TYPE APPROVAL CERTIFICATE

Certificate no.:
TAA0000017
Revision No:
10

This is to certify:

that the Remote Control System, Propulsion, Thruster and Steering

with type designation(s)
AutoChief C600, K-Steering

issued to
Kongsberg Maritime AS
Kongsberg, **Norway**

is found to comply with
DNV rules for classification – Ships
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.

The 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.

Location classes are listed in the certificate

Issued at **Høvik** on **2026-06-19**

This Certificate is valid until **2028-06-27**.
DNV local unit: **Sandefjord**

Approval Engineer: **Thorbjørn Hansen**

for **DNV**
This document has been digitally signed and will therefore not have handwritten signature

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

The AutoChief 600 system is designed for the following application functions:

- Main Engine remote control and monitoring
- Safety protection of main engine
- Speed governing of main engine
- Engine telegraph

The K-Steering system is designed for the following application functions:

- Steering gear remote control, monitoring, and alarm
- Interface to autopilot and (optional) dynamic positioning system and independent joystick system

At the time of type approval, AutoChief 600 and K-Steering utilize basic software version 12.16.104 which is included in the common C600 software platform release 359018.12 as described in revision history document 386083/G.

For K-Steering, this certificate covers only common hardware on the C600 platform. Hardware components for AutoChief 600 and K-Steering are listed in the table below.

See Approval conditions for specification of requirements covered by this certificate, and conditions for modifications of the type approved products.

Type	Product Name	Product no.	Location Classes	Compass Safe Distance	DNV Reference
Operator station	PC MC340 i3	480807B			TAA00002ZN
Operator station	PC MC360 i3	110-0043404_A			TAA000038U
PC computer	MC380 u5 LAN	110-0119632	D/B/A/B/A*	TAA00003SE	TAA00003SE
Local control panel	Panel computer 12”	405149			TAA0000017
Segment controller unit	SCU, SCU-TPI	329785	B/B/B/B/*		TAA0000018
LAN to CAN converter	L2C	404654	D/B/B/B/*	100 mm	TAA0000017
Remote Analogue Input	Rai-10tc	8100161	B/B/B/B/*	50 mm	TAA0000018
Remote Analogue Input	Rai-16xe	329714	B/B/B/B/*		TAA0000018
Remote Digital Input	RDi-32xe RDi-32Axe	333523 333824	B/B/B/B/*		TAA0000018
Remote Analogue Output	Rao-08xe	333824	B/B/B/B/*		TAA0000018
Remote Digital Output	RDo-16xe	329699	B/B/B/B/*		TAA0000018
Combi Module 2 for control applications	C2xe	333346	B/B/B/B/*		TAA0000018
Digital Governor Unit	DGU	8100272	B/B/B/B/*		TAA0000017
Engine safety unit	ESU	8100275	B/B/B/B/*		TAA0000017
Lever telegraph unit	LTU II	364330	D/B/B/B/*	800 mm	TAA0000017
Lever telegraph and speedset unit	LTU II ME	389505	B/B/A/B/*	600 mm	TAA0000017
Bridge wing unit, right	BWU 21 R	486200	D/B/A/B/A	600 mm	TAA0000017
Bridge wing unit, left	BWU 21 L	486233	D/B/A/B/A	600 mm	TAA0000017
Pushbutton telegraph	PBT	8100318	C/B/B/B/*		TAA0000017
Single lever with display	Lever K-Thrust	405842	B/B/A/B/A	1300 mm	TAA0000017
Dual lever with display	Lever K-Thrust	405844	B/B/A/B/A	1300 mm	TAA0000017
Single lever	Lever K-Thrust	416533	B/B/A/B/A	200 mm	TAA0000017
Dual lever	Lever K-Thrust	416532	B/B/A/B/A	200 mm	TAA0000017
Lever display	Lever K-Thrust	416534	B/B/A/B/A	1100 mm	TAA0000017
Mini wheel (only used for K-Steering)	Mini wheel K-Thrust	417835	B/B/A/B/A	1000 mm	TAA0000017
Mini wheel with display (only used for K-Steering)	Mini wheel K-Thrust	412364	B/B/A/B/A	1000 mm	TAA0000017
Button extension	KBE 15	401892	B/B/B/B/B	50 mm	TAA0000017
ACP Button Extension	ABE 11	355146	B/B/B/B/B	50 mm	TAA0000017
Engine safety unit	ESU-12	366666			TAA0000017
Main engine i/f unit	MEI	8100276	B/B/B/B/*		TAA0000017
RPM unit, engine mount	RPME	8100289	B/B/B/B/*		TAA0000017
Electric shaft system	ESS	8100282	B/B/B/B/*		TAA0000017

Type	Product Name	Product no.	Location Classes	Compass Safe Distance	DNV Reference
Process Segment Starcoupler	PSS	8100184	B/B/B/B/*		TAA0000018
Electrical Fuel Actuator (only used for AutoChief)	DSU 38	468770	A/B/A/A/B		TAA0000017
Multi-purpose panel	MPP	8100290	C/B/B/B/*		TAA0000017
Multi-purpose display	MPD	8100292	C/B/B/B/*		TAA0000017
Network switch	EDS-408A				TAA000006N
Touch control panel 12”	CP12 w/KBE15+ABE 11	402586	B/B/A/B/A	750 mm	TAA0000017
Electrical fuel actuator (only used for AutoChief)	ELACT 3812	468750	B/B/B/A/B		TAA0000017
CPP Backup Panel (only used for AutoChief)	PB4	400992	D/B/B/B/B	200 mm	TAA0000017
Push button panel for cancelling overridable limits, SHD and SLD and (only used for AutoChief)	PB6	KM	B/B/A/B/A		TAA0000017
Wheel for rudder control	KM Mini wheel	110-0028810	B/B/A/B/C	200 mm	TAA0000017
Wheel for rudder control	KM Helmsman wheel	110-0098993_B	B/B/A/B/A	200 mm	TAA0000017
Location classes above are denoted in the following sequence: Temperature / Humidity / Vibration / EMC / Enclosure class					
Where enclosure class is denoted as “*”, required enclosure protection according to the rules to be provided upon installation onboard.					
Where compass safe distance is not listed, a minimum distance of 5 meters shall be applied according to section 6.3 in ISO 694:2000.					
Operator station MC380 is tested with Windows 11, and MC340 & MC360 are tested with Windows 10.					

Approval conditions

Product certificate
Each delivery of the type approved system is to be certified according to DNV Pt 4. Ch 9 Sec.1. Project-specific documentation shall be submitted for approval as per the table below and a certification test shall be performed at the manufacturer of the application system before the system is shipped to the yard.

Clause for application software control
All changes in software are to be recorded as long as the system is in use on board. Records of major changes are to be forwarded to DNV for evaluation and approval and shall be approved before implemented on board.

Major changes to the type approved system affecting future deliveries shall be informed to DNV. If the changes are considered to affect functionality for which rule requirements apply, a new functional type test may be required, and the certificate may have to be renewed to identify the new version. Minor changes are covered by this type approval.

This type approval certificate confirms compliance with requirements as specified in the table below.

<table>
<tr><th>This TA certificate covers:</th><th>For each delivery of the type approved system(s), the following documents shall be submitted:</th></tr>
<tr><td>For AutoChief C600 and K-Steering:

Type approval of hardware components in accordance with:

DNV-RU-SHIP Pt.4 Ch.9 Sec.5</td><td rowspan="3">– Inventory/equipment list (F071/Z090), demonstrating consistency with asset inventory 110-0051790.

– System topology (F030/I030), demonstrating system architecture and interfaces with other systems and equipment as per Topology diagram 110-0056695 (AutoChief) or 110-0062446 (K-Steering).

– Power supply arrangement (I050), may be included in document I030.

– Functional description (I020).

– List of control and monitored points (I110), including data transferred on communication links).

– When integrated with other systems, Functional failure analysis (Z070) documenting compliance with requirements for redundancy, segregation, and effect of single failures in the system.

– Test program for product certification (Z252). Type approved security capabilities are exempted from certification test.

– Signed test report (F262) demonstrating configuration of security capabilities as per document 110-0076351.</td></tr>
<tr><td>For AutoChief C600:

Type approval of capabilities for control, monitoring, alarm, and safety functions in accordance with:

DNV-RU-SHIP Pt.4 Ch.9
DNV-RU-SHIP Pt.4 Ch.1 Sec.4</td></tr>
<tr><td>For AutoChief C600 and K-Steering:

Type approval of cyber security capabilities and system architecture in accordance with security profile 1 (SP1):

DNV-RU-SHIP Pt.6 Ch.5 Sec.21</td></tr>
<tr><td colspan="2">Changes in the system to be delivered compared with the type approved system shall be described and submitted as per applicable rules. For further description of document content, see DNV-CG-0550</td></tr>
</table>

For newbuilding projects, identical deliveries to sister vessels with the same DNV project ID are to be documented and submitted as one common transmittal.

Application/Limitation

Two independent pick-up units RPC (393831) shall be installed for each engine when used for RPM control, monitoring and overspeed protection.

AutoChief 600 and K-Steering may be integrated with other systems and equipment as per below:

- Kongsberg K-Chief 600 integrated automation system may connect to Net A and Net B and to the redundant CAN network.
- For vessels with two propulsion systems, another AutoChief 600 system may connect to Net A and Net B and to the redundant CAN network.
- Third-party alarm systems or integrated automation systems may connect by hardwired signals, by serial communication to DGU, or by Modbus TCP to SCU-TPI.
- Engine control systems may connect by serial communication to DGU-ME, or CAN open to SCU-TPI/DGUfx.
- Autopilot or track control system may connect by hardwired signals, by serial communication to DGU, or by Modbus TCP to SCU-TPI.
- Dynamic positioning system (DP) or independent joystick system (IJS) may connect by hardwired signals or serial communication to DGU.
- Voyage data recorder (VDR) may connect by serial communication to an operator station/control panel or DGU.

All the above connected systems and equipment shall be allocated to a security zone on board. If the connected systems or equipment is allocated to different security zones, network segmentation and zone boundary protection shall be implemented for IP-based network connections (i.e., Net A, Net B, Modbus TCP).

AutoChief 600 and K-Steering may also be integrated with the below systems and equipment:

- Kongsberg Remote Services may connect to Net A or Net B as per type approval TAA00003F4
- Kongsberg Information Management System (K-IMS) may connect to Net A or Net B as per type approval TAA00003F4 and TAA00003F5.
- Master clock may connect by serial communication to an operator station/control panel or DGU.

All connected systems and equipment shall be described and illustrated in the System topology (F030/I030) and are subject to testing on board in accordance with applicable requirements in DNV rules.

Type Approval documentation

1) AC C20 instr. manual, propulsion control system, single screw applications, AA-0363-A
2) Type test setup, power supply and system configuration
3) Revision history for C20 system, CU-0315-H, software 0700318 (V08)
4) Revision history for C20 system, 307529-02, software (V09)
5) Revision history for C20 system, 311245/E, software (V10)
6) Revision history for C20 system, 311246/D, software 311245/DC60052.10.07 V10
7) Revision history for C600 system, 386083/E, software 359018.12, V12.16
8) Type approval test procedure AutoChief C20, AO-14125-B,
9) AutoChief C20 report after performance test, AA-00378-A
10) AutoChief C20 alarms and indication on ACP panel, AA-00372-A
11) Datasheets pickup unit (323519/C), RPM pickup CAN (398092/A), LTU11 (367938/A), ESU (372127/A), LTU11ME (389505/D)
12) DANAK test reports, 197561, 197329, 195838, 197309, 197316, 197322, 198709
13) DANAK test reports, 1910496, 1910472, 1911137, 1911809, 1912063, 191002/A, 1911279
14) DANAK test reports, 1913963, 1914404, 1914407
15) Class test procedure AC C20 SEFA 160, BWU-09 (340800/A)
16) Audit test procedure dated March 8. 2017
17) DANAK test reports, 19/15815, 19/15712, and 19/15862
18) Datasheets, PB4 (405886/A), RFU MK2 (406806/A) and TMI (409590/A)
19) Periodical assessment report dated March 8. 2017
20) Lever and Mini Wheel extension: Nemko Test Report K-Thrust Modules (E16203.00/A), Common Thruster lever (412948/A) with listing of new lever configurations and K-Thrust lever performance test (425239/A) dated September 7. 2017.
21) CP12, ABE11 and KBE15 extension: DANAK test reports 1911471 and 1915434, Datasheet Control Panel 12" (405149/B), ABE 11 Assembly Drawing (355196/B.1) and KBE15 Outline Drawing (402348/A1).
22) SEFA800 product reliability update: KM Change Report SEFA 800 update (ECN-003883/A), Servo Actuator maintenance SEFA800 (426578/A), KM ENV Test Report for SEFA800 (424791/A) and Electric Fuel Actuator SEFA800 datasheet (348589/D).
23) Nemko Report. No. E21088.03 Kongsberg Maritime modules, EMC 1-6 GHz IACS E10 Rev.8:2021

24) Nemko Report. No. E21017.03 DSU38 and ELACT 3812, IACS E10 Rev.8:2021
25) Nemko Report. No. E19116.02 ELACT 0516, IACS E10 Rev.8:2021
26) Nemko Report. No. E21239.03 BWU21 Left version and BWU21 Right version
27) TAC, TAA000035F (KM EPL / KM ShaPoLi)
28) AutoChief and K-Steering - Cyber Secure System Asset Inventory, 110-0051790 Rev.L
29) K-Steering - System Topology, 110-0062446 Rev.C
30) AutoChief - System Topology, 110-0056695 Rev.C
31) AutoChief and K-Steering - Description of Security Capabilities, 110-0056696 Rev.G
32) AutoChief and K-Steering - Cyber security test program, 110-0056698 Rev.G
33) AutoChief and K-Steering – Cyber secure configuration guidelines, 110-0076351 Rev.F
34) AutoChief and K-Steering – User manual for cyber security, 110-0076343 Rev.C
35) AutoChief - Modification Strategy, 110-0062235 Rev.A
36) Guideline for Secure Development Lifecycle (SDLC), KM-GUI-0118 Rev.A
37) Change management procedure. Doc. No. KM-PROC-0080/A
38) DANAK test report 197836 Rev.A
39) Nemco Report No. REP043653, Rev.A
40) Autochief and K-steering - Autochief Configuration Guideline, 110-0056704, Rev. C
41) PB6 – Push Button Panel, Technical specifications
42) Test report for KM Mini wheel – Nemko REP029184
43) Datasheet for KM Mini wheel – 110-0101045 Rev. A
44) Test report for KM Helmsman wheel – Nemko REP121803
45) Datasheet for KM Helmsman wheel – 110-0140928 Rev. A
46) Datasheet for Computer MC380 u5 LAN – 110-0134499
47) INS Manual MC380 – 110-0134491 Rev. A
48) GA MC380 – 110-0150881 Rev. A
49) OS Cybersecurity Changes – 110-0166322 Rev.A
50) Configuration checklist – 110-0164990 Rev.A
51) Supplier's Declaration, Lenovo MC380 u5 LAN, 110-0137382 Rev. A

Tests carried out

- Tests according to DNV-CG-0339 (2021-08) as documented in the various test reports submitted.
- Type test of software as performed according to submitted test reports.
- Type test of security capabilities as per test procedure110-0056698 Rev.F.

Place of manufacture

- Kongsberg Maritime Kirkegårdsveien 45, 3616 Kongsberg, Norway
- Kongsberg Maritime AS Bekkajordet 8A 3189 Horten, Norway
- Kongsberg Maritime 9-7, Sandan 3-ro, Jeonggwan-Eup, Gijang-gun, 46027, Busan, Korea
- Kongsberg Maritime China Ltd., No. 136 North Fute Road, China (Shanghai), Pilot Free Trade Zone, 200131, China

Marking of product

- Components are marked with product name and product number as listed in the table above.
- Basic software version is displayed in the system graphical user interface.
- Each project application configuration is documented in a dedicated version log file which is specific for each vessel.

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

Periodical assessment is to be performed at least every second year and at renewal of this certificate.

END OF CERTIFICATE