



SENTINEL S30 INSTALLATION AND OPERATION MANUAL

(Version 16 December 2013)

CAN'T SEE IT? CAN'T STEAL IT!

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.

A handwritten signature in black ink, appearing to read 'Carl Gibbard', with a horizontal line underneath.

Carl Gibbard, Managing Director

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.

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INTRODUCTION

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

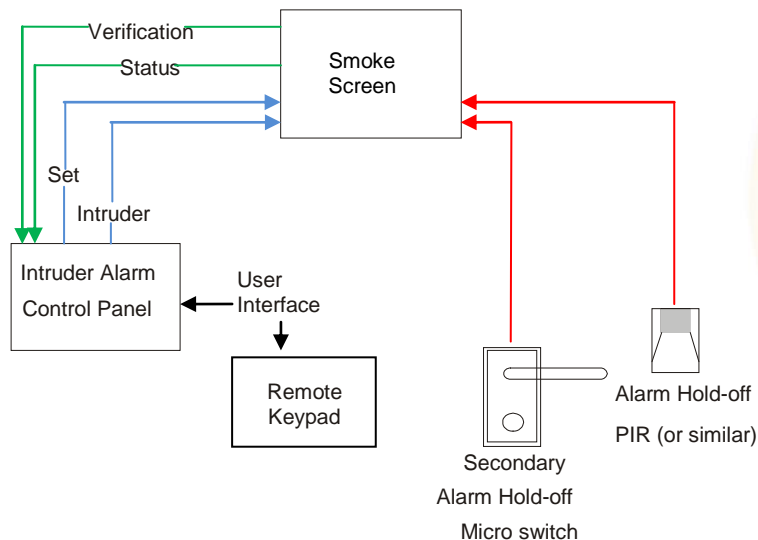
- 1 x Smoke Screen
- 1 x Wall Mounting Bracket
- 1 x Smoke Fluid Bag (Boxed)
- 1 x Literature Pack & Warning Sign

You will also require:

- 230-volt mains supply and connections into the Alarm Panel or other triggering system.
- PIR (or equivalent) to provide the hold-off where required.

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 'standard' installation is shown in the following schematic:



STANDARD INSTALLATION

A 'standard' 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 'smoke' production.
- **A Set** command supplied by an Alarm Control Panel, or equivalent, in the form of an N/C (*Normally closed*) relay opening when the Alarm system is set for operation.
- **A Trigger** command supplied by the Alarm Control Panel, or equivalent, in the form of an N/C (*Normally closed*) relay opening when the Alarm system confirms an intruder alert.

POSITIONING

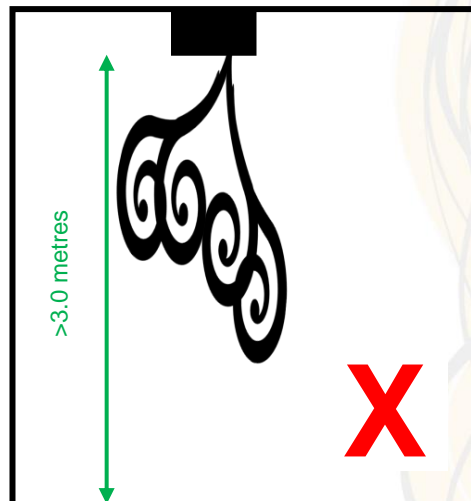
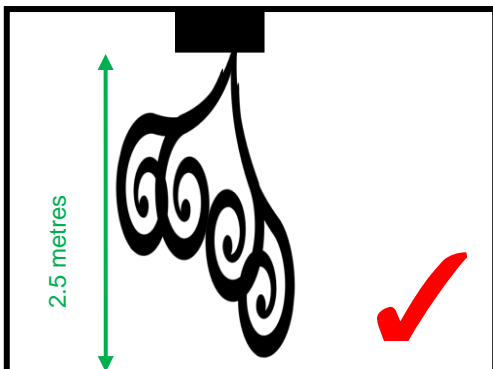
The Smoke Screen should ideally be sited in a covert position away from prying eyes and thereby reducing the possibility of tamper or an attack. The ideal place for the Smoke Screen is above a ceiling from where the smoke plume is used to its best effect, bursting on the ground and spreading outwards 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.

INSTALLATION PROCEDURE

1. Site the Smoke Screen and fix the bracket to the wall or ceiling as appropriate.
2. For wall mounting leave minimum 150mm clearance to ceiling.
3. Fasten the Smoke Screen to the bracket and open front cover.
4. Make connections as required to the Alarm Panel and Hold-off PIR.
5. Make connection to the Exagon panel (if used) and set the key switch to isolate mode.
6. Connect mains power (230-volt AC, 50Hz).
7. The Smoke Screen will heat up to operating temperature in approximately 20 minutes.
8. Ensure that the smoke time is set for the specified room size; the UPS system is set as required; and the programming dip switches are in the correct position.
9. With the power applied insert fluid bag and make sure the fluid switch is closed correctly.
10. Ensure all covers are fitted and tamper switches are closed. You are ready for test.

ACCESS

To access the PCB connections and programming buttons (fluid bag access covered in the relevant section) remove the front cover by unscrewing the 2 set screws on either side and the 2 countersunk set screws in the top; refitting is the reverse process. Installation cable entry is through the grommet on the top, right back of the case.

NOTE

If the Smoke Screen has been in service the heater block will be extremely hot and will cause injury if touched.

MOUNTING

The Smoke Screen can either be ceiling mounted, or wall mounted, using the bracket supplied. If ceiling mounted, it is recommended that the Smoke Screen is suspended on 2 lengths of M8 studding from a Unistrut section (pictured). In all cases, the installer must fit the Smoke Screen using appropriate fasteners.

Suspension Kit (All M8)

Uni-strut 1 x 1 metre

Threaded bar 2 x 1 metre

Fixings:

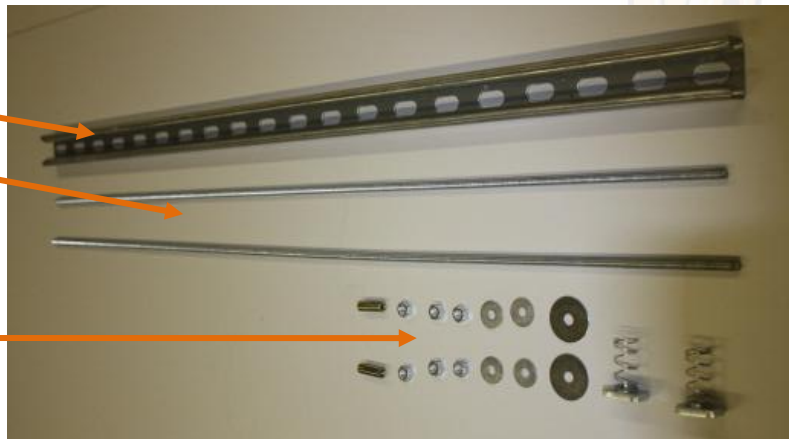
2 x 38mm washer

4 x 25mm washer

6 x full nut

2 x drop-in anchor

2 x channel nuts,



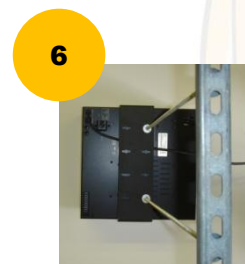
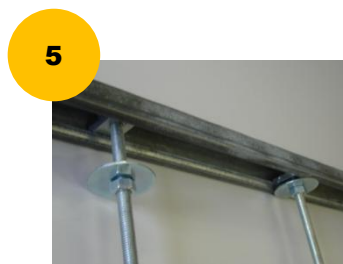
Wall mounting

The Smoke Screen can be wall mounted to fire horizontally, or angled to fire down at 15, 30 or 45 degrees, using a simple wall bracket (1) that should be attached to a suitable wall using appropriate fixings. We recommend as high a position as possible for aesthetic and security/anti-tamper reasons, but no higher than 3 metres above the floor. Select the most appropriate one of the 2 pairs of threaded holes on each side of the Smoke Screen and insert a set screw a few threads into the bottom hole on each side (2). Carefully locate the Smoke Screen on to the bracket by sliding the bottom set screws in to the wall bracket hooks and then insert one set screw on each side to lock the unit at the required angle (3). Tighten all four set screws.



Suspension mounting

Suspending the Smoke Screen range is achieved using the 'Suspension Kit' comprising a length of Uni-strut, two sections of threaded bar and fixings. Fix the required length of M8 threaded bar to the wall bracket (use the holes in line with the bracket hooks) using 4 x nuts and 4 x 25mm washers (4). 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 (5). Insert a set screw a few threads into the lower hole of the top pair of threaded holes on each side of the Smoke Screen (2). As described under "Wall Mounting", lift the Smoke Screen into position and insert another set screw on each side to lock the unit in the 'non-angled' position. Tighten all four set screws. Any final adjustments to height 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 (6).



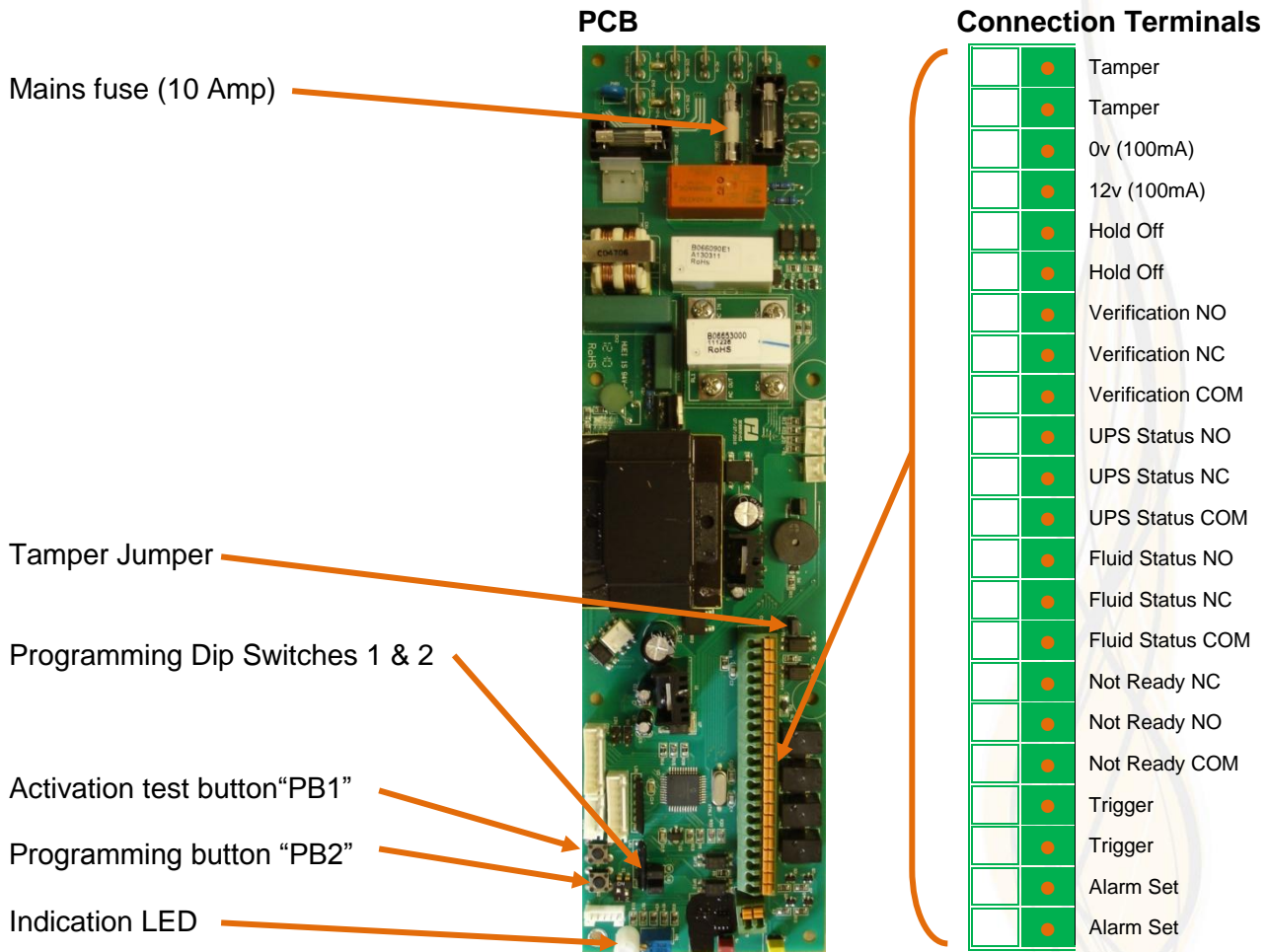
CONTROLLING THE SMOKE

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' as described under 'Trigger Mode' in the 'Programming' section). 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' connections, which open when the Alarm Panel is 'Set' and closing when the panel is 'Unset'.
- **Trigger** – a normally closed relay connected across the Alarm Panel 'Trigger' or 'Intruder' connections, which open when the Alarm Panel is in 'alarm'.
- **Hold-off** – usually a PIR or movement sensor connected to the 'Hold-off PIR' connections (N/C), which opens when the sensor sees movement.
- **Additional Hold-off** – any form of N/C relay or micro switch can be connected to the 'Hold-off' connections. Where fitted in addition to the Hold-off PIR both sets of relays must be 'open' to produce 'smoke'.

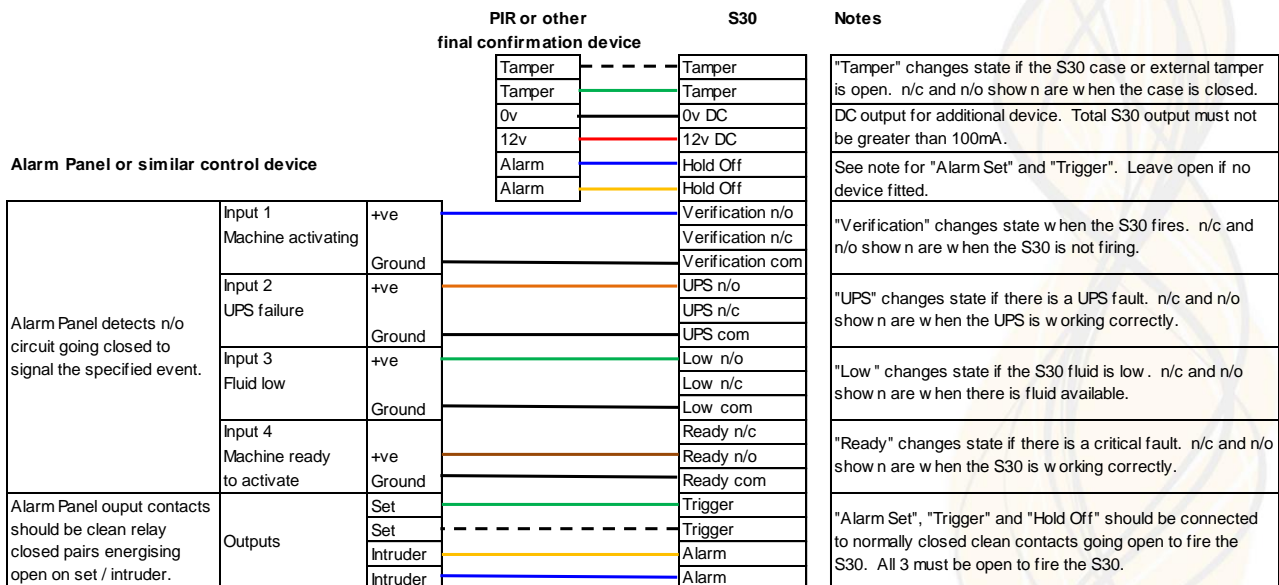
Outputs. Outputs are provided for connection to the Alarm Panel for 'Ready', 'Low Fluid', 'UPS Status' and 'Verification Output'. See the notes on the "Generic Connection Diagram" for the function of these outputs.

CIRCUIT BOARD LAYOUT



GENERIC CONNECTION DIAGRAM

S30 Generic Connection Diagram



UN-INTERRUPTED POWER SUPPLY (UPS)

If required a UPS, or maintained, supply can be incorporated into an installation through the IEC panel plug on the case. When the mains supply fails this will provide power to the electronic circuits and pump (not to the fluid heater) to ensure that for 1 hour after a mains power failure the Smoke Screen can provide a full smoke activation. Enabling the UPS monitoring system is described in the “Programming” section. If the UPS supply fails the Smoke Screen operates normally when a mains supply is available.

Mains Power Loss (No UPS connected). When mains power is restored after a temporary power loss the Smoke Screen will be automatically disabled for 60 seconds to allow the Hold-off PIR to stabilise and prevent the Smoke Screen from firing in the event of a false panel alarm.

TAMPER

There are 3 tamper circuits on the Smoke Screen, one on each cover (front and fluid) and an external tamper input on PCB. The external tamper input can be disabled if not in use by placing a jumper on the pins marked on the photograph in the “Circuit Board Layout” section. A tamper ‘open’ state does not prevent the Smoke Screen from activating.

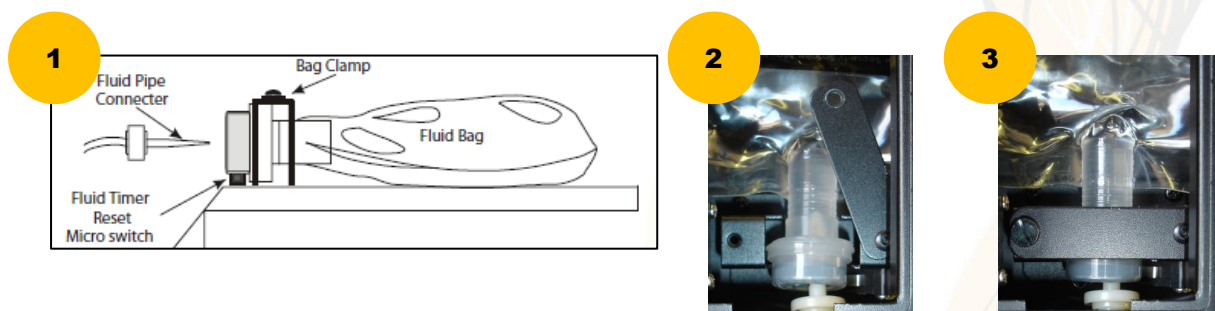
FLUID MANAGEMENT

Fluid capacity. The Smoke Screen can be fitted with a 500ml transparent bag containing ‘Smoke Fluid’.

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 bag clamp is unfastened and the fluid bag is replaced the micro switch is cycled which resets the timer and the Smoke Screen will calculate this as a new fluid bag.

Changing a fluid bag: Ensure that power is applied to the Smoke Screen. Open the fluid access panel in the top of the Smoke Screen. Unscrew the bladder neck holder retaining screw and the bag support screw. Push the fluid probe into the “out” position in the bag neck (1). Place the other end of the bag onto the support and insert the retaining screw.

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



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

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

PROGRAMMING

Smoke Time. The length of time that the Smoke Screen will produce 'smoke' can be varied between 15 seconds and 6 minutes. The delivery smoke time setting is 15 seconds, which is equivalent to approximately 75 cubic metres of smoke. The smoke time is set as follows:

- Change Dip Switch 2 to 'ON' (LED should alternate Red / Green to indicate in programming mode).
- Press the 'PB1' button for 10 seconds. When the buzzer beeps twice the timer is set to 15 seconds.
- Each subsequent press of the 'PB1' button will extend the smoke time by 15 seconds, up to a maximum of 6 minutes.
- When the required smoke time setting is reached change Dip Switch 2 to 'OFF'.
- If a mistake is made in programming the run time change Dip Switch 2 to 'OFF' and start again.

UPS Monitoring. The Sentinel S30 can be set to monitor the UPS (if fitted) and enable the UPS relay output. To alternate UPS monitoring between on and off follow this procedure:

- Change Dip Switch 2 to 'ON' (LED should alternate Red / Green to indicate in programming mode).
- Press 'PB2' for 10 seconds. When the buzzer beeps twice the UPS monitoring has been changed between on and off.
- When finished change Dip Switch 2 to 'OFF'.

Note: If there is a UPS fault or no UPS is fitted the LED will flash twice every 5 seconds accompanied by 3 short beeps every 30 seconds.

Trigger Mode. The delivery settings of the 3 sets of input connections on the Smoke Screen (Alarm Set, Trigger and Hold Off) are normally closed going open to activate (Dip 1 set to 'ON'). These can be changed to normally open going closed to activate by changing Dip 1 to 'OFF'.

OPERATION

While the Smoke Screen is heating up the LED indicator will be Red. If any of the access panels are open the LED indicator will flash yellow once every 5 seconds; a tamper indication will prevent the Smoke Screen from producing smoke. When the Smoke Screen reaches the correct working temperature, all tamper circuits are closed and a full Smoke Fluid Bag has been correctly installed, the LED Indicator will go Green.

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.

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. If a PIR or other detector is fitted the Smoke Screen will fire for the designated Smoke Time period once the 'Alarm Set', 'Trigger' and 'Hold Off' (if fitted) contacts are open. It will stop producing smoke if the 'Alarm' or 'Trigger' 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) by pressing the button on the PCB marked "PB1". This produces smoke only whilst the button is pressed. **NB: this does not check that the inputs and connections to the Smoke Screen are correct.**

Note. When mains power is switched on, even if the Smoke Screen is already at operating temperature, it will be automatically disabled for 60 seconds to allow the Hold-off PIR to stabilise and prevent the Smoke Screen from firing in the event of a false panel alarm.

LED AND SOUND INDICATIONS

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

LED colour	Buzzer sound	Output relay status change	Indication meaning
● Flash twice every 2 seconds	1 short beep every 5 seconds	Ready n/c to open.	Smoke Screen overheating*.
● Flash once every 2 seconds	1 long beep every 60 seconds	Ready n/c to open.	Cover open and/or the external tamper is open/not jumpered.
● Flash twice every 5 seconds	1 short beep every 5 seconds	UPS n/c to open.	UPS monitoring set to on and UPS power fail or UPS not connected.
● Flash once every 5 seconds	1 short beep every 5 seconds	Nil.	Mains power failure (UPS fitted).
● Flashing	1 short beep every 5 seconds	Ready n/c to open.	Heater fault*.
● On	Continuous beep for 30 seconds then 3 short beeps every 5 minutes	Nil.	Smoke Screen heating to operating temperature*.
● ● Alternating	None	Nil.	Smoke Screen in 'Programming Mode'.
● On	None	Ready n/c to closed.	Smoke Screen ready to operate.
● Flashing	None	Nil.	Smoke Screen receiving 'Alarm Set' and 'Trigger' signals but waiting for a 'Hold Off' to activate.
● Flashing	1 beep every 2 seconds	Verification n/c to open.	Smoke Screen has activated and smoke has been produced – indication will continue until both 'Alarm Set' and 'Trigger' are reset.
● On	1 short beep every 5 minutes	Fluid status n/c to open	Low fluid – first warning, Smoke Screen will still activate.
● Flashing	1 long and 1 short beep every 5 minutes	Nil.	Empty fluid or fluid bag removed*.

* = Smoke Screen will not activate in this state.

Once resolved, any remaining fault indications can be cleared by removing and restoring mains power to the Smoke Screen.

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.

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.

FAQ

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

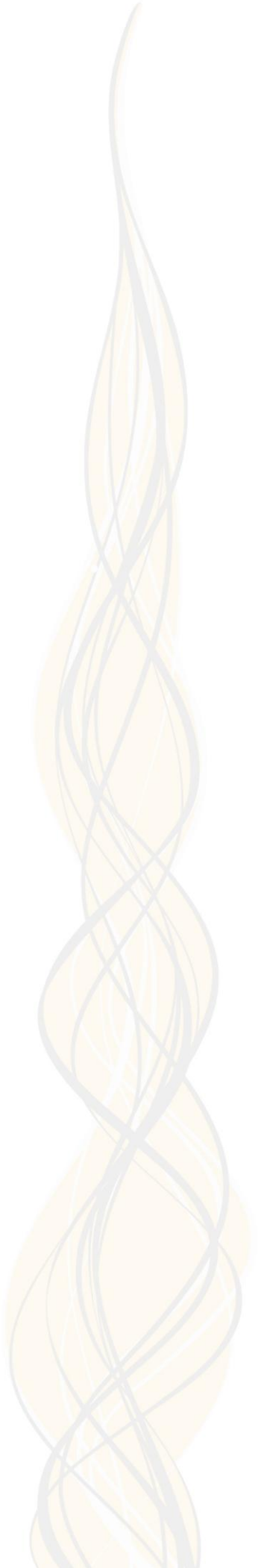
A: With power applied, and keeping clear of the smoke nozzle, disconnect the “Alarm”/“Trigger” and “Hold Off” connection plugs from the PCB. If the Smoke Screen produces smoke there is a miss-connection in the system wiring.

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.

INSTALLER NOTES







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