Choosing the Right PowerSight Model

There are three main PowerSight models to choose from: the PS4500 Power Quality Analyzer, the PS3500 Energy Analyzer, and the PS2500 Power Monitor.

- The PS4500 provides complete analysis in power quality applications (swell / dip / inrush / hi-speed transient / harmonic analysis) in addition to supplying exact measurements for all common power quantities.
- The PS3500 is oriented toward complete power analysis and reporting with helpful power quality capabilities. Thousands of the PS3500 and its PS3000 predecessor are in service all over the world.
- The PS2500 provides basic power analysis and is best suited for occasional use or for those with a limited budget.

No matter what your needs or budget, there is probably a PowerSight model that is right for you.

Our models offer combinations of price, performance, size, and ease of use that are unequaled in the industry.

Comparison Table between PowerSight models**

The following table lists key features and how they apply to each model. Features that end with an asterisk ("*") have explanatory notes in the next section. Cells with a **green** background are features that compare more favorably with the others. Cells with a **red** background are features that compare less favorably with the others.

Basic Measurement Abilities	PS2500	PS3500	PS4500
Basic sampling rate*	16usec	16usec	8usec
Samples per cycle (@ 60Hz)	130	130	2083
Basic RMS measurement rate*	once per second	once per second	every cycle of every channel
True 3-phase*	Yes, 7 channels	Yes, 7 channels	Yes, 7 channels
Setup of power configuration	automatic	automatic	automatic
Single phase measurements	Yes	Yes	Yes
Split phase measurements	Yes	Yes	Yes
Three phase wye and delta	Yes	Yes	Yes
4 wire delta measurements	Yes	Yes	Yes
Open delta measurements	Yes	Yes	Yes
2CT/2PT metering measurements & 2 wattmeter	Yes	Yes	Yes
AC/DC voltage and current measurement*	Yes	Yes	Yes
400 Hz system measurements	No	Yes	Yes

Logging	PS2500	PS3500	PS4500
Logging capacity	Essentially unlimited with SD card	Essentially unlimited with SD card	Essentially unlimited with SD card
Logging variables	61 default	61 default	68 default
Logging rate set by user (time between summarizing 1 second measurements)	1second-99minutes	1second-99minutes	1second-99minutes
Start/Stop at programmed time	Yes	Yes	Yes
Max/Min/Ave/Present value of V,A,W, etc	Yes	Yes	Yes

Power Quality	PS2500	PS3500	PS4500
Swell (surge) triggering/capture*	check each second	check each second	**Check every 1/2 cycle of every input**
Dip (sag) triggering/capture*	check each second	check each second	**Check every 1/2 cycle of every input**
Inrush current capture*	check each second	check each second	**Check every 1/2 cycle of every input**
Swell/Dip/Inrush capacity	view consumption log	view consumption log	**Up to 15000 records, standard**
Swell/Dip/Transient triggered waveform capture	no	no	**Up to 100 graphs of 12 cycles, standard**
RMS graph of swell/dip by 1/2 cycle	no	no	**Up to 2000 graphs of 100 cycles, standard**
Simultaneous measurement of power / harmonics / swell / dip / transients*	no	no	**Yes**
High speed transient capture*	no	no	**Record every 8usec on every input**
Transient capacity	no	no	**Up to 15000 in log, 100 wavesets**

Harmonics	PS2500	PS3500	PS4500
Harmonics analysis capability	1-50th on PC, 25th on unit, with HAO option	1-50th on PC, 25th on unit, to the 7th at 400Hz	**1-50th on PC, 50th on unit, to the 31st at 400Hz**
Harmonics direction	Yes, in software	Yes, in software	Yes, in software
THD calculation	4 seconds/channel	4 seconds/channel	**every cycle of every channel**
K factor	Yes, in software	Yes, in software	Yes, in software
Crest factor	Yes for V and A	Yes for V and A	Yes for V and A

Voltage Measurement	PS2500	PS3500	PS4500
Provision for input ratios for PTs/CTs*	Yes	Yes	Yes
Direct measure of RMS voltage	1-1000Vrms	1-1000Vrms	1-1000Vrms
Peak voltage measurement	2400V	2400V	1500V
DC voltage	1-1000Vdc	1-1000Vdc	1-1000Vdc
Voltage measurement with voltage probe accessories*	1-15,000 Vrms	1-15,000 Vrms	1-15,000 Vrms
Voltage measurement with input ratios	0.5-999MVrms	0.5-999MVrms	0.5-999MVrms
Voltage measurement accuracy*	+/-0.5%	+/-0.5%	**+/-0.1%**
Display resolution (100-400V)	1V	0.1V	0.1V

Current Measurement	PS2500	PS3500	PS4500
AC/DC current measurement*	Yes	Yes	Yes
Neutral current measurement	Yes	Yes	Yes
Amp measurement with accessories*	5ma-6000Arms	5ma-6000Arms	2ma-6000Arms
Amp measurement with input ratios	1ma-999MArms	1ma-999MArms	1ma-999MArms
Current measurement accuracy*	+/-0.5%	+/-0.5%	**+/-0.1%**
Display resolution (100-400A)	1A	0.1A	0.1A
Automatic current probe identification and scaling	Yes	Yes	Yes
Flex, DC, and all other probes do not require batteries	Yes	Yes	Yes

Power Related	PS2500	PS3500	PS4500
True power measurement (W)	Yes	Yes	Yes
Apparent power measurement (VA)	Yes	Yes	Yes
Reactive power measurement (VAR)	Yes	Yes	Yes
Power measurement accuracy*	+/-1.0%	+/-1.0%	**+/-0.25%**
True power factor (TPF)	Yes	Yes	Yes
Displacement power factor (DPF)	Yes, via PC	Yes	Yes
Phasor diagram display	Yes, via software report	Yes, via keypad and software report	Yes, via keypad and software report
Phasor diagram display	Yes, via software report	Yes	Yes
Phasor diagram display	Yes	Yes	Yes
Phase imbalance (V and A)	Yes, via PC	Yes, via PC	Yes, via PC
Energy measurement (KWH)	Yes, via PC	Yes	Yes
Cost measurement	Yes, via PC	Yes	Yes

Other Key Features	PS2500	PS3500	PS4500
Internal memory	4M, compressed	4M compressed	**4M or 16M with MEM2 option**
High frequency spectrum analysis	no	no	**5KHz - 100KHz, FAO option**
Removable memory	yes, SD (SDHC) card up to 32GB	yes, SD (SDHC) card up to 32GB	**yes, SD (SDHC) card up to 32GB**
Detection of errors in connections and wiring*	**SureStart™ errors in plain English**	**SureStart™ errors in plain English**	**SureStart™ errors in plain English**
Data Setup Wizard	Yes, via PSM-A software program	Yes, via PSM-A software program	Yes, via PSM-A software program
Automated Report Writer	Yes, via PSM-A software program	Yes, via PSM-A software program	Yes, via PSM-A software program
Advanced Test Plan Management	no	Yes, via PSM-A software program	Yes, via PSM-A software program
Firmware update via email	Yes	Yes	Yes
Data into Excel Spreadsheet	one step	one step	one step

Other Measurements	PS2500	PS3500	PS4500
Fundamental frequency measurement*	45-66, 360-440Hz	45-66, 360-440Hz, DC	**22-200Hz, 360-440Hz, DC**
Duty cycle / on-off cycles*	Yes, via PC	Yes	Yes

Input / Output	PS2500	PS3500	PS4500
Analysis software	PSM-A included	PSM-A included	PSM-A included
Automated Report Writer	included	included	included
Display	text characters, hi res graphics on PC	Backlit Text, hi res graphics on PC	Backlit Text, hi res graphics on PC
Screen update rate	1 second	1 second	1 second
Scope Mode	No	No	**Yes, on PC**
Manual waveform capture*	via PC	56 via keypad and PC	**Up to 700 via keypad and PC**
Screen snapshot mode	unlimited via software	unlimited via software	unlimited via software
Printing	Yes, via PC	Yes, via PC	Yes, via PC
Communications	Bluetooth wireless	**Bluetooth wireless (Wi-Fi option)**	**Bluetooth wireless (Wi-Fi option)**
Communications speed*	9600 bps	9600 bps	**460.8Kbps**
USB connection	via optional adapter	via optional adapter	via optional adapter
Internet connection	no	via Wi-Fi option	via Wi-Fi option
Integration with automated systems	Yes	Yes	Yes
Multi-lingual	No	Yes	Yes
Keyboard	1 button	Yes, 24 keys	Yes, 24 keys
Real-time clock	Yes	Yes	Yes

Included Accessories	PS2500	PS3500	PS4500
Advanced Analysis Software	PSM-A included	PSM-A included	PSM-A included
Voltage probes*	4 included, jumbo alligator type	4 included, jumbo alligator type	4 included, jumbo alligator type
Current probes	choose separately	choose separately	choose separately
Carrying case*	**soft case included**	many options	many options
Communications cable	none required	none required	none required
Wall charger	120 or 240V	120 or 240V	120 or 240V included

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Power Requirements	PS2500	PS3500	PS4500
Rechargeable battery type	NiMH	NiMH	Li-ion
Run-time on Battery	8-12 hours (depending on probes attached)	8-12 hours (depending on probes attached)	6-10 hours (depending on probes attached)
Charging Time Required	12 hours max	12 hours max	7 hours max.
Display of battery capacity	no	no	Yes
Power requirement	12VDC @ 200ma	12VDC @ 200ma	12VDC @ 500ma
Power itself from the line	Yes, with Line-to-DC option	Yes, with Line-to-DC option	Yes, with Line-to-DC option

Environmental/Safety	PS2500	PS3500	PS4500
Size	4" x 7.75" x 1.75"	4" x 7.75" x 1.75"	3.85" x 7.6" x 1.60" to 2.07"
Weight	1 lb (0.5KG)	1 lb (0.5KG)	1 lb (0.5KG)
Operating temperature	0 - 50 C (32 - 122 F)	0 - 50 C (32 - 122 F)	0 - 50 C (32 - 122 F)
Operating humidity limit	70% non-condensing	70% non-condensing	70% non-condensing
voltage input impedance	4Mohm line-line	4Mohm line-line	4Mohm line-line
Vibration Testing	standard industry	standard industry	MIL-PRF-28800F
Designed to meet safety standard	EN 61010 1000V CAT III, 600V CAT IV	EN 61010 1000V CAT III, 600V CAT IV	EN 61010 1000V CAT III, 600V CAT IV

Cost	PS2500	PS3500	PS4500
Comparable system cost (with 3 HA1000 current probes and soft case**)**	**US$2380**	US$3445	US$5945

Notes and Explanations of the Comparison Table**

Basic sampling rate. This is the basic rate at which inputs are sampled. However, most samples are unnecessary for most measurements so many are not used, depending on the model. The PS2500 and PS3500 use samples sufficient to do RMS measurements of voltage and current including the components of the first 25 harmonics. All models use samples sufficient to analyze harmonics to the 50th harmonic of a 60 Hz fundamental when creating waveforms. The PS4500 continuously uses its 8 microsecond rate to simultaneously measure transients, swells, dips, harmonics, and power measurements on all channels, using over 2000 samples per cycle on its power quality measurements.

Basic RMS measurement rate. The PS2500 and PS3500 look at 2 cycles of each channel every second and do complete measurements of relevant parameters during normal operating modes. Thus one measurement is generated every second, regardless of the recording (logging) rate. The PS4500 does complete measurements of every cycle of every channel, regardless of the recording rate. Therefore, the PS4500/4000 misses nothing in its measurements and every measurement is inherently more accurate. All models are inherently more accurate than competing products that only do measurements when they are about to create a new record in their log.

True 3-phase. PowerSight is a true 3-phase meter. This means that all three phases and totals are accurately measured, regardless of the shape of the waveform. Voltage, current, power, and power factor are not estimated. Instruments with only one voltage and one current channel cannot measure 3-phase power without making assumptions that are usually not true in the real world.

Works with all power systems. PowerSight models are meant to be used on any power system anywhere in the world. They can accurately measure single phase, two phase, three phase, 3- ½ phase, DC, 2CT/2PT, 3CT/3PT, regenerative, 50Hz, 60Hz, 400Hz, DC, variable frequency, phase-phase, phase-neutral, 69/120V, 120/208V, 200V, 240V, 277/480V, 600V systems. Accessories are available for direct connection to voltages as high as 15,000V, to bus bars, and multiple cable pairs.

Voltage measurement accuracy. Accuracy for PS2500 and PS3500 is stated as a percent +/- 0.2V between 0.5-399.9V, +/-2V between 400-3,999V. Accuracy for the PS4500 is stated as a percent of reading +/-0.3V.

Current measurement accuracy. Accuracy for PS2500 and PS3500 is stated as a percent +/- 0.2A between 0.1-399.9A, +/-2A between 400-3,999A for an

HA1000. Add to the stated accuracy the percentage for any other probe that is used. Accuracy for the PS4500 is stated as a percent of reading +/- the accuracy of the probe (other than an HA1000).

Power measurement accuracy. Add to the stated accuracy the percentage for any probe used, other than the HA1000.

Swell (surge) triggering/capture. Swells are detected by PS2500 and PS3500 only if they occur during the measurement time each second and only on a 2 cycle basis. The PS4500 detects swells lasting as little as ½ cycle and measures every ½ cycle of every channel. When detected, the swell can be recorded to a file, can have its RMS profile captured and graphed for every ½ cycle for the length of the swell, and/or can have 12 cycles of the waveform captured for the swell.

Dip (sag) triggering/capture. Dips are detected by PS2500 and PS3500 only if they occur during the measurement time each second and only on a 2 cycle basis. The PS4500 detects any dip lasting as little as ½ cycle while it measures every ½ cycle of every channel. When detected, the dip can be recorded to a file, can have its RMS profile captured and graphed for every ½ cycle for the length of the dip, and/or can have 12 cycles of the waveform captured for the dip.

Inrush current capture. Inrush current is measured by PS2500 and PS3500 only if they occur during the measurement time each second and only on a 2 cycle basis. The PS4500 detects inrush current lasting as little as ½ cycle as it measures every ½ cycle of every channel. When detected by the PS4500, the inrush can be recorded to a file, can have its RMS profile captured for every ½ cycle for the length of the inrush, and/or can have 12 cycles of the waveform captured for the inrush.

High speed transient capture. The PS4500 detects high speed transients on all channels simultaneously, while doing all other measurement functions simultaneously. The transient threshold can be set in 1V increments and can be set to detect absolute values or relative values (where the fundamental periodic waveform is removed). When a transient is detected, the transient information of time/date, maximum value, and duration can be added to a log and a waveform can be captured to a file. Transients of at least 16 usec can be measured in 8usec increments.

Simultaneous measurement of power / harmonics / swell / dip / transients. The PS3500 performs power measurement and limited swell and dip measurement on all channels simultaneously. It pauses to do harmonics and it operates in a special mode to detect transients. The PS4500 performs power, harmonic, swell, dip, and transient analysis simultaneously on all channels.

AC/DC voltage and current measurement. All PowerSight models use the same probes interchangeably. This includes AC and DC current measurement and direct voltage measurement up to 15,000 Vrms with the 15KVP.

Fundamental frequency measurement. All models can operate in fixed 50Hz, fixed 60Hz. The PS2500 and PS3500 can also track frequencies between 45 and 66 Hz. The PS3500 and PS4500 can measure fixed 400Hz and between 360 and 440 Hz. The PS4500 can track frequencies between 22 and 200 Hz for tracking the output of a variable speed drive. In the 400 Hz modes, the PS4500 calculates harmonics to the 31st.

Duty cycle / on-off cycles. The PS3500 and PS4500 can determine the duty cycle of operation. This is the proportion of time that a unit under test is "on". The user sets the value of current considered to be the "on" value. In addition, estimates of number of on-off cycles per hour, per week, and per month are continually estimated during monitoring.

Provisions for input ratios for PTs and CTs. PowerSight automatically identifies each current probe when it is connected and assigns the correct input ratios for correct measurements. In addition, the user can enter ratios to be used for specific measurement sessions. These ratios can be entered via our PSM-A software or entered directly using the keypad with the PS3500/4500.

Voltage measurement with accessories. Special high voltage probes can be used for direct measurement of voltages to 15,000Vrms. However, these probes require the user to enter an input ratio.

Current measurement with accessories. A wide range of current probes are available for measuring AC currents from 2 ma to 6,000A and DC currents from 5A to 2,000A. They are interchangeable and self-identifying so no input ratio needs to be entered into the meter. New current probes are added as the need arises.

Detection of errors in connection. All PowerSight analyzers have our patented SureStart feature that uses artificial intelligence to analyze the connections, wiring, and setup parameters in order to report what problems are likely to exist before you begin monitoring.

Carrying cases. There are various carrying case options including soft cases, hard cases, and weather-resistant cases. The meter may be operated and carried in the weather-resistant carrying case and in the SCAS2 soft case.

Comparable system cost. This is a cost comparison of similar systems. Actual systems may cost more or less than shown, depending on the options chosen. The PS2500 system is a PS2500 with 3 HA1000 probes and without the

Harmonics Option. The PS3500 and PS4500 systems are with 3 HA1000 current probes and the same soft carrying case that the PS2500 comes with. Typical systems usually include 4 current probes and a hard shell carrying case such as CAS3.

VISA/MasterCard/Amex accepted. FOB Walnut Creek, CA USA
**Specifications and features are subject to change without notice.

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9/19/2016