WORMALD FirePro Aerosol System

FP-22408

& 17310

Fire Control Panel

Operation and Maintenance Manual

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1. Introduction

The Model 22408 vehicle control panel to provide an integrated fire detection and suppression system. This control panel allows up to 4 Wormald FirePro Generators of any size to be installed. The panel is compliant to AS5062.

The FIP (fire indicator panel) incorporates-

- two monitored detection circuits,
- a monitored activation circuit,
- a monitored power supply circuit with installed 10A fuse
- a monitored 24hr backup battery circuit with battery installed.
- programmable shutdown delay time.

2. Operation

IN CASE OF FIRE

The Wormald FirePro Vehicle Suppression System is an automatic system and has Manual switches. In case of fire follow these steps:

1. The Detection system will activate suppression system automatically in case of fire.
2. Safely Stop the Vehicle and Evacuate all personnel from the vehicle as soon as possible.
3. Where manual activation required - Remove Travel Pin from Activation Switch and press switch.
4. Keep the Wormald FirePro Aerosol within the risk until the fire is completely extinguished or fire may reignite.
5. Wait approximately 20min for the Wormald FirePro Aerosol to dissipate and clean up with soapy water.
6. DO NOT open the risk area or attempt to restart the engine, until the fire is completely extinguished, and the machine has sufficiently cooled.
7. System will remain in fault until the Wormald FirePro generators are replaced.

SYSTEM OK INDICATOR will indicate green, when the system is receiving appropriate 24vDC supply and is operating normally. If power is not supplied, or a fault if detected the LED will not be lit and the panel will not operate or function correctly.

FIRE INDICATOR will indicate red when the detectors go into alarm or a manual activation switch is pressed.

RELAY RESET INDICATOR and Button. Pressing the button will interrupt the programmed shutdown. This delay can be maintained by continuously pressing the button. - indicates that the relay time delay has been reset.

If the system is in an alarm condition and has been serviced/recharged, the reset button will allow for normal vehicle operation.

ALARM SILENCE INDICATOR and Button - will indicate amber when the alarm has been silenced. if pressed, the alarm will silence for 6 hours before sounding again. All other Fault lights will continue to indicate that a problem is present.

SERVICE SYSTEM INDICATOR - will indicate amber, and activate an alarm, to show that a fault is present. LED will flash in a numbered sequence to indicate which circuit is experiencing a fault (see Fault Codes).

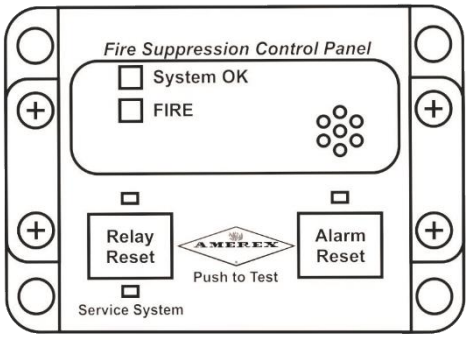
PUSH TO TEST Button - Allows the operator to check functionality of all LED's, relays and alarms without activating the system.

ISOLATION MODE - Pressing the Amerex Logo button five times will put the panel into *Isolation Mode.* To deactivate Isolation Mode – Press and Hold the Amerex Logo Button for 5 seconds. (only for model 22408)

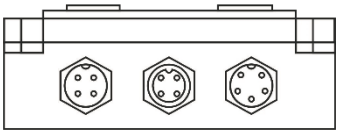
3. Installation Procedure

3.1. Installation and Mounting

Mount the Amerex 22408 Control Panel in a dry, protected area (such as inside the vehicle cab). It should be clearly visible and within reach of the vehicle operator.



DIMENSIONS - 135H x 189W x 50D mm



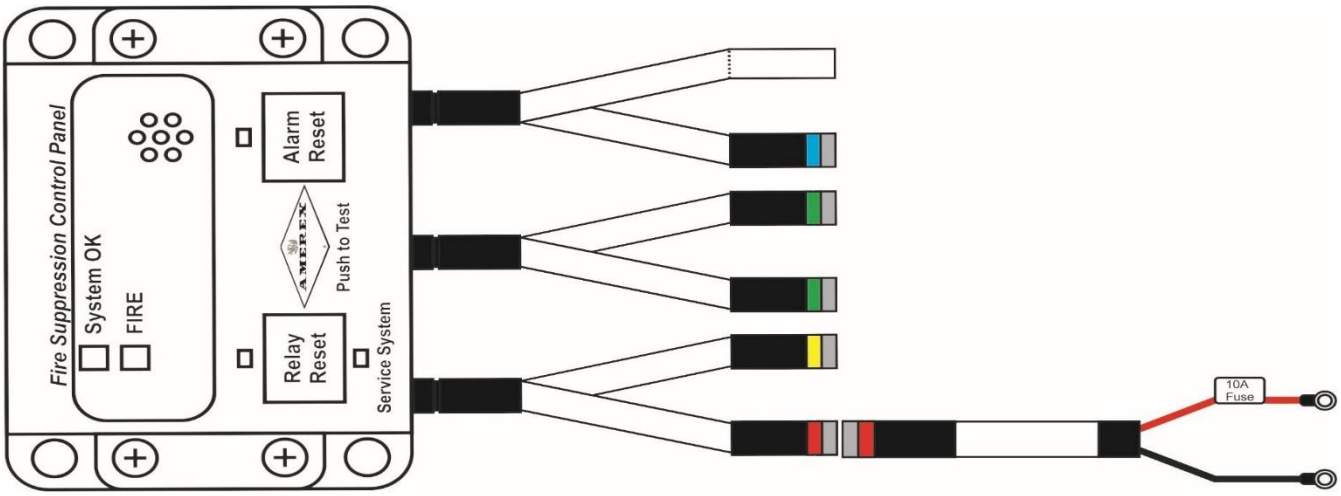
Connect the wiring loom to the panel. Note: each cable uses a different plug to ensure that they are connected to the correct plug. DO NOT force plugs.

The panel should not be placed in environments where the temperature is outside the range of -40°C to +66°C.

Mounting Bracket (FP-22408B) may be used. This bracket will accommodate the control panel and a manual activation switch. Made from 316 stainless steel.

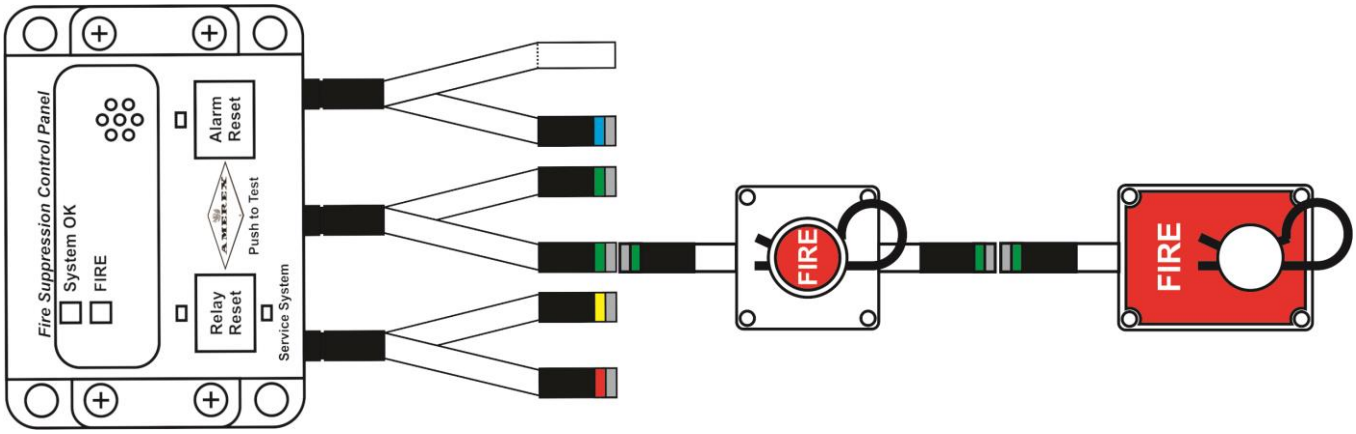
3.2. Power Supply – Connect directly to Battery

Connect Power Supply Assembly to the vehicle's battery terminals and connect to panel using the Power Supply lead coming from the panel (marked Red). **Note:** The Red cable goes to the battery's positive terminal and the black cable goes to the battery's negative terminal.



3.3. Manual Activation Switches

Mount the Internal Activation Switch in a dry, protected area (such as the vehicle cab). It should be clearly visible and within reach of the vehicle operator. This should then be connected to the control panel using one of the two Detection Circuits (marked Green).



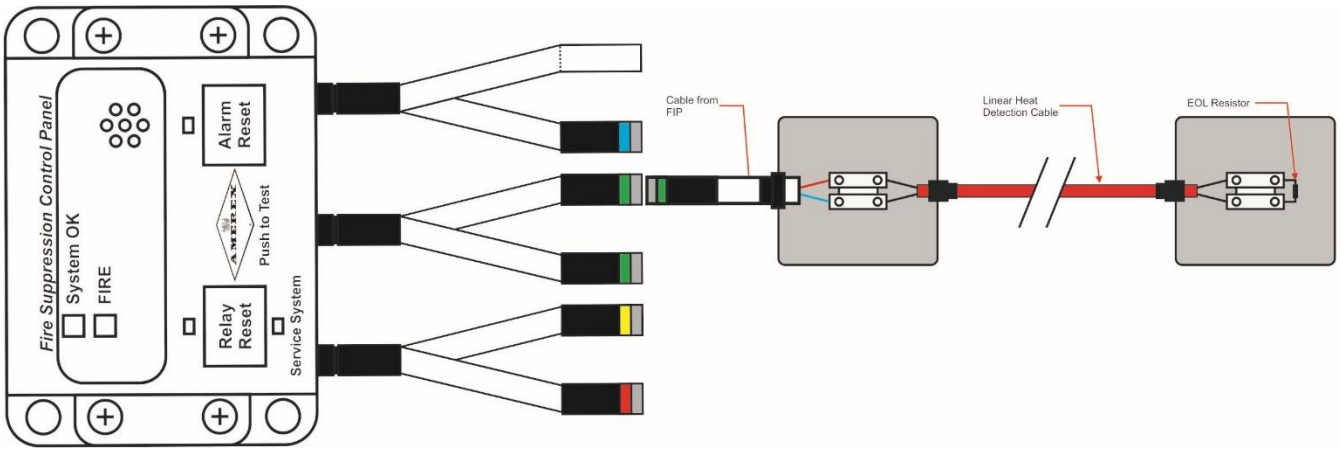
Mount the External Activation Switch on the exterior of the vehicle. This should be easily accessible and away from the risk area. **Note:** the supplied End of Line module MUST be plugged into the cables coming out of the Internal Activation Switch if no External Activation Switch is to be used.

Switch mechanism with travel Pin

Switch Shown in External Mount

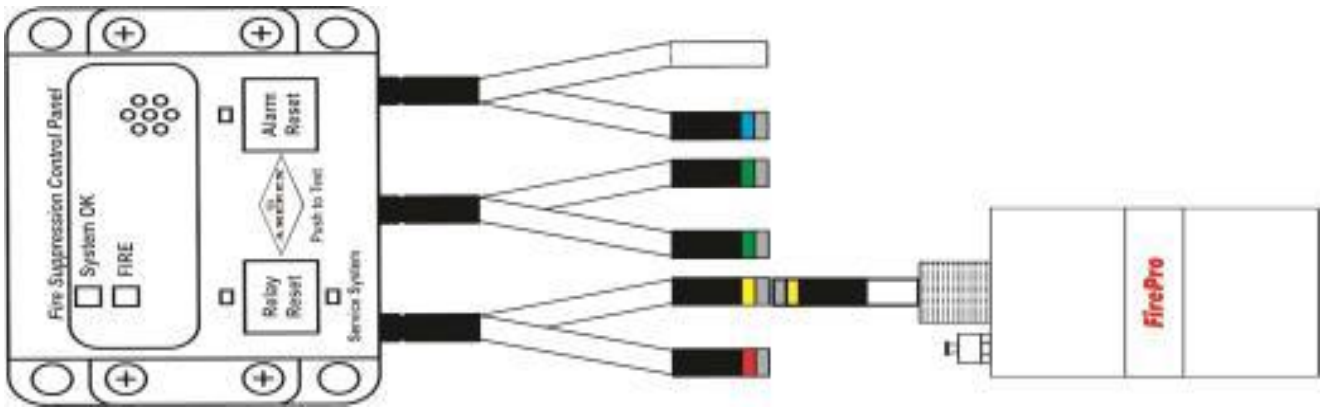
3.4. Linear Heat Detection Cable

Mount the Linear Heat Detection Cable inside the risk area using the supplied P-clips every 500mm and junction boxes. With reference to use one of the supplied 2 Pin Deutsch Plug pairs create a extension cable and plug into the remining Detection Circuit (marked Green). This kit comes with an installed End Of line resistor that must be installed at the end of the LHD cable. **Note:** wiring should not be done in a way that place tension on the cable and installers MUST observe the minimum bend radius on 150mm.

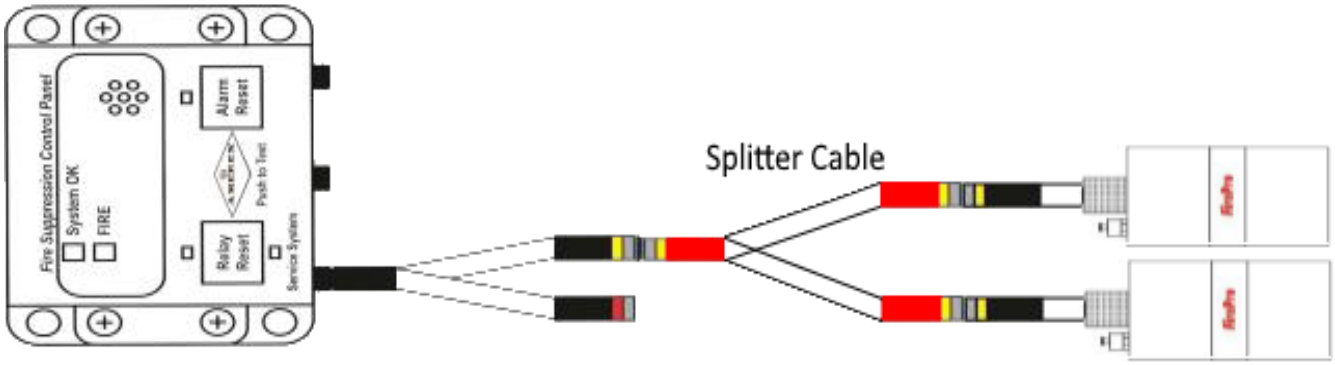


3.5. Installation of FirePro Units – MAX 4 Units

Using the supplied Heavy Duty Brackets, mount the Wormald FirePro Generators inside the risk area facing engine components that pose hazards in case of fire (for example; turbo, fuel supply and battery). Connect the FirePro generator(s) to the panel using the Activation Circuit (marked Yellow). For risks that require two or more FirePro generators use the supplied splitter cable(s).

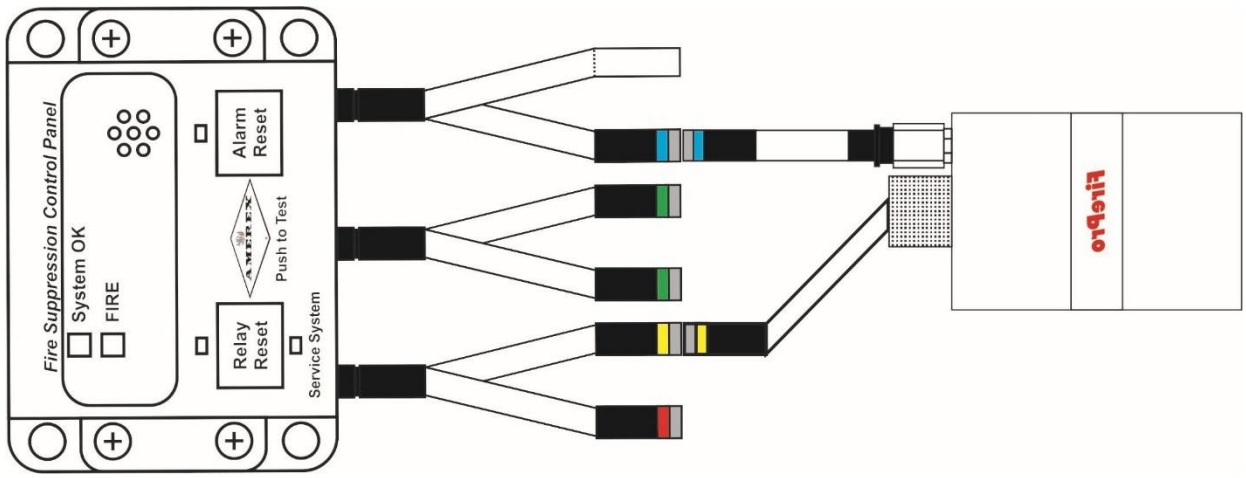


USING Splitter Cables



3.6. Thermal Fuse

Using the supplied Thermal Fuse, remove the cap on the thermal port on one FirePro generator (see image). Screw thermal fuse into thermal port and connect cable to the System Discharge Advice circuit coming from the control panel (marked Blue).



3.7. Relay Connections and Programming

The control panel also provides a Shutdown/Warning Relay to shutdown the vehicle's engine and activate any auxiliary warning equipment (for example sirens or lights).

The colour code for the relay wiring is: Common-Red
Normally Closed-Black
Normally Open-White.

Any device that is wired to the relay must draw its own current from an independent power lead with a 5 Amp AGC fast blow fuse. One of the supplied 3 Pin Deutsch Plugs is supplied any connection.

RELAY PROGRAMMING

The delay for the activation of the shutdown relay can be programmed from 0 to 15 seconds (in 5 second intervals). The default time delay is 15 seconds. To program:

Press and hold the "Relay Reset" and "Alarm Service" buttons simultaneously for 20 seconds.

The panel will chirp once and the "System OK" LED will flash.

Press the "Relay Reset" button "x" times for the desired relay delay.

After 10 secs has elapsed, the panel will chirp twice and the "System OK" LED will stop flashing.

No. times the Button is pressed	Seconds Of Delay
1	0
2	5
3	10
4	15

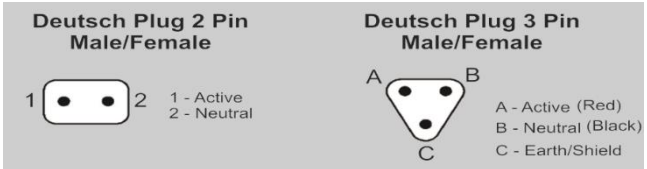
3.8. Sounder circuit wiring

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

3.9. Extension Leads

Each Wormald FirePro Vehicle Suppression System is supplied with Shielded, 2 hour Fire Rated, 2 Core Cable, 4 x 2 Pin Deutsch Plug Pairs and 3 x 3 Pin Deutsch Plug Pairs. These MUST be used for the construction of any extension lead. If additional cable or Deutsch plugs are required, this needs to be specified by the installer. To create extension leads follow these steps:

1. Cut cable to required length and strip outer insulation to approximately 50mm. Remove shielding and for 2 Pin plugs cut earth off.
2. Strip inner insulation to approximately 6mm and using an approved Deutsch Crimping tool, fix pins to the exposed ends of the cable. For 3 Pin plugs this includes the earth.
3. Place heat shrink or rubber boot over the end of the cable. Ensuring that pins are securely fixed to the cable, identify correct socket on plug by noting the numbers or 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. For male plugs the locking wedge is orange and for the female plugs it is green.
5. Using the heat shrink, or other approved insulation, seal the back of the plug and using one of the supplied cable ties mark the cable to identify which circuit it will be used.



3.10. Colour Coded Cables

Cables are colour coded for easy identification. When installing system, cables should be only connected to the correctly coded cable. Colour Coding for cables is as follows:

Colour	Circuit
Red	Power
Yellow	Activation
Green	Detection
Blue	Thermal Fuse

4. Panel Operation

4.1. Silence Alarms

In the event of a system alarm or system service the audible alarm can be silenced with the "Alarm Silence" button. When the "Alarm Silence" button is depressed, the "Alarm Silence" LED will illuminate, and the other LEDs will continue to show the alarm or service system fault status. The alarm will remain silent for 6 hours and will then resound to remind personnel that a problem condition is present.

4.2. Isolation Mode

Model 22408 ONLY. Pressing the Amerex Logo button five times will put the panel into *Isolation Mode*.

During isolation mode the following panel conditions will be in effect:

- The green System OK LED will blink continuously indicating the panel has power but is in isolation mode. The Amber coloured Service System LED will stay steady on. The audible alarm will chirp every 30 seconds to indicate the panel is in isolation mode.
- In isolation mode the firing circuit is disabled. All other circuits, (detection, pressure switch, relay) remain operational. Isolation mode can be used for testing, transportation, machine maintenance etc.
- In isolation mode if either detection circuit is activated the red FIRE LED will illuminate, the audible alarm will sound, and the relay will begin countdown. This condition would remain until the source of the alarm is cleared. **The panel will remain in isolation mode until mode is deactivated.**
- **To deactivate mode**, insure the red FIRE LED is not illuminated, press and hold the Amerex Logo button for five seconds. Panel returns to normal mode green LED System OK illuminated unless fault condition is present. If fault conditions are present, panel flashes standard fault codes at the Service System LED.
- Relay Transfer (engine shutdown) is indicated by a RED LED at the Relay Reset Button.

To Isolate the Model 17310 panel simply unplug the activation cable – and this will put the panel into fault. This should be done at the connection closest to the panel.

5. Maintenance

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.

5.1. TroubleShooting & Fault Codes

In the event of a system fault in any of the supervised circuits, an audible alarm will sound and the yellow "Service System" LED will flash once every ten seconds in a coded sequence to indicate the circuit presenting with a fault.

If a fault is detected there is a five second delay before notification. For power supply faults, the delay for notification is 20 seconds.

The audible alarm can be silenced with the "Alarm Silence" button. When pressed, the "Alarm Silence" LED will illuminate, and the other Fault LEDs will remain on. The alarm will remain silent for 6 hours and will then resound to remind personnel that a fault condition is present.

Fault Source	No. LED Flashes
Power Supply	1
Detection Zone 1	2
Detection Zone 2	3
Activation Circuit	4
Backup Battery	5
Thermal Fuse	7

5.2. Replacing the Internal Battery

This battery should be **replaced every 2 years** to ensure proper system function or if the panel indicates that there is a fault in the backup circuit. To replace:

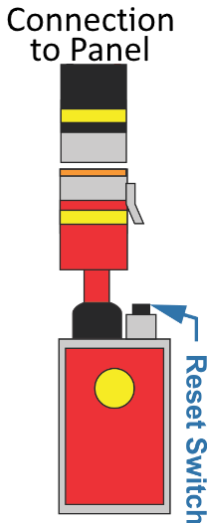
1. Remove the four screws on the front of the panel to remove the front cover.
2. Disconnect the battery and remove old battery. Replace battery (PN 18156).
3. Reconnect the battery and replace the front cover. Check the "Service System" LED on the front of the panel. If installed correctly, there will be no fault.

6. Commissioning & Test Procedure

IMPORTANT Commissioning should be performed when the fire control panel is not in an alarm/fault condition. **Note:** No personnel should be in the risk area until the fire system is fully isolated.

To ensure that your Wormald FirePro system will operate as designed, it should be inspected and serviced every 6 months, and yearly, in accordance with AS1851 and AS5062.

SIX Monthly Test Procedure:



1. Isolate the control panel (see 7.2 Isolate Function) and disconnect the any installed FirePro aerosol generators. This will generate a fault on the fire control panel.
2. Connect a FP-08800 Test Module to the "Discharge" output to the panel (marked yellow). Turn off the Isolate function.
3. Control Panel and components
- Clean and remove dirt, grease or foreign material. Replace any parts that appear damaged or are painted.
- Check all indicators are in normal position.
4. FirePro Aerosol Generators
- Inspect FirePro generators to ensure they are in good condition.
- Check mounting brackets are in good condition and secure.
- Check Dust Covers are in good condition – replace as necessary.
- Check FirePro Units are at predetermined aiming points.
5. Electrical system – Inspection
- Check Manual Actuators are secure, clean, undamaged.
- Check that anti-tamper seals/pull pins are in place and secure.
- Check all system wiring, connection and supports are in intact, not damaged and in correct position.
6. Labels Check manual release, system warning and instruction labels are securely in place, visible and legible.
7. Test the fault monitoring system by disconnecting and reconnecting all connected detection devices and the siren strobe circuit one at a time. Ensure the "Fault" LED indicator illuminates and the internal sounder is heard each time a circuit is disconnected.
8. **Discharge Testing from External Devices :** Each detection and manual actuator device connected to must be tested individually.
- Perform an automatic discharge test by activating the detectors or manual actuators.
- Following the activation sequence ensure the Test Module Red LED has operated.
- Isolate the panel to silence the alarm. The control panel should now display a fault.
- Reset the Test Module.
- Reset the control panel by pressing and holding a single mode switch until 2 beeps are heard. The control panel should no longer be in alarm/fault condition.
9. **System control and indicating equipment.**
- During discharge test, ensure operation of all installed siren/strobe(s).
- During discharge test, ensure operation of all installed shutdown relays. This must shutdown any equipment specified in the risk assessment.
- Test backup battery capacity. Replace every backup battery every 2 years.
10. **Disconnect** the FP-08800 Test Module and reconnect all FirePro aerosol generators.
11. Turn off the Isolation function. System is now operational.

Additional requirements for Commissioning of a System after Install or Discharge

12. **Design Survey** - check against the baseline data, for alterations, changes in use or operating environment, or other factors that could affect the performance of the fire protection system.(Annual)
13. **Risk Assessment –** required to be prepared and reviewed every 5 years or after any incident. Review document to ensure system compliance. Check if document is current.

7. Servicing and Maintenance

Inspection and servicing of the installed fire system should occur in accordance with the relevant Australian Standards (i.e. AS1851 or AS5062).

Any alterations to the risk area should be recorded and where necessary the risk assessment, design calculation and installed components must be revised to reflect the new operating conditions.

A logbook must be kept, recording all the relevant information from the installation and servicing. The logbook must contain the following:

Content of logbook:	Appendices of Logbook:
General details	Schematic diagrams
Devices used	Photos of the original Installation
Date and outcome each inspection	Programming of the control panel
Risk Assessment	Inspection reports

7.1. Daily Service Schedule

A daily inspection should be performed by the operator prior to operation of the equipment. If anything does not appear normal, the equipment should not be operated and the fire service provider alerted. The Daily Inspection should include:

- Visual inspection of the control panel and installed components. These should be accessible and free from debris, rust, or electrical faults.
- Visual inspection of the control panel to ensure normal functioning. When functioning normally the only indicator illuminated should be the "Power" indicator (green).
- Visual inspection of anti-tamper seals and travel pins, to ensure they are in place.

7.2. Semi-annual / Annual Service Schedule

Semi-annual and Annual servicing and maintenance **are to be undertaken only by accredited service technicians.** Any misuse of the FIP may result in an accidental discharge of the suppression system and is not covered by warranty.

Servicing should include a visual inspection of all the installed components to ensure they are in good condition, and that the relevant stream lengths and thermal clearances are observed as per the original design calculation and risk assessment.

Operation of the fire system should be tested as outlined in 6. Commissioning and Test Procedure.

8. Component Description

FP-22408 Amerex AS5062 Vehicle Control Panel

Operates on 10vDC-30vDC power supply with integrated 24hr backup battery. Features:

- Automatic or Manual Activation.
- Fires up to 4 FirePro Aerosol Generators.
- 2x Detection Circuits; 1x Programmable Shutdown Relay.
- Monitors all electrical circuits.
- Vibration and weather proof and EMI/RFI resistant.

FirePro Aerosol Generator

100g – 500g Unit.

Constructed from Stainless Steel.

Comes with installed Deutsch Plug for easy install.

FP-6200

Heavy Duty Bracket 316 SS.

Suits FP-100, 200, 500 FirePro Aerosol Generators.

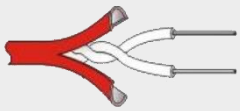
FP-08960

Signage for the System. A sheet of different size labels.

FP-08826

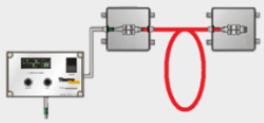
Thermal Fuse

Constructed from Stainless Steel.



FP-09510

Linear Heat Detection Cable 182° C

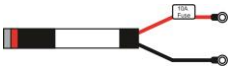


FP-09511

Linear Heat Detection Installation kit. Mounting Clips, 2x Junction Boxes with strain relief cable glands and 1x EOL for monitoring.

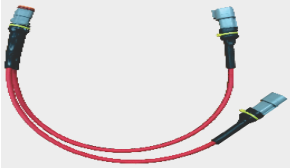
FP-09500

2 Hour Fire Rated Shielded Cable.



FP-14016

Battery Lead



FP-08912

Wiring loom and Splitter Cable for installaion of multiple FirePro generators.

FP-08800

FirePro Simulator – for Testing & Commissioning.

9. Specifications

Mains supply	12 – 24v DC	
Battery	24 hours of Fire Suppression Capability - Nickel Metal Hydride (NiMH)	
Current Requirements		
Normal Operations	12v DC – 18mA	24v DC – 47mA
Fault Condition	12v DC – 10-18mA	24v DC – 47-52mA
Alarm Condition	12v DC – 66mA	24v DC – 78mA
Extinguishant release	Immediate – Max 4 FirePro Aerosol units	
Temperature	Temperature Range -40°C to +66°C	
Audible Alarm – Built in	Output-Continuous Signal - 85dB @ 36" - Resonant Frequency: 2800 Hz continuous	
Detection Type	Latching Type, NO – LHD Cable	
Detection Circuit End of Line	2K2 resistor	
Fault relay contact rating	30VDC 1A Amp max	
Fire relay contact rating	30VDC 1A Amp max	
Dimensions	109mm x 77mm x 38mm – Weight :590g	