

# GNSS-503

## High-performance antenna for terrestrial applications

### Patented technology

The VEXXIS GNSS-500 series antennas provide outstanding circularly polarized, symmetric radiation patterns with superior multipath rejection performance. This is achieved with a patented, multi-point feeding network which provides uniquely low loss and frequency independent amplitude/phase balance. Strictly balancing signals and sequentially feeding the GNSS antenna at multiple points is the key to achieving remarkable performance.

### Optimised for terrestrial applications

The GNSS-503 antenna is designed with a low profile, aerodynamic enclosure, ideal for ground vehicles in applications such as agriculture, machine control and mobile mapping. Magnetic mounts make the antenna easy to install or move between ground vehicle platforms. The combination of intelligent enclosure design along with multi-constellation and L-Band support makes it ideal for any terrestrial application.

### Ruggedized for challenging environments

The GNSS-503 has been thoroughly tested to withstand even the most challenging environments. It endured over 1000 hours of intense vibration testing to earn its MIL-STD-810G rating. It is also water resistant under heavy rainfall or high pressure spray, ensuring its long survivability under the toughest operating conditions.



### Features

- Supports multi-frequency GPS, GLONASS, Galileo, BeiDou, QZSS and IRNSS/NavIC signal reception
- L-Band capable, supporting correction services such as TerraStar
- Multi-point antenna feed provides stable phase centre and enhanced multipath rejection
- Designed for high quality performance when used with STEADYLINE technology from Hexagon | NovAtel
- Low-profile design ideal for machine control applications

## Performance

### Signal Received

|             |                |
|-------------|----------------|
| GPS         | L1, L2, L5     |
| GLONASS     | G1, G2, G3     |
| Galileo     | E1, E5a/b, E6  |
| BeiDou      | B1, B2, B3     |
| QZSS        | L1, L2, L5, L6 |
| IRNSS/NavIC | L5             |
| L-Band      |                |

### Pass Band (typical)

|                |                   |
|----------------|-------------------|
| Upper passband | 1577.5 ± 32.5 MHz |
| Lower passband | 1232.0 ± 68.0 MHz |

### Out-of-Band Rejection (typical)

|                      |       |
|----------------------|-------|
| Band edges ± 50 MHz  | 15 dB |
| Band edges ± 100 MHz | 25 dB |

### LNA Gain (typical)

|                |       |
|----------------|-------|
| Upper passband | 34 dB |
| Lower passband | 38 dB |

### Gain at Zenith (90°)

|                    |                     |
|--------------------|---------------------|
| L1/B1/E1/G1/L-Band | +4.0 dBic (minimum) |
| L2/G2              | +4.0 dBic (minimum) |
| G3/E5/B2           | +3.5 dBic (minimum) |
| L5                 | +2.5 dBic (minimum) |
| L6/E6/B3           | +1.0 dBic (minimum) |

### Gain Roll-Off (Zenith to Horizon)

|                |                 |
|----------------|-----------------|
| Upper passband | 12 dB (typical) |
| Lower passband | 13 dB (typical) |

**Phase Centre Stability** <5.0 mm

**Noise Figure** 2.5 dB (typical)

**VSWR** ≤2.0 (typical)

### L1-L2 Differential Propagation Delay

7 ns (maximum)

**Group Delay Ripple** <15 ns

**Nominal Impedance** 50 Ω

## Physical and Electrical

**Dimensions** 155 mm D × 45 mm H

**Weight** 450 g

**Connector** TNC female

**Mounting** 2 × magnetic mounts  
2 × M4 screw inserts

### Power

Input voltage +3.3 to +18.0 VDC  
Current 20 mA (typical)

## Environmental

### Temperature

Operating -40°C to +85°C  
Storage -55°C to +85°C

**Humidity** 95% non-condensing

**Salt Fog** MIL-STD-810G (CH1), 509.6

**Water/Dust Resistance** IP67, IP69K

### Vibration (operating)

Random MIL-STD-810G (CH1), 514.7 (15 g)  
Annex E, Procedure 1, Category 24

**Shock** MIL-STD-810G (CH1), 516.7 (40 g)  
Procedure 1

**Bump** IEC 60068-2-27 Ea (25 g)

## Compliance

FCC, ISED, CE

## Contact Hexagon | NovAtel

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

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