DPS i4

KONGSBERG

SENSOR FUSIONED GNSS SOLUTION FOR DYNAMIC POSITIONING

By the introduction of the DPS i-series, KONGSBERG fuses decades of experience within GNSS and inertial technology in order to create a fully scalable and future-proof reference solution with emphasis on operational efficiency for DP applications.

Sensors teaming up

An unmatched integration of the latest within multi GNSS and KONGSBERG's unique motion gyro compass (MGC™) facilitate the possibility to operate with no additional augmentation services without compromising on DP performance. The DPS i-series is still fully prepared to utilize differential corrections and SBAS services when required. DPS i4 utilizes data from all available GNSS constellations including GPS, GLONASS, Galileo and Beidou.

Designed for robust performance

The integration ensures a continuous position solution by bridging gaps in the GNSS reception and increasing position stability in periods with limited GNSS availability due to masking, scintillation and interference. GNSS and INS are perfectly matched as they overcome each others limitations. Using both systems is superior to using either system alone. RAIM (Receiver Autonomous Integrity Monitoring) extended by data from the INS provides ultimate reliability of the position and velocity data under difficult GNSS conditions.

Multi-use of sensor

By using the MGC as the inertial sensor, a high-quality WheelMark gyro compass becomes a part of the solution. In addition, MGC can serve other on-board systems such as navigation equipment and other systems that require attitude data.

Increased operational efficiency

Inertial technology combined with the latest multi-constellation GNSS technology enables a cost efficient and reliable position reference solution. No regular maintenance, calibration or additional operational costs are required.

Scalable solution

The flexible design of the DPS i-series ensures a scalable and expandable reference solution that can adapt to the specific requirements of any vessel. For the more demanding applications, a combination of multiple DPS systems and MGC/MRU sensors will enable precise heading determination world wide and provide spoofing detection capabilities. The DPS i-series may utilize existing or dedicated MGC or MRU sensors for the integration.

Active decision support

The DPS i-series has an intuitive and easy-to-use graphical user interface developed in close co-operation with experienced DP operators. The HMI (Human-Machine Interface) enables the operators to assess the quality of their positioning quickly and effectively during operation.

Remote service

The DPS i-series is ready for K-IMS remote services for operational support and troubleshooting. Cases that previously required a visit from a service engineer, may now be resolved remotely.

FEATURES

- Multi-frequency GPS, GLONASS, Beidou, Galileo and SBAS receiver
- Highly optimized integration of INS and GNSS without the use of 3rd party DGNSS services
- Dual frequency ionospheric compensation
- INS aided RAIM capability for enhanced integrity and reliability
- Fully capable to utilize differential correction services if required
- High-precision lever arm compensation of position and velocity
- Intuitive and easy-to-use HMI tailored to safety critical DP operations
- Scalable solution
- GNSS heading (requires two GPS systems)
- Spoofing detection capabilities
- Automatic data recording with replay functionality
- Remote service and diagnostics by utilizing K-IMS
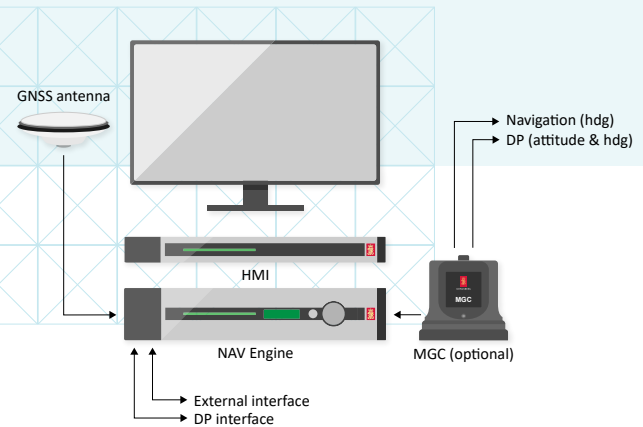
TECHNICAL SPECIFICATIONS

DPS *i*4

PERFORMANCE

Non-differential position accuracy[1]	0.65 m 95% CEP
High precision accuracy[2]	< 10 cm, 95% CEP
DGNSS position accuracy	< 1 m, 95% CEP
SBAS position accuracy	< 1 m, 95% CEP
Velocity accuracy	< 0.01 m/s, 95% CEP
Roll, pitch accuracy	Please see separate datasheets for MGC/MRU products
Update frequency rate[1]	1-20/200 Hz
Latency	< 1 ms

All accuracy specifications are based on real-life tests conducted in the North Sea under various conditions. Operation in other locations under different conditions may produce different results.

INTERFACES

Serial ports	8 isolated ports, 6 configurable between RS-232 and RS-422
IMU	RS-422
Ethernet/LAN	4
USB	3

DATA OUTPUTS

Message formats	NMEA 0183 v. 3.0, Proprietary
Message types	ABBDP, ARABB, DPGGA, DTM, GBS, GGA, GLL, GNS, GRS, GSA, GST, GSV, RMC, VBW, VER, VTG, ZDA

DATA INPUTS

DGNSS corrections	RTCM-SC104 v.2.2, 2.3, 3.0 and 3.1,Seastar XP/XP2/G2/G2+/G4/G4+
RTK corrections	RTCM-SC104 v. 2.3, 3.0, 3.1 and CMR
Gyro compass	NMEA 0183 HDT, HRC,THS and Robertson LR22 BCD format
Display control	DDC

INS SENSOR

Supported INS	MGC R3, MGC R2, MRU 5+ (See dedicated datasheets for technical information)

WEIGHTS AND DIMENSIONS

DPS i4 Processing Unit	5.4 kg, 89 x 485 x 357 mm
DPS i-series HMI Unit	3.8 kg, 44 x 485 x 330 mm
GNSS antenna	0.5 kg, 69 mm x 185 mm

POWER SPECIFICATIONS

DPS i4 Processing Unit	100 - 240 V AC, 50/60 Hz, max 75 W
DPS i-series HMI Unit	100 - 240 V AC, 50/60 Hz, max 40 W
GNSS antenna	5 V DC from Processing Unit

ENVIRONMENTAL SPECIFICATIONS

Operating temperature range

DPS i4 Processing Unit	-15 to +55 °C (*)
DPS i-series HMI Unit	-15 to +55 °C (*)
GNSS antenna	-40 to +85 °C
(*) Recommended	+5 to +40 °C

Humidity

DPS i4 Processing Unit	Max 95 % non-condensing
DPS i-series HMI Unit	Max 95 % non-condensing
GNSS antenna	Hermetically sealed

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 61010-1/EN 61010-1

PRODUCT STANDARDS

GNSS systems	IEC 61108-1
Maritime navigation and radio communication equipment and systems	IEC 61162-1, IEC 60945
IMO regulations	MSC.112(73), MSC.113(73), MSC.114(73), MSC.115(73)
UKOOA compliant	

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[1] *Integrated system*

[2] *Dependent on subscription type*

Specifications subject to change without any further notice.

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