PRODUCT SHEET

KONGSBERG

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MGC® R3

GYRO COMPASS AND INS

A new family of products with motion sensing and gyro compass functionality is introduced. The first product in this family is the MGC R3 which includes three Ring Laser Gyros and three linear accelerometers.

Typical applications

The MGC R3 product is a fully inertial navigation system (INS). It can output heading, roll, pitch, heave and position. Acceleration and velocity of linear motions, as well as angular rates, are output from the unit. The MGC R3 product outputs both processed and raw (gyro and accelerometer) sensor data.

The MGC R3 product can be used as a stand-alone unit or as an IMU in other systems. The product is designed for high precision maritime applications such as offshore operations and seabed mapping.

The product includes integrated navigation algorithms with input from a GNSS receiver for output of aided position and heading data. The proven PFreeHeave® algorithms are part of the navigation algorithms that enable down to 2 cm accuracy in delayed heave output and 5 cm accuracy in real-time heave output. The linear position and velocity measurements can be output in up to four different points on the vessel.

The mounting bracket has been specially designed to enable easy alignment to the vessel axis or the axes of the system on which the unit shall measure the motion. This will ensure that the user gets precise measurements from the unit when it is installed.

Function

The MGC can operate in Gyrocompass mode and Integrated Navigation mode. In the Gyrocompass mode, input of speed is required. In this mode the product will output heading, roll, pitch and heave accurately. In the Integrated Navigation mode, input of speed, position and PPS from a GNSS receiver is required

(VTG, GGA, ZDA). In this mode the product will output heading, roll, pitch, heave and position.

The unit is delivered with Windows based configuration and data presentation software, the MRC+. In this software vector arms from where the MGC is mounted to the center of gravity (CG) and two individually configurable monitoring points (MPs) can be defined. The heave measurements can be output in four different locations (the MGC itself, CG, MP1 and MP2) simultaneously on serial lines or Ethernet ports. A typical measurement point is the echo sounder transducer head.

Variables output

The MGC outputs heading, roll and pitch and corresponding angular rate vectors. The unit outputs relative (dynamic) heave position, velocity and acceleration. In the Integrated Navigation mode it also outputs position in north and east direction in addition to height above the ellipsoid.

Digital I/O protocols

MGC data is available through both Ethernet interface and serial lines enabling easy distribution of data to multiple users on board the vessel. Output protocols for commonly used survey equipment are available on two individually configurable serial lines and Ethernet/UDP.

Features

- 0.01° roll and pitch accuracy
- 0.1° secant latitude heading accuracy with GNSS aiding
- Outputs on RS-232, RS-422 and Ethernet
- High output data rate (200 Hz)
- Precise heave at long wave periods by use of PFreeHeave® algorithms
- Lever arm compensation to two individually configurable monitoring points
- Small size and low power consumption
- Each MGC delivered with a Calibration Certificate
- Selectable communication protocols in the Windows based MRU configuration software