



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **A-11987**

This is to certify that the
Engine Safety, Control and Alarm System

with type designation(s)
AHD 514 OP, AHD 514 OP B, AHD 514 A, AHD 514 S

Manufactured by
Böning Automationstechnologie GmbH & Co.KG
GANDERKESEE, Germany

is found to comply with
Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards

Application
Environmental class:

Type	Temperature	Humidity	Vibration	EMC	Enclosure
AHD 514 OP	D	B	B	B	B (IP44 - front panel only)
AHD 514 OP B	D	B	B	B	B (IP44 - front panel only)
AHD 514 A	D	B	B	B	A (IP20)
AHD 514 S	D	B	B	B	A (IP20)

Høvik, 2011-11-11
for **Det Norske Veritas AS**

This Certificate is valid until
2013-12-31

Odd Magne Nesvåg
Head of Section

DNV local office:
Essen

Krzysztof Jankowski
Surveyor

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.
If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.

Certificate No.: A-11987
File No.: 852.60
Job Id.: 262.1-009902-1

Product description

The AHD514 is intended to use as engine safety, control and monitoring system for emergency, auxiliary and propulsion diesel marine engines.

Designed for power supply 24V DC (-25%/+30%)

System consists components described in table below:

List of hardware		
Name	Unit description	Manufacturer part number
AHD 514 A	Alarm and monitoring system	12972
AHD 514 S	Safety system	12973
AHD 514 OP	Display and operation unit	12974
AHD 514 OP B	Bridge Display and operation unit	14503
AHD R101*	Relay station	12456

List of software	
Hardware name	Relevant software version
AHD 514A	Ver. 3.11
AHD 514 S	Ver. 1.14
AHD 514 OP	Ver. 1.18
AHD R101	Ver. 1.53

* Covered by separate DNV Type Approval Certificate

Application/Limitation

The Type Approval covers hardware and firmware (basic software) listed under Product description.

Please note that AHD514 A COM module is **not** covered by this Type Approval Certificate and shall be approved on case-by-case basis like is required by DNV Rules Pt.4 Ch.9.

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/system application maker integrating control, monitoring and safety system, before the system is shipped to the yard.

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

- Reference to this Type Approval Certificate
- Reference to valid Type Approval Certificate for AHD R101 (if is in use for particular application)
- System block diagram
- Power supply arrangement (may be part of the system block diagram)
- List of controlled and monitored points showing alarms and safety functions (including type, range and threshold)
- Test program for certification
- Layouts of Display and Operation Units
- Information about Engine type (name, power rating, number of cylinders, number of turbochargers)

The current software numbers and versions are listed in document "SW change log AHD 514", dated 2011-09-12.

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 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.

Certificate No.: A-11987
File No.: 852.60
Job Id.: 262.1-009902-1

Tests carried out

Applicable tests according to Standard for Certification No. 2.4, April 2006.

For the bridge mounted components the 'Compass safe distance' was measured according to section 11.2 of IEC 60945 4th edition (2002).

Marking of product

Manufacturer: Bøning Automationstechnologie GmbH & Co.KG

Model name: As listed under Product description

Serial number: Unique for each delivered item

Certificate Retention Survey

The scope of the retention/renewal survey 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 survey 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

Retention survey is to be performed at least every second year and at renewal of this certificate.

END OF CERTIFICATE