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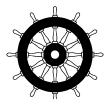
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R6 NAV NEO

High accuracy Heading and Position
with Inertial Support



R6 NAV NEO

Panama approved NPPU and SOLAS approved high-precision DGNSS for bridge integration and use on any waters around the globe



CANAL DE PANAMÁ

Panama Approved

R6 NAV NEO is a high-precision navigation system approved by the Panama Canal Authority (ACP), meeting the requirements for a Non-Portable Piloting Unit (NPPU) in the Panama Canal.

Panama pilots are able to quickly connect portable tablets running the pilotage software of choice to the system's Wi-Fi Access Point providing real-time data of the vessel's position, heading and movements at extreme accuracy.



SOLAS Approved

R6 NAV NEO is also SOLAS approved for bridge integration and general use on any waters. It is designed to meet the increased demand for precision navigation in ports and at docking, with protection against GNSS jamming and spoofing attacks.

The ability to use the extreme precision and integrity protection anywhere, makes R6 NAV NEO a natural choice for SOLAS vessels transiting the Panama Canal. The system will already be in use when arriving to Panama, ensuring a smooth Canal transit.

Key features:

- Dual-DGNSS providing top of the line accuracy for position, speed, course, heading and rate of turn.
- Accurate longitudinal and transversal speed log system for docking and precise manoeuvring.
- Transmitting Heading Device (THD), Speed and Distance Measuring Equipment (SDME) and Rate of Turn Indicator (ROT). SOLAS approval expected late 2024.
- GNSS corrections via SBAS, IALA beacon, L-band services (Atlas, Galileo HAS), as well as local RTK services.
- IMU (Inertial Measurement Unit) back-up system of the ships' position and movements.
- Display of precise position and movements on the R6 CDU (control and display unit) as well as distributed to ECDIS, ARPA or other systems onboard the ship over standardized network and serial interfaces.
- Wireless interface to third party piloting software, such as SafePilot, SEAiq, OpenCPM, Qastor, OrcaX, PilotPro
- AIS target data from built-in AIS receiver
- UPS with >5 hours battery back-up

Anti-jamming and anti-spoofing

The R6 NAV NEO system features built-in anti-jamming and anti-spoofing technology that effectively suppresses attempts to compromise the vessel's position.

The system combines digital filtering with advanced algorithms to analyse and detect signal interference. It identifies, separates, and suppresses interfering signals. In combination with dual-DGNSS reception and IMU-backed position, the R6 NAV NEO provides exceptional position integrity.

R6 NEO – Panama approved NPPU without display

The R6 NEO system is a simplified NPPU option approved for the Panama Canal, but comes without the R6 CDU (control and display unit), and thus without the SOLAS approval. Instead of the operational HMI on a CDU, configurations are made using networked web interfaces of the R6 NAV PRO Compass and the I6 IMU.

The R6 NEO is easy to upgrade to R6 NAV NEO with an R6 CDU.



A flexible system architecture

With our modular design, the new R6 NAV PRO Compass Sensor is a highly capable foundation for other configurations to meet specific needs, with or without the Panama-specific features.



I6 IMU – Inertial Measurement Unit

The IMU integration provides position backup in cases where the GNSS position may be lost, and contributes to further improved position integrity.



C6 COM – Communication Unit

Reception of RTK corrections, a built-in AIS receiver for provision of AIS target data, and Wi-Fi interface for piloting software.



U6 UPS

UPS providing >5 hours battery back-up for uninterrupted operation even during power outage.



Technical specifications

Dimensions/Weight

Navigation Sensor	261x53x177 mm / 1900 g
CDU	220x125x45 mm / 1500 g
IMU Unit	205x150x53 mm / 1100g
Com Unit	205x150x53 mm / 1100g
U6 UPS	205x150x53 mm / 1400g
Battery	202x202x110 mm / 9200g

Environmental

Operation temperature	-15°C to +55°C
Storage temperature	-30°C to +80°C

Positioning / Heading

Supported systems	GPS/GLONASS/ GALILEO/ BeiDou QZSS*, NavIC* and Atlas L-band
Signals supported	GPS L1CA/L1P/L1C/L2P/L2C/L5 GLONASS G1/G2/G3, P1/P2 BeiDou B1i/B2i/B3i/B1C/B2a/B2b/AceBOC GALILEO E1BC/E5a/E5b/E6BC/AltBOC QZSS L1CA/L2C/L5/L1C/L6 NavIC (IRNSS) L5, Atlas L-band
Differential modes	SBAS, RTCM-SC104, IALA Beacon, RTK
Rate of Turn accuracy	< 0.1°/min
Speed Accuracy	< 1 cm/sec
Sensitivity	-142 dBm
Channels	1.100+
Update rate	Up to 10 Hz
Accuracy (RMS 67% / 95%)	Uncorrected: 1.2 m / 2.5 m SBAS/RTCM-SC104: 0.3 m / 0.6 m Atlas L-band subscription: 4 cm / 8 cm RTK: 8 mm + 1 ppm / 15 mm + 2 ppm
Heading Fix	10s typical (Hot Start)
Heading (RMS)	< 0.02° RMS @ 5.0 m antenna separation
Pitch/Roll (RMS)	< 0.5°
Heave (RMS)	< 5 cm RMS (RTK)
Timing (1PPS) accuracy	20 ns
GNSS Fix	60s/30s typical (Cold/Warm)
Gyro Bias Instability	≤ 1.2°/hr
Angular Random Walk	≤ 0.08°/hr

Data interfaces

IEC 61162-1/2	RS-422 Input output
IEC 61162-450	Ethernet RJ45
Alert Relay	0.1-5A, 30VDC, 150W
GNSS	2x 50 Ohm (TNC), 5 VDC
1PPS	5 VDC (BNC)
UHF/AIS	N-Type
Wi-Fi	SMA

Power input

Input voltage	12-24 VDC (nominal)
Consumption	Navigation Sensor: 8 Watt. CDU: 5 Watt.

IALA Beacon Receiver

Dual receiver	Manual- or Automatic-tuning
Frequency	283.5 to 325.0 kHz
MSK Bit Rates	50, 100, 200 bps
Cold Start Time	< 1 minute typical
Reacquisition	< 2 seconds typical
Sensitivity	25 µV/m for 6 dB SNR @ 200 bps

UHF Receiver

Frequency	403 to 473 MHz (default 454.325 MHz)
Bandwidth	12,5/20/25 KHz
Modulation	GMSK/4FSK/8FSK/16FSK)
Protocol	TrimTalk 450S (configurable)
Sensitivity	< -115dBm

AIS Receiver

Frequency	161.975 / 162.025 MHz
Sensitivity	< -116dBm at 20% packet error rate

Wi-Fi

Access Point	IEEE 802.11 a/b/g/n, 2.4 GHz
Number of Clients	4
Security	WPA2
Output Power	18 dBm
Sensitivity	< -82 dBm

