

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Equivalent Sprinkler System**

with type designation(s)

Ultra Fog Accommodation Sprinklers

Issued to

Ultra Fog AB**Kungsbacka Hallands Län, Sweden**

is found to comply with

DNV GL offshore standards**DNV GL rules for classification – Ships****DNV GL statutory interpretations DNVGL-SI-0364 – SOLAS interpretations****Application :****Approved for use as an automatic water sprinkler system for accommodation areas, public spaces and store rooms.****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**Issued at **Høvik** on **2018-04-06**This Certificate is valid until **2023-04-05**.for **DNV GL**DNV GL local station: **Gothenburg**Approval Engineer: **Tessa Bieber**

Mårten Schei-Nilsson
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

"Ultra Fog Accommodation Sprinklers"

is an automatic, fast response, high pressure sprinkler system composed of sprinkler heads, stainless steel piping, sections valves, control systems, strainers, sprinkler pumps and a pressure tank.

The system is to be designed in accordance with the "Principal Requirements for the System" in IMO Res.A.800(19) as amended by IMO Res.MSC.265(84). Only the sprinkler heads are type approved by this certificate. Other components are to be approved and/or certified case by case.

The sprinkler heads are manufactured by Ultrafog Sp. Z o.o., ul Długa 12, 80-209 Tuchom, Poland.

Application/Limitation

Approved for use as an automatic water sprinkler system for accommodation areas, public spaces and store rooms.

Installation should be in accordance with the below:

Application		Type	Location	Projection	Spacing [m]	Dist. to wall [m]	No.
Small cabin	< 12 m ²	603-08-B	Ceiling	Pendant	Single	Centre	1
	< 12 m ²	603-093-B-W	Sidewall ¹⁾	Horizontal	Single	4 ³⁾	2
Medium cabin	< 20 m ²	603-200-061-B	Ceiling	Pendant	Single	Centre	3
	< 25 m ²	603-050-260-B-W	Sidewall ¹⁾	Horizontal	Single	4 ³⁾	4
Large cabin	< 48 m ²	603-260-061-B	Ceiling	Pendant	Single	Centre	5
Corridor		603-19-B	Ceiling	Pendant	5.3	-	6
		603-100-035-B-W	Sidewall ¹⁾	Horizontal	4.0	-	7
Public space ²⁾	h < 2.5 m	603-260-061-B	Ceiling	Pendant	5.3	2.65	5
	h < 5.0 m	603-300-061-B	Ceiling	Pendant	5.3	2.65	8
Storage areas		603-13-B	Ceiling	Pendant	2.25	1.13	9

Notes:

- 1) The sprinkler heads is to be mounted 0.15 m below ceiling centre at longest wall.
- 2) Ceiling height of more than 5 meter is subject to case by case approval.
- 3) Max. distance to opposite wall.

No.	Type	k-factor [lpm/bar ^{1/2}]	Pressure [bar]	Min. flow [lpm]	Dwg. no.
1	603-08-B	0.8	100	8.0	931028-603
2	603-093-B-W	0.93	100	9.3	931028-603
3	603-200-061-B	2.61	100	26.1	20110810-603
4	603-050-260-B-W	3.1	100	31	20110810-603
5	603-260-061-B	3.21	100	32.1	20110810-603
6	603-19-B	1.9	100	19	931028-603
7	603-100-035-B-W	1.35	100	13.5	20110810-603
8	603-300-061-B	3.61	100	36.1	20110810-603
9	603-13-B	1.3	100	13	931028-603

For all applications

- A. Maximum system working pressure is 165 bar, while the minimum working pressure at the sprinkler heads is 100 bar for all application.
- B. All sprinklers are made of stainless steel housing with an aluminium bronze bulb screw. All sprinkler heads are fitted with a fast response glass bulb which releases at nominal 57 °C. Bulbs with higher temperature ratings, but not more than 30 °C over ambient temperature, are subject to approval in each case.
- C. The pumps or pump unit and the pressure tank are to be delivered with DNV GL product certificate. Other system components are to be certified or inspected in accordance with DNV GL Rules.

- D. Redundant pump arrangement is to be approved on a case by case basis.
- E. Only stainless steel piping or equivalent corrosion resistant pipes are to be applied (to avoid clogging of sprinklers). Primary water supply shall be fresh water of potable quality.
- F. Pipes, couplings and other components are regarded as "Class I" piping.
- G. The pump unit and section valves shall be installed in a room having ambient temperature between +4 °C and +45 °C.

The following items are to be submitted for approval for each project:

- i. System arrangement plans including location of sprinklers, pipes, sections valves, control system and pump-unit.
- ii. Specification of pipes, valves, electrical motor, pumps, pressurised tank(s) and associated components (including water supply specifications).
- iii. Pressure drop calculations and water capacity calculations.
- iv. Arrangement of power supply and control system.
- v. Manual containing installation, operation and maintenance instructions.

Installation testing:

- System to be cleaned in accordance with routines outlined in maker's installation manual.
- Not less than 2 sprinkler heads in each section shall be tested. Testing may be limited to 10 sections, i.e. 2 x 10 sprinkler heads if it is successful.
- Automatic start and stop of pumps.
- Automatic change over from main to emergency electric supply.
- Other tests as required by DNVGL Rules (pressure testing of piping, etc.) and according to maker's manual shall be conducted.

Periodical testing:

- The testing shall comply with instructions from flag administration, DNV GL Statutory Interpretations and maker's maintenance manual.

Type Approval documentation

Certification in accordance with Class Programme DNVGL-CP-0213, March 2016.

Performance:

- Test Report No. 01.16351.01.005[1] dated 14 March 2012 from Southwest Research Institute, San Antonio, USA.
- Test Report No. 01.16351.01.006[1] Draft dated 12 March 2012 from Southwest Research Institute, San Antonio, USA.
- Test Report No. 01.16351.01.007[1] Draft dated 12 March 2012 from Southwest Research Institute, San Antonio, USA.

Component:

- Test Report File: Ex5204, Project: 97NK12814, dated 23 July 1999 from Underwriters Laboratories Inc.
- Statement to Component Test No. 20130416.01, dated 16 April 2013 from manufacturer.

Sprinkler heads drawings:

Technical Installation Manual Accommodation Areas from Ultra Fog AB.

Tests carried out

Tested according to IMO Res. A.800(19) as amended by Res. MSC.265(84).

Marking of product

The sprinklers are to be marked with type designation whereas pump / control unit is to be marked with name of manufacturer and type designation.



Job Id: **262.1-013458-5**
Certificate No: **TAF00000XH**

Periodical assessment

DNV GL'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 Class Programme DNVGL-CP-0338, Section 4.