HGUIDE o480
INERTIAL/GNSS NAVIGATOR

The HGuide o480 is a single-card, all-attitude INS/GNSS navigator for air, land, and marine platforms where high-performance navigation data is required in an ultra-low SWaP package.

EU designed and built

The HGuide o480 contains Honeywell's leading-edge IMU technology, a Septentrio multi-frequency, multi-constellation, RTK-capable GNSS receiver, plus an onboard barometer and magnetometer. It is available as a single-antenna, triple-frequency, or dual-antenna, dual-frequency variant.

Honeywell's sensor fusion blends the sensor data to deliver an accurate, robust navigation service to your application, with all the functionality you need—even through GNSS outages. The HGuide o480 outputs timestamped position, velocity, angular rate, linear acceleration, roll, pitch, heading information, and more, at rates up to 400 Hz. In a dual-antenna configuration, the device supports GNSS-based heading outputs and static initialization.

The Septentrio AIM+ feature detects and neutralizes complex wideband interference, including GNSS jamming and spoofing, resulting in secure operation.

KEY HONEYWELL ADVANTAGES

- Designed and manufactured in the EU
- Honeywell advanced navigation algorithms for air, land and marine applications
- Full INS/GNSS capability in a common GNSS form factor
- Honeywell reliability as standard.MTBF >120,000 hrs
- Onboard Data Logging available for Post Processing
- Compatible with most commercial LiDAR sensors
- Raw IMU Data Rate up to 400Hz, GNSS 20Hz
- Blended Navigation data rate = 400Hz
- Multiple PPP correction options available

- Wide range of Velocity Aiding sources, including quadrature pulses and data messages from a DMI, Honeywell HRVS true ground speed sensor for land and aerial platforms and DVL for marine platforms.
- Onboard NTRIP client and accepts RTCM3 corrections
- Multiple, configurable communication ports includingUART, Ethernet, USB , SPI and CAN
- Drivers for ROS and ROS 2. Portable C++ API available.
- Support for external IMUs to scale performance
- The HGuide o480 inertial navigation system is generally available free of an export license

HGUIDE o480 TYPICAL KEY CHARACTERISTICS

Weight / Size / Operating Temp. Range	26g, 71.1mm x 45.7mm x 8mm, -40oC to +85oC
Supply Voltage/Power Consumption	+3.3VDC to 5VDC +/- 5% / 1.5 Watts nominal
Communication Interfaces	5 x UART (LVCMOS), USB, Ethernet & NTRIP Client, 2 x CAN (ISO 11898-2)
Discrete Interfaces	1 x PPS Output, 1 x IMU Sync, 2 x User Event In, Direct Quadrature Encoder Input On-board
Internal Data Storage	16GB eMMC with USB access
Shock/Vibration	40g for 11 msec (MIL-STD-810G) / Random 2.2g's RMS 20-2000 Hz
GNSS Capability	SBAS, RTK. PPP, Single or Dual Antenna variants
GNSS Signals (Single Antenna) Mosaic X5	GPS L1, L2, L5, GLONASS L1, L2, L3 CDMA, BeiDou B1, B2, B3, Galileo E1, E5b, E6, NavIC L5 SBAS EGNOS, WAAS, GAGAN, MSAS, QZSS L1, L2, L-band
GNSS Signals (Dual Antenna) Mosaic H	GPS L1, L2, GLONASS L1, L2, BeiDou B1, B2, B3, Galileo E1, E5b, SBAS EGNOS, WAAS, GAGAN, MSAS, QZSS L1, L2
Time to First Fix	Cold Start = 45 Sec, Warm Start = 20 Sec
Board Connector	60-pin SAMTEC PN SEMS-130-02- 03.0-H-D-K-TR
GNSS Antenna Connector	RF: 2 x MMBX, female, straight, 5VDC, 100mA Maximum Current
Regulatory[1]	RoHS, WEEE, FCC Part 15, ICES-003, CISPR 32, CE Mark Compliant

[1] Requires compliant housing and electrical interface.

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HGUIDE o480 NAVIGATION PERFORMANCE

POSITION		VELOCITY		HEADING[2]	PITCH/ROLL
Horizontal (m, 1σ)	Vertical (m, 1σ)	Horizontal (m, 1σ)	Vertical (m, 1σ)	(°, 1σ)	(°, 1σ)
< 0.006 (+0.5ppm) RTK < 0.6 SBAS	0.01 (+1ppm) RTK < 0.8 SBAS	< 0.015	< 0.01	< 0.06	< 0.015

[2] In dual antenna mode with 2m baseline; longer baselines improve performance

HGUIDE O480 RTK DUAL ANTENNA PERFORMANCE — GNSS OUTAGES BY DURATION [3, 4, 5, 6, 7, 8]

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

[3] Unit accepts DMI pulse count aiding through the direct quadrature encoder input
[4] HGUIDE MOTION DETECT and LAND VEHICLE CONSTRAINTS improve Land Vehicle performance
   during GNSS outages even without an Odometer (DMI)
[5] Typical Horizontal RMS Error of <1% of distance traveled with
Land Vehicle Constraints and Zero Velocity Detect enabled, but no DMI input
[6] Statistics are calculated by taking the RMS of the maximum error over multiple complete GNSS outages in a Land Vehicle application
[7] HGuide o360 was in RTK GNSS mode before and after outages
[8] Navigation performance with GNSS in SBAS mode only will have similar error growth, but absolute accuracy will be reduced

GNSS OUTAGES BY DISTANCE PER VELOCITY AIDING SOURCE9 [9]

Land	DMI or HRVS	<0.25% of distance traveled
HRVS	Horizontal RMS Error	<0.5% of distance traveled
DVL	Horizontal RMS Error	<0.6% of distance traveled

[9] Details of qualification tests and sensors used available on request

HGUIDE o480 NAVIGATION PERFORMANCE [10]

SPEC	GYRO	ACCEL
Range	+/- 490 °/s	+/- 30g
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

[10] Room Temperature

ACCESSORIES AVAILABLE

- HGuide development kit to reduce design time and costs

- GNSS antennas and cables with survey- and UAV-grade options

- HGuide Data Reader graphical UI and data logger for configuration and data logging

- SDK and ROS drivers to support easy integration

For more information
Please click HGuide.com or email us at:
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THE
FUTURE
IS
WHAT
WE
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