



中国船级社
CHINA CLASSIFICATION SOCIETY

证书编号/Certificate No.
HB22PTA00004_03

型式认可证书
CERTIFICATE OF TYPE APPROVAL

兹证明本证书所述制造厂具备按照下列标准的要求生产本证书所列产品的能力和条件。

This is to certify that the manufacturer stated in the certificate meets the requirements of the standards listed below and is available with the ability and conditions to produce the products described in the certificate.

品牌拥有方/ Licensor

Northrop Grumman Sperry Marine B.V.
Woltmanstrasse 19, D-20097 Hamburg, Germany

授权制造企业/Authorized Manufacturer

Mikrolab GmbH
Dieter-Streng-Str. 1, 90766 Fuerth, Germany

产品名称/Product

航速和航程测量装置 (SDME)
Speed and Distance Measuring Equipment (SDME)

认可标准/Approval Standard

- 国际海事组织大会决议A.694(17)《作为全球海上遇险和安全系统(遇险和安全系统)组成部分的船载无线电设备和电子助航设备的一般要求》
IMO Resolution A.694(17) General Requirements for Shipborne Radio Equipment Forming Part of the Global Maritime Distress and Safety System (GMDSS) and for Electronic Navigational Aids
- 国际海事组织大会决议IMO A.824(19)《速度和距离指示装置的性能标准》
IMO Resolution A.824(19) Performance Standards for Devices to Indicate Speed and Distance
- 国际海事组织海安会决议MSC.96(72)《通过速度、距离测量和指示装置性能标准(A.824(19)决议)修正案》
IMO Resolution MSC.96(72) ADOPTION OF AMENDMENTS TO PERFORMANCE STANDARDS FOR DEVICES TO MEASURE AND INDICATE SPEED AND DISTANCE (RESOLUTION A.824(19))
- 国际海事组织海安会决议MSC.334(90)《通过航速和航程测量和指示装置性能标准(MSC.96(72)决议)修正案》
IMO Resolution MSC.334(90) AMENDMENTS TO PERFORMANCE STANDARDS FOR DEVICES TO MEASURE AND INDICATE SPEED AND DISTANCE (RESOLUTION MSC.96(72))
- 国际海事组织海安会决议MSC.36(63)《国际高速船安全规则(HSC规则)》
IMO Resolution MSC.36(63) ADOPTION OF THE INTERNATIONAL CODE OF SAFETY FOR HIGH SPEED CRAFT
- 国际海事组织海安会决议MSC.97(73)《通过2000年《国际高速船安全规则》(2000年HSC规则)》
IMO Resolution MSC.97(73) ADOPTION OF THE INTERNATIONAL CODE OF SAFETY FOR HIGH-SPEED CRAFT, 2000 (2000 HSC Code)
- 国际海事组织海安会决议MSC.191(79)《船载航行显示器有关航行信息显示的性能标准》
IMO Resolution MSC.191(79) Performance Standards for the Presentation of Navigation-Related Information on Shipborne Navigational Displays
- 国际海事组织海安会决议MSC.302(87)《通过驾驶室警报管理性能标准》
IMO MSC.302(87) Adoption of performance standards for Bridge Alert Management
- IEC 61029:2007《航海速度和距离的测量设备(SDME).操作和性能要求.试验方法和要求的试验结果》
IEC 61029:2007 Maritime Navigation and Radiocommunication Equipment and Systems - Marine Speed and Distance Measuring Equipment (SDME) - Performance Requirements, Methods of Testing and Required Test Results

证书有效期至/ This Certificate is valid until 2026年01月16日/ Jan. 16, 2026

发证机构/ Issued by 中国船级社汉堡分社
CCS Hamburg Branch

签发日期/ Date 2022年04月18日
Apr. 18, 2022

本证书根据中国船级社规范和相关规定签发。所有证书页为一个整体，必须同时使用。纸质证书每页均须由本社盖章方为有效，电子证书含数字签名方为有效，本证书复印件无效。任何单位和个人均不应摘录或节选本证书的部分内容。有关方对所持证书的真实性有疑问时，可以向本社检验机构咨询。This Certificate is issued pursuant to the Rules of the Society and related regulation. All pages of the certificate are taken as a whole and are used simultaneously. No paper certificate page is valid without bearing the stamp of the Society, no electronic certificates is valid without the digital signature, and no copied form of the certificate is regarded as valid. Any part of the certificate is not to be extracted or abridged by any unit or individual in any form. Related parties who are doubted about the authenticity of the certificate may inquire of the Society or its offices.



Form No: T02.

联系方式/Contact Us, 见本社官方网站/See official web site of the Society (<http://www.ccs.org.cn>)

UTN:P022-28534952

10. IEC 60945:2002/COR1:2008 《船用航行和无线电通信设备及系统-通用要求-试验方法和试验结果的要求》
IEC 60945:2002/COR1:2008 Maritime Navigation and Radiocommunication Equipment and Systems –General Requirements – Methods of Testing and Required Test Results

11. IEC 62288: 2014 《海上导航和无线电通信设备及系统--船载导航显示器上与导航相关的信息的表示法--一般要求、试验方法和要求的试验结果》

IEC 62288:2014 Maritime navigation and radiocommunication equipment and systems - Presentation of navigation-related information on shipborne navigational displays - General requirements, methods of testing and required test results

12. IEC 62923-1:2018 《海上导航和无线电通信设备和系统-桥楼警报管理-第1部分：操作和性能要求、测试方法和要求的测试结果》

IEC 62923-1:2018 Maritime navigation and radiocommunication equipment and systems - Bridge alert management - Part 1: Operational and performance requirements, methods of testing and required test results

13. IEC 62923-2:2018 《海上导航和无线电通信设备和系统-桥楼警报管理-第2部分：警报和集群标识符以及其他附加功能》

IEC 62923-2:2018 Maritime navigation and radiocommunication equipment and systems - Bridge alert management - Part 2: Alert and cluster identifiers and other additional features

用于/Intended for

高速船舶/High speed ship, 船舶与海上设施/Ships and Offshore Installations

产品明细/Product Description

航速和航程测量装置 (SDME) /Speed and Distance Measuring Equipment (SDME) (M0001)

名称/Name	属性 (值) /Value	单位/Unit
型号/Type	Single-axis water speed Doppler Speed Log NAVIKNOT 450D, NAVIKNOT 450DD	
额定电压/Rated Voltage	24 V DC	
速度范围/Range of Speed	-50 to +50 NM/h	
速度精度/Speed Accuracy	±1% or 0.1 kn of true speed, whichever is greater	
距离显示/Distance Display	0 to 999999.9(total) / 0 to 9999.99(daily) NM	
系统组成/System Component	see additional pages	

航速和航程测量装置 (SDME) /Speed and Distance Measuring Equipment (SDME) (M0002)

名称/Name	属性 (值) /Value	单位/Unit
型号/Type	Dual-axis water and ground speed Doppler Speed Log NAVIKNOT 550DD, SRD 500A	
额定电压/Rated Voltage	24 V DC	
速度范围/Range of Speed	-20 to +50 NM/h	
速度精度/Speed Accuracy	±1% or 0.1 kn of true speed, whichever is greater	
距离显示/Distance Display	0 to 999999.9(total) / 0 to 9999.99(daily) NM	
系统组成/System Component	see additional pages	

航速和航程测量装置 (SDME) /Speed and Distance Measuring Equipment (SDME) (M0003)

名称/Name	属性 (值) /Value	单位/Unit
型号/Type	Single-axis Water Speed Electromagnetic Speed Log NAVIKNOT 350E, 350EE	
额定电压/Rated Voltage	24 V DC	
速度范围/Range of Speed	-35 to +35 NM/h	
速度精度/Speed Accuracy	±1% or 0.1 kn of true speed, whichever is greater	
距离显示/Distance Display	0 to 999999.9(total) / 0 to 9999.99(daily) NM	
系统组成/System Component	see additional pages	

航速和航程测量装置 (SDME) /Speed and Distance Measuring Equipment (SDME) (M0004)

名称/Name	属性 (值) /Value	单位/Unit
型号/Type	NAVIKNOT 600S NAVIKNOT 600SD NAVIKNOT 600SDD NAVIKNOT 600SDT NAVIKNOT 600SE	
额定电压/Rated Voltage	24 V DC	
速度范围/Range of Speed	-50 to +50 NM/h	
速度精度/Speed Accuracy	±1% or 0.1 kn of true speed, whichever is greater	
距离显示/Distance Display	0 to 999999.9(total) / 0 to 9999.99(daily) NM	
系统组成/System Component	see additional pages	

批准的图纸/Approved Drawings

图纸批准号/ Drawings Approval No. : NP21PPP04619, NP09A00735, NP09A00736

产品认可试验报告/ Approval Test Report

试验报告编号/ Test Report No. : see additional pages

试验报告日期/ Test Report Date :

认可后的产品检验方式/ Method of Product Inspection after Approval

认可后的产品检验由制造厂按本社批准的产品检验计划进行，本社在文件审核合格后颁发船用产品证书。

After approval, product inspection should be carried out by the Manufacturer in accordance with the product inspection scheme approved by the Society, and the Marine Product Certificate is issued by the Society upon satisfactory documents review.

认可保持条件/ Maintenance Requirements of Approval

1. 型式认可后，如果产品及其重要零部件的设计、所用材料或制造方法有所改变，且影响到产品的主要特性、特征；或产品的性能指标有所更改，且超过认可的范围，则有关图纸和文件应经检验机构审批。并在检验机构认为必要时，经本社检验人员见证有关试验和进行检查，其结果应能证实仍符合认可条件。

After type approval, if there are changes to the design, materials used or manufacturing method of the product and important components and such changes affect major characteristics and properties of the product, or property indexes of the product are changed and exceed the scope of approval, related drawings and documents are to be examined and approved by the concerned survey office. Where deemed necessary by the survey office, the surveyor to the Society will go to witness relevant tests and conduct inspection and the results should be able to demonstrate compliance with the approval conditions.

2. 工厂的质量管理体系应保持有效运行，并且与认可时一致。如果质量管理体系发生改变，应经原体系认证机构审核并报本社批准。

The quality management system of the factory shall be ensure effective operation, and shall be the same as the situation of approval. If there are any changes to the quality management system, auditing of the original certification organization for quality management system and the society's approval shall be obtained.

3. 认可证书有效期内，如果出现可能导致本社取消认可的情况，工厂应及时采取有效的纠正措施。

Within the validity of the approval certificate, if cases occur that may cause the Society to withdraw the approval, the manufacturer should take corrective actions in a prompt and effective manner.

4. 在认可证书有效期内，本社检验人员可在未经事先通知的情况下对工厂的产品制造过程进行审核，以验证产品的生产是否符合业经本社批准的图纸和文件。工厂应予以配合。

Within the validity of the approval certificate, the surveyor to the Society may pay unannounced audit to the manufacturing process of the product in order to confirm whether it is in compliance with the drawings and documents approved by the Society. The factory should provide an active cooperation and necessary for the surveyor.

5. 型式认可A证书获得者应接受本社每年一次的定期审核，定期审核日为认可证书期满之日对应的每一周年日，检查工作应在周年日的前后三个月内进行。

Those who have obtained the certificate of type approval A should be subject to periodical audit every year. The date of periodical audit shall be each anniversary date which corresponds to the date of expiry of the relevant certificate and the periodical audit shall be done within a time span of three months before and after the annual surveillance date.

6. 本认可证书的有效期与品牌拥有方和产品制造企业之间的授权协议保持一致，但不得超过4年。

The period of validity of this certificate is consistent with that of the agreement between the licensor and the manufacturer(s), but in no case it can over 4 years.

7. 在本证书有效期间，品牌拥有方和产品制造企业之间的授权协议的失效将自动导致本证书的失效。

During the period of validity, this certificate will automatically be ineffective in case of the invalidity of the authorization agreement between the licensor and the manufacturer(s).

备注/Remarks

1. 本证书由原型式认可证书 (No. HB17T00052_03) 变更并换新。

This certificate is modified and renewed from the previous Type Approval Certificate No. HB17T00052_03.

2. 本社已审核了产品厂无石棉声明，但本社的审核不免除产品厂按照合同关系向订货方保证产品无石棉的责任。

The declaration of asbestos-free submitted by manufacturer has been reviewed by the Society. However, liability of the manufacturer to guarantee the products are asbestos-free to purchaser under contract will not be exempted.

3. It is Northrop Grumman Sperry Marine B. V's responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.

中国船级社汉堡分社
CCS Hamburg Branch

注：本证书含有附页，共2页

Note: The certificate is attached with additional 2 page(s)

Product Description**1. Product Description****1.1. Single-axis Water Speed Electromagnetic Speed Log NAVIKNOT 350E, 350EE****1.1.1 The system consisting of the following main parts:**

Control and display unit 5001 or 5001-AA with software revision 2.x

Electronics unit 5003-AA with software revision 3.x

Preamplifier 2863-AA

Transducer 2829 or 4040 or 4077 or 4120 or 4726 or 4874 or 0718-013

Optional Speed indicator: (-5 to 25 kn): 4462 or 4812 or 60381 or 60384 or 60386 or 60387

(-5 to 40 kn): 4525 or 60382 or 60385

(-5 to 60 kn): 60383

(-5 to 30 kn): ANS 244

Optional Universal digital repeater UDR: 4891

Optional Pulse output splitter box: SDO-03, or SDO-06

1.1.2. The Speed-log indicate speed and distance through the water**1.2. Single-axis water speed Doppler Speed Log NAVIKNOT 450D, NAVIKNOT 450DD****1.2.1 The system consisting of the following main parts:**

Control and display unit 5001 or 5001-AA with software revision 2.x

Electronics unit 5003-AA with software revision 3.x

Electronics unit 4909 or 1807227 with HW Rev.1807227-4, Rev.J and SW rev.1813192

Preamplifier 5029 with software revision 1.x

Transducer 4910 or 4978 or 4983 or 5020-AA or 5020-AB or 5020-AC

Optional Speed indicator: (-5 to 25 kn): 4462 or 4812 or 60381 or 60384 or 60386 or 60387

(-5 to 40 kn): 4525 or 60382 or 60385

(-5 to 60 kn): 60383

(-5 to 30 kn): ANS 244

Optional Universal digital repeater UDR: 4891

Optional Pulse output splitter box: SDO-03, or SDO-06

1.2.2. The Speed-log indicate speed and distance through the water.**1.3. Dual-axis water and ground speed Doppler Speed Log NAVIKNOT 550DD, SRD 500A****1.3.1. The system consisting of the following main parts:**

Control and display unit 5001 or 5001-AA with software revision 2.x

Electronics unit 5003-AA with software revision 3.x

Electronics unit P/N 1982770

Transducer Unit(Valve mount) 1982769-VAR or 1982809-VAR

Optional Speed indicator: (-5 to 25 kn): 4462 or 4812 or 60381 or 60384 or 60386 or 60387

(-5 to 40 kn): 4525 or 60382 or 60385

(-5 to 60 kn): 60383 ; (-5 to 30 kn): ANS 244

Optional Universal digital repeater UDR: 4891 or SSD12 or SSD 22

Optional Pulse output splitter box: SDO-03, or SDO-06

1.3.2. The Speed-log indicate speed and distance through the water and ground.**1.4. NAVIKNOT 600S; NAVIKNOT 600SD; NAVIKNOT 600SDD; NAVIKNOT 600SDT; NAVIKNOT 600SE****1.4.1. The System consisting of the following main parts:**

Control and Display Unit 5001 or 5001-AA with Software Revision 2.x

Electronics unit 5003-AA with SW Rev. 3.x; 4909 or 1807227 with HW Rev.1807227-4 and SW rev.1813192

Satellite antenna unit: 60437.

Preamplifier 2863-AA or 5029 with SW Rev. 1.x

Transducer 2829 or 4040 or 4120 or 4726 or 4874 or 4910 or 4978 or 4978-4000 or 4983 or 5020-AA or 5020-AB or 5020-AC or 1981337-VAR

Adaptor flange: 4978-5000

Optional Speed indicator: (-5 to 25 kn): 4462 or 4812 or 60381 or 60384 or 60386 or 60387

(-5 to 40 kn): 4525 or 60382 or 60385

(-5 to 60 kn): 60383

(-5 to 30 kn): ANS 244

Optional Universal digital repeater UDR: 4891

Optional Pulse output splitter box: SDO-03,or SDO-06

1.4.2. Type 600S: Dual-axis ground speed satellite Speed Log system

Type 600SD, 600SDD, 600SDT: Single-axis water speed Doppler and dual axis ground speed satellite Speed Log system.

Type 600SE: Single-axis water speed electromagnetic and dual axis ground speed satellite Speed Log system.

2. Approval Test Report

no	Report No.	Date	Test Lab / Address
1.	5003-0141-07 A	2020-07-23	Northrop Grumman Sperry Marine B.V. / Woltmanstrasse 19, 200097 Hamburg, Germany
2.	5003-0141-04 A	2018-06-19	
3.	5029-0141-03 A	2018-04-16	
4.	5029-0141-02 C	2018-05-25	
5.	5029-0141-04 A	2018-05-25	
6.	GL-07-05-01	2007-05-01	
7.	NAVIKNOT 600s Redesign(20150814)	2015-08-14	
8.	Display test according to IEC 62288	2015-08-13	
9.	EMC07/7003-1-1	2007-02-08	EMV Services GmbH Co. KG / Harburger Schlosstrasse 6-12, 21079 Hamburg, Germany
10.	No.6052b,6154a/07	2007-04-03	BFSV / Ulmenliet 20, 21033 Hamburg, Germany
11.	066-18	2018-05-08	Treo labor fuer umweltsimulation GmbH / Tempowerkring
12.	139-18	2018-05-28	19, 21079 Hamburg, Germany