Guideline - Installation Testing and Commissioning

Fire Suppression System

Issue January 2022
Version 1.0

Reinventing
Fire Suppression

Guideline	Version 1.0
Guideline Submitted on	January 2022
Necessary documents with this guideline	1. FirePro Information, Instruction & User Manual. 2. FirePro Aerosol Generators Installation Drawings (Appendix 1 (EN), (Appendix D (UL), of FirePro Manual). 3. Fire Suppression System Logbook. 4. Control Panel Installation and Operation Manual. 5. User Manual (Operating Instructions).

Contents

1.0 Abstract

This guideline has been created to assist field engineers/technicians during installation, testing, commissioning, maintenance and after FirePro fire suppression system discharge.

2.0 Executive Summary

To achieve the above objectives, a Case study will be implemented, with a detailed explanation of each point related to the installation, testing, commissioning, maintenance and after FirePro fire suppression system discharge.

3.0 System Design

Any design should be prepared by a trained and authorized FirePro engineer/distributor, who creates a set of drawings according to manufacturer's requirements and local or international regulations.

The scope of this guideline is the installation of the fire suppression system and not its design.

4.0 System Installation

In the following guidelines, we assume that system design has been adhered to local regulations, international standards, and manufacturer's guidelines.

4.1 Indicative Fire Suppression System

This is a general guideline and is based on UL terms, the corresponding apply to other standards as well. The following indicative fire suppression system will be implemented as an example. Such systems consist of two parts, the electrical part, and the fire suppression agent part.

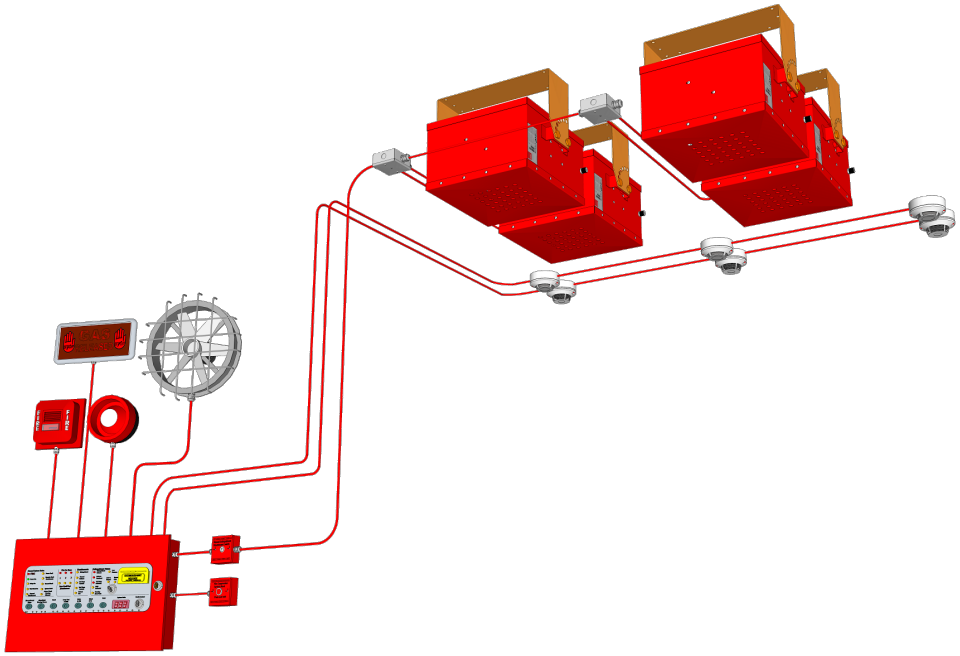

Figure 1, Fire Suppression System for implementation

4.2 System Components

As per the above, indicative design, the following system components are required for a complete system.

Bill Of Material

Fire Detection and Extinguishing Equipment - Part List		
No.	**Item Description**	**QTY**
1	Extinguishant Control Panel	1
2	Sequential Activator	2
3	Conventional Photo Electric Smoke Detector (w/o base)	3
4	Conventional Heat Detector Rate-of-Rise (w/o base)	3
5	Conventional 4-inch Base for Detector	6
6	Fire Alarm Bell 24V DC [1st Stage Alarm]	1
7	Fire Alarm Horn Strobe (Sounder & Beacon) 24V DC [2nd Stage Alarm]	1
8	Gas Release Sign	1
9	System Abort Switch (Hold Off Switch)	1
10	Extinguishant Disablement Switch	1
11	12V 7Ah Sealed Lead Acid Battery	2
12	FirePro Fire Extinguishing Condensed Aerosol Generator FP-3000	4
13	Simulation Lamps	4
14	Fire Resistant Cable, Twisted, Shielded, 2 x 1mm2 + drain wire	LOT
15	Fire Resistant Cable, Twisted, Shielded, 4 x 1mm2 + drain wire	LOT

Table 1, System accessories

4.3 Tools Suggested

The following tools are suggested to complete the installation.

Tools Suggested

Fire Detection and Extinguishing Equipment - Tools		
No.	**Item Description**	**QTY**
1	Digital multi-meter (Volt, Ohm, Ammeter)	1
2	Wire cutters/strippers	1
3	Long Nose Pliers	1
4	Insulated Flat Head Screwdriver - Tip Width - 3 mm (1/8")	1
5	Insulated Cross Head Screwdriver - Phillips Tip Size No.00–2	1
6	Heating gun	1
7	Ferrule Tool	1
8	Spanner	1

Table 2, Tools Suggested

4.4 Panel Installation

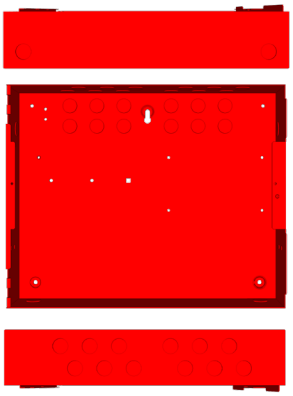

Figure 2, Panel fixing

The front cover of the control panel should be removed by loosening the fixing screws, while holding it in place. Keep the front panel cover and screws in a safe place, until fitting them back. The back box can then be used to mark the fixing position holes in the required installation place. The control panel should be mounted on a dry, flat surface, at eye level to the display and in a level position, such that the enclosure is not distorted. The back box should be mounted with screws of a minimum 5mm diameter in all three fixing positions. Cables should be connected using suitable cable glands fitted to the knockouts provided. If additional cable entry points are required, the field engineer/technician may drill the enclosure. In this scenario, any swarf and debris must be cleaned before power is applied to the panel.

4.5 Fire Detectors Installation

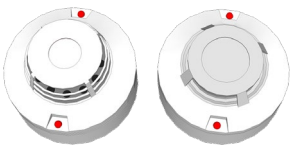

Figure 3, Fire Detectors

Determine the type and correctly space the automatic fire detectors, comprising two opposing detection zones of smoke and rate-of-rise linear heat detector.

4.6 Warning Devices Installation

Warning devices must always be installed to inform the status of the system, such as stage 1st alarm, stage 2nd alarm, and gas release. Therefore, sounder/flashers with different sounds and a gas release indication with different frequency rates are required to distinguish them and be placed together in a location where it can be easily seen as well as the sound is easily distributed.

Figure 4, Warning Devices

4.7 Disconnect Switch, Abort Button

The Disconnect switch and Abort buttons are always installed nearby the control panel or nearby the exit door for easy access and operation.

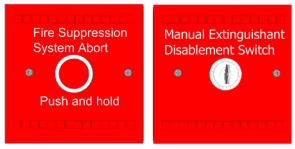

Figure 5, Disconnect Switch, Abort Button Installation

4.8 Sequential Activators Installation

The sequential activators should be installed close to the aerosol generators within one to five meters, minimizing the required cable as much as possible, as this affects the total cable length on the release line.

Figure 6, Sequential Activators Installation

4.9 Aerosol Generators Installation

The FirePro condensed aerosol generators should be correctly positioned and oriented with suitable spacing according to the manufacturer's defined minimum safety distances and maximum stream and other safety instructions as described in the User Manuals.

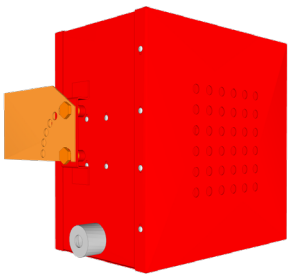

Figure 7, Aerosol

4.10 Power Off Devices Interface

In fire suppression systems and according to the application, an automation may be configured to instantly provide a signal when the Panel enters the stage alarms. For example, an E.P.O. System (Emergency Power-Off System) should be installed and activated prior to the release of the fire extinguishing agent.

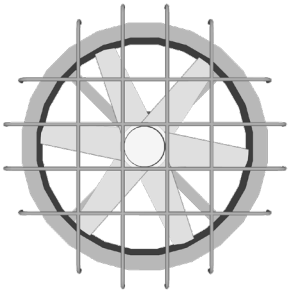

Figure 8, Power Off Device Interface

At **Stage 1 Alarm**, which is triggered by the activation of any of the input detection zones, the Air-Conditioning system is required to be powered off. At **Stage 2 Alarm**, which is triggered by the activation of both input detection zones, it is required that the E.P.O. System powers off all

electronic & electrical equipment within the protected area, including the Ventilation System, prior to the release of the fire firefighting agent.

5.0 System Wiring

5.1 Panel Terminal Details

Locate the following control panel terminals, as they will be used to complete the connections to the other devices of the fire suppression system.

In the following system wiring, a marking system is used so that each wire bears its own label for easy understanding of the various wire connections between panel and accessories.

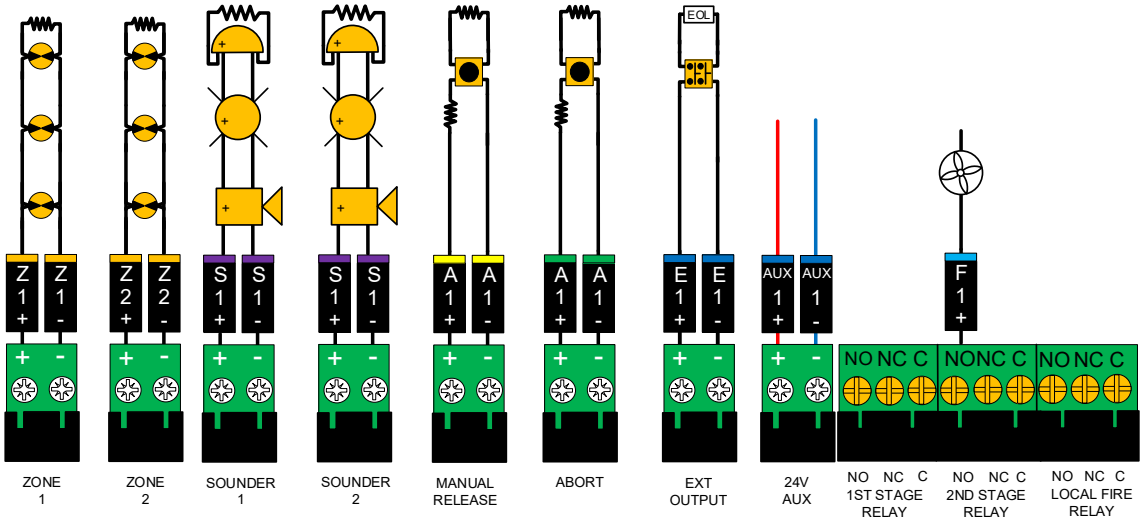

Figure 9, Panel Terminals

5.2 System cables – Diameter

A two-wire cable and four-wire cables will be used. The diameter of the wire varies according to the required length of the cable (release cable line) and as per local regulations. Below you can find a correlation between the diameter of the wire in relation to the length of the cable.

Wire diameter: 1.0 mm^2 – Cable length: 190 m
Wire diameter: 1.5 mm^2 – Cable length: 270 m
Wire diameter: 2.5 mm^2 – Cable length: 470 m

5.3 Panel Terminal – Input Zone 1

Locate the **Zone 1** input terminal on the control panel and remove the End Of Line (EOL) resistor connected to it. Keep the resistor in a safe place for installing it again, at a later stage. A two-wire cable will be used for the connection of the **smoke detectors**.
In this example, an indicative smoke detector base is used. It is the installers responsibility to locate the input/output terminals of the smoke detector/base used in his installations.
Label the two wires on the control panel terminal **ZONE 1** as: **Z1+** [positive wire] and **Z1-** [negative wire]. Connect the Z1+ to the positive input terminal of the first smoke detector base. Connect the Z1- to the negative input terminal of the first smoke detector base. Refer to Figure 11.

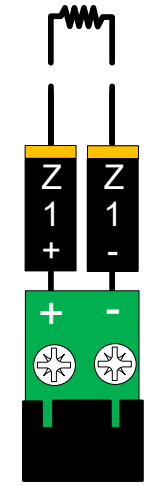

Figure 10, Input Zone 1

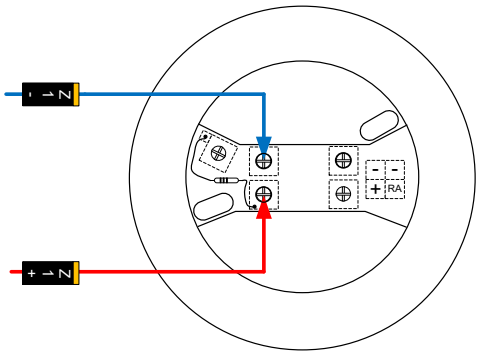

Figure 11, Zone 1 – First smoke detector connection

Use **Z1+** wire to connect the positive input terminal of the first smoke detector base, to the positive input terminal of the second smoke detector base. Use **Z1-** wire to connect the negative **output** terminal of the first smoke detector base, to the negative input terminal of the second smoke detector base. Refer to Figure 12.

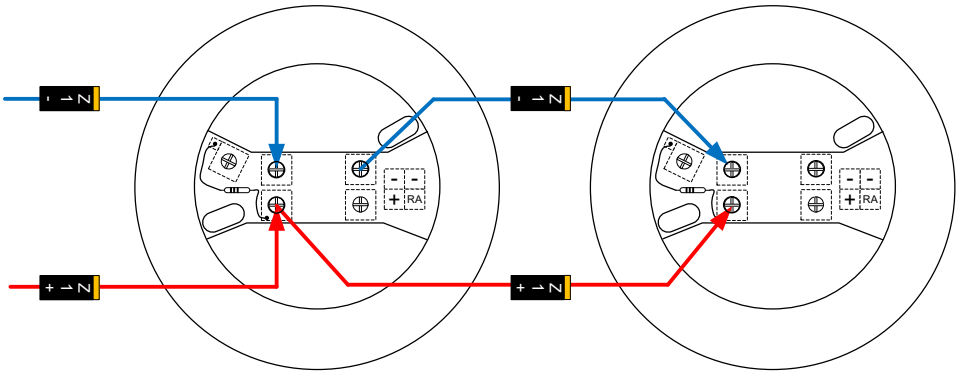

Figure 12, Zone 1 – Second smoke detector connection

Use **Z1+** wire to connect the positive input terminal of the second smoke detector base, to the positive input terminal of the third smoke detector base. Use **Z1-** wire to connect the negative **output** terminal of the second smoke detector base, to the negative input terminal of the third smoke detector base.

Similarly, the third smoke detector is connected to the **Zone 1 cable line** (detection line), but as it is the last smoke detector, it is necessary to install the **EOL resistor** previously removed from the control panel **Zone 1 terminal** to terminate the detection line. Refer to Figure 13. This installation procedure refers to 3 detectors but can be also adopted for any number of detectors.

Read the detector installation manual on how to do this.

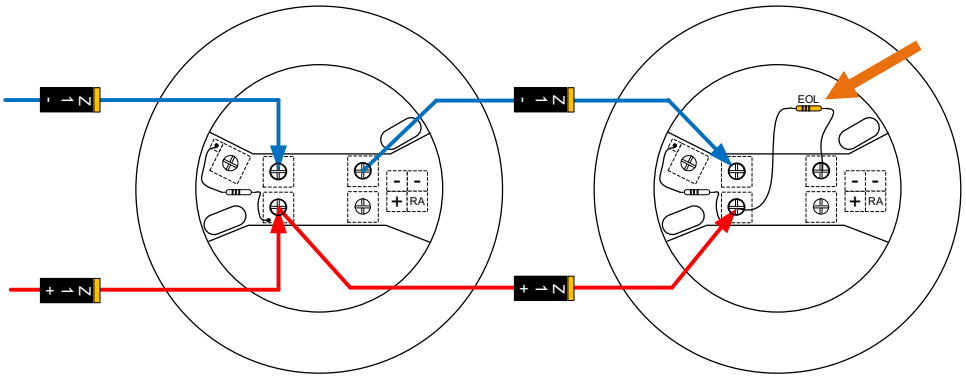

Figure 13, Zone 1 – Third smoke detector connection with EOL resistor termination

5.4 Panel Terminal – Input Zone 2

Locate the **Zone 2** input terminal on the control panel and remove the End Of Line (EOL) resistor connected to it. Keep the resistor in a safe place for installing it again, at a later stage. A two-wire cable will be used for the connection of the **heat detectors**.

Label the two wires on the control panel terminal **ZONE 2** as: **Z2+** [positive wire] and **Z2-** [negative wire]. Connect the Z2+ to the positive input terminal of the first heat detector base. Connect the Z2- to the negative input terminal of the first heat detector base.

Use **Z2+** wire to connect the positive input terminal of the first heat detector base, to the positive input terminal of the second heat detector base. Use **Z2-** wire to connect the negative output terminal of the first heat detector base, to the negative input terminal of the second heat detector base.

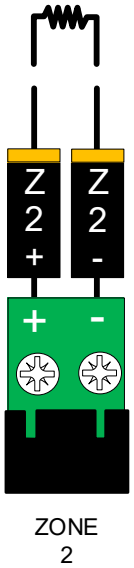

Figure 14, Input Zone 2

Use **Z2+** wire to connect the positive input terminal of the second heat detector base, to the positive input terminal of the third heat detector base. Use **Z2-** wire

to connect the negative output terminal of the second heat detector base, to the negative input terminal of the third heat detector base.

Similarly, the third heat detector is connected to the **Zone 2 cable line** (detection line), but as it is the last heat detector, it is necessary to install the **EOL resistor** previously removed from the control panel **Zone 2 terminal** to terminate the detection line. Refer to Figure 15. This installation procedure refers to 3 detectors but can be also adopted for any number of detectors.

Read the detector installation manual on how to do this.

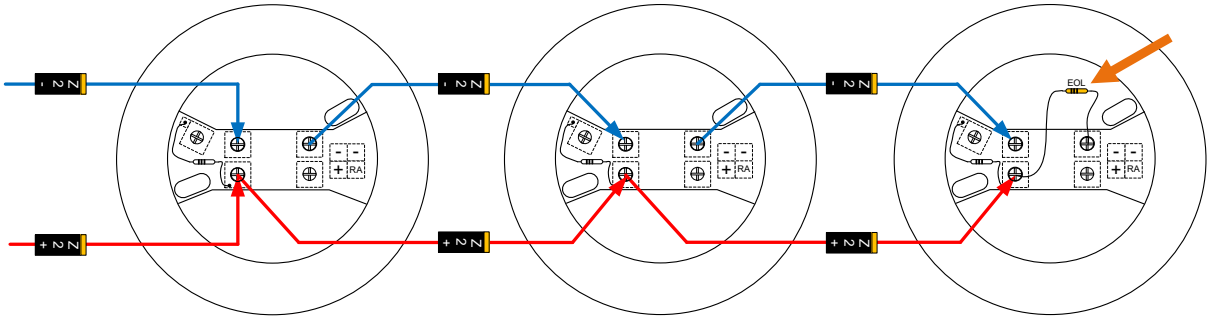

Figure 15, Zone 2 – Heat detectors connected to zone 2

5.5 Panel Terminal – Input Sounder 1 –Stage 1 Alarm

Locate the **Sounder 1** input terminal on the control panel and remove the End Of Line (EOL) resistor connected to it. Keep the resistor in a safe place for installing it again, at a later stage. A two-wire cable will be used for the connection of the **Sounders**.

This Sounder 1 will be activated when **stage 1 alarm** of the control panel is initiated.

Label the two wires on the control panel terminal **SOUNDER 1** as: **S1+** [positive wire] and **S1-** [negative wire]. Connect the S1+ to the positive input terminal of the first sounder device. Connect the S1- to the negative input terminal of the first sounder device.

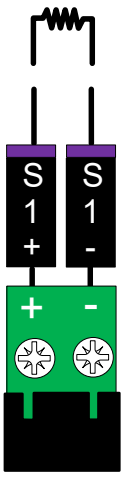

Figure 16, Input Sounder 1

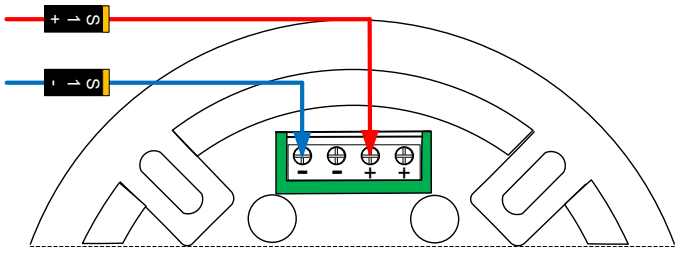

Figure 17, Sounder 1 – stage 1 alarm

If only one sounder will be used for stage 1 alarm, then it is necessary to install the **EOL resistor** removed from the control panel **Sounder 1 terminal** to terminate the sounder cable line.

Read the sounder installation manual on how to do this.

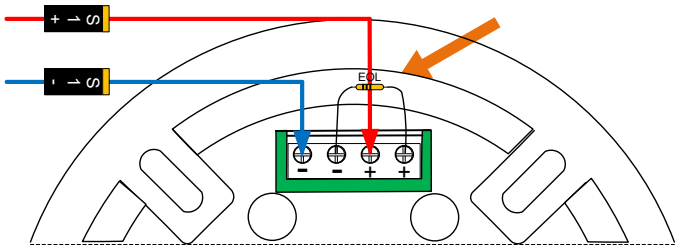

Figure 18, Sounder 1 with EOL resistor termination

If more than one sounder is used for the stage 1 alarm, then the sounder cable line should extend as shown below and terminate with an EOL resistor on the last sounder device.

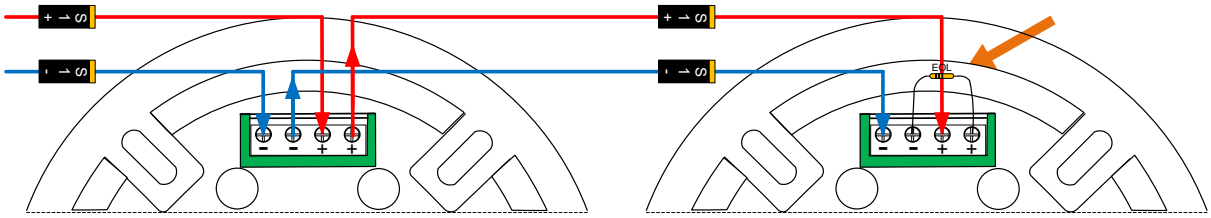

Figure 19, more than one sounder devices on stage 1 alarm

5.6 Panel Terminal – Input Sounder 2 – Stage 2 Alarm

Locate the **Sounder 2** input terminal on the control panel and remove the End Of Line (EOL) resistor connected to it. Keep the resistor in a safe place for installing it again, at a later stage. A two-wire cable will be used for the connection of the **Sounders**.

This Sounder 2 will be activated when **stage 2 alarm** of the control panel is initiated.

Label the two wires on the control panel terminal **SOUNDER 2** as: **S2+** [positive wire] and **S2-** [negative wire]. Connect the S2+ to the positive input terminal of the first sounder device. Connect the S2- to the negative input terminal of the first sounder device.

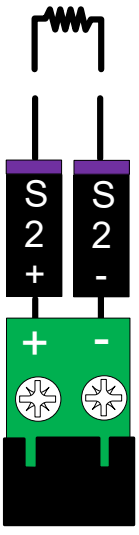

Figure 20, Input Sounder 2

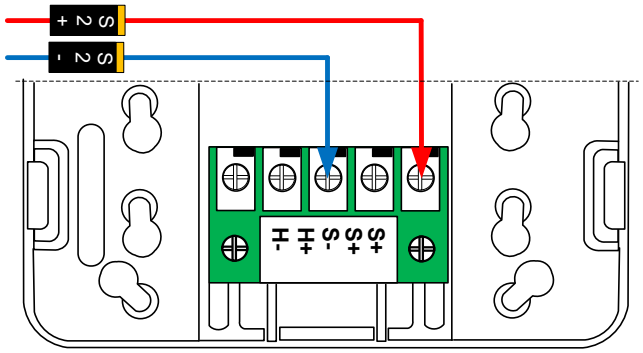

Figure 21, Sounder 1 – stage 2 alarm

If only one sounder will be used for stage 2 alarm, then it is necessary to install the **EOL resistor** removed from the control panel **Sounder 2 terminals** to terminate the sounder cable line. Read the sounder installation manual on how to do this.

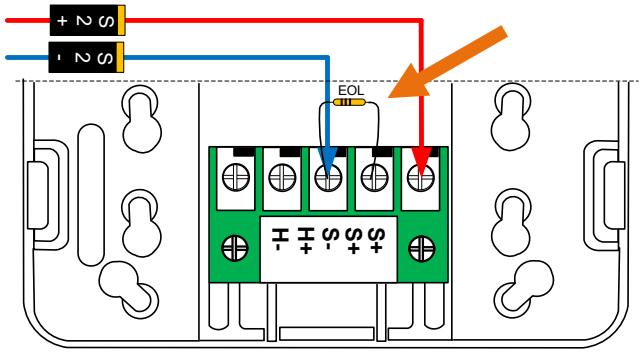

Figure 22, Sounder 2 with EOL resistor termination

If more than one sounder is used for the stage 2 alarm, then the sounder cable line should extend as shown below and terminate with an EOL resistor on the last sounder device.

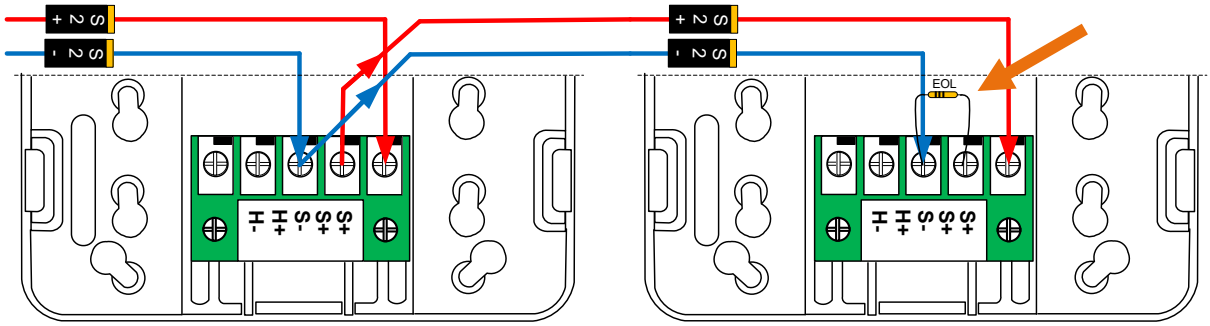

Figure 23, more than one sounder devices on stage 2 alarm

5.7 Panel Terminal – Input Abort Switch (Hold Off Switch)

Locate the **Abort** input terminal on the control panel and remove the End Of Line (EOL) resistor connected to it. Keep the resistor in a safe place for installing it again, at a later stage. A two-wire cable will be used for the connection of the abort button.

Label the two wires on the control panel terminal **ABORT** as: **A1+** [positive wire] and **A1-** [negative wire]. Connect the A1+ to the positive input terminal of the abort button. Connect the A1- to the negative input terminal of the abort button.

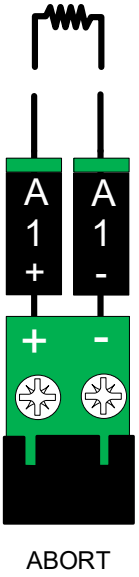

Figure 24, Manual Release

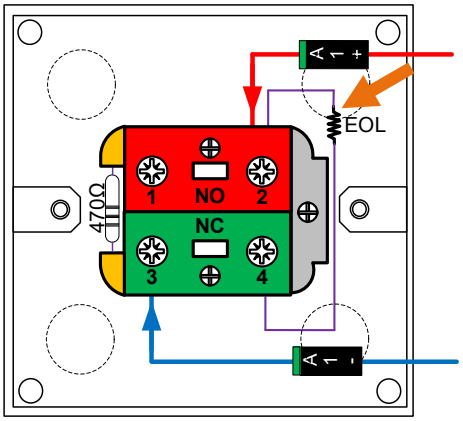

Figure 25, Abort Button

If only one abort button will be used, then it is necessary to install the **EOL resistor** removed from the control panel **Abort terminal** to terminate the Abort cable line.

Read the Abort Button installation manual on how to do this.

If more than one abort button is used, then the abort cable line should extend as shown below and terminate with an EOL resistor on the last abort device.

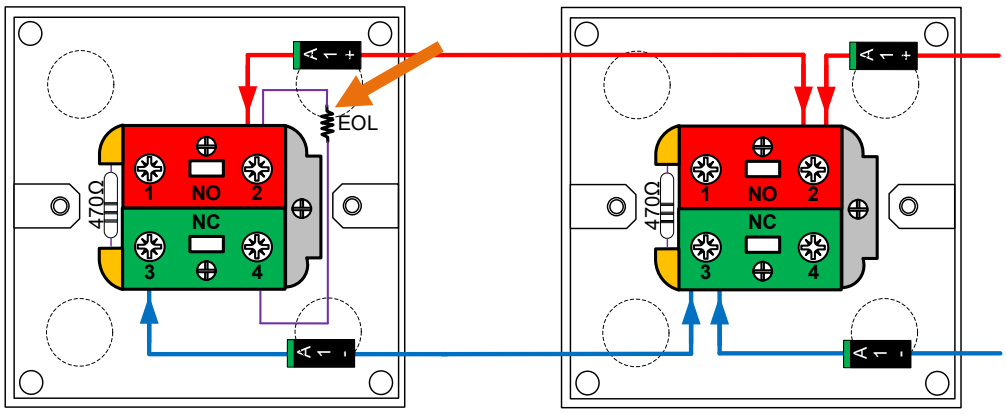

Figure 26, adding abort devices

5.8 Panel Terminal – Input Manual Release

An external manual release switch may be required in addition to the manual release switch on the panel.

In this scenario, locate the **Manual Release** input terminal on the control panel and remove the End Of Line (EOL) resistor connected to it. Keep the resistor in a safe place for installing it again, at a later stage. A two-wire cable will be used for the connection of the manual release button.

Label the two wires on the control panel terminal **MANUAL RELEASE** as: **R1+** [positive wire] and **R1-** [negative wire]. Connect the R1+ to the positive input terminal of the manual release button. Connect the R1- to the negative input terminal of the manual release button.

If only one manual release button will be used, then it is necessary to install the **EOL resistor** removed from the control panel **Abort terminal** to terminate the manual release cable line.

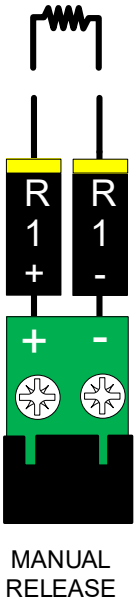

Figure 27, Manual Release

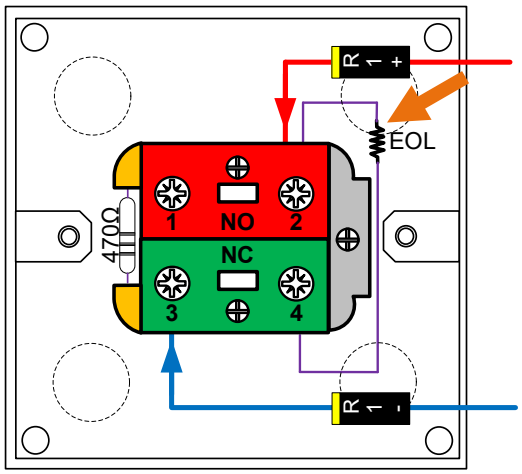

Figure 28, Manual Release

5.9 Panel Terminal – Extinguishing Output

Locate the **Extinguishing Output** terminal (or **Release Output** terminal) on the control panel and remove the End Of Line (EOL) termination component (**diode)**. Keep the termination component in a safe place for installing it again, at a later stage.

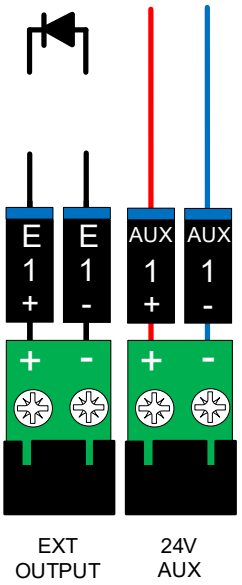

Figure 29, Control panel release line

Because the Manual Extinguishant Disablement Switch is installed between the control panel (release output line) and the sequential activators (to the aerosol generators), a **four-wire cable** will be used.

Two wires will be connected to the extinguishing output terminal of the control panel and the remaining two wires will be connected to the auxiliary output voltage 24Vdc of the control panel.

Label the two wires on the control panel terminal **EXT OUTPUT** related to the release output line as follow: **E1+ [**positive wire] and **E1-** [negative wire].

Label the two wires on the control panel terminal **24V AUX** related to the auxiliary output voltage as follow: **AUX1+ [**positive wire] and **AUX1-** [negative wire].

Connect the **E1+** [positive wire] to the **EXT+** input terminal of the Manual Extinguishant Disablement Switch. Connect the **E1-** [negative wire] to the **EXT-** input terminal of the Extinguishant Disablement Switch.

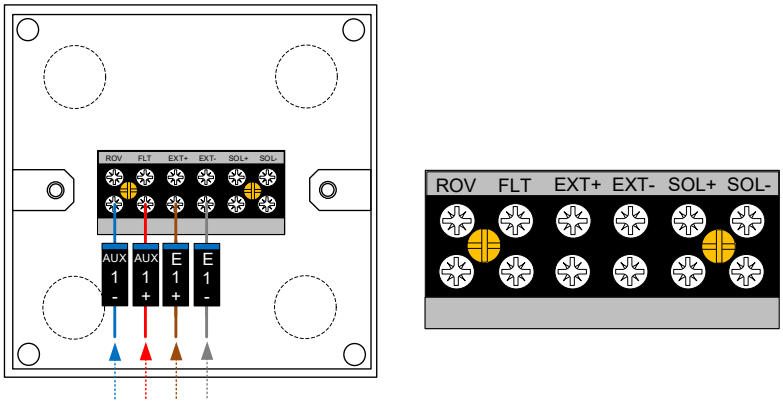

Figure 30, Disablement Switch

Connect the **AUX1+** [positive wire] to the **FLT (24Vdc)** input terminal of the Extinguishant Disablement Switch. Connect the **AUX1-** [negative wire] to the **ROV (0Vdc)** input terminal of the Extinguishant Disablement Switch.

These four wires labeled **E1+, E1-, AUX1+, AUX1-,** must continue to the sequential activators by using the following wires labeled **E2+, E2-, AUX2+, AUX2-.**

NOTE:

It is important to note that the Manual Disablement Switch when activated, is disconnecting the wires E1+, E1- from the control panel terminal EXT OUTPUT to the sequential activators. These wires are related to the extinguishant output line since they are responsible to deliver the required electrical energy for the system release and not the 24V AUX wires. The auxiliary output voltage 24VDC is only used to enable the LED fault indication on the sequential activator.

5.10 Manual Extinguishant Disablement Switch

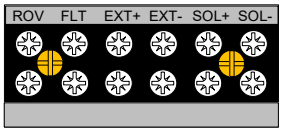

Figure 31, Extinguishant Disablement Switch

The **four-wire cable** will continue towards the sequential activators (to the aerosol generators).

Locate the **Output** terminal on the extinguishant disablement switch labeled **SOL+ ,SOL-** and **the ROV, FLT** terminals.

Label the two wires on the extinguishant disablement switch terminal **SOL+ and SOL-** as follow: **E2+ [**positive wire for **SOL+**] and **E2-** [negative wire for **SOL-**].

Label the two wires on the extinguishant disablement switch terminal **ROV and FLT** as follow: **AUX2+ [**positive wire for FLT] and **AUX2-** [negative wire for ROV].

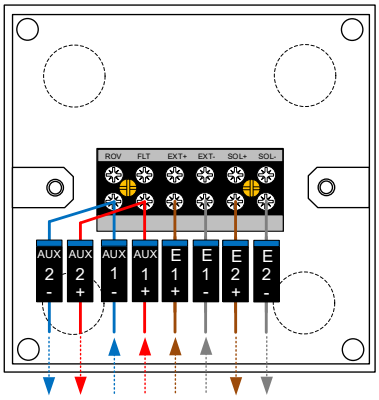

Figure 32, Disablement Switch wires towards Sequential activators

5.11 Sequential Activator

The **four-wire cable** will continue towards the sequential activators (to the aerosol generators). These four wires labeled with **E2+, E2-, AUX2+, AUX2-,** will be connected to the sequential activators as follows:

Connect the **E2+** [Extinguishant wire] to the **IN EXT+** input terminal of the sequential activator.

Connect the **E2-** [Extinguishant wire] to the **IN EXT-** input terminal of the sequential activator.
Connect the **AUX2+** [power wire] to the **IN 24V+** input terminal of the sequential activator.
Connect the **AUX2-** [power wire] to the **IN 24V-** input terminal of the sequential activator.

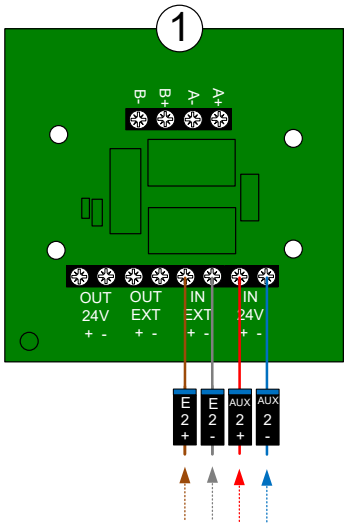

Figure 33, First sequential activator wire connections

Similarly, the output terminals of the first sequential activator **E3+**, **E3-**, **AUX3+**, **AUX3-**, will be connected to the input terminals of the next sequential activator in the array. The **four-wire cable** will continue (in/out) to all sequential activators in the array up to the last sequential actuator.

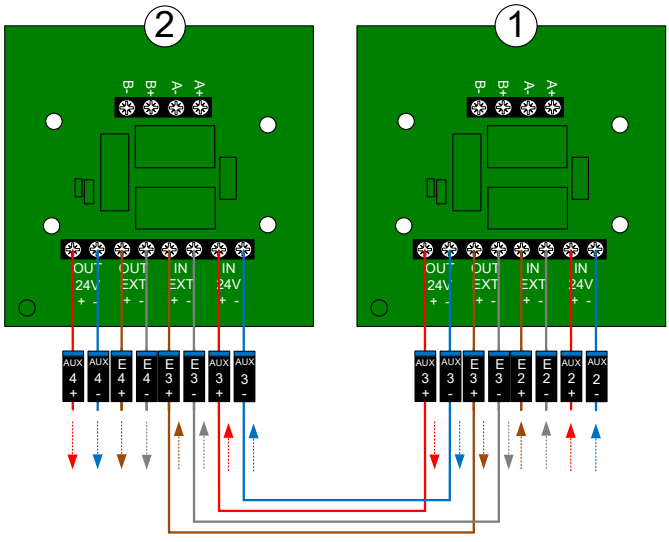

Figure 34, First sequential activator connection

At the last sequential activator, it is necessary to install the **EOL** termination component (diode) removed from the control panel to terminate the release cable line.

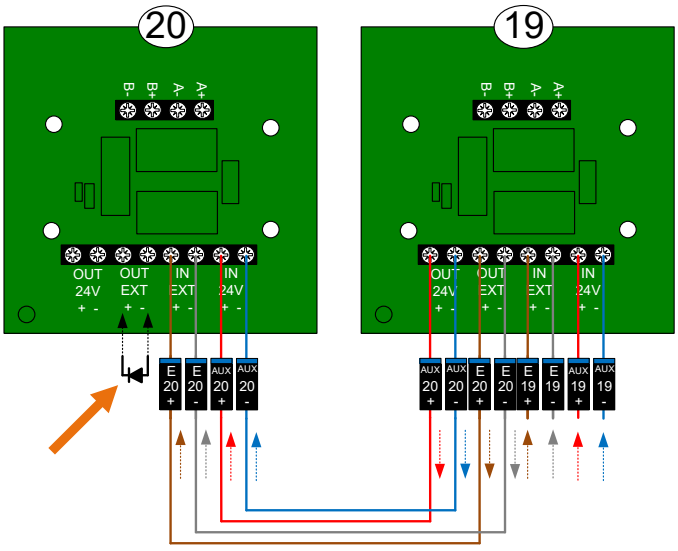

Figure 35, Terminating the release line at the last sequential activator

5.12 Simulation lamps

For safety reasons, the aerosol generators must not be connected to the control panel until it is verified that the system is fault-free. Therefore, simulation lamps are installed in place of aerosol generators for the system testing and commissioning.

Locate the **A+, A- and B+, B-** output terminals on the sequential activator. Each output terminal **A or B** is connected to an aerosol generator. A two-wire cable will be used for the connection of each aerosol generator to the sequential activator.

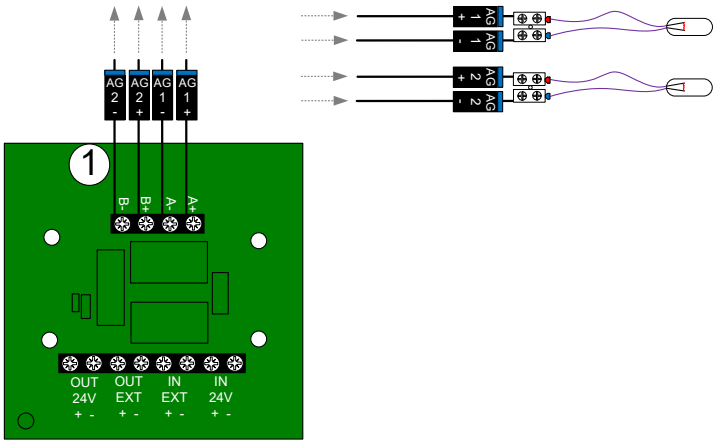

Figure 36, Connecting simulation lamps

For the first aerosol generator label the two wires on the sequential activator terminal **A** as follow: **AG1+** and **AG1-.**

Connect the AG1+ wire to the A+ input terminal of the sequential activator and connect the AG1- wire to the A- input terminal of the sequential activator.

On the other side of the cable (towards the simulation lamp) connect the AG1+ wire to the first wire of the lamp and the AG1- to the second wire of the lamp (there is no polarity).

Similarly, for the second aerosol generator label the two wires on the sequential activator terminal B as follow: **AG2+** and **AG2-.**

Connect the AG2+ wire to the B+ input terminal of the sequential activator and connect the AG2- wire to the B- input terminal of the sequential activator.

On the other side of the cable (towards the simulation lamp) connect the AG2+ wire to the first wire of the lamp and the AG2- to the second wire of the lamp (there is no polarity).

If only one aerosol generator will be connected to a sequential activator, then only the **A+** and **B-** terminals of the sequential activator will be used.

Locate the **A+** and **B-** output terminals on the sequential activator. A two-wire cable will be used for the connection of the aerosol generator to the sequential activator.

Label the two wires on the sequential activator terminals **A+, B-** as follow: Connect the AG1+ wire to the A+ input terminal of the sequential activator and connect the AG1- wire to the B- input terminal of the sequential activator.

On the other side of the cable (towards the simulation lamp) connect the AG1+ wire to the first wire of the lamp and the AG1- to the second wire of the lamp (there is no polarity).

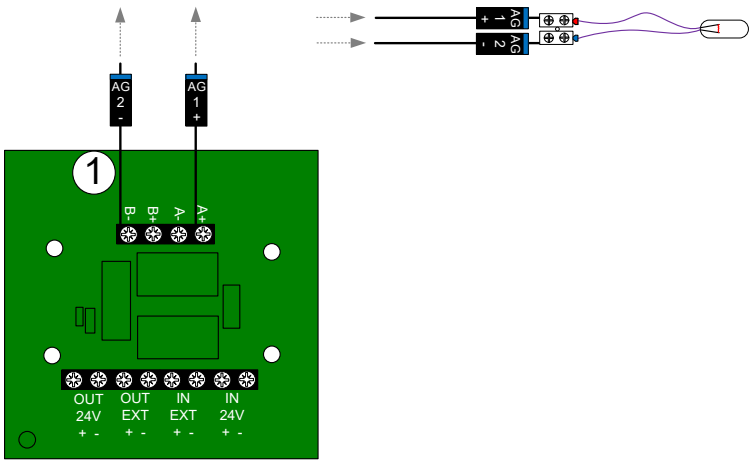

Figure 37, Connecting one simulation lamp to the sequential actuator

5.13 Second Stage Relay - Extractor fan

Locate the **2ND STAGE RELAY** terminal on the control panel.

In this case, the **2ND STAGE RELAY** output terminals needed are marked with **NO** (Normal Open) and **C** (Common) on the control panel. These two terminals together are operating like a switch.

-When the control panel is in a quiescent state, the switch is OFF (no contact), but when the control panel is in the alarm (release) state, the switch is ON (contact).

-The NO (Normal Open) and C (Common) terminals on the control panel are dry contacts of a relay. This type of relays on the control panel have low ratings, such as 30Vdc and 1A and this is why, they are not able to drive high electrical loads.

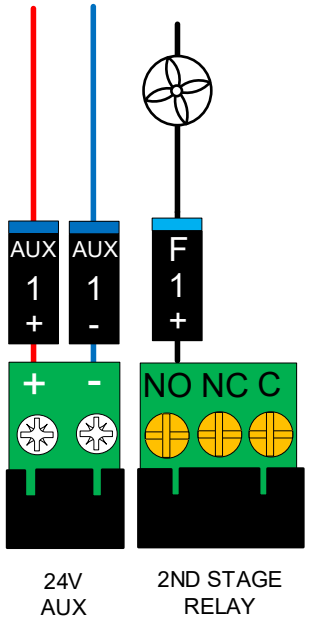

Figure 38, Extract terminals

To overcome the above two issues, it is necessary to use an external relay to create the proper bridge between a low voltage device and a high voltage device while maintaining the functionality of the system.

Label the two wires connected to the **2ND STAGE RELAY** output terminals of the control panel **NO** and **C** as follow: Connect the **F1OUT** wire to the **NO** [Normally Open] terminal and connect the **F1IN** wire to the **C** [Common] terminal.

Label the two wires on the control panel terminal **24V AUX** related to the auxiliary output voltage as follow: **AUX1+ [**positive wire] and **AUX1-** [negative wire].

Connect the wire labeled **AUX1+** to the **2ND STAGE RELAY** terminal **C** labeled with **F1IN** wire**.**

Connect the wire labeled **AUX1-** to the **external RELAY** port **B**.

Connect the wire labelled **F1OUT** from the **2ND STAGE RELAY** terminal to the external RELAY port **A**.

The following indicative schematic diagram shows the required electrical wiring described.

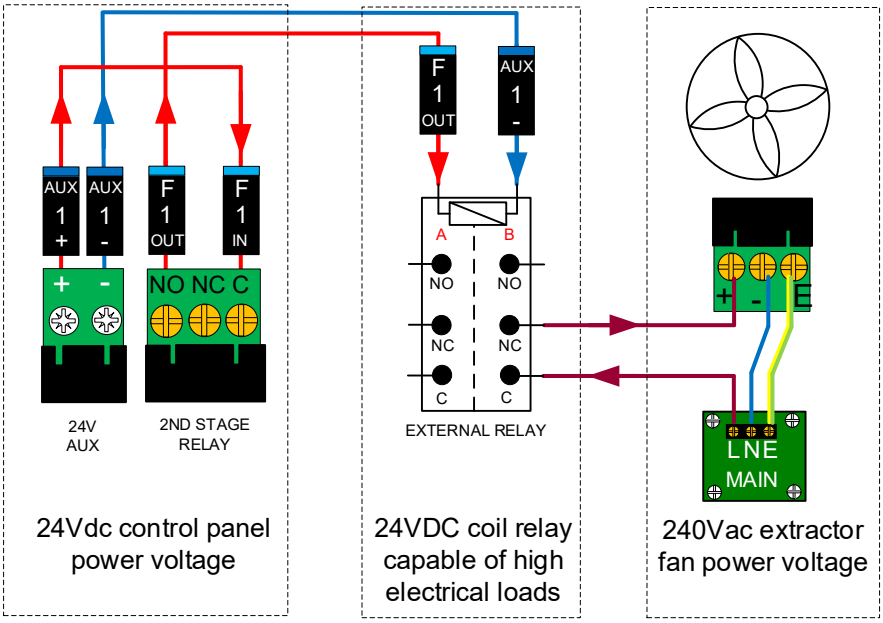

Figure 39, External relay interface with EXTRACT terminals

5.14 Aerosol Generators

The aerosol generators can be installed on the ceiling (refer to Figure 40) or on the side walls of the enclosure (refer to Figure 42). If needed, for high ceiling installations, the generator bracket can be extended (refer to Figure 41).

Roof Installation

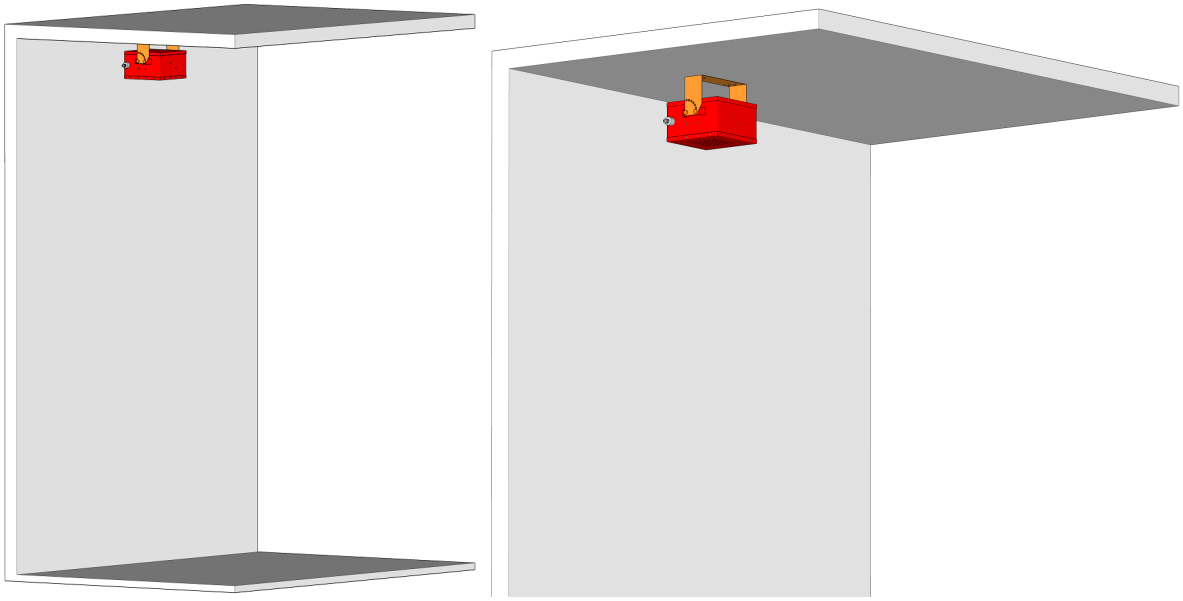

Figure 40, Aerosol Generator – Ceiling Installation

Ceiling installation with extending the bracket

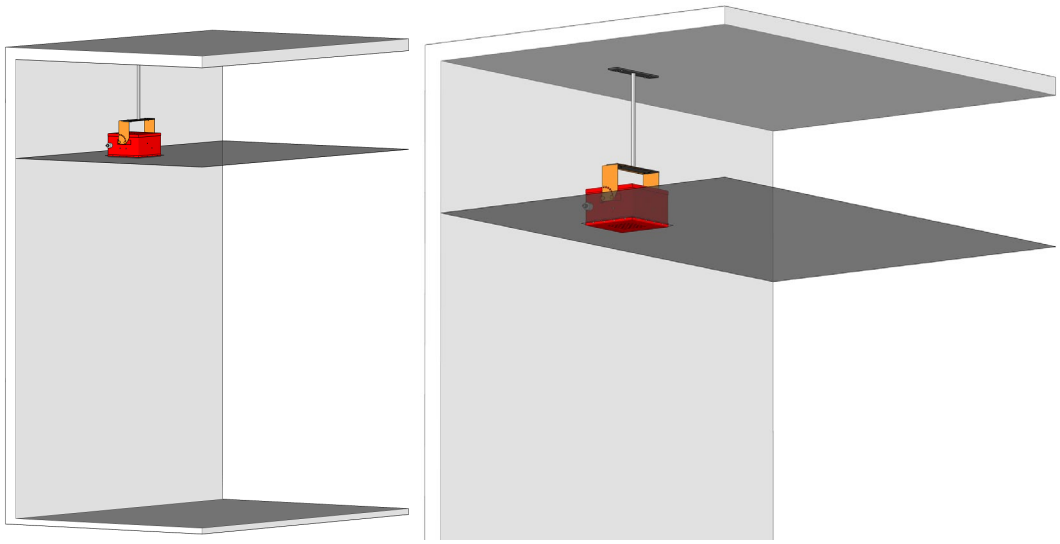

Figure 41, Aerosol Generator – Ceiling Installation with extending bracket

Side wall installation

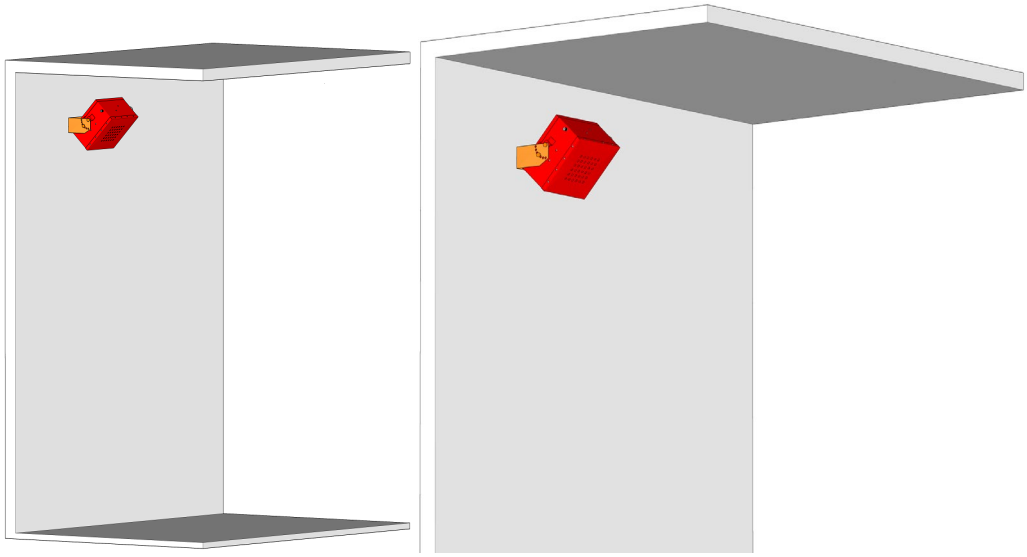

Figure 42, Aerosol Generator – Side wall Installation angled

Raised floor and ceiling installation

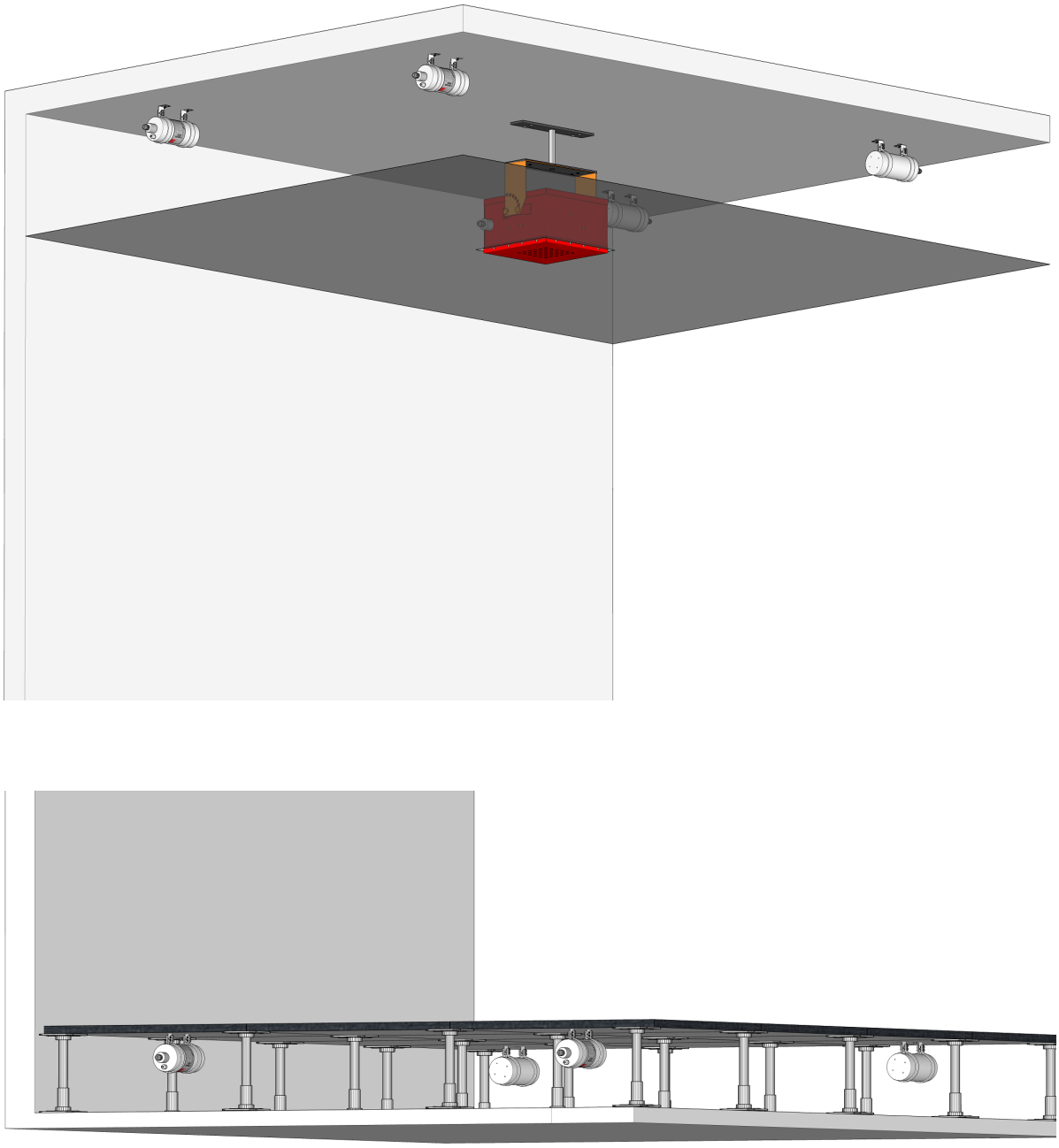

Figure 43, Aerosol Generator – Raised floor and ceiling installation

6.0 System Commissioning and Maintenance

After completing the installation and wiring of all equipment, the system should be commissioned to validate that operates as designed with no faults.

The **"Fire Suppression System Logbook"** should be used, completed and easily available, as it describes all the necessary steps for commissioning and maintenance of the system. The control panel **"Installation and Operation manual"** should also be used, so that any control panel and wire connections faults to be detected and resolved, as well as the control panel **"User Manual (Operating Instructions)"**, so that the control panel can be configured with the desired options.

6.1 Commissioning and Maintenance Steps

Steps before powering the system:

Step 1. Before applying power to the control panel or taking any other actions, disconnect the extinguishant line, with the use of the Manual Extinguishant Disablement Switch (refer to Figure 43). This step should be followed even if simulation lamps are connected to the system, instead of aerosol generators.

Figure 44, Activating the Extinguishant Disablement Switch

Step 2. When electrical power is applied to the control panel, if all connections are correct, only the green "Power On" and the "Automatic and Manual" / "Manual Only" indicators should be lit. If any fault indicators are lit, the wiring to the appropriate input or output should be checked and all faults should be cleared before proceeding as described in the Programming and Operation of the control panel "Installation and Operation manual".

Figure 45, "Power On" and "Automatic and Manual" / "Manual Only" LED indicators

Step 3. Once the control panel is fault free, it can be configured with the desired options as described in the control panel "User Manual (Operating Instructions)".

Step 4. Once the control panel has been configured the system should be thoroughly tested to ensure that the control panel and accessories respond as expected and required as described in the "Fire Suppression System Logbook".

Step 5. After satisfactory testing, measure the resistance of the aerosol generators, confirming that they are within the limits before replacing the simulation lamps as described in the "Fire Suppression System Logbook".

Step 6. Register the results in the logbook.

Step 7. Issue the system certification.

Step 8. Issue the commissioning report.

7.0 After Release

After release, the fire suppression system should be thoroughly inspected to confirm that it is operational as per manufacturer's guidelines and then to substitute the activated aerosol generators.

7.1 After Release Steps

Step 1. Record the status of the system for future reference of an investigation report.

Step 2. Power Off the system.

Step 3. Ensure that the extinguishing output is disconnected by activating the Manual Extinguishant Disablement Switch.

Step 4. Follow the clean procedures as indicated in the FirePro Information, Instruction & User Manual, "Residue, Removal, Dismantling of Units, Waste, and Environment" section, with section number 13 for the EN manual and section number 14 for the UL manual.

Step 5. Replace the aerosol generators with simulation lamps.

Step 6. Follow the instructions as mentioned in section **"6.0 System Commissioning and Maintenance"** of this guideline.

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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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