

TSC100 Firmware Release Notes

VERSION 3.21r2 (October 2017)

- **Improvement:** Added support for new GNSS receiver hardware. TSC100 units from serial number 101000 onwards contain the updated GNSS receiver hardware, which will allow for the possibility of adding support for additional satellite constellations in future firmware revisions.
- **Feature:**
Added an advanced configuration option to use local time instead of UTC time for NTP timestamps. This is non-standard, but may be required in certain applications. This option applies to both server and client operation, and is set independently on each port. Tekron Configuration Tool 4.2.1.10 or later is required to enable this option.
- **Feature:**
Added an option to allow the unit to be reset to factory defaults in the event of a forgotten administrator password. Physical access to the unit is required to perform the reset procedure. Please refer to the Tekron website for the reset procedure. This option is disabled by default. Tekron Configuration Tool 4.2.1.0 or later is required to enable this option.

When this option is disabled, the unit must be returned to Tekron for reprogramming in the event of a forgotten administrator password.

- **Improvement:**
The failure to obtain an IPv4 address via DHCP will result in the clock adopting an ARP tested Link-Local address (169.254.xxx.xxx). An IPv4 address fail alarm will now be displayed in the Configuration Tool. When this alarm occurs, the user may need to update their network adaptor settings to a Link-Local address to gain access to the clock. The alarm will persist until the IPv4 address settings are changed or the clock is connected to a DHCP enabled network.

The alarm appears in the Configuration Tool as “**ipv4 address**”. **This alarm does not open the alarm relay, and does not send an SNMP notification.** This alarm can be viewed in the Configuration Tool by connecting to the TSC100 via the USB port.

- **New feature:**
Added support for ITU-T G.8275.1 PTP Telecom Profile. Both Telecom Grandmaster and Slave operation is supported. Tekron Configuration Tool 4.1.1.0 or later is required to configure PTP in this profile.
- **Improvement:**
PTP slave algorithm has been improved to be more resistant to noise and transients in the PTP time source, which could be caused by heavy or varying network traffic, or by network reconfiguration.
- **Improvement:**
Additional checks are now performed on incoming PTP messages when operating as a PTP slave, in order to improve resistance against possible PTP spoofing attempts.

VERSION 3.16r7 (October 2016)

- **Bug Fix:** The NTP time stamp consists of two fields, a 32 bit field for the number of seconds since 1 January 1900 and a 32 bit field for the sub-second fraction. From 23:00:00 UTC on December 31st 2016 (one hour before the leap second is applied) the sub-second fraction will be frozen at its maximum value (binary all 1's). However, the number of seconds field will continue to update and maintain correct time. This has the effect of decreasing the time stamp resolution from 16ns to 1s and means that the date and time will remain accurate down to 1 second accuracy only. At 23:59:00 UTC the sub-second fraction will return to normal operation and the leap second will be applied correctly.

VERSION 3.16r6 (Not Released for TSC100)

- **Bug Fix:** When the GNSS satellite constellation is restricted to GLONASS only, and the unit has not been previously synchronised to GPS, the UTC time may be offset by the current leap second difference between GPS and UTC time. This fix detects and corrects the offset.

VERSION 3.16r5 (Not Released)

VERSION 3.16r4 (Not Released for TSC100)

VERSION 3.16r3 (November 2015)

- **Bug Fix:** Fixed a bug that could cause the Ethernet interface to fail to initialize when the Ethernet Link Settings are set to any option other than Auto. This bug could cause communication with the clock via the Ethernet port to be lost.

VERSION 3.16r2 (October 2015)

- **Bug Fix:** The TSC100 has a software configurable alarm relay. Previously, after power was first applied, the alarm contact would remain in the **"No Alarm" state during alarm events, regardless** of how the alarm relay was configured. If the relay was subsequently configured via the configuration tool, normal operation would be restored. This was caused by a memory overflow issue that would overwrite the alarm relay configuration on startup.

The system that loads the configuration from flash has now been updated so that the correct number of bytes is copied into RAM and no overflow occurs.

VERSION 3.16r1 (September 2015)

- **Improvement:** The precision reported by NTP when synchronized to GPS is now set at -23 (119 nanoseconds). Previously, NTP responses reported a precision of -34 (0.058 nanoseconds).

VERSION 3.16r (August 2015)

- **Improvement:** Initialization and auto-negotiation timeout periods have been increased to improve interoperability with network infrastructure equipment.
- **Improvement:** When active, Test Mode will now override any other active time sources. This improves the ease of use of test mode, as it is no longer necessary to ensure that all other time sources are disabled.
- **Improvement:** The **sync forced on “Test Mode” setting will now be automatically deactivated** after 1 week. This setting should only be used for testing purposes and should not be left on. The timeout will ensure that it is deactivated if accidentally left on.
- **Improvement:** Increased rate of GPS leap second information requests. GPS leap second information requests are now made every 12.5 minutes following first almanac, and not 1 minute prior to, or in the 6 hours following an already scheduled leap second event.
- **Improvement:** The NTP server will now report the same sub-second value during a leap second, rather than rewinding to the start of the repeated second.
- **Improvement:** Minor improvement to configuration communication protocol for compatibility with latest version of the configuration tool.
- **Improvement:** Added name of new sync source to "Sync source changed" syslog message.
- **Bug Fix:** IRIG-B outputs are now correctly suppressed when the “**Suppress outputs when out of sync**” option is selected. Previously, when this option was selected, user defined pulse and DCF77 simulation outputs were correctly suppressed, but IRIG-B outputs were not.
- **Bug Fix:** The time quality and continuous time quality (CTQ) indicators included in the IRIG-B C37.118.1 extensions now indicate matching quality levels. Previously, these quality indicators indicated conflicting quality levels.
- **Bug Fix:** The daylight savings time change upcoming indicators are now suppressed when no daylight savings are observed. Previously, the clock could incorrectly output daylight savings change indicators when “**Region observes daylight savings**” is not selected.
- **Bug Fix:** A power cycle is no longer required before the PTP foreign master timeout is updated. The foreign master timeout determines how often a slave clock must see announce messages in order to recognize a master as valid, and is determined by the configured announce interval. Previously, a change to the configured announce interval did not update the foreign master timeout until a power cycle occurred.
- **Bug Fix:** SNMPv3 requests that fail authentication are now rejected when the maximum unauthenticated access is set to None. Previously, unauthenticated SNMPv3 ‘Get’ requests succeeded when the maximum unauthenticated access was set to None, in which case they should have been rejected.
- **Bug Fix:** Fixed a bug where the USB interface could excessively consume system resources, reducing the ability of the clock to handle high network traffic.
- **Bug Fix:** Fixed a bug which could cause the USB interface to become unresponsive when the USB cable is disconnected and reconnected.

- **Bug Fix:** Fixed a bug that could cause recoverable failure of loader upgrades.
- **Bug Fix:** PTP Delay Asymmetry value is now stored to clock correctly. Previously, this value was incorrectly reversed when stored.
- **Bug Fix:** IRIG-B extension fields are now set correctly. Previously, they were set using data from the following second.

VERSION 3.09r (July 2014)

- **Improvement:** Change default SNMP access to unauthenticated = none and authenticated = read-only. Reset SNMP access to defaults when leaving insecure mode.
- **Improvement:** Increase the time taken for the clock to fix its location from 10 minutes to 33.3 minutes. The clock will continue to improve its absolute accuracy to UTC during this period.
- **Improvement:** Lower holdover alarm when out of sync alarm is raised.
- **Improvement:** Add slave only PTP telecom profile.
- **Bug Fix:** Re-Work USB support to improve reliability.
- **Bug Fix:** IPv4 addresses with final octet > 233 were incorrectly rejected.
- **Bug Fix:** Reset pulse duration when switching from DCF77 to programmable pulses.
- **Bug Fix:** This bug caused occasional NTP multicast packets to be sent via broadcast.
- **Bug Fix:** Ensure TTL output invert state is recorded correctly.
- **Bug Fix:** Allow group creation in supervisor mode.
- **Bug Fix:** Allow Block VLAN 0 to be set (But only via USB or a VLAN tagged Ethernet request).