Certificate No:
TAA000035R

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Voyage Data Recorder (VDR)

with type designation(s)
VR-7000

Issued to
Furuno Electric Co., Ltd.
Nishinomiya, Hyogo Pref, **Japan**

is found to comply with
VDR: 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)

Application :

See page 2.

Issued at **Høvik** on **2022-06-28**

This Certificate is valid until **2023-06-27**.
DNV local station: **Høvik Electrical Systems**

Approval Engineer: **Frederik Tore Elter**

for **DNV**

Digitally Signed By: Alonso Pontes, Marta
Location: DNV Høvik, Norway

Marta Alonso Pontes
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

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

The VR-7000 VDR comprises combinations of the following components:

Unit	Model Name	Remark	Location
Data collecting unit (DCU)	VR-7010		Protected
Fixed data recording unit	VR-7020		Exposed
Float-free data recording unit	VR-7021F or		Exposed
	VR-7024F	1)	Exposed
Remote alarm panel	VR-7017		Protected
Microphone	VR-7011	*Max 8 ch.*	Protected
Microphone waterproof	VR-7012W		Exposed
Video LAN converter	IF-7100	*Max 2 ch. (DVI-D/RGB)*	Protected
Sensor adapter	MC-3000S	*Serial*	Protected
Sensor adapter	MC-3010A	*Analog (option)*	Protected
Sensor adapter	MC-3020D	*Digital (option)*	Protected
Live player V5	VR-7030	*Playback package*	Protected
Intelligent HUB	HUB-3000	*option*	Protected
Switching HUB	HUB-100	*option*	Protected
Junction box	VR-7022F		Protected
Junction box	IF-8530	*option*	Protected
Software	*Prog.no. 2450102 Rev.01.xx*		

1) *Installation on vessels in according with flag state rules and regulation. w. float-free bracket, heated bracket (HB) option*

Application/Limitation

The VR-7000 equipment shall be installed in compliance with the installation instructions of Pub. No. IME-44850-U10. Fixed Data Recording Unit capacity is 32GB.

Float free VR-7024F (with optional heated bracket) is tested for compliance with IEC 61996-1 (2013) +A1(2021) using a Galileo GNSS receiver in accordance with IEC 61108-3 (2010).

Note: The VR-7000 is examined and found to comply with the standards for IEC 61924-2 “Modular structure for INS”, Annex K and Annex M.

Type Examination documentation

Documentation from folder 344.1-003845			
DNV No.	**Document No.**	**Rev.**	**Title.**
79	K24-17-1084	31. May 2022	Report: Furuno, DNV type approval testing report of IEC 61996-1 E.d2.1, Model VR-7000
77	OME-44852-K	K: APR. 01. 2022	Manual: Furuno, Instruction Manual CDR Maintenance Viewer, Model: VR-7000/VR7000S
76	OME-44851-K	K: APR. 01.2022	Manual: Furuno, Operators Manual, Live Player V5, Model: VR-7030
75	OME-44850-Q		Manual: Operators Manual, VDR/S-VDR Model: VR-7000/VR-7000S
73	IME-44850-X	2022.05.26	Manual: Furuno: Installation Manual VDR/SVDR, Model: VR-7000/VR-7000S_

Documentation from folder 344.1-003845			
DNV No.	**Document No.**	**Rev.**	**Title.**
72	E-4201402-F	2022.06.03	Manual: Furuno: Instruction Manual, Data exchange Procedure, Model: VR-7000/VR-7000S
70	Cert. 1354	4. Feb. 2022	TAC-1354 for Jotron models Tron 40VDR AIS_04-FEB-2022
69	Cert. 354	4. Feb. 2022	TAC-354 for Jotron models Tron 40VDR AIS_04-FEB-2022
66	75950873-02	Issue 01	Report: TUV IEC 60945, ETSI EN 301 489-1 and ETSI EN 301 489-19 Tron 40VDR AIS
65	75950873-08	Issue 03	Report: TUV, IEC 61108-3 (2010) GNSS testing of Tron 40VDR AIS
64	75950873-09	Issue 01	Report: TUV: IEC 61097-2 Anned D, 121.5 MHz Homing transmitter, Tron 40VDR AIS
63	BSH/454.GNSS/TUVSUDLtd/6	8. Feb. 2022	Report: BSH, IEC 61108-3 (2010) (4.3.8, 5.6.9) integrated GNSS receiver,
62	75950873-01	Issue 02	Report: TUV, Cospas-Sarsat T.007 Model: Tron 40VDR AIS
59	75950873-07	Issue 03	Report: TUV, IEC 612097-2 Model: Tron 40VDR AIS EPIRB
58	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))
56	K-24-17-1036-0	13. APR 2021	Report: Furuno IEC61162-450: VDR Internal Test Report of IEC61162-450
53	K-24-17-1026-0	14. JAN 2021	Report: DNVGL type approval Internal test Report pf IEC 62923-1/2 Model VR-7000/VR-7000S
48	FLI 12-14-021		VR-7000: Test Report IEC61162-450
47	LIC 12-19-026		VR-7010: IEC61162-1
46	K24-17-941-0		Internal test report of IEC61162-450 Ed.1 Amd.1-
45	FLI 12-14-020		Test report IEC61162-1/-2 for VR-7000
44	K-24-17-927-0		Internal test report IEC61162-1 Ed.5
43	K24-19-021		Technical document; IF-7100 changes
42	K24-17-637-2	1	Test report of Image Evaluation for VDR
40	FLI12-14-137		IEC60945: Compass safe distance
39	FLI12-14-136		IEC60945: Environmental test report
38	FLI12-14-135		IEC60945: EMC test report
37	K24-19-018		Technical document - monitoring and alerts
36	E42-01402-Z		Data Extraction Procedure
35	K24-19-019		Technical document - configuration data file
34	K24-19-017-3		Technical document - BER monitoring
31	K24-17-657		UTC time synchronization
30	K24-17-658		Recording duration test
28	FLI12-14-026		IEC62288 report
27	FLI12-14-025		Compass safe distance report
26	FLI12-14-024		IEC60945 operation check report
25	FLI12-14-023		IEC60945 test report

Documentation from folder 344.1-003845			
DNV No.	**Document No.**	**Rev.**	**Title.**
24	FLI12-14-022		EMC test report
23	FLI12-14-021		IEC61162-450 test report
22	FLI12-14-020		IEC61162-1/2 test report
18	E13261.04		NEMKO test report - TRON40VDR - IEc61097-2, IEC60945, IEC61996-1, RTCM77
17	75924802	1	TUV SUD - TRON40VDR test report - Cospas-Sarsat T.007
12	ENV267		L3 HVR04 Environmental/EMI test report
11	ENV266		L3 HVR04 Crash Survivability test report
9	K24-17-637		Furuno Image Test Report of VR-7000
8	K24-17-633		Test report IEC61996-2 6.2.2.5 Audio complex signals
7	K24-19-016		Technical Document VR-7000
6	K24-17-591		VR-7000 - Type approval testing report
5	K24-19-017		VR-7000 - Technical document - LTC interface specification

Tests carried out

- Performance - IEC 61996-1 (2013) + A1(2021)
- Serial Interface - IEC 61162-1 (2016)
- Serial Interface - IEC 61162-2 (1998)
- LAN Interface - IEC 61162-450 (2018)
- Presentation - IEC 62288 (2014)
- Environmental - IEC 60945 (2002) (incl. Corr.1,2008)
- Bridge alert management - IEC 62923-1 (2018) and IEC 62923-2 (2018)

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.

Periodical assessment

Product assessed with MED-D annual audit for certificate MEDB000039E.