

POWER QUALITY ANALYZERS, METERS & LOGGERS

Power & Energy Loggers PEL 100 Series



Models PEL 102 & PEL 103

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





Visit the PEL 100 Series website for more information on software, specifications and more!

MODELS		PEL 102 & PEL 103	
GENERAL			
Sampling Frequency	128 samples	per cycle; 50/60Hz (16 samples	/cvcle 400Hz)
Data Storage Rate		1 per second	
Demand Period Storage Rate	User selectable (1	, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30) and 60 minutes)
Recorded Parameters		var, PF, Tan, Wh, VAh, VARh, TH	
(Single- and Poly-Phase)	Individual harmonics (fror	m 1 through 50 per phase); Cres	st Factor (CF), Cos f / DPF
Event Log		s changes and error messages	
Front Panel Indicator LEDs	Bluetooth active, recording in progress, p		
Storage Capacity	2GB SD card (included) is use	ed for storage. SD cards (up to 2 formatted FAT32 are supported	GB); SDHC cards (4 to 32GB)
INPUTS Voltage		put channels via 4mm safety ba	
Current	3 current input channels via	custom 4 pin jacks that accept	AFMC probes and sensors
ELECTRICAL	5 current input chamileis via		ALMO [®] probes and sensors
	DANGE	DEOOL UTION	
VOLTAGE MEASUREMENT	RANGE	RESOLUTION	* ACCURACY (% of Reading)
50/60Hz	42.5 to 69Hz	-	±0.1Hz
Single-Phase RMS Voltages	10 to 1000Vrms	0.1V	$\pm 0.2\%$ Rdg $\pm 0.2V$
Phase-to-Phase RMS Voltages	17 to 1700Vrms	0.1 to 1V	$\pm 0.2\%$ Rdg $\pm 0.4V$
400Hz	340 to 460Hz	_	
Single-Phase RMS Voltages	10 to 600Vrms	0.1V	$\pm 1\%$ Rdg $\pm 1V$
Phase-to-Phase RMS Voltages	17 to 1200Vrms	0.1 to 1V	$\pm 1\%$ Rdg $\pm 1V$
DC	100 to 1000V	0.1V	$\pm 1\%$ Rdg $\pm 3V$ (typical)
PT Ratios	Programmable from 50V to 65,0000V	0.01V to 0.1V	_
CURRENT MEASUREMENT			
Current Probe: MiniFlex. Sensor MA193***	200mA to 100Arms	1 to 100mA	±1.2% ± 50mA
	0.8A to 400Arms	10 to 100mA	±1.2% ± 0.2A
	4A to 2000Arms	0.1 to 1A	±1.2% ± 1A
	20A to 10,000Arms	0.1 to 10A	±1.2%
CT Ratios		ble from 1:1 to 25,000:1 (probe	
POWER MEASUREMENTS			
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 % rug ± 0.005 % 31011
	-1 t0 +1 -3.2 to +3.2		
Tangent ϕ (active/reactive power ratio)	-3.2 10 +3.2	0.001	± 0.02
ENERGY MEASUREMENTS			
Active Energy (EP)	0 to 4 x 10 ¹⁸	1Wh	±0.5% Rdg
Reactive Energy (EQ)	0 to 4 x 10 ¹⁸	1 varh	±2% Rdg
Apparent Energy (ES)	0 to 4 x 1018	1Vah	±0.5% Rdg
THD		± 655%	
Individual Harmonics		displayed in percentage; 1 to 7 a	
External Supply		0V/250V (10%) @ 50/60Hz; 400	
Back-Up Power Source/Charge Time	Rechargeable 8	.4V NiMH battery pack / Approxi	imately 5 hours
Battery Life	30 m	iinutes minimum, 60 minutes ty	pical
MECHANICAL			
Communication Ports	USB 2.0. Eth	nernet (RJ45), Wireless <i>Bluetoot</i>	h Class 1 **
Dimension/Weight		1.92 x 1.46" (256 x 125 x 37mm	
Case/Index of Protection		r-molded, polycarbonate UL94 V	
Mounting/Security		side, keyhole slot on back side /	
DISPLAY		,	
Display Type for Model PEL 103		55mm), four line, monochrome	
ENVIRONMENTAL / SAFETY	20	djustable brightness and contras	SL
Operating Temperature/Relative Humidity	EU0	to 122°F (10° to 50°C) / up to 8	5%
Storage Temperature		(/ / /	
v		with batteries; -4° to 158°F (-20	
Safety Rating/CE Rating	Complies with IEC 61010-1:Ed3, and IEC 6	51010-2-030:Eu1 10f 1000V CA	i iii / 000V GAT IV, Pollution Degree 2 / Y

** Computers with Class II Bluetooth will restrict range to 40 ft. 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.





Simple to use, single-, dual (split-phase)

and three-phase (Y, Δ) power & energy

Designed to work in 1000V CAT III and

600V CAT IV environments and fits in

· Power measurements: VA, W and var

(source, load) and VARh (4 quadrants)
DataView^o software for configuring real-time communication with a PC and

report generation with pre-defined or

Displays stored measurements display or via

Bluetooth (Class 1 - communicates up to

300 ft) to a PC or the Android[™] based

Energy measurements: VAh, Wh

many distribution panels

user defined templatesEthernet compatible

Minimal programming required

· Satisfies the requirements of

(current probe dependent)



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

🐼 Max Mode



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

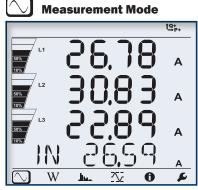
Android[™] App Available!



- Configure Measurements and Recordings
- Display Data in Real-Time
- For Use on any Device with an Android Platform

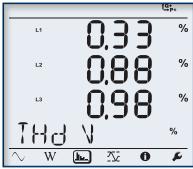
Models PEL 102 & PEL 103

Large Functional Displays



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

Harmonic Mode



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

PRODUCT INCLUDES

PEL 102 & PEL 103 Kit

Small classic tool bag, three MiniFlex[®] MA193-10-BK sensors, 5 ft USB cable, four black test leads and alligator clips, power cord, 12 color-coded ID markers, Multifix mounting system,



mx mounting system, safety card, sensor compliance sheet, 2GB SD-Card with USB-SD-Card reader, quick start user guide, and USB stick supplied with DataView∗ software and user manual.

CATALOG NO. DES

mobile application

NEC Code 220.87

Measures AC/DC

DESCRIPTION	

2137.51	Power & Energy Logger Model PEL 102 (no LCD w/3 MA193-10-BK Sensors)
2137.52	Power & Energy Logger Model PEL 103 (with LCD w/3 MA193-10-BK Sensors)
2137.61	Power & Energy Logger Model PEL 102 (no LCD or Sensors)
2137.62	Power & Energy Logger Model PEL 103 (with LCD, no Sensors)

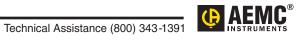


► FEATURES

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POWER QUALITY ANALYZERS, METERS & LOGGERS Optional Accessories

SENSOR TYPE	CL	RRENT RANGE	ACCURACY (typical)	TYPICAL Error On & At 50/60HZ	MAX Conductor Size	USED WITH MODEL	LIMITED RANGE IF USED WITH MODEL
MiniFlex® MA193 *	10	10mA to 3000Aac	±1%	0°	2.75" (70mm)	PEL 102 PEL 103 8333 8336	8220 8230 8435
MR193 Battery operated		1 to 1000Aac 1 to 1300Abc	±2.5%	-0.80°	1.6" (41mm)	PEL 102 PEL 103 8333 8336	8220 8230 8435
SR193		1 to 1200Aac	±0.3%	+0.2°	2.05" (52mm)	PEL 102 PEL 103 8333 8336	8220 8230 8435
AmpFlex• 193 *	100mA to 12,000Aac		±1%	0°	7.64" (190mm) or 11.46" (290mm)	PEL 102 PEL 103 8333 8336	8220 8230 8435
MN93		0.5 to 240Aac	±1%	+0.8°	0.78" (20mm)	PEL 102 PEL 103 8333 8336	8220 8230 8435
MN193	100A	200mA to 120Aac	±1%	+0.75°	0.78"	PEL 102 PEL 103	8220 8230
	5A	5mA to 6Aac	±1%	+1.7°	(20mm)	8333 8336	8230 8435



SENSOR TYPE	CL	IRRENT RANGE	ACCURACY (Typical)	TYPICAL Error on Φ At 50/60HZ	MAX Conductor Size	USED WITH MODEL	LIMITED RANGE IF USED WITH MODEL
SL261 **	100A	5 to 100Aac/dc	±4%	±0.5°	0.46"	PEL 102 PEL 103	8220 8230
Battery operated	10A	50mA to 10AAc/dc	±3%	±1°	(11.8mm)	8333 8336	8435
J93 Battery operated		50 to 3500Aac 50 to 5000Abc	±1%	±1°	2.83" (72mm) Busbar: 5 x 1.69" (127 x 43mm)	PEL 102 PEL 103 8333 8336 8435	N/A

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

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

** AC/DC Current Probe BNC Adapter

for Model SL261 only Catalog #2140.40



CATALOG NO.	DESCRIPTION
1201.51	AC/DC Current Probe Model SL261 (BNC)
2140.28	AC Current Probe Model MR193-BK
2140.32	AC Current Probe Model MN93-BK
2140.33	AC Current Probe Model SR193-BK
2140.34	AmpFlex*Sensor 24" Model 193-24-BK
2140.35	AmpFlex Sensor 36" Model 193-36-BK
2140.36	AC Current Probe Model MN193-BK
2140.48	MiniFlex*Sensor 10" Model MA193-10-BK
2140.49	AC/DC Current Probe Model J93-BK



DATAVIEW[®] Control Panel

Data*View*®

Data Analysis and Reporting Software for the PEL 100 Series

Configure Instrument		
General Communicatio	n Measurement Recording Meters	
_Instrument identifica	tion	
	PEL 103 AEMC	
Serial number:		
		(32 characters max)
	Foxborough, MA	(32 characters max)
Location:	Foxborougn, MAJ	(32 characters max)
Auto power off	LCD	
© 3 min		Contrast:
© 10 min	Normal	node brightness:
© 15 min		
Oisable	Stand-by m	node brightness:
		bling and disabiling of Bluetooth at the the this computer's dock by 22171 second(s).
		OK Cancel Help

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

	rs	
istribution system 3-phase 3-wire open ∆ (12 missing)		
3-phase 3-wire open Δ	^	
3-phase 3-wire Y (I2 missing)		L1
3-phase 3-wire Y 3-phase 3-wire ∆ balanced		L2
3-phase 4-wire Y		— L3 — N
3-phase 4-wire Y balanced		
3-phase 4-wire Y 2½ 3-phase 4-wire ∆		-
3-phase 4-wire open Δ	V1 V2 V3 N ≜ H IZ I3	-Ì
00.0	· · · ·	
lominal voltage and voltage ratios	No	minal frequency
Set a Voltage Transformer Ratio	(6)	Auto
		50 Hz
Primary: 100 V (50650000) Phase-	to-phase 🔘 Phase-to-neutral 🛁 🛸	
) 60 Hz
Secondary: 100 V (50650000) O Phase-	co-phase Phase-co-neutral) 400 Hz
urrent measurement		
AmpFLEX / MiniFLEX	MN93A clamp (5 A)	
Range: 💿 100 A 🛛 💿 2000 A	An external CT is used	
400 A	Primary: 10000	A (525000)
Number of primary wraps: 1 (1, 2 or 3)		Ξ.
Aultiple primary wraps will increase the sensitivity of the	Secondary: 5	Α
AmpFLEX/MiniFLEX, however the nominal current will be	5 A adapter box	
livided by the number of primary wraps.	An external CT is used	
For example, with 2 primary wraps for a 2000 A range, the nominal current will be 1000 A instead of 2000 A.	Primary: 10000	A (525000)
he nominal current will be 1000 A instead of 2000 A.	Secondary: 5	Α
	Current sensor with BNC adapter	
	Nominal current: 1000	A (125000)
	Output voltage: 1	v
	Sensor output voltage must not exce	ed 1.7 V peak

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

neral Communication	Measurement Recording Meters	
Bluetooth		
Enable Bluetooth		
Pairing cod	e: 0000	
Nam	e: PEL 103BT	(32 ASCII characters max)
Visibilit	v: Visible	
100	© Invisible	
USB		
	e: PEL 103 (PROT. 3 01)	
Network		
	s: 00:08:3C:32:2E:FE	
Enable D	HCP	
IP addres	s: 10 . 1 . 10 . 40	
UDP port numbe	r: 3041 ()	1 to 65535)
	··· [] *	
Bluetooth / Network pa	sword	
Enable password p		
Password: 0000		(16 characters max)
		nt via Bluetooth and Ethernet network connections.
This password will be re	ter en inter company are not ante	
This password will be re		
This password will be re		
This password will be re		
This password will be re		
This password will be re		
This password will be re		

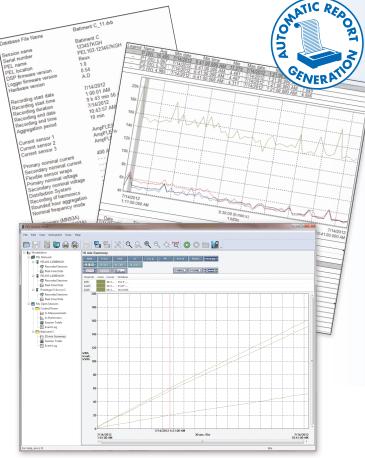
The Communication tab provides information about the various communication mediums supported by the instrument with clear and easy setup of all functions from one dialog box.

Session	n Nami						
Record	Name						
Record		e: Main distrib	oution box			(40 characters max)	
(CCOI G	ing period						
	ing period						
	ord now			Duration: 8 h	iours 🔻	•	
Sche	edule recording	_		Territor and the			
	Start date	6/19/2012		Start time	12:05:54 PM	1	
	End date	6/19/2012		End time	8:05:54 PM	1	
			Rese	et Start Date/Time	2		
Irends	demand interval Perior		ть	aggregation start	a at rounde d b	1011570	
	Peno	1: T min	• ine a	aggregation start	sacroundeun	lours	
Record	ing options						
	ord one second t	ronde					
	ecord current ar						
		-					
ongest	possible recordi	ng is 47 days be	ecause of th	e limitation of file	size (4 GB in F	AT32), regardless of available	e .
nemory							
aution	: Recording harm	nonics will consu	me a consid	lerable amount of	storage space	e and will greatly increase dow	beolow
	lysis time (see h						
Installe	d SD-Card statu	s					
ongest	possible recordi	ng on the instal	led SD-Card	is 18 days.			
1							
.07%	of the SD-Card s	pace has been	used.				
898 M	B is available on	the installed SD	-Card.				
919 M	B is the total cap	acity of the SD-	Card.				

In the Recording tab, configure the instrument to measure (and record) over a user selectable recording period from a few hours to a month or longer. Select demand intervals from one to sixty minutes and view available memory for data storage.



DataView[®]



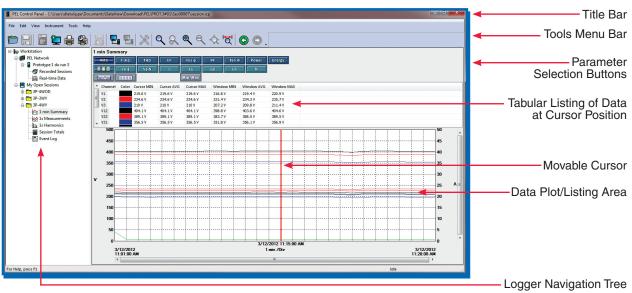
DataView[®] software provides a convenient way to configure and control power and energy tests from a computer. Through the use of clear and easy-to-use tabbed dialog boxes, all PEL 100 series functions can be configured and tests can be initiated.

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 Displays 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. Also logger selection, when multiple loggers are detected, is accomplished in the Control Panel.

