

TERRASTAR® CORRECTION SERVICES

GLOBAL CORRECTION SERVICES



RELIABLE GNSS CORRECTIONS FOR LAND AND AIRBORNE APPLICATIONS.

The future is racing towards you at a speed of 2 centimeters in under a minute – and that’s really going to help you go places. The newest addition to the TerraStar® Correction Services portfolio from NovAtel®, part of Hexagon’s Positioning Intelligence division, is TerraStar-X™, delivering RTK From the Sky™ performance with positioning accuracy of 2 centimeters in under a minute. TerraStar-X joins TerraStar-L™ and TerraStar-C PRO™ to complete the correction services portfolio and deliver sub-meter to centimeter-level positioning accuracy to NovAtel receivers.

TerraStar is available for use in a variety of applications including precision agriculture, construction, survey, UAV and ground truth systems. With a range of options to fit your needs, TerraStar is as precise as you need to be.

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SCALABLE SOLUTIONS TO MEET YOUR MOST CHALLENGING PRECISE POSITIONING NEEDS.

Long-trusted as a strategic partner for high-precision positioning technology, NovAtel® offers a complete solution using TerraStar® Correction Services delivered directly to your GNSS receiver. Combining over 20 years of GNSS receiver expertise with the highest reliability clock and orbit data from our world-wide reference network means you have assured, reliable positioning anywhere, anytime.



Here's How we Deliver Centimeter-Level Positioning Accuracy.

- 1) Superior, independently owned and operated GNSS reference networks provide the raw data to generate corrections.
- 2) Corrections processing generates a data set that can be delivered globally to any NovAtel receiver.
- 3) Geographically separated, independent network control centers ensure over 99.9% availability of corrections.
- 4) Satellite or cellular delivery of the corrections provides flexible options for any application.
- 5) The high-rate, low-latency corrections provide NovAtel receivers with centimeter-level accuracy for any application.

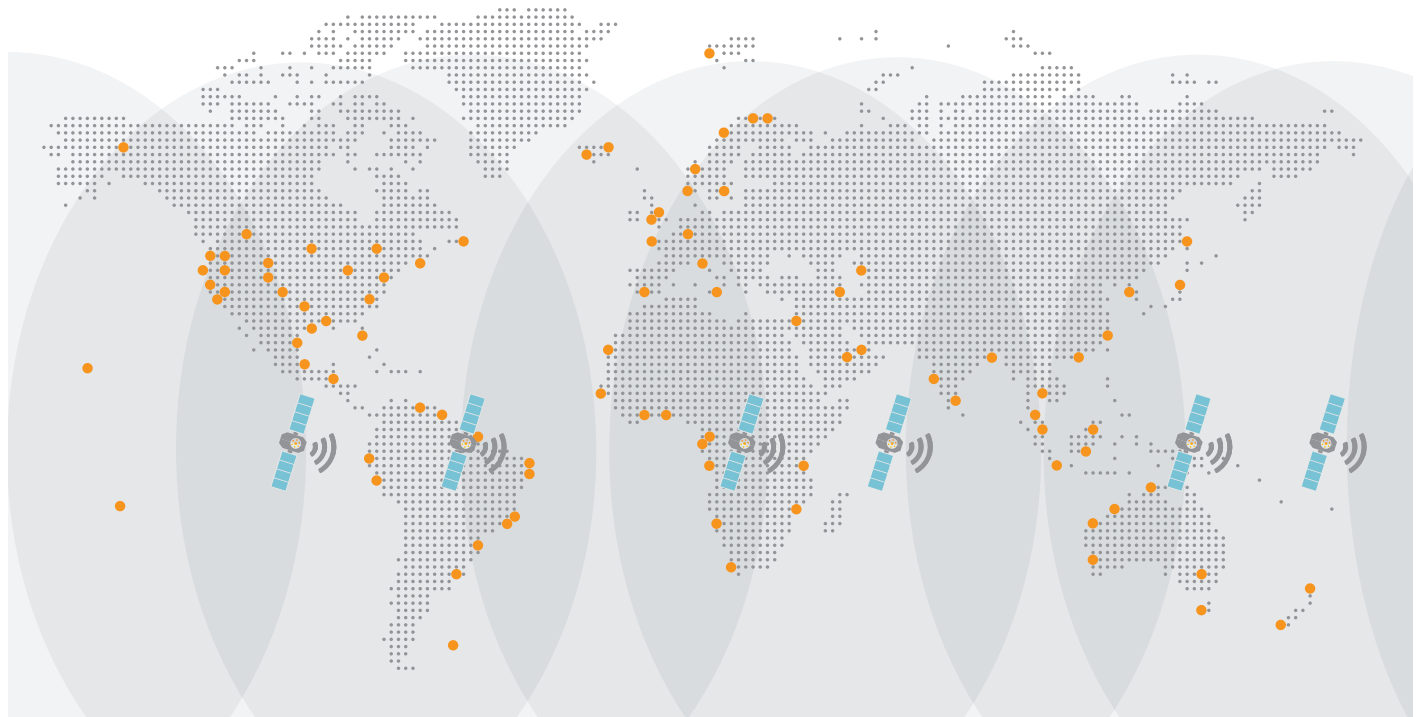
A seamlessly integrated solution that delivers global coverage in any environment.

SUPERIOR PERFORMANCE, GLOBAL AVAILABILITY AND UNCOMPROMISED RELIABILITY.

We are pioneers and global leaders in satellite-based correction services with our high-reliability and availability TerraStar® services. Superior GNSS reference stations, redundant system architecture and continuous quality monitoring contribute to an exceptional service that is available anytime, anywhere. TerraStar Correction Services transmit correction data in real-time, with minimal latency, directly to your NovAtel® receiver via satellite link or Internet connection to provide a robust solution, no matter where you are in the world.

TerraStar System Advantages:

- Complete global coverage from 90+ independently owned and operated GNSS reference stations.
- 3 geographically separated Network Control Centers ensuring over 99.9% availability.
- Ownership over end-to-end correction generation process to provide industry-leading data quality.
- Broadcast over 6 geostationary communication satellites for overlapping global coverage.
- Corrections transmitted over a minimum of 3 beams (Triple-L Band tracking) directly to end user so you're never without correction data.
- 24/7/365, all-weather correction services combined with NovAtel's superior OEM receiver technology allows continuous operation even through correction outages up to 5 minutes.
- Online subscription and account management website for easy activation when you need it.
- Scalable service levels and flexible subscription plans for any application.
- A seamlessly integrated solution from a single source including GNSS hardware and corrections.



Global coverage delivers 99.9% availability.

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EXTREME SPEED. EXACT ACCURACY. EXTRAORDINARY RELIABILITY.

TerraStar-X™ – RTK From the Sky™. Accuracy of 2 Centimeters in Under a Minute.

TerraStar-X uses the latest Precise Point Positioning (PPP) algorithms and the world's largest reference station network to deliver convergence to 2 centimeter accuracy in under a minute. You get the fast convergence and accuracy of Real Time Kinematic (RTK) with the convenience and reliability of satellite delivery – that's RTK From the Sky performance.

TerraStar-X offers the best of both worlds by delivering corrections via satellite to ensure maximum uptime without the hassle of base station infrastructure or cellular plans. It operates seamlessly with TerraStar-C PRO™ to ensure continuous centimeter-level accuracy for customers operating on the edges of the coverage area.



TerraStar-X delivers RTK From the Sky performance – 2 centimeter accuracy in under a minute.

TerraStar-X Benefits

- **Extreme speed.** Converges in under a minute, significantly reducing wait time.
- **Exact accuracy.** 2 cm RMS horizontal accuracy. 2 cm (sub-inch) pass-to-pass accuracy for agriculture applications.
- **Extraordinary reliability.** 3 geographically separated Network Control Centers ensure over 99.9% availability.
- **Exceptional value.** No cellular plans needed.
- **Excellent peace-of-mind.** No worrying about RTK network coverage and outages.
- **Exclusive services.** Automatic fallback and seamless operation with existing TerraStar-C PRO services.



Green area represents approximate TerraStar-X coverage area, with TerraStar C-PRO available outside the green area.

TERRASTAR® OPTIONS FIT YOUR PRECISION NEEDS.

TerraStar premium GNSS corrections combined with OEM receiver technology from NovAtel® offers sub-meter to centimeter-level positioning for land, unmanned and airborne applications globally.

TerraStar multi-constellation corrections are available globally in four service levels, depending on your hardware and GNSS performance requirements.

- TerraStar-X™ on OEM7® (2 cm accuracy < 1 minute).
- TerraStar-C PRO™ on OEM7 (2.5 cm accuracy < 18 minutes).
- TerraStar-C™ on OEM6® (4 cm accuracy < 45 minutes).
- TerraStar-L™ on OEM6/OEM7 (40 cm accuracy < 5 minutes).

TerraStar-C PRO is a globally available service that delivers centimeter-level positioning with faster initial convergence using GPS, GLONASS, Galileo and BeiDou corrections providing greater accuracy, availability and reliability than ever before. TerraStar corrections are available as a termed subscription directly from NovAtel.

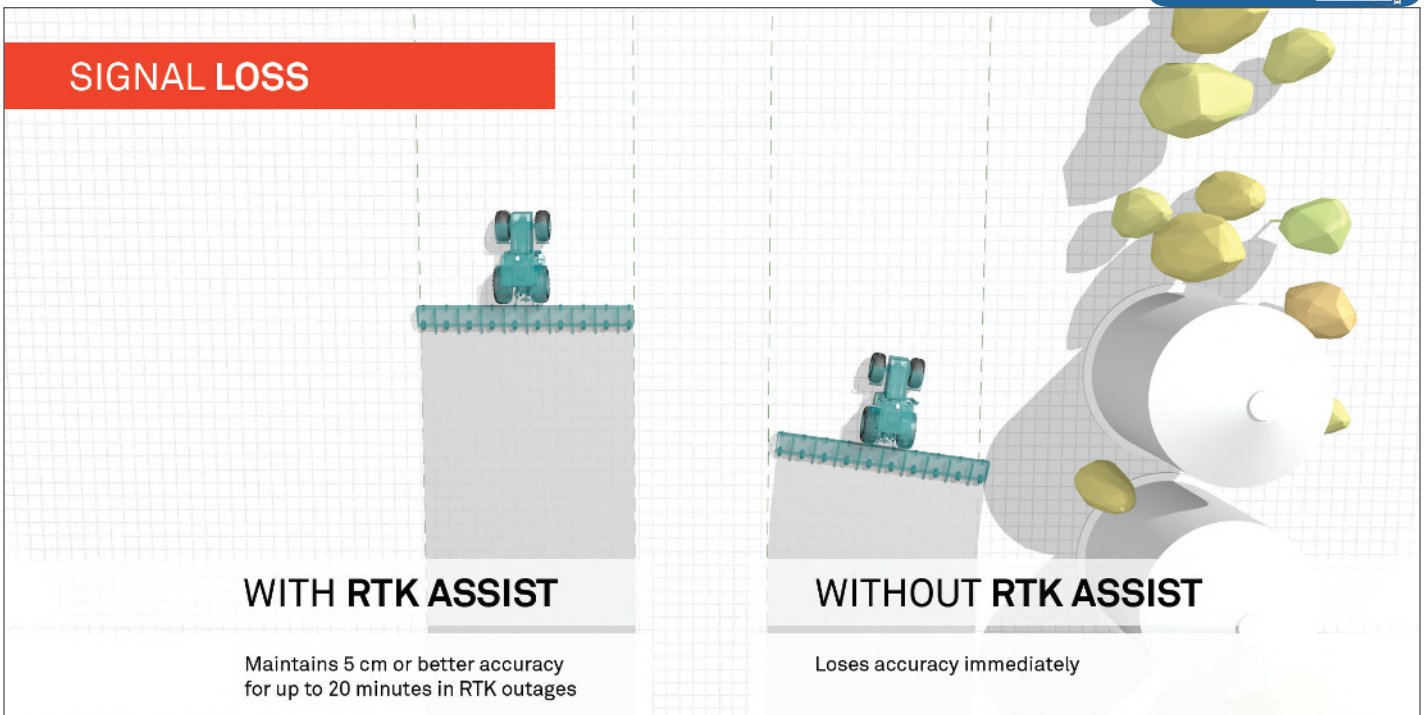
SERVICE LEVELS

PERFORMANCE	TerraStar-X	TerraStar-C PRO	TerraStar-C	TerraStar-L ¹
Horizontal Accuracy	2 cm (RMS) 2.5 cm (95%)	2.5 cm (RMS) 3 cm (95%)	4 cm (RMS) 5 cm (95%)	40 cm (RMS) 50 cm (95%)
Vertical Accuracy	5 cm (RMS)	5 cm (RMS)	6.5 cm (RMS)	60 cm (RMS)
Convergence Time	< 1 min	< 18 min	< 45 min	< 5 min
Supported GNSS	GPS/GLO	GPS/GLO/GAL/BDS	GPS/GLO	GPS/GLO
Supported Platform	OEM7	OEM7	OEM6	OEM7, OEM6
Coverage Area	Regional	Global	Global	Global

1. TerraStar-L is available on OEM628™, FlexPak6™, SMART6-L™, SMART2™ and all OEM7 products.

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MAINTAIN CENTIMETER-LEVEL ACCURACY EVEN WHEN RTK GOES OUT.

For Ultra-Precise Applications, Sometimes Only RTK Will Do. TerraStar® Can Make Any RTK Solution More Robust and Reliable.

Powered by TerraStar, RTK ASSIST™ enables NovAtel® receivers to maintain centimeter-level accuracy during RTK data outages due to radio signal blind spots or interruptions in cellular network connectivity. RTK ASSIST seamlessly works in the background until corrections are recovered, a timeout is reached, or position accuracy degrades beyond a defined threshold.

NovAtel offers scalable solutions including RTK ASSIST and RTK ASSIST PRO™ to meet different application needs:

- RTK ASSIST maintains centimeter-level positioning for up to 20 minutes of RTK correction outages.
- RTK ASSIST PRO unlocks unlimited RTK assistance, maintaining centimeter-level accuracy for longer RTK correction outages.
- RTK ASSIST PRO also provides independent centimeter-level positioning enabling operations in areas where there is no RTK base or network coverage.

Benefits

- Extended RTK operation, which improves productivity by reducing the downtime caused by RTK correction signal outages and cellular signal interruptions.
- Automatically compensates for datum differences and other biases to the RTK solution.
- Delivers corrections over L-Band with no additional hardware to end users worldwide.



NovAtel®, part of Hexagon, is a global technology leader, pioneering end-to-end solutions for assured positioning on land, sea, and air. NovAtel designs, manufactures and sells high-precision positioning technology developed for efficient and rapid integration. Its solutions are empowering intelligent positioning ecosystems in vital industries that depend on the ability to tackle the most complex challenges in the most demanding environments. Learn more at novatel.com.

NovAtel is part of Hexagon's Positioning Intelligence division, which also includes VERIPOS and AutonomouStuff.

Hexagon is a global leader in sensor, software and autonomous solutions that are putting data to work to boost efficiency, productivity, and quality across industrial, manufacturing, infrastructure, safety, and mobility applications. Hexagon (Nasdaq Stockholm: HEXA B) has approximately 20,000 employees in 50 countries and net sales of approximately 3.8bn EUR. Learn more at hexagon.com and follow us @HexagonAB.

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