

# NTS 02-G GNSS Clock

The NTS 02-G is a high precision, 3 port GNSS referenced NTP, SNTP, and PTP (IEEE 1588v2) Grandmaster or Boundary clock that provides secure, accurate, and reliable time synchronization to enterprise networks.



## Key Features

- References GPS and GLONASS networks
- Isolated power supply
- 3 independent RJ-45 Ethernet ports
- NTP/SNTP
- PTPv2 (IEEE 1588-2008) Master/Slave function
- UTC and LST with user defined DST
- Remote configuration over Ethernet
- Remote firmware upgrades
- Configuration encryption and security
- Enhanced security and encryption that exceeds NERC CIP requirements

Each of the ports are independently addressable and logically isolated, allowing multiple networks to be connected to the same clock without compromising network security. The addition of multi-level password protection and user access rights, encrypted SNMPv3 communication, and built-in NTP amplification attack immunity, makes the NTS 02-G a secure and robust synchronization solution for a range of critical network applications.

## Supports

- DC IRIG-B (Un-modulated, DCLS)
- C37.118.1, AFNOR NF S87-500 IRIG-B Extensions
- User defined pulses (including 1 PPS)
- Simulated DCF77 receiver signals
- PTP (Supports Power Profile - C37.238, and Telecom Slave Profile ITU G.8265.1)\*
- NTP / SNTP\*
- SNMP v1, v2c, and v3
- PTPv2 (IEEE 1588-2008)\*



## Physical

(W) 160 mm x (D) 155 mm x (H) 40 mm, 0.8 kg 1U  
 19" rack mount bracket accessory included  
 IP40 (Ingress Protection rating)

## Front Panel

- 2-line x 16-character FSTN LCD display
- 2 LEDs indicating multiple statuses, including:
  - Sync Status
  - Antenna cable fault
  - Satellite acquisition mode
  - Display mode button
  - USB configuration port (Type B)

## GNSS Receiver

L1, C/A code, 32 Channel Parallel-tracking receiver

### Frequency:

1598 MHz

### Sensitivity:

- Acquisition: -155 dBm
- Tracking: -160 dBm

## Oscillator – TCXO

Holdover characteristics operating at 25 degrees C:

- TCXO 1PPS drifts 0.55 ms over a 24 hour period.
- Drift rate: 7 ppb per second

### Back Panel:



## Inputs and Outputs

- 3 x RJ-45 10/100 BASE-T Ethernet UTP connectors
- Timing accuracy: <100 ns to UTC (NTP/SNTP/PTP)

## Protocols Supported

### General

- DHCP auto-configuration with fallback to ARP tested link-local address
- VLAN packet tagging
- Auto MDI-X
- Ethernet Auto-negotiate

### NTP \*

- Stratum-1 NTP and SNTP time server
- Multicast and Broadcast server capability
- Optional MD5 authentication
- Supports NTP v1, v2, v3, v4

### PTPv2 (IEEE 1588-2008) \*

- One or Two Step operation
- End-to-End or Peer-to-Peer delay calculations
- Layer 2 (Ethernet) or Layer 3 (UDP) transport
- Slave only mode
- Default E2E and P2P Profile support
- Power Profile support (C37.238-2011, C37.238-2017)
- Telecom Profile support – ITU G.8275.1, ITU G.8265.1 (slave only)
- C37.238 TLV supported
- Power Utility Profile (IEC 61850-9-3)
- Alternate Time Offset Indicator TLV supported with automatic or manual offset
- C37.238 SNMP MIB supported

### SNMP

- v1, v2c, and v3 support can be independently enabled
- Configurable v1 and v2c community names and security groups
- Full configuration and status monitoring via SNMP
- v3 User-based Security Module (USM) support
- USM authentication methods: MD5, SHA
- USM privacy methods: DES, AES
- USM MIB support

## Notifications

- SNMP trap generation v1, v2c, and v3
- SNMPv3 traps can be authenticated and privatised via USM
- Syslog (RFC-3164 and 5424 varieties)

\*Some optional features may incur extra costs

## Inputs and Outputs Continued Plus

1 x IRIG-B input

### Signals:

DC IRIG-B (Un-modulated, DCLS)-  
Extensions C37.118.1

### Characteristics:

- RS422
- 7 V to +12 V (common mode range) 1/8 unit load (150 k $\Omega$ )
- Built in 120  $\Omega$  for optional termination ESD protection
- IEC 61000-4-2

## Plus

1 x Configurable output

- DC IRIG-B (Un-modulated, DCLS) - Extensions C37.118.1, AFNOR NF S87-500
- User defined pulses (1 to 1000 PPS)
- Simulated DCF77 receiver signals
- Timing accuracy <100 ns of UTC

### Characteristics:

- RS422
- Can drive up to 32 unit loads
- Open circuit:  $\pm 3.3$  V
- Loaded:  $\pm 1$  V @ 80 mA
- ESD detection
- IEC 61000-4-2

## Plus

2x Configurable Relay Outputs, NO contacts

### Relay Outputs:

- 2 x Normally Open, Solid State Relays
- ESD protection ITU K.20/21
- Contact rating: 275 VDC, 100 mA
- Contact protection: 275 VDC, 0.5 A (fused)

## Optional Accessories

### Physical

- GNSS antenna
- Antenna cable
- Adjustable antenna mount
- Lightning protection kit

## Environment and Electrical

### Power Supply

- L = 14 - 36 VDC (3 pin)
- M = 20 - 75 VDC (3 pin)
- H = 85 - 250 VAC / 90 - 300 VDC (3 pin)

### Power Rating

6 W max

### Operating Temperature

-10°C to +65°C

### Humidity

10 to 95% RH  
(non-condensing)

## Configuration Software

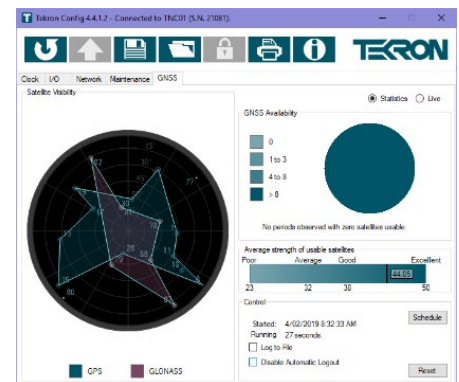
Windows based configuration

software is available for download on the Tekron website. Remote configuration over Ethernet includes the following user adjustable features:

- Multi-level access control
- Privacy and authentication methods equivalent to SNMP USM
- "Supervisor-mode" prevents non-approved changes
- Test mode
- Commissioning tool

### Timing and Synchronization

Worldwide daylight savings and local time configuration is available using either rule based or fixed date methods. Test mode allows equipment checks to be made prior to full installation, and adjustable holdover periods improve resilience against GNSS outages. Configurable delay fields allow for manual adjustments to compensate for installation parameters such as delay of GNSS signal through antenna cable.



## Contact Us

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