

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Application of: Directive 2014/90/EU of 23 July 2014 on marine equipment (MED), issued as "Forskrift om Skipsutstyr" by the Norwegian Maritime Authority. This Certificate is issued by DNV GL AS under the authority of the Government of Norway.

This is to certify:

That the Speed and distance measuring equipment (SDME)

with type designation(s)
DS-85 Doppler Speed Log

Issued to
Furuno Electric Co., Ltd.
Nishinomiya, Hyogo Pref, Japan

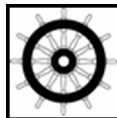
is found to comply with the requirements in the following Regulations/Standards:
Regulation **(EU) 2019/1397**,
item No. MED/4.7. SOLAS 74 as amended, Regulations V/18, V/19 & X/3, IMO Res. A.694(17), IMO Res. A.824(19), IMO Res. MSC.36(63), IMO Res. MSC.97(73), IMO Res. MSC.191(79), IMO Res. MSC.302(87)

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

This Certificate is valid until **2025-02-02**.

Issued at **Høvik** on **2020-02-03**

DNV GL local station:
Kobe



for **DNV GL AS**

Approval Engineer:
Frederik Tore Elter

Notified Body
No.: **0575**

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Roald Vårheim
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 United States of America and the EEA EFTA states on the mutual recognition of Certificates of Conformity for Marine Equipment" signed 17 October 2005, and amended by Decision No 1/2019 dated February 22nd, 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 GL AS 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 This certificate remains valid unless suspended, withdrawn, recalled or cancelled.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.



Product description

The DS-85 Doppler Speed Log consist of the following units:

Unit	Location
Display unit	Protected
Distributor unit	Protected
Transceiver unit	Protected
Transducer	Submerged

For details, see Appendix.

Application/Limitation

- The DS-85 is measuring the ship's speed-through-the-water(STW) in accordance with SOLAS Reg. V/2.3.4.
- The equipment shall be installed and tested onboard in accordance with the Installation Manual IME-72880-Z5 (or later version)

Type Examination documentation

- See Appendix.

Tests carried out

- IEC61023(2007)
- IEC61162-1(2016)
- IEC-61162-2 (1998)
- IEC61162-450 (2018)
- IEC62288(2014)
- IEC60945(2002)(incl. Corr.1,2008)
- IEC62923-1/-2 (2018)

Marking of product

The type designation and name and contact address of the manufacturer shall be affixed visibly, legibly and indelibly to at least one part of the product. In addition the various equipment shall be marked with type and serial number. Safe distance to magnetic compass and power consumption and/or supply voltage may be stated in the installation manual.

APPENDIX

Product description:

The DS-85 Doppler Speed Log comprises the following units:

Unit	Model Name	Remark	
Display unit	DS-8500		
Distributor unit	DS-8510		
Transceiver unit	DS-8520		
Transducer unit	DS-8530		
Transducer unit	DS-820		
Software versions: DS-8500 DS-8510 DS-8520	6550304-01.xx 6550308-01.xx 6550313-01.xx	$x = 0, 1, \dots, 9$	
Optional units*			
Junction box	CI-630		
Remote Display	RD-20		
Remote Display	RD-50		
Dimmer Controller	RD-502		
Remote Controller	RD-501	<i>(for Remote Displays)</i>	
Analog Indicator	SL-200-1W	<i>Bulkhead (IP56)</i>	
	SL-200-1		
	SL-200-5W		
	SL-200-5		
	SL-200-2		
	SL-200-3		
	SL-200-4		
	FL-200S-1	<i>Flush mount (IP5X)</i>	
	FL-200S-1W		
	FL-200S-2		
	FL-200S-3		
	Range Selector - Analog Display Units	DS-389	<i>Flush mount</i>
		MF-22R-1	
MF-22R-2		<i>Bulkhead</i>	
Dimmer - Analog Display Units	DS-F25	<i>Flush mount (IP5X)</i>	
	DS-FE25		
	DS-S25	<i>Bulkhead (IP56)</i>	
	DS-SE25		

*Optional units are tested in accordance with IEC60945 – Protected location

Job Id: **344.1-009083-1**
Certificate No: **MEDB000052F**

Type Examination documentation:

NPS No.	Document No.	Rev.	Document Title
3	IME-72880-Z5		Installation manual: Doppler speed log model DS-85
5	OME-72880-Z5		Operator's manual: Doppler speed log model DS-85
7	K65-17-072	2	DNVGL type approval testing report
8	BSH 6299/063/02		Conformance test of SDME Furuno DS 80
11	LIC 12-19-173		DS-85: Test report IEC61162-1/-2
12	LIC 12-19-172		DS-85: Test report IEC61162-450
13	LIC 12-19-171		DS-85: Test report IEC62288
14	LIC 12-19-170		DS-85: Test report IEC60945 operational checks
15	LIC 12-19-169		DS-85: Test report IEC60945 immersion, noise m.m.
16	LIC 12-19-168		DS-85: Test report IEC60945 environmental
17	LIC 12-19-167		DS-85: Test report IEC60945 CSD
18	LIC 12-19-166		DS-85: Test report IEC60945 EMC
21	FLI 12-09-053		Report: IEC60945 RD-20 remote display inc. RD-501 and RD-502
24	FLI 12-09-068		Report: RD-50 IEC60945
25	BSH_46162_0121508_09		Report: RD-20 IEC62288
26	FLI 12-14-128		Report: IEC62288 - DS-60/RD-50