

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate No:
MEDB00001BE
Revision No:
10

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 AS under the authority of the Government of Norway.

This is to certify:

That the Radar equipment

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, FAR-3220-NXT, FAR-3220-NXT-BB, FAR-3320-NXT

Issued to

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

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

Regulation **(EU) 2022/1157,**

item No. MED/4.64 SOLAS 74 as amended, Reg. V/18, 19, X/3, IMO Res. MSC.36(63)-(1994 HSC Code) 13, IMO Res. MSC.97(73)-(2000 HSC Code) 13, IMO Res. A.278 (VIII), A.694(17), MSC.191(79), 192(79), 302(87), IMO MSC.1/Circ.1349, ITU-R M.1177-4 (04/11)
IMO Res. MSC.232(82) Appendix 6

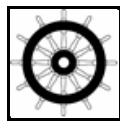
Further details of the equipment and conditions for certification are given overleaf.

This Certificate is valid until **2024-01-01**.

Issued at **Høvik** on **2023-03-29**

DNV local unit:
Kobe

Approval Engineer:
Frederik Tore Elter



Notified Body
No.: **0575**

for **DNV AS**

Sverre Olav Bergli
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 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.



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 Radar and Back-up ECDIS; 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, FAR-3220-NXT, FAR-3220-NXT-BB and FAR-3320-NXT consist of the following units:

Unit	Location
Processor unit	Protected
Monitor (display) unit	Protected
Control unit (operation panel)	Protected
Data interface	Protected
Transceiver unit (Up-mast)	Exposed
or Transceiver unit (Down-mast)	Protected
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 and high speed craft; CAT 1C, CAT 2C, CAT 1HC and CAT 2HC (dependent of monitor and antenna rpm).
- 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) 2021/1158 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 (RGB) 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

- Performance: IEC 62388 (2013)
- Performance: IEC 61174 (2015) Annex F
- Interface: IEC 61162-1 (2016)
- Interface: IEC 61162-2 (1998)
- Interface: IEC 61162-450 (2018)
- Presentation: IEC 62288 (2014)
- Environmental: IEC 60945 (2002) +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 the product. In addition the product shall be marked with serial number, safe distance to magnetic compass, power consumption and/or supply voltage.

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.

APPENDIX

Product description:

The Chart Radars; 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, FAR-3220-NXT, FAR-3220-NXT-BB and FAR-3320-NXT comprise combinations of the following components:

Unit	Model Name	Components	Remark
Processor Unit	EC-3000	Mother board: ADP-556-01 E8860 graphics, SSD & CF, DVD- drive, USB-ports or, Mother board: ADP-219-01 Intel HD Graphics P630, SSD & CF, DVD- drive, USB-ports	<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>IEC61162-2/61162-1</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 WE270FU or JH19T14 FUD-xx4 ¹⁾ or JH20T17 FUD-xx4 ¹⁾ or JH23T12 FUD-xxx ²⁾ or JH23T14 FUD-xx4 ¹⁾ or HD19T22-xx4 ¹⁾ or HD24T22 FUD-xx4 ¹⁾ or HD26T21 MMD-xx4 or HD26T22 FUD-xx4 or HD27T22 FUD-xx4 or HD32T22 FUD-xx4 or HD55T22 FUD-xx4 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 Trackball control unit	RCU-025 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)	SN36CF-RSB129-RTR107 and PSU-014 or PSU-015	

Unit	Model Name	Components	Remark
Transceiver/antenna Unit	FAR-3x30SW(-BB)	SN36CF-RSB131-RTR109 and PSU-014 or PSU-015	
	FAR-3x30S-SSD	SN36CF-RSB133-RTR111 and PSU-016 or PSU-018	
	FAR-3220-NXT(-BB) FAR-3320-NXT	XN12CF-RSB128-RTR123 or XN20CF-RSB128-RTR123 or XN24CF-RSB128-RTR123 and PSU-014	<i>Solid State</i>
Performance monitors	PM-32A, PM-52A PM-32B, PM-52B (solid states)		
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>Option – for proprietary LAN interface.</i>
LAN switch/intelligent HUB	HUB-3000 ³⁾		<i>Option – for IEC 61162-450 external LAN interface.</i> ³⁾ <i>ECDIS backup: Mandatory</i>
Junction Box	RJB-001		<i>Optional</i>
LAN signal converter	HMC-200CE-A		<i>Optional</i>
Software	Main: 0359266 Ver. 05.xx SPU: 0359281 ver.01.xx (Magnetron radar) 0359286 ver.01.xx (S-band solid state radar) 0359477 ver.01.xx (X-band solid state radar)		
RADAR			
ECDIS backup	Ver. 5.xx Linux 5.x Jeppesen SDK 6.0		

Type Examination documentation:

DNV No	Document No	Rev	Title
199	NI/0004/rev1.0/2020	10-06-2020	Report: North Invent, IEC 62288-62388 WE270 Bridge Display
196	K26-17-366	13 March 2023	Report: Furuno, Display Presentation WE270 Color Calibration Report
194	K03-17-3327	20 Oct 2022	Report: Furuno, Marine Radar FAR-3xx0/3xx8 series NorthInvent WE270FU
193	P18-0006	Rev. 2	Report: IEC60945 IACS E10 WE270 Monitor
192	15-2021	Rev. 1.0	Manual: Display Wavell-UM
191	TAA000028U	Rev. 2	Type Approval Certificate, Bridge Monitor WE270
190	TAA00002TT	Rev. 1	Type Approval Certificate, Bridge Monitor WE270
188	DOC206850-2		Hatteland: Statement of Manufactor Similarity for HD 24T22 FUD-MA4-FAGx
187	DOC205825-1	R08	Hatteland: HD 24T22 MMD - IEC 60945 & IACS E10 Statement_R08

DNV No	Document No	Rev	Title
186	PDF208404-1	REV 1	Report: HD 24T23 WAC-DFA-4GP0AA-1 Technical Report 191220001T
185	PDF202100-1	REV 0	Report: HD 24T22 MMD-MA1-FAGP Technical Report 2017-21008 Maritime
184	DOC209240-1		Report: HD 24T22 FUD HW03+ ECDIS Compliance Statement
183	DOC209117-1	R01	Report: IEC62288 flicker test report HD 24T22 MMD-MA1-FAGA-30001
182	DOC209115-1	R01	Report: Conformance test report HD 24T22 MMD-MA1-FAGA-30001
181	DOC207208-1	R09	Hatteland: Statement of Manufactor Similarity for HD 24T22 FEC-MP9-4AAH1A
172	LIC 12-22-051	27 April 2022	Report: LABOTECH, IEC60945 Compass safe diatence, ECDIS/Chart Radar, Model: FMD-3xx5/FAR-3xx5, Type: EC-3005
171	LIC 12-22-050	27 April 2022	Report: LABOTECH, IEC60945 (temp, vib, acoustic noise, dangerous vol), ECDIS/Chart Radar, Model: FMD-3xx5/FAR-3xx5, Type: EC-3005
170	LIC 12-22-049	27 April 2022	Report: LABOTECH: IEC60945 EMC, ECDIS/Chart Radar Model: FMD-3xx5/FAR-3xx5, Type EC-3005
157	VS-TV-100708-01	2021/07/08	Report: VST, IEC 60945, Display HD 24T22 MEC-MP9-4AAH1A-ES3
156	210426002T	Rev. 1	Report: CAL-TECH, IEC 60945 Display HD 24T22 MEC-MP9-4AAH1A-ES3
155	170703001T	Rev.1	Report: CAL-TECH, IEC 60945 Display HD 26T22 MMC-AX3-4GM11F-ES
154	CEBDLB-WTW-P21041117	May 04, 2021	Report: BV, Partial IEC 60945 Test report Display HD 24T22
137	INB10036-4	Rev 00_01	Manual: User Manual Series 1 G2 - Maritime Multi Display Models
136	MRA0000016	Rev. 3	Certificate: IEC 60945 Monitors HD series
135	MRA0000006	Rev. 2	Certificate: IEC 60945 Monitors HD x-series
134	MRA0000003	Rev. 3	Certificate: IEC 60945 Monitors HD series
133	K24-17-1057	06. OCT 2021	Report: FMD TA test procedure (JH23T14 FUD)
132	K24-17-1059	06. OCT 2021	Report: FMD TA test procedure (JH20T17 FUD)
131	K24-17-1061	08. OCT 2021	Report: FMD TA test procedure (JH19T14 FUD)
130	K24-17-1048	06. OCT 2021	Report: FMD TA test procedure (HD19T22 FUD)
129	K03-17-3209	17. SEPT 2021	Report: Furuno DNV type approval Hatteland FAR - RADAR
126	DOC206405-1	Rev. 1	Report: Hatteland, Conformance test report_HD 19T22 MMD-MA1-FOGP_HTB30-DVI-D
125	DOC206081-1	Rev. 1	Report: Hatteland, IEC62288 flicker test report_HD 19T22 MMD_SIGNED
124	DOC205958-1	Rev. 5	Report: Hatteland, IEC62288 Minimum brightness test of GDCX
120	DOC208098-1	Rev. 1	Report: Hatteland - Conformance test report_JH 19T14 MMD-AR4-AOBC_SIGNED
119	DOC208089-1	Rev. 1	Report: Hatteland - Conformance test report_JH 20T17 MMD-MR4-AABA_SIGNED
118	DOC208088-1	Rev.1	Report: Hatteland - IEC62288 flicker test report_ H 20T17 MMD-MR4-AABA
117	DOC208070-1	Rev.1	Report: Hatteland - Conformance test report JH 23T14 MMD-MR4-AABA
116	DOC208060-1	Rev. 1	Report: Hatteland - IEC62288 flicker test report JH 23T14 MMD-MR4-AABA
115	LIC 12-21-055	26 April 2021	Report: LABOTECH: IEC 61162-450 (2018) Model: Sensor Adapter Type: MC-3000S
114	LIC 01-21-017	26 April 2021	Report: LABOTECH: Reference document for IEC 61162-450 test performed by LIC (LIC test report no. LIC 12-21-055 for MC-3000S)
113	LIC 01-21-014	7 April 2021	Report: LABOTECH IEC61162-450 (2018), Reference document for LCI 12-21-037 for FAR-3xx0 series
112	LIC 12-21-037	7 April 2021	Report: LABOTECH IEC61162-450 (2018), for FAR-3xx0 series
107	IME-36160-T	T: FEB. 14, 2023	Manual: Furuno - Installation Manual - CHART RADAR - Model: FAR-3xxx series

DNV No	Document No	Rev	Title
105	K03-17-3122	Ver. 1.03	Report: DNV type approval report - Model : MARINE RADAR - Type: FAR 3 xx 0 series
98	LIC 12-19-156		IEC 60945, Furuno Marine Radar Type: FAR-2228-NXT/2228-NXT-BB/2328-NXT, FAR-3220-NXT/3220-NXT-BB/3320-NXT - Electromagnetic RF radiation
97	LIC 12-19-155		IEC 60945, Furuno Marine Radar Type: FAR-2228-NXT/2228-NXT-BB/2328-NXT, FAR-3220-NXT/3220-NXT-BB/3320-NXT - CSD
96	LIC 12-19-154	27 September 2019	IEC 60945, IEC62388 Furuno Marine Radar Type: FAR-2228-NXT/2228-NXT-BB/2328-NXT, FAR-3220-NXT/3220-NXT-BB/3320-NXT - vibration and shock
95	LIC 12-19-153	27 September 2019	IEC 60945, Furuno Marine Radar Type: FAR-2228-NXT/2228-NXT-BB/2328-NXT, FAR-3220-NXT/3220-NXT-BB/3320-NXT - temperature
94	LIC 12-19-152	27 September 2019	IEC 60945, Furuno Marine Radar Type: FAR-2228-NXT/2228-NXT-BB/2328-NXT, FAR-3220-NXT/3220-NXT-BB/3320-NXT - dangerous voltage
93	LIC 12-19-151	27 September 2019	IEC 60945, ETSI EN 301 843-1, Furuno Marine Radar Type: FAR-2228-NXT/2228-NXT-BB/2328-NXT, FAR-3220-NXT/3220-NXT-BB/3320-NXT
92	K03-17-2892	27 September 2019	IEC 62388, Result of TT Marine Radar F A R 2x 2 8 NXT
91	OMC-44690-Z		Operator's manual: MU-231 monitor
90	K03-17-2885	1.03	DNVGL type approval testing report FAR-3xx0-NXT
88	LIC 12-20-002		Test report (ITU-R M.1177) for transceiver type RTR-123
87	TR-30215	0	Performance testing of X-band SSD antenna & transceiver
85	K03-17-2929	0	Performance in sea and clutter FAR-2328 NXT
83	RFT-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		EC-300 Processor unit: IEC60945 CSD
79	LIC 12-17-063		EC-300 Processor unit: IEC60945 Environmental
78	LIC 12-17-062		EC-300 Processor unit: IEC60945 EMC
75	K03-17-2792-0		DNVGL type approval testing report for pending items
74	K03-17-2679		DNVGL type approval testing 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
69	DNVGL TAA00000S1		Wave series of monitors
66	OMC-44930-Z4		MU-270W marine display: Operator's manual
65	LIC 12-15-059		Test report (IEC61162-450) for Sensor adapters type MC-3000,...
64	LIC 12-16-0nn	nn = 09, 10, 11, 12	IEC60945 and 62288 test reports: Monitor unit: MU-270W
62	LIC 12-15-058		Test report: IEC61162-450 for processor unit for Marine Radar type EC-3000
61	K03-17-2051		DNV type approval testing report: IEC61162-450
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		FAR-2xxx Chart Radar: DNV type approval testing report -Pending items
55	K03-17-1538		FAR-2xxx Chart Radar: DNV type approval testing report -Pending items
54	K03-17-1424		FAR-2xxx Chart Radar: DNV type approval testing report
53	Applica 20128	0	performance testing of RADAR FAR-3000 series
52	K03-17-1888	1	FAR-3210 Performance in sea and rain clutter
51	K03-17-1894	1	Performance in sea clutter
50	K03-17-1899	1	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

DNV No	Document No	Rev	Title
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/-3330S
34	FLI 12-13-072		IEC60945 EMC test report - FAR-3230S/-3330S
33	QINETIQ/MS/MAR/CR1303326/V1.2	1.2	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	1	IEC60945 test report - monitor units
19	FLI 12-03-058		IEC60945 test report
15	OSE-36160-D10		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
5	K03-17-1758		Wind Tunnel test report - RSB-128 & XN12CF/XN20CF/XN24CF
4	K03-17-1759		Wind Tunnel test report - RSB-129 & SN36CF