, and USB drive with DataView® software and user manual.

**PEL 112 (WITH SENSORS)**  
CAT. #2137.53 (*SHOWN*)

Small classic tool bag, (3) MiniFlex® MA193-10-BK Sensors, (4) 10 ft black test leads in reeling box, (4) black alligator clips, set of (12) color-coded input ID markers, 8 GB SD-card (*installed*), USB SD-card reader, USB type A to type B cable, 115 V power cord, NiMH AAA 8.4 V battery (*installed*), quick start guide, and USB drive with DataView® software and user manual.



## ACCESSORIES

CAT. #2137.90

Adapter – 600 V CAT III Power to Phase Adapter for use with Models PEL 112 & PEL 113

**\*ADAPTER SOLD SEPARATELY**

**SEE PAGE 130-131 FOR MORE  
OPTIONAL ACCESSORIES**



## ANDROID™ APP AVAILABLE FOR PEL 112, 113 & 115

- Configure measurements and recordings
- Display data in real-time
- For use on devices with an Android™ platform
- Software sensors providing all comprehensive and instantaneous motors electrical parameters such as rotation speed, efficiency and torque



CAT. #	DESCRIPTION
2137.63	Power & Energy Logger Model PEL 112 (No LCD, No Sensors)
2137.53	Power & Energy Logger Model PEL 112 (No LCD, w/3 MA193-10-BK)

# POWER QUALITY / ENERGY ANALYZERS, METERS & LOGGERS

MODEL	PEL 112 & PEL 113		PEL 115	
Description	Meter Only	Meter with MA193-10-BK Sensors	Meter Only	Meter with 196A-24-BK Sensors
<b>GENERAL</b>				
Number of Voltage Channels	3- (V1, V2, V3)		4- (V1, V2, V3, Earth/Ground)	
Number of Current Channels	3 - (L1, L2, L3)		4 - (L1, L2, L3, Earth/Ground)	
Distribution Systems	Single-/Split-/3-Phase, DC, etc. (17 choices)			
<b>MEASUREMENTS</b>				
Voltage Range - Phase-Neutral (V) <sup>2</sup>	(10 to 1000) V <sub>AC/DC</sub> <sup>2</sup>			
Voltage Range - Phase-Phase (U) <sup>2</sup>	(10 to 1000) V <sub>AC</sub>		(17 to 1000) V <sub>AC</sub>	
Typical Accuracy - Voltage	±0.2 % R ±0.2 V			
Current Range AC	5 mA to 12 kA <sub>AC</sub> <sup>3</sup>	200 mA to 12 kA <sub>AC</sub>	5 mA to 12 kA <sub>AC</sub> <sup>3</sup>	200 mA to 12 kA <sub>AC</sub>
Current Range DC	50 mA to 1300 A <sub>DC</sub> <sup>3</sup>			
Typical Accuracy - Current (Meter Only) <sup>4</sup>	±0.4 % R ± 0.04 % I <sub>nom</sub>	–	±0.4 % R ± 0.04 % I <sub>nom</sub>	–
Network Frequencies	DC/50/60/400 Hz (VFD/PWM not available)			
<b>CALCULATED MEASUREMENTS</b>				
Voltage Ratios	up to 650 kV			
Current Ratios	Up to 25 kA (MN193 probe, 5 A range)	Not available with AmpFlex®/MiniFlex® sensors	Up to 25 kA (MN193 probe, 5 A range)	Not available with AmpFlex®/MiniFlex® sensors
Power (P, P+, P <sub>unb</sub> , Qf, N, D, S)	up to 10 GW/Gvar/GVA <sup>5</sup>			
Energy	up to 4 EWh/EVAh/Evarh <sup>5</sup>			
Phase	cos φ, tan φ, PF			
Phase Order / Phasor Diagram	Yes/Yes (with DataView® or App for Android™)			
Harmonics	THD for V, A and Harmonics to 50 <sup>th</sup> order for V, A			
<b>RECORDING</b>				
Aggregations (Fixed)	200 ms/1 s trends			
Aggregations (Selectable)	(1 to 60) min (12 choices)			
Min/Max Values	Yes			
Alarms	up to 32 separate alarms			
Emailed Reports	Yes, alarms and periodical Min/Max data through DataViewSync®			
Storage Media	SD Card (32 GB Max)			
Recording Length	Several weeks to years (Configuration dependent)			
<b>OTHER FEATURES</b>				
Communication	USB, Ethernet/Wi-Fi LAN, Ethernet/Wi-Fi Direct, DataViewSync®			
Software	DataView® included, free App for Android™			
NEC Article 220.87 Load Study Compliant	Yes, DataView® configuration button and report templates			
Mounting	Embedded Magnets in Case		Pole Mounting Kit (Cat. #2137.82)	
Powered from Phase	Phase Power Adapter (Cat. #2137.90)		Yes	
External Power Supply	120 / 240 V Line Power Cord		Power Adapter	
<b>SAFETY AND MECHANICAL</b>				
Electrical Safety (IEC 61010)	600 V CAT IV / 1000 V CAT III		1000 V CAT IV	
Ingress Protection <sup>6</sup>	IP 54 / IP 20		IP 67	
Weight	<2.2 lb (1 kg)		7.5 lb (3.4 kg)	

<sup>1</sup> Please see user manual for complete technical specifications.

<sup>2</sup> 400 Hz - Phase-Neutral-V (5 to 600) V ; Phase-Phase-U (10 to 600) V.

<sup>3</sup> Probe dependent.

<sup>4</sup> Accuracy of connected current probe must be added to this value

<sup>5</sup> (G = Giga = 10<sup>9</sup>), (E = Exa= 10<sup>18</sup>)

<sup>6</sup> (PEL 115) IP 67 with included waterproof accessories;

(PEL 112/113) IP 54 instrument disconnected (de-energized) / IP 20 instrument connected (energized and operating)

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

MODEL	MAX CONDUCTOR SIZE	ACCURACY (TYPICAL)	TYPICAL ERROR ON $\Phi$ AT (50 / 60) HZ	CURRENT RANGE	USED WITH MODEL	CAT. #
<b>MiniFlex® Model MA193-10-BK* &amp; MiniFlex® Model MA193-14-BK* &amp; MiniFlex® Model MA194-24-BK*</b>  <b>10, 14 &amp; 24 in Sensor</b>	2.75 in (70 mm) (10 in sensor)	± 1 %	0.5 °	100 mA to 12,000 A <sub>AC</sub> <sup>(1)</sup>	PEL 52 PEL 112 PEL 113 PEL 115 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>AC/DC Current Probe Model MR193-BK</b> 	1.6 in (41 mm)	± 2.5 %	-0.80 °	(1 to 1000) A <sub>AC</sub> (1 to 1300) A <sub>DC</sub>	PEL 112 PEL 113 PEL 115 8333 8336 8436 8345	2140.28
<b>AC Current Probe Model MN93-BK</b> 	0.78 in (20 mm)	± 1 %	0.8 °	(0.5 to 240) A <sub>AC</sub>	PEL 52 PEL 112 PEL 113 PEL 115 8333 8336 8436 8345	2140.32
<b>AC Current Probe Model SR193-BK</b> 	2.05 in (52 mm)	± 0.3 %	0.2 °	(1 to 1200) A <sub>AC</sub>	PEL 52 PEL 112 PEL 113 PEL 115 8333 8336 8436 8345	2140.33
<b>AmpFlex® Sensor 24 in Model 193-24-BK*</b> 	7.64 in (194 mm) (24 in sensor)	± 1 %	0.5 °	100 mA to 12,000 A <sub>AC</sub> <sup>(1)</sup>	PEL 52 PEL 112 PEL 113 PEL 115 8333 8336 8436 8345	2140.34
<b>AmpFlex® Sensor 36 in Model 193-36-BK*</b> 	11.64 in (291 mm) (36 in sensor)	± 1 %	0.5 °	100 mA to 12,000 A <sub>AC</sub> <sup>(1)</sup>	PEL 52 PEL 112 PEL 113 PEL 115 8333 8336 8436 8345	2140.35

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

MODEL	MAX CONDUCTOR SIZE	ACCURACY (TYPICAL)	TYPICAL ERROR ON $\phi$ AT (50 / 60) HZ	CURRENT RANGE		USED WITH MODEL	CAT. #
<b>AC Current Probe Model MN193-BK</b> 	0.78 in (20 mm)	± 1 %	0.75 °	100 A	200 mA to 120 AAC	PEL 52 PEL 112 PEL 113 PEL 115 8333 8336 8436 8345	2140.36
			1.7 °	5 A	5 mA to 6 AAC		
<b>AmpFlex® Sensor 24 in Model 196A-24-BK* (Waterproof IP67)</b> 	7.64 in (194 mm) (24 in sensor)	± 1 %	0 °	100 mA to 12,000 AAC <sup>(1)</sup>		PEL 115 8436	2140.75
<b>MiniFlex® Sensor 14 in Model MA196-14-BK* (Waterproof IP67)</b> 	3.9 in (99 mm) (14 in sensor)	± 1 %	0 °	100 mA to 12,000 AAC <sup>(1)</sup>		PEL 115 8436	2140.79
<b>AC Current Probe Model MN94</b> 	0.25 in (7 mm)	± 0.2 %	0.1 °	50 mA to 200 AAC		PEL 52 8345	2140.81
<b>AC / DC Current Probe Model E94</b> 	.464 in (11.8 mm)	± 3 %	1.5 °	10 A	100 mA to 10 AAC	PEL 112 PEL 113 PEL 115 8345	2140.82
		± 4 %	1 °	100 A	500 mA to 100 AAC		

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

All current sensors can be used with Models PEL 115 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 SELECTION CHART

MODEL	CAT. #	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 V <sub>RMS</sub>	2000 V <sub>RMS</sub>	1414 V <sub>pk</sub>	2828 V <sub>pk</sub>	1200 V <sub>DC</sub>	10,000 A <sub>AC</sub>	1300 A <sub>DC</sub>		Yes
8336	2136.30	5 V / 4 I	4 V / 4 I	1000 V <sub>RMS</sub>	2000 V <sub>RMS</sub>	1414 V <sub>pk</sub>	2828 V <sub>pk</sub>	1200 V <sub>DC</sub>	10,000 A <sub>AC</sub>	5000 A <sub>DC</sub>		Yes
8345	2136.35	5 V / 4 I	4 V / 4 I	1000 V <sub>RMS</sub>	2000 V <sub>RMS</sub>	1414 V <sub>pk</sub>	2828 V <sub>pk</sub>	1200 V <sub>DC</sub>	10,000 A <sub>AC</sub>	5000 A <sub>DC</sub>		Yes
8436	2136.43	5 V / 4 I	4 V / 4 I	1000 V <sub>RMS</sub>	2000 V <sub>RMS</sub>	1414 V <sub>pk</sub>	2828 V <sub>pk</sub>	1200 V <sub>DC</sub>	10,000 A <sub>AC</sub>	5000 A <sub>DC</sub>		Yes
PEL 52	2137.71	2 V / 2 I		600 V <sub>RMS</sub>	1200 V <sub>RMS</sub>	-			3600 A <sub>AC</sub>	-	No	Yes
PEL 112	2137.63	4 V / 3 I	3 V / 3 I	1000 V <sub>RMS</sub>	1700 V <sub>RMS</sub>	1414 V <sub>pk</sub>	2400 V <sub>pk</sub>	1000 V <sub>DC</sub>	12,000 A <sub>AC</sub>	5000 A <sub>DC</sub>		Yes
PEL 113	2137.64	4 V / 3 I	3 V / 3 I	1000 V <sub>RMS</sub>	1700 V <sub>RMS</sub>	1414 V <sub>pk</sub>	2400 V <sub>pk</sub>	1000 V <sub>DC</sub>	12,000 A <sub>AC</sub>	5000 A <sub>DC</sub>		Yes
PEL 115	2137.56	5 V / 4 I	4 V / 4 I	1000 V <sub>RMS</sub>		1414 V <sub>pk</sub>	2400 V <sub>pk</sub>	1000 V <sub>DC</sub>	12,000 A <sub>AC</sub>	5000 A <sub>DC</sub>		Yes

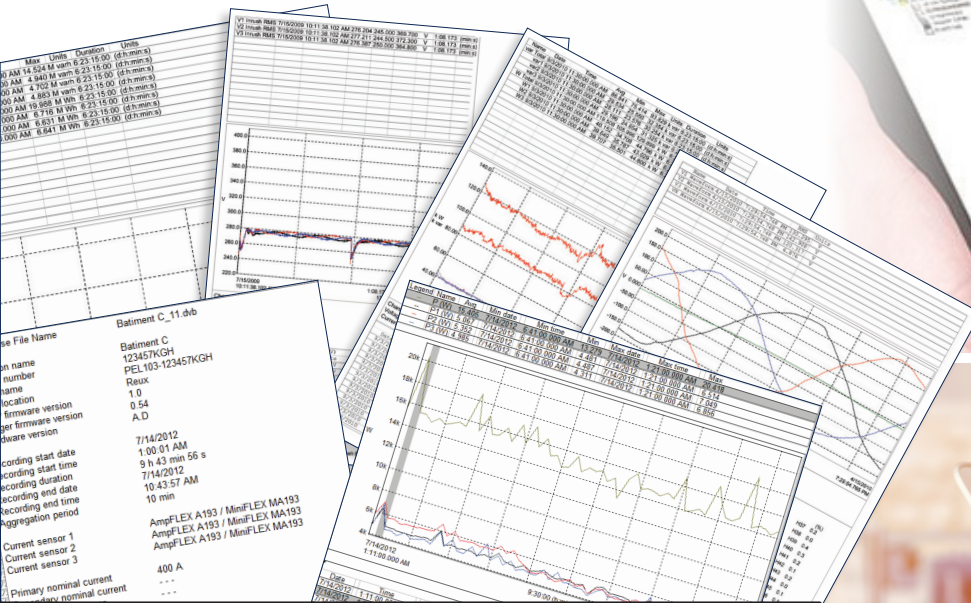
MODEL	CAT. #	DISTRIBUTION SYSTEMS	PHASE ROTATION	WAVEFORM MODE	TRANSIENT MODE	TRUE INRUSH <sup>®</sup> MODE / TYPE / DURATION	ALARM MODE	SNAPSHOT MODE	HARMONIC MODE / INTERHARMONIC MODE	TYPE LCD	POWER SOURCE
8333	2136.10	1 P-2 W, 2 P-3 W, 3 P-3 W, 3 P-4 W		Yes		No	10 types / up to 2 active / 4662 recorded	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 notifications	Yes (no limit with SD card)	DC to 127 <sup>th</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			Monochrome LCD	Power phase input with internal NiMH battery pack
PEL 112	2137.63	1 P-2 W, 1 P-3 W, 3 P-3 W D2, 3 P-3 W O2, 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	None	Line Power with internal NiMH battery pack
PEL 113	2137.64	1 P-2 W, 1 P-3 W, 3 P-3 W D2, 3 P-3 W O2, 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 115	2137.56	1 P-2 W, 1 P-3 W, 3 P-3 W D2, 3 P-3 W O2, 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	Power phase input or external adapter with internal NiMH battery pack

# POWER QUALITY / ENERGY ANALYZERS, METERS & LOGGERS

## DataView<sup>®</sup> Data Analysis and Reporting Software

### Configure all functions:

- 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 available on our website [www.aemc.com](http://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.

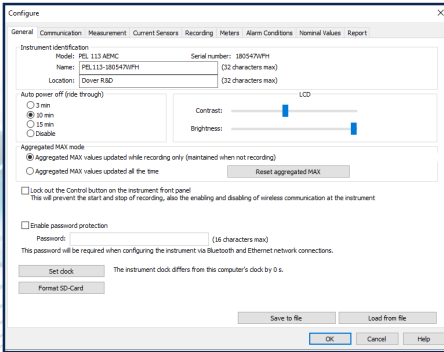


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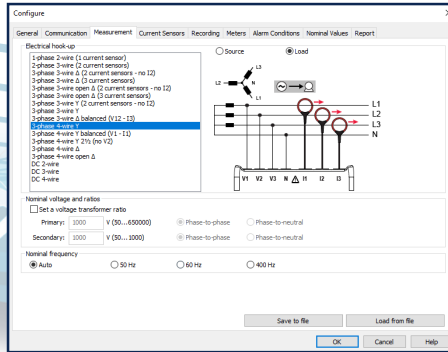
## DataView® Data Analysis and Reporting Software



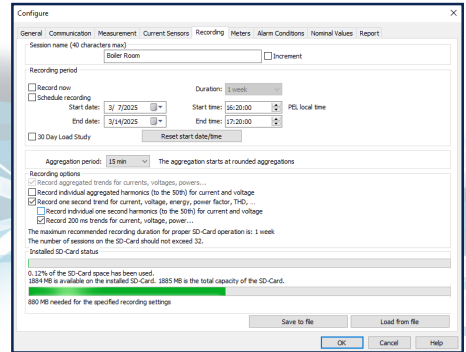
DataView® software, user manual and quick start guide are included in the USB Drive



Configure basic information regarding Auto Power OFF, instrument name and location, display contrast and brightness (*Models PEL 113 & PEL 115*), 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, and nominal frequency.

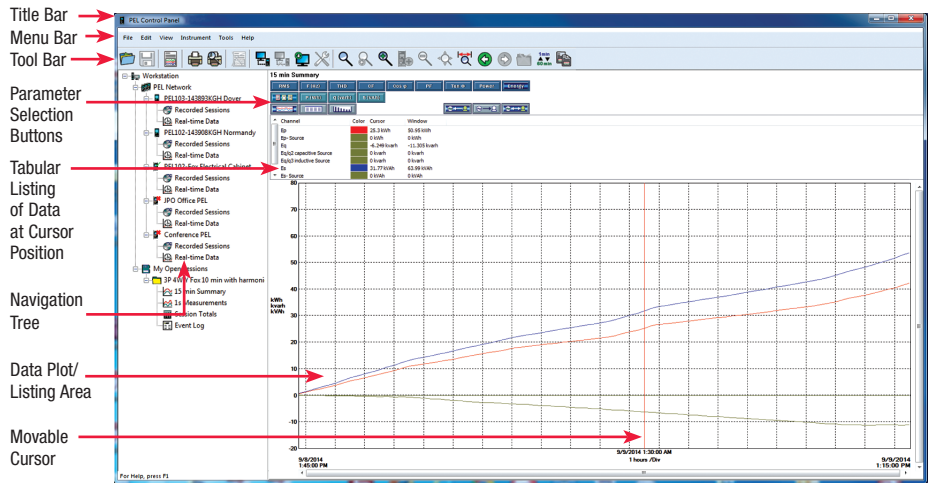


In the Recording tab, configure the instrument to measure (*and record*) over a user selectable recording period. Select demand intervals and view available memory for data storage.

## 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.



**NEW!** Effortlessly Perform Load Study Analysis Meeting the NEC 220.87 Requirements with the PEL DataView® Control Panel Feature