

# AFA 500 BSC

## BSC AIRFLOW MONITOR

Operating and Instruction Manual



### Model AFA 500 / BSC – Mk2

- Built-in or Remote sensor
- 2 Relay inputs
- 1 Relay output
- Com port

Used for alarm indication and monitoring of BSC's

Issue : July 2011

## OPERATOR DISPLAY PANEL



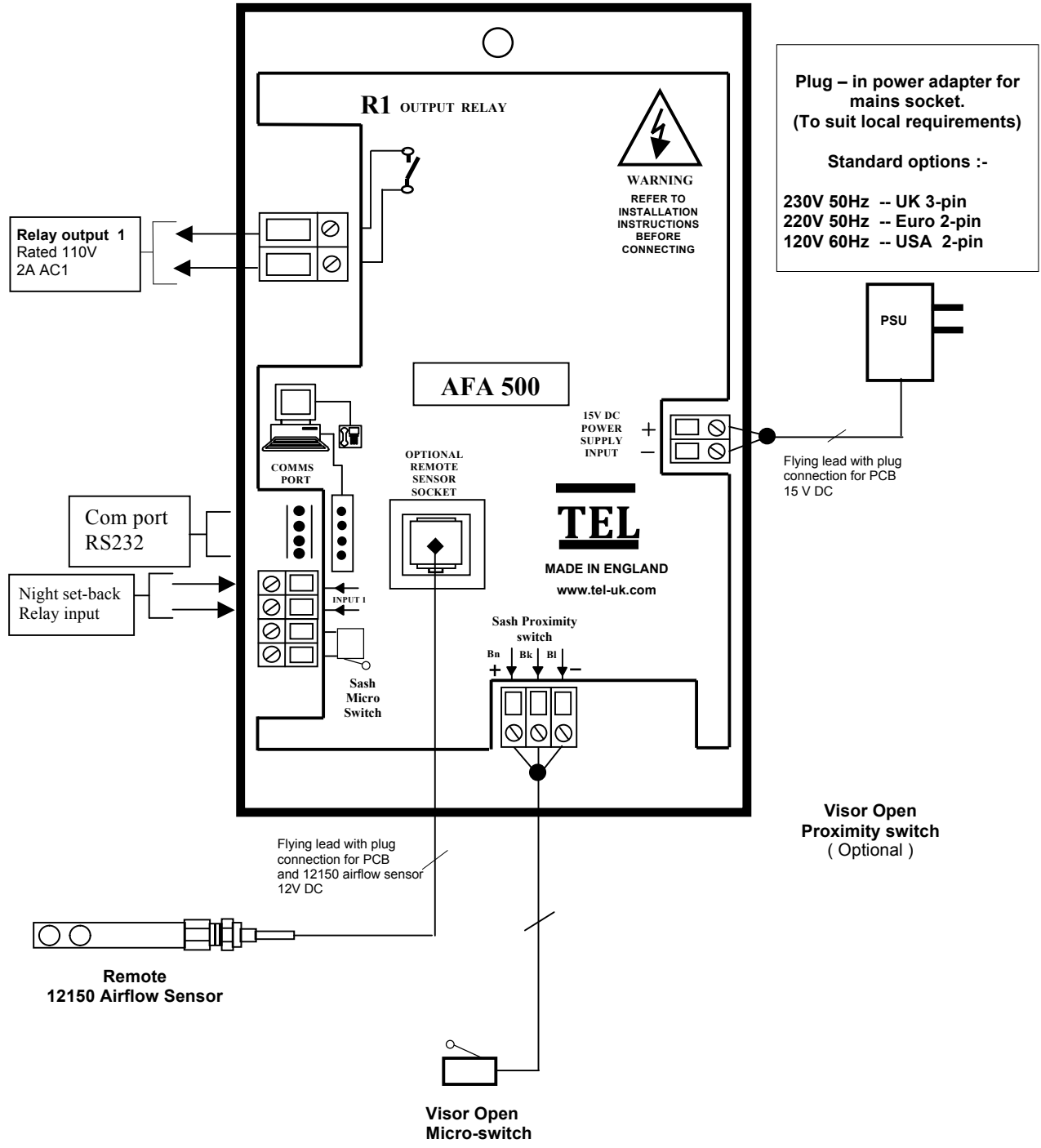
← LED indicators

← Function buttons Calibration.

ENTER – also used as  
Mute button for audible alarm

SET – also used to  
permanently enable / disable  
audible alarm.

**Connection details :-**



## 1.1 General Description

All systems comprise of the following components :-

- 1 – AFA 500 Alarm unit,
- 1 – DC power supply
- 1 – 12150 Airflow sensor

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

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

**Safe LED - Green LED** (Not flashing) will be displayed if the airflow is greater than the Low air alarm point.

**Alarm LED - Red LED** (Not flashing) will be displayed if the airflow is lower than the Low air alarm point.

**Visor Open - Red LED** (Flashing) will be displayed when the Visor is opened

**Audible Alarm** -- the Audible alarm will sound (can be muted) in the Air Fail and the Visor Open alarm condition

**Night Set-back** -- when the Night Setback input is activated the Audible alarm will be muted and the **Green LED will flash on/off**

**ENTER** --- the alarm has an Enter button -- this is multi-functional as follows :-

Press **Enter** momentarily when Low Air alarm is sounding will mute the alarm

Press **Enter** momentarily when Sash High alarm is sounding will mute the alarm and initiate a repeat timer that will re-sound the alarm if the Sash is not lowered to a safe position before the end of the time period

Press **Enter** for 5 secs will gain access to **Calibration** mode

**SET** -- used during the airflow Calibration of the alarm and to permanently mute the alarm.

Press **SET** for 10 secs to disable the audible alarm if enabled.

The audible alarm will beep 3 times to indicate that the alarm is disabled. When the airflow is in the Normal condition the Green LED will flash to indicate that the alarm has been disabled.

Press **SET** for 10 secs to enable the audible alarm if disabled.

The audible alarm will beep 3 times to indicate that the alarm is enabled

**External Connections** -- the alarm unit will have the following connection points :-

**Input 1** --- volt free relay input – ( close contact to activate the input )

This input is configured as :-

**NIGHT SETBACK**

**Output R1** --- volt free relay output - ( contact closes on activation )

This input is configured as :-

**LOW AIR ALARM**

**Sash High Input** --- a. Connection point for **Visor open micro switch**. ( Switch contact to close and remain closed in Visor open condition )

b. Connection point for **Visor proximity switch**. ( Switch contact to close and remain closed in Visor Open condition )

**Note:- Use input a. OR input b. for the Visor Open alarm**

**Remote Airflow Sensor** -- Plug in connection for airflow sensor

**Note:- The remote Airflow Sensor socket will only be available for units ordered without the built-in Airflow Sensor**

**Com Port** --- to enable connection to Laptop or PC.

**Power supply** --- low voltage DC power supply 15V DC

## 1.2 Alarm Configuration / Calibration

The alarm is supplied with a factory configuration. The configuration settings that can be changed are:

- a. the setting for the Visor Open repeat timer time delay.
- b. the percentage figure for the Low Air alarm point.
- c. the alarm delay time on power up (start up)
- d. the relay output activation (close or open on activation)

If required these can be changed by connection to a Laptop or PC via the RS232 com port using TEL config manager software and RS232 com lead.

**Calibration** - The airflow is 'captured' by the alarm. The alarm point is then calculated (factory setting is approx 80% of normal flow). The Low Air alarm will activate if the airflow subsequently falls to the alarm point. The alarm will reset once the airflow has risen above the alarm point and has stayed there for more than 2 seconds.

See Quick start guide for calibration tips.

## 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 the alarm then performs a self test on the functions ,LEDs and audible alarm ( approx 2 sec ) and then initiates a delay timer to allow the airflow sensor to stabilise.
2. During the whole of the delay period all alarms and relay outputs are inhibited and the Red & Green LEDs will be permanently ON.
3. At the end of the delay period 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 Red & Green LEDs will flash on/off and the audible alarm will be muted. It is then possible to press the Enter button for 5 secs and go into the calibration mode – (See 'Quick Start Installation' below for details of the Calibration procedures)

## 1.4 Events / actions

### Safe airflow

- Airflow above alarm level ( eg > 80 fpm )
- Green LED on

### Low airflow

- Airflow below alarm level for longer than the low air delay time ( 5 secs)
- Red LED on ( Not flashing )
- Audible alarm sounds ( 'Beep' on/off every 1 sec ) -- can be muted via Enter pushbutton
- Low air relay R1 operates.

Reset : -- when airflow rises above Low air level for longer than the low air to safe air delay time ( 2 secs ) the Low air alarm resets automatically

### Visor Open

- When the input configured as Visor Open is activated ( Micro switch or Proximity switch )
- Red LED on ( Flashing )
- Audible alarm sounds ( 'Beep' on/off every 1 sec )
- Audible can be muted via Enter pushbutton -- this silences the alarm and initiates a repeat timer ( factory set to 5 mins ) After the delay time the alarm re-sounds ( and can be re-muted). During this time the Red LED flashes on / off.

Reset: -- when Visor closed and input de-activated.

### Night set-back

- When input configured as Night set-back is activated
- Green LED on ( Flashing)
- Audible alarm muted

### Airflow Sensor Error

- The connection and each element of the airflow sensor are monitored at all times. In the event of a problem with the sensor the audible alarm will sound using a different and distinctive tone best described as ' a modulating siren effect'
- The audible alarm can only be silenced by re-connecting the sensor ( if a remote sensor is being used ) or switching the power to the unit off.

## 2.1 Quick Start Installation

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

1. Fit the alarm to the Safety Cabinet using the cut-out details provided with the unit --- see page 10
2. Fit the airflow sensor to the Safety Cabinet using the installation details provided --- see page 11,12, 13 & 14
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 12
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 12.

Power up the unit and wait at least 30 secs while the sensor temperature stabilises.

## **Calibration :-**

### **Normal Airflow Capture**

- a. Press and hold the Enter button for 5 secs to go into the calibration mode. This is indicated by both Red and Green LEDs flashing on/off together with the audible alarm sounding ( 'Beep on/off 4 times every 1 sec ).
- b. To initiate the alarm point calibration press and hold the ENTER and the SET buttons at the same time. The unit will then sample the airflow for a 5 sec period during which time the GREEN LED goes off and the RED LED flashes on/off. The audible alarm continues to sound during this period and if the sampling is successful will give a two tone beep at the end of the period and the unit will then go automatically into the RUN mode.  
If the buttons are released during the sampling period or if the airflow is fluctuating more than the pre-set value the audible alarm will give a lower frequency buzzing sound for a short period and then go back into the calibration mode. If this occurs re- press the ENTER and SET buttons to repeat the airflow sampling.
- d. When complete re-set the airflow to the normal value and the unit will go to the Safe running condition with the GREEN LED on.

**The unit will now function and go into the alarm condition if the Safety Cabinet air velocity falls below the alarm value.**

## **2.2 Calibration Notes :-**

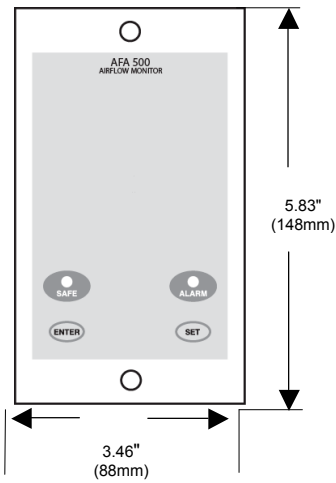
1. When using a standard Safety Cabinet with the airflow sensor in the exhaust duct it is important to position the sensor in a stable and representative position within the duct.

2. Ensure the sensor is fitted with the holes in line with the airflow.

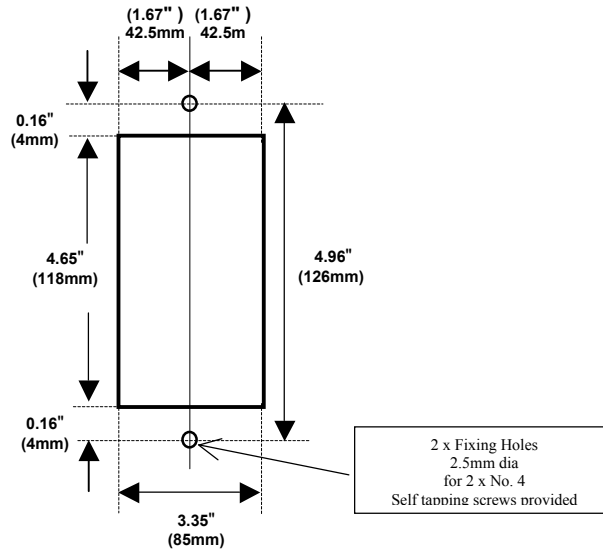
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### **3.0 Dimensions**



**Alarm Panel Dimensions**



**Panel Cutout Dimensions**

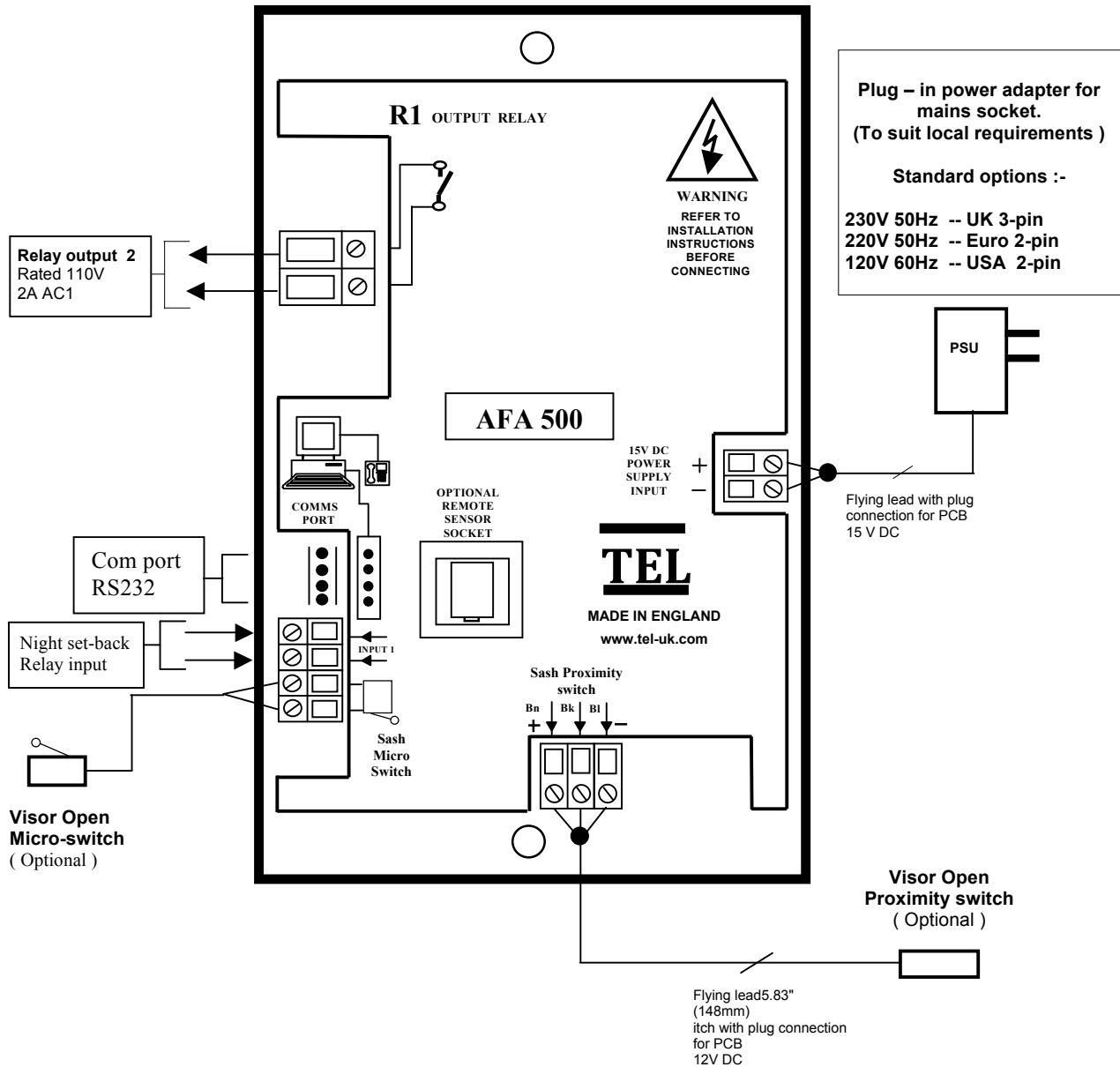
4.65" x 3.35"  
(118mm x 85mm)

## 4.0 Airflow Sensor Installation

**12150  
DUCT  
AIRFLOW SENSOR**

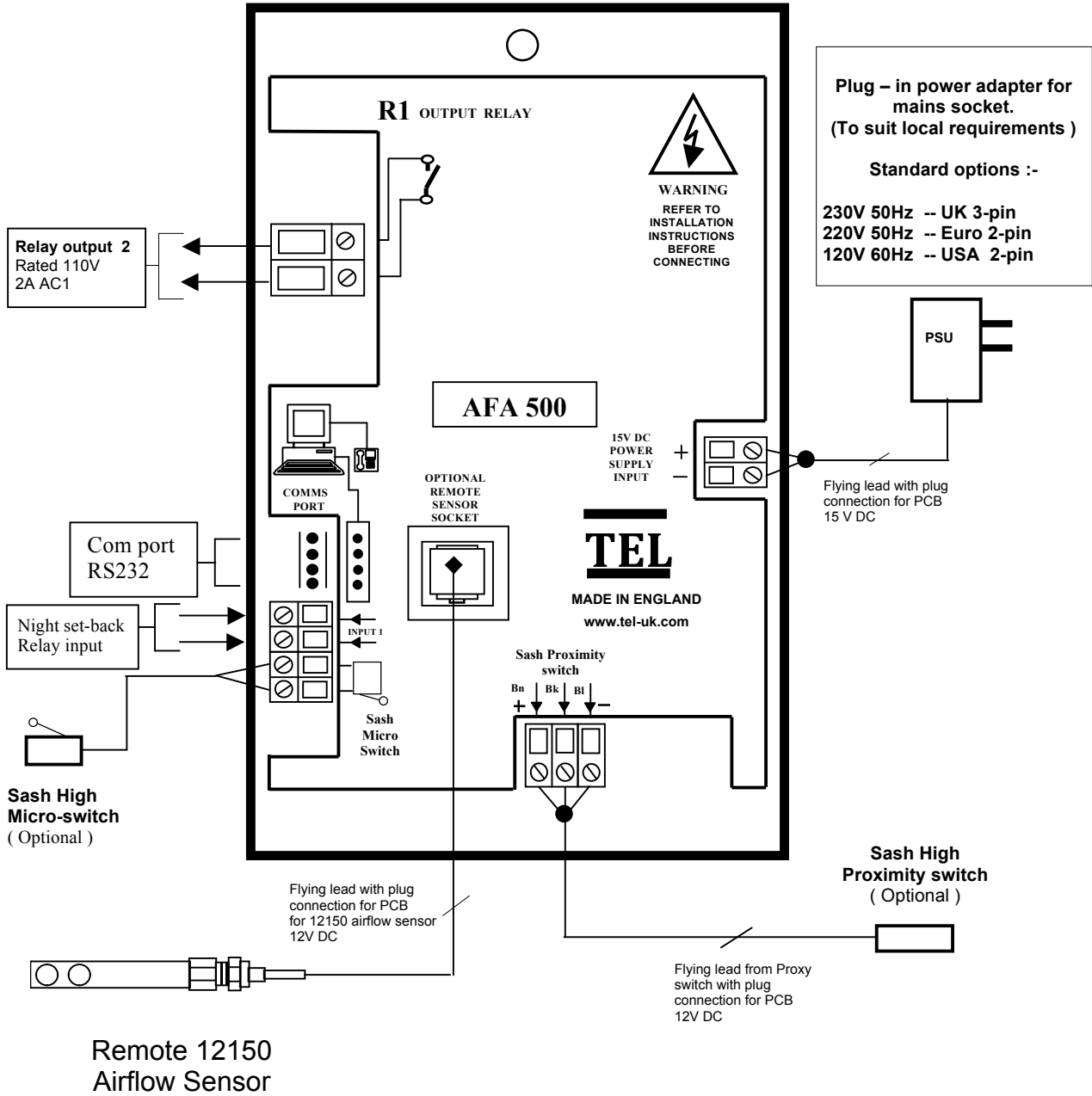
**5.0 Typical Wiring Diagram**

**Standard Alarm with built-in Airflow Sensor**

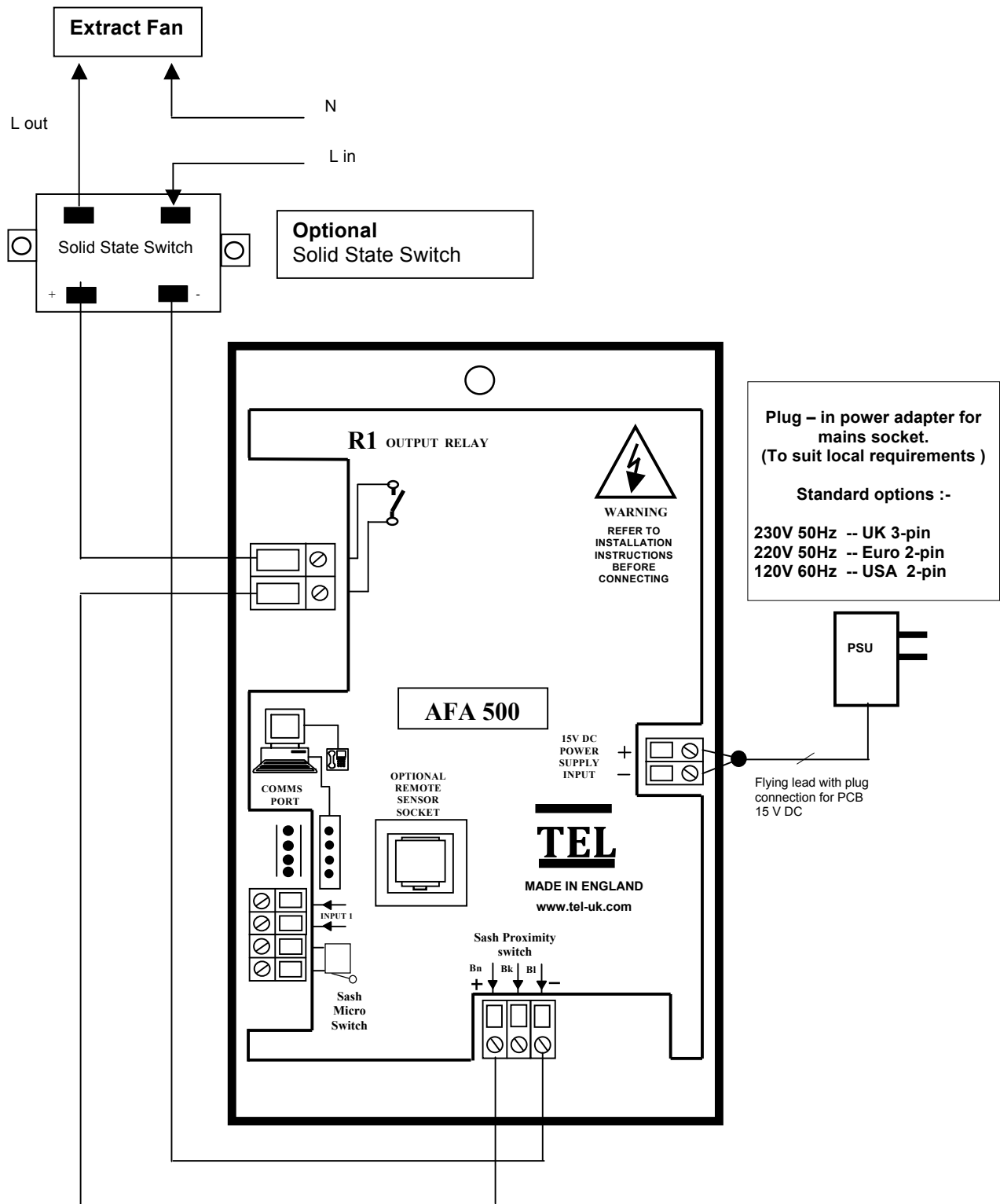


## 5.1 Typical Wiring Diagram

### Alarm with REMOTE Airflow Sensor



## 5.2 Typical Wiring Diagram Connecting the Optional Solid State Fan Switch



## 6.0 Limitation of Warranty and Liability

Seller warrants that this product, under normal use and service as described in the operator's manual shall be free from defects in workmanship and material for a period of twelve (12) months, or the length of time specified in the operator's manual, from the date of shipment to the customer. This limited warranty is subject to the following exclusion :-

- a. Batteries and certain other components when indicated in specifications are warranted for a period of 90 days from the date of shipment to the customer.
- b. With respect to any repair services rendered, Seller warrants that the parts repaired or replaced will be free from defects in workmanship and material, under normal use, for a period of 90 days from the date of shipment to the customer
- c. Seller does not provide any warranty on finished goods manufactured by others. Only the original manufacturer's warranty applies.
- d. Unless specifically authorised in a separate writing by Seller, Seller makes no warranty with respect to, and shall have no liability in connection with, any goods which are incorporated into other products or equipment by the Buyer. All goods returned under warranty shall be at the Buyer's risk of loss, Seller's factory prepaid, and will be returned at Seller's risk of loss, Buyer's factory prepaid.

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## 7.0 Contact us :-

**For further information on our range of airflow alarms and controls please contact us at :-**



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