



TYPE APPROVAL CERTIFICATE
No. **ELE349021XG/001**

This is to certify that the product below is found to be in compliance with the applicable requirement of the RINA type approval system.

<i>Description</i>	Monitoring and control system
<i>Type</i>	K-Chief 600 / DC C20 ; Alarm / Monitoring / Power Management / Control System / Bridge Watch Monitoring System BWMS-C20
<i>Applicant</i>	KONGSBERG MARITIME AS-NORWAY P.O BOX 1009,N-3194 HORTEN HORTEN NORWAY
<i>Manufacturer</i>	KONGSBERG MARITIME AS-NORWAY
<i>Place of manufacture</i>	P.O Box 1024,N-3194 Horten Horten Norway (1)
<i>Reference standards</i>	Rules for the classification of ships.- Part C - Machinery, systems and fire protection. - Ch.3, Sect. 6, Table 1.

Issued in **Hamburg** on **March 17, 2022**. *This Certificate is valid until* **March 16, 2027**



RINA Services S.p.A.
Giuseppe Russo

This certificate consists of this page and 1 enclosure

(1) Subject product can be manufactured by alternative manufacturers as specified in enclosure.

TYPE APPROVAL CERTIFICATE

No. ELE349021XG/001

Enclosure - Page 1 of 4

K-Chief 600 / DC C20

**Alarm / Monitoring / Power Management / Control System / Bridge Watch Monitoring System
BWMS-C20**

K-Chief 600 / DataChief C20 system performs the following functions :

- Alarm and Monitoring
- Control System for aux. machineries/Propulsion/Cargo
- Power Management System
- Aux. Generators protection
- Bridge Watch Monitoring System BWMS-C20 acc. to IMO Res. MSC 128(75)

The typical configuration comprises :

ROS	Remote Operator Station (*)
LOS	Local Operator Station (alphanumeric user interface)
MOS	Midi Operator Station (graphic user interface)
WCC600	Watch Call Panel
TCP	Touch Control Panel
CRP	Common Operator panel / Control Room panel

Distributed Processing Units , based on CAN NET Protocol :

RAi-16;	RAi-16xe	Remote Analog Input
RDi-32;	RDi-32xe	Remote Digital Input
RDi-32A;	RDi-32Axe	Remote Digital Input
RDo-16;	RDo-16xe	Remote Output Input
RAo-8;	RAo-8xe	Remote Analog Output
RAi-10tc;	RAi-10tcxe	Remote Analog Input for Thermo Couple

RIO-C1 Analog or digital input and output channels with Led Status indicator :

- 6 ch. relays NO/NC & solenoid valve driver with loop fail detection
- 2 ch. 24 Vdc pulse, pick-up input
- 2 ch. analog inputs 0-30 Vac
- 1 ch. analog 0-1 A ac
- 4 ch. flexible analog / digital input (ref. RAi -16)
- 4 ch. digital inputs, dry contacts
- 2 ch. analog output +/- 22 mA

RIO-C2; C2xe 16 digital input or output channels with Led Status indicator:

- 8 ch. relays NO/NC
- 8 ch. digital inputs with possibility for 24Vdc live input or dry contacts

RIO-C3; C3xe Generator protection module; 16 analog or digital input and output channels with Led Status indicator:

- 4 ch. relays NO/NC
- 3 ch. analog 0-30 Vac
- 3 ch. analog 0-5 A ac, generator current , (MSB side)
- 3 ch. analog 0-5 A ac , (generator internal)
- 3 ch. digital input, dry contacts
- local 7-segment display, for indication of active protection function.
- local reset-switch for reset of protection function.

TYPE APPROVAL CERTIFICATE

No. ELE349021XG/001

Enclosure - Page 2 of 4

K-Chief 600 / DC C20

Alarm / Monitoring / Power Management / Control System / Bridge Watch Monitoring System BWMS-C20

RIO-C4, C4xe Generator control module; 17 analogue or digital input and output channels with Led Status indicator

- 8 ch. relays NO/NC
- 2 ch. analog 0-30 Vac
- 1 ch. analog 0-5 A ac, generator current , (MSB side)
- 4 ch. digital input, dry contacts
- 2 ch. analog output +/- 22 mA

VCC	Voltage converter controller dedicated for Power Management & Generator Protection Installation
dPSC	Dual two channel CAN gateway with separate and galvanic isolated processors
PSS	Process Segment Starcoupler, driving 8 CAN Bus lines 250m , galvanic isolation between all bus lines
UPS	Standb by power (230/24V)
COP	Common Operator Pannels incl. CRP, INP, ALC
PSO; PSO-P	Power Switch Over
CEG-CAN	CAN Ethernet Gateway
VDU	Visual display units, varius alternatives
PC	Main Computer Units, various alternatives
8" TCP	Touch Screen Panel
13,3" TCP	Touch Screen Panel
8" AIPC	Touch Screen Panel
IPC 13,3	Touch Screen Panel
13,3" AIPC, 13,3" AIPC-XXL	Touch Screen Panel
AIPC KCC	Kongsberg Compact Computer
SCU	Segment Controller Unit
Malware Protection/ Remote Support Unit	
TBP	Tracker Ball Panel
TPP	Touch Pad panel

Documentation:

Delata Electronic Testing - Test Programme - Distributed Process Unit K250808-1 -1dated 1998-09-02
Delata Electronic Testing - Test Programme - Alarm Extension System Op. Control K250600 -1dated 1998-01-07
Minute of Meeting - Function test K-Chief 500 / DC C20 - 2 november 2006
Engineering Guide C20-PMS incl. engine safety & Generator protection AD-00455-B / 23 December 04
AutoChief20 Installation Manual - General for all engine types - Fixed and controllable pitch propeller AA00440 / ACC20.doc
Alarm and monitoring System K-Chief-500 - Installation Manual 311956/A dated October 2007
Software Revision History - C20 System SW (V10) / Software: 311246/F dated 27 July 09
WCC 600 Datasheet 381827B
386083C SW Revision History for C600.pdf
389143A Hardware Module Description.pdf
389994B Touch Pad Panel datasheet.pdf
389995C Tracker Ball Panel datasheet.pdf
390759A Touchpad Panel product description.pdf
390760A Trackerball Panel product description.pdf



TYPE APPROVAL CERTIFICATE

No. ELE349021XG/001

Enclosure - Page 3 of 4

K-Chief 600 / DC C20

Alarm / Monitoring / Power Management / Control System / Bridge Watch Monitoring System BWMS-C20

Additional Documents for K-Chief 600:

RINA Norway AS, letter of Mr. Tonsberg dated of March 9th 2010.

Kongsberg Marine, CD with C 20 Documentation for Class.

Software Revision History: C600 > K-Chief 600 / AutoChief 600 / WCC 600 document 386083 Rev. D dated 15.01.1015 and

Software Revision History: C20 System SW (V10) document 311246 Rev. G dated 08.06.2010

Test Reports:

DANAK-1910054 - Type approval vibration testing of COP-05 Lever Panel and COP-05 Utility Panel
KM-DOC.no:318973 rev.A - dated 6 February 2008

DANAK-1910025 - Supplementary Type approval of Imput Panel - dated 22 January 2008

DANAK-195838 - Type approval testing of Units for Voyager Data Recorder - dated 13 November 2001

DANAK-197941 - Type approval testing of Power Switch Over unit - dated 19 May 2005

DANAK-198195 - Type approval testing of KM Common Operator Panels - dated 19 December 2005

DANAK-198195 Rev.1 - Type approval testing of KM Common Operator Panels - dated 15 June 2007

DANAK-198233 Rev.A - Type approval testing of C4 Auto unit - dated 14 August 2007

DANAK-198234 - Type approval testing of Power Switch Over unit PSO-p / PSO-s - dated 19 January 2006

DANAK-198234 Rev.A - Type approval testing of Power Switch Over unit PSO-p/PSO-s new - dated 14 August 2007

DANAK-198468 Rev.1 - Type approval testing of CEG, Can-Ethernet Gateway - dated 15 June 2007

DANAK-1910002 Project A505037-1 Type approval testing for Pick-up - dated 12 December 2007

DANAK-19/12904 Project T204028 Type Approval Test of WCC600 - dated 15 March 2013

DANAK 1914440 Rev A.pdf - dated 05.09.2014

Nemko - E21088.03 dated 2021-10-28

Additional Test Reports for K-Chief 600:

DELTA Test Report DANAK - 1910740 Deltar A506538 - Type approval testing of modules RAI-16xe, RAO-8xe, RDi-32xe, RDi-32Axe, RDo-16xe and C2xe

DNV Report No. 2006-3473 Rev.01, Type approval testing Marine Multi Display type JH08T01 KMS-C2

Kongsberg FT/FAT Procedure K-Chief 600, issue no.A, dated 02.03.2010

Svenska Provningsanstalten 3P08182 rev.1_Kongsberg Maritime AS.pdf

372931- Nemko report no. E12103.01.pdf

Technical report 20018_rev 1 KM Panel PC.PDF

Test Carried OUT:

Minute of Meeting - Function test K-Chief 600 March 9th 2010



TYPE APPROVAL CERTIFICATE

No. ELE349021XG/001

Enclosure - Page 4 of 4

K-Chief 600 / DC C20

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Alternative manufacturers:

Kongsberg Maritime Korea Ltd, 1058-7, Dalsan-ri, Jungkwan-myeon, Gijang-gun, 619-961, Busan, Korea
Kongsberg Maritime China Ltd - Kongsberg Maritime China Waigaoqiao Ltd., 136 North Fute Road , China
(Shanghai), Pilot Free Trade Zone, 200131 Shanghai, China

Kongsberg Maritime China Jiangsu Ltd, 1-2F No 711 Changjiang Road, Runzhoud district, Jiangsu Province, P.C.
212002 Zhenjiang, China

Retentions:

The validity of the Type Approval is maintained if any implementations / modifications are reported, including changing in Hardware and Software; moreover tests are to be provided in order to:

- Make sure that such modifications do not affect the functionality of the system,
- Verify that no major modifications are introduced in the system structure (HW/SW)

Traceability of Hardware and Software version/release is to be ensured for each installation/application

This certificate annuls and replaces the previous one n° ELE125719XG.

Hamburg March 17, 2022

