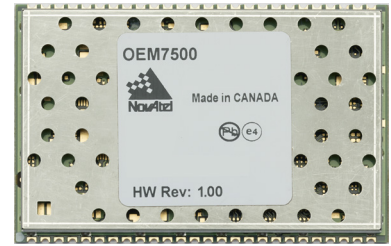


# OEM7500

## Compact, multi-frequency GNSS module



### Our most compact receiver for high-precision GNSS

The multi-frequency OEM7500 offers precise positioning for space-constrained, large-volume applications. This single-sided Surface Mount Device (SMD) package solders down directly, eliminating the need for connectors and mounting hardware.

### Designed with performance and the future in mind

The OEM7500 can track GPS, GLONASS, Galileo, BeiDou, QZSS and NavIC. The consistent and high-performance positioning and the flexibility and upgradeable features of this receiver make this the optimal GNSS receiver for industrial applications.

### Designed for flexibility

The OEM7500 is scalable to offer sub-metre to centimetre-level positioning. Additional options include RTK or TerraStar PPP corrections for centimetre-level real-time positioning, SPAN GNSS+INS technology for continuous 3D position, velocity and attitude measurements and GNSS Resilience and Integrity Technology (GRIT) for advanced positioning protection.

To learn more about how our firmware solutions can enhance your positioning, visit [novatel.com/products/firmware-options-pc-software/gnss-receiver-firmware-options](http://novatel.com/products/firmware-options-pc-software/gnss-receiver-firmware-options).

### Features

- Compact, lightweight form factor for easy integration in space constrained environments
- High position availability with multi-constellation, multi-frequency tracking and high data rate
- Flexible positioning modes include RTK, TerraStar PPP, SBAS and single point
- Spoofing detection, interference detection and mitigation provided by GRIT
- SPAN GNSS+INS technology integration bridges 3D positioning through GNSS outages in difficult environments
- Solder down module with effective thermal mitigation features

**Performance<sup>1</sup>**

**Signal tracking<sup>2</sup>**

GPS	L1 C/A, L1C, L2C, L2P, L5
GLONASS	L1 C/A, L2 C/A, L2P, L3
Galileo	E1, E5a, E5b, AltBOC
BeiDou	B1I, B1C, B2I, B2a, B2b
QZSS	L1 C/A, L1C, L1S, L2C, L5
NavIC (IRNSS)	L5
SBAS	L1, L5
L-Band	Up to 5 channels

**Horizontal position accuracy (RMS)**

Single point L1	1.5 m
Single point L1/L2	1.2 m
SBAS <sup>3</sup>	60 cm
DGPS	40 cm
TerraStar-L <sup>4</sup>	40 cm
TerraStar-C PRO <sup>4</sup>	2.5 cm
RTK	1 cm + 1 ppm
Initialization time < 10 s	
Initialization reliability > 99.9%	

**Maximum data rate**

Measurements	up to 100 Hz
Position	up to 100 Hz

**Time to first fix**

Cold start <sup>5</sup>	< 39 s (typical)
Hot start <sup>6</sup>	< 20 s (typical)

**Signal reacquisition**

L1	< 0.5 s (typical)
L2	< 1.0 s (typical)

**Time accuracy<sup>7</sup>** 20 ns RMS

**Velocity accuracy** < 0.055 m/s RMS

**Velocity limit<sup>8</sup>** 515 m/s

**Physical and electrical**

**Dimensions** 35 × 55 × 4 mm

**Weight** 12 g

**Power**

Input voltage	
VDD	+1.2 VDC +5%/-3%
VCC	+3.3 VDC ±5%

**Power consumption**

Dual frequency GNSS	0.9 W (typ.)
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**Signals to module interfaces**

GNSS RF in	1
UART	3
USB 2.0 (Device, 12 Mbit/s)	1
SPI (Host for IMU only)	1
PPS (Timemark)	1
Event in	2
Event out	1
CAN Bus	1
External LNA power control GPIO	2

**Minimum cascaded antenna gain<sup>9</sup>** 30 dB

**ESD**

Human body model	<±2 KV
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**Environmental**

**Temperature**

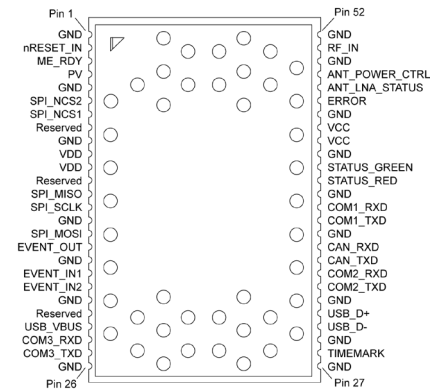
Operating	-40°C to +85°C
Storage	-55°C to +95°C

**Humidity** 95% non-condensing at 40°C

**Vibration**

Random	MIL-STD-810G (CH1), Method 514.7, Category 24 (20 g RMS)
Sinusoidal	IEC 60068-2-6 (5.0 g)

**Pin-out diagram**



**Features**

- Field upgradeable software
- Differential GPS positioning
- Differential correction support for RTCM 2.1, 2.3, 3.0, 3.1, 3.2, 3.3, CMR, CMR+, RTCA and NOVATELX
- Navigation output support for NMEA 0183 and detailed NovAtel ASCII and binary logs
- Receiver Autonomous Integrity Monitoring (RAIM)
- GLIDE and STEADYLINE smoothing algorithms
- Dual receiver ALIGN heading solution
- Multipath mitigating technology
- Pulse Per Second (PPS) output
- GNSS Resilience and Integrity Technology (GRIT)
- SPAN GNSS+INS technology capable with IMU integration via SPI

**Optional accessories**

- VEXXIS GNSS-500 and GNSS-800 series antennas
- Compact GNSS antennas
- OEM7500 Evaluation Kit
- NovAtel Application Suite

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 sources. 2. Model-configurable to track L5/E5a (all / Galileo) through L2 (GPS) or L3/E5b/B2 (GLONASS / Galileo / BeiDou) through L2 (GLONASS). See manual for details. 3. GPS only. 4. Requires a subscription to a TerraStar data service. Subscriptions available from NovAtel. 5. Typical value. No almanac or ephemerides and no approximate position or time. 6. Typical value. Almanac and recent ephemerides saved and approximate position and time entered. 7. Time accuracy does not include biases due to RF or antenna delay. 8. Export licensing restricts operation to a maximum of 515 meters per second, message output impacted above 500 m/s. 9. Cascaded antenna gain includes antenna cable loss. 30 db if the OEM7500 is receiving L-Band signals; 20 db if L-Band signals are not required. 35 dB for receivers using firmware prior to OEM 7.07.

**Contact Hexagon | NovAtel**

sales.nov.ap@hexagon.com 1-800-NOVATEL (U.S. and Canada) or 403-295-4900 | China: 0086-21-68882300 | Europe: 44-1993-848-736 | SE Asia and Australia: 61-400-883-601. For the most recent details of this product: novatel.com

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