

TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate No:
MERB00005J4
Revision No:
3

This Certificate is issued by DNV UK Limited based on authorisation of the Maritime & Coast Guard Agency (MCA) as an UK Approved Body to undertake conformity assessments on marine equipment in accordance with the requirements of the Merchant Shipping (Marine Equipment) Regulations 2016 as amended.

This is to certify:

That the Voyage data recorder (VDR) and Simplified voyage data recorder (S-VDR)

with type designation(s)

**DM100 VDR (trade name Sperry Marine Voyage Master IV VDR),
DM100 VDR G2 (trade name Sperry Marine Voyage Master IV VDR G2, Wärtsilä VDR 4380) and
DM100 S-VDR G2 (trade name Sperry Marine Voyage Master IV S-VDR G2, Wärtsilä S-VDR 4380)**

Issued to

**Danelec Marine A/S
Farum, Denmark**

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

Regulation **MSN 1874 Amendment 9**,

item No. UK/4.29. SOLAS 74 as amended, Regulations V/18, V/20 & 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.302(87), IMO Res. MSC.333(90)

item No. UK/4.47. SOLAS 74 as amended, Regulation V/20, IMO Res. A.694(17), IMO Res. MSC.163(78), IMO Res. MSC.191(79), IMO Res. MSC.302(87), IMO Res. MSC.214(81)

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

This Certificate is valid until **2026-06-20**.

Issued at **London** on **2024-10-04**

DNV local unit:
Denmark CMC



for **DNV UK Ltd.**

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MER Service Responsible



**Maritime &
Coastguard
Agency**

UK Approved Body Authorised
by the MCA

This certificate will not be valid if the manufacturer makes any changes or modifications to the approved type of equipment, which have not been notified to, and agreed with the approved body named on this certificate.

During the period of validity of this certificate the applicable regulations (international conventions and the relevant resolutions and circulars of the IMO) and testing standards may change, therefore the product conformity may need to be re-assessed by the Approved 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-control phase module (D, E or F) of Schedule 2 of the Merchant Shipping (Marine Equipment) Regulations 2016, as amended is fully complied with and controlled by a written inspection agreement with an approved body. In case limitations of use apply, these should be indicated in the Annex.

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

DM100 VDR / VDR G2 / S-VDR G2 with trade names Sperry Marine Voyage Master IV VDR / VDR G2 / S-VDR G2 and Wärtsilä VDR 4380 / Wärtsilä S-VDR 4380 consisting of the components below. Compliance to VDR / S-VDR requirements depending on configuration and installation.

Components necessary for operation:

Component	Designation	Type designation		
		Danelec	Sperry	Wärtsilä
Data Acquisition Unit or, Data Acquisition Unit for 19" Rack or, Data Acquisition Unit G2 ¹⁾ or, Data Acquisition Unit G2 for 19" Rack ¹⁾	DAU	1302641	1302765	N/A
	DAU-R19	1303793	N/A	N/A
	DAU G2	1305085	1305461	1305428
	DAU-R19 G2	1305469	N/A	N/A
Bridge Control Panel	BCP	1302379	1302380	1305430
Bridge Microphone Unit	Indoor: BMU-003	1302646	1302646	1302646
	Outdoor: BMU-004	1302647	1302647	1302647
Data Protective Capsule MK4 32 GB ²⁾ or, Data Protective Capsule MK4 64 GB ^{1), 2)}	Capsule MK4 C32	1302373	1302385	N/A
	Capsule MK4 C64	1305078	1305337	1305431
Float free MK2 ^{2) 3)} or, Float free MK2-HB ^{2), 3)} (Heated bracket)	Float-free MK2	1305474	1305474	1305474
	Float-free MK2-HB	1305475	1305475	1305475
90 Days Underwater Locating Beacon	AUB-90	2302841	2302841	2302841

- 1) DM100 VDR G2, Sperry Marine Voyage Master IV VDR G2 and Wärtsilä VDR 4380 are to be installed with Capsule MK4 C64 and either DAU G2 or DAU-R19 G2.
- 2) VDR installations shall include Protective Capsule MK4 and one Float-free capsule (MK2 or MK2-HB). For S-VDR installations shall include at least one Protective Capsule MK4 or Float-free capsule (MK2 or MK2-HB) is to be installed.
- 3) Separate certificates are required for EPIRB where the Float free is to be used to comply with carriage requirements for EPIRB.

Optional components:

Component	Designation	Type designation		
		Danelec	Sperry	Wärtsilä
Modular Sensor Interface Unit	SIU	1000717	1000609	N/A
Compact Sensor Interface Unit	CSIU	1301871	1302111	1305496
Remote Video Interface - BNC	RVI	1000723	1000658	N/A
Remote Video Interface – DVI-I	RVI	1302152	1302153	N/A
Remote Video Interface with PoE – BNC	RVI-PoE	1302358	1302383	1302358
Remote Video Interface with PoE – DVI-I	RVI-PoE	1302365	1302382	1302365
Remote Audio Interface (4Ch) with PoE	RAI	1302858	1302858	1302858
Remote Audio Interface (8Ch) with PoE	RAI	1302859	1302859	1302859
Remote Serial Data Interface	RDI 08-001S	1303223	1303223	1303223
Ext. Extended Backup Disk (NAS 01-001)	NAS	1302370	1302370	1302370
Remote Digital Data Interface	RDI 24-001D	1303220	1303220	1303220
Remote Analog Data Interface	RDI 08-001A	1303222	1303222	1303222

Software version (for both VDR and S-VDR): 2.xx, xx being 30 or higher

Application/Limitation

- VDR and S-VDR is to be installed in accordance with installation documentation.
- 25 ECDIS or RADAR stations can be connected to the VDR and S-VDR.
- The VDR and S-VDR supports receiving images using binary file transfer according to IEC 61162-450 ed.1 (2011), 61162-450 ed.2 (2018) and IEC 62388, Annex H.4.
- VDR and S-VDR may support up to 4 Remote Video Interfaces with 2 inputs each.
- VDR and S-VDR may support up to 36 serial line interfaces.
- VDR and S-VDR may support MODBUS over TCP/UDP.
- VDR and S-VDR may support Serial MODBUS RTU.
- When installed with Float free MK2 and MK2-HB, the VDR is in compliance with IMO Res. MSC.333(90), as amended by Res. MSC.494(104), and the S-VDR is in compliance with IMO Res. MSC.163(78), as amended by Res. MSC.493(104).
- Float free MK2 and MK2-HB is tested for compliance with IEC 61996-1 (2013) +A1(2021) using a Galileo GNSS receiver in accordance with IEC 61108-3 (2010)
- VDR and S-VDR have been tested for cyber security requirements according to IEC 61162-460 (2024) (460-Node) and DNV CS Sp1 (Essential) (incorporating IACS UR E27 Ed. Sept. 2023). Cyber secure installation shall be according to DNV Type Approval Certificate TAA00003D4.

Tests carried out

- Performance testing: IEC 61996-1 (2013) + A1 (2021) and IEC 61996-2 (2007)
- Environmental testing: IEC 60945 (2002) incl. Corr. 1 (2008)
- Interface testing: IEC 61162-1 (2016), IEC 61162-2 (1998), IEC 61162-450 ed.2 (2018)
- Presentation testing: IEC 62288 (2021)
- Alert Management: IEC 62923-1 (2018), IEC 62923-2 (2018)
- Security testing: IEC 61162-460 (2024) (According to 460-Node requirements)
- Security testing: DNV CS SP1 (Essential) (incorporating IACS UR E27 Ed. Sept. 2023)

Type Examination documentation

DNV No	Document ID	Rev	Description
117	RD15008-10	1.0	Doc: Danelec, Secure Development Lifecycle for embedded products
116	DBS15004-10	1.0	Report: Danelec, Test Report for DM100 VDR as IEC 61162-460 ed.3 node / IACS UR E27 equipment
111	MAN14904-10	1.0	Manual: Danelec, Installation manual for DM100, Cybersecurity addendum
110	DBS14890-11	1.1	Doc: Danelec, Test Specification for DM100 VDR as IEC 61162-460 ed. 3 node / IACS UR E27 equipment
109	DBS14746-11	1.1	Doc: Danelec, Type approval specification (IACS UR E27 / IEC 61162-460 ed.3) for DM100
104	DBS14627-10	1.0	Report: (Internal) Test report for IEC 62288 ed.3.0 (Section 4 and 7) evaluation of DM100 VDR
97		Rev. A	Manual: Jotron, Tron 40VDR AIS Installation Manual
96	DBS11011-32	3.2	Manual: Danelec, Operator's Manual, for DM100 VDR, DM100 VDR G2 and DM100 S-VDR G2
95	DBS10956-34	3.4	Manual: Danelec, Installation Manual, For DM100 VDR G2 and DM100 S-VDR G2
93	Certificate Number: 1354	4 February 2022	Certificate: COSPAS SARSAT, TYPE APPROVAL CERTIFICATE For a 406 Megahertz Distress Beacon for use with the Cospas-Sarsat Satellite System, Model: EPIRB Float Free Tron 40VDR AIS
92	Certificate Number: 354	4 February 2022	Certificate: COSPAS SARSAT, TYPE APPROVAL CERTIFICATE For a 406 Megahertz Distress Beacon for use with the Cospas-Sarsat Satellite System, Model: EPIRB Float Free Tron 40VDR AIS
89		Rev. E	Manual: Jotron, Tron 40VDR AIS Float-free EPIRB with VDR storage, User manual

DNV No	Document ID	Rev	Description
84	75950873-09	Issue 01	Report: TUV, IEC 61097-2 (Annex D: 121.5 MHZ Moming transmitter) Model: Tron 40VDR AIS
83	75950873-08	Issue 03	Report: TUV, IEC 61108-3 Model: Tron 40VDR AIS
82	75950873-07	Issue 03	Report: TUV, IEC 612097-2 Model: Tron 40VDR AIS EPIRB
81	75950873-02	Issue 01	Report: TUV, IEC 60945, ETSI EN 301 489-1 and ETSI EN 301 489-19 Model: Tron 40VDR AIS
80	BSH/454.GNSS/TUVSU DLtd/6	8th February 2022	Report: BSH, IEC 61108-3:2010, 4.3.8 and 5.6.9
79	E21187.00	2022-02-10	Report: NEMKO IEC 61996-1:2013 + AMD1:2021 – Partial test, Tron 40VDR AIS (COSPAS-SARSAT 406 MHz Satellite Emergency Position-Indicating RadioBeacon (EPIRB) with attached Voyager Data Recorder (VDR))
73	BSH/454.VDR/Danelec DM100 VDR G2/1-1	11 March 2022	Report: BSH, IEC61996-1 Ed.2 Testreport DM100 VDR G2
72	BSH/454.VDR/Danelec DM100 VDR G2/1-2	11 March. 2022	Report: BSH, IEC61162-450 Ed.2.0 Testreport DM100 VDR G2
69	DBS11010-30	3.0	Manual: Danelec, Inspector's and Authorities' Manual - For DM100 VDR, DM100 VDR G2 and DM100 S-VDR G2
67	120-22519-1	Rev. 1	Report: FORCE, IEC 60945: Test for marine type approval of DM100 VDR G2 DAU and Capsule MK4 C64
62	GWD13959-10		Danelec: IEC 60945 Waiver of corrosion test on Data Protective Capsule MK4 C64
56	APP13759-12	1.2	Report: Danelec, DM100 IEC 62923 compliance test report
50	0800S3-454.VDR/Danelec/DM100		Report:BSH, IEC61162-450 Ed.2.0
43	DANAK-19/17917	2017-06-01	Report: DELTA IEC 61162-1/2 Interface tests of RDI 08-001S Remote Data Interface, Seria
42	MAN11614-13	1.3	Manual: Installation Manual for RDI 08-001S and RDI 08-001SJ, remote serial interface
39	DANAK-19/16106	2016-01-28	Report: DELTA IEC 60945: Danelec Marine A/S - RDI 08-001S Remote Data Interface, Serial
38	MAN11620-11	1.1	Manual: Installation Manual for RDI 24-001D, remote digital data interface
37	MAN11641-11	1.1	Manual: Installation Manual for RDI 08-001A, remote analog data interface
36	DANAK-19/16012	2015-12-22	Report: IEC 60945 DELTA Test Report, Test for Marine Type Approval of RDI 24-001D Remote Data Interface, Digital
35	DANAK-19/16011	2015-12-22	Report: IEC 60945 DELTA Test Report, Test for Marine Type Approval of RDI 08-001A Remote Data Interface, Analog
33	DANAK-19/16500	2016-05-30	Report: DELTA Vibration test of DM100 DAU-R19 according to IEC60945
32	BSH/4543/001/4292980/15-1	2015-12-15	Report: BSH IEC62388 Ed.2 (section Annex H.4)
31	BSH/4543/001/4292980/15	2015-12-14	Report: BSH IEC19961-1 Ed.2 Voyage data recorder (NAS, 4 VGA, 4 DVI, 36 serial)
30	BSH/4543/001/4292887/15	2015-03-06	Report: BSH IEC19961-1 Ed.2 Voyage data recorder (audio module)
29	-	2013-11-17	Waiver related to IEC 61996-1 ed 2.0 section 6.2.2.6.1 - suppression of low frequency out of band noise
28	BSH/4543/001/429245/13	2014-06-20	Report: BSH - IEC 61996-1(2013), IEC 61162-1 (2010), IEC 61162-2 (1998) - VDR DM100-2014
27	BSH/4543/001/4292645/13-2	2014-06-18	Report: BSH - IEC 61162-450 (2011) - VDR DM100-20144

DNV No	Document ID	Rev	Description
26	BSH/4543/001/4292645/13-1	2014-06-18	Report: BSH - IEC 60945 (2002) sections 6, 11.1, 13-15 - VDR DM100-2014
25	BSH/4542/002/0123036/16	2016-04-22	Report: BSH - IEC 62288 (2014) sections 4 and 7, VDR Display - Bridge Control Panel - BCP
24	DANAK-19/14081	A	Report: DELTA - IEC 60945 (2002), Test for Marine Type Approval of DM100 (2014). BCP, BMU-003 and BMU-004
23	DANAK-19/13648	2	Report: DELTA - IEC 60945 (2002), Test for Marine Type Approval of DM100 system
22	DANAK-19/14068	1	Report: DELTA - IEC 61996-1 (2013), Test for Approval of Capsule MK4
19	L102733-4387	01	Report: DELTA - IEC 62288 Temporal stability Bridge Control Panel
18	BSH/4543/001/4292887/15	2015-03-06	Report: IEC 61996-1 (2013) BSH, Voyage Data Recorder, VDR DM100-2014
17	E13261.04	04	Report: Nemko, EPIRB with attached Voyage Data Recorder
16	DOC11096-10	1.0	Waiver of corrosion test on DM100 Data Acquisition Unit (DAU)
15	DOC11027-10 (Signed)	1.0	Waiver of corrosion test on NAS 01-001
14	GWD11334-10	1.0	Waiver of corrosion test on Remote Audio Interface 4ch and 8ch (RAI 04-001, RAI 08-001)
13	DOC11112-10	1.0	Waiver of corrosion test on BMU-003 and BMU-004
12	DOC11111-10	1.0	Waiver of corrosion test on VDR Bridge Control Panel
11	DOC11110-10	1.0	Waiver of corrosion test on Data Protective Capsule MK4
10	-	2014-02-14	Manual: User Manual for Tron 40VDR FF Capsule
9	DBS00331-31	3.1	Manual: Installation Manual for Remote Video Interface for DM200, DM300, DM400, DM500
8	DBS00327-31	3.1	Manual: Installation Manual for DM100/DM400 modular Sensor Interface Unit
7	DBS00294-31	3.1	Manual: User Manual for VDR Explorer
4	DBS10919-10	1.0	Manual: Installation Manual for Remote Video Interface RVI 02-004 and RVI 02-004D for DM100
3	DBS10704-12	1.2	Manual: Installation Manual for DM100/DM400 VDR compact Sensor Interface Unit

Marking of product

The type designation and name and contact address of the manufacturer shall be affixed visibly, legibly and indelibly to at least one part of the product. In addition, the various equipment shall be marked with serial number. Safe distance to magnetic compass and power consumption and/or supply voltage may be stated in the individual installation manuals.