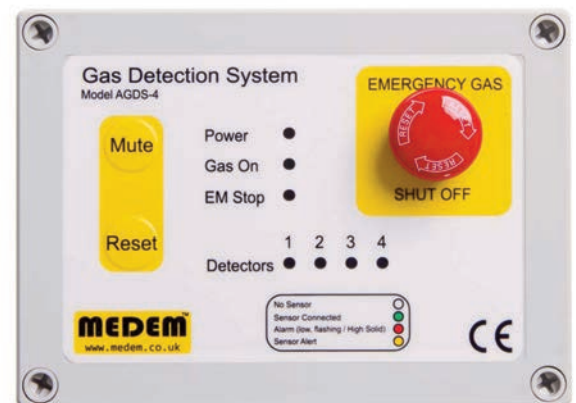


Four Channel Gas Detection System

AGDS 4

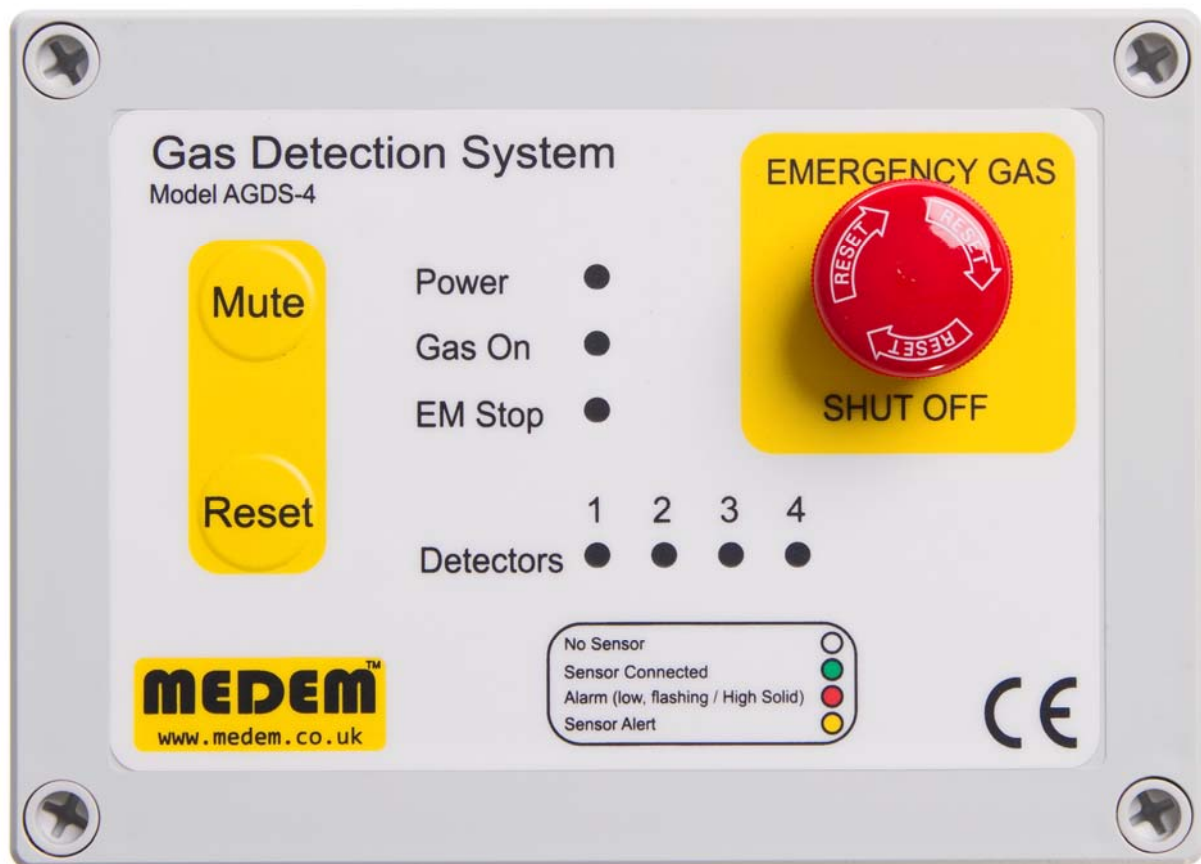


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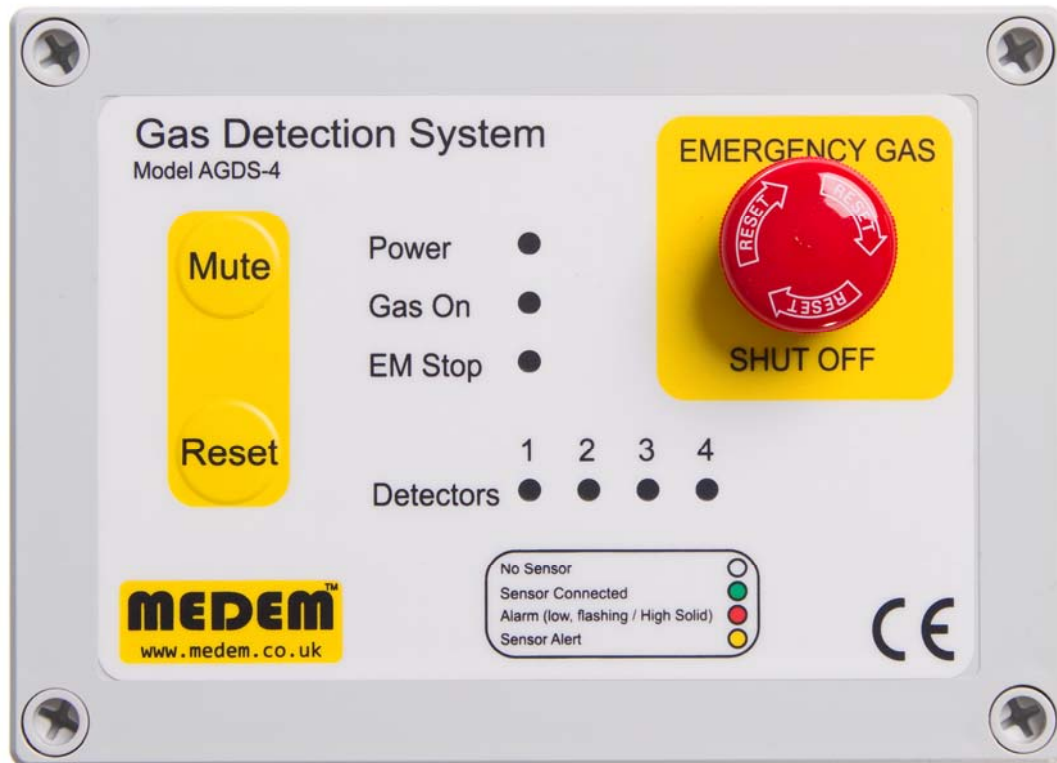
medemTM

Four Channel Gas Detection System



The AGDS-4, Gas detection system has been designed for use in boiler houses and plant rooms. Up to 4 low voltage sensors for the detection of natural gas, LPG or carbon monoxide can be connected to the panel. In the event of a high alarm from one of the sensors the system will isolate the gas supply by closing a connected electric control valve. Emergency stop buttons can be fitted and a fire alarm can close the gas valve when connected to the panel.

Design Features



- **Gas detection** of Natural gas, Carbon monoxide and Butane/Propane L.P.G.
- **Compact** easy to install compact system with long detector life.
- **Remote signalling** can be connected to B.M.S and fire alarm systems.
- **User friendly**, digital design means clear system status indication at all times.
- **Emergency** shut off buttons and thermal links, all low voltage, can be connected.
- **5 Year Warranty** 10 years when installed or commissioned by Medem UK



The AGDS-4 gas detection panel has been designed as a compact and versatile system able to accept digital signals from one to four addressable Medem gas detectors.

The AGDS-4 will accept Medem gas detectors for natural gas, carbon monoxide and LPG. In the event of the target gas being detected the panel will show either a pre alarm or high alarm condition.

In the pre alarm condition the AGDS-4 will indicate by flashing the LED marked "low alarm" and, if enabled, the internal sounder. The system will not isolate the gas supply in the pre alarm condition.

On high alarm the panel isolates the gas supply by closing the control valve. At the same time a BMS and a beacon or sounder can be activated. The AGDS-4 connects to 240 volt normally closed valves but it is possible to run other types of valve.

An emergency shut off button or buttons can be connected to the AGDS-4 panel. Emergency shut off button connections are wired low voltage, normally closed, open on alarm.



Thermal links can be connected to the system, connections are again low voltage. The AGDS-4 can also take a signal from a fire panel to close the control valve in the event of a fire alarm situation.

A fire test isolation panel is available from Medem to allow a fire test to be carried out without isolating the gas supply.

A mute button has been incorporated into the panel lid as well as a reset button in order that a connected valve can be reopened after a high alarm situation has been resolved.

All Medem systems are designed built and supported by Medem UK. The sensors have a design life of five years when used in clean air environments such as a boiler house.



AGDS-4



Technical data sheet

The model AGD-4 consists of a mains powered panel capable of operating up to two combustible gas and or Carbon Monoxide detectors.

The detectors are connected by low voltage 4 core cable (typically telephone cable) back to the control panel. The sensor units may be mounted up to 100mtrs from the control unit.

The complete system is designed to comply with the latest CE directives including the low voltage directive.

This is housed in an IP65 rated ABS enclosure measuring 180mm high x 129mm wide x 70mm deep.

The LED indications on the panel :

Power on	Green
High alarm	Red 2 flash per second
Low alarm	Red 1 flash per second
Gas on	Red
Em stop	Yellow
Alert	Yellow

Audible indications:

An internal buzzer is provided to give the following sounds:

Alarm, beep every 1 second.

There is an option to disable the alarm buzzer on the panel circuit board by removing a jumper plug.

Relay outputs:

Main valve relay rated at 5 amps to provide a switched live to the main solenoid valve.

230 volt rated potential free changeover alarm relay to activate a remote sounder and or beacon or signal a BMS system.

The aux relay function depends on the setting of the "Aux RLY" DIP Switches - this is a dynamic (non-latching) relay. This can advise a BMS of any one of the following conditions.

Off/Off = Low alarm

Off/On = Detector Alert

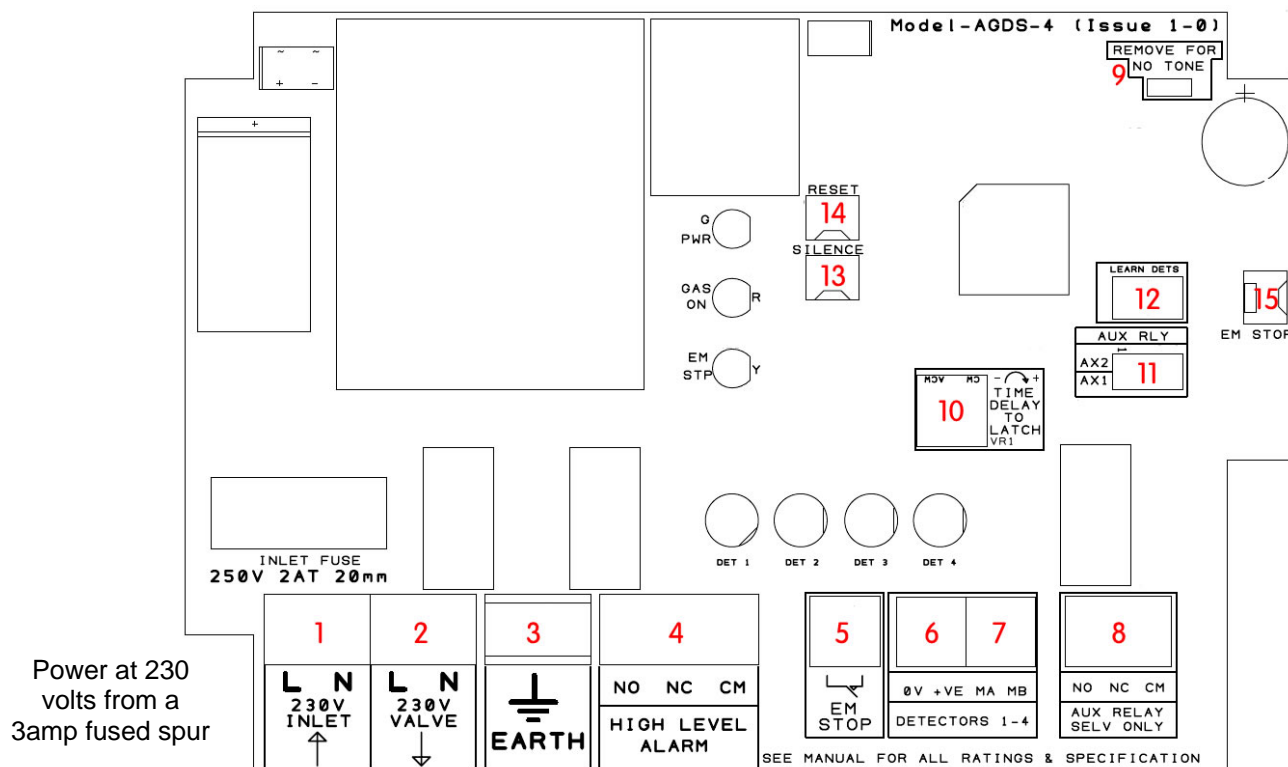
On/Off = Em Stop

On/On = High Alarm

Gas detection settings

The combustible gas detectors are pre calibrated at works to detect gas at 5% of the low explosion level (pre alarm) and at 10% of the low explosion level (high alarm).

The CO detectors are calibrated at 80ppm for pre alarm and 100ppm for full alarm.



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 (5amp relay)
3. Earth connection terminals
4. High Alarm BMS relay (potential free contact, mains rated, max load 5amp)
5. Remote emergency stop buttons SELV, multiple buttons connect in series (requires a N/C circuit)
6. Power connections for detectors, Methane, LPG, CO.
7. Comms connections for detectors, Methane, LPG, CO.
8. Aux Relay, (potential free contact, SELV Only) - [see 11 for settings](#) (non-latching)
9. Jumper link to disable audible alarm sounder.
10. High alarm time delay function - Controls the length of time between a High alarm and the closing of the gas valve
11. Aux Rly Switch - Setting controls the Aux Relay switching conditions

Aux1	Aux2		State
OFF	OFF	=	Low Alarm
OFF	ON	=	Detector Alert
ON	OFF	=	Em Stop
ON	ON	=	High Alarm

12. Learn Detectors - Press after connecting & addressing Medem gas sensors (detector address's 1 - 4 only)
13. Front Panel button connection - Mute
14. Front Panel button connection - Reset
15. Front Panel button connection - Emergency Stop

AGDS-4 Operating and Maintenance

Operation

With mains power available the green 'Power' LED should be illuminated. When power is first applied to the system (or after a power cut) press and hold the reset button (2's) to open the gas valve. The red 'Gas On' LED will be illuminated when the gas valve is open.

Normal operating procedure for gas (when power is first applied)

- Press and hold the 'Reset' button for 2's.
- The gas valve will open and the 'Gas On' LED will light.

Maintenance and testing

To test all features the system.

When power is first applied to the system; press and hold the 'Reset' button on the AGDS-4 (2's):
The 'Gas On' LED will light and the gas valve open, gas should now be available for use.

With the gas available for use, apply a small amount of the target gas to each detector:
The detector LED will turn from 'Green' (powered) to 'Red' (alarm). The AGDS-4 will indicate a low level alarm at 5% LEL for combustible gases, 80ppm for CO, and a high level alarm at 10% LEL for combustible gases, 100ppm for CO.

Maintain the gas at the detector until the high alarm state latches and the gas valve closes:
There is a optional delay adjustment within the AGDS-4 (see installation instructions) with which you can control the amount of time between a high level alarm and the gas valve closing (default set to 1 second)

There should be a manual operational test on any installed Emergency stop buttons, which when operated will isolate the gas supply and remain isolated until a manual reset is completed.

Internal tone will sound when ever the system is in low/high alarm or the emergency stop button has been pressed; Pressing the 'Mute' button on the front panel will silence the tone.

Detector Alert LED

If communication to a previously connected and learnt detector is lost it will cause a "sensor alert state", which indicates that detector is no longer being recognised on the current setting's - this can also be as a result of a connection issue with the wiring. (see installation instructions for more details)

A yearly test and inspection of the solenoid valve and let by test should be carried out by a qualified technician i.e. Gas safe registered engineer.

The detectors are designed to have very low drift so recalibration on site is not required but should be replaced every 5 years in a clean environment but consideration should be given to replacement after 3 years if contamination is a possibility. A functionality test should be carried out every 6-12 months.

If at any time there is an alert or the sounder sounds follow these instructions, further information can be found both in the installation instructions and by contacting Medem (UK) Ltd.

Please read this sheet as it contains important information

Before commencing installation please familiarise yourself to the equipment by reading the comprehensive installation instructions. If in doubt then please call 0161 233 0600. Out of hours please call 07894 684080 or 07843 355163.

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 24 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 main panel only will then be extended to Ten years.

Four channel Gas Detection system

System description

The AGDS-4 is a gas detection system designed to monitor the atmosphere for target gases. The system comprises of a mains powered panel capable of operating up to four sensors, either combustible or Carbon Monoxide gas or a mixture of both. The sensors are pre-calibrated by Medem (UK) Ltd such that they only require to be connected to the panel and functionally tested. In the event of a high alarm from one of the sensors the system will isolate the gas supply by closing a connected electric control valve. Emergency stop buttons and Thermal Links can be fitted and a fire alarm can close the gas valve when connected to the panel.

Control Panel the front of the panel has the following controls and indications:

Emergency Stop

LED indications:

Power On - green
Gas On - red
EM STOP - yellow

Panel Buttons:

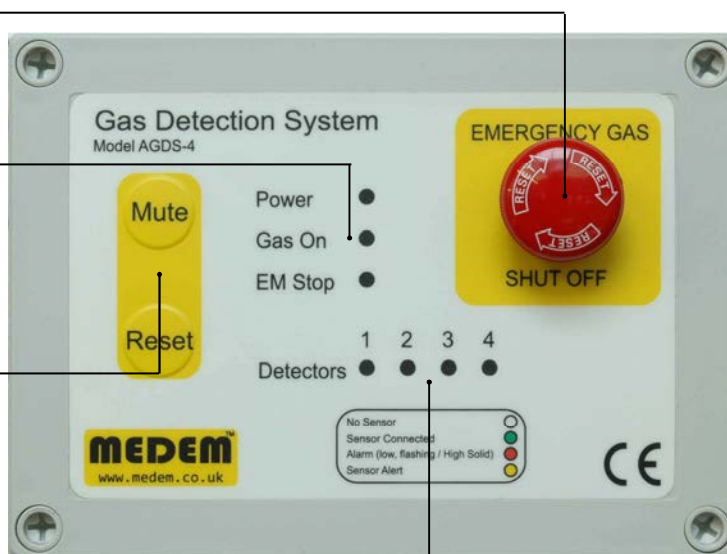
Mute button

Reset button

Press and hold reset button (2's) when power is first applied to enable gas.

Detector LED's

No Detector	- off
Detector Powered	- green (flashing during warm up)
Low Alarm	- flashing red (every second)
High Alarm	- flashing red (every 1/2 second)
High Alarm & Gas isolated	- permanent red
Sensor Alert	- yellow



Low Voltage Gas Detectors

The maximum cable(4 core) length between a sensor and the control panel should not exceed 100 metres, If the distance between the main panel and the detectors is greater than 20meters 1mm cable should be used on the 12v, 0v terminals..

Combustible detectors are pre calibrated at 5% LEL (Pre alarm) and 10% LEL for the High alarm.

Carbon Monoxide detectors are pre calibrated at 80ppm (pre alarm) and 100ppm for high alarm.

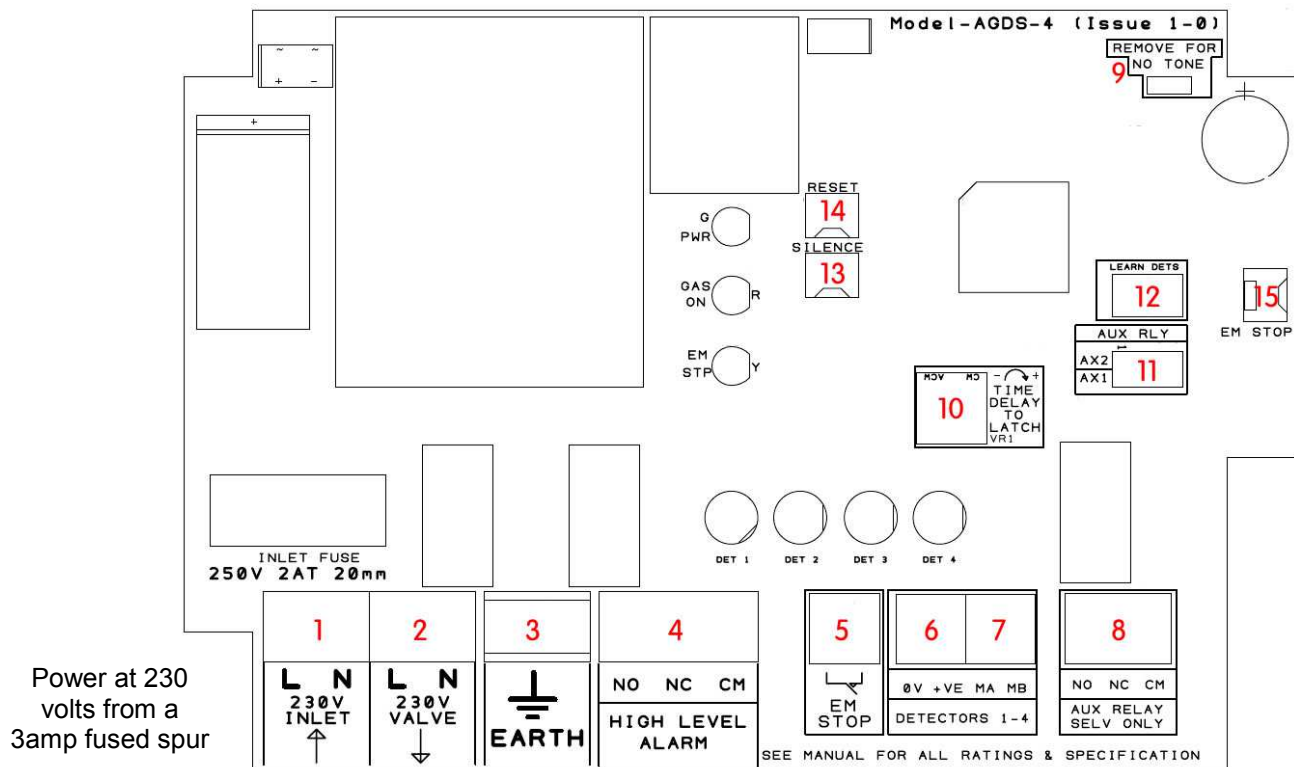
Each detector has a rotary address selector switch (0-F) you must use address's 1-4 only. Once connected and addressed you are required to press the "learn Det's" button (12). Once pressed the corresponding detector LED's on the main panel will light green.

Each sensor unit has an LED which shows green when power is applied.

Note: There is a warm up period after initial power up of approximately 90 seconds. During this time the green LED will flash once per second and the output signal will be inhibited. This is to prevent spurious alarms. After the warm up period and on application of gas, the red LED will light when a high gas alarm level is reached.

Sensor Alert state (yellow LED): indicates that a previously learnt detector is no longer being recognised, normally due to a change to the detectors address or an issue with the wiring.

When first powered or after a loss of power press and hold the reset button for 2 seconds to start the system and open the gas valve.



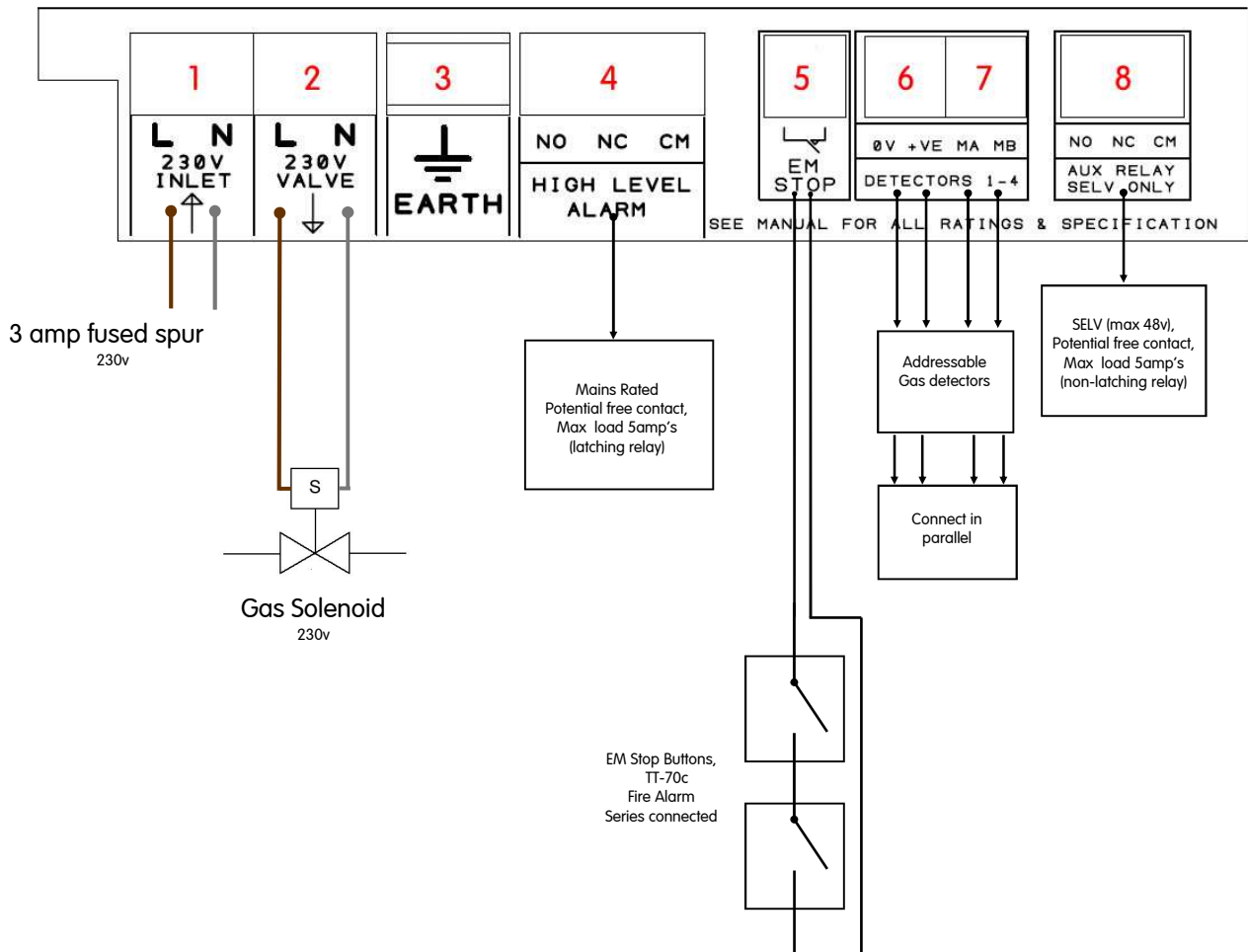
Connections to panel: marked on board

1. Live & Neutral 230 volts supply from 3amp switched fuse spur
2. 230 volts out to gas solenoid valve (5amp relay)
3. Earth connection terminals
4. High Alarm BMS relay (potential free contact, mains rated, max load 5amp)
5. Remote emergency stop buttons SELV, multiple buttons connect in series (requires a N/C circuit)
6. Power connections for detectors, Methane, LPG, CO.
7. Comms connections for detectors, Methane, LPG, CO.
8. Aux Relay, (potential free contact, SELV Only) - [see 11 for settings](#) (non-latching)
9. Jumper link to disable audible alarm sounder.
10. High alarm time delay function - Controls the length of time between a High alarm and the closing of the gas valve
11. Aux Rly Switch - Setting controls the Aux Relay switching conditions

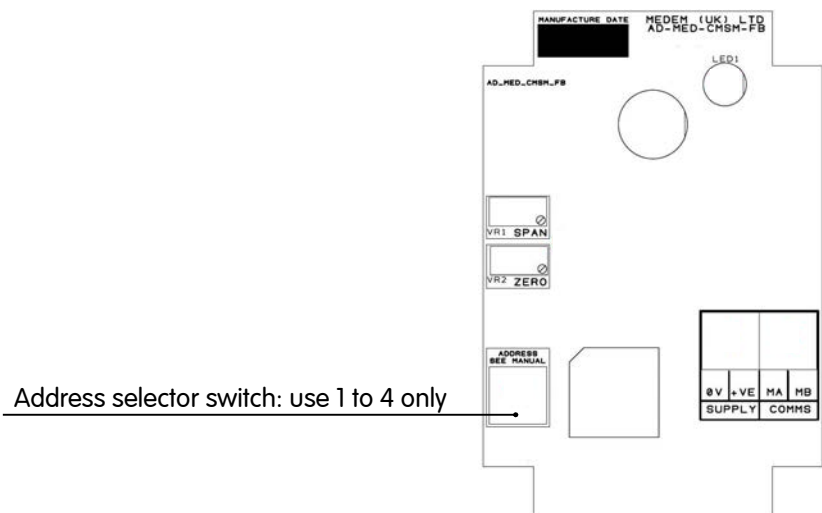
Aux1	Aux2		State
OFF	OFF	=	Low Alarm
OFF	ON	=	Detector Alert
ON	OFF	=	Em-Stop
ON	ON	=	Gas On

12. Learn Detectors - Press after connecting & addressing Medem gas sensors (detector address's 1 - 4 only)
13. Front Panel button connection - Mute
14. Front Panel button connection - Reset
15. Front Panel button connection - Emergency Stop

Earth Connections not shown



Example Medem Gas Detector



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.

Natural Gas

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

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 similarly weighted to air so detectors should be mounted between 1 to 2 meters from the floor.

Detector Testing

Any installed gas detector can be tested by allowing a small amount of the target gas onto the detector head until a change of state is registered on the control panel.

If the level of gas applied is of the set low alarm level, the LED on the detector will change from a solid green to a flashing red. An LED indicating a low level alarm detection combined with an audible alarm on the panel will begin.

If the level of gas drops below the set low alarm level the detector LED will return to a solid green and the panels audible alarm and LED will clear.

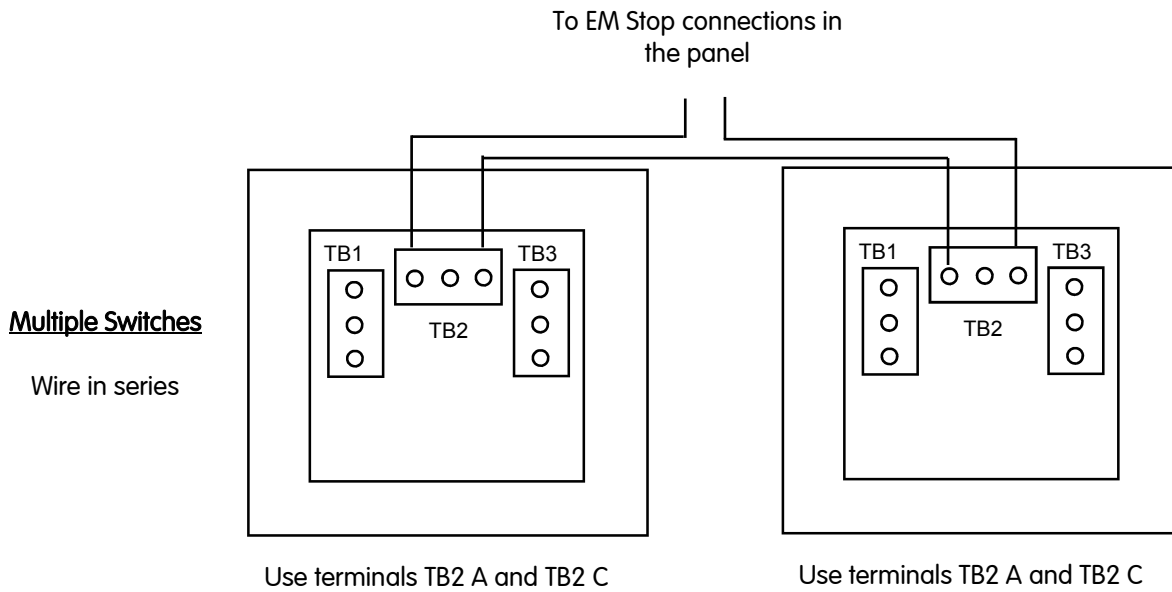
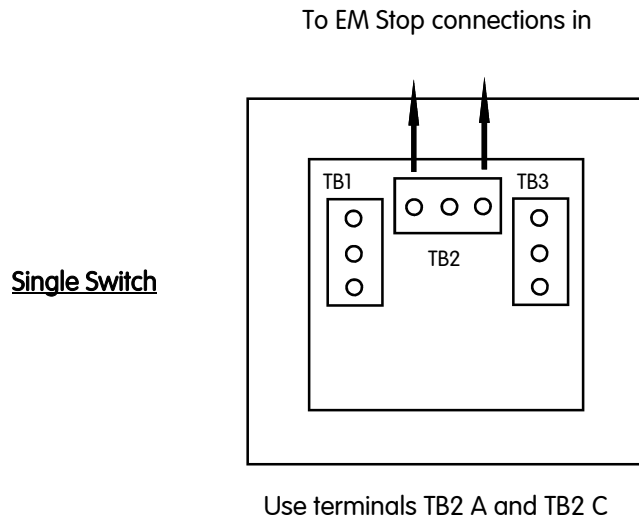
Should an emergency shut-off valve be connected to the panel this will remain open during a low alarm level detection.

If the level of gas applied is of the high alarm level or above, the LED on the detector will change from a solid green to a solid red. An LED indicating a high level alarm detected combined with an audible alarm on the panel will begin.

Should an emergency shut-off valve be connected to the panel this will automatically close.

Once the level of gas drops below the high alarm level the audible alarm will continue and the high alarm LED will remain.

The valve cannot be reinstated until the gases have been cleared and the control panel reset.



Remote stop buttons can be connected to the panel terminal marked as "EM STOP" (number 6). The remote buttons must be wired as above in order to provide a "closed contact" for the control panel.



It is essential that the installation of the AGDS-4 is carried out in the order given below to ensure the correct operation of the system.

This guide, when completed, should be posted to Medem UK in order that the warranty period can be activated.

Site Name	Return one copy of this sheet to the address below: Modern Plant Limited, Otter House, Naas Road, Clondalkin, Dublin 22 Tel: 00353 1 461 4300 E: sales @ modernplant.ie, W: www.modernplant.ie
Installing Company	
Engineers Name	
Date Completed	

With the panel fitted to the wall the following steps should be followed.

- 1, Connect the Control valve twin & earth to the marked terminals.
- 2, Connect BMS, beacons, sounders etc to the relay outputs.
- 3, Connect any additional EM stop buttons and thermal links in series to the terminals marked "EM STOP".
- 4, Each detector has a rotary address switch and each switch should be set to a different number or letter starting with "1". Then connect the gas detectors to terminals marked "detectors" on the panel. Detectors can be wired "Daisy chain".
- 5, Connect the 3 amp fused spur 240 volt supply to marked terminals.
- 6, When first powered press the reset button to start the system and open the gas valve.
- 7, Once power is connected to the panel the detectors will flash the green LED's for 90 seconds after which the LED's will be on continuously.
- 8, Press the "learn field button" this is on the main circuit board on the right hand side, just over half way up the board. Pressing this once allows the panel to learn how many and which type of detectors are fitted.

Tick as each step is completed

- 1: All wiring checked tight and connected as per the installation instructions.**
- 2: Each detector has an individual number or letter from adjusting the blue rotary switch before the "learn" button was pressed.**
- 3: Each detector has been recognised by the panel.**
- 4: On applying a little lighter gas to the Methane detectors the LED turns red and the panel alarms and closes the gas valve.**
- 5: All detectors have a solid green LED illuminated when not in alarm.**
- 6: On activating each emergency stop button the panel alarms and closes the control valve.**

Detector type	Methane	CO	LPG
Number fitted			

Please do not hesitate to call for advice on the following number:
00353 1 461 4300 office hours



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MODERN PLANT For more information call 00353 1 461 4300

Modern Plant Limited, Otter House, Naas Road, Clondalkin, D 22

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