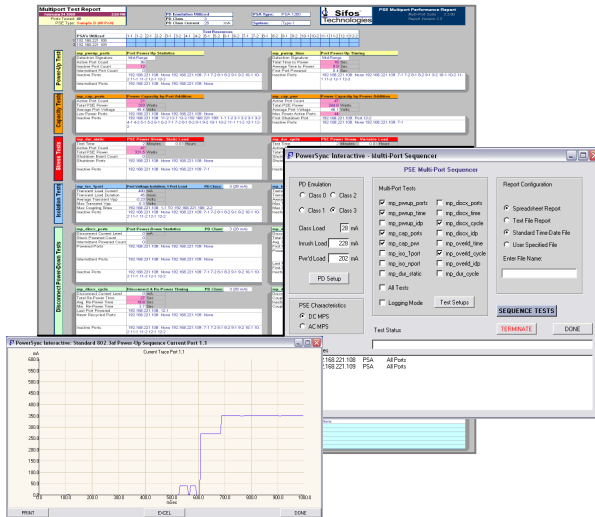




PSA-3048 RackPack PowerSync® Analyzer IEEE 802.3at Power over Ethernet

Product Overview



Key Features

- 48 Port Bundled PowerSync Analyzer – Reduced Cost / Port
- Static PSE Loading > 42 Watts Per Port x 48 Ports
- Flexible Script Automation Supports High Speed PSE Testing
- Soft-Key Upgradeable Test Ports and Features
- Replaces All General Purpose Test Equipment
- Automation Ready with PowerShell Tcl/Wish
- Flexible LLDP (PoE) Emulation and Analysis Upgrade
- Industry Leading IEEE 802.3 PoE PSE Conformance Suite Upgrade
- Unique Fully Automated Multi-Port PSE System Analysis Upgrade
- Graphical User Interface Upgrade
- Flexible and Accurate Measurements of Voltage, Current, Noise
- Noise Immune Triggering and Time Interval Measurements
- Enables PSE Packet Transmission Testing with PoE Loads
- Smart Fan Control – Runs Cool and Quiet
- Backward Compatible to Sifos PSA-1200 / PSA-2400 Analyzers

real POWER from Sifos

Overview

Power-over-Ethernet (PoE) challenges design and test engineers to evaluate multi-channel, “intelligent” DC power sources that are activated and deactivated through signaling protocols operating over several power delivery and polarity configurations. The application and management of DC power over many local area network connections must be completely transparent and non-disruptive to the traditional data transmission functions of those network connections.

802.3at End-Span and Mid-Span PSE Development....

Versatile IEEE 802.3at Compliance, DV, and QA Test....

PSE Functional Stressing and Verification....

Fully Automated Manufacturing Verification....

One Box Solution

Sifos Technologies provides a **one-box solution** to facilitate complete testing and analysis of Power Sourcing Equipment (PSE) behaviors and overall compliance to the **IEEE 802.3at** specification. Each test port inside a PowerSync Analyzer is an autonomous and fully isolated instrument offering a rich set of stimulus and measurement resources. Test ports are configured and controlled via a high level automation interface, **PowerShell PSA**, and may also be accessed and managed from an intuitive graphical user interface, **PSA Interactive**.

Automated PSE Conformance Testing

The PSA-3048 may be optioned via a software key to run the world's most advanced **PSE Conformance Test Suite**. This fully automated application applies the PowerSync Analyzer's diverse resources to assess over 60 IEEE 802.3at specification parameters presented in easily readable spreadsheet reports with multi-port statistics and clearly notated pass/fail limit analysis.

Automated PSE System Testing

PSA-3048's may also be optioned via software keys to run the one-of-a-kind **PSE Multi-Port System Performance Suite**. PSE Multi-Port evaluates systems of up to 192 PSE ports simultaneously to assess overall power capacities, multi-port event responses, PSE system decision making and power budgeting, and inter-port interactions and couplings.

LLDP Emulation

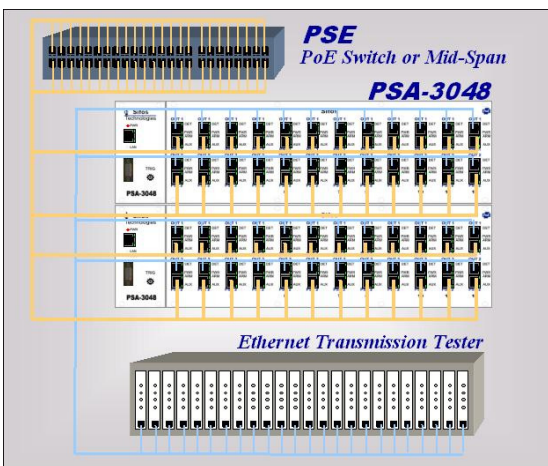
The IEEE 802.3at specification describes new types of PSE's and Powered Devices (PD's) that communicate power needs and power grants using Ethernet layer 2 (LLDP) link protocols. The PSA-3048 is designed with resources to flexibly emulate PD LLDP functions and to analyze LLDP interactions with the PSE. *LLDP emulation may be activated via software keys and will be available via software update from Sifos in the mid-2009 time frame.

Second Generation PoE Solution from Sifos

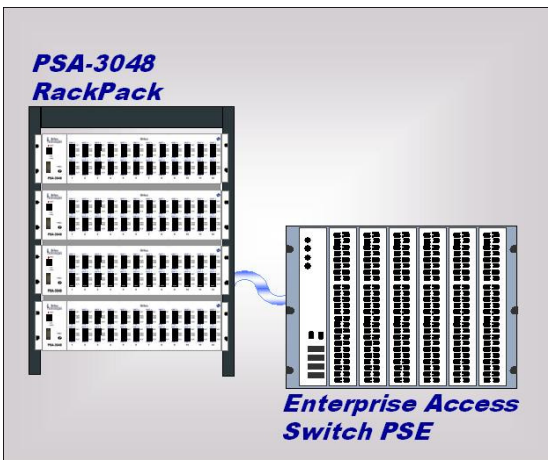
The PSA-3000 family is a second generation family of products from Sifos specifically developed to address the IEEE 802.3at specification. First generation PSA-1200 products established Sifos as the industry standard world-wide for comprehensive PSE testing and analysis. The PSA-3000 family fully supports test procedures and automation developed for PSA-1200 analyzers while offering increased static and transient load stimuli, higher set point and measurement accuracies, higher resolutions, reliable noise-immune triggering, LLDP emulation, active load foldback suppression, and many other advantages relative to the first generation PowerSync Analyzers from Sifos Technologies.

real POWER from Sifos

PowerSync Analyzer Test Equipment Setup: PSE Testing



PowerSync Analyzer Test Equipment Setup: Large PSE System QA



Per-Port PSE Test Resources

- Flexible PD Detection & Class Emulation
- Flexible Loads and Load Transients
- Event or Noise-Immune Edge Triggering of Load Transients & Measurements
- Average, Peak (Min/Max), and Trace Measurements of Port Voltage and Load Current with Flexible Sampling Intervals
- Standard One-Button Waveform Library for Rapid PSE Analysis and Conformance Troubleshooting
- Flexibly Triggered, Noise-Immune Time Intervals / Slew Rates
- O-Scope Graphical Waveforms
- Concurrent Packet Transmission and PoE Load Testing
- External Trigger Input/Output

PSE Multi-Port Testing & QA

- Fully Automated PSE System Testing and Analysis Up to 192 PSE Ports
- Power Decisions & Management
- Power Capacity & Load Stressing
- Port Isolation & Independence
- PSE Group Timing Behaviors
- Flexible PD Emulation
- Automated Sequencing
- Colorful Spreadsheet Reporting
- New **IEEE 802.3at** PSE Multi-Port Test Suite (including LLDP Emulation options) (Future Release)

LLDP* & LAN Test Support

- Flexible, Programmable PD LLDP Emulation for PoE* with control of payloads, timing, and message synchronicity
- Multi-Channel Concurrent LLDP Message Generation and Capture
- Test Port "Through" Channel for LAN Transmission Testing with or without PoE Port Power
- Negligible Through-Channel LAN Impairment

PSE Conformance Suite

- High Coverage, Fully Automated IEEE 802.3af PSE Compliance Testing and Analysis
- Over 20 PSE Tests Producing Over 65 PSE Parameters Per Port
- Automated Test and Port Sequencing with Comprehensive, Colorful Spreadsheet Reporting
- Automatically Adapts to PSE Device Technologies
- Updated with Sifos Tracking Service Agreements
- New **IEEE 802.3at** PSE Conformance Test Suite (including LLDP Emulation options) (Expected Mid-2009)

Powerful Software

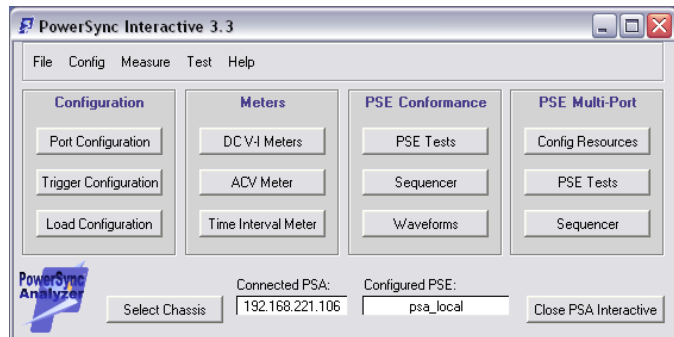
- PowerShell PSA Script Automation
- PSA Interactive GUI (Optional)

PSA Interactive Graphical User Interface (PSA-3048-GUI)

The optional Sifos PSA Interactive Graphical User Interface (GUI) is a flexible and powerful tool designed to allow user to quickly configure and perform both standard and user-defined measurements on IEEE 802.3 compliant power sourcing equipment (PSE). PSA Interactive provides an intuitive view of the full range of testing resources available within the PSA-3048 PowerSync Analyzer. Users can quickly harness the flexibility and power of these resources to perform design verification and diagnostic measurements or to prototype sequences that will eventually be automated in PowerShell PSA scripts.

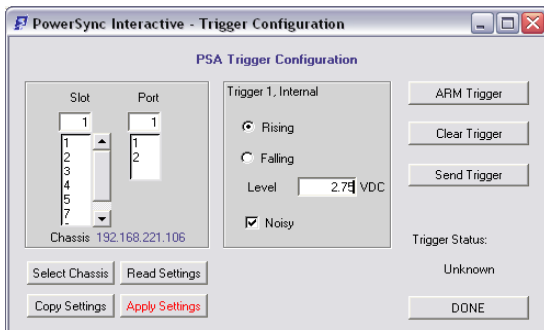
PSA Interactive organizes PSA-3048 resources and testing features into twelve distinct subsystems*:

- Port Detection Configuration
- Trigger Configuration
- Load and Load Transient Configuration and Activation
- DC Meters (Average, Max Peak, Min Peak, and Trace Voltage and Current meters)
- AC Peak Voltage Meter
- Time Interval / Slew Rate Meter
- PSE Conformance Tests
- PSE Conformance Test Sequencer
- Standard Waveform Viewer
- Multi-Port, Multi-Chassis Configuration
- PSE Multi-Port Tests
- PSE Multi-Port Test Sequencer

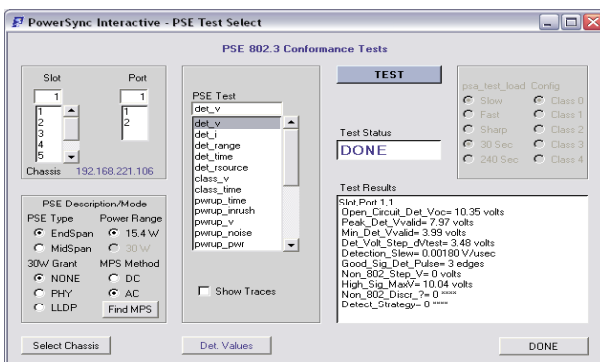
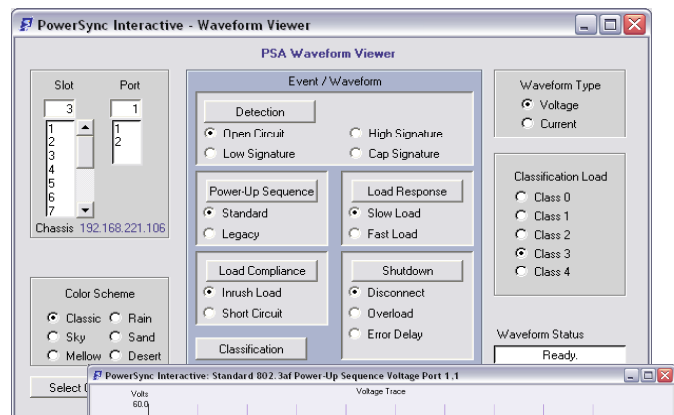


PSA Interactive Main Menu

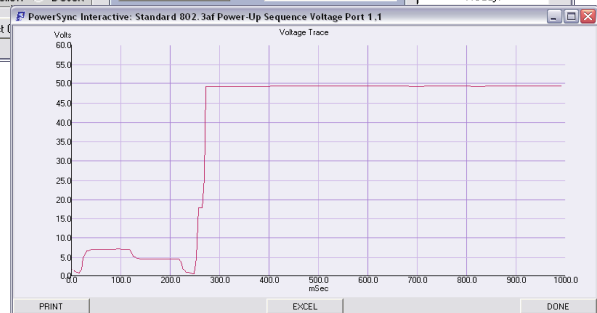
PSA Interactive enables rapid multi-port configurations and one-button testing and analysis through intuitive subsystem dialogs that flexibly address test ports and PSA chassis'.



Waveform Trigger Configuration Menu



PSE Conformance Selected Test Menu



One-Button Waveform Capture & Analysis

*Note: A new subsystem will be added for LLDP Emulation support when it is available from Sifos.

PowerShell PSA Tcl/Tk Interface

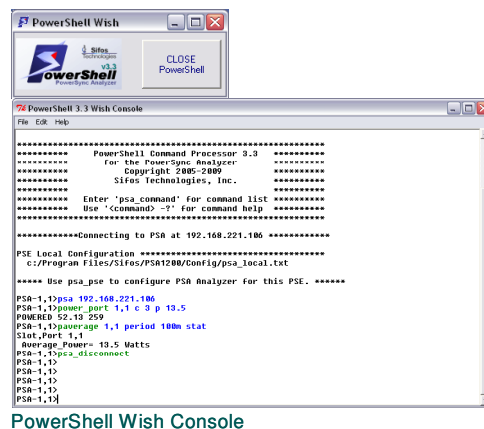
The PowerShell PSA Scripting Environment provides a high level, live-keyboard means to control and program automated test sequences for the PSA-3048 PowerSync Analyzer. PowerShell enables fully automated testing suites that span multiple ports, blades, and frames. Built upon the popular Tool Command Language (Tcl), it offers an extensive and extensible programming language.

PowerShell PSA provides a complete API for the PSA-3048 including high level commands that execute and sequence standard **802.3 PSE Conformance** and **Multi-Port System** test suites. PowerShell commands access all of the resources of the PSA-3048 and enable the rapid development of highly customized test scripts. PowerShell fully supports off-line script development and debug through its robust built-in emulation mode.

PowerShell PSA libraries can be integrated into broader Tcl environments that interlace traditional network transmission tests with Power-over-Ethernet tests. This enables seamless integration of custom or standard PSE tests with existing Tcl-based test suites.

Other features offered by the PowerShell Tcl environment include:

- Interpretive command execution (no compilation, simple debug)
- Simple, intuitive PowerSync Analyzer commands (API)
- Integrated command “help” tools
- Full access to PSA triggering and signal synchronizing features
- Fast test execution speeds
- Script-configured test report files
- Use in tandem with PSA Interactive GUI
- AnyEdit Smart Editor for PowerShell PSA
- Traditional Tcl Console or Command-Knowledgeable Wish Console with PSA waveform viewer capability



PSE Multi-Port System Performance Test Suite (PSA-3048-MPT)

The unique and innovative PSE Multi-Port Test Suite is a library of **fully automated** and **flexibly sequenced** tests that characterize system behaviors of PSE's as they deliver power to groups of many (up to 192) Powered Devices (PD). It enables highly flexible configuration of **PD emulation** characteristics and reports numerous system characteristics including power capacities, power management decisions, port independence and isolation characteristics, port timing characteristics, and stress or burn-in performance.

See **Sifos Technologies Multi-Port Test Suite** overview for further information regarding the Multi-Port Test Suite.

IEEE 802.3 PSE Conformance Test Suite (PSA-3048-CT)

The IEEE 802.3 PSE Conformance Test Suite is a library of **fully automated**, **flexibly sequenced**, and **self-adapting** tests that provide a high degree of specification compliance testing on PSE ports without the need for any external instrumentation. These tests are accessible to both PSA Interactive (GUI) and to PowerShell.

The **PSE Conformance Test Suite** consists of the following modules for testing **802.3af compliant** (or **802.3at “Type-1”**) PSE's:

- | | |
|--|---|
| ➤ Detection Voltages | ➤ PSE Power Capacity |
| ➤ Detection Current Compliance | ➤ Short Circuit Compliance |
| ➤ Detection Acceptance Range (R and C) | ➤ Overload Transient Response |
| ➤ Detection Timing | ➤ DC MPS Validity |
| ➤ PSE Source Resistance | ➤ DC MPS Shutdown |
| ➤ Classification Voltage | ➤ AC MPS Shutdown |
| ➤ Classification Timing | ➤ AC MPS Signal Characteristics |
| ➤ Power-Up Turn-On and Rise Time | ➤ Overload Shutdown |
| ➤ Power-Up Inrush Compliance | ➤ Turn-Off Time |
| ➤ PSE Voltage and Ripple | ➤ Turn-Off Voltage |
| ➤ PSE Noise | ➤ PSE Output Capacitance & Shunt Resistance |

Each test captures and reports one or more parameters that are directly related to the IEEE 802.3 specification. Under sequencer control, multiple PSE tests can automatically sequence across multiple PSE ports in accordance with user selections.

The 802.3 PSE Conformance Test Suite includes several report generation options including automatic Microsoft Excel spreadsheet that reports test results, test statistics, test limits, and pass/fail results on one or more cycles of testing. An example of a PSE Conformance Test Suite test report is shown below:

PSA TEST RESULTS		PSA-3000 Ports										802.3af Conformance Report					
March 29 2009 4:04 PM		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	UNITS	Min	Max	Average	Low Limit	P/F	High Limit	P/F
Port Count: 8		Sifos Technologies Test Mode: 15.4 Watt Sifos Interop Index*: 100%															
Loop Count: 1		Error Log: None															
PSE Tested: 8 Port PSE		version 3.3.20 report version 3.3															
Chassis ID: 192.168.221.107		TestLoop: 1															
Test: det v		19.52	19.4	19.5	19.45	19.9	19.9	19.93	19.9	volts	19.4	19.93	19.6075	2.0	Pass	30	Pass
Open Circuit Det Vout=		6.88	6.87	6.91	6.77	6.87	6.95	6.98	6.96	volts	6.77	6.98	6.88675	3.8	Pass	10	Pass
Peak Det Vvalid=		4.44	4.39	4.46	4.37	4.41	4.47	4.5	4.48	volts	4.37	4.5	4.44	2.8	Pass	9	Pass
Min Det Vvalid=		2.44	2.48	2.45	2.4	2.46	2.48	2.48	2.48	volts	2.4	2.48	2.45875	1	Pass	7.2	Pass
Det Volt Step dVtest=		0.00024	0.00024	0.00023	0.00027	0.00024	0.00022	0.00022	0.00022	V/usec	0.00022	0.00027	0.000235	0.1	Pass	0.1	Pass
Detection Slew=		1	1	1	1	1	1	1	1	edges	1	1	1	1	Pass	1	Pass
Good Sig Det Pulse=		0	0	0	0	0	0	0	0	0	0	0	0	0	Pass	0.1	Pass
Non 802 Step V=		10.66	10.68	10.71	10.5	10.66	10.74	10.79	10.72	volts	10.5	10.79	10.6825	3.8	Pass	11	Pass
High Sig MaxV=		0	0	0	0	0	0	0	0	****	0	0	0	0	Pass	1	Pass
Non 802 Discr =		0	0	0	0	0	0	0	0	****	0	0	0	0	Pass	1	Pass
Detect Strategy=		0	0	0	0	0	0	0	0	****	0	0	0	0	Pass	2	Pass
Test: det i		0.21	0.22	0.22	0.21	0.22	0.22	0.22	0.22	mA	0.21	0.22	0.2175	0	Pass	5	Pass
Init Current Isc=		0.14	0.13	0.21	0.13	0.13	0.18	0.18	0.18	mA	0.13	0.21	0.16	0	Pass	5	Pass
Det Current Isc=		30	29	30	30	30	30	29	29	Kohm	29	30	29.625	26	Pass	33	Pass
Rgood Max=		15	16	17	15	17	17	17	16	Kohm	15	17	16.25	15	Pass	19	Pass
Rgood Min=		0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	uF	0.14	0.14	0.14	0	Pass	10	Pass
Cgood Max=		110.6	111.2	111.2	111.5	110.9	110.8	110.7	110.5	msec	110.5	111.5	110.925	-1	Pass	1500	Pass
Backoff Time Tdb0=		110.6	111.2	111.2	111.5	110.9	110.8	110.7	110.5	msec	110.5	111.5	110.925	-1	Pass	1500	Pass
Eff Backoff Tdb0 eff=		0	0	0	0	0	0	0	0	****	0	0	0	0	Pass	1	Pass
Backoff Type=		203.1	207	203.1	203.1	203.1	207	199.2	207	msec	199.2	207	204.075	5	Pass	500	Pass
Detection Time Tdet=		214.8	214.8	203.1	210.9	214.8	214.8	199.2	214.8	msec	199.2	214.8	210.9	5	Pass	1000	Pass
Total Det Time=		212.9	186	215.9	199.1	215.9	211.8	219	195	KOhm	186	219	206.95	45	Pass	2000	Pass
Output Impedance Zout=		18.5	18.3	18.4	18.3	18.8	18.8	18.9	18.8	volts	18.3	18.9	18.6	15.5	Pass	20.5	Pass
Class Voltage Vclass=		-1	-1	-1	-1	-1	-1	-1	-1	volts	-1	-1	-1	-1	Pass	-1	Pass
Mark Voltage Vmark=		11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	msec	11.7	11.7	11.7	6	Pass	75	Pass
Class Time Tpd=		1	1	1	1	1	1	1	1	****	1	1	1	0	Pass	2	Pass
Event Count=		-1	-1	-1	-1	-1	-1	-1	-1	msec	-1	-1	-1	-1	Pass	-1	Pass
Event1 Tcle1=		-1	-1	-1	-1	-1	-1	-1	-1	msec	-1	-1	-1	-1	Pass	-1	Pass
Event2 Tcle2=		-1	-1	-1	-1	-1	-1	-1	-1	msec	-1	-1	-1	-1	Pass	-1	Pass
Mark Tme1=		-1	-1	-1	-1	-1	-1	-1	-1	msec	-1	-1	-1	-1	Pass	-1	Pass
Mark Tme2=		49	50	49	59	49	47	49	49	usec	47	59	50.125	15	Pass	5000	Pass
Pwr-On Rise Time Trise=		11.7	11.7	11.7	7.8	15.6	11.7	11.7	11.7	msec	7.8	15.6	11.7	0	Pass	400	Pass
Power-On Time Tpon=		415.1	418.1	420.3	420.8	425.4	423.6	426.9	429.6	mA	415.1	429.6	422.475	400	Pass	512	Pass
Init Inrush=		414.3	417.3	419.6	420.6	425.1	423.1	426.1	429.1	mA	414.3	429.1	421.9	400	Pass	450	Pass
Max Inrush=		413.6	416.8	419.1	419.8	424.4	422.1	425.4	428.4	mA	413.6	428.4	421.2	400	Pass	450	Pass
Min Inrush=		59.2	60.4	58.8	60.4	57.6	57.6	60.4	57.2	msec	57.2	60.4	58.95	50	Pass	75	Pass
Tim Inrush=		34.7	34.5	34.8	34.7	35.1	34.9	35.1	35.1	Volts	34.5	35.1	34.875	30	Pass	57	Pass
Inrush Voltage=		49.9	49.6	49.0	49.6	49.0	49.7	49.9	49.6	Volts	49.6	49.9	49.7375	44	Pass	57	Pass
Powered Vpp1=		49.8	49.5	49.7	49.6	49.7	49.7	49.8	49.6	volts	49.5	49.8	49.6625	44	Pass	57	Pass
DC Voltage Vpport=		22	23	23	25	1	23	22	21	mVolts	1	25	20	0	Pass	500	Pass
AC Ripple Vpp(10v)=		5	6	2	6	1	5	7	6	mVolts	1	6	5.25	0	Pass	200	Pass
AC Ripple Vpp(noise)=		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	watts	2.5	2.5	2.5	2.2	Pass	2.9	Pass
DC Power Pport=		50	50	50	50	50	50	50	50	mA	50	50	50	49	Pass	51	Pass
DC Current Iport=		17.6	16.8	16.8	17.6	17.6	17.6	17.6	17.6	watts	16.8	17.6	17.4	15.4	Pass	22.7	Pass
Pport Capacity=		359	344	343	361	360	360	359	361	mA	343	361	355.875	270.2	Pass	399	Pass
Iport Capacity=		0	0	0	0	0	0	0	0	****	0	0	0	0	Pass	3	Pass
Port Class=		416	418	421	421	426	424	427	430	mA	416	430	422.875	400	Pass	512	Pass
Init Ilim=		414	417	420	421	425	423	426	429	mA	414	429	421.875	400	Pass	450	Pass
Max Current Limit Ilim=		414	417	419	420	424	422	425	428	mA	414	428	421.125	400	Pass	450	Pass
Min Current Limit Ilim=		65.8	59.6	60.4	57.6	59.6	59.2	60.4	56.8	msec	56.8	65.8	59.925	50	Pass	75	Pass
Short Cir Timeout Tlim=		34.7	34.5	34.8	34.7	35.1	34.9	35.1	35.1	Volts	34.5	35.1	34.85	44	Info	57	Pass
Output Voltage V=		50	49.7	49.9	49.8	49.9	49.9	50	49.8	Volts	49.7	50	49.875	44	Pass	57	Pass
2S_msec Short Vport=		48.864	48.528	48.768	48.592	48.736	48.656	48.816	48.656	volts	48.528	48.864	48.702	44	Pass	57	Pass
Vport Min=		0.05	0.04	0.05	0.04	0.05	0.04	0.04	0.05	V/Usec	0.04	0.05	0.045	-1	Pass	3.5	Pass
Negative Slew=		0	0	0	0	0	0	0	0	V/Usec	0	0	0	-1	Pass	3.5	Pass
Positive Slew=		3040	3040	3040	3040	3040	3040	3040	3040	uSec	3040	3040	3040	2750	Pass	3250	Pass
Power Duration=		60.35	60.13	60.24	60.07	60.27	60.27	60.19	60.16	mW.Sec	60.07	60.35	60.21	62.5	Pass	69.3	Pass
Integr Power Out=		9	7	10	8	9	9	10	8	mA	7	10	8.75	5.5	Pass	10	Pass
Minimum Valid Imin2=		10	10	10	10	10	10	10	10	msec	10	10	10	1	Pass	65	Pass
Min Valid Time Tmp2=		7	6	9	7	8	7	9	7	mA	6	9	7.5	5	Pass	9.5	Pass
Max Invalid Imin1=		350	357	352	356	352	350	350	356	msec	350	357	352.875	300	Pass	400	Pass
Time-to-Shutdown Tmpd0=		19.536	19.376	19.488	19.408	19.688	19.904	19.936	19.656	volts	19.376	19.936	19.674	-1	Pass	30	Pass
Max Voltage Vopen max=		365	360	360	365	360	370	365	370	mA	360	370	365	271	Pass	400	Pass
Class 0 Ovid Current Icut=		59.6	60.5	59.3	59.4	58.3	57.6	58.4	57	mSec	57	60.5	58.7625	50	Pass	75	Pass
Overld Time Limit Tovld=		62.4	58.8	60.8	60.3	55.7	63.1	59.2	54.1	mSec	54.1	63.1	59.3	0	Pass	500	Pass
Turn-Off Time Toff=		0.08028	0.07445	0.07773	0.07685	0.07015	0.08115	0.07555	0.06768	uF	0.06768	0.08115	0.07548	-1	Pass	0.52	Pass
Output Cap Tot=		9999	9999	9999	9999	9999	9999	9999	9999	Kohm	9999	9999	9999	45	Pass	50000	Pass
Output Load Rp=		0.1	0	0.1	0.1	0	0.1	0.1	0.1	VDC	0	0.1	0.075	0	Pass	2.8	Pass
Avg Idle Voff=		9432.2	9453.1	9257.8	9492.2	9375	9335.9	9296.9	9453.1	msec	9257.8	9492.2	9394.525	750	Pass	10000	Pass
Error Delay Ted=		0.4	0.4	7.3	0.4	0.4	0.4	0.4	0.4	VDC	0.4	7.3	1.2625	0	Pass	20.5	Pass
Peak Error Delay Ved=																	

Technical Data: PSA-3048

LAN Interface Specifications			
Operating Mode	Signal Path	Parameter	Specification
Data Through Mode	PSE-# to OUT-#	Connections	RJ45
		Data Rates and Signaling	10/100/1000BaseT
		Latency	0 (Passively Coupled)
		Impedance	100Ω, Balanced
		Pair-Pair Isolation	≥ 36dB @ 100MHz
		Insertion Loss	≤ 2dB, 0.1MHz to 100 MHz
		Insertion Loss Variation	≤ 0.75dB, 0.1MHz to 100 MHz
		Return Loss (OUT pairs terminated into 100Ω)	≤ -24dB, 1MHz to 100MHz
Data Connect (LLDP Emulation) Mode	PSE-# to Blade Transceiver	Connection	RJ45
		Data Rate and Signaling	10BaseT
		Orientation	MDI End Point
		Protocol	802.1ab, 802.3bc, 802.3at
		Impedance	100Ω, Balanced
		Return Loss	≤-20dB, 1MHz to 100MHz

PoE Port Connections			
Operating Mode	Dependency	Parameter	Selections
2-Pair Power	Port 1 and Port 2 operate independently	Powered Pair	ALT-A or ALT-B
		Polarity	MDI or MDI-X
4-Pair Power	Connect to Port 2 (Port 1 bypassed)	Powered Pair	ALT-A and ALT-B
		Polarity	MDI or MDI-X for each pair

Detection and AC MPS Specifications			
Description	Conditions	Parameter	Specification
Detection Resistance	Vport = 2.5VDC - 12VDC, Port Connected, Transition Current Load = 0	Range	9 KΩ to 39 KΩ
		Resolution	1 KΩ
		Accuracy $\Delta V / \Delta I$ at 1 Volt Spacings	≤ 24KΩ, ± 250Ω > 24KΩ, ± 400Ω
Detection Capacitance	Vport = 2.5VDC - 12VDC, Port Connected, Transition Current Load = 0	Range	0.14, 5, 7, 11μF
		Accuracy	15%
Detection Signature Cut-Off Threshold	Port Connected	Vport	12V ± 2%
AC MPS Signature	Vport = 12VDC - 60VDC, Port Connected	AC Impedance	24KΩ (0.1μF + 330Ω)
		Resistance Accuracy $\Delta V / \Delta I$ at 2 Volt Spacings	22.8KΩ, ± 250Ω
	Port Isolated	AC Impedance (≤ 500 Hz)	≥ 1.1 MΩ
		AC Impedance (≤ 120 Hz)	≥ 3.0 MΩ

Current Load Specifications			
Description	Conditions	Parameter	Specification
Load Current	Per Powered Pair	Range	0 to 750 mA
		Resolution	0.25 mA
		Accuracy	± 0.5% ± 0.25mA
		Slew Rates	> 4mA / μsec
		Activation Voltage	15V, Rising Vport
		De-Activation Voltage	14V, Falling Vport

Current Load Specifications			
Transition Current	Load Current Active, Per Powered Pair	Range	0 to 400 mA
		Resolution	0.25 mA
		Accuracy	$\pm 0.5\% \pm 0.25\text{mA}$
		Slew Rates	$> 4\text{mA} / \mu\text{sec}$
		Activation Voltage	14V, Falling Vport
		De-Activation Voltage	6V, Falling Vport
Configurable Load Transient	Vport > 15VDC	Load Step 1 Range	0 to 2000 mA
		Load Step 2 Range	0 to 750 mA
		Resolution (0 – 1023 mA)	0.25 mA
		Resolution > 1023 mA	0.50 mA
		Accuracy	$\pm 1\% \pm 0.5\text{mA}$
		Slew Rates	$> 4\text{mA} / \mu\text{sec}$
		Steps	2
		Load Step 1 Duration < 1024 mA	200 μsec to 1 sec
		Load Step 1 Duration > 1023 mA	200 μsec to 80 msec
		Load Step 2 Duration	20 μsec to 1 sec (or persist)
		Step Resolution	100 μs
		Saturated Load Eff. Resistance	37 Ω
		Foldback Suppression Minimum Port Voltage (@ 400mA PSE Current Limiting)	33 VDC
Foldback Suppression Duration	Step 1 + Step 2 Duration		

DC Metering Specifications			
Description	Conditions	Parameter	Specification
Voltage Meter	Average, Max-Peak, Min-Peak, Scope Trace	Voltage Range	0 - 60V
		Trace Length	256 Samples
		Sample Rates	39.1 μsec – 39.1 msec (10msec -- 10sec traces)
		Resolution	0.025 V
		Accuracy ¹	$\pm 0.5\% \pm 15.6\text{ mV}$
		Measurement Triggers	Immediate, Edge, Event
Current Meter	Average, Max-Peak, Min-Peak, Scope Trace	Current Range	0 – 2000 mA
		Trace Length	256 Samples
		Sample Rates	39.1 μsec – 39.1 msec (10 msec -- 10sec traces)
		Resolution (0 – 1023 mA)	0.25mA
		Resolution (1024 – 2000 mA)	0.5mA
		Accuracy ²	$\pm 0.5\% \pm 0.5\text{mA}$
		Triggers	Immediate, Edge, Event

1. Does not include Voltage drop due to cable losses and 0.45 Ω maximum test port input resistance.
2. Does not include Port-Connected MPS current, which is approximately $(V_{\text{port}} - 12\text{V})/24\text{k}\Omega$.

AC Metering Specifications				
Description	Conditions	Parameter	Specification	
AC Peak-Peak Meter	Low Band	3dB Bandwidth	16Hz – 500Hz	
	High Band	3dB Bandwidth	1500Hz – 300kHz	
	Full Band	3dB Bandwidth	16Hz – 300kHz	
	All Bands	Resolution		1mV
		Accuracy		2% \pm 8mV
		Range		1Vp-p

Triggering Specifications			
Description	Conditions	Parameter	Specification
Edge & Event Triggers	All Modes	Range	0.25V - 59.5V
		Resolution	0.125 mV
		Accuracy (relative to DC Meter)	± 0.0625 mV
		Trig1 to Meter or Transient Latency	~ 50 µsecs
		Event Trigger Latency	< 500 µsecs
	Trigger Noise Immunity	Pre-Trigger Qualification Time (Voltage below Rising threshold or above Falling threshold)	1.5 msec
		Normal Mode Edge Noise Rejection	125 mV
	Noisy Mode Edge Noise Rejection	500 mV	

Time Interval Metering Specifications			
Description	Conditions	Parameter	Specification
Time Interval Meter	Microsecond scale	Time Range	4 – 26200 µs
		Time Resolution	1 usec
		Time Accuracy	± 2 µsecs
		Min. Resolvable Time Interval	~ 4 µsecs
	Millisecond scale	Time Range	2-6550 ms
		Time Resolution	0.1 msec
		Time Accuracy	± 1 msec
		Min. Resolvable Time Interval	2 msec
	Second Scale	Time Range	0.1 – 16.1 sec
		Time Resolution	0.1 sec
		Time Accuracy	± 0.05 sec
		Min. Resolvable Time Interval	0.1 sec
	Triggering & Noise Immunity	Start Trigger	Edge or Event
Stop Trigger		Edge	
Normal Mode Edge Noise Rejection		125 mV	
Noisy Mode Edge Noise Rejection		500 mV	

LED Indicators		
LED Label	Parameter	Description
DET	Detection Enabled	ON: Valid Detection Signature Connected (R= 19 to 26 KΩ, C= 0µF) AND Port Switch Connected BLINKING: Receiving or Transmitting a Layer 2 LLDP message. OFF: Port Switch Open OR Invalid PD Signature
PWR	PSE Power On	ON: Indicates Power-Up with Vport > 36 VDC (Regardless of Trigger State) OFF: Vport < 36 VDC
ARM	Trigger ARM	ON: Trigger 1 in the ARMED State OFF: Trigger 1 NOT in the ARMED State
AUX	Communications	ON or BLINKING: Indicates Communications to PSA Test Port

Programming and Control	
Description	Specification
Interface	Ethernet 10/100BaseT
Host Requirements	PC running Microsoft Windows NT, 2000, XP, Vista, or Linux PC (Fedora, SUSE)
Control Environment	Sifos PowerShell or PSA-Interactive
Recommended Network Latency:	< 5 msec

Physical and Environmental	
Description	Specification
Dimensions	19"W x 11.5"H x 12"L (7U Rack Mount)
Weight	41 lbs.
Power	100VAC-240VAC, 50-60 Hz, 2A Max.
Ambient Operating Temperature	0°C to 50°C (≤ 42.75 Watt loading per port)
Storage Temperature	-20°C to 85°C
Operating Humidity	5% to 95% RH, Non-Condensing.

Certifications	
Description	Certifications
Emissions	FCC Part 15, Class A Meets EN55022 VCCI, AS/NZS 3548
Safety	CSA Listed (CSA22.2 No. 61010) Meets EN61010-1 CB Scheme IEC 61010-1
European Commission	Low Voltage Directive (73/23/EEC) Electromagnetic Compatibility Directive (89/336/EEC) CE Marking Directive (93/68/EEC)
<p>FCC Statement:</p> <p>This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.</p>	

Ordering Information

PSA-3048, PowerSync Analyzer 3048 RackPack PSA with PowerShell PSA

PSA-3048-GUI, PSA Interactive Graphical User Interface Software for PSA-3048

PSA-CT, PSE Conformance Test Suite for One PSA Controller (Up to 24 Test Ports)

PSA-MPT, PSE Multi-Port Test Suite for One PSA Controller (Up to 24 Test Ports)

PSA-TS1, PSE Automated Test Suite Tracking Service for One Year for One PSA Controller

PSA-TS2, PSE Automated Test Suite Tracking Service for Two Years for One PSA Controller

PSA-3048U, PSA-2400 to PSA-3048 Chassis, Controller, and Test Card Upgrade

PSA-LLPD, LLDP Emulation and Analysis Feature for One PSA-3000 Controller (*future activation key availability*)

Accessories Included:

- Installation Guide & Configuration Chart
- PowerSync Analyzer Reference Manual (Binder and CD)
- Power Cord
- Cross-Over Ethernet Cable
- RS-232 Cable

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real POWER from Sifos