TCG 01-G
GNSS Clock

The TCG 01-G is a highly accurate, full featured Global Navigation Satellite System (GNSS) clock trusted and proven for use in electricity protection and control systems. The TCG 01-G supports IEEE 1588 v2 and conforms to IEC 61850.

Key Features

- References GPS and GLONASS networks
- Multi-level password protection
- Independently isolated outputs
- Isolated power supply
- High power line drivers
- Low noise characteristics due to balanced pair distribution
- UTC and LST with user defined DST options
- Remote configuration over Ethernet
- Configuration Security
- Enhanced security and encryption that exceeds NERC CIP requirements
- Remote firmware upgrades

The TCG 01-G can reference signals from either or both the GPS and GLONASS satellite networks. The clock synchronizes multiple IEDs (Intelligent Electronic Devices) within a network, including protection relays and remote telemetry units, and provides time-stamps to all electronic data being generated by the IEDs.

Supports

- IEEE 1588 (PTP C37-238, Telecom Slave only profile, ITU G.8265.1, Telecom Full profile ITU G-8275.1)
- DC IRIG-B or Modified Manchester
- AM IRIG-B (Modulated)
- Serial Strings
- User defined pulses
- DCF77
- NTP/ SNTP (IEC 61850)
- Event Recording

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

The TCG 02-G has a 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
- Alarm

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

Inputs and Outputs

2 x independently programmable outputs, either:

- TTL 0 - 5 V, 150 mA (BNC or 2-pin)
- RS422 +/- 5 V, 50 unit loads (2-pin)
- HV switch MOSFET 300 V 1 A (2-pin)
- Fiber TX (62.5/ 125 µm, λ 820 nm), compatible with multi-mode fiber (ST Fiber connectors)

Timing accuracy: <100 ns to UTC

Plus:

- 1 x RS232/ RS422 serial port, DCE wired (DB9) RS232: Signals are +/- 9 V, 15 mA.

Serial time messages can be configured to be output at 1200, 2400,4800, 9600, 19200 and 38400 baud. Programmable pulse or IRIG-B available on pin 1.

Timing accuracy of RS232/ RS422 port:

- Serial Message: <1 bit time
- Pulse/ or IRIG-B time code: <1.5 µs to UTC

Plus:

1 x AM IRIG-B, 8 Vpp, 120 ohm (BNC)
Timing accuracy: <2 µs to UTC

Plus:

2 x Event recording inputs/ DC IRIG-B inputs (2 pin) Input rating: 5 V, 7 mA (10 V, 20 mA also accepted) Timing accuracy <100 ns

Plus:

1 x Antenna fail alarm (2 pin - Form A contact) Contact rating: 200 V, 150 mA DC or 150 V, 100 mA AC

Plus:

1 x Sync relay (2 pin - Form A contact) Contact rating: 200 V, 150 mA DC or 150 V, 100 mA AC

Back Panel:

Plus:

1 x RJ45 10/100 Mbps UTP connector

Timing stamp accuracy: <100 ns to UTC (NTP/SNTP + PTP)

Protocols Supported:
ARP, UDP, ICMP, TFTP, DHCP, SNMP v1, v2c & v3; VLAN.

Oscillator Options

OCXO

1PPS

Precision:
<±50ns UTC Time
Holdover Characteristics:

- <±5 µs/8 hours (48-hours aging)
- ±10 µs/18 hours (48-hours aging)
- ±10 µs/24 hours (7-days aging)

10MHz

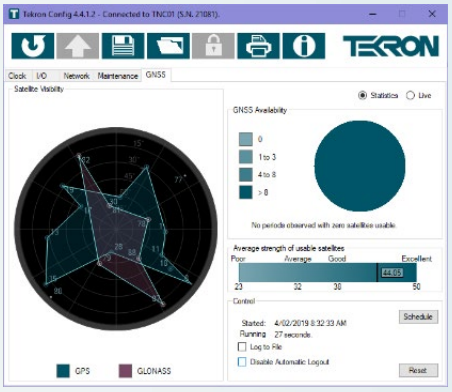
Stability:
<±1.0x10^(-9) Peak to Peak
Precision:

- <±1.0x10^(-12) Avg per 24 hours
- <±1.0x10^(-10) Root Allan
- Variance (tau=1 second)

Holdover Characteristics:
<±1.0x10^(-10) / 24 hours Common to 48-hours aging and 7-days aging

Atomic

Please contact us for information



Contact Us

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- Sales Freephone: (Australia) 1800 608 572
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Note:
The quickest and most effective method to request a quote is through the online quote request form on the Tekron website.

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 & authentication methods equivalent to SNMP USM
- “Supervisor-mode” prevents non-approved changes
- Test mode
- Commissioning tool

Timing & Synchronization

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

Programmable Outputs

- IRIG-B (B00x / B22x) time code with selectable C37.118.1 and AFNOR S87-500 extensions
- DCF77 time code, 1 kHz square wave
- User defined pulse sequences:
  Repetition rates from 20 ms to 24 hours
  Offsets and durations from 10 ms to 24 hours

Serial Strings

- NMEA-0183 ZDA
- NMEA-0183 RMC
- IRIG J-17
- Tekron A - H (Eight protocols for plug and play compatibility with a wide range of equipment).

SNMP

- v1, v2c & v3 support can be independently enabled
- Configurable v1, v2c community names & 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
- Notifications
- SNMP trap generation v1, v2c & v3
- SNMPv3 traps can be authenticated & privatized via USM
- Syslog (RFC-3164 & 5424 varieties)