HGUIDE n580
INERTIAL/GNSS NAVIGATOR

> The HGuide n580 inertial navigation system is a small, light-weight, self-contained, all-attitude inertial navigation system. The n580 can be used for a wide variety of industrial applications where continuous navigation information is a critical component.

Proven — Dependable — Accurate

The HGuide n580 inertial navigation system contains Honeywell's leading edge HG4930 IMU and HGuide g080 dual-antenna, triplefrequency, multi-GNSS RTK receiver. Honeywell's integration expertise blends the IMU and GNSS data to provide an accurate, robust navigation service to your application with all the functionalities that you need, even in extended GNSS-denied environments.

The HGuide n580 output data includes time stamped position, velocity, angular rate, linear acceleration, roll, pitch and heading information at 100Hz. The internal GNSS receiver delivers GNSS-based heading. The HGuide n580 can accept a wide variety of external aiding sources to further improve performance in GNSS-denied conditions.

KEY HONEYWELL ADVANTAGES

- Honeywell advanced navigation algorithms for air, land and sea tailored to industrial applications
- Proven reliability, dependability, and ruggedness. 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 (16GB, ~1 week of data) of IMU and GNSS data suitable for Post Processing
- Log IMU and GNSS data suitable for Post Processing
- OEM versions available
- The HGuide n580 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 n580 KEY CHARACTERISTICS

GNSS Capability	SBAS, RTK, and Dual Antenna Standard; PPP Capable
GNSS Signals	GPS L1/L2/L5; GLONASS G1/G2/G3/P1/P2; BeiDou Phase 2&3 B1/B2/B3; Galileo E1/E5a/E5b/E6; NavIC (IRNSS) L5; QZSS L1/L2/L5
Time to First Fix	Cold Start = 60 Sec, Warm Start = 30 Sec, Hot Start with Heading Fix = 10 Sec
Shock/Vibration	40 g for 11 msec (MIL-STD-810G) / Random 7.7g's RMS 20-2000 Hz
Supply Voltage/Power Consumption	+9VDC to +36VDC / 7.5 Watts Typical
Weight/Size	<500g, ~9 cm x 6cm x 6cm
Operating Temperature Range	-40°C to +71°C
Regulatory	RoHS, WEEE, FCC Part 15, ICES-003, CISPR 32, CE Mark Compliant
Environmental Seal	IP68 per IEC 60529
Communication Interfaces	RS-422 (2x), 5V CMOS, RS-232, USB, Ethernet & NTRIP Client, CAN ISO 11898-2
Discrete Interfaces	Time Mark Outputs (2), User Event In (2), Direct Quadrature Encoder Input
Internal Data Storage	16 GB, USB 2.0 Access
LED Status Indicators	Power, GNSS, Navigation, Data Logging

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HGUIDE n580 NAVIGATION PERFORMANCE[1]					
POSITION		**VELOCITY**		**HEADING[1]**	**PITCH/ROLL**
Horizontal (m, 1σ)	Vertical (m, 1σ)	Horizontal (m/s, 1σ)	Vertical (m/s, 1σ)	(°, 1σ)	(°, 1σ)
< 0.01 RTK < 0.4 SBAS	< 0.025 RTK < 0.4 SBAS	< 0.015	< 0.01	< 0.03	< 0.015

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

HGUIDE n580 RTK DUAL ANTENNA PERFORMANCE — GNSS OUTAGES BY DURATION[2, 3, 4, 5, 6, 7]				
RMS Error	3 Seconds	10 Seconds	30 Seconds	60 Seconds
Horizontal (m)	0.08	0.10	1.0	3.5
Vertical (m)	0.05	0.10	0.30	0.70
Heading (°)	0.01	0.03	0.04	0.05
Horizontal Velocity (m/s)	0.02	0.04	0.06	0.15
Vertical Velocity (m/s)	<0.01	0.01	0.02	0.03

[2] Unit accepts DMI pulse count aiding through the direct quadrature encoder RS422 input
[3] HGUIDE MOTION DETECT and LAND VEHICLE CONSTRAINTS improve Land Vehicle performance during GNSS outages even without an Odometer (DMI)
[4] Typical Horizontal RMS Error of ~0.25% of distance traveled with Land Vehicle Constraints and Zero Velocity Detect enabled, but no DMI input
[5] Statistics are calculated by taking the RMS of the maximum error over multiple complete GNSS outages in a Land Vehicle application
[6] HGuide n580 was in RTK GNSS mode before and after outages
[7] 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[8]

DMI	Horizontal RMS Error	<0.05% of distance traveled
DVL	Horizontal RMS Error	<0.2% of distance traveled

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

ONBOARD IMU SPECIFICATION

Spec	Gyro	Accel
Range	+/- 400 °/s	+/- 20g
Bias	7 °/hr 1σ	1.7 mg 1σ
Bias Stability	0.25 °/hr 1σ	25 µg 1σ
Random Walk	0.04 °/ √hr	0.045 m/s/ √hr

ACCESSORIES AVAILABLE

- HGuide Terminated and Unterminated Power and I/O cables
- GNSS antennas and cables with Survey and UAV grade options
- HGuide Data Reader, SDK and ROS Drivers to support easy integration

N61-3101-000-000 I 04/22

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