

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate no.:
MEDB00007YG

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 Heading control system (HCS)

with type designation(s)
AP8000M

issued to

EKM Co., Ltd.
Gimpo-si, Gyeonggi-do, Korea, Republic of

is found to comply with the requirements in the following Regulations/Standards:

Regulation (EU) 2023/1667,

item No. MED/4.16. SOLAS 74 as amended, Regulations V/18 & V/19, IMO Res. A.342(IX), IMO Res. A.694(17),
IMO Res. MSC.191(79), IMO Res. MSC.64(67) Annex 3, IMO Res. MSC.302(87)

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

This Certificate is valid until **2029-01-30**.

Issued at **Høvik** on **2024-01-31**

DNV local unit:
Mokpo CMC

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 This certificate remains valid unless suspended, withdrawn, recalled or cancelled.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 AP8000M Heading Control System (HCS) consist of the following components:

Unit	Type	Location	Comments	Remarks
1	HCS Control Unit	Protected	Power : DC 24[V], 2.0[A] RS232/422 : 14 Channels Analog In : 4 Channels ($\pm 10[V]$ /0-10[V]/0-5[V]/ 0–24[mA]) Analog Out : 2 Channels ($\pm 10[V]$ /0-10[V]/0-5[V]/ 0–24[mA], 4–20[mA]) PWM Out : 3 Channels((Dry Contact) Digital In: 2 Channels(Dry Contact/Open Collector) Digital Out: 2 Channels(Dry Contact/Open Collector)	
2	HCS Main Unit	Protected	Power : DC 24[V], 1.5[A] RS232/422 : 4 Channels Ethernet : 1 Channel TFT LCD : 7 inches, 1024X768	
3	Repeater Unit	Protected	Power : DC 24[V], 1.5[A] RS232/422 : 4 Channels Ethernet : 1 Channel TFT LCD : 12 inches, 1280X800	Optional Unit
4	Steering Wheel Unit	Protected	Power : DC 24[V], 0.5[A] RS232/422 : 2 Channels	
5	Annunciator Main Unit	Protected	Power : DC 24[V], 1.0[A] Battery : DC 24[V], 3.2[A] RS232/422 : 8 Channels Digital In : 8 Channels(Dry Contact/Open Collector) Digital Out : 8 Channels(Dry Contact/Open Collector)	
6	Annunciator Display Unit	Protected	Power : DC 24[V], 0.5[A] RS232 : 2 Channels TFT LCD : 4 inches, 800 X 480	
7	Power Supply Unit	Protected	AC Power : 220 VAC $\pm 10\%$, 50/60Hz $\pm 5\%$, 4[A] DC Power : 24 VDC +30%, -20%, 7.5[A]	
8	Switches (System, HCS, NFU, Power, Mode)	Protected	System : 2 Position Selector Switch HCS : 2 Position Selector Switch Power : 2 Position Selector Switch Mode : 3 Position Selector Switch NFU : 3 Position Selector Switch(Return Type)	

For more information please see manufacturers documentation.

Software version: 1.0.00x

Application/Limitation

- Equipment is to be installed according to manufacturer's manuals.
- A change-over control from automatic to manual steering shall be provided and located easily accessible to the officer of the watch.
- Annunciator Unit for power failure alert is to be installed interfaced to a secondary system on the bridge. The interfaced system shall be capable of providing an alert message in accordance with ISO 11674, IEC 61162-1 and IEC 62923-1/-2 for HCS Power Failure.

Type Examination documentation

DNV No	Drw No	Rev	Title
21	HCS-APP-005	1.0.0	Report: EKM, IEC 62923-1/2 Test Report
20	HCS-APP-002	1.0.0	Report: EKM, IEC 61162-1/2 Test Report
19	HCS-APP-006	1.0.0	Report: EKM, ISO 11674 Test Report
18	HCS-APP-004	1.0.0	Report: EKM, IEC 62288 Test Report
17	HCS-APP-003	1.0.0	Report: EKM, IEC 61162-450 Test Report
16		2023-11-03	Report: EKM, Display IEC 62288 Test report
15	KOMERI-0602-23T0110	E	Report: Komeri, Ap-8000M IEC 60945 Vibration Test Report
14	KOMERI-0601-23T0111	E	Report: Komeri, Ap-8000M IEC 60945 Acoustic noise and signals Test Report
13	KOMERI-0311-23T0202	E	Report: Komeri, AP-8000M IEC 60945 EMC Test Report
12	KOMERI-0314-23T0112	E	Report: Komeri, AP-8000M IEC 60945 Protection against accidental access to dangerous voltages Test Report
11	KR23OWUA	001	Report: TUV Rheinland, IEC 62288 Flicker test HCS Control Unit
10	KR235RO8	001	Report: TUV Rheinland, IEC 62288 Flicker test HCS Annunciator Display Unit
9	KR23I9HM	001	Report: TUV Rheinland, IEC 62288 Flicker test Repeater
8		1.edition	Manual: EKM, Autopilot Operator's Manual AP-8000M
7	KSI-UIPA-211201 (2)	2023-01-27	Drawing: EKM, AP-8000M Wiring Diagram
6	KS-UIPA-A-220803	0.1	Drawing: EKM, HCS Component drawings

Tests carried out

- Performance testing, ISO 11674 (2019)
- Environmental testing, IEC 60945 (2002) incl Corr. 1 (2008)
- Serial interface testing, IEC 61162-1 (2016), 61162-2 (1998)
- LAN interface testing, IEC 61162-450 (2018)
- Presentation testing, IEC 62288 (2021)
- Bridge Alert Management testing IEC 62923-1/2 (2018)

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.