EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate No:
MEDB0000795

Application of: Directive 2014/90/EU of 23 July 2014 on marine equipment (MED). This Certificate is issued by DNV 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)
RCI-400 including Signal Correction Box (SCB-V)

Issued to
Wabtec Netherlands B.V.
Ede Gld, Gelderland, Netherlands

is found to comply with the requirements in the following Regulations/Standards:
Regulation **(EU) 2020/1170,**
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 **2026-03-18**.

Issued at **Hamburg** on **2021-03-19**

DNV local station:
Netherlands CMC

Approval Engineer:
Jörg Rebel

Notified Body
No.: **0098**

for **DNV GL SE**
Digitally Signed By: Mydlak-Röder, Christine
Location: DNV GL SE, Hamburg

Christine Mydlak-Roeder
Head of Notified Body

A U.S. Coast Guard approval number will be assigned to the equipment when the production module has been completed and will appear on the production module certificate (module D, E or F), as allowed by the "Agreement between the European Community and the United States of America on Mutual Recognition of Certificates of Conformity for Marine Equipment", signed February 27th, 2004, and amended by Decision No 1/2018 dated February 18th, 2019.

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 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 This certificate remains valid unless suspended, withdrawn, recalled or cancelled.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.

Product description

The rudder angle overhead indicator system comprises a receiver (in the following rudder angle indicator), a signal correction box and a transmitter, the rudder angle feedback unit:

The analogue rudder angle indicator type RCI-400 with servo motor drive has following specification:

Dimension [mm]	400 x 370 x 120 (D1 x D2 x H)
Protection degree (housing)	IP 52
Full scale deflection range	45° - 0° – 45° or 70° - 0° – 70°
Input signal	0/4 – 20 mA or 0 – 10 V DC or ±10 V DC
Power supply	24 V DC (18 – 31.2 V DC) (24 V DC for illumination)
Power consumption	≤ 3 W (< 7 W for illumination)

The Signal Correction Box type SCB-V2.1 has following specification:

Variants	SCB-V2.1
Protection degree (housing)	IP 20
Input signal	0/4 – 20 mA or 0 – 10 V DC or ±10 V DC
Output signal	10 x 0 – 10 V DC / ±10 V DC
Power supply	24 V DC (18 – 31.2 V DC)

Note: 1. The rudder angle transmitter (or rudder angle feedback unit) as part of the rudder angle indicator system is to be connected to the Signal Correction Box, which ensures correct calibration and linearization of the analogue rudder angle signal.
2. The rudder angle transmitter is to be type-approved.

Application/Limitation

If the above described indicator receivers are combined with other rudder angle feedback units, i.e. other rudder angle transmitters, these rudder angle indicator systems needs their own EC-Type Examination certificates.

Tests carried out

- Environmental and EMC testing: IEC 60945 (2002) incl. Corrigendum 1 (2008)
- Presentation testing: IEC 62288 (2014)
- Performance testing: ISO 20673 (2007)

Note: The rudder angle indicator type RCI-400 does not issue alerts, hence, testing according to IEC 62923-1/-2 is deemed as not being applicable.
The above mentioned rudder angle indicator has no interfaces according to IEC 61162 series, thus, testing according to IEC 61162 series is deemed as not being applicable, as well.

Type Examination documentation

DNV No	Document ID	Rev.	Description
24	4200510.HAN	1 (01/2021)	Installation instructions and manual for RCI-400 indicators
23	M21.001-P21.001	2021-03-18	Report: Sebert, Vibration tests for RCI-400 according to IEC 60945, 8.7
22	0026-H0203-0000206390	2021-02-24	Report: Thales, Environmental tests for RCI-400 according to IEC 60945, 8.2 and 8.4
20	20210049RPT01	2021-02-23	Report: DARE, EMC tests for RCI-400 according to IEC 60945, 9.2, 10.3, 10.4 and 10.8 for RCI-400
18	20210001BRF01	2021-01-07	DARE, Comments on EMC test reports for Dv/D3v, RCI-400 and S4v indicators
15	-	2020-12-23	Report: Wabtec NL, Analysis of compliance with IEC 62288 (2014) for analogue indicators
14	4209289.TER	2010-08-05	Report: Niaf-Smitt, SCB Performance tests for indicator series type DV/D3v..S and RCI-400
12	10C00570RPT01	2010-07-30	Report: DARE, EMC tests for RCI-400 acc. to LR TSN 1 (only EMI part) (2002)

DNV No	Document ID	Rev.	Description
11	08C00579RPT01	2008-07-23	Report: DARE, EMC tests for RCI-400 acc. to LR TSN 1 (only EMI part) (2002)
10	05C01497RP01	2006-01-10	Report: DARE, EMC tests for RCI-400 acc. to LR TSN 1 (only EMI part) (2002), Ch. 22 to 27, 29 and 30
9	310/2	2006-02-28	Report: BSH, Compass Safe Distance certificate for RCI-400 according to IEC60945, 11.2
8	4209068.TER	2006-01-24	Report: Niaf-Smitt, Test results for RCI-400 acc. to LR TA 2002 and MED
7	9505 000 999XX	2005-11-14	Report: Thales, Vibration and humidity test for RCI-400 acc. to LR TA system - Test specification 1 (2002), Sects. 12 and 15

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.

END OF CERTIFICATE