



TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate No:
MERB000038V
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 Speed and distance measuring equipment (SDME)

with type designation(s)

NAVIKNOT Types: 350E, 350EE, 450D, 450DD, 550DD, 600S, 600SD, 600SDD, 600SDT, 600SE and SRD500A

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/4.7. SOLAS 74 as amended, Regulations V/18, V/19 & X/3, IMO Res. A.694(17), IMO Res. A.824(19),
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 **2025-08-20**.

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

DNV local unit:
Hamburg – CMC North/East



for **DNV UK Ltd.**

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**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 This certificate remains valid unless suspended, withdrawn, re-called, or cancelled.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

For the speed and distance measuring equipment (SDME) NAVIKNOT following types are existing:

Type: 350E, 350EE,

Single-axis water speed electromagnetic speed log system

Type: 450D, 450DD

Single-axis water speed Doppler speed log system

Type: 550DD and SRD500A

Dual-axis water and ground speed Doppler speed log system

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

The SDME types 350E, 350EE, 450D, 450DD, 550DD, 600S, 600SD, 600SDD, 600SDT, 600SE and SRD500A consist of following main components:

Main component	Type	Software Rev.
Control and Display Unit	5001, 5002	2.x
Electronics Unit	5003, 5004	3.x

With following output interfaces:

6 x NMEA acc. to IEC 61162-1

5 x 10, 100, 200, 400 or 20.000 pulses/nm

Analogue speed output (0...10V and 4...20mA)

Log failure and power failure alarm (n.c.)

Speed limit relay output to limit the rudder angle on steering gear

Watch alarm trigger output for Bridge Navigational Watch Alarm Systems (BNWAS)

Bidirectional alert interface acc. to IEC 62923-1

And of following system components:

System component	Type	Software Rev.
Electronics Unit	1982770	12.x
Satellite Antenna Unit	60437	
Preamplifier D	5005, 5029	1.x
Preamplifier E	2863-AA	
Transducer	2829, 4040, 4077, 4120, 4726, 4874, FNF III 4874, 4910, 4978, 4978-4000, 4983, 5020, 0718-013, 1976121, 1981337, 1981337-VAR, 1982769-VAR, 1982809-VAR	
Adaptor flange	4978-5000	

And of following optional speed indicators:

Mounting	Type	Size	Range
Console mounting	60381	96x96mm	-5...+25kn
Console mounting	60382	96x96mm	-5...+40kn
Console mounting	60383	96x96mm	-5...+60kn
Console mounting	60384	144x144mm	-5...+25kn
Console mounting	60385	144x144mm	-5...+40kn
Console mounting	60386	192x192mm	-5...+25kn
In housing with bracket	60387	144x144mm	-5...+25kn

Optional speed indicator	Type
Universal Digital Repeater UDR	4891

Application/Limitation

Speed and distance through the water only: 350E, 350EE, 450D, 450DD

Speed and distance over ground only: 600S

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)
- Bridge alert management testing: IEC 62923-1 (2018) and IEC 62923-2 (2018)
- Performance testing: IEC 61023 (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.

Type Examination documentation

DNV GL	Document ID	Rev.	Description
25	5003-0141-07	A, 2020-07-23	Report: Gap analysis for bridge alert management compliance acc. to IEC 62923-1/-2 (2018)
24	056395	A, 2018-05-29	Manual: Operation, installation and service manual for NAVIKNOT 600SD with GNSS 5004
23	056396	A, 2018-05-29	Manual: Operation, installation and service manual for NAVIKNOT 600SD with GNSS 5003 and Preamplifier 5029
22	056394	A, 2018-05-29	Manual: Operation, installation and service manual for NAVIKNOT 450D with Preamplifier 5029
21	5029-0141-04	A, 2018-05-23	Report: Test Change Log
20	5003-0141-04	A, 2018-06-19	Report: BAM compliance tests acc. to IEC 61924-2 (Module A and C) and to CDV IEC 62923-2 (2017-09)2
19	5029-0141-03	A, 2018-04-16	Report: Environmental tests acc. to IEC60945, 8.2 to 8.4
18	5029-0141-02	C, 2018-05-16	Report: Speed accuracy tests acc. to IEC 61023, 5.12
17	066-18	1, 2018-05-08	Report: Vibration tests acc. to IEC 60945, 8.7 and DNVGL-CG-0339, 3[6.2]
16	139-18	1, 2018-05-18	Report: EMC tests acc. to IEC 60945, 9 and 10
15	056381	A, 2015-09-09	Manual: Service manual GNSS retrofit procedures for NAVIKNOT 600SDT and 600SDD
14	056380	A, 2015-09-09	Manual: Service manual GNSS retrofit procedures for NAVIKNOT 600S, 600SE and 600SD
13	056379	D, 2018-08-15	Manual: Operation, installation and service manual for NAVIKNOT 600SD with GNSS 5003 and Preamplifier 5005
12	056378	D, 2018-08-15	Manual: Operation, installation and service manual for NAVIKNOT 600SE with GNSS 5003
11	056377	D, 2018-08-15	Manual: Operation, installation and service manual for NAVIKNOT 600S with GNSS 5003
10	056354	F, 2018-08-15	Manual: Operation, installation and service manual for NAVIKNOT 550DD
9	056347	G, 2018-08-15	Manual: Operation, installation and service manual for NAVIKNOT 450DD with SRD331
8	056346	F, 2018-08-15	Manual: Operation, installation and service manual for NAVIKNOT 450D with SRD331
7	056366	E, 2018-08-15	Manual: Operation, installation and service manual for NAVIKNOT 350EE
6	056345	H, 2018-08-15	Manual: Operation, installation and service manual for NAVIKNOT 350E



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DNV GL	Document ID	Rev.	Description
5	-	A, 2015-08-14	Report: Integration and speed and distance measurement tests acc. to IEC 61023 for NAVIKNOT 600 S
4	-	B, 2015-08-13	Report: Display test acc. to IEC 62288
3	GL 07 05 01	2007-04-12	Report: Performance tests acc. to IEC 61023
2	6052b/07	2007-04-03	Report: Environmental tests acc. to IEC 60945, Sects. 8.2 to 8.4 and 8.7
1	07/7003-1-1	2007-02-08	Report: EMC tests acc. to IEC60945, Sects. 9 and 10

END OF CERTIFICATE