Tekron Time Code Generator TCG 01-E

WORLD WIDE WARRANTY 10 YEARS

A GPS clock with superb timing accuracy

The TCG 01-E is a highly accurate, full featured GPS clock for use in electricity Distribution/Transmission and generation protection and control systems. The TCG 01-E conforms to IEC 61850.

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.

The TCG 01-E supports IEEE 1588 v2 (PTP).

TEKRON
www.tekroninternational.com

About Tekron

Tekron International is a leading developer of exceedingly accurate GPS clocks and time synchronization solutions for use in industrial applications.

Tekron GPS clocks are simple to install and use and are extremely rugged, attributes that are a prerequisite in the often extreme environments in which the clocks are installed.

Tekron GPS clocks have been installed in thousands of power stations & substations across the globe, where they prove invaluable in assisting power companies to operate efficiently, minimizing downtime and increasing the accuracy of control decisions.

With a Tekron GPS clock you can be confident that you can set it up and walk away.

Features

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

Master/ Slave function

Remote configuration over Ethernet

Configuration Security

Supports

IEEE 1588 (PTP)

DC IRIG-B or Modified Manchester

AM IRIG-B (Modulated)

Serial Strings

User defined pulses

DCF77

NTP/ SNTP (IEC 61850)

Event Recording

information@tekroninternational.com | www.tekroninternational.com

Physical

19" rack mount 1U high

(W) 160 mm x (D) 155 mm x (H) 40 mm, 0.8 Kg

IP40 (Ingress Protection rating)

Front panel display

The TCG 01-E 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
- Sync to IRIG-B and PTP
- IRIG-B available

GPS receiver

L1, C/ A code, 14 Channel Parallel-tracking receiver

Frequency:	1575.42 MHz
Pulse accuracy:	15 ns
Sensitivity:	
Acquisition	-160 dBm
Tracking	-155 dBm
Acquisition:	
Hot Start	<18 s
Warm Start	<45 s
Cold Start	<50 s

Antenna

Physical

Conical shaped polycarbonate durable shell which minimizes snow and dust buildup.

Dimensions:	98 mm tall 90 mm diameter
Weight:	200 g

Specifications

Bandwidth:	1575.42 ± 1.023 MHz
Attenuation:	60 dB (typical) at 1575.42 ± 50 MHz
Gain:	38 dB 5 +/- 0.5 V (27 mA max)
Operating temperature:	-40 to 85° C

Antenna Cable

Low loss, high shielding antenna cable

Inputs & Outputs

2 x independently programmable outputs, either:

- TTL 0 - 5 V, 150 mA (BNC or 2-pin)
- RS422 +/- 5 V, 50 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   <200 μs to UTC
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)

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

Options

Network Time Server Port

1 x RJ45 UTP connector

100 Mbps

Timing accuracy: <200 ns to UTC

This UTP network interface option allows the TCG 01-E to function as a Stratum 1 NTP/ SNTP Time Server.

Protocols Supported:

ARP, UDP, ICMP, TFTP, DHCP, SNMP, and BOOTP.

IEEE 1588 v2 support

As per Network Time Server above plus:-

   PTP (IEEE1588) v2 operation

   GrandMaster (GPS) or ordinary clock functions - determined via BMC algorithm

   Profile selection: Default or Power

   1-step tx, 1-step/ 2-step rx

   Layer 2 or Layer 3 mapping

   Peer to Peer and End to End delay support

Typical ordinary clock PPS accuracy (single sub-net) <250 ns

Lightning protection kit

NexTek, multi-strike weather proofed low throughput energy Impulse Suppressor.

Antenna Mounting Bracket

500 mm adjustable wall mount bracket.

Configuration software

Windows based configuration software is supplied on CD and is also available to be downloaded from the Tekron website. User adjustable options include:

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 GPS coverage.

Adjustments to compensate for installation parameters such as delay of GPS signal through antenna cable.

Programmable Outputs

IRIG-B (B00x / B22x) time code with selectable IEEE1344 and AFNOR S87-500 extensions

DCF77 time code

1000 Hz (500 µs) pulse

User defined pulse sequences:

- Repetition rates from 20 ms to 24 hours
- Offsets and durations from 10 ms to 24 hours
- Resolution is 10 ms; timing accuracy is 100 ns

Serial Strings

NMEA-0183 ZDA

NMEA-0183 RMC

IRIG J-17

Tekron A - G (Seven protocols for plug and play compatibility with a wide range of equipment).

Environmental & Electrical

Power supply:	L = 14-36 Vdc
	M = 20-72 Vdc
	H = 90-300 Vdc
Power Drain:	6 W max
Operating temperature:	-10 to +65° C
Humidity:	To 95% non-condensing

Isolation

| Outputs to base unit: | 2.5 kV |
| Power supply to I/O: | 3.5 kV |

Request a quote

Web: www.tekroninternational.com

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Freephone (Australia): 1800 608 572

Fax: +64 4 569 9272

Email: information@tekroninternational.com

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

The specifications contained in this document are subject to change without notice.