



# TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate No:  
**MERB00007UR**  
Revision No:  
**0**

This Certificate is issued by DNV UK Limited based on authorisation of the Maritime & Coast Guard Agency (MCA) as an UK Approved Body to undertake conformity assessments on marine equipment in accordance with the requirements of the Merchant Shipping (Marine Equipment) Regulations 2016 as amended.

## This is to certify:

**That the Heading control system (HCS)**

with type designation(s)  
**Kongsberg Autopilot M100**

Issued to

**Kongsberg Maritime AS**  
**Kongsberg, Norway**

is found to comply with the requirements in the following Regulations/Standards:  
Regulation **MSN 1874 Amendment 9,**

**item No. UK/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 **2028-01-19**.

Issued at **London** on **2024-10-14**

DNV local unit:  
**East & South Norway CMC**



for **DNV UK Ltd.**

Approval Engineer:  
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Approved Body No.: **0097**

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**MER Service Responsible**



**Maritime &  
Coastguard  
Agency**

UK Approved Body Authorised  
by the MCA

This certificate will not be valid if the manufacturer makes any changes or modifications to the approved type of equipment, which have not been notified to, and agreed with the approved body named on this certificate.  
During the period of validity of this certificate the applicable regulations (international conventions and the relevant resolutions and circulars of the IMO) and testing standards may change, therefore the product conformity may need to be re-assessed by the Approved Body.  
"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-control phase module (D, E or F) of Schedule 2 of the Merchant Shipping (Marine Equipment) Regulations 2016, as amended is fully complied with and controlled by a written inspection agreement with an approved body. In case limitations of use apply, these should be indicated in the Annex.

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

Kongsberg Autopilot M100 Heading Control System consists of the following components:

| Unit                           | Description   | Model name                   | Article no                    | Comments   |
|--------------------------------|---|------------------------------|-------------------------------|--|
| Controller                     | Control unit with sensor and thruster/rudder interfaces       | H6059<br>or<br>H1170         | 000110313<br><br>477531       | 4 x RS422 in/out<br>1 x CAN interface                |
| Operator Station               | Operator Panel, 12" Panel PC                                  | DR12<br>or<br>PPC-120T-AL-0X | 000124787<br><br>RRM000526735 | Touch screen   |
|                                | Heading Wheel (Multipurpose input device)                     | MPID                         | RRM000455093                  |  |
|                                | Alarm and Buzzer panel (Buzzer, Silence and Ack. alert panel) | COP05ALC                     | RRM000464627                  |  |
| Network Switch                 | Lynx Managed Ethernet switch with routing functionality       | L210-F2G-RR-V2               | RRM000376790                  |  |
|                                | Lynx Managed Ethernet switch with routing functionality       | L210-F2G-MM-RR-V2            | RRM000376886                  |  |
| Power Supply <sup>1)</sup>     | AC/ DC power supply, 240W                                     | Pro Top 1                    | RRM000471072                  | In: 230VAC<br>Out: 24VDC                             |
|                                | DC/DC Power supply 240 W                                      | Pro Top DC                   | RRM00468339                   | In: 24VDC<br>Out: 24VDC                              |
| Interfaces units <sup>1)</sup> | B&R Terminal block  | X20TB12                      | 000108217                     |  |
|                                | B&R Terminal block  | X20TB2105                    | 000108230                     |  |
|                                | B&R Bus controller  | X20BC0043-10                 | 000108227                     | Steering mode selector interface                     |
|                                | B&R Bus controller power supply                               | X20PS9400                    | 000108228                     |  |
|                                | B&R Base module for bus controller                            | X20BB80                      | 000108229                     |  |
|                                | B&R Bus module  | X20BM11                      | 000108211                     |  |
|                                | B&R Power feed, +/-10V  | X20PS4951                    | 000114704                     | Power feed +/-10V                                    |
|                                | B&R Potential distributor                                     | X20PD0012                    | 000113192                     |  |
|                                | B&R Digital interface unit                                    | X20DI6371                    | 000111443                     | 24VDC, 6 inputs, 2-wire, sink                        |
|                                | B&R Digital Interface unit                                    | X20DI9371                    | 000110707                     | 24VDC, 12 inputs, 1- wire                            |
|                                | B&R Analogue input  | X20AI4632                    | 000110702                     | 4 inputs, +/- 10V, 0-20 mA                           |
|                                | B&R Analogue input  | X20AI4632-1                  | 000117804                     | 4 inputs, +/- 11V, 0-22 mA                           |
|                                | B&R Relay module  | X20DO4529                    | 000110710                     | 4 relay outputs, 4 change over contacts 115VAC, 0.5A |
|                                | B&R Relay module  | X20DO6529                    | 000113193                     | 6 Relay outputs                                      |
|                                | B&R Analogue output module                                    | X20AO4622                    | 000108226                     | 4 outputs, +/-10V, 0-20 mA                           |
|                                | B&R Analogue and Digital I/O                                  | X20CM8281                    | 000110712                     | 4 DI, 2 DO, 1 AI, 1 AO                               |
|                                | B&R Serial interface (sensor input)                           | X20CS1030                    | 000110698                     | 2 RS422 I/O  |
|                                | B&R Pulse counter   | X20DC2395                    | RRM000247245                  | 2 channels   |
|                                | External NMEA COM Module                                      | HT 00262<br>OPT-Ax USB       | RRM000644018                  | 4 x NMEA RS-422 / RS-485                             |

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

<sup>1)</sup> Actual configuration may vary based on requirements for individual installations. Only modules listed in certificate are approved for installation.

### Versions (SW/FW)

- Control SW: 2.1.x
- HMI SW: 2.1.x

### Application/Limitation

- The installation shall be accordance with manufacturers installation and operation manual.
- Kongsberg Autopilot M100 supports optional Course Control or Speed Control modes.

### Tests carried out

- Performance testing: ISO 11674 (2019)
- Environmental testing: IEC 60945 (2002) incl. Corr.1 (2008)
- Presentation of information: IEC 62288 (2021)
- Serial interface testing: IEC 61162-1 (2016) and IEC 61162-2 (1998)
- Bridge Alert Management: IEC 62923-1 (2018) and IEC 62923-2 (2018)

### Type Examination documentation

| DNV No | Document ID  | Rev.       | Description   |
|--------|--------------|------------|---|
| 73     | 110-0070111  | A          | Manual: Kongsberg Maritime, Autopilot M100 Installation Manual  |
| 72     | 110-0070007  | A          | Manual: Kongsberg Maritime, Autopilot M100 Operator Manual  |
| 71     | 110-0070113  | A          | Manual: Kongsberg Maritime, Autopilot M100 Maintenance Manual   |
| 62     | E21172.02    | 02         | Report: Nemko, EMC and environmental test report for Panel Computer PPC-120T-AL-0X  |
| 61     | 463754-01r00 | 00         | Report: Nemko, IEC 62288 (2021) test report for PPC-120T-AL-0X  |
| 57     | MRA000002D   | 2          | Certificate: DNV, EU RO MAR certificate for Hatteland Series E MMC Standard and ARM CPU, Series X MMC Compact computers incl. HT 00262 OPT-Ax USB ext. module |
| 55     | E21194.01    | 01         | Report: Nemko, EMC and environmental test report for marine computer H1170 (KM art.no. 488531)  |
| 52     | 110-0019858  | A          | Report: Kongsberg Maritime, Autopilot M100 - Course mode tests and speed pilot demo   |
| 49     | 110-0010072  | A          | Report: Kongsberg Maritime, Test specification and report - Command control approval for Autopilot M100   |
| 46     | 480326       | C          | Report: Kongsberg Maritime, Autopilot TA Test Report HCS - Rev C  |
| 45     | 110-0008716  | B          | Report: Kongsberg Maritime, Autopilot BAM Test Report   |
| 44     | 110-0001359  | C          | Report: Kongsberg Maritime, Autopilot Interface tests report- HCS   |
| 26     | E22111.00    | 00         | Report: Nemko, EMC and environmental test report for Autopilot B&R Units, KM doc no. 110-0008433A   |
| 20     | 463754-02    | 00         | Report: Nemko, Display performance test report for PPC-120T-BT-01   |
| 19     | 463754-01    | 00         | Report: Nemko, Display performance test report for PPC-120T-AL-0X   |
| 15     | TAA00000BJ   | 8          | Certificate: DNV, TA certificate for B&R IO modules   |
| 12     | IVR-433022-1 | 2021-06-21 | Report: Nemko, IEC 61162-1 and -2 test report for H1151 Marine Controller for HCS and TCS   |
| 8      | E15269.00    | 00         | Report: Nemko, EMC and environmental test report for 8" and 12" Maritime Panel PC   |
| 7      | TAA00002F2   | 6          | Certificate: DNVGL, Type Approval Certificate for PRO TOP-series power supplies   |
| 6      | E18116.00    | 00         | Report: Nemko, EMC and environmental test report for Multi Purpose Input Device (MPID)  |
| 5      | 20216        | 1          | Report: Applica, EMC and environmental test report for Marine Controller H1151 and Ethernet Breaker   |
| 4      | REC-E702792  | 2011-04-08 | Report: Delta, EMC and environmental test report for Lynx+  |
| 3      | DANAK-198195 | 1          | Report: Delta, EMC and environmental test report for KM Common Operator Panels  |

### 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.