

# EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate No:  
**MEDB00001AV**  
Revision No:  
**11**

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 Electronic chart display and information system (ECDIS)**

with type designation(s)  
**FMD-3200/3200-BB/FMD-3300**

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/4.30. SOLAS 74 as amended, Regulations V/18, V/19, V27 & X/3, IMO Res. A.694(17), IMO Res. MSC.36(63), IMO Res. MSC.97(73), IMO Res. MSC.191(79), IMO Res. MSC.232(82), IMO Res. MSC.302(87), IMO MSC.1/Circ.1503 Rev.1**

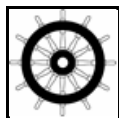
Further details of the equipment and conditions for certification are given overleaf.

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 FMD-3200/3200-BB/FMD-3300 consist of the following units:

Unit	Location
Main Computer(s)	Protected
Display(s) (VDUs)	Protected
Operation Panel(s) (control unit)	Protected
Data interface(s)	Protected

For details, see Appendix.

## Application/Limitation

- DVI port(s) shall be used for video signal interface between Main Computer Unit and VDU.
- The ECDIS may be configured as a single workstation or a system of multiple workstations.
- A dual installation of the Furuno ECDIS 3000-series may comply with the SOLAS requirements for ECDIS with Back-up arrangements.
- The ECDIS may be operated in RCDS mode of operation using HCRF or BSB4 chart data format.
- The ECDIS may be interfaced with RADAR.
- The ECDIS may be interfaced with NAVTEX.
- The ECDIS may be interfaced with VDR via Ethernet in accordance with IEC61996-1 annex G.
- The ECDIS shall be installed and tested in accordance with the Installation Manual FMD-3200/3200- BB/3300

Note 1:

The ECDIS may optionally support MFD including an alarm management system (AMS) and conning information display (CID). Appropriate installation drawings and alert list shall be submitted for approval as requested. AMS is tested to comply with IEC 62923-1 (2018) and IEC 62923-2 (2018) for CAM

Note 2:

The FMD-3200 ECDIS may optionally support the HMI required for Sea Traffic Management (STM) functionality.

## Type Examination documentation

- See Appendix.

## Tests carried out

- Performance: IEC 61174 (2015)
- Interface: IEC 61162-1 (2016)
- Interface: IEC 61162-2 (1998)
- Interface: IEC 61162-450 (2018)
- Presentation: IEC 62288 (2014)
- Environmental: IEC 60945 (2002 incl. Corr.1, 2008)
- Bridge Alert Management: IEC 62923-1 (2018) and IEC 62923-2 (2018)

Note:

The ECDIS testing included the optional scenarios for use in polar waters (latitude>85°) in accordance with IEC61174 Annex P. The STM-HMI has been tested and verified for compliance with IEC60945 clause 6.1 and IEC62288 clause 4.

## Marking of product

The name and contact address of the manufacturer and type designation of the product shall be affixed to the equipment in a clearly visible location. 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 ECDIS FMD-3200/3200-BB/FMD-3300 comprises combinations of the following components:

Unit	Model Name	Components	Remark
Main Computer 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	
Monitor Unit (VDU)	MU-190 <sup>2)</sup> or MU-231 <sup>2)</sup> or MU-201CE <sup>2)</sup> or MU-231CE <sup>2)</sup> or MU-270W <sup>2)</sup> or WE270FU <sup>2)</sup> or JH19T14FUD-xx4 <sup>1)</sup> or JH20T17FUD-xx4 <sup>1)</sup> or JH23T14 FUD-xx4 <sup>1)</sup> or HD19T22 FUD-xx4 <sup>1)</sup> or HD24T22 FUD-xx4 <sup>1)</sup>  or HD26T21 MMD-xx4 <sup>1)</sup> or HD26T22 FUD-xx4 <sup>1)</sup> or HD27T22 FUD-xx4 <sup>1)</sup> or HD32T22 FUD-xx4 <sup>1)</sup> or HD55T22 FUD--xx4 <sup>1)</sup> or WA460-01-MON-01-XXFU <sup>2)</sup> or WA270-01-MON-01-XXFU <sup>2)</sup>		<i>x=variable letter/number according to manufacturer's type number identification</i>  <sup>1)</sup> DVI/VGA connection <sup>2)</sup> DVI connection
Operation panel	RCU-024		Selectable RCU-024 or RCU-026
Trackball control panel	RCU-026		Selectable RCU-024 or RCU-026
Ethernet controller (interface)	REALTEK and INTEL	2 Tj45 ports	IEC61162-450
Interface Unit (Sensor Adapter)	MC-3000S	Serial to network (IEC61162-450)	Option
Interface Unit (Sensor Adapter)	MC-3010A		Option
Interface Unit (Sensor Adapter)	MC-3020D		Option
Interface Unit (Sensor Adapter)	MC-3030D		Option
Network switch/switching HUB	HUB-100		<i>Option – for proprietary LAN interface.</i>
Network switch/intelligent HUB	HUB-3000		<i>Option – for IEC 61162-450 external LAN interface.</i>
<i>Software</i> Application version	05.xx		Linux kernel: 5.x

PresLib version	4.0		
C-MAP SDK ver.	6.0		

### Type Examination documentation

DNV No	Document No.	Rev.	Title
7	BSH/46162/0071829/11	2011.07-11	MU-231: Conformance Test Report - Flat Panel Display - ECDIS-Monitor MU-231
8	BSH/46162/0071828/11	2011-07-07	MU-190: Conformance Test Report - Flat Panel Display for use as ECDIS-Monitor - MU-190
18	k24-17-473	2012-04-24	Test Report for Pending Items - FMD-3000 Series ECDIS
19	K24-17-391		DNV type approval test report
20		8. December 2011	MU-190 and MU-231 Monitor color testing
21	K24-17-467		DNV Type approval testing report FMD-3000 series
22		13.12.2011	Appendix 1- Encrypted ENC testing, IEC 61174 Ed3
30			Color Calibration method in ECDIS and RADAR
31	BSH/46162/0071224/09	06.05.2009	MU-231CE: Flat Panel Display for use as Radar - and ECDIS - Monitor
32	62/0071223/09BSH/461		MU-201CE Flat Panel Display for use Aas Radar - and ECDIS - Monitor - 20.1" TFT Flat Panel Display
33	BSH_4612_4302098_12		Approval of TFT Display JH23T14FUD for usage with ECDIS, Assessment report, signed
35	BSH/4612/4301921/11		Attachment to FEA-2x07 module B cert
37	BSH/46162/0071145/10		JH20T17 FUD, Flat Panel Display for use as ECDIS-Monitor
38	BSH/46162/0071144/10 & BSH/46162/0071148/10		JH19T14 FUD, Flat Panel Display for use as ECDIS-Monitor
41	DOC101183-1		HD 26T21 MMD: Conformance test report
42	2012-336	1	Technical report of Monitor HD 26T21MMD-MA1-FAGA
50			Alert Management System (manual)
61	K24-17-549		DNV Type approval testing report - FMD-3000 series
75	K24-17-717		DNV Type approval testing report IEC62288: FMD-3000 series
76	E42-01204-F10		Instruction Manual: Settings and adjustments FMD-3x00, FCR2xx9
80	K24-17-765		DNV type approval testing report: FMD-3000 series
82	LIC 12-15-059		Test report: IEC 61162-450 for Sensor adaptor MC-3000S
83	K24-17-791		Addition of NAVTEX function
84	K24-17-748		DNVGL type approval testing report for MSC302(87) - FMD3000 series
86	K26-17-224-0		MU-270W Display presentation data: IEC61174, IEC62288(color calibration)
87	FLI 12-14-035		Test report IEC61162-450: FMD-3200/-3200-BB/-3300

DNV No	Document No.	Rev.	Title
89	LIC 12-16-0nn	nn = 09, 10, 11	Monitor unit MU-270W: IEC60945 test reports
90	LIC 12-16-012		Monitor unit MU-270W: IEC62288 test report
104	TAA00000S1		North Invent Wave series monitors
105	STM-2018-102		DNV type approval testing report: FMD-3200 STM Function
107	DOC205958-1		Minimum brightness test of GDCX rev 5_SIGNED
108	DOC205969-1		IEC62288 flicker test report HD26T22_SIGNED
110	DOC102352-3		Conformance test report HD 26T22 MMD-MA1-FAGA-ES_HTC02-DP_R01
111	DOC102352-4		Conformance test report HD 26T22 MMD-MA1-FAGA-ES_HTC02-DVI-D_SIGNED
113	Applica 21008		HD 24T22 MMD-MA1-FAGP Technical Report 2017-21008 Maritime ...
114	Applica 21009		HD 26T22 MMD-MA1-FAGP Technical Report 2017-21009 Maritime Rev 0
116	DNV 2013-3122	0	HD 24T21 MMC-MYI-HABA Technical Report
120	DOC205967-1		IEC62288 flicker test report HD24T22_SIGNED
122	DOC102352-1		Conformance test report HD 24T22 MMD-MA1-FAGA-ES_HTC02-DP_R01_
123	DOC102352-2		Conformance test report HD 24T22 MMD-MA1-FAGA-ES_HTC02-DVI-D_SIGNED
124	LIC12-17-062		IEC60945. EMC test report EC-3000
125	LIC12-17-063		IEC60945 test report EC-3000
126	LIC12-17-064		CSD test report EC-3000
131	DOC206156-1	01	IEC62288 flicker test report HD27T22MMD
132	DOC206155-1	1	Conformance Test Report of LCD for use in Radar and ECDIS
133	DOC205958-1	2	Minimum Brightness Test of GDCX rev 5
136	170703003T	2	HD 27T22 MMD-MA1-FAGA-ES Technical Report - radiated emission and CSD
138	applica 20885		HD 27T22 MEC-CGU-AIBR Technical Report - EMC
139	applica 20941	0	HD 27T22 MEC-CGU-xABR Technical Report - environmental
142	applica 20931		HD 32T22 MVD-MA1-AAGP Technical Report
144	DOC205970-1	01	IEC62288 flicker test report HD32T22 MMD
145	DOC205992-1	1	Conformance test report HD 32T22 MVD-MA1-AOGP
149	E16240.00	1	HD 55T22 MVD-MA1-AOGP NEMKO Technical Report - Vibration
150	applica 20869	1	HD 55T22 MVD-MA1-TOGP Technical Report
151	applica 21007	0	HD 55T22 MVD-MA1-AOGP Technical Report
153	DOC205971-1	01	IEC62288 flicker test report HD55T22_SIGNED
154	DOC205984-1	1	Conformance test report HD 55T22 MVD-AA1-TOGP
156	259507/Vi01	00	NEMKO Test Report Color Verification
157	applica 3253		JH 20T17 MMD-DA1-AAAA: Technical report -radiated emission

DNV No	Document No.	Rev.	Title
158	applica 3421	1	JH 20T17 MMD-DA1-AAAR Technical report: IEC60945
159	STM-2018-103		FMD-3200 STM function - additional reports for pending items
163	LIC 12-19-027		IEC61161-1 test report: EC-3000 processor unit
164	LIC 12-19-028		IEC61162-1 ed.5 test report MC-3000S sensor adapter
165	K24-17-940		Internal test report of IEC 61162-450 Ed.1 AMD1
166	K24-17-919	1.1	IEC61162-1 Ed.5
191	K24-17-1033		Report (Draft): DNV GL type approval testing report - Model: ECDIS - Type: FMD 3000 series
192	IME44730M10	M10 : FEB . 08, 2021	Manual: Furuno - Installation Manual ECDIS, Model FMD-3200/FMD-3300/FMD-3200-BB
193	OME-44730-P10	P10 : FEB . 08, 2021	Manual: Furuno - OPERATOR'S MANUAL - ECDIS, Model FMD-3200/FMD-3300/FMD-3200-BB
194	LIC 01-21-005	23 March 2021	Report: LABOTECH IEC61162-450 (2018), Reference document for IEC 61162-450 test performed by LIC (LIC test report N o. LI C 12-21-024 for EC 3000
195	LIC 12-21-024	23 March 2021	Report: LABOTECH IEC61162-450 (2018), Test Report, Trade name: Furuno Model: FMD-3200/3300/3300-BB-Type: EC-3000
200	K24-17-1034		Report: Furuno IEC62923-1/-2: DNVGL type approval testing report, Model: Alert Management System, Type: FMD-3000 series
201	E402101Z		Manual: Furuno, INSTRUCTION MANUAL AMS USER'S GUIDE, Model FMD-3200/3300-BB/3200-BB
205	LIC 12-21-055	26 April 2021	Report: LABOTECH: IEC 61162-450 (2018) Model: Sensor Adapter Type: MC-3000S
206	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)
207	DOC205958-1	Rev. 5	Report: IEC 62288 Hatteland: Minimum brightness test of GDCX
208	DOC206081-1	Rev. 3	Report: IEC 62288 Hatteland: IEC62288 flicker test report HD19T22MMD
209	DOC206405-1	Rev. 2	Report: IEC 62288 Hatteland: Conformance Test Report of LCD for use in RADAR and ECDIS HD 19T22 MMD-MA1-FOGP-ES2
211	DOC208044-1	Rev. 1	Report: IEC 62288 Hatteland: Minimum brightness test of PCA200865-1 keypad
212	DOC208060-1	Rev. 1	Report: IEC 62288 Hatteland: Flicker test report JH 23T14 MMD-MR4-AABA
213	DOC208070-1	Rev. 1	Report: IEC 62288 Hatteland: Conformance Test Report of LCD for use in RADAR and ECDIS JH 23T14 MMD-MR4-AABA
214	DOC208088-1	Rev. 1	Report: IEC 62288 Hatteland: Flicker test report JH 20T17 MMD-MR4-AABA
215	DOC208089-1	Rev. 1	Report: IEC 62288 Hatteland: Conformance Test Report of LCD for use in RADAR and ECDIS JH 20T17 MMD-MR4-AABA-ES

DNV No	Document No.	Rev.	Title
216	DOC208098-1	Rev. 1	Report: IEC 62288 Hatteland: Conformance Test Report of LCD for use in RADAR and ECDIS JH 19T14 MMD-AR4-AOBC-ES
220	K24-17-1048		Report: Furuno, DNV type approval Internal test report of ECDIS monitor HD19T22-FUD-MA4-xxxx, Model: ECDIS, Type: FMD-3200
221	K24-17-1057		Report: Furuno, DNV type approval Internal test report of ECDIS monitor JH23T14-FUD-xRx-xxxx, Model: ECDIS, Type: FMD-3200
222	K24-17-1059		Report: Furuno, DNV type approval Internal test report of ECDIS monitor JH20T17-FUD-MR1-xxxx, Model: ECDIS, Type: FMD-3200
224	MRA0000016	Rev. 4	Certificate: IEC 60945, Displays HD 15T22 MMD, HD 17T22 MMD, HD 19T22 MMD, HD 24T22 MMD, HD 24T23 MMD, HD 26T22 MMD, HD 27T22
231	K24-17-1061		Report: Furuno, DNV type approval Internal test report of ECDIS monitor JH19T14-FUD-xRx-xxxx, Model: ECDIS, Type: FMD-3200
248	K24-17-1087	25 May. 2022	Report: Furuno, GPU Performance Test Report, Model: ECDIS / Chart RADAR, Type: FMD-3005 / FAR-30x5
250	LIC 12-22-049	27 April 2022	Report: LABOTECH: IEC60945 EMC, ECDIS/Chart Radar Processor Unit EC-3005, Model: FMD-3xx5/FAR-3xx5, Type EC-3005
251	LIC 12-22-050	27 April 2022	Report: LABOTECH, IEC60945 (temp, vib, acoustic noise, dangerous vol), ECDIS/Chart Radar, Processor Unit EC-3005, Model: FMD-3xx5/FAR-3xx5, Type: EC-3005
252	LIC 12-22-051	27 April 2022	Report: LABOTECH, IEC60945 Compass safe distance, ECDIS/Chart Radar, Processor Unit EC-3005 Model: FMD-3xx5/FAR-3xx5, Type: EC-3005
253	K03-17-3282	12th April 2022	Report: Furuno, Result of TT Scenario Test EC-3005 IEC62388 Result of TT Scenario Test, Type : FAR-3015/3025
255	170703001T	Rev.1	Report: CAL-TECH IEC60945, HD 26T22 MMC-AX3-4GM11F-ES Technical Report
256	210426002	Rev.1	Report: CAL-TECH IEC60945 HD 24T22 MEC-MP9-4AAH1A-ES3 Technical Report
257	VS-TV-100708-01		Report: IEC60945 Vibration, HD 24T22 MEC-MP9-4AAH1A-ES3
283	DOC205825-1	R08	Hatteland: HD 24T22 MMD - IEC 60945 & IACS E10 Statement
284	DOC206850-2	R01	Hatteland: Statement of Manufacturer Similarity for HD 24T22 FUD-MA4-FAGx
285	DOC207208-1	R09	Hatteland: Statement of Manufacturer Similarity for HD 24T22 FEC-MP9-4AAH1A
286	DOC209115-1	R01	Report: Conformance test report HD 24T22 MMD-MA1-FAGA-30001
287	DOC209117-1	R01	Report: IEC62288 flicker test report HD 24T22 MMD-MA1-FAGA-30001

<b>DNV No</b>	<b>Document No.</b>	<b>Rev.</b>	<b>Title</b>
288	DOC209240-1	R01	Hatteland: HD 24T22 FUD HW03+ ECDIS Compliance Statement
289	PDF202100-1		Hatteland: HD 24T22 MMD-MA1-FAGP Technical Report 2017-21008 Maritime
290	PDF208404-1		Hatteland: HD 24T23 WAC-DFA-4GP0AA-1 Technical Report 191220001T
292	TAA00002TT	Rev-1	Type Approval Certificate: Bridge Monitor WE 270
293	TAA000028U	Rev-2	Type Approval Certificate: Bridge Monitor WE 270
295	P18-0006	Rev. 2	Report: IEC60945 IACS E10 WE270
297	K24-17-1094	19 OKT 2022	Report: Furuno ECDIS FMD-3200/3300 series WE270FU monitor
298	K26-17-366		Report: Furuno ECDIS WE270 Colour Calibration Report
301	NI/004/rev1.0/2020	10-06-2020	Report: North Invent, IEC 62288-62388 WE270 Bridge Display