



GPS PTP GRAND MASTER
T-GPS-300-PTPGM

OVERVIEW

Networks of computers are omnipresent. Synchronization of these computers is highly recommended at all enterprises. This integrates various diversified systems to work in unison.

Internetworking has become the backbone for communication and transportation of data and has paved way for advancement in the future.

The latest time protocol deployed in these networks is the Precision Time Protocol (PTP) & Network Time Protocol (NTP). A less complex implementation of this is the Simple Network Time Protocol (SNTP).

SERTEL manufactures GPS based Time Synchronizing PTP Grand Master & NTP Server which generates precise time stamp signals that synchronizes network of computer devices over an entire network of LANs and WANs.

Our PTP Grand Master & NTP Server obtains the UTC data from the GPS satellite system and corrects the local time in each connecting computer. PTP provides highly accurate performance depending on the network paths.

Equipped with high precision and stable OCXO, T-GPS-300-SXX is capable of performing during temporary signal loss thus showing its accuracy and reliability.

OPERATION

T-GPS-300-PTPGM performs Stratum-1 operation by receiving the time signal from the GPS satellites.

The Receiver unit generates time base pulses of 1PPS as that in the UTC or the atomic clock in the GPS satellite from the data received. This is imbedded into the networking protocol PTP(GM) & NTP that are available at the output ports.

PTP(GM) & NTP Time Sync Server is connected with Redundant Power Supply and the system runs with high precision OCXO for frequency maintaining micro second level.

The front panel shows the Time / Date with provision for manual setup through simple user-interface keys. The RS232 outputs are also available from the output ports. The status of input mode: GPS, Master Clock, is too indicated.

GPS Time Sync Server also provides time and date in SERTEL format through serial communication port of RS232.

PTP & NTP Server performs with high capacity ensuring integration into existing and future networks

KEY FEATURES

- Dedicated PTP(GM) & NTP ports
- supporting IEDs.
- Performance at nanosecond level.
- 2x16 / 2x20 characters LC display to show the Time, Date, Latitude, Longitude and Time Zone.
- Equipped with high precision and stable OCXO/TCXO crystal.
- Accuracy of less than 100 nano second with OCXO.
- Supports PTP and PRP as per the IEEE1588 Power Profile IEEE/IEC61850-9-3, C37.118 & IEC 62439-3 PRP Profile.
- Supports NTPv4/v3/v2, SNTP, and NTP Unicast/Broadcast/Multicast.
- Supports HTTP/SSL/HTTPS, SHS, SCP, IPv4, IPv6 network security protocols.
- Supports network devices such as Routers, switches, Checkpoint firewalls.
- All types of Operating Systems are supported.
- Packed in 1U/2U/3U of size (customizable based on ports) with redundant Power Supply unit.
- Universal Power supply: 90 to 230V AC/DC
- Necessary Time Suite software is provided.
- Friendly user interface with plug- and play feature.
- Low cost maintenance with durable performance



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GPS PTP GRAND MASTER T-GPS-300-PTPGM

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	60W max
Power Supplies	1x or 2x Power Supplies High Voltage - AC/DC 120-240 VDC

GNSS RECEIVER

Model	T-GPS-300-PTPGM
Interface	TTL (Normal High)
Input connector	BNC
Output Rate	Every Second
Power Supply	90-260 V AC/DC A & B
Display	2 x16 / 2x20 LCD
Type	GPS: L1 C/A, L2C, GLO: L1OF, L2OF, GAL: E1B/C BDS: B1I, B2I 184 Channel Parallel-tracking receiver
Frequency	1598 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)

MECHANICAL SPECIFICATION

Dimensions	1U(H) x 485(W) x 185(D) mm 2U/3U Size available based on output requirements
Mounting	19" Rack
Weight	2 KG [For 1U]

Oscillator Options



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	100-240 VAC Low Voltage - DC 40-110 VDC
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Ingress Protection IP40

Configuration Software

Platform HTTPS/SSL Browser-based configuration

INPUT

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

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]

Ethernet Connections RJ45 1GbE/Fast Ethernet
SFP 1GbE/Fast Ethernet

Alarm Relay 3-Pin Form-C NO/NC alarm relay

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Rubidium TBC*

VCTCXO TBC*

OCXO TBC*

OUTPUT

1PPS TTL, 50 Ω Impedance, BNC [F]

PTP[GM] RJ45 Copper

PRP Supports PRP without external RED BOX*

NTP/SNTP RJ45 Copper

IRIG-B AM [B125], BNC [F]

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



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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 & privatised 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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