GPStation-6™

Next Generation High-Performance GNSS Ionospheric Scintillation and TEC Monitor (GISTM) Receiver Enclosure with Low Phase Noise Oscillator

Benefits
Measure ionospheric activity for research applications
Monitor localized space weather impact on GNSS
Familiar workflow and data for existing GSV4004B users

Features
50 Hz phase data and amplitude sampling
120 independent tracking channels
Amplitude and phase scintillation indices output
Code TEC and Carrier TEC output
Customizable utility software for data collection and analysis

Modernized GISTM Receiver Technology
GPStation-6 is a next-generation GNSS Ionospheric Scintillation and TEC Monitor (GISTM) receiver. The multi-frequency multi-constellation GPStation-6 design is based on the mature GSV4004B GISTM receiver that has been used in ionospheric monitoring networks and space weather applications around the world since 2004. By combining the proven GSV4004B receiver design with NovAtel’s latest 120 channel OEM628 GNSS measurement engine, the GPStation-6 offers a future proof modernization path for existing customers and a leading edge solution for new customers in this unique application space.

Future-Proofed Scalability
GPStation-6 is software upgradable in the field to provide the custom performance required for application demands. The receiver can track all present and upcoming GNSS constellations and satellite signals including GPS L1/L2/L2C/L5, SBAS L1/L5, GLONASS L1/L2, Galileo E1/E5a/E5b/Alt-BOC and Compass signals and delivers high performance GNSS signal tracking together with ionospheric scintillation and TEC measurements.

GISTM Features
A maximum sampling rate of 50 Hz generates high rate ionospheric scintillation measurements for each of the 120 available tracking channels. The receiver tracks and reports ionospheric scintillation and TEC measurements for all supported signal types. A 25 Hz raw signal intensity noise bandwidth and 25 Hz phase noise bandwidth ensures that all the spectral components of both amplitude and phase scintillations are measured.

Customizable Utility Software
The provided GPStation-6 software utilities support automated receiver configuration and control, log decoding, specialized post-processing algorithms and real-time data display. The GPStation-6 receiver software and utilities are based on the same software that the GSV4004B included, allowing for easy transition of existing workflows to the new GISTM platform.
Performance

Channel Configuration
120 channels

Signal Tracking

<table>
<thead>
<tr>
<th>System</th>
<th>L1</th>
<th>L2</th>
<th>L2/C</th>
<th>L5</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPS</td>
<td>L1, L2, L2C, L5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GLONASS</td>
<td>L1, L2-C/A, L2P</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Galileo</td>
<td>E1, E5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GIOVE-A/GIOVE-B</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compass</td>
<td>L1, L5</td>
<td></td>
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</tbody>
</table>

Horizontal Position Accuracy

- Single point L1: 1.5 m
- Single point L1/L2: 1.2 m

Measurement Precision

Fully independent code and carrier measurements:

<table>
<thead>
<tr>
<th>System</th>
<th>L1 C/A code</th>
<th>L1 carrier phase</th>
<th>L2 P(Y) code</th>
<th>L2 carrier phase</th>
<th>L2C code</th>
<th>L2C carrier phase</th>
<th>L5 code</th>
<th>L5 carrier phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPS</td>
<td>4 cm 8 cm</td>
<td>0.5 mm 1.0 mm</td>
<td>8 cm 8 cm</td>
<td>1.0 mm 1.0 mm</td>
<td>8 cm 8 cm</td>
<td>0.5 mm 0.5 mm</td>
<td>3 cm</td>
<td>0.5 mm</td>
</tr>
<tr>
<td>GLONASS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Galileo</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>SBAS</td>
<td></td>
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</tr>
</tbody>
</table>

Ionospheric Modeling

Phase and Amplitude Data 50 Hz (raw or detrended)

<table>
<thead>
<tr>
<th>System</th>
<th>L1-C/A, L2C, L5</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPS</td>
<td></td>
</tr>
<tr>
<td>GLONASS</td>
<td></td>
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<td>Galileo</td>
<td></td>
</tr>
<tr>
<td>SBAS</td>
<td></td>
</tr>
</tbody>
</table>

Code TEC and Carrier TEC

<table>
<thead>
<tr>
<th>System</th>
<th>L1/L2, L1/L5</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPS</td>
<td></td>
</tr>
<tr>
<td>GLONASS</td>
<td></td>
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<tr>
<td>Galileo</td>
<td></td>
</tr>
<tr>
<td>SBAS</td>
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</tbody>
</table>

Maximum Data Rate

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurements</td>
<td>50 Hz</td>
</tr>
<tr>
<td>Position</td>
<td>50 Hz</td>
</tr>
</tbody>
</table>

Time to First Fix

<table>
<thead>
<tr>
<th>Type</th>
<th>Start</th>
<th>Hot start</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cold</td>
<td>&lt; 0.5 s</td>
<td>&lt; 0.5 s</td>
</tr>
<tr>
<td>Hot</td>
<td>&lt; 0.5 s</td>
<td>&lt; 35 s</td>
</tr>
</tbody>
</table>

Signal Reacquisition

<table>
<thead>
<tr>
<th>L1</th>
<th>L2</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 0.5 s (typical)</td>
<td>&lt; 1.0 s (typical)</td>
</tr>
</tbody>
</table>

Time Accuracy

20 ns

Physical and Electrical

Dimensions
233 x 154 x 71 mm

Weight
1.4 kg

Power

Input Voltage: +11 to +18 VDC
Power Consumption: 6 W (typical)

Antenna LNA Power Output

Output Voltage: +5 VDC
Maximum Current: 100 mA

Communication Ports

- One USB/RS-232 port
- Two RS-232 serial ports capable of 9,600 to 921,600 bps
- One I/O port (PPS, Event, ERROR and Position valid)

Connectors

- 4-pin LEMO
- TNC female
- BNC female
- DB-9 male
- DB-9 male
- DB-9 female

Environmental

Temperature

Operating: -20°C to +45°C
Storage: -45°C to +85°C

Compliance

FCC, CE, Industry Canada

Features

- Field upgradable software
- PAC multipath mitigating technology
- Navigation output support for NMEA-0183 and detailed NovAtel ASCII and binary logs
- Auxiliary strobe signals, including a configurable PPS output for time synchronization and mark inputs
- Built-in low phase-noise 10 MHz oscillator

Included Accessories

- Serial cable (null)
- I/O cable
- Power cable
- Serial cable (straight)
- USB cable
- Utility software CD

Optional Accessories

- GPS-700 series antenna
- GNSS-750 antenna
- RF cables - 5, 10 and 30 m lengths
- AC Adapter - International and North American

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RoHS COMPLIANT