

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate no.:
MEDB00001B0
Revision no.:
11

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 backup, and raster chart display system (RCDS)**

with type designation(s)
TECDIS

issued to

Telko AS
TJØME, Norway

is found to comply with the Implementing Regulation (EU) 2025/1533 for
Item no. **MED/4.30 (Row 2 of 3)**
according to the following requirements:

SOLAS 74 Reg. V/19, IMO Res. A.694(17), IMO Res. MSC.36(63)-(1994 HSC Code) 13, IMO Res. MSC.97(73)-(2000 HSC Code) 13, IMO Res. MSC.191(79), IMO Res. MSC.232(82), IMO Res. MSC.302(87), IMO MSC.1/Circ.1503. Rev.1 or Rev.2, SOLAS 74 Reg. V/18, SOLAS 74 Reg. V/27, SOLAS 74 Reg. X/3, IMO Res. MSC.36(63)-(1994 HSC Code) 13, IMO Res. MSC.97(73)-(2000 HSC Code) 13

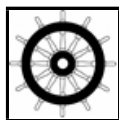
Further details of the equipment and conditions for certification are given overleaf.

Date of issue: **2025-09-26**

Expiry date: **2028-12-19**

DNV local unit:
Sandefjord

Approval Engineer:
Arve Lepsøe



Notified Body
no.: **0575**



for **DNV AS**

Digitally Signed By:
Elter, Frederik Tore
on behalf of

Christine Mydlak-Röder
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 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 This certificate remains valid unless suspended, withdrawn, recalled or cancelled.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 USD 300 000.

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 as listed in table included in certificate appendix:

Please see Appendix: Product Description

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". *
- 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", provided interface electrical connection is in accordance with IEC 60945.
- TECDIS may optionally be interconnected with a video source via video port on the TECDIS computer for presenting video on ECDIS screen, provided interface electrical connection is in accordance with IEC 60945.
- 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 (2018) addition to binary image transfer and RTZ route transfer.

Note:

* 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

Type Examination documentation

Please see Appendix: Type Examination Documentation

Tests carried out

- Performance testing: IEC 61174 (2015)
- Performance testing, presentation: IEC 62288 (2021)
- Environmental testing: IEC 60945 (2002) incl. Corr. 1 (2008)
- Serial interface testing: IEC 61162-1 (2016)
- Bridge alert management (BAM): IEC 62923-1 (2018) and IEC 62923-2 (2018)

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.



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APPENDIX

Type Examination documentation

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Document No.	Rev.	Title
TELKO S63	1.0	Telco - S63 Loader Manual (User Guide) EN
DOC100496-1		Conformance Test Report JH19T14MMD-AA1-AOAA-1
2008-3528	01	EMC and Environmental testing of JH19T14MMD
	3	TECDIS conformance test report
DOC100828-1		Telko Conformance test report 19T14
2009-3482	01	EMC and Environmental type testing of QWERTY keyboard and cursor control L50 Trackball
	2010-04-07	Survey report
DNV 2010-3243	04	TECHNICAL REP - HATTELAND DISPLAY AS - EMC AND ENVIRONMENTAL TESTING OF MARITIME COMPUTER HT C01 STD-D100
2010-3124	02	Technical Report - Hatteland Display AS - EMC AND ENVIRONMENTAL TESTING OF MARITIME DISPLAY JH 23T14 MMD-MA1
DOC100883-3	01	JH23T14MMD-MA1-AOBA- Conformance Test Report of LCD for use in RADAR and ECDIS
	2.3	TECDIS Operator Manual
25. June 2013	01	TECDIS Synchronization Installation Guide 25. June 2013
27. June 2013	01	TECDIS Synchronization User Guide 27. June 2013
27. June 2013	1	Conformance test of chart synchronization and new updating means dated 27. June 2013
2013-3135	00	EMC and Environmental Testing of Maritime Computer HT B22GE STC-C4K-M100
26 August 2013	1	ENIX-2067-TEL-D1 -TECDIS Conformance test of a Electronic Chart Display and Information System
2008-3425	02	DNV Environmental & EMC test report: Keytouch
25.02.2014	1.1	Installation notes - TECDIS Keypad EN
2014.03.04	01	TECDIS Keypad Conformance test w/video switch
20316	0	Interconnection test of Moxa Multiport Serial board -IEC61162
Applica 20285	0	EMC and environmental testing of HT C02HJ STC-A4D-A000-ES1
Applica 20373	0	EMC and environmental testing of HT C02HJ STC-A4D-A000-ES11
Applica 20286	0	EMC and environmental testing of HT C02HJ STC-A4D-A000-ES2
Applica 20287	0	EMC and environmental testing of HT 221HJ STC-A4D-A000-ES1
Applica 20385	0	EMC and environmental testing of HT 221HK STC-A6D-A000-ES12
IQ87-PLH3 and MAX3535E		LAN and Serial interface documentation
SP05980	2015-11-03	Report: EMC testing og USB Mouse - Track IEC60945
	2015-08-10	Statement from ITAC - trackball B-MPIND-XROHS REV C
DOC101901-1R2	Rev. 2	Appendix IEC62288 JH 23T14
DOC101935-1R2	Rev. 2	Appendix IEC62288 JH19T14 HW06
		TECDIS Conning installation for fall-back arrangements
		Report: Conformance test of TECDIS with IEC62288 2nd edition

		Report: Conformance test or TECDIS binary image transfer with IEC61162-450
		Telko Conning User Manual 1_00
		Report: Conformance test of Conning DNV Rules for ships
1.0		Quick reference guide - TelkoTranslator 1_0
01		TECDIS IEC 61162-450 serial input validation
1.0		Quick reference guide - 61162-450 in TECDIS
		Report: Confirmace test of TECDIS with IEC61174 ed-4 - Signed
		Report: Confirmace test of TECDIS with IHO test data sets for ECDIS (S-64) - Signed
		Report: TECDIS IEC 61162-1 for NRM-NRX-NSR test report - signed
4.00 beta 4		Manual: TECDIS Manual EN Full
		EDS-308 309 316 series DNV Test Report
DOC102352-3		Conformance Test Report of LCD for use in RADAR and ECDIS HD 26T22 MMD-MA1-FAGA-ES
DOC102352-4		Conformance Test Report of LCD for use in RADAR and ECDIS HD 26T22 MMD-MA1-FAGA-ES
DOC205969-1		Report: IEC62288 flicker test report HD26T22 SIGNED
DOC102352-1		Report: Conformance Test Report of LCD for use in RADAR and ECDIS HD 24T22 MMD-MA1-FAGA-ES
DOC102352-2		Report: Conformance test report HD 24T22 MMD-MA1-FAGA-ES_HTC02-DVI-D_SIGNED
DOC205967-1		Report: IEC62288 flicker test report HD24T22 SIGNED
T208006-2 - DANAK 1914159		Report: IEC 60945 Test for Marine Type Approval E38-16A19D-E003 Trackball right handed and E38-16A19D-E003 Trackball left handed
117-21066 - DANAK-1918104		Report: DELTA - IEC 60945 - Corrosion - Salt Mist test
DOC206080-1		Report: Hatteland - Conformance test report HD 19T22 MMD-MA1-FOGA-ES HT221-DVI-D
DOC206081-1		Report: Hatteland - IEC62288 flicker test report HD 19T22 MMD R02
21089	Rev. no.: 0	Report Applica: IEC60945 EMC HD 19T22 MMD-MA1-FAGP-ES Maritime Multi Display
21122	Rev. no.: 0	Report Applica: IEC60945 EMC Radiated Emission testing of HD 19T22 MMD-MA1-FOGA-ES Maritime Multi Display
	02	Report: TELKO Conformance test of TECDIS with IEC61174, IEC61162-450 and IEC61162-1 for RTZ route plan exchange
20588	Rev. no.: 0	Report: IEC60945 EMC and Environmental testing of Maritime Multi Computer HD 19T21 MMC-M2D-MBAA
MRA0000016	Rev. 1	Certificate: Maritime Multi Display HD 15T22 MMD, HD 17T22 MMD, HD 19T22 MMD, HD 24T22 MMD, HD 26T22 MMD, HD 26T22 MMD, HD 26T22 MMD, HD 27T22 MMD
DOC205958-1	Rev. 5	Report: Minimum brightness test of GDCX SIGNED
DOC206156-1	Revision 2	Report: IEC 62288 flicker test report HD 27T22 MMD
DOC206166-1-1	Revision 3	HD 27T22 MMD – ECDIS Compliance Statement
DOC206417-1		Report: Conformance test report HD 27T22 MMD-MA1-FAGA HTB30-DVI-D
		EDS-200A Corrosion Waiver (Moxa Switch)
		Moxa and Weidmuller equivalence statement
TAA000006N	Revision 1	Certificate: Moxa Ethernet Switch EDS-208A
MRA0000014	Revision 1	Certificate: Series X G2 Maritime Multi Computer
DOC102331-1	Rev-1	Report: Hatteland, Conformance test report HD 27T22 MEC-CGU-AABR

DOC205812-1	rev 02	Report: Hatteland, IEC62288 flicker test report HD27T22 MMC-CGU-AABR-ES (signed)
DOC102332-1	rev-01	Report: Hatteland, Minimum brightness test of GDCX found in HD 27T22 MEC-CGU-AABR
	Rev 1	Report: TECDIS Test Report - Update monitor ECDIS display tests
2012-3081	01	Report: EMC and environmental testing of display HD 15T21 STD-MA1-FAGA
1727	-	Certificate: Conformity of NSI bvba trackballs TBE38F0-001-MC1
DANAK-19/18561	2017-11-18	Report: Environmental tests of NSI bvba keyboard and 4 trackballs (TBE38N0)
1339	-	Certificate: Conformity of NSI bvba keyboard RKCT92S
DANAK-19/14501	2014-09-19	Report: Environmental tests of NSI bvba keyboard RKCT92S
OMC-35191	A	Manual: Operator's manual for switch Furuno HUB-100
-	2018-08-27	Statement of manufacturer on compliance of Furuno HUB-100 with IEC 60945 and IEC 61162-450
FLI 12-04-014	2004-03-19	Report: EMC tests acc. to IEC60945, clauses 9 and 10 (Furuno HUB-100)
01-2019	2019-02-27	Statement of TELKO on HT B30GI TEC processor performance
DOC207168-1	Rev. 01	Statement of Manufacturer Similarity for HT B30GI TEC
DOC206548-1	Rev. 5	Statement on compliance of HT B30xx STC-xxx-xxxxxx with IEC 60945 and IACS E10
170905002TR1	2018-04-09	Report: EMC and environmental tests of HT B30KH STC-A37-EB3G00-ES-3
21111	Rev. 01	Report: EMC and environmental tests of HT B30GH STC-A3x-M13200-ES
21110	Rev. 0	Report: EMC and environmental tests of HT B30KH STC-A37-EB3G00-ES
DOC206328-1	Rev. 1	Statement of Manufacturer Similarity for HD 19T22 FUD
-	2019-02-07	Report: Performance tests of TECDIS acc. to IEC 61174 Ed.4 and IEC 62288 Ed.2
DOC208309-1	Rev. 01	IEC 60945 Corrosion Statement - Hatteland Technology
PDF207847-1		Report: Applica IEC 61162-1/-2 - HD 27T30 MMC-Mx7-4AOB1N-ES Technical Report - EN61162 - 30429 Rev 1
PDF209224-1		Report: Nemko IEC 60945: HTC03-i5-MP C732836-2139C Technical Report E21014.00 Rev.0
		Report: TECDIS Test Report HTC03-i5-MP Computer upgrade test 2021-03-23
	19th of June 2021	Report: Telko IEC 62923-1:2018, IEC 62923-2:2018 and IEC 61162-450:2018 TECDIS Test Report
TL20074	Issue 2	Report: MS Testing, IEC60945: Test Report Ingress Protection Cursor Controls Ltd. TKB08025A/RKTS13F2041-W-MC1 USB Keypad
TL20074	Issue 2	Report: MS Testing, IEC60945: Test Report Marine Type Approval Testing Salt Mist Cursor Controls Ltd. TKB08025A/RKTS13F2041-W-MC1 USB Keypad
TL20074A	Issue 3	Report: MS Testing, IEC60945: Marine Type Approval Testing Cursor Controls Ltd. TKB08025A/RKTS13F2041-W-MC1 USB Keypad
119-29851-1		Report: IEC60945 Force: Test for marine type approval of RKTE85 keyboard
TL18136	Issue 1	Report: IEC60945 MS TESTING: Test Report Marine Type Approval Testing - Selected desfs only Cursor Controls Silicone Rubber Keyboard with Ergonomic Trackball
DOC205970-1		Report: IEC62288 Hatteland: Flicker test report HD32T22 (DNV witnessed)

DOC205992-1		Report: IEC62288 Hatteland: Conformance test report HD 32T22 MVD-MA1-AOGP_HTC02-DP (DNV witnessed)
DOC205971-1	R01	Report: IEC62288 Hatteland: Flicker test report HD55T22 (DNV Witnessed)
DOC205984-1	R01	Report: IEC62288 Hatteland: Conformance test report HD 55T22 MVD-AA1-TOGP_HTC02-DP (DNV Witnessed)
		TECDIS TKB08025A Test Report 25-06-21
	Rev. 1	Report: Conformance test of TECDIS with IEC62288 3rd edition
	Rev. 14	TECDIS 4.8.3 List of alerts
	Rev. 2	TECDIS Framegrabber feature description
	Rev. 3	TECDIS IEC 62288 ed.3 compliance statement
230705003T	Rev.1	Report: CAL-TECH IEC 60945 HT 00262 OPT-B1-ES1 HT External Opron Modules
CEBDLB-WTW-P23070143		Report: IEC 60945 Cal-Tech_HT 00262 OPT-B1-ES1 HT External Opron Modules
DOC206335-1	R02	Report: IEC 62288 (RADAR ECDIS display) Hatteland Conformance test report HD 24T22 MMC-M82-4GP186-ES
DOC206337-1	R04	Hatteland HD 24T22 MEC - ECDIS Compliance statement
DOC206364-1_	R01	Report: Hatteland IEC62288 flicker test report HD 24T22 MMC
DOC206156-1	2	Report: IEC62288 flicker test report HD 27T22 MMD
DOC208044-1	1	Report: Minimum brightness test of PCA200865-1 keypad
DOC209185-1	1	Report: IEC62288 flicker test report HD 55T40 MVD-MA1-CAJG-ES02
DOC209273-1	1	Report: IEC62288 flicker test report HD 43T40 MVD-MA1-CAJG-ES01
DOC209276-1	1	Report: IEC62288 flicker test report HD 32T40 MVD-MA1-CAJA-ES01
DOC209419-1	1	Reprot: PCA200856-1R04 Minimum brightness test of buttons and status indicators
DOC209420-1	1	Report: HD TDCMVD KIT-A1 Minimum brightness test of buttons and status indicators
DOC209421-1	1	Report: GDCX rev 6 Minimum brightness test of buttons and status indicators
DOC210588-1	2	Report: IEC62288 flicker test report HD 24T27 MMD-MA1-FOGA1A-ES
DOC210715-1	2	Report: IEC62288 flicker test report_JH 21T27 MMD-MR1-AABA2A-ES2
	3.16	Manual: TECDIS Installation Manual EN
MRA0000016	8	Monitor series HD --T22 MMD
MRA0000059		Monitor Series X G3 - T27 MMD, Series 1 G3 - T27
PDF205641-1	Rev.1	Report: HD 24T30 MMC-Nz7-4AML18-ES Technical Report 190123002T
PDF216147-1	Rev.1	Report: HD 24T27 MMD-MA1-FAGP1A-ES Report 240620003T
PDF216151-1	Rev.1	Report: HD 27T27 MMD-MA1-FAGP1A-ES-Report 240620002T
PDF216505-1	Rev.1	Report: JH 21T27 MMD-MR1-AABA2A-ES2 Report 31650
PDF216557-1	Rev.1	Report: JH 21T27 MMD-MR1-AABA2A-ES2 Report 241116001T
	Rev. 1	Report: TELKO Conformance test of TECDIS with: IEC 61174 ed.4 IEC 62288 ed.2 JH21T27MMD, HD43T40FUD, JH19T27FUD, HD19T27FUD, HD24T27FUD, HD27T27FUD, HD32T40FUD and HD55T40FUD

APPENDIX

Product Description

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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 C02HJ TEC-C44-AA00, or HT C02HJ TEC-C44-DA00, or HT B30GI TEC or, HTC03-i5-MP C732836-2139C	<i>Embedded graphics</i>
Display unit:	Hatteland Display JH 19T14MMD, or Hatteland Display JH21T27FUD, or Hatteland Display JH19T27FUD, or Hatteland Display HD19T27FUD, or Hatteland Display HD24T27FUD, or Hatteland Display HD27T27FUD, or Hatteland Display HD32T40FUD, or Hatteland Display HD43T40 FUD, or Hatteland Display HD55T40FUD, or Hatteland Display JH23T14 MMD, or Hatteland Display HD19T22 FUD, or Hatteland Display HD24T22 FUD, or Hatteland Display HD 26T22 FUD, or Hatteland Display HD 27T22 FUD, or Hatteland Display HD 32T22 FUD, or Hatteland Display HD 55T22 FUD	<i>DVI connection FUD models are branded versions of standard models.</i>
<i>or panel computer;</i>		
Panel Computer:	HD 27T22-DEC-M53-40AB2A or, HD 27T22-EEC-M53-40AB2A or, HD 24T22 DEC-M62-4GAB1A or, HD 27T22-DEC-M63-4GAB2A	<i>Combined Display and processing unit. DEC and EEC models are branded versions of standard models.</i>
<i>Main processing and display unit or panel computer to be installed with:</i>		
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 Cursor Controls E38-16A19D-E003, or Cursor Controls E38-16A19D-E004, or Trackball NSI TBE38NO Keytouch Panel Combo ²⁾ , or NSI RKCT92S2), or TECDIS Keypad3) (Keytouch PN17610415), or RCU-018, or NSI RKTE85B0001-W-MC11 ²⁾ , or Cursor Controls TKB08025A ¹⁾	¹⁾ <i>Both keyboard and a trackball are required</i> ²⁾ <i>Combined unit</i> ³⁾ <i>Option</i>
Loudspeakers(option):	DNH HP-6, or	

Unit	Components	Remark
	DNH HPS-6	<i>Loudspeaker is required only when display unit does not include a buzzer and RCU-018 is not connected.</i>
Serial Interface:	Moxa Opt.8	<i>⁴⁾ Installed with: All Main Processing Units, all Panel Computers and HT 00262 OPT-A1</i>
	Moxa CP-114EL-I(CV-150k)	
	Hatteland HT 00262 OPT-A1	
	Hatteland Display PCA100293-1 ⁴⁾ Hatteland PCA200828-1 ⁴⁾	
LAN interface:	Intel IQ87-PLH3 Ethernet Switch: Moxa EDS-208A, Moxa EDS-308 and/or Weidmüller IE-SW-BL08-8TX	
Software Versions:		
TECDIS	4.8.3.x	
Presantation Library	4.0.x	
Telko Chart Loader	2.nn	
OS	Windows 7 or Windows 10	
Screen sender	1.xx	