中国船级社
CHINA CLASSIFICATION SOCIETY

证书编号/Certificate No.
BG25PTB00002

型式认可证书
CERTIFICATE OF TYPE APPROVAL

兹证明本证书所述制造厂具备按照下列标准的要求生产本证书所列产品的能力和条件。
This is to certify that the manufacturer stated in the certificate meets the requirements of the standards listed below and is available with the ability and conditions to produce the products described in the certificate.

制造厂/Manufacturer

Kongsberg Maritime AS (Kongsberg)

地址/Address

Kirkegardsveien 45, P.O. Box 483, NO-3605 Kongsberg, Norway

产品名称/Product

推进装置遥控系统
Remote Control System for Thrusters, Propulsion and Steering

附加标志/Notations

无/Nil.

认可标准/Approval Standard

1. 中国船级社《钢质海船入级规范》第7篇第2, 3章
Chapter 2,3, Part Seven of China Classification Society Rules for Classification of Sea-going Steel Ships
2. 中国船级社《钢质海船入级规范》第8篇第11, 15章
Chapter 11, 15, Part Eight of China Classification Society Rules for the Classification of Sea-going Steel Ships
3. 中国船级社《船舶网络安全指南》2024
China Classification Society Guidlines for Ship Cyber Security,2024
4. IACS UR E27(Rev.1)

用于/Intended for

船舶/Ships

证书有效期至/This Certificate is valid until **2026年09月26日/ Sep. 26,2026**

发证机构 中国船级社奥尔根办事处
Issued by COS Bergen Office

签发日期 2025年07月04日
Date Jul. 04,2025

本证书根据中国船级社规范和相关规定签发。所有证书页为一个整体，必须同时使用。纸质证书每页均须由本社盖章方为有效，电子证书含数字签名方为有效，本证书复印件无效。任何单位和个人均不应摘录或节选本证书的部分内容。有关方对所持证书的真实性有疑问时，可以向我社检验机构咨询。**本证书凡是未注明版本的规范，其（发证时）最新版本适用于本证书。**
This Certificate is issued pursuant to the Rules of the Society and related regulation. All pages of the certificate are taken as a whole and are used simultaneously. No paper certificate page is valid without bearing the stamp of the Society, no electronic certificates is valid without the digital signature, and no copied form of the certificate is regarded as valid. Any part of the certificate is not to be extracted or abridged by any unit or individual in any form. Related parties who are doubted about the authenticity of the certificate may inquire of the Society or its offices. **For Rules with no version indication, their latest version (at the time of issuance of the certificate) applies to the certificate.**

产品明细/Product Description

推进装置遥控系统/Propulsion Machinery Control System(M0001)

名称/Name	属性（值）/Value	单位/Unit
产品名称/Product Name	Remote Control System for Thrusters, Propulsion and Steering	
型号/Type	K-Thrust 720	
电源/Power Source	-Levers: 24V DC dual input -Thruster command panel: 24V DC dual input -CAN switches: 24V DC dual input -Direct wiring panel: 24V DC dual input -(RPC420: 24V DC dual input) -Direct wiring contoller: 24V DC dual input -Thruster controller: 115/230V AC / 24V DC dual input -Local control cabinet: 24V DC dual input	
软件版本号/Software Version	4.2.X	
外壳防护等级/Degree of Protection of Enclosure	-Levers, Lever Panels/Displays: IP 22 -Thruster Command Panel: IP 44	
系统组成/System Component	-Thruster Command Panel -Levers -Lever Panels/Display -CAN switches -Indicator Instruments -(Remote Panel Controller) -Direct Wiring Panel and Controller -Local Control Panel -Thruster Controller -Operator Stations (TCPs) -K-Thrust Instrument Display -K-Master Thruster Control Equipment -Engine Room Telegraph For more details of hardware, please refer to additional pages.	

批准的图纸/Approved Drawings

图纸批准号/ Drawings Approval No.: NP16A03006,NP25PPP00696

产品认可试验报告/ Approval Test Report

试验报告编号/ Test Report No.： 110-0066078-C
试验报告日期/ Test Report Date： 2024-04-05
试验单位/ Laboratory: Kongsberg Kongsberg
试验单位地址/ Test Address: Norway

试验报告编号/ Test Report No.： REP008558
试验报告日期/ Test Report Date： 2023-03-16
试验单位/ Laboratory: NEMKO
试验单位地址/ Test Address: Norway

试验报告编号/ Test Report No.： 20157 rev 3
试验报告日期/ Test Report Date： 2014-01-31
试验单位/ Laboratory: Applica Technica
试验单位地址/ Test Address: Norway

试验报告编号/ Test Report No.： E15269.00
试验报告日期/ Test Report Date： 2016-01-06
试验单位/ Laboratory: NEMKO
试验单位地址/ Test Address: Norway

试验报告编号/ Test Report No.： E21159.01
试验报告日期/ Test Report Date： 2021-08-25
试验单位/ Laboratory: NEMKO
试验单位地址/ Test Address: Norway

试验报告编号/ Test Report No.： REP008558
试验报告日期/ Test Report Date： 2023-03-16
试验单位/ Laboratory: NEMKO
试验单位地址/ Test Address: Norway

试验报告编号/ Test Report No.： DANAK-1910264
试验报告日期/ Test Report Date： 2008-09-01
试验单位/ Laboratory: DELTA
试验单位地址/ Test Address: Denmark

试验报告编号/ Test Report No.： DANAK-1910281 Rev.1
试验报告日期/ Test Report Date： 2008-10-14
试验单位/ Laboratory: DELTA
试验单位地址/ Test Address: Denmark

试验报告编号/ Test Report No.： DNV 2011-3416
试验报告日期/ Test Report Date： 2011-10-14
试验单位/ Laboratory: DET NORSKE VERITAS
试验单位地址/ Test Address: Norway

试验报告编号/ Test Report No.： TI 3010-08-0107
试验报告日期/ Test Report Date： 2008-04-14
试验单位/ Laboratory: The National Institute of Technology in Norway
试验单位地址/ Test Address: Norway

试验报告编号/ Test Report No.： Nemko E11024.03
试验报告日期/ Test Report Date： 2012-05-07
试验单位/ Laboratory: Nemko A/S
试验单位地址/ Test Address: Norway

试验报告编号/ Test Report No.： DANAK-197309
试验报告日期/ Test Report Date： 2004-01-19
试验单位/ Laboratory: DELTA
试验单位地址/ Test Address: Denmark

试验报告编号/ Test Report No.： DANAK-197873
试验报告日期/ Test Report Date： 2005-03-07
试验单位/ Laboratory: DELTA
试验单位地址/ Test Address: Denmark

试验报告编号/ Test Report No.： E12059.00
试验报告日期/ Test Report Date： 2012-05-07
试验单位/ Laboratory: Nemko
试验单位地址/ Test Address: Norway

试验报告编号/ Test Report No.： DANAK-1910136
试验报告日期/ Test Report Date： 2008-04-17
试验单位/ Laboratory: DELTA
试验单位地址/ Test Address: Denmark

试验报告编号/ Test Report No.： DANAK-1910401
试验报告日期/ Test Report Date： 2009-06-04
试验单位/ Laboratory: DELTA
试验单位地址/ Test Address: Denmark

试验报告编号/ Test Report No.： DANAK-1910900
试验报告日期/ Test Report Date： 2010-06-02
试验单位/ Laboratory: DELTA
试验单位地址/ Test Address: Denmark

试验报告编号/ Test Report No.： DANAK-1911523
试验报告日期/ Test Report Date： 2012-10-26
试验单位/ Laboratory: DELTA
试验单位地址/ Test Address: Denmark

试验报告编号/ Test Report No.： DANAK-198696
试验报告日期/ Test Report Date： 2007-03-15
试验单位/ Laboratory: DELTA
试验单位地址/ Test Address: Denmark

试验报告编号/ Test Report No.： TL1673-EMC Issue 3
试验报告日期/ Test Report Date： 2014-06-26
试验单位/ Laboratory: Mariner Systems Test Lboratory
试验单位地址/ Test Address: UK

试验报告编号/ Test Report No.： TL1673-ENV Issue 3
试验报告日期/ Test Report Date： 2014-06-26
试验单位/ Laboratory: Mariner Systems Test Laboratory
试验单位地址/ Test Address: UK

试验报告编号/ Test Report No.： Thales 9501 029 033XX 001
试验报告日期/ Test Report Date： 2006-11-22
试验单位/ Laboratory: THALES NEDERLAND B.V.
试验单位地址/ Test Address: Nederland

试验报告编号/ Test Report No.： 332991
试验报告日期/ Test Report Date： 2009-04-16
试验单位/ Laboratory: Kongsberg Maritime AS
试验单位地址/ Test Address: Norway

试验报告编号/ Test Report No.： 6773782
试验报告日期/ Test Report Date： 2019-06-19
试验单位/ Laboratory: Kongsberg Maritime AS
试验单位地址/ Test Address: Norway

试验报告编号/ Test Report No.： DANAK-197329
试验报告日期/ Test Report Date： 2004-01-30
试验单位/ Laboratory: DELTA
试验单位地址/ Test Address: Denmark

试验报告编号/ Test Report No.： DANAK-197561
试验报告日期/ Test Report Date： 2004-08-09
试验单位/ Laboratory: DELTA
试验单位地址/ Test Address: Denmark

试验报告编号/ Test Report No.： DANAK-197724
试验报告日期/ Test Report Date： 2004-12-07
试验单位/ Laboratory: DELTA
试验单位地址/ Test Address: Denmark

试验报告编号/ Test Report No.： E15157.02
试验报告日期/ Test Report Date： 2017-08-21
试验单位/ Laboratory: Nemko
试验单位地址/ Test Address: Norway

试验报告编号/ Test Report No.： DANAK-19/16085 Rev.A
试验报告日期/ Test Report Date： 2016-02-15
试验单位/ Laboratory: DELTA
试验单位地址/ Test Address: Denmark

试验报告编号/ Test Report No.： DANAK-194874
试验报告日期/ Test Report Date： 1999-12-21
试验单位/ Laboratory: DELTA
试验单位地址/ Test Address: Denmark

试验报告编号/ Test Report No.： TL15055 Issue 5
试验报告日期/ Test Report Date： 2015-11-18
试验单位/ Laboratory: MS Testing
试验单位地址/ Test Address: UK

试验报告编号/ Test Report No.： E18081.00
试验报告日期/ Test Report Date： 2018-04-23
试验单位/ Laboratory: Nemko

试验单位地址/ Test Address: Norway

试验报告编号/ Test Report No.： E16203.00
试验报告日期/ Test Report Date： 2017-03-17
试验单位/ Laboratory: Nemko
试验单位地址/ Test Address: Norway

试验报告编号/ Test Report No.： E15165.01
试验报告日期/ Test Report Date： 2017-04-28
试验单位/ Laboratory: Nemko
试验单位地址/ Test Address: Norway

试验报告编号/ Test Report No.： TL15048-TL15051
试验报告日期/ Test Report Date： 2015-12-09
试验单位/ Laboratory: MS Testing
试验单位地址/ Test Address: UK

试验报告编号/ Test Report No.： TL16112
试验报告日期/ Test Report Date： 2016-11-11
试验单位/ Laboratory: MS Testing
试验单位地址/ Test Address: UK

试验报告编号/ Test Report No.： DANAK-19/15434
试验报告日期/ Test Report Date： 2015-07-07
试验单位/ Laboratory: DELTA
试验单位地址/ Test Address: Denmark

试验报告编号/ Test Report No.： DANAK-198508
试验报告日期/ Test Report Date： 2006-10-17
试验单位/ Laboratory: DELTA
试验单位地址/ Test Address: Denmark

试验报告编号/ Test Report No.： E21088.03
试验报告日期/ Test Report Date： 2021-10-28
试验单位/ Laboratory: NEMKO
试验单位地址/ Test Address: Philip Pedersens vei 11, P.O. Box 91, 1366 Lysaker, Norway

试验报告编号/ Test Report No.： DANAK-1910740
试验报告日期/ Test Report Date： 2009-12-18
试验单位/ Laboratory: DELTA
试验单位地址/ Test Address: Denmark

认可后的产品检验方式/ Method of Product Inspection after Approval

按规范认可后应进行产品检验的产品/The product should be inspected in term of the rules：
认可后的产品检验应由本社验船师根据本社规范规定按批准的产品检验计划进行检验，经检验合格后由本社颁发船用产品证书。
After approval, product inspection should be carried out by the Surveyor of the Society in accordance with the approved product inspection scheme, and the Marine Product Certificate will be issued by the Society upon satisfactory inspection.

认可保持条件/ Maintenance Requirements of Approval

1.型式认可后，如果产品及其重要零部件的设计、所用材料或制造方法有所改变，且影响到产品的主要特性、特征；或产品的性能指标有所更改，且超过认可的范围，则有关图纸和文件应经检验机构审批。并在检验机构认为必要时，经本社检验人员见证有关试验和进行检查，其结果应能证实仍符合认可条件。
After type approval, if there are changes to the design, materials used or manufacturing method of the product and important components and such changes affect major characteristics and properties of the product, or property indexes of the product are changed and exceed the scope of approval, related drawings and documents are to be examined and approved by the concerned survey office. Where deemed necessary by the survey office, the surveyor to the Society will go to witness relevant tests and conduct inspection and the results should be able to demonstrate compliance with the approval conditions.
2.工厂的质量管理体系应保持有效运行，并且与认可时一致。如果质量管理体系发生改变，应经原体系认证机构审核并报本社批准。
The quality management system of the factory shall be ensure effective operation, and shall be the same as the situation of approval. If there are any changes to the quality management system,

auditing of the original certification organization for quality management system and the society's approval shall be obtained.
3.认可证书有效期内，如果出现可能导致本社取消认可的情况，工厂应及时采取有效的纠正措施。
Within the validity of the approval certificate, if cases occur that may cause the Society to withdraw the approval, the manufacturer should take corrective actions in a prompt and effective manner.
4.在认可证书有效期内，本社检验人员可在未经事先通知的情况下对工厂的产品制造过程进行审核，以验证产品的生产是否符合业经本社批准的图纸和文件。工厂应予以配合。
Within the validity of the approval certificate, the surveyor to the Society may pay unannounced audit to the manufacturing process of the product in order to confirm whether it is in compliance with the drawings and documents approved by the Society. The factory should provide an active cooperation and necessary for the surveyor.
5.如果属于获得型式认可B 模式证书，且无需颁发船用产品证书/等效证明文件的情况，证书获得者应接受本社每年一次的定期审核，定期审核日为认可证书期满之日对应的每一周年日，检查工作应在周年日的前后三个月内进行。
If belong to the situation of the product has type approval mode B certificate, and marine product certificate/equivalent document is not necessary, those who have obtained the certificate should be subject to periodical audit every year. The date of periodical audit shall be each anniversary date which corresponds to the date of expiry of the relevant certificate and the periodical audit shall be done within a time span of three months before and after the annual surveillance date.

备注/Remarks

1. 本证书由原型式认可证书（No.BG22PTB00017）变更并替代原证书。
This certificate is modified from and supersedes the previous Type Approval Certificate No.BG22PTB00017.

2. K-Thrust 720的单船设计图纸应经由本社审图中心批准.
For each designed vessel, the drawing of K-Thrust 720 should be submitted for approval to the Society Plan Approval Center.

3. The cyber security levels of K-Thrust 720 systems is SL0 as per CCS Guidelines for Ship Cyber Security 2024

4.本社已审核了产品厂无石棉声明，但本社的审核不免除产品厂按照合同关系向订货方保证产品无石棉的责任。
The declaration of asbestos-free submitted by manufacturer has been reviewed by the Society. However, liability of the manufacturer to guarantee the products are asbestos-free to purchaser under contract will not be exempted.

中国船级社卑尔根办事处
CCS Bergen Office

注：本证书含有附页，共3页
Note: The certificate is attached with additional 3 page(s)

Product Description

K-Thrust 720 RCS system is a flexible and scalable thruster remote control system that can be tailored to suit a variety of different vessel requirements with regards to system segregation and redundancy.

Each propulsion unit, steering gear or thruster has its own separate remote control sub system. A complete remote-control system (RCS) for a propulsion plant consists of several parallel RCS. Common functions for command transfer and control mode selection at each control position synchronize the parallel sub systems.

1. Main function of the system

-Remote control of propulsion, thruster, and steering gear

-Command responsibility transfer between control positions and individual transfer between ECR and Bridge

-Command change over between control system (modes)

-Alarm indication

2. Additional functions

-Steering Gear Alarm indication system

-Synchronous control

-Crash stop in high-speed modes

-Backup Lever function

-Electric shaft control

-Controller / Bus redundancy

-VDR interface

-Emergency stop button

3. Operation modes

-Lever

-Manual Heading (Wheel or Mini wheel)

-Autopilot (External)

-Autopilot (K-Pos or K-Bridge)

-Speed Lever

-Speed Pilot (External)

-Joystick (Independent Joystick system, e.g. cJoy)

-DP (e.g., K-Pos)

Manufacturing places

(1) Kongsberg Maritime AS, Bekkajordet 8A, 3189 Horten, Norway

(2) Kongsberg Maritime AS, Søndre Kullerød 1, 3241 Sandefjord, Norway

(3) Kongsberg Maritime AS, Kirkegårdsveien 45, 3616 Kongsberg, Norway

(4) Kongsberg Maritime China Ltd., No. 136 North FuTe Road, China (Shanghai), Pilot Free Trade Zone, 200131 Shanghai, China

Components list for K-Thrust 720

Modules	Item Number
Telegraph	
Push Button Telegraph - PBT	81002278, 8100318
Lever	
Azimuth Lever with display	405846
Azimuth Lever	416533
Single Lever with display	405842
Single Lever	416531
Dual Lever with display	405844
Dual Lever	416532
Lever Display	416534
Lever telegraph unit – LTU11	364330
Lever telegraph and speedset unit – LTU11ME	389505
Mini Wheel	
Mini Wheel with display	412364
Mini Wheel	417835
Panel	
K-Master Alarm Panel (Alarm Panel w/horn K-Master)	346999
K-Master I/O controller	344382
K-Master Touch Control Panel – 13.3” HD 13T21 KMD-DR1-CORP	356680
Direct Wiring Panel	345857
Direct Wiring IO Controller	345847
Thruster Command Panel	406412
Multi Purpose Panel-MPP	8100290
Push Button 4 (PB4)	400992
Push Button 4 (PB4) Momentary	110-0033305
LAN to CAN Gateway-L2C	404654
I/O unit	
RSER200-4	603444
RHUB200-5	603442
RMP201-8	324400
RMP420	306712
RDIOR420	306713
Main Engine Interface unit -MEI	8100276
Remote input/output - C2xe	333346
Earth Fault Indicator 16 A –EFI-16	321492

Controller	
RCU502i	421768
RCU602	383962
RCU601	477601
CAN Distribution	
CAN Switch – CS100	396502
CAN Switch Connector Module – CC100A	396504
CAN Switch Connector Module – CC100B	396633
LAN to CAN Gateway – L2C	404654
Switch	
Lynx 8-port switch, 8xRJ45	RRM000376790
Lynx 8+2-port switch, 8xRJ45,2xLC	RRM000376886
Moxa SFP module	378893, 388849, 399666, 424338
Ethernet plugin modules – Moxa Port Interface IM-6700A series	438763, 438765, 402107
Computer	
PANEL computer 10.4”	RRM000603363 RRM000483816
PANEL computer 12”	000124787
PANEL computer 8”	000123971
MC340 Computer [ThinkStation P340 Tiny]	477549 477550 477553 477554 110-0028204
MC360 Computer [ThinkStation P360 Tiny]	110-0016255 110-0016256 110-0016257 110-0016258 110-0016259 110-0016260 110-0024558
Panel PC with 12.1”touch screen	402831
Panel PC with 12.1”touch screen	110-0002985,RRM000526735
NEO CE-HW-01	409251
Power Supply	
QUINT – PS/1AC/24DC/10	326396
QUINT – PS/1AC/24DC/20	326574
Trio Diode Module, 12-24VDC, 2x10A/1x20A	386113
PULS YR40.241	389002
Network devices	
Moxa EDS-408A Series	467615
EDS-408A-MM-SC	450144
EDS-408A-3M-SC	464916
Moxa IKS-6728A series	382427
Cisco C1000-24T-4X-L	110-0001617
Cisco C1000-24FP-4G-L	110-0009583
Cisco C1000-24T-4G-L	469125,492517
Fortinet FGR-60F	110-0020955