

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate No:
MEDB00000K0
Revision No:
4

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)
Navmaster ECDIS

Issued to

PC Maritime Ltd.
Ivybridge, Devon, United Kingdom

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

Regulation **(EU) 2021/1158**,

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

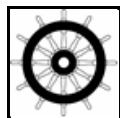
Further details of the equipment and conditions for certification are given overleaf.

This Certificate is valid until **2026-08-26**.

Issued at **Høvik** on **2021-08-27**

DNV local station:
Manchester

Approval Engineer:
Steinar Kristensen



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

Navmaster ECDIS consists of the following modules:

Hardware modules:

Unit	Description	Model name	Comment
Computer	Computer with integrated graphical processor, USB and LAN interfaces	LGP36	LAN: 2 x RJ 45 USB*: 4 x USB 3.0
	or Computer with integrated graphical processor, USB, LAN and NMEA interfaces	or HTC03-i5-AC A732568-ES-1	or LAN: 4 x RJ 45 USB*: 4 x USB 3.0 12x RS485/RS422 in-/outputs
Monitors	ECDIS display	LGM 24 V3 or HD19T21STD-MA1-FAGA or HD19T21 PCS-MAE-FAGA or HD24T21STD-MA4-FAGA	
User Input Devices	Keyboard with trackball or, Keyboard with trackball or, Keyboard and Trackball	RKTE85 RKCT92S LGKB-2 LGT-TB2	
Interface unit- for LGP36 computer	NMEA breakout box	BOB PC84	8x RS485/RS422 input 4x RS485/RS422 outputs

^{*)} USB interfaces may not be used for direct inter-connection to other systems

All units listed above are to be installed in a protected environment, i.e. indoor.

Software modules:

- Navmaster ECDIS software ver. 9.1.0.X
- C-Map SDK ver. 6.0.x.x
- IHO presentation library ver. 4.0.x
- Operating System:
 - LGP36 computer: Microsoft Windows 7 Professional
 - HTC03 computer: Microsoft Windows 10 IoT Enterprise 2019 LTSC EPKEA

Application/Limitation

- Navmaster ECDIS shall be installed according to manufacturer's documentation.
- Navmaster ECDIS is found to comply with the requirements for ECDIS with Back-up arrangements.
- Navmaster ECDIS is found to comply with the requirements for ECDIS in RCDS mode of operation when using HCRF navigational chart data format.
- Navmaster ECDIS supports reception of target information from AIS and Radar.
- Navmaser ECDIS may optionally be connected to NAVTEX for Maritime Safety Information (MSI).
- Navmaster ECDIS cannot be connected to an INS for reception of sensor data.

Tests carried out

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

Type Examination documentation

DNV GL No	Document ID	Rev.	Description
273		2021-08-26	Report: PC Maritime, Navmaster Test Report IEC 61162-450 (2018)
272		2021-08-26	Report: PC Maritime, Navmaster Test Report IEC 62923-1 and -2 (2018)
271	TL18136	2019-06-25	Report: MS Testing, EMC and environmental test report for RKTE85 keyboard with trackball
270	119-29851-1	2019-09-20	Report: Force Technology, EMC and environmental test report for RKTE85 keyboard
269	DANAK-19/14501	2014-09-19	Report: Delta, EMC and environmental test report for backlighted keyboard with trackball RKCT92S0001-W-MC1
268	2009-3601	5	11- Report: DNV, EMC and environmental testing of computer HT B18 STD
266	20554	0	10- Report: Applica, EMC and environmental testing of computer HT C02HJ STC-T40-D000
255	30551-HTC 03-i5	1	1- Report: Applica, EMC and environmental testing of computer HTC03-i5-AC A732933-ES
253	200803002T	1	2- Report: Cal-Tech, EMC and environmental testing of computer HTC03-TestUnit-2
247	E21014.00	0	7- Report: Nemko, EMC and environmental testing of Maritime Computer HTC03-i5-MP C732836-2139C
243	30551-HT C03-i5	1	Report: Applica, EMC and environmental test report for Marine Computer HTC03-i5-AC A732933-ES-1
210	Navmaster User Guide	Version 2.00	Manual: Lilley&Gillie, Navmaster ECDIS - User Guide for version 8
209	LGP36-0414	2	Report: PC Maritime, Selected ECDIS performance tests for new computer
207	LGS213-NME-ITF-1	2014-04-26	Report: Lilley&Gillie, NMEA Interface test report for ECDIS processor LGS213
206	LGP36-NME-ITF-1	2014-04-26	Report: Lilley&Gillie, NMEA Interface test report for ECDIS processor LGP36
203	LGP36-0414	2014-04-03	Report: PC Maritime, Selected performance tests for Navmaster ECDIS with LGP36 computer
201	LGP36-EMC-SRG-1	2014-02-04	Report: Lilley&Gillie, Immunity to surges test report
200	LGP36-EMC-RAI-1	2014-02-04	Report: Lilley&Gillie, Radiated immunity test report
199	LGP36-EMC-RAE-1	2014-02-04	Report: Lilley&Gillie, Radiated emissions test report
198	LGP36-EMC-PSV-1	2014-02-04	Report: Lilley&Gillie, Immunity to power supply short-term variations test report
197	LGP36-EMC-PFA-1	2014-02-04	Report: Lilley&Gillie, Immunity to power supply failure test report
196	LGP36-EMC-FTR-1	2014-02-05	Report: Lilley&Gillie, Immunity to fast transients test report
195	LGP36-EMC-ESD-1	2014-02-04	Report: Lilley&Gillie, ESD immunity test report
194	LGP36-EMC-COI-1	2014-02-05	Report: Lilley&Gillie, Conducted immunity test report
193	LGP36-EMC-COE-1	2014-02-04	Report: Lilley&Gillie, Conducted emissions test report
190	3448-A3-51	1	Drawing: Lilley&Gillie, General Connection Diagram Navmaster 1200 ECDIS
188	LGP36-SPT-CSD-1	2014-02-05	Report: Lilley&Gillie, Compass Safe distance test report
187	LGP36-SPT-ANS-1	2014-02-06	Report: Lilley&Gillie, Acoustic noise and signals test report
186	LGP36-SPF-ADV-1	2014-02-06	Report: Lilley&Gillie, Protection agains accidental access to dangerous voltages test report
185	LGP36-PWS-NOR-1	2014-02-04	Report: Lilley&Gillie, Normal power supply test report
184	LGP36-PWS-EXT-1	2014-02-04	Report: Lilley&Gillie, Extreme power supply test report
183	LGP36-PWS-EXC-1	2014-02-06	Report: Lilley&Gillie, Excessive power supply test report
182	LGP36-ENV-VIB-1	2014-02-06	Report: Lilley&Gillie, Vibration test report
181	LGP36-ENV-LOP-1	2014-02-07	Report: Lilley&Gillie, Low Temperature test report
180	LGP36-ENV-DHF-1	2014-02-07	Report: Lilley&Gillie, Dry heat test report
179	LGP36-ENV-DAM-1	2014-02-05	Report: Lilley&Gillie, Damp heat test report
164	DOC101134-1	2012-09-14	REPORT: Hatteland, Conformance test report HD19T21STD-MA1-FAGA

DNV GL No	Document ID	Rev.	Description
163	A-12839		CERTIFICATE: DNV, Type approval of Hatteland MMD Series X displays
145	OPT-CAL0006	2010-09-21	Report: Lilley&Gillie, ECDIS Optical Test Report - LGS213
144	PWS-NOR-LGS213	28-09-2010	Report: Lilley&Gillie, Environmental and EMC test reports IEC 60945
118	OPT-CAL0003	2009-09-17	Report: Lilley&Gillie, Ecdis Optical Test Report for LGM24 V2
117	OPT-CAL0005	2009-09-29	Report: Lilley&Gillie, Ecdis Optical Test Report for LGM24 V2
84	NME-ITF-LGP30	2009-06-22	Report: Lilley&Gillie, NMEA Interface test report
57	OPT-CAL0003		Report: Lilley&Gillie, ECDIS Optical test report
56		1.0	Manual: PC Maritime, Navmaster ECDIS v9 Installation Guide
54		V9.1	Manual: PC Maritime, Navmaster User Guide for v9.1
23		2009-03-26	Report: PC Maritime, Navmaster Test Results IEC61174 edt 3
22		2009-03-26	Report: PC Maritime, IEC 61174 Edt 3 Performance Test Results
21			Report: PC Maritime, IEC 62288 Edt 1 Test Results
20		2009-03-26	Description: PC Maritime, S-63 Test Definitions and Scripts for Encrypted ENC

Marking of product

The type designation and name and contact address of the manufacturer shall be affixed visibly, legibly and indelibly to the product. In addition the product shall be marked with serial number, safe distance to magnetic compass, power consumption and/or supply voltage.