

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Remote Control System Diesel Engine**

with type designation(s)

BMS-2000 III, BMS-2000 III ME

Issued to

Mitsui Zosen Systems Research Inc.**Tamano Okayama Pref., Japan**

is found to comply with

Det Norske Veritas' Rules for Classification of Ships and Det Norske Veritas' Offshore Standards**Application :****Location classes:*****, **, ***, **** : See page 2.****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**

Type	Temperature	Humidity	Vibration	EMC	Enclosure
BMS-2000 III	B	B	A, B*	A, B**	Required protection according to the Rules to be provided upon installation onboard
BMS-2000 III ME	B	B	A, B***	A, B****	Required protection according to the Rules to be provided upon installation on board

This Certificate is valid until **2017-06-30**.Issued at **Busan** on **2015-06-03**DNV GL local station: **Kobe**for **DNV GL**Approval Engineer: **Jong Yun Kim**

Baeg Soon Choi
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Environmental conditions :

* **MMM-, CPIL2/3, RPM-1/F, GVA-S/M/L/LL/F, LOP(B), EOB-1: B, Others: A**
** **FBCP-1, FBIP-1, BCFH-1, MMM-, BCB3-B/H, TTH-3, RCPU, DOT-A, DMP-DY, DSP-3/5, MTL-1A: B, Others: A**
*** **LOP/LOP-1 and RPM-1: B, Others: A**
**** **BCB3-B/H, TTH-3, RCPU, DSP-3/5, MTL-1A: B, Others: A**

Product description

BMS-2000 III Remote Control System is containing:

System/component	Type	SW/firmware ver. no.
Bridge Control Box	BCB3-B/H, BCFH-1	RSW 1.10.000
Telegraph Transmitter	TTH-3	-
RCPU Unit	RCPU	RCPU 1.10.000
Order Indicator	DOT-A	-
Dimmer Panel for Order Indicator	DMP-DY	-
W/H Display	DSP-3/5	LCD3 1.10.000
Telegraph Logger	MTL-1A	-
C/R Operating Panel	COPB-1/2, OPPF-1	RS2 1.03.000
C/R Control Box	CRCB-D/H	RS2 1.03.000
Main Control Unit	MCU2-1/2-2/2-3	RDU (EPS, GOV) 1.03.000 CCPU/BCPU 1.03.001
C/R Power Unit	CPWU	-
C/R Display	DSP-3/5	LCD3 1.10.000
Speed Control Dial	SCD-1, SCD-1A, SCD-F	-
Servo Panel	MSP-1/2/3/1A/2A/3A	-
Transformer	MGT-1/2/3	-
E/S Telegraph & Ind.Box	CPIL2/3	RS2 1.03.000
Pick-Up Box	RPM-1, RPM-F	-
Governor Actuator	GVA-S/M/L/LL/F	-
EIO P.C.B. Unit	PEIO-1	-
UIO Unit	UIO	UIO 4
UTB Unit	UTB	-
CBIO Unit	CBIO	-
CBPS Unit	CBPS	-
Power Box	PBA-1	-
Local Operating Panel (B)	LOP(B)	-
MEPS Unit	MEPS	MEPS 1.00.003 RDU (MEPS) 1.00.003
Bridge CPP Panel	FBCP-1	-
Bridge Indication Panel	FBIP-1	-
C/R CPP Panel	FCCP-1	-
Telegraph Receiver	TTR-3	-
E/S Operating Box	EOB-1	-
Power module	MMM-PWR	-
CPU Module	MMM-CPU	-
LAN Module	MMM-LAN	-
Digital Input Module	MMM-DI	-
Digital Output Module	MMM-DO	-
Serial Communication Module	MMM-SIO	-
D/A Converter Module	MMM-DAC	-

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A/D Converter Module	MMM-ADC	-
Extension Module	MMM-EXT	-
RTD(Resistance Temperature Detector) Module	MMM-RTD	-

BMS-2000 III ME Remote Control System is containing:

System/component	Type	SW/firmware ver. no.
Bridge Control Box	BCB3-B/H	RSW 1.03.102
Telegraph Transmitter	TTH-3	-
RCPU Unit	RCPU	RCPU 1.01.101
W/H Display	DSP-3/5	LCD3 1.03.000
Telegraph Logger	MTL-1A	-
C/R Operating Panel	COPB-1, CROP-5	RS2 1.03.000
C/R Power Unit	CRPW	-
C/R Display	DSP-3/5	LCD3 1.03.000
MEPS Unit	MEPS	MEPS 1.00.003 RDU (MEPS) 1.00.003
MERI Unit	MERI	MERI 1.00.006
R/I Signal Converter	RICV	-
Speed Control Dial	SCD-1A, SCD-2	-
Pick-Up Box	RPM-1	-
Local Operating Panel	LOP, LOP-1	-

Application/Limitation

The Type Approval covers the hardware listed under Product description.

For BMS-2000 III,

The current and historical software numbers and versions are listed in document R61802-013K-090 "System Software Overview" and the revision for each software are listed in documents R61802-013K-002 Rev.1/003 Rev.1/004 Rev.1/005 Rev.1/013 Rev.1/014/040 Rev.1 and EDC02002-B03-01-ES-Rev.6.

The following documentation of the actual application is to be submitted for approval in each case:

- Reference to this Type Approval Certificate
- Functional description
- System block diagram
- Power supply arrangement (may be part of the System block diagram)
- List of control & monitored points (including alarm, load reduction and shutdown setpoints)
- Test program for certification

For BMS-2000 III ME,

The current and historical software numbers and versions are listed in document R61803-013K-090 "System Software Overview" and the revision for each software are listed in documents R61802-013K-013/014/040, R61803-013K-002/003/500/501, R61803-013K-090

The following documentation of the actual application is to be submitted for approval in each case:

- Reference to this Type Approval Certificate
- Functional description
- System block diagram

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- Power supply arrangement (may be part of the System block diagram)
- List of control & monitored points with thresholds and range
- Test program for certification

Product certificate.

Each delivery of the system is to be certified according to Pt.4 Ch.9 Sec.1. The Certification of Application Functions is to be performed at the manufacturer of the application system before the system is shipped to the yard. After certification the clause for application software control will be in force:

Clause for application software control.

All changes of software in use on board are to be recorded. The records are to be forwarded to DNV for evaluation and approval. Major changes are to be approved before being installed.

Bridge equipment shall not be mounted closer than 5m from compass since no tests have been performed towards IEC60945.

Type Approval documentation

Tests carried out

Applicable tests according to Standard for Certification No.: 2.4 - April 2006

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Periodical assessment

The scope of the retention/renewal survey is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the survey are:

- Ensure that type approved documentation is available.
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines.
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications.
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given.
- Ensuring traceability between manufacturer's product type marking and the type approval certificate.

Retention survey is to be performed at least every second year and at renewal of this certificate.

END OF CERTIFICATE