Type Approval Certificate

KR KOREAN REGISTER

[Safety Control and Monitoring System with Cyber Resilience]

Initial Approval 20 September 2024

Manufacturer Kongsberg Maritime AS, Horten

Bekkajordet 8, NO-3189 Horten, Norway

Product Description Safety Control and Monitoring System

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Type : K-Chief, K-Safe
- Application : Trusted network only
- Manufacturing Place
  A) Kongsberg Maritime AS(HQ) / Kirkegardsveien 45, 3616 Kongsberg, Norway
  B) Kongsberg Maritime AS(Horten) / Bekkajordet 8A, NO-3189 Horten, Norway
  C) Kongsberg Maritime Korea / 9-7 Sandan 3-ro, Jeonggwan-eup, Gijang-gun,
     Busan, 46027, Republic of Korea
  D) Kongsberg Maritime China(Shanghai) / No. 136 North Fute Road,
     China (Shanghai), Pilot Free Trade Zone, 200131, China

  " See Appendix 1 "
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Approval Condition " See Appendix 1 "

THIS IS TO CERTIFY that the above-mentioned product has been approved in accordance with the relevant requirement of this Society's Rules and / or of the recognized standards as follows.

Ch. 3 of the Guidance for Cyber Resilience of Ships and Systems

This Certificate is valid until 19 September 2029

Issued at Busan, Korea on 20 September 2024

This certificate is signed electronically in accordance with IMO FAL.5/Circ.39/Rev.2. Validation and authentication of the certificate can be confirmed from "http://e-cert.krs.co.kr" by using the tracking No(ME24046688065) and certificate No.(CPH27937-CS002).

KOREAN REGISTER

General Manager of
Marine & Ocean Equipment Team

Note : 1. This certificate will be valid subject to complying with the approval conditions described on the certificate and/or on the Rules of this Society.

2. This certificate will be invalid from the expiry date aforementioned unless the extension or renewal has been granted to the applicant or the manufacturer.

3. Any significant modifications or changes in design or construction to the above product without approval from this Society will render this certificate invalid.

4. Should the specified rules, regulations or standards be amended during the validity of this certificate, the product is to be re-approved by this Society in accordance with the requirements as amended.

Product Description and/or Approval Condition

A. Product Description

1. Product Specification

1) Product Specification
   K-Chief system performs the following functions:
   - Alarm and Monitoring
   - K-Gauge application and GLK SPU
   - Power Management System
   - Auxiliary generator controls
   - 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 preprogrammed actions will take place
   - Supports multiple redundant configurations
   - Instrument safety function

2) Hardware components
   K-Chief and K-Safe (Common modules)

Name	Description	TA Cert no.
MC340 i3 LAN	PC computer, Lenovo ThinkStation P340 Tiny	GZU41200-AC002
MC340 i7 LAN	PC computer, Lenovo ThinkStation P340 Tiny	GZU41200-AC002
MC360 i3 LAN	PC computer, Lenovo ThinkStation P360 Tiny	NYK47060-AC001
MC360 i5 LAN	PC computer, Lenovo ThinkStation P360 Tiny	NYK47060-AC001
MC360 i7 LAN	PC computer, Lenovo ThinkStation P360 Tiny	NYK47060-AC001
RCU 602	Remote Controler Unit	CPH27937-AC003
C1000-24T-4X-L	Managed Switch, CISCO	-
C1000-24FP-4G-L	Managed Switch, CISCO	-
C1000-24T-4G-L	Managed Switch, CISCO	-
C1000-24P-4G-L	Managed Switch, CISCO	-
IKS-6728A	Managed Switch, Moxa	-
EDS-408A-MM-SC	Managed Switch, Moxa	-
EDS-408A-3M-SC	Managed Switch, Moxa	-
FGR-60F	Rugged Firewall, FortiGate	-
WCC 600	Watch Calling C600 Panel	CPH27937-AC003
RTL8153B	USB/LAN Adapter, EX-1330M RTL8153B - USB3.1 to 4x Gb ethernet	-
ALC SA	Alarm and Command Panel, COP05 ALC Stand Alone	-
Tracker Ball Panel	Tracker Ball Panel	CPH27937-AC003

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Name	Description	TA Cert no.
Input Panel	Panel Input Mk3 COP 05	-
BU AUT Panel	Configuration input panel for automation systems, COP-05 BU-AUT Panel	-
Panel ALC	Alarm and Command Panel	CPH27937-AC003
L2C	LAN to CAN Gateway	CPH27937-AC003
RDo-16xe	16 digital outputs	CPH27937-AC003
RAI-16xe	16 analogue inputs	CPH27937-AC003
C2xe	Digital input/digital output	CPH27937-AC003
RAo-08xe	8 analogue outputs	CPH27937-AC001
RDi-32xe	32 digital inputs	CPH27937-AC001
RDi-32Axe	32 digital inputs	CPH27937-AC001
RMP 201-8	Remote MultiPurpose I/O module	CPH27937-AC003
RMP 420	Remote MultiPurpose I/O module	CPH27937-AC003
RMP 422(i)	Remote MultiPurpose I/O module	CPH27937-AC003
RDIO 420S	Remote Digital I/O module	CPH27937-AC003
RDIOR 420	Remote Digital I/O module and Relay channels	CPH27937-AC003
RHUB200-5	Communication HUB and Repeater	CPH27937-AC003
RSER200-4	Serial Line Communication Interface	CPH27937-AC003
GLK-300	Signal Processing Unit (SPU)	CPH04968-AC005
EFI-16	Earth Fault Indicator	CPH27937-AC003
RMC-ST	Remote Media Converter, Fiber Converter	CPH27937-AC003
PSS	Process Segment Starcoup	CPH27937-AC003

K-Safe

Name	Description	TA Cert no.
RCU 502(i)	Remote Controler Unit	CPH27937-AC003
RMP 420S	Remote MultiPurpose I/O module	-
RMP 422S(i)	Remote MultiPurpose I/O module	CPH27937-AC003

3) Software components

Name	Description	Version
7-Zip	File archiver	21.07.00.0
Adobe Acrobat DC	PDF viewer	2021.011.20039

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Name	Description	Version
AIM	Kongsberg Maritime AS Application Software	8.12.x
Bomgar Button	Remote access software	15.01.2003
Browser for SQL Server 2019	Database management tool	15.0.2000.5
Debugging Tools for Windows (x86)	Debugging tool	6.11.1.404
FileZilla Server	FTP SW	1.8.0
HMI Production Service and Mimic Editor	Kongsberg Maritime Mimic tool	3.3.x
Historian Database	Kongsberg Maritime AS Historian Application Software	4.0.x
Imaging And Configuration Designer	Windows image tool	10.1.19041.1
Intel(R) Network Connections	Network Interface Card management	27.00.3
Intel(R) SCS ACUConfig	Network Interface Card config tool	12.2.0.170
Intel(R) SCS ACUWizard	Network Interface Card config tool	12.2.0.170
K-Chief HMI Vessel Support apps	Kongsberg Maritime AS Application SW	1.3.x
K-Chief One Watch Call	Kongsberg Maritime AS Application SW	1.4.x
K-Chief One Watch Call Config Tool	Kongsberg Maritime AS Configuration tool	1.2.x
K-Chief One Watch Call Wcc Load	Kongsberg Maritime AS Configuration tool	2.0.x
Kongsberg Maritime Access Control	Kongsberg Maritime AS Application SW	1.0.x
Kongsberg Maritime Access Control Config Tool	Kongsberg Maritime AS Configuration tool	1.0.x
Kongsberg Maritime Beacon	Kongsberg Maritime AS Application SW	2.15.X
Kongsberg Maritime Dnet2	Kongsberg Maritime AS Application SW	1.1.x
Kongsberg Maritime K-Chief HMI	Kongsberg Maritime AS Application SW	2.0.x
Kongsberg Maritime K-Safe HMI	Kongsberg Maritime AS Application SW	1.0.x

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Name	Description	Version
Kongsberg Remote Support	Kongsberg Remote support	1.0.0
LogViewer	Kongsberg Maritime AS Logger	2.0.x
Microsoft OLE DB Driver for SQL Server	Database	18.6.7
Microsoft SQL Server 2012 Native Client	Database	11.4.7462.6
Microsoft SQL Server 2019 (64-bit)	Database	15.0.2000.5 (X64)
Microsoft SQL Server 2019 setup (English)	Database	15.0.4013.40
Microsoft SQL Server 2019 T-SQL Language Service	Database	15.0.2000.5
Microsoft SQL Server Compact 3.5 SP2 ENU	Database	3.5.8082.0
Microsoft SQL Server Compact 3.5 SP2 x64 ENU	Database	3.5.8082.0
Microsoft VSS Writer for SQL Server 2019	Database	15.0.2000.5
MPS	Kongsberg Malware Shell Protection	04.03
MPS Malware Cleaner	Kongsberg Malware Cleaner	04.mar
Notepad++	Text editor	7.6.3
OSK	Kongsberg Maritime AS Application SW	2.16.x
PageConfig	Kongsberg Maritime AS Mimic tool	1.3.x
Paragon Hard Disk Manager	Backup SW	17.16.16
PCK	Kongsberg Maritime AS Application SW	2.15.x
PostgreSQL	Database	15
PostgreSQL	Database	16
Putty	Terminal SW	0.70.0.0
RemoteAssist	Kongsberg Remote Assist	1.0.0
RemoteSupportBomgar	Kongsberg Remote support Bomgar	1.0.0

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Name	Description	Version
Sentinel Protection Installer	Tool	7.6.6
SerialLineLogger	Kongsberg Maritime AS Application SW	1.0.x
SnmpGet	SNMP	1.0.1
Vessel Mimic Symbol Library	Kongsberg Maritime AS Application SW	1.25
USB shell protection	Kongsberg USB Shell Protection	04.03

2. Approved Drawings and Documents
1) Approved documents
   - CBS asset inventory : 110-0066104 Rev.C
   - Topology diagrams : 110-0066093 Rev.B
   - Description of security capabilities : 110-0066099 Rev.B
   - Test procedure for security capabilities : 110-0066078 Rev.A
   - Secure development lifecycle : KM-GUI-0118 Rev.A

3. Test Reports, etc.
1) Test Reports No.
   - 110-0066078 Rev.A dated 2020.05.22 witnessed by KR Surveyor
2) Etc.
   - Security configuration guidelines : 110-0078720 Rev.A
   - Plans for maintenance and verification : KM-PROC-0057 Rev.E
   - Information supporting incident response and recovery plans : 110-0068347 Rev.A,
     KM-GUI-9504 Rev.3, KM-GUI-9505 Rev.D, Cyber Security information for K-Chief & K-Safe
   - Management of change plan : KM-PROC-0080 Rev.A, KM-PRO-0120 Rev.A

B. Approval Condition

1. Application & Limitation
1) This approval is granted on the basis of the approved documentation and the test reports
   (IACS UR E27 Rev.1).
2) This system is not to be connected to the untrusted network.
3) The manufacturer is to inform this Society of all kinds of revisions of the equipment
   including software. If the changes are recognized to affect the functionality of the
   approved equipment, a type test to confirm the reliability of the revised equipment may
   be performed in the presence of our surveyor.

2. Individual Product Cert. and Drawing Approval Requirement
1) Individual Product Certification is not required according to Ch. 3 of the Guidance for
   Cyber Resilience of Ships and Systems.
2) In the case where this system is installed on board, below documents for individual
   vessel are to be submitted to this Society according to Ch. 3 of the Guidance for Cyber
   Resilience of Ships and Systems.
   - Approved documents
     CBS asset inventory
     Topology diagrams
   - Reference documents
     Cyber Resilience Test reports

3. Marking
N/A

4. Others
N/A

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