

# EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate No:  
**MEDB00001B0**  
Revision No:  
**6**

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 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:

Regulation **(EU) 2018/773**,

**item No. MED/4.30. SOLAS 74 as amended, Regulations V/18, V/19 & 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**

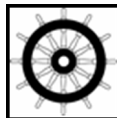
Further details of the equipment and conditions for certification are given overleaf.

This Certificate is valid until **2021-06-13**.

Issued at **Høvik** on **2019-04-03**

DNV GL local station:  
**Sandefjord**

Approval Engineer:  
**Frederik Tore Elter**



Notified Body  
No.: **0575**

for **DNV GL AS**

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 This certificate remains valid unless suspended, withdrawn, recalled or cancelled.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

TECDIS may be installed in a main processing and separate display unit combination or as an panel computer, consisting of the following components:

Unit	Components	Remark
<i>Main processing and separate display units;</i>		
Main processing unit:	HT C01 TEL-A596, or HT C01 TEL-D596, or Enix-2077-TEL-D1, or HT C02HJ TEC-C44-AA00, or HT C02HJ TEC-C44-DA00, or HT B30GI TEC	<i>Embedded graphics</i>
Display unit:	Hatteland Display JH 19T14 MMD, or Hatteland Display JH 20T17 MMD, or Hatteland Display JH 23T12 MMD, or Hatteland Display JH 23T14 MMD, or Hatteland Display HD 19T03 BOAA, or Hatteland Display HD 19T21 MMD, or Hatteland Display HD 19T22 TID, or Hatteland Display HD 19T22 FUD, or Hatteland Display HD 24T21 MMD, or Hatteland Display HD 24T22 TID, or Hatteland Display HD 24T22 FUD, or Hatteland Display HD 26T21 MMD, or Hatteland Display HD 26T22 TID, or Hatteland Display HD 26T22 FUD, or Hatteland Display HD 27T22 TID, or Hatteland Display HD 27T22 FUD, or Furuno MU-201CE, or Furuno MU-231CE	<i>DVI connection</i>
<i>or panel computer;</i>		
Panel Computer:	HD 24T21 MEC-M3D-ACB2, or HD 24T21 EEC-M3D-ACB2, or HD 27T22 DEC-M53-41AB2D, or HD 27T22 EEC-M53-41AB2D	<i>Combined Display and processing unit.</i>
<i>Main processing and display unit or panel computer to be installed with:</i>		

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Unit	Components	Remark
Keyboard/ Trackball <sup>1)</sup> :	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 Cursor Controls E38-16A19D-E003, or Cursor Controls E38-16A19D-E004, or Trackball NSI TBE38NO Keytouch Panel Combo <sup>2)</sup> , or NSI RKCT92S <sup>2)</sup> TECDIS Keypad <sup>3)</sup> (Keytouch PN17610415), or RCU-018	<sup>1)</sup> Both keyboard and a trackball are required  <sup>2)</sup> Combined unit  <sup>3)</sup> 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.8 Moxa CP-114EL-I(CV-150k) <sup>4)</sup> Hatteland Display PCA100293-1 <sup>5)</sup>	<sup>4)</sup> Enix-2077 only  <sup>5)</sup> HD 24T21 MEC-M3D-ACB2, HT C02HJ TEC-C44-AA00, HD 27T22 DEC-M53-41AB2D, HD 27T22 EEC-M53-41AB2D and HT C02HJ TEC-C44-DA00
LAN interface:	Intel IQ87-PLH3 Ethernet Switch: Moxa EDS-208A, Moxa EDS-308 and/or Weidmüller IE-SW-BL08-8TX	
<b>Software Versions:</b>		
TECDIS	4.8.3.x	
Presantation Library	4.0.x	
Telko Chart Loader	2.nn	
OS	Windows 7 or Windows XP <sup>6)</sup>	<sup>6)</sup> 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. <sup>1)</sup>
- TECDIS may optionally be provided with C-Routes routing advisory functionality.

- TECDIS may optionally be connected to internet via "secure web-tunneling".<sup>1)</sup>
- TECDIS may optionally support uploading of SENC delivery (CM93/3 format) via external link.<sup>1)</sup>
- TECDIS may be optionally provided with C-Map Update Service functionality.<sup>1)</sup>
- TECDIS may be optionally provided with Navtor NavSync chart update functionality.<sup>1)</sup>
- 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 be interfaced to either RADAR or AIS, or both, for target presentation.
- 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 (2011), (including amendment 2016) in addition to binary image transfer and RTZ route transfer.

*Note:*

1) A physical disconnection device (e.g. switch) shall be provided in the vicinity of the TECDIS – and be properly marked. Firewall is to be provided onboard. For ship external data exchange; connection is only towards remote access nodes specified by the Manufacturer.

## Tests carried out

- Performance testing: IEC 61174 (2015)
- Environmental testing: IEC 60945 (2002) incl. Corrigendum 1 (2008)
- Serial interface testing: IEC 61162-1 (2016)
- Presentation of navigational information: IEC 62288 (2014)

## Type Examination documentation

DNV GL No	Document ID	Rev.	Description
282	-	2019-02-07	Report: Performance tests of TECDIS according to IEC 61174 Ed.4 and IEC 62288 Ed.2
281	DOC206328-1	Rev. 1	Statement of Manufacturer Similarity for HD 19T22 FUD
280	21110	Rev. 0	Report: EMC and environmental tests of HT B30KH STC-A37-EB3G00-ES
279	21111	Rev. 01	Report: EMC and environmental tests of HT B30GH STC-A3x-M13200-ES
278	170905002TR1	2018-04-09	Report: EMC and environmental tests of HT B30KH STC-A37-EB3G00-ES-3
277	DOC206548-1	Rev. 5	Statement on compliance of HT B30xx STC-xxx-xxxxxx with IEC 60945 and IACS E10
276	DOC207168-1	Rev. 01	Statement of Manufacturer Similarity for HT B30GI TEC
275	01-2019	2019-02-27	Statement of TELKO on HT B30GI TEC processor performance
273	FLI 12-04-014	2004-03-19	Report: EMC tests acc. to IEC60945, clauses 9 and 10 (Furuno HUB-100)
271	-	2018-08-27	Statement of manufacturer on compliance of Furuno HUB-100 with IEC 60945 and IEC 61162-450
270	OMC-35191	A	Manual: Operator's manual for switch Furuno HUB-100

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269	DANAK-19/14501	2014-09-19	Report: Environmental tests of NSI bvba keyboard RKCT92S
268	1339	-	Certificate: Conformity of NSI bvba keyboard RKCT92S
266	DANAK-19/18561	2017-11-18	Report: Environmental tests of NSI bvba keyboard and 4 trackballs (TBE38N0)
265	1727	-	Certificate: Conformity of NSI bvba trackballs TBE38F0-001-MC1
264	2012-3081	01	Report: EMC and environmental testing of display HD 15T21 STD-MA1-FAGA
262		Rev 1	Report: TECDIS Test Report - Update monitord ECDIS display tests
261		Rev 3.04	Manual: TECDIS Installation Manual EN
255	DOC102332-1	rev-01	Report: Hatteland, Minimum brightness test of GDCX found in HD 27T22 MEC-CGU-AABR
254	DOC205812-1	rev 02	Report: Hatteland, IEC62288 flicker test report HD 27T22 MMC-CGU-AABR-ES (signed)
252	DOC102331-1	Rev-1	Report: Hatteland, Conformance test report HD 27T22 MEC-CGU-AABR
251	MRA0000014	Revision 1	Certificate: Series X G2 Maritime Multi Computer
250	MRA0000008	Revision 2	Certificate: Maritime Computers HT B06, HT C02Hx, HT C02Hi, HT 221Hx, HM C02HK
243	TAA000006N	Revision 1	Certificate: Moxa Ethernet Switch EDS-208A
242			Moxa and Weidmuller equivalence statement
239			EDS-200A Corrosion Waiver (Moxa Switch)
236	DOC206417-1		Report: Conformance test report HD 27T22 MMD-MA1-FAGA HTB30-DVI-D
235	DOC206166-1-1	Revision 3	HD 27T22 MMD - ECDIS Compliance Statement
234	DOC206156-1	Revision 2	Report: IEC62288 flicker test report HD 27T22 MMD
233	DOC205958-1	Rev. 5	Report: Minimum brightness test of GDCX SIGNED
228	MRA0000016	Rev. 1	Certificate: Maritime Multi Display HD 15T22 MMD, HD 17T22 MMD, HD 19T22 MMD, HD 24T22 MMD, HD 26T22 MMD,
225	20588	Rev. no.: 0	Report: IEC60945 EMC and Environmental testing of Maritime Multi Computer HD 19T21 MMC-M2D-MBAA
224	DOC205975-1-1	Revision 4	HD 19T22 MMD - IEC 60945 & IACS E10 Statement
223		02	Report: TELKO Conformance test of TECDIS with IEC61174, IEC61162-450 and IEC61162-1 for RTZ route plan exchange
222	21122	Rev. no.: 0	Report Applica: IEC60945 EMC Radiated Emission testing of HD 19T22 MMD-MA1-FOGA-ES Maritime Multi Display
217	21089	Rev. no.: 0	Report Applica: IEC60945 EMC HD 19T22 MMD-MA1-FAGP-ES Maritime Multi Display
216	DOC205975-1	Rev.1	Statement: Hatteland - HD 19T22 MMD - IEC 60945 & IACS E10 Statement
213	DOC206081-1		Report: Hatteland - IEC62288 flicker test report HD 19T22 MMD R02
212	DOC206080-1		Report: Hatteland - Conformance test report HD 19T22 MMD-MA1-FOGA-ES HT221-DVI-D
208	117-21066 - DANAK-1918104		Report: DELTA - IEC 60945 - Corrosion - Salt Mist test
207	T208006-2 - DANAK		Report: IEC 60945 Test for Marine Type Approval E38-16A19D-E003 Trackball right handed and

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	1914159		E38-16A19D-E003 Trackball left handed
205	MRA0000016		Certificate: Monitors HD 24T22 MMD, HD 26T22 MMD, HD 27T22 MMD, HD 32T22 MVD, HD 55T22 MVD
199	DOC205967-1		Report: IEC62288 flicker test report HD24T22 SIGNED
198	DOC102352-2		Report: Conformance test report HD 24T22 MMD-MA1-FAGA-ES_HTC02-DVI-D_SIGNED
197	DOC102352-1		Report: Conformance Test Report of LCD for use in RADAR and ECDIS HD 24T22 MMD-MA1-FAGA-ES
194	DOC205969-1		Report: IEC62288 flicker test report HD26T22 SIGNED
192	DOC102352-4		Conformance Test Report of LCD for use in RADAR and ECDIS HD 26T22 MMD-MA1-FAGA-ES
191	DOC102352-3		Conformance Test Report of LCD for use in RADAR and ECDIS HD 26T22 MMD-MA1-FAGA-ES
181			EDS-308 309 316 series DNV Test Report
163		4.00 beta 4	Manual: TECDIS Manual EN Full
158			Report: TECDIS IEC 61162-1 for NRM-NRX-NSR test report - signed
151			Report: Conformance test of TECDIS with IHO test data sets for ECDIS (S-64) - Signed
150			Report: Conformance test of TECDIS with IEC61174 ed-4 - Signed
138			Report: Witnessed Conformance Test of TECDIS with IEC 61162-450 (receiving IEC 61162-1 sentences)
137		1.0	Quick reference guide - 61162-450 in TECDIS
135		01	TECDIS IEC 61162-450 serial input validation
134		1.0	Quick reference guide - TelkoTranslator 1_0
132			Report: Conformance test of Conning DNV Rules for ships
128			Telko Conning User Manual 1_00
124			Report: Conformance test of TECDIS binary image transfer with IEC61162-450
123			Report: Conformance test of TECDIS with IEC62288 Ed.2
121			TECDIS Conning installation for fall-back arrangements
106	DOC101936-1R2	Rev. 2	Appendix IEC62288 JH20T17
105	DOC101935-1R2	Rev. 2	Appendix IEC62288 JH19T14 HW06
104	DOC101901-1R2	Rev. 2	Appendix IEC62288 JH 23T14
103	DOC101900-1R2	Rev. 2	Appendix IEC62288 HD 19T21
102	DOC101896-1R2	Rev. 2	Appendix IEC62288 HD 24T21
101	DOC101895-1R5	Rev. 5	Appendix IEC62288 HD 26T21
97		2015-08-10	Statement from ITAC - trackball B-MPIND-XROHS REV C
96	SP05980	2015-11-03	Report: EMC testing of USB Mouse - Track IEC60945
92	IQ87-PLH3 and MAX3535E		LAN and Serial interface documentation
91	DNV 2013-3135	3.01	TECDIS Installation Manual
90	DNV 2013-3135	0	EMC and environmental testing of HT B22GE STC-C4K-M100
89	Applica 20385	0	EMC and environmental testing of HT 221HK STC-A6D-A000-ES12

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88	Applica 20287	0	EMC and environmental testing of HT 221HJ STC-A4D-A000-ES1
87	Applica 20286	0	EMC and environmental testing of HT C02HJ STC-A4D-A000-ES2
86	Applica 20373	0	EMC and environmental testing of HT C02HJ STC-A4D-A000-ES11
85	Applica 20285	0	EMC and environmental testing of HT C02HJ STC-A4D-A000-ES1
84	20316	0	Interconnection test of Moxa Multiport Serial board - IEC61162
83	2014.03.04	01	TECDIS Keypad Conformance test w/video switch
80	25.02.2014	1.1	Installation notes - TECDIS Keypad EN
78	2008-3425	02	DNV Environmental & EMC test report: Keytouch
77	Nemco E12134.04		IEC60945 - Test Report: enix-2067/3076/3000/2077
76	26 August 2013	1	ENIX-2067-TEL-D1 -TECDIS Conformance test of a Electronic Chart Display and Information System
74	2013-3135	00	EMC and Environmental Testing of Maritime Computer HT B22GE STC-C4K-M100
72	2012-3372	0	EMC and Environmental Testing of Maritime Multi Display HD 24T21 MMD-MA1-FAGP
71	2011-3396	02	EMC and Environmental Testing of JH 26T11 MMD-MA1-AOBC Maritime Multi Display
70	DOC101183-1	2	HD 26T21 MMD-MA4-FAGA -Conformance Test Report of LCD for use in Radar and ECDIS -
69	DOC101257-1	1	HD 24T21 MMD-MA1-FAGA- Conformance Test Report of LCD for use in Radar and ECDIS -
68	DOC101223-1	1	HD 19T21 MMD-MA1-FOGA- Conformance Test Report of LCD for use in Radar and ECDIS -
67	DOC101028-1	1	HD 24T21 MMC-MJD-AAB2- Conformance Test Report of LCD for use in Radar and ECDIS -
61	2012-3362	0	EMC and Environmental Testing of Maritime Display HD 26T21 MMD-MA1-FAGA, Doc. No.: 2012-3362 Rev.0
60	2011-3481	1	EMC and Environmental Testing of HD 24T21 MMD-MA1- FAGA Maritime Multi Display
59	2012-3302	02	EMC and Environmental testing of Maritime Display HD 19T21 MMD-MA1-FAGA
58	2011-3475	01	EMC and Environmental testing of panel computer HD 24T21 MMC-MJD-AAB2
57	27. June 2013	1	Conformance test of chart synchronization and new updating means dated 27. June 2013
56	27. June 2013	01	TECDIS Synchronization User Guide 27. June 2013
55	25. June 2013	01	TECDIS Synchronization Installation Guide 25. June 2013
53		2.3	TECDIS Operator Manual
51	DOC100883-4	04	JH23T14MMD-MA1-AABA-Conformance Test Report of LCD for use in RADAR and ECDIS - JH23T14MMD-MA1-AABA
45	DOC100883-3	01	JH23T14MMD-MA1-AOBA- Conformance Test Report of LCD for use in RADAR and ECDIS
44	2010-3124	02	Technical Report - Hatteland Display AS - EMC AND ENVIRONMENTAL TESTING OF MARITIME DISPLAY JH 23T14 MMD-MA1
43	DNV 2010-3243	04	TECHNICAL REP - HATTELAND DISPLAY AS - EMC AND ENVIRONMENTAL TESTING OF MARITIME COMPUTER HT

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			C01 STD-D100
41	40.9a	2010-09-09	Survey Report - interfcae with Furuno monitors MU-series
40		2010-04-07	Survey Report
38	2009-3482	1	EMC and Environmental type testing of QWERTY keyboard and cursor control L50 Trackball
34	2009-3161	02	EMC and Environmental type testing of Maritime computer HT C01 STD
33	2006-3107	01	EMC and Environmental type testing of HD19T03MMDII-A1, 19 inch AC monitor
32	DOC100828-4		Telko Conformance test report 19T03
31	DOC100828-3		Telko Conformance test report 23T12
30	DOC100828-2		Telko Conformance test report 20T17
29	DOC100828-1		Telko Conformance test report 19T14
28			TYPE TESTING OFHM20T07 MIL-E1 Rev. 1 - 2007-3008.pdf
26			JH19T12MMD-AA1-AAAC Technical Report 2008-3143.pdf
25			JH 19T12 MMD-DA1-AAAA Technical Report 2008-3146.pdf
24	2008-3190	02	MONITOR MODEL JH19T12MMD -AA1-AAAA Technical Report Rev.2.pdf
21		3	TECDIS conformance test report
16	2008-3142	1	EMC and Environmental testing of JH23T12MMD
15	2008-3511	2	EMC and Environmental testing of JH20T17MMD
14	2008-3528	1	EMC and Environmental testing of JH19T14MMD
6	DOC100496-1		Conformance Test Report JH19T14MMD-AA1-AOAA-1
5	DOC100495-1		Conformance Test Report JH23T12MMD-AA1-AAAA
3	TELKO S63	1.0	Telco - S63 Loader Manual (User Guide) EN

### Marking of product

The name and contact address of the manufacturer and type designation of the product is to be affixed to the equipment in a clearly visible location. In addition the equipment shall be marked with serial number, safe distance to magnetic compass, power consumption and/or supply voltage.