

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Application of: Council Directive 96/98/EC of 20 December 1996 on Marine Equipment as amended by directive (EU) 2015/559, issued as "Forskrift om Skipsutstyr" by the Norwegian Maritime Directorate. 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)
TECDIS

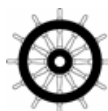
Issued to

Telko AS
TJØME, Norway

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

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 **2017-08-31**.Issued at **Høvik** on **2016-06-14**DNV GL local station:
SandefjordApproval Engineer:
Frederik Tore ElterNotified Body
No.: **0575**for **DNV GL AS**-----
Vidar Dolonen
Head of Notified Body

Product description

The TECDIS is consisting of the following components:

Unit	Components	Remark
Main processing unit:	HT C01 TEL-A596, or HT C01 TEL-D596, or HD 24T21 MEC-M3D-ACB2 or Enix-2077-TEL-D1 or HT C02HJ TEC-C44-AA00	Embedded graphics
Display unit:	Hatteland Display JH19T14MMD, or Hatteland Display JH20T17MMD, or Hatteland Display JH23T12MMD, or Hatteland Display JH23T14 MMD, or Hatteland Display HD19T03 BOAA, or Hatteland Display HD19T21 MMD, or Hatteland Display HD24T21 MMD, or Hatteland Display HD26T21 MMD, or Furuno MU-201CE, or Furuno MU-231CE or ISIC DuraMON 19 LED or ISIC DuraMON 26 WS	DVI connection
Keyboard/ Trackball ¹⁾ :	BTC5100C PS/2, or Cherry G84-4100LCMGB-2 or Keytouch Panel QWERTY, and MouseTRAK B-MPIND-XROHS, or MouseTRAK B-USBID-XROHS, or Logitech Trackman Marble – ELK, or Keytouch Panel Trackball, or Keytouch Panel Combo ²⁾ , TECDIS Keypad ³⁾ (Keytouch PN17610415) RCU-018 ³⁾	¹⁾ Both keyboard and a trackball are required ²⁾ Combined unit ³⁾ Option
Loudspeakers(option):	DNH HP-6, or DNH HPS-6	Loudspeaker is required only when display unit does not include a buzzer and RCU-018 is not connected.
Serial Interface:	Moxa Opt.8F Moxa CP-114EL-I(CV-150k) ⁴⁾ Hatteland Display PCA100293-1 ⁵⁾	⁴⁾ Enix-2077 only ⁵⁾ HD 24T21 MEC-M3D-ACB2 and HT C02HJ TEC-C44-AA00
LAN interface:	Intel IQ87-PLH3 ⁶⁾	⁶⁾ HT C02HJ TEC-C44-AA00
Software Versions:		
TECDIS	4.7.1.x or 4.7.2.x	x ≥ 30
Telko Chart Loader	2.nn	
OS	Windows 7 or Windows XP ⁷⁾	⁷⁾ HT C01 TEL-A596 and HT C01 TEL-D596
Screen sender	1.xx	

Application/Limitation

- A dual installation of TECDIS is found to comply with the requirements for ECDIS with Back-up arrangements.
- TECDIS may optionally be provided with radar overlay functionality.
- TECDIS may optionally be provided with weather information overlay functionality.
- TECDIS may optionally be provided with *C-Routes* routing advisory functionality.
- TECDIS may optionally be connected to internet via "secure web-tunneling".¹⁾
- TECDIS may optionally support uploading of SENC delivery (CM93/3 format) via external link.
- TECDIS may be optionally provided with C-Map Update Service functionality.
- TECDIS may be optionally provided with Navtor NavSync chart update functionality.
- TECDIS may be optionally provided with chart synchronization functionality.
- The TECDIS monitor may optionally be interconnected with a video source via a separate input port for presentation of video. The ECDIS monitor shall be marked with "**ECDIS**".
- TECDIS may provide conning information to a separate monitor.
 - Conning image is found to be in accordance with requirements listed in DNV Rules for Ships Pt. 6 Ch.8 and Pt. 6 Ch.20, January 2014, for forward and aft orientation.
 - Fallback arrangement may be achieved by connecting conning monitor to TECDIS and a dedicated conning computer or to two TECDIS computers.
 - For Conning installation components listed under TECDIS product description are to be used.
- TECDIS may provide re-transmittable binary images in accordance with IEC61162-450 to VDR.
- TECDIS may be interfaced to either RADAR or AIS, or both, for target presentation. If TECDIS is interfaced to both AIS and RADAR, RADAR is to support TLB sentence.
- The TECDIS shall be commissioned and tested onboard according to the Installation Manual.
- TECDIS may receive IEC 61162-1 formatted sentences (as defined in product documentation) on Ethernet in accordance to IEC 61162-450 (2016).

Note:

- 1) *a physical disconnection device (e.g. switch) shall be provided in the vicinity of the TECDIS – and be properly marked*

Tests carried out

- Performance testing, IEC 61174 (2008)
- Performance testing, presentation, IEC 62288 (2014)
- Environmental testing, IEC 60945 (2002)
- Serial interface testing, IEC 61162-1 (2010)

Type Examination documentation

DNV GL No	Document Title	Drawing No.	Rev.
138	Report: Witnessed Conformance Test of TECDIS with IEC 61162-450 (receiving IEC 61162-1 sentences)		
137	Quick reference guide - 61162-450 in TECDIS		1
135	TECDIS IEC 61162-450 serial input validation		1
134	Quick reference guide - TelkoTranslator 1_0		1
132	Report: Conformance test of Conning DNV Rules for ships		
131	TECDIS Feature Guide 30		
130	TECDIS 4.7.x.30 List of alerts rev.6		
128	Telko Conning User Manual 1_00		
124	Report: Conformance test of TECDIS binary image transfer with IEC61162-450		

Job Id: **344.1-000515-13**
Certificate No: **MEDB00001B0**

DNV GL No	Document Title	Drawing No.	Rev.
123	Report: Conformance test of TECDIS with IEC62288 2nd edition		
121	TECDIS Conning installation for fall-back arrangements		
106	Appendix IEC62288 JH20T17	DOC101936-1R2	Rev. 2
105	Appendix IEC62288 JH19T14 HW06	DOC101935-1R2	Rev. 2
104	Appendix IEC62288 JH 23T14	DOC101901-1R2	Rev. 2
103	Appendix IEC62288 HD 19T21	DOC101900-1R2	Rev. 2
102	Appendix IEC62288 HD 24T21	DOC101896-1R2	Rev. 2
101	Appendix IEC62288 HD 26T21	DOC101895-1R5	Rev. 5
97	Statement from ITAC - trackball B-MPIND-XROHS REV C		2015-08-10
96	Report: EMC testing og USB Mouse - Track IEC60945	SP05980	2015-11-03
92	LAN and Serial interface documentation	IQ87-PLH3 and MAX3535E	
91	TECDIS Installation Manual	DNV 2013-3135	3.01
90	EMC and environmental testing of HT B22GE STC-C4K-M100	DNV 2013-3135	0
89	EMC and environmental testing of HT 221HK STC-A6D-A000-ES12	Applica 20385	0
88	EMC and environmental testing of HT 221HJ STC-A4D-A000-ES1	Applica 20287	0
87	EMC and environmental testing of HT C02HJ STC-A4D-A000-ES2	Applica 20286	0
86	EMC and environmental testing of HT C02HJ STC-A4D-A000-ES11	Applica 20373	0
85	EMC and environmental testing of HT C02HJ STC-A4D-A000-ES1	Applica 20285	0
84	Interconnection test of Moxa Multiport Serial board - IEC61162	20316	0
83	TECDIS Keypad Conformance test w/video switch	2014.03.04	1
80	Installation notes - TECDIS Keypad EN	25.02.2014	1.1
78	DNV Environmental & EMC test report: Keytouch	2008-3425	2
77	IEC60945 - Test Report: enix-2067/3076/3000/2077	Nemco E12134.04	
76	ENIX-2067-TEL-D1 -TECDIS Conformance test of a Electronic Chart Display and Information System	26-Aug-13	1
74	EMC and Environmental Testing of Maritime Computer HT B22GE STC-C4K-M100	2013-3135	0
72	EMC and Environmental Testing of Maritime Multi Display HD 24T21 MMD-MA1-FAGP	2012-3372	0
71	EMC and Environmantal Testing of JH 26T11 MMD-MA1-AOBC Maritime Multi Display	2011-3396	2
70	HD 26T21 MMD-MA4-FAGA -Conformance Test Report of LCD for use in Radar and ECDIS -	DOC101183-1	2
69	HD 24T21 MMD-MA1-FAGA- Conformance Test Report of LCD for use in Radar and ECDIS -	DOC101257-1	1
68	HD 19T21 MMD-MA1-FOGA- Conformance Test Report of LCD for use in Radar and ECDIS -	DOC101223-1	1

Job Id: **344.1-000515-13**
Certificate No: **MEDB00001B0**

DNV GL No	Document Title	Drawing No.	Rev.
67	HD 24T21 MMC-MJD-AAB2- Conformance Test Report of LCD for use in Radar and ECDIS –	DOC101028-1	1
65	Nemko Test Report Color Verification MD 26 KM05	E12140.02	
64	Nemko Test Report Color Verification DuraMon 19 LED	E13034.02	
63	Test for Marine Type Approval of MD26 16:10 ECDIS KM05	DANAK-1911472	
62	Type approval test of 19" DuraMon monitor	PX25885-1	Rev.1: 2013-11-05
59	EMC and Environmental testing of Maritime Display HD 19T21 MMD-MA1-FAGA	2012-3302	2
58	EMC and Environmental testing of panel computer HD 24T21 MMC-MJD-AAB2	2011-3475	1
57	Conformance test of chart synchronization and new updating means dated 27. June 2013	27. June 2013	1
56	TECDIS Synchronization User Guide 27. June 2013	27. June 2013	1
55	TECDIS Synchronization Installation Guide 25. June 2013	25. June 2013	1
53	TECDIS Operator Manual		2.3
51	JH23T14MMD-MA1-AABA-Conformance Test Report of LCD for use in RADAR and ECDIS - JH23T14MMD-MA1-AABA	DOC100883-4	4
50	Test Report - ISIC MU-231CE - TYPe Approval Testing of 23.1 Inch MarineMonitor	DANAK E501200-2	2004-03-26
49	Test Report -ISIC MU-231CE- TYPe Approval Testing of 20.1 Inch MarineMonitor	DANAK E501200-1	2004-03-26
47	ISIC MU-231CE - Conformance Test Report of LCD for use in RADAR and ECDIS -	DOC100883-2	2
46	ISIC MU-201CE - Conformance Test Report of LCD for use in RADAR and ECDIS	DOC100883-1	1
45	JH23T14MMD-MA1-AOBA- Conformance Test Report of LCD for use in RADAR and ECDIS	DOC100883-3	1
44	Technical Report - Hatteland Display AS - EMC AND ENVIRONMENTAL TESTING OF MARITIME DISPLAY JH 23T14 MMD-MA1	2010-3124	2
43	TECHNICAL REP - HATTELAND DISPLAY AS - EMC AND ENVIRONMENTAL TESTING OF MARITIME COMPUTER HT C01 STD-D100	DNV 2010-3243	4
41	Survey Report - interfcae with Furuno monitors MU-series	40.9a	2010-09-09
34	EMC and Environmental type testing of Maritime computer HT C01 STD	2009-3161	2
33	EMC and Environmental type testing of HD19T03MMDII-A1, 19 inch AC monitor	2006-3107	1
32	Telko Conformance test report 19T03	DOC100828-4	
31	Telko Conformance test report 23T12	DOC100828-3	
30	Telko Conformance test report 20T17	DOC100828-2	
29	Telko Conformance test report 19T14	DOC100828-1	
28	TYPE TESTING OFHM20T07 MIL-E1 Rev. 1 - 2007-3008.pdf		

Job Id: **344.1-000515-13**
Certificate No: **MEDB00001B0**

DNV GL No	Document Title	Drawing No.	Rev.
26	JH19T12MMD-AA1-AAAC Technical Report 2008-3143.pdf		
25	JH 19T12 MMD-DA1-AAAA Technical Report 2008-3146.pdf		
24	MONITOR MODEL JH19T12MMD -AA1-AAAA Technical Report Rev.2.pdf	2008-3190	2
21	TECDIS conformance test report		3
6	Conformance Test Report JH19T14MMD-AA1-AOAA-1	DOC100496-1	
5	Conformance Test Report JH23T12MMD-AA1-AAAA	DOC100495-1	
3	Telco - S63 Loader Manual (User Guide) EN	TELKO S63	1