

# EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate No:  
**MEDB000004K**  
Revision No:  
**2**

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 Rudder angle indicator**

with type designation(s)

**Bridge Mate Propulsion Display**

Issued to

**Marine Technologies LLC**  
**Egersund, Norway**

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)**

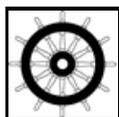
Further details of the equipment and conditions for certification are given overleaf.

This Certificate is valid until **2026-04-29**.

Issued at **Høvik** on **2021-04-30**

DNV local station:  
**Norway CMC, West**

Approval Engineer:  
**Steinar Kristensen**



Notified Body  
No.: **0575**

for **DNV AS**

**Sverre Olav Bergli**  
**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 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

Bridge Mate Propulsion Display Rudder Angle Indicator consists of the below modules:

Unit	Component	Note
Computer	MT-COMPUTER-300 <i>or</i>	Computer with on-board DVI interface
	MT-COMPUTER-400	
Display	Hatteland HD 13T21 MMD <i>or</i>	DVI interface
	Hatteland HD 17T22 MMD	
Network switches	Netgear GS728TP <i>or</i>	24 ports, 10/100/1000Mbs, PoE, RJ 45
	MT-PoE—SWITCH-1080-8-PORT <i>or</i>	8 ports, 10/100/1000Mbs, PoE, RJ 45
	ORing IGPS-1080-24V	8 ports, 10/100/1000Mbs, PoE, RJ 45
I/O Interface units	MT IOB mK2 (I/O card) <i>or</i>	Listener according to IEC 61162-1 and IEC 61162-2
	MT-PoE-IOB (I/O card)	Thruster/Rudder Interface: $\pm 10V$ and 4-20mA Listener and talker according to IEC 61162-1 and IEC 61162-2
<b>Options</b>		
NMEA-CONVERTER	MT-NMEA-CONVERTER	Listener and talker according to IEC 61162-1 and IEC 61162-2
Input Device	Keyboard Cherry / MT Type	

All units listed above are to be installed in a protected environment, i.e. indoor.

### Software modules

	Version
• Operating System:	Windows 8.1 Industrial Pro Embedded
• Bridge Mate Propulsion Display:	1.6.x.x

### Application/Limitation

- Rudder Angle Transmitter connected to these interface cards must be in accordance with the following specifications:
  - Linear potentiometer or sinus cosines potentiometer of resistive type larger than 500 Ohms and with a center tap in addition to the wiper
  - Linearity 0.4% or better
  - Phasing Difference less than  $\pm 1^\circ$  for the full range of the transmitter
  - Overall Resistance Range Deviation less than  $\pm 10\%$
- The performance of the rudder/steering feedback is to be verified as described 'TCS Commissioning Procedure', MT-DEV-4741 for each installation.
- The Bridge Mate Propulsion Display is restricted to be used in MT Bridge Mate applications
- The Bridge Mate Propulsion Display does not issue alerts, hence testing according to IEC 62923-1 and IEC 62923-2 is deemed as not being applicable.

### Type Examination documentation

DNV No	Document ID	Rev.	Description
45	1907-2-29-IGPS-1080-1	V1.1	Manual: ORing, Quick Installation Guide for IGPS-1080-24V
43	202-11136-01	V1.0	Manual: Netgear, Netgear GS728TP Hardware Installation Guide
42	MT-DEV-5648	1.0	Manual: MT, Installation Manual MT-COMPUTER-300 WINDOWS 8.1
40	MT-DEV-5469	1.0	Manual: MT, Maintenance manual for computer based systems
39	MT-DEV-0683	7.0	Manual: MT, Overhead Indicator Display, User and Technical Manual
38	MT-DEV-5653	2.0	Manual: MT, Installation manual MT-COMPUTER-400 Operating Systems

DNV No	Document ID	Rev.	Description
37	INB101192-1	16	Manual: Hatteland, User Manual- Series X G2 Maritime Multi Display (MMD) models
31	141011F	2014-03-11	Report: TesLab, EMC and environmental test report for Netgear GS728TP
30	MRA0000006	2	Certificate: DNV, EU-MR-TA certificate for Maritime Multi Displays and Standard Displays – Series X
29	17A283F	2018-01-25	Report: TesLab, EMC and environmental test report for MT-COMPUTER-300
28	17A284F	2018-01-25	Report: TesLab, EMC and environmental test report for MT-COMPUTER-400
27	MRA0000016	2	Certificate: DNV, Hatteland HD XXT22 MMD Monitor series
25	DOC206405-1	R01	Report: Hatteland, Conformance test report HD 19T22 MMD-MA1-FAGA HTB30-DVI-D
24	DOC206081-1	R01	Report: Hatteland, IEC62288 flicker test report HD 19T22 MMD
23	DOC206452-1	R01	Report: Hatteland, Conformance test report HD 17T22 MMD-MA1-FAGA HTB30-DVI-D
22	DOC206444-1	R01	Report: Hatteland, IEC62288 flicker test report HD 17T22 MMD
21	T140319D03-RL	00	Report: CCS, Environmental Test Report ORing-IGPS-1080-24V MT-PoE—SWITCH-1080-8-PORT
20	T140319D03-E	2014-03-24	Report: CCS, EMC Test Report ORing-IGPS-1080-24V MT-PoE—SWITCH-1080-8-PORT
19	133040F-H	2013-05-30	Report: TesLab, EMC and Environmental tests computer MT 200AC
17	147124F	2014-09-15	Report: TesLab, NMEA CONV IEC 60945 report
16	MT-DEV-5457	0.7	Report: MT, MT-DEV-5457 - IEC61162-1 and -450 MT NMEA Converter Test Program
11	MT-DEV-5460	2016-03-21	Report: MT, Signed Propulsion Display Test Report
10	MT-DEV-0683	5.5	Manual: MT, Operations manual Bridge Mate Overhead Panels
8	MT-DEV-4741	2.2	Test Procedure-MT, TCS Commissioning Procedure

### 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) and IEC 61162-2 (1998)

### 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.