

TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate No:
MERB00001MN
Revision No:
2

This Certificate is issued by DNV UK Limited based on authorisation of the Maritime & Coast Guard Agency (MCA) as an UK Approved Body to undertake conformity assessments on marine equipment in accordance with the requirements of the Merchant Shipping (Marine Equipment) Regulations 2016 as amended.

This is to certify:

That the Electronic chart display and information system (ECDIS)

with type designation(s)
FMD-3100

Issued to
Furuno Electric Co., Ltd.
Nishinomiya, Japan

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

Regulation **MSN 1874 Amendment 7,**

item No. UK/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 **2028-10-11**.

Issued at **London** on **2023-10-23**

DNV local unit:
Japan CMC

Approval Engineer:
Steinar Kristensen



Approved Body No.: **0097**

for **DNV UK Ltd.**

Christine Mydlak-Röder
MER Service Responsible



**Maritime &
Coastguard
Agency**

UK Approved Body Authorised
by the MCA

This certificate will not be valid if the manufacturer makes any changes or modifications to the approved type of equipment, which have not been notified to, and agreed with the approved body named on this certificate.

During the period of validity of this certificate the applicable regulations (international conventions and the relevant resolutions and circulars of the IMO) and testing standards may change, therefore the product conformity may need to be re-assessed by the Approved 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-control phase module (D, E or F) of Schedule 2 of the Merchant Shipping (Marine Equipment) Regulations 2016, as amended is fully complied with and controlled by a written inspection agreement with an approved body. In case limitations of use apply, these should be indicated in the Annex.

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.



The FMD-3100 ECDIS consists of the following units:

Unit	Location
Main Computer (incl. monitor)	Protected
Operation Panel (control unit)	Protected

For details, see Appendix.

Application/Limitation

- The FMD-3100 may be configured as a single workstation or a system of multiple workstations.
 - A dual installation of the FMD-3000 ECDIS series may comply with the SOLAS requirements for ECDIS with Back-up arrangements.
 - The FMD-3100 may be operated in RCDS mode of operation using HCRF or BSB4 chart data format.
 - The FMD-3100 may be interfaced with RADAR.
 - The FMD-3100 may be interfaced with NAVTEX.
 - The FMD-3100 may be interfaced with VDR via LAN2 in accordance with IEC61996-1 annex G.
 - The FMD-3100 shall be installed and tested in accordance with the Installation Manual IME-44841-C10 (or later version).
- Note: The FMD-3100 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 (2021)
- 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 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 FMD-3100 ECDIS comprises combinations of the following units:

Unit	Model Name	Comment	Remark
Panel Computer (integrated monitor)	PCU-3010 (HD24T22)	Intel Q170 w/Intel HD graphics 530	
	Serial interface	IEC61162-1/2 IEC61162-1	2 ports 2 ports
	Ethernet controller	INTEL I210-IT	2 x RJ45 ports
Trackball control unit	RCU-030		
Interface Unit (Sensor Adapter)	MC-3000S	Serial to network (IEC61162-450)	Optional
Interface Unit (Sensor Adapter)	MC-3020D	digital IN	Optional
Interface Unit (Sensor Adapter)	MC-3030D	digital OUT	Optional
Network switch/switching HUB	HUB-100		Optional
Network switch/intelligent HUB	HUB-3000		Optional
<i>Software</i>			<i>Linux kernel 5.x</i>
Application version	05.xx		
PresLib version	4.0		
Jeppesen SDK ver.	6.0		

Type Examination documentation

DNV No.	Document ID	Rev.	Description
18	K24-17-473		Test Report for Pending Items - FMD-3000 Series ECDIS
19	K24-17-391		DNV type approval test report
21	K24-17-467		Testing report For Pending Item-FMD-3000 Series ECDIS
22			Appendix 1- Encrypted ENC testing, IEC 61174 Ed3
30			Color Calibration method in ECDIS and Radar
60	K24-17-604		FMD-3100 endurance testing report
61	K24-17-549		DNV Type approval testing report - FMD-3000 series
66	IME-44841-Z	A	Installation manual : ECDIS FMD-3100
67	Applica report 20199	0	Acoustic noise testing of Maritime Multi Computer
68	FLI 12-13-118		FMD-3100: IEC61162-1/2 test report
69	FLI 12-13-114		FMD-3100: IEC60945 test report
70	FLI 12-13-111		FMD-3100: IEC60945 EMC test report
71	FLI 12-13-119		FMD-3100: IEC61162-450 test report
75	K24-17-717		Type approval testing report IEC62288: FMD-3000 series
80	K24-17-765		DNV type approval testing report: FMD-3000 series
81	K24-17-787	4	Testing report of improved software: pending items part 2
82	LIC 12-15-059		Test report: IEC61162-450 for Sensor Adaptor MC-3000S
83	K24-17-791		Test report: Addition of NAV/TEX function
84	K24-17-748		Test report for MSC302(87): FMD-3000 series ECDIS
91	K24-17-772	2	DNV type approval: Internal test report of improved software for pending items
133	DOC205958-1		Hatteland Display GDCX rev5: minimum brightness test
164	LIC 12-19-028		IEC61162-1 ed.5 test report MC-3000S sensor adapter
165	K24-17-940		Test report of IEC 61162-450 Ed.1 AMD1
166	K24-17-919	1.1	Test report for IEC61162-1 Ed.5
168	DOC206880-1	2	HD 24T22 FEC-: ECDIS Conformance test Report of LCD
169	DOC206882-1	2	HD 24T22 FEC: Flicker test Report
171	18-10-VAA-126		HD24T22 : IP22 test
172	180828001T	1	HD24T22 : IEC60945 tests
173	EN180919C24 R2		HD24T22 : EMC tests - radiated

DNV No.	Document ID	Rev.	Description
174	TH1_18_0445 & TH3_19_0018		HD24T22 MEC : Sound pressure level test report
175	181217001T		HD24T22 MEC : Environmental, EMC & SRS test report
176	VS-TV-071225-01		HD24T22 MEC : Vibration test report
177	190400235TWN-001		HD24T22 MEC : IP-x2 test report
178	VS-TV-071225-02		HD24T22 MEC : Vibration test report
179	EN190221C05		HD24T22 MEC : EMC radiated test report
183	K24-17-968		FMD-3100 Performance Test Report
189	IME44841C10	C10: FEB . 08, 2021	Manual: Furuno - Installation Manual - Model ECDIS FMD3100(PCU3010)
190	OME-44841-E10	2023-10-10	Manual: Furuno - Operator's Manual - ECDIS Model FMD- 3100 (PCU-3010)
191	K24-17-1033		Report (Draft): DNV GL type approval testing report - Model: ECDIS - Type: FMD 3000 series
198	LIC 12-21-039	14 April 2021	Report: LABOTECH IEC621162-450 (2018): Test Report Trade name: Furuno, Model: FMD-3100, Type: PCU-3010
199	LIC 01-21-015	14 April 2021	Report: LABOTECH IEC621162-450 (2018): Reference document for IEC 61162-450 test performed by LIC (LIC test report no. LI C 12 21 039 for PCU 3010)
203	LIC 12-21-055	26 April 2021	Report: LABOTECH: IEC 61162-450 (2018) Model: Sensor Adapter Type: MC-3000S
204	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)
263	1912EAT107E00A		Report: ETC IEC 60945 Monitor HD 24T23 WAC-DFA-4GP0AA-1
264	EN191217C22-1		Report: BV IEC 60945 Monitor HD 24T23 WAC-DFA-4GP0AA-1
265	EN191217C22		Report: BV IEC 60945 Monitor HD 24T23 WAC-DFA-4GP0AA-1
266	VS-TV-090103-01		Report: VIBRATION SOURCE TECHNOLOGY IEC 60945 Monitor HD 24T23 WAC-DFA-4GP0AA-1
267	VS-TV-090106-01		Report: VIBRATION SOURCE TECHNOLOGY IEC 60945 Monitor HD 24T23 WAC-DFA-4GP0AA-1
269	DOC209112-1	R01	Report: Conformance test report HD 24T22 MEC-MP9-4AAH1A HW03
270	DOC209117-1	R01	Report: IEC62288 flicker test report HD 24T22 MMD-MA1-FAGA-30001
271	DOC209170-1	R01	Declaration: Hatteland, HD 24T22 FEC HW06 - ECDIS Compliance Statement
272	191220001T	Rev.1	Report: CAL-TECH, IEC 60945 test report for HD 24T23 WAC-DFA-4GP0AA-1
303	CEBDLB-WTW-P21041117	Jun. 09.2021	Report: BV Partial IEC 60945 Test Report, HD 24T22
304	210426002	Rev.1	Report: Cal-Tech HD 24T22 MEC-MP9-4AAH1A-ES3 Technical Report
305	VS-TV-100708-01	2021/07/08	Report: VST, HDT22 IEC 60945 vibration test
306	170703001T		Report: CAL-TECH IEC 60945, HD 26T22 MMC-AX3-4GM11F-ES Technical Report 2017
317	K24-17-1118	2023-09-20	Report: Furuno, Type Approval test report for FMD-3xxx series ECDIS according to IEC 62288 (2021)
316	OME-44730-S11	2023-09-26	Manual: Furuno, Operators Manual, ECDIS Model: FMD-3005, FMD-3200, FMD-3300, FMD-3200-BB
315	IME-44730-R	2023-02-14	Manual: Furuno, Installation Manual ECDIS Model FMD-3005/FMD-3200/FMD-3300/FMD-3200-BB
314	VS-TV-111207-01	2022-12-07	Report: Vibration Source Technology Co. LTD, Vibration test report for HD 24T22 MEC-MP9-4AAH1A-ES
312	CEBDLB-WTW-P22110073	2022-12-19	Report: BV, Partial IEC60945 test report for HD 24T22 MEC-MP9-4AAH1A-ES
311	221026001T	1	Report: CAL-TECH. IEC 60945 test report for HD 24T22 MEC-MP9-4AAH1A-ES