



DET NORSKE VERITAS

EC TYPE EXAMINATION CERTIFICATE

Application of: Council Directive 96/98/EC of 20 December 1996 on Marine Equipment as amended by directive 2012/32/EU, issued as "Forskrift om Skipsutstyr" by the Norwegian Maritime Directorate. This Certificate is issued by Det Norske Veritas under the authority of the Government of the Kingdom of Norway.

CERTIFICATE NO. **MED-B-8886**

This is to certify that the
Radar equipment CAT 1 with Chart option

with type designation(s)

FAR-3210, FAR-3220, FAR-3230S, FAR-3230S-SSD, FAR-3310, FAR-3320, FAR-3330S, FAR-3330S-SSD, FAR-3320W, FAR-3330SW, 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.1/4.38a and Annex B, Module B in the Directive. SOLAS 74 as amended, Regulation V/18 & V/19, IMO Res. A.278(VIII), IMO Res. A.694(17), IMO Res. A.823(19), IMO Res. MSC.191(79), IMO Res. MSC.192(79), ITU-R M.1177-3(06/03)

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

Høvik, 2014-03-03
for Det Norske Veritas AS


for **Marianne Strand Valderhaug**
Head of Department



Notified Body No.: **0575**

DNV local office:
Helsinki



This Certificate is valid until
2019-03-03


Olaf Gundersrud
Surveyor



The Certificate is subject to terms and conditions overleaf. Any significant changes in design or construction of the product, or amendments to the Directive or Standards referenced above may render this Certificate invalid. The product liability rests with the manufacturer or his representative in accordance with Council Directive 96/98/EC, as amended. The Mark of Conformity may only be affixed to the product and a Declaration of Conformity may only be issued when the production/product assessment module referred to in the council directive, is fully complied with.



Certificate No.: MED-B-8886
Item No.: A1/4.38a
Job Id.: 344.1-003839-1

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
Main processing unit	Protected
Display (monitor)	Protected
Operation Panel (control unit)	Protected
Data interface	Protected
Up-mast transceiver unit - or down-mast transceiver unit	Exposed
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-radar found to be in compliance with RADAR for ships; CAT 1, CAT 1C, CAT 2, CAT 2C with reference to the Directive annex A1; A.1/4.34, A.1/4.35, A.1/4.38, and IMO resolution MSC.192(79) table 1.
- The FAR-radar may be configured in compliance with the requirements for Back-up ECDIS with reference to the Directive annex A.1/4.30.
- The DVI interface shall be used for video signal transfer between Main processing 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)
- IEC62288(2008)
- 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.

Mark of Conformity

The manufacturer is allowed to affix the Mark of Conformity according to Article 11 in the Council Directive 96/98/EC on Marine Equipment and shall issue a Declaration of Conformity, only when the module D or E or F of Annex B in the same directive is fully complied with.

- Module D: The quality system for production and testing shall be approved by the Notified Body.
Module E: The quality system for inspection and testing shall be approved by the Notified Body.
Module F: Compliance of the products to type as described in this EC Type-Examination Certificate must be verified by the Notified Body who also shall issue a Certificate of Conformity.



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USCG Approval for ARPA/ATA (Cat.1/Cat.2)

The product has been assigned a **U.S. Coast Guard Module B number**, USCG approvals 165.115/EC0575 (Cat.1) or 165.116/EC0575 (Cat.2) as applicable 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.



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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
Main Processing Unit	EC-3000	Mother board ADP-555-02	
Graphical unit : SSD	ATI Radeon E4690 SDG2A64GMDFBWSZ-SSJA		
Data Interfaces (embedded)	Connector J3 & J4	TTYCS(LA)-4	IEC61162-2/IEC61162-1
	Connector J5 – J10	TTYCS(LA)-1Q	IEC61162-1
Display Unit (VDU)	MU-190 ¹⁾ MU-231 MU-201CE ¹⁾ MU-231CE JH19T14FUD ¹⁾ JH20T17FUD ¹⁾ JH23T12FUD JH23T14FUD HD26T21MMD-MA4-FAGA		¹⁾ CAT 2
Radar control unit	RCU-025		
ECDIS control unit	RCU-024 ²⁾		
Trackball control unit	RCU-026 ²⁾		²⁾ Option
Data Interface Unit (Sensor Adapter)	MC-3000S		Option
Data Interface Unit (Sensor Adapter)	MC-3010A		Option
Data Interface Unit (Sensor Adapter)	MC-3020D		Option
Data Interface Unit (Sensor Adapter)	MC-3030D		Option
Network switch/switching HUB	HUB-100		Option
Network switch/intelligent HUB	HUB-3000		Option
X-band transceiver unit	RTR-105 or RTR-106 or RTR-108	12 kW upmast 25kW upmast 25kW downmast	FAR-3x10 FAR-3x20 FAR-3320W
S-band transceiver unit	RTR-107 or RTR-109 or RTR-111	30kW upmast 30kW downmast 250W upmast (solid state)	FAR-3x30S FAR-3330SW FAR-3x30S-SSD
Scanner	XN12CF or XN20CF or XN24CF SN36CF	4 ft 6.5 ft 8 ft 12 ft	X-band S-band
Gear box (24/42 rpm)	RSB-128 RSB-130 RSB-129 RSB-131 RSB-133	X-band upmast X-band downmast S-band upmast S-band downmast S-band upmast (solid state)	FAR-3xx0S FAR-3320W FAR-3x30S FAR-3330SW FAR-3x30S-SSD
Antenna power supply unit	PSU-014 ¹⁾ PSU-015 ²⁾ PSU-016 ³⁾ PSU-018 ⁴⁾	X/S-Band S-Band S-Band S-Band	¹⁾ X-24/42rpm / S-24 rpm ²⁾ S-band 42 rpm ³⁾ solid state 24 rpm ⁴⁾ solid state 42 rpm
Performance monitor	PM-32A PM-52A PM-52B	X-band S-band (magnetron) S-band (solid state)	
Junction Box	RJB-001		Option
LAN signal converter	HMC-200CE-A		Option



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Product description(cont.):

Software	0359266-xx.xx	EC-3000	
	0359286-xx.xx	Transceiver	solid state
	0359281-xx.xx	Transceiver	magnetron

Type Examination documentation:

DNV No.	Document No.	Document Title
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
49	ome-36160-Z10	Operator's manual -FAR-3000 series
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/CR1303326/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
16	OME-36160	Operator's manual - CHART RADAR
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
7	IME-36160	Installation Manual Chart RADAR- FAR-3210/-3220/-3310/-3320
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



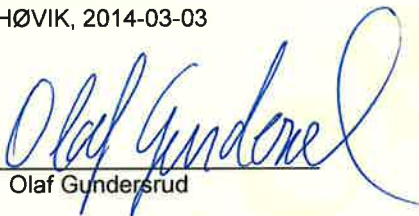
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Type Examination documentation(cont.):

5	K03-17-1758	Wind Tunnel test report - RSB-128 & XN12CF/XN20CF/XN24CF
4	K03-17-1759	Wind Tunnel test report - RSB-129 & SN36CF
2	IME-36160-Z2	Installation manual FAR-3210/-3220/(-BB))/-3310/-3320

Place and date
HØVIK, 2014-03-03


Olaf Gundersrud





End of Certificate