

Type Examination Certificate

This is to certify that:

FirePro Systems Ltd
8 Faleas Str.
Agios Athanasios Industrial Area
Limassol
CY-4101
Cyprus

Holds Certificate Number:

BSI/MED/3.46/755612

In respect of:

MED/3.46

Equivalent Fixed Gas Fire Extinguishing Systems Components for Machinery Spaces (Aerosol Systems)

MED/3.46 - Equivalent fixed gas fire extinguishing systems for machinery spaces (aerosol systems).

Product Description - Aerosol Fire Extinguishing Units with dry condensed extinguishing agent, Fire Class A & B Models - FP20S, FP20SE, FP40S, FP80S, FP100S, FP200S, FP500S, FP1200, FP1200S, FP2000, FP2000S, FP3000, FP3000S, FP4200T/TS, FP5700 & FP5700S.

Specified standard: IMO MSC/Circ 1270 incl Corr.1 as amended.

On the basis that BSI carried out the relevant EU type examination procedures for the equipment identified above which was found to be in compliance with the Marine Equipment Directive (MED) 2014/90/EU as amended, subject to any conditions in the schedule attached hereto. The attached schedule of approval forms part of this certificate.

For and on behalf of BSI, a Notified Body for the above Directive (Notified Body Number 2797):

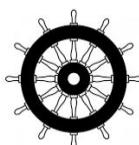


Denelise L'Ecluse, Managing Director Assurance - Continental Europe

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Schedule of Approval

Product Specification

The products listed below are to be installed with an actuation system/panel where manual activation is achieved as defined in MSC1/Circ 1270 chapter 17 and as per the FirePro User/Installation manual. The actuation system/panel is excluded from this certification.

FP20S :	Aerosol generating fire extinguishing system unit with 20g dry condensed extinguishing agent, Fire Class A & B
FP20SE :	Aerosol generating fire extinguishing system unit with 20g dry condensed extinguishing agent, Fire Class A & B
FP40S :	Aerosol generating fire extinguishing system unit with 40g dry condensed extinguishing agent, Fire Class A & B
FP80S :	Aerosol generating fire extinguishing system unit with 80g dry condensed extinguishing agent, Fire Class A & B
FP100S :	Aerosol generating fire extinguishing system unit with 100g dry condensed extinguishing agent, Fire Class A & B
FP200S :	Aerosol generating fire extinguishing system unit with 200g dry condensed extinguishing agent, Fire Class A & B
FP500S :	Aerosol generating fire extinguishing system unit with 500g dry condensed extinguishing agent, Fire Class A & B
FP1200/FP1200S :	Aerosol generating fire extinguishing system unit with 1200g dry condensed extinguishing agent, Fire Class A & B
FP2000/FP2000S :	Aerosol generating fire extinguishing system unit with 2000g dry condensed extinguishing agent, Fire Class A & B
FP3000/FP3000S :	Aerosol generating fire extinguishing system unit with 3000g dry condensed extinguishing agent, Fire Class A & B
FP4200T/TS:	Aerosol generating fire extinguishing system unit with 4200g dry condensed extinguishing agent, Fire Class A & B
FP5700/FP5700S :	Aerosol generating fire extinguishing system unit with 5700g dry condensed extinguishing agent, Fire Class A & B

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Schedule of Approval

Approval Documentation that forms part of this certification:

Drawing No.	Rev/Issue	Date	Title
C20EASS	1	27/05/2014	FP20SE – General Assembly Drawing
C40ASS	1	27/05/2014	FP40S – General Assembly Drawing
C80ASS	1	27/05/2014	FP80S – General Assembly Drawing
C1AS	4	27/05/2014	FP100S – General Assembly Drawings
C2AS	4	27/05/2014	FP200S – General Assembly Drawings
C5AS	4	27/05/2014	FP500S – General Assembly Drawings
B12AS	0	05/01/2016	FP1200 – General Assembly Drawing
B12EH	0	01/01/2008	FP1200 – External Housing Construction Drawing
B12IH	0	05/01/2016	FP1200 – Internal Housing Construction Drawing
B12IAS	0	05/01/2016	FP1200 – Internal Assembly Drawing
B20AS	0	05/01/2016	FP2000 – General Assembly Drawing
B20IAS	0	05/01/2016	FP2000 – Internal Assembly Drawing
B30AS	0	05/01/2016	FP3000 – General Assembly Drawing
B30IAS	0	05/01/2016	FP3000 – Internal Assembly Drawing
B2030EH	1	01/01/2008	FP2000 & FP3000 – External Housing Construction Drawing
B2030IH	0	05/01/2016	FP2000 & FP3000 – Internal Housing Construction Drawing
B122030BRKT	1	01/08/2012	FP1200/FP2000/FP3000 – Mounting Bracket
B42TAS	0	01/01/2008	FP4200 – General Assembly Drawing
B42TIAS	0	27/04/2014	FP4200 – Internal Assembly Drawing
BS57TEH	0	01/01/2008	FP4200 (FP5700T) – External Housing Construction Drawing
B57TIH	0	02/10/2014	FP4200 – Internal Housing Construction Drawing
B57EH	1	01/10/2008	FP 5700 – External Housing Construction Drawing
B57IH	0	05/01/2016	FP5700 – Internal Housing Construction Drawing
B57IAS	0	05/01/2016	FP5700 – Internal Assembly Drawing
B57BRKT	2	02/10/2014	FP4200, FP5700 – Mounting Bracket
AELACT	0	01/01/2008	Electrical Activators for all Models.
B122030BRKT	1	01/08/2012	FP1200S, FP2000S, FP3000S – Mild Steel Mounting Bracket
B12EHBC	1	01/08/2012	FP1200S – External Housing Bottom Cover
B12EHSW	1	01/08/2012	FP1200S – External Housing Side Walls
B12EHTC	1	01/08/2012	FP1200S – External Housing Top Cover

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Approval Documentation that forms part of this certification (continued):

Drawing No.	Rev/Issue	Date	Title
B203057EHBC	1	02/10/2014	FP2000S, FP3000S, FP5700S – External Housing Bottom Cover
B203057EHTC	1	01/08/2012	FP2000S, FP3000S, FP5700S – External Housing Top Cover
B2030EHSW	2	01/08/2012	FP2000S, FP3000S – External Housing Side Walls
B57BRKT	2	02/10/2014	FP5700S – Mounting Bracket
B57EHSW	2	01/08/2012	FP5700S – External Housing Side Wall
Supporting Document			
Technical Dossier	BSI Reference 7498123, 8030440, 8198682, 8636065, 3307535 & 3498912. Latest Revision No.17 dated August 2021.		
Manuals	Information, Instruction & User Manual, EU Manual, Latest Version No.8, May 2020. Annex 1 Marine Manual Latest Revision No.5 Aug 2021.		
Reports & Certificates	KIWA Certificate K21477/08 01/04/2010 UL Test Report, Project Ref 05CA05359, File EX6960 USCG Report CG-D-03-06 Russian Maritime Register of Shipping, Type approval Certificate Ref 10.80012.180 dated 11/06/2010 for MCS 1270 * Hughes Associates INC Analysis Report dated Nov 2004 & 15/01/2009 ** Cone Calorimeter Tests of IMO MSC Circ 1270 Class A Plastic Materials – Hughes Associates Inc (26/01/2021) Efectis Test Report R1134, Fire test - Wood Cribs & Plastic Sheets (Jan 2012) KIWA, EMC Test Report 126076-EMC (11/01/2013) KIWA Certificate K21774/14 UK (19/14/2014) – FPC Compound. KIWA Certificate K21774/17 UK (23/12/2016) – update to include FP 20T/40T/80T & FP 4200T models		

The Products were previously MED approved under Module B certificate number BSI/MED/3.46/560436 from 20/08/2010 to 31/12/2020

* The Russian Maritime Register of Shipping has made an independent evaluation of the test reports owned by FirePro and according to their opinion it satisfied the requirements of the MSC.1/Circ.1270. Since the Certification list is reporting all the approval documents received so far by FirePro, the Russian Registry Type Approval was included in the above list.

** The Hughes Report is that at the time MCA requested FirePro to run additional tests, the opinion of FirePro was that they had already run the additional tests as part of the listing with various accredited Institutes, such as UL. Therefore FirePro asked Hughes Associates, the largest in the world Fire Risk Assessment Company, to carry out an evaluation and provide their independent opinion on this issue. Mr.L.Borghetti (Hughes Europe) was the chairman of the CEN,ISO and IMO technical committees on the aerosol technology and therefore he is in position to give a competent opinion on the issue.

The conclusion of Hughes Analysis Report is: "FirePro was participating and contributing to the research and test campaign headed by USCG, having the scope to develop the information necessary for the revision of the existing IMO MSC/Circ.1007 (now IMO MSC/Circ.1270). The FirePro Aerosol Extinguishing Systems passed all the tests and requirements stated by the revised IMO MSC/Circ.1270 as reported by the USCG, the polymeric Sheet Test has been witnessed as passed by the listing issued by the Underwriters Laboratories.

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Design Calculation.

Agent

The quantity (mass) of aerosol agent to be used should be determined as follows:

$$W = \frac{V \times q \text{ (g)}}{f}$$

where

W = Agent mass (g) (Total mass required to protect the specific volume)

V = Volume of enclosure (m³) (Protected volume)

q = Design application density (gr/m³) (net mass of agent per unit volume (g/m³) required by the system designer for the fire protection application)

f = Efficiency coefficient of generator's model (%) (net mass of agent delivered by a generator model (size))

q = 120 gr/m³

Efficiency coefficients (related to each generator model (size)):

FP-20S/SE= 60%

FP-1200/S = 63%

FP-40S= 61%

FP-2000/S = 60%

FP-80S= 59%

FP-3000/S = 61%

FP-100S = 61%

FP4200T/TS = 60%

FP-200S = 59%

FP-5700/S= 59%

FP-500S = 66%

The total number of generators (N) to be used is derived by the following formula

$$N = \frac{W \text{ (total agent mass)}}{\text{nominal mass (initial mass of the solid compound) of each generator model (size)}}$$

Example: FP2000 = 2000 grams of nominal mass

FP5700 = 5700 grams of nominal mass

Note: If different generator models (size) should be selected, the total mass of extinguishant (solid compound) shall not be less than the quantity required (W).

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Technical Specification

Model

Type	Cold
Activation mechanism	electrical (min 1.5 VDC, min 0.8 A in 3 - 4 sec)
Activator type	heating element with 2.3 ohm resistance
Current intensity to be tested	maximum 5 mA
Weight gross	310 g
Weight net extinguishing agent	20 g
Operational discharge time	5 - 10 seconds
Discharge outlet	2
Discharge length	0.6 m
Size	165 mm x 32 mm (incl. connector housing)
Self activation temperature	300 C

Model

Type	Cold
Activation mechanism	electrical (min 1.5 VDC, min 0.8 A in 3 - 4 sec)
Activator type	heating element with 2.3 ohm resistance
Current intensity to be tested	maximum 5 mA
Weight gross	610 g
Weight net extinguishing agent	40 g
Operational discharge time	5 - 10 seconds
Discharge outlets	2
Discharge length	1.2 m
Size	140 mm x 51 mm
Self activation temperature	300 C

See Product Specification note on Page 2

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Technical Specification

Model

Type
Activation mechanism
Activator type
Current intensity to be tested
Weight gross
Weight net extinguishing agent
Operational discharge time
Discharge outlets
Discharge length
Size
Self activation temperature

FP-80S

Cold
electrical (min 1.5 VDC, min 0.8 A in 3 - 4 sec)
heating element with 2.3 ohm resistance
maximum 5 mA
870 g
80 g
5 - 10 seconds
2
2 m
185 mm x 51 mm (incl. connector housing)
300 C

Model

Type
Activation mechanism
Activator type
Current intensity to be tested
Weight gross
Weight net extinguishing agent
Operational discharge time
Nozzle
Discharge outlet
Discharge length
Size
Self activation temperature

FP-100S

Cold
electrical (min 1.5 VDC, min 0.8 A in 3 - 4 sec)
Heating element with 2.3 ohm resistance
Maximum 5 mA
1370 g
100 g
5 - 10 seconds
optional
1
1 m
155 mm x 84 mm (incl. connector housing)
300 C

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Model

Type
Activation mechanism
Activator type
Current intensity to be tested
Weight gross
Weight net extinguishing agent
Operational discharge time
Nozzle
Discharge outlet
Discharge length
Size
Self activation temperature

FP-200S

Cold
electrical (min 1.5 VDC, min 0.8 A in 3 - 4 sec)
heating element with 2.3 ohm resistance
maximum 5 mA
1840 g
200 g
5 - 10 seconds
Optional
1
2 m
185 mm x 84 mm (incl. connector housing)
300 C

Model

Type
Activation mechanism
Activator type
Current intensity to be tested
Weight gross
Weight net extinguishing agent
Operational discharge time
Discharge outlet
Discharge length
Size
Self activation temperature

FP-500S

Cold
electrical (min 1.5 VDC, min 0.8 A in 3 - 4 sec)
heating element with 2.3 ohm resistance
maximum 5 mA
3340 g
500 g
5 - 10 seconds
1
2.5 m
295 mm x 84 mm (incl. connector housing)
300 C

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Model

Type
Activation mechanism
Activator type
Current intensity to be tested
Weight gross
Weight net extinguishing agent
Operational discharge time
Discharge outlet
Discharge length
Size
Self activation temperature

FP-1200 / FP1200S

Cold
electrical (min 1.5 VDC, min 0.8 A in 3 - 4 sec)
heating element 2.3 ohm resistance
maximum 5 mA
10900 g (excl bracket)
1200 g
10 -15 seconds
1
3.5 m
216 mm x 300 mm x 167 mm
300 C

Model

Type
Activation mechanism
Activator type
Current intensity to be tested
Weight gross
Weight net extinguishing agent
Operational discharge time
Discharge outlet
Discharge length
Size
Self activation temperature

FP-2000 / FP2000S

Cold
electrical (min 1.5 VDC, min 0.8 A in 3 - 4 sec)
heating element 2.3 ohm resistance
maximum 5 mA
15500 g
2000 g
10 - 15 seconds
1
3.5 m
300 mm x 300 mm x 185 mm
300 C

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Model

Type
Activation mechanism
Activator type
Current intensity to be tested
Weight gross
Weight net extinguishing agent
Operational discharge time
Discharge outlet
Discharge length
Size
Self activation temperature

FP-3000 / FP3000S

Cold
electrical (min 1.5 VDC, min 0.8 A in 3 - 4 sec)
heating element 2.3 ohm resistance
maximum 5 mA
16300 g
3000 g
15 - 20 seconds
1
4 m
300 mm x 300 mm x 185 mm
300 C

Model

Type
Activation mechanism
Activator type
Current intensity to be tested
Weight gross
Weight net extinguishing agent
Operational discharge time
Discharge outlet
Discharge length
Size
Self activation temperature

FP-4200T/TS

Cold
electrical (min 1.5 VDC, min 0.8 A in 3 - 4 sec)
heating element 2.3 ohm resistance
maximum 5 mA
23600 g
4200 g
15 - 20 seconds
1
5 m
300 mm x 300 mm x 300 mm
300 C

Model

Type
Activation mechanism
Activator type
Current intensity to be tested
Weight gross
Weight net extinguishing agent
Operational discharge time
Discharge outlet
Discharge length
Size
Self activation temperature

FP-5700 / FP5700S

Cold
electrical (min 1.5 VDC, min 0.8 A in 3 - 4 sec)
heating element 2.3 ohm resistance
maximum 5 mA
26400 g
5700 g
15 - 20 seconds
1
8 m
300 mm x 300 mm x 300 mm
300 C

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Certificate Amendment Record and BSI internal Review relating to this Certificate

Issue date	Comments	BSI Review No.
October 2021	First Issue	2797:21:3499222
January 2023	5-year Re-certification	2797:22: 3794673

Conditions of Certification

- i) This certificate remains valid unless cancelled or revoked, provided the conditions listed below are complied with and the equipment remains satisfactory in service.
- ii) The equipment detailed on page 1 on this certificate is to be manufactured in accordance with Conformity to Type Based on Quality Assurance of the Production Process (Module D) of the Marine Equipment Directive.
- iii) The certificate will not be valid if the manufacturer makes any changes or modifications to the approved equipment, which have not been notified to, and agreed with the approved body named on this certificate.
- iv) Should the specified regulations or standards be amended during the validity of this certificate, the products are to be re-approved prior to them being placed on board vessels to which the amended regulations or standards apply.
- v) Detailed User instructions are to be provided with each product.
- vi) The Aerosol units shall be used with an activation system complying with all the requirements of MSC.1/Circ.1270, in particular clauses 12.1, 14 and 17.
- vii) SOLAS 74 Reg. II-2/10, SOLAS 74 Reg. X/3, IMO Res.MSC.98(73)-(FSS Code) 5, IMO Res.MSC.36(63)-(1994 HSC Code) 7, IMO Res.MSC.97(73)-(2000 HSC Code) 7, IMO MSC/Circ.1270 incl. Corr.1, IMO MSC.1/Circ.1313 requirements, as applicable.
- viii) Production tests are to be conducted in accordance with the applicable requirements of the IMO Resolutions and applicable standards and be recorded by the manufacturer in accordance with the approved Conformity to Type Based on Quality Assurance of the Production Process (Module D) of the Marine Equipment Directive.
- ix) Each item, batch or lot of the equipment is to have the "Mark of Conformity" affixed and be issued with a "Declaration of Conformity".

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