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Firmware upgrade Release Notes: TSync-PCIe™

TSync-PCIe version 3.4.7 Release Notes

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Rochester NY, USA
21-May-2018

Spectracom has released a firmware update for the TSync-PCIe bus-level timing boards. This document lists and briefly describes newly released features, enhancements and fixes for the Spectracom TSync-PCIe firmware. The release notes are organized in a backwards chronological order, i.e. the most recent releases are captured first.

To obtain the applicable firmware update files, please visit:

https://files.spectracom.com/public-downloads/tsync-pcie-firmware-upgrade

***Note**: TSync-PCIe firmware version 2.0.0 (and higher) modifies the available input reference of "host" to become "hst0" instead. This change was incorporated to allow more than one instance of a "host" reference in the Spectracom SecureSync appliances (which shares the same firmware as the Spectracom TSync-PCIe board). If the available "host" input reference is being used, when updating from a version 1.x.x version of firmware to a version 3.x.x version of firmware, the application software will need to be modified and recompiled to the new driver to reflect this change to "hst0", instead of "host". Note that the TSync-PCIe only has one instance of a host reference, so the only "hst" value that is referenced with a TSync-PCIe board is "hst0".*

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Version 3.4.7

Release features

- Added support for new Flash IC's.
    - Backwards compatible; can be cut in to production at any time before new TSync-PCIe boards are released
- Added support for temperature sensor on new revision TSync-PCIe boards.
    - Temperature sensor in on PCB boards revision 6 or higher.
- Added support for reference monitoring
- Added support for ublox M8T upgrade

Enhancements and fixes

- Oscillator disciplining improvements
- GNSS receiver will now restart survey on power-up or board reset
- GNSS setting now defaults to GPS/GAL not GPS/GLO. For TSync-PCIe with ublox M8T receivers only.

Version 3.3.2

Release features

- Added support for ublox GNSS receiver.
- Added ability to update Trimble Res-SMT-GG receivers in the field
    - Note this firmware update needs to first be applied before the receiver can be updated. This may also require the TSync driver be updated to a newer version to support this function (TSync linux driver needs to be at version 3.2.0 or higher).

Enhancements and fixes

- Incorporated TCXO and OCXO disciplining improvements

Version 2.2.3

Enhancements and fixes

- Fixed an issue with "MSG" messages potentially resulting in systems freezing upon a reboot when used in certain servers (such as HP, Dell and Supermicro systems).
    - We found an issue when receipt of any MSG packet (without data) as the first message after a long idle period would trigger the release of bad data. So, MSG packets embedded in other traffic were OK, but the power management message sent from certain systems upon a reboot was usually the first message sent after a long idle period.
- (Primarily for factory use only) updated the boot loader program to address various conditions.

Version 2.2.1

Release features

- Added support for GNSS receivers (GPS and/or Glonass satellite reception)
    - Added software support for the Trimble SMT-GG GNSS receiver.

Note: The desire to add Glonass satellite reception capability to TSync-PCIe boards purchased prior to March 2014 requires the purchase of a different antenna and receiver. Contact the Spectracom Sales team for more details.

- Added Restart Tracking capability to coarse adjust the oscillator
  - Added ability to command the oscillator to coarse align again with an external 1PPS reference. This helps expedite the realignment of the oscillator to a shift in the 1PPS reference or to a different selected 1PPS reference, as it alleviates the need for the oscillator to otherwise be very slowly slewed back into alignment.
- Increased logging capabilities
  - Increased the various messages that can be sent to the message log (LS_GetMessage API call/example program).

Enhancements and fixes

- Fixed an issue causing intermittent crashes and/or data corruption when the card is used in certain recently released servers.
  - Data corruption can potentially affect any data transfer on the PCIe interface, adversely affecting operations such as the MatchTime functionality or rarely causing systems to hang/crash (especially with HP servers).

Version 2.2.0

Enhancements and fixes

- Fixed an issue preventing the timing board from being detected when installed in certain HP servers.
- Fixed an issue with the Match Time function.

Version 2.1.1

Release features

- Updated the assigned Class Code
  - The previous generic Class Code assigned to the TSync-PCIe board could cause problems with some systems recognizing the timing board being installed. Updated

Class Code to a more specific value of “Communication synchronizer: Spectracom Corporation Device 8000”.

Version 2.1.0

Release features

- Added support for TSync-PCIe-PTP
  - A TSync-PCIe-PTP board can be configured as a PTP Master or PTP slave. As a Master, it can provide accurate time over an Ethernet network to PTP other PTP devices when synchronized to IRIG or an external 1PPS. As a slave, it can make use of the PTP protocol as a timing reference. (The PTP feature takes the place of the GPS feature in TSync-PCIe boards).
- Mobile Mode operation for TsyncI-PCIe was released to Manufacturing
  - Version 2.1.0 incorporated the mobile mode into all shipping TsyncI-PCIe boards (Mobile Mode capability was made available in the version 2.0.0 release but was not made available in shipping product until version 2.10).

Enhancements and fixes

- Made improvements to the NTP operation

Version 2.0.0

Release features

- Implemented default input reference table changes.
  - Removed Host/EPP0 combination.
  - Added Self/EPP0 combination (enabled by default). With this configuration, the TSync-PCIe-PCIe board can synchronize using its internal time and date as soon as an external 1PPS is applied. The internal time need only be set once by synchronizing briefly to any timing reference, or it can be set manually. As long as the time is set correctly once after power-up, the external 1PPS will keep the time synchronized. If the time is never set in the board after power-up, the default time that will be read is the number of seconds since the power-up time of midnight, January 1, 2000.

- Added Host0/Host0 combination (enabled by default).This configuration allows the TSync-PCIe board to be able to discipline to its host input reference.

- Implemented “Mobile Mode for the “internal” (onboard) GPS receivers
  - The on-board GPS receivers are configured at the factory to operate in a stationary environment. Prior to version 2.0.0, the timing boards were not able to operate in a mobile environment. Firmware version 2.0.0 added commands to configure the GPS receiver Mode and the associated Dynamics code. Version 2.00 was not cut into all manufactured boards and was only available upon request. Version 2.1.0 implements the mobile mode into all shipping TSyncI-PCIe boards.

    Note: Refer to Technical Application Note TN09-101 for additional information regarding the TSync-PCIe Mobile Mode operation.

Version 1.4.1

Enhancements and fixes

- Holdover alarm timeout was changed from immediate to 5 seconds due to a change made to the GPS signal.
  - Due to a change made to the GPS signal in January 2010, version 1.4.1 changed the Holdover alarm timeout to 5 seconds. Added shared lib support (`libtsync.so`).

Version 1.4.0

Enhancements and fixes

- Implemented changes necessary for the TSync-PCIe boards to be able to operate in HP (Hewlett Packard) servers
  - Firmware versions prior to version 1.4.0 were unable to fully boot-up when installed in HP servers. Version 1.4.0 enabled the TSync-PCIe-PCIe board to be able to operate in HP servers. Holdover alarm timeout was changed from immediate to 5 seconds due to a change made to the GPS signal.

Version 1.2.0

Release features

- Updated the TSync-PCIe timing boards with “Phase 2” capabilities (Reference ECN 2299), including the following features:
  - Oscillator Disciplining
  - IRIG Output (AM/DCLS)
    - Supports formats A, B, G, E, and NASA 36
    - Signature control
  - External GPS Support
  - General Purpose Output
    - Direct Value – can put out Logic Low or Logic High
    - Square Wave – put out digital square wave with variable polarity and pulse width aligned to the 1 PPS (offsets available)
    - Time Match – You can set the outputs to go high or low at specified times in the future (up to 100 days out)
  - 1 PPS Output Control
    - Signature Control
    - Polarity – Rising or falling edge PPS
    - Pulse Width – Defaults to 200 ms, but adjustable 50 ns to 900 ms
    - Offset – -500 µs to +500 µs
  - 10MHz Output Control
    - Signature Control

How to contact Spectracom Tech Support

Should you have any questions or comments regarding any of the above-mentioned features or fixes, please contact one of the global Spectracom Technical Support centers for more information:

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