



Lloyd's  
Register

## Type Approval Certificate

*This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.*

This certificate supersedes certificate number 13/20024 (E5) issued on 23.08.2017 which is hereby cancelled.

This certificate is issued to:

**PRODUCER**

Kongsberg Maritime AS  
Bekkajordet 8A  
P.O. Box 1009  
N-3189 Horten – Norway

**DESCRIPTION**

Electronic Ship Automation Equipment  
Propulsion Control System, Thruster Control, Steering Control

**TYPE**

K-Chief 500 and 600 Marine Automation System  
AutoChief C20 & 600 Propulsion Control System  
Bridge Monitoring System C20  
K-Thrust 600 and K-Steering 600 Thruster and Steering Control System  
Lever K-Thrust with/without Display, Command Panel and Display  
WCC600 Marine Engineers Alarm System

Comprising of modules:

SCU – Segment Controller Unit  
SEFA160 FA – Fuel Actuator\*  
SEFA800 HD – Fuel Actuator\*  
SEFA800 Cyclo – Fuel Actuator\*

**Certificate No.**

13/20024 (E6)

**Issue Date**

12 September 2019

**Expiry Date**

20 July 2024

**Sheet**

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**TYPE (continued)**

BWU 09 – Bridge Wing Unit  
 RAi-16xe – Distributed Processing Unit  
 RAo-8xe – Distributed Processing Unit  
 RDi-32xe – Distributed Processing Unit  
 RDi-32Axe – Distributed Processing Unit  
 RDo-16xe – Distributed Processing Unit  
 C2xe – Distributed Processing Unit  
 NQB101 – Torque and Power Monitoring System for rotating shafts  
 MSI-12 – Distributed Processing Unit  
 MSI CL – Distributed Processing Unit  
 RAi-10tcxe – Distributed Processing Unit  
 C3xe – Distributed Processing Unit  
 C4xe – Distributed Processing Unit  
 ESU-12 – Engine Safety Unit  
 WCC600 – Watch Call Panel  
 LTU11 / LTU11 ME – Lever Telegraph Unit  
 TBP – Tracker Ball Panel  
 TPP – Touch Pad Panel  
 PCP – Pointer Carrier Panel  
 RPC – RPM Pickup CAN (Type: MDS-8-M18-IM-SA-CO-KM)  
 Speed Set Dial Unit (for Autochief 600)  
 PB4 – NFU control of rudder or CPP or for pump start/stop  
 L2C – LAN to CAN converter (Version 1.00.xx)  
 RFU – Rudder Feedback Unit  
 TMI – Torque Motor Interface (NA1221 Version TMI\_1.00)  
 Thruster Command Panel <sup>[Q]</sup>  
 Lever K-Thrust Display <sup>[Q]</sup>  
 Lever K-Thrust <sup>[Q]</sup> (Azimuth with/without Display  
     Single with/without Display;  
     Dual with/without Display;  
     Mini Wheel with/without Display)  
 CP12 –Control Panel PC 12" with touch display  
 ABE11/KBE11 – Button extension strip (for use with CP12)

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**TYPE (continued)**

Component	Boot loader / Application	Description
7" MTP	GNU GRUB 2.00- 7ubuntu11 Ubuntu 12.04.2 kernel 3.2.0-43	7" Marine Touch Panel PC (Intel Atom N2800, Dual Core 1.86GHz)
8" AIPC	V2.2 C1.0 / V2.4 C1.1 API Version: 1.3.268	8" Panel PC (Intel Atom N450 1.6GHz CPU) with multi touch functionality
8" TCP	- API Version: 1.3.268	8" Control Panel with multi touch functionality
13.3" AIPC	V2.2 C1.0 / V2.4 C1.1 API Version: 1.3.268	13.3" Panel PC (Intel Atom N450 1.6GHz CPU) with multi touch functionality
13.3" TCP	- API Version: 1.3.268	13.3" Control Panel with multi touch functionality
13.3" IPC	V2.2 C1.0 / V2.4 C1.1 API Version: 1.3.375	13.3" Panel PC (Intel Dual Core 2.26GHz CPU) with multi touch functionality

Operating System: Windows Embedded 7P, Windows XP

Firmware Version: 121129R0V01

Touch Firmware: 1.100

**APPLICATION**

Marine applications in environmental categories ENV1, ENV2\*, ENV3(\*), ENV4\*\* and ENV5\*\*\* as defined in LR Test Specification No. 1 (2015).

\* 8" TCP / IAPC and 13.3" TCP / IAPC / IPC

(\*) 7" MTP, PB4, L2C, RFU, TMI, Lever K-Thrust, Lever K-Thrust Display, Thruster Command Panel, CP12

\*\* L2C, RFU, TMI, SEFA160/800 HD/800 Cyclo Fuel Actuators, ABE/KBE11

\*\*\* BWU 09,

**ADDITIONAL TESTS**

**Low Temperature:**

SCU, RAi-16xe, RAo-8xe, RDi-32Axe, RDi-32xe RDo-16xe, C2xe, NQB101, MSI-12, MSI CL, RAi-10tcxe, C3xe, C4xe, ESU-12, WCC600, PCP, LTU11 /ME, TBP, 8" TCP/IAPC and 13.3" TCP/IAPC/IPC, 7" MTP, Speed Set Dial Unit, Lever K-Thrust, Lever K-Thrust Display, CP12, ABE/KBE11	- 15° C
BWU 09, TPP, L2C, RFU, TMI, Thruster Command Panel	- 25° C

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**ADDITIONAL TESTS  
(continued)**

**Immunity to Radiated Radio Frequency Fields**

SCU, NQB101, MSI-12, MSI CL, C3xe, C4xe, RAI-10tcxe, ABE/KBE11	80MHz to 6 GHz
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**Radiated emission above 1Ghz**

SCU, NQB101, MSI-12, MSI CL, C3xe, C4xe, RAI-10tcxe,	1 - 6GHz
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**Compass Safe Distance**

LTU11	80cm	
C2xe, BWU 09, LTU11 ME	60cm	
TBP	50cm	
TPP	40cm	
RAo-8xe	30cm	
SCU, RDi-32Axe	25 cm	
ESU-12, MSI-12, NQB101	20cm	
RAi-16xe, RDi-32xe, RDo-16xe, C3xe, C4xe, MSI CL, L2C	10cm	
RAi-10tcxe, TML, ABE/KBE11	5cm	
	<i>Standard</i>	<i>Steering</i>
7" MTP	55cm	40cm
8" AIPC / TCP	45cm	25cm
13.3" AIPC/TCP	45cm	30cm
13.3" IPC	65cm	42cm
WCC600	45cm	27cm
RPC - RPM Pickup CAN MDS-8-M18-IM-SA-CO-KM	35cm	20cm
Speed Set Dial Unit (Autochief 600)	80cm	50cm
PB4	20cm	10cm
RFU	50cm	30cm
CP12	75cm	50cm

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**ADDITIONAL TEST  
(continued)**

**Compass Safe Distance**

	<i>Standard</i>	<i>Steering</i>
Lever K-Thrust Single or Dual without Display with Display	20cm 130cm	10cm 90cm
Mini Wheel K-Thrust without Display with Display	100cm 100cm	60cm 60cm
Lever K-Thrust Azimuth without Display with Display	100cm 100cm	60cm 60cm
Lever K-Thrust Display	110cm	80cm
Thruster Command Panel	120cm	70cm

**Ingress Protection Rating**

NBQ101, PB4 (with internal buzzer), CP12 (front)	IP56
RFU	IP55
MSI-12, MSI CL, RAi-10tcxe, C3xe, C4xe, ESU-12, 7" MTP, TBP, L2C, TMI	IP2X
LTU11 (ME), TPP, PCP, Lever K-Thrust, Lever K-Thrust Display	IP22
8" TCP/IAPC and 13.3" TCP/IAPC/IPC	IP20(back) IP66 (front)
WCC600, Speed Set Dial Unit, Thruster Command Panel, ABE/KBE11, CP12 with ABE/KBE11	IP44
RPC - RPM Pickup CAN MDS-8-M18-IM-SA-CO-KM	IP66

**Immunity Fast, Low energy transients - (Bursts)**

SCU	Repetition rate: 100kHz Burst Duration 0.75ms
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**OTHER CONDITIONS**

Type Approval of products according to Test Specification No. 1 is essentially for hardware. Examination of software aspects is restricted to functional operation as demonstrated in the Performance Test.

The software development and quality assurance processes of Kongsberg are covered by the Software Conformity Assessment (SCA) Certificate.

For programmable electronic systems implementing emergency stop or safety critical functions the requirements of Control Engineering Systems needs to be satisfied.

The Touch Displays and Panel PC's (8" AIPC, 8"TCP, 13.3" AIPC, 13.3"TCP, 13.3"IPC) were tested with +55°C for 16 hours, only. Therefore, mounting in consoles and housings together with other electrical equipment needs to be specially considered from heat accumulation aspects.

**PLACES OF PRODUCTION**

Kongsberg Maritime China Ltd.  
136 North Fute Road,  
China (Shanghai)  
Pilot Free Trade Zone  
200131 Shanghai - China

Kongsberg Maritime Korea Ltd.  
9-7, Sandan 3-Ro,  
Junggwon-Eup,  
Gijang-Gun  
Busan, 46027, Korea

W. Gessmann GmbH [Ⓞ]  
Eppinger Straße 221  
74211 Leingarten  
Germany

*The Type Approval does not eliminate the need for normal inspection and survey procedures required by the Rules and Regulations.*

*If the specified standards are amended during the validity of this certificate, the product is to be re-approved prior to it being supplied to vessels to which the amended standards apply.*

*The Design Appraisal Document No. HTS/ETS 33732-16, issue 3 and its supplementary Type Approval Terms and Conditions form part of this Certificate.*

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