



### Applications of Time Synchronisation

- Power Utility
- Tele Communication
- Network Timing – Interacting at Bus Level
- Range timing
- Common Timing Synchronisation
- Power Generation plant – Smart Grid Applications
- Power Distribution – Smart Grid adaptable
- Power transmission
- Substation Monitoring
- SCADA Process Integration
- Networking on Operating/ Monitoring Station
- Commercial Building – Police Stations / Fire Stations
- Variable Size Display
- Data Converters of different I/P, O/P combinations.

## GPS Based Time Synchronisation for critical applications - Smart Grids, Distribution substation monitoring.

### Introduction :

**SERTEL** is an embedded solution provider with expertise in time synchronisation solutions and process instrumentation. We are pioneers in design and manufacture of time and frequency products for synchronising complex instrumentation, data logger, event recording systems, computer/LAN networks/Servers and tele-communication systems. Our expertise lies in advanced research & development of highly accurate GPS based/ oscillator based time receivers that can transmute time signals across various communication protocols, handshaking with systems efficiently. Knowing when fault or trip occurs has always been a challenging measurement in process industries. Our T-GPS-300 fills the gap by providing accurate timing signals, of the order of 1 micro-second, henceforth enabling the sequential capture of events across different measuring instruments.

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# SERTEL GPS TECHNICAL SPECIFICATION

## GPS RECEIVER & SIGNAL PROCESSING UNIT

MODEL NO.	: T-GPS 300
TYPE	: FLASH TYPE MICRO CONTROLLER
RECEIVING FREQUENCY	: 1575-42MHz +/- 1MHz
TRACKING CODE	: 'L' BAND CA CODE
GEODECTIC SYSTEM	: WGS-84
NO OF CHANNELS	: 8 CHANNEL / PARALLEL
TRACKING METHODS	: CODE / CARRIER TRACKING
INTERFACE	: TTL (NORMAL HIGH)
OUTPUT FORMATE	: NE MA 0183
TIME REFERENCE	: OCXO WITH STABILITY OF IPPM FOR A TEMP RANGE 0.55°C
OUTPUT RATE	: EVERY SECOND
COMMUNICATION SPEED	: 9600 BPS (OTHER SPEED CONSULT US)
INPUT CONNECTER FOR ANTENNA	: BNC - P
ACCURACY	: WITH GPS SIGNAL- 1 MICRO SECOND WITH OUT GPS - IPPM - 10-6
POWER SUPPLY	: 90V to 280V AC/DC (CONSULT US FOR OTHERS)
POWER CONSUMPTION	: 40 WATTS
DISPLAY	: LCD - 4 LINES X 40 CHARACTERS DISPLAY OF 4 LINE CHARACTERS

JULLIAN DAYS	HH MM SS	DD MM YY
LATTITUDE		LONGTITUDE
DAY OF THE WEEK		FREQUENCY
STATUS		NO OF SATTELITE

ENVORNMENT	: a. TEMPERATURE 0-50 °C b. RH 90% AT 45°C NON CONDENSING
MOUNTING	: PANNEL MOUNTING TO SUIT 19" RACK
DIMENSION	: WIDTH 484 mm X HEIGHT 135 mm X DEPTH 350 mm (2U or 3U)
PFC CONTACT	: FOR ALARM TO DCS / SCADE DRY CONTACT • GPS FAIL • WATCH DOG • POWER FAIL
ACQUISITION TIME	: COLD START - 15 MINUTES, WARM START - 20 SECONDS
TIME SYCHRINISATION OUTPUT	: ANY OUTPUT CAN BE SELECTED BY CUSTOMER
ANALOG IRIG-B	: IRIG-B MODULATED A1 KHz CARRIER
DC SHIFT TIME CODE	: IRIG-B POSITIVE EDGE ON TIME
PULSE	: IRIG-B TTL PULSE
RS232C	: 8 BITS SYNCHRONOUS, ASCII FORMATE
RS485	: 8 BITS SYNCHRONOUS, ASCII FORMATE
RS422	: 8 BITS SYNCHRONOUS, ASCII FORMATE
NTP PROTOCOL	: ANY RFC PROTOCOL
ETHERNET BUS	: TCP / IP 10 BASE T / 100 BASE, RJ 45 CONNECTOR
VOLTAGE	: 5V DC OR 50V DC OUTPUT PULSE
PULSE	: IPPD / IPPH / IPPM / IPPS - 1/2 HOUR
PFC	: IPPD / IPPH / IPPM / IPPS - 1/2 HOUR DURATION

- Note : a) SERTEL can offer any number of above outputs as per field requirement by multiplying and given the separate signal conditions for large number of outputs.  
b) IPPD/IPPH/IPP/PPS - 1/2 hour duration can be performed and select anyone the following configuration.  
• By Rotary switch • Thumb wheel • Personal computer 9 pin D connector as by direct output  
• By through key pad  
c) RS232C - window - WIN 2K overiding for end computer  
d) PFC dry contact outputs 220V AC / DC (max. 3A)  
e) Voltage and PFC contacts duration variable for 20 m.sec to 999 m.sec. request basis  
f) Frequency compartor with respect to standard frequency 50 Hr. & output of integrated to 3 decimal of Hz. Frequency.  
g) NTP servers with high accuracy for LAN synchronisation  
Output Contacts : a) BNC for IRIG-B and voltage pulse. b) RS232, RS422, 9 pin D connector.  
c) RS485, Slave, PFC EURO Connector. d) PFC - EURO Connector

## GPS ANTENNA

MODEL NO.	: GPA-014
TYPE	: HELICAL
AXIAL RATIO	: 5 dts-5Db
TOTAL GAIN	: OVER 30db
NOISE	: LESS THAN 2.6db
SUPPLY VOLTAGE	: 5V DC INTERNAL SUPPLY
OPERATING TEMP	: 30°C to +80°C
CONNECTOR	: N or BNC - J
COAXIAL CABLE)	: (LOW LOSS STD 50 MTRS OTHER DISTANCE CONSULTANCY
MOUNTING	: FIXED (sky view place) OUT DOOR
DIMENSION	: TopDia - 69 mm Bottom Dia - 32 mm Height - 88 mm
WEATHER CONDITION	: ALL SEASONS
LIGHTING ARRESTER	: OPTIONAL - CONSULT US
WEIGHT OF THE ANTENNA	: 0.5 KG.

## REMOTE TIME DISPLAY

MODEL NO.	: T-SL300-100-6D- SLAVE CLOCK
DISPLAY	: HH.MM & SS IN 24 Hre.Format
DISPLAY SIZE	: 100mm 7 SEGMENT RED LED 6 DIGITS
INPUT	: DIFFERENTIAL PULSE (or) IRIG-B FROM GPS RECEIVER
POWER SUPPLY	: 230V AC +/- 10%, 50 Hz 110V AC +/-
CONNECTION	: SLAVE CLOCK ARE CONNECTED TO GPS BY 3 CORE CABLE-SERIAL COMMUNICATION
SIGNAL UPDATION	: EVERY SECOND
ENVIRONMENT	: (a) Temp 0-50°C (b) RH :0-90% NON CONDENSING
MOUNTING	: WALL MOUNTING/TABLE TOP MOUNTING
DIMENSIONS	: W:700mm, H:200mm, D:125mm
DISPLAY	: STAND 100 MM CHARACTER SERTEL CAN GIVE 12.5 MM/25 MM/50MM/100MM/200MM/300MM
WIRELESS REMOTE DISPLAY	: AVAILABLE ON REQUEST

## MULTI DISPLAY SYSTEM FOR POWER PLANT MEASUREMENT:

Display of Kilo Watt / Mega Watt of Each Unit Generation. Frequency Generated. Total Generation parameters of power plant. Transmission through LAN Output TCP/IP on Ethernet Bus.

## Other Range of Products

- SMPS
- Process Isolators
- Time Code Generator
- IRIGB Reader
- Time Up/Down Converters
- Large Display & Remote Display Unit
- Alarm Annunciators

## Sertel Equipment meets the type test for the standard of IEC 255-IV Standard

1	Electrical fast transient test as per	IEC 61000-4-4, 1995
2	Electrostatic discharge test as per	IEC 61000-4-2, 1999
3	High energy surge test as per	IEC 61000-4-5, 1995
4	1.0 MHz damped oscillatory surge test as per	IEC 255-4, 1978
5	Power frequency magnetic field test	IEC 61000-4-8, 1993
6	Radiated susceptibility test as per	IEC 61000-4-3, 1998
7	Conducted RF immunity test as per	IEC 61000-4-6, 1996