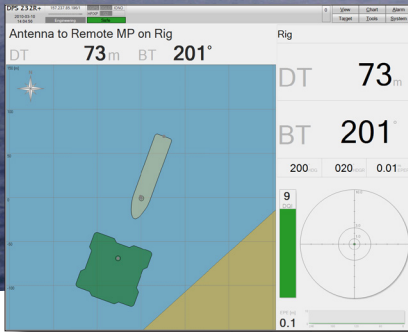


DPS 232 R+



KONGSBERG



HIGH PERFORMANCE ABSOLUTE AND RELATIVE REFERENCE SYSTEM

DPS 232 R+ is a GNSS based absolute and relative position reference system using GPS and GLONASS. DPS 232 R+ features technology that is steps ahead for secure and robust positioning during various operational conditions.

High precision absolute and relative position

DPS 232 R+ is a GNSS-based system which uses simultaneously gathered GPS/GLONASS data from high performance sensors on remote and own vessel to compute distance to target (DT) and bearing to target (BT). Relative position will be available at short and long distances with a worldwide accuracy of 20 cm and is independent of differential correction data. For computation of absolute position, differential corrections are used. The absolute position is available with a worldwide accuracy of 10 cm in High Precision mode utilising commercial subscription services. In addition the DPS system also makes use of free-to-air SBAS correction signals such as WAAS, EGNOS and MSAS. These correction signals can be received and used free of charge.

Trustworthiness of satellite navigation

DPS NAV Engine® comprises an all-in-one signal processing core with advanced algorithms and true parallel processing of all available signals. The addition of GLONASS significantly increases satellite availability, improves integrity monitoring and enables better precision under different signal tracking conditions. DPS 232 R+ increases the reliability of system outputs and minimises the effects of outlier measurements. Alarms and warnings are activated if critical tolerances are exceeded and if position quality degrades. The system is tailor-made for DP operations and will enhance DP performance and provide 24/7 reliable operation year after year.

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.

Radio communication

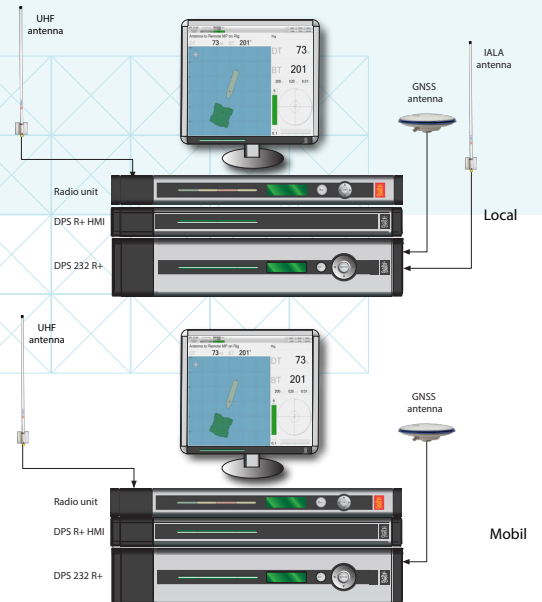
Data between two DPS 232 R+ systems are transferred by UHF transceivers operating in the 450 MHz band, 455 MHz band or 860 MHz band. The data are transmitted using a TDMA protocol, which enables two-way communication between the two systems. UHF frequency configuration flexibility ensures reliable and safe operations in areas with high radio communication activity.

Lever arm compensation

Built-in lever arm compensation enables selection of several measurement points on the vessel. The selected monitoring points will be the basis for the distance calculations during relative position mode operation. Heading input is necessary to utilise the built-in lever arm compensation.

FEATURES

- Combined GPS L1/L2, GLONASS L1/L2 and SBAS receiver
- Real-time compensation of errors introduced by high ionospheric activity
- High-precision absolute and relative position
- 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



TECHNICAL SPECIFICATIONS

DPS 232 R+

PERFORMANCE

RTK horizontal accuracy	1 cm + 1.6 ppm RMS
RTK vertical accuracy	2 cm + 3.2 ppm RMS
XP2/G2 horizontal accuracy	10 cm, 95% CEP
XP2/G2 vertical accuracy	15 cm, 95% CEP
DGPS/DGLONASS position accuracy	< 1 m, 95% CEP, 0.4 m, 1 σ
SBAS accuracy	< 1 m, 95% CEP, 0.6 m, 1 σ
Velocity accuracy	0.05 m/s, 95% CEP, 0.2 m/s, 1 σ
Relative position accuracy	0.2 m, 95% CEP *)
Output rate	1 Hz

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
Ethernet/LAN	4
USB	3

DATA OUTPUTS

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

DATA INPUTS

DGPS/DGLONASS corrections	RTCM-SC104 ver. 2.2, 2.3, 3.0, 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, HDM, THS, EM3000, PSXN10, PSXN 23, Robertson LR22 BCD format
Display control	DDC

WEIGHTS AND DIMENSIONS

DPS 232 R+ unit	5.4 kg, 89 x 485 x 357 mm
HMI unit	3.8 kg, 43 x 485 x 330 mm
Radio unit *)	3.0 kg, 43 x 485 x 330 mm
GNSS antenna	0.5 kg, 69 mm x 185 mm
IALA beacon antenna	0.9 kg, 1100 mm
UHF 450 antenna	1.3 kg, length 1400 mm, 6 cm max
UHF 860 antenna	1.4 kg, length 1510 mm

POWER

DPS 232 R+ unit	100 - 240 V AC, 50/60 Hz, max 60 W
HMI unit	100 - 240 V AC, 50/60 Hz, max 40 W
Radio unit *)	100 - 240 V AC, 50/60 Hz, typical 7 W
GNSS antenna	5 V DC from processing unit
IALA beacon antenna	10.2 V DC from processing unit

ENVIRONMENTAL SPECIFICATIONS

Operating temperature range	
DPS 232 R+ unit	-15 to +55 °C (*)
HMI unit	-15 to +55 °C
Radio unit *)	-15 to +55 °C
GNSS antenna	-40 to +85 °C
IALA beacon antenna	-55 to +55 °C
UHF antenna	-30 to 70 °C
(*) Recommended +5 to +40 °C	

Humidity

DPS 232 R+ unit	Max. 95 % non-condensing
HMI unit	Max. 95 % non-condensing
Radio unit *)	Max. 95 % non-condensing
GNSS antenna	Hermetically sealed
IALA beacon antenna	Hermetically sealed
UHF antenna	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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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

Specifications subject to change without any further notice.

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