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# Receivers OEM638™

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## FLEXIBLE POSITIONING OPTIONS PROVIDED ON NOVATEL'S MOST ADVANCED OEM6® RECEIVER

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### OEM638 DELIVERS SCALABLE CONFIGURATION

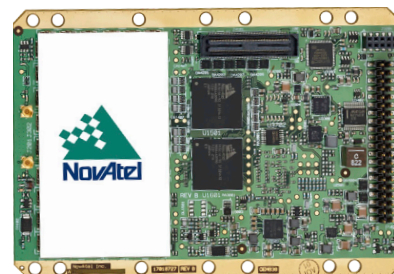
The OEM638 is the most advanced Global Navigation Satellite System (GNSS) receiver within NovAtel's OEM6 series of products. From standalone metre-level to centimetre-level positioning, the fully featured OEM638 provides the flexibility to meet your unique positioning needs. With 240 channels and comprehensive tracking and positioning with all current and planned GNSS systems, 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 Application Programming Interface (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.

### THE SECRET TO POSITIONING SUCCESS

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.



### BENEFITS

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- + 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+INS
- + Multiple communication interfaces provide flexible and fast integration

### FEATURES

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- + 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

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If you require more information about our receivers, visit [www.novatel.com/products/gnss-receivers/oem-receiver-boards/](http://www.novatel.com/products/gnss-receivers/oem-receiver-boards/)

# OEM638™

## PERFORMANCE<sup>1</sup>

### Channel Configuration

240 Channels<sup>2</sup>

### Signal Tracking

GPS L1, L2, L2C, L5  
GLONASS L1, L2  
Galileo E1, E5a, E5b, AltBOC  
BeiDou<sup>3</sup> B1, B2  
SBAS  
QZSS L1, L2C, L5  
L-Band

### Horizontal Position Accuracy (RMS)

Single point L1 1.5 m  
Single point L1/L2 1.2 m  
NovAtel CORRECT™  
» SBAS<sup>4</sup> 0.6 m  
» DGPS 0.4 m  
» PPP<sup>5</sup> 4 cm  
» RT-2® 1 cm + 1 ppm  
Initialization time <10 s  
Initialization reliability >99.9%

### 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 mm
L2 P(Y) code <sup>6</sup>	8 cm	8 cm
L2 carrier phase <sup>6</sup>	1 mm	1 mm
L2C code <sup>7</sup>	8 cm	8 cm
L2C carrier phase <sup>7</sup>	1 mm	1 mm
L5 code	3 cm	-
L5 carrier phase	0.5 mm	-

### Maximum Data Rate

Measurements 100 Hz  
Position 100 Hz

### Time to First Fix

Cold start<sup>8</sup> <50 s typical  
Hot start<sup>9</sup> <35 s typical

### Signal reacquisition

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

### Time Accuracy<sup>10</sup> 20 ns RMS

### Velocity Accuracy

0.03 m/s RMS

### Velocity Limit<sup>11</sup> 515 m/s

## PHYSICAL & ELECTRICAL

### Dimensions

85 × 125 × 14.3 mm

**Weight** 84 g

### Power

Input voltage 3.3 V +5%/-3% or 4.5-36 V  
Power consumption<sup>12</sup> 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 MIL-STD 810G (7.7 g RMS)  
Sinusoidal IEC 60068-2-6 (5 g)  
High Vibration Option MIL-STD 810G (20 g RMS)

### Acceleration (operating)

MIL-STD 810G, Method 513.6 Procedure II (16 g)

**Bump** ISO 9022-31-06 (25 g)

### Shock

Operating MIL-STD 810G (40 g)  
Survival (75 g)

## 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)

## OPTIONAL ACCESSORIES

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

## NOVATEL CONNECT™

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

- Easy to use wizards for positioning mode configuration and raw data collection
- Detailed GUI for comprehensive status information
- Plan view and playback files allow monitoring the positioning and configuration history
- Remotely control and monitor the OEM638 over the internet
- Windows XP and Windows 7 platforms

For the most recent details of this product: [www.novatel.com/products/gnss-receivers/oem-receiver-boards/oem6-receivers/oem638/](http://www.novatel.com/products/gnss-receivers/oem-receiver-boards/oem6-receivers/oem638/)

## novatel.com

sales@novatel.com

1-800-NOVATEL (U.S. and Canada) or 403-295-4900

China  
0086-21-54452990-8011

Europe 44-1993-848-736

SE Asia and Australia  
61-400-883-601

**Version 7** Specifications subject to change without notice.

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1. Typical value. Performance specifications subject to external factors including US DOD operational performance, atmospheric conditions, interference, baseline 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. Requires subscription to TerraStar-C data service. Subscriptions available from NovAtel.

6. L2P for GLONASS.  
7. L2 C/A for GLONASS.  
8. Cold start with no almanac, ephemerides and no approximate time or position.  
9. Hot start with almanac & ephemerides saved, approximate time and position entered.  
10. Time accuracy does not include biases due to antenna or RF delay.  
11. Export licensing restricts operation to a maximum of 515 metres per second.  
12. Power consumption values for GPS L1/L2 with Ethernet disabled.

