# EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate No:
**MEDB00006Y5**

Application of: Directive 2014/90/EU of 23 July 2014 on marine equipment (MED). This Certificate is issued by DNV SE based on the notification of the Federal Maritime and Hydrographic Agency of Germany.

## 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 **(EU) 2022/1157,**
**item No. MED/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 **Hamburg** on **2022-09-07**

DNV local station:
**Hamburg CMC**

Approval Engineer:
**Jörg Rebel**

Notified Body
No.: **0098**

for **DNV SE**

**Christine Mydlak-Roeder**
**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 module certificate (module D, E or F), as allowed by the "Agreement between the European Community and the United States of America on Mutual Recognition of Certificates of Conformity for Marine Equipment", signed February 27th, 2004, and amended by Decision No 1/2018 dated February 18th, 2019.

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 Directive 2014/90/EU.
This certificate is valid for equipment, which is conform to the approved type. The manufacturer shall inform DNV SE 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 This certificate remains valid unless suspended, withdrawn, recalled or cancelled.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.

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)<br>(front (console mount): IP 24, back: IP 20) | Type: 5033 Hardware Rev.: Ax<br>Application Software Version: 1.xxx<br>OS Software Version: 1.xxx (xxx ≥ 001)<br>Boot Software Version: 1.xxx |
| And | |
| 2. Autopilot Processing Unit (APU)<br>(IP 20) | Type: 5032 Hardware Rev.: Ax<br>Application Software Version: 1.xxx<br>OS Software Version: 1.xxx (xxx ≥ 001)<br>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<br>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<br>or 20043 Hardware Rev. Ax |
| or | |
| - AC Solenoid board for On/Off solenoid valves | Type: 20040 Hardware Rev.: Ax<br>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

## 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