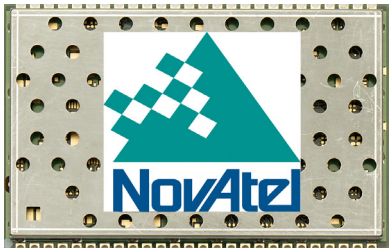
OEM7500

Compact, Multi-Frequency GNSS Module



High Precision GNSS, Most Compact Size

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

Designed With Performance And The Future In Mind

The OEM7500 is capable of tracking GPS, GLONASS, Galileo, BeiDou, QZSS and NavIC (IRNSS). The consistent and high performance positioning, along with the flexibility and upgradable features of this receiver, makes this the optimal GNSS receiver for autonomous applications.

Designed For Flexibility

The OEM7500 is scalable to offer sub-meter to centimeter level positioning. Additional options include RTK or TerraStar PPP corrections for centimeter level real-time positioning, and SPAN GNSS+INS technology for continuous 3D position, velocity and attitude measurements.

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

Benefits

- Compact, lightweight form factor
- Easy to use interface simplifies integration
- Low power consumption for power constrained, high performance positioning applications

Features

- Flexible positioning modes include RTK, TerraStar PPP, SBAS and single point
- Multi-constellation signal tracking for higher availability
- Multi-frequency enables high accuracy
- Advanced interference visualization and mitigation features
- SPAN GNSS+INS technology integration bridges 3D positioning through GNSS outages in difficult environments
- Solder down module with effective thermal mitigation features

Performance[1]

Channel Count

181 Channels

Signal Tracking[2]

GPS	L1, L2, L5
GLONASS	L1, L2
Galileo	E1, E5a, E5b, AltBOC
BeiDou	B1I, B1C, B2I, B2a, B2b
QZSS	L1, L1C, L2C, L5
NavIC (IRNSS)	L5
SBAS	WAAS, EGNOS, MSAS, GAGAN, QZSS
L-Band	Up to 3 channels

Horizontal Position Accuracy (RMS)

Single Point L1	1.5 m
Single Point L1/L2	1.2 m
SBAS[3]	60 cm
DGPS	40 cm
TerraStar-L[4]	40 cm
TerraStar-C PRO[4]	2.5 cm
TerraStar-X[4]	2.0 cm
RTK	1 cm + 1 ppm
Initialization time	< 10 s
Initialization reliability	> 99.9%

Maximum Data Rate

Measurements	up to 20 Hz
Position	up to 20 Hz

Time to First Fix

Cold start[5]	< 39 s (typical)
Hot start[6]	< 20 s (typical)

Signal Reacquisition

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

Time Accuracy[7] 20 ns RMS

Velocity Accuracy < 0.055 m/s RMS

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 1.5 W (typ.)

Signals to Module Interfaces

GNSS RF In	1
UART Up to	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[8] 30 dB

ESD

Human body model <±2 KV

Environmental

Temperature

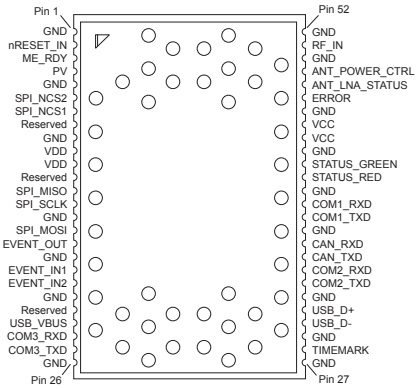
Operating	-40°C to +85°C
Storage	-55°C to +95°C

Humidity 95% non-condensing at 40°C

Vibration

Random	MIL-STD-810G (CH1), Method 514.7, Category 24, (7.7 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
- Interference Toolkit
- SPAN GNSS+INS technology capable with IMU integration via SPI

Optional Accessories

- OEM7500 Evaluation Kit

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 subscription to 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. Cascaded antenna gain includes antenna cable loss. 35 dB for receivers using firmware prior to OEM 7.07.

Contact Hexagon | NovAtel

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For the most recent details of this product: novatel.com

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