Certificate no.:
TAA00003FV

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Governor Control System

with type designation(s)
EMS

issued to
Enmar Engines AB
Göteborg, **Sweden**

is found to comply with
DNV rules for classification – Ships

Application:

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Temperature	**B**
Humidity	**B**
Vibration	**B**
EMC	**A**
Enclosure	**B**

Issued at **Høvik** on **2024-09-18**
This Certificate is valid until **2026-09-03**.
DNV local unit: **Denmark CMC**

for **DNV**

Approval Engineer: **Jens Dietrich**

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

EMS governor control system for methanol fuelled Enmar Engines DI16MD97 (covered by TAM00001AE) consisting of:

- I7RS/1 NIRA Engine Control Unit (ECU)
- Wiring harness
- SW for ECU consisting of Function file version I7-RS-H3_03_r10_y01
- Application specific config files, alternatively:
  SND03105, SND03106, SND03107, SND03115, SND03101, SND03102, SND03103, SND03104.

Approval conditions

The following documentation of the actual application is to be submitted by the engine system integrator for approval in each case:

- Reference to this Type Approval Certificate
- Version of function file and config file
- Functional description
- System block diagram
- Power supply arrangement (may be part of the System block diagram)
- List of control and monitored points
- Circuit diagrams
- Test program for certification (for the assembled engine control-, monitoring and safety system, including item 5 below)

The Type Approval covers hardware and software listed under Product description.

Product certification

Each delivery of the application system where the EMS is part of is to be certified according to Pt.4 Ch.9 Sec.1. The certification test is to be performed at the integrating manufacturer of the respective overall engine control system before the system is shipped to the yard. After the certification the clause for application software control will be put into force.

Software Control

All changes in software are to be recorded as long as the system is in use on board. Documentation of major changes is to be forwarded to DNV for evaluation and approval before implemented on board. Certification of modified functionality may be required for the particular vessel.

Application/Limitation

1. The EMS is not suitable for single engine propulsion plants.
2. This certificates only covers the versions of the function and configuration files listed under product description.
3. The used sensors and actuators are not covered by this certificate.
4. The second barrier of the return pipes for methanol built on the engine are not in compliance with the requirements given in the IMO Interim Guideline Circ.1621, paragraph 5.6.2, 9.4 and 12. However, the applied measures, documented in the existing safety concept and demonstrated by testing, confirms that the design is suitable for the intended use. **The project-specific application requires the approval by the flag state.**
5. The product certification tests to include tests described in Enmar Engines doc. SND08008, Rev.11 Chapter 2 and 3.
6. The design concept requires a ventilation hood above the engine, which needs to be in line with the requirements for ventilation and gas detection (alarm and safety function for fuel supply shut-down) and shall be checked for each project according to Pt.6 Ch.2 Sec.6, 7.3.3 and 7.3.5 and table 8, 9 and 10.
7. Liquid leakage detection (alarm and safety function for fuel supply shut-down) to be provided as required by Pt.6 Ch.2 Sec.6, 7.3.4 and table 10.

Type Approval documentation

Tests carried out

Applicable tests according to DNV CG-0339, 2021.
Functional performance test on engine Enmar Engines DI16MD97.

Marking of product

ECU: Nira Control AB, Prod art: i7RS/1, serial number, Made in Sweden

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

A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE