

# GPS-700 Series



## Features

Excellent multipath rejection

Highly stable phase center

Available in L1 and L1/L2 models with identical housing and mounting system

## Benefits

Provides performance equivalent to a choke ring antenna without the cumbersome size and weight

Offers flexibility in antenna placement and aids in precise positioning, even when using long baselines

Requires minimal integration effort to convert between single- and dual-frequency operation

The GPS-700 antenna series incorporates NovAtel's patented Pinwheel™ technology and is designed to enhance the performance of the OEM4-G2 and OEM4-G2L GPS engines.

## Choke ring-like performance

The GPS-700 series, including the single frequency GPS-701 and the dual frequency GPS-702, takes advantage of Pinwheel™ technology to provide exceptional multipath rejection. With a gain roll off to the horizon of 13 dB for the L1 signal and 11 dB for L2, the GPS-700 provides performance comparable to that offered by a typical choke ring and antenna combination. Signals arriving from low elevation angles are attenuated, virtually eliminating position errors due to troublesome signal reflections.

## Stable phase center

For added reliability, the antenna's phase center remains constant as the azimuth and elevation angle of satellites change. With signal reception unaffected by the rotation of the antenna or satellite elevation, placement and installation of the GPS-700 can be completed with ease. In addition, the phase center is in the same location for both the L1 and L2 signals. This, combined with minimal phase center variation between individual antennas, makes the GPS-700 ideal for baselines of any length.

## Rugged and lightweight

While providing equivalent multipath reduction, the GPS-700 is significantly smaller, lighter, and more economical than a combined choke ring and antenna solution. Both L1 and L1/L2 models share the same enclosure and mounting system for quick conversion from single- to dual-frequency operation. In addition, the GPS-700 is waterproof to IEC 60529 IPX7 and meets the MIL-STD-810F specification for vibration and salt spray, resulting in an antenna suited to diverse applications, including marine environments, precision agriculture, and machine control.



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# GPS-700 Series

## GPS-702 Performance

### 3 dB Pass Band

L1	1575 -15/+30 MHz (typical)
L2	1228 -15/+30 MHz (typical)

### Out-of-Band Rejection ( $f_c = L1, L2$ )

$f_c$ -30/+50 MHz	30 dBc (typical)
$f_c$ -40/+80 MHz	50 dBc (typical)

**LNA Gain 27 dB (typical)**

### Gain at Zenith (90°)

L1	+5 dBic (minimum)
L2	+2 dBic (minimum)

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

L1	13 dB
L2	11 dB

**Noise Figure  $\leq 2.0$  dB (typical)**

**VSWR  $\leq 2.0 : 1$**

**L1-L2 Differential Propagation Delay 5 ns (maximum)**

**Nominal Impedance 50  $\Omega$**

**Altitude 9,000 m**

- 1 Unless otherwise indicated, all specifications apply to both the GPS-702 and the GPS-701.
- 2 Not including tape measure tab. Full diameter with tape measure tab is 195 mm.

## GPS-701 Performance

### 3 dB Pass Band

L1 1575 -15/+30 MHz (typical)

### Out-of-Band Rejection ( $f_c = L1$ )

$f_c$ -30/+50 MHz	30 dBc (typical)
$f_c$ -40/+80 MHz	50 dBc (typical)

**LNA Gain 27 dB (typical)**

### Gain at Zenith (90°)

L1 +5 dBic (minimum)

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

L1 13 dB

**Noise Figure  $\leq 2.0$  dB (typical)**

**VSWR  $\leq 2.0 : 1$**

**Nominal Impedance 50  $\Omega$**

**Altitude 9,000 m**

## Physical & Electrical<sup>1</sup>

### Size

Diameter <sup>2</sup>	185 mm
Height	69 mm

**Weight 480 g**

### Power

Input Voltage	+4.5 to +18 VDC
Current Consumption	
GPS-702	35 mA (typical)
GPS-701	25 mA (typical)

**Connector TNC female**

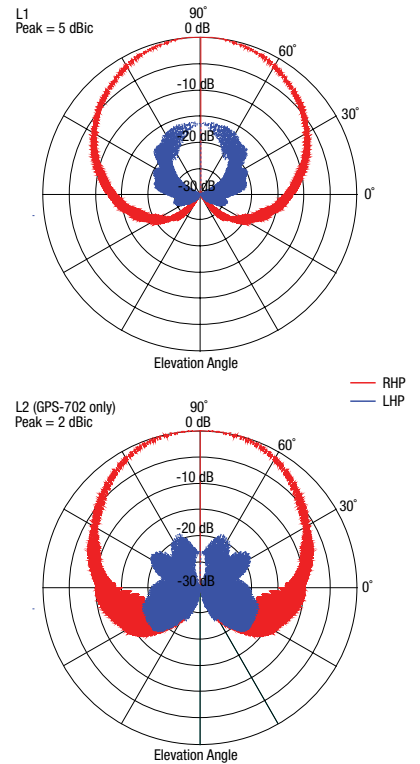
### Environmental

Temperature	
Operating	-40°C to +85°C
Storage	-55°C to +85°C
Vibration	MIL-STD-810F method 514.5
Salt Spray	MIL-STD-810F method 509.4
Waterproof	IEC 60529 IPX7

**Regulatory FCC Class B, CE**

## Elevation Gain Patterns

The plots below represent the typical right-hand polarized (RHP) and left-hand polarized (LHP) normalized radiation patterns for the L1 and L2 frequencies.



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