SMART7-S

GNSS SMART antenna featuring powerful OEM7 and SPAN technology

Maximum performance
The OEM7 receiver and VEXXIS antenna inside the SMART7-S allow it to receive GPS, GLONASS, BeiDou, Galileo and QZSS signals. Multiple GNSS signals deliver better satellite availability under variable terrain and environmental conditions. The SMART7-S also receives L-Band signals providing easy access to the world-wide correction signals provided by TerraStar.

Integrated inertials
The SMART7-S includes deeply-coupled GNSS+Inertial Navigation System (INS) SPAN technology from Hexagon | NovAtel and is optimized for the unique dynamics commonly experienced in demanding applications like precision agriculture and machine control. SPAN technology provides accurate attitude information and terrain compensation that can simplify the development of vehicle guidance systems and bridge GNSS signal outages caused by trees, buildings and other obstacles.

ALIGN
ALIGN technology from NovAtel is optionally supported when combined with a second SMART7 or NovAtel receiver to provide relative heading and position that can be used to guide accessory vehicles.

Maximum accuracy
The SMART7-S can provide a range of performance accuracies from dual-frequency GLIDE to full centimeter -level RTK. TerraStar services provide decimeter or centimeter-level accuracy using globally transmitted satellite corrections.

Maximum connectivity
The SMART7-S supports RS-232 and CAN bus communications. Optional 2.4 GHz Wi-Fi and 10/100 Ethernet connectivity allows connection to a vehicle’s Wi-Fi network, routers, terminals or other SMART7 antennas. Wi-Fi and Ethernet connectivity can also be used to receive RTK or TerraStar corrections over NTRIP.

Durable, field-ready design
This rugged SMART7-S antenna is enclosed in a durable, waterproof housing that meets MIL-STD-810G environmental standards for many years of reliable use in the field. Magnetic and screw mounting is supported.

Benefits
• Centimeter-level accuracy using TerraStar-C PRO, TerraStar-X and RTK
• High quality measurements and stable phase center for precision applications
• Integrated IMU for accurate vehicle attitude, terrain compensation and bridging of GNSS outages
• Simplified setup and configuration with optional onboard Setup & Monitor (Web) and wireless connectivity

Features
• GPS, GLONASS, BeiDou, Galileo, QZSS plus TerraStar correction signal reception
• Simultaneously track up to 3 TerraStar Correction Service satellites
• Optional heading and relative positioning using ALIGN
• Integrated NTRIP client using optional Ethernet/Wi-Fi interface
• Advanced ISOBUS-compatible CAN interface supports NMEA2000, NovAtel messages and firmware updates
Performance

Signal Tracking

GPS L1, L2, L2C, L5
GLONASS L1, L2
Galileo E1, E5a/b, E5 AltBOC
BeiDou B1I, B1C, B2I, B2a, B2b
QZSS L1, L2
SBAS L1
L-Band

Horizontal Position Accuracy

(RMS)

Single point L1/L2 1.2 m
SBAS 0.6 m
DGPS 40 cm
TerraStar-L 40 cm
TerraStar-C PRO 2.5 cm
TerraStar-X 2.0 cm
RTK 1 cm +1 ppm

(95%)

Single point L1/L2 2.4 m
SBAS 120 cm
DGPS 80 cm
TerraStar-L 50 cm
TerraStar-C PRO 3 cm
TerraStar-X 2.5 cm
RTK 2.5 cm +1 ppm

Pass-to-Pass Accuracy (95%)

L1/L2 GLIDE Single Point 35 cm
TerraStar-L 15 cm
TerraStar-C PRO 2 cm

Maximum Data Rate

Measurements Up to 20 Hz
Position Up to 20 Hz
INS solution Up to 200 Hz

Time to First Fix

Cold start 40 s (typical)
Hot start 20 s (typical)

Signal Reacquisition

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

Performance During GNSS Outages

<table>
<thead>
<tr>
<th>Outage Duration</th>
<th>Positioning Mode</th>
<th>Accumulated Position Error (m) RMS</th>
<th>Accumulated Velocity Error (m/s) RMS</th>
<th>Accumulated Attitude Error (Degrees) RMS</th>
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</thead>
<tbody>
<tr>
<td>10 s</td>
<td>All</td>
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<tr>
<td></td>
<td></td>
<td>Horizontal 0.50</td>
<td>Vertical 0.20</td>
<td>Roll 0.03</td>
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<tr>
<td></td>
<td></td>
<td>Horizontal 0.075</td>
<td>Vertical 0.020</td>
<td>Pitch 0.03</td>
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<td></td>
<td></td>
<td></td>
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<td>Heading 0.150</td>
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</tbody>
</table>

1. Typical values (open sky conditions). 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. GPS only.
3. Requires subscription to TerraStar data service.
4. Specifications subject to Terrestrial data service.
5. As per the user’s geographic region, ionospheric activity, constellation levels, GNSS availability and constellation health, multipath conditions and presence of interference sources.
6. Typical value. No almanac or ephemerides and no approximate position or time.
7. Typical value. Almanac and recent ephemerides saved and approximate position and time entered.
8. Time accuracy does not include biases due to RF or antenna delay.
9. With SPAN model firmware installed.
11. 10s Outages are the Position/Velocity/Attitude error that has accumulated over the GNSS outage duration, initial accuracies are dependent on the positioning mode in which you are operating.

Environmental

Temperature

Operating -40°C to +70°C
Storage -45°C to +80°C

Humidity

MIL-STD-810G(CH1) Method 507.6

Immersion

MIL-STD-810G(CH1) Method 512.6

Shock

MIL-STD-810G(CH1) Method 512.6

Solar Radiation

EN60950-22 8.2
ISO 9022-9, Method 20,
Severity Degree 03

Salt Fog

IEC 60068-2-11

Correlation Services

TerraStar-L
TerraStar-C PRO
TerraStar-X
RTK ASSIST
RTK ASSIST PRO

Available Hardware Options

• SMART7-S with SPAN
• SMART7-SI with SPAN, Wi-Fi and Ethernet

Firmware Solutions

• GLONASS tracking
• Galileo tracking
• BeiDou tracking
• L-Band tracking
• ALIG
• RTK
• SPAN

Optional Accessories

• Mounting plate
• Interface cable
• RELAY7

Contact Hexagon | NovAtel

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

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