



TYPE APPROVAL CERTIFICATE

Certificate no.:
TAA00003DA
Revision No:
1

This is to certify:
that the Hardware Platform

with type designation(s)
KM Manoeuvring Control - Hardware Platform

issued to
Kongsberg Maritime AS
Kongsberg, Norway

is found to comply with
DNV rules for classification – Ships, offshore units, and high speed and light craft

Application:

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Location classes are listed in the certificate.

Issued at **Høvik** on **2024-04-30**

for **DNV**

This Certificate is valid until **2026-04-03**.

DNV local unit: **Sandefjord**

Approval Engineer: **Martin Skårerverket**

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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Form code: TA 251

Revision: 2023-09

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Product description

This Type Approval covers hardware components for the Kongsberg Maritime K-Thrust 720 and Mcon systems, comprising the modules listed below. (see individual system certificates for information on required configurations).

Location classes in the table below are denoted in the following sequence:

Temperature / Humidity / Vibration / EMC / Enclosure class

Where temperature is denoted as “**”, then the module is tested to low temperature -15°C.

Where enclosure class is denoted as “***”, required enclosure protection according to the rules to be provided upon installation onboard.

K-Thrust 720 Hardware:

Module type	Product Description	Product No.	Location Classes	Compass Safe Distance	DNV reference
Telegraph	Push Button Telegraph - PBT	8100278 8100318 8100333	C/B/B/B/**		TAA0000017
Lever	Azimuth Lever with display	405846	B*/B/A/B/A	1000 mm	TAA0000017
	Azimuth Lever	416533	B*/B/A/B/A	1000 mm	TAA0000017
	Single Lever with display	405842	B*/B/A/B/A	1300 mm	TAA0000017
	Single Lever	416531	B*/B/A/B/A	200 mm	TAA0000017
	Dual Lever with display	405844	B*/B/A/B/A	1300 mm	TAA0000017
	Dual Lever	416532	B*/B/A/B/A	200 mm	TAA0000017
	Lever display	416534	B*/B/A/B/A	1100 mm	TAA0000017
	Lever telegraph unit – LTU11	364330	D/B/B/B/**	800 mm	TAA0000017
	Lever telegraph and speedset unit – LTU11ME	389505	B/B/A/B/**	600 mm	TAA0000017
Mini Wheel	Mini Wheel with display	412364	B*/B/A/B/A	1000 mm	TAA0000017
	Mini Wheel	417835	B*/B/A/B/A	1000 mm	TAA0000017
Panel	K-Master Alarm Panel	346999	B*/B/A/B/**		TAA000004C
	K-Master I/O controller	344382	B*/B/A/B/**		TAA000004C
	K-Master Touch Control Panel - 13.3" HD 13T21 KMD-DR1-CORP	356680	A*/B/A/B/**	800 mm	TAA000004C
	Direct Wiring Panel	345857	B*/B/A/B/**	50 mm	DNV No. 18, 20, 22
	Direct Wiring IO Controller	345847	B*/B/A/B/**	100 mm	DNV No. 18, 20, 22
	Thruster Command Panel	406412	D/B/A/B/A	1200 mm	TAA000004C
	Multi Purpose Panel - MPP	8100290	C/B/B/B/**		TAA0000017
Controller	RCU601	477601	B/B/A/B/A	300 mm	TAA00003BA
	RCU602	383962	B*/B/A/B/A	300 mm	TAA00000W5
	RCU502i	421768	B*/B/A/B/A	300 mm	TAA00000W5
CAN Distribution	CAN Switch - CS100	396502	B*/B/A/B/A	1000 mm	DNV No. 19, 22, 23
	CAN Switch Connector Module – CC100A	396504	B*/B/A/B/A	1000 mm	DNV No. 19, 22, 24
	CAN Switch Connector Module – CC100B	396633	B*/B/A/B/A	1000 mm	DNV No. 19, 22, 24
IO unit	Remote Serial line interface module - RSER200-4	603444	B*/B/A/B/**	50 mm	TAA00000W5
	RBUS Hub Module - RHUB200-5	603442	B*/B/A/B/**	50 mm	TAA00000W5

Module type	Product Description	Product No.	Location Classes	Compass Safe Distance	DNV reference
	Remote Multi Purpose IO Module - RMP201-8	324400	B*/B/A/B/**	50 mm	TAA00000W5
	Remote Multi Purpose module series 420 - RMP420	306712	B*/B/A/B/**	50 mm	TAA00000W5
	Remote Digital I/O Relay series 420 - RDIOR420	306713	B*/B/A/B/**	50 mm	TAA00000W5
	Main Engine Interface unit - MEI	8100276	B*/B/B/B/**		TAA0000017
	Remote input/output - C2xe	333346	B*/B/B/B/**	600 mm	TAA0000018
	Earth Fault Indicator 16 A – EFI-16	321492	B*/B/A/B/**	500 mm	TAA00000W5

Mcon Hardware:

Module type	Product Description	Product No.	Location Classes	Compass Safe Distance	DNV reference
Lever	Main propulsion, single, fwd	000114574	B/B/A/B/A	300 mm	TAA00002DT
	Main propulsion, single, aft	000122040	B/B/A/B/A	300 mm	TAA00002DT
	Main propulsion, double, fwd	000114575	B/B/A/B/A	300 mm	TAA00002DT
	Main propulsion, double, aft	000114576	B/B/A/B/A	300 mm	TAA00002DT
	Main propulsion, single, fwd, motorized	000122041	B/B/A/B/A	300 mm	TAA00002DT
	Main propulsion, single, aft, motorized	000122042	B/B/A/B/A	300 mm	TAA00002DT
	Main propulsion, double, fwd, motorized	000122043	B/B/A/B/A	300 mm	TAA00002DT
	Main propulsion, double, aft, motorized	000122044	B/B/A/B/A	300 mm	TAA00002DT
	Main propulsion, single pitch/RPM, ECR	RRM000353541	B/B/A/B/A	300 mm	TAA00002DT
	Main propulsion, single pitch/RPM, ECR, motorized	RRM000357317	B/B/A/B/A	300 mm	TAA00002DT
	Main propulsion, single pitch/RPM, fwd, motorized	RRM000480571	B/B/A/B/A	300 mm	TAA00002DT
	Main propulsion, single pitch/RPM, aft, motorized	RRM000480573	B/B/A/B/A	300 mm	TAA00002DT
	Tunnel thruster, double	000104154	B/B/A/B/A	300 mm	TAA00002DT
	Tunnel thruster, double, motorized	000104155	B/B/A/B/A	300 mm	TAA00002DT
	Tunnel thruster, single	000104156	B/B/A/B/A	300 mm	TAA00002DT
	Tunnel thruster, single, motorized	000104157	B/B/A/B/A	300 mm	TAA00002DT
	Rudder Tiller (50- 0- 50)	000104162	B/B/A/B/A	300 mm	TAA00002DT
	Rudder Tiller (70- 0- 70)	000112159	B/B/A/B/A	300 mm	TAA00002DT
	Helmsman Lever (50- 0- 50)	000110624	B/B/A/B/A	300 mm	TAA00002DT
	Rudder Tiller (45- 0- 45), with lever, no buttons	RRM000460995	B/B/A/B/A	300 mm	TAA00002DT
	Azimuth CP, aft	000104146	B/B/A/B/A	300 mm	TAA00002DT
	Azimuth CP, fwd	000104147	B/B/A/B/A	300 mm	TAA00002DT
	Azimuth CP, motorized, aft	000104148	B/B/A/B/A	300 mm	TAA00002DT
	Azimuth CP, motorized, fwd	000104149	B/B/A/B/A	300 mm	TAA00002DT

Module type	Product Description	Product No.	Location Classes	Compass Safe Distance	DNV reference
	Azimuth CP, motorized, fwd, without scale numbering	000125251	B/B/A/B/A	300 mm	TAA00002DT
	Azimuth FP, aft	000104150	B/B/A/B/A	300 mm	TAA00002DT
	Azimuth FP, fwd	000104151	B/B/A/B/A	300 mm	TAA00002DT
	Azimuth FP, motorized, aft	000104152	B/B/A/B/A	300 mm	TAA00002DT
	Azimuth FP, motorized, fwd	000104153	B/B/A/B/A	300 mm	TAA00002DT
	Azimuth FP, scale 0-10-0-10	RRM000377686	B/B/A/B/A	300 mm	TAA00002DT
	Azimuth FP, motorized, scale 0-10-0-10	RRM000377687	B/B/A/B/A	300 mm	TAA00002DT
	Main propulsion single	RRM000385830	B/B/A/B/A	300 mm	TAA00002DT
	Main propulsion double	RRM000385831	B/B/A/B/A	300 mm	TAA00002DT
	Tunnel thruster single	RRM000385832	B/B/A/B/A	300 mm	TAA00002DT
	Tunnel thruster double	RRM000385833	B/B/A/B/A	300 mm	TAA00002DT
	Azimuth	RRM000385835	B/B/A/B/A	300 mm	TAA00002DT
	Azimuth, limited +/-60 degrees	RRM000385836	B/B/A/B/A	300 mm	TAA00002DT
Joystick	Kwant G2 Combined Joystick & Positioning	000104163 000117270	B/B/A/B/A	300 mm	TAA00002DT
	G1 Joystick device	74525	B/B/A/B/A		TAA00001FF
	Kwant G1 Positioning device	000102278	B/B/A/B/A		TAA00001FF
Panel	Steering gear panel - pump control	000117799	B/B/A/B/A	300 mm	TAA00002DT
	Steering gear panel - NFU control, fwd	000117800	B/B/A/B/A	300 mm	TAA00002DT
	Steering gear panel - NFU control, aft	000117801	B/B/A/B/A	300 mm	TAA00002DT
	MMS panel autocrossing	000126062	B/B/A/B/A	300 mm	TAA00002DT
	MMS panel autocrossing, DP mode	000127586	B/B/A/B/A	300 mm	TAA00002DT
	MMS panel autocrossing, Autodocking mode	RRM000413829	B/B/A/B/A	300 mm	TAA00002DT
	MMS panel autocrossing, JS mode	RRM000438977	B/B/A/B/A	300 mm	TAA00002DT
	CAN RailModule	000117803	B/B/A/B/A	300 mm	TAA00001FF
	USB Buzzer Panel	RRM000464627	B/B/A/B/A	300 mm	TAA00001FF
Controller	H1151.6059, Marine Controller	466764 000110313	B*/B/A/B/A	250 mm	TAA00002DS
	H1170, Marine Controller	488531 RRM000471733	B*/B/A/B/A	100 mm	TAA00002DS
	Micro Marine Controller MMC11	000124868	C/B/A/B/**		TAA00000FK

Common Hardware:

Module type	Product Description	Product No.	Location Classes	Compass Safe Distance	DNV reference	
Panel	Push Button 4 (PB4)	400992 RRM000477379	D/B/B/B/B	200 mm	TAA0000017	
	Push Button 4 (PB4) Momentary	110-0033305	B/B/A/-/**		DNV No. 27	
	LAN to CAN Gateway – L2C	404654	D/B/B/B/**	100 mm	DNV No. 22, 25, 26	
Computer	PANEL COMPUTER 10.4"	RRM000603363 RRM000483816	D/B/A/B/A	1000 mm	TAA00001UU	
	12 INCH PANEL COMPUTER	000124787	B*/B/A/B/A	650 mm	TAA00000EY	
	8 inch panel computer	000123971	B*/B/A/B/A	700 mm	TAA00000EY	
	MC340	477549 477550 477553 477554 110-0016256 110-0028204	D/B/A/B/A	1500 mm	TAA00002ZN	
	MC360	110-0016255 110-0016256 110-0016257 110-0016258 110-0016259 110-0016260 110-0024558	D/B/A/B/A	750 mm	TAA000038U	
	Panel PC with 12.1" touch screen	402831	B*/B/A/B/A	750 mm	TAA0000017	
	Panel PC with 12.1" touch screen	110-0002985 RRM000526735	B*/B/A/B/A	1300 mm	TAA0000338	
	NEO CE-HW-01	409251	B*/B/A/B/A	900 mm	TAA00000FC	
	Switch	Lynx 8-port switch, 8xRJ45	RRM000376790	D/B/A/B/A	150 mm	TAA000000R
		Lynx 8+2-port switch, 8xRJ45, 2xLC	RRM000376886	D/B/A/B/A	150 mm	TAA000000R
Moxa EDS-408A Series EDS-408A-MM-SC EDS-408A-3M-SC		467615 450144 464916	D/B/A/B/**	600 mm	TAA000006N	
Moxa SFP module		378893 388849 399666 424338	D/B/A/B/**	600 mm	TAA000006N	
Ethernet plugin modules - Moxa Port Interface IM- 6700A series		438763 438765 402107	D/B/A/B/**	500 mm	TAA0000043	
Moxa IKS-6728A series		382427	D/B/A/B/**	500 mm	TAA0000043	
Cisco C1000-24T-4X-L		110-0001617	D/B/A/B/A	2400 mm	TAA000035N	
Cisco C1000-24FP-4G-L		110-0009583 469123	D/B/A/B/A	2400 mm	TAA000035N	
Cisco C1000-24T-4G-L		469125	D/B/A/B/A	2400 mm	TAA000035N	
Cisco C1000-24P-4G-L		492517	D/B/A/B/A	2400 mm	TAA000035N	
Fortinet FGR-60F		110-0020955	D/B/A/B/A	450 mm	TAA000035M	

Place of manufacture

Final assembly of KM Manoeuvring Control systems can be performed at the following locations:

- Kongsberg Maritime AS, Kongsberg, Norway
- Kongsberg Maritime AS, Horten, Norway
- Kongsberg Maritime AS, Longva, Norway
- Kongsberg Maritime AS, Ulsteinvik, Norway
- Kongsberg Maritime OY, Rauma, Finland
- Kongsberg Maritime Inc., New Orleans, USA
- Kongsberg Maritime China Ltd., No. 136 North Fute Road, China (Shanghai) Pilot Free Trade Zone, 200131, China
- Kongsberg Maritime Korea Ltd., Busan, Korea
- Kongsberg Maritime Pte. Ltd., Singapore, Singapore

Approval conditions

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV rules for classification of ships Pt.4 Ch.9 Control and monitoring systems.

Product certificate

If specified in the Rules, ref. Pt.4 Ch.9 Sec.1, the control and monitoring system in which the above listed hardware is used shall be delivered with a product certificate. For each such delivery the certification test is to be performed at the manufacturer of the application system before the system is shipped to the yard. The test shall be done according to an approved test program. After certification the clause for software control will be put into force.

Software control

All changes in software are to be recorded as long as the system is in use on board. Documentation of major changes is to be forwarded to DNV for evaluation and approval before implemented on board. Certification of modified functionality may be required for the particular vessel.

Type Approval documentation

DNV No.	Document ID	Rev.	Description
14	E18116-353576	00	Test Report - Multi Purpose Input Device (MPID)
18	334102	F	Direct Wiring Panel and IO Controller Hardware Module Description
19	E15157.00	02	Test Report CAN Distribution Unit (CDU) CS100/CC100A/CC100B/CR100
20	354809/DANAK-1910900	A	Test for Marine Type Approval of STG Panel and STG Panel Controller
22	487708	3	Nemko test report 1-6 GHz
23	396509	B	CS100 Hardware Module Description
24	396515	B	CC100A / CC100B Hardware Module Description
25	409453	C	L2C LAN to CAN Gateway (datasheet)
26	DANAK-19/16085	A	Test for Marine Type Approval of L2C
27	REP026850	A	Test report NEMKO PB4 (KM Item No: 110-0033305)

Tests carried out

Applicable tests according to class guideline DNV-CG-0339, August 2021.

For the bridge mounted components the 'Compass safe distance' was measured according to section 11.2 of IEC 60945 4th edition (2002).

Marking of product

The products to be marked with:

- manufacturer name
- model name
- serial number
- power supply ratings

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

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

END OF CERTIFICATE