



TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate No:
MERB000025M
Revision No:
2

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 200, NAVIGAT 2500, NAVIGAT 3500

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 9,**

**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 **2026-04-29**.

Issued at **London** on **2024-06-21**

DNV local unit:
Hamburg – CMC North/East



for **DNV UK Ltd.**

Approval Engineer:
Jörg Rebel

Approved Body No.: **0097**

**Mydlak-Röder, Christine
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.



Form code: MER 201.GBR

Revision: 2023-03

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Product description

The rate-of-turn indicator systems NAVIGAT 200, NAVIGAT 2500 and NAVIGAT 3500 are based on an electronic gyro-compass and are connected to the digital multi-compass Heading Management System CompassNet for operating in a single or multi-compass configuration. Up to four (4) gyro-compasses and one (1) magnetic compass can be connected to CompassNet. The system-internal communication is based on a proprietary Ethernet-based redundant ring-bus architecture. The ring-bus is closed and could only be used by the CompassNet units in the Heading Management System for internal communication and comprises of the following equipment necessary for functioning:

Mastercompass:	NAVIGAT 200	P/N: 073517-0000-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
and/or		
Mastercompass:	NAVIGAT 2500	P/N: 073524-0000-xxx
		or P/N: 073524-0001-xxx
and/or		
Mastercompass:	NAVIGAT 3500	P/N: 073525-0000-xxx
		or P/N: 073525-0001-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:

Rate-of-Turn indicator (in housing with bracket)	192 mm	Range ± 30 °/min	P/N: 060402-0000-xxx
Rate-of-Turn indicator (console mounted)	192 mm	Range ± 30 °/min	P/N: 060372-0000-xxx
Rate-of-Turn indicator (console mounted)	192 mm	Range ± 60 °/min	P/N: 060421-0000-xxx
Rate-of-Turn indicator (console mounted)	192 mm	Range ± 90 °/min	P/N: 060379-0000-xxx
Rate-of-Turn indicator (console mounted)	192 mm	Range ± 300 °/min	P/N: 060380-0000-xxx
Rate-of-Turn indicator (console mounted)	144 mm	Range ± 30 °/min	P/N: 060368-0000-xxx
Rate-of-Turn indicator (console mounted)	144 mm	Range ± 60 °/min	P/N: 060393-0000-xxx
Rate-of-Turn indicator (console mounted)	144 mm	Range ± 90 °/min	P/N: 060369-0000-xxx
Rate-of-Turn indicator (console mounted)	144 mm	Range ± 300 °/min	P/N: 060370-0000-xxx

Terminal Box	P/N: 074859-0000-xxx
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:		
Gyro-compass	NAVIGAT 100	P/N: 073518-0000-xxx
Universal Digital Repeater (console mounted)		P/N: 074833-0000-xxx,
Universal Digital Repeater (in Housing with Brackets)		P/N: 074834-0000-xxx
with		
Terminal Box		P/N: 074837-0000-xxx
RS422 Splitter Box		P/N: 074800-0000-xxx
		or P/N: 074850-0000-xxx

Software versions:	
NAVIGAT 200	Software Version 2.xxx (xxx \geq 004) CCU
	Software Version 2.xxx (xxx \geq 003) CSU
NAVIGAT 100	Software Version 2.xxx (xxx \geq 004) CCU
	Software Version 2.xxx (xxx \geq 003) CSU

NAVIGAT 2500 P/N 073524-0000-xxx	Software Version FW 2.82.x (x ≥ 21)
NAVIGAT 2500 P/N 073524-0001-xxx	Software Version Pack 20.1.x (x ≥ 4)
NAVIGAT 3500 P/N 073525-0000-xxx	Software Version FW 2.82.x (x ≥ 21)
NAVIGAT 3500 P/N 073525-0001-xxx	Software Version Pack 20.1.x (x ≥ 4)
Converter and Amplifier Unit	Software Version 2.xxx (x ≥ 006)
Converter and Amplifier Board	Software Version 2.xxx (x ≥ 006)
Data Distribution Unit	Software Version 2.xxx (x ≥ 006)
DDU Processor Module	Software Version 2.xxx (x ≥ 006)
NAVITWIN V	Software Version 2.xxx (x ≥ 006)

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 CompassNet fulfils the carriage requirements according to 2000 HSC Code, 13. Installation to be performed according to the manufacturers Operation, Installation and Service manual.

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), 5039_5040-0141-02 Rev. A, 00013715 Ed. E, 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), 5017-0141-20 Rev. A3 (LPC54608), 5039_5040-0141-05 Rev. A (NAVIGAT 2500/3500, ISO 8728, ISO 16328, ISO 20672, IEC 60945), 5039_5040-0141-06 Rev. A (NAVIGAT 2500/3500, ISO 20672), 5017-0141-24.Rev. A (Integration of NAVIGAT 2500/3500 into CompassNet), 5017-0141-28 Rev. A (Summary Report for NAVIGAT 2500/3500), 5017-0141-29 Rev. A1 (Sea trials for NAVIGAT 2500/3500), 5017-0141-30 Rev. A1 (Data gap report for NAVIGAT 2500/3500), 5017-0141-31 Rev. A (Integration of NAVIGAT 2500/3500 into CompassNet).

Manuals:

Operation, Installation and Service Manual CompassNet System (including NAVIGAT 200, 2200, 3000, 2500, 3500)	056372 Rev. K2
Operation, Installation and Service Manual NAVIGAT 100	056373 Rev. G1
Operation, Installation and Service Manual Repeater Compass System	056376 Rev. C1
Operation, Installation and Service Manual Switch-Over Unit	056318 Rev. A
Operation, Installation and Service Manual NAVITWIN IV	056360 Rev. E
Operation, Installation and Service Manual Universal Digital Repeater	056351 Rev. C

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)

Note: Further tests passed according to DNV Rules for Ships Pt.6 Ch.3 (July 2022), especially: 6.2.3.6 Dual heading input – NAUT(AW) and 6.3.1 Dual compass systems.

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