

**EC-TYPE EXAMINATION
CERTIFICATE (MODULE B)**Certificate No:
MEDB00001BE
Revision No:
5

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 Radar equipment with a chart option**

with type designation(s)

FAR-3210, FAR-3210-BB, FAR-3220, FAR-3220-BB, FAR-3310, FAR-3320, FAR-3320W, FAR-3220W-BB, FAR-3330SW, FAR-3230SW-BB, FAR-3230S, FAR-3230S-BB, FAR-3330S, FAR-3230S-SSD, FAR-3230S-SSD-BB, FAR-3330S-SSD

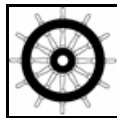
Issued to

**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/4.34, 4.35, 4.37, 4.38. SOLAS 74 as amended, Regulations V/18 & V/19 & X3, IMO Res. A.278(VIII), IMO Res. MSC.36(63), IMO Res. MSC.97(73), IMO Res. A.694(17), IMO Res. MSC.191(79), IMO Res. MSC.192(79), IMO Res. MSC.302(87), IMO MSC.1/Circ.1349, ITU-R M.1177-4 (04/11) and IMO Res. MSC.232(82) Appendix 6**

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

This Certificate is valid until **2021-08-29.**Issued at **Høvik** on **2019-10-21**DNV GL local station:
Kobefor **DNV GL AS**Approval Engineer:
Steinar KristensenNotified Body
No.: **0575****Roald Vårheim**
Head of Notified Body

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 This certificate remains valid unless suspended, withdrawn, recalled or cancelled.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 Radar; FAR-3210, FAR-3210-BB, FAR-3220, FAR-3220-BB, FAR-3310, FAR-3320, FAR-3320W, FAR-3220W-BB, FAR-3330SW, FAR-3230SW-BB, FAR-3230S, FAR-3230S-BB, FAR-3330S FAR-3230S-SSD, FAR-3230S-SSD-BB, FAR-3330S-SSD, consist of the following units:

Unit	Location
Processor unit	Protected
Monitor (display) unit	Protected
Control unit (operation panel)	Protected
Data interface	Protected
Up-mast transceiver unit -	Exposed
Scanner power supply unit	Protected
Antenna unit	Exposed

For details, see Appendix.

Application/Limitation

- The FAR-3xx0 is found to be in compliance with the requirements for RADAR for ships; CAT 1C, CAT 2C, CAT 1HC and CAT 2HC.
- Back-up ECDIS: The FAR-3xx0 is found to be in compliance with the requirements of SOLAS V/19.2.1.5 and the Commission Implementing Regulation (EU)2019/1397 MED/4.30 when configured as Back-up for ECDIS.
- The FAR-3xx0 may be configured for processing(combining) the radar signals from two separate sources (2 transceivers).
- The DVI interface shall be used for video signal transfer between Processor unit and Monitor unit.
- The FAR-3000 may be interconnected to the VDR thru the DVI-I port(USB) or via LAN2 port (IEC61162-450) in compliance with IEC61996-1.
- The FAR-radar shall be installed and tested onboard in accordance with the Installation Manual (ref. appendix)

Type Examination documentation

- See Appendix.

Tests carried out

- IEC62388(2013)
- IEC61162-1(2016)
- IEC61162-2(1998)
- IEC61162-450(2011+AMD1:2016)
- IEC62288(2014)
- IEC60945(2002)
- IEC61174(2015) Annex F

Marking of product

The type designation and name and contact address of the manufacturer shall be affixed visibly, legibly and indelibly to the product. In addition the product shall be marked with serial number, safe distance to magnetic compass, power consumption and/or supply voltage.

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USCG Approval for ARPA/ATA (CAT.1C/CAT.2C/CAT.1HC/CAT.2HC) and ECDIS Back-up

The product has been assigned a **U.S. Coast Guard Module B number**, USCG approval 165.115-/EC0575, 165.116/EC0575, 165.216/EC0575 and 165.217/EC0575, as applicable to CAT 1C, CAT 2C, CAT 1HC and CAT 2HC respectively, and 165.124/EC0575 for the ECDIS Back-up configuration, to note type approval to Module B only as it pertains to obtaining US Coast Guard approval 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 22 February 2019.

The RADAR transceiver for CAT 1C and CAT 2C are not covered by the agreement and must have separate U.S. certification for installation on U.S. flagged vessels.

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APPENDIX

Product description:

The Chart Radar; FAR-3210, FAR-3210-BB, FAR-3220, FAR-3220-BB, FAR-3310, FAR-3320, FAR-3320W, FAR-3220W-BB, FAR-3330SW, FAR-3230SW-BB, FAR-3230S, FAR-3230S-BB, FAR-3330S FAR-3230S-SSD, FAR-3230S-SSD-BB, FAR-3330S-SSD comprise combinations of the following components:

Unit	Model Name	Components	Remark
Processor Unit	EC-3000	Mother board: ADP-556-01 Graphical unit: ATI Radeon E8860	<i>For Chart Radar & ECDIS backup the graphical unit and the monitor shall be of calibrated type</i>
Data Interfaces (embedded)	Connector J3 - J6	TTYCS(LA)-4	<i>IEC61162-2/IEC61162-1</i>
	Connector J7 - J10	TTYCS(LA)-1Q	<i>IEC61162-1</i>
	Ethernet 1000Base-T	2 ports	<i>LAN</i>
Monitor Unit (VDU)	MU-190 ¹⁾ or MU-231 or MU-201CE ¹⁾ or MU-231CE or MU-270W or JH19T14FUD ¹⁾ or JH20T17FUD ¹⁾ or JH23T12FUD ²⁾ or JH 23T14 FUD-MA4-AxxA or HD24T22 FUD-MA4-FxGx ¹⁾ or HD26T21 MMD-MA4-FAGA or HD26T22 FUD-MA4-FxGx or HD27T22 FUD-MA4-FxGx or HD32T22 FUD-MA4-FxGx or HD55T22 FUD-xA4-xOxx or WA460-01-MON-01-XXFU or WA270-01-MON-01-XXFU		¹⁾ <i>CAT 2 monitor</i> ²⁾ <i>RADAR only - not for ECDIS backup</i> <i>x=variable letter/number according to manufacturer's type number identification</i>
Radar Control unit	RCU-025		
Trackball control unit	RCU-026		
Transceiver/antenna Unit	FAR-3x10(-BB) FAR-3x20(-BB)	XN12CF-RSB128-RTR10n or XN20CF-RSB128-RTR10n or XN24CF-RSB128-RTR10n and PSU-014	<i>n=5 or 6</i>
	FAR-3x20W(-BB)	XN20CF-RSB130-RTR108 or XN24CF-RSB130-RTR108 and PSU-014	
	FAR-3x30S(-BB)	SN24CF-RSB129-RTR107 or SN30CF-RSB129-RTR107 or SN36CF-RSB129-RTR107 and PSU-014 or PSU-015	

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Product description(cont.):

Unit	Model Name	Components	Remark
Transceiver/antenna Unit	FAR-3x30SW(-BB)	SN36CF-RSB131-RTR109 and PSU-014 or PSU-015	
	FAR-3x30S-SSD	SN24CF-RSB133-RTR111 or SN30CF-RSB133-RTR111 or SN36CF-RSB133-RTR111 and PSU-016 or PSU-018	
Performance monitors	PM-32A		
ECDIS control unit	RCU-024		<i>Optional</i>
Sensor Adapter (interface unit)	MC-3000S	Serial to network (IEC61162-450)	<i>Optional</i>
Sensor Adapter (interface unit)	MC-3010A	analog	<i>Optional</i>
Sensor Adapter (interface unit)	MC-3020D	digital IN	<i>Optional</i>
Sensor Adapter (interface unit)	MC-3030D	digital OUT	<i>Optional</i>
LAN switch/switching HUB	HUB-100		<i>Radar: optional</i>
LAN switch/intelligent HUB	HUB-3000 ³⁾		³⁾ <i>ECDIS backup: Mandatory</i>
Junction Box	RJB-001		<i>Optional</i>
LAN signal converter	HMC-200CE-A		<i>Optional</i>
<i>Software</i>	<i>RADAR 039266 Ver. 02.xx</i>		
<i>RADAR</i>	<i>SPU 0359281 ver.1.xx Ver. 2.xx</i>		
<i>ECDIS backup</i>	<i>Linux 3.2 Jeppesen SDK 6.0</i>		

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Type Examination documentation:

NPS No.	Document No.	Rev.	Document Title
83	RET-19029		The modification of FHD layout for CAT1 requirement
82	LIC 12-19-028	5	MC-3000S IEC61162-1 Ed.5
81	LIC 12-19-027	5	EC-3000 IEC61162-1 Ed.5
80	LIC 12-17-064		Processor unit EC-3000 CSD test report
79	LIC 12-17-063		Processor unit EC-3000 IEC60945 test report
78	LIC 12-17-062		Processor unit EC-3000 EMC test report
75	K03-17-2792-0		DNVGL testing report for pending items
74	K03-17-2679		DNVGL TA test report:IEC61174 Annex F & MSC.302(87)
73	E32-01305-G20		Instruction manual, setting and adjustments
72	K03-17-2468		DNVGL type approval testing report – FAR-3000 series
66	OMC-44930-Z4		Operator’s manual for the MU-270W monitor
65	LIC12-15-059		Test report IEC61162-450 for sensor adapters: MC-3000
64	LIC12-16-009/010/011/012		Labotech test reports: IEC60945 and IEC62288 for monitor unit: MU-270W
62	LIC12-15-058		Labotech test report: IEC61162-450 for processor unit for Marine Radar type EC-3000
61	K03-17-2051		DNV type approval testing report: IEC61162-450
60	IME-36160-J22		Installation manual; Chart RADAR FAR-3xx0 series
59	OME-36160-H21		Operator's manual; Chart RADAR FAR-3xx0 series
58	K03-17-2231		DNVGL type approval testing report: Marine Radar FAR-3000 series
57	K03-17-1877		DNV type approval testing Report
56	K03-17-1554		FCR-2xxx Chart radar: Type approval testing report
55	K03-17-1538		FCR-2xxx Chart radar: DNV Type approval testing report
54	K03-17-1424		FCR-2xxx Chart radar: DNV Type approval testing report
53	Applica technical report 20128		Performance testing of Radar FAR-3000 series
52	K03-17-1888		FAR-3210 Performance in sea and rain clutter
51	K03-17-1894		Performance in sea clutter
50	K03-17-1899		Performance in sea and rain clutter
43	FLI 12-13-081		IEC60945 test report -FAR-3330SW
42	FLI 12-13-080		IEC60945 EMC test report -FAR-3330SW
41	FLI 12-13-079		IEC60945 test report -FAR-3320W
40	FLI 12-13-078		IEC60945 EMC test report -FAR-3320W
39	FLI 12-13-077		IEC60945 test report -FAR-3230S-SSD/-3330S-SSD
38	FLI 12-13-076		IEC60945 EMC test report -FAR-3230S-SSD/-3330S-SSD
37	FLI 12-13-075		IEC60945 test report -FAR-3210/-3310/-3220/-3320
36	FLI 12-13-074		IEC60945 EMC test report -FAR-3210/-3310/-3220/-3320
35	FLI 12-13-073		IEC60945 test report -FAR-3230S-SSD/-3330S-SSD
34	FLI 12-13-072		IEC60945 EMC test report - FAR-3230S/-3330S
33	QINETIQ/MS/MAR/CR13 03326/V1.2		Unwanted emission measurements - FAR-3xxx-series
32	K03-17-1869		Antenna radiation pattern for FAR-3xxx series
29	FLI 12-13-064		IEC60945 EMC test report - FAR-3230S-SSD/-3330S-SSD
28	FLI 12-13-063		IEC60945 EMC test report - FAR-3230S/-3330S

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NPS No.	Document No.	Rev.	Document Title
27	FLI 12-13-062		IEC60945 EMC test report - FAR-3210/-3310/-3220/-3320
26	FLI 12-13-059		IEC60945 & 62388 test report - FAR-3230S-SSD/-3330S-SSD
25	FLI 12-13-058		IEC60945 & 62388 test report - FAR-3210/-3310/-3220/-3320
24	FLI 12-13-057		IEC60945 & 62388 test report - FAR-3230S/-3330S
23	FLI 12-12-025		IEC60945 test report - FMD-3000 series ECDIS
22	FLI 12-11-112		IEC61162-1 test report - FMD-3000 series ECDIS
21	FLI 12-11-111		IEC60945 test report - ECDIS FMD-3000 series
20	FLI 12-10-068		IEC60945 test report - monitor units
19	FLI 12-03-058		IEC60945 test report
18	OMC-44690-Z		Monitor MU-231 Operator's manual
15	OSE-36160-Z		Operator's guide: CHART RADAR
14	OMC-44670-Z		Monitor MU-190: Operator's manual
13	K03-17-1815		DNV type approval testing report: IEC62388
11	K03-17-1814		TT and Association scenario test Marine Radar
10	IME-36240-J22		Installation Manual Chart RADAR- FAR-3320W/-3220-BB/-3330SW/3230SW-BB
9	IME-36190-J22		Installation Manual Chart RADAR- FAR-3230S-SSD(-BB)/FAR-3330S-SSD
8	IME-36180-J22		Installation Manual Chart RADAR- FAR-3230S(-BB)/-3330S
5	K03-17-1758		Wind Tunnel test report - RSB-128 & XN12CF/XN20CF/XN24CF
4	K03-17-1759		Wind Tunnel test report - RSB-129 & SN36CF