



CERTIFICATE NUMBER
EFFECTIVE DATE
EXPIRY DATE
ABS TECHNICAL OFFICE

25-0347570-PDA
25-Aug-2025
24-Aug-2030
London Engineering Department

CERTIFICATE OF Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

HAES TECHNOLOGIES LIMITED

located at

**UNIT 3 HORTON INDUSTRIAL PARK, , WEST DRAYTON,
MIDDLESEX, United Kingdom, UB7 8JD**

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product: Fire Alarm Panel
Model: ESEN-2MAR; ESEN-4MAR; ESEN-8MAR; ESEN-12MAR & ESEN-R-12MAR
Endorsements:
Tier: 2 - PDA Issued

This Product Design Assessment (PDA) Certificate remains valid until 24/Aug/2030 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau Of Shipping

Vasileios Vitanopoulos, Engineer/Consultant

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

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Tier: 2 - PDA Issued

Product: Fire Alarm Panel
Model: ESEN-2MAR; ESEN-4MAR; ESEN-8MAR; ESEN-12MAR & ESEN-R-12MAR
Endorsements:

Intended Service:

For use on ABS classed Vessels and Offshore Facilities in accordance with the listed ABS Rules and International Standards.

Description:

Fire alarm panel for 2, 4, 8 or 12 zones + repeater

Main features:

- Activate controls via keyswitch or code entry.
- Soft tactile buttons for controls & programming.
- Compatible with conventional detectors.
- Integral detector removal monitoring.
- Earth fault monitoring.
- 1.25 Amp switch mode power supply Nom 27V DC for ESEN-2MAR; ESEN-4MAR.
- 3 Amp switch mode power supply for ESEN-8MAR; ESEN-12MAR.
- 2 monitored sounder outputs for ESEN-2MAR; ESEN-4MAR.
- 4 monitored sounder outputs for ESEN-8MAR; ESEN-12MAR.
- 2 Aux C/O relays (1 x Fire) (1 x Fault) voltage free
- Class change I/P.
- Alert (pulsing) I/P.
- Fire & fault switched -ve outputs.
- Program delays to outputs.
- False alarm mode (Only ESEN-2MAR; ESEN-4MAR).
- False alarm modes A, B & C (Only ESEN-8MAR; ESEN-12MAR).
- Muster alarm.
- Test mode, with or without sounders.
- Disable zones, sounder O/Ps & Aux O/Ps.
- Alarm load, 800mA shared between all sounder outputs.
- All sounder circuits are fused @ 500mA with resettable fuses.

External indications:

- Zones in fire.
- Zones in fault, disable or in test mode.
- Supply Healthy.
- General Fire.
- General Fault.
- General Disablement.
- Test Mode.
- Sounder Status.
- Aux Output Status.
- Power Supply Fault.
- Delay status (Only ESEN-8MAR; ESEN-12MAR).
- System Fault.
- Access Level.

External controls:

- Resound.
- Silence.
- Reset.

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-Disable Mode.
-Test Mode.
-Mute Buzzer.
-Test Lamps.
-Enter.

Rating:

Max battery size = 2 x 3.2Ah, 12V for ESEN-2MAR & ESEN-4MAR.
Max battery size = 2 x 7Ah, 12V for ESEN-8MAR & ESEN-12MAR.

Service Restriction:

1. Unit Certification is not required for this product. Each configuration and individual application is to be specifically approved.
2. If the manufacturer or purchaser requests an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.

Comments:

1. The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.
2. When incorporated in a system of Category I, II or III in accordance with 4-9-3/7.1 and 4-9-3/Table 1 of the ABS Marine Vessels Rules, the documentation detailed in 4-9-3/Table 2 of the ABS Marine Vessels Rules is to be submitted to ABS or is to be available for review by ABS as applicable
3. Unless specifically directed by the administration, this type approval is not to be construed as a substitution for a flag Administration's approval.
4. Tests and approval are for hardware only. Each configuration and external connection is to be specifically approved.

Notes/Drawing/Documentation:

Drawing No. 20-2053061-PDA, Declaration of Conformity, Pages: 1

Previously Submitted Drawing:

Drawing No.: DS0045, ESEN-MAR-2-4 data sheet, Revision: 3, Pages: 2
Drawing No.: DS0046, ESEN-MAR-8-12 data sheet, Revision: 2, Pages: 2
Drawing No.: DS0050, ESEN-MAR Repeater data sheet, Revision: 1, Pages: 2
Test Report No.: TE 297382, Test report, Laboratory: BRE Global, Dated: 2015-10, Revision: 2, Pages: 76
Test Report No.: TE275787, test report_2, Laboratory: BRE Global, Dated: 2013-04, Revision: -, Pages: 91
Test Report No.: TE287634, Alarm Sense CIE Test Report, Laboratory: BRE Global, Dated: 2014-05, Revision: -, Pages: 57
Test Report No.: P114459, Haes Esento-MAR Marine CIE (EN54-2 & EN54-4 & IEC60092 & IEC60533) -Final-Report- 19-12-20, Laboratory: BRE Global, Dated: 2019-12, Revision: -, Pages: 44

Terms of Validity:

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STANDARDS

ABS Rules:

ABS Rules: Marine Vessels Rules (2025): 1-1-4/7.7, 1-1-A3, 1-1-A4 which covers the following:
4-7-3/11.3.2 a), 4-7-3/11.3.2 b), 4-7-3/11.5.1 a), 4-7-5/11.5.1 e), 4-9-9/Table 1;

Offshore Rules (2025) 1-1-4/9.7, 1-1-A2, 1-1-A3, which covers the following:
4-1-1/7.9, 4-3-1/11, 6-1-8/9

National:

EN 54-2 (1997) + AC:1999 + A1 (2006)
EN 54-4 (1997) + A1 (2002) + A2 (2006)
EN 50130-4:2011 + A1:2014

International:

SOLAS Chapter II-2 Regulation 3/22, Consolidated Edition 2014 and IMO FSS Code 2007 (supplement 2024)
Chapter 9/ 2.1.1; 2.1.2; 2.1.3; 2.1.5; 2.1.6; 2.3.2; 2.5
IEC 60533 (2015);
IEC 60092-504 (2016);
IACS E10 Rev 9:2024

Government:

NA

EUMED:

NA

OTHERS:

NA