



TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate No:
MERB000008R
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)
DS-60

Issued to

Furuno Electric Co., Ltd.
Nishinomiya, Japan

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 **2024-07-30**.

Issued at **London** on **2022-12-28**

DNV local unit:
Kobe



for **DNV UK Ltd.**

Approval Engineer:
Frederik Tore Elter

Approved Body No.: **0097**

Christine Mydlak-Röder
MER Service Responsible



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 This certificate remains valid unless suspended, withdrawn, re-called, or cancelled.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

The DS-60 SDME comprises combinations of the following units:

Unit	Model Name	Remark	Location
Display unit	DS-600		Protected
Distributor unit	DS-610		Protected
Transceiver unit	DS-620		Protected
Transducer	DS-630 or DS-630A or DS-631 ¹⁾ or DS-631A ¹⁾	¹⁾ with watertight connection	Exposed
Transducer tank	DS-660 or DS-660A	for DS-630/631 for DS-630A/631A	Protected
Gate valve	DS-661	for DS-630	

Optional units	Model name	Remark	Location
Remote display	RD-20		Protected
Remote display	RD-50		Protected
Rate-of-turn gyro	DS-670		Protected
Remote controller	RD-501		Protected
Dimmer controller	RD-502		Protected
Junction box	DS-640/645A/645B	w/installation materials (CP66-01721)	
Waterproof box	DS-605-R/605-L	w/installation materials (CP66-01731)	Exposed
Analogue Indicator	FL-200S-1	-10 to 30 kn, flush mount	Protected
	FL-200S-2	-10 to 40 kn, flush mount	
	SL-200-1	-10 to 30 kn, bulkhead mount	
	SL-200-2	-10 to 40 kn, bulkhead mount	
	FL-200S-1W	-10 to 30 kn, flush mount	
	FL-200S-3	-10 to 20 kn, flush mount	

Application/Limitation

- The DS-60 is applicable for provision of speed measurements over the ground (SOG) and through the water (STW), with distance measurements through the water (STW).
- The DS-60 equipment shall be installed in compliance with the installation instructions of Pub. No. IME72640J12 or later versions.

Type Examination documentation

DNV No.	Document Id.	Description
30	OME72640E12	Manual: User Manual DOPLER SONAR - MODEL DC-60
29	IME72640J12	Manual: Installation Manual DOPLER SONAR - MODEL DC-60
28	K66-17-175	Report: DNVGL type approval testing report - Model: DOPPLER SONAR - Type: DS-60 IEC62923-1/-2
22	FLI 12-14-128	IEC 62288 ed.2.0 test report DS-60
21	FLI 12-13-009	IEC 61162-1 test report DS-60
20	FLI 12-10-028	IEC60945 and IEC61023 test report DS-60
19	FLI 12-09-070	IEC60945 Vibration test report DS-60
18	FLI 12-09-068	IEC60945 RD-50
17	FLI 12-09-053	IEC60945 RD-20
16	FLI 12-09-046	EMC test report - DS-60
15	FLI 12-09-045	IEC60945 and IEC61023 DS-60
14	K66-17-166-2	DNVGL type approval testing report - doppler sonar
13	BSH/46162/0121509/09	IEC 61162-1 (2007) RD-50 display
12	BSH/46162/0121508/09-1	IEC 61162-1 (2007) RD-20 display
11	BSH/46162/0121508/09	IEC 62288 (2008) RD-20 display
10	BSH/4612/4071804/11-3	IEC 61023 (2007) analogue indicator
9	BSH/4612/4071804/11-2	IEC 62288 (2008) analogue indicator
8	BSH/4612/4071804/11-1	IEC 61162-1 (2007) DS-60
7	BSH/4612/4071589/10	IEC 61023 (2007) DS-60
6	BSH/4612/4071196/09-1	IEC 61023(2007) and IEC61162-1 (2007)
5	BSH/4612/4071196/09	IEC 62288 (2008)

Tests carried out

- Performance - IEC 61023 (2007)
- Serial Interface - IEC 61162-1 (2016)
- Presentation - IEC 62288 (2014)
- Environmental - IEC 60945 (2002) incl. Corr.1 (2008)
- Bridge Alert management - IEC 62923-1 (2018) and IEC 62923-2 (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