Certificate No:
TAA00002YW

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Position Transmitter

with type designation(s)
Tail-Shaft Clearance Monitoring System (TCMS), MWC-0031 Control Panel, MWS-0027 Wear-down sensor

Issued to
MIKASA CORPORATION
Hiroshima, Japan

is found to comply with
DNV rules for classification – Ships, offshore units, and high speed and light craft

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Location classes:

Type	Temperature	Humidity	Vibration	EMC	Enclosure
MWC-0031 Control Panel	B	B	A	A	C / IP56
MWS-0027 Wear-down sensor	-2°C to 40°C	B	A	A	D / IP68

Issued at **Høvik** on **2021-09-10**
This Certificate is valid until **2023-09-09**.
DNV local station: **Kobe**

Approval Engineer: **Thorbjørn Hansen**

for **DNV**

Jan Tore Grimsrud
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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.

Product description

The MIKASA TCMS (Tail-Shaft Clearance Monitoring System) is a system used for monitoring of the distance between the tail-shaft and the shaft bearing. The system consists of a Control Panel (MWC-0031), the wear-down sensor (MWS-0027) and the sensor cable with connector.
A digital scaling meter is installed in MWC-0031, provides continuous reading of the actual wear down. A separate 4-20 mA output is provided for remote reading.

TCMS technical data:

Measurement range	:	0-10 mm
Accuracy	:	±5%
Output	:	4-20 mA
Power supply	:	24 VDC

TCMS HW / Rev:

HW unit name	HW no.	HW Rev no.
Control Panel	MWC-0031	-
Wear-down sensor	MWS-0027	-

Application/Limitation

Installation, replacement and calibration to be in accordance with the manufacturer's instruction.

To comply with the EMC-requirements in DNVGL-CG-0339, a copper foil tape (0.08 mm, manufactured by Teraoka Seisakushu) shall be installed on the inner surface of the control panel (ref. section 2.9 of Labotech test report no. LIC 12-21-089 / 26 July 2021).

Type Approval documentation

Tests carried out

Applicable tests according to class guideline DNV-CG-0339, August 2021.
IPx8 tested at 15 metres / 30 minutes according to IEC 60529.

Marking of product

The products to be marked with:
- Product Name
- product Code
- Serial No.
- Drawing No.

Periodical assessment

The scope of the periodical assessment 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 assessment 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

A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE