DNV·GL

Certificate No:
MEDB00003AN

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Application of: Directive 2014/90/EU of 23 July 2014 on marine equipment (MED). This Certificate is issued by DNV GL SE based on the notification of the Federal Maritime and Hydrographic Agency of Germany.

This is to certify:

That the Rudder angle indicator

with type designation(s)
DEIF Rudder Angle Indicator System

Issued to
DEIF A/S
Skive Midtjylland, Denmark

is found to comply with the requirements in the following Regulations/Standards:
Regulation **(EU) 2017/306,**
item No. MED/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 **2020-04-16**.

Issued at **Hamburg** on **2017-11-21**

DNV GL local station:
Aalborg

Approval Engineer:
Jan Reinecke

Notified Body
No.: **0098**

for **DNV GL SE**

Sven Dudszus
Head of Notified 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-surveillance module (D, E or F) of Annex B of the MED is fully complied with and controlled by a written inspection agreement with a Notified Body. The product liability rests with the manufacturer or his representative in accordance with Directive 2014/90/EU.
This certificate is valid for equipment, which is conform to the approved type. The manufacturer shall inform DNV GL SE of any changes to the approved equipment. This certificate remains valid unless suspended, withdrawn, recalled or cancelled.
Should the specified regulations or standards be amended during the validity of this certificate, the product is to be re-approved before being placed on board a vessel to which the amended regulations or standards apply.

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Job Id: **344.1-007507-1**
Certificate No: **MEDB00003AN**

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
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.

Type Examination documentation

DNV GL No	Document Id.	Rev.	Description
45	4198350064A	2017-11-07	Rudder system MED approval matrix
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
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

DNV GL No	Document Id.	Rev.	Description
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 IEC60945
-	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

Tests carried out

Applicable tests according to

- IEC 60945 (2002) incl. IEC 60945 Corr. 1 (2008),
- IEC 61162 series:
  - IEC 61162-1 ed4.0 (2010-11)
  - IEC 61162-2 ed1.0 (1998-09)
- IEC 62288 Ed. 2.0 (2014-07),
- ISO 20673:2007

Marking of product

According to Article 10 of the Council Directive (MED):

- The wheel mark shall be affixed visibly, legibly and indelibly to the product or to its data plate and, where relevant, embedded in its software. Where that is not possible or not warranted on account of the nature of the product, it shall be affixed to the packaging and to the accompanying documents.
- The wheel mark shall be affixed at the end of the production phase.
- The wheel mark shall be followed by the identification number of the notified body, where that body is involved in the production control phase, and by the year in which the mark is affixed.
- The identification number of the notified body shall be affixed by the body itself or, under its instructions, by the manufacturer or the manufacturer's authorised representative.

For specific products, manufacturers may use an appropriate and reliable form of electronic tag instead of, or in addition to, the wheel mark.

END OF CERTIFICATE