SMART-V1 & SMART-V1G Antenna

Precise thinking

NovAtel's SMART-V1 and SMART-V1G Antennas are a rugged self-contained L1 GPS or L1 GPS+GLONASS receiver and antenna designed for harsh environments.

Features

Integrated L-Band for OmniSTAR and CDGPS on SMART-V1

L1 GPS+GLONASS on SMART-V1G

RTK Positioning

Application Programming Interface (API) option

Benefits

Sub-meter real-time accuracy

Additional GLONASS satellites offer increased position availability

20 cm real-time accuracy using NovAtel's proven RT-20 technology

Reduces system hardware by utilizing the SMART-V1 Antenna's processor and memory

Performance

The SMART-V1 Antenna features 14 channels for L1 GPS code and phase tracking, as well as one dedicated channel for L-Band signals. The SMART-V1G Antenna features 14 channels for L1 GPS and 12 channels for L1 GLONASS code and phase tracking. Both antennas provide two dedicated channels for Satellite-Based Augmentation System (SBAS) signals, measurement or position data at up to 20Hz and can provide a 1PPS signal to within 20ns (typical).

Integration

The SMART-V1 Antenna provides an integrated L1 GPS receiver, L-Band receiver and antenna in a single, rugged housing. This product is available with an RS-232 or RS-422 interface, as well as support for either CAN or USB. The SMART-V1G Antenna provides an integrated L1 GPS+GLONASS receiver and is available with an RS-232 interface with support for USB. The SMART-V1 and SMART-V1G Antennas are designed to meet or exceed MIL-STD-810F specifications.

Corrections

The SMART-V1 and SMART-V1G Antennas include standard support for SBAS corrections provided by WAAS, EGNOS and MSAS. An integrated L-Band capability also allows the SMART-V1to receive corrections from the Canadian DGPS (CDGPS) service, and subscription-based corrections for an OmniSTAR VBS solution. The SMART-V1 and SMART-V1G Antennas are compatible with RTCM differential corrections.

Customization

The Application Programming Interface (API) functionality is available on both the SMART-V1 and SMART-V1G Antennas. The API allows for an application to be developed to run directly on the receiver which can result in reduced system hardware, a reduction in development time and quicker time to market.

AEGIS Instruments

Supplier of Geophysical Equipment to the Earth Science and Engineering Sectors

SMART-V1 & SMART-V1G Antenna

Performance[1]

SMART-V1	SMART-V1G
14 GPS L1	14 GPS L1
1 L-Band	12 GLO L1
2 SBAS	2 SBAS

Position Accuracy (RMS)

L1	1.8 m
SBAS	1.2 m
CDGPS[2]	1.0 m
OmniSTAR VBS[2]	0.9 m
DGPS	0.7 m
RT-20[3]	0.2 m

Measurement Precision

L1 C/A Code	18 cm RMS
L1 Carrier Phase	1.5 mm RMS

Data Rate[4]

Measurements	20 Hz
Position	20 Hz

Time to First Fix

Cold Start[5]	65 s
Hot Start[6]	35 s

Signal Reacquisition

L1	0.5 s (typical)

Time Accuracy[7] **20 ns RMS**

Velocity Accuracy **0.03 m/s RMS**

Dynamics

Velocity[8]	515 m/s

Physical & Electrical

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

Weight **575 g**

Power

Input Voltage	+9 to +24 VDC
Power Consumption	1.2 W (typical)

Communication Ports

- 2 RS-232 or RS-422 serial ports[9]
- 1 CAN[10] Bus or 1 USB 1.1 port
- 1 PPS

Input/Output Connectors

18-pin plastic bulkhead connector

Mounting

- 1" - 14 UNS threads for center mounting
- 3 x 10-32 UNF screws for plate mounting

Environmental

Temperature	
Operating	-40°C to +75°C
Storage	-55°C to +90°C
Waterproof/Immersion	MIL-STD-810F 512.4, Procedure I
Salt Spray	MIL-STD-810F 509.4
Sand and Dust	MIL-STD-810F 510.4
UV Light Protection	ASTM G-151
Shock	MIL-STD-810F 516.5
Vibration (Random)	MIL-STD-801F 514.5 C17
Vibration (Sine)	SAE EP455

Regulatory

Emissions	FCC Part 15B
	EN 55022
Immunity	EN 61000-6-2
Safety	EN 60950-1

Optional Accessories

- Interface cable (3m) with bare leads
- Interface cable (3m) with connectors (dB9 or dB9 plus USB)

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 CDGPS corrections may not be available in all areas. A subscription is required for OmniSTAR HP/XP/VBS service, which may not be available in all areas. SMART-V1 only.
3 Expected accuracy after static convergence.
4 Slower data rates are expected for API customers. The maximum data rate is dependent on the size of the application.
5 Typical value. No almanac or ephemerides and no approximate position or time.
6 Typical value. Almanac and recent ephemerides saved and approximate position and time entered.
7 Time accuracy does not include biases due to RF or antenna delay.
8 Export licensing restricts operation to a maximum of 18,288 meters and 514 meters per second.
9 RS-422 currently available only with SMART-V1.
10 SMART-V1 is hardware-capable. Requires software support via API for CAN functionality.

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