TYPE APPROVAL CERTIFICATE

Certificate no.:
TAA00003MX
Revision No:
1

This is to certify:

that the Bridge instrumentation

with type designation(s)
HermAce gateway
HUB-3000, Switching hub
FELCOM18, Inmarsat-C MES
FM-8900S, VHF radiotelephone
FS-xx75, MF/HF radiotelephone
NX-900, NAVTEX receiver
FA-170, U-AIS transponder
FAR-15x8 / FAR-2xx8 / FAR-30x5, RADAR
FMD-3005/3100, ECDIS
BR-500, BNWAS
MC-3000S, Sensor adapter
GP-170, GNSS
GS-100, Satellite speed log
VR-7000/VR-7000S, VDR/S-VDR
PS-100, Voyage planning station
FE-800, Echo sounder
DS-60, Doppler sonar
DS-85, Doppler speed log
IF-2550, Interface unit
BC-6201, Battery charger
PR-851, AC-DC power supply

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

is found to comply with
DNV rules for classification – Ships Pt.6 Ch.5 Sec.21 Cyber security

Application:

The Type Approval covers security capabilities in accordance with DNV security profile 1 and IACS UR E27 Rev.1, subject to conditions stated in this certificate.
Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Issued at **Høvik** on **2025-06-04**

This Certificate is valid until **2027-06-03**.
DNV local unit: **Japan CMC**

Approval Engineer: **Knut Omberg**

for **DNV**
Digitally signed by: Jarle Coll Blomhoff
Location: DNV Høvik, Norway

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 USD 300 000.

Product description

This TA certificate applies for the Navigational and radiocommunication equipment listed below and confirms compliance with cyber security requirements in DNV-RU-SHIP Pt.6 Ch.5 Sec.21, security profile 1 (SP1).

No.	Model	Type	Application SW ver.
1	HermAce	Gateway	5.0.X
2	HUB-3000	Switching hub	2.0.X
7	FELCOM18	Inmarsat-C MES	1650247-02.XX
8	FM-8900S	VHF radiotelephone	0550249-07.XX
9	FS-xx75	MF/HF radiotelephone	0550243-05.XX
10	NX-900	NAVTEX receiver	0850202-01.XX
11	FA-170	U-AIS transponder	0550255-02.XX
12	FAR-30x5	RADAR	0359266-05.XX
13	FAR-2xx8	RADAR	0359377-04.XX
14	FAR-15x8	RADAR	0359344-04.XX
15	FMD-3005	ECDIS	2450074-05.XX
16	FMD-3100	ECDIS	2450074-05.XX
17	BR-500	BNWAS	2450056-02.XX
18	MC-3000S	Sensor adapter	2450081-05.XX
19	GP-170	GNSS	2051542-03.XX
20	GS-100	Satellite speed log	2051552-05.XX
21	VR-7000/VR-7000S	VDR/S-VDR	2450102-01.XX
22	PS-100	Voyage planning station	1.8.XXXXX
23	FE-800	Echo sounder	1251002-01.XX
24	DS-60	Doppler sonar	6652102-02.XX
25	DS-85	Doppler speed log	6550308-01.XX
26	IF-2550	Interface unit	7850004-01.XX
27	BC-6201	Battery charger	7850009-02.XX
28	PR-851	AC-DC power supply	7850007-02.XX

A complete list of hardware and software is specified in document F030/F071, see Type approval documentation below.

Documentation of major changes to the type approved product shall be informed to DNV. If the changes are considered to affect functionality covered by this TA certificate, a new functional type test may be required, and the certificate may have to be renewed to identify the new version.

Minor changes to the type approved products are identified by updating the last number in the version identifier and are covered by this type approval. All modifications to the type approved system shall be carried out in accordance with document I320, see Type approval documentation below.

Approval conditions

When multiple devices are delivered as an interconnected system to a vessel with class notation Cyber secure(Essential), the system shall be delivered with a vessel-specific product certificate (PC). The following verification applies as per DNV-RU-SHIP Pt.6 Ch.5 Sec.21:

a) It shall be demonstrated that the architecture of each delivery is documented in a project-specific system topology F030 and that this is consistent with type approved document DNV SP1 TA logical topology diagram (PPMD-IS&TA-2025-003).

b) It shall be demonstrated that the delivered hardware and software is documented in a vessel-specific asset inventory (F071) and that this document is consistent with and the type approved document Logical Topology Diagram and Inventory list (PPMD-IS&TA-2025-003).

c) It shall be demonstrated by declaration or test report(s) (Z261) that each device has been configured and hardened as per the type approved configuration guideline F141 for each product, see Type approval documentation.

When devices are delivered as individual products to a system integrator, the systems integrator shall obtain the product certificate for the integrated system as per above.

If a delivered product differs from the type approved product, this shall be described and submitted for assessment.

Application/Limitation

The equipment shall be located in areas on board to which physical access can be controlled.

Sensor data from equipment required by statutory regulations shall be transmitted redundantly via the sensor network and by serial communication lines.

Audit records from each device shall be transferred to HermAce, alternatively audit record storage shall be described and verified for each project.

The following interfaces to other systems, networks or equipment are covered by this TA certificate:

- HermAce gateway LAN 1 may be connected to the vessel's IT network providing communications with HermAce Cloud Infrastructure.

- HermAce gateway LAN 4 may be connected to the vessel's IT network providing communications with third party systems such as chart providers and with local computers on board through VPN (e.g., captain's PC and VDR application "Live Player").

The above interfaces and data flows shall be indicated and described in document F030 and is subject to verification onboard for each delivery.

Type Approval documentation

Equipment-specific documents:

- F021, F252: A description of the equipment, its security capabilities, and the test procedure
- F141: Installation manual, including guidelines for security-related configurations
- F142, F253: Operation manual, including security-related information to asset owner

No.	Model, type	F021, F252	F141	F142, F253
1	HermAce, Gateway	HermAce DNV TA Design Doc. rev.1.3-6 (May.26.2025)	TR-33 rev.2 (Dec.08.2024)	OME-57180-A (Jun.04.2025)
2	HUB-3000, Switching hub	K24-17-1142 rev.3 (Apr.28.2025)	TIE-45220-A12 (May.27.2025)	OME-44730-V21 (Apr.23.2025)
7	FELCOM18, Inmarsat-C MES	K16-17-892 rev.4 (May.10.2025)	IME-56740-Q11 (Apr.24.2025)	OME-56740-N11 (May.09.2025)
8	FM-8900S, VHF radiotelephone	K05-17-1222 rev.4 (Apr.14.2025)	IME-56800-L11 (Apr.15.2025)	OME-56800-M11 (Apr.15.2025)
9	FS-xx75, MF/HF radiotelephone	K05-17-1227 rev.7 (Apr.14.2025)	IME-56770-U10 (Mar.18.2025)	OME-56770-P10 (Mar.18.2025)
10	NX-900, NAVTEX receiver	K08-17-239 rev. 4 (May.12.2025)	OME-57150-C11 (May.12.2025)	OME-57150-C11 (May.12.2025)
11	FA-170, U-AIS transponder	K05-17-1226 rev.5 (May.09.2025)	IME-44900-K11 (Apr.24.2025)	OME-44900-L11 (Apr.24.2025)
12	FAR-30x5, RADAR	K24-17-1141 rev.4 (May.30.2025)	TIE-36940-A12 (May.27.2025)	OME-36160-U31 (Apr.23.2025)
13	FAR-2xx8, RADAR	K03-17-3456 rev.4 (Apr.11.2025)	IME-36520-X12 (Apr.09.2025)	OME-36520-Q11 (Apr.09.2025)
14	FAR-15x8, RADAR	K03-17-3510 rev.1 (Apr.11.2025)	IME-36380-J22 (Apr.08.2025)	OME-36380-K11 (Apr.08.2025)
15	FMD-3005, ECDIS	K24-17-1141 rev.4 (May.30.2025)	TIE-45220-A12 (May.27.2025)	OME-44730-V21 (Apr.23.2025)
16	FMD-3100, ECDIS	K24-17-1141 rev.4 (May.30.2025)	TIE-44841-A12 (May.27.2025)	OME-44841-G12 (May.27.2025)
17	BR-500, BNWAS	K24-17-1161 rev.3 (May.15.2025)	OME-44610-K11 (May.13.2025)	OME-44610-K11 (May.13.2025)
18	MC-3000S, Sensor adapter	K24-17-1143 rev.3 (May. 15.2025)	TIE-45220-A12 (May.27.2025)	OME-44730-V21 (Apr.23.2025)
19	GP-170, GNSS	K20-17-1777 rev.5 (May.12.2025)	IME-44820-L22 (Mar.28.2025)	OME-44820-Z11 (May.13.2025)
20	GS-100, Satellite speed log	K20-17-1778 rev.3 (May.12.2005)	OME-72790-P21 (May.12.2025)	OME-72790-P21 (May.12.2025)
21	VR-7000/VR-7000S, VDR/S-VDR	K24-17-1140 rev.6 (Apr.25.2025)	IME-44950-A12 (May.13.2025)	OME-44850-T21 (Apr.24.2025)

No.	Model, type	F021, F252	F141	F142, F253
22	PS-100, Voyage planning station	K24-17-1139 rev.2 (May.22.2025)	TIE-45190-Z11 (May.2025)	OME-45190-A11 (May 2025)
23	FE-800, Echo sounder	K12-17-072 rev.4 (Apr.25.2025)	IME-23840-N11 (Apr.21.2025)	OME-23840-K11 (Apr.21.2025)
24	DS-60, Doppler sonar	K66-17-205 rev.4 (Apr.25.2025)	IME-72640-M11 (Apr.24.2025)	OME-72640-J12 (Apr.24.2025)
25	DS-85, Doppler speed log	K65-17-111 rev.4 (Apr.25.2025)	IME-72880-E11 (Apr.24.2025)	OME-72880-F11 (Apr.24.2025)
26	IF-2550, Interface unit	K78-17-22 rev.0 (May.16.2025)	N/A	N/A
27	BC-6201, Battery charger	K86-17-290 rev.5 (Apr.25.2025)	C82-02202-C11 (Apr.09.2025)	C82-02202-C11 (Apr.09.2025)
28	PR-851, AC-DC power supply	K86-17-289 rev.6 (Apr.25.2025)	C82-02201-B11 (Apr.09.2025)	C82-02201-B11 (Apr.09.2025)

Common documents:

- F030/F071: Logical topology diagram and inventory list, PPMD-IS&TA-2025-003 (Apr.09.2025)
- F259: Secure development lifecycle, DEV-25-004, rev.0 and DEV-024-011, rev.0 (May.30.2025)
- I320: Management of change process: 07B-Q-032/6-2103
- F259: Software development plan (FHL), Q-52, rev.2 (Mar.12.2025)
- I320: Management of change process (FHL): IS Pr.02 rev.2.2

At renewal of this TA certificate a complete list of modifications (i.e., an accumulated change log) shall be submitted.

Tests carried out

Tested on April 1-10, 2025, in accordance with each product's test procedure, see 'Type approved documentation' above. HermAce was tested on November 4-11, 2024 in accordance with DNV-type approval testing report. (DNV no. 87).

Marking of product

Components are marked with product name and type as listed in 'Product description' above.
The products' software version(s) can be seen via each product's management interface.

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.
The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate
- Review documented evidence of adherence to Secure Development Lifecycle processes

Periodical assessment is to be performed at renewal of this certificate.

Manufactured by

Product 1 - HermAce: **FURUNO HELLAS S.A.**, 10 Thetidos Str, GR 16675 Glyfada, Greece
Other products: **FURUNO ELECTRIC CO.,LTD**, 9-52 Ashihara-cho, Nishinomiya-shi, Hyogo. 662-8580, Japan

END OF CERTIFICATE