OEM7720

Dual-antenna, multi-frequency, GNSS receiver delivers robust heading and positioning

High-precision GNSS heading and positioning
The dual-antenna, multi-frequency OEM7720 offers future-ready precise heading and positioning for space-constrained applications. Advanced interference mitigation features maintain high performance in challenging environments. With a variety of interface options to facilitate system integration, the OEM7720 provides the most efficient way to bring powerful Global Navigation Satellite System (GNSS) capable products to market quickly. With centimetre-level positioning utilising TerraStar satellite-delivered correction services, the OEM7720 ensures globally available, high-performance positioning without the need for expensive network infrastructure. Anywhere. Anytime.

Single-board heading
The OEM7720 can be configured in multiple ways for maximum flexibility. OEM7 firmware from Hexagon | NovAtel allows users to configure the OEM7720 for their unique application needs. Utilising a single antenna, the OEM7720 delivers a traditional precise positioning solution, while connecting the optional second antenna allows ALIGN to compute a high precision heading solution. When the distance between antennas increases, it maximises the heading precision. The OEM7720’s dual antennas will quickly initialise SPAN GNSS+INS technology, enabling continuous 3D position, velocity and attitude. RTK delivers centimetre-level real-time positioning, or it can go base-free with centimetre and decimetre PPP solutions using TerraStar corrections.

To learn more about how our firmware solutions can enhance your positioning, visit novatel.com/products/therapy-therapy-therapy/therapy-therapy-therapy-options.

Designed with the future in mind
The OEM7720 can track all current and upcoming GNSS constellations including GPS, GLONASS, Galileo, BeiDou, QZSS and NavIC. It is software upgradeable to track modernised signals as they become available.

Features

- High position availability with multi-constellation, multi-frequency tracking and high data rate
- TerraStar Correction Services supported over multi-channel L-Band and IP connections
- Serial, USB, CAN and Ethernet connectivity with web interface
- Spoofing detection, interference detection and mitigation provided by GNSS Resilience and integrity Technology (GRIT)
- RTK, GLIDE and STEADYLINE firmware options
- Simple to integrate, small form factor with 20 g vibration performance rating
- SPAN GNSS+INS technology integration bridges 3D positioning through GNSS outages in difficult environments
### Performance

**Signal tracking**

<table>
<thead>
<tr>
<th>Primary RF</th>
<th>Secondary RF</th>
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<tbody>
<tr>
<td>GLONASS L1 C/A, L2 C/A, L2P, L5</td>
<td>GLONASS L1 C/A, L2 C/A, L2P, L5</td>
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**Galileo**

<table>
<thead>
<tr>
<th>Galileo E1, E5, AltiBOC, E5a, E5b</th>
<th>Galileo E1, E5 AltiBOC, E5a, E5b</th>
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**NavIC (IRNSS)**

<table>
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<tr>
<th>NavIC (IRNSS)</th>
<th>L5</th>
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**SBAS**

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<tr>
<th>SBAS</th>
<th>L5</th>
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**L-Band**

| up to 5 channels |

**Horizon position accuracy (RMS)**

| Single point L1 | 1.5 m |
| Single point L1/L2 | 1.2 m |
| SBAS | 60 cm |
| DGPS | 40 cm |
| TerraStar-L5 | 40 cm |
| TerraStar-C PRO | 2.5 cm |
| RTK | 1 cm + 1 ppm |

**Initialization time**

- Initialization time < 10 s
- Initialization reliability > 99.9%

**ALIGN heading accuracy**

<table>
<thead>
<tr>
<th>Baseline Accuracy (RMS)</th>
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<tbody>
<tr>
<td>2 m 0.08 deg</td>
</tr>
<tr>
<td>4 m 0.05 deg</td>
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</tbody>
</table>

**Maximum data rate**

- Measurements up to 100 Hz
- Position up to 100 Hz

**Environmental**

### Time to first fix

- Cold start<sup>7</sup> < 39 s (typ)
- Hot start<sup>8</sup> < 20 s (typ)

### Signal reacquisition

- L1 < 0.5 s (typ)
- L2 < 1.0 s (typ)

### Time accuracy<sup>9</sup>

- 20 ns RMS

### Velocity accuracy

- < 0.03 m/s RMS

### Velocity limit<sup>10</sup>

- 515 m/s

### Physical and electrical

#### Dimensions

- 46 x 71 x 8 mm

#### Weight

- 29 g

#### Power

- Input voltage 3.0 to 5.0 VDC

#### Power consumption<sup>11</sup>

- GPS/GLONASS L1 1.8 W (typ)
- GPS/GLONASS L1/L2 2.3 W (typ)
- All frequencies/All constellations with L-Band 2.7 W (typ)

#### Antenna port power output

- Output voltage 5 VDC ±5%
- Maximum current 200 mA

### Connectors

- Main 60-pin dual row female socket
- Antenna inputs MMBX female

### Communication ports

- 5 LVCMOS serial up to 460,800 bps
- 2 CAN Bus 1 Mbps
- 1 USB 2.0 (device) HS
- 1 USB 2.0 (host) HS
- 1 Ethernet 10/100 Mbps

### Compliance

- FCC, ISED, CE and Global Type Approvals

### Features

- Field upgradeable software
- Differential GNSS positioning
- Differential correction support for RTCM 2.1, 2.3, 3.0, 3.1, 3.2, 3.3, 3.4, CMR, CMR+, RTCA and NOVATEL X
- Navigation output support for NMEA 0183 and detailed NovAtel ASCII and binary logs
- Receiver Autonomous Integrity Monitoring (RAIM)
- GLIDE and STEADYLINE smoothing algorithms
- Web GUI
- Outputs to drive external LEDs
- 4 Event inputs
- 4 Event outputs
- Pulse Per Second (PPS) output

### Firmware solutions

- ALIGN
- GNSS Resilience and Integrity Technology (GRIT)
- SPAN GNSS+INS technology
- RTK
- RTK ASSIST
- TerraStar Correction Services
- API

### Optional accessories

- VEXXIS GNSS-500 and GNSS-800 series antennas
- Compact GNSS antennas
- Mechanical mounting rails
- OEM7 Development Kit
- NovAtel Application Suite

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1. Typical values. Performance specifications subject to GNSS system characteristics, Signal-In-Space (SIS) operational degradation, ionospheric and tropospheric conditions, satellite geometry, baseline length, multipath effects and the presence of intentional or unintentional interference.
2. Model-configurable to track L5/E5a (all / Galileo) through L2 (GPS) or L3/E5b/B2 (GLONASS / Galileo / BeiDou) through L2 (GLONASS).
3. Hardware ready for L5.
4. E1bc and E6bc support only.
5. GPS-only.
6. Requires a subscription to a TerraStar data service. Subscriptions available from NovAtel.
7. Typical value. No almanac or ephemerides and no approximate position or time.
8. Typical value. Almanac and recent ephemerides saved and approximate position and time entered.
9. Time accuracy does not include biases due to RF or antenna delay.
10. Export licensing restricts operation to a maximum of 515 meters per second message output impacted above 500 m/s.
11. Typical values using serial port communication without interference mitigation. Consult the OEM7 User Documentation for power supply considerations.
12. May require an optional heat spreader in high current configurations. Consult the OEM7 user documentation (docs.novatel.com/OEM7) for further details.
13. Requires mechanical mounting rails to meet 20g; 7.7g without rails.