

TCG 01-E and TCG 02-E Ethernet Firmware Release Notes

Version 2.040 (29 July 2015)

- **Improvement:**
The default TAI -> UTC offset has been updated to the current value of 36.
- **Bug Fix:**
PTP and NTP time quality indicators now correctly show degrading sync quality while the clock is in holdover. Previously, the time quality indicators did not signal any degradation in quality until after holdover expired.
- **Bug Fix:**
GPS-related SNMP and Syslog trap messages are now no longer generated when the Ethernet module is fitted to a Fibre Slave clock.
- **Bug Fix:**
The time accuracy indicator in PTP Announce packets is now correct when the Ethernet module is fitted to a Fibre Slave clock. Previously, the time accuracy indicator always indicated that the clock was unsynchronized, regardless of whether it is synchronized or not.

Version 2.039 (Limited Release)

- **Bug Fix:**
The synchronized/unsynchronized state of the Ethernet module is now controlled by the state of the host clock. Previously, the Ethernet module determined the sync state independently, which could cause its sync state to differ from that of the host clock (Sync LED is lit but the Config Tool reports out of sync). However, this state normally only occurs if there is a hardware fault.
- **Bug Fix:**
8 bits are now used for the PTP domain value, which allows the PTP domain to be set to a value higher than 7. Previously, if the domain value was set higher than 7, only the last 3 bits would be used to determine the value used in PTP messages, effectively remapping the set value to a value less than or equal to 7.
- **Bug Fix:**
The leap second flags in PTP announce messages are now set correctly. The PTP LI 59 and PTP LI 61 flags will now correctly indicate an impending leap second event.
- **Bug Fix:**
When acting as a PTP slave the leap second indicators were not being correctly processed. This caused the leap second to happen late.

- **Bug Fix:**

During the leap second the sub second fraction of the NTP time stamp is now held at one count before the end of the second (for the entire second). Previously the sub-second fraction rolled to zero at the start of the leap second and counted up as per a normal second. Because most leaps seconds are a repetition of the last second of the day, if the sub second fraction is not held at one count before the end of the second, timestamps taken during the leap second could appear to be earlier in time than stamps recorded during the previous second.

Old Leap Second Behavior	New Leap Second Behavior
23:59:58.00	23:59:58.00
23:59:58.25	23:59:58.25
23:59:58.50	23:59:58.50
23:59:58.75	23:59:58.75
23:59:59.00	23:59:59.00
23:59:59.25	23:59:59.25
23:59:59.50	23:59:59.50
23:59:59.75	23:59:59.75
23:59:59.00	23:59:59.99
23:59:59.25	23:59:59.99
23:59:59.50	23:59:59.99
23:59:59.75	23:59:59.99
00:00:00.00	00:00:00.00
00:00:00.25	00:00:00.25

- **Bug Fix:**

During a leap second, NTP now repeats the last second of the previous day instead of the first second of the next day.

Old Leap Second Behavior	New Leap Second Behavior
23:59:56	23:59:56
23:59:57	23:59:57
23:59:58	23:59:58
23:59:59	23:59:59
00:00:00	23:59:59
00:00:00	00:00:00
00:00:01	00:00:01
00:00:02	00:00:02

- **Bug Fix:**

The NTP leap second indicator flag is now being set correctly. Previously the leap second indicator flag was missing.

Version 2.038 (12th January 2015)

- **Bug Fix:**
Fixed bug which prevented mobile GPS mode from being set
- **Bug Fix:**
Fixed bug in PTP message “Type” checking
- **Improvement:**
Added support for PTP V1 Compatibility Flag and Padding

VERSION 2.037 (10th June 2014)

- **Bug Fix:**
Ensures correct time stamping of network packets received in very quick succession.

VERSION 2.032 – 2.036 (Limited Release)

- **Improvement:**
Continuous Time Quality (CTQ) field added to conform to C37.118.1 / IEEE 1344 IRIG-B extensions.
- **Improvement:**
Code added to further strengthen remote upgrades.
- **Bug Fix:**
Timing algorithm has been modified to reject erroneous PTP time jumps.

VERSION 2.031 (8th July 2013)

- **Improvement:**
If no IP addresses are available, the clock will revert to a link local address (RFC 3927). This ensures that no IP clashes will occur on a network, during the remote upgrade procedure.
- **Bug Fix:**
Remote upgrade – during the remote upgrade procedure, it was possible for the unit to reset when writing to the memory. This was a fatal condition which caused the unit to become unresponsive.

VERSION 2.030 (Limited Released)

- **Improvement**
Updated the handling of the GPS information, so that the sync status is reported correctly.

VERSION 2.029 (Not Released)

VERSION 2.028 (Not Released)

VERSION 2.027 (Limited Release)

- **Improvement:**
Remote firmware upgrades are now supported.

VERSION 2.026 (Not Released)

- **Improvement:**
Further improvements have been made to the PTP syncing algorithm.

VERSION 2.025 (Limited Release)

- **Improvement:**
Added PTP functionality – The PTP C37.238 power profile (SLAVE ONLY) is now supported
- **Bug Fix:**
The PTP port number setting has been removed. It is now set to 1 by default. The domain number is now user configurable.
- **NOTE:**
Configuration tool V3.1.0 or higher is required to access the new settings.

VERSION 2.024 (27 August 12)

- **Bug Fix:**
When the clock came out of bootloader mode, it would transmit an incorrect MAC address. This only occurred after a power cycle.
- **Bug Fix:**
After upgrading the Ethernet port from 1.x.x.x Firmware to 2.x.x.x Firmware, the unit type was incorrect.
- **Bug Fix:**
The clientID has now been added to the DHCP messages. DHCP messages were being transmitted without the clientID which prevented some servers from responding.
- **Bug Fix:**
Spurious PTP messages debug messages which were being transmitted over Ethernet have now been removed.

VERSION 2.018 to 2.023 (NOT RELEASED)

VERSION 2.017 (30 January 2012)

- **Improvement:**
PTP syncing was improved.

VERSION 2.016 (27 January 2012)

- **Improvement:**
An improvement was made to the PTP slave syncing.

VERSION 2.015 (19 January 2012)

- **Bug Fix:**
A bug has been found inside the set time routine when the UTC offset was set to negative time zone. This has now been fixed.

VERSION 2.014 (23 November 2011) (NOT RELEASED)

VERSION 2.013 (29 August 2011) (NOT RELEASED)

VERSION 2.011 (16 June 2011)

- **Improvement:**
 - NTP updated to meet RFC 5905
 - NTP stratum selection modified – Originally it was 1 when in sync and 0 when not, now it is:
 - 1 when synced to GPS
 - 2 when synced to IRIG-B
 - 16 when out of sync

VERSION 2.001 (04 March 2011)

- **Improvement:**

The configuration tool has a new feature allowing the user to modify the baud rate of the serial port, when outputting different time strings.