Certificate No:
TAF00001U3

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Water and Foam Monitor

with type designation(s)
LJSAFE-FM101, LJSAFE-FM111, LJSAFE-FM112

Issued to
LJSAFE Technology Co., Ltd.
Taizhou, Jiangsu, China

is found to comply with
DNV statutory interpretations DNV-SI-0364 – SOLAS interpretations, Edition July 2021
DNV rules for classification – Ships
DNV offshore standards

Application :

The water and foam monitor is approved for installation on ships and offshore vessels.

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

Issued at **Høvik** on **2023-09-28**
This Certificate is valid until **2028-09-27**.
DNV local unit: **Jiangyin NB & CMC**

Approval Engineer: **Helge Bjørnarå**

for **DNV**

Jowita Permoda
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

"LJSAFE-FM101, LJSAFE-FM111, LJSAFE-FM112"
Water and foam monitor consisting of branchpipe, which projects water or foam in a jet, and turret. Branchpipe and turret are made of stainless steel (316L). The water monitor is either manually (M) or electrically (E) operated.

Monitor movement:

- Rotation: 0° ~ 360°
- Elevation: -70° ~ 90°

For further details, see drawings listed under Type Approval documentation below.

Manufactured by: LJSAFE Technology Co., Ltd., Jiangsu, China.

Application/Limitation

The water and foam monitor is approved for installation on ships and offshore vessels.

Size	Nozzle size/inlet Nom. Dia. / OD [mm]	Nozzle outlet/orifice OD [mm]	Flow rate [lpm]	Throw length [m]	Inlet pressure [bar]	k-factor [lpm/√bar]
LJSAFE-FM101-M/E	DN100 / 108	41	2760 – 4167	77 – 100	6 – 14	1120
LJSAFE-FM111-M/E	DN150 / 159	41	3198 – 4507	100 – 120	8 – 16	1129
LJSAFE-FM112-M/E	DN150 / 159	44.5	3787 – 5333	91 – 120	8 – 16	1350

Max. working pressure is 14 bar (LJSAFE-FM101-M/E) and 16 bar (LJSAFE-FM111-M/E and LJSAFE-FM112-M/E).

Hydraulic test to 1.5 times working pressure to be documented before delivery.

Works certificate indicating mechanical properties of materials in the monitor and pressure test report is to accompany each product.

Materials are to be in accordance with the DNV-RU-SHIP Pt.4 Ch.6 Sec.1 (Pipe of class III).

The specific arrangement of water and foam monitors, piping and control equipment is subject to approval in each case.

Each product is to be supplied with its manual for installation, use and maintenance.

Type Approval documentation

Certification in accordance with Class Program DNV-CP-0338, September 2021.

Test report No. FMM TEST PROCEDURE Rev. E dated 7 June 2023 from LJSAFE, Shanghai, China.

"Fixed water monitor operating manual" Rev. C dated 12 December 2022 from LJSAFE, Shanghai, China.

Drawing No. LJTP220810-2-1/2/3/4 Rev. B dated 30 May 2023 from manufacturer.
Drawing No. LJTP220810-3-1 Rev. A dated 30 August 2022 from manufacturer.
Drawing No. LJTP220810-3-2/4 Rev. B dated 30 May 2023 from manufacturer.
Drawing No. LJTP220810-3-3 Rev. B dated 30 August 2022 from manufacturer.
Drawing No. LJTP220810-4-2/4 Rev. B dated 30 May 2023 from manufacturer.
Drawing No. LJTP220810-4-3 Rev. B dated 30 August 2022 from manufacturer.

Tests carried out

Tested according to EN 13565-1:2019 as branchpipe (discharge coefficient/characteristics (flow) test, range test, leak test and mechanical test).

Marking of product

The product is to be marked according to EN 13565-1:2019, Section 7.

Periodical assessment

DNV's surveyor is to be given permission to perform Periodical Assessments at any time during the validity of this certificate and at least every second year. The arrangement is to be in accordance with procedure described in DNV-CP-0338 Section 4.