Certificate no.:
TAA00003K0

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Remote Control System, Propulsion, Thruster and Steering

with type designation(s)
Advanced Manoeuvering (M50 & M100)

issued to
Kongsberg Maritime AS
Kongsberg, Norway

is found to comply with
DNV rules for classification – Ships Pt.6 Ch.5 Sec.21 Cyber security

Application:

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.
This type approval covers security capabilities in accordance with DNV security profile 1 and IACS UR E27 Rev.1, subject to conditions stated in this certificate.

Issued at **Høvik** on **2025-03-10**

This Certificate is valid until **2027-03-09**.
DNV local unit: **East & South Norway CMC**

Approval Engineer: **Alexander Dahlstrøm Jønsson**

for **DNV**
Digitally signed by: Jarle Coll Blomhoff
Location: DNV Høvik, Norway

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Product description

Advanced Manoeuvring (AdvMan) is a processor-based control system application for specialized control functions such as Autopilot, Auto-crossing and Auto-docking, joystick and station keeping operations.

The product consists of hardware and software components listed in document 110-0081474 revision D.

- Operator Station version 8" Panel Computer, 10.4" Panel Computer & 12" Panel Computer with KM – Embedded Operating System version 1.5.x, HMI Application version 4.7.x and Control System Application version 4.7.x.
- Controller version H1151.6059 Marine Controller & H1170 Marine Controller with KM – Embedded Operating System version 1.5.x, Control System Application version 4.7.x and DDS Interface Application version 4.7.X.
- Managed Ethernet switch version Lynx with Westermo Operating System version 4.3x.x.

Changes to the type approved system shall be managed in accordance with document KM-PROC-0080. Major changes shall be documented and submitted to DNV for verification of compliance with applicable requirements, witness new type test and revise this TA certificate. Minor changes are covered by this type approval.

A log of all change reports shall be submitted upon renewal of this TA certificate

Approval condition

This TA certificate covers type approval of cyber security capabilities and system architecture in accordance with security profile 1 as specified in DNV-RU-SHIP Part 6 Chapter 5 Section 21.

For each delivery of the system to vessels with DNV class notation Cyber secure(Essential), the following documents shall be submitted for assessment:

- System topology (F030), demonstrating consistency with type approved document 110-0081476 revision C.
- Inventory/equipment list (F071), demonstrating consistency with type approved document 110-0081474 revision D.
- Signed delivery checklist (F262) demonstrating that security capabilities and system architecture have been configured as per document 110-0098175 revision B.

In addition to the documents above, any differences in the delivered system compared with the type approved system shall be documented and submitted for approval.

A Product Certificate (PC) shall be issued for each delivery based on the above document assessment. Certification test is not required as long as the system is correctly represented by this type approval.

Modifications to delivered systems shall be managed in accordance with DNV-RU-SHIP Pt.7 Ch.1 Sec.2 [1.5].

Application/Limitation

Advanced Manoeuvring system may be integrated with other systems and equipment as per below:

- Mcon in the same security zone may connect directly to the Advanced Maneuvering system Process network A and B.
- Kongsberg Maritime system in the same security zone may connect directly to Advanced Manoeuvring system Modbus fieldnet (e.g., K-Chief, K-Thrust)
- Other Kongsberg Maritime systems or sensors in the same security zone may connect directly to Advanced Manoeuvring OpenCAN network.
- Kongsberg systems in other security zones may connect to the Advanced Manoeuvring system Process network A and B via firewalls (e.g., FGR-60F) supplied with the other Kongsberg system (e.g., K-Bridge).
- Third party systems, sensors and actuators may connect to Advanced Manoeuvring system using hardwired signals or serial communication directly to the Advanced Manoeuvring system controllers.

Advanced Manoeuvring system may also be integrated with the below systems and equipment:

- Kongsberg Remote Services may connect to Advanced Manoeuvring system Process network via firewalls (e.g., FGR-60F) supplied with the other Kongsberg system as per type approval TAA00003F4
- Kongsberg Information Management System (K-IMS) may connect to Advanced Manoeuvring Process network via firewalls (e.g., FGR-60F) supplied with the other Kongsberg system firewall(s) as per type approval TAA00003F4 and TAA00003F5

Connected systems and equipment shall be described in signed delivery checklist (F262) / signed version of document 110-0098175 revision B and illustrated in the System topology (F030). The integration is subject to testing on board in accordance with applicable requirements in DNV rules.

Type Approval documentation

110-0053460 revision D Mcon & Adv. Man. Control Systems, Description of Security Capabilities
110-0081476 revision C Advanced Manoeuvring, System Topology
110-0081474 revision D Advanced Manoeuvring, Asset Inventory
110-0053461 revision F Mcon & Adv. Man. Control Systems, Cyber Security - Test Procedure
110-0098175 revision B Mcon & Adv. Man. Control Systems, Cyber Security Configuration & Validation Procedure
KM-GUI-0118 revision A Guideline for Secure Development Lifecycle (SDLC)
KM-PROC-0080 revision B Change management
Cyber security Usermanual Advanced Maneuvering
KM-PRO-0120 revision B Configuration Management Procedure

Tests carried out

Tested according to test procedure 110-0053461 revision B carried out 25th and 26th of June 2024.
Tested according to test procedure 110-0053461 revision F carried out 20th and 21st of November 2024.

Place of manufacture

Kongsberg Maritime AS, Longvafjordvegen 379, 6293 Longva, Norway

Marking of product

The products to be marked with:

- manufacturer name
- model name
- product number

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate
- Review documented evidence of adherence to Secure Development Lifecycle processes
- A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE