



中国船级社
CHINA CLASSIFICATION SOCIETY

证书编号/Certificate No.
BG26PTB00011

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(Trondheim)

地址/Address

Skonnertvegen 1, N-7053 Ranheim, Norway

产品名称/Product

压力、温度、液位测量报警系统
Pressure, Temperature, Level Measuring Alarm System

认可标准/Approval Standard

1. 中国船级社《钢质海船入级规范》第3篇第5章, 第15章
Chapter 5 & 15, Part Three of CCS Rules for Classification of Sea-going Steel Ships
2. 中国船级社《钢质海船入级规范》第4篇第1, 2, 3章
Chapter 1, 2 & 3, Part Four of CCS Rules for Classification of Sea-going Steel Ships
3. 中国船级社《钢质海船入级规范》第7篇第2章
Chapter 2, Part Seven of CCS Rules for Classification of Sea-going Steel Ships
4. 中国船级社《船舶网络安全指南》(2025) 第1章, 第2章, 第3章
Chapter 1, 2 and 3 China Classification Society Guidelines for Ship Cyber Security 2025
5. IACS UR E27 (Rev. 1) 船载系统和设备网络韧性
IACS UR E27 (Rev.1) Cyber resilience of on-board systems and equipment

用于/Intended for

船舶/Ships



证书有效期至/This Certificate is valid until 2028年11月13日/ Nov. 13,2028

发证机构/中国船级社北京办事处
Issued by CCS Beijing Office

签发日期 2026年08月27日
Date Aug. 27,2026

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, 可以向本社检验机构咨询。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.**



Form No: T01.

联系方式/Contact Us, 见本社官方网站/See official web site of the Society (<http://www.ccs.org.cn>)

UTN:P026-50464684

产品明细/Product Description**压力、温度、液位测量报警系统/Pressure, Temperature, Level Measuring Alarm System (M0001)**

名称/Name	属性（值）/Value	单位/Unit
型号/Type	K-Gauge CLS	
系统组成/System Component	Refer to the additional pages.	
软件版本号/Software Version	Refer to the additional pages.	
网络安全等级/Cyber Security Level	SL0	

压力、温度、液位测量报警系统/Pressure, Temperature, Level Measuring Alarm System (M0002)

名称/Name	属性（值）/Value	单位/Unit
型号/Type	K-Gauge RSS	
系统组成/System Component	Refer to "Additional Page" for details	
软件版本号/Software Version	Refer to "Additional Page" for details	
网络安全等级/Cyber Security Level	SL0	

压力、温度、液位测量报警系统/Pressure, Temperature, Level Measuring Alarm System (M0003)

名称/Name	属性（值）/Value	单位/Unit
型号/Type	K-Gauge TOP	
系统组成/System Component	Refer to the additional pages.	
软件版本号/Software Version	Refer to the additional pages.	
网络安全等级/Cyber Security Level	SL0	

批准的图纸/Approved Drawings

图纸批准号/ Drawings Approval No. : NP17A01510, NP20PPP04365, NP21PPP01383, NP26PPP02836

产品认可试验报告/ Approval Test Report

试验报告编号/ Test Report No. : Baseefa06ATEX0092X-Issue 4

试验报告日期/ Test Report Date : 2020-03-01

试验单位/ Laboratory: SGS

试验单位地址/ Test Address: UK

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. : IECEX BAS 04.0025

试验报告日期/ Test Report Date : 2005-04-20

试验单位/ Laboratory: Baseefa

试验单位地址/ Test Address: UK

试验报告编号/ Test Report No. : BAS01ATEX7005 - Issue 10

试验报告日期/ Test Report Date : 2018-11-09

试验单位/ Laboratory: SGS

试验单位地址/ Test Address: UK

试验报告编号/ Test Report No. : DNV 22 ATEX 82891X Issue 1

试验报告日期/ Test Report Date : 2014-02-26

试验单位/ Laboratory: DNV

试验单位地址/ Test Address: Norway

试验报告编号/ Test Report No. : P007416B

试验报告日期/ Test Report Date : 2025-01-17

试验单位/ Laboratory: Nemko Scandinavia AS

试验单位地址/ Test Address: Norway

试验报告编号/ Test Report No. : E09680.00

试验报告日期/ Test Report Date : 2009-06-24
试验单位/ Laboratory: Nemko AS
试验单位地址/ Test Address: Oslo, Norway

试验报告编号/ Test Report No. : E17118. 00
试验报告日期/ Test Report Date : 2017-09-22
试验单位/ Laboratory: Nemko AS
试验单位地址/ Test Address: Oslo, Norway

试验报告编号/ Test Report No. : E13152. 02
试验报告日期/ Test Report Date : 2013-09-30
试验单位/ Laboratory: Nemko AS
试验单位地址/ Test Address: Oslo, Norway

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. : E21088. 00
试验报告日期/ Test Report Date : 2021-07-05
试验单位/ Laboratory: Nemko
试验单位地址/ Test Address: Norway

试验报告编号/ Test Report No. : i047852
试验报告日期/ Test Report Date : 2020-12-17
试验单位/ Laboratory: Kongsberg Maritime AS(Trondheim)
试验单位地址/ Test Address: Skonnertvegen 1, N-7053 Ranheim, Norway

试验报告编号/ Test Report No. : E16236. 00
试验报告日期/ Test Report Date : 2016-11-14
试验单位/ Laboratory: Nemko AS
试验单位地址/ Test Address: Oslo, Norway

试验报告编号/ Test Report No. : E15308. 01
试验报告日期/ Test Report Date : 2016-03-03
试验单位/ Laboratory: Nemko AS
试验单位地址/ Test Address: Oslo, Norway

试验报告编号/ Test Report No. : 209536
试验报告日期/ Test Report Date : 2012-08-21
试验单位/ Laboratory: Nemko AS
试验单位地址/ Test Address: Oslo, Norway

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: Oslo, Norway

试验报告编号/ Test Report No. : DANAK-1911523 Revision 1
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. : E15165. 00
试验报告日期/ Test Report Date : 2015-09-18
试验单位/ Laboratory: Nemko
试验单位地址/ Test Address: Oslo, Norway

试验报告编号/ Test Report No. : E10017. 00
试验报告日期/ Test Report Date : 2010-01-19
试验单位/ Laboratory: Nemko AS
试验单位地址/ Test Address: Oslo, Norway

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.

备注/Remarks

a) 本产品不支持直接与不可信网络连接，不支持无线访问，本系统硬件以及访问界面应设置在受控物理区域
This product does not support direct connection to untrusted networks and does not support Wireless access. all hardware devices and accessible interfaces in the CBS shall be installed in areas With physical access restrictions.

b) 如实际产品交付时重大变化（含硬件及软件）应通知CCS，若变化明显影响本社相关要求时，可能需要进行型式试验，签发新的认可证书。/Major changes of the type approved system affecting future deliveries shall be informed to CCS. 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.

c) 工厂应确保产品的开发遵循安全开发生命周期中各阶段的网络安全要求，编制相应的程序和安全更新文件应持续有效，并符合本社《船舶网络安全指南》及IACS UR E27 要求。
The manufacturer shall Ensure that the development of products meets the cyber security requirements at each stage of Secure Development Lifecycle, and develop corresponding prosederes and security update documents that are continuously effective and comply with CCS "Guidelines for Ship Cyber Security" and IACS UR E27 requirements.

d) 结合具体项目申请本社检验时，以下文件应提交批准：CBS 资产清单、网络系统拓扑图、配置核查报告
The following documentation of the specific base individual application is to be submitted for approval in each case:

- CBS asset inventory
- Topology diagrams
- Test report for configuration of security capabilities.

e) The system mentioned in this certifcate can be produced by following company:

Chinese Name: 康士伯企业管理（上海）有限公司

Chinese Address: 中国（上海）自由贸易试验区富特北路136 号，邮编：200131

English Name: Kongsberg Maritime China Ltd.

English Address: No. 136 North Fute Road, China (Shanghai) Pilot Free Trade Zone, 200131, China

f) For each designed vessel, the drawings of the K-Gauge Cargo monitoring system should be submitted for approval to the Society Plan Approval Center.

g) 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.

h) 本证书由原型式认可证书 (No. BG23PTB00013_04) 变更并替代原证书。

This Certificate is modified from and supersedes the previous Type Approval Certificate No. BG23PTB00013_04.

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)

1.The System Component

Name of type	Description	List of components
K-Gauge CLS	Tank monitoring system	1) Main CLS Cabinet 2) Radar Tank Gauge (RTG) 3) Cargo Temperature Unit (CTU) 4) Signal Processing Unit (GLK-300,RCM-300,HCM-300,TCU-300) 5) Cargo Temperature Sensors 6) Tank Pressure Sensors 7) Operator Stations and Pannels 8) Zener Barriers 9) Remote Multipurpose I/O (RMP420) 10) Remote Digital I/O and Relay (RDIOR420,RSER200-4 RHUB200-5) 11) Remote Controller Unit (RCU601,RCU602)
K-Gauge RSS	Tank monitoring system	1) K-Gauge RSS Cabinet 2) Remote Multipurpose I/O (RMP420) 3) Remote Controller Unit (RCU601, RCU602) 4) Operator Stations 5) Operator Panels
K-Gauge TOP	High-level and overfill alarm system	1) Main HLA Cabinet 2) Alarm sensors 3) Zener barriers 4) Remote Controller Unit (RCU601,RCU602) 5) Operator Panels 6) Alarm devices 7) Remote Multipurpose I/O (RMP420) 8) Remote Digital I/O and Relay (RDIOR420,RSER200-4 RHUB200-5) 9) Radar Tank Gauge (RTG) 10) Signal Processing Unit (GLK-300,RCM-300,HCM-300,TCU-300)
The Network device	For K-Gauge CLS/RSS/TOP	Cisco Catalyst1000 Series Moxa IKS-6700Series Fortinet FGR-60F Fortinet FS-124F Moxa EDR-8010-2GSFP Moxa EDS-408A Series Moxa EDS-518E Series
The Operator Station (OS)	For K-Gauge CLS/RSS/TOP	MC360 i3 LAN(Based on Windows10) MC360 i5 GPU(Based on Windows10) MC360 i7 LAN(Based on Windows10) MC380 u5 Basic(Based on Windows11) MC380 u5 LAN(Based on Windows11) MC380 u5 Basic Extra(Based on Windows11) MC380 u7 LAN(Based on Windows11) MC380 u7 LAN Extra(Based on Windows11) MC380 Ultra u7 (Based on Windows11)

2.Software information

Name of type	Version
K-Gauge CLS RSS TOP	AIM basis software release 8.5, 8.6, 8.7, 8.8 ,8.10. 8.12 and 8.13

3. Ex-Proof information

Part Name	Ex-Proof Grade	Ex-Certificate No.	Issued by
Transmitter Barrier Unit DZ- 110/U	II (1) G Ex[ia Ga] IIC	Presafe 14 ATEX 4368, issue 5	DNV Product Assurance AS
Signal Processing Unit (SPU) GLK-300	II (1) G [Ex ia Ga] IIB/IIC (-15°C ≤ Ta ≤ +70°C)	Presafe 14ATEX5412X	DNV Product Assurance AS
Cargo Temperature Unit (CTU) GC- 300, GC-306	II 1 G Ex ia II C T4 Ga (-45°C ≤ Ta ≤ +85°C)	Sira 14ATEX2054X issue 4	CSA Group Netherlands B.V.
Pressure Transmitter GT402, GT403, GT404, GT406 GT420,GT422	II 1 G Ex ia IIC T5 Ga (-45°C ≤ Ta ≤ +80°C)	Presafe 20 ATEX 08383X Issue 0	DNV GL Presafe AS
Radar Communication Module RCM- 300	II (1) G [Ex ia Ga]II C (-15°C ≤ Ta ≤ +70°C)	DNV 22 ATEX 82891X Issue 1	DNV Product Assurance AS
HART Communication Module HCM- 300	II (1) G [Ex ia Ga]II C (-15°C ≤ Ta ≤ +70°C)	DNV 22 ATEX 82891X Issue 1	DNV Product Assurance AS
Barrier Unit KCD2-SR-Ex*.*	II 3 (1) G Ex ec nC [ia Ga] IIC T4 Gc (-40°C ≤ Ta ≤ +70°C) II (1) D [Ex ia Da] IIIC (-40°C ≤ Ta ≤ +70°C) I (M1) [Ex ia Ma] I (-40°C ≤ Ta ≤ +70°C)	Baseefa06ATEX00 92X-Issue 4	SGS
Barrier Unit MLT 7700 Series	II (1) GD [Ex ia Ga] IIC (-20°C ≤ Ta ≤ +60°C) [Ex ia Da] IIIC (-20°C ≤ Ta ≤ +60°C)	BAS01A TEX7217 - Issue 10	SGS
Z-Series Shunt Zener Diode Safety Barriers	II (1) GD [Ex ia Ga]II C (-20°C ≤ Ta ≤ +60°C) [Ex ia Da]IIIC (-20°C ≤ Ta ≤ +60°C) I M1 [Ex ia Ma] I (-20°C ≤ Ta ≤ +60°C)	BAS01ATEX7005 - Issue 10	SGS
Radar Tank Gauge GLA-300 and GLA-310	II 1 G Ex ia IIC T4 Ga (-45°C ≤ Ta ≤ +80°C/+70°C) *Ambient temperature 80°C when single radar and 70°C when dual radar.	Sira 14ATEX2056X Issue: 5	CSA Group Netherlands B.V.

Note: The Ex-Proof parameters of the approved products originate from Ex-Certificate received from the manufacturer, not approved by CCS. This Type Approval Certification will be invalid if the approved products do not hold a valid Ex-Certificate.

4. System Description

K-Gauge CLS

Cargo tank monitoring system for monitoring level, pressure and temperature on cargo tanks for oil, product and chemical cargo. Also included monitoring of ballast, fuel and service tanks levels when operated from same system.

K-Gauge RSS

Remote Sounding System for draft, ballast and service tanks, including both hydrostatic pressure and electro-pneumatic type.

K-Gauge TOP

Flexible high level and overfill alarm system suitable for use in all types of tankers rather than the tank intended for the liquefied gas.

The K-Gauge CLS /TOP/ RSS system utilizes K-Chief as its tank monitoring and control platform , the asset inventory documents 110-0066104 Asset Inventory K-Chief K-Safe is applicable for K-Gauge CLS /TOP/ RSS