TYPE APPROVAL CERTIFICATE
No. **ELE099326XP/001**

This is to certify that the product below is found to be in compliance with the applicable requirement of the RINA type approval system.

Description	**Monitoring and control system**
Type	**K-Chief / K-Safe**
Applicant	**KONGSBERG MARITIME AS-NORWAY** **P.O BOX 1009,N-3194 HORTEN HORTEN** **NORWAY**
Manufacturer	**KONGSBERG MARITIME AS-NORWAY**
Place of manufacture	**P.O Box 1024,N-3194 Horten Horten** **Norway (1)**
Reference standards	**Rules for the Classification of Ships - Part C - Machinery Systems and Fire Protection; Ch. 3; Sec. 8, Table 1; Pt C; Ch. 3; Sec. 3 (IACS UR E22 "On Board use and Applicaiton of Computer based Systems"); Pt C; Ch. 3; Sec. 5 (IACS UR E27 "Cyber resilience of onboard systems and equipment")**

Issued in **Gdańsk** on **October 14, 2026**. *This Certificate is valid until* **October 14, 2031**

On behalf of

RINA Services S.p.A.
Anna Maria Baranska

This certificate consists of this page and 1 enclosure

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K-Chief / K-Safe

K-Chief system performs the following functions:

- Alarm and Monitoring
- K-Gauge application and GLK SPU
- Power Management System
- Auxiliary generators protection
- Auxiliary machinery control
- Tank management
- Ballast/bunker monitoring and control
- Gas management
- Cargo monitoring and control
- Fully automated climate control
- Watch call system
- Operator fitness alarm system

K-Safe system performs the following functions:

- Monitors and controls installations according to cause and effect charts
- Allows operator to safely monitor the situation and intervene with manual actions before pre-programmed actions will take place
- Supports multiple redundante configurations.
- Offers Safety Integrity Level (SIL) for an instrument safety functions defined in the standard IEC 61508

The K-Safe concept consists of number different safety modules (Safety Management & Control Systems, Emergency Shutdown System, F Shutdown System and Fire & Gas Detection) which has been designed for various applications and types of installations. The modules can supplied either as a stand alone or integrated systems and are based on the same hardware and software platforms.

The **K-Chief and K-Safe system comprises the following modules:**

	Components	Part No.
Operator Control Panels	COP-05 BU-AUT Panel	603529
	COP05 ALC Stand Alone	391890
	Tracker Ball Panel (TBP)	388930
	Panel ALC	603526
	Panel Input Mk3 COP 05	110-0049940
Earth Failure Indicator	EFI-16-2	110-0019139
Media Converter	RMC-ST	321520
Controller	RCU 502i	421768
	RCU 601	477601
	RCU 602	383962
IO Units	RMP420	306712
	RMP420S	319824
	RDIOR420	306713
	RDIO420S	316564
	RMP422i	408442

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The **K-Chief and K-Safe system comprises the following modules:**

	Components	Part No.
IO Units	RMP422Si	408406
	RMP201-8	324400
	RSER200-4	603444
	RHUB200-5	603442
Distributed Processing Units (DPU)	Remote Analog input Module - RAi-16xe	329714
	Remote Digital output Module - RDo-16xe	329699
	Remote Digital input Module - RDi-32xe	333523
	Remote Digital input Module - RDi-32Axe	333824
	Remote Analog output Module - RAo-8xe	333505
	Remote Digital I/O Module - RIO-C2xe	333346
	PSS Module	8100184
Signal Processing Unit (SPU)	GLK-300	
LAN to CAN module	L2C	404654, 406381
Network component	RTL8153B-USB3.0/3.1/3.2 to 4x Gb Ethernet	446030
ALB	Alarm Buzzer	110-0051818
EFI	EFI-16-2 Module	110-0019139
Extension Alarm and Watch Call Units	WCC 600	373860
Software Version	AIM Basis Software 8.3, 8.5, 8.6, 8.7, 8.8, 8.10, 8.12, 8,13	

Additional Third- Party modules

Component type	Name
Network Cmponents	Moxa IKS-6726A-2GTXSFP-HV-T Moxa EDS-408A-467615 Moxa EDS-518E-4GTXSFP Moxa EDS-518E-MM-4GTXSFP Moxa-EDR-8010 Fortinet FS-124F Fortinet FGR-60F
Operator stations	Computer MC360 i3 LAN(Based on Windows 10) Computer MC360 i5 GPU(Based on Windows 10) Computer MC360 i7 LAN(Based on Windows 10) Computer MC380 u5 Basic(Based on Windows 11) Computer MC380 u5 LAN(Based on Windows 11) Computer MC380 u5 BasicExtra(Based on Windows 11) Computer MC380 u7 LAN(Based on Windows 11) Computer MC380 u7 LANExtra(Based on Windows 11) Computer MC380 Ultra u7 (Based on Windows 11)

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Documentation:

110-0066093B K-Chief & K-Safe - System Topology
110-0066099F K-Chief & K-Safe - Description of Security Capabilities
110-0066104J K-Chief & K-Safe - Asset Inventory - K-Chief and K-Safe
110-0001444C K-Chief & K-Safe - AIM 8-13 SW Revision History.
110-0066078A K-Chief & K-Safe - Test Procedure- Cyber Security IACS UR E27.
110-0035193B K-Chief Cyber Security compliance with IACS UR E26&E27
110-0078720D Security Configuration Guideline IACS E27 K-CHief and K-Safe
110-0026741B RCU601 Hardware Module Description
110-0126198B Cyber Security Configuration Checklist
323935E RPM420S Hardware Module Description.
381827B WCC 600 Datasheet.
482250A KM module Declaration of Identity (DoI) with statements for ENV test report.
392044A COP05 ALC SA Assembly drawing.
463242B USB 3.2 to 4x Ethernet 1Gb EX-1330M, Data Sheet
389143B 7" Marine Touch Panel PC Hardware Module Description.
389994B Touch Pad Panel datasheet
389995C Tracker Ball Panel datasheet
390759A Touchpad Panel product description
390760A Trackerball Panel product description
300984E COP-05 Input Panel Hardware Module Description
HW List K-Chief & K-Safe
301028B COP-05 BU-AUT Panel Hardware Module Description
392044A COP05 ALC SA Assembly drawing
300977B COP-05 ALC Panel Hardware Module Description
324876I EFI-16 - Earth Fault Monitor 16 A Hardware Module Description
325472E RMC-ST Hardware Module Description
429804D RCU502i Hardware Module Description
408644C RCU602 Hardware Module Description
311165E RMP420 Hardware Module Description
323935E RMP420S Hardware Module Description
311163D RDIOR420 Hardware Module Description
323936H RDIO420S Hardware Module Description
424828B RMP422i Hardware Module Description
424829C RMP422Si Hardware Module Description
330111C RMP201-8 Hardware Module Description
300993J RSER200-4 Hardware Module Description
300994G RHUB200-5 Hardware Module Description
341333C RAi-16xe Datasheet
341336C RDo-16xe Datasheet
341335C RDi-32xe Datasheet
341334B RAo-8xe Datasheet
341338B C2xe DPU Datasheet
330194A PSS Process Segment Star Coupler (8 CAN) Datasheet
404663A L2C Outline Drawing
493992D K-Chief Product Description
163875I K-Safe Product Descritpion
KM Supplier's Declaration for Lenovo ThinkStation P3 Tiny Gen 2 - KM MC380 (Doc. No. 110 0137382A)
110 0134498A Data Sheet Computer MC380 u5 Basic
110 0134499A Data Sheet Computer MC380 u5 LAN
110 0150717A Data Sheet Computer MC380 u5 Basic Extra
110 0134500A Data Sheet Computer MC380 u7 LAN
110 0134501B Data Sheet Computer MC380 u7 LAN Extra
110 0134503A Data Sheet Computer MC380 Ultra u7
RINA Type Approval: ELE108425XL for Lenovo ThinkStation P3 Tiny Gen 2 - KM MC380

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K-Chief / K-Safe

Test Reports:

DANAK-1910054 - Type approval vibration testing of COP-05 Lever Panel and COP-05 Utility Panel KM-DOC.no:318973 rev.A - dated 6 February 2008
DANAK-1910025 - Supplementary Type approval of Imput Panel - dated 22 January 2008
DANAK-198195 - Type approval testing of KM Common Operator Panels - dated 19 December 2005
DANAK-198195 Rev.1 - Type approval testing of KM Common Operator Panels - dated 15 June 2007
DANAK-1912904 Test for Marine Type Approval of WCC 600 - Dated 15 March 2013
DANAK 1916085 Test for Marine Type Approval of L2C- Dated 15 February 2016
DANAK 197538 Test for Marine Type Approval of PSS, dPSC, C1 and C2 - Dated 06 July 2004
DANAK 194874 Test for Marine Type Approval of DPUs - Dated 21 December 1999
DANAK 1910740 Test for Marine Type Approval of new Xe modules - Dated 18 December 2009
DANAK 1910541 Type approval testing of RCU501, RHUB200-5, RMP420 & RSER200-4 - Dated 11 June 2009
DANAK 1910121 Type approval testing of RDIO401S and RDIO420S - Dated 27 March 2008
DANAK 198696 Type approval testing of RMP420 and RDIOR420 - Dated 15 March 2007
DANAK 1911658 Type approval testing of RMP420 Rev.2 - Dated 08 December 2011
DANAK 1914440 Test for Marine Type Approval of E38-96A29D-E002 trackball - Dated 05 December 2014
DANAK 1910264 Test for Marine Type Approval of EFI - Dated 01 September 2008
DANAK 1910281 Test for Marine Type Approval of EFI-16 - Dated 14 October 2008
Nemko E21088.03 Upgrade all HW to IACS E10 Rev.8:2021 - Dated 2021-10-28.
Nemko- REP019643 Test report Panel Input Mk3 COP 05 - dated 17 January 2024
Nemko - E19179.01 Test report Computer Adapters - dated 25 March 2020
Nemko - REP008558 Remote Controller Unit RCU601 - dated 16 March 2023
Nemko E14127.00 Type approval test of WCC600 - Dated 2014-05-21.
Nemko E18040.01 Flame Retardant IACS E10.2014 C700 Products - Dated 2019-07-04
Nemko E13144.03 Type approval test of RMP422i, RMP422Si - Dated 2017-08-17.
Nemko E15165.01 Type approval test of RCU602 and RMC-ST - Dated 2017-04-28.
SP 3P08182 Type approval test of PCP Pointer Carrier Panel - Dated 02 February 2015

Alternative manufacturers:

Kongsberg Maritime Korea Ltd, 1058-7, Dalsan-ri, Jungkwan-myeon, Gijang-gun, 619-961, Busan, Korea
Kongsberg Maritime China Ltd - Kongsberg Maritime China Waigaoqiao Ltd., 136 North Fute Road , China (Shanghai), Pilot Free Trade Zone, 200131 Shanghai, China
Kongsberg Maritime China Jiangsu Ltd, 1-2F No 711 Changjiang Road, Runzhoud district, Jiangsu Province, P.C. 212002 Zhenjiang, China

Remarks:

The control system is approved without connections to untrusted networks including remote support capabilities, data export capabilities and automatic malware definition updates. These features will require installation of additional system(s) such as Kongsberg Remote Services, Kongsberg Information Management System (K-IMS and Malware Protection System (MPS) on dedicated certificate(s).
The validity of the Type Approval is maintained if any implementations / modifications are reported, including changing in Hardware and Sof moreover tests are to be provided in order to:

- Make sure that such modifications do not affect the functionality of the system,
- Verify that no major modifications are introduced in the system structure (HW/SW)

Traceability of Hardware and Software version/release is to be ensured for each installation/application

This certificate annuls and replaces the previous one n° ELE093324XP/001.

Gdańsk October 14, 2026

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