

## PowerSync Analyzer Version 3.4 Software



PowerSync Analyzer **Version 3.4** software and related documentation is available starting October 19, 2009. This software replaces Version 3.3 software originally released in February 2009. PSA Version 3.4 software upgrades do not require any firmware upgrades to the PSA-1200, but may require firmware upgrades to the PSA-3000 depending on what features are activated.

### Highlights

#### 802.3at PD LLDP Emulation with PSA-3000 / PSL-3000 and the PSE Conformance Test Suite for 802.3at

PSA Software version 3.4 fully enables access to a powerful suite of Powered Device LLDP emulation commands, configurations, and utilities available under PowerShell to PSA-3000's and PSL-3000's that are enabled for the LLDP feature. Using this feature, customers may:

- Configure all aspects of transmitted LLDP frames and TLV's from a virtual LLDP-capable PD
- Connect and disconnect a LAN PHY required for LLDP emulation
- Evaluate LAN Link
- Configure 802.3at-specified PoE TLV's including requested PD power
- Manage LLDP frame transmission intervals and transmission counts
- Receive, count, and analyze PSE LLDP (PoE) Frames and TLV's (e.g. power-grants)
- Generate Frame and Event Triggers from Received LLDP Frames
- Triggered Transmission of PD Emulated (outgoing) LLDP Frames
- LLDP PoE Protocol Tracing
- Synchronize triggered measurements or load transients to LLDP transactions
- Extensions to **class**, **power\_port**, and **psa\_disconnect** to support LLDP emulations including PD class-specific power-ups requiring PSE power grants via LLDP

*Note: LLDP capabilities are not yet available under PSA-Interactive.*

#### PSE Conformance Test Suite for 802.3at (Beta Version, PSA-3000 only)

PSA Software version 3.4 enables access to a Beta Version of the PSE Conformance Test Suite for **802.3at**. Access to this suite requires a PSA-3000 that is fully enabled for the PSE Conformance Test Suite and also requires a special "secret" command utilized to enable or disable the new test suite. Key features of the PSE Conformance Test Suite for **802.3at** include:

- All new PSE adaptive logic for handling ever increasing variety of detection and classification schemes, methods, and state behaviors – takes advantage of unique PSA-3000 capabilities
- Higher PSE test coverage targeting >95% overall PSE PICS coverage when the suite is completed.
- Greater parameter accuracies across most tests
- Support of Type-1 emulations for testing both **15.4W** and **30W** PSE's as well as Type-2 PD emulations for testing **30W** PSE's
- Test adaptations for Type-2 **PHY** Grant PSE's (*available now*) and Type-2 **LLDP** Grant PSE's (*future*)

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- Type-2 (30W) testing enabled under **PSA Interactive** with the PSA-3000 whenever the 802.3at test suite is enabled
- Eleven 802.3at (Beta) PSE Conformance Tests available under PSA 3.4 include one new test and approximately 20 new test parameters in addition to 802.3af parameters.

The Beta Version PSE Conformance Test Suite for **802.3at** currently offers the following tests:

- **det\_v**
- **det\_i**
- **det\_range**
- **det\_time**
- **det\_resource**
- **class\_v**
- **class\_time**
- **class\_err**
- **pwrup\_time**
- **pwrup\_inrush**
- **pwrpn\_pwracap**

Under PSA 3.4, new Beta Versions of the 802.3at PSE Conformance Test Suite may be added at any time without further PSA software upgrades. Tests to be added include:

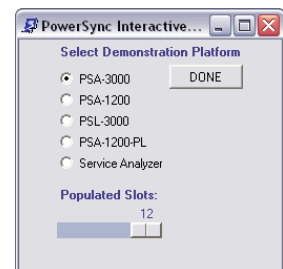
- **class\_ildp**
- **pwrpn\_v**
- **pwrpn\_maxi**
- **pwrpn\_overld**
- **pwrpn\_overld**
- **mps\_ac\_pwrpn**
- **mps\_ac\_vf**
- **mps\_ac\_voff**
- **mps\_dc\_valid**
- **mps\_dc\_pwrpn**
- **pwrpn\_time**
- **pwrpn\_v**

## Expanded PSE Conformance Test Adaptability

As with most PSA software releases, adaptability of the PSE Conformance Test Suite to an ever increasing range of PSE behaviors has been improved in the PSA 3.4 software release whether testing with PSA-1200's or PSA-3000's.

## Flexible PSA Demo Mode

Under PSA 3.4 software, Demo Mode may now be configured via either PSA Interactive or PowerShell to emulate any of the following PowerSync Family platforms:



- PSA-3000
- PSA-1200
- PSA Service Analyzer
- PSL-3000
- PSA-1200-PL

Also supported is the ability to configure the slot count in each platform from 1 to 12 slots.

## PSE Conformance Test Suite Enhancements

Under PSA 3.4, enhancements affecting the “traditional” PSE Conformance Test Suite for 802.3af and for pre-standard high power testing include:

- Implemented new global test list arrays for the 802.3af (PSA-1200) suite and 802.3at (PSA-3000) suite in **psa\_env.txt** environment file
- Refined "Zero-Backoff" adaptation processing given PSA-3000 test blades
- Improved **Tdet** and **Tdbo** measurements given "Zero-Backoff" adaptations
- Refined adaptive processing for open circuit triggering and minimum trigger delays to a PSA-3000 test port
- Modified **pwrup\_pwracap** to test up to 37 watts on a PSA-3000 test port given PD Class 4 emulation in PowerShell

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- Modified **pwrnd\_overld** to test Type-2 PSE on a PSA-3000 test port given PD Class 4 emulation in PowerShell
- Added adaptive logic to deal with delayed detection signaling following a port connection
- Refined **pwrup\_time** test to better assess Tpon in cases of multiple detect-class cycles with very short duration class pulses
- Improved logic for properly resolving 802.3at compliant inrush behavior initially when running **pwrup\_inrush\_2** (port combined test)
- Improved the trace production mode allowing visual analysis of **Tmps** analysis in **mpps\_dc\_valid**
- Added capability to **pwrup\_pwracap** and **pwrup\_pwracap\_2** to account for very small PSA test port voltage drops when computing PSE output power.
- Revised **pwrup\_inrush** test to apply a fixed 41 msec overload pulse (previously 25 msec default) when assessing Powered Vport based on analysis of worst case PD Inrush
- Improved **det\_resource** processing of problematic detection step voltage measurements
- Modified **pwrup\_pwracap\_2** to better deal with long, slow, overload threshold determinations by a PSE controller
- Extended adaptation logic in **det\_v** for wider versatility in differentiating very small (< 1V) detection steps

### PSE Conformance Test Report Enhancements

- Version 3.4 standard spreadsheet report fully adapted to work with both the 802.3af and PSA-1200 Port Combined tests as well as new PSA-3000 802.3at tests

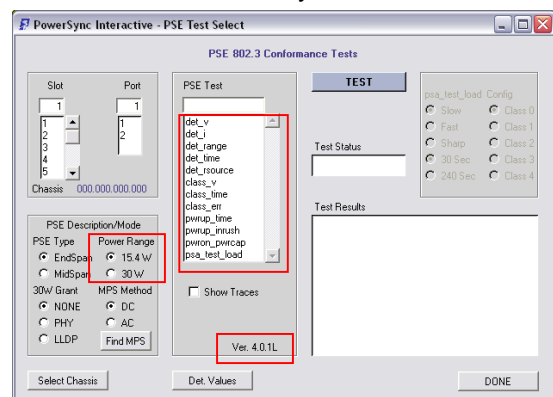
### Multi-Port Test Suite Improvements

- Enabled selective Test Suite loading to enable next generation 802.3at Multi-Port Test Suite for the PSA-3000
- Improved diagnostic treatment of heterogeneous PSA-1200+PSA-3000 chassis configurations

### PSA Interactive Enhancements and Improvements

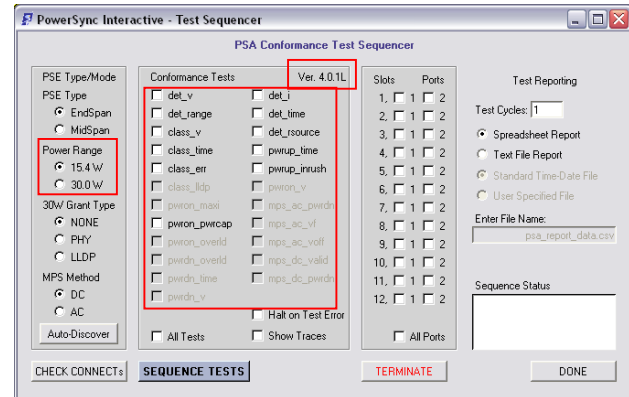
PSA 3.4 includes a number of mostly “behind the scenes” changes to PSA Interactive that are required to enable the coexistence of Port Combined high power testing with the PSA-1200 and Type-2 (30W) PSE testing with the PSA-3000 and the new 802.3at Conformance Suite. The full set of changes include:

- PSE Conformance **Selected Tests** menu enabled for **30W** PSE testing when 802.3at test suite is loaded
- PSE Conformance **Sequencer** menu enabled for **30W** PSE testing when 802.3at test suite is loaded
- PSE Conformance **Tests** and **Sequencer** menus enhanced to automatically revert between 802.3af test suite tests and 802.3at test suite tests
- Added annunciation in PSA Interactive **Main** menu for PSA Type (1200, 3000, or blend)
- Added new menu for platform-specific **Demo Mode** selection (PSA-3000, PSA-1200, PSL-3000, PSA-1200-PL, or PSA Service Analyzer)
- Altered the PSA **Features** help menu to include LLDP
- Enhancements to **Chassis Select** menu to support Demo Mode access and to better tolerate rapid address selects



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- Improved diagnostics when PSA connections fail for various reasons
- Improved logic managing PSE Conformance Test mode controls (power level, high power grants, MPS, EndSpan vs MidSpan) and available tests as PSE Configurations are loaded or connections are made to various PSA chassis'
- Modified all PSA-1200 Port Combiner Logic to key on **30W** PSE Type in PSE Conformance Test menus only when connected to a homogenous PSA-1200
- Enabled use of **psa\_test\_load** test in the **PSE Tests** menu with PD Class 4 (Type-2) emulation when connected to a PSA-3000
- Added notation of PSE Conformance Test Suite version (3.3.x or 4.0.x beta) to **PSE Tests** and **Sequencer** menus
- Enabled trigger level granularity of 0.125V in **Trigger Configuration** menu when connected to a PSA-3000
- Enhanced **Load Configuration** menu to fully support all load transient capabilities of the PSA-3000
- Extended Mark Current range in **Load Configuration** to 400mA to agree with PowerShell command
- Updated **Help Topics** menu to work with PSA-3000 based on PSA-3000 reference manual
- Corrected a test result display bug in **PSE Tests** menu
- Corrected several bugs in **Load Configuration** relating to Port Combined transients and maximum static load range
- Fixed bug where Auto-Discover could enable High Power check-button in **Port Configuration** menu with PSA-3000
- Fixed bug in Compliance **Waveforms** (Waveform menu) where transient foldback suppression could get specified with certain PSA-1200 blades
- Fixed bug in Legacy Power-Up **Waveform** where a 47uF capacitance would get configured in a PSA-3000 blade that does not support that feature
- Corrected a problem where PD Class 4 emulation with the Inrush Compliance **Waveform** was compromised by PSA-3000 foldback suppression.



### PSA Interactive PL Enhancements

- Restricted PSL-3000 load current resolution to 2mA in PSA Interactive PL
- Added annunciation in and PSA-Interactive PL for PL Type (1200, 3000, or blend)
- Corrected bug relating to Port Combined maximum static load range

### PowerShell PSA Tcl-Wish Enhancements

PowerShell changes and enhancements (excluding LLDP) supporting the PSA 3.4 release include:

- Added I/O Driver Timeout Capability to trap dropped PSA connections
- Fortified I/O Driver for both PSA-3000 and PSA-1200 applications
- Added robustness in handling of environment and PSE local config files
- Added Feature security control for LLDP on PSA-3000
- Extended the **psa\_load\_test** application to work with PD Class 4 on PSA-3000
- Improved **power\_port** for class 4 emulation to prevent premature power removals on some PSE's

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- Extended **sequence** command to differentiate between PSA-1200 with Port Combiners and Type-2 Testing with PSA-3000 (Type-2 testing with PSA-3000 automatically gated by availability of 4.0 802.3at Test Suite)
- Added support for a time limited access to PSA functions to enable fixed duration demos and rentals
- Extended **sequence** command to handle multiple possible parameter counts per test according to test suite and test conditions
- Added override to LSB smoothing in **psa\_trace** command
- Better enabling/disabling of PowerShell commands and arguments when transitioning between test ports in a hybrid PSA-1200 / PSA-3000 chassis
- Altered sequence to preserve text case when specifying text report file names
- Improved voltage-current trace **psa\_remove\_pulse** (pulse eraser) utility
- Improved **psa\_wait** command to prevent a condition where meter returns "READY" with no measurement data
- Restricted use of PSA-3000 test blades in PSA-1200 chassis' Slot 12 as this combination cannot properly initialize
- Improved error diagnostics when PSA address connections are refused
- Fine tuned accuracy of low current readings from PSA-3000 test ports
- Enhanced Power Level measurement accuracy with automatic compensation for small voltage drops in test port front-end
- Corrected issue where detection capacitance values larger than 11uF could be "programmed" to PSA-3000 blades
- Corrected problem related to saving new PSE local configuration files

### ***PSA-3000 & PSL-3000 PD LLDP Emulation Subsystem***

A more detailed account of the PowerShell LLDP capabilities now available to the PSA-3000 and PSL-3000 platforms is provide below:

- Extended LLDP emulation to include the legacy PoE frames described in 802.3bc
- Refined **psa\_lan** command to properly handle all possible chassis and test port configurations when activating/deactivating LLDP termination or when queried for configuration and status
- Enhanced PD emulated LLDP frame generation command **pd\_lldp** in conjunction with PSA-3000 firmware 3.02 and later
- Enhanced PD emulated frame & TLV generation command **pd\_frame** in conjunction with PSA-3000 firmware 3.03 and later
- Enhanced PD emulated Power Request and protocol timing command **pd\_req** in conjunction with PSA-3000 firmware 3.06 and later
- Enhanced PSE LLDP frame capture command **pse\_lldp** in conjunction with PSA-3000 firmware 3.01 and later
- Enhanced PSE TLV capture command **pse\_frame** in conjunction with PSA-3000 firmware 3.06 and later
- Added **pd\_default\_lldp** utility to configure Default LLDP parameters to one or more PSA-3000/PSL-3000 test ports
- Added **pd\_mac\_init** utility to assign and store a user defined range of unique MAC addresses to PSA LLDP subsystem
- Added **psa\_check\_lan\_state** utility to assess LAN link status
- Added **pd\_lldp\_start** utility to verify LAN connection and start or restart LLDP frame transmissions
- Added **pse\_link\_wait** utility to wait for and assess LAN link availability
- Added **pse\_lldp\_wait** utility to wait for and assess PoE LLDP frame receipt from a PSE
- Added **pse\_alloc\_wait** utility to wait for and assess PoE LLDP power grant (updated allocation) from a PSE

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- Added **psa\_lldp\_trace** utility to record and log a series of LLDP transactions between PSE and emulated PD
- Added **pse\_lldp\_emul** utility to enable use of a PSA-3000/PSL-3000 test port to emulate LLDP from a PSE
- Added LLDP Support utilities such as MAC Address evaluator
- Extended **class** command to accept LLDP requested power argument
- Extended **psa\_disconnect** command to support LLDP (disconnect)
- Extended **power\_port** to perform PD (Type-2) LLDP Power-Up Emulation using LLDP commands and utilities
- Expanded "DET" LED function to blink slowly when PSA LLDP subsystem is connected and to blink rapidly when LLDP subsystem is linked to a PSE

### ***PSA Service Analyzer***

The PSA Service Analyzer was fully ported to run with a PSA-3000 and also updated to work with changes to PowerShell I/O drivers described above under PowerShell PSA. Coverage remains for Type-1 PSE power levels. Changes include:

- Implemented realistic waveforms into the DEMO MODE with the service analyzer
- Verified Service Analyzer function, including in-band configurations, with PSA 3.4 software and PSA-3000 platform
- Improved robustness with in-band configuration tolerance of LAN link drops
- Enabled Service Analyzer to run with a PSA-3000 test blade
- Corrected bug in the Chassis Select function

### ***PSA Test Blade Version Support***

- PSA-1200 Test and Load Blades, Version 1
- PSA-1200 Test and Load Blades, Version 2
- PSA-1200 Test and Load Blades, Version 3
- PSA-3000 Test Blade, Version 1
- PSL-3000 Test Blade, Version 1 and 2

### ***PSA Current Firmware Versions***

PSA-3000 Controller Blade	3.04
PSA-3102 Test Blades	3.07
PSL-3000 Controller Blade	3.04
PSL-3102 Load Blades	3.07
PSA-1200 Controller Blade	1.65
PSA-1200 Test Blades	1.59
PSA-1200-PL Load Blades	1.59