



CERTIFICATE NUMBER	22-2274355-PDA-DUP
EFFECTIVE DATE	10-Aug-2022
EXPIRY DATE	09-Aug-2027
ABS TECHNICAL OFFICE	Rio de Janeiro Engineering - Machinery

CERTIFICATE OF Product Design Assessment

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

KONGSBERG MARITIME CHINA LTD.

located at

**1F&4F, 135 NORTH FUTE ROAD, PILOT FREE TRADE ZONE
SHANGHAI, China, 200131**

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: Alarm, Monitoring and Control System
Model: K-Chief 700, K-Chief and K-Safe
Endorsements:
Tier: 5 - Unit Certification Required

This Product Design Assessment (PDA) Certificate remains valid until 09/Aug/2027 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

Ivson Soares, Managing Principal Engineer

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)

KONGSBERG MARITIME CHINA LTD.

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Tier: 5 - Unit Certification Required

Product: Alarm, Monitoring and Control System

Model: K-Chief 700, K-Chief and K-Safe

Endorsements:

Intended Service:

For use on ABS classed vessels and offshore facilities in accordance with the listed ABS Rules and International Standards.

Description:

K-Chief 700, K-Chief and K-Safe is an integrated system which can carry out the following functions:

K-Chief 700 and K-Chief:

- Alarm and Monitoring
- Power Management
- Control of Machinery, Cargo, Ballast, Vessel Mode, Heating, Venting and Air Conditioning

K-Safe:

- Alarm Management
- Emergency Shutdown
- Process Shutdown
- Fire and Gas Detection and Protection

AIM Basis Software Release 8.3, 8.5, 8.6, 8.7, 8.8 and 8.10 for the above functions used in K-Chief 700, K-Chief and K-Safe.

Notes:

The K-Chief Hardware components which are common with the C600 platform are listed in ABS certificate 22-2274357-PDA;

Hardware components which are specific for the K-Chief 700, K-Chief and K-Safe systems are listed in this certificate.

Please refer to attachment "Hardware List Table" for hardware list.

Rating:

Power supply: 115 / 230 VAC (+10%, -15%);

Cabinet: IP 22; RCU 602 and RMC-ST: IP 20

Operating temperature: -15 Deg. C to 55 Deg. C

Service Restriction:

1) Unit Certification is required for the products, specified on ABS Rules for Building and Classing Marine Vessel Rules (2022) 4-1-1/Table 3 item 35 (computer-based systems Category III). Unit Certification may be carried out during Factory Acceptance Test of the overall system.

2) Evidence and documentation as required by 4-9-3/Table 2 of the ABS Rules for Building and Classing Marine Vessel Rules (2022), is to be submitted for review when requested.

3) Fault simulation and factory acceptance testing, as these are detailed in 4-9-3/Table 2, Items 3.6 and 3.7 of the ABS Rules for Building and Classing Marine Vessel Rules (2022) are to be witnessed by an ABS Surveyor.

4) On-board complete system and integration testing, as these are detailed in 4-9-3/Table 2, Items 4.1 and 4.2 of the ABS Rules for Building and Classing Marine Vessel Rules (2022) are to be witnessed by an ABS Surveyor.

5) If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.

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Tier: 5 - Unit Certification Required

Comments:

- 1) The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.
- 2) K-Chief 700, K-Chief and K-Safe systems are listed as System Category III in accordance with 4-9-3/Table 1 of the ABS Rules for Building and Classing Marine Vessel Rules (2022).
- 3) Tests and approval are for the basic K-Chief 700/K-Chief components and K Safe Components. Each configuration and external connection are to be specifically approved.

Notes/Drawing/Documentation:

Drawing No. 110-0001444, Revision History for AIM 8.10, Revision: a

Drawing No. 323520, outline, Revision: c

Drawing No. 325472, Product Description - RMC-ST (Media Converter), Revision: e

Drawing No. 424964, RMP422(S)i EMC comparison, Revision: A

Drawing No. 487567, GA Drawing, Revision: A

Drawing No. 493992, K-Chief Product Description, Revision: A

Drawing No. NEMKO E13144.02, Test report RMP422S, dated 11-Mar-2015

Drawing No. Nemko E21088.03, Test Report - 1 to 6 GHz / Tests Evaluation, dated 28-Oct-2021

Drawing No. Nemko E22067.01, Test Report, Revision: a, dated 20-Apr-2022

Support documentation from previous review:

Refer to attachment "Drawing List - Previous Review".

Terms of Validity:

This Product Design Assessment (PDA) Certificate remains valid until 09/Aug/2027 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.

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STANDARDS

ABS Rules:

Rules for Conditions of Classification (2022) – 1-1-4/7.7, 1-1-A3, 1-1-A4, which covers the following:

Rules for Building and Classing Marine Vessel Rules: 4-9-1/7.3.3, 4-9-1/7.3.5, 4-9-2/3.1.1, 4-9-2/3.1.2, 4-9-2/3.1.3, 4-9-2/3.1.4, 4-9-2/3.1.5, 4-9-2/3.5, 4-9-2/3.7, 4-9-2/7.1, 4-9-2/7.5, 4-9-2/7.7, 4-9-2/7.9, 4-9-2/7.11, 4-9-2/7.13, 4-9-3/5, 4-9-3/7, 4-9-3/11, 4-9-3/13.1, 4-9-4, 4-9-9/1, 4-9-9/3, 4-9-9/7, 4-9-9/13, 4-9-9/Table 1 and Table 2.

Rules for Conditions of Classification (2022) – Offshore Units and Structures 1-1-4/9.7, 1-1-A2, 1-1-A3, which covers the following:

Rules for Building and Classing Mobile Offshore Units: 6-1-1/9, 6-1-1/13.

National:

NA

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Tier: 5 - Unit Certification Required

International:

IEC 60529:2013

IEC 61508:2010

IEC 62061:2021

Government:

NA

EUMED:

NA

OTHERS:

IACS UR E10 Rev.8:2022

IACS UR E22 Rev.2:2016 (CAT III)