

# LV101 GPS Compass OEM Board

## Superior Heading and Positioning Smart Antenna Module



Powered by  
**Crescent**

Experience superb navigation or antenna alignment from the accurate heading and position available with the LV101™ GPS compass OEM board. The Crescent® Vector™ II technology brings a series of new features to the LV101 GPS compass OEM board including heave, pitch and roll output, and more robust performance.

The LV101 integrates two GPS antennas, a CANBUS communications processor, a single axis gyro, tilt sensors and a power supply into a single system. The dual antennas allow for ease of integration into your application and provide for precise heading and GPS sub-meter position accuracy even while sitting stationary. The gyro and tilt sensor improve system performance and provide backup heading information if the GPS-based heading is ever lost. The Crescent Vector II technology provides more accurate code phase measurement and improved multipath mitigation resulting in excellent accuracy and stability.

### Key LV101 GPS Compass OEM Board Advantages

- Affordable solution delivers 2D GPS heading accuracy better than 0.75 degree rms
- Differential positioning accuracy of less than 1m, 95% of the time
- Smart antenna design ensures simple integration into finished product
- Fast heading and positioning output rates up to 20 Hz
- NMEA 2000 certified
- Integrated gyro and tilt sensors deliver fast start-up times and provide heading updates during temporary loss of GPS
- SBAS compatible (WAAS, EGNOS, MSAS, etc.) and optional external differential input
- COAST™ technology maintains differentially-corrected positioning for 40 minutes or more after loss of differential signal

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## GPS Sensor Specifications

Receiver Type:	L1, C/A code, with carrier phase smoothing
Channels:	Two 12-channel, parallel tracking (Two 10-channel when tracking SBAS)
SBAS Tracking:	2-channel, parallel tracking
Update Rate:	Standard 10 Hz, optional 20 Hz (position and heading)
Horizontal Accuracy:	< 1.0 m 95% confidence (DGPS <sup>1</sup> ) < 3.5 m 95% confidence (autonomous, no SA <sup>2</sup> )
Heading Accuracy:	< 0.75° rms
Pitch / Roll Accuracy:	< 1° rms
Heave Accuracy:	30 cm
Timing (1PPS) Accuracy:	50 ns
Rate of Turn:	90°/s maximum
Cold Start:	< 60 s typical (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 kph (999 kts)
Maximum Altitude:	18,288 m (60,000 ft)

## Communications

Serial ports:	2 full-duplex RS-232 and 2 half-duplex RS-422
Baud Rates:	4800 to 115200
Correction I/O Protocol:	RTCM SC-104
Data I/O Protocol:	NMEA 0183, NMEA 2000, Crescent binary <sup>3</sup> , L-Dif <sup>TM3</sup>
Timing Output:	1PPS (HCMOS, active high, rising edge sync, 10 kΩ, 10 pF load)

## 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
Shock and Vibration:	<sup>4</sup> IEC 60945
EMC:	<sup>4</sup> FCC Part 15, Subpart B, CISPR22, CE

## Power

Input Voltage:	9 to 36 VDC
Power Consumption:	5.4W nominal
Current Consumption:	450 mA @ 12 VDC nominal
Power Isolation:	Isolated power supply
Reverse Polarity Protection:	Yes

## Mechanical

Dimensions:	45.8 L x 11.3 W x 3.7 H (cm) 18.0 L x 4.4 W x 1.4 H (in)
Weight:	350 g (12.3 oz)
Status Indications (LED): GPS	Power, primary GPS lock, secondary lock, DGPS lock, and heading lock
Power/Data Connector:	2 connectors, 2R x 2.54 mm (2R x .01")

## Aiding Devices

Gyro:	Provides smooth heading, fast heading reacquisition and reliable < 1° heading for periods up to 3 minutes when loss of GPS has occurred
Tilt Sensors:	Assists in fast start-up of heading solution



Top View



Bottom View

## 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, ionospheric activity and satellite geometry
- 3 Hemisphere GPS proprietary
- 4 When integrated in conjunction with the recommended shielding and protection as outlined in the Integrator's Guide.

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