

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

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 GL AS under the authority of the Government of the Kingdom of Norway.

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 Hyogo Pref, Japan

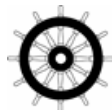
is found to comply with the requirements in the following Regulations/Standards:
Regulation **(EU) 2015/559,**
Annex A.1, item No. A.1/4.30 and Annex B, Module B in the Directive. IMO Resolutions A.694(17), MSC.191(79) & MSC.232(82)
IMO Resolution MSC.302(87) Performance standards for Bridge Alert Management

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

This Certificate is valid until **2021-11-17**.

Issued at **Høvik** on **2016-11-18**

DNV GL local station:
Kobe



for **DNV GL AS**

Approval Engineer:
Olaf Gundersrud

Notified Body
No.: **0575**

Vidar Dolonen
Head of Notified 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-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 GL 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 This certificate remains valid unless suspended, withdrawn, recalled or cancelled.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.

Product description

The FMD-3100 ECDIS consists 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

- The ECDIS may be configured as a single workstation or a system of multiple workstations.
- A dual installation of the Furuno ECDIS FMD-3000 series 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
- 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-3100

Type Examination documentation

- See Appendix.

Tests carried out

- IEC61174(2015)
- IEC61162-1(2010)
- IEC61162-2(1998)
- IEC61162-450(2011)
- IEC62288(2014)
- IEC60945(2002)

Note:

The ECDIS testing included the optional scenarios for use in polar waters (latitude>85°) in accordance with IEC61174 Annex P.

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 ECDIS FMD-3100 comprises combinations of the following components:

Unit	Model Name	Components	Remark
Panel Computer & Display Unit Embedded Graphical Processor	PCU-3000 Serial interface	AMD A70M-R464L AMD Radeon HD 7660G IEC61162-1/2 IEC61162-1	 2 ports 2 ports
Trackball control unit	RCU-030		Selectable RCU-024 or RCU-026
Ethernet controller (interface)	REALTEK RTL8111G INTEL 82583v		2 RJ45 ports (IEC61162-450)
Interface Unit (Sensor Adapter)	MC-3000S		Optional
Interface Unit (Sensor Adapter)	MC-3010A		Optional
Interface Unit (Sensor Adapter)	MC-3020D		Optional
Interface Unit (Sensor Adapter)	MC-3030D		Optional
Network switch/switching HUB	HUB-100		Optional
Network switch/intelligent HUB	HUB-3000		Optional
<i>Software</i>			
Application version	03.xx		Linux kernel 2.6
PresLib version	4.0		
C-MAP SDK ver.	6.0		

Type Examination documentation

NPS No.	Dwg. No.	Rev.	Title
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
62	DOC101345-1		Conformance test report of LCD for use in RADAR and ECDIS HD24T21 FEC-M3K-AAB9-ES
66	IME-44840	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: IEC606945 test report
70	FLI 12-13-111		FMD-3100: IEC60945 EMC test report
71	FLI 12-13-119		FMD-3100: IEC61162-450 test report

APPENDIX

Type Examination documentation (cont.)

DNV No.	Dwg. No.	Rev.	Title
75	K24-17-717		DNV Type approval testing report IEC62288: FMD-3000 series
77	E42-01311-C10		Instruction manual settings and adjustments: FMD-3100
78	OME-44840-C2		Operator's manual:ECDIS FMD-3100
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	K2417-791		Test report: Addition of NAVTEX function
84	K24-17-748		Test report for MSC302(87): FMD-3000 series ECDIS
86	K26-17-224-0		MU-270W Display presentation data: IEC61174, IEC62288
87	FLI 12-14-035		Test report IEC61162-450: FMD-3200/3200-BB/3300
91	K24-17-772	2	DNV type approval:Internal test report of improved software for pending items