DNV·GL

Certificate No:
TAA00002RR

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Electrical Control System

with type designation(s)
Detonation Detector DET-1600, Ignition Control Unit CD200D

Issued to
Altronic, LLC
Girard, OH, USA

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.

Type	Temperature	Humidity	Vibration	EMC	Enclosure
Detonation Detector DET-1600	B	B	B	A	*
Ignition Control Unit CD200D	B	B	B	A	*

***) Required protection according to relevant rules shall be provided upon installation on board**

Issued at **Hamburg** on **2020-04-21**
This Certificate is valid until **2025-04-20**.
DNV GL local station: **Houston, Approval CMC**

Approval Engineer: **Jens Dietrich**

for **DNV GL**

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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") 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.

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Product description

DET-1600 Detonation Detection Sensing Monitor Unit for gas-fueled engines for detection of misfiring and knocking conditions (SW V1.4)
-16 sensor inputs
-Sensor type Bosch 0261 231 148 or equivalent
-Display / Keypad: Backlit, 2x16 character / 8 key membrane
-Power Supply 10-32VDC
-2 programmable solid-state outputs, rated 200mA@200VDC
-RS485 Modbus RTU interface
-4-20mA current loop output

CD200D Digital Ignition Control Unit (SW V3.6)
-16 ignition coil outputs
-Power supply 12-30VDC
-Output voltage 160VDC nom.
-Inputs for magnetic pick-up or hall effect pickup
-RS485 Modbus RTU interface

Approval conditions

The Type Approval covers hardware and software listed under Product description. When the hardware is used in applications to be classed by DNV GL, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV GL rules for classification of ships Pt.4 Ch.9 Control and monitoring systems.

Suitability to be checked for the individual application engine characteristics.

Product certificate
If specified in the Rules, ref. Pt.4 Ch.9 Sec.1, the control and monitoring system in which the above listed hardware is used shall be delivered with a product certificate. For each such delivery the certification test is to be performed at the manufacturer of the application system before the system is shipped to the yard. The test shall be done according to an approved test program. After certification the clause for 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 GL for evaluation and approval before implemented on board. Certification of modified functionality may be required for the particular vessel.

Tests carried out

Applicable tests according to DNV GL CG-0339, November 2016.

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)
- 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 after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE