

TYPE EXAMINATION CERTIFICATE

This is to certify:

That the Steering Gear Control System

with type designation(s)
NAVIGUIDE 4000

Issued to

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

is found to comply with

IEC 60945 Ed. 4 (2002-08) Maritime navigation and radiocommunication equipment and systems – General requirements – Methods of testing and required test results

Application :

Product(s) approved by this certificate fulfill(s) minimum performance requirements for electronic shipborne navigational aids and all other bridge-mounted equipment as given in IMO Resolution A.694(17).

Issued at **Hamburg** on **2017-01-09**

for **DNV GL**

This Certificate is valid until **2018-06-10**.

DNV GL local station: **Hamburg**

Approval Engineer: **Jörg Rebel**

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Duy Nam Le
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Examination Certificate and not to the approval of equipment/systems installed.

Product description

The NAVIGUIDE 4000 Manual Steering System based on the NAVINET 4000 Steering Control Network may consist of the following equipment:

<i>Description</i>	<i>Type</i>
Steering Mode Selector / NFU Tiller with Override contacts	4954AA
Steering Mode Selector / NFU Tiller	4954
SyncroHelm FU Hand Wheel	4944DA
SyncroHelm FU Mini Wheel with 3 buttons and Software 020238-0000-000 Rev.: x	4956AA
FU Mini Wheel / Display Unit with 3 buttons and Software 020238-0000-000 Rev.: x	4956
Multi-Function Unit with 3 buttons with following functions: Wheel Control Unit, FU, Device Interface / Display Unit and Software 020238-0000-000 Rev.: x	4955AA
Multi-Function Unit with 6 buttons and with following functions: Steering Mode Selector, Steering Position Selector, Dual Rudder Sync Selector, Steering Alarm Module and Software 020238-0000-000 Rev.: x	4955
Steering Control Unit Hardware Rev.: Ax; Software 020801-0000-000 Rev.: x	4961
Override Unit	4987
Steering insert	4944
FU tiller	4970
NFU tiller	4930
Control selector switch	4516, 4518, 4876
FU amplifier	4747, 60197
Feed-back unit incl. lever drive	4968 (Temperature: A; Vibration: B)
Emergency NFU control switch	4870
Power supply unit	60208, 60281, 60290, 60272, 47891
Relays	43118, 47276, 46154, 46104
Relay box	4971
Diodes	46673
Automatic rudder limiter	4823
Program Fieldbus Controller Ethernet with Software 020809-0000-000 Rev.: V1.xx	750-881
- Program Fieldbus Controller Ethernet	750-352
- Power Supply Filter 24VDC	750-626
- Field Supply Filter 24VDC	750-624
- Power Supply Module 24VDC	750-602
- Power Supply Module 24VDC	750-612
- Power Supply Module 24VDC, fuse	750-610

Job Id:
Certificate No: **TAA00000YU**

<i>Description</i>	<i>Type</i>
- 2 DO, 125 VAC	750-514
- 8 DI, 24 VDC, 3 ms	750-430
- 8 DO, 24VDC, 0,5 A	750-530
- 8 DO, 24VDC, 0,5 A	750-536
- 4 AO, +- 10VDC, 12 Bit	750-557
- 4 AI, +- 10VDC, s.e.	750-457
- Interface serial, RS485	750-653
- End Module	750-600
- Solid State Relay	PLC-OSP

Application/Limitation

None

Type Examination documentation

Tests carried out

Applicable tests according to IEC/EN 60945 (2002) including Corrigendum 1 (2008).

Marking of product

- Components are marked with product name and product number as listed in the table above.
- Basic software version is displayed in the system graphical user interface.
- Each project application configuration is documented in a dedicated version log file which is specific for each vessel.

Certificate Retention Survey

The scope of the retention survey is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type examination documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type examined documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type examination given
- Ensuring traceability between manufacturer's product type marking and the type examination certificate

Retention survey is to be performed at least at renewal of this certificate.

END OF CERTIFICATE