

GPS TIME SYNC SERVER T-PAN-300



OVERVIEW

Time synchronization creates a platform for an entire system comprising wide range of products to operate in synchronous with time. The demand for improving the effectiveness of any system in place is met with time synchronization system deployed in the field.

Troubleshooting is simplified by the application of time synchronization in the event of fault analysis.

SERTEL manufactures GPS based Time Synchronization System which generates precise time stamp signals that synchronizes various network of electrical, computer, communications devices such as SCADA, DCS, PLCs, LANs, Computer Buses etc.

Most modern protection relays and Intelligent Electronic Devices (IED) come with ports to accept the time synchronization signal.

Equipped with high precision and stable OCXO, T-PAN-300 is capable of performing during non-availability of input signal thus showing its accuracy and reliability.

The time stamp in the signal could be transmitted over long distance maintaining the synchronization of the whole network

OPERATION

The signal from the satellite is collected by GNSS antenna and transmitted to the GNSS Receiver

SERTEL GNSS Receiver generates time base pulses as that in the UTC or the atomic clock in the GPS satellite from the signal received.

Pulses can be generated for every second, minute or hour. Serial data packets comprising date and time information along with the pulses forms the time stamp and are made available in a variety of protocol format such as RS232, PTP, NTP/SNTP, Sync E, IRIGB, 10Mhz and many other to interface with wide range of devices.

LCD displays in the front panel shows the frequency, date, time and geographical location. These can be viewed with the help of keypad upfront. The status of the GPS receiver is shown by LED indications and alerts during failure through alarm provision.

Highly precise and stable OCXO compensates for any interferences or loss of signal from the satellite thus making the operation of the receiver reliable. Redundant Master Clocks are provided for continuous functioning of the system.

Integrated inside one unit are the Redundant Comparators which receive input from the GPS Receiver and generates numerous output formats embedding time signals into them.

External time signal input provision as a source of time signal is provided*.

Signal Conditioner units are provided to multiply the time signal in various protocols such as RS232, Pulse, PFC IRIGB, NTP/SNTP, TCP/IP and many others to give that many number of provision for connecting other devices for time synchronization.

Redundancy in Power Supply is provided through redundant Diode Oring unit to maintain the exact voltage supply to all the units.

KEY FEATURES

- 24 Channel GPS Receiver and 12 Channel Continuous Tracking.
- Equipped with high precision OCXO crystal will act as secondary time source.
- Redundancy in GPS Receiver, Master Clock, Comparator Unit and Power Supply.
- Type Tests are carried out at ETDC and SAMEER labs.
- 4 x 20 characters LC display in each Receiver units, 6-digit Date/Time display in Master Clock units.
- Highly customizable Output / configurable as per customer's requirements.
- Configured to work as Stand Alone Clock during temporary GPS signal loss with high tenacity.
- Output Integrated to 3 decimal of frequency in Hz.
- Capable to drive more than 200 number of Slave Clocks by covering entire plant radius through multidrop mode over distance of 10Kms.
- Low cost maintenance with durable performance.
- Customizable output protocols such as RS232/422/485, IRIG-B AM/TTL, PTP, NTP / SNTP, TCP/IP, SyncE, DCF77, BCD, PPH, PPM, PFC, Programmable pulse, 10MHZ, 2.048Mhz and others.



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SERTEL INSTRUMENTS INC

Saskatoon, Saskatchewan Canada

GPS TIME SYNC SERVER T-PAN-300

TECHNICAL SPECIFICATIONS

GNSS ANTENNA

Model	T-GPA-014-S15
Receiving Frequency	1575.42 MHz +/- 1 MHz
Tracking code	'L' Band CA code
Geodetic System	WGS – 84
No. of Channels	24 Channel / Parallel
Type	Helical
Axial Ratio	<4 dB
Supply Voltage	+5V DC (Internal)
Gain	Over 40 dB
Noise Figure	Less than 1.5 dB
Operating Temp	-40 °C to +85 °C
Connector	BNC
Dimension	80(h)x55(d) x 82(w) mm
Mounting	Fixed (Roof mount)

ENVIRONMENT

Storage Temperature	-40 to +85 °C
Operating Temperature	-10 to +55 °C
Humidity	0 – 95% RH, non-condensing
Power Drain	W max
Power Supplies	1x or 2x Power Supplies High Voltage - AC/DC 120-240 VDC 100-240 VAC

PANEL [T-PAN-300]

Receiver Model	T-GPS-300-EU
Interface	TTL (Normal High)
Input connector	BNC
Output Rate	Every second
Power Supply	90-260 V AC/DC A & B
No. of channels	24 Channel / Parallel
Type	GPS: L1 C/A, L2C, GLO: L1OF, L2OF, GAL: E1B/C BDS: B1I, B2I 184 Channel Parallel-tracking receiver
Frequency	1575.42 MHz +/- 1 MHz
Sensitivity (Acquisition)	-148 dBm
Sensitivity (Tracking)	-167 dBm
Design	1U rack-mount bracket designed for 19 Inch Cabinets Fabricated Heatsinks IP40 (Ingress Protection Rating)
Geodetic System	WGS – 84

MECHANICAL SPECIFICATION

Panel Dimensions	2115(H) x 800(W) x 800(D) mm (customizable)
Panel Shade	Customizable

Oscillator Options

Rubidium	TBC*
VCTCXO	TBC*
OCXO	TBC*

Configuration Software

Platform	HTTPS/SSL Browser-based configuration
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	Low Voltage - DC 40-110 VDC
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Ingress Protection

IP32 to IP55 Based on Panel Specification

INPUT

OUTPUT

GNSS Antenna inputs	L1Band GNSS, BNC [F]
External 1PPS	TTL, BNC [F]*
External IRIG-B	TTL/AM, BNC [F]*
External 10Mhz	0 to 13dBm, BNC [F]*
Impedance	50 Ω Sine Wave
Input	DC IRIG-B Input (BNC)
Antenna Input	BNC 5V GNSS Input
Alarm Relay	3-Pin Form-C NO/NC alarm relay
	For GPS, Master, Comparator, Power Supply

1PPS	TTL, 50 Ω Impedance, BNC [F]
IRIG-B	AM [B125], BNC [F]
	TTL BNC [F] / TTL-FO
RS232	DB-9 [F] / Phoenix / Wago
RS485	DB-9 [F] / Phoenix / Wago
NTP / SNTP	RJ45 [Copper] / FO
PTP[GM]	RJ45 [Copper] / FO
10 MHz	10dBm, ±1dBm, BNC [F]
Impedance	50 Ω Sine Wave

Ethernet Connections	RJ45 1GbE/Fast Ethernet SFP 1GbE/Fast Ethernet
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T1/E1/J1 Output	RJ48 T1/E1/J1 Output
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Configuration	Web server Interface and Sertel Time Management Suite for complete accessibility and configurability of server. SNMP for remote management Keypad for local configuration L1Band GNSS, BNC [F]
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Fiber Output	ST Fibre 62.5/125 μm, λ 820 nm
Programmable Output	TTL or Frequency Output (1.544, 2.048, 10MHz, Sine or Square) (BNC) TTL or AM IRIG-B Output (BNC) TTL Input/Output (BNC) ST Fiber (62.5/125 μm) multi-mode HV MOSFET 300V 1A (2-pin)

CLOCK ACCURACY TO UTC

1 PPS	< 100 ns
PTP Time Stamp	< 100 ns
NTP Timestamp	< 50 μs

TTL/Fiber:	< 100 ns
AM IRIG-B	< 60 ns



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NETWORK TIME SERVER OPTION*

IEEE 1588v2 (PTP)	P2P/E2E delay 1-Step/2-Step delay C37.238:2011 Power Profile C37.238:2017 Power Profile ITU G.8265.1 Telecom Profile ITU G.8275.1 Telecom Profile IEEE 61850-9-3 Power Utility Profile	PRP	IEC 62439-3 (2016) Fast failover slave Supports up to two PRP pairs PTP (IEEE 1588v2) Default & Power Profiles
NTP/SNTP	Stratum 1 NTP & SNTP Time server Multicast & Broadcast capability	Security	User-Defined Access Control Lists (ACL)
SNMP	V1, V2C & V3 support can be independently enabled Configurable V1, V2C community names & security groups Fully configurable via SNMP;	Notifications	NMP trap generation V1, V2C & V3 SNMPv3 traps can be authenticated & privatized via USM Syslog (RFC-3164 & 5424 verities)
Protocols supported	ARP, UDP, ICMP, DHCP, SNMP, HTTPS, IPV4		

TEST AND STANDARDS

Dry Heat Test	IEC 60068-2-2	Electrostatic Discharge Immunity Test	IEC 61000-4-2,2008
Cold Test	IEC 60068-2-1	Radiated Susceptibility Test	IEC 61000-4-3,2010
Damp Heat (Steady State) Test	IEC 60068-2-3	Electrical Fast Transient Immunity	IEC 61000-4-4,2012
Sinusoidal Vibration Test	IEC 60068-2-6	High Energy Surge Immunity Test	IEC 61000-4-5,2014
Dielectric Strength Test	IEC 60255-5-0	Conducted RF Immunity Test	IEC 61000-4-6,2013
Pulse Magnetic Field Test	IEC 61000-4-9,2016	Power Frequency Magnetic Field Test	IEC 61000-4-8,2009
Radiated RF Power Disturbance	CISPR 14-1,2009	Damped Oscillatory Sinusoidal Immunity Test	IEC 61000-4-18,2011
Voltage Fluctuation and Flicker Emission Test	IEC 61000-3-3,2013	Voltage Dips and Interruption Immunity Test	IEC 61000-4-11
Harmonics, Inter Harmonics and Low Frequency Immunity Test	IEC 61000-4-13,2002		

*Feature Available only on Specific requests and suitable price points
 *Output ports & Input Ports are customizable based on the requirements
 *Product development is continuous process, subject to change without prior notice



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