CERTIFICATE NUMBER	25-0375462-PDA-DUP
EFFECTIVE DATE	08-Oct-2025
EXPIRY DATE	07-Oct-2030
ABS TECHNICAL OFFICE	London Engineering Department

CERTIFICATE OF

Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

KONGSBERG MARITIME KOREA LTD.

located at

1058-7, DALSAN-RI, JUNGKWAN-MYEON,, GIJANG-GUN , BUSAN, Korea, Republic of

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product:	**Propulsion/Thruster Control System**
Model:	**Kongsberg Auto Chief 600 and K-Steering Control System compliance of Cyber Security E27, IACS UR E27 (Rev.1)**
Endorsements:	**CyberSecurity**
Tier:	**3 - Type Approved, unit certification not required**

This Product Design Assessment (PDA) Certificate remains valid until 07/Oct/2030 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau Of Shipping

Siddharth Barua,Engineer/Consultant

KONGSBERG MARITIME KOREA LTD.
1058-7, DALSAN-RI
JUNGKWAN-MYEON,
GIJANG-GUN
BUSAN
Korea, Republic of
Telephone: +82 51 719 8641
Fax: +82 51 749 8649
Email: hyun.jae.kim@km.kongsberg.com
Web: www.kongsberg.com

Tier: 3 - Type Approved, unit certification not required

Product: **Propulsion/Thruster Control System**
Model: **Kongsberg Auto Chief 600 and K-Steering Control System compliance of Cyber Security E27, IACS UR E27 (Rev.1)**
Endorsements: **CyberSecurity**

Intended Service:
ABS Classed Vessels and Offshore Facilities in accordance with the listed ABS Rules and International Standards.

Description:
Kongsberg Auto Chief 600 and K-Steering Control System is an engine, propulsion, and steering gear control system designed for use in a variety of marine applications. This PDA also covers the ABS MVR 2025, 4-9-14 (IACS E27 (rev 1)) requirements of the equipment.

The AutoChief 600 system is designed for the following application functions:
- Main Engine remote control and monitoring
- Safety protection of the main engine
- Speed governing of the 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

Please see the attachment for a list of approved hardware for this system.

Rating:
Supply voltage: 18 -32 V DC from a 230 VAC UPS
Operational temperature: -15 to +70 C degrees.

Degree of protection: IP 20 or IP 54 with extra encapsulation. DPUs are qualified for non-resilient mounting on machinery.

Pushbutton 4 (PB4): Supply voltage: 18-24 VDC, Power consumption: 1W, Operating temperature: -15°C to 70°C degrees., IP56 (Front)
L2C (LAN to 2 CAN gateway): Supply voltage:18 - 32 VDC, Power: 2.4 W Max, Operating temperature: -15°C to + 70°C degrees., Ingress protection: IP22.

Service Restriction:
1. Unit Certification is required for this product. According to ABS MVR 4-9-14/19.1.6 and ABS MVR 4-9-3/8.3.7, a Factory Acceptance Test (FAT) must be conducted for the system and should be witnessed by an ABS Surveyor. Additionally, as outlined in ABS MVR 4-9-3/8.5.6, a System Acceptance Test (SAT) is to be conducted on board the vessel, also witnessed by an ABS Surveyor.
2. If the manufacturer or purchaser requests an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards must be clearly defined.
3. This PDA is issued to demonstrate that the subject control monitoring systems meet the IACS UR E27 "Cyber resilience of on-board systems and equipment" requirements and ABS MVR 4-9-14/15.1 Table 1.
4. This PDA is issued with the limitation that the directly connected networks are considered “trusted networks”.
5. During installation, defence-in-depth measures are expected to be provided by the external environment, such as physical arrangement, policies and procedures, to prevent unauthorised access and manipulation of hardware, software, cables, and data, as well as changing the network topology.

KONGSBERG MARITIME KOREA LTD.
1058-7, DALSAN-RI
JUNGKWAN-MYEON,
GIJANG-GUN
BUSAN
Korea, Republic of
Telephone: +82 51 719 8641
Fax: +82 51 749 8649
Email: hyun.jae.kim@km.kongsberg.com
Web: www.kongsberg.com

Tier: 3 - Type Approved, unit certification not required

6. Recommended configuration settings of the security capabilities and specific default values need to be provided during the installation.
7. This PDA is issued on the contingent that the end user follows the “Kongsberg Cyber Secure Configuration Guideline” with Document ID 110-0076351
8. When using the WebUI, the web browser in use must be up to date and be the latest version.
9. At the first installation, the default password for the administrator must be changed to conform with IEC 62443-3-3/SR 1.7 and ABS MVR 4-9-14/15.1 Table 1 item 6.
10. When delivering the control system using this PDA, the following documents must be submitted to ABS engineering for review as per ABS MVR 4-9-14/19.1.6.
• Asset inventory, demonstrating consistency with type-approved asset inventory.
• System topology, demonstrating system architecture and interfaces with other systems and equipment as per type-approved topology.
• Test report or declaration demonstrating configuration of security capabilities as per the type-approved configuration document
• Relevant description of any differences in the delivered system compared with the type-approved system
11. Any modification to the approved asset inventory, network topology, software or firmware that might have a significant impact on the performance of the cyber resilience capabilities or the system function must be reviewed by ABS Engineering.
12. The onboard attending surveyor is to verify that the installation of the equipment is the same setup and configuration as listed in this PDA
13. The Kongsberg Auto Chief and K-Steering Control System uses the Lenovo Think Station P3** Tiny range of OS stations. This PDA does not cover those components of the Kongsberg Auto Chief and K-Steering Control System; instead, they are covered by PDA 21-2107667-PDA. All conditions and service restrictions of that PDA are to be followed to use this PDA.

Comments:
1. The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.
2. When a type-approved computer-based system or component is proposed for use on board a vessel, a vessel-specific system certification verifying compliance with applicable requirements from Sections 4-9-3, 4-9-13 and 4-9-14 is still required since vessel-specific functions, parameter configurations, and installation elements demand vessel-specific verification are to be reviewed and tested by ABS engineering.
3. The system lacks any wireless and Bluetooth capability, so wireless features are not addressed in this PDA.
4. This PDA does not cover the embedded software's functionality, as required by IACS UR E22
5. An ABS Surveyor has witnessed the verification of the system capabilities during the PDA process.

Notes/Drawing/Documentation:
Cyber Resilience Drawing:
Drawing No. 110-0051790, AC600 & K-Steering Cyber Secure System Asset Inventory, Revision: K, Pages: 36
Drawing No. 110-0056695, AutoChief System Topology, Revision: C, Pages: 11
Drawing No. 110-0056696, AC600 & K-Steering Description of Security Capabilities, Revision: F, Pages: 51
Drawing No. 110-0056698, AC-600 and K-Steering Test Procedure, Revision: F, Pages: 63
Drawing No. 110-0056704, AC600 & K-Steering Configuration Guideline, Revision: D, Pages: 35
Drawing No. 110-0061729, 110-0061729 Rev.C AC600 Cyber security compliance with IACS UR E26 E27, Revision: C, Pages: 14
Drawing No. 110-0062234, AutoChief Change Management, Revision: A, Pages: 11
Drawing No. 110-0062235, AutoChief Modification Strategy, Revision: A, Pages: 9
Drawing No. 110-0062446, K-Steering System Topology, Revision: B, Pages: 10
Drawing No. 110-0068347, Paragon Hard disk manager, Revision: C, Pages: 101
Drawing No. 110-0076343, User Manual Cyber security for AC600 & K-Steering, Revision: C, Pages: 30
Drawing No. 110-0076351, AC600 & K-Steering Cyber Secure Configuration Guideline, Revision: D, Pages: 33
Drawing No. 366198, AutoChief Product description, Revision: E, Pages: 4

KONGSBERG MARITIME KOREA LTD.
1058-7, DALSAN-RI
JUNGKWAN-MYEON,
GIJANG-GUN
BUSAN
Korea, Republic of
Telephone: +82 51 719 8641
Fax: +82 51 749 8649
Email: hyun.jae.kim@km.kongsberg.com
Web: www.kongsberg.com

Tier: 3 - Type Approved, unit certification not required

Drawing No. 394651, K-Steering Functional Design Document, Revision: H, Pages: 28
Drawing No. 399816, K-Steering Operator manual, Revision: F, Pages: 43
Drawing No. 418740, K-Steering Product sheet, Revision: C, Pages: 4
Drawing No. 467324, C600 Change management procedure, Revision: D, Pages: 12
Drawing No. 467325, C600 Modification strategy, Revision: C, Pages: 19
Drawing No. 477191, Managing SW changes in C600 products, Revision: A, Pages: 19
Drawing No. KM-GUI-0118, Guideline for Secure Development Lifecycle, Revision: B, Pages:21
Drawing No. KM-PROC-0080, Change management, Revision: C, Pages: 17
Drawing No. N.A, HW list AC600 & K-Steering Rev.1, Revision: 1,
Drawing No. Witness testing with signature, Test Procedure for AC600 & K-Steering - ABS signed, Revision: D, Pages: 62

Hardware Drawing:
Drawing No. 110-0140928A, KM Helmsman Wheel Datasheet, Revision A
Drawing No. 110-0000939, Connection Diagram, Revision: a
Drawing No. 110-0001301, Data Sheet, Revision: a
Drawing No. 386083, SW Revision History for C600, Revision: f
Drawing No. 442395, 0516 Outline Drawing, Revision: a
Drawing No. 443346, 0516 Datasheet, Revision: a
Drawing No. 468844, Outline, Revision: a
Drawing No. 468845, Assembly, Revision: a
Drawing No. 469179, Internal wiring, Revision:
Drawing No. 473083, outline, Revision: a
Drawing No. 473084, Assembly, Revision: a
Drawing No. 477386, Datasheet, Revision: a
Drawing No. 493430, AC600 ELACT3812 System Test, Revision: a
Drawing No. DANAK 1910475 Rev.B, Missing Test reports 19-LD1896003-PDA, Revision: B, dated 27-Nov-2009
Drawing No. DANAK 1910740, Missing Test reports 19-LD1896003-PDA, dated 18-Dec-2009
Drawing No. DANAK 194157, Missing Test reports 19-LD1896003-PDA, dated 03-Nov-1998
Drawing No. DANAK 194874, Missing Test reports 19-LD1896003-PDA, dated 21-Dec-1999
Drawing No. DANAK 197536, Missing Test reports 19-LD1896003-PDA, dated 06-Jul-2004
Drawing No. DANAK 197538, Missing Test reports 19-LD1896003-PDA, dated 06-Jul-2004
Drawing No. DANAK-1910979, Test for Marine Type Approval of Panel Input Mk2 COP 05, dated: 13-Jul-2010
Drawing No. NEMKO E15157-02, Missing Test reports 19-LD1896003-PDA, dated 21-Aug-2017
Drawing No. NEMKO E15165.01, Missing Test reports 19-LD1896003-PDA, dated 28-Apr-2017
Drawing No. NEMKO E18040-01, Missing Test reports 19-LD1896003-PDA, dated 27-10-2021
Drawing No. Nemko E19116.02, Test report, dated 18-Dec-2019
Drawing No. Nemko E21017.03, Test report, dated 20-Jan-2022
Drawing No. Nemko E21088.03, Test Report - 1 to 6 GHz / Tests Evaluation, dated 28-Oct-2021
Drawing No. Nemko E21239.00, Test report, dated 31-Mar-2022
Drawing No. DANAK 1916085, DANAK 1916085 L2C, Revision: 0, Pages:
Drawing No. 300984E , HMD for new product 110-0049940 - Panel Input Mk3 COP 05, Revision: E, Pages: 1
Drawing No. DANAK 1910922, DANAK 1910922 SCU, Revision: 0, Pages:
Drawing No. 5, Following letter to the appplication for 22-2274357-PDA, Revision: A, Pages: 1
Drawing No. 110-0056696 Rev.C, Cyber Resilience Security Capabilities, Revision: C, Pages: 1
Drawing No. 6, Declaration of the Absence of Asbestos 420563, Revision: A, Pages: 1
Drawing No. 482250, 482250A KM module Declaration of Identity (DoI), Revision: A, Pages:
Drawing No. DANAK 197724, DANAK 197724 Conducted low frequency immunity testing of AC-C20 Units, Revision: 0, Pages:
Drawing No. 392044A, Assembly drawing for new product 391890 - COP05 ALC Stand Alone, Revision: A, Pages: 1
Drawing No. DANAK 1911307, DANAK 1911307 C3xe,C4xe and RAi-10tcxe, Revision: 0, Pages:

KONGSBERG MARITIME KOREA LTD.
1058-7, DALSAN-RI
JUNGKWAN-MYEON,
GIJANG-GUN
BUSAN
Korea, Republic of
Telephone: +82 51 719 8641
Fax: +82 51 749 8649
Email: hyun.jae.kim@km.kongsberg.com
Web: www.kongsberg.com

Tier: 3 - Type Approved, unit certification not required

Drawing No. DANAK 198234, DANAK 198234 Rev.A PSO-P -PSO-S, Revision: A, Pages:
Drawing No. DANAK 197329, DANAK 197329 ACP, PBT, MPP, MPD, Revision: 0, Pages:
Drawing No. KM-GUI-9504 Rev.A, Guidelines for service on AIM systems, Revision: A, Pages: 1
Drawing No. 3, HW List K-Chief 600, Revision: A, Pages: 1
Drawing No. 482250A, KM module Declaration of Identity (DoI), Revision: A, Pages: 1
Drawing No. DANAK 198195 Rev.1, DANAK 198195 Rev.1 COP05, Revision: 1, Pages:
Drawing No. Nemko E19179.01, Test report for new product 446030 - USB3.03.13.2 to 4x Gb Ethernet, Revision: A, Pages: 1
Drawing No. Nemko REP019643, Test report for new product 110-0049940 - Panel Input Mk3 COP 05, Revision: A, Pages: 1
Drawing No. DANAK 198195, DANAK 198195 COP05, Revision: 0, Pages:
Drawing No. 110-0056698, Test Procedure for AC600 & K-Steering ABS signed, Revision: D, Pages:
Drawing No. DANAK 1911846, DANAK 1911846 Rev.1 C3xe C4xe IEC 60255, Revision: 1, Pages:
Drawing No. 463242B DS, Datasheet for new product 446030 - USB3.03.13.2 to 4x Gb Ethernet, Revision: B, Pages: 1
Drawing No. Nemko E21088.03 (KM 487708B), Test report for new product 391890 - COP05 ALC Stand Alone, Revision: C, Pages: 1
Drawing No. DANAK 197561, DANAK 197561 RPME RPMU PBT MPP MPD, Revision: 0, Pages:
Drawing No. KM-GUI-9505 Rev.D , Guidelines for backup on AIM system, Revision: D, Pages: 1
Drawing No. KM-GUI-9505 Rev.D, Guidelines for backup on AIM system, Revision: D, Pages: 1
Drawing No. 4, HW list AC600 & K-Steering, Revision: A, Pages: 1
Drawing No. DANAK 198234, DANAK 198234 PSO-P - PSO-S, Revision: 0, Pages: 12
Drawing No . P21-0035-1 , DELTA test report , Pages 144
Drawing No. REP121803, Nemko - IACS E10 Test Report , Pages 33

Terms of Validity:
This Product Design Assessment (PDA) Certificate remains valid until 07/Oct/2030 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

STANDARDS

ABS Rules:
ABS Rules for Conditions of Classification (2025): 1-1-4/7.7, 1-1-A3, 1-1-A4 which covers the following:
Marine Vessell Rules (2025): 4-9-2/3.1.1, 4-9-2/3.1.2,4-9-2/3.5, 4-9-2/3.7,4-9-2/7.1, 4-9-2/7.5, 4-9-2/7.7, 4-9-2/7.9, 4-9-2/7.11, 4-9-2/7.13, 4-9-3/7.1, 4-9-3/8.3.1,4-9-3/8.3.2, 4-9-3/8.3.3, 4-9-9/8.3.4,4-9-3/13.1,4-9-4,4-9-9/3,4-9-9/15.1 TABLE1, 4-9-14

ABS Rules for Conditions of Classification - Offshore Units and Structures (2025):1-1-4/9.7, 1-1-A2, 1-1-A3, which covers the following:
Offshore Units Rules (2025) : 6-1-1/9, 6-1-1/13.

KONGSBERG MARITIME KOREA LTD.
1058-7, DALSAN-RI
JUNGKWAN-MYEON,
GIJANG-GUN
BUSAN
Korea, Republic of
Telephone: +82 51 719 8641
Fax: +82 51 749 8649
Email: hyun.jae.kim@km.kongsberg.com
Web: www.kongsberg.com

Tier: 3 - Type Approved, unit certification not required

DP Guide (2025): 1/9.3,5/1

National:
NA

International:
IEC 60529:2020
IEC 62061:2021
IACS UR E10 Rev.9:2023
IACS UR E22 Rev.2:2016 (CATII or III)
IACS UR E26 Rev. 1:2022
IACS UR E27 Rev 1, 2023 edition

Government:
NA

EUMED:
NA

OTHERS:
NA