

TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate No:
MERB00003AN
Revision No:
1

This Certificate is issued by DNV UK Limited based on authorisation of the Maritime & Coast Guard Agency (MCA) as an UK Approved Body to undertake conformity assessments on marine equipment in accordance with the requirements of the Merchant Shipping (Marine Equipment) Regulations 2016 as amended.

This is to certify:

That the Rudder angle indicator

with type designation(s)
DEIF Rudder Angle Indicator System

Issued to
DEIF A/S
Skive, Denmark

is found to comply with the requirements in the following Regulations/Standards:
Regulation **MSN 1874 Amendment 9**,
item No. UK/4.20. SOLAS 74 as amended, Regulations 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.302(87)

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

This Certificate is valid until **2029-11-26**.

Issued at **London** on **2024-11-27**

DNV local unit:
Denmark CMC



for **DNV UK Ltd.**

Approval Engineer:
Jörg Rebel

Approved Body No.: **0097**

Mydlak-Röder, Christine
MER Service Responsible



**Maritime &
Coastguard
Agency**

UK Approved Body Authorised
by the MCA

This certificate will not be valid if the manufacturer makes any changes or modifications to the approved type of equipment, which have not been notified to, and agreed with the approved body named on this certificate.

During the period of validity of this certificate the applicable regulations (international conventions and the relevant resolutions and circulars of the IMO) and testing standards may change, therefore the product conformity may need to be re-assessed by the Approved 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-control phase module (D, E or F) of Schedule 2 of the Merchant Shipping (Marine Equipment) Regulations 2016, as amended is fully complied with and controlled by a written inspection agreement with an approved body. In case limitations of use apply, these should be indicated in the Annex.

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.

Product description

The Rudder Angle Indicator System consists of the following equipment:

Analogue system components:

Indicators: XL72, XL96, XL144, XL192, TRI-2, BRW-2, BW144, BW192, XDi96, XDi144, XDi192

Feedback Unit: RT-2, RTA602, Sakae SFSCB30A, Sakae FSCB30AG, Volvo Penta IPS 3

Interface Unit: DC/DC Amplifier: TDG-210, WAGO 857-409, AX1 analogue module

CAN system components:

Indicators: XL72, XL96, XL144, XL192, BRW-2, BW144, BW192, TRI-2 CAN, XDi96, XDi144, XDi192

Feedback Units: Contelec Vert-X 515x CANopen/Vert-X 37 CANopen, FSG MH620-II/MU, Dr. Horn EDG 50.42/72, RTC300, RTC600

Optional: XDi extension modules AX1 analogue, DX1 digital, NX1/NX2 serial

Software versions: XDi D & M platform 1: 1.0x.x and 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

Application/Limitation

WAGO 857-409 Amplifier not to be used in locations of bridge and open decks.

Tests carried out

- Environmental and EMC testing: IEC 60945 (2002) incl. Corrigendum 1 (2008)
- Interface testing: IEC 61162-1 (2016), IEC 61162-2 (1998)
- Presentation testing: IEC 62288 (2021)
- Performance testing: ISO 20673 (2022)

Note: The DEIF Rudder Angle Indicator System does not issue alerts, hence, testing according to IEC 62923-1/-2 is deemed as not being applicable.

Marking of product

According to IEC 60945, Sect.4.9:

The product to be marked with following information, where practicable:

- Identification of the manufacturer,
- Equipment type number or model identification under which it was type tested,
- Serial number of the unit,
- Compass safe distance.

Alternatively, the marking may be presented on a display at equipment start-up, and in case of fixed equipment compass safe distance may be given in the equipment manual.

Type Examination documentation

DNV No.	Document ID	Rev.	Description
58	4198350064B	B	Rudder system MED approval matrix
57	GS0067 + GS0068	2020-02-24	Report: GS0067_GS0068_MED test_IPS3_xDi_XL
53	2P00115-01	2020-02-06	Report: Dry Heat_IPS3
52	2P00115	2020-02-13	Report: Burst and Radiated 6 GHz_IPS3
50	PX20946	2012-03-22	Report: Environmental Test Report, IPS3
49	PX20946	2012-03-19	Report: EMC Report, IPS3
36	4910215100H	2017-10-30	Report: 15A - High Voltage Test, Sakae potmeter
35	4910215100H	2017-10-30	Report: 14A Insulation resistance, Sakae potentiometer
34	4910214100i	2017-11-10	Report: 9A Vibration Test, Sakae potentiometer
33	4910213115G	2017-10-20	Report: 6A Damp Heat test Marine, Sakae potentiometer
32	4910213105G	2017-10-12	Report: 4A Dryheat Test, Sakae potentiometer
31	4910213100G	2017-10-13	Report: 3A Cold test, Sakae potentiometer
30	4910212100F	2017-10-23	Report: 02A Performance test Sakae potentiometer

DNV No.	Document ID	Rev.	Description
29	GS0066	2017-11-07	GS0066_MED test Sakae_SIN-COS + XDi 180_0_180_2017_Final
28	GS0065	2017-11-07	GS0065_MED test Sakae_SIN-COS + XL 180_0_180_2017_Final
27	GS0012	2015-03-19	Report: GS0012_MED test RTA 600 + XL 45_0_45_Final
26	GS0005	2015-03-16	Report: GS0005_MED test RTC 600 + XDi 45_0_45_Final
25	GS0003	2015-03-18	Report: GS0003_MED test RTC 600 + TRI-2 70_0_70_Final
24	GS0002	2015-03-19	Report: GS0002_MED test RTC 600 + XL 45_0_45_Final
23	GS0064	2015-03-17	Report: GS0064_MED test EDG 50,72 + TRI-2 70_0_70_Final
22	GS0061	2015-03-20	Report: GS0061_MED test EDG 50,72 + XL 45_0_45_Final
21	GS0054	2015-03-20	Report: GS0054_MED test FSG MH620-II + TRI-2 70_0_70_Final
20	GS0051	2015-03-20	Report: GS0051_MED test FSG MH620-II + XL 45_0_45_Final
19	GS0044	2015-03-20	Report: GS0044_MED test EDG 50,42 + TRI-2 70_0_70_Final
18	GS0041	2015-03-18	Report: GS0041_MED test EDG 50,42 + XL 45_0_45_Final
17	GS0033	2015-03-18	Report: GS0033_MED test Contelec Vert X-5151 + XDi 45_0_45_Final
16	GS0024	2015-03-20	Report: GS0024_MED test Contelec Vert x-37 + TRI-2 70_0_70_Final
15	GS0023	2015-03-18	Report: GS0023_MED test Contelec Vert X-37 + XDi 45_0_45_Final
14	GS0022	2015-03-19	Report: GS0022_MED test Contelec Vert X-37 + XL 45_0_45_Final
13	GS0014	2015-03-19	Report: GS0014_MED test RTA 600 + TRI-2 45_0_45_Final
12	GS0013	2015-03-18	Report: GS0013_MED test RTA 600 + XDi 45_0_45_Final
10		2014-06-12	Report: CAN Bus performance test
9		2015-02-18	Report: CAN Bus performance test (Angle transmitter)
8		2015-03-27	Report: Test Report Flicker evaluation XDi
6		2013-10-09	Report: Test report_RAI_GL_xDi_Horn_FSG
5		1.1	Report: Test of a Maritime navigation and radiocommunication equipment and systems IEC 61162-1/-2
4	4189350049B	B	Manual: Designer's Handbook
3	4189350046D	D	XDi quick guide 4189350046 UK
2	4921250067D	D	XDi data sheet 4921250067 UK
1	4910211100D	2016-12-16	Report: EPC 679 XDi Test Data IEC 60945
-	Miscs		E502501-2 dated 05-11-2004; Phoenix Testlab E112540E1 and U112540E1, RT2 20100715JST, Technical Report DNV No. 95-1019 dated 1995-03-01 and IPG 0102 dated 1999-08-23, EMC Test DANAK-1910936 dated 2010-06-21, Test Report no IPA 0322 dated 2010-09-22

END OF CERTIFICATE