DNV·GL

Certificate No:
MEDB00001UR

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Application of: Directive 2014/90/EU of 23 July 2014 on marine equipment (MED). This Certificate is issued by DNV GL SE based on the notification of the Federal Maritime and Hydrographic Agency of Germany.

This is to certify:

That the Sprinkler systems components for accommodation spaces, service spaces and control stations equivalent to that referred to in SOLAS 74 Regulation II-2/12 (limited to nozzles and their performance)

with type designation(s)
Minifog marine XP

Issued to
Minimax GmbH & Co. KG
BAD OLDESLOE, Germany

is found to comply with the requirements in the following Regulations/Standards:
Regulation **(EU) 2017/306,**
item No. MED/3.9. SOLAS 74 as amended, Regulation II-2/7, II-2/9, II-2/10 & X/3, HSC Code 7, FSS Code 8, MSC.44(65), MSC/Circ.912 and IMO Res. A.800(19) as amended

Further details of the equipment and conditions for certification are given overleaf.

This Certificate is valid until **2022-03-29**.

Issued at **Hamburg** on **2017-03-30**

DNV GL local station:
Hamburg

Approval Engineer:
Michael Kämpf

Notified Body
No.: **0098**

for **DNV GL SE**

Sven Dudszus
Head of Notified Body

The mark of conformity may only be affixed to the above type approved equipment and a Manufacturer's Declaration of Conformity issued when the production-surveillance module (D, E or F) of Annex B of the MED is fully complied with and controlled by a written inspection agreement with a Notified Body. The product liability rests with the manufacturer or his representative in accordance with Directive 2014/90/EU.
This certificate is valid for equipment, which is conform to the approved type. The manufacturer shall inform DNV GL SE of any changes to the approved equipment. This certificate remains valid unless suspended, withdrawn, recalled or cancelled.
Should the specified regulations or standards be amended during the validity of this certificate, the product is to be re-approved before being placed on board a vessel to which the amended regulations or standards apply.

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Product description

The water mist sprinkler heads (nozzles) with nozzle designation "MX3-WMOx-Ky" are manufactured by Minimax, Bad Oldesloe, Germany. They have the following main features:

General nozzle details	
Location	Below ceiling (pendent)
Min. operating pressure	60 bar
Max. working pressure	140 bar
Material	Naval brass or equivalent
Surface design	Nickel plated
Heat sensitive bulb	57 °C, 68 °C, 79 °C, 93 °C, 141 °C
RTI	< 50 (fast response)

Only the nozzles are certified with this certificate.

Application/Limitation

The main performance and installation parameters of the nozzles of type "MX3-WMOx-Ky" are indicated in the various tables below:

Accommodation spaces of minor or moderate fire risk, sanitary and similar spaces (cabins, etc.) (room categories 6, 7 and 9, as defined in SOLAS II-2/9.2.2.3.2.2)			
Sprinkler type	**MX3-WMO1-K2.6**	**MX3-WMO2-K3.5**	**MX3-WMO3-K4.3**
Max. nominal coverage area	12 m^2 1)2)	21 m^2 1)2)	32 m^2 1)2)
Max. distance to walls	2.0 m 3)	3.5 m 3)	4.0 m 3)
Max. sprinkler spacing	4.0 m	7.0 m	8.0 m
Max. installation height	2.5 m 4)	2.5 m 4)	2.5 m 4)
k-factor ($Q = k \times p^{1/2}$)	2.6 lpm/$bar^{1/2}$	3.5 lpm/$bar^{1/2}$	4.3 lpm/$bar^{1/2}$
Min. water flow	20.14 ltr/min	27.11 ltr/min	33.30 ltr/min
Min. discharge density	1.68 ltr/min/m^2	1.29 ltr/min/m^2	1.04 ltr/min/m^2
Min. water flux density	0.67 ltr/min/m^3	0.52 ltr/min/m^3	0.42 ltr/min/m^3

Notes:

1) Cabin net area excluding wet unit.

2) Larger spaces need to be protected with several sprinklers by observing the max. coverage area and max. sprinkler spacing.

3) Where one nozzle is used, the nozzle is to be located as close as possible to the centre of the space.

4) Installation in spaces with higher ceilings is accepted if the min. water flux density is ensured.

Corridors and stairways up to 1.5 m width 1) (room categories 2 and 3, as defined in SOLAS II-2/9.2.2.3.2.2)	
Sprinkler type	**MX3-WMO3-K4.3**
Max. nominal coverage area	9 m^2
Max. distance to end bulkheads	3.0 m
Max. sprinkler spacing	6.0 m
Max. installation height	2.5 m 2)
k-factor ($Q = k \times p^{1/2}$)	4.3 lpm/$bar^{1/2}$
Min. water flow	33.30 ltr/min
Min. discharge density	3.70 ltr/min/m^2
Min. water flux density	1.48 ltr/min/m^3

Notes:
1) Corridors and stairways with a width of more than 1.5 m need to be considered as public spaces.
2) Installation in spaces with higher ceilings is accepted if the min. water flux density is ensured.

Public spaces and similar areas (control stations, main galleys, etc.) (room categories 1, 2, 3, 6, 7, 8, 9, 11 and 12, as defined in SOLAS II-2/9.2.2.3.2.2)		
Sprinkler type	**MX3-WMO5-K6.2**	**MX3-WMO6-K6.2**
Max. nominal coverage area	28.1 m^2	28.1 m^2
Max. distance to walls	2.65 m	2.65 m
Max. sprinkler spacing	5.3 m	5.3 m
Max. installation height	2.5 m	5.0 m 3)
k-factor ($Q = k \times p^{1/2}$)	6.2 lpm/$bar^{1/2}$	6.2 lpm/$bar^{1/2}$
Min. water flow	48.02 ltr/min	48.02 ltr/min
Min. discharge density	1.709 ltr/min/m^2	1.709 ltr/min/m^2
Min. water flux density	0.683 ltr/min/m^3	0.342 ltr/min/m^3

Notes:
3) In spaces with ceiling heights more than 5 m, the max. coverage area, max. sprinkler spacing and max. distance to wall need to be reduced accordingly to obtain the min. water flux density.

Store-rooms and similar spaces (workshops, pantries, etc.) (room categories 13 and 14, as defined in SOLAS II-2/9.2.2.3.2.2)	
Sprinkler type	**MX3-WMO4-K2.7**
Max. nominal coverage area	9 m^2
Max. distance to walls	1.5 m
Max. sprinkler spacing	3.0 m
Max. installation height	2.5 m 4)
k-factor ($Q = k \times p^{1/2}$)	2.7 lpm/$bar^{1/2}$
Min. water flow	20.9 ltr/min
Min. discharge density	2.32 ltr/min/m^2
Min. water flux density	0.93 ltr/min/m^3

Notes:
4) Installation in spaces with higher ceilings is accepted if the min. water flux density is ensured.

Type Examination documentation

Fire performance test reports:
- SINTEF test report for cabin and corridor fire tests, no. NBL F14104 dated 2014-04-02
- SP test report for storage area fire tests, no. SPFR F14115 dated 2014-09-18
- SP test report for public space fire tests, no. SPFR F16 20246-01:1 dated 2016-08-22

Component (nozzle material) test reports:
- UL component test report for nozzles with designations WMO1, WMO2, WMO3 and WMO4; UL project no. 4786623165 file ex15257 dated 2016-01-29
- UL component test report for nozzles with designations WMO5 and WMO6; UL project no. 4787626110 file ex15257 dated 2017-03-07

System design, installation, operating and maintenance manual submitted by Minimax, title "Minifog marine XP", doc. no. 100073123, version 01/2017

Tests carried out

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

Marking of product

The nozzles are to be provided with the mark of conformity (wheel mark). This mark shall be followed by our identification number 0098 and by the year in which the mark is affixed, e.g. 0098/2016. Furthermore, the obligations of manufacturers as defined in Article 12 of Directive 2014/90/EU shall be observed.