



中国船级社
CHINA CLASSIFICATION SOCIETY

证书编号/Certificate No.
GB24PTB00058

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

DEIF A/S

地址/Address

Frisenborgvej 33, DK-7800 Skive, DENMARK

产品名称/Product

舵角指示器
Rudder Angle Indicator

认可标准/Approval Standard

- 国际海事组织大会决议A. 694 (17) 《作为全球海上遇险和安全系统（遇险和安全系统）组成部分的船载无线电设备和电子助航设备的一般要求》
IMO Resolution A.694(17) General Requirements for Shipborne Radio Equipment Forming Part of the Global Maritime Distress and Safety System (GMDSS) and for Electronic Navigational Aids
- 经MSC. 466 (101) 修正的MSC. 191 (79) 《船载航行显示器有关航行信息显示的性能标准》
IMO Resolution MSC.191(79) Performance Standards for the Presentation of Navigation-Related Information on Shipborne Navigational Displays, as Amended by MSC.466(101).
- IEC 60945:2002/COR1:2008 《船用航行和无线电通信设备及系统-通用要求-试验方法和试验结果的要求》
IEC 60945:2002/COR1:2008 Maritime Navigation and Radiocommunication Equipment and Systems - General Requirements - Methods of Testing and Required Test Results
- ISO 20673: 2022 《船舶和海上技术--电气舵角指示器》
ISO 20673: 2022 Ships and Marine Technology -- Electric Rudder Angle Indicators

用于/Intended for

船舶/Ships



证书有效期至/This Certificate is valid until 2029年11月25日/ Nov. 25,2029

发证机构 中国船级社哥本哈根办事处
Issued by CCS Copenhagen Office

签发日期 2025年02月17日
Date Feb. 17, 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 this 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:P024-42865613

产品明细/Product Description**舵角指示器/Rudder Angle Indicator (M0001)**

| 名称/Name | 属性 (值) /Value | 单位/Unit |
|-----------------------|--|---------|
| 型号/Type | Indicator: TRI-2/XL/BRW-2/BW/XDi Transmitter: RTA 602/RTC 300/RTC 600 | |
| 系统组成/System Component | See Additional Pages | |

批准的图纸/Approved Drawings

图纸批准号/ Drawings Approval No. : NP20PPP03744

产品认可试验报告/ Approval Test Report

试验报告编号/ Test Report No. : DANAK-1910190/1910191

试验报告日期/ Test Report Date : 2008-06-12

试验报告编号/ Test Report No. : IPA No. 182 & 220

试验报告日期/ Test Report Date : 2008-08-18

试验报告编号/ Test Report No. : DANAK-1910397

试验报告日期/ Test Report Date : 2009-01-27

试验报告编号/ Test Report No. : IPA No. 220-8

试验报告日期/ Test Report Date : 2009-03-18

试验报告编号/ Test Report No. : IPA No. 293

试验报告日期/ Test Report Date : 2009-09-01

试验报告编号/ Test Report No. : DANAK-19/12974

试验报告日期/ Test Report Date : 2013-04-11

试验报告编号/ Test Report No. : DANAK-19/13130

试验报告日期/ Test Report Date : 2013-06-06

试验报告编号/ Test Report No. : UB 11794

试验报告日期/ Test Report Date : 2013-07-03

试验报告编号/ Test Report No. : DANAK-19/13548

试验报告日期/ Test Report Date : 2013-11-11

试验报告编号/ Test Report No. : IPA0369

试验报告日期/ Test Report Date : 2013-12-04

试验报告编号/ Test Report No. : 20040401

试验报告日期/ Test Report Date : 2013-12-04

试验报告编号/ Test Report No. : IPA0340-01

试验报告日期/ Test Report Date : 2015-04-07

试验报告编号/ Test Report No. : IPA0375-01

试验报告日期/ Test Report Date : 2015-09-15

试验报告编号/ Test Report No. : EPC 675 XDi TEST DATA

试验报告日期/ Test Report Date : 2016-12-16

试验报告编号/ Test Report No. : XL RF E-FIELD IMMUNITY_TEST 02B Ref. : 4910217502N

试验报告日期/ Test Report Date : 2020-05-27

试验报告编号/ Test Report No. : XL RADIATED EMISSION - 16A Ref. : 4910216501M

试验报告日期/ Test Report Date : 2020-05-27

试验报告编号/ Test Report No. : 02B RF electromagnetic field immunity XDi Ref. : 4910217502N

试验报告日期/ Test Report Date : 2020-06-08

试验报告编号/ Test Report No. : 16A Radiated disturbance XDi Ref. : 4910216501M

试验报告日期/ Test Report Date : 2020-06-08

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

按规范只认可不进行产品检验的产品/The product approved only in term of the rules:

认可后的产品由制造厂检验合格后签发合格证明, 并连同该产品的本社认可证书复印件一并交付用户, 制造厂对产品符合公约、法规、本社规范和本社认可的标准规定负责。

After approval, product inspection should be carried out by the Manufacturer. Upon satisfactory inspection, and the Quality Certificate issued by the Manufacturer should be provided to the purchaser together with the copy of the approval certificate issued by the Society. The manufacturer should take responsibility for the product being in compliance with the convention, statutory regulation, the Society rules and the standard accepted by the Society.

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. 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。

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.

2. 本证书由原型式认可证书 (No. GB20PTB00049) 换新并替代原证书。

This certificate is renewed from and supersedes the previous Type Approval Certificate No. GB20PTB00049.

中国船级社哥德堡办事处

CCS Gothenburg Office

注: 本证书含有附页, 共2页

Note: The certificate is attached with additional 2 page(s)

System Description

The Rudder Angle Indicator System may consist of the following equipment:

- Panel-mounted indicators, type XL72/96/144/192
- Bridge wing indicators, type BW144/192
- Bridge wing indicator, type BRW-2
- Panorama indicator, type TRI-2
- Flexible display indicators, type XDi 96/144/192
- Optional XDi extension modules: AX1 analogue, DX1 digital, NX1/NX2 serial
- Rudder angle transmitter, type RTA 602/RTC 300/RTC 600
- Analogue signal converter, type TDG-210DG

Product Specification

Illuminated indicators XL, BW and BRW-2

| | Description | Standards/remarks |
|-------------------------|---|-------------------|
| Type | XL72, XL96, XL144, XL192, BW144, BW192, BRW-2 | |
| Power supply | 24 V DC, -25/+30% (18 to 24 to 31.2 V DC) | |
| Illumination supply | 7 to 30 V DC (max. 31.2 V DC) | |
| Connectors | Analogue, sCAN and Dual CAN | |
| Compass safety distance | Steering compass: 0.60 m | IEC/EN 60945 |
| | Standby/emergency compass: 0.40 m | |
| Accuracy | Class 0.5 (-10 to 15 to 30 to 55 °C) | IEC/EN 60051 |
| Protection | XL: Front IP52(IP60 optional), Rear IP20 | IEC/EN 60529 |
| | BW, BW-2: IP66 | |
| Data sheet | 4921250057 UK | |

Flexible Display indicators XDi

| | Description | Standards/remarks |
|-------------------------|--|-------------------|
| Type | XDi 96, XDi 144, XDi 192 | |
| Variants | Dual, Multi and Nav | |
| Power supply | 24 V DC (18.0 to 31.2 V DC) | |
| Interfaces | two CAN interfaces | |
| Optional | extension modules: AX1 analogue, DX1 digital, NX1/NX2 serial | |
| Compass safety distance | < 0.3 m | IEC/EN 60945 |
| Software version | XDi D & M platform 1: 1.0x.x XDi D, M & N platform 2: 2.0x.x, AX1 Modul: 1.0x.x, DX1 Modul: 1.0x.x, NX1/NX2 Modul: 1.0x.x | |
| Accuracy | Analogue scale: < +/-1 pixel, accuracy depends on scale length. No parallax error on analogue indicators. Digital readout: < +/-1 of least significant digit | |
| Protection | From front IP52, from rear IP20 | IEC/EN 60529 |
| | Optional kit: IP66 from front | |
| Data sheet | 4921250067 UK | |

Panorama rudder indicator TRI-2, TRI-2 CAN

| | Description | Standards/remarks |
|-------------------------|--|-------------------|
| Power supply | 12 V or 24V DC (9.0 to 31.2V DC) | CAN version |
| | 24V AC/DC -25/+30% for illumination | Analogue version |
| Interface | Single CAN and dual CAN | CAN version |
| | Standard analogue interface or 3-wire rudder interface | Analogue version |
| Accuracy (CAN) | Class 1 in the range -10...15...30...55°C | IEC/EN 60051 |
| Accuracy (analogue) | Class 1.5 in the range -10...15...30...55°C | IEC/EN 60051 |
| Compass safety distance | 1 metre (40 inch) | IEC/EN 60945 |
| Protection | IP54 | IEC/EN 60529 |
| Data sheet | 4921250066 UK | |

Rudder/azimuth angle analogue transmitter RTA 602

| | Description | Standards/remarks |
|-------------------------|--|-------------------|
| Transmitter type | Analogue 2-wire 4 to 20 mA | |
| Output range | 4.0 to 20.0 mA | |
| Operating voltage (VCC) | 7.5 to 35.0 Vdc | |
| Rotation direction | Default clockwise (CW) seen into the shaft Programmable to counterclockwise (CCW) | |
| Angle range | Freely programmable: Recommended +/-20 deg. to +/-180 deg. Default +/-45 deg. | |
| Protection | IP67 | IEC/EN 60529 |
| Data sheet | 4921250068 UK | |

Rudder/azimuth angle CAN transmitter RTC 300, RTC 600

| | Description | Standards/remarks |
|-------------------------|-----------------------|-------------------|
| Type | CAN angle transmitter | |
| Interface | 1 CANopen interface | ISO/DIS 11898-2 |
| Operating voltage (VCC) | 18 to 31.2 V DC | |
| Current | ≤30 mA | |
| Measuring angle | +/-180 deg. | |
| Protection | IP67 | IEC/EN 60529 |
| Data sheet | 4921250069 UK | |