

Seapath[®] 385 series



The all-new Seapath 385 is based on the legacy of the Seapath 300-series and incorporates new hardware and advanced navigation algorithms. The Seapath 385 is developed specifically for hydrographic surveying where high-precision heading, position, velocity, roll, pitch, heave and timing are critical measurements. Our solution combines state-of-the-art inertial technology and processing algorithms with multi-frequency GPS, GLONASS, Galileo, Beidou, QZSS and geostationary satellite signals.

Specifications

Product	Seapath [®] 385 series
Country of origin	Norge
Manufacturer	Kongsberg Discovery

Function

The advanced Seapath sensor fusion algorithms integrate raw inertial sensor data from our unique and very high-performance MGC® (Motion Gyro Compass), MRU (Motion Reference Unit) or miniMRU, together with raw GNSS data and RTK, PPP or DGNSS corrections. Our unique navigation algorithms enable high accuracy position output even when no correction signals are available.

The Seapath is robust against GNSS dropouts by using the inertial sensor for dead reckoning navigation, providing all measurements even when GNSS is not available.

Post-processing of the Seapath data is possible to further enhance accuracy in position and attitude. The Seapath 130 includes a new post-processing format that contains all necessary data and system configuration in a single file. Centimetre position accuracy can be achieved through downloaded satellite orbit and clock data or data logged from base stations.

System configuration

The Seapath 385 is built on a new hardware platform, delivering improved processing capabilities and upgraded interfaces. The Seapath 385 is a modular rack-mounted system with a dedicated Processing Unit that connects to the inertial sensor and two GNSS antennas. The Processing Unit runs all critical computations independent from the user interface on the HMI Unit, which ensures continuous and reliable operation. The operator software can also be installed on the customer's computer and used instead of the HMI Unit.

Interfaces

The Seapath 385 Processing Unit has 8 configurable RS-232/422 serial lines in addition to several Ethernet ports available over 5 LANs. Data for all 6 degrees of freedom can be output through NMEA messages or proprietary messages to external sensors and survey computers. Several simultaneous GNSS augmentation sources can be connected through configurable serial lines or Ethernet.

The Seapath 385 provides accurate measurements with a data rate of up to 200 Hz at multiple monitoring points, to accommodate sensors or systems relying on motion or position data across the vessel.

Model types

	Motion			Position				
	Roll/pitch	Heading	Heave	Non-differential	Galileo HAS	RTK	Real-time PPP	Dead reckoning 60 s
Seapath 130-3/40	0.015°	0.10°	2 cm or 2 %	0.3 m	0.1 m	0.01 m	0.05 m	1.6 m
Seapath 130-5/60	0.010°	0.08°	1 cm or 1 %	0.3 m	0.1 m	0.01 m	0.05 m	0.6 m
Seapath 130-5+	0.007°	0.08°	1 cm or 1 %	0.3 m	0.1 m	0.01 m	0.05 m	0.3 m
Seapath 130-R3	0.007°	0.05°	1 cm or 1 %	0.3 m	0.1 m	0.01 m	0.05 m	0.2 m
Seapath 130-R2	0.009°	0.06°	1 cm or 1 %	0.3 m	0.1 m	0.01 m	0.05 m	0.6 m

Interfaces

Communication ports	8 serial RS-232/RS-422 lines and 5 Ethernet LANs
Data output interval	Programmable in 0.005-second steps and 1PPS pulse
Data output rate	Up to 200 Hz
1PPS signal accuracy	220 nsec

GNSS signal tracking

GPS	L1 C/A, L1C, L2C, L2P, L5
GLONASS	L1 C/A, L2 C/A, L2P, L3, L5
Galileo	E1, E5 AltBOC, E5a, E5b, E6
BeiDou	B1I, B1C, B2I, B2a, B2b, B3I
QZSS	L1 C/A, L1C, L1S, L2C, L5, L6

Power specifications

Processing unit	100 - 240 VAC, 75 W (max)
HMI Unit	100 - 240 VAC, 170 W (max)
IMU	24 VDC from Processing Unit
GNSS antenna	5 VDC from Processing Unit

Other specifications

Vibration	IEC 60945/EN 60945, IACS E10
Compliance to EMC immunity/emission	IEC 60945/EN 60945, IACS E10
Compliance to LVD standard used	IEC 61010-1/EN 61010-1

Operating temperature range

Processing unit	-15 - 55 °C
HMI Unit	5 - 35 °C
miniMRU/MRU	-5 - 55 °C
MGC	-15 - 55 °C
GNSS antenna	-40 - 85 °C

Storage temperature range

Processing unit	-20 - 70 °C
HMI Unit	-10 - 40 °C
IMU	-25 - 70 °C
GNSS antenna	-55 - 85 °C

Enclosure protection

Processing unit / HMI Unit	IP21
miniMRU	IP52
MRU/MGC	IP66
GNSS antenna	IP69K

Weights and dimensions

Processing unit	5.4 kg, 89 x 485 x 357 mm
HMI Unit	3.6 kg, 44 x 481 x 267 mm
miniMRU	0.5 kg, 100 x 80 x 46 mm
MRU	2.2 kg, 140 x Ø 105 mm
MGC	8.1 kg, 188 x 189 x 189 mm
GNSS antenna	0.5 kg, 55 x 176 mm

