CONCEPT
smoke screen

SENTINEL S50-S70-S100
INSTALLATION AND OPERATION

MANUAL

VERSION: 1 February 2016

Thank you for purchasing a Concept Smoke Screen system. Your choice to protect your property and premises with this equipment has given you the use of one of the most effective security systems currently available. Concept Smoke Screen systems have been in service for over 35 years and have protected many millions of pounds worth of property, defeating criminals and securing premises on an almost daily basis.
Please take the time to read and understand this guide to ensure you achieve the maximum performance from your Smoke Screen. If you have any questions that remain unanswered, please call our experts at Concept Smoke Screen and we will help. Once again, thank you for your decision; we hope that it's one that never needs to be tested.

Matt Gilmartin, Managing Director

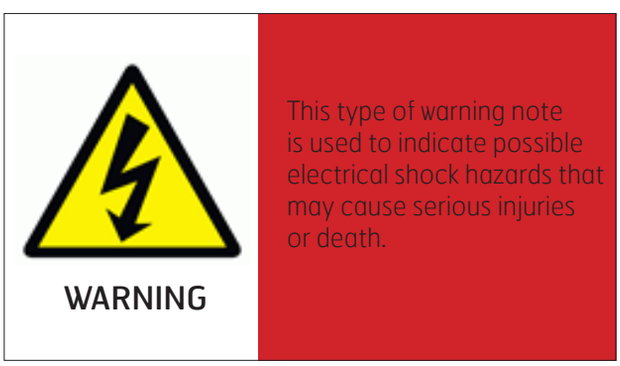
CONTENTS

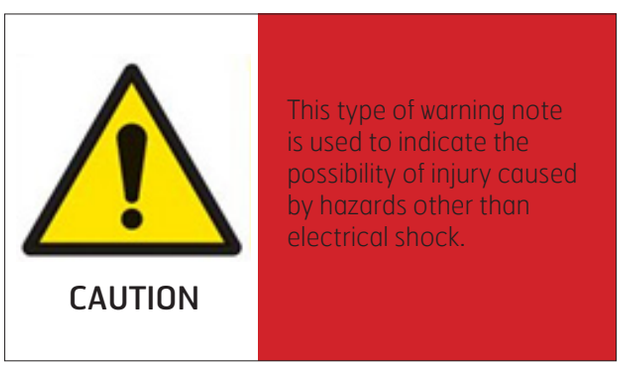
1.1 SAFETY INSTRUCTIONS

Before installing and using the Smoke Screen read, follow and retain this manual and safety instructions for future reference.
To reduce the risk of severe injury or death to persons, or damage to the Smoke Screen:

- Do not work on the Smoke Screen unless qualified by the manufacturer to do so.
- Disconnect the mains power supply before working in the heater block compartment or under the cover over the mains power supply part of the main PCB (this is engraved with the layout of the PCB connections).
- Install in accordance with the instructions in this manual.
- Operate the Smoke Screen only from the type of power source indicated on the label.
- Do not modify the Smoke Screen.
- Adjust only those controls specified in this manual.
- Use only consumables and replacement parts specified by the manufacturer.
- Do not spill liquid of any type on, or inside, the Smoke Screen.

The following signs, or a variation, may be used for safety notices in this manual or on the Smoke Screen:





1.2 HOW DOES YOUR SMOKE SCREEN WORK?

Your Smoke Screen heats a non-toxic fluid under pressure to create smoke, or more accurately a thermally generated fog, that obscures visibility to discourage intruders from entering your premises.

This fog is very persistent and will stay suspended in the room for a significant length of time until it is vented by opening the doors and windows.

The Smoke Screen uses a sophisticated electronic control system to ensure it heats up to, and maintains, its ideal operating temperature using a minimal amount of electricity.

This control system similarly provides a flexible interface with intruder detectors and alarm systems to ensure that you are always protected and free of inadvertent activations.

1.3 INTRODUCTION

This manual covers the Sentinel S50, S70 and S100.

Before commencing installation of the Smoke Screen ensure that you have all of the following equipment supplied in the box:

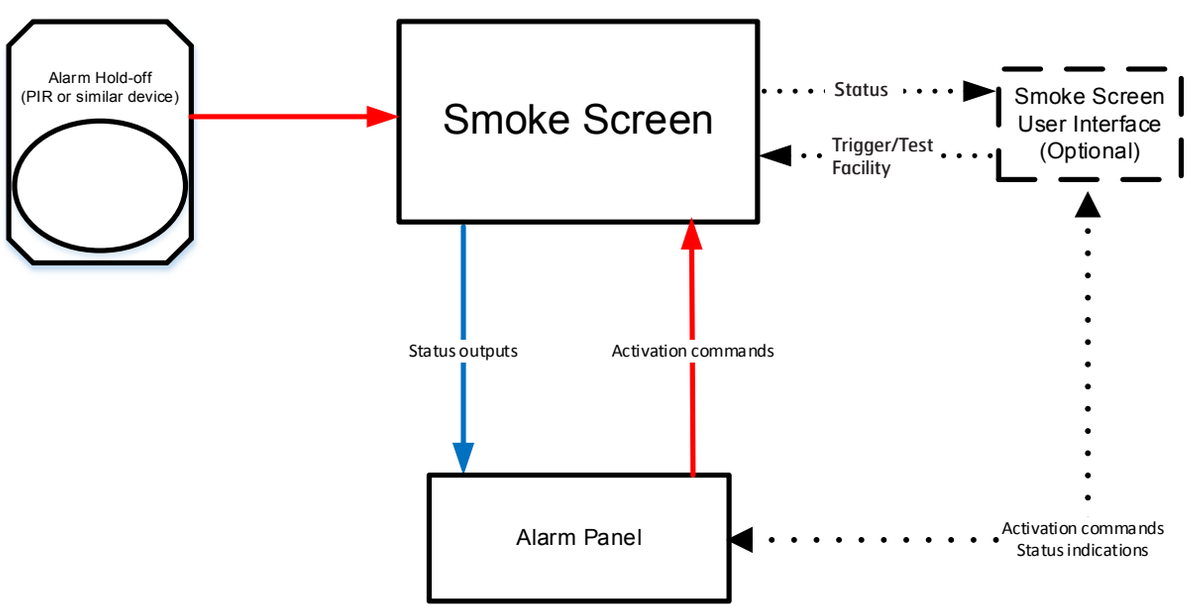
- 1 x Smoke Screen.
- 1 x Mounting Bracket.
- 1 x Smoke Fluid Consumable or Swift-fit fluid reservoir (Boxed).
- 2 x 12v Batteries.
- 1 x Literature Pack and Warning Sign.

You will also require:

- Mains power supply; an un-switched 13 amp fused spur connected to a dedicated breaker.
- Connections into the Alarm Panel or other triggering system.
- PIR (or equivalent) to provide a hold-off where required.

1.4 OVERVIEW

The Smoke Screen is designed to form part of an existing intruder alarm system but may also be configured as a 'stand-alone' system. A typical installation is shown in the following schematic:



1.5 TYPICAL INSTALLATION

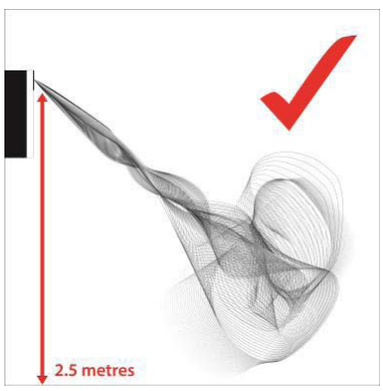
A typical installation is configured in the following way:

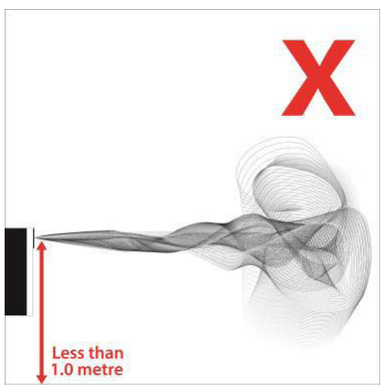
- **The Smoke Screen wall** or ceiling mounted in the appropriate location.
- **A Hold-off PIR** (or similar device) located within the same area as the Smoke Screen providing a confirmation signal to the Smoke Screen to start, or re-start, 'smoke' production.
- **A Set** command supplied by an Alarm Control Panel, or equivalent, in the form of a N/C (normally closed) or a N/O (normally open) relay changing state when the Alarm system is set for operation.
- **A Trigger** command supplied by the Alarm Control Panel, or equivalent, in the form of a N/C (normally closed) or a N/O (normally open) relay changing state when the Alarm system confirms an intruder alert.

2.1 POSITIONING

The Smoke Screen should ideally be sited in a covert position away from prying eyes and thereby reducing the possibility of tamper or an attack. The ideal place for the Smoke Screen is above a ceiling from where the smoke plume is used to its best effect, bursting on the ground and spreading outwards and upwards through 360°. If no suitable ceiling location is available then the next best location is a wall mounting as close to ceiling height as possible.

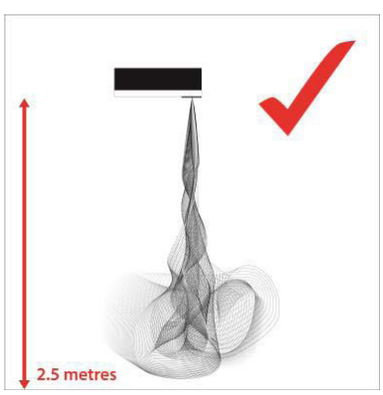
Wall-mounting

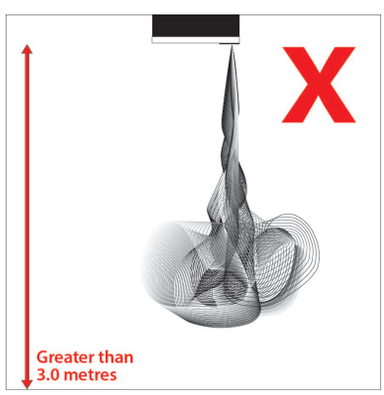




The optimum wall mounting position for the Smoke Screen is 2.5 metres above the floor facing the area to be protected and using an appropriate angle nozzle. The maximum mounting-height above floor level is 3 metres, the minimum is 1 metre and there should be no obstacle within 1 metre of the smoke output nozzle.

Ceiling-mounting





The optimum ceiling mounting height for the Smoke Screen is 2.5 metres above the floor over the area to be protected and using a straight nozzle. The maximum mounting-height above floor level is 3 metres and there should be no obstacle within 1 metre of the smoke output nozzle.

2.2 INSTALLATION PROCEDURE

1. Site the Smoke Screen, fix to the wall or ceiling as appropriate.
2. Select the “Service Mode”dip switch to “On”.
3. Make connections as required to the Alarm Panel and Hold-off PIR.
4. Make connection to the Smoke Screen Interface (if used) and set the key switch to isolate.
5. Connect and turn on the mains power.
6. Turn on the internal battery back-up.
7. The Smoke Screen will heat up to operating temperature in approximately 20 minutes.
8. Set correct time/date and smoke timing for the specified room size.
9. Ensure the “Service Mode” dip switch is selected to “Off”.
10. With the power applied insert fluid consumable and make sure the fluid switch is closed correctly.
11. Make sure all tamper switches are closed.
12. If fitted set the Smoke Screen Interface key switch to Ready and you are ready for test.

2.3 ACCESS

To access the PCB connections, programming panel, mounting holes (battery and fluid access is covered in the relevant sections) remove the front cover by unscrewing the 2 set screws on either side and unhooking it from the top of the case; refitting is the reverse process. Installation cable entry is through the serrated grommet on the right-hand side of the back plate.

2.4 MOUNTING

The Smoke Screen can be mounted on a ceiling or a wall using the simple standard bracket supplied with the unit. This flush-fitting bracket maximizes security by concealing all the mounting fastenings such that they can only be accessed, or the Smoke Screen dismounted, by dismantling the unit. In all cases, the installer must attach the Smoke Screen to the building structure using appropriate fasteners.

NB: When mounting the Smoke Screen ensure that the airflow through the vent holes in the rear of the unit is not obstructed.

Wall and ceiling mounting

Ceiling or wall mounting is the same process except that rather than fixing the Smoke Screen direct to a ceiling an intermediate unistrut section may be used or it can be suspended as described in the next section. Attach the bracket to the wall or ceiling using appropriate fixings (1). Carefully hook the slots on the back of the Smoke Screen onto the bracket (2) and slide along to align the screw fixing holes. The unit will now hang on the bracket. Fit, and ensure tight, 1 x M6 set screw with washer in the hole in the back of the Smoke Screen alongside each of the 2 mounting slots (3) - access to the fixing holes is through the fluid and heater block compartments.

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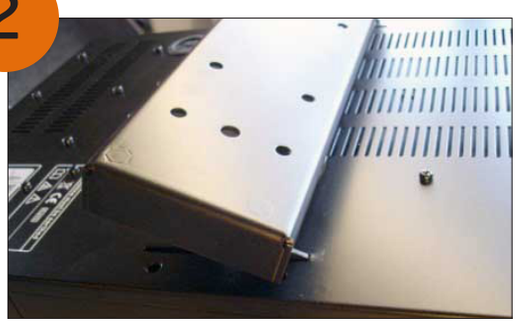

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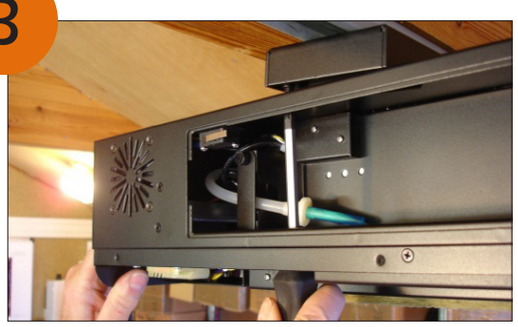

Suspension mounting

Suspending the Smoke Screen is achieved using a 'Suspension Kit' comprising a length of Uni-strut, two sections of threaded bar and fixings (4). Prepare the Smoke Screen by fixing the required length of M8 threaded bar to the bracket using 4 x nuts and 4 x 25mm washers (5). Fix the uni-strut into place. There are a range of fixings to accommodate concrete ceiling, girders etc; if in doubt contact the fixing supplier. Attach the threaded bar to the uni-strut using the channel nuts, 38mm washers and M8 nuts (6). Once this is done the Smoke Screen can be lifted into position and the set screws tightened as above (3). Any fine adjustments can be made at this stage as the nuts and the threaded bar will take the weight of the Smoke Screen. The final assembly, viewed 'through the ceiling' is in photo (7). Any hole made in the ceiling can be made-good with a cosmetic hole surround.

Suspension Kit (All M8)

Uni-strut 1 x 1 metre

Threaded bar 2 x 1 metre

Fixings:
1 x ceiling hole surround
2 x 38mm washer
4 x 25mm washer
6 x full nut
2 x drop-in anchor
2 x channel nuts,

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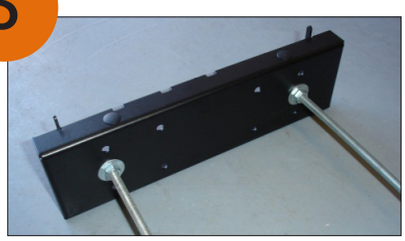

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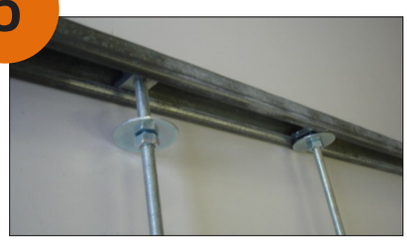

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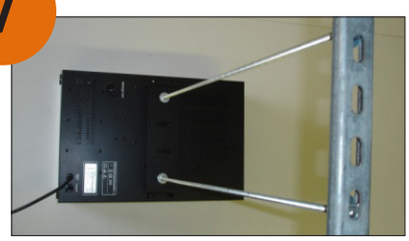


2.5 NOZZLE CHANGING

WARNING

Be aware of high voltage in the block area. The electrical supply should be switched off before working in the heater block compartment.

CAUTION

This operation is usually carried out during installation. If the Smoke Screen has been in service the nozzles will be extremely hot and will cause injury if touched. Therefore, the Smoke Screen should be switched off and time should be allowed for the nozzles to cool.

To change the nozzle, first remove the front cover then remove and replace the nozzle using a 12mm ring spanner. Always use the new PTFE tape (S50) or a new copper washer (S70/S100) and ensuring that an angled nozzle is seated in the correct orientation. The Smoke Screen is delivered with a single-hole straight nozzle and the following are also available – 2-hole horizontal, 3-hole horizontal, 1-hole 30 deg angle down and 2-hole 30 deg angle down.

3.1 CONTROLLING THE SMOKE

Inputs. There are 3 sets of input connections on the Smoke Screen (Alarm Set, Trigger and Hold Off) that should be connected to clean contacts. For the Smoke Screen to produce 'smoke' all 3 sets of connections must be 'open circuit' (this can be changed to 'closed = activate' – see "Invert Trigger Mode" in the Programming section but note that 'open = activate' is used in this manual).
We recommend to use the default setting 'open circuit = activation' to ensure that the Smoke Screen will activate in case the alarm cables are tampered from the outside. If one set of connections is 'closed circuit' then the Smoke Screen is prevented from producing smoke. Hence the production of smoke is controlled using one or a combination of the following:

- **Alarm Set** – a normally closed relay connected across the Alarm Panel 'Set' output connections, which is open when the Alarm Panel is 'Set' and closed when the panel is 'Unset'.

- **Trigger** – a normally closed relay connected across the Alarm Panel 'Trigger' or 'Intruder' output connections, which is open when the Alarm Panel or Controlling Device is in 'alarm'.

- **Hold-off** – usually a PIR or movement sensor normally closed output, which opens when the sensor detects movement, connected to the Smoke Screen "Hold-off" normally closed connections.

- **Additional Hold-off** – any form of normally closed relay or micro switch can be connected to the "Hold-off" connections. Where fitted in parallel as an addition to a PIR both devices must be 'open' to produce 'smoke'.

Delaying an activation. After the Smoke Screen has received the required 3 inputs to produce smoke, an activation can be delayed for a period between 0 and 60 seconds (in 1 second intervals). This can be used to sequence activations in a multi-machine installation. See "Smoke Delay" in the Programming section.

Stopping an activation. Once activated the Smoke Screen will stop producing 'smoke' before the end of the programmed smoke time only if the Alarm Set is selected to a non-alarm state.

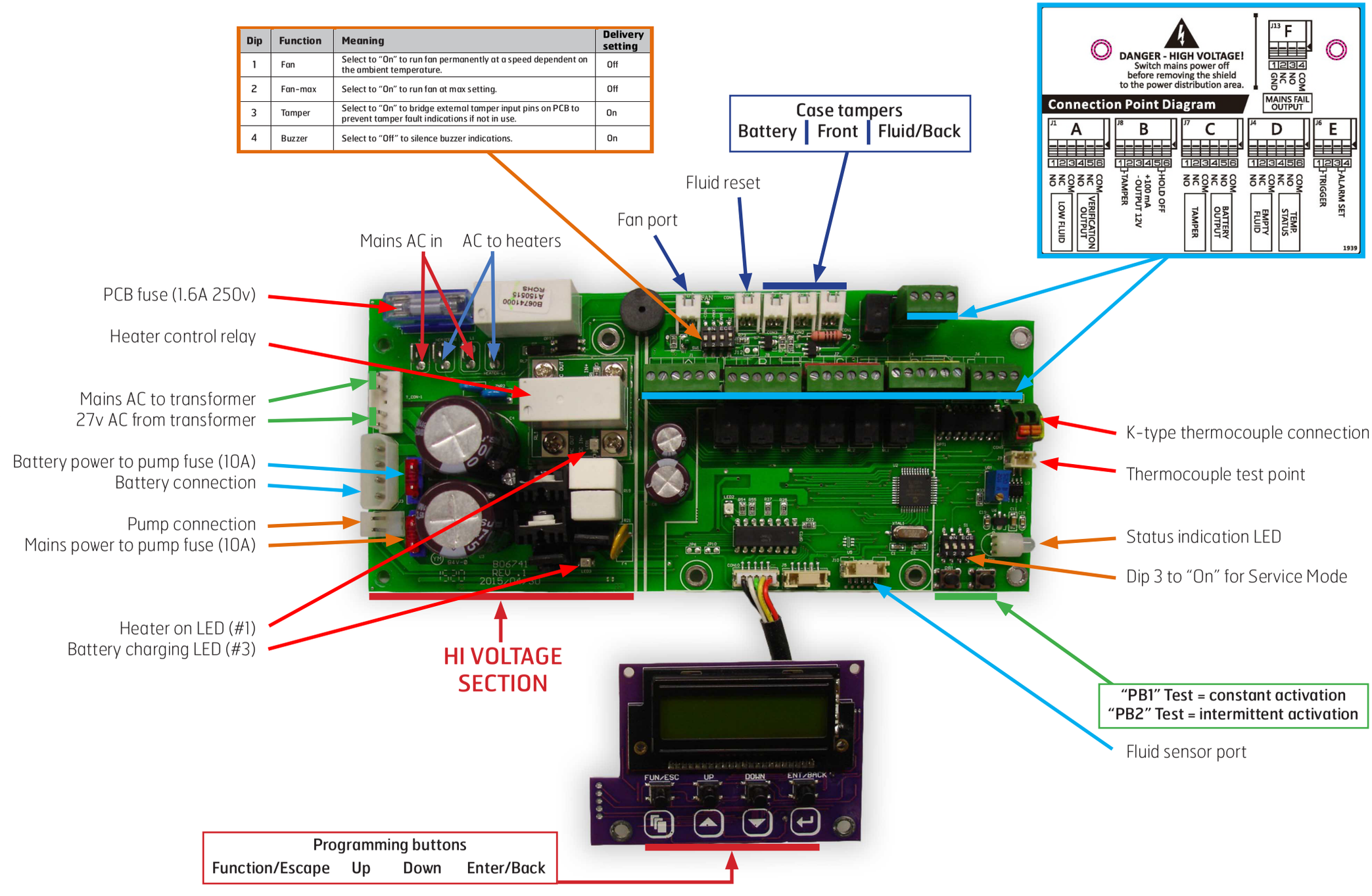
Preventing an activation. To prevent the Smoke Screen from making smoke during a service inspection under any circumstances select the "Service Mode" dip switch to on (see separate section).

3.2 OUTPUTS

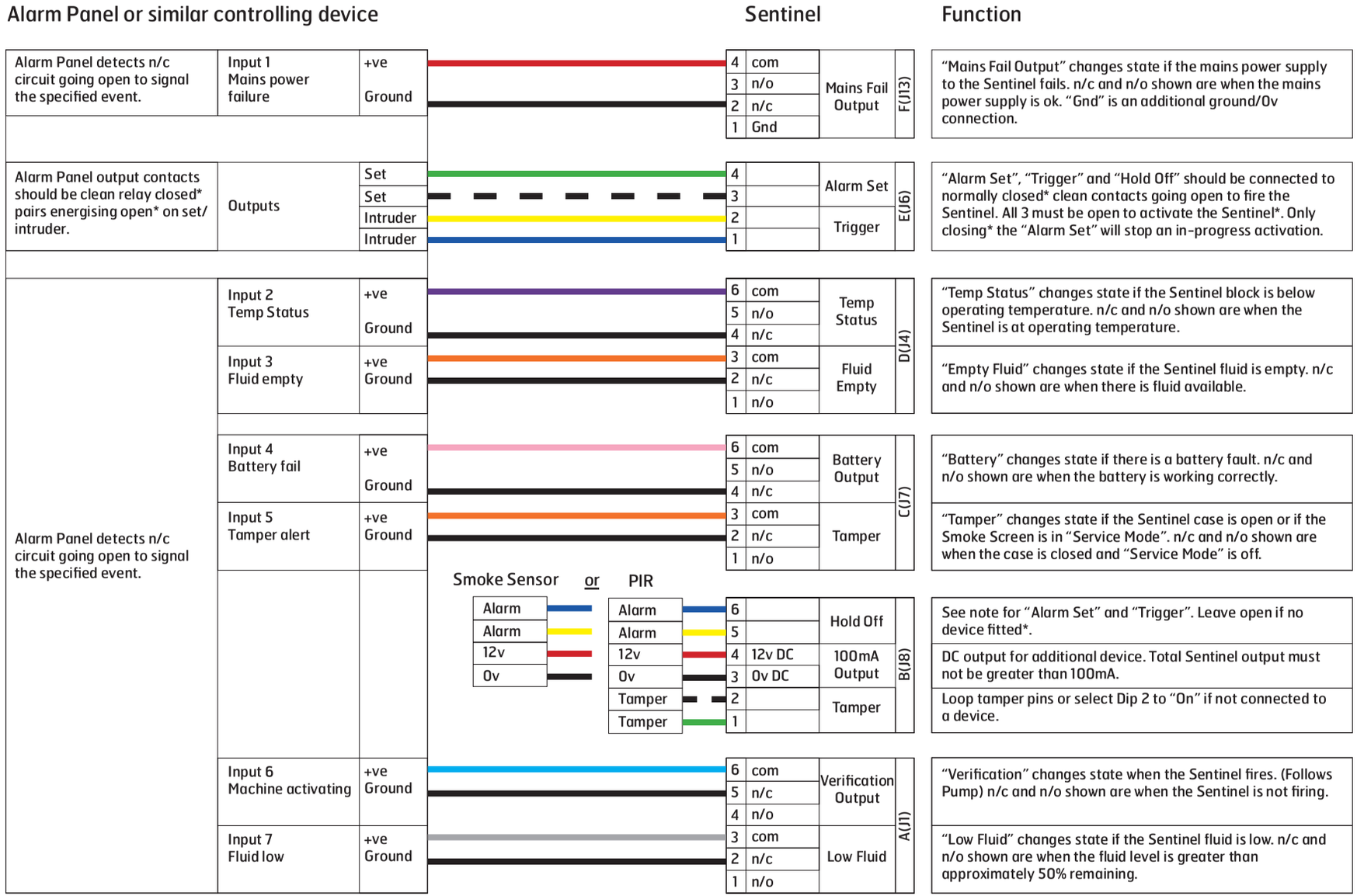
Outputs. Clean contact outputs are provided for connection to the Alarm Panel for 'Mains Fail', 'Temp Status', 'Empty Fluid', 'Battery Output', 'Tamper', 'Verification Output' and 'Low Fluid'. See the notes on the "Generic Connection Diagram" for the function of these outputs.

4.1 CIRCUIT BOARD LAYOUT

Dip	Function	Meaning	Delivery setting
1	Fan	Select to "On" to run fan permanently at a speed dependent on the ambient temperature.	Off
2	Fan-max	Select to "On" to run fan at max setting.	Off
3	Tamper	Select to "On" to bridge external tamper input pins on PCB to prevent tamper fault indications if not in use.	On
4	Buzzer	Select to "Off" to silence buzzer indications.	On



4.2 GENERIC CONNECTION DIAGRAM



20160120-S50 S70 & S100 Generic Connection Diagram-v4

*unless Inverted Trigger mode is selected.

5.1 SCREEN SENSOR

A Concept Smoke Screen "Screen Sensor" can be connected to the Sentinel as shown in the "Generic Connection Diagram". When this is integrated the system detects a drop in the fog density in the protected area and will re-trigger the Sentinel to maintain the fog level. When fitted the Screen Sensor is connected to the Hold Off input pins and, consequently, it prevents the use of a hold-off detector.

NB: It is critical that the Screen Sensor is installed in an area that receives the maximum fog coverage. It will not operate correctly if this is not achieved. (See 4.2 generic connection diagram)

5.2 ENERGY SAVING MODE (ESM)

When ESM is selected and the Alarm Panel input to the Smoke Screen is "Unset" the Smoke Screen lowers its running temperature to a standby level to reduce power consumption and cost. When the Smoke Screen receives an 'Alarm Set' input it automatically heats to its normal operating temperature. If the Smoke Screen is in ESM mode and is activated as soon as the Alarm is set, ie before it has heated to normal operating temperature, it will still produce smoke but possibly for a shorter period than the set smoke time.

5.3 SERVICE MODE

Setting Dip Switch No 3 of the bank marked "On-ServiceMode" (see diagram under "Circuit Board Layout") to "On" puts the Smoke Screen into "Service Mode". This setting prevents the Smoke Screen from making smoke whilst work is conducted with power applied. To highlight that the Smoke Screen is in "Service Mode" the Tamper output is put into an alarm state.

FAILURE TO DISABLE SERVICE MODE WHEN NO LONGER REQUIRED WILL PREVENT THE SMOKE SCREEN OPERATING.

5.4 TURBO SMOKE MODE

When "Turbo Smoke Mode" is set (see section under "Programming") the Smoke Screen produces a high-volume burst of smoke to provide rapid obscuration of a local, high value protected area. In "Normal Smoke Mode" the Smoke Screen produces a short full-output burst followed by a lower output over a longer period.

5.5 TAMPER

There are 5 tamper circuits on the Smoke Screen, one on each cover (front, battery and fluid), one through the rear of the case for bracket tamper and an external tamper input on PCB Terminal Block "B". The external tamper input can be disabled if not in use by selecting Dip Switch 3 (marked "TAMP") to "On", which bridges the input pins on the PCB. A "Tamper Status" output is provided on PCB Terminal Block "C". A tamper 'open' state provides only an indication of the event; it **does not** automatically activate the Smoke Screen or prevent it from activation. If the Smoke Screen is not mounted on its bracket the barcket tamper should be by-passed to prevent unwanted tamper warnings.

5.6 FLUID MANAGEMENT

Fluid consumable model

WARNING

Be aware of high voltage in the Smoke Screen. The mains electrical supply should be switched off before changing the fluid consumable.

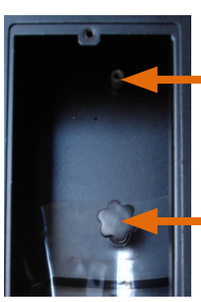
CAUTION

If the Smoke Screen has been in service the heater block and connected parts will be extremely hot and will cause injury if touched. Therefore, the Smoke Screen should be switched off and time should be allowed for the heater block to cool.

Fluid capacity. There are 2 sizes (500ml Or 1000ml) of transparent consumable containing 'Smoke Fluid' for the Smoke Screen.

Fluid monitoring. The Fluid Level is monitored using an on-board timer that measures the amount of fluid used by timing consumption when the Smoke Screen is activated. Each time the consumable clamp is unfastened and the fluid consumable is replaced the micro switch is cycled which resets the timer and the Smoke Screen will calculate this as a new fluid consumable. See the section on "Programming" to set the volume of fluid available to the Smoke Screen.

Changing a fluid consumable. Ensure that power is applied to the Smoke Screen; **this should only be battery power.** Open the right-hand access panel. Unscrew the consumable holder retaining screw and the consumable support screw. Push the fluid probe into the "out" position in the consumable neck. Place the other end of the consumable onto the support and insert the retaining screw.



Use the upper support point for a 1000ml consumable.

Use the lower support point for a 500ml consumable.

Carefully locate the consumable neck in the cradle (1) & (2). Close the retaining gate and insert the retaining screw (3). Ensure the consumable neck is held correctly and the fluid micro switch is closed properly.

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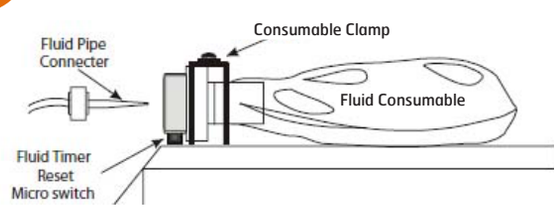

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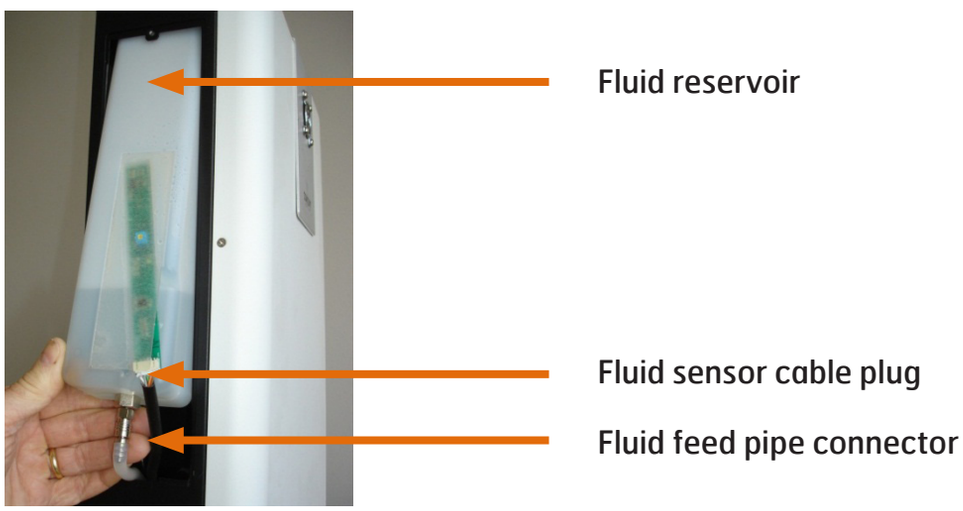
ALWAYS REPLACE A FULL FLUID CONSUMABLE OR 5000ML BOTTLE EVERY TIME THE FLUID CONSUMABLE HOLDER MICRO SWITCH IS RESET. FAILURE TO DO SO MAY RESULT IN DAMAGE TO THE SMOKE FLUID PUMP.

WHEN A NEW FLUID CONSUMABLE IS FITTED BATTERY POWER MUST BE APPLIED TO THE SMOKE SCREEN TO RESET THE FLUID TIMER.

Fluid reservoir model

The Smoke Screen has a replaceable 1 litre fluid reservoir that is accessed by removing the cover on the right-hand side of the unit. The fluid level is monitored using sensors in the fluid reservoir.

Fluid Replenish. Obtain a replacement fluid reservoir from your Smoke Screen supplier (a discount is available if the empty container is returned). Open the right-hand access panel. Lift the reservoir out of the compartment by removing the lower end first (see photo below). Disconnect the fluid monitoring cable and the fluid feed pipe (pull collar to release). Refitting the reservoir is the reverse of the removal process.



External reservoir

This facility is designed only for demonstration purposes; please contact Concept Smoke Screen if you wish to use this function. When a 5-Litre external fluid bottle is used and the timer is set to 5000ml via the LCD control panel the function of the micro switch on the fluid consumable holder is changed and a consumable should not be fitted. In this mode, with power applied to the Smoke Screen, momentarily pressing and leaving open the micro switch on the fluid consumable holder resets the fluid timer to 5000ml available.

5.7 BATTERY MANAGEMENT

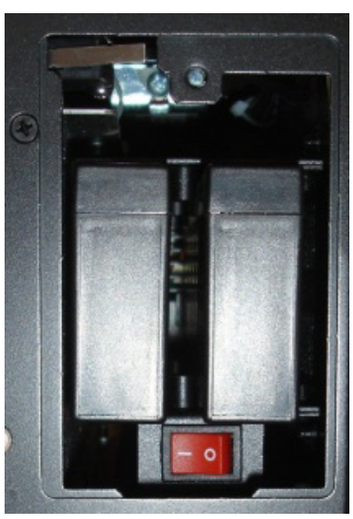
Operation. The Smoke Screen is fitted with a battery to provide power to the electronic circuits and pump (not to the fluid heater) in the event of a mains power failure. This ensures that 1 hour after a mains power failure at an ambient temperature of 20 deg C the Smoke Screen can provide a minimum 30 second activation. The Smoke Screen is capable of activating in the event of a battery fault or if the batteries are not fitted; in the latter case, to avoid battery fault indications, the facility should be disabled (see section under "Programming"). The Smoke Screen is supplied with a set of batteries but they are not fitted on delivery. Replacement batteries may be obtained from your Smoke Screen installer or Concept Smoke Screen.

Battery protection. To prevent damage to the batteries caused by running them to a completely discharged state, the Smoke Screen will switch off the battery power 3 hours after a mains power failure, at which time the unit is too cold to activate; the Smoke Screen will start up normally as soon as mains power is re-applied.

Battery Switch. The Smoke Screen has a switch in the battery compartment to permit the batteries to be disconnected from the system whilst remaining in place. The delivery setting is "Off"; select to "On" if intending to use the battery facility.

Removal and replacement. To remove the batteries, open the access panel on the left side of the Smoke Screen. Slide out the old batteries and replace with new units ensuring that the battery is upright and the contacts enter the battery compartment first.

Battery Switch. The Smoke Screen has a switch in the battery compartment to permit the batteries to be disconnected from the system whilst remaining in place. The delivery setting is "Off"; select to "On" if intending to use the battery facility.



WARNING

Be aware of high voltage in the Smoke Screen. The electrical supply should be switched off before changing the batteries.

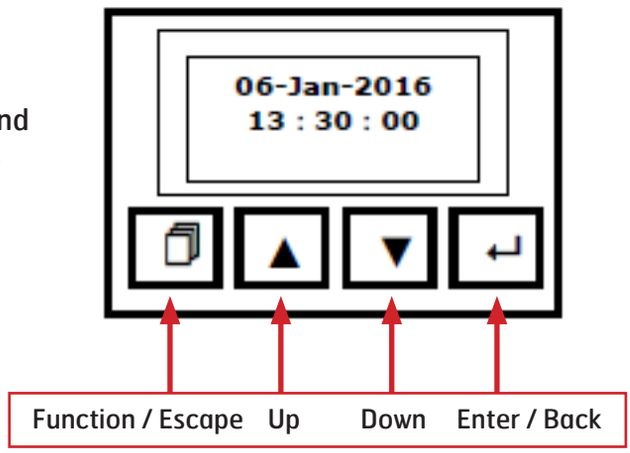
CAUTION

If the Smoke Screen has been in service the heater block and connected parts will be extremely hot and will cause injury if touched. Therefore, the Smoke Screen should be switched off and time should be allowed for the heater block to cool.

THE SMOKE SCREEN WILL NOT FUNCTION AT ALL DURING A MAINS POWER FAILURE IF THE BATTERIES ARE DISABLED.

5.8 PROGRAMMING

The LCD Display and operating buttons



LCD illumination. The LCD backlight automatically extinguishes after 1 minute of inactivity; pressing any button illuminates the backlight.

Setting the time and date. In the Smoke Screen Status or Current Time display press and hold for 3 seconds until the date and time are shown with the Day flashing. Use the ▲ and ▼ buttons to change the value. ↵ saves a change and moves to the next parameter and returns to the previous parameter without saving any change. Repeated presses of will return the display to the higher level menu.

Accessing information and setting variable parameters. In the Smoke Screen Status or Current Time display press to access the variable parameters. Use the ▲ and ▼ buttons to scroll through the available functions and ↵ to select items to change/view each one as follows:

- **Event Log.** In the "Event Log" display press ↵ to show the latest event and the time of that event. Use ▲ and ▼ buttons to scroll through the event log. Pressing will return the display to the higher level menu. Events recorded are as per the Section "LCD, LED and Sound indications".

- **Setting Smoke Time.** In the "Setting Smoke Time" display press ↵ to show the current smoke time set. Use ▲ and ▼ buttons to move up and down to select a time between 5 and 360 seconds in 5 second intervals. Press ↵ to save the new setting and return to the higher level menu. Press to return to the higher level menu without saving changes. The delivery Smoke Time Setting is "5 seconds".

- **Setting Fluid Capacity.** In the "Setting Fluid Capacity" display press ↵ to show the current fluid capacity set. Use ▲ and ▼ buttons to move up and down to select 500ml, 1000ml 5000ml or "Fluid Sensor on". Press ↵ to save the new setting and return to the higher level menu. Press to return to the higher level menu without saving changes. The delivery Fluid Capacity Setting is "1000ml" on the Fluid Consumable models or "Fluid sensor on" on the reservoir models.

- **Setting Temperature.** This is preset at manufacture and should only be altered by Concept Smoke Screen.

- **Setting Smoke Mode.** In the "Setting Smoke Mode" display press ↵ to show the current smoke mode set. Use the ▲ and ▼ buttons to move up and down to select " Turbo Mode" or "Normal Mode". Press ↵ to save the new setting and return to the higher level menu. Press to return to the higher level menu without saving changes. The delivery Smoke Mode Setting is "Turbo Mode".

- **Invert Trigger Mode.** In the "Invert Trigger Mode" display press ↵ to show the current trigger mode set. Use ▲ and ▼ buttons to move up and down to select "N/O Mode" (unit detects a normally open circuit going closed to activate) or "N/C Mode" (unit detects a normally closed circuit going open to activate). The Set, Trigger and Hold-Off modes are always the same and changing this setting changes all 3 at once. Press ↵ to save the new setting and return to the higher level menu. Press ⧉ to return to the higher level menu without saving changes. The delivery Trigger Mode Setting is "N/C Mode".

- **Enable / Disable Battery.** In the "Enable / Disable Battery" display press ↵ to show the current battery setting. Use the ▲ and ▼ buttons to move up and down to select "Disable" or "Enable". Press ↵ to save the new setting and return to the higher level menu. Press ⧉ to return to the higher level menu without saving changes. The delivery Battery Setting is "Enable". **NB: the function of the battery switch as described in the "Battery Management" Section.**

- **Enable / Disable ESM (Energy Saving Mode).** In the "Enable / Disable ESM" display press ↵ to show the current ESM setting. Use the ▲ and ▼ buttons to move up and down to select "Disable" or "Enable". Press ↵ to save the new setting and return to the higher level menu. Press ⧉ to return to the higher level menu without saving changes. The delivery ESM Setting is "Disable".

- **Smoke Delay.** In the "Smoke Delay" display press ↵ to show the current smoke delay set. Use the ▲ and ▼ buttons to move up and down to select a time between 0 and 60 seconds in 1 second intervals. Press ↵ to save the new setting and return to the higher level menu. The delivery Smoke Delay Setting is "0 seconds".

6.1 OPERATION

While the Smoke Screen is heating up the LCD display will show "Heating up" and the LED indicator will be Yellow. If the cover is open "Tamper Fault" will be displayed on the LCD and the LED indicator will flash yellow once every 5 seconds; a tamper indication will not, on its own, prevent the Smoke Screen from producing smoke. When the Smoke Screen reaches the correct working temperature, and a full Smoke Fluid Consumable has been correctly installed, the LED Indicator will go Green and the LCD Display will show the date and time.

Stopping smoke. If the 'Hold-Off' is closed during an activation the Smoke Screen will continue to produce smoke for the set Smoke Time. An activation can only be stopped by closing the 'Alarm Set' and/or the 'Trigger'.

Re-triggering smoke (Hold-off attached). If, after it has made smoke for the pre-set time, the Smoke Screen receives another hold-off alarm with open 'Alarm Set' and 'Trigger' inputs it will 're-trigger' and make smoke again.

6.2 TESTING

Full alarm test. Where possible a full alarm test should be conducted to check that all inputs, outputs and wiring connections to the Smoke Screen are correct. The Smoke Screen will fire for the designated Smoke Time once the 'Alarm Set', 'Trigger' and 'Hold Off' (if fitted) contacts are open. It will re-trigger if the 'Alarm Set' remains open and either the 'Trigger' and/or the PIR inputs are cycled after the set Smoke Time. It will stop producing smoke if the 'Alarm Set' contacts are closed.

Smoke Screen stand-alone test. The Smoke Screen can be tested when it is ready to operate (indicated by a steady green LED) and it is not in "Service Mode" by pressing the buttons on the PCB marked "PB1" or "PB2" (see the section "Circuit Board Layout" for the location and function description for these buttons). **NB: this does not check that the inputs and connections to the Smoke Screen are correct.**

7.1 LCD, LED AND SOUND INDICATIONS

The Smoke Screen provides on-board status monitoring via an LCD, a multicolour LED and a sounder. Indications displayed are:

LCD Message	LED Colour		Buzzer Sound	Relay status change	Indication Meaning
Heating up	🟡	permanent.	Nil.	Temp Status n/c to open.	Smoke Screen heating to operating temperature.
System ok or Date & Time	🟢	permanent.	Nil.	Nil.	Smoke Screen ready to operate.
--	🟢 🟡	flash once every 5 sec.	Nil.	Nil.	Battery charging.
System SET	🟢	permanent.	Nil.	Nil.	Smoke Screen has received a "Set" input from the Alarm Panel.
Trig Open	🟢	flash once every 5 sec.	Nil.	Nil.	Trigger in alarm.
Hold-Off Open	🟢	permanent.	Nil.	Nil.	Hold-off in alarm.
Smoke Verify	🟢	flash.	1 beep every 1 sec.	Verification output n/c to open.*	Smoke Screen producing smoke.
Thermal Fault*	🔴	permanent.	1 long 3 short beeps every 3 mins.	Temp Status n/c to open.*	Temperature too high or sensor failure.
Heater Fault*	🔴 🟡	flash once every 5 sec.	1 long 2 short beep every 3 min.	Temp Status n/c to open.*	Smoke Screen not heating at the correct rate within 10 min of power on.
Empty Fluid	🔴 🟢	flash once every 5 sec.	1 long beep every 3 min.	Liquid Status output n/c to open.* Low Fluid output n/c to open.*	Fluid empty or no fluid installed.
Low Fluid	🟡 🟢	flash once every 5 sec.	1 short beep every 5 min.	Low Fluid output n/c to open.*	Fluid less than 50%.
Battery Fault	🔴 🟡 🟢	flash once every 5 sec.	3 short beep every 5 min.	Battery output n/c to open.*	Battery lower than 19V and charging time >360min or battery removed > 1 min.
Tamper Fault	🟡	flash once every 5 sec.	2 short beep every 5 min.	Tamper Status n/c to open.*	One or more of the access panels, or the external tamper if dip set to "off", are open.
Mains Fault	🔴	flash once every 5 sec.	1 long 1 short beep every 3 min.	Mains Fail output n/c to open.*	Mains power failure.
Service Mode Setting	🔴 🟢	alternate flash.	Nil.	Tamper Status n/c to open.*	Smoke Screen in Service Mode.

***unless the outputs have been wired using N/O.**

NOTES:

- The LCD will display the last current message generated; see the "Event Log" for a message history.
- **Once resolved, fault indications will automatically clear, except those marked* that also require the removal and restoration of all power, mains and battery.**

7.2 THERMAL CUT OUT (TCO) RESET

WARNING

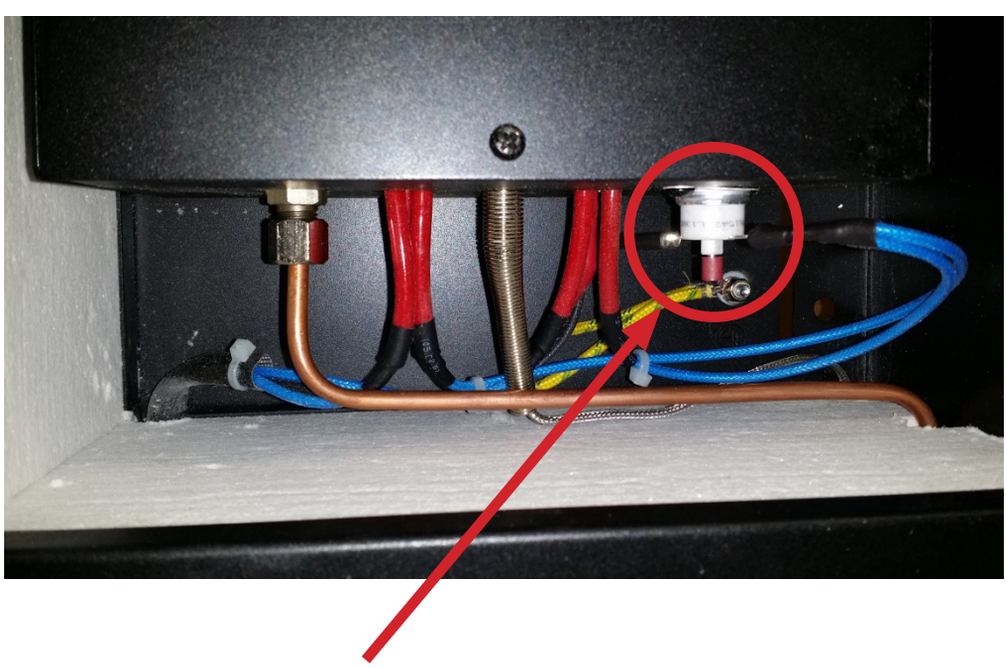
Be aware of high voltage in the block area. The electrical supply should be switched off before working in the heater block compartment.

CAUTION

If the Smoke Screen has been in service the heater block and connected parts will be extremely hot and will cause injury if touched. Therefore, the Smoke Screen should be switched off and time should be allowed for the heater block to cool.

In the unlikely event that the temperature in the heater block increases significantly above the set working temperature the TCO will trip to protect the machine from damage. The TCO can be reset using the following procedure:

- Make sure the mains power to the machine is turned off before resetting the TCO.
- Reset the TCO by pressing on the little button on the top area. If the thermal device has tripped it should be possible to hear a click when it resets.
- Switch on the mains power after resetting.
- Check the machine heats up to normal operating temperature and make sure it archives a ready state. See the operating "LCD, LED and Sound Indications" for further information on fault indications.



Note: The position of the TCO can be different depending on the machine version.

7.3 ACTION AFTER EVERY ACTIVATION

- Wait until the smoke production has ceased. **Do not try to enter the affected area as you will not be able to see through the fog.**
- Look for signs of forced entry. If you find any, or you believe that intruders are on the premises, call the Police and wait for them to arrive. **Take no further action.**
- Where there are no signs of forced entry, open all external doors and wait for the fog to start clearing – this may take 10 to 15 minutes. Keep watch for intruders that may have been screened by the fog.
- As visibility returns open more doors or windows to speed up the venting process.
- Check the fluid level for the Smoke Screen by checking the appropriate LEDs as described above. It is recommended that the installer or Concept Smoke Screen are requested to service/replenish the Smoke Screen if there have been 2 or more activations of the Smoke Screen.

7.4 SERVICING AND FLUID REPLENISHMENT

Please note that it is a requirement of the standards relating to security fogging devices the Smoke Screen is serviced/replenished by an engineer certified by the manufacturer. If you are unsure, ask the engineer for his certification ID card. It is recommended that the Smoke Screen is checked and the fluid changed annually by the installer or Concept Smoke Screen. Always ensure that the Smoke Screen has sufficient fluid or it will not produce smoke when needed. It is recommended that the installer or Concept Smoke Screen are requested to service/replenish the Smoke Screen if there have been 2 or more activations of the Smoke Screen.

WARNING – only Smoke Screen fluid should be used as other smoke fluids may cause damage or noxious fumes.

8.1 FAQ

Q: The Smoke Screen is indicating it is ready to operate but does not respond to a full alarm test.

A: Ensure “Service Mode” is disabled.

A: With power applied, and keeping clear of the smoke nozzle, disconnect the “Alarm”/”Trigger” and “Hold Off” connection plugs from the PCB. If the Smoke Screen produces smoke there is a mis-connection in the system wiring.

Q: The Smoke Screen is puffing out smoke whilst heating up.

A: This is the result of very small amounts of air and residual fluid in the heater block being changed into an insignificant volume of smoke and can happen particularly after the Smoke Screen has been moved about when cold. i.e. prior to installation or in the time after an activation.

8.2 INSTALLER NOTES

INSTALLER NOTES

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