

FirePro.

FPC - 2V2

Fire Extinguishant Controller Operation and Installation Manual



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Reinventing
Fire Suppression

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Overview

The **FirePro** FPC-2 V2 Fire Extinguishant Controller enables monitoring detection and automatic extinguishing of a fire in an electrical cabinet or small enclosure using linear heat detection cable or automatic smoke detectors and **FirePro** Condensed Aerosol Generators.

The FPC-2V2 has one detection input for connection of linear heat detection cable, smoke detectors or a combination of both, which is monitored for disconnection of the detection devices.

Four outputs are provided for the connection of **FirePro** Condensed Aerosol Generators and disconnection of any of these will announce a fault condition.

The FPC-2V2 requires a battery backed 24 V DC power supply capable of delivering a minimum of 1.6A for a short period to operate the Condensed Aerosol Generators. Terminals are provided for incoming and outgoing connection of the 24 V DC power supply.

Volt free contacts are available to signal fire and fault conditions to plant or other monitoring equipment. By selecting the appropriate jumper link arrangement, it is possible to signal an addressable input module via a simple 2 wire connection.

An Isolate Key switch - located on the front of control panel – allows for the isolation the four extinguishant outputs for service or maintenance purposes.

The FPC-2V2 conforms to the essential requirements of the EMC Directive 2014/30/EU and are manufactured at an ISO9001 and ISO14001 certified facility of Kentec Electronics Limited. The declaration of conformity is issued under the sole responsibility of the manufacturer.

1. Operation

Under normal circumstances only the green Power On indicator will be lit, none of the outputs will be operated and the internal buzzer will be silent.

The wiring to the detection circuit and the **FirePro** Condensed Aerosol Generators is supervised and disconnection of any of this wiring will be shown by illumination of the yellow Fault indicator on the front panel and operation of the internal buzzer.

The internal fault volt free contact will operate and signal any external equipment that is connected to the controller. Internal indicators are provided to show whether it is the detection circuit wiring or the wiring to the Condensed Aerosol Generators that has a fault.

The buzzer may be silenced by pressing the Buzzer Silence button.

Upon activation of a linear heat detection cable or smoke detector the red Fire indicator will be lit, the **FirePro** Condensed Aerosol Generators will operate and immediately discharge extinguishing Aerosol into the protected area. The internal buzzer will sound, and the Fault indicator will illuminate indicating that the Condensed Aerosol Generators have fired and need replacing.

The internal fire volt free contact will operate and signal any external equipment that is connected to the controller.

The buzzer may be silenced by pressing the Buzzer Silence button.

Operating the Isolate key-switch by turning the key anti-clockwise from 'Live' to 'Off' isolates the four extinguishant outputs thereby preventing discharge. This mode should only be used for service, maintenance, or temporary purposes - In the 'Off' position and where the detection circuit is activated, extinguishant outputs **will not operate**.

With the Isolate key-switch in the 'Off' position and where the detection circuit is activated, the internal volt free contact will continue to operate (change over). The Reset and Buzzer Silence buttons will continue to be operational, when pressed.

Following a fire activation and replacement of the **FirePro** Condensed Aerosol Generators the system can be returned to normal operation by operating the Reset button on the front of the controller.

Note:

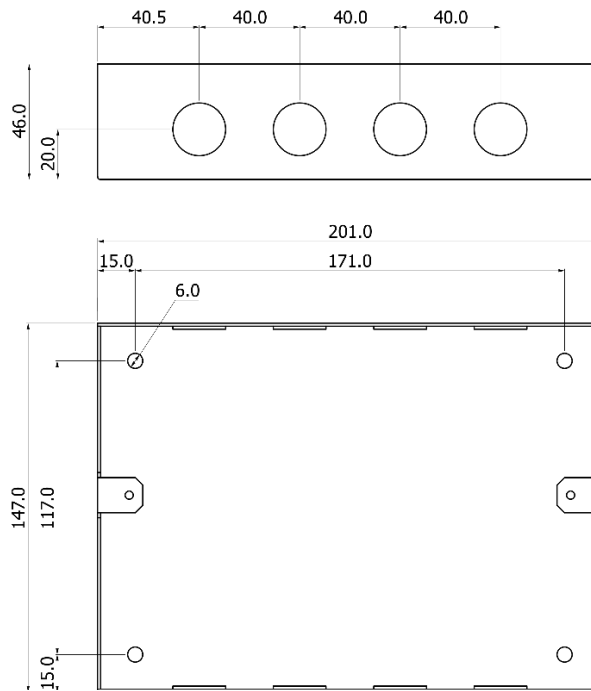
The controller will continue to show a fault condition until the Condensed Aerosol Generators are replaced.

2. Installation

The front panel of the FPC-2V2 should be removed by loosening the two M4 fixing screws holding it in place and should be put in a safe place along with the screws for refitting later.

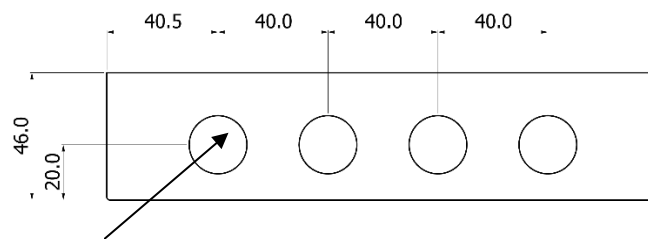
The back box can then be used to mark the fixing position holes in the required place. The box should be mounted with screws of a minimum 4mm diameter in all four fixing positions.

Figure 1- Fixing centres of mounting enclosure
(Not to Scale)



The back box has several 20mm knockouts in the top and bottom. Remove the knockouts required and fit 20mm cable glands and the required cables.

Figure 2 – Knockouts
(Not to Scale)



21mm diameter knockouts

If additional cable entries or cable entries in different positions to those provided are required, these cable entries should be drilled at this stage and any swarf or debris removed from the enclosure.

Use proper 20mm glands and seal all unused openings properly

With all cables in position, connections can now be made to the circuit board mounted on the front plate. All connections must be made with power off.

3. Terminal details

3.1 Power terminals 24V IN/24V OUT

These are the power supply terminals. The polarity of these terminals is very important. If connecting multiple FirePro. FPC-2 V2 units to a single power supply the 24V DC must be wired as shown in Figure 3 below.

Use a minimum cable size of 1.5mm² and a maximum length of 100 metres or a maximum cable size of 2.5mm² and a maximum cable length of 160 metres.

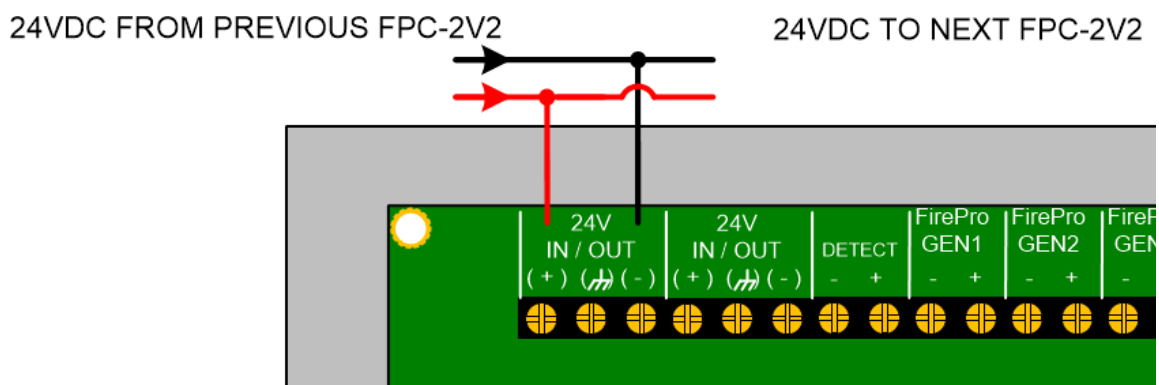


Figure 3- Connection of 24V power supply

3.2 Detection terminals

These terminals are for the connection of a conventional type 24V smoke detector or other another detection device such as linear heat detection cable, see figures 4 and 5. A 6K8 end of line monitoring resistor is fitted to these terminals. This must be removed and place across the end of the detection circuit wiring to provide open circuit monitoring for the detection cable.

Note:

Automatic smoke detectors are polarity sensitive so polarity should be observed. If a short circuit takes place on the detection line (either by linear heat detector activation or smoke detector activation [470 Ohms] or by accident), then the panel will immediately proceed to activation.

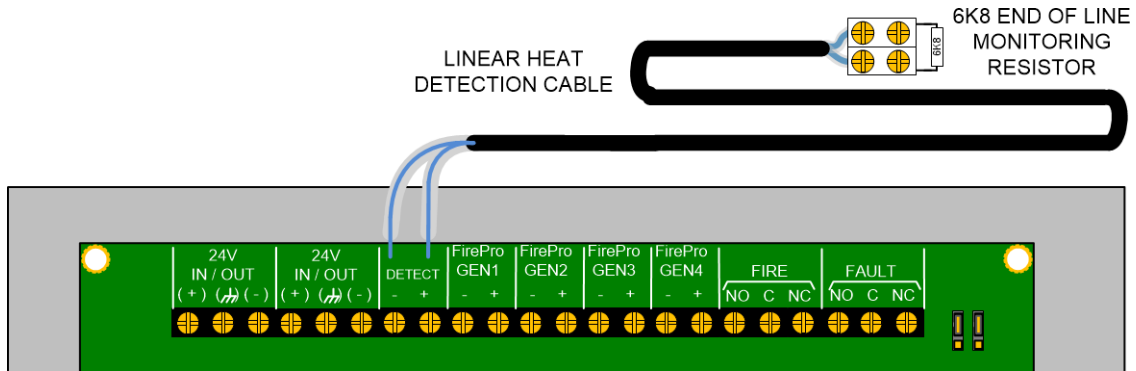


Figure 4- Connection to linear heat detection cable

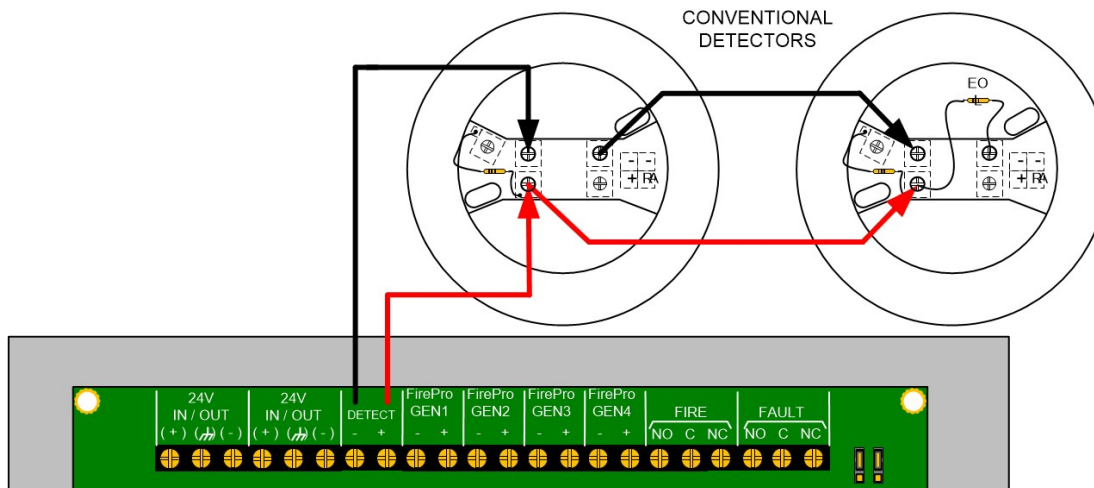


Figure 5- Connection to smoke detectors

3.3 FirePro Condensed Aerosol Generators connection terminals

These terminals ("FIREPRO GEN1" to "FIREPRO GEN4") are for the connection of **FirePro** Condensed Aerosol Generators. Test lamps are provided in the terminals to allow testing of the system before connecting the **FirePro** Condensed Aerosol Generators. These test lamps should be removed from the terminals if a **FirePro** Condensed Aerosol Generator is to be fitted.

Any **FirePro** generator outputs that are not being used should be left with test lamps fitted.

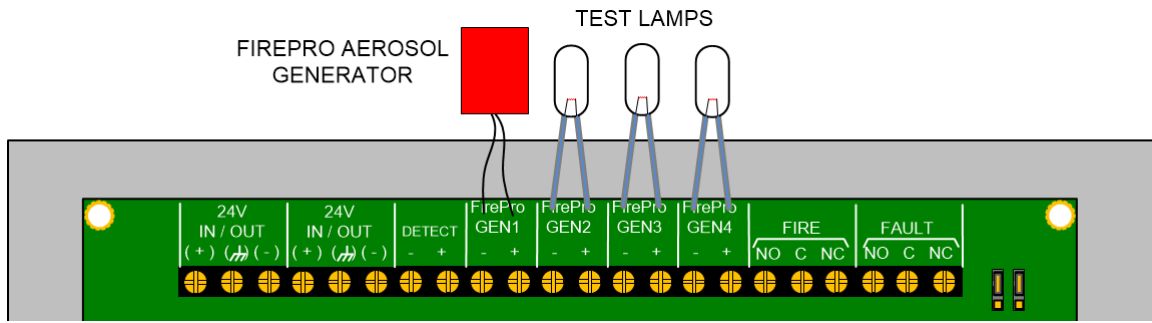


Figure 6- Connection to Condensed Aerosol Generator

3.4 FIRE contacts for remote signalling

Volt free changeover contact that will operate whenever the system is triggered to alarm. This contact is rated for a maximum of 30V DC and 1 Amp. These ratings must not be exceeded.

3.5 FAULT contacts for remote signalling

Volt free changeover contact that will operate whenever there is a fault condition. This contact is rated for a maximum of 30V DC and 1 Amp. These ratings must not be exceeded.

3.6 Sounder circuit wiring

There is no dedicated Siren circuit on this FPC-2V2 panel, however a siren can be connected to the fire relay output. The "FIRE" terminal on the FPC-2V2 panel is a relay that creates a closed circuit upon activation of the panel. This can be used to activate a siren or other device when wired as shown in Figure 7.

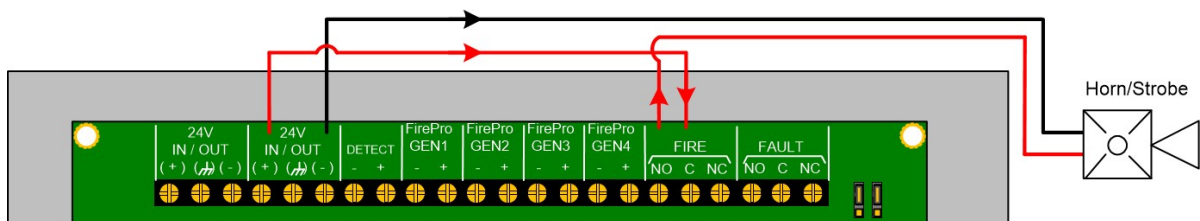


Figure 7- Connection to Sounder/Strobe

3.7 Connection to addressable modules

It is possible to configure the FPC-2V2 panel such that it will trigger a VMMI1000 addressable module with fire and fault signals via FIRE and FAULT relay contacts.

To make the FPC-2V2 panel compatible with an addressable input module, move jumpers J1 and J2 from their default positions (position A) to position B.

The FIRE NO and C terminals can now be connected directly to the addressable input module as shown in Figure 8.

Alarm and Fault conditions will be indicated on a suitable address fire alarm control panel.

Note:

The volt free contacts cannot be used for anything else when the contacts are connected to an addressable input module.

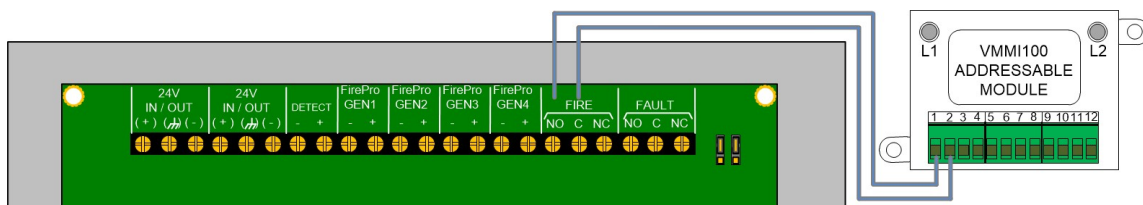


Figure 8- Connection from FPC-2V2 to VMMI1000 addressable modules

4. Testing and Commissioning

Before applying power to the FPC-2V2 panel, **FirePro** Condensed Aerosol Generators must be physically isolated from the system by disconnecting both wires to it. This will prevent any accidental release of extinguishant.

IMPORTANT
DISCONNECT ALL **FirePro CONDENSED AEROSOL GENERATORS BEFORE TESTING.**

With all FirePro Condensed Aerosol generators disconnected from the FPC-2V2 panel, ensure that the test lamps that are supplied with the unit are fitted to terminals FirePro GEN1, FirePro GEN2, FirePro GEN3 and FirePro GEN4

IMPORTANT
DO NOT LEAVE ANY FirePro CONDENSED AEROSOL GENERATORS CONNECTED TO THE UNIT WHEN TESTING AS THESE **FirePro GENERATORS WILL ACTIVATE.**

When power is applied and all connections are correct, only the green "Power On" LED should be lit. If any fault indicators are lit the wiring to the appropriate input or output should be checked and all faults have been cleared before proceeding.

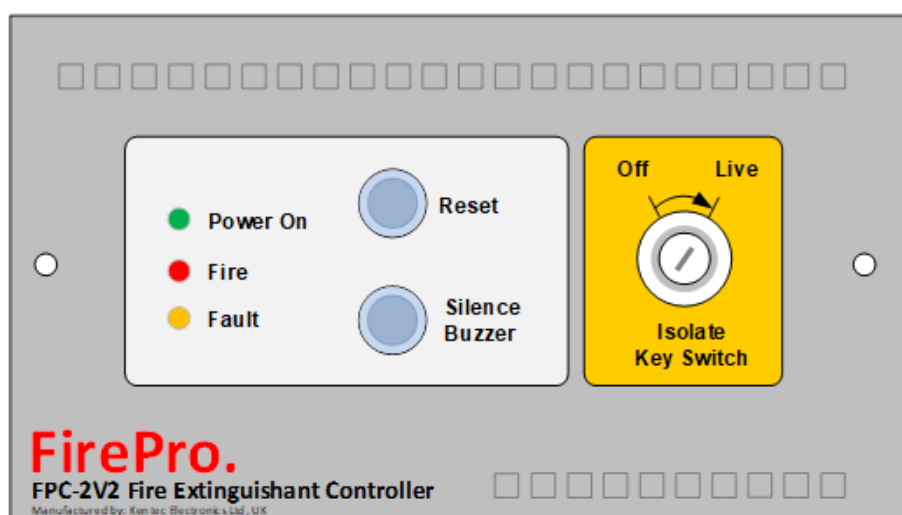


Figure 9 – Unit front frame

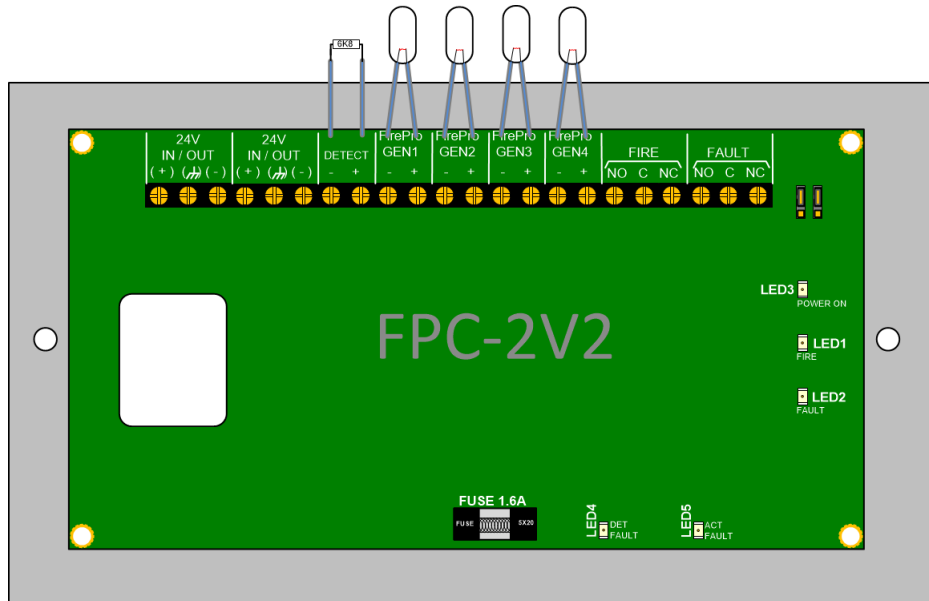


Figure 10 – Connections to FirePro Gen outputs to test system.

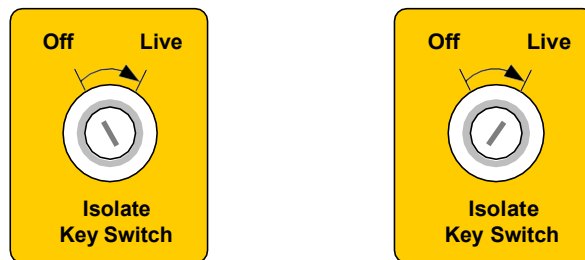


Figure 11 – Isolate Key Switch "Off" and "Live"

IMPORTANT
**ALL TECHNICAL CHECKS MUST COMPLY WITH APPLICABLE
LOCAL CODES, REGULATIONS AND SPECIFIC PROJECT
REQUIREMENTS**

4.1 System Test

- Step 1 Power off the unit.
- Step 2 Turn **Isolate Key Switch** to "Off" position.
- Step 3 Disconnect the FirePro Generators and ensure that the test lamps are fitted to the terminals.
- Step 4 Ensure both jumper links (J1 & J2) are fitted in position A
- Step 5 Inspect all system components (Detectors, Sirens etc.) and all cables for signs of damage.

4.2 Release Test

- Step 6 Power on the unit.
- Step 7 Turn **Isolate Key Switch** to "Live" position.
- Step 8 Trigger the detection input by operating a smoke detector or linear heat detector.
- Step 9 Ensure both jumper links (J1 & J2) are fitted in position A
- Step 10 Inspect all system components (Detectors, Sirens etc.) and all cables for signs of damage.

4.3 Detector monitoring Test

- Step 11 Disconnect the wiring to the detector and ensure that the yellow Fault LED on the front panel and the internal yellow LED marked LED4 are lit and the buzzer sounds.
- Step 12 Press the **Silence Buzzer** button and ensure the buzzer silences.
- Step 13 Re-connect the detector wiring and ensure that the fault indications clear.

4.4 Condensed Aerosol Generator monitoring Test

- Step 14 Disconnect one of the test lamps and ensure that the yellow Fault LED on the front panel and the internal yellow LED marked LED5 are lit and the buzzer sounds.
- Step 15 Press the **Silence Buzzer** button and ensure the buzzer silences.
- Step 16 Re-connect the test lamp and ensure that the fault indications clear.
- Step 17 Turn the **Isolate Key Switch** to the "Off" position and ensure the that the yellow fault LED on the front panel and the internal yellow LED marked LED5 are lit and the buzzer sounds.
- Step 18 Turn the **Isolate Key Switch** to the "Live" position and ensure that the fault indication clears.

5. Testing and Commissioning

5.1 System test

- Step 1 Power off the unit.
- Step 2 Turn the **Isolate Key Switch** to the "Off" position.
- Step 3 Remove the front frame panel.
- Step 4 Disconnect the FirePro Generators and ensure the test lamps are fitted to the terminals.
- Step 5 Inspect all components – detectors, sirens etc.
- Step 6 Inspect cables for signs of damage.
- Step 7 Inspect panel fuse and check if it has blown.
- Step 8 Power on the unit.
- Step 9 Turn Isolated Key Switch to the "Live" position.
- Step 10 Trigger the detection input by operating a smoke detector linear heat detector.
- Step 11 Ensure that the test lamps connected to the FirePro GEN1 terminals light immediately, the red fire indicator on the panel is lit, the yellow fault indicator is lit and the buzzer sounds.
- Step 12 Press the **Silence Buzzer** button to silence the buzzer and then the **Reset button** to reset the system.
- Step 13 Disconnect the wiring to the detector and ensure that the yellow Fault LED on the front panel and the internal yellow LED marked LED4 are lit and the buzzer sounds.
- Step 14 Press the **Silence Buzzer** button and ensure the buzzer silences.
- Step 15 Re-connect the detector wiring and ensure that the fault indication clears.
- Step 16 Disconnect one of the test lamps and ensure that the yellow Fault LED on the front panel and the internal yellow LED marked LED5 are lit and the buzzer sounds.
- Step 17 Press the Silence Buzzer button and ensure the buzzer silences.
- Step 18 Re-connect the test lamp and ensure that the fault indication clears.
- Step 19 Turn **Isolate Key Switch** to "Off" position and ensure that the yellow Fault LED on the front panel and the internal yellow LED marked LED5 are lit and the buzzer sounds.
- Step 20 Turn **Isolate Key Switch** to "Live" position and ensure that the fault indication clears.

- Step 21 Power off the unit.
- Step 22 Turn **Isolate Key Switch** to "Off" position.
- Step 23 Disconnect the test lamps and ensure that the FirePro Generators fitted to terminals.
- Step 24 Place the front frame of the panel.
- Step 25 Power on the unit.
- Step 26 Ensure that only the yellow Fault LED on the front panel and the internal yellow LED marked LED5 are lit and the buzzer sounds.
- Step 27 Turn **Isolate Key Switch** to live position and ensure that the fault indication clears.
- Step 28 The system recommissioning is completed.

5.2 Fuse replacement

- Step 1 Power off the unit.
- Step 2 Turn **Isolate Key Switch** to "Off" position.
- Step 3 Remove the front frame of the panel from the back box.
- Step 4 Flip the front panel frame on the PCB side.
- Step 5 Locate the fuse holder as indicated in Figure 10.
- Step 6 Lift the fuse cover and push the fuse to release it.
- Step 7 Replace the fuse with a 1.6A quick blow fuse.
- Step 8 Push the fuse in the fuse cover and secure it.
- Step 9 Push the fuse cover in the fuse holder and secure it.
- Step 10 Place the front frame of the panel to the back box.
- Step 11 Power on the unit.
- Step 12 Turn **Isolate Key Switch** to "Live" position

6. Specifications

Mains supply	24V DC +10% - 15%
Maximum current	1.6 Amps
Fuse rating	1.6 Amps (Quick Blow)
Operating voltage	19-30VDC
Output voltage	19-30VDC +/- 2%
Standby current	18 milliamps
Extinguishant release output	19-30VDC, Fused at 1.6 Amp
Extinguishant release	Immediate – Max 4 FirePro Condensed Aerosol Generators
Extinguishant release duration	Latched - Continuous
Detection Type	Conventional Smoke or Heat Detectors – Max of 2 Detectors, can be mixed. Linear Heat Detection Cable - Latching Type NO – LHD Cable Max 30m.
Detection Circuit End of Line	6K8 5% ½ Watt resistor
Fault monitoring	Detection and actuator circuits (open circuit monitored only)
Fault relay contact rating	30VDC 1A Amp max
Fire relay contact rating	30VDC 1A Amp max
Cable entries	8 X 21mm knockouts
Terminal capacity	0.52mm to 2.52mm solid or stranded wire
Overall size	190mm x 136.5mm x 43mm
Construction	1/2mm sheet steel
Finish	Epoxy powder coat
Colour	BS OO A 05 light grey textured
Panel environmental class	Class A and is designed for indoor use only
Operating temperatures	-5oC (+/- 3) and +40oC (+/- 2)
Maximum relative humidity	95%

7. Indicative system diagram

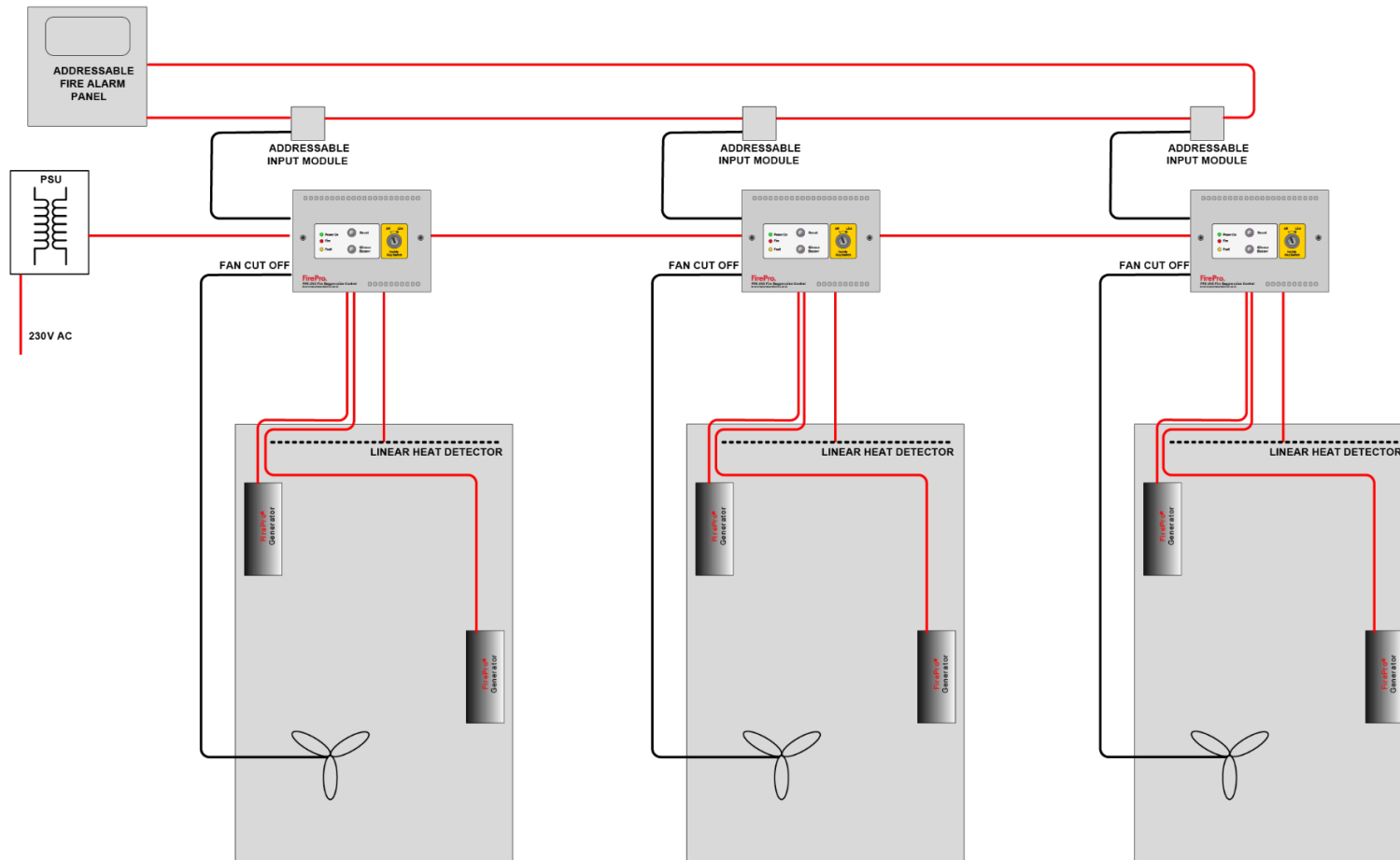


Figure 12- Example of connection to addressable fire alarm panel

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

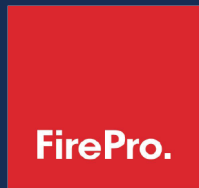
It is the contractor's responsibility to verify whether any circuit design is compatible with the equipment used in the system. Furthermore, the responsibility for the preparation and/ or approval of a project, subject to its specifications/ technical features and its related documentation, designs or 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.

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NOTE

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