PSA-3048

RackPack PowerSync® Analyzer

IEEE 802.3at Power over Ethernet

Product Overview

Key Features

- ❑ **48 Port Bundled PowerSync Analyzer – Reduced Cost / Port**
- ❑ **Continuous PSE Loading > 42 Watts Per Test Port**
- ❑ **Continuous 4-Pair PSE Loading to 95 Watts Per Slot x 24 Ports**
- ❑ **Unique, Fully Automated Multi-Port PSE System Analysis**
- ❑ **Industry Leading IEEE 802.3at PoE PSE Conformance Suite**
- ❑ **High Level Script Automation Supports High Speed PSE Testing**
- ❑ **Replaces All General Purpose Test Equipment & Fixtures**
- ❑ **Flexible Powered Device LLDP Emulation and LLDP Analysis**
- ❑ **One-Button 2-Pair and 4-Pair PSE Waveform Analysis**
- ❑ **Flexible and Accurate Measurements of Voltage, Current, Noise**
- ❑ **Noise Immune Triggering, Transients, and Time Interval Measurements**
- ❑ **Supports PSE Packet Transmission Testing with PoE Loads**
- ❑ **Smart Fan Control – Runs Cool and Quiet**
- ❑ **Software Compatible with Sifos PSA-3000 Family**

Verification, *Simplified.*

IEEE 802.3at and Pre-8023.bt PSE's

End-Spans

Mid-Spans

PoE/PoE+ Connectors

Injectors

Fully Automated 802.3at PSE Conformance Test

Hardware / Firmware Design Verification

Device Qualification

LLDP Protocol Analysis

Interoperability Analysis

Quality Assurance

Fully Automated PSE System Power Management Test

PSE System and Power Management Verification

System Stability Analysis including PoE LLDP

PSE Administrative Responses up to 192* 802.3at PD's or 96* 4-Pair PD's

High Throughput QA, Manufacturing

Multi-Port Automation

Ready-to-Use, High Throughput Test Scripts

High Defect Coverage

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 multiple local area network connections must be completely transparent and non-disruptive to the traditional data transmission functions of those network connections.

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 license keys 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 70 IEEE 802.3at specification parameters per port, presented in easily readable spreadsheet reports with multi-port statistics and clearly notated pass/fail limit analysis.

Automated PSE System Testing

PSA-3000's may also be optioned via a license key to run the one-of-a-kind **PSE Multi-Port Suite**. This software offers flexible, programmable, simultaneous **Live PD Emulation** of up to 192 independent Powered Devices including 802.3at Type-2, LLDP capable devices and also supports live emulation of up to 96 proprietary 4-Pair PD's. A fully automated 2nd generation **Multi-Port Test Suite for 802.3at** evaluates PSE power allocation decisions and power management behaviors in response to multi-port PD loads including Type-2 PD's and 802.3at LLDP power administration. Results are presented in colorful graphical reports.

LLDP Emulation

The IEEE 802.3at specification describes a new generation of PSE's and Powered Devices (PD's) that communicate highly resolved power needs and power allocations using Ethernet layer 2 (LLDP) link protocols. The PSA-3048 may be optioned via license keys to flexibly emulate PD's and fully analyze the power negotiation protocols between PSE's and PD's.

Getting Ready for 4-Pair PoE (802.3bt)

Each test slot within a PSA-3048 has the ability to internally combine test port resources for the purpose of emulating a variety of 4-Pair PD signatures and power loads with continuous power loading up to 95 watts. 4-Pair metering of load power, load current, voltage-per-pair, power-per-pair, and current-per-pair is readily accessed through menus in **PSA Interactive** and through high level **PowerShell PSA** commands. PSA Interactive offers Standard Waveforms to allow visual analysis of PSE signaling, power-up, load response, disconnect (2 or 4 pair), and overload (2 or 4 pair) responses. PD emulation is flexibly configured to work with a variety of proprietary 4-Pair PSE's including UPoE PSE's deploying extended LLDP protocols for 4-pair powering.

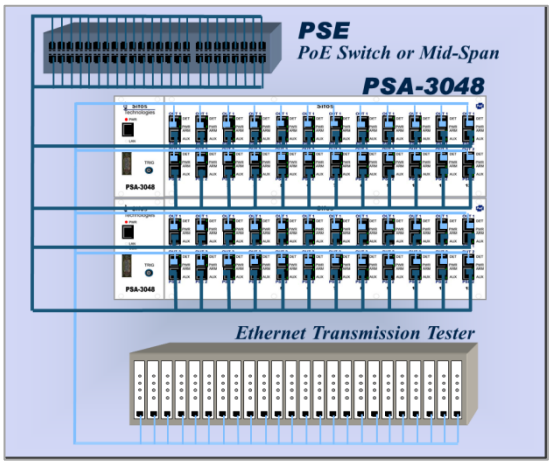
* *Assumes up to 4 PSA-3048's combined into single Multi-Port Resource Configuration.*

Verification, Simplified.

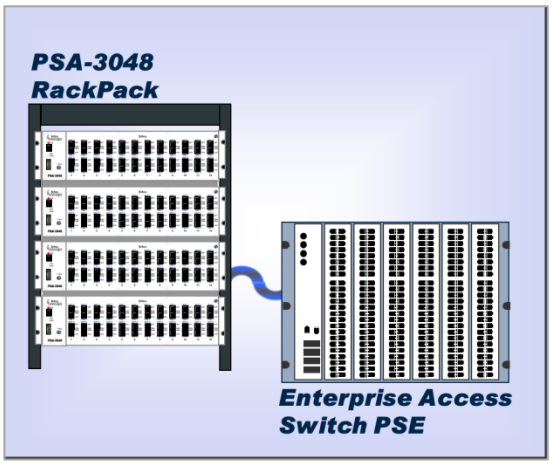
Copyright 2009-2015, Sifos Technologies, Inc.

PowerSync Analyzer Test Equipment Setups

PSE DV, System, Mfg. Test



Large PSE System QA



* Available as an optional feature to the PSA-3048. See feature-specific data sheet.

Per-Port PSE Test Resources

Flexible PD Detection & Class Emulation

Flexible Loads and Load Transients

Event or Edge Triggering of Load Transients & Measurements

Average, Peak (Min/Max), and Trace Measurements of Port Voltage and Load Current with Flexible Sampling Apertures

Standard One-Button Waveform Library for Rapid PSE Analysis and Conformance Troubleshooting (*including 4-Pair PSE's*)

Flexibly Triggered, Noise-Immune Time Intervals / Slews

O-Scope Graphical Waveforms (*802.3at and 4-Pair PSE's*)

LAN Termination, LLDP Protocol Emulation and Tracing

Concurrent Packet Transmission and PoE Load Testing

External Trigger Input/Output

4-Pair PoE Loading and Analysis (*per Test Blade*)

PSE System & Multi-Port Testing*

Fully Automated Multi-Port Test Suite for Type-1 and Type-2, including Type-2 LLDP PSE's up to 192 PSE Ports Covering:

- **Power Administration by PD Class and Port Group Subsets**
- **Group Power-Up, Power Negotiation, and Disconnect Timing**
- **Static Power Capacity by PD Type**
- **Transient Reserve Capacity by PD Type**
- **PD Power Budget Uncertainty by PD Class**
- **Group Overload Response and Timing**
- **Power Stress Tolerance**

Programmable Live PD Emulation Up to 192 Simultaneous 802.3at PD's (Type-1, Type-2, with or without LLDP) drawing up to 34 watts each

Programmable Live PD Emulation Up to 96 Simultaneous 4-Pair PD's (with or without UPoE LLDP) drawing up to 95 watts each

LLDP*, PHY, Transmission Test Support

Flexible, Per-Port, Programmable PD LLDP Emulation for PoE with Payload, Timing, & Synchronization Control

Fully Automated LLDP Protocol Traces and Analysis

PSE Side LLDP Emulation and Protocol Traces

Cisco UPoE PD LLDP Support (PD Emulation)

Test Port "Through" Channel for 10/100/1000 PHY Testing (*using the Sifos PVA-3000*) and LAN Transmission Testing

Negligible Through-Channel LAN Impairment

PSE Conformance Suite*

High Coverage, Fully Automated IEEE 802.3at PSE Compliance Testing and Analysis (including LLDP)

23 PSE Tests Producing Over 70 802.3at Parameters / Port

Automated Test and Port Sequencing with Comprehensive, Colorful Spreadsheet Reporting

Automatically Adapts to PSE Device Technologies

> 95% 802.3at PSE PICS Coverage

Regularly Updated with Sifos Tracking Service Agreements

Powerful Software

PowerShell PSA Script Automation

PSA Interactive Graphical User Interface*

Sample High Throughput, Multi-Port PSE Test Script

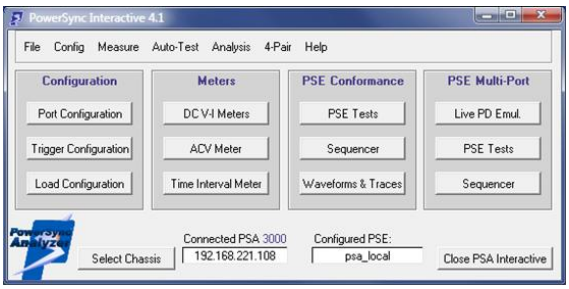
Copyright 2009-2015, Sifos Technologies, Inc.

PSA Interactive Graphical User Interface

The optional Sifos PSA Interactive graphical user interface (GUI) is a flexible and powerful tool designed to allow users 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.

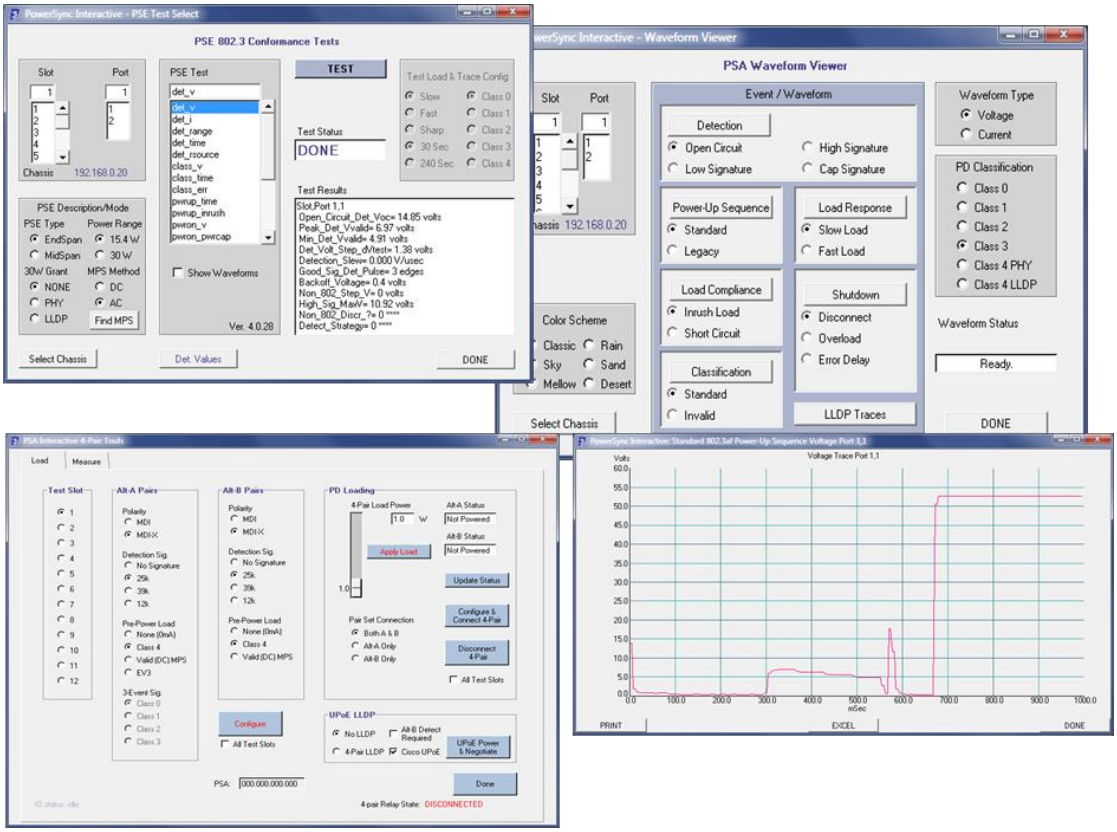
PSA Interactive organizes PSA-3048 resources and testing features into a variety of distinct subsystems:

- 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 Waveforms & PD LLDP Emulation / Testing
- Multi-Port Live PD Emulation
- PSE Multi-Port Tests
- PSE Multi-Port Test Sequencer
- 4-Pair PSE Signature, Load Configurations and Metering (including Standard Waveforms)
- PSE LLDP Emulation / Testing
- Quick-Test PSE Fast Multi-Port PSE Verification



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'.



PSA Interactive Menus for PSE Conformance Selected Test, Standard One-Button Waveform Analysis, and 4-Pair PSE Signature and Load Configuration

PowerShell PSA Tcl/Tk Interface

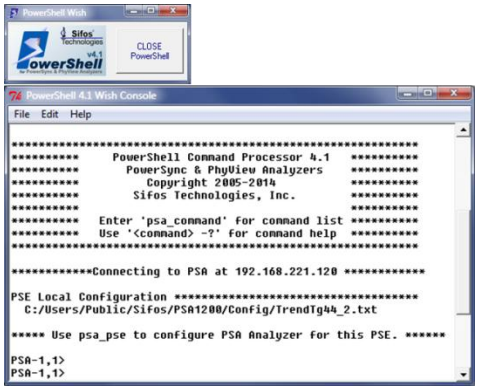
The PowerShell PSA Scripting Environment provides a high level, interactive means to control and program automated test sequences for the PSA-3048 PowerSync Analyzer. PowerShell enables fully automated testing suites that span multiple ports, blades, and instruments. Built upon the popular Tool Command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

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 PSA commands access all of the resources of the PSA-3048 and enable the rapid development of highly customized test scripts. PowerShell PSA 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 PSA environment include:

- Interpretive command execution (no compilation, easy debug)
- Simple, intuitive PowerSync Analyzer commands (API)
- Integrated and extensive command "help" features
- Fast test execution speeds
- DUT-specific configuration files to configure settings
- Supports sequencing of test suite sequences and DUT-specific report routing
- Use sided-by-side with PSA Interactive GUI
- AnyEdit PSA Smart Editor for PowerShell PSA
- Traditional Tcl Console
- Command-Knowledgeable Wish Console with PSA waveform viewer capability



PowerShell Wish Console

IEEE 802.3 PSE Conformance Test Suite

The IEEE 802.3at 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. The PSE Conformance Test Suite may be used to fully assess interoperability of one or more PSE ports given a single button press or single command. Colorful Microsoft Excel spreadsheet reports analyze all test results relative to IEEE 802.3at specification parameters, flagging failures and compiling statistics.

The PSE Conformance Test Suite serves as a virtual industry standard for PSE specification compliance. Testing can be completed without deep, internal knowledge of the 802.3at standard and without high expertise in PSA-3048 capabilities. Test coverage **exceeds 95%** of 802.3at PSE PICS.

See Sifos datasheet, **PSE Conformance Test Product Overview**, for further information regarding the 802.3at PSE Conformance Test Suite.

PSE Multi-Port Suite

While IEEE 802.3at describes a PSE as a single port device, most PSE's are multi-port systems such as Ethernet switches. This fact leads to the need for system test methods and tools to assess PSE behavior across a multitude of ports. The **PSE Multi-Port Suite** offers two fundamental testing capabilities that address this need.

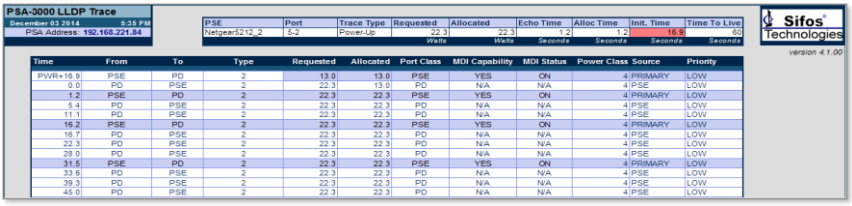
Multi-Port PD Emulation turns every PSA-3048 test port into an emulated Powered Device where behaviors such as static power load, PD classification, line power loss, and even PoE LLDP protocol characteristics are modeled simultaneously across as many as 192 PSA ports. Type-1 ($\leq$13W) and Type-2 ($\leq$25.5W) PD's may be emulated. See Sifos datasheet, **Multi-Port Live PD Emulation Overview**, for further information on Live PD Emulation.

The **Multi-Port Test Suite** is a set of fully automated tests and reporting that takes the PSA-3048 into the realm of fully automated 802.3at PSE System Power Management and Multi-Port Stimulus-Response testing. The Multi-Port Test Suite assesses system-wide behaviors only observable when many IEEE 802.3at PD's are powered by a PSE. The test suite will acquire and distill information regarding key behaviors of a PSE including **class-based power administration**, multi-port **LLDP granting**, power-up and LLDP grant timing, **static power** capacity, **transient reserve** capacity, power down timing, power-per-port **uniformity and uncertainty**, and power **stress test** analyses. Results are presented in colorful, graphical spreadsheet reports. See Sifos datasheet, **Multi-Port 2 Test Suite Overview**, for further information about this test suite.

PoE LLDP Emulation and Analysis

The PSA-3000 includes a subsystem designed to flexibly emulate LLDP capable PD's on a per test port basis. Fully automated applications allow in depth capture and analysis of protocol between the PSE and the PD.

See Sifos datasheet**, LLDP Emulation and Analysis Overview**, for further information on this topic.



LLDP Protocol Trace

Multi-Port High Throughput PSE Verification

The PSA-3000 is provided with a sample PSE automated test script, **psa_quick_test**, that recovers critical PoE parameters from PSE ports with an effective test throughput of less than 15 seconds per tested port. This application can be used in both QA and manufacturing test to *rapidly* qualify PSE functional performance.

Important features of the **psa_quick_test** include:

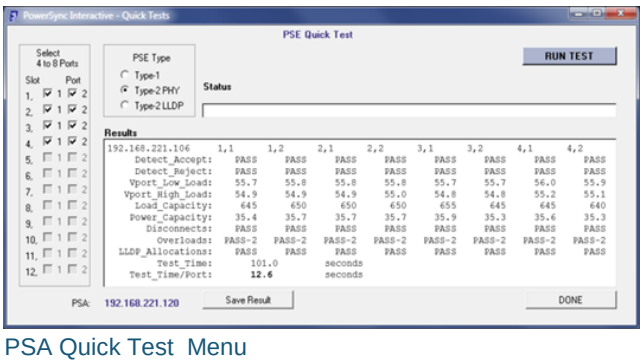
- **Source Code Provided**: May be used as is, may be modified, or may be used as template script
- Scans 4 to 8 PSE ports per test cycle
- Tests **Type-1**, **Type-2** (**2-event**), and **Type-2** (**LLDP***) PSE's
- Validates PoE **Detection Acceptance** and **Rejection** Ranges
- Measures PSE **Port Voltage** at min. and max. load conditions
- Determines **Power Capacity** in Watts and mA
- Assesses **Disconnect Power Removal** response and timing
- Assesses **Overload Power Removal** and **Power-Type** Threshold
- Assesses **LLDP Power Allocations*** and associated timing

Typical test times will range from 8 to 14 seconds per port tested, even when testing Type-2 LLDP capable PSE's.

```
PSA-1,1>psa_quick_test 1,1 1,2 2,1 2,2 3,1 3,2 4,1 4,2  type-2 lldp
TESTING WITH 192.168.221.106 ON PORTS 1,1 1,2 2,1 2,2 3,1 3,2 4,1 4,2
EVALUATING DETECTION REJECT SIGNATURES...
EVALUATING DETECTION ACCEPT, LOW LOAD Vport, AND DISCONNECTS...
EVALUATING DETECTION ACCEPT, HIGH LOAD Vport, CAPACITY, & OVERLOADS...
ASSESSING LLDP POWER-UPS...
REQUESTING FULL TYPE-2 POWER...
ASSESSING LLDP ALLOCATIONS...

     192.168.221.106     1,1      1,2      2,1      2,2      3,1      3,2      4,1      4,2
      Detect_Accept:    PASS     PASS     PASS     PASS     PASS     PASS     PASS     PASS
      Detect_Reject:    PASS     PASS     PASS     PASS     PASS     PASS     PASS     PASS
     Vport_Low_Load:    55.7     55.8     55.8     55.8     55.7     55.7     56.0     55.9
    Vport_High_Load:    54.9     54.9     54.9     55.0     54.8     54.8     55.2     55.1
      Load_Capacity:     645      650      650      650      655      645      645      640
     Power_Capacity:    35.4     35.7     35.7     35.7     35.9     35.3     35.6     35.3
        Disconnects:    PASS     PASS     PASS     PASS     PASS     PASS     PASS     PASS
          Overloads:  PASS-2   PASS-2   PASS-2   PASS-2   PASS-2   PASS-2   PASS-2   PASS-2
   LLDP_Allocations:    PASS     PASS     PASS     PASS     PASS     PASS     PASS     PASS
          Test_Time:       101.0          seconds
     Test_Time/Port:       12.6          seconds
```

Automated Manufacturing/QA PowerShell Test Script, **psa_quick_test**



PSA Quick Test Menu

*Note: *LLDP testing requires PoE LLDP Emulation and Analysis feature*.

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 ΔV / ΔI 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 ΔV / ΔI at 2 Volt Spacings	22.8KΩ, ± 250Ω
	Port Isolated	AC Impedance (≤ 500 Hz) AC Impedance (≤ 120 Hz)	≥ 1.1 MΩ ≥ 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

Copyright 2009-2015, Sifos Technologies, Inc.

Current Load Specifications

Description	Conditions	Parameter	Specification
Transition (Mark Region) Current	Load Current Active, Per Powered Pair	Range	0 to 400 mA
		Resolution	0.25 mA
		Accuracy	± 0.5% ± 0.25mA
		Slew Rates	> 4mA / µsec
		Activation Voltage	14V, Falling Vport
		De-Activation Voltage	6V, Falling Vport
Configurable Load Transient	Vport > 15VDC	Sequential Load Steps	2
		Load Step 1 Range	0 to 1800 mA
		Load Step 2 Range	0 to 750 mA
		Resolution (0 – 1023 mA) Resolution > 1023 mA	0.25 mA 0.50 mA
		Accuracy	± 1% ± 0.5mA
		Slew Rate	< 10mA / µsec
		Step 1 Duration < 1024 mA	200 µsec to 1 sec
		Step 1 Duration > 1023 mA	200 µsec to 80 msec
		Step 2 Duration Load Step 1 < 1024 mA Load Step 1 > 1023 mA	 200 µsec to 1 sec (or persist) 1 sec
		Step Resolution	100 µsec
		Trigger Modes: < 1024 mA > 1023 mA	Immediate, Edge, Event Immediate
		Effective Load Source Resistance	37Ω
		Foldback Suppression Min. Port Voltage (@ 400mA PSE Current Lim.)	30 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
		Accuracy1	> 30VDC: ± 1.5% ±15.6 mV < 30VDC: ± 2.0% ±15.6 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
		Accuracy2	± 0.5% ± 0.5mA
		Triggers	Immediate, Edge, Event

1. Does not include Voltage drop due to cable losses and 0.45Ω maximum test port input resistance.
2. Does not include Port-Connected MPS current, which is approximately (Vport - 12V)/24kΩ.

AC Metering Specifications

Description	Conditions	Parameter	Specification
AC Peak-Peak Meter	Low Band, VDC= 40-57V	Accuracy, 25Hz – 325Hz Accuracy, 50Hz – 300Hz	-15%, +11% -7.5%, +11%
	High Band, VDC= 40-57V	Accuracy, 2.5KHz – 250KHz Accuracy, 20KHz – 250KHz	-15%, +7% -6%, +7%
	Full Band, VDC= 40-57V	Accuracy, 50Hz – 250KHz	-7.5%, +8.5%
	All Bands, VDC= 40-57V	Resolution	1mV
		Range	1Vp-p
		Input Impedance	0.05µF

Copyright 2009-2015, Sifos Technologies, Inc.

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 μsec
		Time Resolution	1 μsec
		Time Accuracy	± 2 μsec
		Min. Resolvable Time Interval	~ 4 μsec
	Millisecond scale	Time Range	2-6550 msec
		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**: Configured for LAN Termination. Long on-time blink for LINK UP, short on-time blink for UNLINKED. **OFF**: Invalid or no PD Signature AND configured as through.
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

Copyright 2009-2015, Sifos Technologies, Inc.

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, 1350mA 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)

FCC Statement:

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.

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-LLPD, LLDP Emulation and Analysis Feature for One PSA Controller
PSA-CT, PSE Conformance 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-MPT, PSE Multi-Port Test Suite for One PSA Controller (Up to 24 Test Ports)*

Accessories Included:

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

*** Note**: *There are 2 PSA Controllers per PSA-3048 RackPack PSA*

Sifos Technologies, Inc.
1061 East Street
Tewksbury, MA 01876
+1 (978) 640-4900
www.sifos.com
sales@sifos.com

Verification, Simplified.

Copyright 2009-2015, Sifos Technologies, Inc.