

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate No:
MEDB00002UG
Revision No:
1

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 Rudder angle indicator

with type designation(s)
Rudder Angle Indicator System

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) 2021/1158,

item No. MED/4.20. SOLAS 74 as amended, Regulations V/18, V/19 & X/3, 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)

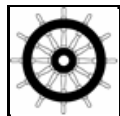
Further details of the equipment and conditions for certification are given overleaf.

This Certificate is valid until **2022-10-12**.

Issued at **Hamburg** on **2021-12-16**

DNV local station:
Hamburg – CMC North/East

Approval Engineer:
Uwe Supke



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) 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 This certificate remains valid unless suspended, withdrawn, recalled or cancelled.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.

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 Northrop Grumman Sperry Marine B.V. Rudder angle indicator system consists of the following equipment:

Three-face panorama rudder angle indicator, with built-in dimmer, IP23, yellow figures with red/green ribbon on black background, with yellow pointer, for ceiling mounting:

060396-0000-000 Range $\pm 45^\circ$
060397-0000-000 Range $\pm 70^\circ$

Rudder angle indicator in housing with bracket, watertight (IP66), with built-in dimmer, scale 192x192mm, red/green figures on white background, with black pointer, illuminated:

060357-0000-000 Range $\pm 45^\circ$
060332-0000-000 Range $\pm 45^\circ$ (PANAMA TYPE)
060359-0000-000 Range $\pm 70^\circ$
060362-0000-000 Range $\pm 70^\circ$ (PANAMA TYPE)

Rudder angle indicator in housing with bracket, watertight (IP66), with built-in dimmer, scale 144x144mm, red/green figures on white background, with black pointer, illuminated:

060327-0000-000 Range $\pm 45^\circ$
060325-0000-000 Range $\pm 45^\circ$ (PANAMA TYPE)
060328-0000-000 Range $\pm 70^\circ$
060326-0000-000 Range $\pm 70^\circ$ (PANAMA TYPE)

Rudder angle indicator for console mounting, frontside IP56, size 192x192mm, yellow figures with red/green ribbon on black background, with yellow pointer, illuminated:

060352-0000-000 Range $\pm 45^\circ$
060354-0000-000 Range $\pm 45^\circ$ (PANAMA TYPE)
060353-0000-000 Range $\pm 70^\circ$
060355-0000-000 Range $\pm 70^\circ$ (PANAMA TYPE)

Rudder angle indicator for console mounting, frontside IP56, size 144x144mm, yellow figures with red/green ribbon on black background, with yellow pointer, illuminated:

060338-0000-000 Range $\pm 45^\circ$
060340-0000-000 Range $\pm 45^\circ$ (PANAMA TYPE)
060339-0000-000 Range $\pm 70^\circ$
060341-0000-000 Range $\pm 70^\circ$ (PANAMA TYPE)

Rudder angle indicator for console mounting, frontside IP56, size 96x96mm, yellow figures with red/green ribbon on black background, with yellow pointer, illuminated:

060334-0000-000 Range $\pm 45^\circ$
060331-0000-000 Range $\pm 45^\circ$ (PANAMA TYPE)
060335-0000-000 Range $\pm 70^\circ$
060337-0000-000 Range $\pm 70^\circ$ (PANAMA TYPE)

Rudder angle calibrator (RAC): Type: 5014, Software Vers. 1.00

Feedback unit: 4136, 4968, 4132, 4134, 4137

Application/Limitation

The Rudder Angle Indicator System does not issue alerts, hence testing according to IEC 62923-1 and IEC 69923-2 is deemed as not being applicable.

Type Examination documentation

No.	Document No.	Date	Document Title	Test standard
1	08/8189-1	2008-12-23	Test Report Rudder Angle Calibrator RAC, EMV Services	IEC 60945
2	6628b/08	2009-01-26	Test Report environmental conditions, BFSV	IEC 60945
3	594/1	-	Mag. Safe distance, BSH	IEC 60945
4	5014	2009-04-29	Type Approval Test Procedure, Rev. B	IEC 61162
5	9065 17 69609 157	2017-09-05	Test Report, Test of Rudder Angle Indication System	ISO 20673 IEC 61162, IEC 62288
6	06/17	2017-09-22	Installation instructions RAI System	
7	56357/B	2017-10	Operation, Installation and Service Manual RAI System	

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 (2014)
- Performance testing: ISO 20673 (2007)

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