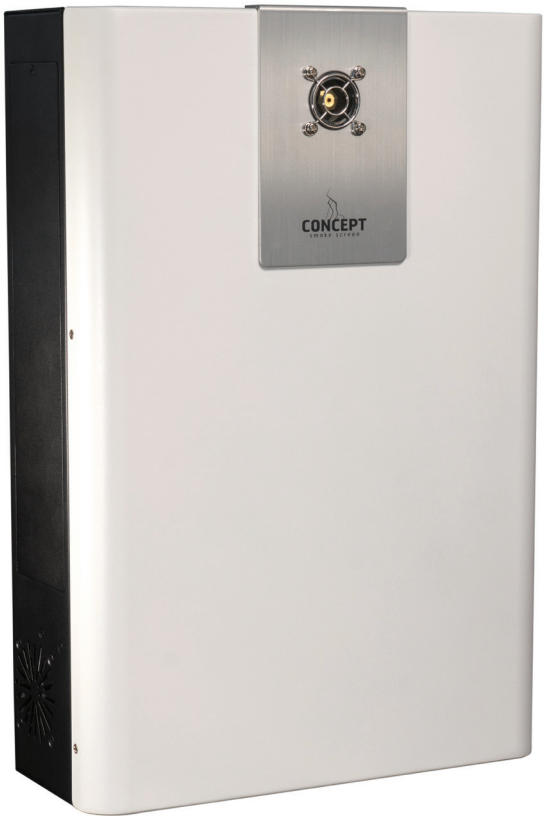
CONCEPT
smoke screen




SENTINEL S55
INSTALLATION AND OPERATION

# MANUAL

Version: July 2020

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

# General 1

## 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 anywhere that mains voltage is indicated by the warning labels shown below (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 the 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:


This type of warning note is used to indicate possible electrical shock hazards that may cause serious injuries or death.


This type of warning note is used to indicate the possibility of injury caused by hazards other than electrical shock.

## 1.2 HOW DOES YOUR SMOKE SCREEN WORK?

Your Smoke Screen passes a non-toxic fluid through an efficient heat exchanger to create smoke, or more accurately a thermally generated fog that obscures visibility, discouraging 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.

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

# 1.3 INTRODUCTION

This manual covers the Sentinel S55.

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

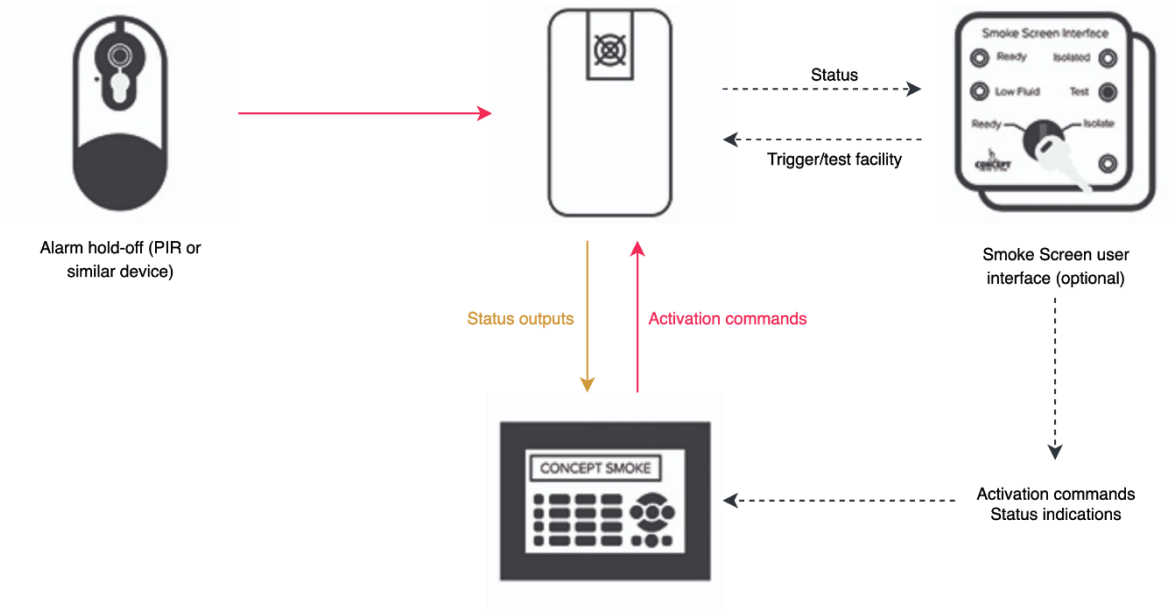
- 1 x Smoke Screen.
- 1 x Mounting bracket.
- 1 x Swift-Fit fluid reservoir (boxed).
- 2 x 12v batteries.
- 1 x Literature pack and warning sign.
- 1 x Extra 30-degree Nozzle for wall mounted installation.

You will also need:

- Mains power supply; an unswitched 13 amp fused spur connected to a dedicated breaker.
- Connections into the alarm panel or other triggering system.
- PIR (or equivalent) to provide the 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 or as part of a centrally monitored, command and control system. A typical installation is shown in the following schematic:



# 1.5 TYPICAL INSTALLATIONS

A typical installation can be configured in the following way:

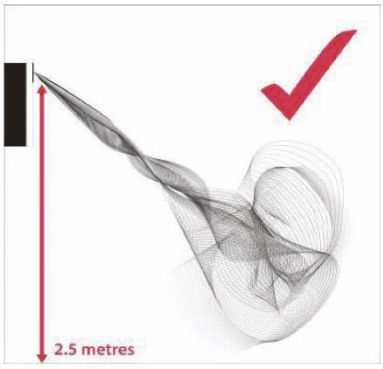
- The Smoke Screen is wall or ceiling mounted in the appropriate location.
- A Hold-off PIR (or similar device) located within the same area as the Smoke Screen providing a confirmation signal to the Smoke Screen to start, or restart, ‘smoke’ production.
- A Set command supplied by an alarm control panel, or equivalent, in the form of an N/C (normally closed) or an 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 an N/C (normally closed) or an N/O (normally open) relay changing state when the alarm system confirms an intruder alert.

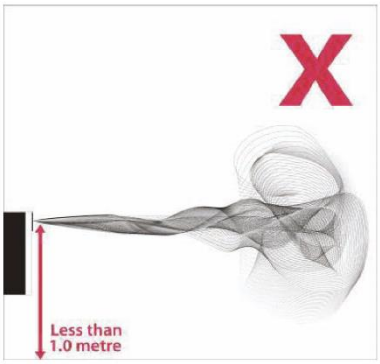
# Location 2

## 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.

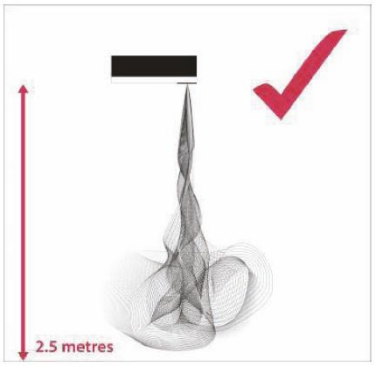
### Wall-mounting

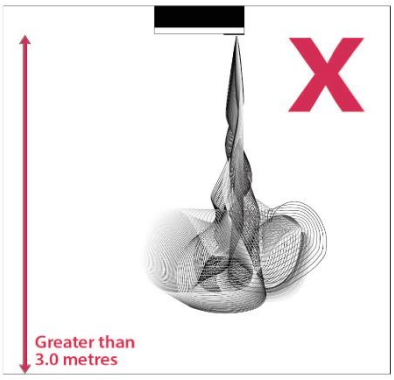



The optimum wall mounting position for the Smoke Screen is 2.5 metres above the floor facing the area to be protected and using the 30-degree angle nozzle. The maximum recommended mounting-height above floor level is 3 metres, the minimum is 1 metre and there should be no obstacle within 1 metre of the smoke output nozzle.  Also, leave a minimum of 150mm clearance to the ceiling.

### Ceiling-mounting




The optimum ceiling mounting position for the Smoke Screen is 2.5 metres above the floor facing the area to be protected and using the standard straight nozzle. The maximum recommended 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.

## 2.2 INSTALLATION PROCEDURE

1. Site the Smoke Screen and 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. Insert a Swift-fit fluid reservoir.
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, batteries and fluid, remove the front cover by unscrewing the 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 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. Moreover, the Smoke Screen has a tamper protection switch to provide an alert in the unlikely event that it is disturbed. 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.


Carefully hook the slots on the back of the Smoke Screen onto the bracket (for clarity, shown above not attached to the ceiling/wall). Slide along to align the screw fixing holes. The unit will now hang on the bracket.


Fit, and ensure tight, 1x M6 set screw with washer in the hole in the back of the Smoke Screen alongside each of the two mounting slots. Access to the fixing holes is through the fluid and heater block compartments.

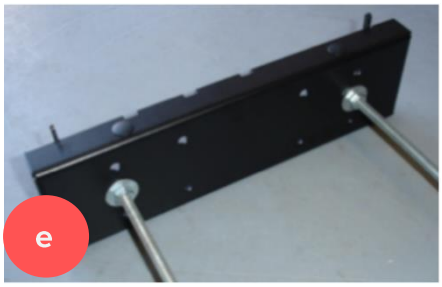
### Suspension mounting

Suspending the Smoke Screen is achieved using a 'Suspension Kit' comprising a length of unistrut, two sections of threaded bar and fixings.

### Suspension Kit Contents (all M8)

Unistrut 1 x 1 metre
Threaded bar 2 x 1 metre

Fixings:
1 x ceiling hole surround
2 x drop-in anchors
6 x full nuts
4 x 25mm washers
2 x 38mm washers
2 x channel nuts


Prepare the Smoke Screen by fitting the angle brackets. Fix the required length of M8 threaded bar to the bracket using 4 x nuts and 4 x 25mm washers.


Fix the unistrut 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 unistrut using the channel nuts, 38mm washers and M8 nuts. Once this is done the Smoke Screen can be lifted into position and the set screws tightened as above.


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 the photo. Any hole made in the ceiling below can be made good with a cosmetic hole surround.

## 2.5 NOZZLE CHANGING

To change the nozzle, first remove the front cover then remove and replace the nozzle using a 10mm ring spanner, sealing it with PTFE tape and ensuring that an angled nozzle is seated in the correct orientation. The Smoke Screen is delivered with a single-hole straight nozzle plus an extra 1-hole 30 deg angle down nozzle. The following are also available – 2-hole horizontal, 3-hole horizontal, 1-hole 30° angle down and 2-hole 30° angle down.


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


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.

# Function 3

## 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 using 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 / 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 / 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’.

### Smoke Time

The Smoke Screen should be set to produce fog for a time (Smoke Time) that is suitable for the volume of the location to be protected. As a guide, an S55 set to 60 seconds Smoke Time will reduce the visibility to 1 metre* in a 175 $m^3$ volume room. The Smoke Time is changed in the settings; see Section 5.9.
(* as defined by the test requirements of EN50131-8)

### 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

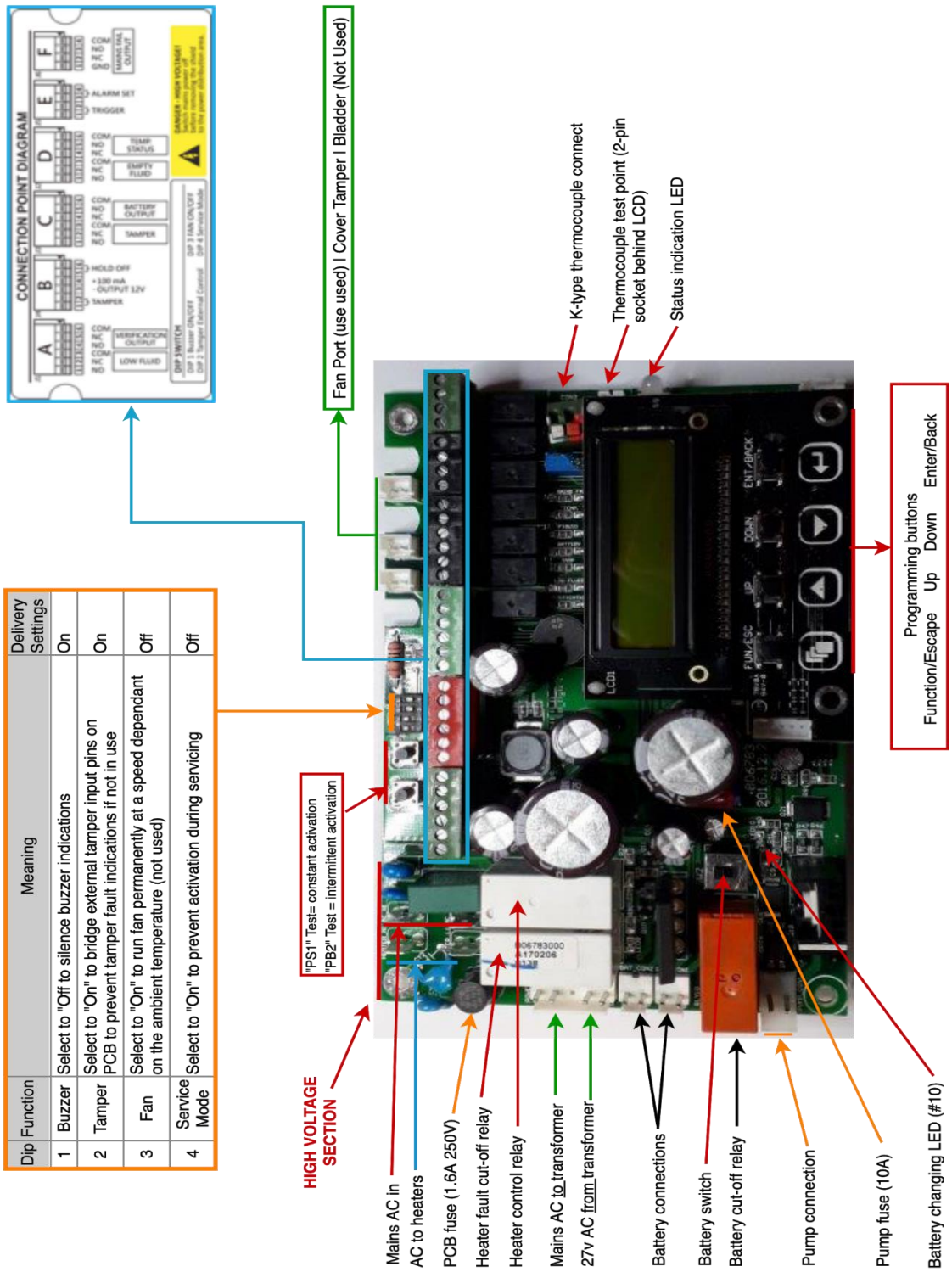
To prevent the Smoke Screen from making smoke during a service inspection under any circumstances select the “Service Mode” dip switch to on (see separate section).

## 3.2 OUTPUTS

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.

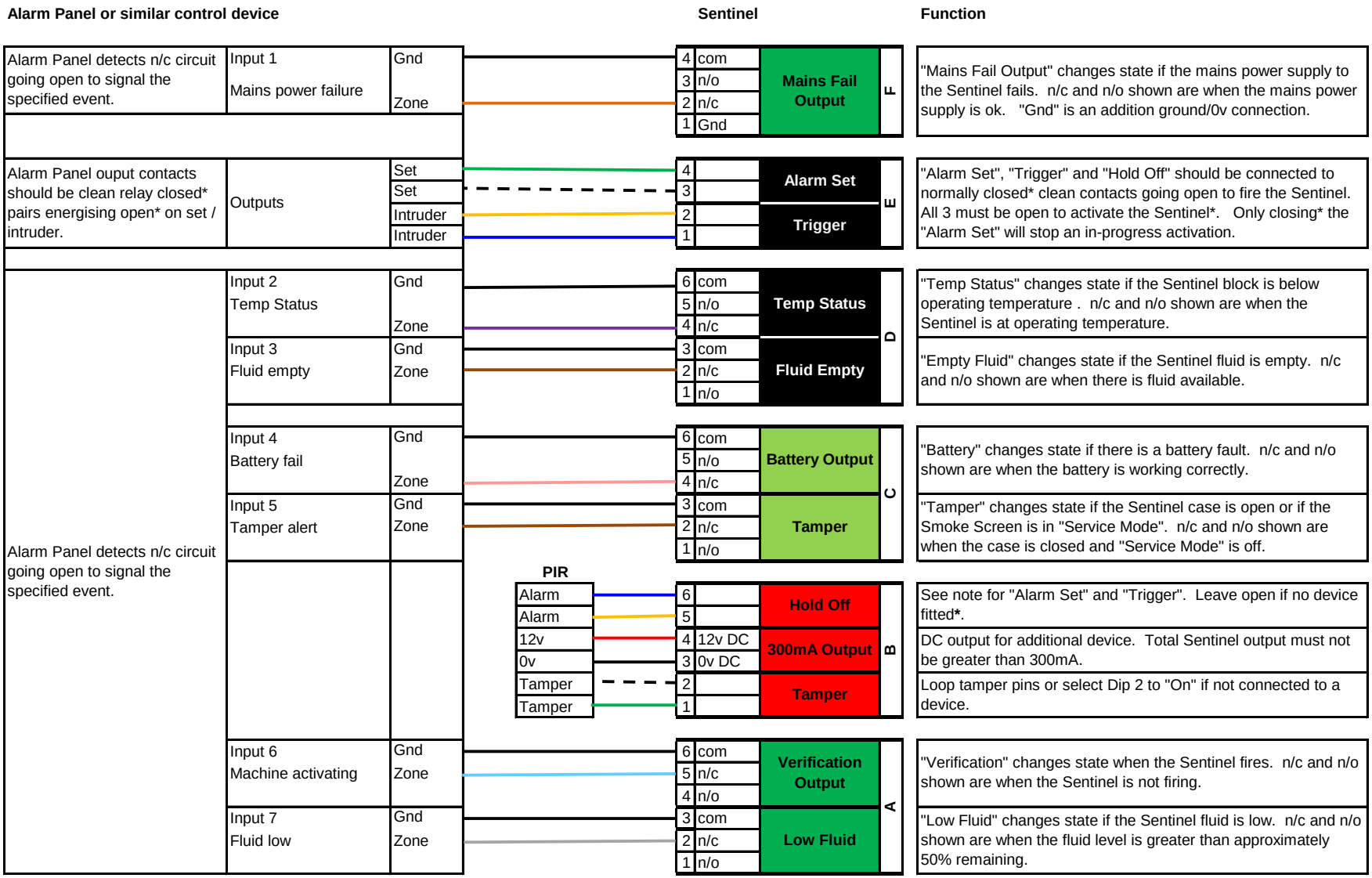
# Connections 4

## 4.1 CIRCUIT BOARD LAYOUT




| Dip | Function | Meaning | Delivery Settings |
|---|---|---|---|
| 1 | Buzzer | Select to "Off to silence buzzer indications | On |
| 2 | Tamper | Select to "On" to bridge external tamper input pins on PCB to prevent tamper fault indications if not in use | On |
| 3 | Fan | Select to "On" to run fan permanently at a speed dependant on the ambient temperature (not used) | Off |
| 4 | Service Mode | Select to "On" to prevent activation during servicing | Off |

# 4.2 GENERIC CONNECTION DIAGRAM




***** unless Inverted Trigger mode is selected.

# Settings 5

## 5.1 SCREEN SENSOR

A Concept Smoke Screen "*Screen Sensor"* can be connected to the Sentinel. 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**

## 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 VERIFICATION TIMER

If the "Verify Timer" is set to 0 seconds the verification output changes state during an activation for the set "Smoke Time". If the "Verify Timer" is set above the set Smoke Time the verification output maintains the changed state for that time after an activation starts.

## 5.4 SERVICE MODE

Setting dip switch No 4 (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.**

## 5.5 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.

## 5.6 TAMPER

There is an internal tamper circuit on the Smoke Screen cover and an external tamper input on PCB terminal block "B". A "Tamper Status" output is provided on PCB terminal block "C". To prevent unwanted tamper signals the external tamper input can be disabled if not in use by selecting dip switch 2 to "On", which bridges the input pins on the PCB. A tamper 'open' state provides only an indication of the event; it does not automatically activate the Smoke Screen or prevent it from activation.

# 5.7 FLUID MANAGEMENT

The Smoke Screen has a replaceable 1 litre Swift-Fit fluid reservoir (also known as product code SFL-1000) 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 to give a “Low Fluid” indication output when the Swift-Fit is approximately 50% full and an “Empty Fluid” output when the bottle is empty. The Smoke Screen will not produce fog when there is an “Empty Fluid” indication.


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

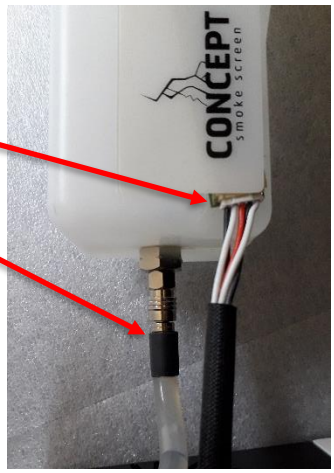

If the generator has been in service the heater block and connected parts will be extremely hot and will cause injury if touched. Switch off and allow the heater block to cool.

## Changing a fluid consumable

Obtain a replacement fluid reservoir from your Smoke Screen supplier. Open the right-hand access panel. Lift the reservoir out of the compartment by removing the upper end first.

Disconnect the fluid monitoring cable.

Disconnect the fluid feed pipe (pull collar to release).




Connect the monitoring cable and feed pipe to a new fluid reservoir.

Insert the reservoir into the fluid compartment base first ensuring that the pipe connection is not accidentally released.

Make sure the notch in the reservoir is on the outside of the Smoke Screen or the compartment door will not fit. This orientation ensures that the fluid feed is correct for both upright and face-down installations.

### External reservoir

A 5000ml external reservoir can be used with Smoke Screen, please contact Concept Smoke Screen if you wish to use this function.

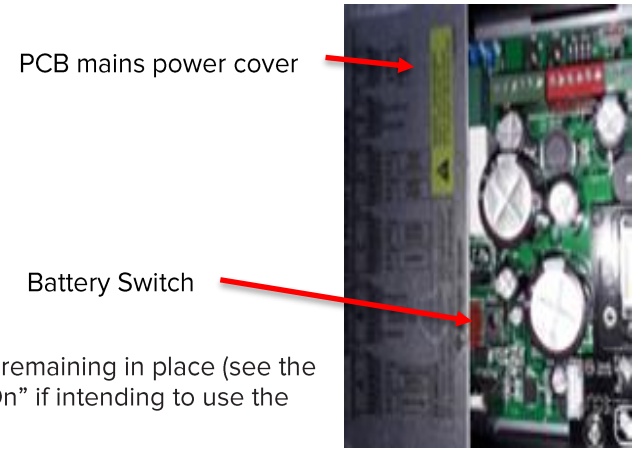
# 5.8 BATTERY MANAGEMENT

## 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 the Smoke Screen can provide an effective activation for at least 1 hour after a mains power failure (further detail is on the relevant Smoke Screen datasheet). 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 “Programming”). The Smoke Screen is supplied with a set of batteries and replacement batteries may be obtained from your Smoke Screen distributor 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 1.5 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 on the PCB to permit the batteries to be disconnected from the system whilst remaining in place (see the picture above). The delivery setting is “Off”; select to “On” if intending to use the battery facility.

## Removal and replacement

Disconnect the mains power supply. Take off the Smoke Screen front cover, the battery compartment cover on the left side and the mains power cover on the PCB. Disconnect the battery plugs from the PCB. Slide out the old batteries, replace with new units and refit the plugs and covers

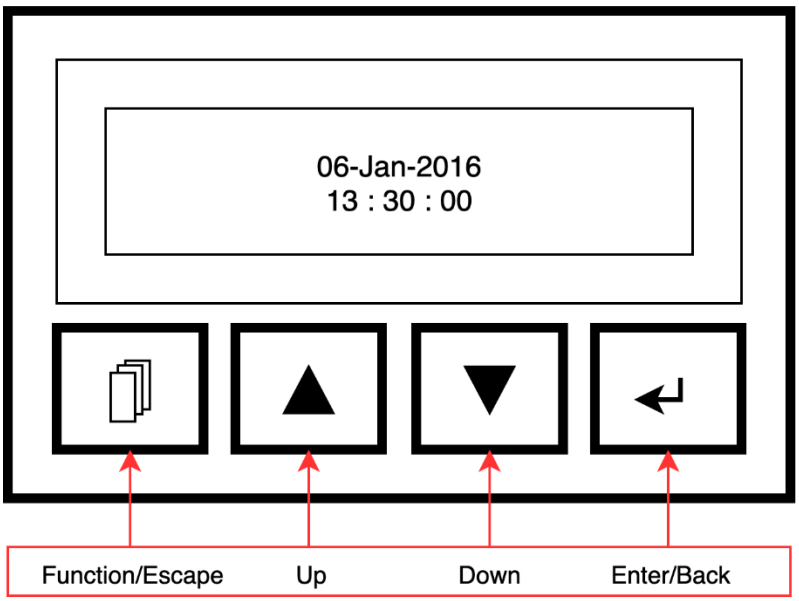
**THE SMOKE SCREEN WILL NOT FUNCTION AT ALL DURING A MAINS POWER FAILURE IF THE BATTERIES ARE DISABLED.**


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


If the generator has been in service the heater block and connected parts will be extremely hot and will cause injury if touched. Switch off and allow the heater block to cool.

# 5.9 PROGRAMMING

The LCD Display and operating buttons




## LCD illumination

Pressing any button illuminates the LCD back-light; it automatically extinguishes after 1 minute of inactivity.

## Setting the time and date

In the Smoke Screen Status or Current Time display:

- Press and hold **Function/Escape** for 3 seconds until the date and time are shown with the Day flashing.
- Change the value with the **Up** and **Down** buttons.
- Press **Enter/Back** to save a change and move to the next parameter.
- Press **Function/Escape** to return to the previous parameter without saving any changes.
- Repeated presses of **Function/Escape** will return the LCD to the Live Status display.

## Viewing and setting the functions and variable parameters

In the Smoke Screen Status or Current Time display:

- Press **Function/Escape** to access the programmable functions.
- Press **Up** or **Down** buttons to scroll through the available functions.
- Press **Enter/Back** to view the current function setting.
- Press **Up** or **Down** buttons to scroll through the available parameters.
- Press **Enter/Back** to select and save the value shown and return to the list of functions.
  (Note: if the change results in a Live Status change the display will return to the Live Status display).
- Press **Function/Escape** to return to the list of programmable functions without saving any changes.
- Repeated presses of **Function/Escape** will return the LCD to the Live Status display.

## Parameter settings

| MENU ITEM | DELIVERY SETTING | AVAILABLE SETTINGS | REMARKS |
|---|---|---|---|
| Event Log | - | Read-only. | Events recorded are as listed in the Section “LCD, LED and Sound indications”. |
| Setting Smoke Time | 5 seconds | 5 to 360 seconds in 1 second intervals. | See Section 3.1. |
| Setting Fluid Capacity | 500ml | 500ml, 1,000ml, 5,000ml or “Fluid Sensor on”. | The S55 MUST be set to “Fluid Sensor on”.<br><br>See Section 5.6. |
| Setting Temperature | - | Nil. | Manufacturer-only setting. |
| Setting Smoke Mode | Turbo Mode | Turbo Mode<br>Normal Mode | See Section 5.5. |
| Invert Trigger Mode | N/C Mode | N/O Mode<br>N/C Mode | N/O Mode = unit detects a normally open circuit going closed to activate.<br><br>N/C Mode = unit detects a normally closed circuit going open to activate.<br><br>NB: This setting changes the Set, Trigger and Hold-off all at once. |
| Enable/Disable Battery | Enable | Disable<br>Enable | The PCB- mounted battery switch is “Off” on delivery.<br><br>See Section 5.7. |
| Enable/Disable ESM | Disable | Disable<br>Enable | Energy Saving Mode.<br><br>See Section 5.2. |
| Smoke Delay | 0 seconds | 0 to 60 seconds in 1 second intervals. | See Section 3.1. |
| Verify Timer | 0 seconds | 0 to 3600 seconds in 5 second intervals. | See Section 5.3. |
| EN Mode | - | Nil. | Manufacturer-only setting. |

# Commissioning 6

## 6.1 OPERATION

While the Smoke Screen is heating up the LCD display will show a “Live Status” in code format and the LED indicator will be Yellow. If the cover is open “Tamper Fault (Ti)” 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 current status on the machine (see ‘Codes for live status’).

### Stopping smoke

If the ‘Hold-off’ is closed during an activation the Smoke Screen will continue to produce smoke for the set Smoke Time. Once initiated an activation can be stopped only by closing the ‘Alarm Set’.

### 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 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 ‘Hold-off’ inputs are cycled after the set ‘Smoke Time’. It will stop producing smoke if the ‘Alarm Set’ contacts are closed.

### Smoke Screen standalone 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.**

# Servicing 7

## 7.1 LCD LIVE STATUS INDICATIONS

The Smoke Screen provides 'Live Status' indications on the LCD to give a quick overview of the current condition of the machine. The indications have the following meanings:

### Top Line (Outputs):

| Indication | Meaning | Explanation |
|---|---|---|
| TS | Temp Status | The Smoke Screen heater block is not at operating temperature and it is not ready to activate or there is a Heater fault. |
| V | Verify Smoke | The Smoke Screen is active / pump running. |
| M | Mains Fault | The Mains Power input has failed. |
| B | Battery Fault | The batteries are not fitted or are switched off or there is a charging fault. |
| E | Empty Fluid | The Swift-Fit is empty (Smoke Screen will not produce smoke). |
| L | Low Fluid | The Swift-Fit fluid level is less than 50%. |
| TI | Tamper Internal | The Tamper Output is giving a tamper alarm. |

### Bottom Line (Inputs):

| Indication | Meaning | Explanation |
|---|---|---|
| Set | Set | The Set input is armed. |
| Trg | Trigger | The Trigger input is in an alarm state. |
| Ho | Hold-off | The Hold-off input is in an alarm state. |
| Sm | Service Mode | The Service Mode Dip switch is selected on. |
| ES | Energy Save Mode | Energy Save Mode is enabled. |


**Example:** The codes on the LCD screen shown above indicate the following live status:

**Top line (Outputs):**

TS, B, E, L and TI are in an alarm state.
V and M are normal (the Smoke Screen is not making smoke and the mains power is okay).

**Bottom line (Inputs):**

Set, Trg and Ho in an alarm state.
Sm and ES are enabled.

# 7.2 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 seconds | 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 seconds | Nil | Nil | Trigger in alarm. |
| Hold-Off Open |  | Permanent | Nil | Nil | Hold-off in alarm. |
| Smoke Verify |  | Flash | 1 beep every 1 second | 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 seconds | 1 long 2 short beeps every 3 mins | Temp Status n/c to open* | Smoke screen not heating at the correct rate within 10 mins of power on. |
| Empty Fluid |  | Flash once every 5 seconds | 1 long beep every 3 mins | 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 seconds | 1 short beep every 5 mins | Low Fluid output n/c to open* | Fluid less than 50%. |
| Battery Fault |  | Flash once every 5 seconds | 3 short beeps every 5 mins | 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 seconds | 2 short beeps every 5 mins | Tamper Status n/c to open* | One or more of the access panels, or the external tamper is dip set to "off", are open. |
| Mains Fault |  | Flash once every 5 seconds | 1 long 1 short beep every 3 mins | 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.
- The LCD will display the current status via the on-board codes for live status (see Section 7.1)
- Once resolved, fault indications will automatically clear, except those marked * that also require the removal and restoration of all power, mains and battery

# 7.3 THERMAL CUT-OUT (TCO) RESET

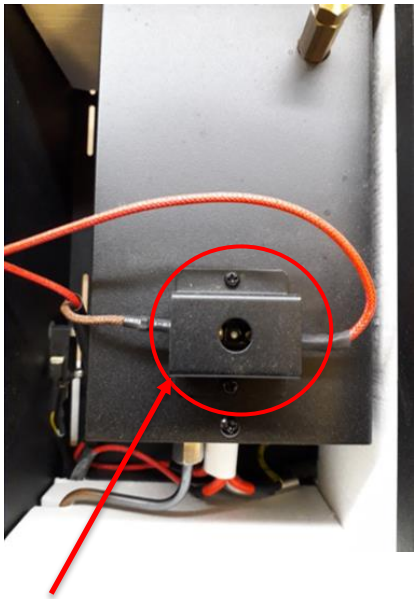

Be aware of high voltage in the block area. The electrical supply should be switched off before working in the heater block compartment.


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.

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 that is accessed through the hole in protective cover (see photo below). 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.

**NB: A TCO usually only trips if there is a problem. If it trips again the Smoke Screen should be checked for faults before further use.**



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

# 7.4 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.

# 7.5 SERVICING AND CONSUMABLE REPLENISHMENT

**Installation/service engineer qualification.** Please note that it is a requirement of the standards relating to security fogging devices that the Smoke Screen is serviced/replenished by an engineer certified by the manufacturer. If you are unsure, ask the engineer for their certification ID card.

**Smoke Screen servicing.** To ensure the Smoke Screen remains fully operational it must be regularly serviced by a Concept Smoke Screen certified engineer. Failure to service the Smoke Screen may invalidate the warranty.

**Service intervals.** The Smoke Screen should be serviced annually by a Concept Smoke Screen certified engineer and the following consumables should be replaced as specified:

**Fluid:** Always ensure that the Smoke Screen has sufficient fluid or it will not produce smoke when needed. The fluid consumable should be changed:

- Every 12 months as ‘best-practice’ or, as a minimum, every 2 years.
- If the Smoke Screen displays a Low or Empty Fluid fault in between services.
- If there have been 2 or more activations of the Smoke Screen since the fluid was replenished.

**WARNING: Only Smoke Screen fluid should be used as other smoke fluids may cause damage to the unit or noxious fumes.**

**Batteries:** The batteries should be changed:

- At least every 2 years.
- If the Smoke Screen displays a battery fault in between services.

**WARNING: Only batteries supplied by Concept Smoke Screen should be used in the Smoke Screen.**

# Miscellaneous 8

## 8.1 GLOSSARY

| Item | Meaning | Explanation |
|---|---|---|
| Activation | Smoke Screen making fog | |
| Dip switch | PCB mounted on/off switch | |
| Drop-in anchor | M8 fixing for blind holes in masonry | |
| ESM | Energy Saving Mode | A slight reduction in running temperature when “Unset” that reduces the power consumption |
| Hold-off | Final trigger before activation | PIR or another device such as a door contact |
| Invert Trigger Mode | Changes the alarm input requirement between n/o and n/c | |
| Live Status | The current status of the Smoke Screen | Faults, inputs and settings shown on the LCD (see Section 7.1) |
| n/c | Normally closed | Output status |
| n/o | Normally open | Output status |
| PB1 / PB2 | Push Button number 1 / number 2 | PCB mounted activation test switches |
| PIR | Passive InfraRed | Motion detector |
| Screen Sensor | A device that can be used to maintain a fog density after an activation | |
| Set | Smoke Screen Alarm / Disarm input | Signal from Alarm Panel or SSI to Smoke Screen |
| SM | Service Mode | Smoke Screen is isolated for repair/installation |
| Smoke | Fog | The Smoke Screen makes a fog rather than produces smoke |
| Smoke Delay | Time after an activation demand before the Smoke Screen activates | |
| Smoke Mode | Setting that varies the intensity of the initial burst of smoke | |
| Smoke Time | Time set for each activation | |
| SSI | Smoke Screen Interface | Isolating key-switch with status indications |
| TCO | Thermal Cut Out | Mechanical safety trip in case of heater block overheat |
| Temp Status | The Smoke Screen block temperature | Indication if the Smoke Screen is at operating temperature (see “Live Status” at Section 7.1) |
| Thermocouple | Temperature sensor | Gives the heater block temperature to the PCB |
| Trigger | Smoke Screen alert input | Signal from Alarm panel or SSI to Smoke Screen |
| Unistrut | Metal suspension bracket | |
| Unset | Smoke Screen not in operation | Signal from Alarm Panel or SSI to Smoke Screen |
| Verification | Output indication of an activation | Smoke Screen making fog |
| Verify Timer | Time that the verification output maintains a change of state after an activation is initiated | |
| WEEE | Waste Electrical and Electronic Equipment | |

## 8.2 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.

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.

## 8.3 END OF PRODUCT LIFE POLICY

At Concept Smoke Screen we take our environmental obligations very seriously and constantly strive to minimise any environmental impact of the products we sell.

To comply with the WEEE Regulations 2013 we label all relevant products with the crossed-out wheelie bin symbol and are members of the Comply Direct WEEE compliance scheme. Comply Direct have registered us with the Environment Agency as a Producer and will arrange to have any of our equipment collected and recycled as necessary. Comply Direct can be contacted on 0844 873 1034. If arranging a collection please quote our membership number which is CD01/00593. Our Environment Agency Producer Registration number is WEE/HB3530XZ.

### How to return goods

When the goods are no longer required or are deemed to be beyond economic repair you can also return the goods to the following address for disposal:

> Concept Smoke Screen Ltd, 1C North End Business Park, Station Road, Swineshead, Boston, Lincolnshire, PE20 3PW

Alternatively, if it is more convenient to arrange disposal locally, please ensure disposal is carried out in accordance with any local guidelines.

Further guidance can be found here https://www.complydirect.com/the-recycling-room/

## 8.4 WARRANTY TERMS AND CONDITIONS

CSS Return to Base warranty service may be obtained only against presentation of the following information:

(a) the purchase date.
(b) the invoice number.
(c) the model name and serial number of the purchased product.
(d) the date of installation of the product.
(e) full details of the nature of the fault.
(f) copies of any service records.

CSS reserves the right to refuse warranty service if this information is not complete.

CSS may repair or replace CSS products with new or reconditioned parts or products of equivalent to new performance and reliability. CSS may also replace products with equivalent models where the original has been discontinued. Reconditioned parts or products will only be used if it is permissible to do so under the statutory law of a country where the warranty is applied

## Warranty period

This warranty is valid from the date of purchase, as evidenced by the above-mentioned documents, for the following periods:

- Sentinel (including Titanium variants) S55/S70/S100/S150:
  - 12 months parts and labour; extended to 60 months parts only.

- Sentinel S35, Strobe and Sounder:
  - 12 months parts and labour; extended to 36 months parts only.

## Limitations

CSS do not warrant the following:

- Periodic check-ups, maintenance and repair or replacement of parts due to normal wear and tear.
- Consumables.
- Any software.
- Defects caused by modifications carried out without CSS's approval.
- Costs incurred by CSS in making any adaptations or modifications of a product necessary for country specific technical or safety standards or specifications, or any other costs to adjust the product as a result of any specifications which have changed since the delivery of the product.
- Damage resulting from the fact that a product is not conforming to country specific standards or specifications in another country than the country of purchase.

Warranty repair service is excluded if the equipment has not been serviced on, as a minimum, an annual basis and if damage or defects have been caused by:

- Improper use, excessive use, handling or operation of the product including without limitation, incorrect storage, dropping, excessive shocks.
- Repairs, modifications or cleaning carried out at a service centre not authorised by CSS.
- Damage caused directly by the use of spare parts, software or consumables which are not compatible with the product.
- Inadequate packaging of the product when returning it to the CSS Repair Centre.
- Accidents or disasters or any cause beyond the control of CSS, including but not limited to lightning, water, fire, public disturbances and improper ventilation.

## To obtain a warranty service

Warranty service is available from CSS UK Head Office.  Any costs of secure transportation of the product to and from CSS will be borne by the customer.

Where an Installer chooses to replace a part themselves, the supply of the replacement part will become chargeable should the faulty item not be returned to CSS within 21 days of receipt of said replacement part.

## Other information

When returning the product for warranty service, please pack it very carefully and enclose the instructions for repair.  CSS shall not be liable for any incidental or consequential damages for breach of any express or implied warranty of this product.

These warranty terms and conditions are offered to you by CSS without prejudice to any statutory rights that you may additionally have with regard to the products covered by these terms and conditions.

## 8.5 INSTALLER NOTES

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Sentinel S55
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