masibus
A Sonepar Company

MTS200L

masTER Time-Sync

Accurate. Reliable. Compact.

RoHS

Masibus **masTER** T-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, PTP, 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. NTPv2, v3 and v4 with unicast alongwith NTP related necessary MD5/SHA symmetric key based authentication mechanisms are provided in this device.

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

Features

- 22 satellite parallel tracking
- NTPv2/v3 and NTPv4 with MD5 symmetric key management
- 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
- Highly accurate TCXO type crystal with time stability of 0.25 ppm (1ms/hour drift in case of non-availability of signal)
- Re-acquisition time is typically 1 second.
- Propagation delay compensation from 0 to 99.99 us with the resolution
- Programmable pulse outputs
- Solid state relays for programmable events
- NTP client synchronization software
- Supporting timing protocols:
  - NMEA [GPRMC, GPZDA, GPGGA], NGTS, T-FORMAT
  - IRIG-B modulated
  - IRIG-B TTL
  - SNTP/NTP
  - PTPv2

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

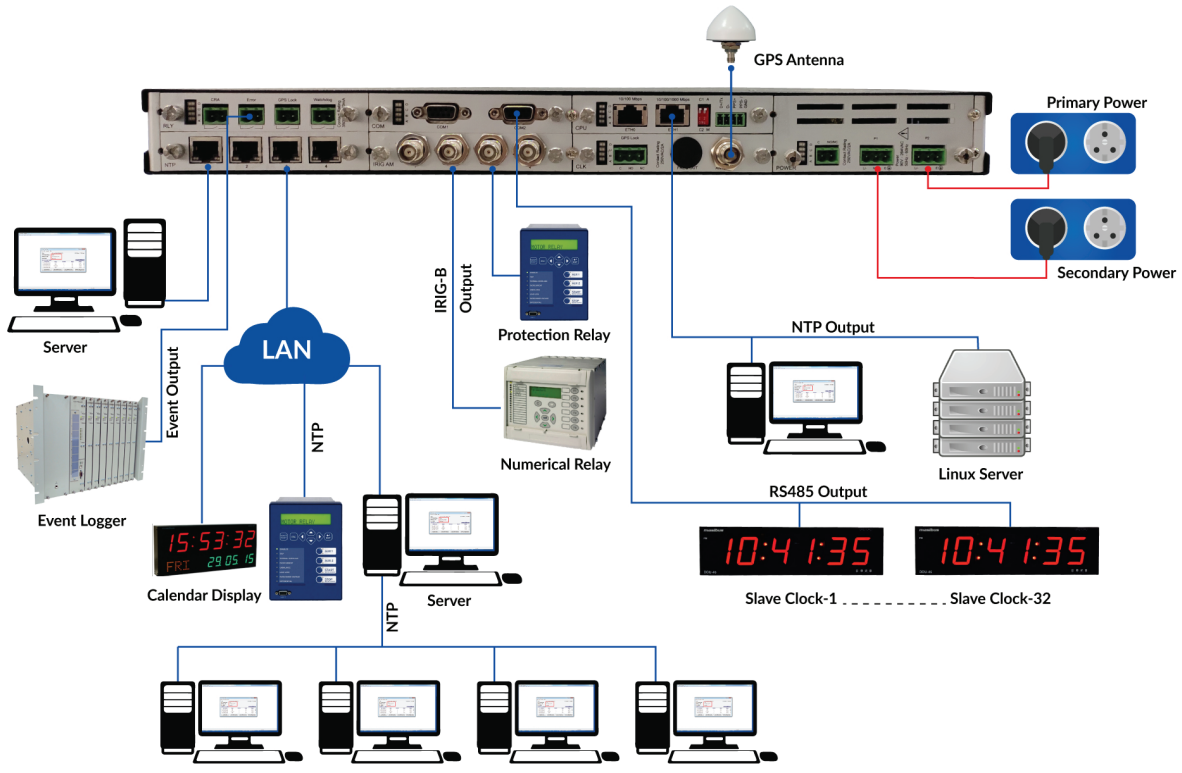
TECHNICAL SPECIFICATIONS

GNSS Receiver	
Timing Accuracy	< 15 ns with GNSS (GPS + GLOANASS+ IRNSS (NAVIC) receiver (receiver is locked on fixed position)
Positioning Accuracy	< 10m
Input Frequency	1559 – 1606 MHz L1 C/A code + 1166 – 1187 MHz L5 C/A code
Tracking	22 parallel channels
Acquisition Time	Hot start < 2 Sec. Warm start < 30 Sec. Cold start < 35 Sec.

Antenna	
Type	Active L1 and L5. GNSS (GPS + GLOANASS + IRNSS (NAVIC), 40 dB gain
Antenna Cable Type	RG 6
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.
Status LEDs	• Power, 1PPS, watchdog, error, GPS locked
Configuration Methods	• Front keypad • Front console DB-9 port (serial RS-232) • WEBSERVER, TELNET (ethernet RJ45 port)
Keypad Configurable Parameters	• Hour settings for display (12 or 24 format), UTC/LOCAL time display • Data format selection (NGTS/T-FORMAT) • Additional event configuration (total & on time of events) • IPv4 network parameters [IP, subnet, gateway]
Network Protocols	• IPv4, TCP, UDP • NTP v2[RFC 1119], v3[RFC 1305] and v4[RFC 5905] • NTP v3,v4 MD5 authentication with symmetric key management • 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

Application Diagram



TECHNICAL SPECIFICATIONS

CPU Card

Output	Description	Connector	Accuracy (to UTC)	Output per card
ETHx (LAN)	• IPv4, NTP, SNMP, Webserver, Telnet • Mode: Server • Network interface: RJ45, auto-negotiation • Both port 10/100 Mbps	RJ45	±1mSec. [NTP server]	2 x 10/100 Mbps
NMEA	• NMEA frame – GPRMC • Isolated output • RS-232 /RS-485** • Fix configuration: 9600-8-N-1	Plug in screw terminals	±100nSec. (PPS o/p)	1

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

Time Signal Output

Output Card Type	Description	Connector	Accuracy (to UTC)	Output per card Optional	
				Option-1	Option-2
PPS Card	• 1 Pulse per second • TTL into 250 Ω • 200 ms pulse width	BNC female	±100nSec.	2 nos.	4 nos.
IRIG-B Modulated Card	• Format: IRIG-B(127),IEEE 1344/C37.118-2005 • 1 KHz AM signal • Modulation ratio: 3:1 • 3 Vp-p, into 100Ω ±10%	BNC female	±10µSec.	2 nos.	4 nos.
IRIG-B TTL Card	• Format: IRIG-B (007) or IEEE1344 (field set) • TTL into 50Ω	BNC female	±1.5µSec.	2 nos.	4 nos.
NTP (LAN Interface)	• Protocol support: NTP V3, SNTP • Network protocol: TCP, telnet, UDP, IPv4 • Mode: Server	RJ45	±1mSec. [NTP server]	2 nos.	4 nos.
Serial Card	• Configurable serial frames (NMEA / NGTS / T-format) • Output status LED • Isolated outputs • RS-232 or RS-485 (Factory set to be selected from ordering code) • Fix configuration: 9600-8-N-1	DB9 female	-	2 nos.	NA
Event Card	• Configurable event period (1sec to 1 day) with ON time from 50 milliseconds to 50% of total period • PMOS relay • Rating: 350V DC/120mA • Output status LED	Plug in screw terminals AWG max. 2.5 mm2	-	2 nos.	4 nos.
Relay Card	• GPS LOCK, redundancy, 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	-	-	4 nos.
Pulse O/P Card (Fiber Optic)	• 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	2 nos.	4 nos.
Multi-port Output Card (M1)#	• 2 nos. IRIG-B AM /TTL / PPS (any one factory set) • 2 nos. Event O/P • 2 nos. Alarm (GPS lock and watchdog)	As defined above respectively	As defined above respectively	Max 2 nos. IRIG-B AM or TTL or PPS (any one factory set), 2 nos. event & 2 nos. alarm in one card	
Multi-port Output Card (M2)#	• 1 no. IRIG-B AM /TTL / PPS (any one factory set) • 2 nos. Event O/P • 2 nos. FO over IRIG-B TTL (007)/PPS/PPM/PPH/PPD – factory configurable • 2 nos. Alarm (GPS lock and watchdog)	As defined above respectively	As defined above respectively	Max 1 no. IRIG-B AM or TTL or PPS (any one factory set, 2 nos. FO over IRIG-B TTL/PPS /PPM/PPH/PPD – factory set), 2 nos. event & 2 nos. alarm in one card	

TECHNICAL SPECIFICATIONS

Power Supply

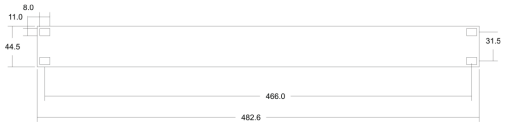
Standard	90 - 264 V AC / 90- 300 V DC, 35W
Option-1	18 - 36 V DC, 30W
Option-2	36 - 75 V DC, 30W
Output Status	Power LED status, power fail relay output

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▲

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
High Frequency Disturbance	IEC 61000-4-10
Voltage Interruption/Voltage Dips	IEC 61000-4-11
Radiated Emission Conducted Emission	As per CISPR-22
Vibration	IEC 68-2-6
Bump Test	IS 9002 Part-7
Dry Heat Test	IEC 60068-2-2
Damp Heat Steady State Test	IEC 60068-2-30
Shock Test	IEC 60255-21-2
Dielectric Test	
Cold Test	IEC 60068-2-1: 2007

▲*Under Certification*

Ordering Code

Model	Power Supply				CPU with Ethernet o/p		Output Card (Select Code for Card Type from Table1.1)				Antenna Cable Length	
	PS-1		PS-2				Card-1	Card-2	Card-3	Card-4*		
MTS200L	X		X		X		X	X	X	X	X	
	1	90 - 264 V AC/ 90- 300 V DC	N	None	C1	1 x 10/100 Mbps					0	None
	2	18-36 V DC	1	90 - 264 V AC/ 90- 300 V DC	C2	2 x 10/100 Mbps					1	15 meters
	3	36-75 V DC	2	18-36 V DC							2	30 meters
			3	36-75 V DC							3	50 meters
											4	100 meters
											S	Special

Output Card Table 1.1	
Code-X	**Card Type/ No of Ports**
N	None
1B	IRIG-AM (2 ports)
1C	IRIG-AM (4 ports)
2B	IRIG-TTL (2 ports)
2C	IRIG-TTL (4 ports)
3B	1PPS (2 ports)
3C	1PPS (4 ports)
4B	Serial (2 ports)
5B	Event/ Pulse (Electrical) (2 ports)
5C	Event/ Pulse (Electrical) (4 ports)
6B	NTP (2 ports)
6C	NTP (4 ports)
7C	Relay (4 ports)
8A	PTP (1 port)
8B	PTP (2 ports)
AB	Pulse FO (2 ports)
AC	Pulse FO (4 ports)
M1	Multiport Card#
M2	Multiport Card#
S	Special O/P Card

Standard Accessories
m-AN-01: Antenna – 1 no
m-AR-01-01: Antenna rod (0.5 meter) – 1 no

Optional Accessories (Extra cost)
m-LA-01: Lighting arrestor (surge suppressor)
m-SR-01: RS-485 repeater
TDR-4: Time distribution rack
TSR-4: Time signal repeater

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

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