

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Electronic fuel injection system

with type designation(s)
MVC01-24

Issued to

Heinzmann GmbH & Co. KG
Schönau/Schwarzwald, Germany

is found to comply with

DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

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

Temperature	D
Humidity	B
Vibration	B
EMC	A
Enclosure	B

Issued at **Hamburg** on **2018-01-23**

This Certificate is valid until **2020-01-22**.

DNV GL local station: **Augsburg**

Approval Engineer: **Jens Dietrich**

for **DNV GL**

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Joannis Papanuskas
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.



Product description

Digital Injection Valve Control for multiple engine installations or main propulsion application for gas and diesel engines

Type: MVC 01-24

Technical Data:

- Supply voltage: 24VDC
- 6 x Universal input (VTSI): 0...5V, PTC, NTC or binary configurable
- 24 x Universal input (VTDI): 0...5V, 0...36V, PTC, NTC, thermocouple J,K or binary configurable
- 24 x Injector output, max 33A, flexible voltage configuration 24V / 48...110VDC, current profiles configurable individually
- Communication interface: 3 x CAN, RS232, RS485,
- LAN interface (for service maintenance only)
- SW-Version: 00.00.00

REMARK: Single plug E (middle of the control unit) must be always connected with the associated connector.

Application/Limitation

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

When the type approved software is revised (affecting all future deliveries) DNV GL is to be informed by forwarding updated software version documentation. If the changes are judged to affect functionality for which rule requirements apply a new functional type test may be required and the certificate may have to be renewed to identify the new software version.

Product certificate.

Each delivery of the application system is to be certified according to Pt.4 Ch.9 Sec.1. The certification test is to be performed at the manufacturer of the application system, preferably at the engine maker integrating control-, monitoring and safety system, before the system is shipped to the yard. After the certification the clause for application software control will be put into force.

Integration testing with respective engine is required according to Pt.4 Ch.3 Sec.1 [1.3.6] in order to verify engine response in case of control system failures.

Clause for application software control

All changes in software are to be recorded as long as the system is in use on board. The records of all changes are to be forwarded to DNV GL for evaluation and approval. Major changes in the software are to be approved before being installed in the computer. A Certification of Application Functions may be required for the particular vessel.

Tests carried out

Applicable tests according to DNV GL CG-0339, edition November 2016.
Functional Performance Test.

Marking of product

Maker, type designation, serial number.

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)

Job Id: **262.1-025042-1**
Certificate No: **TAA00001KX**

- 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

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

END OF CERTIFICATE