Certificate No: LR2599957TA
Issue Date: 13/06/2025
Expiry Date: 17/05/2030

Type Approval Certificate

This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.

Manufacturer	**Boening Automationstechnologie GmbH & Co. KG**
Address	Am Steenoever 4, Ganderkesee, 27777, Germany
Type	Alarm And Monitoring Systems
Description	Alarm-, start-/stop- and safety system for diesel engines
Trade Name	AHD 504 A, AHD 504 NG, AHD 504 OP, AHD 514 A, AHD 514 S, AHD 514 OP
Application	Marine, offshore and industrial applications for use in environmental categories ENV1, ENV2, ENV3 and ENV4 as defined in Lloyd's Register's Type Approval System, Test Specification Number 1 – 2002.
Specified Standard	Manufacturer's specification IACS unified requirements E10 (Rev.9 Aug 2023)
Ratings	Power supply: 24VDC AHD 504 A Alarm System and Start-/Stop Unit 9 x analog (selection 4–20mA / PT1000 / Bin via Jumper) 2 x analog (selection NiCrNi / 0-32V via Jumper) 3 x binary (Contact/Bedia with wire break monitoring) 6 x binary (control inputs) 1 x engine speed input (Pickup, galvanically isolated) 1 x Transistor 8A, wire break monitored, short-circuit proof (for solenoid or

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operating solenoid)
4 x relay 3A (32VDC, potential free)
1 x Transistor (32V/25mA)
2 x LED indicator (Power, Fault)
Interfaces: 2 CAN bus, RS232 diagnostic, serial for I/O extensions
Functions: Alarming, start-/stop Control, logging
Firmware-Version: 3.12.xxx

AHD 504 NG Grid and Generator Capture Unit
3 x analog (400V AC, 50Hz / 60Hz) voltage and frequency measuring
Interfaces: 1 CAN Bus
Functions: measuring and monitoring of voltage and frequency of the power grid
Firmware-Version: 2.4.1.xxx

AHD 504 OP / AHD 514 OP Operator Panels
AHD 504 OP: 4.3“ (16:9) colour display with automatic dimmed illumination
AHD 514 OP: 5.7" colour display with automatic dimmed illumination
Interfaces: CAN Bus for communication with AHD 504 A, AHD 504 NG, AHD 514 A and AHD 514 S
Functions: Indication of most important analog engine parameters on each page, engine status indication, alarm pages for acknowledged and unacknowledged alarms, membrane keys for engine start/stop, buzzer stop, acknowledgement, reset and page selection, buzzer
AHD 504 OP: Firmware-Version: 1.1.xxx
AHD 514 OP: Firmware-Version: 1.30.xxx / 1.31.xxx

AHD 514 A Alarm System and Start-/Stop Unit
6 analog inputs 4-20mA
6 analog inputs PT100/PT1000
1 RPM input, galvanic isolated
2 add. binary inputs6 binary inputs for control
2 voltage input for fuse trip and charging alternator
2 voltage input for speed-up/down
8 binary relay outputs 6A
2 binary transistor outputs (with wire break monitoring)

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1 voltage output 1-5V/1-10V
2 status-LEDs
Interfaces: 2 CAN bus, RS232 diagnostic, serial for I/O extensions (e.g. AHD R101)
Functions: Alarming, start-/stop Control, logging.
Firmware-Version: 3.12.XXX / 4.2.xxx

AHD 514 S Safety System
2 emergency stop inputs (direct acting) with wire break monitoring
5 binary inputs for automatic shut down with wire break monitoring
5 binary inputs for control (reset, override...)1 RPM input, galvanic isolated
4 binary relay outputs, 6A
2 transistor outputs 8A, with wire break monitoring
1 transistor output 8A, short-circuit-proof with wire break monitoring
1 current output 4..20mA2 status-LEDs
8 alarm-LED for override, emergency stop, overspeed and 5 other safety stop criteria
Interfaces: 1 CAN Bus for communication with AHD 514-A and AHD 514-OP, serial output
Functions: Manual emergency stops and automatic shut-down.
Firmware-Version: 1.19.xxx

Additional Tests Low temperature test (-25°C/16h)

Other Conditions The complete installation is subject to a separate plan appraisal according to applicable Rules and Regulations when installed on LR classed vessels.

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This certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register EMEA of any modification or changes to the equipment in order to obtain a valid Certificate.

Previous Version: LR2003809TA-02

The Design Appraisal Document TSO-25-034916/TW and its supplementary Type Approval Terms and Conditions form part of this Certificate.

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