Seapath™ 20 NAV

KONGSBERG

The GPS Compass and Position Sensor

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The Seapath 20 NAV provides position and true heading output with no moving parts. The Seapath 20 NAV replaces several vessel instruments with one compact navigation package (gyrocompass, GPS receiver equipment, speed log and Rate-Of-Turn indicator) that outputs heading, position, velocity and rate-of-turn, together with 1-second time pulse (1PPS) for synchronization of other systems.

Flexible components

The product consists of a Sensor Unit, a Processing Unit and a Display Unit. The Sensor Unit contains two GPS sensors and an inertial rate sensor. This unit is to be mounted in the vessel's mast. The Processing Unit contains the main CPU, serial interface and Ethernet. The Display Unit has a LCD screen for navigation information and user control buttons.

Perfect accuracy

Precision heading is derived from the fixed-distance dual GPS antenna arrangement in the Sensor Unit, using carrier phase data to generate heading information independent of latitude and vessel dynamics. GPS position and velocity are calculated from both of the two antennas, which gives total redundant position and velocity sources in this product. Input of DGPS corrections or reception of SBAS (WAAS/EGNOS) signals may improve position accuracy. The inertial element provides yaw information. In case of short GPS signal loss, the inertial sensor automatically takes over as the prime source for heading determination until the GPS comes back on line. The rate element and GPS are working together seamlessly, ensuring accurate, continuous and robust heading information.

Easy to install and operate

The Seapath 20 NAV requires no scheduled maintenance or recalibration. The product offers a flexible configuration of the outputs and interface setups, depending on the vessel and application. It is easy to operate, install and align.

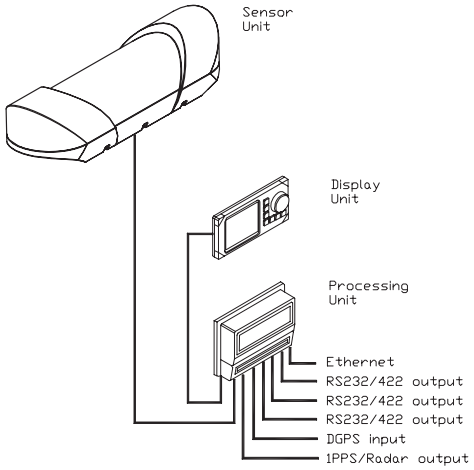
Type approved

The product is IMO type approved as THD (Transmitting Heading Device) using GNSS principle (pending) and GPS Receiver Equipment and has a Wheelmark. Be aware that the product can only be certified either as THD or GPS Receiver Equipment onboard and not both.

Features

Features:

- True heading anywhere on earth
- 0.5º heading accuracy
- Heading accuracy unaffected by the latitude
- Heading available in periods of GPS drop-outs
- Compliant to WAAS, EGNOS and MSAS Satellite Based Augmentation Systems
- Capable of DGPS multi-reference station processing
- Replaces several instruments with one robust, integrated product
- Only two-pair cable (no coax) between the mast unit and the Processing unit on the bridge.
- 20 Hz update rate on heading, rate of turn and position measurements
- Three RS-422 output serial lines to equipment requiring data from a IMO approved product
- Three RS-232 configurable output serial lines for non IMO critical purposes
- Output data on Ethernet
- 1PPS output for synchronisation of other survey equipment



Technical specifications

Performance Data *

Heading accuracy, dynamic:	0.5º RMS
Heading resolution:	0.01º RMS
Heading operational measurement range:	Roll/pitch within ± 30º
Rate of turn accuracy:	0.5º/s +5%
Position accuracy with DGPS or SBAS:	1.2 m RMS or 2.5 m 95% CEP
Velocity accuracy:	0.07 m/s 95% CEP
Max turn rate:	80º/s

* The performance figures are valid with a minimum of four visible satellites, HDOP less than 4, PDOP less than 6, high quality dGPS corrections and otherwise normal conditions. Excessive multipath, GPS signal obstructions or interference may reduce the performance.

Physical Dimensions

Processing Unit

Width x Height x Depth	287 x 203 x 60 mm
Weight:	1.3 kg (2.9 lbs.)
Colour:	Black

Display Units

Width x Height x Depth	220 x 110 x 39 mm
Weight:	0.5 kg (1.1 lbs.)
Colour:	Black

Sensor Unit

Width x Height x Depth	850 x 205 x 262 mm
Weight:	8 kg (17.6 lbs.)
Colour:	White

Environmental Specification

Processing Unit

Enclosure material:	Anodised aluminium
Enclosure protection:	IP-44
Operating temperature range:	-25 to +55ºC (-13 to 131°F)
Storage temperature range:	-25 to +60ºC (-4 to 140°F)
Safe distance to compass:	0.3 m (1.0 ft)
Power Voltage:	12 or 24 VDC

Display Units

Enclosure protection:	IP-56 from front, IP-43 from back
Operating temperature range:	-15 to +55ºC (5 to 131°F)
Storage temperature range:	-30 to +80ºC (-22 to 176°F)
Safe distance to compass:	0.35 m (1.1 ft.)

Sensor Unit

Enclosure material sensor housing:	Polyethylene
Enclosure material bracket:	Anodised aluminium
Enclosure protection:	IP-66
Operating temperature range:	-25 to +55ºC (-13 to 131°F)
Operating humidity (max.):	100%
Storage temperature range:	-30 to +70ºC (-22 to 158°F)
Storage humidity (max.):	100%
Safe distance to compass:	0.3 m (1.0 ft)

Other Data:

Data I/O

Configuration:	Display unit connected to the Processing unit
Data outputs:	Three RS-232, three RS-422 serial lines and Ethernet UDP/IP
Data inputs:	One RS-232 and one RS-422 serial line
DGPS corrections:	RTCM 104 version 2.2 and SAPOS®EPS
Baud rate:	Max. 38.4 kBaud

HDT, ROT, GGA and GLL data update rates:	Up to 20 Hz
HDT, ROT, GGA and GLL data delay:	Less than 50 ms
ZDA and VTG data update rate:	Max 2 Hz
VTG data delay:	Max 1 sec
ZDA data delay:	1 ms
1 PPS Signal accuracy	0.5 ms

Data output formats:

- NMEA 0183 ZDA, DTM, GBS, GNS, GST, RMC,GGA, GLL, VTG, HDT, ROT, GSA, GRS and proprietary messages PSXN, 20. The PSXN, 20 message includes position, height and heading quality information.
- ZDA 1 Hz. An NMEA ZDA message that is output at 1 Hz interval.
- Radar output on the AD-10 format (Simrad and Furuno radar compatible) and a 1PPS signal.

Approved according to IMO GPS Receiver Equipment standard and THD-standard using GNSS method by DNV and BSH.

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