

# medem SafeAir CMv3

## Installation Instructions

The SafeAir CMv3 is a ventilation interlock system with gas detection.

The system can ensure that any mechanical ventilation being monitored is running before the gas can be used. When installed with Medem gas sensors it will also monitor the atmosphere for CO<sub>2</sub>, CO, methane and LPG.

Product Dimensions 180mm x 130mm x 70mm



- Gas Pressure proving.
- Gas Detection (up to 4 detectors )
- Built in Fan Current Monitor for 2x Fan interlocking.
- 5 year warranty - 10 years when commissioned

### SafeAir CMv3 features

Before commencing installation please familiarise yourself to the equipment by reading the comprehensive installation instructions. If in doubt then please call 0161 233 0600.

**It is a statutory requirement that this safety system is installed and commissioned to the satisfaction of the manufacturer.**

A commissioning certificate must be issued to the end user along with instructions for the operation of the equipment.

As the Manufacturer Medem UK should commission this safety system whereupon a commissioning report will be forwarded to the installing agent who should provide a copy to the end user.

At the point of our commissioning an individual serial number will be attached to the system along with a 24hr help line number. Photos and all relevant information for the installation will then be stored on the Medem site database to be accessed in the event of a call on the 24 hour help line.

The warranty period for the panel and sender unit will then be extended to Ten years.



# SafeAir CMv3

## System description

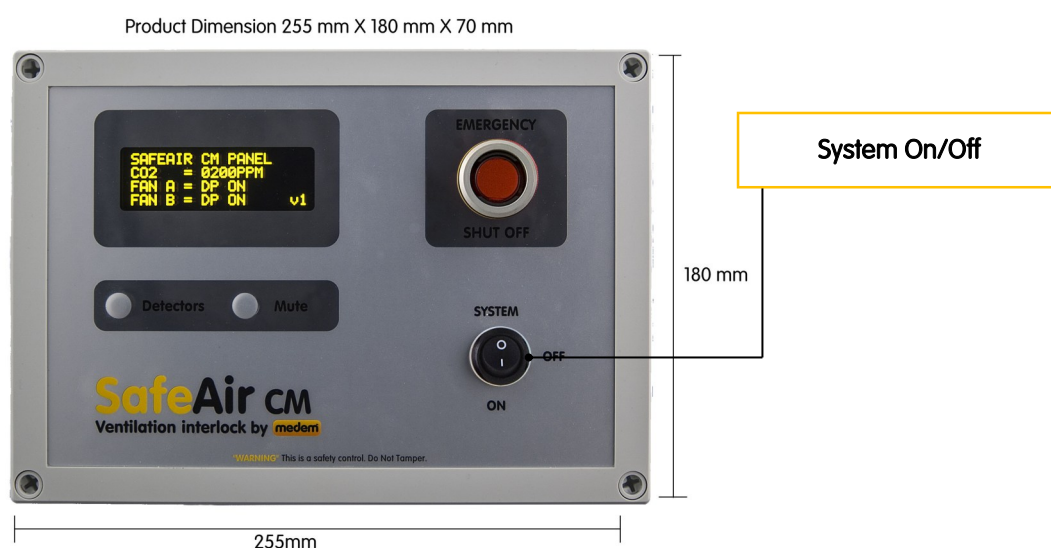
### Ventilation Interlock System For Kitchens

The **SafeAir CM** is a Ventilation Interlock system with inbuilt two channel current monitors.

The system will ensure that any mechanical ventilation connected (supply or extract) is running before the gas can be used. When installed with Medem gas detectors it will also monitor the atmosphere for CO (Carbon Monoxide) and/or CO<sub>2</sub> (Carbon Dioxide).

The system comprises of a mains powered panel capable of operating up to four sensors and an internal two channel current monitor for interlocking the mechanical ventilation this has a monitoring range of 30 mAmps to 20 Amps.

The ventilation can also be interlocked by mechanical air flow switches (DP) if required.



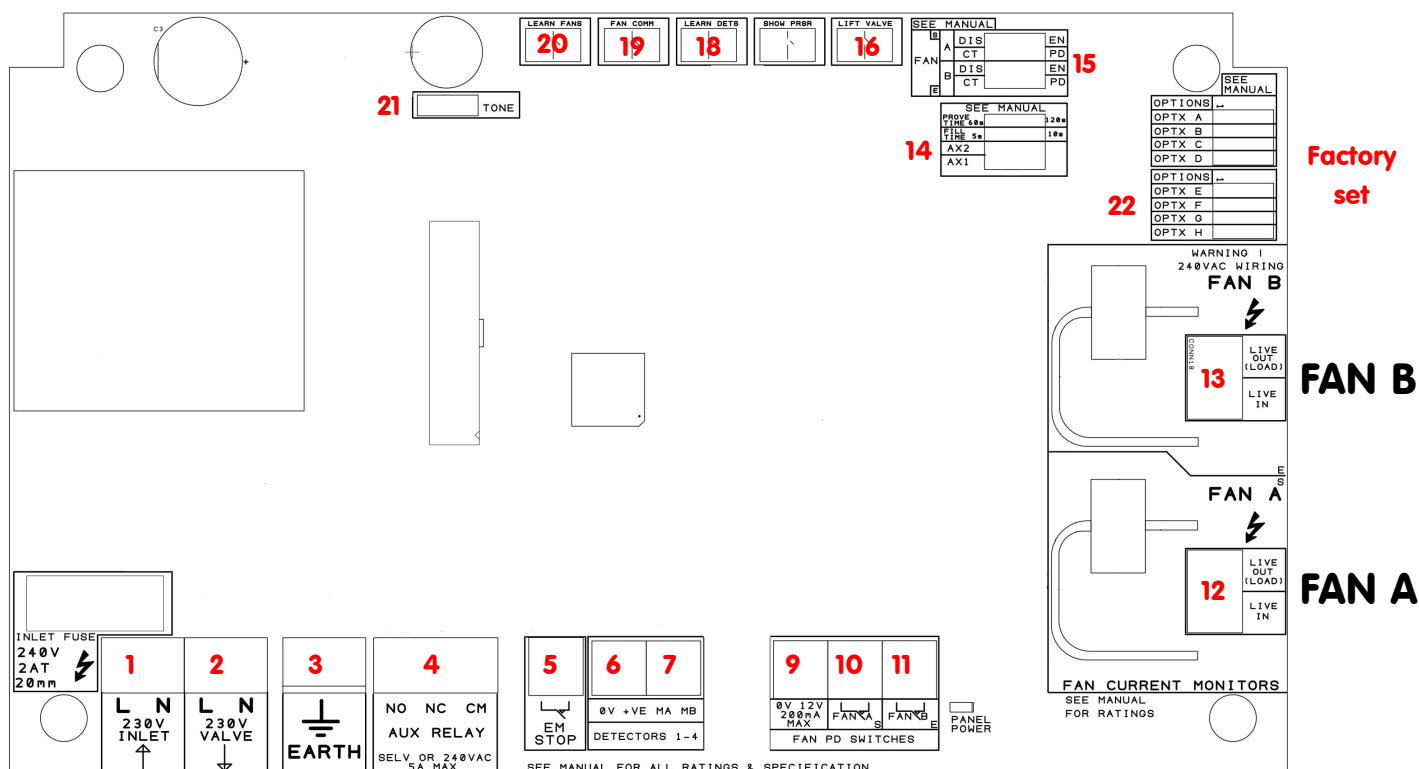
### Control Panel

The front of the panel has the following controls and indications:

- Emergency stop button.
- System On/Off switch.
- Detectors button - For viewing detector status.
- Mute.

LCD display:

For displaying system status during both installation and normal use, also for displaying diagnostics.



Connections to panel: marked on board.

1. Live & Neutral 230 volts supply from 3amp switched fuse spur.
2. 230 volts out to gas solenoid valve.
3. Earth connection terminals.
4. BMS to indicate, high alarm, gas on, EM stop, low alarm. (Using No14 AX1 & AX2 ).
  - 00 = Gas On.
  - 01 = Fan Fault.
  - 10 = EM Stop & High Alarm.
  - 11 = Unused.
5. Remote emergency stop buttons SELV, connect in series multiple buttons (requires a N/C circuit).
6. Power connections for detectors, Methane, LPG, CO, CO2, Oxygen, Temperature.
7. Comms connections for detectors, Methane, LPG, CO, CO2, Oxygen, Temperature.
9. 12 volt power.
10. Fan A interlock for PD switches.
11. Fan B interlock for PD switches.
12. Fan A current monitor (CT) connection.
13. Fan B current monitor (CT) connection.
14. Fill & prove time for gas pressure proving & AUX relay settings (see No4).
15. Set Fan A to use either PD switch (No10) or Current Monitor (CT) (No12).
16. Lift valve button: Opens the gas valve only whilst the button is continuously pressed, for commissioning purposes.
18. Learn detectors button: Press once only when all detectors are connected and powered.
19. Fan comm button: Displays the "Fan Current Trip level" this is the minimum fan current draw allowed before the system will indicate that the fans aren't running. (Default 35mA).
20. Learn Fan current: Set fan speed controller to desired speed (and therefore current) press to store value.
21. Enable/disable audible alarm sounder.
22. OPTX G: Enable enhanced interlocking mode. All other options are factory set.

## Gas Detection

**IMPORTANT** - Gas Detectors should not be installed until all building, construction or painting work etc.. Is completed, as these works can effect the sensitivity and longevity of the detectors.



Ensure that the protective cover labels (**RED**) are removed only after the completion of all building work and the system has been commissioned by the Medem engineer.

The labels are required to be removed for the detectors to operate, but removal before the completion of works risks contaminating the sensor element.

The system is capable of operating a mix of up to 4 detectors of different types.

### Detector Alarm levels

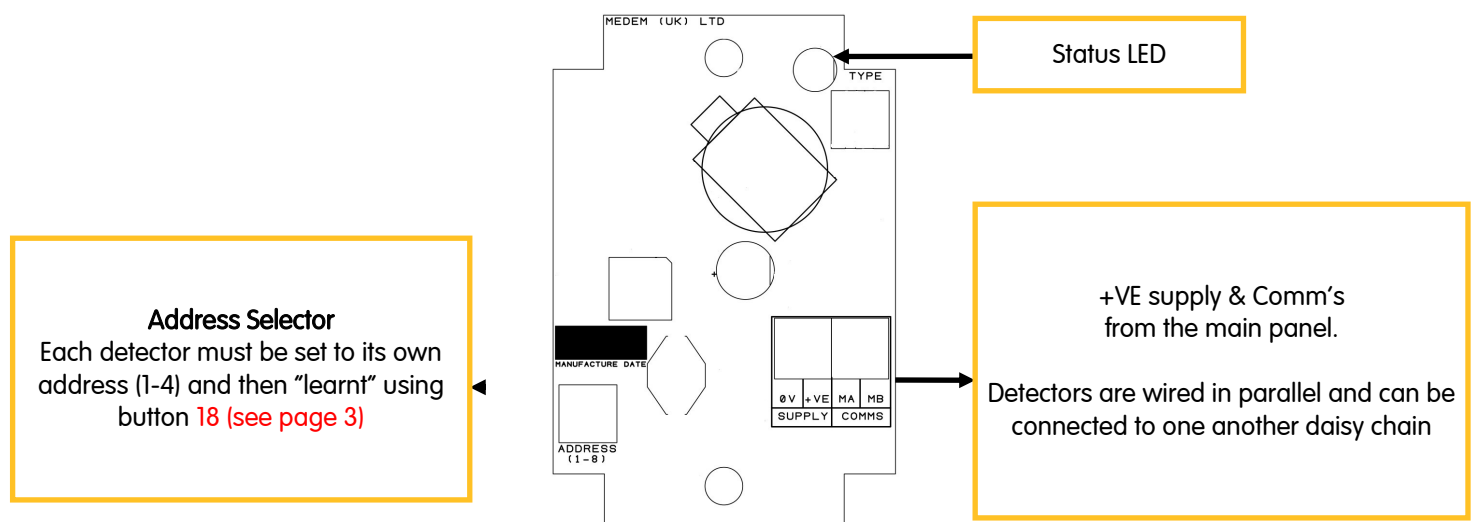
| Type | Pre-Alarm | High Alarm |
|------|-----------|------------|
| CO:  | 20ppm     | 30ppm      |
| CO2: | 1800ppm   | 2800ppm    |

Pre-alarm will display a warning message and tone (3beeps) every 10mins.

High-alarm will display a warning message, tone every one second and isolate the gas valve after 60seconds.

Detector location will vary dependant on the individual characteristics of the target gas that is being monitored for.

## Connection and addressing



All current wiring regulations must be followed with reference to running low and mains voltage cables together.

The maximum cable length between a detector and the control panel should not exceed 100 metres, if the distance between the main panel and the detectors is greater than 20metres a 1mm screened cable must be used on the +VE & Comms terminals

Gas detectors, require a four core screened Belden type security cable or 600v rated BMS cable (max cable length of 100meters.) which must be ground at one end.

Pressure sender unit, remote emergency stops, require a two core screened cable.

## Detector Indications

Each detector has its own Bi-Colour LED which is used to indicate the status of that detector.

|                 |                                                                                                                                                                                                                              |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Not Lit:        | No power/comm's. These are four wire units and all connections are required, check the polarity of both the power and the comm's (MA/MB) terminals are correct.                                                              |
| Flashing Green: | Detector is warming up, the detectors will flash green on power up for 90 seconds while the sensor elements stabilize. The system will ignore any detectors while flashing.                                                  |
| Solid Green:    | Detector is powered and active. <b>Note:</b> The detectors will still require correctly addressing (using the address selector pot) and learning by the system using button <b>16</b> (see page 3).                          |
| Flashing Red:   | Low level alarm. All detectors have both a low and high level alarm, low level alarms serve as a warning that an unsafe condition maybe building and gives chance to intervene before loss of gas service.                   |
| Solid Red       | High level alarm. An unsafe level of the target gas have been reached and the system will isolate the gas supply. The cause of the alarm will require identifying and resolving before the gas supply can be re-established. |

After installation a simple bump test can be performed by using an appropriate level test gas in order to check operation. Full testing and calibration checking takes place during a Medem commissioning.

## Detector Location

Detector location will vary dependant on the individual characteristics of the target gas that is being monitored for. The descriptions below describe the position for each detector after considering these characteristics.

For proper function care must be taken not to site a detector in a "dead space" or in the flow of any ventilation.

### Natural Gas/Methane

Natural gas detectors should be mounted at high level on a wall approximately 150mm from the ceiling height and avoiding corners and potential dead air areas.

Natural gas detectors should not be mounted below the height of the top of a doorway for example. This is because as the gas is slightly lighter than air it will rise filling the room from the ceiling down and will spill through the top of a door opening into the next room. If the detectors are mounted below this height then it will take longer the gas to reach the detector.

### LPG /Propane

LPG gas is heavier than air so detectors need to be mounted at low level 100mm from the floor, consideration should be given to any potential mopping or wet floor height.

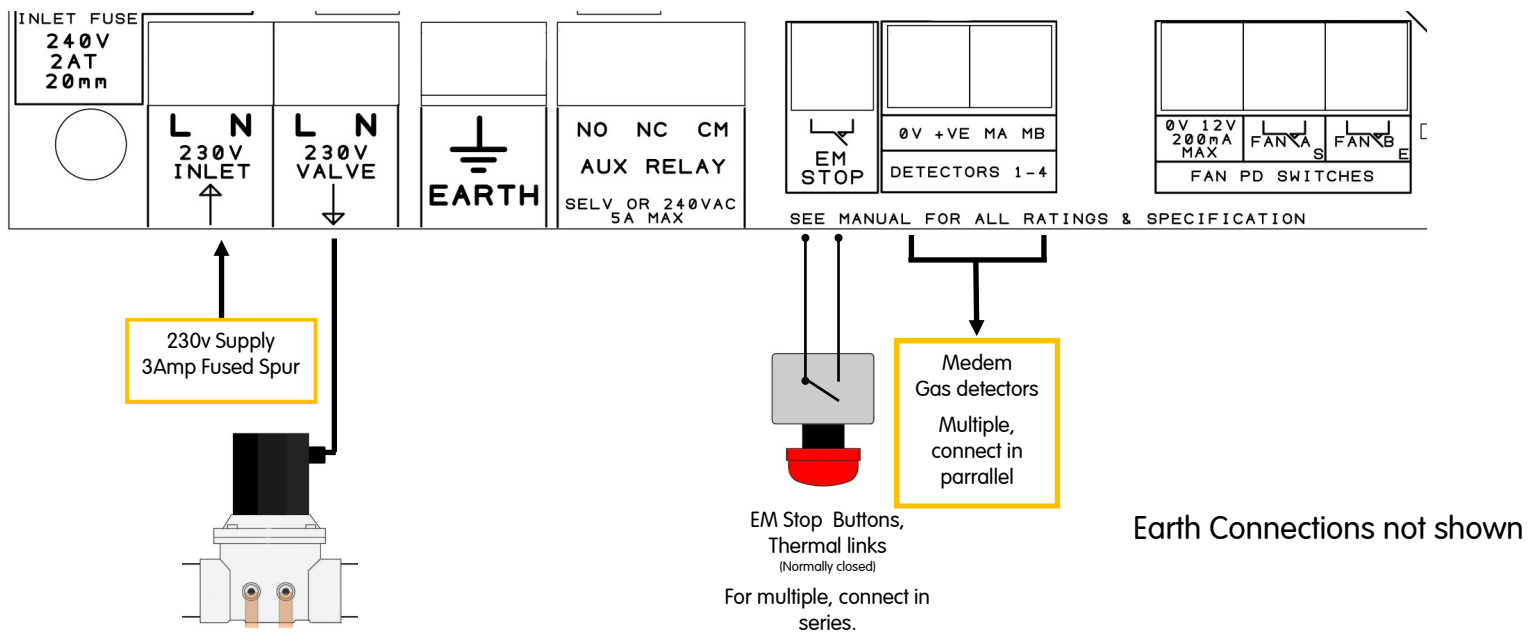
### Carbon Monoxide

Carbon Monoxide is slightly lighter than air and defuses evenly so detectors should be mounted within the breathing zone approximately 1.6m from the floor.

### Carbon Dioxide

Carbon Dioxide detectors should be installed so they monitor the general level of CO2 within the area. They should be mounted at 2m high and between 1m and 3m from the cook line. Care should be taken so they are not located close to the edge of a canopy or in direct flow of the supply or extract ventilation.

*For additional information or guidance on site specific requirements please don't hesitate to contact us.*

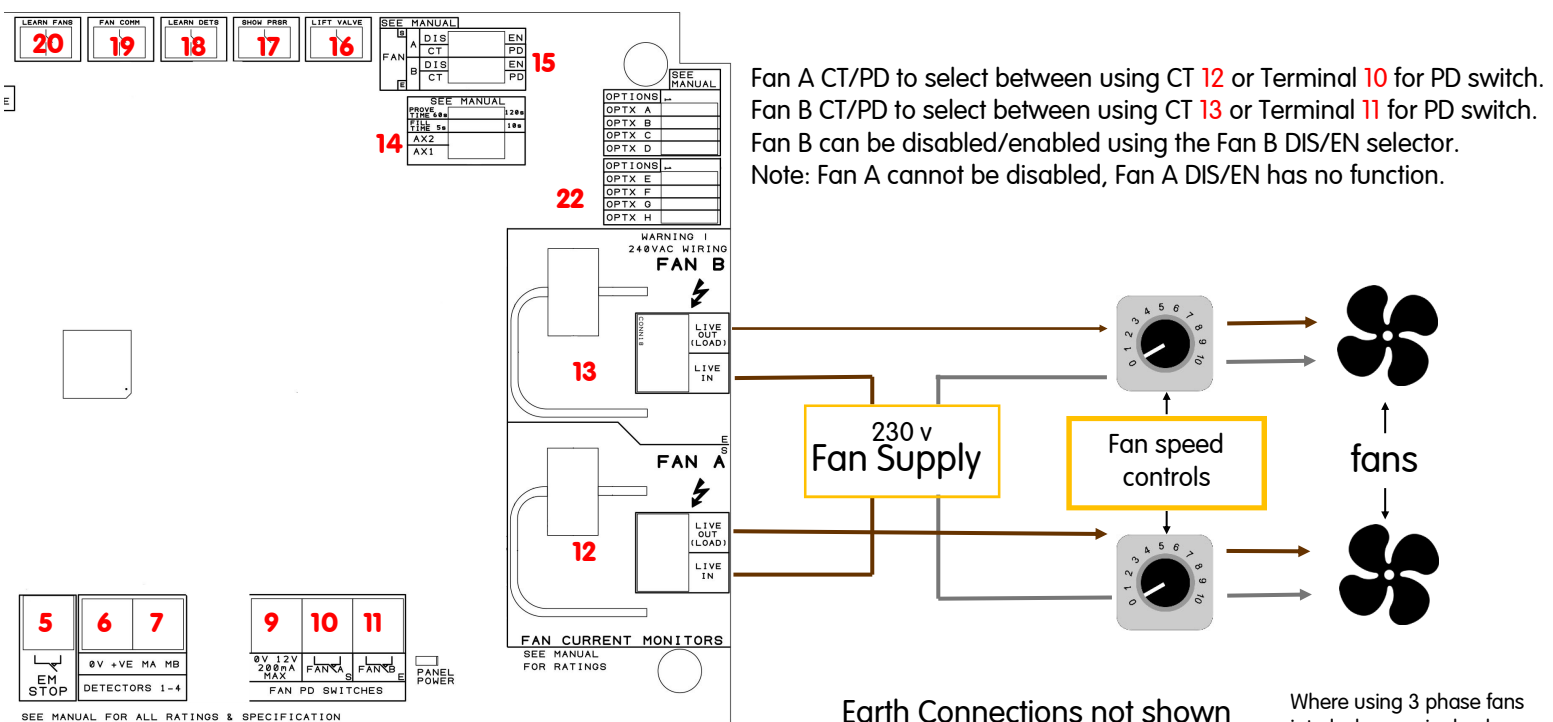


Set a minimum fan running speed by setting a minimum allowed fan current load.

If you wish to set a minimum fan running speed, adjust the fans to the desired speed settings and then press button **20** (Learn fans). This will change the "minimum trip current" setting from the default 35mA to be that being used by the fans at your set speed.

Pressing button **19** (Fan comm) will display the new "minimum trip current" value. If the fan load drops below that level for more than 10 seconds the system will give an alert and isolate the gas supply. There is a 20% allowance for fluctuations in fan load due to temperature etc.

### Current Monitoring or PD Switch No15



Mains rating: 240/440 VAC 50HZ. Monitoring range - Min: 35 mAmps to Max: 24 Amps Continuous.

### Enhanced fan interlock method

Some modern fans are tuned to be particularly efficient at a certain speeds.

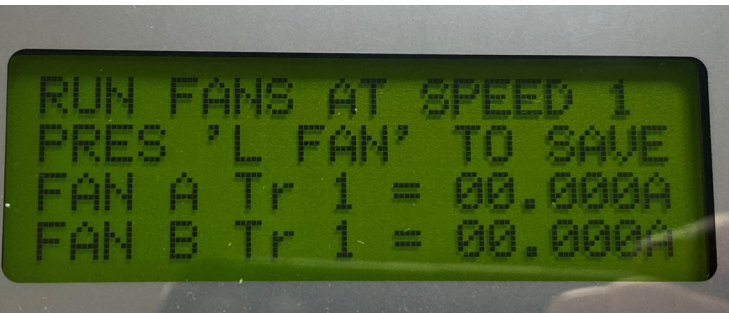
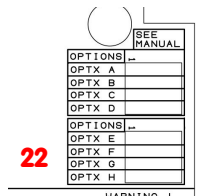
This can result in a higher speed drawing less current than a lower speed, by using the "minimum only method" a fan not running fault can be displayed when the speed is turned up.

Our enhanced method of interlocking utilises two learnt currents, with a lower and higher speed recorded.

The system will then see fans running between those speeds but not above or below.

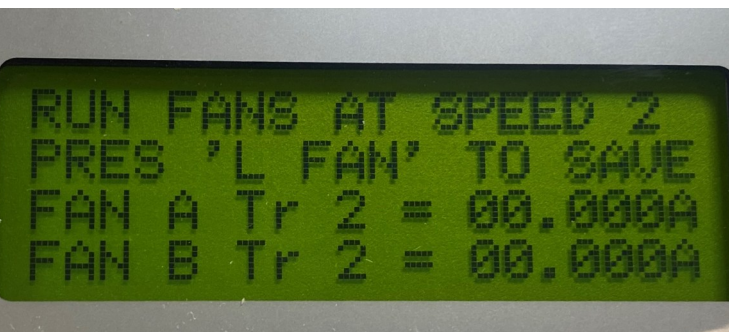
If a high speed draws more or less current than the lower, the system will adjust to compensate.

To enable the enhanced interlock **OPTX G (22)** must be enabled.

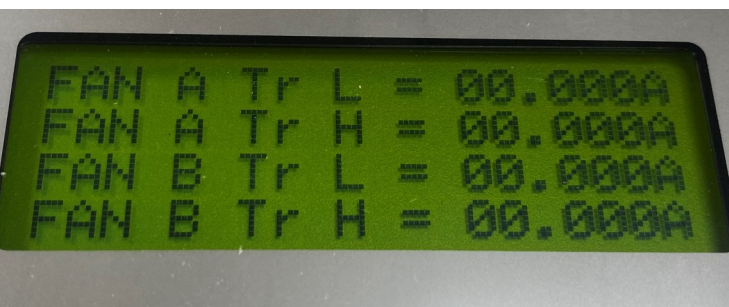


With **OPTX G** enabled, press the "learn fans" (20) button to bring up the display.

Set your first fan speed/current and press learn fans again to store that value.



Now adjust your fan speed to your next desired speed and press the "learn fans" (20) button again to store that value.



Pressing "Fan Comm" (19) will display the fan current values stored.

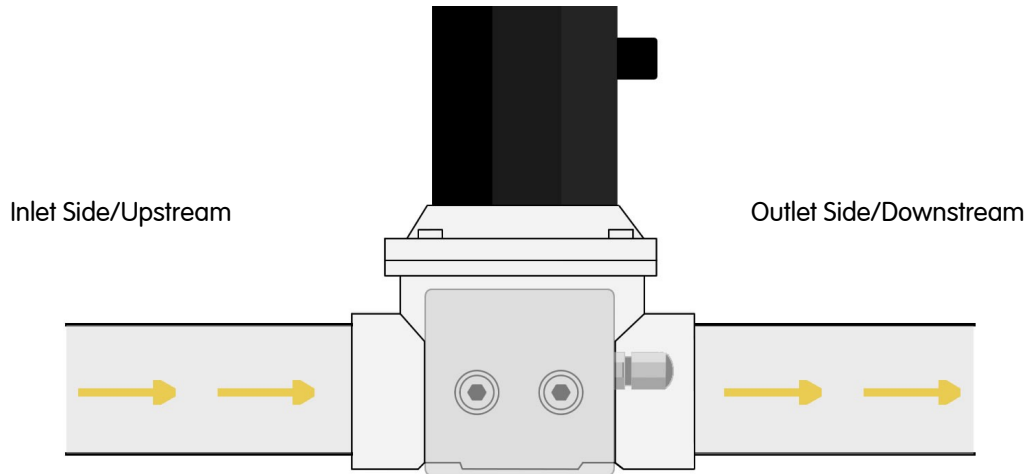
It doesn't matter if the first or second speed drew more or less current. The system will store the lower value as **L** and the higher value as **H**.

Below **L** and above **H** will fault, in between the fans are seen a running.

## Valve connection

### Direction of flow

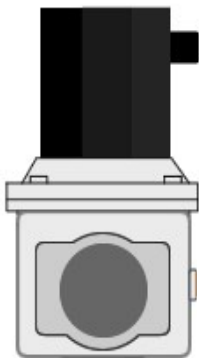
Ensure that the valve is correctly installed with regard to the direction of the flow of gas



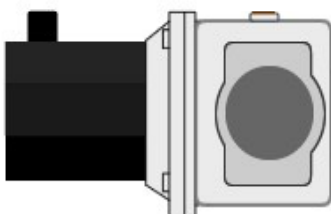
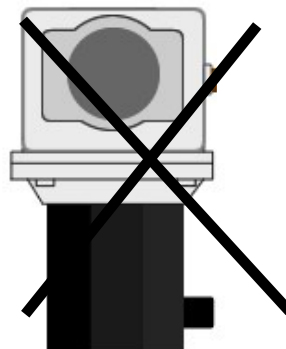
### Gas Solenoid Mounting

Never mount the valve such that the Solenoid/Coil are below the horizontal.

Correct



Incorrect

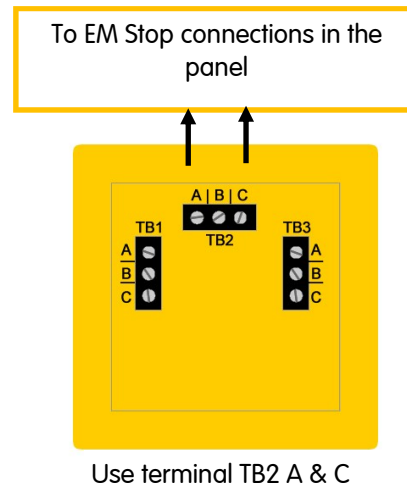


### Single Stop Buttons

Remote stop buttons can be connected to the panel terminal marked as "EM STOP" (number 6 ).

The remote buttons must be wired as shown in order to provide a "closed contact" for the control panel.

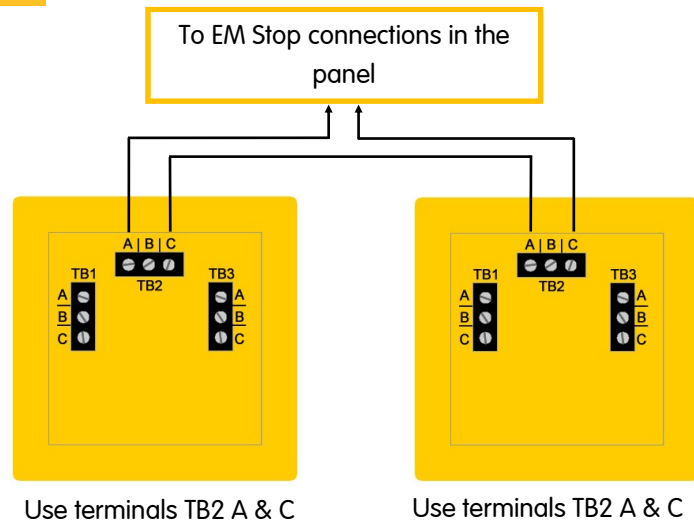
**If a fire alarm is to be monitored, this should be wired in series with the EM stop buttons**



### Multiple Stop Buttons & Fire Alarm

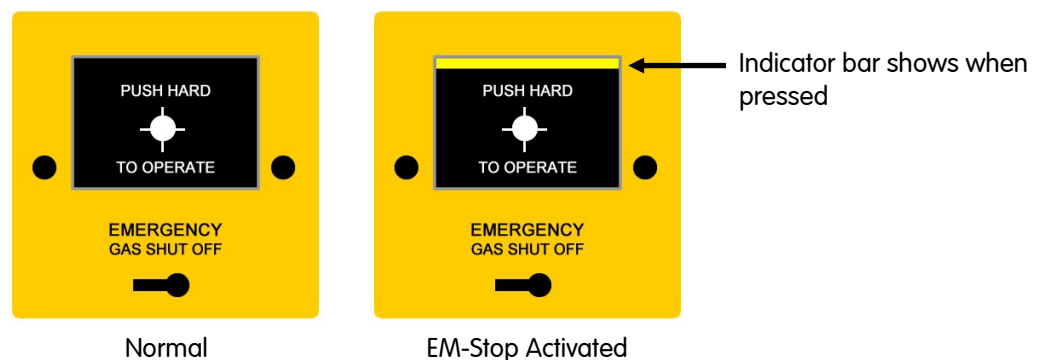
Multiple stop buttons are wired in series.

**If a fire alarm is to be monitored, this should be wired in series with the EM stop buttons**



### Resetting (indicator bar)

The stop buttons supplied by Medem are of a "Push Glass, key resettable" style, when activated a yellow indicator bar will show and the unit will require resetting using the key provided.



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## Medem UK Warranty Terms & Conditions

1. The warranty is a parts warranty and Medem UK Ltd will not cover or accept any labour or other expenses that may be incurred in the process of changing faulty product.
2. All panels and sender units are covered by a five year warranty.
3. Gas detector units and other remote detectors carry a one year warranty. Installation of the detectors should not be undertaken until all building and construction work is completed.
4. Gas solenoid valves carry the original manufacturers warranty, though as the supplier Medem UK will exchange faulty valves for return to the manufacturer.
5. Where a Medem UK engineer (or another company appointed by Medem UK) commission and installed system then that system will carry a ten year warranty. This applies to the main panel and the sender unit. At the time of commissioning a security label with a serial number will be attached to the main panel box. photographs and a comprehensive record of the installation will be held by Medem UK.
6. Where a warranty claim is made then, where appropriate, a written order to attend site must be provided to Medem UK A cost for labour and travel to site will be prepared as a quote. The cost must be included in the order.
7. Where it is found that the installation and/or the quality of workmanship has contributed to or wholly caused the failure of the product then we reserve the right to charge the whole or a proportion of the cost of the faulty item.

In the event of any alert the system will always give a reason on screen as to the cause.

Common messages you may receive are shown below with further explanation.

If you require any help or if anything is unclear then please contact technical support on 0161 233 0600

#### **Detector fault, DXX lost comms**

The system believes it has lost connection to a detector on address XX, verify detector addresses and press the "learn button" (18). Verify all connected detectors are being registered by pressing "Detectors" on the display. If you have no detectors connected to the system pressing the learn button will clear the error message.

#### **Gas Off, Switch On Fan X.**

The system can monitor the fan status via a current monitor or air pressure switches. These provide a closed contact to terminals Fan A and Fan B, it is a requirement when using fan interlocking that the fans be running (and therefore the A and B receiving a closed contact) before gas is available for use. If at any point the fans stop running (opening the A or B contact) the system will isolate the gas and report fans not running. Check that the fans are not only switched on, but actually running and moving air.

#### **Gas Off, Reset Em Stops & Switch On/Off**

The system has a panel mounted emergency stop and connections inside for remote buttons. First check the panel button (once pressed some require resetting by twisting and releasing). Clear the message by turning the main system switch off and then back on, if the message remains check any remote buttons and their connections. The terminal for the remote buttons requires a volt free normally closed contact, ensure all remote stop buttons and any another connected systems (BMS/Fire panels) are reset and the contacts are closed.