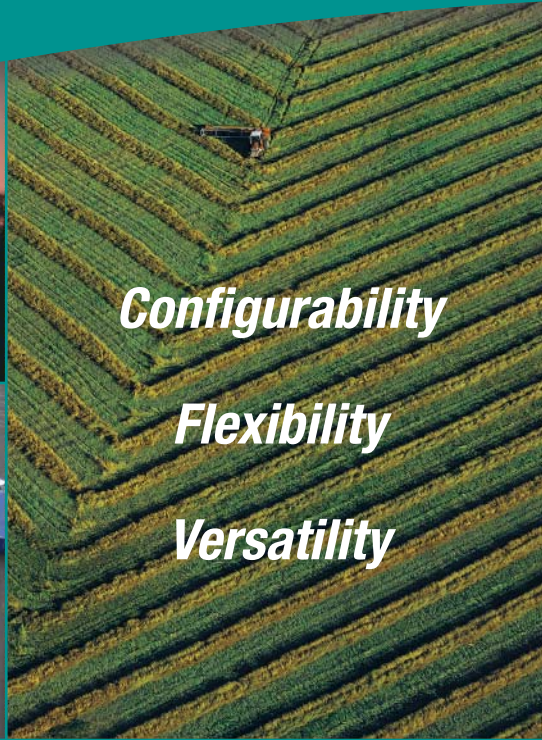


NovAtel's OEMV[®] Receiver Firmware

Delivering Superior Functionality



Configurability

Flexibility

Versatility



Advanced firmware to meet all your application needs

www.novatel.com

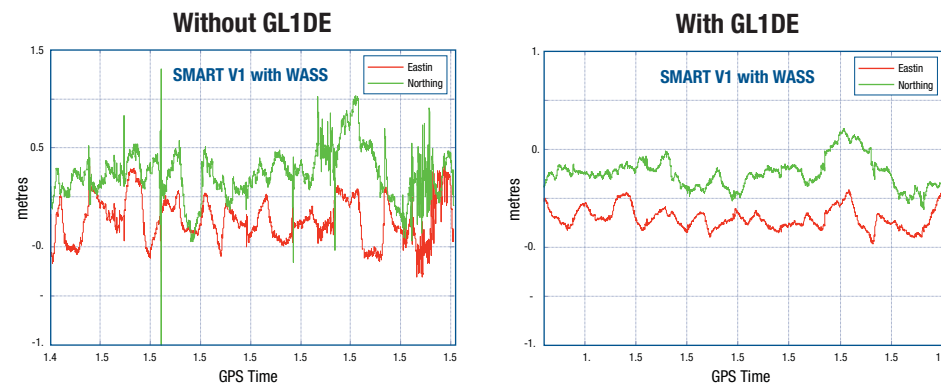


GL1DE™ – Pass to Pass Repeatability for Smoother Positioning

NovAtel's GL1DE technology offers users of autonomous L1 code positioning superior stability that was previously only available for dual frequency carrier phase solutions. GL1DE technology combines L1 code and phase data to produce a positioning solution well-suited for applications such as agricultural guidance, where pass-to-pass repeatability is critical. Using GL1DE, users will see significantly fewer positioning jumps and less than 1cm position differences from one epoch to the next. GL1DE works in all code positioning modes, including single point, SBAS, and OmniSTAR; as well as with CDGPS, the Canadian correction service supported only by NovAtel receivers.



**GL1DE Offers Smoother Position Guidance!
Ideal for Agriculture and Machine Control**



Features and Benefits

- Smoothing algorithm gives you a much straighter track with less volatile position jumps
- Available for Single Point, SBAS, CDGPS, and OmniSTAR position modes
- Ideal for single frequency receivers

ALIGN™ – NovAtel's Heading Solution

NovAtel's ALIGN heading technology generates distance and bearing information between a "Master" and one or more "Remote" receivers. This feature is ideal for customers wanting relative directional heading, separation heading between two objects, or heading information with moving base and pointing applications. Heading applications can be applied over various markets, including machine control, unmanned vehicles, marine, and agriculture markets.



ALIGN is offered on all existing OEMV hardware platforms including single and dual frequency systems. This provides users with the flexibility to choose the hardware that is best suited for their application. ALIGN also functions for GPS-only and GPS + GLONASS models and supports a 10Hz heading output rate.

Table: ALIGN Fixed Heading RMS Accuracy

	0.5m Baseline	1m Baseline	2m Baseline	10m Baseline
Single Frequency – Fixed Heading Accuracy	1.6 degrees	0.8 degrees	0.4 degrees	0.08 degrees
Dual Frequency – Fixed Heading Accuracy	1.2 degrees	0.6 degrees	0.3 degrees	0.06 degrees

Features and Benefits

- Precise heading solution for various applications
- GLONASS assisted solution provides more satellite availability
- Available for both single and dual frequency receivers

AdVance™ RTK – Precise Position Solutions through DGPS

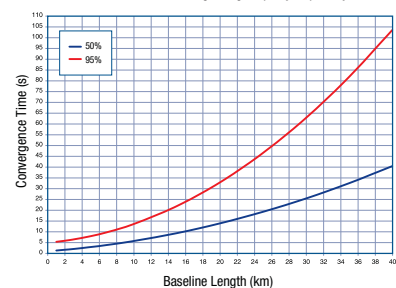
NovAtel's industry leading RTK engine provides rapid centimeter-level positioning. The dual frequency RT-2® and single frequency RT-2 L1TE enhance the survey-grade performance of NovAtel's OEMV GNSS receiver family. The RT-20™ option also provides code and carrier based decimeter positions.

RT-2 is customized for OEMV hardware and focuses on fast initialization times and position accuracy over a variable range of usable baseline lengths. An independent quality check indicates whether a fixed position solution has been verified, ensuring a higher level of robustness and a more reliable position solution.

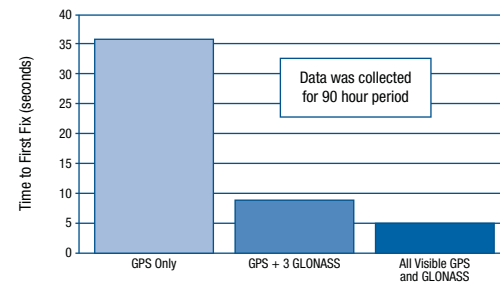
NovAtel's RT-2 L1TE offers users of single frequency GPS and GLONASS positioning, a centimeter-level RTK solution for baseline lengths of up to 3km. RT-2 L1TE utilizes both L1 GPS and L1 GLONASS measurements to resolve ambiguities and form code-based corrections, making use of the wider satellite availability of multiple constellations.



RT-2 Time Integer Fix over Baseline Length
AdVance RTK - Time to Integer Narrowlane vs. Baseline Length
Time after five satellites are tracking with good parity - Open sky conditions



RT-2 L1TE Time to First Fix Relationship with GLONASS Assistance



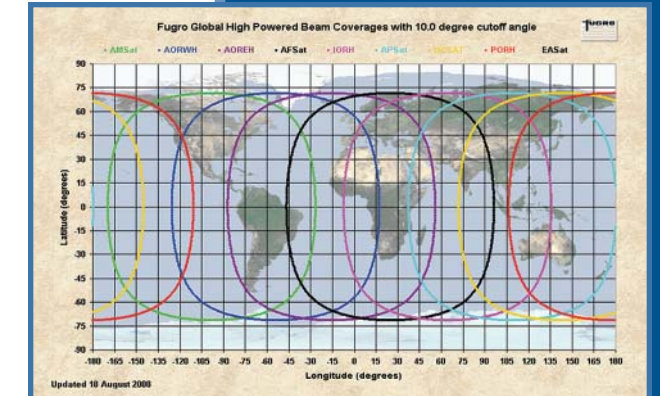
Features and Benefits

- Rapid initialization with RT-2
- Centimeter level accuracy
- Variable baseline lengths
- RT-2 L1TE provides survey grade accurate positions at a lower cost
- GLONASS option provides more satellite availability
- Robust and reliable position solution

L-Band Correction Services

OmniSTAR

OmniSTAR's DGPS enhanced data via satellite offers world-wide coverage of sub-meter to decimeter level accuracy for OEMV-1 and OEMV-3 products. A robust network of 710 global reference stations and 3 network control centers makes OmniSTAR a highly reliable positioning service for industries such as agricultural machine guidance, aerial photogrammetry, unmanned aerial vehicles (AUV), and many other applications. NovAtel offers OmniSTAR's VBS, HP, and XP subscriptions for the OEMV product family.



CDGPS

CDGPS is a wide area DGPS service initially developed for the Canadian positioning market. This service is offered as a free utility with no recurring subscriptions charges, to support and stimulate the Canadian industry. It appeals to end-users requiring affordable accurate positioning data for real-time applications.

Features and Benefits

- CDGPS provides North American coverage from Mexico to the high Arctic and delivers superior performance in foliated conditions
- Sub-meter accuracy with CDGPS
- Sub-meter or decimeter accuracy available with OmniSTAR
- 24 x 7 operations with built-in network redundancy
- OmniSTAR provides global correction coverage



Precise thinking

	OEMV-1 Product	OEMV-1G Product	OEMV-2 Product	OEMV-3 Product
GPS-L1	14-Channels	14-Channels	14-Channels	14-Channels
GPS-L2			14-Channels	14-Channels
GLONASS-L1		12-Channels	12-Channels	12-Channels
GLONASS-L2			12-Channels	12-Channels
SBAS	2-Channels	2-Channels	2-Channels	2-Channels
L-Band	✓			✓
RT-20	✓	✓	✓	✓
RT-2			✓	✓
RT-2 L1TE		✓	✓	✓
CDGPS	✓			✓
OmniSTAR VBS	✓			✓
OmniSTAR HP				✓
OmniSTAR XP				✓
Maximum Position Update Rate	50 Hz	50 Hz	50 Hz	50 Hz
Maximum Measurement Update Rate	50 Hz	50 Hz	50 Hz	50 Hz
Raw Data Log	✓	✓	✓	✓
API	✓	✓	✓	✓
SPAN Support (50 Hz IMU and IGI Higher Rate IMU)			✓	✓
SPAN Support (200 Hz IMU and IGI Higher Rate IMU)				✓
GL1DE	✓	✓	✓	✓
ALIGN		✓	✓	✓

Horizontal Position Accuracy¹

Position Type	Horizontal Accuracy
Single Point L1	1.8m
Single Point L1/L2	1.5m
SBAS	0.6m
CDGPS	0.6m
DGPS	0.45m
OmniSTAR	
VBS	0.70m
XP	0.15m
HP	0.10m
RT-20	0.2m
RT-2 L1TE	1.5cm + 1ppm
RT-2	1.0cm + 1ppm

¹ Typical values. Performance specifications subject to GPS system characteristics, US DOD operational degradation, ionospheric and tropospheric conditions, satellite geometry, baseline length, multipath effects and the presence of intentional or unintentional interference sources

OEMV Supported Message Formats

RTCA, RTCM Version 2.3, Version 3.0, CMR, CMR+

View our application white papers at:
<http://www.novatel.com/products/whitepapers.htm>
 for further firmware feature information.

NovAtel, OEMV and RT-2 are registered trademarks of NovAtel Inc. GL1DE, AdVance RTK, RT-20 and ALIGN are trademarks for NovAtel Inc.

