Vector VS131 Receiver

Professional Heading and Positioning Receiver

Vector VS131

Powered by Crescent

Experience the addition of L-band technology to our Vector™ VS family. Precise marine and land applications demand the heading and positioning performance of the Vector VS131™ receiver. The Vector VS131 is ideal for professional machine control and navigation applications in areas where L-band is achieved.

The Vector VS131 utilizes all of the innovations in Hemisphere GPS' Crescent® Vector and brings a series of features to the Vector VS131 including heave, pitch and roll output, and more robust positioning performance.

The Vector VS131 receiver, with its display and user interface, can be conveniently installed near the operator. The two antennas are mounted separately and with a user-determined separation to meet the desired accuracy.

The Vector VS131 uses L-band, Beacon and SBAS (WAAS, EGNOS, MSAS, etc.) for differential GPS positioning.

Key Vector VS131 Receiver Advantages

- L-band capable
- Professional heading < 0.03° rms
- Differential position accuracy of < 30 cm rms
- Heave < 30 cm rms
- Pitch and Roll < 1° rms
- Simple menu operations
- Accurate heading up to 3 minutes during GPS outages
- COAST technology maintains differentially-corrected positioning for 40 minutes or more after loss of differential signal
- Integrated gyro and tilt sensors deliver fast start-up times and provide heading updates during temporary loss of GPS

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GPS Sensor Specifications

Receiver Type:	L1, C/A code, with carrier phase smoothing	
Signals Received:	GPS	
Channels:	270	
GPS Sensitivity:	-142dBm	
SBAS Tracking:	2-channel, parallel tracking	
Update Rate:	10 Hz standard, 20 Hz available by subscription	
Horizontal Accuracy:	RMS (67%)	2DRMS (95%)
L-band (OmniSTAR): [2, 7]	0.3 m	0.6 m
SBAS (WAAS): [2]	0.3 m	0.6 m
Autonomous, no SA: [2]	1.2 m	2.5 m
Heading Accuracy:	< 0.33° rms @ 0.5 m antenna separation	
	< 0.17° rms @ 1.0 m antenna separation	
	< 0.08° rms @ 2.0 m antenna separation	
	< 0.03° rms @ 5.0 m antenna separation	
Pitch/Roll Accuracy:	< 1° rms	
Heave Accuracy:	30 cm rms[6]	
Timing (1PPS) Accuracy:	50 ns	
Rate of Turn:	90°/s maximum	
Cold Start:	< 60 s (no almanac or RTC)	
Warm Start:	< 20 s typical (almanac and RTC)	
Hot Start:	< 1 s typical (almanac, RTC and position)	
Heading Fix:	< 10 s typical (valid position)	
Maximum Speed:	1,850 mph (999 kts)	
Maximum Altitude:	18,288 m (60,000 ft)	

L-band Sensor Specifications

Sensitivity:	-130 dBm
Channel Spacing:	7.5 kHz
Satellite Selection:	Manual and Automatic
Reacquisition Time:	15 seconds (typical)
Rejection:	15 kHz spacing > 30 dB, 300 kHz spacing > 60 dB
Processor:	DSP for demodulation and protocol decoding module provides processing for the differential algorithms
Command Support:	Reports L-band (OmniSTAR) region and satellite info, allows input and status of L-band (OmniSTAR) subscription, bit error rate (BER) output for reception quality indication, and manual frequency tuning

Communications

Serial Ports:	2 full-duplex RS-232 ports
USB Ports:	1 USB-B
Baud Rates:	4800 - 115200
Correction I/O Protocol:	RTCM v2.3 (DGPS), RTCM SC-104, L-Dif™ [3]
Data I/O Protocol:	NMEA 0183, Crescent binary[3], L-Dif
Timing Output:	1PPS CMOS, active low, falling edge sync, 10 kΩ, 10pF load

Power

Input Voltage:	8 to 36 VDC
Power Consumption:	< 4.5 W nominal (GPS (L1) and L-band) < 3.6 W nominal (GPS (L1)
Current Consumption:	< 0.38 A nominal (GPS (L1) and L-band) < 0.30 A nominal (GPS (L1)
Power Isolation:	500 V
Reverse Polarity Protection:	Yes
Antenna Short Circuit Protection:	Yes

Environmental

Operating Temperature:	-30°C to + 70°C (-22°F to + 158°F)
Storage Temperature:	-40°C to + 85°C (-40°F to + 185°F)
Humidity:	95% non-condensing
Enclosure Rating:	IP66 (IEC 60529)
Shock and Vibration:	Mechanical Shock: EP455 Section 5.14.1 Vibration: EP455 Section 5.15.1 Random
EMC:	CE (IEC 60945 Emissions and Immunity) FCC Part 15, Subpart B CISPR22
IMO Wheelmark Certification:	No

Mechanical

Dimensions:	20.2 L x 12.0 W x 7.5 H (cm) 8.0 L x 4.7 W x 3.0 H (in)
Weight:	~1.1 kg (~2.5 lbs.)
Status Indications (LED):	Power, Primary and Secondary GPS lock, Differential lock, DGPS position, Heading, L-band lock
Power Switch:	Front panel soft switch
Power Connector:	2-pin ODU metal circular
Data Connector:	DB9 (sealed)
Antenna Connectors:	2 TNC (female)

Aiding Devices

Gyro:	Provides smooth heading, fast heading reacquisition and reliable < 1° per minute heading for periods up to 3 minute when loss of GPS has occurred [4]
Tilt Sensors:	Provide pitch, roll data and assist in fast start-up and reacquisition of heading solution.

Authorized Distributor:

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1 Depends on multipath environment, number of satellites in view, satellite geometry, baseline length (for local services), and ionospheric activity
2 Depends on multipath environment, number of satellites in view and satellite geometry
3 Hemisphere GPS proprietary
4 Under static conditions
5 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.
6 Based on a 40 second time constant
7 Requires a subscription from OmniSTAR