

DPS 4D



KONGSBERG



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A NEW INERTIAL AIDED GNSS SOLUTION FOR DP OPERATIONS

DPS 4D takes GNSS based Positioning Reference Systems to a higher level by combining different technologies into one single system. DPS 4D combines the latest achievements in advanced GPS and GLONASS technology aided by a high performance IMU (MRU 5+). DPS 4D effectively combats common mode errors occasionally observed when using two or more GPS based systems.

The best of two worlds

The integration of GPS/GLONASS and an IMU is ideal due to the combination of complementary physical qualities into a tightly integrated solution. The IMU measurements effectively bridge gaps in the satellite constellation caused by physical obstructions or ionospheric activity, and at the same time all available GPS and GLONASS signals will remove bias or drift in IMU measurements.

Accuracy and reliability

DPS 4D is capable of providing position and velocity data with the best possible accuracy by combining all available GNSS signals and a multitude of differential correction data. In High Precision mode a worldwide accuracy of 10 - 20 cm is possible. RAIM (Receiver Autonomous Integrity Monitoring) extended by data from the IMU provides ultimate reliability of the position and velocity data under difficult GNSS conditions.

Designed for robust performance

DPS 4D is designed to ensure continuous and reliable operation. New hardware technology tailored for maritime use and advanced modular software design in a networked architecture ensure robust and stable performance. DPS 4D has an intuitive and easy to use graphical user interface developed in close co-operation with DP operators.

Multiple information layers

Multiple layers of information give the DP operator unmatched opportunities for a customized visual presentation. Electronic chart, seabed maps, well head positions, static targets and AIS target information are some of the functions that are easily enabled by selecting or combining the different information layers.

Ease-of-use HMI

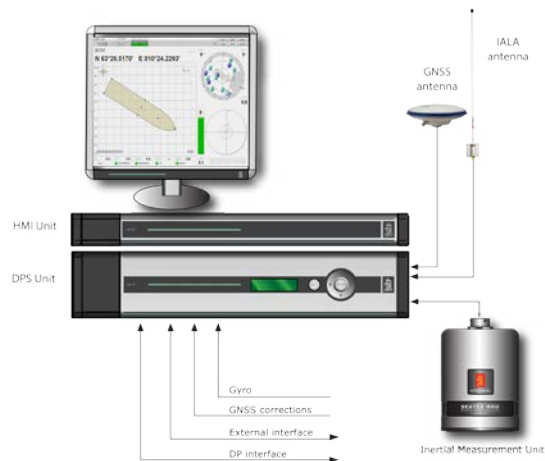
The DP has an intuitive and easy-to-use graphical user interface developed in close co-operation with experienced DP operators. This HMI enables the operators to assess the quality of their positioning quickly and effectively during operation. For better visibility under different light conditions the operator can easily select between a set of colour palettes, including a well tested night display.

Features

- Ionospheric disturbance mitigation by combining different technologies
- IMU aided RAIM capability for enhanced integrity and reliability
- Bridging GNSS outages by using IMU based positions
- IMU aiding of GNSS tracking loops
- Automatic high precision lever arm compensation
- Multiple differential correction support including global decimeter-level network services and free-to-air services such as SBAS and IALA
- Zero delay in position and velocity measurements
- Extended DP interfacing capabilities

FEATURES DPS 4D

- Combined GPS L1/L2, GLONASS L1/L2 and SBAS receiver
- Inertial aiding
- Dual frequency ionospheric compensation
- On-line monitoring and display of QC data
- Easy-to-use HMI tailored to safety critical DP operations
- Interface to heading sensors
- Lever arm compensation
- Automatic data recording with replay functionality
- Skyplot with satellite prediction and shadow sectors
- Target monitoring
- Speed view
- Electronic bearing line (EBL)
- Electronic chart/seabed maps
- AIS Interface
- Audible and visual alarms
- UKOOA compliant



TECHNICAL SPECIFICATIONS

PERFORMANCE

High precision accuracy	10 cm, 95 % CEP
DGPS/DGLONASS	< 1 m, 95 % CEP
SBAS accuracy	< 1 m, 95 % CEP
Velocity accuracy	< 0.01 m/s, 95 % CEP
Accuracy roll, pitch (for ±5° amplitude)	0.01° RMS
Update frequency rate	1 to 20 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.

ENVIRONMENTAL SPECIFICATIONS

Operating temperature range

DPS 4D Processing Unit	-15 to +55 °C (*)
DPS 4D HMI Unit	-15 to +55 °C (*)
GNSS antenna 1/2	-40 to +85 °C/-30 to +70 °C
IALA beacon antenna	-55 to +55 °C
MRU 5+ (IMU)	-5 to +55 °C

(*) Recommended +5 to +40 °C

Humidity

DPS 4D Processing Unit	Max 95 % non-condensing
DPS 4D HMI Unit	Max 95 % non-condensing
GNSS antennas	Hermetically sealed
IALA beacon antenna	Hermetically sealed
MRU 5+ (IMU)	Hermetically sealed

Mechanical

Vibration	IEC 60945/EN 60945
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Electromagnetic compatibility

Compliance to EMC, immunity/emission	IEC 60945/EN 60945
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POWER

DPS 4D Processing Unit	100 - 240 V AC, 50/60 Hz, max 75 W
DPS 4D HMI Unit	100 - 240 V AC, 50/60 Hz, max 40 W
GNSS antenna	5 V DC from processing unit
IALA beacon antenna	10.2 V DC from processing unit
MRU 5+ (IMU)	24 V DC from processing unit, max 12 W

Specifications subject to change without any further notice.

WEIGHT AND DIMENSIONS

DPS 4D Processing Unit	5.4 kg, 89 x 485 x 357 mm
DPS 4D HMI Unit	3.8 kg, 44 x 485 x 330 mm
GNSS antenna	0.5 kg, 69 mm x 185 mm
IALA beacon antenna	0.9 kg, 1100 mm
MRU 5+ (IMU)	2.5 kg, 140 mm x Ø 105 mm

INTERFACES

Serial ports	8 isolated ports, 6 configurable between RS-232 and RS-422
MRU 5+ (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, VTG, ZDA

DATA INPUTS

DGPS/DGLONASS corrections	RTCM-SC104 v.2.2, 2.3, 3.0 and 3.1, Seastar XP, Seastar G2
RTK corrections	RTCM-SC104 v. 2.3, 3.0, 3.1 and CMR
Gyro compass	NMEA 0183 HEHDT, EHRC and Robertson LR22 BCD format

PRODUCT SAFETY

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