



PROFESSIONAL GNSS HEADING & POSITIONING SMART ANTENNA



The Vector™ V123/133 is Hemisphere GNSS' all-in-one single-frequency, multi-GNSS smart antenna which provides Atlas decimeter-level position and precise heading. This rugged design is sealed for the harshest environments and is a great solution for professional marine and other challenging applications.

The all-in-one V123/133 combines simple installation with consistent and precise heading accuracy and decimeter positioning.

Key Features

- Simple all-in-one single-frequency, multi-GNSS heading solution
- Single-frequency GPS/GLONASS/ BeiDou/Galileo QZSS
- Atlas® L-band and beacon (V133) capable
- Integrated gyroscope provides smooth, fast heading reacquisition
- Reliable < 1° per minute heading for periods up to 3 minutes when loss of GNSS has occurred
- Fully rugged solution for the harshest environments

GNSS Receiver Specifications

Receiver Type:	Vector GNSS Receiver
Signals Received:	GPS, GLONASS, BeiDou, Galileo, QZSS ⁷ , and Atlas ⁶
Channels:	424
GPS Sensitivity:	-142 dBm
SBAS Tracking:	2-channel, parallel tracking
Update Rate:	20 Hz standard, 50 Hz optional
Timing (1 PPS)	
Accuracy:	20 ns
Rate of Turn:	100°/s maximum
Compass Safe	
Distance:	50 cm ⁴
Cold Start:	60 s (no almanac or RTC)
Warm Start:	30 s typical (almanac and RTC)
Hot Start:	10 s typical (almanac, RTC and position)
Heading Fix:	10 s typical (valid position)
Antenna Input	
Impedance:	50 Ω
Maximum Speed:	1,850 mph (999 kts)
Maximum Altitude:	18,288 m (60,000 ft)
Differential Options:	SBAS, Atlas (L-band)

Accuracy

Position:	RMS (67%)
Autonomous, no SA: ¹	1.2 m
SBAS: ²	0.3 m
Atlas (L-Band): ⁶	0.3 m
Heading (RMS):	0.3°
Pitch/Roll (RMS):	1°
Heave (RMS):	30 cm (DGPS) ³ , 10 cm (Atlas) ⁴

Beacon Receiver Specifications

Channels:	2-channel, parallel tracking ⁸
Frequency Range:	283.5 to 325 kHz ⁸
Operating Modes:	Manual, Automatic, and Database ⁸
Compliance:	IEC 61108-4 beacon standard ⁸

L-Band Receiver Specifications

Receiver Type:	Single Channel
Channels:	1525 to 1560 MHz
Sensitivity:	-130 dBm
Channel Spacing:	5 kHz
Satellite Selection:	Manual or Automatic
Reacquisition Time:	15 sec (typical)

1. Depends on multipath environment, number of satellites in view, satellite geometry, no SA, and ionospheric activity
2. Depends on multipath environment, number of satellites in view, WAAS coverage and satellite geometry
3. Based on a 40-second time constant
4. This is the minimum safe distance measured when the product is placed in the vicinity of the steering magnetic compass. The ISO 694 defines "vicinity" relative to the compass as within 5 m (16.4 ft) separation
5. Hemisphere GNSS proprietary
6. Requires a Hemisphere GNSS subscription
7. With future firmware upgrade and activation
8. V133 only



Communications

Ports:	1x RS232, 1x RS422, 1x half-duplex RS422(TX), NMEA2000 4800 - 115200
Baud Rates:	
Correction I/O Protocol:	Atlas, Hemisphere GNSS proprietary, RTCM v2.3 (DGPS) NMEA 0183, NMEA 2000, Hemisphere GNSS binary
Data I/O Protocol:	
Timing Output:	1 PPS (active high, rising edge sync, 10 kΩ, 10 pF load)
Event Marker Input:	Active low, falling edge sync, 10 kΩ, 10 pF load
Heading Warning I/O:	Open relay system indicates invalid heading

Power

Input Voltage:	9 - 36 VDC with reverse polarity operation									
Power Consumption:	(multi-GNSS, typical continuous draw @ 12V)									
	<table><thead><tr><th>SBAS</th><th>Beacon</th><th>Atlas</th></tr></thead><tbody><tr><td>V123</td><td>-</td><td>4.3 W</td></tr><tr><td>V133</td><td>4.2 W</td><td>4.36 W</td></tr></tbody></table>	SBAS	Beacon	Atlas	V123	-	4.3 W	V133	4.2 W	4.36 W
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V123	-	0.36 A								
V133	0.35 A	0.38 A								
Reverse Polarity Protection:	Yes									

Environmental

Operating Temperature:	-40°C to +70°C (-40°F to +158°F)
Storage Temperature:	-40°C to +85°C (-40°F to +185°F)
Humidity:	95% non-condensing
Vibration:	IEC60945 Section 8.7
EMC:	IEC60945 FCC part 15 Subpart B, CISPR32

IMO Wheelmark Certification:

MED/4.41 Transmitting Heading Device THD (GNSS Method)
IP66/IP69

Enclosure:

Mechanical

Dimensions:	66.5 L x 20.8 W x 14.6 H (cm) 26.2 L x 8.2 W x 5.8 H (in)
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Weight:	
V123	2.1 kg (4.6 lb)
V133	2.4 kg (5.4 lb)

Status Indications

(LED):	Power
Power/Data Connector:	18-pin environmentally sealed

Aiding Devices

Gyro:	Integrated gyroscope provides smooth heading, fast heading reacquisition and reliable < 1° per minute heading for periods up to 3 minutes when loss of GNSS has occurred
Tilt Sensors:	Provide pitch, roll data and assist in fast start-up and reacquisition of heading solution

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