



TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate No:
MERB00006Y5
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 Heading control system (HCS)

with type designation(s)
NAVIPILOT 4500N

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 6,**

item No. UK/4.16. SOLAS 74 as amended, Regulations V/18 & V/19, IMO Res. A.342(IX), IMO Res. A.694(17), IMO Res. MSC.191(79), IMO Res. MSC.64(67) Annex 3, IMO Res. MSC.302(87)

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

This Certificate is valid until **2027-09-06**.

Issued at **London** on **2022-11-15**

DNV local unit:
Hamburg – CMC North/East



for **DNV UK Ltd.**

Approval Engineer:
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Approved Body No.: **0097**

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MER Service Responsible



**Maritime &
Coastguard
Agency**

UK Approved Body Authorised
by the MCA

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. The product liability rests with the manufacturer or his representative in accordance with the Merchant Shipping (Marine Equipment) Regulations 2016.

This certificate is valid for equipment, which is conform to the approved type. The manufacturer shall inform DNV UK Ltd. of any changes to the approved equipment. 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. This certificate remains valid unless suspended, withdrawn, re-called, or cancelled.

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 Heading Control System NAVIPILOT 4500N is available as PID - controlled or self-tuning (adaptive) type and consists of following equipment:

1. Control and Display Unit (CDU)
 (front (console mount): IP 24, back: IP 20)

Type: 5033 Hardware Rev.: Ax
 Application Software Version: 1.xxx
 OS Software Version: 1.xxx (xxx ≥ 001)
 Boot Software Version: 1.xxx

And

2. Autopilot Processing Unit (APU)
 (IP 20)

Type: 5032 Hardware Rev.: Ax
 Application Software Version: 1.xxx
 OS Software Version: 1.xxx (xxx ≥ 001)
 Boot Software Version: 1.xxx

With following interfaces:

- Central Alarm Interface bidirectional acc. to IEC 61162-1
- Inputs acc. to IEC 61162-1: 2 x Heading, 1 x Speed, 1 x GNSS
- Outputs acc. to IEC 61162-1: 1 x Rudder Order, 1 x Voyage Data Recorder, 1 x Heading Monitor
- Analogue Outputs 4-20mA or +/-10V: 2 x Rudder Order
- Isolated status Inputs: 6 x configurable for different functions e.g. Auto Mode, Override, Silence.
- Potential free contacts: 1 x System Failure, 9 x configurable for different functions e.g. Main Power Failure, Backup Power Failure, Override Status, Auto Mode, OFF Heading Alert, BNWAS Timer Reset, Backup Navigator Call.

3. Additional components:

The following units may be used as additional components for controlling bang-bang steering control valves:

Steering Control Interface Unit Type: 4961 Hardware Rev.: Ax
 Application Software Version: 020800-0000-000 Rev. x

with integral output board

- DC Solenoid board for On/Off solenoid valves Type: 20042 Hardware Rev.: Ax
 or 20043 Hardware Rev. Ax

or

- AC Solenoid board for On/Off solenoid valves Type: 20040 Hardware Rev.: Ax
 or 20041 Hardware Rev.: Ax

or

- Isolated Proportional Output board +/- 10 V or 4-20 mA Type: 20044 Hardware Rev.: Ax

4. Documentation:

NAVIPILOT 4500N System Operation Manual Doc. no. 056403
 NAVIPILOT 4500N System Installation and Service Manual Doc. no. 056404

Application/Limitation

None

Type Examination documentation

| DNV No. | Document ID | Rev. | Description |
|---------|---------------|---------------|---|
| 12 | 056404 | A, 2022-08-01 | Manual: System installation and service of NAVIPILOT 4500N |
| 11 | 056403 | A, 2022-08-01 | Manual: Operation of NAVIPILOT 4500N |
| 10 | 243-21 | 2021-10-04 | Report: Treo, Tests acc. to IEC 60945, 8.2 to 8.4, 8.7, 11.2 and 12.1 |
| 9 | F210932E1 | 2021-07-07 | Report: Phoenix Testlab, Presentation tests acc. to IEC 62288 (2014) |
| 8 | 21-E009028-BM | A01 | Report: Siemens, EMC tests according to IEC 60945, 9 and 10 and DNV-CG-0339 (2021-08) |
| 7 | 5032-0141-08 | A1 | Report: Summary of test reports |
| 6 | 5032-0141-07 | A | Report: NGSM, Interface tests according to IEC 61162-1, Annex B.4 |
| 5 | 5032-0141-06 | A | Report: NGSM, Bridge alert management tests acc. to IEC 62923-1/-2 |
| 4 | 5032-0141-05 | A | Report: NGSM, Performance tests according to ISO 11674 (2019) |
| 3 | 5032-0141-04 | A | Report: NGSM, Tests according to IEC 60945 |
| 2 | 5032-0141-03 | B1 | Report: NGSM, Presentation tests according to IEC 62288 (2021) |
| 1 | 5032-0141-01 | A | Report: NGSM, Acoustic noise test according to IEC 60945, 11.1 |

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 11674 (2019)

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