

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate No:
MEDB00000A6
Revision No:
3

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)
DM800 ECDIS G2 and DM700 ECDIS

Issued to

Danelec Marine A/S
Birkerød, Denmark

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)

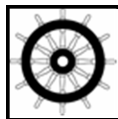
Further details of the equipment and conditions for certification are given overleaf.

This Certificate is valid until **2021-09-12**.

Issued at **Høvik** on **2016-12-12**

DNV GL local station:
Copenhagen

Approval Engineer:
Frederik Tore Elter



Notified Body
No.: **0575**

for **DNV GL AS**

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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 This certificate remains valid unless suspended, withdrawn, recalled or cancelled.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.



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Product description

Danelec Marine A/S DM800 ECDIS G2 (commonly referred to as DM800 ECDIS) and DM700 ECDIS, consisting of the following components:

- Computer (for DM800: in cabinet including DVD drive)
- Monitor
- Keyboard/ Trackball
- Alarm panel

Hardware modules DM800 ECDIS G2:

Computer:

- DM800 ECDIS G2 DPU Type Designator: 1303413
- DVD Drive Type Designator: 2301387

Monitor:

- Sealine MK3 SL231-02, or Type Designator: 1301414
- Sealine MK3 SL213-01, or Type Designator: 1301415
- Sealine MK3 SL190-02, or Type Designator: 1302867
- Sealine MK3 SL190-01, or Type Designator: 1301416
- Wave 19" WA190-01, or Type Designator: 1302913
- Wave 24" WA240-01, or Type Designator: 1302914
- Wave 27" WA270-01 Type Designator: 1302915

Alarm Panel

Type Designator: 1301365

Hardware modules DM700 ECDIS:

Computer:

- DM700 ECDIS DPU Type Designator: 1303952

Monitor:

- Wave 19" WA190-01, or Type Designator: 1302913
- Wave 24" WA240-01, or Type Designator: 1302914
- Wave 27" WA270-01 Type Designator: 1302915

with HMI:

- Wave Monitor HMI for hinge or Type Designator: 1303942
- Wave Monitor HMI for panel mount Type Designator: 1303943

Common hardware DM800 ECDIS G2/DM700 ECDIS:

Keyboard/ Trackball (one of below listed):

- KSLM106F1USB-WLED Type Designator: 2301384
- Cortron 564-0094 Type Designator: 2301514
- Cortron 564-0095 Type Designator: 2301927
- EK 03-001 KEYBOARD Type Designator: 2303578
- 5 port managed Gb Ethernet switch Type Designator: 1303974

Software modules (common for DM800 ECDIS G2/DM700 ECDIS):

- System Software version 3.xx
- Operating System: Proprietary Embedded Linux
- IHO presentation library ver. 4.0.x

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Application/Limitation

- ECDIS supports interface to radar for presentation of radar targets via serial interface.
- ECDIS may provide binary image transfer to VDR in accordance with applicable parts of IEC61162-450 (2016).
- ECDIS may interface and present Navtex information via serial interface.
- ECDIS installation shall be verified and tested on board according to Installation Manual.
- Monitors are to be interfaced via DVI only, and monitor serial line interface to be connected to the ECDIS computer.
- A dual installation of ECDIS is found to comply with the requirements for ECDIS with Back-up arrangements.
- ECDIS may interface to Navtor Navbox.
- ECDIS may provide BAM interface on serial NMEA.
- ECDIS may export and import RTZ format route files via USB removable storage device.

Tests carried out

- Performance testing, IEC 61174 (2015)
- Environmental testing, IEC 60945 (2002)
- Serial interface testing, IEC 61162-1 (2010) and IEC 61162-1 (2016)
- Serial interface testing, IEC 61162-2 (1998)
- Presentation of navigation information, IEC 62288 (2014)

Type Examination documentation

DNV GL No	Title	Drawing No	Rev.
161	Manual: Installation Manual for DM700 ECDIS	MAN11805-10	1
160	Manual: User Manual for DM700 ECDIS hardware	MAN11804-10	1
158	Manual: Installation manual for DM800 ECDIS G2	DBS11427-21	2.1
157	Manual: User manual for DM800 ECDIS G2 hardware	DBS11426-21	2.1
156	Manual: User Manual for Danelec Marine ECDIS Software V3.xx	DBS11425-21	2.1
149	Report: DELTA IEC61162-1/2 Test Report, Interface test of DM700 ECDIS DPU, DPU 700-01	T600466 - DANAK 1917171	
146	DM700 ECDIS and DM800 ECDIS G2 test setup for type approval June 2016	DBS11734-10	1
145	DM700 ECDIS and DM800 ECDIS G2 test setup for type approval June 2016	DBS11734-10	1
141	Report: Delta IEC 60945 Test for Marine Type Approval of VRI 002 Vessel Remote Interface	T220720 - DANAK 1916673	
132	Report: IEC 60945 Test for Marine Type Approval of DM700 ECDIS DPU, DPU 700-001 and DM700 ECDIS DPU, DPU 700-001 (OVP version)	DANAK 1917003 T600250	Rev A
127	DM700 ECDIS and DM800 ECDIS G2 comparative report	DBS11817-10	
113	Statement regarding previous tested IEC 61174 tests of DM800 ECDIS G2	GWD11775-10	
108	Report: IEC61174 ed.4 Danelec DM ECDIS		
101	Report: Test IHO S-64, Preslib 4.0 Danelec DM ECDIS		

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90	Report: DELTA Test Report - Test for Marine Type Approval of Scorpius V1 (Tesoro) keyboard with 2" trackball	DANAK-19/16049-T211751	
82	Report: Prosedure for testing IEC61161-1 B.10, B.11, B.12 on DM800	DBS11347-11	
79	Report: Test report for Binary Image transfer for DM800 ECDIS G2 DBS11453-10		
78	Report: Performance testing DM800 ECDIS G2		
70	Report: Flicker 19 report	L102692-4176	
69	Report: North Invent 19 DVI report	L102692-4206	
68	Report: Delta, Supplementary EMC tests for Marine Type Approval of MK3 monitor	DANAK-19/12130	
67	Report: Delta, High temperature tests of 19" MK3 monitor	DANAK-19/12367	
66	Report: Report: BSH, Assessment report for 19" TFT LED display	BSH 4542/002/0072555/14	
65	Report: Delta, Environmental test for SL190 monitor	DANAK-1910139-rev-1	
64	Report: Monitors 21,24,27"	DANAK 1914088	
63	Report: Delta, Environmental test for SL190 monitor	DANAK-1910139	
62	Report: BSH SL231 Report	BSH_46162_0071113_09	
61	Report: North Invent 24 Flicker report	L102733-4323	
60	Report: North Invent 27 DVI report	L102733-4324	
59	Report: North Invent 27 Flicker report	L102733-4326	
58	Report: Cortron TM-361 Corrosion-Humidity IEC60945	TM-361/ Q04154	
57	TE A-14092 page 1-2	TE A-14092	
56	TE A-14092 page 3-4 appendix	TE A-14092	
55	Report: Cortron TM-344 Dry Heat IEC 60945 Model 80	TM-344/ Q04150	
54	Report: Cortron TM-345 Low Temp-25C IEC 60945 Model 80	TM-345/ Q04152	
53	Report: Cortron TM-349 Vibration IEC 60945 Model 80	TM-349/ Q04153	
52	Report: Cortron TM-350 Damp Heat IEC 60945 Model 80	TM-350/ Q04151	
51	Report: Cortron TM-351 Immunity IEC60945	TM-351/ Q04163	
50	Report: North Invent 24 DVI report	L102733-4321	
49	Report: BSH SL231 Report	BSH_46162_0071113_09	
48	Report: Delta, Calibration of FPD for use as ECDIS monitor with DVI connection	DELTA-L102692-4206	
47	Report: Delta, Test of flicker from a 19inch monitor for use as ECDIS monitor	DELTA-L102692-4176	

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46	Report: Environmental and display testing of 23" monitor	A506792-01	
45	Report: Type approval testing of Sea Line Monitors	DBS10558-10	
44	Report: Type approval testing of Sea Line Monitors	A505354	
43	Report: Calibration of FPD for use as ECDIS monitor - SL213-01, 21" TFT FPD, Day mode	L102043-3236	
42	Report: DELTA - SL213-01, 21" TFT FPD, Dusk mode	L102043-3237	
41	Report: Calibration of FPD for use as ECDIS monitor - SL213-01, 21" TFT FPD, Night mode	L102043-3238	
40	Report: Calibration of FPD for use as ECDIS monitor - SL190-01, 19" TFT FPD, Day mode	L102043-3233	
39	Report: Calibration of FPD for use as ECDIS monitor - SL190-01, 19" TFT FPD, Dusk mode	L102043-3234	
38	Report: Calibration of FPD for use as ECDIS monitor - SL190-01, 19" TFT FPD, Night mode	L102043-3235	
36	Report: Test for Marine Type Approval of DM800 ECDIS G2 (DPU 800-	DELTA-T211067	
31	Report: Rejection test of UDP datagrams with incorrect CRC DM800 ECDIS G2	GWD11472-10	1
3	IEC61162-1 - A506681 - Interface test of ECDIS	DAMAK-1910793	
1	IEC60945 - A506510-1 - Type approval testing of ECDIS (DM800E)	DANAK-1910792	