Certificate no.:
TAA00003JX

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Integrated Navigation Systems (INS)

with type designation(s)
K-Bridge

issued to
Kongsberg Maritime AS
Kongsberg, **Norway**

is found to comply with
IEC 61162-460 Ed. 3.0 (2024-04) Maritime Navigation and radiocommunication equipment and systems – Digital interfaces – Part 460: Multiple talkers and multiple listeners – Ethernet interconnection – Safety and security

Application:

The Type Approval covers security capabilities as 460-nodes as defined in IEC 61162-460 (2024).
See page 4 for further details.

Issued at **Høvik** on **2025-04-03**

This Certificate is valid until **2027-04-02**.
DNV local unit: **East & South Norway CMC**

Approval Engineer: **Steinar Kristensen**

for **DNV**

This document has been digitally signed and will therefore not have handwritten signature

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Product description

Kongsberg Maritime K-Bridge navigation systems provide functionality for the following functions, as defined in the referenced certificates [1]:

- ECDIS (Electronic Chart Display and Information System), ref certificate MEDB000013V
- Radar, ref certificate MEDB000013U
- INS (Integrated Navigation System), ref certificate MEDB00003XA
- HCS (Heading Control System), ref certificate MEDB00001MX
- TCS (Track Control System), ref certificate MEDB00001MZ
- BNWAS (Bridge Navigational Watch Alarm System), ref certificate MEDB00001MY
- Propeller revolution indicator, ref certificate MEDB000025Y
- Rudder Angle Indicator, ref certificate MEDB000026A
- Pitch Indicator, ref certificate MEDB000026B
- Rate-of-turn Indicator, ref certificate MEDB000026C

The equipment listed below, forming part of the above referenced systems, have been assessed for compliance with the Cyber Security requirements for 460-nodes as defined in IEC 61162-460 (2024):

- **K-Bridge Operator station**

  K-Bridge Operator station is available in versions as either Panel Computer with integrated display or as Computer with separate Display unit, as specified below:

  Panel Computer with integrated Display:

  - Panel PC: Panel PC 24” i5/ i7 ECDIS T22W10, Computer with i5 or i7 processor, Integrated display, embedded graphical processor and backup sensor interface (PCA100293-1; 4x NMEA input/output module)
    or
    Panel PC 27” i5/ i7 ECDIS T22W10, Computer with i5 or i7 processor, integrated display, embedded graphical processor and backup sensor interface (PCA100293-1; 4x NMEA input/output module)

  Computer for use with separate Display Unit:

  - Main Computer Unit : MC340 i7 LAN or MC360 i7 LAN, incl adapter USB to 1 serial RS232

  K-Bridge Sensor Integrator K-SINT:

  Remote Controller : RCU502i

  Serial Line Interface Module, 4 NMEA In/Out: RSER200-4

  RBUS Hub Module : RHUB200-5

  Option:
  Remote IO modules : RMP420, RDIOR420 and RMP201-8

[1] See individual system certificates for information on required configurations.

- **K-Bridge Standalone Operator station**
  K-Bridge Standalone Operator station is a Panel Computer with integrated display as specified below:

  Panel Computer with integrated Display:

- Panel PC	:	Panel PC 24” i5/ i7 ECDIS T22W10, Computer with i5 or i7 processor, Integrated display, embedded graphical processor and backup sensor interface (PCA100293-1; 4x NMEA input/output module) or Panel PC 27” i5/ i7 ECDIS T22W10, Computer with i5 or i7 processor, integrated display, embedded graphical processor and backup sensor interface (PCA100293-1; 4x NMEA input/output module)

- **Software modules for K-Bridge and K-Bridge Standalone Operator stations**

Operating System	:	Windows 10
K-Bridge System Platform SW	:	9.2.x

- **K-Bridge Multi Indicators**
  Panel Computer with integrated Display:

- Panel PC	:	Panel PC 13.3” 1.3GHz 13T30, 4x RS 485/ RS 422 ports

Multi Indicator SW version	:	2.0.x

Application/Limitation

- Installation is to be performed according to the installation manuals for the individual systems and the K-Bridge IEC 61162-460 Software Configuration Guide (doc no. 110-0081846/A).
- The system may comply with the requirements for the DNV Class notation Cyber Secure (Essential) as defined in DNV Rules Pt.6 Ch.6 Sec.21 when installed in a separate security zone with border protection (e.g. a 460-Gateway).

Approval conditions

Product certificate

Each delivery of the type approved system is to be certified according to Pt.6 Ch.5 Sec.21.
Project-specific documentation shall be submitted for approval as per the table below. Certification test is not required for cyber security capabilities as long as the system is correctly installed as represented by this type approval.

Clause for application software control

All changes in software are to be recorded as long as the system is in use on board. Records of major changes are to be forwarded to DNV for evaluation and approval and shall be approved before implemented on board.

Major changes to the type approved system affecting future deliveries shall be informed to DNV. If the changes are considered to affect functionality for which rule requirements apply, a new functional type test may be required, and the certificate may have to be renewed to identify the new version. Minor changes are covered by this type approval.

This type approval certificate confirms compliance with requirements as specified in the table below.

This TA certificate covers:	For each delivery of the type approved system(s), the following documents shall be submitted:
Type approval of cyber security capabilities according to IEC 61162-460 (2024)	– System topology (F030), illustrating system architecture and interfaces with other systems. Including consistency with document K-Bridge CS Topology 110-0061346 – Inventory/equipment list (F071), demonstrating consistency with asset inventory for K-Bridge 110-0055591. This document may be common with Z090. – Completed delivery checklist (F262) demonstrating configuration of security capabilities.
In addition to the documents above, any modifications in the delivered system compared with the type approved system shall be documented and submitted for approval.	

The manufacturer will generate release/update notes for each new software revision. The current software version is listed under Product Description.

Tests carried out

- Cyber Security Testing: IEC 61162-460 (2024) for 460-Node

Type Approval Documentation

DNV No	Document ID	Rev.	Description
14	110-0078706	A	Report: Kongsberg Maritime, Cyber Security Test report IEC 61162-460 ED3
15	110-0079506	B	Description: Kongsberg Maritime, IEC 61162-460 Certification Reference Document
16	110-0081846	A	Manual: Kongsberg Maritime, K-Bridge IEC 61162-460 Software Configuration Guide
17	110-0101142	A	Report: Kongsberg Maritime, K-Bridge Cyber Security, Comments to IEC 61162-450 General Requirements

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.
The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate
- Review documented evidence of adherence to Secure Development Lifecycle processes

A renewal assessment will be performed at renewal of the certificate.

Manufactured by:

- **Kongsberg Maritime AS,** Kirkegårdsveien 45, 3616 Kongsberg, Norway
- **Kongsberg Maritime China Ltd**., No. 136 North Fute Road, Pilot Free Trade Zone, 200131, Shanghai, China
- **Kongsberg Maritime Korea Ltd,** 9-7, Sandan 3-ro, Jeonggwan-Eup, Gijang-gun, 46027, Busan, Korea