

	A	B	C	D	E	F	G	H
1	MODEL	8220	8230	8335	8333	8336	8435	PEL102 / 103
2	Mission	Power Quality Analyzer	Power Quality Analyzer	Power Quality Analyzer	Power Quality Analyzer	Power Quality Analyzer	Power Quality Analyzer	Power Energy Logger
3	AEMC Catalog #	2130.90	2130.81	2136.20	2136.10	tba	2136.41	2136.61 / 2136.62
4	Firmware	1.4	1.6	2.8	≥4.0	≥4.0	≥3.1	≥1.23/1.13
5	Input Terminals	1V / 1A	1V / 1A	5V / 4I	4V / 3I	5V / 4I	5V / 4I	4V / 3I
6	Channels	1V / 1A	1V / 1A	4U / 4I	3U / 4I	4U / 4I	4U / 4I	3U / 3I
7	RMS Voltage Max - Phase-to-Neutral	600Vrms	600Vrms	1200Vrms	1000Vrms	1000Vrms	1200Vrms	1000Vrms
8	RMS Voltage Max - Phase-to-Phase	660Vrms	660Vrms	2400Vrms	2000Vrms	2000Vrms	2400Vrms	1700Vrms
9	Peak Voltage Max - Phase-to-Neutral	850Vpk	850Vpk	1697Vpk	1414Vpk	1414Vpk	1697Vpk	1414Vpk
10	Peak Voltage Max - Phase-to-Phase	935Vpk	935Vpk	3394Vpk	2828Vpk	2828Vpk	3394Vpk	2400Vpk
11	DC Voltage Max	600Vdc	600Vdc	1697Vdc	1200Vdc	1200Vdc	1697Vdc	1000Vdc
12	AC Current Max (Probe Dependent)	6500Aac	6500Aac	6500Aac	10,000Aac	10,000Aac	6500Aac	10,000Aac
13	DC Current Max (Probe Dependent)	1400Adc	1400Adc	1200Adc	5000Adc	5000Adc	1200Adc	5000Adc
14	Ratios Volt	Yes	Yes	Yes	Yes	Yes	Yes	Yes
15	Ratios Ampere	No	No	Yes	Yes	Yes	Yes	Yes
16	Rogowski (Flex sensors) Amplified Circuit	No	No	No	Yes	Yes	No	Yes
17	Flex Sensors - Selectable Ranges Y/N? (Ranges)	No	No	No	Y (100/6500/10kA)	Y (100/6500/10kA)	No	Y (100/400/2000/10kA)
18	AmpFlex (193-24/36-BK) Probe Specs Ranges and Resolution - Unity Gain Un / Amplified Anom In Instrument Column (39.1uVac/Aac @ 50Hz) (24" 610mm long ; 7.64" 190mm diameter) (36" 914mm long ; 11.46" 290mm diameter) 4 Digits Display Max Accuracy Specs - Refer To User Manual	3000Aac nominal [10 ; 1000A] resolution 0.1A <10.0A displayed as 0 [1000 ; 6500A] resolution 1.0A	3000Aac nominal [10 ; 1000A] resolution 0.1A <10.0A displayed as 0 [1000 ; 6500A] resolution 1.0A	3000Aac nominal [10 ; 1000A] resolution 0.1A <10.0A displayed as 0 [1000 ; 6500A] resolution 1.0A	(100A Range) [0.10 ; 100.0A] resolution 0.01A [>100A] resolution 0.1A (6500A Range) [10.0 ; 1000A] resolution 0.1A [1000 ; 6500A] resolution 1.0A (10kA Range) [10.0 ; 10000A] resolution 1.0A [>10,000A] resolution 10.0A	(100A Range) [0.10 ; 100.0A] resolution 0.01A [>100A] resolution 0.1A (6500A Range) [10.0 ; 1000A] resolution 0.1A [1000 ; 6500A] resolution 1.0A (10kA Range) [10.0 ; 10000A] resolution 1.0A [>10,000A] resolution 10.0A	[10.0 ; 1000A] resolution 0.1A [1000 ; 6500A] resolution 1.0A	(100A Range) [0.2 ; 100A] (400A Range) [0.2 ; 400] (2000A Range) [1 ; 2000] (10kA Range) [5 ; 10kA] < 0.05% of nominal range displayed as 0

	A	B	C	D	E	F	G	H
1	MODEL	8220	8230	8335	8333	8336	8435	PEL102 / 103
19	MiniFlex (MA193-10-BK) Probe Specs Ranges and Resolution - Unity Gain Un / Amplified Anom In Instrument Column (39.1uVac/Aac @ 50Hz) (10" 254mm long ; 2.75" 70mm diameter) 4 Digits Display Max Accuracy Specs - Refer To User Manual	1000Aac nominal [10; 1000A] resolution 0.1A [>1000A] resolution 1.0A <10.0A displayed as 0	1000Aac nominal [10; 1000A] resolution 0.1A [>1000A] resolution 1.0A <10.0A displayed as 0	1000Aac nominal [10; 1000A] resolution 0.1A [>1000A] resolution 1.0A <10.0A displayed as 0	(100A Range) [0.10 ; 100.0A] resolution 0.01A [>100A] resolution 0.1A (6500A Range) [10.0 ; 1000A] resolution 0.1A [1000 ; 6500A] resolution 1.0A (10kA Range*) [10.0 ; 10000A] resolution 1.0A [>10,000A] resolution 10.0A *Limited By Conductor Diameter	(100A Range) [0.10 ; 100.0A] resolution 0.01A [>100A] resolution 0.1A (6500A Range) [10.0 ; 1000A] resolution 0.1A [1000 ; 6500A] resolution 1.0A (10kA Range*) [10.0 ; 10000A] resolution 1.0A [>10,000A] resolution 10.0A *Limited By Conductor Diameter	[10.0 ; 1000A] resolution 0.1A [1000 ; 6500A] resolution 1.0A	(100A Range) [0.2 ; 100] (400A Range) [0.2 ; 400] (2000A Range) [1 ; 2000] (10kA Range*) [5 ; 10kA] < 0.05% of nominal range displayed as 0 *Limited By Conductor Diameter
20	SR193 Probe Specs Ranges and Resolution (1000Aac nom) (1mVac/Aac) (2" 52mm clamping diameter) 4 Digits Display Max Accuracy Specs - Refer To User Manual	[3 ; 1000A] resolution 0.1A <0.5A displayed as 0 [1000 ; 1200A] resolution 1.0A	[3 ; 1000A] resolution 0.1A <0.5A displayed as 0 [1000 ; 1200A] resolution 1.0A	[3 ; 1000A] resolution 0.1A <0.5A displayed as 0 [>1000A] resolution 1.0A	[1 ; 1000A] resolution 0.1A [>1000A] resolution 1.0A	[1 ; 1000A] resolution 0.1A [>1000A] resolution 1.0A	[1 ; 1000A] resolution 0.1A [>1000A] resolution 1.0A	[0.5 ; 1000A] resolution not specified
21	MN93 Probe Specs Ranges and Resolution (200Aac nom) (5mVac/Aac) (0.8" 20mm clamping diameter) 4 Digits Display Max Accuracy Specs - Refer To User Manual	[2 ; 200A] resolution 0.1A <0.5A displayed as 0	[2 ; 200A] resolution 0.1A <0.5A displayed as 0	[2 ; 200A] resolution 0.1A <0.5A displayed as 0	[0.2 ; 200A] resolution 0.1A	[0.2 ; 200A] resolution 0.1A	[0.2 ; 200A] resolution 0.1A	[0.1 ; 200A] resolution not specified
22	MN193 Probe Specs Ranges, Resolution & Accuracy (5A / 100A nom) (5A 200mV / 100A 10mVac/Aac) (0.8" 20mm clamping diameter) 4 Digits Display Max Accuracy Specs - Refer To User Manual	5 / 100Aac nominal [0.3 ; 120A] resolution 0.1A <0.2A displayed as 0	5 / 100Aac nominal [0.3 ; 120A] resolution 0.1A <0.2A displayed as 0	(5A Range) [0.005 ; 5A] resolution 0.001A <0.2A displayed as 0 (100A Range) [0.1 ; 100A] resolution 0.01A [>100A] resolution 0.1A	(5A Range) [0.005 ; 5A] resolution 0.001A (100A Range) [0.1 ; 100A] resolution 0.01A [>100A] resolution 0.1A	(5A Range) [0.005 ; 5A] resolution 0.001A (100A Range) [0.1 ; 100A] resolution 0.01A [>100A] resolution 0.1A	(5A Range) [0.005 ; 5A] resolution 0.001A (100A Range) [0.1 ; 100A] resolution 0.01A [>100A] resolution 0.1A	(5A Range) [0.0025 ; 5A] (100A Range) [0.05 ; 100A]

	A	B	C	D	E	F	G	H
1	MODEL	8220	8230	8335	8333	8336	8435	PEL102 / 103
27	Distribution Systems	(2 total) 1P-2W 3P-3W ΔB	(2 total) 1P-2W 3P-3W ΔB	(5 total) 1P-2W 2P-3W 3P-3W 3P-4W 3P-5W	(4 total) 1P-2W 2P-3W 3P-3W 3P-4W	(8 total) 1P-2W 1P-3W 2P-2W 2P-3W 2P-4W 3P-3W 3P-4W 3P-5W	(8 total) 1P-2W 1P-3W 2P-2W 2P-3W 2P-4W 3P-3W 3P-4W 3P-5W	(17 total) 1P-2W 1P-3W 3P-3W Δ2 3P-3W O2 3P-3W Y2 3P-3W Δ3 3P-3W O3 3P-3W Y 3P-3W ΔB 3P-4W Y 3P-4W YB 3P-4W Y2 1/2 3P-4W Δ 3P-4WOΔ DC-2W DC-3W DC-4W
28	Distribution System Connection Methods	Standard	Standard	Standard	Standard 2 elements 2 1/2 elements	Standard 2 elements 2 1/2 elements	Standard 2 elements 2 1/2 elements	Standard 2 elements 2 1/2 elements
29	Input Impedance - Voltage	451K	451K	969K	1.195M	1.195M	969K	1.908M
30	Input Impedance - Current (Probe/Rogowski)	1M / 12.4K	1M / 12.4K	1M / 12.4K	1M / 12.4K	1M / 12.4K	1M / 12.4K	1M / 12.4K
31	Phase Rotation	Yes 2Wire Method	Yes 2Wire Method	Yes	Yes	Yes	Yes	Yes
32	Waveform (Trend) Mode	Yes - Realtime through DataView (recordable to PC)	Yes	Yes	Yes	Yes	Yes	No
33	Transient Mode	No	No	store 7 searches max 210 recorded	store 7 searches max 51 recorded	store 7 searches max 210 recorded	store 7 searches max 210 recorded	No
34	Max Transient Voltage (With No Damage To Instrument)	N/A	N/A	8kV - Phase-Neutral 8kV - Phase-Case 2.5kV - Phase-P.S.	8kV - Phase-Neutral 8kV - Phase-Case 2.5kV - Phase-P.S.	8kV - Phase-Neutral 8kV - Phase-Case 2.5kV - Phase-P.S.	8kV - Phase-Neutral 8kV - Phase-Case 2.5kV - Phase-P.S.	N/A
35	True Inrush Mode - Type - Duration	Yes (RMS) duration unspecified	Yes (RMS) <15 seconds @ 60Hz	Yes (RMS & PEAK only) up to 10 minutes	No	Yes (RMS+PEAK & RMS only) up to 10 minutes	Yes (RMS+PEAK & RMS only) up to 10 minutes	No
36	Alarm Mode	No	18 types up to 10 active 4096 Recorded	40 types up to 40 active 10,920 recorded	10 types up to 2 active 4662 recorded	40 types up to 7 active 16,362 recorded	40 types up to 7 active 16,362 recorded	No

	A	B	C	D	E	F	G	H
1	MODEL	8220	8230	8335	8333	8336	8435	PEL102 / 103
37	Flicker Short (PST) / Long (PLT)	No	Short (PST)	Short (PST)	Short (PST)	Short (PST) & Long (PLT)	Short (PST) & Long (PLT)	No
38	Photograph Mode (# Of Photographs)	Yes (9)	Yes (8)	Yes (50)	Yes (12)	Yes (50)	Yes (50)	No
39	Harmonic Mode (up to 50th) - Expert	No	Yes	Yes	Yes	Yes	Yes	No
40	Harmonic Mode (up to 50th) - Neutral	No	No	Yes	No	Yes	Yes	Yes
41	Harmonic Mode - RMS Distortion	Yes	Yes	No	Yes	Yes	Yes	Yes
42	THDf and THDr - %f , %r	No	No	No	Yes	Yes	Yes	No
43	Power Mode- Power Distortion	No	No	No	Yes	Yes	Yes	Yes
44	Power Mode - DC Power	No	No	No	No	Yes	Yes	Yes
45	Power And Energy - Labels IEEE 1459 {W ; VAR ; VAD ; VAR ; VA} => {P ; Q ₁ ; D ; N ; S}	No	No	No	Yes	Yes	No	No
46	Energy - Units	Wh, VARh, VAh	Wh, VARh, VAh	Wh, VARh, VAh	Wh, VARh, VAh	Wh, VARh, VAh	Wh, VARh, VAh	Wh, VARh, VAh
47	Energy - Reported Parameters	Wh, VARh, VAh	Wh, VARh, VAh	Wh, VARh, VAh	Ph, Q1h, Dh, Nh, Sh	Ph / Joule / Nuclear toe / Non-Nuclear toe / BTU, Q1h, Dh, Nh, Sh	Wh / Joule / Nuclear toe / Non-nuclear toe / BTU, VARh, VADh, VAh	Wh, VARh, VAh
48	Calculation Methods - Non Active Values	Yes Reactive Values With And Without Harmonics	Yes Reactive Values With And Without Harmonics	Yes Reactive Values With And Without Harmonics	Yes Reactive Values With And Without Harmonics	Yes Reactive Values With And Without Harmonics	Yes Reactive Values With And Without Harmonics	Yes Reactive Values With Harmonics
49	Calculation Methods - Y / N - K-Factor / Factor K?	Yes - K-Factor	Yes - K-Factor	Yes - K-Factor	Yes - Factor K	Yes - Factor K	Yes - Factor K	No
50	Type Of Measures Monitored/Recorded Trend Mode And/Or Alarms	Vrms, Vrms 1/2max, Vpk+, Vpk-, Vdc, Vcf, Arms, Adc, Acf, Apk+, Apk-, Arms 1/2max, Akf, W, Wdc, Var, Va, Pf, Dpf	Vrms, Vrms 1/2max, Vpk+, Vpk-, Vdc, Vcf, Arms, Adc, Acf, Apk+, Apk-, Arms 1/2max, Akf, W, Wdc, Var, Va, Pf, Dpf, Pst, Vthd, Vdf, Athd, Adf	Urms, Ucf, Uthd, Vrms, Vcf, Vthd, Arms, Acf, Athd, W, VAR, VA, PF, cos, tan, VfIk, Akf, Vunb, Aunb, Hz, Xh, Yh	Urms, Ucf, Uthdf, Uthdr, Vrms, Vcf, Vthdf, Vthdr, Arms, Acf, Athdf, Athdr, W, VAR, VAD, VA, PF, cos, tan, PST, FHL, FK, Vunb, Aunb, Hz, U-h, V-h, A-h, VA-h	Urms, Udc, Upk+, Upk-, Ucf, Uthdf, Uthdr, Vrms, Vdc, Vpk+, Vpk-, Vcf, Vthdf, Vthdr, Arms, Adc, Apk+, Apk-, Acf, Athdf, Athdr, W, Wdc, VAR, VAD, VA, PF, cos, tan, PST, PLT, FHL, FK, Vunb, Aunb, Hz, U-h, V-h, A-h, VA-h	Urms, Udc, Upk+, Upk-, Ucf, Uthdf, Uthdr, Vrms, Vdc, Vpk+, Vpk-, Vcf, Vthdf, Vthdr, Arms, Adc, Apk+, Apk-, Acf, Athdf, Athdr, W, Wdc, VAR, VAD, VA, PF, cos, tan, PST, PLT, FHL, FK, Vunb, Aunb, Hz, U-h, V-h, A-h, VA-h	Vrms, Vdc, Urms, Arms, Adc, Vcf, Acf, P, Psrc, Q, S, Unbalance[realtime], W, VAR, VA, PF, cos, tan, Hi_V, Hi_U, Hi_A, Vthd, Uthd, Athd, Angle_V, Angle_U, Angle_A, Freq
51								
52	Line Frequency	40 to 69Hz	40 to 69Hz	40 to 70Hz	40 to 70Hz	40 to 70Hz	40 to 70Hz	[42.5;69], [340;460]
53	Sampling Rate - # Of Samples Per Line Cycle	256	256	256	256	256	256	128 (16@400Hz)
54	Type LCD	Electroluminescent Backlit LCD	Color	STN	TFT - 5.7" diagonal 320x240 resolution	TFT - 5.7" diagonal 320x240 resolution	STN	None (102) / Monochrome LCD (103)

	A	B	C	D	E	F	G	H
1	MODEL	8220	8230	8335	8333	8336	8435	PEL102 / 103
55	Auto Shut OFF LCD Possible When Power On	Yes	Yes	No	Yes	Yes	No	Dims After Inactivity (103)
56	Display - Night Mode	Yes (Backlight)	No	No	Yes	Yes	No	No
57	Front Panel Keypad	Snapshot, Print, View, Delete Function Buttons. L/R Navigation Keys, White/Yellow Function Buttons.	Recording, Alarm, Setup, Waveform, Power/Energy, Harmonics and Snapshot Function Buttons. Up/Down/L/R/Enter Navigation Keys.	Capture key (capture menu) Alarm key	Capture key for Transient only (no capture menu) Alarm key	Capture key (capture menu) Alarm key	Capture key (capture menu) Alarm key	Navigation Keys Used For Config Menus(103) and to Start/Stop Recordings and Bluetooth
58	Storage Maximum - SD Card / Internal	Internal - 9 Possible Photographs Only	Internal - 1Mb Internal Memory	SD - 2Gb	256Mb	SD - 2Gb	SD - 2Gb	SD - 2 Gb Shipped (32Gb upgradeable)
59	Recording Length Calculator?	No	Yes - AEMC's Trend Duration Calculator	Yes - Control Panel Recordings Tab	Yes - AEMC's Trend Duration Calculator	Yes - AEMC's Trend Duration Calculator	Yes - AEMC's Trend Duration Calculator	No
60	Dataview - Software	Included	Included	Included	Included	Included	Included	Included
61	DataView - Connection Method	USB Optical Connector	USB Optical Connector	USB Type-B	USB Type-B	USB Type-B	USB Type-B	USB - Type-B Bluetooth2.1 Class 1 LAN
62	Power Source / Battery Information	6xAA batteries or 120V/240Vac External Adapter	120V/240Vac External Adapter with Internal NiMH Battery Pack (7.2V / >1800mAh)	120V/240Vac External Adapter with Internal NiMH Battery Pack (9.6V / 4000mAh)	120V/240Vac External Adapter with Internal NiMH Battery Pack (9.6V / 4000mAh)	120V/240Vac External Adapter with Internal NiMH Battery Pack (9.6V / 4000mAh)	120V/240Vac External Adapter with Internal NiMH Battery Pack (9.6V / 4000mAh)	120V/240Vac External Adapter with Internal NiMH Battery Pack (8.4V / 750 mAh)
63	IP Mechanical Rating	IP54	IP54	IP50	IP53	IP53	IP67	IP54
64	Measurement Category Safety Rating	600V CAT IV	600V CAT III	600V CAT IV	600V CAT IV 1000V CAT III	600V CAT IV 1000V CAT III	600V CAT IV 1000V CAT III	600V CAT IV 1000V CAT III

