



# TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate No:  
**MERB00007ZB**  
Revision No:  
**0**

This Certificate is issued by DNV UK Limited based on authorisation of the Maritime & Coast Guard Agency (MCA) as an UK Approved Body to undertake conformity assessments on marine equipment in accordance with the requirements of the Merchant Shipping (Marine Equipment) Regulations 2016 as amended.

## This is to certify:

**That the Rate-of-turn indicator (ROTI)**

with type designation(s)  
**NAVIGAT 100**

Issued to

**Northrop Grumman Sperry Marine B.V. - German Branch  
Hamburg, Germany**

is found to comply with the requirements in the following Regulations/Standards:

Regulation **MSN 1874 Amendment 7,**

**item No. UK/4.9. SOLAS 74 as amended, Regulations V/18, V/19 & X/3, IMO Res. A.526(13), IMO Res. A.694(17),  
IMO Res. MSC.36(63), IMO Res. MSC.97(73), 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 **2027-03-06**.

Issued at **London** on **2023-12-01**

DNV local unit:  
**Hamburg – CMC North/East**



for **DNV UK Ltd.**

Approval Engineer:  
**Jörg Rebel**

Approved Body No.: **0097**

**Christine Mydlak-Röder  
MER Service Responsible**



**Maritime &  
Coastguard  
Agency**

UK Approved Body Authorised  
by the MCA

This certificate will not be valid if the manufacturer makes any changes or modifications to the approved type of equipment, which have not been notified to, and agreed with the approved body named on this certificate.

During the period of validity of this certificate the applicable regulations (international conventions and the relevant resolutions and circulars of the IMO) and testing standards may change, therefore the product conformity may need to be re-assessed by the Approved Body.

"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-control phase module (D, E or F) of Schedule 2 of the Merchant Shipping (Marine Equipment) Regulations 2016, as amended is fully complied with and controlled by a written inspection agreement with an approved body. In case limitations of use apply, these should be indicated in the Annex.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



## Product description

The rate-of-turn indicator system NAVIGAT 100 is based on an electronic gyro-compass, that can act as a stand-alone sensor only gyrocompass or may be integrated into a CompassNet Heading Management System by means of a Converter and Amplifier Unit (CAU) or Converter and Amplifier Board (CAB), and comprises of the following equipment necessary for functioning:

Mastercompass: NAVIGAT 100 P/N: 073518-0000-xxx  
 with  
 Gyrosphere: P/N: 074829-0000-xxx,  
 or P/N: 074831-0000-xxx (HSC)  
 and  
 Gyro Container Mod. 10/4 P/N: 025953-0000-xxx

The following units may be used:

Converter and Amplifier Unit P/N: 074904-0000-xxx  
 Converter and Amplifier Board P/N: 025826-0000-xxx  
 incl. CAB/CAU Main PCB P/N: 020760-0000-xxx  
 Data Distribution Unit (DDU) P/N: 074907-0001-xxx,  
 or P/N: 074907-0002-xxx  
 DDU Processor Module P/N: 025786-0001-xxx,  
 or P/N: 025786-0002-xxx  
 NAVITWIN V P/N: 074902-0000-xxx,  
 or P/N: 074902-0001-xxx

One or more of the following rate-of-turn indicators to be used:

Multifunctional NAV Data Repeater P/N: SM-XDI192N  
 Multifunctional NAV Data Repeater P/N: SM-XDI144N  
 Serial I/O Module P/N: SM-XDI-NX1  
 Serial I/O Module P/N: SM-XDI-NX2  
 Analogue Extension Module P/N: SM-XDI-AX1

Options:

Universal Digital Repeater (console mounted) P/N: 074833-0000-xxx,  
 Universal Digital Repeater (in Housing with Brackets) or P/N: 074834-0000-xxx  
 with  
 Terminal Box P/N: 074837-0000-xxx  
 RS422 Splitter Box P/N: 074800-0000-xxx  
 RS422 Splitter Box or P/N: 074850-0000-xxx

Software versions:  
 NAVIGAT 100

Software Version 2.xxx (xxx ≥ 004) CCU  
 Software Version 2.xxx (xxx ≥ 003) CSU

Converter and Amplifier Unit Software Version 2.xxx  
 Converter and Amplifier Board Software Version 2.xxx  
 Data Distribution Unit Software Version 2.xxx  
 DDU Processor Module Software Version 2.xxx  
 NAVITWIN V Software Version 2.xxx

Note:

Heading Management System CompassNet:

The Heading Management System CompassNet is a central control and display device for multi-compass systems for the maritime navigation of vessels. The functionality includes heading source functionality compliant with the requirements of DNV Rules for Ships Pt.6 Ch.3 with regard to distribution of heading information and the following parts are required for compliance:

Data Distribution Unit (DDU) P/N: 074907-0001-xxx,  
 or P/N: 074907-0002-xxx  
 NAVITWIN V P/N: 074902-0000-xxx,  
 or P/N: 074902-0001-xxx

The CompassNet system offers the possibility to connect other type approved gyro compasses via

Converter and Amplifier Unit P/N: 074904-0000-xxx  
 Converter and Amplifier Board P/N: 025826-0000-xxx

### Application/Limitation

The rate-of-turn indicator system NAVIGAT 100 fulfils the carriage requirements according to 2000 HSC Code, 13. Installation to be performed according to the manufacturers Operation, Installation and Service manual.

The rate-of-turn indicator system NAVIGAT 100 provides serial alert communication fulfilling the requirements of IEC 62923-1 (2018) and IEC 62923-2 (2018). The gyro compass shall be installed on board associated with an alert display compliant with IEC 60945, IEC 61162 series, IEC 62288, and the relevant requirements of IEC 62923-1/-2. According to IEC 62923-1 (2018) a back-up shall be provided for this display.

### Type Examination documentation

#### Test reports:

5026-0141-07 Rev. B, 5017-0141-03 Rev. B, 5026-0141-02 Rev. B, 5026-0141-01 Rev. A, 5017-0141-01 A1, 5019-0141-01 Rev. B, 5026-0141-04 Rev. A, 5026-0141-05 Rev. A, 002 16 V1U, 003-16-V1U, ECL-EMC-TR-16-042-V1.00, ECL-EMC-TR-16-045-V1.00, 5026-0141-03 Rev. A, 5023-0141-02 Rev. B, ECL-EMC-TR-17-010-V02.00 (IEC 60945 EMC), 5026-0141-08 Rev. B (ISO 8728, ISO 20672), TREO 172-17 (ISO 8728, Vibration), 152-20 Issue 2, 005026-0141-26 Rev. C, 5017-0141-17 Rev. C (IEC 62923-1, IEC 62923-2), 5026-0141-27 Rev. C (K60).

#### Manuals:

Operation, Installation and Service Manual NAVIGAT 100	056373
Operation, Installation and Service Manual Repeater Compass System	056376
Operation, Installation and Service Manual Universal Digital Repeater	056351

### Tests carried out

- Environmental and EMC testing: IEC 60945 (2002) incl. Corrigendum 1 (2008)
- Interface testing: IEC 61162-1 (2016) and IEC 61162-2 (1998)
- Presentation testing: IEC 62288 (2021)
- Bridge alert management testing: IEC 62923-1 (2018) and IEC 62923-2 (2018)
- Performance testing: ISO 20672 (2022)

### Marking of product

According to IEC 60945, Sect.4.9:

The product to be marked with following information, where practicable:

- Identification of the manufacturer,
- Equipment type number or model identification under which it was type tested,
- Serial number of the unit,
- Compass safe distance.

Alternatively, the marking may be presented on a display at equipment start-up, and in case of fixed equipment compass safe distance may be given in the equipment manual.

END OF CERTIFICATE