Tekron
Time Code Generator
TTM 01-E

WORLD WIDE 10 YEARS WARRANTY

A reliable and accurate GPS clock

The TTM 01-E is a reliable and accurate GPS clock with sub-microsecond timing that is used to synchronize IEDs (Intelligent Electronic Devices) in the power industry and other industries where precise and reliable timing is required.

As with all Tekron GPS clocks, the TTM 01-E has electrically isolated outputs, providing an extra layer of protection to all IEDs attached to it.

The TTM 01-e supports IEEE 1588 v2.

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

Remote configuration

Supports

DC IRIG-B (Un-modulated, DCLS)

AM IRIG-B (Modulated)

Serial Strings

User defined pulses

Modified Manchester

NTP/ SNTP (IEC 61850)

PTP (IEEE 1588 v2)

DCF77

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.

> TEKRON | TTM 01-E Datasheet

Physical

UL94-V0 polycarbonate flame retardant din rail mount case with IP20 (Ingress Protection rating).

(W) 55 mm x (D) 60 mm x (H) 90 mm, 0.15 Kg
Rising clamp terminals: Wire size (max): 1.5 mm Ø

LED Indicators

Two LEDs indicating multiple Statuses, including:

– Sync Status

– Antenna/ cable fault

– Satellite acquisition mode

GPS Receiver

L1, C/ A code, 12 Channel Parallel-tracking receiver

Frequency:	1575.42 Mhz	
Pulse accuracy:	60 ns	
Sensitivity:	Acquisition	-146 dBm
	Tracking	-160 dBm
Acquisition:	Hot Start	<8 s
	Warm Start	<35 s
	Cold Start	<38 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

LMR240 low loss, high shielding antenna cable

Inputs & Outputs

Serial Version

1 x RJ45 UTP connector   10/ 100 Mbps

1 x Serial strings output

1 x Time code or pulse output

Electrical specification:	+/- 9 V RS232 levels.

Timing accuracy:	
Serial Message	<200 µs to UTC
Pulse/ or Time code	<1.5 µs to UTC

1 x Sync indication output 200 V, 150 mA (Max)

TTL Version

1 x RJ45 UTP connector   10/ 100 Mbps

2 x TTL Outputs: Time codes or pulses

Electrical specification:	TTL/CMOS compatible, 0-5 V 150 mA sink/source
Timing accuracy:	<200 ns to UTC

1 x Sync indication output 200 V, 150 mA (Max)

AM IRIG-B Version

1 x RJ45 UTP connector   10/ 100 Mbps

1 x AM-IRIG_B12x

Electrical specification: impedance	9 Vpk-pk, 120 ohms
Timing accuracy:	<2 us to UTC

1 x Sync indication output 200 V, 150 mA (Max)

Options

Network Time Server Port

Timing accuracy: <200 ns to UTC

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

Protocols Supported:	ARP, TCP, ICMP, Telnet, 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
>
> Multicast operation

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

Lightning protection kit

Polyphaser DGXZ+06NFNF-A Impulse Suppressor multi-strike weather proofed low throughput energy lightning arrestor kit.

In-line amplifier kit

The LA-21-1575-100N In-line amplifier is available for extending cable runs.

Antenna Mounting Bracket

Adjustable 500 mm mounting 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

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 - F (Six protocols for plug and play compatibility with a wide range of equipment).

Environmental & Electrical

Power supply:	L = 12-36 Vdc M = 20-72 Vdc H = 90-300 Vdc 240 Vac-24 Vdc GPO plug pack
Power Drain:	3 W max
Operating temperature:	-10 to +65°C
Humidity:	To 95% non-condensing

Isolation

Power to Antenna:	1 kV
Power to I/O:	3.5 kV
Between TTL outputs A + B:	5 kV

Request a quote

Web:	www.tekroninternational.com
Phone:	+64 4 566 7722
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.