

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate No:
MEDB00001BE

Application of: Council Directive 96/98/EC of 20 December 1996 on Marine Equipment as amended by directive (EU) 2015/559, issued as "Forskrift om Skipsutstyr" by the Norwegian Maritime Directorate. This Certificate is issued by DNV GL AS under the authority of the Government of the Kingdom of Norway.

This is to certify:

That the Radar equipment for high speed craft applications (CAT 1HC)

with type designation(s)

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

Issued to

Furuno Electric Co., Ltd.

Nishinomiya Hyogo Pref, Japan

is found to comply with the requirements in the following Regulations/Standards:

Annex A.1, item No. A.1/4.38 and Annex B, Module B in the Directive; SOLAS 74 as amended, Regulation X/3, IMO Resolutions A.278(VIII), A.694(17), MSC.191(79), MSC.192(79) and ITU-R M.1177-4 (04/11)

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

This Certificate is valid until **2021-06-29**.

Issued at **Høvik** on **2016-06-30**

DNV GL local station:

Kobe

Approval Engineer:

Olaf Gundersrud

Notified Body

No.: **0575**

for **DNV GL AS**

Vidar Dolonen

Head of Notified Body

Product description

The Radar FAR-3210, FAR-3220, FAR-3230S, FAR-3310, FAR-3320, FAR-3320W, FAR-3330S, FAR-3330SW, FAR-3230S-SSD, FAR-3330S-SSD, FAR-3210-BB, FAR-3220-BB, FAR-3230S-BB, FAR-3230S-SSD-BB, FAR-3220W-BB, FAR-3230SW-BB 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
or down-mast transceiver unit	Protected
Scanner power supply unit	Protected
Antenna unit	Exposed

For details, see Appendix.

For latest revision of the Appendix, see <http://exchange.dnv.com/tari>

Application/Limitation

- The FAR-3xx0 chart radar is found to be in compliance with RADAR for high speed crafts; CAT 1H, CAT 1HC, CAT 2H, CAT 2HC with reference to the Directive annex A1; A.1/4.37, 4.38 and IMO resolution MSC.97(73) (2000 HSC Code).
- The FAR-3xx0 chart radar is found to be in compliance with the standards for ECDIS Back-up; IMO resolution MSC.232(82) Appendix 6 and IEC61174 Annex F.
- The FAR-radars with type designation 3xx0nn-BB shall be interconnected with one of the monitor units identified in the appendix.
- The DVI interface shall be used for video signal transfer between Processor unit and Monitor unit.
- The FAR-radar shall be installed and tested onboard in accordance with the pertinent Installation Manual (ref. appendix)

Type Examination documentation

- See Appendix.

Tests carried out

- IEC62388(2013)
- IEC61162-1(2010)
- IEC61162-2(1998)
- IEC61162-450(2011)
- IEC62288(2014)
- IEC60945(2002)

Marking of product

The manufacturer and Type Designation to be applied to the equipment in a clearly visible location and in addition the equipment shall be marked with serial number, safe distance to magnetic compass, power consumption and/or supply voltage.

APPENDIX

Product description:

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

Unit	Model Name	Components	Remark
Processor Unit	EC-3000	Mother board: ADP-555-02 Graphical unit: ATI Radeon E4690	<i>For Chart Radar the graphical unit and the monitor shall be of calibrated type</i>
Data Interfaces (embedded)	Connector J3 & J4	TTYCS(LA)-4	<i>IEC61162-2/IEC61162-1</i>
Connector J5 – 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		<i>¹⁾ CAT 2 monitor</i>

	MU-201CE ¹⁾ or MU-231CE or MU-270W or JH19T14FUD ¹⁾ or JH20T17FUD ¹⁾ or JH23T12FUD or JH23T14FUD or HD26T21MMD-MA4-FAGA			
Radar control unit	RCU-025			
X-band transceiver unit	RTR-105 (12 kW upmast) or RTR-106 (25kW upmast) or RTR-108 (25kW downmast)			<i>FAR-3x10</i> <i>FAR-3x20</i> <i>FAR-3320W</i>
S-band transceiver unit	RTR-107 (30kW upmast) or RTR-109 (30kW downmast) or RTR-111 (250W upmast (solid state))			<i>FAR-3x30S</i> <i>FAR-3330SW</i> <i>FAR-3x30S-SSD</i>
Scanner	XN12CF or XN20CF or XN24CF	4 ft 6.5 ft 8 ft		<i>X-band</i>
SN36CF	12 ft	<i>S-band</i>		
Gear box (42 rpm)	RSB-128 or RSB-130	X-band upmast X-band downmast		<i>FAR-3x10/3x20</i> <i>FAR-3320W</i>
RSB-129 or RSB-131 or RSB-133	S-band upmast S-band downmast S-band upmast (solid state)	<i>FAR-3x30S</i> <i>FAR-3330SW</i> <i>FAR-3x30S-SSD</i>		
Antenna power supply units	PSU-014 ¹⁾ or PSU-015 ²⁾ or PSU-018 ³⁾	X/S-Band S-Band S-Band		¹⁾ <i>X-42rpm</i> ²⁾ <i>S- 42 rpm</i> ³⁾ <i>solid state 42 rpm</i>

APPENDIX

Product description cont.:

Unit	Model Name	Components	Remark
Performance monitors	PM-32A or PM-52A or PM-52B	X-band S-band S-band	<i>magnetron</i> <i>solid state</i>
Software	0359266-xx.xx	EC-3000	
0359286-xx.xx	Transceiver	<i>solid state</i>	
0359281-xx.xx	Transceiver	<i>Magnetron</i>	

Optional units

ECDIS control unit	RCU-024		
Trackball control unit	RCU-026		
Sensor Adapter (interface unit)	MC-3000S	Serial Serial to network	<i>IEC61162-450</i>
Sensor Adapter (interface unit)	MC-3010A	analog	
Sensor Adapter (interface unit)	MC-3020D	digital IN	
Sensor Adapter (interface unit)	MC-3030D	digital OUT	
LAN switch/switching HUB	HUB-100		

LAN switch/intelligent HUB	HUB-3000
Junction Box	RJB-001
LAN signal converter	HMC-200CE-A

Type Examination documentation:

DNV GL No.	Document No.	Rev.	Document Title
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-C2		Installation manual; Chart RADAR FAR-3xx0 series
59	OME-36160-C		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

APPENDIX

Type Examination documentation(cont.):

DNV GL No.	Document No.	Rev.	Document Title
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/CR130 3326/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
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	Installation Manual Chart RADAR- FAR-3230W/-3330SW
9	IME-36190-Z6	Installation manual FAR-3220S-SSD(-BB))/FAR-3330S-SSD
8	IME-36180	Installation Manual Chart RADAR- FAR-3230S(-BB)/-3330S
6	E32-01305-Z	Instruction manual FAR-3210/-3220/-3310/-3320/-3230S/-3330S/-3320W/-3330SW/-3230S-SSD/-3330S-SSD/-3210-BB/-3220-BB/-3230S-BB/-3230S-SSD-BB/-3220W-BB/-3230SW-BB
5	K03-17-1758	Wind Tunnel test report - RSB-128 & XN12CF/XN20CF/XN24CF
4	K03-17-1759	Wind Tunnel test report - RSB-129 & SN36CF