



CERTIFICATE NUMBER
EFFECTIVE DATE
EXPIRY DATE
ABS TECHNICAL OFFICE

24-00T2541233-PDA
03-Jul-2024
02-Jul-2029
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 AS, MERCHANT MARINE DIVISION

located at

POSTBOKS 1009, , HORTEN, Norway, N-3194

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: ACC, Electronic Ship Automation Equipment

Model: K-Chief 600

Endorsements:

Tier: 5 - Unit Certification Required

This Product Design Assessment (PDA) Certificate remains valid until 02/Jul/2029 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

SBarua

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)

KONGSBERG MARITIME AS, MERCHANT MARINE DIVISION

POSTBOKS 1009

HORTEN

Norway N-3194

Telephone: +47 48084692

Fax:

Email: geir.gjertsen@km.kongsberg.com

Web: www.kongsberg.com

Tier: 5 - Unit Certification Required

Product: ACC, Electronic Ship Automation Equipment

Model: K-Chief 600

Endorsements:

Intended Service:

For use on ABS Classed Vessels and Offshore Facilities in accordance with the listed ABS Rules and International Standards.

Description:

K-Chief 600, is an integrated system which can carry out the following functions:

K-Chief 600:

- Alarm and Monitoring
- Auxiliary Machinery Control
- Power Management
- Engine/Generator Protection

Additional information with detailed list of assemblies and sub-assemblies is provided on an attachment "Hardware List Table".

Software version according to document "Revision History for K-Chief 600 / AutoChief 600 Software: 359018.12", No. 386083 - Rev. G dated 24 May 2022.

Rating:

Supply voltage: 18 -32 V DC from a 230 VAC UPS

Operational temperature: -15 to +70 C degrees.

Maximum relative humidity: 96% non-condensing

Ambient storage temperature: -25 to +70 C degrees in a dry area with approx. 70% humidity

DPU 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 the products, specified on ABS Rules for Building and Classing Marine Vessel Rules (2024) 4-1-1/Table 3 item 35. Unit Certification may be carried out during Factory Acceptance Test of the overall system.

2) When it is used for Computer-Based Systems Category II or III services in 4-9-3/Table 1 of Marine Vessels Rules, the documentation required by 4-9-3/8.3 and 4-9-3/15 Table 3, Table 4 and Table 5 of the 2024 Marine Vessels Rules are to be maintained by manufacturer and submitted for ABS upon requested.

3) Fault simulation, factory acceptance testing, on-board complete system and integration testing as these are detailed in 4-9-3/Table 5, of the ABS Rules for Building and Classing Marine Vessel Rules 2024 are to be witnessed by an ABS Surveyor.

4) If the manufacturer or purchaser requests an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.

Comments:

1) The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.

2) K-Chief 600, systems are listed as System Category III in accordance with 4-9-3/Table 1 of the ABS Rules for Building and Classing Marine Vessel Rules (2024).

3) Tests and approval are for the basic systems. Each configuration and external connection are to be specifically

KONGSBERG MARITIME AS, MERCHANT MARINE DIVISION

POSTBOKS 1009

HORTEN

Norway N-3194

Telephone: +47 48084692

Fax:

Email: geir.gjertsen@km.kongsberg.com

Web: www.kongsberg.com

Tier: 5 - Unit Certification Required

approved.

4) This certificate does not cover any requirements for the cyber resilience for onboard system, equipment's and for vessels.

Notes/Drawing/Documentation:

Drawing No. DANAK 1916085, DANAK 1916085 L2C, Revision: 0, Pages:

Drawing No. KM-GUI-0118 Rev.A, Guideline for Secure Development Lifecycle, Revision: A, Pages: 1

Drawing No. 110-0051790 Rev.E, Cyber Resilience Asset Inventory, Revision: E, Pages: 1

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 application 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:

Drawing No. 7, ABS London Plan Approval Request For 22-2274357-PDA, Revision: A, Pages: 1

Drawing No. DANAK 198234, DANAK 198234 Rev.A PSO-P -PSO-S, Revision: A, Pages:

Drawing No. KM-PROC-0080 Rev.At, Change management, Revision: A, Pages: 1

Drawing No. DANAK 197329, DANAK 197329 ACP, PBT, MPP, MPD, Revision: 0, Pages:

Drawing No. KM-PRO-0120 Rev.A, Configuration Management Procedure, Revision: A, Pages: 1

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. 110-0062446 Rev.A, K-Steering System Topology, Revision: A, Pages: 1

Drawing No. 110-0056695 Rev.A, AutoChief System Topology, Revision: B, Pages: 1

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. 1, Request for upgrade of 22-2274357-PDA, Revision: A, Pages: 1

Drawing No. KM-PROC-0080 Rev.A, Change management, Revision: A, 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:

Drawing No. 2, KM Doc package matching UR E27 certification, Revision: A, Pages: 1

Terms of Validity:

This Product Design Assessment (PDA) Certificate remains valid until 02/Jul/2029 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).

KONGSBERG MARITIME AS, MERCHANT MARINE DIVISION

POSTBOKS 1009

HORTEN

Norway N-3194

Telephone: +47 48084692

Fax:

Email: geir.gjertsen@km.kongsberg.com

Web: www.kongsberg.com

Tier: 5 - Unit Certification Required

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:

Rules for Building and Classing Marine Vessel Rules 2024 : 1A-1-4/7.7, 1A-1-A3, 1A-1-A4, 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.

Rules for Building and Classing Mobile Offshore Units 2024 : 6-1-1/9, 6-1-1/13.

National:

NA

International:

NA

Government:

NA

EUMED:

NA

OTHERS:

IACS UR E10 Rev 8:2022

IACS UR E22 Rev 2:2016 (CAT II and III)



CERTIFICATE NUMBER
EFFECTIVE DATE
EXPIRY DATE
ABS TECHNICAL OFFICE

24-00T2541233-PDA-DUP
03-Jul-2024
02-Jul-2029
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 CHINA LTD.

located at

**NO. 136 NORTH FUTE ROAD, CHINA (SHANGHAI) POILOT FREE
TRADE ZONE, , SHANGHAI, China**

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: ACC, Electronic Ship Automation Equipment

Model: K-Chief 600

Endorsements:

Tier: 5 - Unit Certification Required

This Product Design Assessment (PDA) Certificate remains valid until 02/Jul/2029 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

SBarua

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)

KONGSBERG MARITIME CHINA LTD.

NO. 136 NORTH FUTE ROAD, CHINA (SHANGHAI) POILOT FREE TRADE ZONE

SHANGHAI SHANGHAI

China

Telephone: +86 213279888

Fax: +86 2131279555

Email: Ying.Han@km.kongsberg.com

Web: <http://www.km.kongsberg.com>

Tier: 5 - Unit Certification Required

Product: ACC, Electronic Ship Automation Equipment

Model: K-Chief 600

Endorsements:

Intended Service:

For use on ABS Classed Vessels and Offshore Facilities in accordance with the listed ABS Rules and International Standards.

Description:

K-Chief 600, is an integrated system which can carry out the following functions:

K-Chief 600:

- Alarm and Monitoring
- Auxiliary Machinery Control
- Power Management
- Engine/Generator Protection

Additional information with detailed list of assemblies and sub-assemblies is provided on an attachment "Hardware List Table".

Software version according to document "Revision History for K-Chief 600 / AutoChief 600 Software: 359018.12", No. 386083 - Rev. G dated 24 May 2022.

Rating:

Supply voltage: 18 -32 V DC from a 230 VAC UPS

Operational temperature: -15 to +70 C degrees.

Maximum relative humidity: 96% non-condensing

Ambient storage temperature: -25 to +70 C degrees in a dry area with approx. 70% humidity

DPU 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 the products, specified on ABS Rules for Building and Classing Marine Vessel Rules (2024) 4-1-1/Table 3 item 35. Unit Certification may be carried out during Factory Acceptance Test of the overall system.
- 2) When it is used for Computer-Based Systems Category II or III services in 4-9-3/Table 1 of Marine Vessels Rules, the documentation required by 4-9-3/8.3 and 4-9-3/15 Table 3, Table 4 and Table 5 of the 2024 Marine Vessels Rules are to be maintained by manufacturer and submitted for ABS upon requested.
- 3) Fault simulation, factory acceptance testing, on-board complete system and integration testing as these are detailed in 4-9-3/Table 5, of the ABS Rules for Building and Classing Marine Vessel Rules 2024 are to be witnessed by an ABS Surveyor.
- 4) If the manufacturer or purchaser requests an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.

Comments:

- 1) The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.
- 2) K-Chief 600, systems are listed as System Category III in accordance with 4-9-3/Table 1 of the ABS Rules for Building and Classing Marine Vessel Rules (2024).
- 3) Tests and approval are for the basic systems. Each configuration and external connection are to be specifically

KONGSBERG MARITIME CHINA LTD.

NO. 136 NORTH FUTE ROAD, CHINA (SHANGHAI) POILOT FREE TRADE ZONE

SHANGHAI SHANGHAI

China

Telephone: +86 213279888

Fax: +86 2131279555

Email: Ying.Han@km.kongsberg.com

Web: <http://www.km.kongsberg.com>**Tier: 5 - Unit Certification Required**

approved.

4) This certificate does not cover any requirements for the cyber resilience for onboard system, equipment's and for vessels.

Notes/Drawing/Documentation:

Drawing No. DANAK 1916085, DANAK 1916085 L2C, Revision: 0, Pages:

Drawing No. KM-GUI-0118 Rev.A, Guideline for Secure Development Lifecycle, Revision: A, Pages: 1

Drawing No. 110-0051790 Rev.E, Cyber Resilience Asset Inventory, Revision: E, Pages: 1

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 application 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:

Drawing No. 7, ABS London Plan Approval Request For 22-2274357-PDA, Revision: A, Pages: 1

Drawing No. DANAK 198234, DANAK 198234 Rev.A PSO-P -PSO-S, Revision: A, Pages:

Drawing No. KM-PROC-0080 Rev.At, Change management, Revision: A, Pages: 1

Drawing No. DANAK 197329, DANAK 197329 ACP, PBT, MPP, MPD, Revision: 0, Pages:

Drawing No. KM-PRO-0120 Rev.A, Configuration Management Procedure, Revision: A, Pages: 1

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. 110-0062446 Rev.A, K-Steering System Topology, Revision: A, Pages: 1

Drawing No. 110-0056695 Rev.A, AutoChief System Topology, Revision: B, Pages: 1

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. 1, Request for upgrade of 22-2274357-PDA, Revision: A, Pages: 1

Drawing No. KM-PROC-0080 Rev.A, Change management, Revision: A, 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:

Drawing No. 2, KM Doc package matching UR E27 certification, Revision: A, Pages: 1

Terms of Validity:

This Product Design Assessment (PDA) Certificate remains valid until 02/Jul/2029 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).

KONGSBERG MARITIME CHINA LTD.

NO. 136 NORTH FUTE ROAD, CHINA (SHANGHAI) POILOT FREE TRADE ZONE

SHANGHAI SHANGHAI

China

Telephone: +86 213279888

Fax: +86 2131279555

Email: Ying.Han@km.kongsberg.com

Web: <http://www.km.kongsberg.com>**Tier: 5 - Unit Certification Required**

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:**

Rules for Building and Classing Marine Vessel Rules 2024 : 1A-1-4/7.7, 1A-1-A3, 1A-1-A4, 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.

Rules for Building and Classing Mobile Offshore Units 2024 : 6-1-1/9, 6-1-1/13.

National:

NA

International:

NA

Government:

NA

EUMED:

NA

OTHERS:

IACS UR E10 Rev 8:2022

IACS UR E22 Rev 2:2016 (CAT II and III)

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: 5 - Unit Certification Required

Product: ACC, Electronic Ship Automation Equipment**Model:** K-Chief 600**Endorsements:****Intended Service:**

For use on ABS Classed Vessels and Offshore Facilities in accordance with the listed ABS Rules and International Standards.

Description:

K-Chief 600, is an integrated system which can carry out the following functions:

K-Chief 600:

- Alarm and Monitoring
- Auxiliary Machinery Control
- Power Management
- Engine/Generator Protection

Additional information with detailed list of assemblies and sub-assemblies is provided on an attachment "Hardware List Table".

Software version according to document "Revision History for K-Chief 600 / AutoChief 600 Software: 359018.12", No. 386083 - Rev. G dated 24 May 2022.

Rating:

Supply voltage: 18 -32 V DC from a 230 VAC UPS

Operational temperature: -15 to +70 C degrees.

Maximum relative humidity: 96% non-condensing

Ambient storage temperature: -25 to +70 C degrees in a dry area with approx. 70% humidity

DPU 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 the products, specified on ABS Rules for Building and Classing Marine Vessel Rules (2024) 4-1-1/Table 3 item 35. Unit Certification may be carried out during Factory Acceptance Test of the overall system.

2) When it is used for Computer-Based Systems Category II or III services in 4-9-3/Table 1 of Marine Vessels Rules, the documentation required by 4-9-3/8.3 and 4-9-3/15 Table 3, Table 4 and Table 5 of the 2024 Marine Vessels Rules are to be maintained by manufacturer and submitted for ABS upon requested.

3) Fault simulation, factory acceptance testing, on-board complete system and integration testing as these are detailed in 4-9-3/Table 5, of the ABS Rules for Building and Classing Marine Vessel Rules 2024 are to be witnessed by an ABS Surveyor.

4) If the manufacturer or purchaser requests an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.

Comments:

1) The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.

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: 5 - Unit Certification Required

2) K-Chief 600, systems are listed as System Category III in accordance with 4-9-3/Table 1 of the ABS Rules for Building and Classing Marine Vessel Rules (2024).

3) Tests and approval are for the basic systems. Each configuration and external connection are to be specifically approved.

4) This certificate does not cover any requirements for the cyber resilience for onboard system, equipment's and for vessels.

Notes/Drawing/Documentation:

Drawing No. DANAK 1916085, DANAK 1916085 L2C, Revision: 0, Pages:

Drawing No. KM-GUI-0118 Rev.A, Guideline for Secure Development Lifecycle, Revision: A, Pages: 1

Drawing No. 110-0051790 Rev.E, Cyber Resilience Asset Inventory, Revision: E, Pages: 1

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 application 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:

Drawing No. 7, ABS London Plan Approval Request For 22-2274357-PDA, Revision: A, Pages: 1

Drawing No. DANAK 198234, DANAK 198234 Rev.A PSO-P - PSO-S, Revision: A, Pages:

Drawing No. KM-PROC-0080 Rev.At, Change management, Revision: A, Pages: 1

Drawing No. DANAK 197329, DANAK 197329 ACP, PBT, MPP, MPD, Revision: 0, Pages:

Drawing No. KM-PRO-0120 Rev.A, Configuration Management Procedure, Revision: A, Pages: 1

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. 110-0062446 Rev.A, K-Steering System Topology, Revision: A, Pages: 1

Drawing No. 110-0056695 Rev.A, AutoChief System Topology, Revision: B, Pages: 1

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. 1, Request for upgrade of 22-2274357-PDA, Revision: A, Pages: 1

Drawing No. KM-PROC-0080 Rev.A, Change management, Revision: A, 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:

Drawing No. 2, KM Doc package matching UR E27 certification, Revision: A, Pages: 1

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: 5 - Unit Certification Required

Terms of Validity:

This Product Design Assessment (PDA) Certificate remains valid until 02/Jul/2029 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:**

Rules for Building and Classing Marine Vessel Rules 2024 : 1A-1-4/7.7, 1A-1-A3, 1A-1-A4, 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.

Rules for Building and Classing Mobile Offshore Units 2024 : 6-1-1/9, 6-1-1/13.

National:

NA

International:

NA

Government:

NA

EUMED:

NA

OTHERS:

IACS UR E10 Rev 8:2022

IACS UR E22 Rev 2:2016 (CAT II and III)



CERTIFICATE NUMBER
EFFECTIVE DATE
EXPIRY DATE
ABS TECHNICAL OFFICE

24-00T2541233-PDA-DUP
03-Jul-2024
02-Jul-2029
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: ACC, Electronic Ship Automation Equipment

Model: K-Chief 600

Endorsements:

Tier: 5 - Unit Certification Required

This Product Design Assessment (PDA) Certificate remains valid until 02/Jul/2029 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)

CAN MAKINA ELEKTRİK VE İNŞAAT SANAYİ TİCARET A.Ş.

AYDINTEPE MAH., TERSANELER BOLGESİ, HARMANDALI SOK. NO. 12

TUZLA

İSTANBUL

Turkey

Telephone: +90 216 494 30 94

Fax: +90 216 392 90 96

Email: engin@canelektrik.com

Web: www.canelektrik.com

Tier: 5 - Unit Certification Required

Product: ACC, Electronic Ship Automation Equipment

Model: K-Chief 600

Endorsements:

Intended Service:

For use on ABS Classed Vessels and Offshore Facilities in accordance with the listed ABS Rules and International Standards.

Description:

K-Chief 600, is an integrated system which can carry out the following functions:

K-Chief 600:

- Alarm and Monitoring
- Auxiliary Machinery Control
- Power Management
- Engine/Generator Protection

Additional information with detailed list of assemblies and sub-assemblies is provided on an attachment "Hardware List Table".

Software version according to document "Revision History for K-Chief 600 / AutoChief 600 Software: 359018.12", No. 386083 - Rev. G dated 24 May 2022.

Rating:

Supply voltage: 18 -32 V DC from a 230 VAC UPS

Operational temperature: -15 to +70 C degrees.

Maximum relative humidity: 96% non-condensing

Ambient storage temperature: -25 to +70 C degrees in a dry area with approx. 70% humidity

DPU 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 the products, specified on ABS Rules for Building and Classing Marine Vessel Rules (2024) 4-1-1/Table 3 item 35. Unit Certification may be carried out during Factory Acceptance Test of the overall system.
- 2) When it is used for Computer-Based Systems Category II or III services in 4-9-3/Table 1 of Marine Vessels Rules, the documentation required by 4-9-3/8.3 and 4-9-3/15 Table 3, Table 4 and Table 5 of the 2024 Marine Vessels Rules are to be maintained by manufacturer and submitted for ABS upon requested.
- 3) Fault simulation, factory acceptance testing, on-board complete system and integration testing as these are detailed in 4-9-3/Table 5, of the ABS Rules for Building and Classing Marine Vessel Rules 2024 are to be witnessed by an ABS Surveyor.
- 4) If the manufacturer or purchaser requests an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.

Comments:

- 1) The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.
- 2) K-Chief 600, systems are listed as System Category III in accordance with 4-9-3/Table 1 of the ABS Rules for

CAN MAKINA ELEKTRİK VE İNŞAAT SANAYİ TİCARET A.Ş.

AYDINTEPE MAH., TERSANELER BOLGESİ, HARMANDALI SOK. NO. 12

TUZLA

İSTANBUL

Turkey

Telephone: +90 216 494 30 94

Fax: +90 216 392 90 96

Email: engin@canelektrik.com

Web: www.canelektrik.com

Tier: 5 - Unit Certification Required

Building and Classing Marine Vessel Rules (2024).

3) Tests and approval are for the basic systems. Each configuration and external connection are to be specifically approved.

4) This certificate does not cover any requirements for the cyber resilience for onboard system, equipment's and for vessels.

Notes/Drawing/Documentation:

Drawing No. DANAK 1916085, DANAK 1916085 L2C, Revision: 0, Pages:

Drawing No. KM-GUI-0118 Rev.A, Guideline for Secure Development Lifecycle, Revision: A, Pages: 1

Drawing No. 110-0051790 Rev.E, Cyber Resilience Asset Inventory, Revision: E, Pages: 1

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 application 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:

Drawing No. 7, ABS London Plan Approval Request For 22-2274357-PDA, Revision: A, Pages: 1

Drawing No. DANAK 198234, DANAK 198234 Rev.A PSO-P -PSO-S, Revision: A, Pages:

Drawing No. KM-PROC-0080 Rev.At, Change management, Revision: A, Pages: 1

Drawing No. DANAK 197329, DANAK 197329 ACP, PBT, MPP, MPD, Revision: 0, Pages:

Drawing No. KM-PRO-0120 Rev.A, Configuration Management Procedure, Revision: A, Pages: 1

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. 110-0062446 Rev.A, K-Steering System Topology, Revision: A, Pages: 1

Drawing No. 110-0056695 Rev.A, AutoChief System Topology, Revision: B, Pages: 1

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. 1, Request for upgrade of 22-2274357-PDA, Revision: A, Pages: 1

Drawing No. KM-PROC-0080 Rev.A, Change management, Revision: A, 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:

Drawing No. 2, KM Doc package matching UR E27 certification, Revision: A, Pages: 1

CAN MAKINA ELEKTRİK VE İNŞAAT SANAYİ TİCARET A.Ş.

AYDINTEPE MAH., TERSANELER BOLGESİ, HARMANDALI SOK, NO. 12

TUZLA

İSTANBUL

Turkey

Telephone: +90 216 494 30 94

Fax: +90 216 392 90 96

Email: engin@canelektrik.com

Web: www.canelektrik.com

Tier: 5 - Unit Certification Required

Terms of Validity:

This Product Design Assessment (PDA) Certificate remains valid until 02/Jul/2029 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:

Rules for Building and Classing Marine Vessel Rules 2024 : 1A-1-4/7.7, 1A-1-A3, 1A-1-A4, 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.

Rules for Building and Classing Mobile Offshore Units 2024 : 6-1-1/9, 6-1-1/13.

National:

NA

International:

NA

Government:

NA

EUMED:

NA

OTHERS:

IACS UR E10 Rev 8:2022

IACS UR E22 Rev 2:2016 (CAT II and III)



CERTIFICATE NUMBER
EFFECTIVE DATE
EXPIRY DATE
ABS TECHNICAL OFFICE

24-00T2541233-PDA-DUP
03-Jul-2024
02-Jul-2029
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 ELEKTRİK VE İNŞAAT SANAYİ TİCARET A.Ş.

located at

**AYDINTEPE MAH., TERSANELER BOLGESİ, HARMANDALI SOK,
NO. 12, TUZLA, , İSTANBUL, Turkey**

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: ACC, Electronic Ship Automation Equipment

Model: K-Chief 600

Endorsements:

Tier: 5 - Unit Certification Required

This Product Design Assessment (PDA) Certificate remains valid until 02/Jul/2029 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

SBarua

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)