Time Sync

Release Notes

A-TSM

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Firmware Revision 1.029

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1. PREFACE

1.1. COMPATIBILITY

Firmware revision 1.029 of the Time Sync module will require the following compatible versions:

Software	Version
Slate	1.093 and later

1.2. NOTES

The following should be noted:

- Firmware upgrades will be done using Aparian's Slate software.
- Aparian flash files have an *.afb* extension.
- Slate can also be used to set the initial network parameters using its DHCP server.
- Should any interruptions cause the module to not complete the firmware upgrade the module will return to Safe Mode. The user can then re-flash the module with the application firmware. See the user manual for more information regarding Safe Mode.

1.3. ADDITIONAL INFORMATION

The following resources contain additional information that can assist the user with the module installation and operation.

Resource	Link
Slate Installation	http://www.aparian.com/software/slate
Time Sync User Manual Time Sync Datasheet Example Code & UDTs	http://www.aparian.com/products/timesync
Ethernet wiring standard	www.cisco.com/c/en/us/td/docs/video/cds/cde/cde205_220_420/installation/guide/cde205_220_420_hig/Connectors.html
GPS information	https://www.u-blox.com/images/stories/the_gps_dictionary.pdf
1588 Precision Time Protocol (PTP)	http://www.ieee1588.com/
Network Time Protocol (NTP)	http://www.ntp.org/documentation.html
CIPSync	https://www.odva.org/Home/ODVATECHNOLOGIES/CIP/CIPTechnologyOverview/CIPSync.aspx

1.4. SUPPORT

Technical support will be provided via the Web (in the form of user manuals, FAQ, datasheets etc.) to assist with installation, operation, and diagnostics.

For additional support the user can use either of the following:

Contact Us web link	www.aparian.com/contact-us
Support email	support@aparian.com

2. IMPROVEMENTS

The following updates are included in this firmware revision.

Revision	Improvement	Description
1.029	UTC Offset	Added support for a PTP Master with zero UTC Offset
	Large Offset	Improved stability with large PTP Offsets from the PTP Master when the module is operating as a PTP Slave.
1.028	Configurable PTP Sync Threshold	Added parameter to allow the user to configure the time synchronization threshold (in microseconds).
	PTP Slave Sync Diagnostics	Added diagnostics (when the module is operating as a PTP Slave) for Mean Path Delay time, Grand Master Offset time, and Synchronization status.
1.027	PTP Subnet Bypass	Added option to bypass the PTP packet subnet mask to allow certain switches with IP 0.0.0.0 to operate as the PTP Master.
1.026	Powerup	Improved resilience when powering up with inconsistent power feed.
1.025	None	-
1.023	Enhanced Remote Targets	Added enhanced remote targets allowing the user up to 10 Remote Target time updates. Also added support for remote targets MicroLogix 1400 and Micro800.
1.022	NTP Parameters	Added Drift and Jump parameters when operating as a NTP Client and PTP Master.
	NTP Server Stats	Added statistics for when the module is operating as a NTP Server.
	PTP Grandmaster	Added indication for PTP Grandmaster in Slate.
	Modbus Server Time	Time in Modbus Registers when operating as a Modbus Server is the internal module time and not GPS time.
	Modbus Server Time Zone	Added Time Zone to the Modbus Holding Registers that can be written to from a Modbus Client.
	Remote Target Time Zone	When using SLC, PLC5, or Modbus Remote Target, dynamic TZ can now be enabled to allow the module to read the TZ from the remote target.
	GPS Spoofing	Added GPS Spoofing detection.
1.021	General	Non-application specific update.

1.020	NTP Server Redundancy	Added additional NTP Server IP address which is used as a backup NTP Server when the primary is lost.
	NTP to PTP	Improvement in PTP clock management when using an inaccurate NTP Server as the time source.
1.019	Modbus GPS Position	Add GPS Positioning data to Modbus mapping when module is operating as a Modbus TCP slave.
1.018	ARP Client Count	Increased the maximum ARP client count to 100 from 20.
	Minor Enhancements	Minor enhancements to the Ethernet stack.
1.017	Modbus Slave functionality	Added functionality to allow the TSM to operate as a Modbus TCP Slave.
1.016	Remote Target Time zone	Added the ability to dynamically change the remote target time zone using an MSG instruction.
1.015	NTP Source	Add support for NTP servers that are on a different subnet from the local module.
	NTP Source	Input assembly will update the Gregorian Time when a NTP Time source.
1.014	PTP over IEEE802.3	Support for PTPv2 network transport IEEE802.3
1.013	NTP Source	Support for NTP time source.
1.012	1588 PTP Holdover Support	Added support for 1588 PTP holdover reporting.
1.011	Peer-to-Peer Delay Mechanism	Added support for 1588 PTP Peer-to-Peer (P2P) delay mechanism
1.009	PTP TTL	Add ability to configure TTL for 1588 PTP packets
	Modbus	Add ability to set time in a Modbus Register
	SLC	Add ability to set time in SLC
	PLC5	Add ability to set time in PLC5
1.008	EtherNet/IP	Updates to EtherNet/IP and CIP communication to comply with latest ODVA certification.
	Class 1 Connection	Improved stability when running at lowest RPI (1ms).
1.006	EtherNet/IP	Minor improvements to communication stability.
1.005	PTP	Minor PTP data exchange improvements
1.003	Ethernet Cable Length	Added Ethernet cable length measurement
	Reset	Fix CIP reset anomaly
	Owned	Fixed owned indication when receiving a Forward Close.
1.002	Requested Packet Interval (RPI)	Minimum RPI was changed to 1ms from 10ms

3. ANOMALIES FIXED

The following anomalies have been fixed in this firmware revision.

Revision	Anomaly	Description
1.029	None	-
1.028	None	-
1.027	None	-
1.026	PTP Slave	Fixed anomaly where seconds could jump when the module is operating as a PTP Slave and the PTP Master sends out follow-up packets in different seconds.
1.025	SLC File	Update the firmware to allow the module to read SLC File 255.
1.024	PTP Management	Fixed anomaly that could cause the PTP Clock identity of the A-TSM/B not to update in the Logix controller.
1.023	Time Zone	Fixed anomaly where time zone received from the Remote Target device was added to the system time, causing the time zone to be adjusted twice.
1.022	NTP Enabled	Fixed issue where NTP out had to be enabled when using NTP Client.
	NTP to PTP	Fixed anomaly where NTP to PTP would not work if the GPS year is zero.
1.015	PTP Management	Fixed issue where PTP management responses would be responded to which could cause PTP response storm.
1.011	Second Rollback	Fix anomaly that could occur when a PTP delay request is received at the edge of a second rollover causing the timestamp second to rollback one second.
	PTP Domain	Fixed operation of PTP Domain to not process packets from a different domain.
	PCCC Connection	Fixed PCCC connection timeout when connection to remote PLC/SLC/MicroLogix is lost
	PTP Enable	Fixed anomaly that could cause the PTP to be disabled when changing PTP parameter from Time Sync Object
1.010	Remote Device	Fix anomaly where if PTP was disabled and a remote device is used then the base time would not update.
1.009	Ethernet	Fix for certain broadcast Ethernet packets that were being re-broadcasted.
1.007	Other	Minor bug fixes
1.006	Time Rollover	Fix issue where PTP delay request is close to rollover causing the timestamp to be out by a second.
1.004	ARP client list	Fix issue where DHCP requests increase client list count

4. KNOWN ANOMALIES

The following known anomalies exist in this firmware revision.

Revision	Anomaly	Description
1.029	None	-