

FPC-2

Fire Control Panel with Extinguishant Control Unit for Aerosol Release

Operation and Maintenance Manual

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1. Introduction

The FPC-2, a fire alarm control panel with Extinguishant Control Unit and Aerosol Agent Controller, is designed to comply with AS4487(2013) - Control and Indicating Equipment.

The control equipment is a combined fire alarm control panel and extinguishant system with one detection zones, and one extinguishant zone.

The FPC-2 Panel Protection Controller enables monitoring of detection and extinguishing circuits. The panel will support up to 4 FirePro aerosol generators.

The FPC-2 requires a battery backed 24V DC power supply capable of delivering 3A for a short period in order to operate the Aerosol Generators.

Volt free contacts are available to signal fire and fault conditions to plant or other monitoring equipment. Jumper links allow a signal to an addressable input module via a simple, 2 wire connection.

2. Operation

Under normal circumstances, the green Power On indicator will be lit, and the internal buzzer will be silent.

The wiring to the detection circuit and to the FirePro 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 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 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 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. Following a fire activation and replacement of the FirePro 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 Aerosol Generators are replaced.

3. Installation and Mounting

This equipment is designed to be operated from 24V DC supply. This power supply must be battery backed. The FPC-2 should be effectively bonded to earth. Failure to ensure that all conductive accessible parts of this equipment are adequately bonded to earth will render the equipment unsafe.

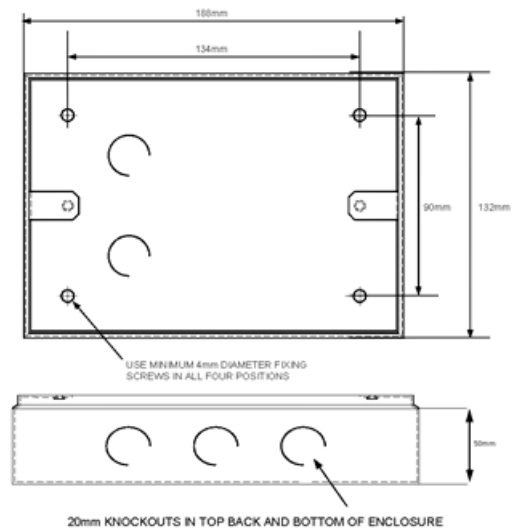
This control panel is designed for indoor use only and at temperatures between -5°C (+/- 3) and +40°C (+/-2) and with a maximum relative humidity of 95%. Panels is rated to IP30 and suitable for mounting indoors.

Operation outside of these limits may render the equipment unsafe.

MOUNTING - The control panel should be mounted on a dry, flat surface, in a level position such that the enclosure is not distorted. Suitable fixings of a minimum of 4mm diameter are to be used at all fixing points such that the control panel is securely mounted.

The panel should not be mounted in another enclosure or near sources of excessive heat.

Cables should be connected using cable glands fitted to the knockouts. If additional entry points are required, all swarf and debris caused by drilling of additional cable entries must be cleared before power is applied to the panel.



DIMENSIONS - 135H x 189W x 50D mm

Specifications

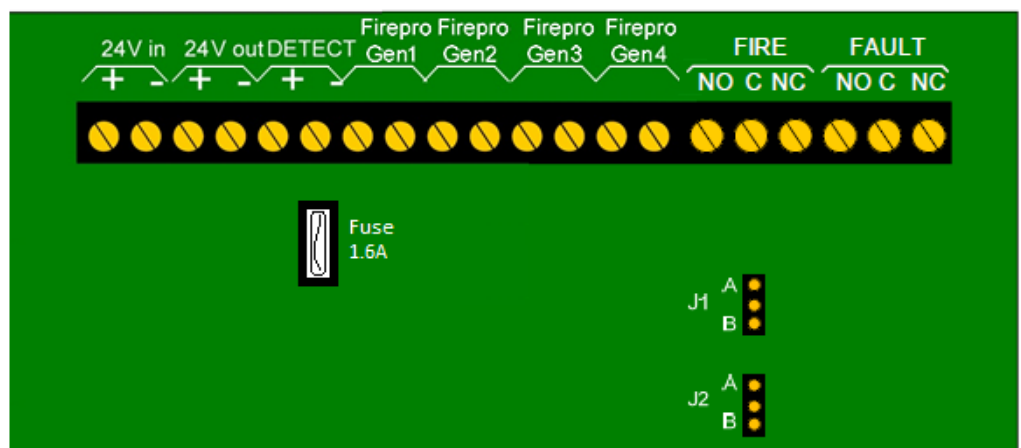
Mains supply	24V DC +10% - 15%
Mains supply fuse	1.6Amp (Quick Blow)
Operating Voltage	19-30V DC
Output voltage	19-30V DC +/- 2%
Standby Current	18mA
Extinguishant release output	19 to 30V DC. Fused at 1.6 Amp
Low Voltage limit	6V DC – at this point unit is operational will send fault signal to Sigma XT Panel
Extinguishant release	Immediate – Max 4 FirePro Aerosol units
Extinguishant release duration	Latched - Continuous
Detection Type	Hochiki Conventional PE smoke or Thermal Detectors – Max of 5 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 relay contact rating	30VDC 1A Amp max
Fire relay contact rating	30VDC 1A Amp max
Cabling	FP200 or equivalent (maximum capacitance 1uF maximum inductance 1 millihenry)
Cable Entries	6 x20mm knockouts provided
Terminal capacity	0.5mm ² to 2.5mm ² solid or stranded wire
Construction	1.2mm steel – Epoxy Powder Coated

3.1. Connecting to the circuit board

All connections for field wiring are to a single row of terminals along the top of the circuit board.

Cabling must comply with the Australian Standards. The resistance of any cable must not exceed 25 ohms.

Terminals are capable of accepting wires of up to 2.5mm².



3.2. Power 24v IN – 24v OUT

The polarity of these terminals is very important. The 24V IN is for connection of the power from a previous unit or a power supply and the 24V OUT is for connection to further units.

Max Number of FPC-2 Units chained together is 3 using the power IN / OUT link. For additional units need to wire separately. Power supply will need to consider what current is required to ensure all devices operate correctly.

3.3. Detection zone wiring

These terminals are for the connection of a conventional type 24V smoke detectors or linear heat detection cable.

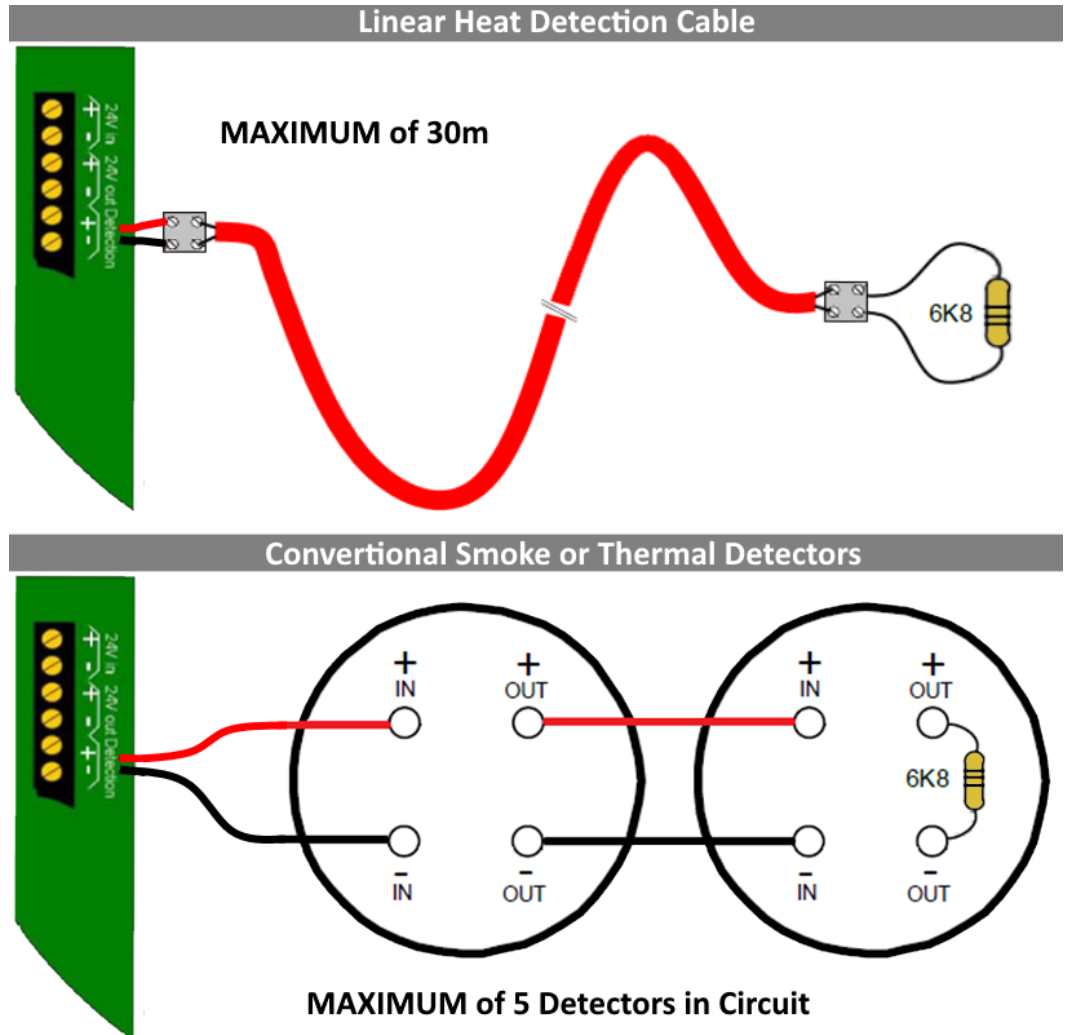
The wiring is monitored for open circuit faults.

The 6K8 end of line resistor are factory fitted to the control panel's terminals must be removed and placed across the last device that is wired to the circuit.

Detection circuit must be wired as a single, radial circuit with no spurs or T junctions to enable the monitoring circuit to work correctly.

Convention detectors may be mixed Thermal and Smoke.

A short circuit will create an ALARM condition.

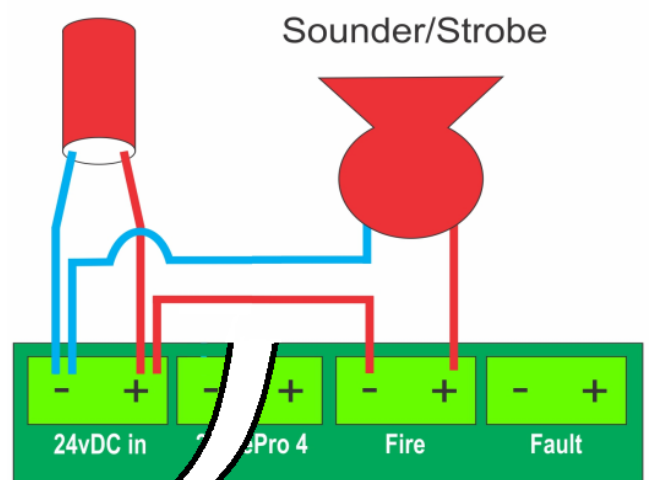


3.4. Sounder circuit wiring

There is no dedicated Siren circuit on this panel. Using the Fire Relay, a siren can be connected.

The "FIRE" terminal on the FPC2 is a relay that creates a closed circuit upon activation of the panel.

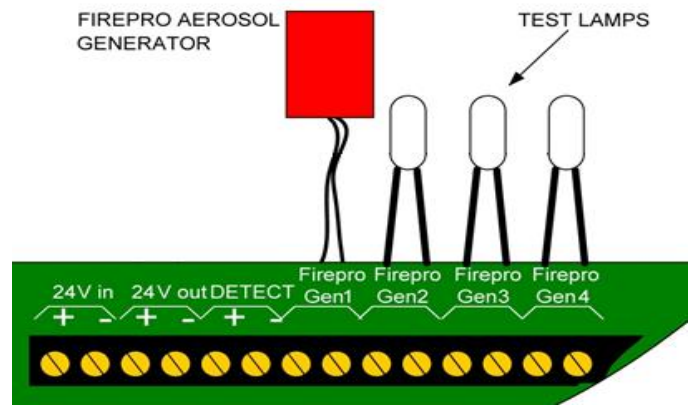
This can be used to activate a siren or other device.



3.5. Connection of Aerosol Units to Activation circuit

These terminals are for the connection of FirePro® Aerosol Generators. Test lamps are provided in the terminals to allow testing of the system before connecting the FirePro® generators. These test lamps should be removed from the terminals if a FirePro® Aerosol Generator is to be fitted.

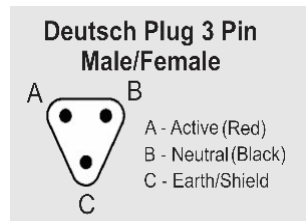
Any FirePro® generator outputs that are not being used should be left with test lamps fitted.



3.6. Connection to FirePro Units

When constructing leads to the FirePro units the supplied Deutsch Plugs must be used to ensure water-proof connections are made throughout the installation.

1. Cut cable to required length and strip outer insulation to approximately 50mm.
2. Strip inner insulation to approx. 6mm and using a Deutsch Crimping tool, fix pins to the exposed ends of the cable, including the earth.
3. Place heat shrink or rubber boot over the end of the cable. Identify correct socket on plug by the numbers/letter on the side of the plug and push through the gasket at the bottom of the plug until a click is heard and the pin is locked in place.
4. Place the locking wedge inside the plug to ensure pins remain secure. (Male plugs the locking wedge is orange. Female plugs the locking wedge is green)
5. Using the heat shrink and rubber boot, seal the back of the plug.



3.7. Indications

Power Indicator	Operates as long as voltage is coming into panel – range is 12-30VDC.
Fault Indicator	Operates whenever any circuit fault is detected in the system. It is a common indicator for both the activation and detection circuits.
Fire Indicator	Operates when the detection circuit goes into alarm.

3.8. Fault relay

The Fault Relay is normally energised and will de-energise upon any fault condition on the detection part or the extinguishant part of the control panel including total loss of power. Volt free changeover contact that will operate whenever there is a fault condition. This contact is rated for a maximum of 30V DC and 1Amp. These ratings must not be exceeded

3.9. Fire relay

The Fire Relay will energise upon activation of a fire condition. The relay will remain activated until the control panel is reset. 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 1Amp. These ratings must not be exceeded.

4. Connecting to Master Fire Panel

4.1. General

To connect to a Master Indicator Panel, there is some connections to be made between the panels and then some programming configuration in the Master Panel.

4.2. FPC-2 as a sub-panel with stand-alone detection and activation

Following explains connection and configuration to Sigma XT Master Panel. The concepts will be similar to other brands/types on master panel.

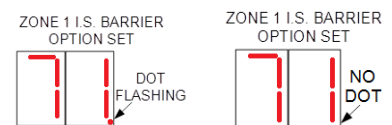
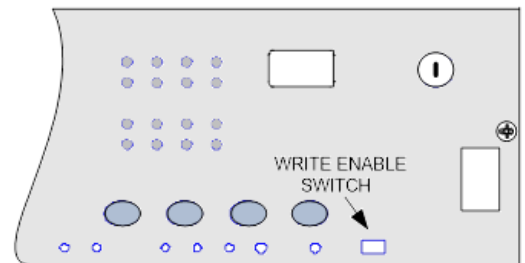
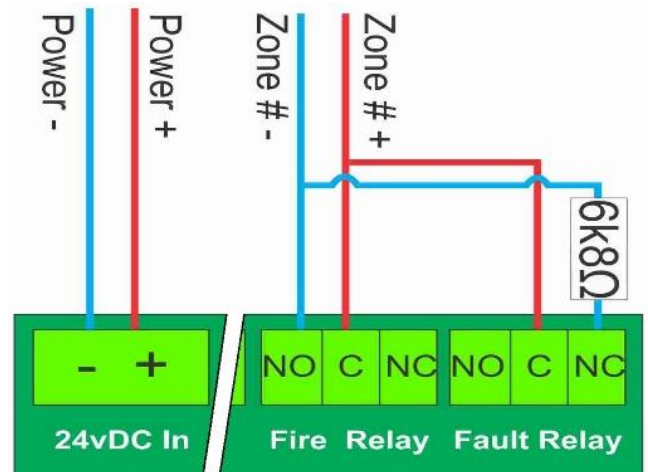
The connections are 24vDC power which can come from Sigma XT – or an appropriate external source, and a Single detection Zone is require on Sigma to allow inputs from FPC-2.

The EOL Resistor ensures that this circuit is monitored from the Sigma XT panel.

Once the connections are complete. The Sigma XT panel must be programmed correctly to set up the FP-C2 as a remote device. This must be done so that the FP-C3 is not treated as a regular detection device. When programmed correctly, the FP-C2 will alert the main Sigma XT panel of any alarm or fault states.

On the Sigma XT FIP, enter Access Level 2 by turning the key in "Enable Control" port on the Detection card (top card) or by releasing the read switch by opening the inner Perspex door.

6. Enter Access level 3 on the Detection Card (top card) by moving the "Write Enable" switch to the right. The "System Mode" LCD display will read "00".
7. The FIP's detection options are numbered. Using the controls on the Detection Card, navigate the menu until the "System Mode" LCD display reads "7#" (# being the number of the detection circuit you wish to connect to). To do this press the "Mode (+10)" button until the first number is "7" and then press the "Select (+1)" button until the display shows the correct detection circuit.
8. The detection circuit number will have a flashing dot next to the number, indicating that it is programmed for conventional detection. Press the "Enter" button to change the detection circuit to S/C mode. This will cause the flashing dot to turn off.
9. Exit Access level 3 by moving the "Write Enable" switch to the left and exit Access level 2 by closing the inner door or by turning the key in the "Enable Control" port.



4.3. FPC-2 as a activation Module only

This configuration uses the FPC-2 as an activation module only. This can be established with any style of AS Panel. Individual configurations will be dependent on the specifics of the master panel.

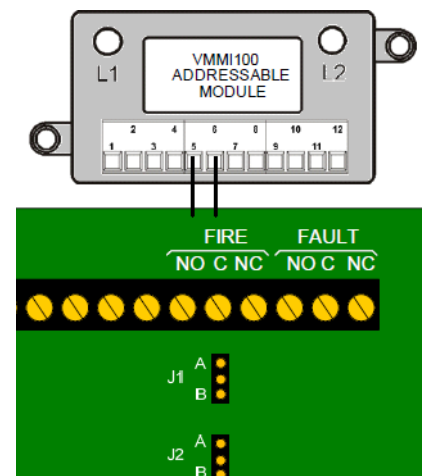
Connection will be required for the Power Supply. The activation device needs to connect to the detection circuit on the FPC-2, this needs to meet the detection circuit criteria. Once the FPC-2 receives a detection advice – activation of the extinguishant system is immediate.

Fire and Fault reporting will require connection back to the master panel.

To make the FPC-2 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.

Alarm and fault conditions will be indicated on a addressable fire alarm control panel.

Note: The volt free contact function is not available when the contacts are being used to signal and addressable input module.



5. Panel Operation

5.1. Silence Alarms

The *Silence/Sound alarm* button will only silence the buzzer in the FPC-2 unit.

5.2. Reset

To *Reset* button is a full reset on the FPC-2 panel only.

6. Power supply

The control panel requires 24v DC.

Exceeding the maximum power supply rating may cause a fuse or other protective device to operate and render the equipment inoperative until the fuse is replaced or protective devices are reset.

7. Maintenance

FPC-2 control panels do not require any specific maintenance but should the control panel become dirty it can be wiped over with a damp cloth and should then be dried with a dry, lint free cloth. Detergents or solvents should not be used to clean the panel and care must be taken that water does not *Enter* the enclosure.

Testing of the extinguishant system should only be carried out by trained personnel and must be done with appropriate isolation measures in place to ensure that accidental discharge of the extinguishant agent is avoided and any malfunction should be reported to the fire alarm maintenance company immediately.

8. Commissioning & Testing

Before applying power to the panel, igniting actuators must be physically isolated from the system by disconnecting both wires to it. This will prevent any accidental release of extinguishant.

When power is applied, if all connections are correct, only the green Power 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.

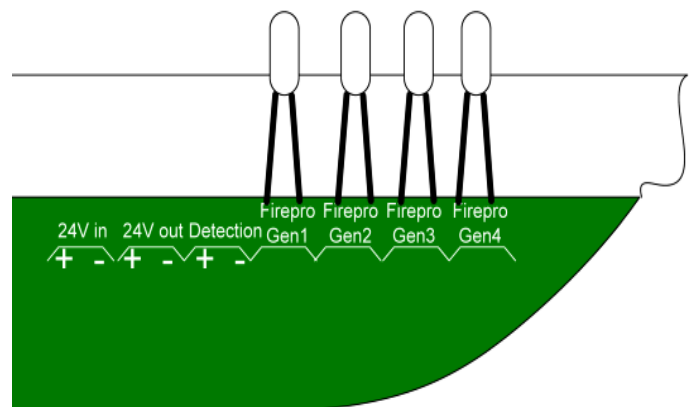
TESTING

DISCONNECT ALL FIREPRO AEROSOL GAS GENERATORS BEFORE TESTING.

Do not leave any FirePro gas generators connected to the unit when testing or these units will activate.

TO TEST SYSTEM:

- Step 1 Turn Power off
- Step 2 Disconnect FirePro units and connect test lamps
- Step 3 Visually inspect each FirePro unit installed and ensure BKF and mounting bolts are intact. The FirePro® unit must be clean and free of debris
- Step 4 Inspect all other component detectors, sirens etc. Inspect cable for any signs of damage.
- Step 5 Turn power on to panel and test detection system to simulate activation-all test lamps to be lit.
- Step.6 Turn off power – Reconnect all FirePro units
- Step.7 Turn power on – Testing is complete



Note: If the system has been activated the system activation fuse needs to be inspected as blown fuse will show as a fault. The Fuse is 1.6AMP Quick Blow.