



SAAB



R6 NEO

High accuracy Heading and Positioning with Inertial support

R6 NEO is Saab's latest navigation system designed to **meet NeoPanamax requirements** for Panama Canal passage. It utilizes advanced technology for precise ship movement information. The NEO system is an integral SOLAS-approved heading sensor for daily navigation while satisfying Panama requirements. It offers centimeter RTK-based navigation, accurate Rate-Of-Turn and heading measurements, and optional SOLAS-approved Speed log and Rate-Of-Turn functionality.

Ease of use

The system is designed to be self-monitoring and user-friendly, offering a seamless experience. It incorporates the highly versatile R6 CDU (Control and Display Unit) and provides flexibility through various sensor configurations and antennas, making it one of the most adaptable systems available. The intuitive and user-friendly design ensures smooth operation, serving as a valuable tool for daily tasks. The CDU boasts a modern graphical user interface with a 7-inch touch display that is sunlight-readable and delivers accurate colours from any viewing angle. With a resolution of 1024x600 pixels and support for over 16 million colours, the display provides a visually appealing experience. Additionally, the R6 CDU includes an interface for convenient dimming of central bridge equipment.

Multi-purpose display

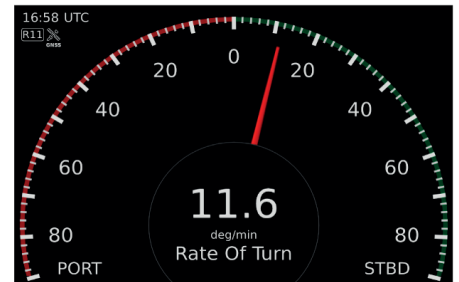
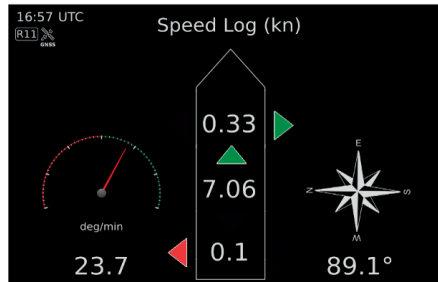
To streamline the bridge setup and reduce equipment and installation costs, the CDU features a shared display capability with our type-approved R6 Supreme AIS/VDES transponder.

This integration ensures a minimized number of screens on the bridge, promoting efficiency. By utilizing multiple CDUs, users can simultaneously access various views and configurations, enabling them to monitor essential parameters such as position, heading, rate-of-turn, speed logging, and more from the system. This versatile functionality empowers users with comprehensive situational awareness and flexibility in their monitoring capabilities.

Inertial Navigation

R6 NEO goes beyond the traditional Saab navigation system by incorporating built-in gyros and accelerometers in a 6 degree of freedom IMU (Inertial Measurement Unit) configuration.

This integration of inertial navigation enhances the system's robustness, enabling it to sustain accurate navigation even in demanding conditions like passing under bridges where the GNSS signal may be lost. The R6 NEO's capability to maintain precise navigation under such circumstances showcases its resilience and dependability.



Precise navigation with RTK

Input of RTK by Satellite/UHF Radio/Wi-Fi Connection/External input make the system able to calculate position with centimetre accuracy and very precise heading with a resolution of hundreds of a degree.

Spoofing and Jamming Detection

The rise of spoofing has become a significant worry, as it often places vessels in dangerous situations that could potentially result in fatal outcomes.

However, R6 NEO offers a robust multi-frequency and multi-system solution to counteract such risks. By providing Position and Heading stabilization, along with multiple methods of integrity monitoring using Inertial Navigation technology, R6 NEO effectively safeguards against any attempts to compromise vessel integrity.

This comprehensive approach serves as a powerful defense mechanism against the dangers associated with spoofing.

Meeting NeoPanamax requirements

By combining the R6 NEO system with the R6 Supreme, the resulting setup satisfies the NeoPanamax requirement for navigating the Panama Canal.

Technical specifications

Dimensions/Weight

Navigation Sensor	261x53x177 mm / 1900 g
CDU	220x125x45 mm / 1500 g
IMU Unit	(165x128x54) mm / TBD
Com Unit	(165x128x54) mm / TBD

Data interfaces

IEC 61162	8+1 IEC 61162-1/2 - Output 5+1 IEC 61162-1/2 - Input 2x2 IEC 61162-450 Ethernet RJ45
Alert Relay	0.1-5A, 30VDC, 150W
GNSS	2x 50 Ohm (TNC), 5 VDC
1PPS	5 VDC (BNC)

Power input

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

IALA Beacon Receiver (HW option)

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

Environmental

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

Features

- Market leading GNSS/DGNSS performance
- Dual 61162-450 network interfaces for easy integration and redundancy
- Dual-use CDU can combine functionality with R6 Supreme AIS/VDES system
- CDU with waterproof front for exposed panel mount installations
- 1PPS timing output port
- Up to 4000 waypoints and 128 routes
- Integrity monitoring by RAIM and Heartbeat
- 128 waypoints per route
- Rate-of-turn indicator
- True Heading device
- Speed Log functionality
- Spoofing and Jamming Detection

Options

- Multi frequency operation
- Increased multi-path resilience
- RTK support license option
- Centimetre level accuracy
- Satellite-based correction subscription service

Positioning / Heading

Supported systems	GPS/GLONASS/ GALILEO/ BeiDou QZSS, Navic and Atlas L-band
Signals received	L1CA/LIP/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
Differential modes	SBAS, RTCM-SC104 input, IALA Beacon, RTK
Rate of Turn	100°/s maximum, accuracy <0.1°/min
Speed Accuracy	<1 cm/sec
Sensitivity	-142 dBm
Channels	1.100+
Update rate	Up to 50 Hz
Accuracy* (RMS 67% / 95%)	Uncorrected: 1.2 m / 2.5 m SBAS/RTCM-SC104: 0.3 m / 0.6 m 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