



FirePro.

Operation and User Manual
FPC-5V2
Panel Fire Protection Controller

Issue April 2019
Version 2



Reinventing
Fire Suppression

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Reinventing
Fire Suppression



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1. Overview

This Operation & User Manual provides information on the FPC-5V2 fire protection module and how it is connected to the various FirePro Condensed Aerosol Generators.

2. Summary of Technical Characteristics

- Autonomous fire suppression unit
- Primary power source: 3Vdc battery.
- Battery monitoring feature with LED - indication.
- Manual or Automatic battery status indication.
- Single input detection loop.
- Linear heat detector cable or a bimetallic sensor connections



Figure 1: FPC-5V2 module.

3. Technical Features

- The FirePro fire protection module detects fire by using either a linear heat detector cable or a bimetallic sensor and activates the condensed aerosol fire suppression generators automatically in electrical cabinets and similar enclosures.



Figure 2: Fire detection devices.

- Input detection terminal (J7 on the PCB) is available for connecting the linear heat detector cable or a bimetallic sensor. Output terminal (J6 on the PCB) can be used to connect the condensed aerosol fire suppression generator. Both J7 & J6 terminals are not electrically polarized.

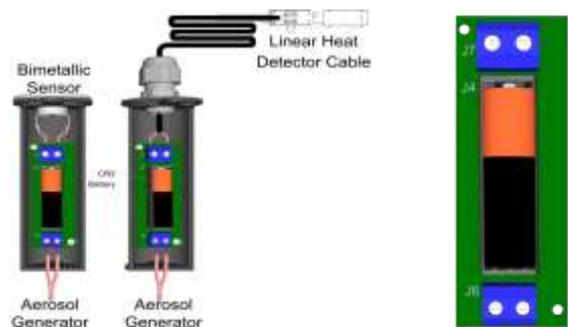


Figure 3: Interconnecting the fire detection devices.



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- The fire protection module FPC-5V2 is powered by an internal 3V battery capable of providing the necessary amperage to activate a condensed aerosol fire suppression generator.
- The FPC-5V2 module is equipped with a battery monitoring feature. The battery status is indicated by the three LEDs located on the front of the unit.
 - The green LED flashes every four seconds, indicating that the battery is in good operating condition and is able to activate the aerosol generator when required.
 - The yellow LED is illuminated when the battery voltage level has dropped but is still able to activate the aerosol generator when required.
 - The red LED is illuminated when the battery is unable to activate the aerosol generator and it is necessary to replace the battery immediately.
 - When no LED is illuminated, either the battery is installed in reverse polarity or it is fully discharged, or the unit is set in manual mode.

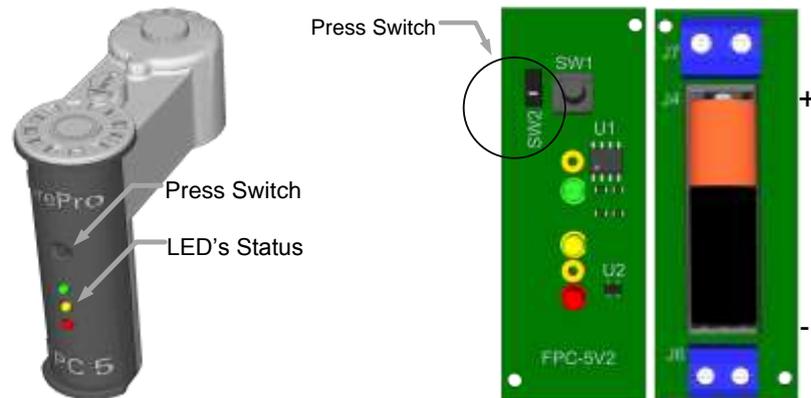


Figure 4: Battery status indicator.

- The fire protection module FPC-5V2 can monitor the battery in both automatic and manual mode. Automatic mode means that the battery monitor function of the unit is operating continuously. Manual mode means that the battery monitor function of the unit does not operate continuously but only operates by pressing and holding the press switch located on the front of the unit above the LED. Automatic mode and Manual mode operation can be adjusted by changing the position of the "SW2" switch on the electronic PCB. When the switch is in the ON - position the unit is in Automatic mode. When the switch is in the OFF - position the unit is in Manual mode.



4. Unit Assembly

Step 1: Remove the top safety Knob “A” on the unit and remove the front part, containing the electronic PCB.



Figure 5

Step 2: Pass the Condensed Aerosol Generator wires through the FPC-5V2 main body. It is important to pass the Condensed Aerosol Generator wires from the same opening of the adaptor plate/junction box coupling.

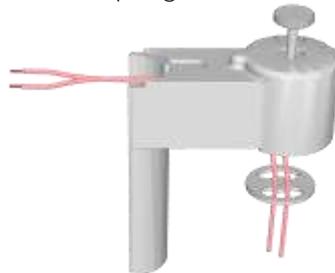


Figure 6

Step 3: Install the FPC-5V2 main body to the Condensed Aerosol Generator by turning Knob “B” to tighten the unit.



Figure 7

Step 4: Connect the bimetallic sensor or linear heat detector cable to terminal “J7” on the electronic PCB.

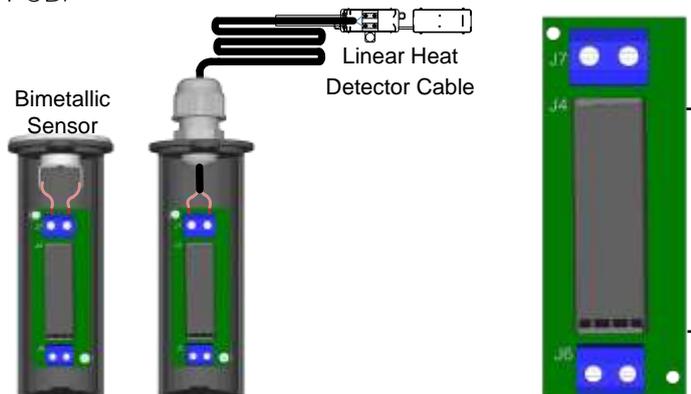


Figure 8



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Step 5: Install the CR2 battery on the battery holder "J4".

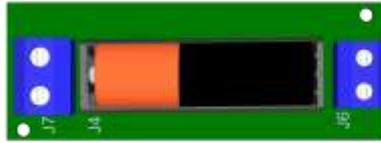


Figure 9

Step 6: Use a multimeter to make sure that there is no voltage at terminal "J6" on the electronic PCB. If there is a voltage reading, this means that the fire detection part of the unit has been activated, which will trigger the activation of the condensed aerosol generator when connected. Address this issue first and then proceed to the next step.

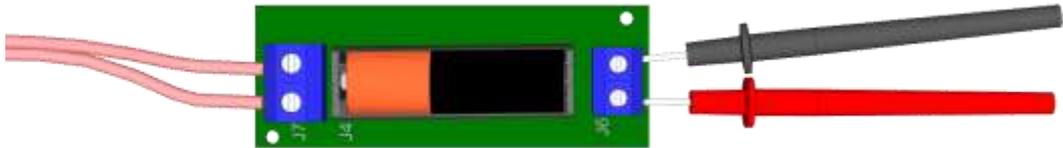


Figure 10

Step 7: Connect the Condensed Aerosol Generator wires to terminal "J6" on the electronic PCB.

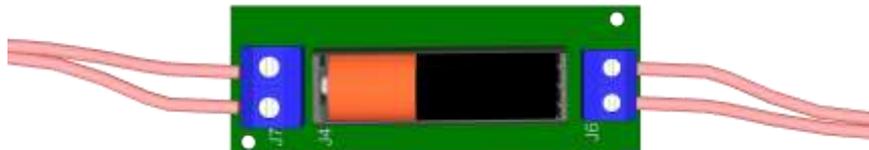


Figure 11

Step 8: To adjust the position of the "SW2" switch for Automatic or Manual monitoring mode operation, unscrew the electronic PCB from the front section of the FPC-5V2 module.

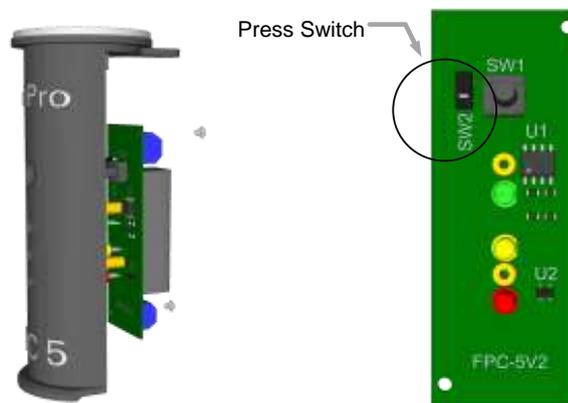


Figure 12

Step 9: Place the front section of the FPC-5V2 module into the main body of the FPC-5V2. Insert and tighten safety Knob "A" to assemble the unit.



Figure 13

5. Installation guidelines

The Linear Heat Detector cable that is connected to the FPC-5V2 module must be installed inside and on the ceiling of the electrical panel enclosure .

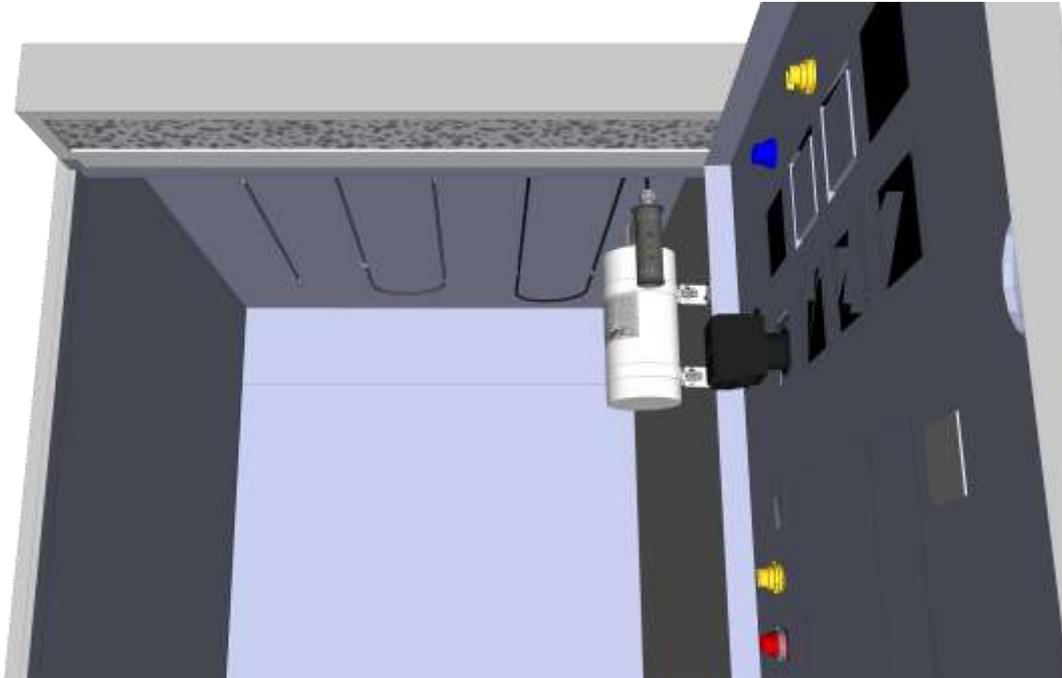


Figure 14 Typical installation

The FPC-5V2 module equipped with a bimetallic sensor must be installed in such a way so that the bimetallic sensor is as close to the ceiling inside the electrical panel enclosure.

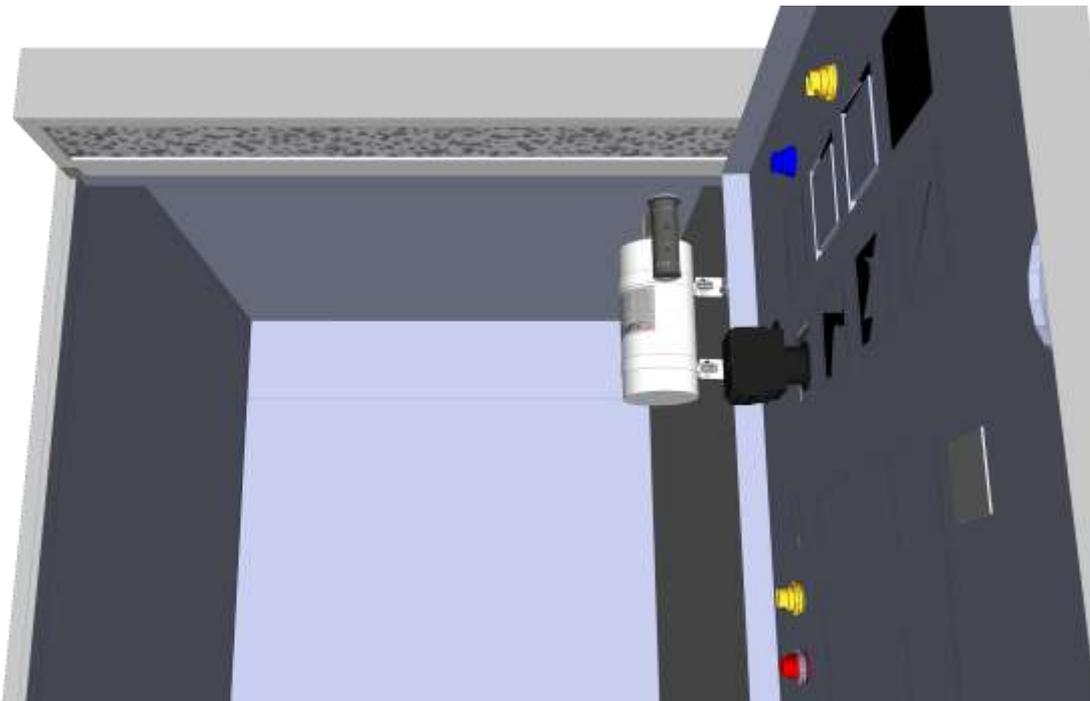


Figure 15 Typical installation



6. Specifications

FPC-5V2	Terminals	Description
I/P terminal	J7	Linear Heat Detector cable max 10m length
I/P terminal	J7	Linear Heat Detector cable max 10m length
O/P terminal	J6	Condensed Aerosol Generator 1
O/P terminal	J6	Condensed Aerosol Generator 1
Battery		3Vdc Lithium battery (CR2 (3V))
I/P Rating		IP30
Enclosure Heat Resistance		Withstands for a short period heat of up to 180°C degrees

Table1: Specifications

7. Testing and Commissioning

For Testing, Commissioning and Simulation purposes, the Condensed Aerosol Generator is disconnected from the fire protection module FPC-5V2 and replaced by an indication circuit as per below diagram. The indication circuit includes a resistor and an LED (the indication circuit must be installed as illustrated below since the LEDs feature polarity).

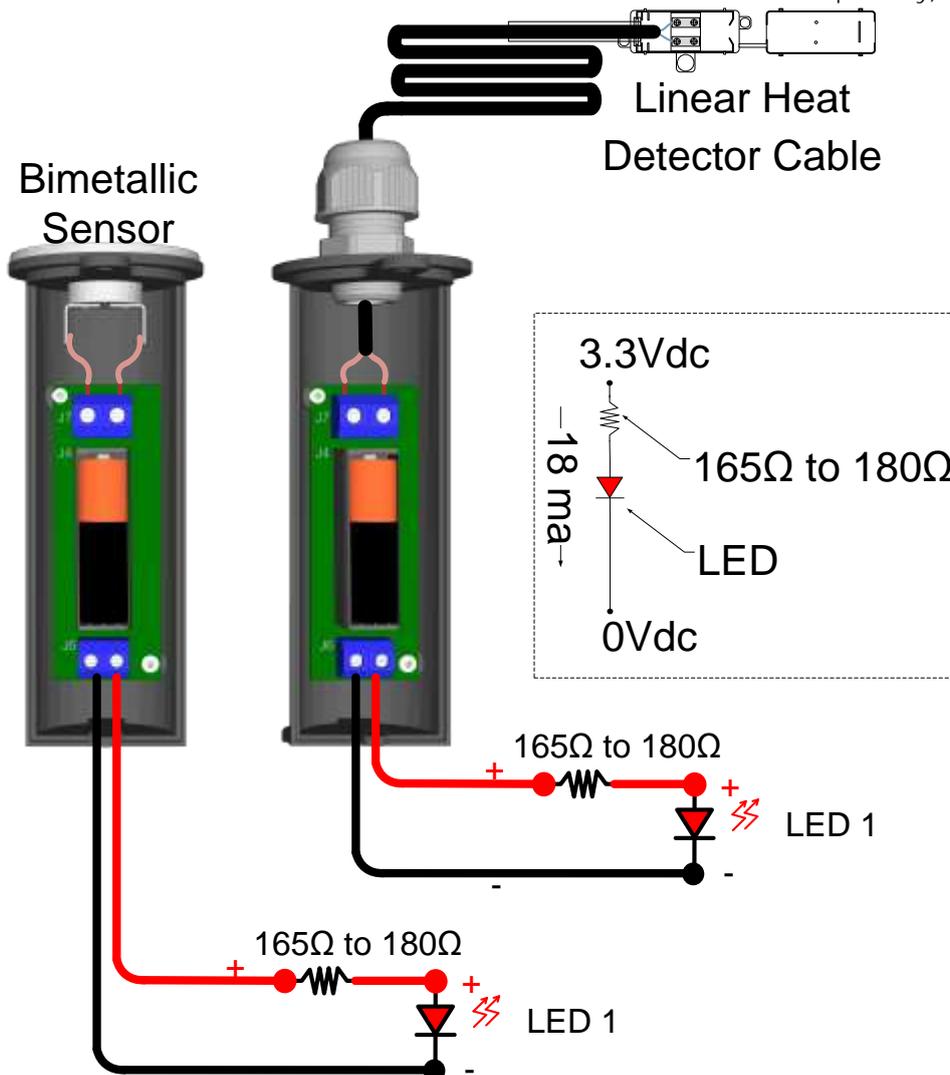


Figure 16: Typical connection of the simulation LED



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Step 1: Remove any power source connected to the system (CR2 Battery).

Step 2: Connect the simulation LED circuit as described in figure 16.

Step 3: Apply the power source to the system (CR2 Battery).

Step 4: Create a short-circuit by using the two end-wires of the LHD cable (Linear Heat Detector cable) or apply heat to the bimetallic sensor.

Step 5: Once the detection line is activated observe whether the LED illuminates.

Step 6: Cancel the short-circuit on the detection line (LHD cable) or wait for the bimetallic sensor to cool down.

Step 7: Observe whether the LED is off.

Step 8: If no problem has been observed, remove the power source connected to the system (CR2 Battery).

Step 9: By using an ohm-meter ensure that the ohmic resistance of the condensed aerosol generators is **between 1.6Ω to 3.6Ω** .

Step 10: Replace the simulation LED circuit with the condensed aerosol generators.



Figure 17: Measuring the Condensed Aerosol Generator's resistance



8. FPC5-V2 Module Assembly

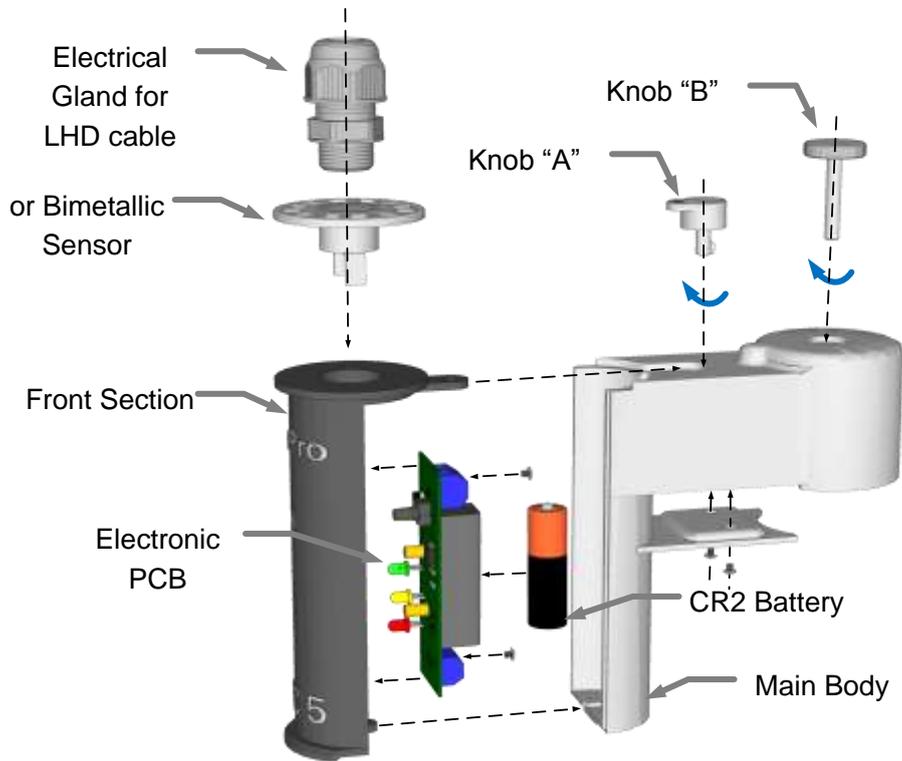


Figure 18:

9. Adaptor plate/junction box coupling required

<p>Adaptor plate applicable to Condensed Aerosol Generator series: FP-20</p>	
<p>Adaptor plate applicable to Condensed Aerosol Generator series: FP-40, FP-80</p>	
<p>Junction box coupling applicable to Condensed Aerosol Generator series: FP-100, FP-200, FP-500, FP-1200, FP-2000, FP-3000, FP-4200, FP-5700,</p>	

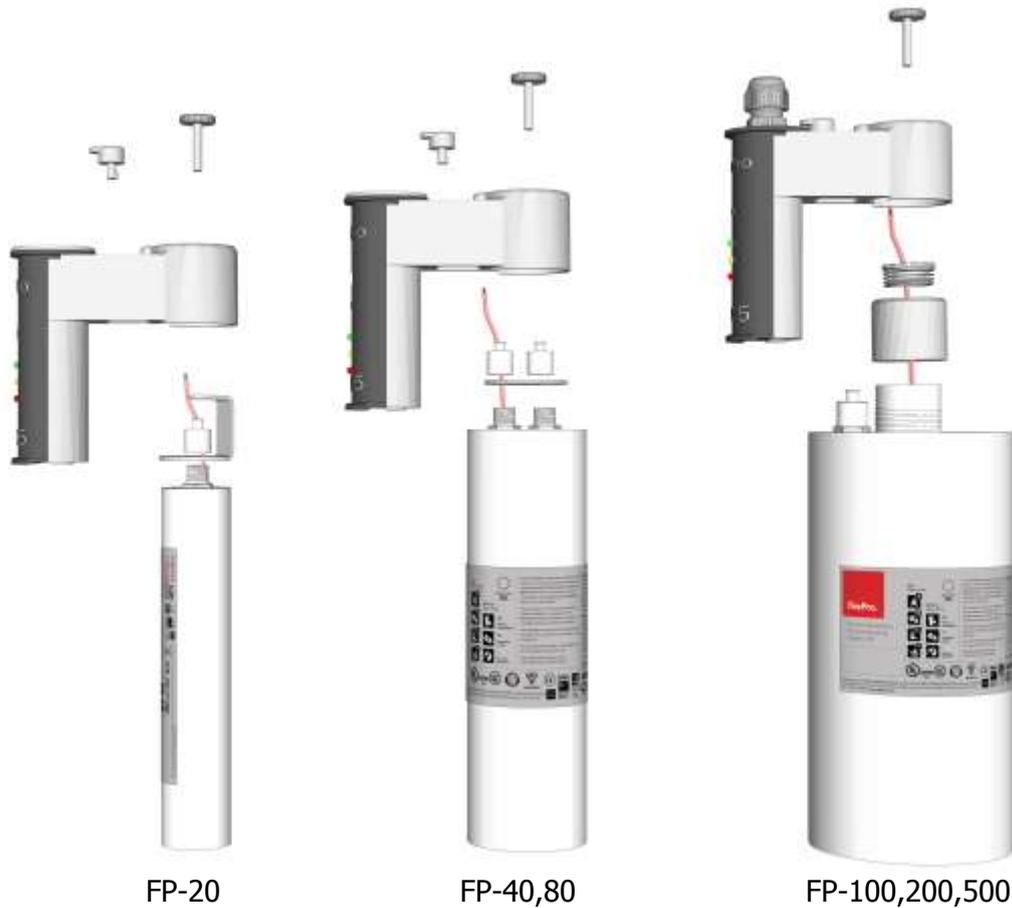
Table 1:



10. Installation of FPC5-V2 module to the Condensed Aerosol Generators



Figure 19: For Box type Condensed Aerosol Generators FP-1200, 2000, 3000, 4200, 5700



FP-20

FP-40,80

FP-100,200,500

Figure 19: For Cylindrical type Condensed Aerosol Generators FP-20,40, 80, 100, 200, 500





Declarations





DECLARATION



Number K94463/05

Replaces K94463/04

Issued January 16th, 2017 first issue

Valid until December 4th, 2019

Declaration of Conformity,

based on the requirements § 4.4.2, § 4.4.3 and § 7.15 of
CEN/TR 15276-1, regarding

FirePro

Ignition device for Non-Pressurized Condensed Aerosol Generators

- BTA ignition device (Bulb Thermal Activator)
- FPC-5 ignition device in conjunction with
 - Bi-metal switch
 - Heat cable
 - Extension cable for bi-metal switch and heat cable

STATEMENT BY KIWA

With this declaration, Kiwa declares that legitimate confidence exists that the products supplied by

FirePro Systems Ltd.

comply with the technical specifications as laid down in this product declaration.

Ronald Karel
Kiwa

This declaration consists of 6 pages.
Publication of this declaration is allowed.

Note:

Publication of only this front page or parts of the declaration is considered as "not valid".

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FirePro Ignition device for Non-Pressurized Condensed Aerosol Generators

Declaration

This product declaration is based on the functional requirement § 4.4.2, § 4.4.3 and test requirements § 7.15 of CEN/TR 15276-1. Ignition device(s) other than the standard electrical ignition device have not been tested as a part of the Non-Pressurized Condensed Aerosol Generators or separate component according § 7.

Generator specifications

The products mentioned below belong to this product declaration.

Type	Housing Stainless steel	Activation Type		Number of outlets
		Thermal	Electrical	
FP20 SE	Cylinder	No	Yes	2
FP20 T	Cylinder	No	Yes	1
FP20 TH	Cylinder	Yes	No	1
FP40 S	Cylinder	No	Yes	2
FP40 T	Cylinder	Yes	Yes	1
FP80 S	Cylinder	No	Yes	2
FP80 T	Cylinder	Yes	Yes	1
FP100 S	Cylinder	Yes	Yes	1
FP200 S	Cylinder	Yes	Yes	1
FP500 S	Cylinder	Yes	Yes	1
Type	Housing Red Coated Steel	Activation Type		Number of outlets
		Thermal	Electrical	
FP1200	Box	No	Yes	1
FP1200 T	Box	Yes	Yes	1
FP2000	Box	No	Yes	1
FP2000 T	Box	Yes	Yes	1
FP3000	Box	No	Yes	1
FP3000 T	Box	Yes	Yes	1
FP4200 T	Box	Yes	Yes	1
FP5700	Box	No	Yes	1
FP5700 T	Box	Yes	Yes	1
Type	Housing Stainless Steel	Activation Type		Number of outlets
		Thermal	Electrical	
FP1200 S	Box	No	Yes	1
FP1200 TS	Box	Yes	Yes	1
FP2000 S	Box	No	Yes	1
FP2000 TS	Box	Yes	Yes	1
FP3000 S	Box	No	Yes	1
FP3000 TS	Box	Yes	Yes	1
FP4200 TS	Box	Yes	Yes	1
FP5700 S	Box	No	Yes	1
FP5700 TS	Box	Yes	Yes	1

Non-pressurized generator.

FirePro Ignition device for Non-Pressurized Condensed Aerosol Generators

Application and use

Total flooding fire-extinguishing systems are used primarily for protection against hazards that are in enclosures or equipment that, in itself, includes an enclosure to contain the extinguishant. Condensed aerosol generators can be used as a part of fire fighting systems in buildings, plants or other structures. It covers total flooding systems primarily related to buildings, plant and other specific applications, utilizing electrically non-conducting condensed aerosol fire extinguishants.

The following are typical of such hazards, but the list is not exhaustive:

- a) Electrical and electronic hazards;
- b) Telecommunications facilities;
- c) Flammable and combustible liquids and gases;

Where aerosol generators are used in a potentially explosive application, the suitability of the generator to the atmosphere for the determined life shall be assessed.

The fire extinguishing components shall be suitable for extinguishing fires of the following classes:

- Class A according EN2
- Class B according EN2

Conditions for application

- The numbers and types of the extinguishing components have to be determined in conformity with the guidelines and calculation methods of the supplier.
- Distribution is to be done by supplier or companies authorised by the supplier.
- Before usage an instruction is to be given by a trainer or instructor for this product authorized by the supplier.
- The installation and maintenance of the fire extinguishing components have to take place according to the specifications of the supplier/manufacturer, CEN/TR 15276-2 and/or evaluation guideline BRL-K23003.

Point of interest during use or limitation of use

The condensed aerosol extinguishing components should not be used on fires involving the following unless relevant testing by accredited testing laboratories has been carried out to the satisfaction of the Authority:

- Temperatures for use of aerosol extinguishing agents shall be within the supplier's listed limits.
- Local applications ¹⁾ of condensed aerosol extinguishing systems are not covered by this product declaration.
 - Local applications require a pre-engineered and pre-designed system which has been tested and approved for a specific application by an authority such as Kiwa or by an accredited testing laboratory.

¹⁾ a local application is used for the extinguishment of surface fires in flammable liquids, gasses, and shallow solids, where the enclosure does not conform to the requirements for total flooding.

The above list may not be exhaustive.

Manual

At delivery the product should be accompanied by an operation manual in the English language, known and authorized by Kiwa.

Following minimum items shall be described:

- Type of aerosol generators;
- Design application density;
- Description of occupancies and hazards to be protected against;
- Specification of aerosol generators;
- Equipment schedule or list of materials for each piece of equipment or device, showing device name; supplier, model or part number and description;
- System calculation;
- Enclosure pressurization and venting calculations;
- Description of fire detection, actuation and control systems.
- Requirements for inspection, maintenance and testing of an aerosol fire-extinguishing system and for the training of inspection and maintenance personnel.

For specific details regarding the owner's manual, see CEN/TR 15276-1.

FirePro Ignition device for Non-Pressurized Condensed Aerosol Generators

Marking

The products should be marked with the Kiwa®-mark.

Place of the mark	Required specifications	Method of marking
<ul style="list-style-type: none"> On the generator 	<ul style="list-style-type: none"> Name of the product and supplier Supplier's type designation Production date and serial number Mass of aerosol-forming compound Temperature range Storage humidity range Service life Distances as specified in table 5 Reference to the application instructions Certification mark Fire Class A according EN2 Fire Class B according EN2 	<ul style="list-style-type: none"> Non-erasable and non-detachable; Non-flammable; Permanent and legible

Recommendations for Customers

Check at the time of delivery whether:

- The supplier has delivered in accordance with the agreement;
- The mark and the marking method are correct;
- The products show no visible defects as a result of transport etc.

If you should reject a product on the basis of the above, please contact:

- FirePro Systems Ltd
- and, if necessary,
- Kiwa Nederland B.V.

Consult the suppliers processing guidelines for the proper storage and transport methods.

FirePro Ignition device for Non-Pressurized Condensed Aerosol Generators

Cross reference CEN/TR 15276-1, Fixed fire fighting systems - Condensed aerosol extinguishing systems - Part 1: Requirements and test methods for components, February 2009

Chapter	Description	Demand ¹⁾	Result	Remarks
4	Component requirements			
4.4	Ignition device			
4.4.2	Electrical ignition device	A	Pass	Standard electrical activator in conjunction with thermal ignition device, see 4.4.3
4.4.3	Thermal ignition device	A	Pass	Bi-metal switch, heat cable and BTA ignition device (Bulb Thermal Activator) See 5.12.2, 5.12.3 and 7.15 See Kiwa declaration K90415 and K97969
4.4.4	Other methods of ignition device	N/A		
5.	Condensed aerosol generator requirements			
5.12	Ignition device			
5.12.2	Electrical ignition device			Standard electrical activator only tested for function in conjunction with the following ignition devices: Bi-metal: <ul style="list-style-type: none"> • 60 °C Heat cable: <ul style="list-style-type: none"> • 68 °C See 5.12.3 and 7.15 The bi-metal switch and heat cable are mandatory equipped with the FPC-5 ignition device.
5.12.3	Thermal ignition device	A	Pass	Bi-metal switch: <ul style="list-style-type: none"> • 60 °C Heat cable: <ul style="list-style-type: none"> • 68 °C BTA ignition device (Bulb Thermal Activator): <ul style="list-style-type: none"> • 57 °C (glass bulb) Other bulb temperatures are available. See information, instruction & user manual § 9. The bi-metal switch and heat cable are mandatory equipped with the FPC-5 ignition device. See 7.15

FirePro Ignition device for Non-Pressurized Condensed Aerosol Generators

Chapter	Description	Demand ¹⁾	Result	Remarks
7.	Test methods			
7.15	Ignition performance test	A	Pass	<p>25 samples of the complete ignition devices:</p> <ul style="list-style-type: none"> • Bi-metal switch, • Heat cable and • BTA ignition device (Bulb Thermal Activator) <p>The bi-metal switch and heat cable are mandatory equipped with the FPC-5 ignition device.</p> <p>Bi-metal switch is tested including an extension cable for bi-metal element with a maximum length of 10 meters and up to 3 bi-metal switch elements in multiple (parallel) configuration.</p> <p>Heat cable is tested with a maximum length of 10 meters including the length of the extension cable. Variations are allowed.</p> <p>All operate as intended.</p>

¹⁾ A = Applicable

N/A = Not Applicable

Not tested

DISCLAIMER

FirePro Systems makes no representations or warranties of any kind, either express or implied, statutory or otherwise, including but not limited to warranties of merchantability, fitness for a particular purpose, of title, or of non-infringement of third party rights, including the intellectual property rights of others.

Any information provided by FirePro Systems, relevant to the system engineering of the project is indicative and for guidance purposes only.

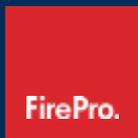
It is the contractor's responsibility to verify whether any circuit design is compatible with the equipment used in the system. Furthermore, the responsibility for the preparation and/ or approval of a project, subject to its specifications/ technical features and its related documentation, designs or drawings adherence (e.g. design documentation, construction, as-built drawings, circuit diagram, cable lengths and voltage drop calculations, etc.) to local, national and international laws and regulations, falls entirely within the scope of the contractor/ consultant assigned for the installation and commissioning.

LIMITATION OF LIABILITY

In no event, regardless of cause, shall FirePro Systems be liable for any indirect, special, incidental, punitive or consequential damages of any kind, whether arising under breach of contract, tort (including negligence), strict liability or otherwise, even if advised of the possibility of such damages.

NOTE

FirePro is constantly updating its products and systems to the state of the art and therefore reserves the right to make changes in design, equipment and technology. You cannot therefore base any claims on the data, illustrations or descriptions contained in this literature.



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