



Certificate no.:
TAA00003FM

TYPE APPROVAL CERTIFICATE

This is to certify:

that the **Control and Monitoring System**

with type designation(s)

HC800 Integrated Automation System

issued to

Høglund AS

Barkåker, Norway

is found to comply with

DNV rules for classification – Ships Pt.6 Ch.5 Sec.21 Cyber security

Application:

This type approval covers security capabilities in accordance with DNV security profile 1 and IACS UR E27, subject to conditions stated in this certificate.

Issued at **Høvik** on **2025-05-20**

This Certificate is valid until **2027-05-19**.

DNV local unit: **East & South Norway CMC**

for **DNV**

Approval Engineer: **Knut Omberg**

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.



Form code: TA 251

Revision: 2023-09

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Page 1 of 3

Product description

The HC800 integrated automation system is designed for control, monitoring, alarm and safety functions on maritime vessels. The system's hardware and software components are specified in Asset inventory 20000-HAS-C-LE-0011, including the following devices:

Description	Type	Manufacturer	TA certificate
cSafe firewall	FL mGuard 4302	Phoenix Contact	TAA0000382
CN firewall	FL mGuard 4302	Phoenix Contact	TAA0000382
Process station	AC800M PM8xx	ABB	TAA00000C5
Operator station	EliteDesk 800 G9 SFF	Hewlett Packard	TAA000039D
Network switch	IE-SE-BL0x-xTX	Weidemüller	TAA00000WN
E0 panel bridge	X2 Marine 7-B2	Beijer Electronics	TAA00000N8
E0 panel cabin	X2 Pro 4-B2	Beijer Electronics	TAA00000N8
Modbus TCP secure router	EDR-8010	Moxa	TAA00003B9/ TAA00003JH

This TA certificate covers HC800 version 1.0. See 'Type approval documentation' below for conditions related to modifications of the type approved product.

Approval conditions

Each type approved system delivered to DNV classed vessels shall be delivered with a vessel-specific product certificate (PC). The product certificate shall be issued based on assessment of design documents and certification survey with testing as specified in DNV-RU-SHIP Pt.4 Ch.9. For newbuilding projects, one set of design documents shall be submitted, covering all identical deliveries to sister vessels with the same DNV project ID. Certification survey with testing is required for each delivery.

When the type approved system is delivered to a vessel with class notation Cyber secure(Essential), the following additional verification applies as per DNV-RU-SHIP Pt.6 Ch.5 Sec.21:

1. 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 20000-HAS-C-XI-0001.
2. It shall be demonstrated that each delivery is correctly represented by a vessel-specific asset inventory (F071) and that this inventory is consistent with type approved document 20000-HAS-C-LE-0011.
3. It shall be demonstrated by a declaration or test report (Z261) that each delivery has been configured and hardened as per the type approved document 20000-HAS-C-KA-0020. Certification testing of cyber security capabilities is not required if the delivery is fully covered by this TA certificate.

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

Application/Limitation

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

- Data export from HC800 to Høglund cloud server via cSafe firewall
- File transfer from HC800 to untrusted network on board via cSafe firewall
- Data transfer from HC800 to MQTT broker in untrusted network on board via cSafe firewall
- Bidirectional data exchange with OPC UA client in untrusted network on board via cSafe firewall
- Remote access for Høglund service personnel via cSafe firewall
- Bidirectional data exchange with devices in the same security zone using Modbus RTU (CI853) or Modbus TCP (CI867A)
- Bidirectional data exchange with devices in other security zone using Modbus RTU or using Modbus TCP through the Modbus TCP secure router/firewall

The above interfaces, data flows and firewalls shall be indicated in document F030 for each delivery.

All network equipment and controllers in the HC800 shall be installed in locked cabinets, and the cabinets shall be located in areas on board to which physical access can be controlled

Type Approval documentation

HC800 version 1.0 is represented by the following design documents:

- 20000-HAS-C-XI-0001 System Topologi and Block Diagram, Doc. Rev. 03
- 20000-HAS-C-LE-0011 HC800 Asset Inventory, Doc. Rev. 01
- 20000-HAS-A-SA-0001 Høglund Cyber security document, Doc. Rev. 04
- 20000-HAS-C-KA-0022 HC800 Security capabilities test procedure, Doc. Rev. 01
- 20000-HAS-C-KA-0020 HC800 Configuration and hardening of security capabilities, Doc. Rev. 02
- 20000-HAS-C-KA-0021 HC800 Cyber security information to asset owner, Doc. Rev. 01

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

Documentation of major changes to the type approved system 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 are covered by this type approval.

Minor modifications to the type approved system is identified by updating the last number in the version identifier. Major modifications are identified by updating the first number in the version identifier. All modifications to the type approved system shall be carried out in accordance with document:

- 20000-HMS-C-KA-0018 Software Modification procedure, Doc. Rev.04

Tests carried out

Test of security capabilities April 24. – 25. 2025 in accordance with test procedure 20000-HAS-C-KA-0022 Doc. Rev. 00.

Marking of product

Hardware devices Components are marked with product name and product number as per table in Product description. Software versions can be displayed via the relevant management interfaces.

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.

END OF CERTIFICATE