

# 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.

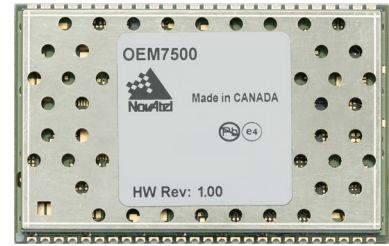
### Designed with performance and the future in mind

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 cm
RTK	1 cm + 1 ppm

### Maximum data rate

Measurements	up to 100 Hz
Position	up to 100 Hz

### Time to first fix<sup>5</sup>

Cold start	< 34 s (typical)
Hot start	< 20 s (typical)

### Signal reacquisition

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

### Time accuracy<sup>6</sup>

	< 5 ns RMS
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### Velocity accuracy

	< 0.03 m/s RMS
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### Velocity limit<sup>7</sup>

	600 m/s
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## Physical and electrical

### Dimensions

	35 × 55 × 4 mm
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### Weight

	12 g
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### Input voltage

VDD	+1.2 VDC +5%/-3%
VCC	+3.3 VDC ±5%

### Power consumption

GPS L1	0.9 W (typ.)
GPS/GLONASS L1/L2	1.3 W (typ.)
All frequencies/All constellations with L-Band	1.5 W (typ.)

### 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>8</sup>

	30 dB
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### ESD

Human body model	<±2 KV
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## Environmental

### Temperature

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

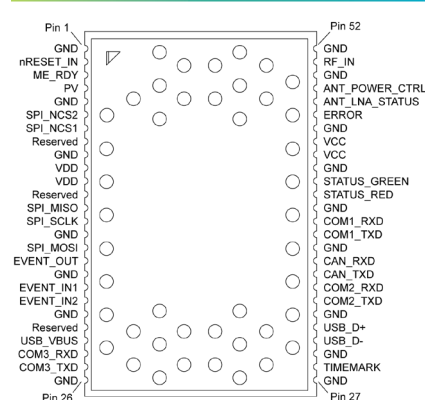
### Humidity

	95% non-condensing at 40°C
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### 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 GNSS 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

- OEM7500 Evaluation Kit

1. Typical values under ideal, open sky conditions.

2. Signal availability based on model configuration. See manual for details.

3. GPS only.

4. Requires a subscription to TerraStar correction service.

5. Cold start: no almanac or ephemerides and no approximate position or time.

Hot start: almanac and recent ephemerides saved and approximate position and time entered.

6. Time accuracy does not include biases due to RF or antenna delay.

7. Export licensing restricts operation to a maximum of 600 m/s, message output impacted above 585 m/s.

8. 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

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