EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate no.:
MEDB00008ST

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 AS under the authority of the Government of Norway.

This is to certify:

that the Integrated navigation system (INS)

with type designation(s)
HiINS

issued to
HD Hyundai Marine Solution Co., Ltd.
Ulsan, Korea, Republic of

is found to comply with the requirements in the following Regulations/Standards:
Regulation **(EU) 2024/1975,**
item No. MED/4.59. SOLAS 74 as amended, Regulations V/15, 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.252(83), IMO Res. MSC.302(87)

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

This Certificate is valid until **2030-01-09**.

Issued at **Høvik** on **2025-01-10**

DNV local unit:
Gimhae Station

Approval Engineer:
Tommi Juhani Rifaat

Notified Body
No.: **0575**

for **DNV AS**

Mydlak-Röder, Christine
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 1/2023 dated August 21st, 2023.

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 This certificate remains valid unless suspended, withdrawn, recalled or cancelled.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

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 HiINS Integrated Navigation System (INS) consists of several Multifunction displays (MFDs) incorporating the below functions and integrated via redundant Ethernets:

Function	*Type*
• Route Monitoring (ECDIS)	MNS-100E Series
• Route Planning (ECDIS)	MNS-100E Series
• Collision Avoidance (RADAR)	MNS-100R Series
• Navigation Control data (CID)	MNS-100C Series
• Alert Management (CAM)	MNS-100CA Series
• Status and Data Display (INS)	MNS-100I Series

All functions may be operated on any of the MFDs in the INS.

The HiINS INS topology consists of combinations of the following units and components:

Unit	**Type**	**Components**	**Remark**
ECDIS	MNS-100E Series	Processor unit Display unit Keyboard & Trackball	*See ECDIS type examination certificate for details*
RADAR	MNS-100R Series	Processor unit Display unit Control unit Antenna unit Transceiver unit Network unit Power Supply	*Dual radar installation* *See RADAR type examination certificate for details*
CID	MNS-100C Series	Processor unit Display unit Keyboard & Trackball	*See CID type approval certificate for details*
CAM	MNS-100CA Series	Processor unit Display unit Keyboard & Trackball	*See CAM type approval certificate for details*
INS	MNS-100I Series	INS with Status and Display function runs uniformly on all hardware listed	
Network Hub(s)	Cisco C9200L-48P-4G-E *or* HP Aruba Instant 1930 series HPE JL686A		*See ECDIS type examination certificate for details*
Sensor Adapter Unit(s)	MDCU-100S (LAN to RS422/485)		*See ECDIS type examination certificate for details*
Cabling	Please refer to individual Type examination certificates		
Software versions	ECDIS: ver. 1.1.x RADAR ver. 1.0.x CID: ver. 1.1.x CAM: ver.1.1.x INS: ver 1.0.x		x is higher than 0

For the relevant revisions of referred certificates see https://approvalfinder.dnv.com/.

Application/Limitation

- The ECDIS and Radar functions shall hold valid type approval certificates documenting compliance with applicable international standards in accordance with the Directive.
- The minimum configuration of HiINS for SOLAS compliance comprises 5 MFDs. An INS-topology involving additional MFDs may be approved on case-by-case basis.
- The HiINS INS shall be interconnected with dual installations of position, heading and speed sensors holding valid type approval certificates.
- The HiINS INS is to be connected to an alarm transfer system for transfer of back-up navigator alarms.
- The MFDs shall be individually connected to the VDR for transfer of ECDIS and RADAR images in compliance with IEC 61996-1.
- The INS Alert Management (CAM) may handle, distribute and present bridge alerts being additional to the HiINS INS and its primary sensors.
- For vessels where BAM-compliance in accordance with MSC.302(87) is required the INS CAM-HMI should be arranged as the functional HMI for the BAM.
- The HiINS INS ECDIS function may be integrated with and act as HMI for the MRC MNS-100ET Series Track Control System (TCS)
- The HiINS INS shall be installed and commissioned onboard according to manufacturer's installation instructions for the individual functions/components.

Tests carried out

- Performance testing: IEC 61924-2 (2021)
- Environmental testing: IEC 60945 (2002) incl. Corr.1 (2008)
- Serial Interface testing: IEC 61162-1, IEC 61162-2 (2024)
- LAN Interface testing: IEC 61162-450 (2018)
- Presentation of navigation information: IEC 62288 (2021)
- Bridge Alert Management: IEC 62923-1 (2018) and IEC 62923-2 (2018)

Type Examination documentation

DNV No	Drw No	Rev	Title
15	TAA00003HV		Certificate: DNV, MNS-100C Series Conning Display
16	TAA00003J3		Certificate: DNV, MNS-100CA Series CAM
10	MEDB00007V3		Certificate: DNV, MNS-100E Series ECDIS
12	MEDB00007V5		Certificate: DNV, MNS-100ET Series TCS
11	MEDB00007V4		Certificate: DNV, MNS-100R Series Radar equipment
24	MNS-MCI-001-ED1		Manual: MRC, MNS-100C Series CID Instruction Manual
17	MNS-MCAI-001-ED1		Manual: MRC, MNS-100CA Series CAM Instruction Manual
18	MNS-MEO-001-ED8		Manual: MRC, MNS-100E Series ECDIS Operating Manual
19	MNS-MII-001		Manual: MRC, MNS-100I Series INS Instruction Manual
20	MNS-MIQ-001		Manual: MRC, MNS-100I Series INS Quick Guide
21	MNS-MIT-001		Manual: MRC, MNS-100I Series INS Technical Manual
22	MNS-MRI-001-ED1		Manual: MRC, MNS-100R Series Radar Instruction Manual
6	MNS-TSI-002	1.0.1	Report: HMS & MRC, INS IEC 61162-1 Edition 6.0 Test Report
7	MNS-TSI-003	1.0.1	Report: HMS & MRC, INS IEC 61162-2 Edition 2.0 Test Report
3	MNS-TSI-004	1.0.1	Report: HMS & MRC, INS IEC 61162-450 Edition 2.0 Test Report
5	MNS-TSI-001	1.0.1	Report: HMS & MRC, INS IEC 61924-2 Edition 2.0 Test Report
4	MNS-TSI-005	1.0.1	Report: HMS & MRC, INS IEC 62288 Edition 3.0 Test Report
25	MNS-TSI-006	1.0.1	Report: MRC, INS CAM IEC 62923-1 Edition 1.0 Test Report

Marking of product

The designation of Manufacturer and Type shall be fixed in a clearly visible location on the individual equipment. In addition the equipment shall be marked with serial number. Safe distance to magnetic compass and power consumption and/or supply voltage may be included on the label or stated in the individual installation manuals.