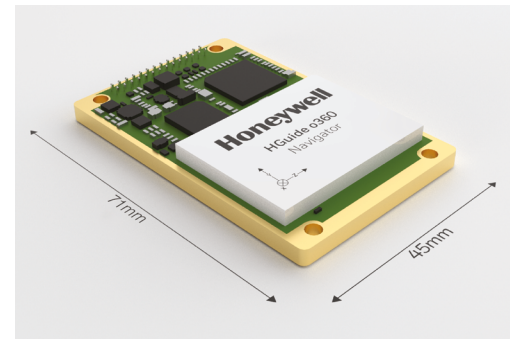


# HGUIDE o360 INERTIAL/GNSS NAVIGATOR

The HGuide o360 is a single-card, all attitude INS/GNSS Navigator designed for platforms where high performance navigation data is required in an ultra-low SWAP package.



*Proven - Dependable - Accurate*

The HGuide o360 INS/GNSS navigator contains a powerful dual-antenna, multifrequency, multi-constellation, RTK capable GNSS receiver and Honeywell's leading edge i300 IMU technology and a high grade calibrated Magnetometer.

Honeywell's sensor fusion expertise blends the IMU, GNSS and Magnetometer data to deliver an accurate, robust navigation service to your application with all the functionalities that you need, even through GNSS outages. The HGuide o360 output data includes timestamped position, velocity, angular rate, linear acceleration, roll, pitch and heading information at 100Hz. In dual-antenna mode, the device supports GNSS-based heading measurements and initialization.

## KEY HONEYWELL ADVANTAGES

- Honeywell advanced navigation algorithms for air, land and sea tailored to industrial applications
- Full INS/GNSS capability in a common GNSS form factor
- Proven reliability and dependability. MTBF >50,000 hrs
- Onboard NTRIP client and accepts RTCM3 corrections
- Multiple, configurable communication ports including UART, Ethernet and CAN
- Direct input of quadrature pulses from Distance Measurement Instrument (DMI)
- Compatible with most commercial LiDAR sensors
- Onboard Data Logging available for IMU and GNSS data suitable for Post Processing
- Raw IMU Data Rate up to 600Hz, GNSS 5Hz
- Compatible with Honeywell HGuide Post Processing suite
- The HGuide o360 inertial navigation system is not ITAR controlled. Its Export Control Classification Number (ECCN) is 7A994 and is generally available free of an export license

## HGUIDE o360 TYPICAL KEY CHARACTERISTICS

<b>GNSS Capability</b>	SBAS, RTK, and Dual Antenna Standard
<b>GNSS Signals</b>	GPS L1/L2; GLONASS G1/G2; BeiDou Phase 2&3 B1/B2/B3; Galileo E1/E5b; SBAS (WAAS, EGNOS, MSAS, GAGAN,SDCM)
<b>Time to First Fix</b>	Cold Start = 60 Sec, Warm Start = 30 Sec, Hot Start with Heading Fix = 10 Sec
<b>Shock/Vibration</b>	25g for 11 msec (MIL-STD-810G) / Random 2.2g's RMS 20-2000 Hz
<b>Supply Voltage/Power Consumption</b>	+3.3VDC +/- 4% / 3 Watts Typical
<b>Weight/Size</b>	<30g, 71mm x 45mm x 12mm
<b>Operating Temperature Range</b>	-40°C to +85°C
<b>Regulatory<sup>1</sup></b>	RoHS, WEEE, FCC Part 15, ICES-003, CISPR 32, CE Mark Compliant
<b>Communication Interfaces</b>	4 x UART (LVTTTL), USB, Ethernet & NTRIP Client, 2 x CAN (ISO 11898-2)
<b>Discrete Interfaces</b>	1 x PPS Output, 2 x User Event In, Direct Quadrature Encoder Input
<b>Internal Data Storage</b>	On-board Micro-SD Card Slot with optional USB access
<b>Board Connector</b>	28-pin male header (2mm); Samtec PN TMM-114-03-G-D
<b>GNSS Antenna Connector</b>	RF: 2 x MMCX, female, straight, 100mA Maximum Current

<sup>1</sup> Requires compliant housing and electrical interface.

## HGUIDE o360 NAVIGATION PERFORMANCE

POSITION		VELOCITY		HEADING <sup>2</sup>	PITCH/ROLL
Horizontal (m, 1σ)	Vertical (m, 1σ)	Horizontal (m, 1σ)	Vertical (m, 1σ)	(°, 1σ)	(°, 1σ)
< 0.01 RTK < 0.6 SBAS	0.025 RTK < 0.8 SBAS	< 0.015	< 0.01	< 0.06	< 0.015

<sup>2</sup> In dual antenna mode with 2m baseline; longer baselines improve performance

## HGUIDE O360 RTK DUAL ANTENNA PERFORMANCE – GNSS OUTAGES BY DURATION<sup>3, 4, 5, 6, 7, 8</sup>

RMS Error	3 Seconds	10 Seconds	30 Seconds	60 Seconds
Horizontal (m)	0.08	0.20	1.4	5.0
Vertical (m)	0.06	0.15	0.45	1.0
Heading (°)	0.070	0.085	0.095	0.120
Horizontal Velocity (m/s)	0.015	0.04	0.1	0.2
Vertical Velocity (m/s)	<0.01	0.02	0.03	0.04

<sup>3</sup> Unit accepts DMI pulse count aiding through the direct quadrature encoder input

<sup>4</sup> HGUIDE MOTION DETECT and LAND VEHICLE CONSTRAINTS improve Land Vehicle performance during GNSS outages even without an Odometer (DMI)

<sup>5</sup> Typical Horizontal RMS Error of <1% of distance traveled with Land Vehicle Constraints and Zero Velocity Detect enabled, but no DMI input

<sup>6</sup> Statistics are calculated by taking the RMS of the maximum error over multiple complete GNSS outages in a Land Vehicle application

<sup>7</sup> HGuide o360 was in RTK GNSS mode before and after outages

<sup>8</sup> Navigation performance with GNSS in SBAS mode only will have similar error growth, but absolute accuracy will be reduced

## GNSS OUTAGES BY DISTANCE PER AIDING SOURCE<sup>9</sup>

DMI	Horizontal RMS Error	<0.2% of distance traveled
DVL	Horizontal RMS Error	<0.6% of distance traveled

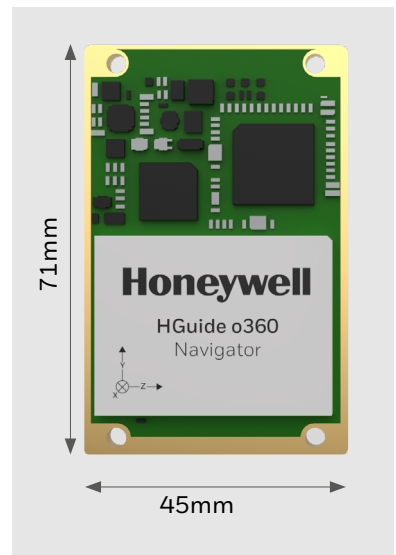
<sup>9</sup> Details of qualification tests and sensors used available on request

## ONBOARD IMU SPECIFICATION

Spec	Gyro	Accel
Range	+/- 490 °/s	+/- 16g
Bias	30 °/hr 1σ	500 μg 1σ
Bias Stability	0.5 °/hr 1σ	5 μg 1σ
Random Walk	0.06 °/√hr	0.02 m/s/√hr

## ACCESSORIES AVAILABLE

- HGuide development kit to reduce design time/costs
- GNSS antennas and cables with Survey and UAV grade options
- HGuide Data Reader, SDK and ROS Drivers to support easy integration



### For More Information

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FUTURE  
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