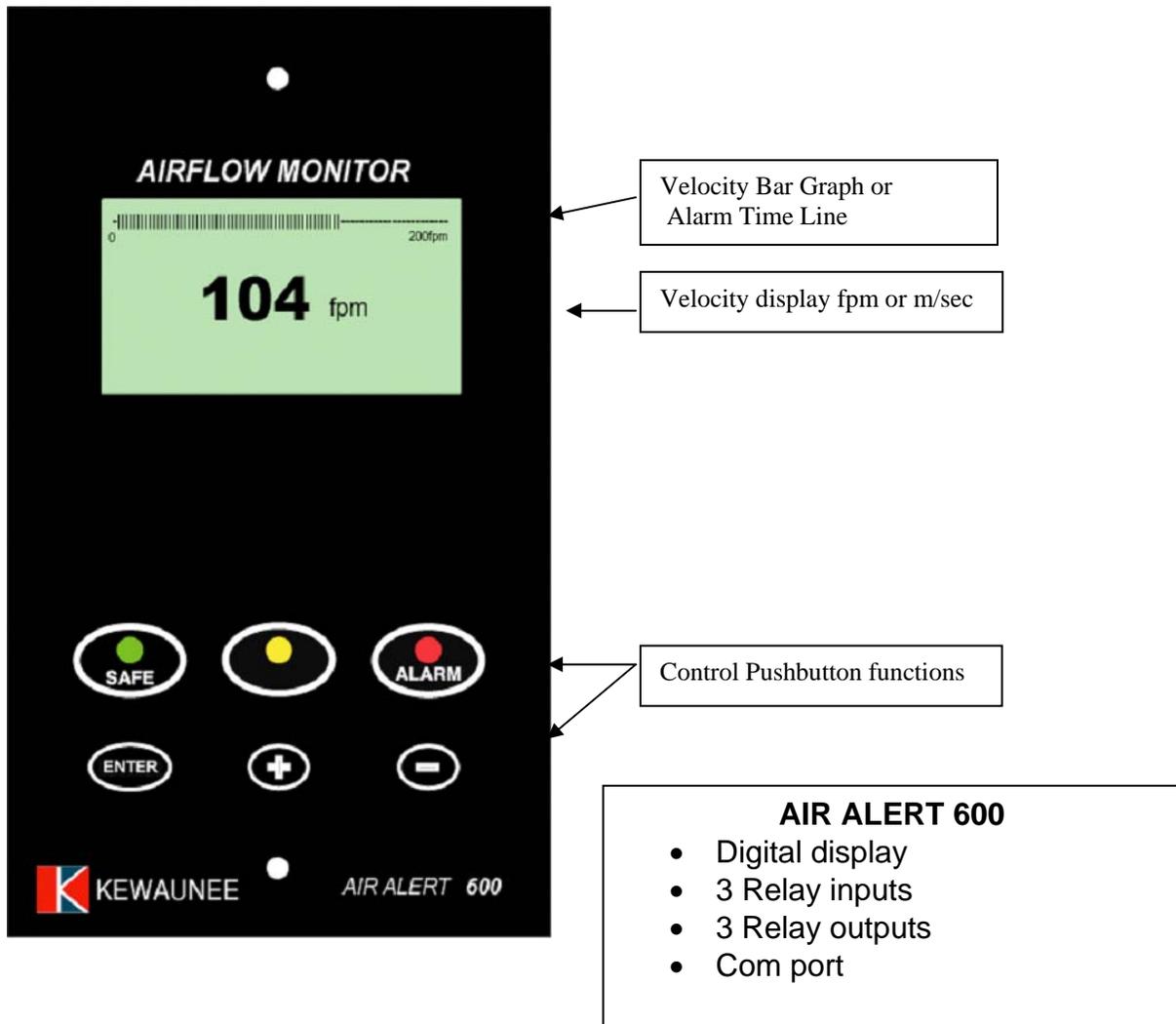




# Air Alert 600

## FUME HOOD VELOCITY ALARM

Operating and Installation Manual



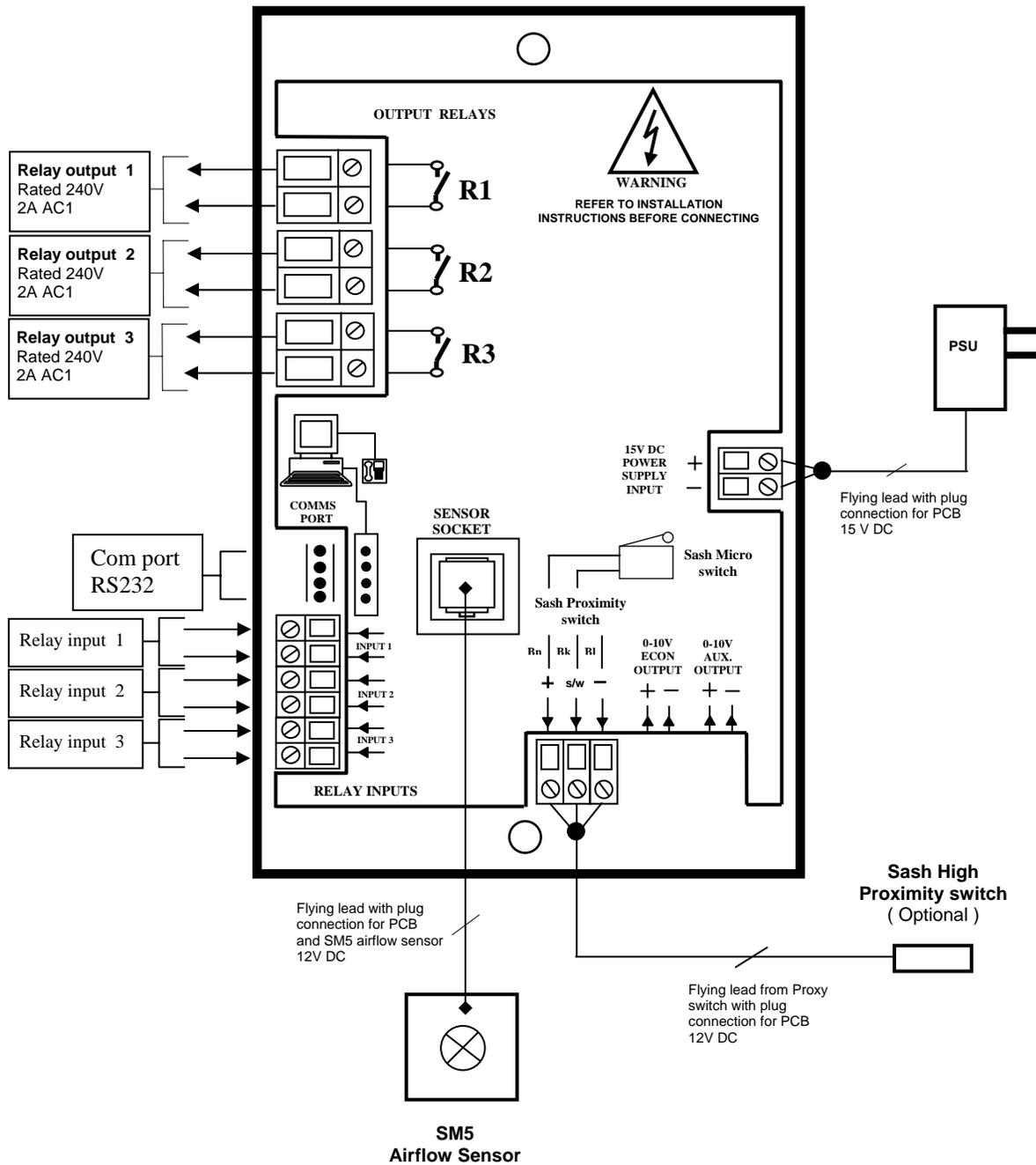
**SEE P. 10 FOR CALIBRATION PROCEDURE!!!**



**Note:**

Access to the Calibration and Configuration menus is password protected and is factory-set. Default password is 0000. To change the password or other parameters, obtain the alarm communication program from Kewaunee Scientific ([www.kewaunee.com](http://www.kewaunee.com)). Use a Laptop connected to the Com port and the Upload/Download software to alter password or make other changes.

**Connection details:**





## 1.1 General Description

**All systems are comprised of the following components:**

- 1 – SM5 In –line Airflow Sensor,
- 1 – AIR ALERT 600 Alarm unit,
- 1 – AC power supply

If the Sash Alarm System option is included there will also be a sash micro switch or proximity switch.

**Operator Features** --- the alarm has the following operator features:

### **Digital Display**

The digital display is a back-lit, full graphic unit with a visual display of approx. 2.25" x 1.25". The display operates through the software allowing the generation of figures, wording and icons. The display shows the fume hood face velocity in **m/sec** or **fpm** when enabled or the alternative with no velocity reading but showing **AIR FAIL / AIR SAFE** as continuous display. All of the above are configurable via the alarm key pad.

An '**event time line**' segmented into 20, 3-minute segments will scroll across the display when enabled.

This takes the form of a graphical 'blip' that will progress from the right-hand side to the left-hand side, representing events that have occurred during the past hour. On the standard alarm this will be limited to airflow alarms but other alarms are available.

Using the diagnostics software and an associated computer via the **com port** on the alarm the event data can be transferred to a data logger.

The alternative to the event time line is a dynamic '**bar graph**' representing the face velocity.

The display shows a **Horn** icon (with line through it) when the audible alarm is in the Muted condition.



## Condition Messages Displayed on Screen:

**Sash High** –will be displayed when the Sash alarm is enabled and the sash is raised above the max safe working opening. This display will alternate on/off with the velocity reading.

**Ext Alarm** – will be displayed when the external alarm input is activated ( when enabled ) This display will alternate on/off with the velocity reading

**Air Fail** - will be displayed if the airflow is less than the Low air alarm point. This display will alternate on/off with the velocity reading

**High Air** - will be displayed if the airflow is more than the High air alarm point. This display will alternate on/off with the velocity reading

**Set-back**- will be displayed if the night set-back function is activated (when enabled) This display will alternate on/off with the velocity reading.

**Disabled** - will be displayed if the alarm disable function is activated (when enabled) This display will alternate on/off with the velocity reading

**LED Indicators** ---- the alarm unit has three LED indicators:

**Red** -- Alarm  
**Amber** -- Caution  
**Green** -- Safe

**Audible Alarm sounder** -- the alarm has an audible alarm sounder with local or remote mute facility

## Buttons and Controls:

**Enter** --- the alarm has an Enter button -- this is multi-functional as follows:  
Press **Enter** momentarily when alarm is sounding will mute the alarm  
Press **Enter** for 5 secs will gain access to **Calibration** and **Configuration** menus ( both menus password protected )

**+ / -** The alarm has + / - buttons that can be used to scroll through the calibration and configuration menu or to select options or values



### **External Connections:**

**Input 1** --- volt free relay input configurable for normally closed or normally open relays

This input can be configured as:

- Alarm disable
- Night set-back
- External alarm
- Sash High
- High / Low

**Input 2** --- volt free relay input configurable for normally closed or normally open relays

This input can be configured as:

- Alarm disable
- Night set-back
- External alarm
- Sash High
- High / Low

**Input 3** --- volt free relay input configurable for normally closed or normally open relays

This input can be configured as:

- Alarm disable
- Night set-back
- External alarm
- Sash High
- High / Low

**Output 1** --- volt free relay output configurable as normally closed or normally open relays.

**Output 2** --- volt free relay output configurable as normally closed or normally open relays.

**Output 3** --- volt free relay output configurable as normally closed or normally open relays.



**Com Port** --- to enable connection to Laptop or PC for full diagnostics, logging or setting up and for communications to building computer system (BMS)

**Power supply** --- low voltage DC power supply

**Airflow Sensor** --- connection socket for the face velocity airflow sensor.

## 1.2 Alarm Configuration / Calibration

The alarm can be configured via a Laptop or PC using a variety of 'set up' programs each designed for a particular application with a combination of inputs, outputs and push buttons. This configuration can be changed via the alarm key pad using the menu system if required or re-configured by re-connection of the laptop or PC.

The configuration of the various functions and the calibration of the alarm face velocity meter is menu-driven. Access to the menu will be via password (4 digit number) and will be two-level. The first level will be for calibration of the unit and the second level will be for set-up of the configuration of the alarm.

The menus and sub-menus are in plain language and incorporate brief instructions where appropriate.

## 1.3 Start up

When unit is powered up, the following sequence of events occur:

1. The 12V DC power is applied to the airflow sensor and a delay on timer (30 sec) is initiated.
2. The alarm then performs a self-test on the display and all indicators etc (approx. 5 sec)
3. The display show a 'Welcome note' – with the Kewaunee name for the rest of the initial 30 sec delay time. During this time the airflow sensor is stabilizing.
4. During the whole of the 30 sec period all alarms and relay outputs are inhibited.



5. At the end of the 30 sec delay the unit performs one of two options:
  - a. If the alarm calibration has been previously completed, the unit goes to normal operating mode (Run)
  - b. If the unit has not been calibrated the unit displays:  
'Unit requires set up -- press Enter to access Set up menu'  
The set up menu allows calibration or configuration via the password protection  
  
During the set-up all alarms and output relays are inhibited.

## **1.4 Events / Actions**

### **Safe airflow**

- Meter reading above warning level (> 0.90 FPM)
- Green LED on

### **Warning airflow**

- Meter reads between warning level and air fail level (> 80 FPM and < 90 FPM)
- Amber LED on

### **Low airflow**

- Meter reads below alarm level for longer than the warning to low air delay time
- AIR FAIL toggles on / off with display
- Red LED flashes
- Audible alarm sounds -- can be muted via Enter pushbutton
- Low air relay operates if configured

### **Reset**

- When airflow rises 4 fpm above Low air level for longer than the low air to warning air delay time the Low air alarm resets automatically

### **Audible alarm Mute**

- When the audible alarm is muted via the Enter button - an Icon (horn with forward slash) is shown on the display.



### **Sash High**

- When the input configured as Sash High is activated
- Amber LED on
- Sash High – toggles on / off with velocity display
- Audible alarm sounds
- Audible can be muted via Enter pushbutton -- this silences the alarm and initiates a repeat timer (if configured). After the delay time the alarm re-sounds ( and can be re-muted). During this time the Amber LED flashes on / off.
- Sash High relay operates (if configured)

Reset when Sash lowered to safe position and input de-activated.

### **High / Low**

- When input configured as High/Low is activated
- Display Icon shows High or Low
- High / Low relay operates (if configured)

This function is designed for two-speed fan operation or two position damper operation switched via a micro switch or proximity switch activated at a given position on the sash.

### **Night set-back**

- When input configured as Night set-back is activated
- Night set-back Icon is displayed
- Red LED on (Flashing)
- Reduced Low air alarm (if configured)
- Audible alarm muted
- Mute Icon shown on display

### **External alarm**

- When input configured as External alarm is activated
- Red LED on ( Flashing) – ( if configured )
- External Alarm toggles on /off with display -- ( if configured )
- Audible alarm sounds – can be muted via Enter pushbutton
- External alarm relay operates ( if configured)

### **Alarm disable**

- When input configured as Alarm disable is activated
- Alarm disabled is displayed
- Red LED on ( Flashing)
- Audible alarm muted
- Mute Icon shown on display



## 2.1 Quick Start Installation

Follow the instructions below for installing and commissioning the unit. :-

1. Fit the alarm to the Fume Hood using the cut-out details provided with the unit see page 12
2. Fit the airflow sensor to the Fume Hood using the cut out and installation details provided --- see page 10
3. Connect the 'telephone style' airflow sensor plug-in cable to the sensor and the back of the alarm unit --- see typical connection diagram on page 11
4. Plug in the power adapter to a Mains AC power socket and connect the flying lead to the alarm unit --- see typical connection diagram on page 11.
5. Power up the unit and wait at least 30 sec. while the sensor temperature stabilizes.
6. If the unit has not been calibrated the unit will display 'Requires setup' – press ENTER to continue and in the Main Menu use the +/- buttons on the alarm facia select 'SETUP' and then press the ENTER button.
7. In the 'Setup Menu' select 'CALIBRATION' and press the ENTER button
8. At this stage you will be requested to enter the PASSWORD. Use the +/- buttons to select the individual digits in turn and then press ENTER. If the password is correct the unit will go to the calibration mode. If the password is not correct you will be requested to try again --- on the third wrong password entry the calibration menu will lock out for 10 minutes. From the factory, default password is set for 0000.
9. When in the calibration mode follow the instructions on the display screen to carry out the calibration of the unit. See 'Calibration Notes' below for hints on successful calibration.  
When the calibration is complete the unit will return to the Main Menu.
10. Use the +/- buttons on the alarm face; select ' RUN ' and then press the ENTER button.

**The unit will now function and display the measured Fume Hood face velocity**

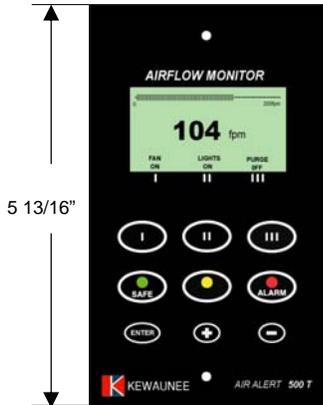


## 2.2 Calibration Procedure:

1. When using a standard Fume Hood with Vertical Sliding sashes, open the sash to the normal max safe working height for the Low Air sample.
2. For the Higher Air sample close the sash to approx. 50% of the opening used for the Lower Air sample. If the Higher air sample value is too close to the Lower Air sample the alarm will detect this and ask you to repeat with a higher value. To do this, close the sash a little more and repeat the sample. Avoid closing the sash below 4 inches.
3. The face velocity readings on the open sash may vary at different points on the measuring grid by up to 20 FPM. This is quite acceptable in terms of the fume hood performance, so long as no individual point is below the designated Low Air alarm point. The figure entered for the calibration point should be taken as the average value of all the measuring grid readings.
4. Take time when measuring the face velocities for the calibration procedure to allow for the velocities across the open sash to stabilize. If the velocities are changing or are turbulent during the sampling period the alarm will detect this and ask you to repeat the sample.
5. When using a Fume Hood with Horizontal Sliding sashes, open the sashes to the normal max safe working opening for the Low Air sample.



### 3.0 AIR ALERT 600 -- CUTOUT AND ALARM DIMENSIONS



5 13/16"

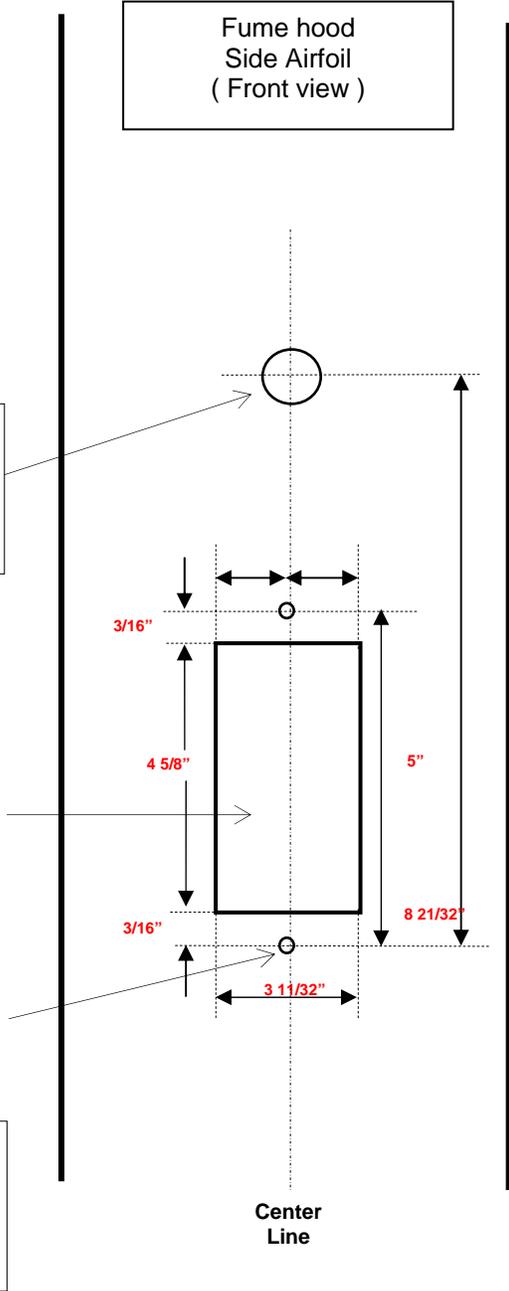
3.5"

**Alarm Panel Dimensions**

**Sensor Tube Cutout Dimensions**  
1" diameter

**2 x Fixing Holes for Alarm Plate Screws**  
Hole size 5/32" for No 4 Self-tapping screw provided

**Alarm Panel Cutout Dimensions**  
4 7/16" x 3 11/32"

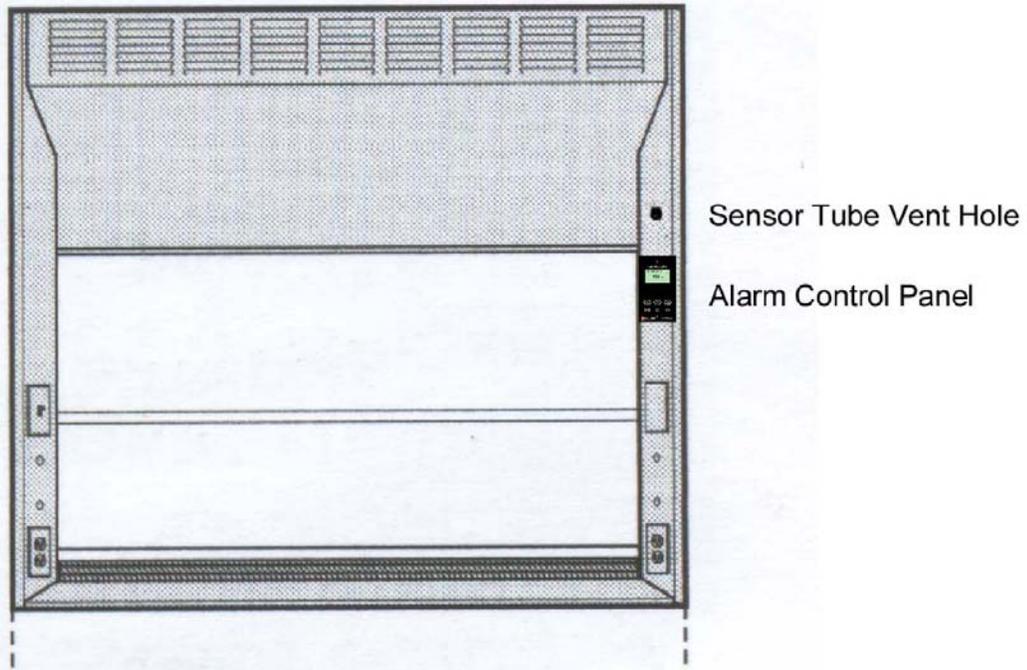


Fume hood Side Airfoil ( Front view )

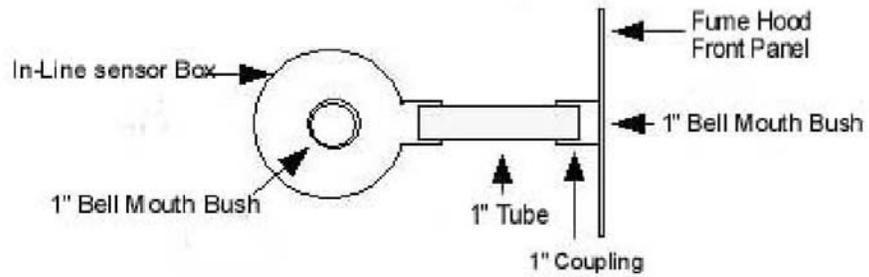
Center Line



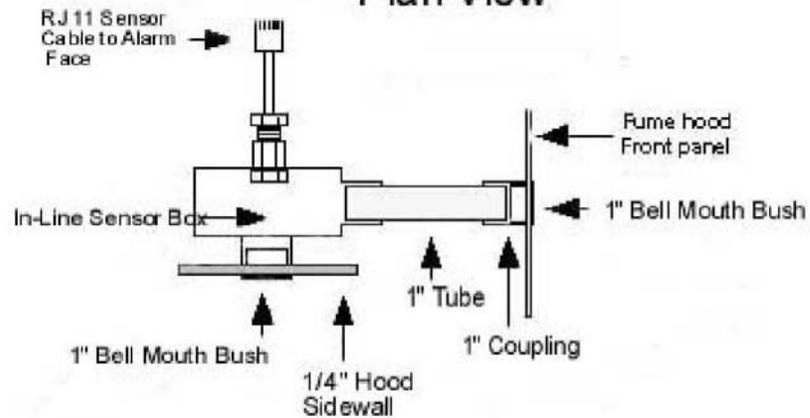
## 4.0 INSTALLATION DETAILS



Side View

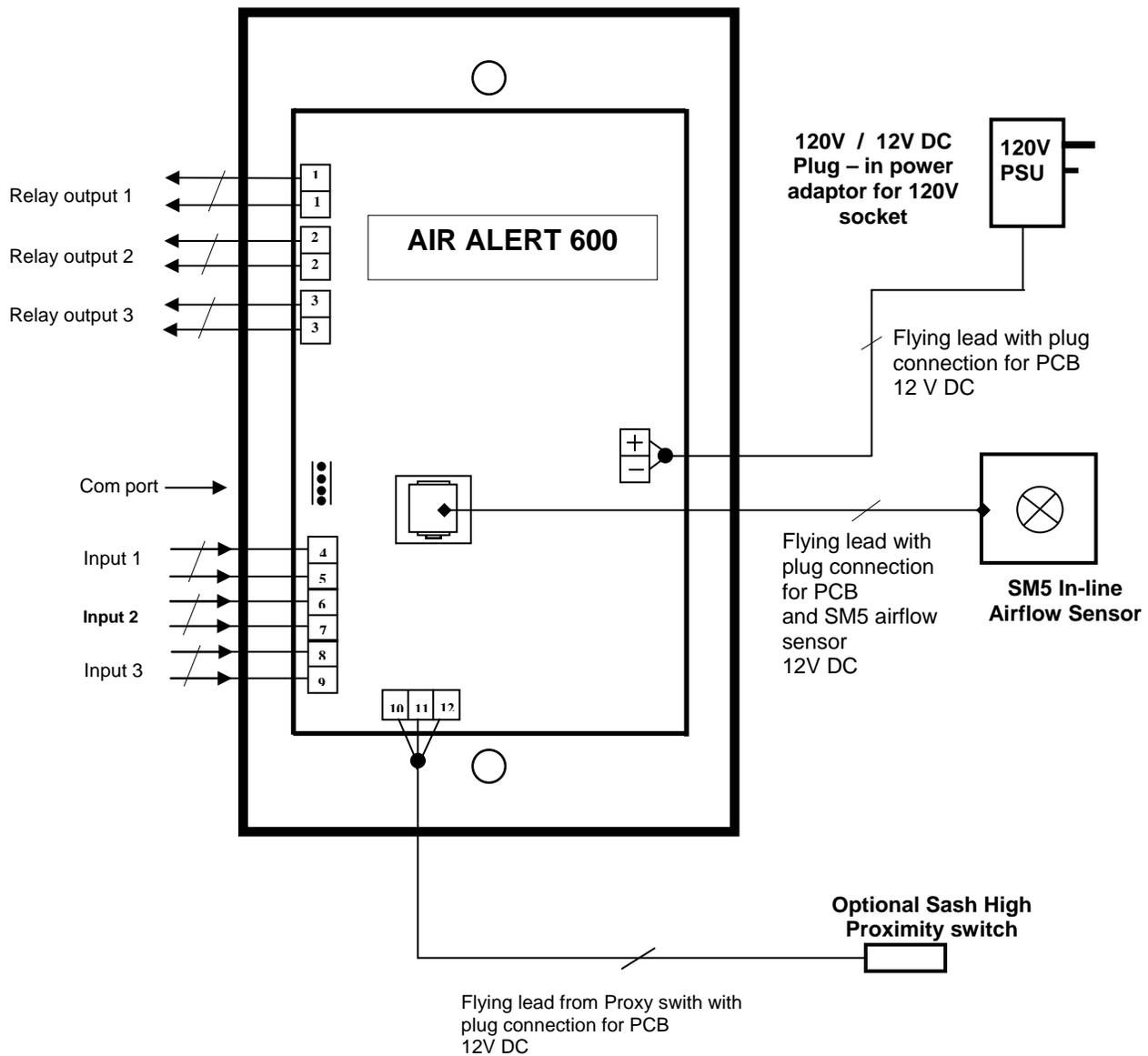


Plan View





# 5.0 WIRING DIAGRAM



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