MGC® R2 COMPASS

KONGSBERG

TYPE APPROVED COMPASS FOR SHIPS AND HIGH-SPEED CRAFTS

0575

The MGC R2 COMPASS system is IMO type approved as a gyro compass for navigation purposes for use together with a heading and bearing repeater. Very high reliability is achieved by using Ring Laser Gyros with no rotational or mechanical wear-out parts.

Typical applications

The system can be operated as an inertial navigation system as well as a gyro compass with output of position and heading. Linear position and velocity measurements can then be output in up to four different points on the vessel.

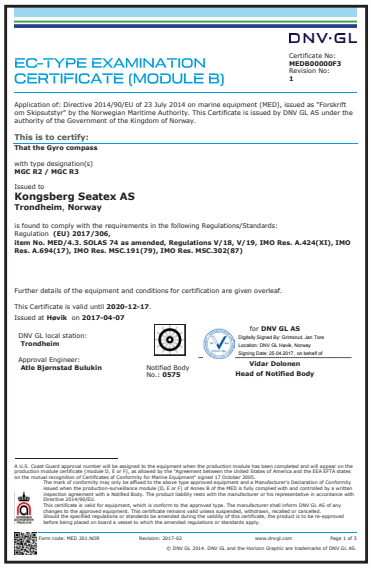
Digital I/O protocols

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 equipment are available on five individually configurable serial lines and five Ethernet/UDP ports.

Function

The MGC is a strap-down based gyro compass including three Ring Laser Gyros (RLG) and three linear accelerometers. The system can operate in Attitude and Heading Reference System (AHRS) mode and Inertial Navigation mode. In the AHRS mode input of speed and latitude data (VBW/VTG and GGA/GLL) is required. External time input is also required (ZDA). In this mode the system will output heading, roll, pitch and heave. In the Inertial Navigation mode input of latitude, longitude, height and time (GGA and ZDA) and PPS from a GNSS receiver is required. In this mode the product will output heading, roll, pitch, heave and position.

The system is delivered with configuration software. In this software the user selects output formats on the different communication lines in addition to other configuration purposes.



DNV·GL

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate No: **MED/B00000F3**
Revision No: **1**

Application of: Directive 2014/90/EU of 23 July 2014 on marine equipment (MED), issued as "Forskrift om Skipsutstyr" by the Norwegian Maritime Authority. This Certificate is issued by DNV GL AS under the authority of the Government of the Kingdom of Norway.

This is to certify:
That the Gyro compass

with type designation(s)
MGC R2 / MGC R3

Issued to
Kongsberg Seatex AS
Trondheim, Norway

is found to comply with the requirements in the following Regulations/Standards:
Regulation **(EU) 2017/306,**
Item No. MED/4.3. SOLAS 74 as amended, Regulations V/18, V/19, IMO Res. A.424(XI), IMO Res. A.694(17), IMO Res. MSC.191(79), IMO Res. MSC.302(87)

Further details of the equipment and conditions for certification are given overleaf.

This Certificate is valid until **2020-12-17**.
Issued at **Høvik** on **2017-04-07**

DNV GL local station:
Trondheim

Approval Engineer:
Atle Bjørnstad Bulukin

Notified Body No.: **0575**

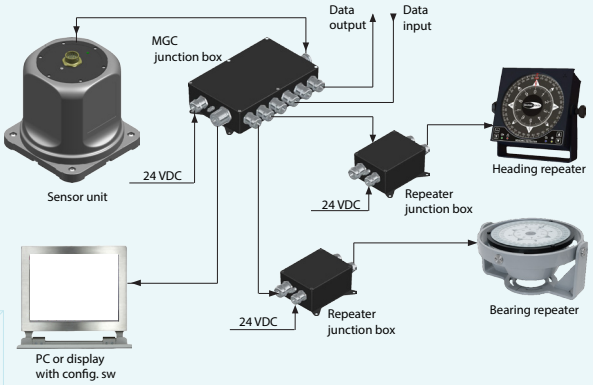
for **DNV GL AS**
Digitally Signed By: Grimsrud, Jan Tore
Location: DNV GL Høvik, Norway
Signing Date: 26.04.2017, on behalf of
Vidar Dolonen
Head of Notified Body

A U.S. Coast Guard approval number will be assigned to the equipment when the production module has been completed and will appear on the production-model certificate (module D, E or F), as allowed by the "Agreement between the United States of America and the EEA EFTA states on the mutual recognition of Certificates of Conformity for Marine Equipment" signed 17 October 2003.
The mark of conformity may only be affixed to the above type approved equipment and a Manufacturer's Declaration of Conformity issued when the production-surveillance module (D, E or F) of Annex B of the MED is fully complied with and controlled by a written inspection agreement with a Notified Body. The product liability rests with the manufacturer or his representative in accordance with this Certificate holder.
This certificate is valid for equipment, which is conform to the approved type. The manufacturer shall inform DNV GL AS of any changes to the approved equipment. This certificate remains valid unless suspended, withdrawn, recalled or cancelled.
Should the specified regulations or standards be amended during the validity of this certificate, the product is to be re-approved before being placed on board a vessel to which the amended regulations or standards apply.

Form code: MED 201.NOR Revision: 2017-02 www.dnvgl.com Page 1 of 3

FEATURES

- 0.02° roll and pitch accuracy
- 0.1° heading accuracy GNSS aided
- No rotational or mechanical wear-out parts
- Outputs on RS-422 and Ethernet
- High output data rate (200 Hz).
- Small size, light weight and low power consumption
- IMO type approved
- Each MGC delivered with Calibration Certificate
- Selectable communication protocols in the configuration software



TECHNICAL SPECIFICATIONS

MGC R2 COMPASS

HEADING OUTPUT

Accuracy heading	0.15° RMS sec.lat
Accuracy heading (GNSS aided)	0.1° RMS sec.lat
Heading settling time to data available	<5 min from start-up
Heading settling time to full accuracy (typical)	17 min from start-up
Resolution	0.01°

ROLL AND PITCH OUTPUT

Output range	±90°
Resolution	0.001°
Angular rate noise	0.020°/s RMS
Accuracy	0.02° RMS

HEAVE OUTPUT

Output range	±50 m, adjustable
Periods (real-time)	0 to 25 s
Periods (delayed)	0 to 50 s
Heave accuracy (real-time)	5 cm or 5% whichever is highest
Heave accuracy (delayed)	2 cm or 2% whichever is highest

POSITION OUTPUT

Free inertial	20 nm/hr

ELECTRICAL

Voltage input	24 V DC (nominal (18 to 32 V DC)
Power consumption	Max. 13 W (typical 11 W)
COM1 through COM4	Serial port, bidirectional RS-422/IEC 61162-1 and IEC 61162-2
COM5	Serial port output RS-422 and PPS port input RS-422 electrical levels
Baud rate	Max. 115200 Baud
Ethernet UDP/IP (5 ports)	10/100 Mbps
Output data rate (max)	200 Hz
Timing accuary	1 ms

INPUT FORMATS

NMEA sentences	GGA, GLL, VBW, VTG, ZDA

OUTPUT FORMATS

NMEA sentences	GGA, GLL, VTG, HCR, HDT, ROT, THS

OTHER DATA

MTBF (service history based)	100 000 h
MTBF (computed)	50 000 h

WEIGHTS AND DIMENSIONS

Sensor unit	188.9 x 189.5 x 189.5 mm, 8 kg
MGC junction box	57.1 x 236 x 146 mm, 2 kg
Repeater junction box	57.1 x 115 x 104 mm, 0.5 kg

ENVIRONMENTAL SPECIFICATIONS

Operating temperature range

Sensor unit	-15 to +55°C
MGC junction box	-15 to +55°C
Repeater junction box	-15 to +55°C

Storage temperature range

Sensor unit	-25 to +70°C
MGC junction box	-25 to +70°C
Repeater junction box	-25 to +70°C

Enclosure protection

Sensor unit	IP66
MGC junction box	IP54
Repeater junction box	IP54

December 2018

Specifications subject to change without any further notice.

KONGSBERG SEATEX

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