DNV·GL

Certificate No:
MEDB00003DT

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Application of: Directive 2014/90/EU of 23 July 2014 on marine equipment (MED), issued as "Forskrift om Skipsutstyr" by the Norwegian Maritime Authority. This Certificate is issued by DNV GL AS under the authority of the Government of Norway.

This is to certify:

That the Rudder angle indicator

with type designation(s)
AD80

Issued to
Nanjing Ninglu Technology Co., Ltd
Nanjing, China

is found to comply with the requirements in the following Regulations/Standards:
Regulation **(EU) 2019/1397,**
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 **2025-03-24**.
Issued at **Høvik** on **2020-03-25**

DNV GL local station:
Nanjing

Approval Engineer:
Steinar Kristensen

Notified Body
No.: **0575**

for **DNV GL AS**
Digitally Signed By: Alonso Pontes, Marta
Location: DNV GL Høvik, Norway
On behalf of

Roald Vårheim
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 United States of America and the EEA EFTA states on the mutual recognition of Certificates of Conformity for Marine Equipment" signed 17 October 2005, and amended by Decision No 1/2019 dated February 22nd, 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 GL AS 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 This certificate remains valid unless suspended, withdrawn, recalled or cancelled.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.

NORWEGIAN ACCREDITATION PROD 019

Job Id: **344.1-007591-1**
Certificate No: **MEDB00003DT**

Product description

The AD80 Rudder Angle System consists of the following modules [1)]:

Equipment type	Description/application	Model	Environment
Rudder Angle Indicator units	Three-face Indicator, Ceiling mounting, Φ370mm, 156mm height, 24VDC power	AD801	Protected
	Panel mounting, 192x192x86mm (LxWxH), 24VDC power	AD804	Exposed
	Panel mounting, 144x144x86mm (LxWxH), 24VDC power	AD805	Exposed
	Panel mounting, 96x96x93mm (LxWxH), 24VDC power	AD806	Protected
	Panel mounting, 96x96x53mm (LxWxH), 24VDC power	AD807	Protected
Control unit	Control unit for AD80 system, 350x222x122mm (LxWxH),AC 110/220V and DC 24V power	AD802	Protected
Rudder Angle Transmitter	Transmitter, 160x239x83mm (LxWxH) 45°/0/45°	AD803	Exposed
Dimmer	Remote dimmer for Rudder Angle Indicator system	AD807	Protected

Application/Limitation

- Indicators to be installed according to instructions in installation manuals, and in combination with approved transmitters.
- The AD80 Rudder Angle indicator System does not issue alerts, hence testing according to IEC 62923-1 and IEC 62923-2 is deemed as not being applicable.

Tests carried out

- Performance testing: ISO 20673 (2007)
- Environmental testing: IEC 60945 (2002) incl Corr.1 (2008)
- Presentation of navigation information: IEC 62288 (2014)
- Serial interface testing: IEC 61162-1 (2016)

Type Examination documentation

DNV GL No	Document Id.	Rev.	Description
16	NLT-AD80-DG	2019-07-04	Report: NINGLU, Type test report for AD80 Rudder Angle Indication System
15	Ship Test ER2019-018	2019-09-18	Report: CSIC, Environmental test report for AD80 Rudder Angle Indication system
14	Ship Test EM2019-018-2	2019-05-08	Report: CSIC, EMC test report for AD-80 Rudder Angle Indication System
1	NLT-AD80-SSEN	V200220	Manual: NINGLU, AD80 Rudder Angle Indication System Operation & Installation Manual

Marking of product

The type designation and name and contact address of the manufacturer shall be affixed visibly, legibly and indelibly to the product. In addition the product shall be marked with serial number, safe distance to magnetic compass, power consumption and/or supply voltage.

[1)] Actual configuration may vary based on requirements for individual installations.