

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Cargo Monitoring and Control System**with type designation(s)
M-TMS

Issued to

Musasino Co., Ltd.
Ohta-ku, Tokyo, Japanis found to comply with
DNV GL rules for classification – Ships and offshore units**Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**

Temperature	D
Humidity	B
Vibration	A
EMC	B
Enclosure	C

This Certificate is valid until **2018-08-28**.Issued at **Busan** on **2016-08-29**for **DNV GL**DNV GL local station: **Yokohama**Approval Engineer: **Byoung So Lee**-----
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.

Product description

Musasino Tank Monitoring System (M-TMS) consists of the following components;

Product	Component	Model
Control panel	Power supply	HWS50A-12/A HWS50A-15/A HWS100A-12/A HWS100A-15/A
	Controller	SCU, SFNB 8TX, IP485, MIP-SB2, MIF-CO2, ICC
	Display	SSD10 SSD19U/D
Radar type	Level gauge with pressure gauge	LEX1H LEX1S LEX1F
	Pressure gauge	TPC-C
	Temperature gauge	LTA LTB
	Zener barrier	MBXS-15D-9BL
	Local indicator	LDIA
Float type	Level alarm	LSA-1 LAS-2 LDM
	Zener barrier	MBRS-15-8BL

Application/Limitation

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case.

Reference is made to DNV Rules for Ships. At least the following documentation is to be submitted:

- Reference to this Type Approval Certificate
- System block diagram
- Power supply arrangement (may be part of the System block diagram)
- Instrument list
- Test program for certification

Product certificate

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

Clause for Application software control

All changes in software are to be recorded as long as the system is in use on board. The records of all changes are to be forwarded to DNV for evaluation and approval.

Major changes in the software are to be approved before being installed in the computer.

A Certification of Application Functions may be required for the particular vessel.

Installation in hazardous area

Ex-certification is not covered by this certificate. Application in hazardous area to be approved in each case according to the Rules and Ex-Certification/ Special Condition for Safe Use listed in valid Ex-certificate issued by a notified/recognized Certification Body.

Type Approval documentation

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Tests carried out

Applicable tests according to DNV GL Class Guideline DNVGL-CG-0339 November 2015.

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