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 an 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

<table>
<thead>
<tr>
<th>Network Time Protocols supported</th>
<th>Synchronization Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTP V3 and V4</td>
<td>1-PPS output accuracy in sync mode</td>
</tr>
<tr>
<td>Throughput</td>
<td>Frequency stability</td>
</tr>
<tr>
<td>PTP v2 (Optional)</td>
<td>1x10⁻¹² when tracking satellites after 24 Hours</td>
</tr>
<tr>
<td>PTP time stamping resolution</td>
<td>Holdover accuracy (1 day)</td>
</tr>
<tr>
<td></td>
<td>&lt; 20 ns RMS to UTC, rising edge active</td>
</tr>
</tbody>
</table>

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.)

Supports more than 5000 client/s E2E and P2P grandmaster Clock with hardware time stamping

Synchronization Performance

- 1-PPS output accuracy in sync mode
- Frequency stability: 1x10⁻¹² when tracking satellites after 24 Hours
- Holdover accuracy (1 day): < 20 ns RMS to UTC, rising edge active

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

**Signal Inputs**

- **1/5/10 MHz reference input** (optional)
- **1-PPS reference input**
- **IRIG Input**
- **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. Connectors : BNC female
- **1 PPS Output**
  - 1. TTL levels into 50 Ω
  - 2. Pulse width: 100 us (Programmable) on the rising edge on time
  - 3. Connectors : 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:** 1U/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**
  - www.accord-soft.com
Antenna Specifications

### Electrical Specifications

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

### Available customizations for NGS-N90

(Please contact Factory with your requirements)

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
4. Programmable Pulse rate output from 1-PPS to 10 MPPS at RS-422 Level on a single/multiple DB-9 Female-connectors(s)
5. 2-U rack mountable Enclosure depending on the number of output connectors
6. DC supply input :18-36 V with lockable Circular connector
7. 1-PPS output on multiple BNC female connectors
8. 10 MHz output (Sine/Square) on multiple BNC female connector.
9. External IRIG reference input for synchronization
10. IRIG time-code output on multiple DB-9 connectors
11. Internal GNSS Receiver with redundant Antenna Input
12. Antenna Cable of required length with the Line amplifier
13. Custom outputs and accessories supply as per site requirements

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