

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Application of: Directive 2014/90/EU of 23 July 2014 on marine equipment (MED), issued as "Forskrift om Skipsutstyr" by the Norwegian Maritime Authority. This Certificate is issued by DNV GL AS under the authority of the Government of Norway.

This is to certify:

That the Integrated navigation system (INS)

with type designation(s)
K-Bridge INS

Issued to

Kongsberg Maritime AS
KONGSBERG, Norway

is found to comply with the requirements in the following Regulations/Standards:

Regulation **(EU) 2017/306,**

item No. MED/4.59. SOLAS 74 as amended, Regulations V/15, V/18, V/19 & X/3, IMO Res. A.694(17), IMO Res. MSC.36(63), IMO Res. MSC.97(73), IMO Res. MSC.191(79), IMO Res. MSC.252(83), IMO Res. MSC.302(87)

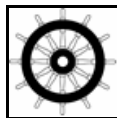
Further details of the equipment and conditions for certification are given overleaf.

This Certificate is valid until **2023-03-14.**

Issued at **Høvik** on **2018-03-15**

DNV GL local station:
Sandefjord

Approval Engineer:
Steinar Kristensen



Notified Body
No.: **0575**

for **DNV GL AS**

Roald Vårheim
Head of Notified Body



The mark of conformity may only be affixed to the above type approved equipment and a Manufacturer's Declaration of Conformity issued when the production-surveillance module (D, E or F) of Annex B of the MED is fully complied with and controlled by a written inspection agreement with a Notified Body. The product liability rests with the manufacturer or his representative in accordance with Directive 2014/90/EU.

This certificate is valid for equipment, which is conform to the approved type. The manufacturer shall inform DNV GL AS of any changes to the approved equipment. This certificate remains valid unless suspended, withdrawn, recalled or cancelled.

Should the specified regulations or standards be amended during the validity of this certificate, the product is to be re-approved before being placed on board a vessel to which the amended regulations or standards apply.



Product Description

The K-Bridge Integrated Navigation System (INS) consists of several K-Bridge Operator stations (Multifunction displays, MFDs) incorporating the below functions and integrated via redundant Ethernets:

<i>Function</i>	<i>Type</i>
• RADAR	K-Bridge Radar
• ECDIS	K-Bridge ECDIS
• CONNING	Included in K-Bridge Radar and ECDIS
• CAM	Included in K-Bridge Radar and ECDIS

All functions may be operated on any of the MFDs in the INS.

The K-Bridge INS is realised using the following components, connected in a topology as described in Ch. 2 of the K-Bridge INS System Description, doc. no 433744 (see Type Examination Documentation):

Funcions	Components	Remark
ECDIS	<ul style="list-style-type: none"> • K-Bridge Operator station, consisting of: <ul style="list-style-type: none"> ○ Main Computer Unit ○ Graphical Interface ○ Display Unit ○ Sensor Interface ○ Input Device ○ Computer keyboard ○ Software Module • Radar Interface • Transceivers and antenna units 	See ECDIS EC-Type Examination certificate MEDB000013V and Type Approval certificate TAA00000FJ for details
RADAR		See Radar EC-Type Examination Certificate MEDB000013U and Type Approval certificate TAA00000FJ for details
CONNING / CAM		
Software version	K-Bridge version 8.2.x	

Application/Limitation

- The ECDIS and Radar functions shall hold valid type approval certificates documenting compliance with applicable international standards in accordance with the Directive.
- The minimum configuration of K-Bridge INS for SOLAS compliance comprises 4 MFDs. An INS-topology involving additional MFDs may be approved on case-by-case basis.
- The K-Bridge INS shall be interconnected with dual installations of position, heading and speed sensors holding valid type approval certificates.
- The K-Bridge INS is to be connected to an alarm transfer system for transfer of back-up navigator alarms.
- The INS Alert Management (CAM) may handle, distribute and present bridge alerts being additional to the K-Bridge INS and its primary sensors.
- For vessels where BAM-compliance in accordance with MSC.302(87) is required the INS CAM-HMI should be arranged as the functional HMI for the BAM.
- The K-Bridge INS ECDIS function may be integrated with and act as HMI for the K-Bridge Heading Control System (HCS) and K-Bridge Track Control System (TCS)
- The K-Bridge INS shall be installed and commissioned onboard according to manufacturer's installation instructions for the individual functions/components.

Note: The K-Bridge installation may comply with the DNVGL's additional class notations NAUT-xx with qualifier (ICS). The actual INS topology and the workstation arrangement are subject to approval on case-by-case basis.

Tests carried out

- Performance testing: IEC 61924-2 (2012)
- Environmental testing: IEC 60945 (2002) incl. Corr.1 (2008)
- Serial Interface testing: IEC 61162-1 (2010) and IEC 61162-1 (2016)
- Presentation of navigation information: IEC 62288 (2014)
- DNVGL Rules for Classification of Ships: Pt.6 Ch.3 Sec.3 Clause 7, NAUT(ICS)

Type Examination documentation

DNV GL No	Document Id.	Rev.	Description
15	429363	A	Manual: Kongsberg Maritime, K-Bridge Autopilot, Operator Manual, Release 8.2
14	429323	A	Manual: Kongsberg Maritime, K-Bridge Radar, Operator Manual, Release 8.2
13	429325	A	Manual: Kongsberg Maritime, K-Bridge ECDIS, Operator Manual, Release 8.2
12	430676	A	Manual: Kongsberg Maritime, K-Bridge INS On-board familiarization training
11	433756	A	Description: Kongsberg Maritime, K-Bridge INS, FMEA Document
10	433754	A	Description: Kongsberg Maritime, K-Bridge INS, System Description
9	429328	A	Manual: Kongsberg Maritime, K-Bridge Conning and CAM-HMI, Operator Manual
7	419854	D	Report: Kongsberg Maritime, Test Report for K-Bridge ICS, DVNGL-RU-SHIP Pt.6 Ch.3
6	415228	A	Report: Kongsberg Maritime, Type Approval Test Report for K-Bridge BAM, Central Alert Management System
5	424988	J	Report: Kongsberg Maritime, Type Approval Test Report for K-Bridge INS, Alert Management
4	418199	B	Report: Kongsberg Maritime, Type Approval Test Report for K-Bridge INS Clause 6, CCRS
2	424985	G	Report: Kongsberg Maritime, Type Approval Test Report for K-Bridge INS, Tasks and functions Clause 7
1	170083	T	Manual: Kongsberg Maritime, Kongsberg Maritime, Network, Installation Manual

Marking of product

The designation of Manufacturer and Type shall be fixed in a clearly visible location on the individual equipment. In addition the equipment shall be marked with serial number. Safe distance to magnetic compass and power consumption and/or supply voltage may be included on the label or stated in the individual installation manuals.