NTS 03-G+ GNSS Clock

The NTS 03-G+ is a fully customizable satellite reference clock. It meets the demanding precision and reliability requirements of the Power, Telecommunications and Enterprise sectors.

Key Features

- References GPS and GLONASS networks
- Multi-level password protection
- Isolated singular or dual power supplies
- High power line drivers
- Low noise characteristics due to balanced pair distribution
- UTC and LST with user defined DST options
- Up to 9 outputs
- Supports IEC61850
- Enhanced Security and encryption that exceed NERC CIP requirements
- Remote configuration and firmware upgrades
- OCXO and Atomic oscillator options

Multiple Ethernet ports support advanced PTP and NTP time synchronization solutions, while the high drive IRIG-B option delivers legacy device interoperability. This ruggedized platform brings ultimate reliability through Rubidium and OCXO oscillator options, and time sync redundancy through Parallel Redundancy Protocol (PRP) support.

Enhanced security is delivered through fully encrypted and authenticated configuration access. Multiple user accounts are supported with configurable access control. Independently addressable and logically isolated Ethernet ports allow multiple networks to be connected to the same clock without compromising the network security. Encrypted SNMPv3 support and NTP amplification attack immunity help facilitate secure communication.

IRIG-B, PTP, and NTP support makes the NTS 03-G Plus a versatile synchronization solution.

Supports

- DC IRIG-B or Modified Manchester
- Fiber IRIG-B
- AM IRIG-B (Modulated)
- IEEE C37.118.1 extensions
- User defined pulses (including 1PPS)
- 100 BASE-FX Fiber (62.5/ 125 μm, λ 1300 nm)
- PTPv2 (IEEE 1588-2008)
- NTP/SNTP*
- SNMP v1, v2c, v3

*Some optional features may incur extra costs

Physical

- 19” rack mount 1U high
- (W) 430 mm x (D) 270 mm x (H) 45 mm
- 2.0 kg
- IP40 (Ingress Protection rating)

Front Panel

2 line x 16 character FSTN LCD display and two 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, GPS and GLONASS

Sensitivity:

Acquisition: -155 dBm
Tracking: -160 dBm

Oscillator Options

Select your holdover needs:

TCXO (25°C)

<±100 µs/4 hours (24 hours aging)
<±0.6 ms/24 hours (24 hours aging)

OCXO (25°C)**

±5 µs/8 hours (48 hours aging)
±10 µs/18 hours (48 hours aging)
±10 µs/24 hours (7 days aging)
**not compatible with Fiber Ethernet on 4 or 6 port options

Rubidium (25°C)

±1 µs/24 hours (7 days aging)
±3 µs/72 hours (7 days aging)
±10 µs/7 days (7 days aging)

Please note that NTP and IRIG-B slave functionality is not available with OCXO and Rubidium Options

Network Protocols

General

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

PTPv2 (IEEE 1588-2008) *

- One or Two Step operation
- End-to-End, Peer-to-Peer or manual 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 (Slave only - ITU G. 8265.1)
- Telecom Profile support (Master/Slave - ITU G. 8275.1)
- Power Utility Profile (IEC 61850-9-3)
- C37.238 TLV supported
- Alternate Time Offset Indicator TLV supported with automatic or manual offset
- C37.238 SNMP MIB supported

NTP*

- Stratum-1 NTP and SNTP server
- Multicast and Broadcast server capability
- SNTP unicast, multicast, and broadcast client
- Optional MD5 authentication
- Supports NTP v1, v2, v3, v4

PRP*

- IEC 62439-3 (2016)
- Redundant Master Clock
- Fast failover slave
- Supports up to two PRP pairs
- PTPv2 (IEEE 1588-2008) Default and Power Profiles
- NTP/SNTP

SNMP

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

*Some optional features may incur extra costs

Notifications

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

Optional Accessories

Physical

- GNSS antenna
- Antenna cable
- Adjustable antenna mount
- Lightning protection kit
- BNC-2PIN adapter

Environment and Electrical

Power Supply

- MV = 20 - 75 Vdc (2 pin)
- HV = 90 - 300 Vdc (2 pin)
- HV = 90 - 300 Vdc / 85 - 250 Vac (IEC 320 inlet)

Power Rating

12W - 28W max (depending on order options)

Operating Temperature

- -10°C to +65°C
- -10°C to +60°C (Rubidium)

Humidity

10 to 95% RH (non-condensing)

3 Port Option

3x Network Time Server Ports

Characteristics

- Copper: RJ45 10/100 BASE-T Ethernet
- Fiber: ST multi-mode fiber 100 BASE-FX Ethernet (available on Eth2 or Eth3)
- Timing Accuracy: <100 ns to UTC (NTP/SNTP/PTP)
- PRP: 1 pair (Eth2 with Eth3)

Plus

- 1x IRIG-B Input: DC IRIG-B (Un-modulated, DCLS)
- Signals: C37.118.1 and AFNOR NF S87-500 Extensions

Characteristics

RS422: -7V to +12V (common mode range)
1/8 unit load (150 k Ω)
Built in 120 Ω for optional termination

Plus

1 x Programmable output

Signals: DC IRIG-B (Un-modulated, DCLS)
C37.118.1 and AFNOR NF S87-500 Extensions
User defined pulses (1 to 1000 PPS)
Simulated DCF-77 receiver output signal

Timing accuracy: <100 ns to UTC

Characteristics

RS422: Can drive up to 32 unit loads
Open circuit: ±3.3 V
Loaded: ±1 V @ 80 mA

Plus

4x Alarm Relay Outputs

- Alarm Types: Antenna, Sync, Power A and Power B
- Relay outputs: Normally Open (Form A)
  Solid State Relays
  ESD protection ITU K.20/21
  Contact rating: 275 VDC, 100 mA
  Contact protection: 275 VDC, 0.5 A (fused)

*Some optional features may incur extra costs

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
- GNSS logging and statistics for commissioning and debugging

Timing and Synchronization

Worldwide daylight savings and local time configuration is supported using either rule based or fixed date methods. Test modes allow equipment checks prior to full installation, and adjustable hold-over times can increase reliability in the case of poor GNSS coverage. Adjustable fields can compensate for installation parameters such as delay of GNSS signal through antenna cable.

Contact Us

- www.tekron.com
- Phone: +64 4 566 7722
- Sales Freephone: (Australia) 1800 506 311
- Sales Freephone: (North America) 1800 256 2309

Note:
The quickest and most effective method to request a quote is through the online quote request form on the Tekron website.

*Some optional features may incur extra costs

6 Port Option

3x additional Network Time Server Ports

Characteristics

- Copper: RJ45 10/100 BASE-T Ethernet
- Fiber: ST multi-mode fiber 100 BASE-FX Ethernet (available on Eth2 to Eth6)
- Timing Accuracy: <100 ns to UTC (NTP/SNTP/PTP)
- PRP: 2 pair (Eth2 with Eth3 and Eth5 with Eth6)*

4 Port + IRIG Option

1x additional Network Time Server Port

Characteristics

- Copper: RJ45 10/100 BASE-T Ethernet
- Fiber: ST multi-mode fiber 100 BASE-FX Ethernet (available on Eth2 to Eth4)
- Timing Accuracy: <100 ns to UTC (NTP/SNTP/PTP)
- PRP: 1 pair (Eth2 with Eth3)*

Plus

4x Programmable output

Signals: DC IRIG-B (Un-modulated, DCLS)
C37.118.1 and AFNOR NF S87-500 Extensions
User defined pulses (1 to 1000 PPS)
Simulated DCF-77 receiver output signal

Timing accuracy: <100 ns of UTC

Characteristics

BNC: 5V TTL, 150 mA (with current sense)

ST Fiber: TX (62.5/125 µm, λ 820 nm), compatible with multi-mode fiber

Plus

2x Programmable output

Signals: DC IRIG-B (Un-modulated, DCLS)
Selectable AM IRIG-B (Modulated)
C37.118.1 and AFNOR NF S87-500 Extensions
User defined pulses (1 to 1000 PPS)
Simulated DCF-77 receiver output signal

Timing Accuracy: DCLS IRIG-B: <100 ns to UTC
AM IRIG-B: <2 µs to UTC