SERTEL

GPS BASED TIME SYNCHRONIZATION SYSTEM FOR POWER SECTOR DISTRIBUTION SUBSTATION MONITORING

MGMT. SYS. RvA C 105
IS / ISO 9001: 2000

PRECISE TIME
PRECISE FREQUENCY
COMPUTER CLOCK
SYNCHRONISATION

- POWER UTILITY
- TELE COMMUNICATION
- NETWORK TIMING
- BUS LEVEL
- RANGE TIMING
- DISPLAYS

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GPS BASED TIME SYNCHRONIZATION SYSTEM FOR POWER SECTOR DISTRIBUTION - SUBSTATION MONITORING

MODEL NO. T - GPS - 300

INTRODUCTION

Global positioning system is an absolute system to provide dimensional position fixing velocity measurement and time reference generation to ultimate user, GPS provides continuous world wide coverage, 24hrs a day under any weather conditions. The system is sponsored and operated by US DOD(Dept. of Defence). Civilian access to the system is guaranteed through an agreement between US DOD & US DOT (Dept. ofTransport)& is subject to US Government Selective Availability (SA) policy.

The GP'S Sateliite System is the most accurate and competant system for world wide distribution of precise time, frequence and position ever deployed. Each of the GPS Satellites carries an ensumble of on-board atomic clocks, which are tracked and maintained traceable to UTC/USNO using the satellite's transmisson signals, the GPS receivers can determine and maintain very precise time.

SERTEL designs and manufactures precision time and frequency products for synchronizing today's complex computer / server, communications and instrumentation system. Our advanced research and development of Global positioning system (GPS) timetechnology continues to produce the most accurate GPS timing receivers in the world to meet the growing demand in all the fields of engineering for precise synchronization of timing applications.

GPS Antenna

Collects the signal from GPS satellite, and feeds them to the GPS Receiver through Low Loss Coaxial Cable. Std 50 Mtrs. (consult us for more length).

GPS Receiver and Signal Processing Unit

Collects the data, process them and generate outputs a time based pulse (1PPS) every second in precise synchronising with IST / UTC. Each 1 PPS pulse is accompanied by Serial Data Packet Output. (A real time data comprising of year, month, date, hour, minute and second) which is time stamp for that pulse. It is an accurate, free running flash type micro controller based Digital Clock System which is constantly monitored by the Receiver to keep its time synchronized with 1ST. In addition to display of time (HH,MM,SS) in 24Hrs. format. It provides necessary output to synchronize or provide date / time stamp to other microprocessor based Electronic Equipment in addition to driving Remote Slave displays. **These outputs are available even if the GPS link is lost, by using OCXO (10MHZ) with 10^{-6} (1PPM) thus providing 100% redundancy.**

Remote Display Unit

Electronic Digital Displays of Hrs, Mins, Secs in 24 hrs or 12hrs format. This unit counts the differential pulse (HH,MM,SS) transmitted by the GPS receiver and Signal Processor and displays the time. Any number of remote display can be used by using booster unit for signal strength. Special remote display unit also can be used with signal as a IRIGB reader and also can transmit signal to very long distances, even kilometers of distance

APPLICATION

Power Utilities

Frequency and time measurement. Precise time and frequency output to SER'S, fault locator and voltage phase angle systems. Disturbance recorder. Event logger, SCADA, Energymeter, RTU, Numeric Display and other Instrumentation system. For computer and service through RS232 eithernet based TCP/IP and NTP with RFC's for server on NTP protocol.

Range Timing

Precise timing for data acquisition time code for range distribiution and data time tagging.

Remote Time Display

Uniform time display at various locations - 100mm std. cunsult us for various sizes.

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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		LONGTITUTE
DAY OF THE WEEK		FREQUENCY
STATUS		NO OF SATTELITE

ENVORONMENT	:	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 ASYNCHRONOUS. ASC II FORMATE
RS485	:	8 BITS ASYNCHRONOUS. ASC II FORMATE
RS422	:	8 BITS ASYNCHRONOUS. ASC II 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 seperate signal conditions for large number of outputs.
b) IPPD/IPPH/IPPM/IPPS - 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.

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
	:	Helght - 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 CHARACTOR SERTEL CAN GIVE 12.5 MM/25 MM/50MM/100MM/200MM/300MM
WIRELESS REMOTE DISPLAY	:	AVAILABLE ON REQUEST

MULTI DISPLAY SYSTEM FOR POWER PLANT POWER MEASUREMENT : KILO WATT / MEGA WATT OF EACH UNIT GENERATION, FREQUENCY OF EACH UNIT GENERATION TOTAL GENERATION OF POWER PLANT. TOTAL ACTIVITY OF THE SYSTEM CAN BE CONNECTED THROUGH DIGITAL OUTPUT WITH TCP / IP ON THE EITHERNET BUS OF TOTAL. REPORT GENERATION IN ALL THE COMPUTERS SYSTEM OF THE PLANT AS PER THE ASTHITIC LOOK OF THE PLANT.

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

Both AC & DC Voltages

1	Electrical fast transient test as per	IEC 61000-4-4, 2001
2	Electrostatic discharge test as per	IEC 61000-4-2, 2001
3	High energy surge test as per	IEC 61000-4-5, 2001
4	Radiated susceptibility test as per	IEC 61000-4-3, 2002
5	Conducted RF immunity test as per4	IEC 61000-4-6, 1996
6	1.0 MHz damped oscillatory surge test as per	IEC 61000-4-12, 2001
7	Power frequency magnetic field test	IEC 61000-4-8, 1994

OTHER RANGE OF PRODUCTS

PROCESS & POWER CONTROL & AUTOMATION

- Digital Process Indicator / Controller.
- Strip Chart / Circular Chart Recorder.
- Process / Power Scanner 12pt / 6pt.
- Thermocouple RTD'S/MTTC.
- System Integration involving AC Drives / Scada PLC's, DCS.
- Transducers for process and power measurement.
- Instrument / control Panel.
- SMPS - Powers Supply.
- Large Display & Remote Display Unit.
- Digital Multimeter.
- Line Driver / Line Receiver.
- RS485 / RS232 Convertor.

TIME MANAGEMENT SYSTEM

- Central Satellite Clocks.
- Satellite Based Time Synchronization System
- GPS Receiver.
- Time Code Generator - IRIGB - Reader.
- Time Up /Down Counter.
- Crystal - OCXO / VCXO / TCXO.
- Hand held GPS Receiver.
- Access Control System / Attendance Monitoring.

ASSET LOCATOR AND REMOTE MONITORING

- Asset Locator of Time and Position.
- Asset Vehicle Locator GPS/GSM/CDMA/GPRS with maping solutions.
- Wireless - GPRS - Distance Transfer of Data PC to PC.
- Data Transfer Machine to Machine through GSM.

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Manufactured by :

SERTEL ELECTRONICS PVT. LTD.

377, Nehru Nagar, First Cross Street,
Old Mahabalipuram Road, Perungudi, Chennai - 600 096.
Tel : 91-44-24925716, 24925011. Fax : 91-44-2492 6170.
Email : telser@md4.vsnl.net.in Web : www.telser.net

Authorised Dealer

Shri Akshaya Graphics / Ph: 044-2484 3118