

# SMART Antenna



## Features

Carrier phase measurements

RS-232 or RS-422 interface

Standard support for SBAS (WAAS, EGNOS) corrections

Rugged aluminum base

## Benefits

Carrier phase measurements provide improved positioning accuracy and reliability

Communications interface ensures flexibility and ease of integration, even for installations with long cable lengths

SBAS messages offers increased accuracy without extra cost or additional equipment

Rugged enclosure permits reliable vehicle installations

NovAtel®'s SMART Antenna is a rugged, self-contained GPS receiver and antenna designed for harsh tracking environments.

## Carrier phase capability

The SMART Antenna features a 12-channel GPS receiver capable of receiving SBAS corrections and producing position outputs at up to 5Hz rates. For improved positioning accuracy, raw carrier phase measurement at 5Hz can be collected for post-processing. For precise timing applications, the SMART Antenna also features an optional 1PPS accuracy of 50 nanoseconds (typical).

## SBAS support standard

The SMART Antenna also includes standard support for Satellite-Based Augmentation System (SBAS) corrections provided by WAAS, EGNOS, and MSAS systems. Use of SBAS correction data provides increased positioning accuracy without additional cost or equipment.

## Ease of integration

A combined GPS receiver and antenna, the SMART Antenna requires minimal installation effort. Available in multiple configurations, including an RS-232 or RS-422 interface, the SMART Antenna is designed to meet or exceed MIL-STD-810E specifications for shock and environmental contaminants such as salt spray, sand, and dust.

## Flexible interface

The SMART Antenna offers a flexible command and log interface. System integrators can choose either NovAtel's proprietary L1 family binary format, which allows for high throughput, or the industry-standard NMEA format, to ensure compatibility. For DGPS applications, the SMART Antenna features RTCM SC-104 messages.



Precise thinking

# SMART Antenna

## Performance<sup>1</sup>

### Position Accuracy

|                 |             |
|-----------------|-------------|
| Single Point L1 | < 5 m CEP   |
| WAAS L1         | < 1.5 m CEP |
| DGPS (L1, C/A)  | < 1 m CEP   |

### Measurement Precision

|                  |                                    |
|------------------|------------------------------------|
| L1 C/A Code      | 75 cm RMS                          |
| L1 Carrier Phase | 1 cm RMS<br>(differential channel) |

### Data<sup>2</sup>

|              |      |
|--------------|------|
| Measurements | 5 Hz |
| Position     | 5 Hz |

### Time to First Fix

|                         |       |
|-------------------------|-------|
| Cold Start <sup>2</sup> | 166 s |
| Warm Start <sup>3</sup> | 45 s  |
| Hot Start <sup>4</sup>  | 30 s  |

**Signal Reacquisition** < 1 s (typical)

**Velocity Accuracy** 0.05 m/s RMS

### Dynamics

|                       |          |
|-----------------------|----------|
| Velocity <sup>5</sup> | 514 m/s  |
| Altitude <sup>5</sup> | 18,288 m |

## Physical & Electrical

**Size** 115 mm diameter x 90 mm height

**Weight** 575 g

### Power

|                   |                 |
|-------------------|-----------------|
| Input Voltage     | +9 to +36 VDC   |
| Power Consumption | 1.4 W (typical) |

### Communication Ports

- 1 RS-232 or RS-422 serial port capable of 300 to 19,200 bps
- 1 RS-232 or RS-422 DGPS port capable of 300 to 19,200 bps

### Input/Output Connectors

|        |                                |
|--------|--------------------------------|
| RS-232 | 7-pin plastic or 6-pin metal   |
| RS-422 | 12-pin standard or cable mount |

### Environmental

|                      |                                     |
|----------------------|-------------------------------------|
| Temperature          |                                     |
| Operating            | -30°C to +75°C                      |
| Storage              | -40°C to +85°C                      |
| Humidity             | SAE J1455/4.2, procedure I, II      |
| Waterproof           | IEC 60529 IPX7                      |
| Salt Spray           | MIL-STD-810E 509.3                  |
| Sand and Dust        | MIL-STD-810E 510.3                  |
| UV Light Protection  | ASTM G53-88                         |
| Shock                | MIL-STD-810E 516.4, procedure I, IV |
| Transient Protection | SAE J1455 4.11.2                    |
| Regulatory           | FCC Class A, CE                     |

## Optional Accessories

- RS-232 interface cables, with optional DB-9 and automotive power adapter
- RS-422 interface cables, in 5, 15, and 30 metre lengths

## Additional Features

- 12 channel “all-in-view” parallel tracking
- PVT output at rates up to 5 Hz
- Carrier phase measurement output at rates up to 5 Hz
- Precise timing model accurate to ± 50 ns (typical)
- DGPS base station model (RS-422 version only)
- Supports NMEA 0183 version 2.20 and RTCM SC-104 version 2.1 (types 1, 2, and 9) message types, as well as NovAtel’s L1 binary message format
- Rapid time to first fix after power interruption
- Field-upgradeable firmware

- 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.
- 2 Typical value. No almanac or ephemerides and no approximate position or time.
- 3 Typical value. Almanac saved and approximate position and time entered. No recent ephemerides.
- 4 Typical value. Almanac and recent ephemerides saved and approximate position and time entered.
- 5 Export licensing restricts operation to a maximum of 18,288 metres and 514 metres per second.

**PRELIMINARY**  
ALL SPECIFICATIONS SUBJECT TO CHANGE



1-800-NOVATEL (U.S. & Canada) or 403-295-4900  
Europe +44 (0) 1993 852-436  
SE Asia & Australia +61 (0) 400 833-601  
sales@novatel.com  
novatel.com



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