GNSS Based Network Time Server

Technology

NGS-N90 is the next generation GNSS based Network Time Server from Accord which is also a source of highly stable and accurate time and frequency. It comes fitted with a Accord's GNSS receiver capable of receiving and tracking signals from GPS, SBAS (GAGAN), GLONASS & IRNSS (dual frequency).

Accord NGS has multiple GbE ports for time dissemination over the network using NTP protocol. It comes with multitude of customizable options for signal outputs and ports making it truly suited to meet the network and site requirements of the end-user.

Specification

Network Time Protocols supported

NTP V3 and V4	Stratum-1 primary Server with support for Unicast, Broadcast, Multicast (Programmable option to transmit GPS time instead of UTC time as a part of the NTP messages.)
Throughput	Supports more than 5000 client/s
PTP v2 (Optional)	E2E and P2P grandmaster Clock with hardware time stamping
PTP time stamping resolution	8 ns (Optional)

Synchronization Performance

1-PPS output accuracy in sync mode	< 20 ns RMS to UTC, rising edge active
Frequency stability	$1x10^{-12}$ when tracking satellites after 24 Hours
Holdover accuracy (1 day)	1. Rubidium Oscillator < 1 us (optional) 2. < 1e-12 after 24 Hours of continuos operation with Position fix availability at near constant temperature

LAN Ports

10Base-T/100Base-Tx/1000Base-T (GbE) on RJ-45 Connector	For Time distribution over LAN using NTP/PTP Protocol. LAN port shall also be used for, • Data port for Management via SNMP V1 /V2c • For remote control and monitoring via web based interface application over HTTPS via through Web interface • For software update

Other Network Protocols Supported

Protocols	NTP v2, v3, v4, Unicast, Multicast, Broadcast SNTP, v3, v4 IPv4/IPv6 HTTPS (web interface) TELNET SNMP v1, v2c, v3 DHCP clients TCP/IP

Specification

Internal GNSS Receiver Specifications

Make	Accord's GNSS Receiver
Number of Channels	55 [GPS-16, GLONASS-16 IRNSS L5-11, IRNSS S-11, SBAS (GAGAN)-3]
GNSS bands	1. Single frequency GPS (L1) and SBAS (GAGAN) L1:1575.42 ±10MHz 2. Single frequency GLONASS (G1) G1:1602.00±5MHz 3. Dual frequency IRNSS(L5 & S), L5-band:1176 ±12MHz S-band: 2492 ±8.5MHz
Position Accuracy	< 10 m RMS (1σ) with GPS+SBAS under clear sky condition < 5 m RMS (1σ) with GPS+SBAS+IRNSS under clear sky condition
Acquisition Time	Cold Start : <20 min <2 mins (Warm up mode)
Satellite selection provision	GPS only GLONASS only IRNSS only

IRNSS code loading	The dual frequency IRNSS Timing Receiver will have provision for loading additional IRNSS Codes apart from those mentioned in IRNSS SIS ICD.
Delay compensation (Cable,b Antenna and Receiver)	Provision for delay compensation to compensate varying length delays from one-site to another.

User Interface

Display with Keypad	High resolution Vacuum Fluorescent Display (VFD) to display Time in GPS/UTC/IST, Position of the Antenna, the status of the Unit and programmable parameters
Web browser interface	HTTP based comprehensive web-interface over LAN ports for local or remote monitoring, command and control over the network
LEDs	1.Power 2.GNSS Receiver Position Fix status 3.System Lock/Sync/Holdover Indication 4.System Fault Indication

Internal Clock source

Oscillator	TCXO / OCXO / Rubidium
Frequency	10 MHz
Aging	STAND +/- 1 x10^{-7} OCXO +/- 1 x10^{-10} Rubidium +/- 5 x10^{-11}

OCXO Oscillator Phase noise(DBc/Hz @ 10MHz)	1 Hz : -98 10 Hz : -127 100 Hz : -140 1 Khz : -150 10 Khz : -150 100 Khz : -150
Allan Deviation	5e-11 @ 1 sec 4e-11 @ 10 sec 1e-12 @ 24 hrs

Signal Inputs

1/ 5/ 10 MHz reference input (optional)	1. Sine, 0-13 dbm, 50 Ω BNC Female-connector
1-PPS reference input	1. Rising edge active, 5V TTL into 50 Ω 2. BNC Female-connector,
IRIG Input	IRIG-A/B/G, AM, 3Vpp, 3:1 ratio into 50 Ω
RF input from GNSS Antenna	TNC Receptacle, 50 Ω impedance active Antenna

Signal Outputs

Time Code Output	1. IRIG-A/B/G AM or DCLS 2. AM : 3 Vpp, 3:1 ratio into 50 Ω 3. Connectors : BNC female
10 MHz Sine wave Output	1. Signal type: Sine wave 2. Amplitude:0 -10 dBm ±1 dB 3. Accuracy: Function of input sync source(GNSS/ 1PPS/ IRIG) 4. Connector: BNC female
1 PPS Output	1. TTL levels into 50 Ω 2. Pulse width: 100 us (Programmable) on the rising edge on time 3. Connector: BNC female

Environmental specifications

Operating Temperature	-10°C to +55°C
Storage Temperature	-40°C to +85°C
Relative Humidity	< = 95% non-condensing

Data Outputs

NMEA Data	Position and Time information in NMEA-0183 (ZDA/GGA/GSV/RMC..) standard sentence format at RS232 level on DB-9 female-connector & LAN port User selectable rate up to 115.2Kbps

Mechanical Specification

Size	1 U/2U, 19 inch rack mountable
Weight	< 6 Kg

Power

AC input	100-240 V, 50 Hz, IEC 60320 C14 Connector with lockable plug and 2-m cable

Product Includes

GNSS Antenna	Accord's GNSS Antenna
Low Loss RF Cable for GNSS Antenna	30 m length (Standard)
Antenna Mounting Stand	1-feet tall
AC Power Cord	2m
Installation and Operating Manual	

Antenna Specifications

Electrical Specifications

Frequency Range	1164 to 1249 MHz (85) 1559 to 1607 MHz (48) 2482 to 2502 MHz (20)
Coverage	Hemispherical pattern
VSWR	< 1.5:1
Passive Gain	Peak : > 5dBic
Beam width (3 dB)	70 deg minimum
Polarization	RHCP
Axial Ratio	< 3dB
LNA gain with Band pass filter	33 +/- 3 dB L band 30 +/- 1.5 dB for S band
Noise Figure	< 2.0 dB
Impedance	50 ohms
DC Supply	+5.0 V
Connector	TNC(F)

Available customizations for NGS-N90

(Please contact Factory with your requirments)

1. Additional port: 10Base-T/100Base-Tx on RJ-45 Connector for Time distribution over LAN using PTP (IEEE 1588) Protocol
2. Additional port: 10Base-T/100Base-Tx/1000Base-T GbE on RJ-45 Connector for Time distribution over LAN using NTP Protocol
3. NTP over fiber: 10/100/1000 Base-Lx, 1310nm, single mode fiber on LC type connector
3. Programmable Pulse rate output from 1-PPS to 10 MPPS at RS-422 Level on a single/multiple DB-9 Female-connectors(s)
4. 2-U rack mountable Enclosure depending on the number of output connectors
5. DC supply input :18-36 V with lockable Circular connector
6. 1-PPS output on multiple BNC female connectors
7. 10 MHz output (Sine/Square) on multiple BNC female connector.
8. External IRIG reference input for synchronization
9. IRIG time-code output on multiple DB-9 connectors
10.Internal GNSS Receiver with redundant Antenna Input
11. Antenna Cable of required length with the Line amplifier
12. Custom outputs and accessories supply as per site requirements

Data subject to change. Please contact us for more information.

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