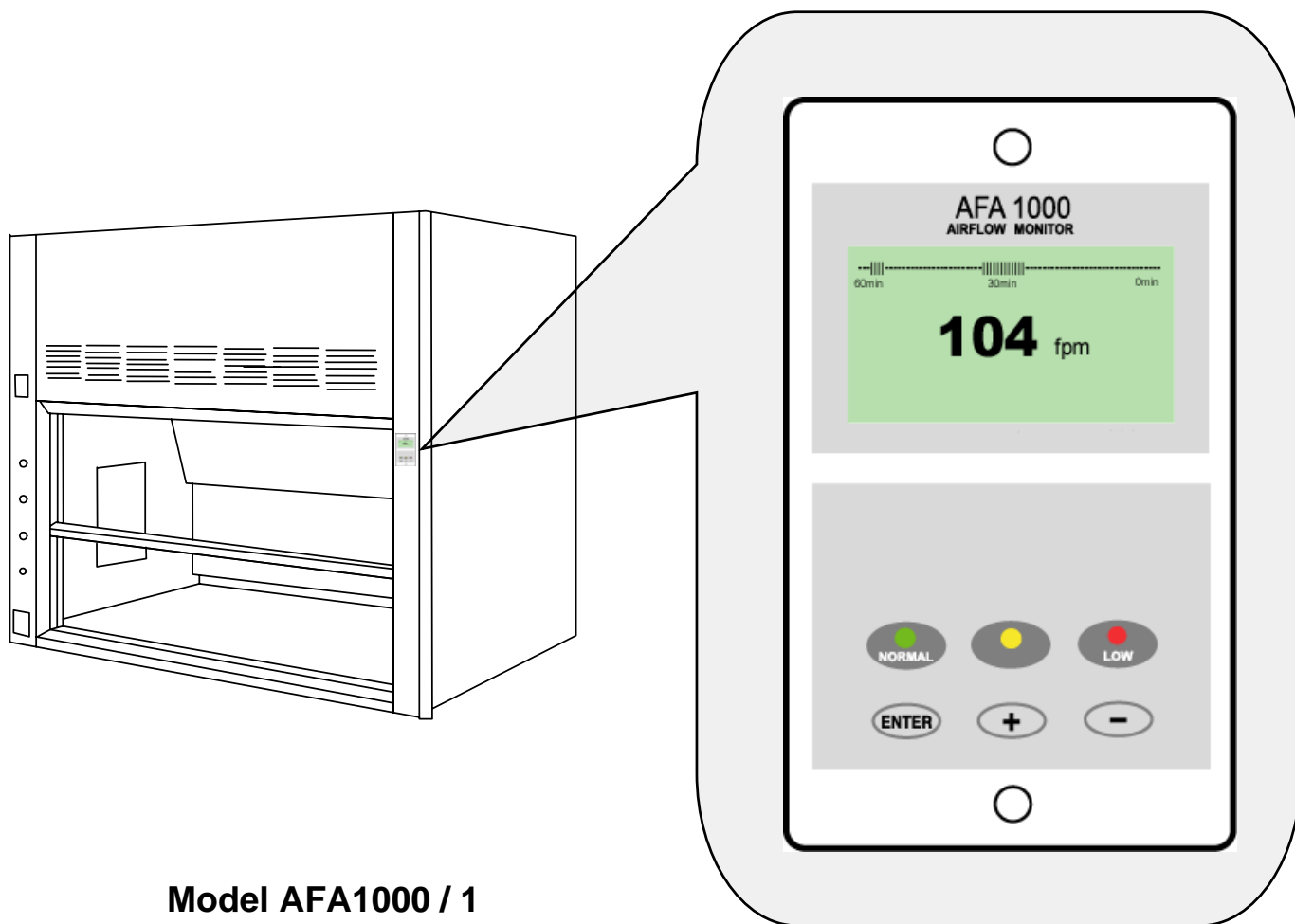


AFA 1000

FUME HOOD ALARMS

Operating and Instruction Manual



Model AFA1000 / 1

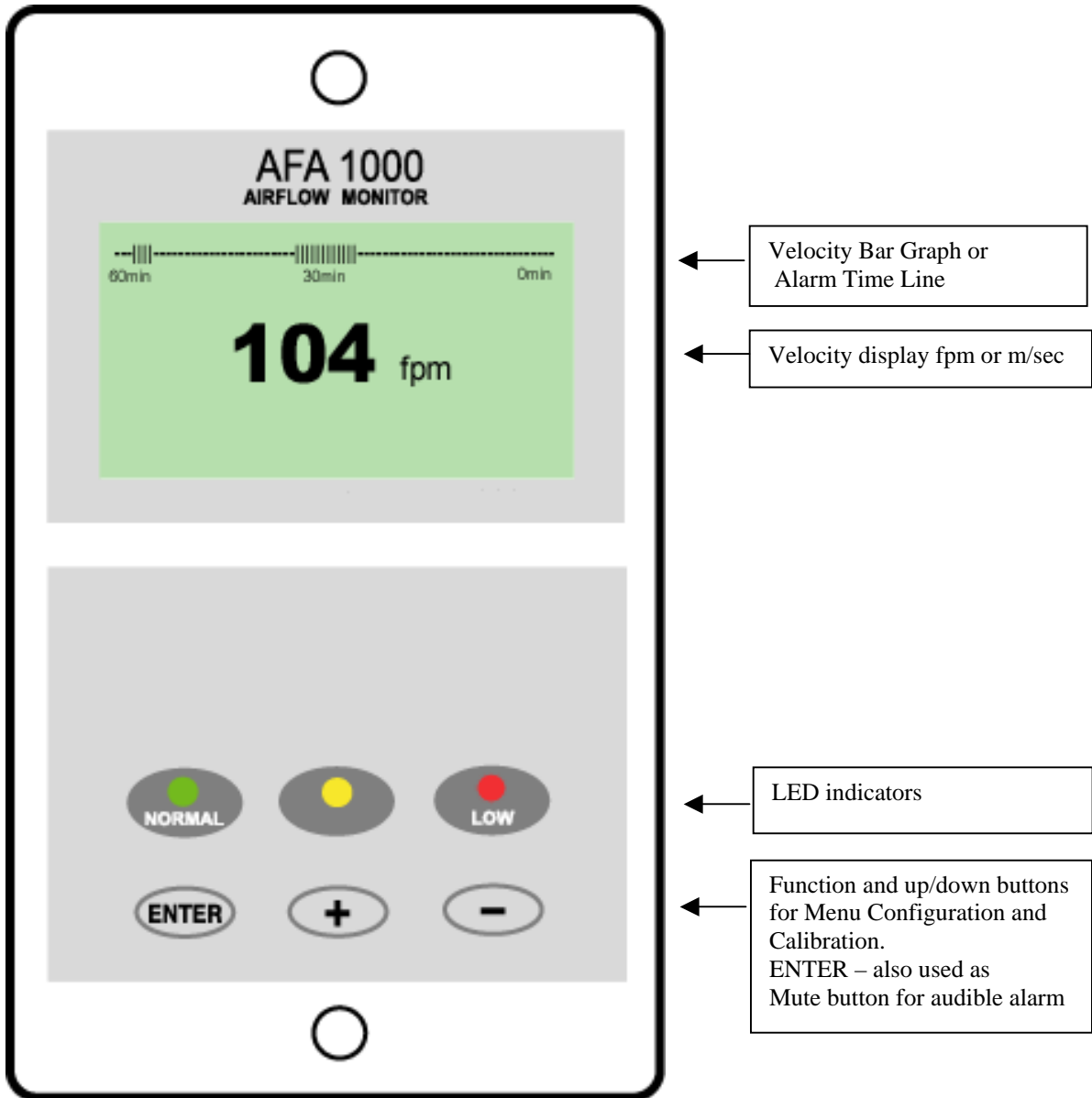
- Digital display
- 1 Output relay
- 3 Input relays
- Com port

Used for alarm indication and monitoring on
Fume Hoods

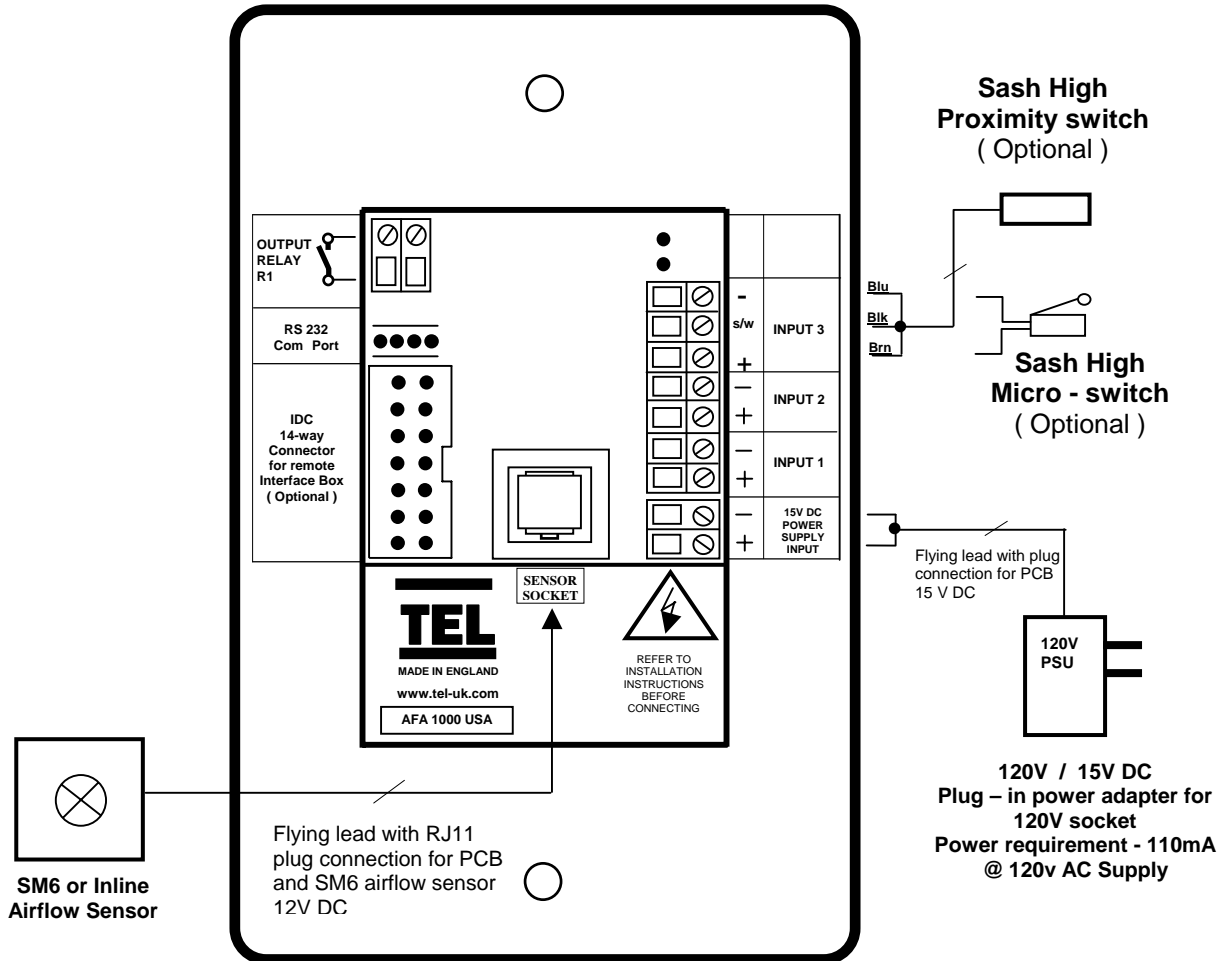
1/MK3/FH/USPSU
250804

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1.0 Operator Display Panel



2.0 Connection details



Notes :-

Inputs 1 2 & 3 are volt free inputs. (Max line resistance 4.7K ohms) (Short circuit current 5mA DC)

Relay output R1 is a power limited volt free contact. Contact rating 30VAC / 42VDC Max

Primary power requirement - 110mA @ 120VAC (3A Fused supply recommended).

3.0 General Description

All systems comprise of the following components :-

- 1 – In-line Airflow Sensor,
- 1 – AFA1000 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 2.2" x 1.18 ". 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 **LOW AIR / NORMAL** as continuous display.

All of the above are configurable via the alarm key pad.

An ' **event time line** ' segmented into 20 x 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.

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

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

Low Air - 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 -- Low
Amber -- Caution
Green -- Normal

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

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

Press **Enter** momentarily when alarm is sounding will mute the alarm.

The horn can be permanently disabled using the configuration menu.
When this option is selected the Horn Icon with the word OFF will permanently appear on the display.

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 -- the alarm unit has the following connection points :-

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 relay .

Com Port --- for communications to building computer system (BMS)

Power supply --- low voltage DC power supply

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

4.0 Installation

Follow the instructions below for installing the unit. :-

1. Fit the alarm to the Fume Hood using the cut-out details provided with the unit --- see page 16 to 17
2. Fit the airflow sensor to the Fume Hood using the cut out and installation details provided --- see page 18
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 19 & 20
4. Plug in the power adapter to a 120V AC power socket and connect the power supply connector to the alarm unit --- see typical connection diagram on page 19 & 20

5.0 Start up / Calibration

1. Power up the alarm and it then performs a self test on the display and all indicators etc (approx 5 sec) , then wait at least 30 secs while the sensor temperature stabilizes.
2. If the alarm has not been calibrated it will display ' Requires setup ' – press ENTER to continue and in the Main Menu use the +/- buttons on the alarm face to select ' SETUP ' and then press the ENTER button.
3. To calibrate the alarm it is necessary to use a pre-calibrated anemometer which can be used to give an accurate measurement of the actual face velocity of the hood at two sample values. The lower value is taken with the sash at the normal working height and is 'captured' by the alarm.

A higher value is taken with the sash partially closed and this is also 'captured' by the alarm. From these two known points the alarm will track the face velocity over the whole range of the hood face velocities.

Before starting the calibration of the alarm please read the 'Calibration Notes' below.

When you are ready to start the calibration proceed as follows :-

- a. In the Setup Menu select 'CALIBRATION' and press the ENTER button
- b. At this stage you will be requested to enter the PASSWORD. Use the +/- buttons to select the individual digits in turn and press ENTER for each digit.
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 mins

**NOTE:- If you enter the Calibration Menu by accident :-
press the + & - buttons at the same time to escape back to the Main Menu**

- c. 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.
- d. When the calibration is complete the unit will return to the Main Menu.
- e. From the Main Menu 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

Note:- To re-enter the Menu functions press and hold the ENTER button until the Main Menu appears on the display

5.1 Calibration Notes :-

1. When using a standard Fume Hoods 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 ins.
A difference of at least 50 fpm or more between the high and low velocity points will create the best accuracy over the whole operating range.
3. The face velocity readings on the open sash may vary at different points on the measuring grid by up to 20fpm. 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 can be taken as the average value of all the measuring grid readings or could be taken as the individual lowest point on the grid. For most fume hoods this low point is on the bottom row in the centre and is a convenient position to measure and for future reference when checking the alarm during annual maintenance.
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.

When calibrating or re-calibrating the alarm it is important to ensure that the 'Vent kit' is connected to the In-line airflow sensor on the fume hood. If the vent kit is not connected the sensor will not 'see' a change in the airflow during the calibration procedure. If this occurs the alarm will detect this and bring up a warning on the display asking you to 'check the sensor'

If the sensor cable is not connected the alarm will display SENSOR ERROR and you will not be able to proceed with the calibration.

6.0 Monitor Configuration

The configuration of the various functions and the calibration of the alarm face velocity display is menu driven. Access to the Calibration and Configure menu will be via separate passwords (4 digit numbers). The numbers are factory set to 0000 and 0000 . These numbers can be changed via the pushbuttons and display from the Setup Menu.

NOTE:- If you enter the Configure or Password Menu by accident :- press the + & - buttons at the same time to escape back to the Main Menu

The menus and sub–menus are in ‘ plain language ’ and incorporate brief instructions where appropriate.

See ‘ Menu Block Diagrams ’ for a step by step view of the menu structure

7.0 Events / actions

Normal airflow



- Meter reading above warning level (e.g. > 90fpm)
- Green LED on

Warning airflow



- Meter reads between warning level and air fail level (e.g. > 80fpm and < 90fpm)
- Amber LED on

Low airflow



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

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

High airflow



If configured :-

- High Air toggles on / off with display
- Audible alarm sounds – can be muted via Enter pushbutton)

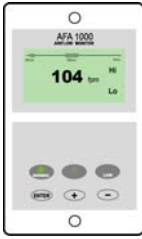
Sash High



- 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)
- Ext 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



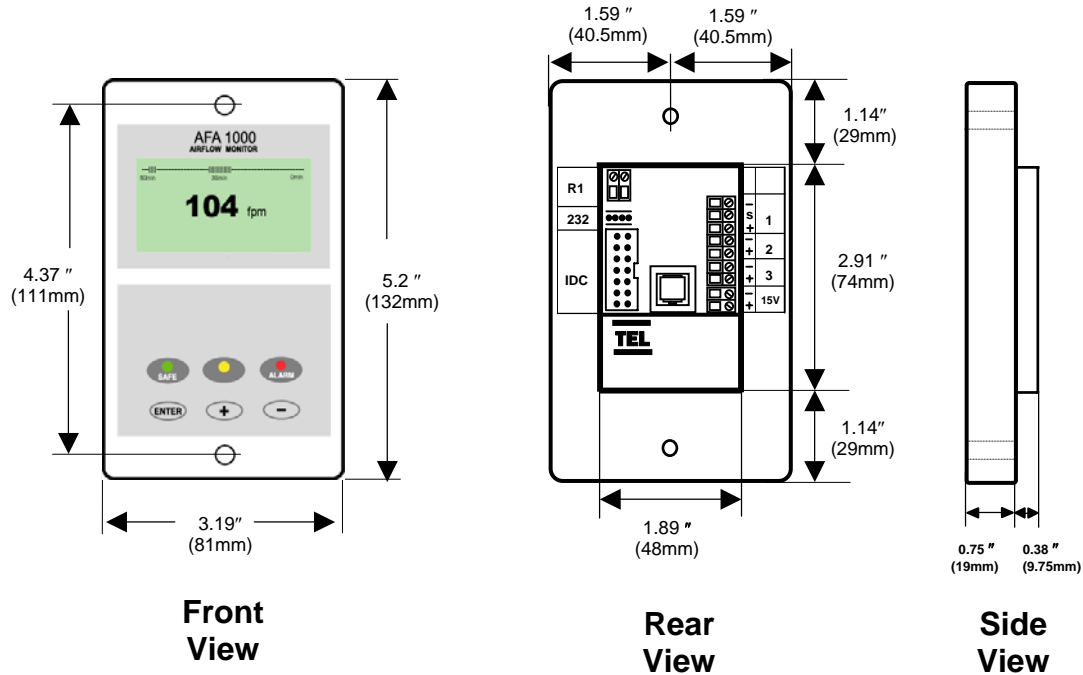
- When input configured as Alarm disable is activated
- Alarm disabled is displayed
- Red LED on (Flashing)
- Audible alarm muted
- Mute Icon shown on display

Audible alarm Mute

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

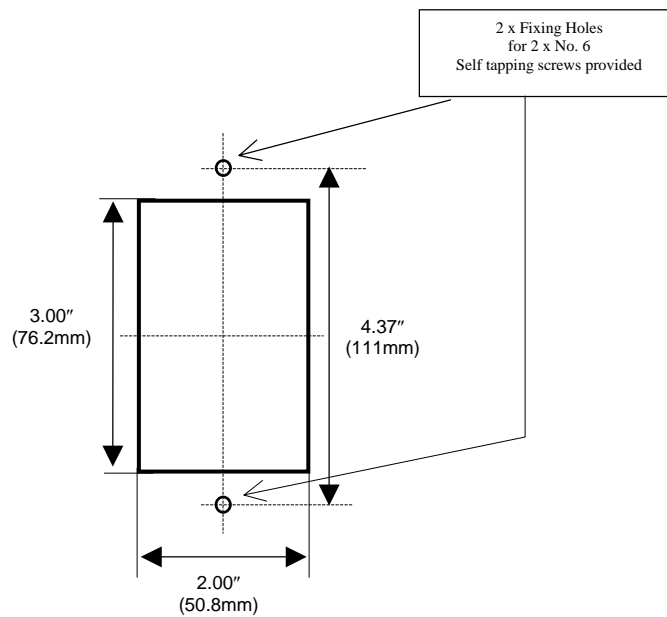
8.0 Dimensions

Alarm Panel Dimensions



Panel Cutout Dimensions

3.00" x 2.00"

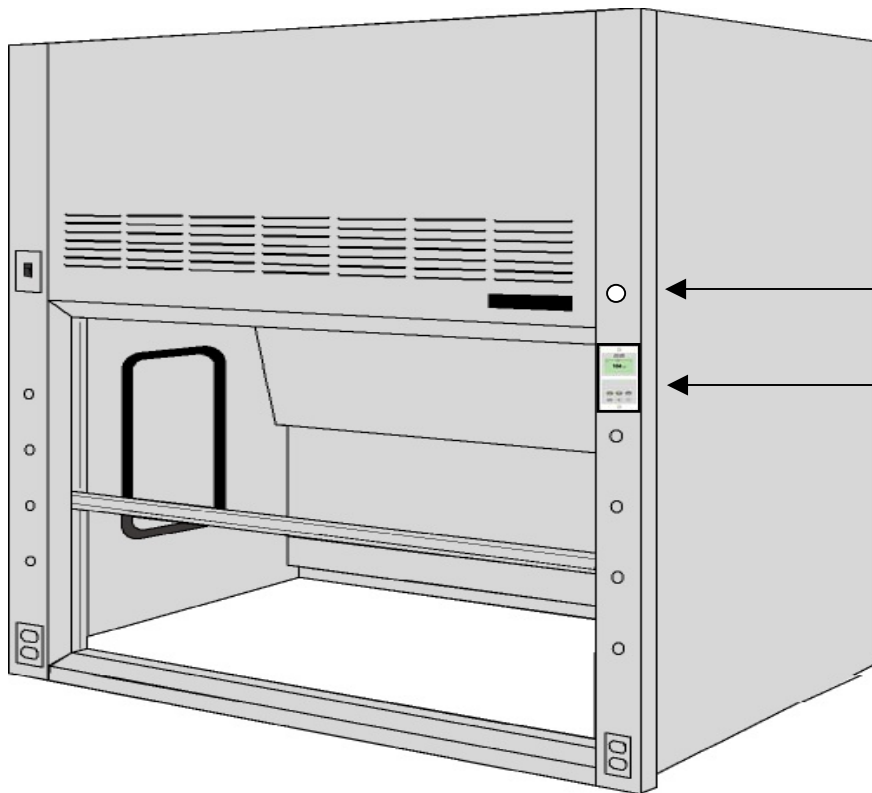




Concept or Pioneer Fume Hood

Vent Tube Hole

Airflow Alarm

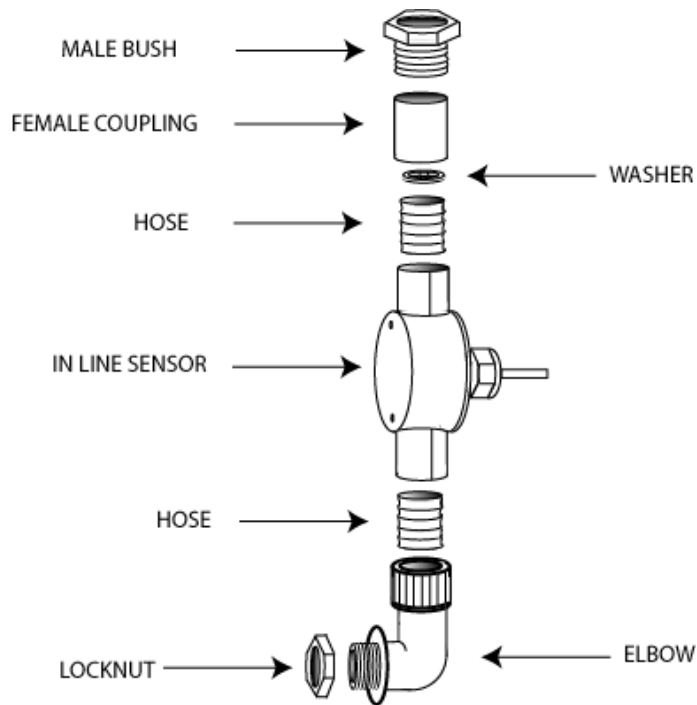


SafeAir Fume Hood

Vent Tube Hole

Airflow Alarm

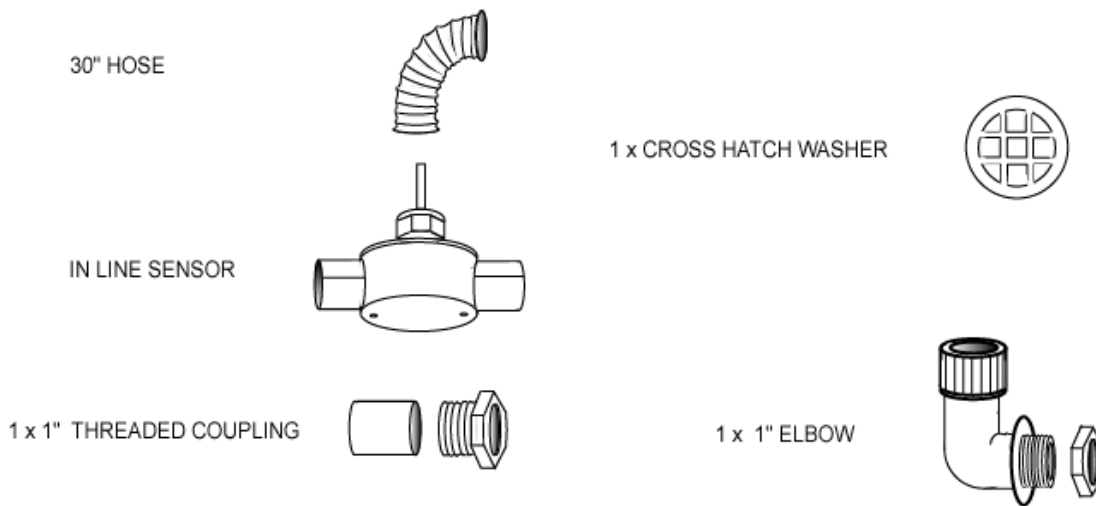
9.0 In – line Airflow Sensor Installation

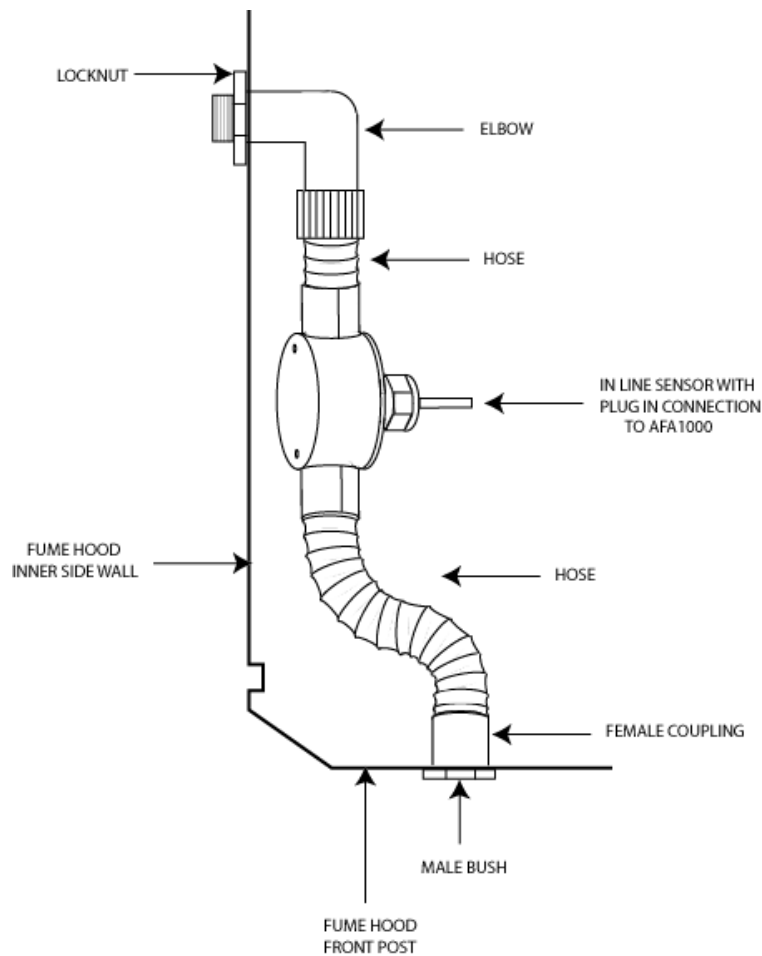


The in-line sensor kit comprises of the following components

Select the correct length of **Hose** to suit the installation .

The **Cross Hatch Washer** is fixed inside of the female coupling.



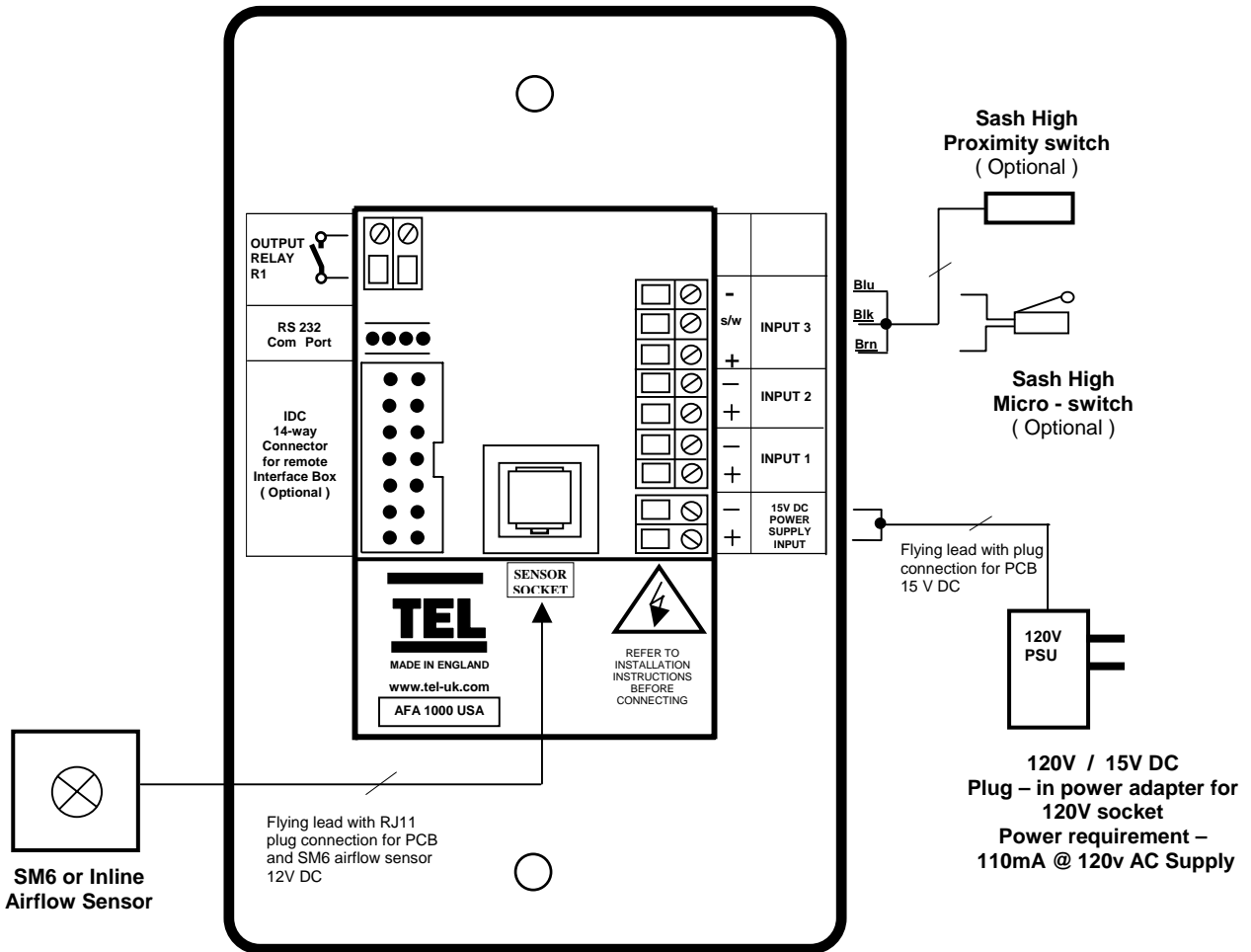


It is very important to position the In-line airflow sensor in the correct position to give long term stable reading of the face velocity. Please read the INSTALLATION NOTES below and if in doubt contact us for further advice.

INSTALLATION NOTES :-

1. The In-line sensor must be positioned where it can " see " the room pressure of the laboratory.
1" Threaded coupling should be mounted through a 1" hole in the front face of the side wall post. Cross hatch washer is pre- fitted between Hose & female coupling.
1" Elbow should be mounted through a 1" hole in the inner lining side wall. The **ideal position** for this elbow is 4" back from the sash glass and 4" higher than the normal sash opening height through the inner side wall.
- 2 The sensor should not be mounted in a position where it is subject to drafts from the laboratory air input or ventilation system.

10.0 Typical Wiring Diagram --- (Alarm only)



11.0 Spare Parts List

Item	Description	Part Number
AFA1000	AFA1000/1/Mk3/FH/USPSU	62199
Airflow sensor	SM6 SIL In-line FH with 2m RJ11 cable	SM6 / SIL / FH
Flexible tube	Flexible tube 30"	Adaptorflex 30"
Cross Hatch Washer	Cross Hatch washer –white	CHW /Wh
Front Post Tube coupling	1" Threaded coupling	EVK / Bush & Coupling
Side wall adaptor	1" Elbow with Locknut	1" Elbow
Power supply	USA power supply	USAPSU
Com Port Cable	RS232 serial cable	RS232 / 2M
Fixing screws	Black fixing screws	No. 6 Blk screws

12.0 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 2 years (24) 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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The purchaser and all users are deemed to have accepted the terms of this LIMITATION OF WARRANTY AND LIABILITY, which contains the complete and exclusive limited warranty of Seller. This LIMITATION OF WARRANTY AND LIABILITY may not be amended or modified nor may any of its terms be waived except by a writing signed by an authorised representative of the Seller.

13.0 Contact us :-

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



HOLLAND SAFETY EQUIPMENT

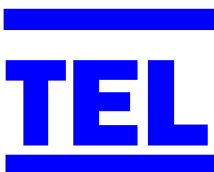
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