



Flexible Positioning Options Provided on NovAtel's Most Advanced OEM6® Receiver

Benefits

Current and upcoming GNSS signal support ensures future proofing of your GNSS products

Powerful and improved performance to work with your demanding applications

Application Programming Interface (API) reduces hardware requirements and complexity improving your ROI and time to market

SPAN® ready for rapid integration in GNSS + Inertial systems

Multiple communication interfaces provide flexible and fast integration

Features

240 channels to support all constellations

Advanced interference rejection for robust operation in harsh interference environments

4 GB onboard memory for data logging and easy storage and retrieval

Up to 100 Hz data output to meet your high dynamic needs

The Secret to Positioning Success

NovAtel® designs, manufactures and sells high precision OEM Global Navigation Satellite System (GNSS) positioning technology. Developed for efficient and rapid integration, our GNSS products have set the standard in quality and performance for over 20 years. State-of-the-art, lean manufacturing facilities in our North American headquarters produce the industry's most extensive line of OEM receivers, antennas and subsystems. All of our products are backed by a team of highly skilled design and customer support engineers, ready to answer your integration questions. For unsurpassed quality, product selection and engineering know-how, choose NovAtel.

OEM638 Delivers Scalable Configuration

The OEM638™ is the most advanced GNSS receiver within NovAtel's OEM6 series of products. From standalone metre-level to AdVance® RTK centimetre-level positioning, the fully featured OEM638 provides the flexibility to meet your unique positioning needs. With 240 channels and comprehensive tracking and positioning with all current and planned GNSS signals, the OEM638 is field upgradeable, eliminating the need for future hardware changes. The unprecedented user configurability of the OEM638 makes it an ideal solution for reference station, timing and a wide range of precision positioning applications.

Easy System Integration

The OEM638 is designed and built with a focus on product quality and ease of integration. With robust interference rejection, a powerful API, 4 GB onboard data storage, wide input voltage and a host of interface options, integration is simplified and overall system costs are reduced. Combined with NovAtel's outstanding customer support, the OEM638 greatly improves your time to market and return on investment.

If you require more information about our receivers, visit novatel.com/products/gnss-receivers/oem-receiver-boards



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Performance¹

Channel Configuration

240 Channels ²	
Signal Tracking	
GPS	L1, L2, L2C, L5
GLONASS	L1, L2, L2C
Galileo	E1, E5a, E5b, AltBOC
BeiDou ³	B1, B2
SBAS ⁴	
QZSS	L1, L2C, L5
L-Band	

Horizontal Position Accuracy (RMS)

Single point L1	1.5 m
Single point L1/L2	1.2 m
SBAS	0.6 m
DGPS	0.4 m
L-Band	
VBS	0.6 m
XP	0.15 m
HP	0.1 m
RT-2 [®]	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

Maximum Data Rates

GPS Measurement	Up to 100 Hz
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Time to First Fix⁵

Cold start	<50 s typical
Hot start	<35 s typical

Signal Reacquisition

L1	<0.5 s (typical)
L2/L5	<1.0 s (typical)

Velocity Accuracy⁶

0.03 m/s RMS

Time Accuracy⁷

20 ns RMS

Measurement Precision (RMS)

Fully independent code and carrier measurements:

	GPS	GLO
L1 C/A code	4 cm	8 cm
L1 carrier phase	0.5 mm	1.0 mm
L2 P(Y) code ⁸	8 cm	8 cm
L2 carrier phase ⁸	1.0 mm	1.0 mm
L2C code ⁹	8 cm	8 cm
L2C carrier phase ⁹	0.5 mm	0.5 mm
L5 code	3 cm	-
L5 carrier phase	0.5 mm	-

Physical and Electrical

Dimensions

85 x 125 x 14.3 mm

Weight

84 g

Power

Input voltage	3.3 V +5%/-3% or 4.5-36 V
Power consumption ¹⁰	2.8 W

Antenna Port Power Output

Output voltage	3.3 V ±5% or 5 V ±5% or external
Maximum current	200 mA

Connectors

Main	40-pin dual row male header
Expansion	100-pin
Antenna input	MMCX female
External oscillator input	MMCX female

Communication Ports

Serial Ports

RS-232/422	2
CMOS Level UART	3
IMU Port	1

USB 2.0 High Speed (only)

Device	1
Host	2
Ethernet	1
CANBus	2
Event Input	4
Event Output	7

Environmental

Temperature

Operating	-40°C to +85°C
Storage	-40°C to +95°C
Humidity	95% non-condensing

Vibration (operating)

Random vibrate	MIL-STD 810G (7.7 g RMS)
Sinusoidal	IEC 60068-2-6 (5 g)
High Vibration Option	MIL-STD 810G (20 g RMS)

Shock

Operating	MIL-STD 810G (40 g)
Non-operating	MIL-STD 810G (75 g)
Bump	ISO 9022-31-06 (25 g)

Optional Accessories

- GPS-700 series antennas
- ANT series antennas
- RF Cables
- GrafNav/GravNet[®]

Features

- 4 GB onboard memory
- Field-upgradeable firmware and field-upgradeable software models
- Up to 100 Hz measurement or position data rate
- PAC multipath mitigating technology
- Robust interference rejection for all GNSS signals
- Differential correction support for RTCM 2.1, 2.3, 3.0, 3.1, CMR, CMR+ and RTCA
- Navigation output support for NMEA-0183 and detailed NovAtel ASCII and binary logs
- Application Programming Interface (API)

NovAtel Connect

NovAtel Connect is an intuitive configuration and visualization tool suite allowing comprehensive control of the OEM638 product.

- Easy to use wizards guide you through positioning mode configuration and raw data collection
- Detailed graphical windows display comprehensive status information
- Plan view and playback files allow you to monitor the positioning and configuration history
- Remotely control and monitor the OEM638 over the internet
- Available on Windows 2000, Windows XP and Windows 7 platforms



Version 2 - Specifications subject to change without notice.

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For the most recent details of this product:

<http://www.novatel.com/products/gnss-receivers/oem-receiver-boards/oem6-receivers/>

¹ Typical value. Performance specifications subject to external factors including US DOD operational performance, atmospheric conditions, multipath, interference, etc. length, multipath effects and the presence of intentional or unintentional interference sources.

² Tracks up to 120 L1/L2 satellites. Some configurations may have reduced channel count.

³ Firmware update required.

⁴ GPS only.

⁵ Cold start with no almanac, ephemerides and no approximate time or position. Warm start with almanac & ephemerides saved, approximate time and position entered.

⁶ Export licensing restrictions limit maximum velocity to 515 m/s.

⁷ Time accuracy does not include biases due to antenna or RF delay.

⁸ L2P for GLONASS.

⁹ L2 C/A for GLONASS.

¹⁰ Power consumption values for GPS L1/L2 with Ethernet disabled.