SEAPATH® 380-R SERIES

KONGSBERG

THE ULTIMATE HEADING, ATTITUDE AND POSITIONING SENSOR

The Seapath 380-R series uses a state-of-the-art dual frequency GNSS receiver, inertial technology and processing algorithms to provide surveyors with the best possible accuracy in position, attitude and timing. All available GPS, GLONASS, Galileo, Beidou and QZSS satellites are used in the position solution. The MGC part of the Seapath 380-R functions both as an IMU in the Seapath and as a stand-alone IMO type approved gyrocompass.

Function

The advanced Seapath navigation algorithms integrate RTK GNSS data with the inertial sensor data from the MGC. This gives the Seapath 380-R unique advantages compared to stand- alone RTK products. The Seapath product's accurate roll, pitch and heading measurements allow the RTK antenna position to be referenced to any point on the vessel where accurate position and velocity are required. All data from Seapath have the same time stamp and the output is in real-time. Subdecimetre position accuracy can be achieved through download of satellite orbit and clock data from the internet and by post processing of satellite and IMU data.

Product range

The latest Seapath software includes Automatic Online Calibration (AOC) that significantly improves the roll and pitch accuracy. With the AOC functionality recalibration of the IMU is no longer required if the vessel is in motion.

The Seapath 380-R series is delivered in the following product range:

	Roll/Pitch [RMS]	Heading [RMS]	
		2.5m baseline	4m baseline
Seapath 380-R2	0.01°	0.03°	0.02°
Seapath 380-R3	0.007°	0.02°	0.01°
Seapath 380-R4	0.005°	0.012°	0.007°

System configuration

This Seapath series is a two-module solution with a Processing Unit and an HMI unit connected via Ethernet. The Processing Unit runs all critical computations independent from the user interface on the HMI unit to ensure continuous and reliable operation. The HMI unit presents the vessel motion in a clear and easy-to-understand format.
The Seapath is operated through the operator software installed on the HMI unit. This software is used for performance monitoring, configuration and troubleshooting of the system.

Interfaces

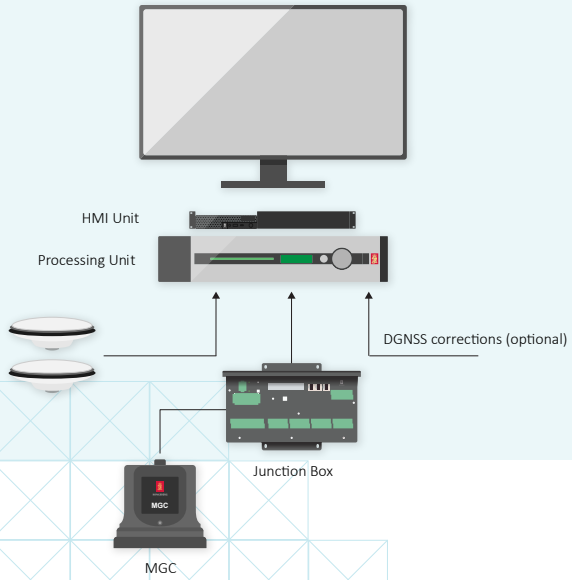
The Processing Unit has eight RS-232/422 serial lines, four Ethernet LANs and three analog output channels. This makes distribution of Seapath data to various users onboard almost endless. DGNSS corrections of various quality and sources are input on a configurable RS-232/422 serial line or Ethernet.

Applications

By using standard DGNSS, XP2/G2/G4/G4+ and RTK corrections, the Seapath 380-R is a unique solution for hydrographic surveying and dredging work demanding the most comprehensive and accurate surveying data available.

FEATURES

- 0.005° to 0.01° heading accuracy depending on MGC
- 2 cm heave accuracy by use of the PFreeHeave® algorithms
- Meets IHO special order requirements
- Robust against GNSS dropouts due to the inertial sensor part of the product
- 555-channel dual frequency GPS/GLONASS/Galileo/Beidou receiver
- All available GPS/GLONASS/Galileo/Beidou/QZSS satellites are used in the positioning solution
- IMO type approved gyrocompass part of the product
- Fugro XP2/G2/G4/G4+ corrections and RTK supported
- RTK corrections format RTCM and CMR supported
- Includes SBAS corrections (WAAS, EGNOS, MSAS, GAGAN)
- All data have the same time stamp and to an accuracy of 0.001 s to the actual measurement time
- Logging of raw satellite and IMU data possible



TECHNICAL SPECIFICATIONS

SEAPATH 380-R SERIES

PERFORMANCE

Heave accuracy (real-time)	5 cm or 5% whichever is highest
Heave accuracy (delayed signal)	2 cm or 2% whichever is highest
Heave motion periods (real-time)	1 to 20 seconds
Heave motion periods (delayed signal)	1 to 50 seconds
Position accuracy DGNSS	0.5 m RMS or 1 m 95% CEP
Position accuracy SBAS	0.5 m RMS or 1 m 95% CEP
Position accuracy Fugro XP2/G2/G4/G4+	0.1 m RMS or 0.2 m 95% CEP
Position accuracy RTK (X and Y)	1 cm + 1 ppm RMS
Position accuracy RTK (Z)	2 cm + 1 ppm RMS
Velocity accuracy	0.03 m/s (RMS)

DATA OUTPUTS

Communication ports	8 serial RS-232/RS-422 lines and 16 Ethernet UPD/IP ports
Data output interval	Programmable in 0.005-se steps and 1PPS pulse
Data update rate	Up to 200 Hz
Analog output	3 user configurable channels,+/- 10 Volt
1PPS signal accuracy	220 nsec

POWER SPECIFICATIONS

Processing Unit	100 to 240 V AC, 75 W (max)
HMI Unit	100 to 240 V AC, 170 W (max)
Monitor	100 to 240 V AC, 23 W (max)
IMU	24 V DC from Processing Unit
GNSS antenna	5 V DC from Processing Unit

WEIGHTS AND DIMENSIONS

Processing Unit	5.4 kg, 89 x 485 x 357 mm
HMI Unit	3.6 kg, 44 x 485 x 257 mm
Monitor	3.8 kg, 383 x 380 x 170 mm
IMU	8,1 kg, 188 x 189 x 189 mm
GNSS antenna	0.5 kg, 69 x 185 mm

ENVIRONMENTAL SPECIFICATIONS

Operational temperature range

Processing Unit	-15 to +55 °C
HMI Unit	+5 to +35 °C
Monitor	+5 to +40 °C
IMU	-15 to +55 °C
GNSS antenna	-40 to +85 °C

Storage temperature range

Processing Unit	-20 to +70 °C
HMI Unit	-10 to +40 °C
Monitor	-20 to +60 °C
IMU	-25 to +70 °C
GNSS antenna	-55 to +85 °C

Enclosure protection

Processing and HMI Unit	IP 21 (rear)
Monitor	IP 21 (rear)
IMU	IP 66
GNSS antenna	IP 66
Cables	IP 67
Connectors	IP 67

Mechanical

Vibration	IEC 60945/EN 60945

Electromagnetic compatibility

Compliance to EMCD, immunity/emission	IEC 60945/EN 60945

PRODUCT SAFETY

Compliance to LVD, standard used	IEC 60950-1/EN 60950-1

Specifications are valid without multipath, without shadowing of antennas and with vessel in motion.

110-0017979/B - September 2023

Specifications subject to change without any further notice.

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