NTS100 Firmware Release Notes

VERSION 3.21r7 (May 2018)

Bug: When the clock was synchronizing to PTP, the clock would use the leap second value if the UTC valid flag was not set. This behaviour has been corrected, and the clock will only take the leap second value if the UTC valid flag is set. If the flag is not set the clock will ignore the incoming value and continue to use any previously set value.

VERSION 3.21r6 (March 2018)

Feature: PTP C37.238-2017 and 61850-9-3 Power Utility profile has been added. ConfigTool v4.3.1.5 or later is required to select this Profile.

Improvement: While configuring NTP multicast address, if the IPv4 address assigned for multicast is an invalid address, then the clock will use the broadcast MAC address. For valid IPv4 multicast addresses a valid multicast MAC will still be used.

Improvement: Clocks getting their Sync from PTP will advertise Stratum-1. Previously they were advertised as Stratum-2

Improvement: Added ability to lockout a user for a period following several unsuccessful login attempts. Both the number of unsuccessful attempts and the period of lockout can be configured.

By default, this feature is disabled (Logging attempts before lockout set to 0) and this will be the case for clocks upgraded to this version.

To prevent the leaking of security information there is no notification to a user that the lockout is in place, and the standard login failed message will be displayed.

The lockout is based on the user account and operates regardless of the IP address that the attempt is made from or if the attempt is made via SNMP or the Config Tool. Similarly, a failed login via any method or from any address adds to the users failed login attempts count.

The lockout is per account and a lockout on one account does not prevent other accounts from logging in.

Subsequent incorrect login attempts during the lockout period will not increase that period.

SNMPv3 traps authenticated with the credentials of a locked-out user will still be sent.

Config Tool 4.3.1.0 Is required to access this feature.

Improvement: Modified NTP broadcast and multicast periods to be expressed in raw seconds, rather than powers of two. This will allow a wider range of options than previously available but excludes rates of more than one message per second.

When upgrading the intervals will automatically be converted from the earlier format and any intervals of less than one second will be rounded up to one second.

ConfigToolII 4.3.1.1 is required to select or view the full range of intervals.

Figure 1 NTP Broadcast/Multicast Rate Selection in ConfgToolII 4.3.1.1 and later.

Config Tools earlier than 4.3.1.1 offer a fixed set of options and will map the interval to one of the these as follows:

Old Value	New Value		Old Value	New Value
1/8th Second	1 Second		128 Seconds	2 Minutes
1/4th Second	1 Second		256 Seconds	5 Minutes
½ Second	1 Second		512 Seconds	10 Minutes
1 Second	1 Second		1024 Seconds	15 Minutes
2 Seconds	2 Seconds		2048 Seconds	30 Minutes
4 Seconds	5 Seconds		4096 Seconds	1 Hour
8 Seconds	10 Seconds		8192 Seconds	2 Hours
16 Seconds	15 Seconds		16384 Seconds	5 Hours
32 Seconds	30 Seconds		32768 Seconds	10 Hours
64 Seconds	1 Minute			

The NTP client request rate is not modified by this change.

There is a new MIB (201801250000Z) which includes the new objects
- o   tncNTPBroadcastInterval
- o   tncNTPMulticastInterval

Bug Fix: A bug in the PTP BMCA algorithm was discovered where the PTP Slave clock would go into an Uncalibrated State if the Best Master changed frequently in the network.
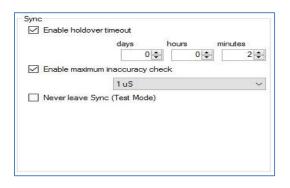

VERSION 3.21r3 (November 2017)

Improvement: Added a "maximum inaccuracy check" option, which allows a time inaccuracy threshold to be set, at which the clock will leave holdover and indicate out of sync. This option can be used instead of, or in addition to, the "holdover timeout" option, which causes the clock to indicate out of sync after a specified time in holdover.

The "maximum inaccuracy check" option is useful for ensuring that the clock does not exceed a specific accuracy level. The clock will automatically take into account factors such as the fitted frequency reference and time in sync to determine how long to remain in holdover.

If both "holdover timeout" and "maximum inaccuracy check" are enabled, the clock will leave holdover and indicate out of sync only when both the holdover time has expired, and the inaccuracy threshold has been crossed.

VERSION 3.21r2 (October 2017)

Improvement:

Added support for new GNSS receiver hardware. NTS100 units from serial number 181000 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 NTS100 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 (March 2016)

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 (Initial Release)