

VN-360 GPS-Compass

High-Accuracy GPS Heading & Position

PRODUCT OVERVIEW

VectorNav introduces the VN-360 GPS-Compass, a surface mount module that provides an accurate, True North heading solution for systems integrators seeking a reliable alternative to magnetic-based sensors.

Incorporating two onboard GNSS receivers, the VN-360 measures the relative position between two connected GNSS antennas to calculate a heading solution that is an order of magnitude more accurate than a magnetic compass. The VN-360 also incorporates a set of 3-axis gyros and accelerometers that provide pitch & roll measurements and enable the VN-360 to output a continuous heading solution through a temporary loss of GPS.

Designed to provide maximum flexibility to the user, the VN-360 supports a variety of GNSS antennas that can be mounted on a host platform with a separation distance anywhere from a few centimeters out to several meters. Users can choose a configuration that suits the mounting constraints of their platform or optimize the heading accuracy and startup time of the VN-360 to meet the requirements of their application.

The VN-360 features VectorNav's state-of-the-art SmartAlign™ technology, a set of intelligent algorithms that eliminate erroneous heading measurements at startup. SmartAlign™ adds an extra layer of reliability when initializing the VN-360 in a wide range of operating environments.



HIGHLIGHTS

- ▶ Heading as accurate as 0.15° RMS
- ▶ Alignment in under two minutes (typical)
- ▶ Flexible GNSS antenna baseline configurations
- ▶ Simple one-time setup and configuration
- ▶ Onboard 3-axis gyro and accelerometer:
 - Pitch & roll measurements
 - Heading updates during temporary loss of GPS
- ▶ SmartAlign™ technology eliminates erroneous heading measurements at startup
- ▶ Unaffected by ferrous materials, motors, batteries, vibration and changes in the magnetic environment
- ▶ Heading output up to 10 Hz
- ▶ Dual 72 Channel L1 GNSS receivers
- ▶ Miniature surface mount package (30-pin LGA)
 - Dimensions: 24 x 22 x 3 mm
 - Weight: 5 grams
- ▶ Self-locking U.FL connectors for GNSS antennas

TECHNICAL SPECIFICATIONS

Attitude

Heading Accuracy (w/ 0.5 meter baseline) ¹ :	0.6 ° RMS
Heading Accuracy (w/ 1 meter baseline) ¹ :	0.3 ° RMS
Heading Accuracy (w/ 2.0 meter baseline) ¹ :	0.15 ° RMS
Pitch & Roll Accuracy:	0.5 ° RMS
Angular Resolution:	< 0.05 °
Repeatability:	< 0.1 °
Max Output Rate:	10 Hz

GNSS

Receiver Type:	72 Channels, L1, GNSS
Horizontal Position Accuracy:	2.5 m CEP
Horizontal Position Accuracy (w/SBAS):	2.0 m CEP
Velocity Accuracy:	0.05 m/s
Solution Update Rate:	5 Hz
Time-to-First-Fix (Cold/Warm Start):	29 s
Time-to-First-Fix (Hot Start):	1 s
Altitude Limit:	50,000 m
Velocity Limit:	500 m/s

Environment

Operating Temp:	-40°C to +85°C
Storage Temp:	-40°C to +85°C

Electrical:

Input Voltage:	3.2 V to 5.5 V
Current Draw ² :	185 mA @ 3.3 V
Max Power Consumption ² :	1.2 W
Digital Interface:	Serial TTL

Physical:

Size:	24 x 22 x 3 mm
Weight:	5 g
Connector:	30-pin LGA
GNSS Antenna Connectors:	U.FL

¹ With clear view of GNSS satellites, good multipath environment and sufficient GNSS antenna ground planes.

² Not including active antenna power consumption.

APPLICATIONS

- ▶ Antenna Pointing
- ▶ UAVs (Multirotor, Tethered, VTOL) & Aerostats
- ▶ Ground Vehicles / Robotics
- ▶ Heavy Machinery Monitoring
- ▶ Automated Agriculture
- ▶ GIS Mapping
- ▶ Structural Monitoring
- ▶ Augmented Reality
- ▶ Land Surveying
- ▶ Weapons Training / Warfare Simulation



DEVELOPMENT TOOLS

- ▶ **Sensor Explorer GUI:** Powerful and user-friendly GUI allows you to display sensor output as a 3D object, graph inertial data, configure sensor settings, perform data-logging, & more.
- ▶ **Software Development Kit:** Programming libraries with C/C++, .NET, MATLAB, Python & LabVIEW support for both Windows & Linux.
- ▶ **Online Library:** A large collection of inertial navigation knowledge and application notes is available on our website to help maximize VN-360 performance for your application.
- ▶ **Engineering Support:** Dedicated and responsive engineering support team with combined experience in sensing, guidance, navigation, and controls.
- ▶ **Custom Solutions:** Application-specific modeling & algorithm development; controls & closed-loop navigation solutions; custom form-factors & packaging; integration with other external sensors; displays, GUIs & other software packages; tailored calibrations; custom communication protocols.

ABOUT VECTORNAV

VectorNav Technologies is the leading designer and manufacturer of high-performance inertial navigation systems using the latest in MEMS sensor and GPS/GNSS technology. Since its founding in 2008, VectorNav has partnered with integrators in over 60 countries to deliver world-class navigation solutions and industry leading customer support.

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