DPS i2

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 technology 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 i2 utilizes data from GPS and GLONASS.

Designed for robust performance

The integration between GNSS and INS 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 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 DPS systems)
- Spoofing detection capabilities
- Automatic data recording with replay functionality
- Remote service and diagnostics by utilizing K-IMS
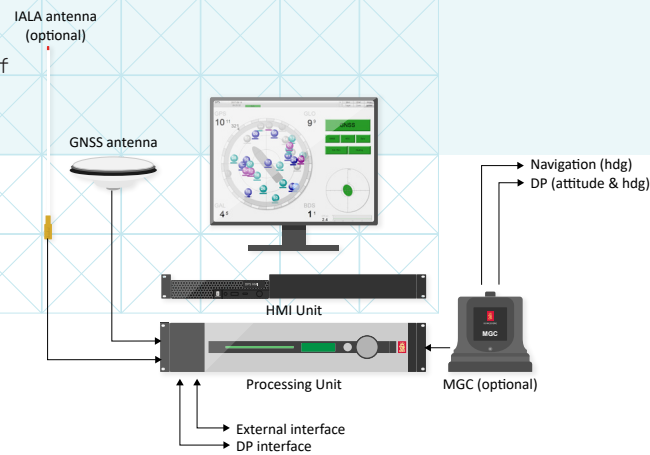
TECHNICAL SPECIFICATIONS

DPS i2

PERFORMANCE
Non-differential position accuracy	1.3 m, 95% CEP
RTK	1 cm + 1.6 ppm RMS
High precision accuracy[1]	< 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	MRU 5+: 0.007° RMS, MGC R2: 0.01° RMS , MGC R3: 0.007° RMS
Update frequency rate[1]	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+
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	MRU 5+, MGC R2, MGC R3 (See dedicated datasheets for technical information)

WEIGHTS AND DIMENSIONS
DPS Processing Unit	5.4 kg, 89 x 485 x 357 mm
DPS HMI Unit	3.6 kg, 44 x 481 x 267 mm
GNSS antenna	0.5 kg, 69 mm x 185 mm

POWER SPECIFICATIONS
DPS Processing Unit	100 - 240 V AC, 50/60 Hz, max 75 W
DPS HMI Unit	100 - 240 V AC, 50/60 Hz, max 170 W
GNSS antenna	5 V DC from Processing Unit

ENVIRONMENTAL SPECIFICATIONS
Operating temperature range
DPS Processing Unit	-15 to +55 °C (*)
DPS HMI Unit	+5 to +35 °C (**)
GNSS antenna	-40 to +85 °C
(*) Recommended	+5 to +40 °C
(**) Recommended	+20 °C

Humidity
DPS Processing Unit	Max 95 % non-condensing
DPS HMI Unit	Max 90 % non-condensing
GNSS antenna	IPX6

Mechanical
Vibration	IEC 60945/EN 60945, IACS E10

Electromagnetic compatibility
Compliance to EMC, immunity/emission	IEC 60945/EN 60945, IACS E10

Spectrum
Compliance to Article 3.2, standards used	ETSI EN 303 413 V1.2.1 (2021-04) ETSI EN 300 330 V2.1.1 (2017-02)

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	

[1] Dependent on subscription type

Specifications subject to change without any further notice.