Three Phase, *Class A* Power Quality Analyzer **PowerPad**® **IV**

MODEL 8345

Excel at Power Quality Analysis

POWERP D IV Class

Portable Easy-To-Use Shock-Resistant

- Voltage quality diagnostics
- Full compliance with IEC 61000-4-30 Class A standard
- Easy-to-use on-screen setup
- 5 V to 1000 V three-phase analyzer
- Works on all existing electrical networks (single phase, three phase wye, delta, ...)
- 7 inch color display touch screen
- TRMS voltage and current measurements
- Power W, VA and VAR (N, Q1 and D) measurements
- PF, DPF, CF and THD measurements
- Webserver, Wi-Fi, Ethernet, and USB communication
- Auto recognition of current sensors and probes
- Includes FREE DataView® software for configuring, data retrieval, real-time display, analysis and report generation

Our products are backed by over 130 years of experience in test and measurement equipment, and encompass the latest international standards for quality and safety.

Technical Hotline: (800) 343-1391 www.aemc.com



POWER & ENERGY QUALITY ANALYZER Model 8345

PowerPad® IV Model 8345 - Top Performance and Accuracy

Intended for inspection, maintenance and field service teams on industrial or commercial installations, the PowerPad[®] IV gives you a snapshot of the electrical network quality features. Class A instruments meet the most rigorous performance and measurement time accuracy requirements (better than +/- 0.3 sec/day) for parameters such as voltage, current, harmonics and power and other measurements as defined in the IEC 61000-4-30 standard, and are capable of producing reliable and repeatable results when connected to the same signals.

Comfortable to handle and equipped with an intuitive graphical user interface, this analyzer offers high measurement accuracy. It also features numerous calculated values and several processing functions.



APPLICATIONS



Commercial and Industrial Sectors

Today, electrical distribution networks are judged according to their ability to power loads causing disturbances and loads sensitive to disturbances. The latter may take multiple forms.

Voltage quality analyzers can be used to detect and qualify each disturbance type: outage, voltage surges and sags, flicker, THD, voltage variations, transients, etc.

Energy Efficiency

For energy diagnostics on a site, a logger must be set up to record the electrical power and energy consumed. Once all the measurements have been taken, billing data is compared with the actual measurements to determine whether corrective action needs to be taken. This action may take different forms: resizing of a transformer, implementation of filtering systems, replacement of faulty equipment, etc. This analysis helps you understand and act at the right place and time to provide the best solution.



Electrical Maintenance

The increase of electronic power supplies in industrial processes has led to increases in harmonic disturbances on electrical networks which have a direct impact on the quality of the energy distributed. These disturbances may cause failures across all the electrical devices connected to the network.

Harmonic currents have negative effects on nearly all the components in the electrical system, creating new dielectric, thermal and/or mechanical stresses.



POWER & ENERGY QUALITY ANALYZER Model 8345

PowerPad® IV Model 8345

The PowerPad moves up a grade - Class A!



SPECIFICATIONS

MODEL	024E						
MODEL	8345						
ELECTRICAL							
Measurement	Measurement Rang (with unity						
Frequency	Min	Max					
	42.50 Hz	69.00 Hz					
Inputs	5 x voltage / 4 x cu	rrent, isolated					
Voltage	(5 to 1,000) Va	c and Voc					
Harmonics Mode	DC to 127 th order						
Interharmonics Mode	0 to 126 th order						
Inrush / Transient Capture (number)	No maximum (limited by	<i>SD card) /</i> 1000 ct					
Shockwaves (Fast transient)	Up to 12 kV sample	d every 500 ns					
Flicker (Pst)	< 0.1	-					
Voltage Unbalance (u0,u2)	(0.5 to 5) % (absolute); ±	± 0.15 % (absolute)					
. ,	> 900 parai	neters					
Trend Recording	3 d with a sampling p 15 d with a samplin 45 d with a samplin	g period of 1 s					
Sampling Rate	Voltage 400 kSps / Cu Surge 2 N	irrent 200 kSps /					
Alarm Mode (types / number)	52 / 20,000 with Em	ail notifications					
Real-time / Power / Energy / Unbalance Modes	Yes / Yes / Yes /	Composite					
Screenshots	No maximum (limite	ed by SD card)					
Power Supply	Power from phase from (1 with external supply	,					
Carrier Current Detection	Yes						
Battery Life	Cartridge Li-ion – 5800 A·h \leq 6 h w/ display ON; \leq 1						
MECHANICAL							
Data Storage	16 GB SD-Card <i>(included)</i> for alarms and trend						
Display	7 in color LCD touch scree	n: 800 x 480 (WVGA)					
Clock / GPS	Yes, buil						
Operating Temperature	(32 to 104) °F (0 to 40) °C					
Communication	USB, Ethernet, Wi-F IRD server, USB driv						
Dimensions	(7.87 x 11.22 x 2.17) in (2						
Weight (meter only)	4.19 lb (1.						
COMPLIANCE & STANDARDS							
Safety	IEC 61010 100	0 V CAT IV					
Environmental	IEC 61557-12 &	IEC 62586					
Measurement Standard	IEC 61000-4-30 (Ed	3) Class A (Full)					
EN50160 Monitoring Mode	With DataView [®]	, , ,					
Warranty	*3 y (registration r within 30 d of the da						

Consult factory for NIST Calibration prices.

Download the user manual for complete specifications





PRODUCT INCLUDES

CAT. # 2136.35 - POWERPAD IV MODEL 8345 (NO PROBES) CAT. # 2136.36 - POWERPAD® IV MODEL 8345 W/4 MA194-24-BK MINIFLEX® SENSORS CAT. # 2136.37 - POWERPAD IV MODEL 8345 (WITH (4) AMPFLEX® MA193-24-BK FLEXIBLE CURRENT SENSORS)

Meter, extra-large tool bag, internal carrying pouch, hand strap, (4) MA194-24-BK sensors, 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, SD card, 5.8 Ah Li-ion battery pack, quick start guide, and a USB drive with DataView[®] software and user manual.



ACCESSORIES/REPLACEMENTS

CAT. #2140.43 Lead - Set of 5, 10 ft (3M) Black Leads w/5 Black Alligator Clips

CAT. #2140.44 Lead, (1) 10 ft (3M) Black Lead w/1 Black Alligator Clip

CAT. #5100.14

Adapter - Replacement Power Plug Adapter for PA32ER

CAT. #5100.15

Adapter - Replacement 1000 V PA32ER Power Supply



CAT. #2140.80 MiniFlex[®] Sensor Model MA194-24-BK

CAT. #2140.81 AC Current Probe Model MN94

CAT. #2140.82 AC/DC Current Probe Model E94

CAT. #2136.80 Cable - Replacement 10 ft USB Cable



FEATURES, FUNCTIONS & MEASUREMENTS

GENERAL

- Easy-to-use, portable power quality analyzer
- Full compliance with IEC 61000-4-30 ed. 3.0 Class A functions
- Voltage quality diagnostics and communication options
- Records and stores hundreds of parameters in memory every 10/12 periods (200 ms)
- Measurements on all network types: three-phase, Aron connection, single phase, etc.
- Electrical network monitoring with setting of alarms
- Characterization with software for True RMS single-, two- and three-phase measurements at 512 samples/cycle, plus DC
- 7 inch color graphical, backlit TFT touch screen display
- Monitors user configured alarm parameters
- Fast transient events are captured and stored in memory
- True InRush capabilities to study loads during setup as well as ongoing

MEASUREMENTS

- Measurements and recordings accessible on the device's front-panel
- Measures all DC components
- Harmonics (amplitude and phase shift) from DC to the 127th order
- Inter-harmonic subgroups from 0 to the 126th order
- 2 line carrier signal frequencies monitored
- Measurement of active power (P), non-active power (N), reactive power (Q₁), apparent power (S) and distortion power (D) values (total and per phase)
- Measurement of energy values (total and per phase) with Energy valuation
- Internal GPS for precise UTC synchronization
 (NTP possible too)
- Real-time color waveforms (5 voltage and 4 current)
- Easy-to-use multilingual on-screen setup
- Automatic current probe/sensor recognition and scaling
- True RMS voltage and current measurement
- Shockwave measurement



CALCULATIONS

- Calculation of K factor & FHL
- Calculation of distorting voltages and currents
- Calculation of Displacement Power Factor (DPF)
 and True Power Factor (PF)
- Calculation of Pst & Plt flicker and the sliding Pst
- Calculation of unbalance (current and voltage)
- Waveform Inrush with a duration of up to 10 minutes
- RMS and Peak Inrush for up to 30 minutes
- Capture of hundreds of 2.5 µs transients
- Capture shockwaves up to 12 kV with a resolution of 500 ns
- Trend Recording
- Trend recording period from 200 ms to 2 hrs

COMMUNICATION

- Built-in GPS
- USB 2.0 external flash drive supported (host devices)
- USB 2.0 connection with a PC
- Ethernet 100 Mbps communication
- Built-in Wi-Fi 802.11b/g communication
- Web server for a remote user interface with Android, Microsoft and iOS applications
- Backup and recording of screenshots (image and data)
- Recording and export to a PC
- Includes DataView[®] software for real-time data recovery and communication with a PC

ERGONOMICS & EASE OF USE

- Wide 7-inch color LCD touch screen (WVGA)
- Real-time display of waveforms (4 voltage/4 current)
- DC current sensor power supply
- 5 x 50 Hz/60 Hz AC/DC voltage inputs
- Intuitive, user-friendly and multilingual graphical interface
- Fully multi-task instrument with user profiles
- Automatic recognition of different current sensors
- Display of phasor diagrams
- Waveforms at 512 samples per cycle, with Min/Max 2.5 µs
- Real-time waveforms displayed from 1 cycle to 10/12 cycles (50/60 Hz)

STANDARD VERIFICATION CAMPAIGNS



ENERGY VALUATION

PowerPad IV Class A Model 8345 offers all the measurements required to successfully implement energy efficiency projects and monitor electricity distribution.

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SHOCKWAVES

Shockwaves, usually caused by lightning, are spectacular instantaneous electrical voltage surges. They also propagate in the digital network. Model 8345 can withstand shockwaves up to 12 kV which are sampled every 500 ns.



MSV_{3*} LINE CARRIER SIGNAL MEASUREMENT

In the harmonic analysis function, there is also a mode for monitoring carrier currents. After defining their frequency in the instrument, the command signals will then be measured.



INTERHARMONICS (harmonic mode)

Model 8345 can be used to measure and display the interharmonics, as requested in IEC 61000-4-7, for very precise analysis of all the disturbances on an electrical network.







MONITORING MADE EASY

TREND



The trend graph shows the variations of the parameters measured over time as fast as 200 ms.





ALARMS

Alarms set points can be programmed to be monitored, which are then recorded and time-stamped with the duration and extreme values. Users can be informed directly by email when an alarm is triggered.

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1 02	IPI	200ms	3L	>	4000 W	1%	0s					L3	PF₁	2.696	59s59	
03	VRMS	%c	3L	<	215 V	1%	0s					L1	Vrms	144.7 mV	3min00	6
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TRANSIENTS

Transients correspond to peaks in the voltage or current waveform. Shockwaves are extremely fast transients with even greater possible amplitude.





TRUE INRUSH®

For tests when starting up loads, model 8345 can record ½-period values covering more than 30 minutes and the waveforms of the signal can be captured.





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A VERSATILE COMMUNICATING INSTRUMENT

SOFTWARE

The DataView[®] Control Panel software processes the measurements made with the PowerPad[®] IV Class A Model 8345 including:

- Configuration of the instrument: *setup, recording, alarms*
- Real-time display
- Processing of all the recorded data
- Transfer of screenshots and transients
- Data export into spreadsheet (Excel, .CSV)
- Data export in graphic form in Windows™.



The web server

PowerPad[®] IV Class A Model 8345 is equipped with firmware for remote access. It can be controlled via VNC, which controls a remote machine while displaying its desktop. It can be activated from any browser (Chrome, Edge, Firefox, etc.).

Use any iOS or Android PC, tablet or smartphone.

Communication

In addition to using media such as SD cards and USB drivers, it is possible to download the measurements and communicate with the instrument remotely via USB, remote links, Wi-Fi (direct or via server) or the RJ45 (Ethernet connector).

(Refer to the User Manual for PC computer USB hardware requirements).



IRD server

Our IT networks are protected against external attack. Thanks to the provision of access to our IRD server, a single authorized IP output address allows you to transmit your measurements all over the world.

We recommend utilizing the IRD Server for configuring test measurements, and directly connecting to a PC for generating reports involving large packets of data.

SCPI commands

With an integrated interfacing software layer, it is possible to control the 8345 instrument via its own software application. SCPI commands are available for all the instrument's functions.

Data files in JSON format

Saved in JSON format, all the recordings are accessible and can be processed with a third-party and/or proprietary application.



MEETING STANDARDS

IEC 61000-4-30

The International Electrotechnical Commission (IEC) IEC 61000-4-30 Edition 3.1 standard. This standard defines:

- the methods for measuring the quality parameters for the supply of power to electrical power networks
- and how to interpret the results

The measurement parameters are described for each applicable parameter in terms which provide reliable, repeatable results, however the method is implemented.

	7 ? 🤇	<mark>0]</mark> 49	.98 Hz	18/05/21 07:25	8\$ ## III
	1	2	3	N	
RMS	228.3 V~	232.4 V~	236.0 V~	5.869 V~	
DC	+ 0.103 V=	+ 0.150 V=	+ 0.210 V=	- 0.186 V=	
THD	2.7 %f	5.4 %f	2.7 %f		3U
THD	2.7 %r	5.4 %r	2.7 %r	4.5 %r	<mark>4V</mark> 4A
CF	1.374	1.418	1.451	1.569	
Pinst	0.014	0.017	0.016		L1 L2 L3 N
Pst	0.143	0.156	0.148		
Plt	0.121	0.133	0.129		
RMS	THD	CF T		64	

EN 50160

Homogeneous tolerances

The EN 50160 standard characterizes the quality of the voltage supplied. It presents the different types of disturbances which may affect the voltage on a network. It lists the parameters to be monitored and defines how long the parameters should be monitored for.

With the DataView[®] software, the Monitoring mode can be used to set up a simplified configuration of all the limits to be monitored and the parameters to be recorded.



IEC 61000-4-7

Harmonics and interharmonics

The IEC 61000-4-7 standard defines the measurement methods for voltage quality analyzers so that they remain compliant with the emission levels stipulated in certain standards (e.g. the harmonic current limits specified by IEC 61000-3-2) and for the measurement of harmonic currents and voltages on the power networks themselves.

IEC 61000-4-15

Short or long-term flicker

This is caused by the power supply voltage modulation. When it affects lighting, it gives an impression of unstable vision due to a light stimulus whose luminance or spectral distribution fluctuates over time.

There are 2 parameters calculated from the power supply voltage.

- *Pst* which is a short-term assessment based on a 10-minute observation period
- *Plt* which is a long-term assessment, usually over a period of 2 hours







MODEL 8345: DIAGNOSTIC TOOL

Viewing the signal and its components

Model 8345 is an easy-to-use analytical tool. After connection, the 8345 immediately and totally automatically displays the voltages up to 1,000 V AC and DC and the currents, thanks to a function which automatically recognizes the sensor connected. A large number of sensors are compatible with the PowerPad.



The Waveform mode automatically provides an oscillogram showing the voltage and/or current waveforms.

™ № ③ № P (W) - 584.1 - 675.8 - 694.8	
P (W) - 584.1 - 675.8 - 694.8	
	3L
Q _f (var) - 81.8 - 97.5 - 96.8	L1
D (var) + 18.7 + 43.1 + 13.4	L1 L2 L3 Σ
N (var) + 83.9 + 106.6 + 97.7	•
S (VA) 590.1 684.2 701.6	
W PF	

Model 8345 can be used to monitor all the power values (P, Q, D, etc.) in real time over periods of varying durations. Measurement and analysis of all the power values enables you to perform a full power survey in compliance with the standards.



It is very simple to measure harmonics and interharmonics with Model 8345, which is very easy to use as an analytical tool.



The phase relation between the voltages and currents is displayed with a phasor diagram. The vectorial representation allows you to confirm the instrument is properly connected to the electrical network.

Simplified configuration

We've simplified the configuration set up for ease of use.

Image: Weight of the second		※ ? ● 13/04/21 11:03 ○ 0 4/# ₩0 ③E VOLTAGE RATIOS USER1 2
Trend mode A Alarm mode Transient mode A Alarm mode Transient mode A G Alarm mode Inrush mode A G A Alarm mode Inrush mode A Alarm mode Electrical connection 30 G Sensors / Ratios Calculation methods X=	3-phase 5-wire	Ratio set-up ✓ V1 + V2 + V3 + VN ▶ ① 1.0k / 1000.0 ≥ 1.0k / 1000.0 ② 1.0k / 1000.0 ⊗ 1.0k / 1000.0 ③ 1.0k / 1000.0 ⊗ 1.0k / 1000.0 ③ 1.0k / 1000.0 ⊗ 1.0k / 1000.0



MODEL 8345: PROBES & SENSORS

We offer a complete family of current measurement probes to meet most AC (or DC) measurement applications up to 10,000 Arms.

	Probe/Sensor Type	TRMS Current	Max Conductor Size	Accuracy on IRMS	Accuracy on Φ	Safety
	SR193-BK (1000 A)	(1 - 3) A		. 0.0.0/	-	EN 61010-2-032
	Catalog #2140.33	(3 - 10) A	2.05 in	± 0.8 %	±1°	Pollution Degree 2
	AC Current Probe	(10 - 100) A	(52 mm)	± 0.8 %	± 0.5 °	600 V CAT IV,
	with 10 ft lead	(100 - 1200) A	1	± 0.8 %	± 0.3 °	1000 V CAT III
	MR193-BK	(1 - 10) A		. (1 E 0/ . 1 A)	-	
Harris	(1000 AAC / 1400 ADC)	(10 - 100) A	1	± (1.5 % + 1 A)	± 2 °	EN 61010-2-032
	Catalog #2140.28	(100 - 800) A	- 1.6 in	± 3 %		Pollution Degree 2 300 V CAT IV,
	AC Current Probe	(800 - 1200) A	- (41 mm)	50/	± 1.5 °	600 V CAT IV,
-	with 10 ft lead	(1200 - 1400) A		± 5%		
	MN94 Catalog #2140.81 AC Current Probe	(0.05 to 200) A	0.25 in (16 mm)	± 0.2 %	± 0.1°	EN 61010-2-032 Pollution Degree 2 300 V CAT IV, 600 V CAT III
	MN93-BK (200 A)	(0.5 - 2) A		. (2.0/ . 1.4)	-	EN 61010-2-032
	Catalog #2140.32	(2 - 10) A	0.78 in	± (3 % + 1 A)	± 6 °	Pollution Degree
	AC Current Probe	(10 - 100) A	(20 mm)	± (2.5 % + 1 A)	± 3 °	300 V CAT IV,
	with 10 ft lead	(100 - 240) A	1	± (1 % + 1 A)	± 2 °	600 V CAT III
	MN193-BK (100 A)	(100 - 300) mA			-	
	Catalog #2140.36	300 mA - 1 A	-	± (0.7 % + 2 mA)	± 1.5 °	
	AC Current Probe with 10 ft lead	(1 - 120) A	- 0.78 in	± 0.7 %	± 0.7 °	EN 61010-2-032
	MN193-BK (5 A)	(5 - 50) mA	(20 mm)	$\pm (1 \% + 0.1 \text{ mA})$	± 1.7 °	Pollution Degree 2 300 V CAT IV,
	Catalog #2140.36	(50 - 500) mA		± 1 %		600 V CAT III
	AC Current Probe with 10 ft lead	. ,	-		±1°	
		500 mA - 6 A		± 0.7 %		
	AmpFlex [®] 193-24-BK (6500 A) Catalog #2140.34	(10 - 100) A	7.64 in	± 3 %	±1°	EN 61010-2-032 Pollution Degree
	Flexible Current Probe with 24 in sensors & (100 - 6500) A 10 ft lead		(190 mm)	± 2 %	± 0.5 °	600 V CAT IV, 1000 V CAT III
	AmpFlex [®] 193-36-BK (6500 A) Catalog #2140.35	(10 - 100) A	11.46 in	± 3 %	±1°	EN 61010-2-032 Pollution Degree 2
	Flexible Current Probe with 36 in sensors & 10 ft lead	(100 - 6500) A	(290 mm)	± 2 %	± 0.5 °	600 V CAT IV, 1000 V CAT III
	MiniFlex® MA193-10-BK (1000 Aac)	(10 - 100) A	2.75 in	± 3 %	±1°	EN 61010-2-032 Pollution Degree 2
	Catalog #2140.48 MiniFlex [®] Sensor with 10 in sensor & 5 ft lead	(100 - 1000) A	(70 mm)	± 2 %	± 0.5 °	600 V CAT IV, 1000 V CAT III
	MiniFlex® MA193-14-BK (1000 Aac)	(10 - 100) A	3.94 in	± 3 %	±1°	EN 61010-2-032 Pollution Degree 2
	Catalog #2140.50 MiniFlex [®] Sensor with 14 in sensor & 5 ft lead	(100 - 1000) A	(100 mm)	± 2 %	± 0.5 °	600 V CAT IV, 1000 V CAT III
	MiniFlex® MA194-24-BK (1000 Aac)	(10 - 100) A	7.64 in	± 3 %	±1°	EN 61010-2-032 Pollution Degree 2
	Catalog #2140.80 MiniFlex [®] Sensor with 24 in sensor & 10 ft lead	(100 - 1000) A	(190 mm)	± 2 %	± 0.5 °	600 V CAT IV, 1000 V CAT III
	E94 Catalog #2140.82	10 A: (0.1 - 10) A	.464 in	± 3 %	±1°	EN 61010-2-032 Pollution Degree 2
	AC Current Probe	100 A: (0.5 to 100) A	(11.8 mm)	±4%	± 0.5 °	300 V CAT IV, 600 V CAT III



All probes and sensors. For system accuracy calculations, add the probe accuracy to the meter accuracy. * Requires BNC adapter Catalog #2140.40

SOFTWARE & REPORTS



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.





DataView[®] software provides a convenient way to configure and control power analysis tests from a computer. Through the use of clear and easy-to-use tabbed dialog boxes, all PowerPad[®] IV Model 8345 functions can be configured and tests can be initiated. Results can be displayed in real-time and stored on a PC. Reports may be printed along with the operator's comments and analysis.

- Configure all PowerPad[®] functions and parameters from your PC
- Record trend data directly to the PC
- Customize views, templates and reports to meet specific needs
- Create and store a complete library of configurations that can be uploaded to the PowerPad[®] as needed
- Zoom in and out and pan through sections of the graph to analyze the data
- Display waveforms, trend graphs, harmonic spectrums, text summaries, transients, event logs and stored alarms
- Print reports using standard or user designed custom templates
- Selectively review individual channels, phases on total network recordings
- Keep track of accumulated energy over time and time of use
- Create user-specific cover sheets for reports identifying specific data that includes operator, tests site and narrative associated with the data



DATAVIEW® MONITORING

Data View Data Analysis and Reporting Software

The DataView[®] Control Panel

The monitoring feature allows the user to set up a recording with selected parameters for which specific user-defined pass/fail criteria can be applied. The objective is to set up a measurement chart of relevant parameters and monitor them to establish whether an electrical network of source and loads is within control limits. Monitoring can also be set up without any thresholds for pass/fail criteria. The software structure of set up is flexible and allows the user full customization. The progress of the measurement set up can be viewed in real-time as the measurement is progressing. A customized report can automatically be generated at the end of the monitoring session.

Configure Instrument		×
Monitoring Slow Variations Thresholds Rapid Voltage Changes and Intr	erruptions Dips and swells Transients	
Electrical distribution system: 3-Phase 5-Wire		
Set EN 50160 defaults		
Nominal voltage	THD calculation:	
Enter the nominal voltage of the distribution network:	MAX harmonic used for THD calculation:	Load
Phase-to-neutral 115 V (50 - 650000)	25	Save as
Nominal frequency	Aggregation period (by default)	
○ 50 Hz	10 min \checkmark	
Mains signaling voltage (MSV) frequencies to monitor:		
200		
3000		
Mains signaling voltage (MSV) minimum threshold % of nominal voltage:		
0.30 %		
Mains signaling voltage (MSV) minimum duration:		
120 s		
Enter name of recording. Name is up to 8 chars and contains "A-Z", "0-9", "&".		
EN50160		
Schedule a test		
Starting time Ending time	x==1	
2022-09-06 V 21:10 2022-09-13	✓ 21:10	

Monitoring tab allows complete control of Monitoring conditions.

The Control Panel Makes it Easy to:

- Name the Monitoring
- Select Aggregation period from 0.2 s to 2 hrs
- Schedule Monitoring by selecting Start and Stop Date/Time
- Load Parameters from a file
- Save all the Parameters to re-load later
- Edit Power Ratios
- Add to the Parameter list
- Edit conditions for any Parameter
- Delete a given Parameter from the list
- Monitor an active recording session or a saved session
- Reverse current probes that were incorrectly installed

Confi	gure Instrument														×
Monit	toring Slow Variati	ons Threshold	s Rapid Voltage Chang	es and Inte	rruptions Dip	s and swe	ells 1	Transients							
Ele	Electrical distribution system: 3-Phase 5-Wire % of														
	Quantity	Harmoni order	: Aggregation period	Select %	Nominal value			Low (<) limit			Hig	h (>) limit	a	ggregation periods	
1	Hz	\sim	10 s 🔷 🔨	× 🗹 %	60 Hz	-1	%	59.4	Hz	1	%	60.6	Hz	99.5 %	
2	Hz	\sim	10 s 🚿	× 🗹 %	60 Hz	-6	%	56.4	Hz	4	%	62.4	Hz	100 %	
3	Vonns	\sim	10 min (default)	× 🗹 %	230 V	-10	%	207	$\sim v$	10	%	253	$\sim v$	95 %	
4	Vonns	\sim	10 min (default)	× 🗸 %	230 V	-15	%	195.5	$\sim v$	10	%	253	$\sim v$	100 %	
5	Plt	\sim	2 h 🔗	+								1		95 %	
6	VUNB (U2)	\sim	10 min (default)	*								2	%	95 %	
7	VφNтнonf	\sim	10 min (default)	*								8	%f	95 %	
8	VφN-h f	~ 2	10 min (default)	*								2	%f	95 %	
9	VφN-h f	~ 3	10 min (default)	+								5	%f	95 %	
10	VφN-h f	~ 4	10 min (default)	*								1	%f	95 %	

Configuration: Clear and easy setup of all functions from one tabbed dialog box. Select Parameters and Monitoring conditions.



CONFIGURATION & ANALYSIS SCREENS

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t Zoom tool	Zoon	n previous	Zoom in	Zoom out	Zoom all	Select start a	nd ei
larm ALAR	M1						
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	Line L3	Extreme va	alue Unit	s Direction t		Iration	
Measurement					14		
Measurement VффRMs	L3	0	v	<	14	.781045437 s	
Measurement Vφφ RMs Vφφ RMs	L3 L2	0	v v	< <	14 24 46	. 781045437 s . 36856389 s	
Measurement VφφRMs VφφRMs VφNRMs	L3 L2 L1	0 0 0 0	V V V	< < <	14 24 46 59	. 781045437 s . 36856389 s . 338799715 s	
Measurement VφφRMs VφφRMs VφNRMs VφNRMs	L3 L2 L1 L1	0 0 0 0	v v v v	< < < <	14 24 46 59 59	.781045437 s .36856389 s .338799715 s .908352852 s	
Measurement VφφRMs VφφRMs VφNRMs VφφRMs VφQRMs	L3 L2 L1 L1 L2	0 0 0 0 0	V V V V V	< < < < <	14 24 46 59 59	. 781045437 s . 36856389 s . 338799715 s . 908352852 s . 908352852 s	

Configure and display alarm parameters, thresholds and tests results.







Display all harmonics from 1^{st} to 127^{th} or interharmonics from 1^{st} to 126^{th} in bar graph form for voltage, current and power.



Display real-time waveforms by phase, parameter or total.



Display real-time phaser diagrams. Includes unbalance for both voltage and current.

PAT3 Control Panel - CA8345-198823	uL						- 🗆 ×
File Edit View Instrument Tools	Help						
Open Close Save Save as	Create report Spreads	heet Word Print	Print preview Ad	dress book Edit sessi parameti		Customize toolbar	Zoom tool Zoom previous
Workstation BernerPad IV Network BernerPad IV Network BernerPad IV Network BernerPad IV Network BernerPad IV Network	Real-time Harm		Harne Harne		N		
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	THD	100.0 %f	300.0 %f	300.0 %F	100.0 %f		
	2	0.1909 %/F	0.1682 %/	0.1774 %/	460.3 %/F		
	3	0.1921 %f	0.1864 %/	0.2170 %/	135.2 %f		
	4	0.01981 %f	0.01690 %f	0.01208 %f	354.7 %f		
	5	0.03029 %F	0.04019 %f	0.02923 %f	109.8 %F		
	6	0.04548 %/	0.04571 %f	0.04838 %/	4486 % f		
	7	0.01052 %f	0.006461 %/	0.009896 %/	100.5 %f		
	8	0.007161 %f	0.007243 %f	0.008854 %f	521.6 %f		
	9	0.004395 %F	0.003737 %f	0.005805 %F	93.39 %f		
	10	0.009309 %/	0.006077 %/	0.004957 %/	338.4 %f		
	11	0.004292 %/	0.003902 %/	0.004948 %/	71.78 %f		
	12	0.01057 %f	0.01303 %f	0.008837 %/	924.3 %f		
	13	0.001983 %F	0.003383 %f	0.004504 %f	65.13 %F		
	14	0.004355 %/	0.003821 %	0.002946 %	163.8 %/		
	15	0.001955 %/	0.002263 %df	0.003144 %/	65.92 %f		
	16	0.004278 %f	0.004151 %f	0.003786 %f	195.8 %f		
	17	0.002226 %F	0.002290 %f	0.001632 %f	52.11 %f		
	18	0.004493 %/	0.002740 %/	0.003056 %	359.0 %/		
	19	0.001542.%f	0.001974 %f	0.001187 %#	47.88 %f		
	20	0.003400 %f	0.002115 %f	0.003109 %f	121.3 %f		
	21	0.001048 %F	0.002259 %f	0.001445 %f	50.42 %F		
	22	0.002938 %/	0.001824 %	0.002270 %/	105.6 %/		
	23	0.0008924 %/	0.001821 %f	0.001836 %/	41.49 %f		
	24	0.002446 %f	0.001693 %f	0.001960 %f	104.7 %f		
	25	0.001068 %F	0.001929 %f	0.002293 %f	37.62.%f		
	26	0.001810 %/	0.001568 %/	0.001564 %	59.82 %f		
	27	0.001243 %f	0.001514 %f	0.002301 %#	33.77 %f		
	25	0.001639 %f	0.001331 %f	0.001588 %f	55.37 %f		
	29	0.001005 %F	0.001072 %f	0.001353 %F	31.41 %F		
	30	0.001110 %/	0.001637 %/	0.001678 %/	59.08 %r		
	31	0.0009463 %f	0.001078 %f	0.0009445 %/	36.02 %f		
	32	0.001136 %f	0.001308 %f	0.001552 %f	38.89 %f		
		0.0006782 %F	0.0007719 %F	0.0008459 %			
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	v 36	0.0008285 %F	0.0008525 %f	0.001082 %	34.78 %f		
		*******	A AMARTNA ALL	A 44444 M & Z	N. CAME		

Display harmonics in a text table from harmonic 0 (DC) through the 127^{th} .



CONFIGURATION & ANALYSIS SCREENS

DataView[®] Data Analysis and Reporting Software



Configure transient voltage and current detection.

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en Close Save Save as Creab	e report Spres	adsheet Word Print	Print preview	Address book Edit session parameters	Copy Custo	enize toolbar Zoom tool Z	toom previous Zo	osmin Zoomo	ut Zooma
	Trend EN501	160							
PowerPad I/ Network	-899-		8						
🗄 🏪 CA 8345-198823UL	0								
- The context sessions	0								
Peal-time data	Start date	Start time	End date	End time	Duration	Event type	Forced end	Res value	Voltage by
Copen sessions	2022-06-27	22:39:10.23021218	2022-06-27	22:41:10.304751024	120.074538708 #	Prep bend 1 YoN	No	2,9851	Tell
- T 1N50160	2022-06-27	22:39:10.29940945	2022-06-27	22:39:11.421294181	1.021824037 s	RVC (rapid voltage changes)	No	45.29	Yell
Slow variations	2022-06-27	22:39:13.937393691	2022-06-27	22/39/14/956238441	1.018824815.5	RVC (rapid voltage changes)	No	43.3087	YeN
-Trend	2022-06-27	22/39/18.534667541	2022-06-27	22/39/19/536292416	1.001624823.5	RVC (rapid voltage changes)	No	43.5087	VigN
	2022-06-27	22:29:18.554242533	2022-06-27	22:29:22.670116624	4.115874052.6	Interrupt	No	0	YigN
Rapid voltage changes (RVC)	2022-06-27	22:29:22.670116624	2022-06-27	22:29:24.641966253	1.97184968 s	RVC (rapid voltage changes)	No	5.6922	YiqN
- Long and short interruptions	2022-06-27	22:39:22.699993616	2022-06-27	22:39:23.600591408	0.900599715 s	Interrupt	No	0	YeN
- Voltage dips	2022-06-27	22:39:29.491440174	2922-06-27	22:39:30.698199866	1.206749915 s	RIC (repid voltage changes)	No	37.1293	Yell
X Voltage swells	2022-06-27	22:39:30.78971485	2922-06-27	22/39/32/620839506	1.831124783.5	RVC (rapid voltage changes)	No	37.1543	YoN
- V" Transient	2022-06-27 2022-06-27	22:39:33.776914225 22:39:36.016038808	2922-06-27 2022-06-27	22/39/34/290029108 22/29:42/292027224	1.013124943 5	RVC (rapid voltage changes)	No	15.8564	YoN
- Class A Events	2022-06-27	22:29:49.42068608	2022-06-27	22:29:50.522785916	1.202099095 s	RVC (rapid voltage changes) RVC (rapid voltage changes)	No	51,2503	YoN
	2022-06-27	22:39:53.666060249	2022-06-27	22:39:54.752785108	1.006724987 a	RIC (repid voltage changes) RIC (repid voltage changes)	No	50.0183	YoN
	2022-06-27	22:39:55.250784949	2022-06-27	22:39:57.36329991	1.302474689 a	RVC (rapid voltage changes) RVC (rapid voltage changes)	No	46,5755	YeN
	2022-06-27	22:39:56.250794949	2022-06-27	22 39157 303239391 22 40:01 173138875	1.019224644.5	RVC (rapid voltage changes) RVC (rapid voltage changes)	Ne	40.8068	Tight
	2022-06-27	22/40/03/217403481	2022-06-27	22/40/04 317058341	1,099624872.5	RVC (rapid voltage changes) RVC (rapid voltage changes)	No	\$1,8134	Tight
	2022-06-27	22:40:06.638922878	2022-06-27	22:40:07.741032741	1. 102099895 s	RIC (rapid voltage changes)	No	48.7458	Yes
	2022-06-27	22:41:18.337640009	2022-06-27	22:41:19.359322092	1.021674071 s	RVC (rapid voltage changes)	No	50.2368	Yell
	2022-06-27	22:41:25.040697204	2022-06-27	22:41:26.046947159	0.998250008 s	RVC (rapid voltage changes)	No	37, 2547	Yell
	2022-06-27	22:41:27.885547059	2022-05-27	22:41:25.899071934	1.013524771 s	RVC (rapid voltage changes)	No	14,3165	Tell
	2022-06-27	22:41:29.442673859	2022-06-27	22/41/30/998923692	1.5562498575	RVC (rapid voltage changes)	No	37, 3596	YoN
	2922-06-27	22:41:31.273521759	2922-06-27	22 41:32 41367 1626	1.14015007 s	RVC (rapid voltage changes)	No	37.9662	YON
	2022-06-27	22:41:32.498546609	2022-06-27	22:41:36.679996209	4.191449642.6	RVC (rapid voltage changes)	No	37.9521	YigN
	2022-06-27	22:41:30.071596159	2022-06-27	22:41:40.097421034	2.025824785 s	RVC (rapid voltage changes)	No	14.3925	VigN
	2022-06-27	22:41:40.144646034	2022-06-27	22:41:41.201570901	1.056925058 #	RVC (repid voltage changes)	No	37.3559	TigN
	2022-06-27	22:41:46.866095434	2922-06-27	22:41:47.958220317	1.302124691 s	RVC (rapid voltage changes)	No	49.3588	TigN
	2022-06-27	22:41:51.699420084	2922-06-27	22:41:52.701695084	1.00227499 s	RVC (rapid voltage changes)	No	49.9914	YigN
	2022-06-27	22:41:51.721395084	2922-06-27	22/41/55.248569884	3-52717495.5	Interrupt	No	0	YON
	2022-06-27	22:41:55.245469084	2022-06-27	22:41:57.339044759	2.093575001 s	RIIC (rapid voltage changes)	No	3.9512	YeN
	2022-06-27	22:41:55.270594004	2022-06-27	22:41:56.178219917	0.099625063 a	Interrupt	No	0	VaN
	2022-06-27 2022-06-27	22:42:01.247894509 22:42:01.267629509	2022-06-27 2022-06-27	22:42:02.249869509 22:42:03.441594359	1.00197506 s 3.173974752 s	RVC (repid voltage changes) Internuct	No	46.0914	YoN
	2022-06-27 2022-06-27	22:42:01.267629509 22:42:04.441594359	2022-06-27 2022-06-27	22:42:04.441594359 22:42:06.520794234	3.173974752 s 2.0791997915	RVC (rapid voltage changes)	No	6.2053	YoN
	2022-06-27 2022-06-27	22/42/04/471944399	2022-06-27 2022-06-27	22 42 06 520794234 22 42 05 369694259	2/0791997915 0.8977499015	RVC (rapid voltage changes) Interrupt	No	6.3353	TigN 1
	2022-06-27	22:42:25.62116946	2022-06-27	22:42:26.611718368	0.990550041 s	RIC (rapid voltage changes)	No	40.1164	Vol
	2022-06-27	22:42:28.193010417	2022-06-27	22:42:29.191543409	0.990524904 s	RIC (rapid voltage changes)	No	30.0194	YoN
	2022-06-27	22:42:29.47446536	2022-06-27	22:42:30.465038235	0.990549803 #	RIC (repid voltage changes)	No	35,9597	YoN
	2022-06-27	22:42:38.157153159	2022-06-27	22:42:39.159038167	1.001825094 s	RVC (rapid voltage changes)	No	48,0529	Yell
	2022-06-27	22/42/41/073143159	2022-06-27	22 42 42 14359 30 34	1.070449829 5	RVC (rapid voltage changes)	No	37,9661	TON
	2022-06-27	22/42/42/831817937	2922-06-27	22/42/43/969117961	1.1373000145	RIIC (rapid voltage changes)	Ne	41.2812	VoN
	2022-06-27	22:42:49.175843034	2022-06-27	22:42:50.32231901	1.146475077 s	RVC (rapid voltage changes)	Ne	40.2932	YoN
	2022-06-27	22:42:49.33981901	2022-06-27	22:42:52.429257986	3.009449083 s	Internant	No	0.474	YeN
						Internet		0.4795	YeN

Display Class A list.



Display transient waveforms.

Setup	OK Cancel	Help	Re-read from instrument								
Sensors and Ratios	Save to file	Load from file									
Instrument Display	Nominal phase-to-n	eutral voltage:									
Communication	120										
Alarm Settings	Nominal phase-to-phase voltage:										
Trends	208										
Transients	Dips:										
	Threshold % of nominal:										
Inrush	\$2.0										
Class A Events											
Energy rates	Voltage hysteresis in %:										
Schedule	2.0										
	Swells:										
	Threshold % of nominal:										
	110.0										
	Voltage hysteresis in %:										
	2.0										
	2.0										
	Interrupts:										
	Threshold % of nominal:										
	5.0										
	Hysteresis in %:										
	2.0										











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