



CERTIFICATE NUMBER 20-1996108-PDA

EFFECTIVE DATE 6 July 2020

EXPIRATION DATE 5 July 2025

ABS TECHNICAL OFFICE Singapore Engineering Services

CERTIFICATE OF Product Design Assessment

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

KONGSBERG MARITIME AS

located at

POSTBOKS 483, N-3601 KONGSBERG, NORWAY

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 and K-Safe

This Product Design Assessment (PDA) Certificate remains valid until 05 July 2025 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

Manoraaju, 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)

KONGSBERG MARITIME AS

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Tier: 5 - Unit Certification Required

Product: Alarm, Monitoring and Control System

Model: K-Chief 700 and K-Safe

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 automation system is based on a concept of distributed local process control stations, operator consoles comprising computer units, high-resolution colour flat screens, dedicated function keyboards and dual redundant communication network links for connection with local process stations and other control systems. Local process control stations utilise main controllers (RCU500, RCU501, RCU502, RCU510, RCU502i and RCU 602) and additional I/O units (RMP420/422, RDIOR400/420 and other units of 400/420 range).

K-Chief 700 can carry out the following functions: Alarm and monitoring system, Power Management and Control of Machinery, Cargo, Ballast, Auxiliary machinery control.

K-Safe computerized safety system comprising operator stations and controller cabinets with RCU 500/501/502/502i/510 processor units with additional I/O units for direct connections to process shutdown field devices, fire and gas detection units, emergency shutdown push buttons and matrix panel for alarm and indications. Communication with the other controllers and operator stations can be obtained via hubs, switches and network cards. K-Safe can carry out the following functions:

Alarm Management, Power Management, Process Shutdown and Fire and Gas detection and protection system. K Safe 2 and K Safe 3 systems comprise redundant power supplies, computers, RIO units and communication links.

Please refer to attachment 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 both products, K-Chief 700 and K-Safe, specified on ABS Rules for Building and Classing Marine Vessels (2020) 4-1-1/Table 3 item 35 (computer-based systems category II for K-Chief 700 and Category III for K-Safe Safety systems).

2) Evidence and documentation as required by 4-9-3/Table 2 of the ABS Rules for Building and Classing Marine Vessels (2020), 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 Vessels (2020) 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 Vessels (2020) 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.

Comments:

1) The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.

2) K-Chief 700 Alarm and monitoring systems are listed as System Category II in accordance with 4-9-3/Table 1 of the ABS Rules for Building and Classing Marine Vessels (2020).

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3) K-Safe Safety systems are listed as System Category III in accordance with 4-9-3/Table 1 of the ABS Rules for Building and Classing Marine Vessels (2020).

4) Tests and approval are for the basic K-Chief 700 components and K Safe Components. Each configuration and external connection are to be specifically approved.

5) Equipment intended to be installed on ships contracted for construction on or after 1 January 2022 is to comply with IACS UR E10 Rev.7.

Notes/Drawing/Documentation:

Please see attached drawing list

Terms of Validity:

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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.

STANDARDS

ABS Rules:

Rules for Conditions of Classification (2020) – 1-1-4/7.7, 1-1-A3, 1-1-A4, which covers the following:

Rules for Building and Classing Marine Vessels: 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 (2020) – 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 Drilling Units: 6-1-1/9, 6-1-1/13.

National:

NA

International:

IEC 60529:2013

IEC 61508:2010

IEC 62061:2015

Government:

NA

EUMED:

NA

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OTHERS:

IACS UR E10 Rev.6:2014

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