CERTIFICATE NUMBER	26-00T2541231-1-PDA-DUP
EFFECTIVE DATE	23-Jun-2026
EXPIRY DATE	08-Mar-2031
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

CAN MAKINA ELEKTRIK VE INSAAT SANAYI TICARET A.S.

located at

AYDINTEPE MAH., TERSANELER BOLGESI, HARMANDALI SOK, NO. 12, TUZLA, , ISTANBUL, Türkiye

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:	**Alarm Monitoring, Bilge and Ballast Control Systems**
Model:	**K-Chief and K-Safe Product**
Endorsements:	**CyberSecurity**
Tier:	**2 - PDA Issued**

This Product Design Assessment (PDA) Certificate remains valid until 08/Mar/2031 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

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

Sensitivity: Internal & Restricted

CAN MAKINA ELEKTRIK VE INSAAT SANAYI TICARET A.S.
AYDINTEPE MAH., TERSANELER BOLGESI, HARMANDALI SOK, NO. 12
TUZLA
ISTANBUL
Türkiye
Telephone: +90 216 494 30 94
Fax: +90 216 392 90 96
Email: engin@canelektrik.com
Web: www.canelektrik.com

Tier: 2 - PDA Issued

Product: **Alarm Monitoring, Bilge and Ballast Control Systems**
Model: **K-Chief and K-Safe Product**
Endorsements: **CyberSecurity**

Intended Service:
For use on ABS classed vessels and offshore facilities in accordance with the listed ABS Rules and International Standards.

Description:
K-Chief and K-Safe, with compliance with “Cyber Resilience” ABS MVR 4-9-14 (2025) (IACS UR E27 Rev.1), is an integrated system which can carry out the following functions:

K-Chief:
- Alarm and Monitoring
- Power Management
- Control of Machinery, Cargo, Ballast, Vessel Mode, Heating, Venting and Air Conditioning
- K-Gauge application and GLK SPU
- Auxiliary generators protection
- Tank management
- Gas management
- Watch call system
-Operator fitness alarm system

K-Safe:
- Alarm Management
- Emergency Shutdown
- Process Shutdown
- Fire and Gas Detection and Protection

AIM Basis Software Release 8.3, 8.5, 8.6, 8.7, 8.8, 8.9, 8.10, 8.11 ,8.12and 8.13 for the above functions used in K-Chief and K-Safe.

Notes:
Hardware components which are specific for the K-Chief and K-Safe systems are listed in this certificate.
Please refer to attachment "Hardware List Table" for hardware list.

Rating:
Power supply: 115 / 230 VAC (+10%, -15%);
Cabinet: IP 22; RCU 602 and RMC-ST: IP 20
Operating temperature: -15 Deg. C to 55 Deg. C

Service Restriction:
1. Unit Certification is required for the products, specified on ABS Rules for Building and Classing Marine Vessel Rules (2025) 4-1-1/Table 3 item 34 (computer-based systems Category III). Unit Certification may be carried out during Factory Acceptance Test of the overall system.
2. Evidence and documentation as required by 4-9-3/Table 3 of the ABS Rules for Building and Classing Marine Vessel Rules (2025), is to be submitted for review when requested.
3. Test and evidence as indicated in 4-9-3/17 Table 5 of the ABS Rules for Building and Classing Marine Vessel Rules (2025) are to be followed according of the assigned system category.
4. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.

5. This PDA is issued to demonstrate that the subject control monitoring systems meet the ABS MVR 4-9-14/15.1 Table 1 requirements, and as such, this PDA is issued with the limitation that the directly connected networks are to be only “trusted networks”.
6. During installation, defense-in-depth measures are expected to be provided by the external environment, such as physical arrangement, policies and procedures, to prevent unauthorized access and manipulation of hardware, software, cables, and data, as well as changing the network topology. Please refer to the document No. KM-GUI-0118 Rev. A “Guideline for Secure Development Lifecycle (SDLC)”.
7. Recommended configuration settings of the security capabilities as defined in document No. 110-0078720 “Security Configuration Guideline IACS E27 - K-Chief and K-Safe” and specific default values are needed to be provided during the installation.
8. This PDA is issued on the contingent that the end user follows the Kongsberg Cyber Security Handling guidelines in the K-Chief and K-Safe System Operator Manual.
9. This PDA does not cover the marine suitability of the third-party hardware components listed in the attached document “Hardware List Table”. Each component is covered by an ABS PDA Certificate. The validity of the ABS PDA Certificate is to be verified in each vessel specific installation.

Comments:
1. The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.
2. K-Chief and K-Safe systems are listed as System Category III in accordance with 4-9-3/7.1 Table 1 of the ABS Rules for Building and Classing Marine Vessel Rules (2025).
3. Enclosures are to be constructed as per 4-8-3/5.3.1 and 4-8-3/Table 2 of the ABS Rules for Building and Classing Marine Vessel Rules (2025).
4. Tests and approval are for the basic K-Chief components and K Safe components. Each configuration and external connection are to be specifically approved.
5. The onboard attending surveyor is to verify that the installation of the equipment matches the setup and configuration listed in this PDA, and any modification to the hardware, software, or firmware that could significantly impact the performance of the cyber resilience capabilities shall be reviewed by ABS Engineering.
6. The system doesn't have wireless and Bluetooth capability, so this PDA does not cover this aspect.
7. The system is only to be connected to networks in the manner to satisfy IACS UR E26/E27 (Rev. 1).
8. Any modification to the hardware, software or firmware that might have a significant impact on the performance of the cyber resilience capabilities must be reviewed by ABS Engineering.
9. If the Computer Based System is allocated to a security zone, it shall be delivered with unit certification in accordance with section 4-9-14/19.1.6 of the ABS Rules for Building and Classing Marine Vessel Rules (2025). This certification shall be based on approval of the documents listed below:
    a. Asset inventory, demonstrating consistency with type approved asset inventory.
    b. System topology, demonstrating system architecture and interfaces with other systems and equipment as per type approved topology.
    c. Test report or declaration demonstrating configuration of security capabilities as per type approved configuration document.
    d. Relevant description of any differences in the delivered system compared with the type approved system.
10. When this certified computer-based system is proposed for use on board a vessel, a vessel-specific system certification verifying compliance with applicable requirements from Sections 4-9-3 and 4-9-13 is still required since vessel-specific functions, parameter configurations and installation elements demand vessel specific verification are to be reviewed and tested as per section 4-9-14/19.1.6 of the Rules.
11. An ABS Surveyor has witnessed the testing of the required secured capabilities dated 21 May 2024. The relevant report is 6424474. Further testing was conducted on 19 May 2026 due to adding new components to the system, relevant to the report 7683224.

Notes/Drawing/Documentation:
Datasheets
Drawing No.110-0134498,DS - MC380 u5 Basic,Revision:A,Pages:2
Drawing No.110-0134499,DS - MC380 u5 LAN,Revision:A,Pages:2

Drawing No.110-0134500,DS - MC380 u7 LAN,Revision:A,Pages:2
Drawing No.110-0134501,DS - MC380 u7 LAN Extra,Revision:B,Pages:2
Drawing No.110-0134503,DS - MC380 u7 Ultra,Revision:A,Pages:2
Drawing No.110-0150717,MC380 U5 Basic Extra,Revision:A,Pages:2
Cyber Updated Documents:
Drawing No.110-0001444C,AIM 8-13 SW revision history,Revision:C,Pages:25
Drawing No.110-0035193,K-Chief Cyber Security Compliance with IACS UR E26-E27,Revision:B,Pages:28
Drawing No.110-0066099F, K-Chief and K-Safe Description of Security Capabilities,Revision:F,Pages:50
Drawing No.110-0169550, Alternative Asset Inventory K-Chief K-Safe,Revision:A ,Pages:35
Drawing No.110-0078720D,K-Chief and K-Safe Security Configuration Guideline IACS E27,Revision:D,Pages:29
Drawing No.110-0126198,Cyber Security Configuration Checklist,Revision:B, Pages:3
Drawing No.110-0137382,Supplier’s Declaration,Revision:A,Pages:1
ABS Witness Reports:
Drawing No.110-0066078D ,Cyber Security Test Procedure – Witness ABS 19.May.2026, Pages:74
Drawing No.110-0165159C ,TA Renewal MC380 Win11 – Witness ABS 19.May.2026, Pages:14
Drawing No.488323I ,FAT Hardware Inspection Witness – ABS 19.May.2026, Pages:34
Drawing No. 496335I ,FAT Software Inspection Witness – ABS 19.May.2026, Pages:36

Previous Drawing
Drawing No. 110-0066099, Description of Security Capabilities, Revision: E, Pages: 51
Drawing No. 110-0001444, AIM Revision History, Revision: B, Pages: 19
Drawing No. 110-0026741, RCU601 Hardware Module Description, Revision: B, Pages: 32
Drawing No. 110-0044042, Earth Fault Indicator – EFI-16-2, Revision: B, Pages: 2
Drawing No. 110-0051916, Alarm Buzzer with Sound off Button, Revision A, Pages 1
Drawing No. 110-0066093, System Topology, Revision: D, Pages: 11
Drawing No. 110-0066104, Asset Inventory - K-Chief and K-Safe, Revision: G, Pages: 28
Drawing No. 110-068347, Paragon - Hard Disk Manager - User Manual, Revision: C, Pages: 101
Drawing No. 110-0078720, Security Configuration Guideline IACS E27 - K-Chief and K-Safe, Revision: C, Pages: 29
Drawing No. 110-0081470, ALB – Alarm Buzzer Datasheet, Revision: B, Pages 2
Drawing No. 163875, K-Safe Product Description, Revision: I, Pages: 98
Drawing No. 300984, COP-05 Input Panel - Hardware Module Description, Revision: E, Pages: 22
Drawing No. 323935, RMP420S Hardware Module Description, Revision: E, Pages: 32
Drawing No. 392044, Assembly Drawing for COP05 ALC SA, Revision: A, Pages: 1
Drawing No. EX-1330M, USB 3.2 Gen1 - Ethernet, Revision: -, Pages 2
Drawing No. 493996, K-Chief and K-Safe System Operator Manual, Revision: F, Pages: 124
Drawing No. 1031801-KM-I-CA-0001, FMEA Documents K-Chief, Revision: 02, Pages: 64
Drawing No. KMNOR-TMPL-1071, FMEA Template K-Safe ESD and F&G, Revision: A, Pages: 58
Drawing No. -, Hardware List for K-Chief and K-Safe, Revision: -, Pages: 1
Drawing No. -, Document Package for Cyber Resilience, Revision: -, Pages 1
Drawing No. KM-GUI-0118, Guideline for Secure Development Lifecycle (SDLC), Revision: A, Pages: 21
Drawing No. KM-GUI-9504, Guidelines for Service on AIM Systems, Revision: C, Pages: 10
Drawing No. KM-GUI-9505, AIM System Guidelines for Delivery Backup, Revision: D, Pages: 13
Drawing No. KM-PRO-0120, Configuration Management Procedure, Revision: A, Pages: 14
Drawing No. KM-PROC-0080, Change Management, Revision: A, Pages: 16
Drawing No. 110-0066078, Test Procedure for K-Chief & K-Safe - ABS signed, Revision: B, Pages: 80
Drawing No. 434902, Software Quality Plan and Life Cycle Activities for K-Chief, K-Chief 700 and K-Safe, Revision: B, Pages: 14
Drawing No. 493992, K-Chief Product Description, Revision: D, Pages: 112
Incomings / Declarations:
Drawing No. -, Schedule of Accreditation, Revision: -, Pages: 10

CAN MAKINA ELEKTRIK VE INSAAT SANAYI TICARET A.S.
AYDINTEPE MAH., TERSANELER BOLGESI, HARMANDALI SOK, NO. 12
TUZLA
ISTANBUL
Türkiye
Telephone: +90 216 494 30 94
Fax: +90 216 392 90 96
Email: engin@canelektrik.com
Web: www.canelektrik.com

Tier: 2 - PDA Issued

Drawing No. 482250, KM Module Declaration of Identity (DoI) with Statements for ENV Test Report, Revision: A, Pages: 12
Drawing No. -, Alarm Screenshot, Revision: -, Pages: -
Drawing No. 3100.01, Scope of Accreditation to ISO/IEC 17025:2017, Revision: -, Pages: 5
Drawing No. La/ETM/Oppd/KM, Declaration concerning IACS E10 Rev.8, Revision: -, Pages: 2
Drawing No. -, Application to reconstruct/redesign and extensions of the existing certificate 22-2274355-PDA to include IACS UR E26 & E27 compliance who will come into force on 1 July 2024, Revision: -, Pages: 2.

Test Reports:
Drawing No. 2330521R-E3012100075-A, Test Report for EDR-8010, DEKRA Lab, Dated 02 May 2023, Revision: 1.0, Pages: 88
Drawing No. DANAK-198696, Test report for new product RMP420S and RDIOR420, Delta Test Lab, Dated 15 March 2007, Revision: A, Pages: 62
Drawing No. DANAK-1911658, Test for Marine Type Approval of RMP420, Delta Test Lab, Dated 08 December 2011, Revision: 2, ages 71
Drawing No. DANAK-1910979, Test for Marine Type Approval of Mk2 COP 05, Delta Test Lab, Dated 13 July 2010, Revision: -, ages 65
Drawing No. E21088.03 (KM 487708/03), Test Report for New Product, Nemko Test Lab, Dated 28 October 2021, Revision: 03, Pages: 122
Drawing No. REP006527C, Test Report for EFI-16-2, Nemko Test Lab, Dated 28 June 2023, Revision: C, Pages: 81
Drawing No. REP008558, Test Report for New Product RCU601, Nemko Test Lab, Dated 16 March 2023, Revision: A, Pages: 95
Drawing No. REP042855, Test Report Alarm Buzzer, Nemko Test Lab, Dated 20 August 2024, Revision: A, Pages: 71
Drawing No. E19179.01, Test report for new product DisplayPort 1.2 to 3-Port, EX-1330M, EX-1163HM, EX-1339HMVS, Nemko Test Lab, Dated 25 March 2025, Revision: A, Pages: 75
Drawing No. REP019643, Test Report for New Product Panel Input Mk3 COP 05, Nemko Test Lab, Dated 17 January 2024, Revision: A, Pages: 72
Drawing No. DVEQ23071, Test Report for EDR-8010 Series, MOXA, Dated 31 August 2023, Revision: 1.0, Pages: 108
Drawing No. DVEQ23070, Test Report for EDR-8010 Series, MOXA, Dated 31 August 2023, Revision: 1.0, Pages: 108
Drawing No. TL23042, Test Report for MOXA EDR-8010 Series, MS Testing, Dated 20 June 2023, Revision: 2, Pages: 55
Drawing No. REP019643, Test Report for New Product Panel Input Mk3 COP 05, Nemko Test Lab, Dated 17 January 2024, Revision: A, Pages: 72
Drawing No. 2330486R-0E3012100115-A, Test Report for EDR-8010, DEKRA Lab, Dated 02 May 2023, Revision: 1.0, Pages: 85

Terms of Validity:
This Product Design Assessment (PDA) Certificate remains valid until 08/Mar/2031 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.

CAN MAKINA ELEKTRIK VE INSAAT SANAYI TICARET A.S.
AYDINTEPE MAH., TERSANELER BOLGESI, HARMANDALI SOK, NO. 12
TUZLA
ISTANBUL
Türkiye
Telephone: +90 216 494 30 94
Fax: +90 216 392 90 96
Email: engin@canelektrik.com
Web: www.canelektrik.com

Tier: 2 - PDA Issued

Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

STANDARDS

ABS Rules:
Rules for Conditions of Classification (2026 edition) – 1A-1-4/7.7, 1A-1-A3, 1A-1-A4, which covers the following:
Rules for Building and Classing Marine Vessel Rules (2026 edition): 4-9-1/7.3.3, 4-9-1/7.3.5, 4-9-2/3.1.1, 4-9-2/3.1.2, 4-9-2/3.1.3, 4-9-2/3.1.4, 4-9-2/3.1.5, 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, 4-9-3/5, 4-9-3/7, 4-9-3/8.3.4, 4-9-3/11, 4-9-3/13.1, 4-9-4, 4-9-9/1, 4-9-9/3, 4-9-9/7, 4-9-9/13, 4-9-9/Table 1 and Table 2, 4-9-14/13, 4-9-14/15, 4-9-14/17, 4-9-14/19.

Rules for Conditions of Classification (2026 edition) – Offshore Units 1B-1-4/9.7, 1B-1-A2, 1B-1-A3, which covers the following:
Rules for Building and Classing Offshore Units (2026 edition): 6-1-1/9, 6-1-1/13.

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

National:
NA

International:
IEC 60529:2019
IEC 61508:2010
IEC 62061:2024
IACS UR E10 Rev.9:2023
IACS UR E22 Rev.3:2023 (CAT III)

Government:
NA

EUMED:
NA

OTHERS:
NA