masibus
A Sonepar Company

MTS200L

Master Time Sync Unit

Accurate. Reliable. Compact.

RoHS

Masibus masTER Time-Sync MTS200L is capable for the time synchronization requirements in various industries like power, process, IT, telecommunications, cement, education, finance. It generates wide range of time code and pulse signals via different output ports like 1PPS, IRIG-B TTL/AM, NTP, serial (RS-232/RS-485), event/relay, pulse FO.

Masibus MTS200L is a time server having Dual band, multi constellation GNSS receiver. It supports both L1 and L5 bands. MTS200L supports GPS, GLONASS and NavIC as multi constellation. It has redundant and non-redundant options for power supply. MTS200L has a 20 x 2 LCD display for viewing of time parameters, status of GNSS receiver parameters, and output ports, discrete LEDs provide at-a-glance status and health information. The GNSS receiver has built-in RTC backed up with on board battery to maintain time during power loss and instant recovery on power resumption.

Network Time Protocol (NTP)

MTS200L is a stratum1 GNSS based full featured NTP server for synchronizing all types of NTP and SNTP clients in LAN.

Networking Protocols

MTS200L supports a suite of networking protocols for its own administration and configuration management. These are IPv4 TCP, UDP, HTTP, SNMP, and TELNET.

User Friendly Setup and Administration

MTS200L is simple to install and easy to manage. Front panel controls allows network configuration and other set-up parameters. Further, MTS200L can be configured remotely through webserver, SNMP, telnet, serial port. MTS200L can send notifications regarding GPS Lock/Unlock alarms to remote servers through SNMP TRAP.

Features

- 22 satellite parallel tracking
- <15 ns with GPS receiver (the receiver is locked on a fixed position).
- <±0.0005 ppm (OCXO) accuracy while GPS is Unlock* (Optional)
- <±0.5 ppm (TCXO) accuracy while GPS Is Unlock
- Resynchronization Delay: - < 5 Min.
- Propagation delay compensation upto 99999 ns
- During the loss of the UTC source, Unit will shift to the internal RTC time
- NTPv2/v3
- IPv4, UDP, SNMP, HTTP, TELNET, Networking Protocols
- Remote alarm notifications via SNMP
- Remote configuration using webserver, telnet
- Universal time-zone settings with offset to permit correction to local time
- Supports synchronization of IEC61850 compliant devices via
- NTP/SNTP protocol
- Universal (AC/DC) power supply
- Re-acquisition time is typically 1 second.
- Programmable pulse outputs
- Solid state relays for programmable events
- NTP client synchronization software
- Compact 19 " 1U rack mount enclosure
- Supporting timing protocols:
  - Serial NMEA [GPRMC], NGTS, T-FORMAT
  - IRIG-B (Modulated & Un Modulated/TTL/DCLS/PWM)
  - SNTP/NTP
  - Frequency Output (2.048 MHz (ITU-T G.703)/10 Mhz)

Applications: Time synchronization of

- Sequence of Event Recorders, Disturbance Recorders, PMU
- Numerical Relays, Slave Clocks
- UNIX, Linux, Solaris & Windows Servers
- PLC/DCS/SCADA, ABT Metering
- Telecommunication, Synchrophasor Measurement
- EMS system, Fault Locator

TECHNICAL SPECIFICATIONS

GNSS Receiver

Timing Accuracy	< 15 ns with GNSS (GPS + GLOANASS OR GPS + GLOANASS + IRNSS (NAVIC)) receiver (when receiver is locked on fixed position)
Positioning Accuracy	< 10m
Input Frequency	1575.42 MHz to 1602 MHz L1 C/A code, 1176.45 MHz + 1575.42 MHz to 1602 L1 + L5 C/A code
Tracking	22 parallel channels
Acquisition Time	Hot start < 5 sec. Warm start < 38 sec. Cold start < 45 sec.

Antenna

Type	Active L1 GNSS (GPS + GLOANASS) 40 dB gain Active L1 and L5. GNSS (GPS + GLOANASS + IRNSS (NAVIC), 40 dB gain
Antenna Cable Type	RG 6/RG 11
Operating Temperature	-40 to +85°C
Coverage	360 degree
Ingress Protection	IP67
Weight	150 g

Interface and Configuration

Display	2 x 20 character backlit LCD display
Displayed Data	Local / UTC time and date, Day of the week Position latitude, longitude, Status of the GNSS receiver Configuration parameters, Product Firmware Version & Date Product Serial Number
Status LEDs	Power, 1PPS, Watchdog, Error, GPS Locked
Redundancy	Power supply Redundancy
Configuration Methods	Front keypad Front console DB-9 port (serial RS-232) WEBSERVER, TELNET (ethernet RJ45 port)
Keypad Configurable Parameters	Universal time zone correction Hour settings for display (12 or 24 format), UTC/LOCAL time display Data format selection (NGTS/T-FORMAT) Repetitive event generation output via potential free contact (PPS, PP5S, PPM, PPQH, PPHH, PPH,PPD) IPv4 network parameters [IP, subnet, gateway]
Network Protocols	IPv4, TCP, UDP NTP v2[RFC 1119], v3[RFC 1305] SNMP v1[RFC 1157], v2[RFC 1901-1908] with enterprise MIB file SNMP v1, v2 compatible traps with two configurable SNMP trap managers Webserver through HTTP browser based configuration Remote alarm notification through SNMP traps
NTP / SNTP Client Software	Platform support: Windows 10 & above, Windows server 2016 & above, Unix, Linux, Solaris server for Time Synchronization Using Net T Sync Software
Firmware Upgrade	Supported through Bootloader over (Serial and Ethernet)

CPU Card

Output	Description	Connector	Accuracy (to UTC)	Output per card
ETH x (LAN) Without PTP (CPU C1, C2)	Mode: Server IPv4, NTP, SNMP, WEBSERVER, TELNET Network interface: RJ45 with auto-negotiation	RJ45	±1mSec. [NTP server]	1 x 10/100 Mbps + 1 x 10/100 Mbps
NMEA	NMEA frame – GPRMC, Isolated output, RS232 /RS485** Fix configuration: 9600-8-N-1	Plug in screw terminals		1 no

**RS-232/RS-485 in CPU Card is site selectable, default setting RS-232

TECHNICAL SPECIFICATIONS

Time Signal Output

Output Type	Description	Connector	Accuracy (to UTC)
PPS Output	1 Pulse per second Over 250 Ω with 200 ms Pulse width	BNC Female	±100nSec.
IRIG-B Modulated Output	IRIG-B(127),1 KHz AM signal With Modulation ratio: 3:1 IRIG-B Output as per IEEE Standard C37.118 or IEEE 1344 standard Configurable 3 Vp-p, into 100Ω ±10%	BNC Female	±10µSec.
IRIG-B TTL Output	Format: IRIG-B (007) 100 Hz PWM signal IRIG-B Output as per IEEE Standard C37.118 or IEEE 1344 standard Configurable 5.5 Vp-p TTL signal into 50Ω IRIG-B PWM Differential RS485 Output (Optional/ On Request)	BNC Female	±1.5µSec.
Additional NTP Output	Mode: Server Protocol support: NTP V3, SNTP, TCP, TELNET, UDP, IPv4	RJ45	±1mSec. [NTP server]
Serial Output	Configurable serial frames (NMEA / NGTS / T-format) NMEA frames - GPRMC Isolated outputs with status LED RS-232 or RS-485 (Site Configurable), Fix configuration: 9600-8-N-1	DB9 Female	-
Event/ Pulse Output	Configurable event period (PPS, PP5S, PPM, PPQH, PPHH, PPH,PPD) with on time from 50 milliseconds to 50% of total period PMOS Relay output with status LED, Rating: 350V DC/120mA	Plug in screw terminals AWG max. 2.5 mm2	-
Relay Output	GPS Lock, Watchdog, Error Relay Rating: 230V AC/ 30V DC @ 2A; 110V DC@ 0.3A; 220V DC@ 0.12 A (max.)	Plug in screw terminals AWG max. 2.5 mm2	-
FDM Output	**Input Signal:** Mains frequency, 90 - 270VAC, 50Hz or 60Hz **Output Frame:** Serial frame (RS232, RS485) per second Baud rate: 9600/19200/38400/57600/115200-7/8-N/E/O-1/2 (Configurable) **Frame parameters**: Power line frequency, Frequency deviation, Reference time, Power line time, Time deviation **Alarm Outputs:** 2 PMOS relay alarm [Overflow, watchdog/Fail] Contact capacity: 350V DC, 120mA maximum	Input: 2-Way terminal strip DB-9 (RS-232) 2 pin plug (RS-485) 4 pin plug (Alarm)	Frequency: Accuracy of reference (Clock freq) ±1Hz Time deviation: Accuracy of reference (PPS) ±1ms
Fiber Optic Output	Signal type: IRIG-B TTL (007)/PPS/PPM/PPH/PPD - Configurable Transmission: Simplex, Fiber size: 62.5/125 µm, Wavelength: 820 nm Distance: 1750 meters	Multimode ST connector	As per signal type
Frequency Output	2.048 Mhz Over BNC (75 Ohms) 2.048 Mhz Over Ethernet (120 Ohms) 10 Mhz Over BNC	BNC Female/RJ45	-

Multiple Output Card

Multi-Port Output Card (M1)#	2 Nos. IRIG-B AM /TTL / PPS (Any one factory set) 2 Nos. Event output and 2 Nos. Alarm (GPS Lock and Watchdog)	BNC female, Plug in screw terminals	As defined above respectively
Multi-Port Output Card (M2)#	1 Nos. IRIG-B AM /TTL / PPS (Any one factory set) 2 Nos of Event and 2 Nos Alarm (GPS Lock and Watchdog) 2 Nos. FO over IRIG-B TTL/PPS/PPM/PPH/PPD	BNC female, Plug in screw terminals, Multimode ST connector	As defined above respectively

TECHNICAL SPECIFICATIONS

Power Supply

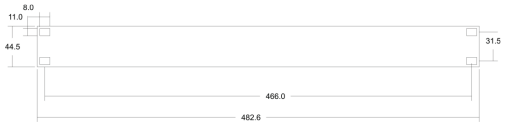
Standard	90 - 264 V AC / 90- 300 V DC, 35W
Option-1	18 - 75 V DC, 30W
Output Status	Power LED status, power fail relay output

Isolation (Withstanding Voltage)
Between primary terminals* and secondary terminals**: At least 1500 V AC for 1 minute
Between primary terminals* and grounding terminal: At least 1500 V AC for 1 minute
Between grounding terminal and secondary terminals**: At least 1500 V AC for 1 minute
Between secondary terminals**: At least 500 V AC for 1 minute
* Primary terminals indicate power terminals and relay output terminals.
** Secondary terminals indicate output ports
Insulation resistance: 50MΩ or more @ 500 V DC between power terminals and grounding terminal.
Note: No Isolation between IRIGB-TTL and PPS output.

Physical

Mounting	1U, 19" rack mount
Dimensions (mm)	45(H) x 483(W) x 251(D)
Ingress Protection	IP20 enclosure
Weight	3 Kg

Mounting Dimensions



Environmental

Operating Temperature	0 to +55 °C
Storage Temperature	-20 to +80 °C
Humidity	20-95 % RH non condensing

Type test▲

EMI/EMC Tests	
Electrostatic Discharge (ESD)	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3*
EFT Test	IEC 61000-4-4
Surge Test	IEC 61000-4-5
Conducted Susceptibility (Conducted RF)	IEC 61000-4-6*
Power Frequency Magnetic Field	IEC 61000-4-8
Voltage Interruption/Voltage Dips	IEC 61000-4-11
Damped Oscillatory Wave Immunity Test	IEC 61000-4-18
Conducted Emission	IEC61000-6-4
Radiated Emission	IEC61000-6-4
Environmental Tests	
Cold Test	IEC 60068-2-1
Dry Heat Test	IEC 60068-2-2
Damp Heat Steady State Test	IEC 60068-2-30
Vibration	IEC 60255-21-1
Shock Test	IEC 60255-21-2
Dielectric Test	IEC 60255-5-0*

Note: Tests marked with an asterisk (*) are currently in progress.

▲*Under Certification*

Ordering Code

Model	Receiver Clock Module		Power Supply PS-1		Power Supply PS-2		CPU with Ethernet o/p		Output Card (Select Code for Card Type from Table1.1) Card-1	Card-2	Card-3	Card-4*	Antenna Cable Length	
MTS200L	X		X		X		X		X	X	X	X	X	
	1	1 x Clock GPS+GLO	1	90 - 264 V AC/ 90- 300 V DC	N	None	C1	1 x 10/100 Mbps					0	None
	3	1 x Clock GPS+GLO+ IRNSS	2	18-75 V DC	1	90 - 264 V AC/ 90- 300 V DC	C2	2 x 10/100 Mbps					1	15 meters
					2	18-75 V DC							2	30 meters
													3	50 meters
													4	100 meters
													S	Special

Output Card Table1.1

Card Type	None	IRIG-B AM		IRIG-B TTL		1PPS		Serial	Event		NTP/SNTP		Relay	FO		FDM	Multiport#		Special
Code-X	N	1B	1C	2B	2C	3B	3C	4B	5B	5C	6B	6C	7C	AB	AC	F	M1	M2	S
No. of Ports	-	2 No.	4 No.	2 No.	4 No.	2 No.	4 No.	2 No.	2 No.	4 No.	2 No.	4 No.	4 No.	2 No.	4 No.	4 No.	6 No.	7 No.	

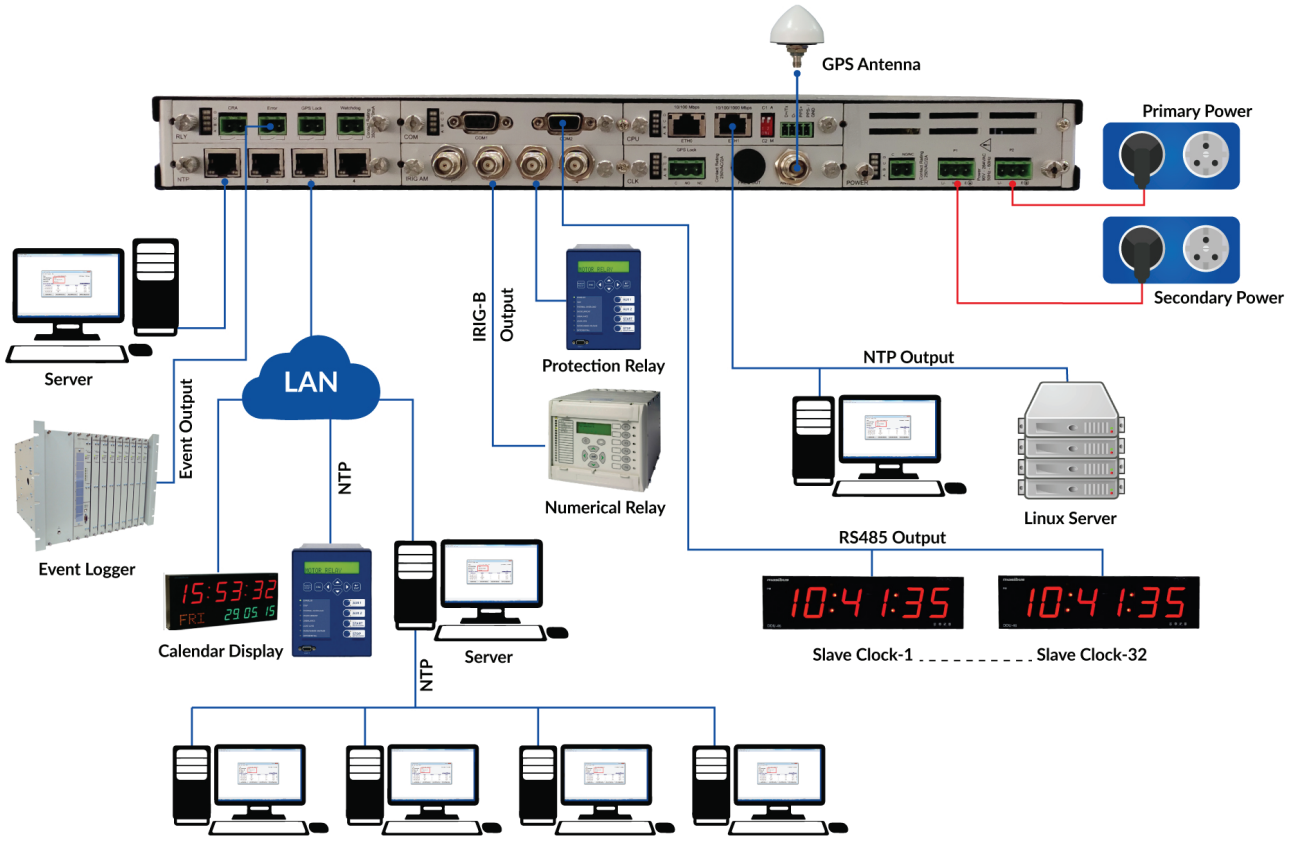
Standard Accessories
GPS Antenna and 0.5 Meter SS Antenna mounting rod integrated - 1 No.
2 Meter RJ45 Ethernet Cable - 1 No.
2 Meter RS-232 GPS Configuration Cable - 1 No.
Documents – User Manuals, Test Certificates - 1 Set
Windows based NTP Client Syncronization software - Download from Webstie

Optional Accessories (Extra cost)
mLA01: Lighting Arrestor (Surge Suppressor) - 1 No.
S-lineamp: Line Amplifier - 1 No.

#Customer to specify the required o/p type in multiport card while ordering

TECHNICAL SPECIFICATIONS

Application Diagram



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