



## OVERVIEW

Time synchronization creates a platform for an entire system comprising wide range of applications 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 syncing equipment's in the event of fault analysis.

SERTEL manufactures GNSS/GPS based Time Synchronization System Equipment's that generates precise time stamp signals that synchronizes various networks of electrical, computer, communications devices such as SCADA, DCS, IEDs, PLCs, LANs, Computer Buses, RTUs etc.

Equipped with high precision redundant GNSS Receiver with high stability OCXO crystal, T-GPS-300-EU-S27 is capable of performing with greater accuracy and tenacity during temporary signal loss.

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

The time stamps in the signal could be transmitted over long distances maintaining synchronization in the whole network.

## OPERATION

The signal from the satellite is collected by T-GPA-014-S15, an active antenna, and transmits the signal to T-GPS-300-EU-S27 Redundant Receivers.

Time base pulses as that in the UTC or the atomic clock in the GPS satellites are generated.

Redundant Master Clocks are provided for continuous functioning of the system. Power Supply redundancy for maintaining constant voltage [Optional].

Pulses can be generated for every second, minute, ½minute, hour, day etc which are configurable at site through Sertel Time Management Suite.

Time stamps in the form of data packets comprising date and time information are made available in a variety of protocol format such as NTP/SNTP, IRIGB, RS232, RS485 and many other to interface with wide range of devices.

LC display in the front panel shows the frequency, date, time, day, number of satellites, Julian days and geographical location by providing latitude and longitude. GNSS receivers, Master Clock – A & B, Comparator status is shown by LED indication in front Panel of receiver.

Highly precise and stable OCXO compensates for any interferences or loss of signal from the satellite thus making the operation of the receiver more reliable.

## KEY FEATURES

- Redundancy in Receiver, Master Clock, Comparator and Power Supply sections.
- Compact 1U size.
- International Standard Euro Cards[Optional].
- 24 Channel GPS Receiver and 12 Channel Continuous Tracking.
- Equipped with high precision OCXO crystal for frequency maintaining micro second level accuracy in case of non-availability of satellite signal.
- Various output protocols such as PTP, NTP/SNTP, RS232, RS485, IRIGB AM/TTL, BCD, PPH, PPM, PFC, Programmable pulse, DCF 77, etc.
- LCD Display for visual information.
- Highly customizable Output as per requirement.
- Configured to work as Stand Alone Time server.
- Universal Redundant Power Supply.
- Output Integrated to 3 decimal of frequency in Hz.
- Status indication through LEDs for various sections.
- Low-cost maintenance with durable performance.
- Have provision to Slave display units over long distance communication with differential pulse clocks

GPS TIME SYNC SERVER  
T-GPS-300-EU-S27



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### SERTEL INSTRUMENTS INC

Saskatoon,  
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# GPS TIME SYNC SERVER

## T-GPS-300-EU-S27

### TECHNICAL SPECIFICATIONS

#### GPS ANTENNA

Model	T-GPA-014-S15
Receiving Frequency	L1- 1575.42 MHz L5- 1176 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 0.5 dB
Operating Temp	-40 °C to +85 °C

Connector	BNC
Dimension	80(h)x55(d) x 82(w) mm
Mounting	Fixed (Roof mount) IP67 (Ingress Protection Rating)

#### ENVIRONMENT

Storage Temperature	-40 to +85 °C
Operating Temperature	-10 to +55 °C
Humidity	0 – 95% RH, non-condensing

#### GPS RECEIVER

Model	T-GPS-300-EU-S27
Interface	TTL (Normal High)
Input connector	BNC Connector
Output Rate	Every second
Power Supply	2x 90-260 V AC/DC
Display	Two 2x16 / 2x20 LCD
Type	GPS: L1 C/A, L2C, GLO: L1OF, L2OF, GAL: E1B/C BDS: B1I, B2I 184 Channel Parallel-tracking receivers

Frequency	L1 & L2
Sensitivity (Acquisition)	-148 dBm
Sensitivity (Tracking)	-167 dBm
Design	1U rack-mount bracket designed for 19 Inch Cabinets Fabricated Heatsinks

Protocol	NMEA, Sertel Format, Serial String ASCII format.
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#### MECHANICAL SPECIFICATION

Dimensions	1U(H) x 485(W) x 185(D) mm *Size Depends on number of outputs
Mounting	19" Rack
Weight	2 KGS



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**Power Drain**

55W \*Depends on Output configuration

**Power Supplies**

1x or 2x Power Supplies  
 High Voltage - AC/DC  
 90-370 VDC  
 80-260 VAC  
 Low Voltage - DC  
 24-60 VDC  
 \*Feature Available only on Specific requests and suitable price points

**Ingress Protection**

IP40

**Configuration Software**

**Platform**

HTTPS/SSL Browser-based configuration

**INPUT**

**GNSS Antenna inputs**

L1Band GNSS, BNC [F]

**Configuration**

Sertel Time Management Suite for complete accessibility and configurability of server.  
 Keypad for local configuration  
 L1Band GNSS, BNC [F]  
 \*Feature Available only on Specific Requests and suitable price points

**Input**

DC IRIG-B Input (BNC)

**Antenna Input**

BNC 5V GNSS Input

**Alarm Relay**

3-Pin Form-C NO/NC alarm relay

**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

**Oscillator Options**

\*Feature Available only on Specific requests and suitable price points

**Disciplined Oscillator**

TBC\*

**Rubidium**

TBC\*

**VCTCXO**

TBC\*

**OCXO**

TBC\*

**OUTPUT VARIANTS\***

**1PPS**

TTL, 50 Ω Impedance, BNC [F]

**IRIG-B**

AM [B125], 50 Ω Impedance  
 Sine Wave, BNC [F]  
 TTL [PWM]

**DCF77**

TTL, 50 Ω Impedance, BNC [F]

**Pulse Outputs**

1 PPM/PPS/PPD/PPH/  
 Configurable

**Display Outputs**

Differential Pulse/ Serial/ IRIGB

**Fiber Output**

PPS | NTP | IRIGB TTL

ST Fiber 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)  
 Modbus RS485/TCPIP  
 IEC60870-103/104

**Ethernet Output**

RJ45 - Time Protocols NTP, PTP



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NTP/SNTP	Stratum 1 NTP & SNTP Time server Multicast & Broadcast capability	Ethernet Connections	RJ45 1GbE/Fast Ethernet SFP 1GbE/Fast Ethernet <small>*Feature Available only on Specific Requests and suitable price points</small>
SNMP	V1, V2C & V3 support can be independently enabled Configurable V1, V2C community names & security groups Fully monitored via SNMP;		
Protocols supported	ARP, UDP, ICMP, DHCP, SNMP, HTTPS, IPv4, IPv6		

### CLOCK ACCURACY TO UTC

TTL/Fiber:	< 100 ns	AM IRIG-B	< 100 ns
PTP Time Stamp	< 100 ns	1 PPS	< 100 ns
Security	User-Defined Access Control Lists (ACL)	NTP Timestamp at Server Source	< 1 $\mu$ s (At client End Depends on Network Architecture for more accuracy)
PRP	IEC 62439-3 (2016) Fast failover slave Supports up to two PRP pairs PTP (IEEE 1588v2) Default & Power Profiles	Notifications <small>*Feature Available only on Specific Requests and suitable price points</small>	SNMP trap generation V1, V2C & V3 SNMPv3 traps can be authenticated Syslog (RFC-3164 & 5424 verities)

### 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		

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\*Output ports are customizable based on the requirements  
\*Product development is continuous process, subject to change without prior notice



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