



SERVICEGUARD

GAS PROVING & SERVICES ISOLATION SYSTEM

Manufactured in the UK by



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COMMISSIONING CHECKLIST

SITE ADDRESS	
POST CODE	
ROOM REF	
PANEL TYPE	
SERIAL NO	
GAS PRESSURE	

SYSTEM INSPECTION & OPERATION

YES

NO

Panel wired as per diagram

☐
☐

Display functioning correctly

☐
☐

Key Switch operates correctly

☐
☐

Valve opens and system 'proves'

☐
☐

Passed Let-By Test

☐
☐

Passed Tightness Test

☐
☐

Detects open ends

☐
☐

INTERFACE FUNCTIONALITY TEST

YES

NO

N/A

Key Switch operates correctly

☐
☐

Panel Emergency Stop

☐
☐

Remote Emergency Stop

☐
☐
☐

Ventilation Interlock(s)

☐
☐
☐

CO2 Interlock

☐
☐
☐

Gas Sensors/Detectors

☐
☐
☐

COMMISSIONED BY	
COMPANY	
DATE	
SIGNATURE	

INSTALLATION

SERVICEGUARD

The information contained within this guide is to cover typical installations, however allowances must be made for the site-specific requirements. If in doubt always contact Flamefast for further guidance.

TECHNICAL SPECIFICATION

Power Supply	100 – 240VAC 50/60Hz
Power Consumption	10W (Panel Only – inc. Aux Output)
Gas Solenoid Output Rating	5A @ 240V Max
Water & Electric Output	5A @ 240V Max (Combined)
Status Relay Rating	5A @ 240V Max
BACnet (COMING SOON)	MS/TP over RS485
(Optional Extra)	Baud: 9k6, 19k2, 38k4 or 76k8 127 Address (1/10th Load)
Operating Conditions	Temp 0 - 50°C Humidity 0 - 95% (NC)
IP Rating	IP65 (Providing rear entry sealed)
Housing Material	Flame Retardant ABS
Colour	Light Grey (RAL7035)
Approval	CE, UKCA

IMPORTANT
PLEASE READ CAREFULLY PRIOR TO INSTALLATION

- This product must be installed by a competent/qualified person in accordance with all relevant national and local regulations and legislations:
 - BS 6173:2020
 - IGEM/UP/2 Edition 3
 - IGEM/UP/11 Edition 3
 - IGEM/UP/19 Edition 2
- If there is any question over the suitability for your application, please contact Flamefast prior to installation.
- This product must be mounted flush to the wall (or similar) using secure fixings to prevent access to the rear.
- This product must be connected to an accessible 5A fused spur and ensure that the electrical rating of any components is not exceeded.
- Ensure the mains supply is isolated and locked off prior to installation.
- If this equipment is used in a manner not specified by the manufacturer, protection provided may be impaired.
- This product is designed for indoor use in ambient temperatures and standard atmospheric conditions.
- Following installation, the correct operation of the system and any associated items should be verified.
- All Gas Safety Systems should be safety checked by a competent/qualified person at least annually.

PANEL LOCATION

The control panel should be mounted either next to the primary emergency exit or next to the teachers bench (where applicable). Any additional emergency exit should be fitted with a remote emergency stop button.

PANEL MOUNTING

The control panel should be mounted at a readily accessible height (typically 1.2 – 1.5m from the finished floor level) ensuring that the panel mounted Emergency Stop Button is easily accessible. The panel should ideally be located next to the exit with any additional exits covered by remote stop buttons.

For securing the panel to the wall there are four mounting holes, one in each corner; these should be used to ensure that the IP rating of the unit is not compromised.

With regards to cable entry, there is a 35mm cut out in the rear of the panel which must be sealed if mounted externally. Cables can be brought in from the top or bottom however allowances for internal components must be made, and mains cables should not be run across the face of the PCB.

ALWAYS REMOVE THE PCB PRIOR TO DRILLING THE ENCLOSURE
ENSURE ANY GLANDS CLEAR COMPONENTS PRIOR TO DRILLING

ELECTRICAL CONNECTIONS

All electrical connections are to be made as indicated on the wiring diagram (overleaf) and the maximum cable size should not be exceeded.

Any alarm (volt free) inputs must be wired using a dedicated volt free contact and where more than one device is used these MUST be wired in SERIES.

It is recommended that ALL devices connected to the low voltage terminals be done so using a screened cable as any voltage induction can cause fault conditions or in more severe cases, cause damage to the panel.

24V OUTPUT

The 24V DC auxiliary output is designed to power numerous Flamefast devices, however the maximum rating of 300mA should not be exceeded. The device consumptions are as below, however site-specific conditions and cable resistance should also be considered:

Description	Max Consumption
Gas Detector (FGD)	60mA
Gas Sensor (FGS)	100mA
Transmitter/BACnet Sensor (TR/BAC)	50mA
Fan Current Monitor (FCMON)	40mA

The output can be increased to 2,000mA with the use of the Flamefast Boxed 24VDC Power Supply (PS-24D).

BATTERY BACKUP (COMING SOON)

If the Flamefast battery backup is being used, this will maintain the integrity of all monitoring circuits including the powering of all sensors. However, on loss of power the Gas Valve Output and Status Relay will de-energise until power is restored. The Gas Valve Output provides a switched live output, based on the incoming supply, so this cannot be maintained on loss of power.

The battery backup provides 800mAh at 24V, and the backup time can be calculated by dividing 800 by the load. The load is calculated based on the sum of the consumption of any connected devices (as previously defined), plus an additional 120mA for the panel operation.

An example when using two devices using 50mA, please see below:

$$\begin{aligned} 800 / (120 + XX + XX) &= X \text{ Hours} \\ 800 / (120 + 40 + 40) &= 4 \text{ Hours} \end{aligned}$$

GAS AVAILABILITY TIMER

The Gas Availability Timer is used to ensure the system is isolated and the end of each day. This can be set to 4, 8, 16 hours or disabled using a combination of DIP switches 5 and 6 (default 16 hours).

No alarms will be raised, the system will simply fail to safe. This also ensures that the gas pipework is tested daily.

If DIP 2 is set to the ON position, this will also isolate the Water and Electric outputs where applicable.

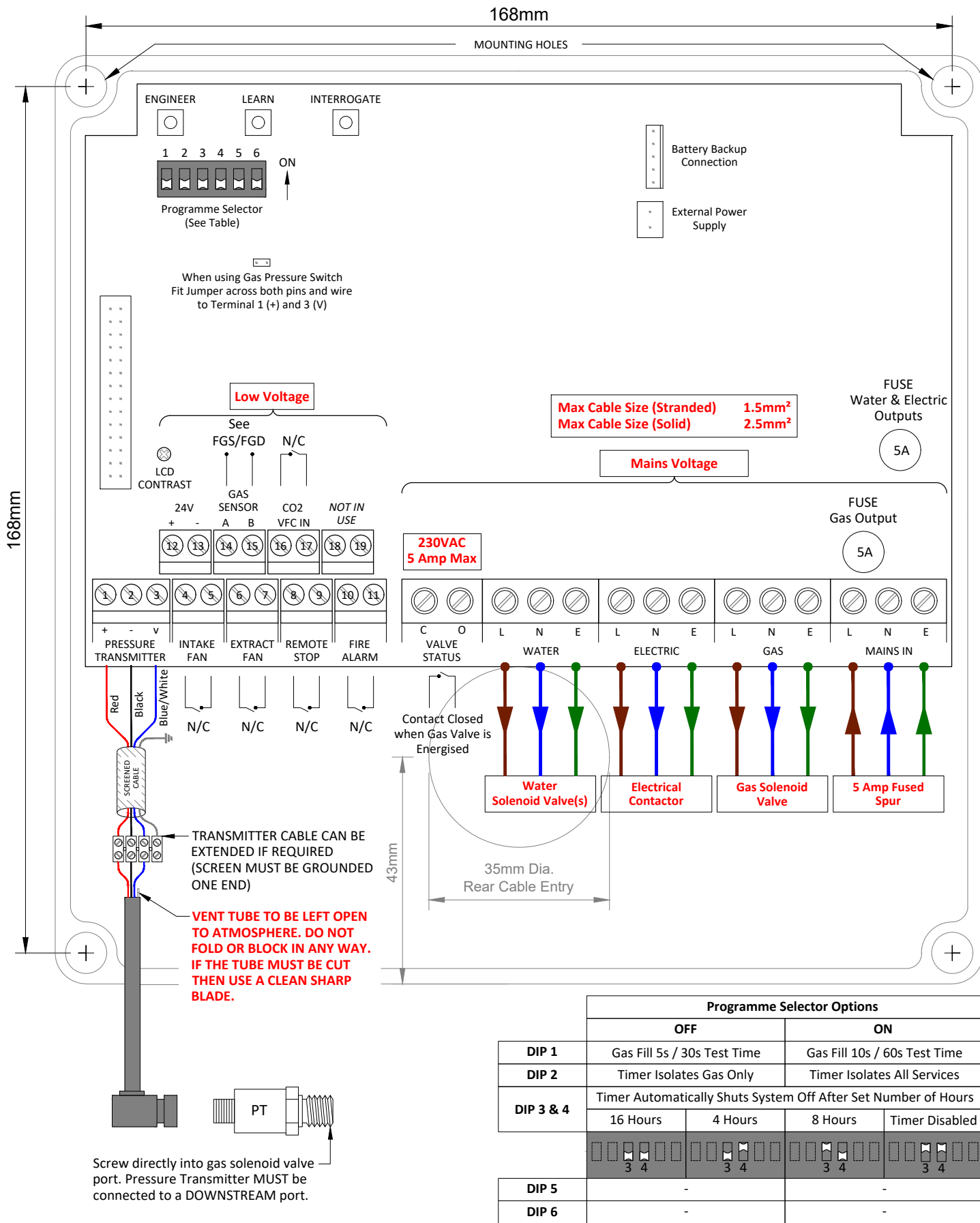
GAS FILL & TEST TIME

DIP switch 1 can be used to increase the gas pipework pressurisation time from 5 to 10 seconds for larger volume systems. When the fill time is increased, this also increases the test time from 30 to 60 seconds.

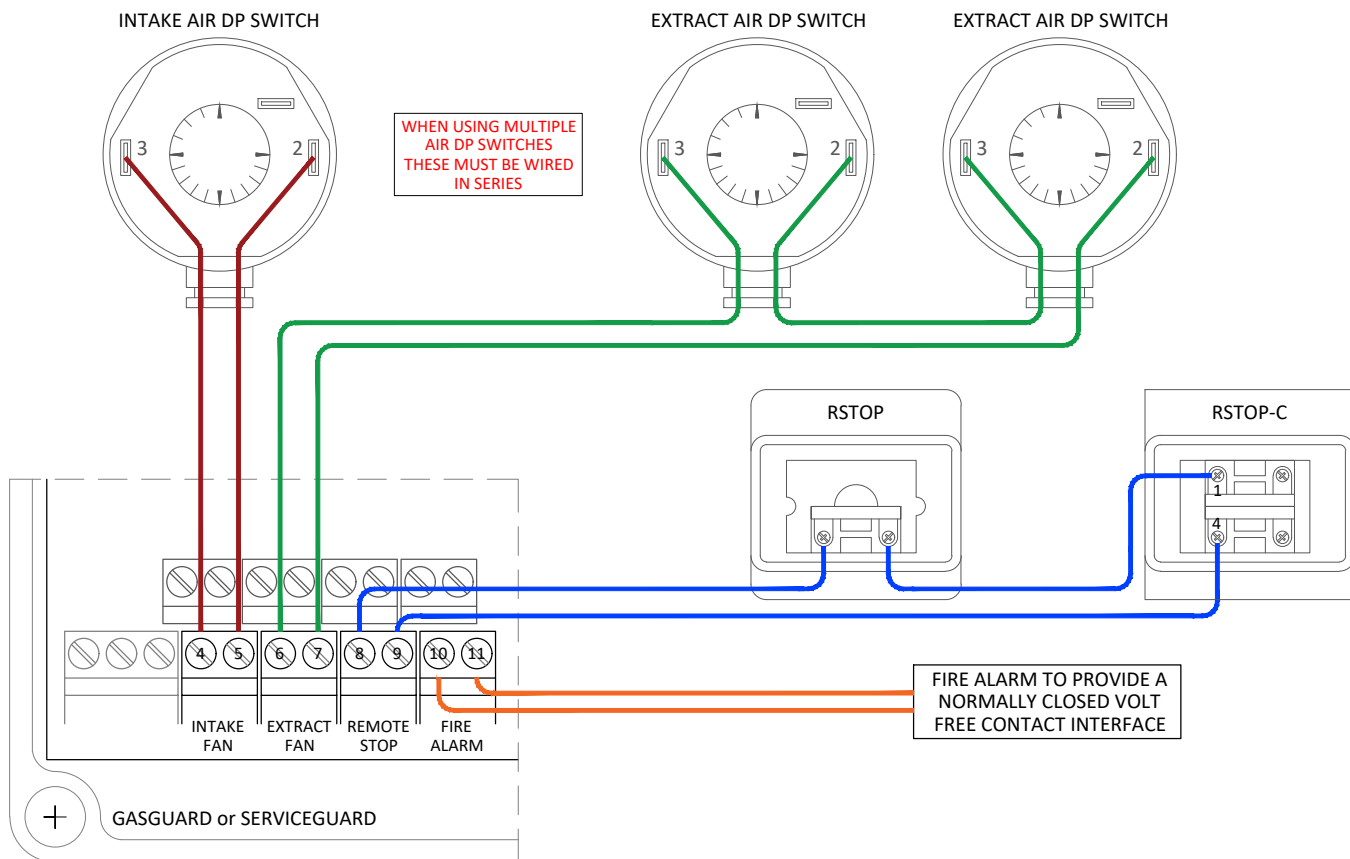
The fill and test time can be fully customised using the BACnet interface. Please contact Flamefast for further details.

Although all Flamefast panels now use a Pressure Transmitter, they are backwards compatible and can therefore be used with Gas Pressure Switches as used on all panel pre-2017. When using a Pressure Switch, the test time will double to compensate for the reduced sensitivity. The switch should be set to no less than half of the incoming gas pressure.

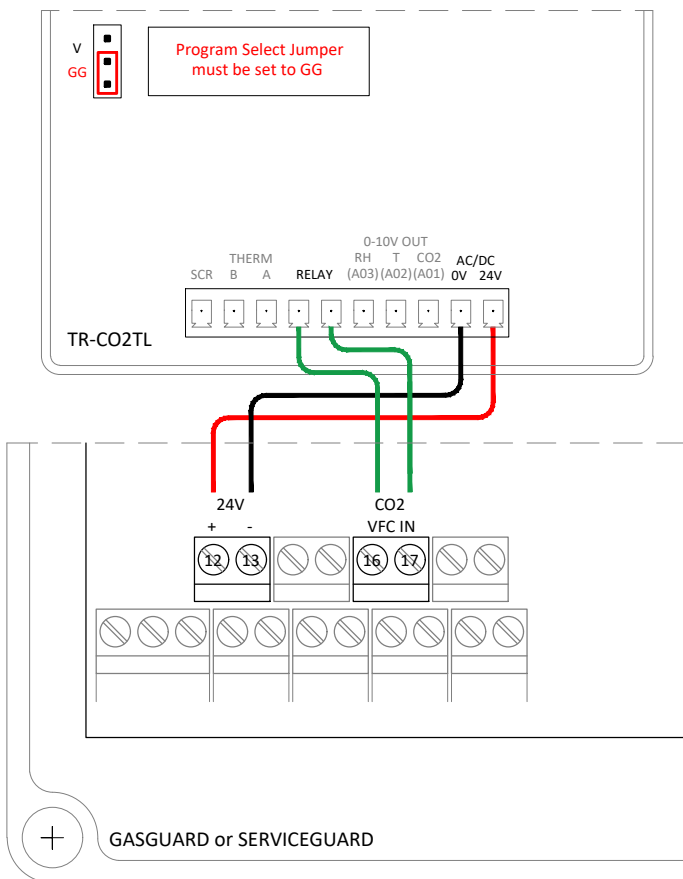
SERVICEGUARD CONNECTION DETAILS



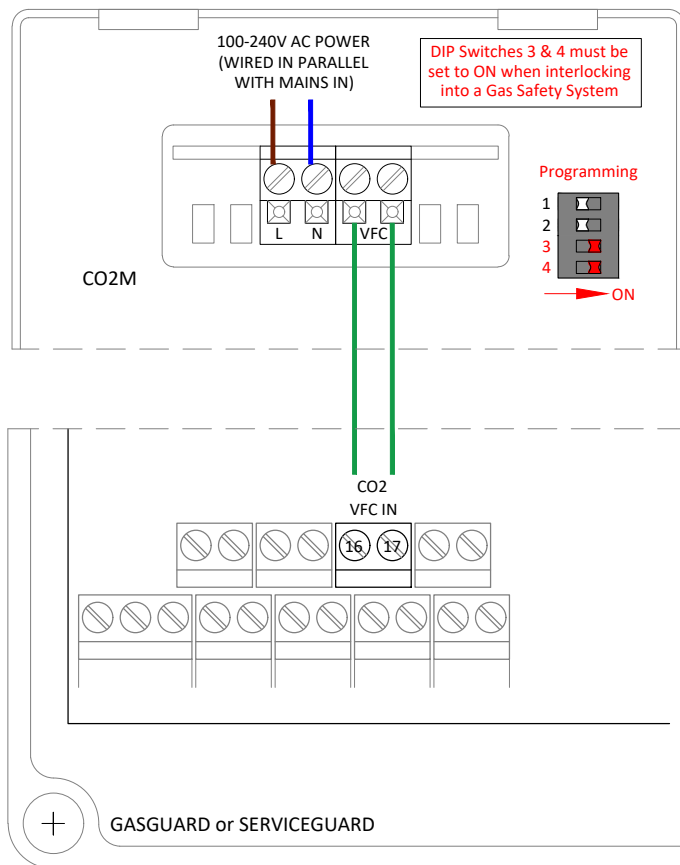
AIRDPS/RSTOP/FIRE



TR-CO2TL



CO2M

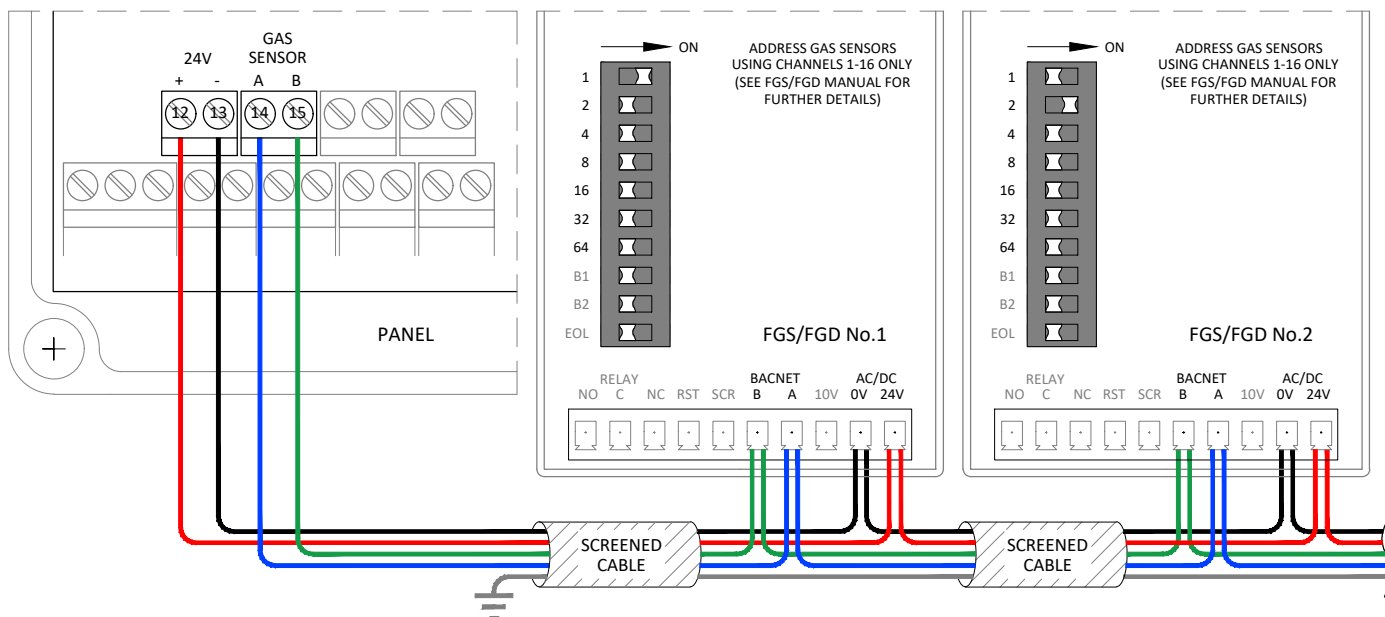


GAS DETECTORS/SENSORS

PLEASE SEE BELOW CONNECTIONS WHEN CONNECTING TO THE PANEL

SENSORS MUST BE WIRED IN ONE CONTINUOUS DAISY CHAIN. STAR WIRING CONFIGURATIONS MAY CAUSE THE PANEL TO 'LOSE' SENSORS

ALL SENSORS MUST BE SET TO DIFFERENT ADDRESSES, AND WE RECOMMEND NUMBERING STARTING AT 1, 2.. IN THE ORDER THEY ARE WIRED FROM THE PANEL



OPERATION & COMMISSIONING

OPERATION

The basic operation of the system is advised by the LCD readout:

1. Turn the Key to ON to requested gas, which will initiate the pressure test.
 - a. The valve will open for 5 seconds to pressurise the pipework.
 - b. A pressure measurement will be taken.
 - c. The pressure will be monitored for a drop over 30 seconds.
 - d. If a pressure drop of more than 10% of the initial test pressure is detected, the panel will alarm and advise.
 - e. If no pressure drop is detected, the panel will open the gas valve.
2. Turn the key to OFF to switch off the gas supply.

**THE KEY SWITCH SHOULD BE TURNED TO THE OFF POSITION
AND THE KEY REMOVED WHEN THE ROOM IS UNOCCUPIED**

COMMISSIONING

Once the installation is complete a functionality test must be carried out to verify the correct installation & operation of the system – the gas must be live.

1. Turn the key switch to the ON position to ensure the gas valve output and pressure transmitter are functioning correctly.
2. Press the panel mounted emergency stop button ensuring that all outputs are isolated and the panel alarms accordingly.
3. Once all outputs have been proved, the gas proving function must be tested by opening an outlet during the system test and ensure that the pressure drop registers and the panel alarms accordingly.
4. The correct operation of any interfaced devices such as Remote Stop Buttons, Intake/Extract Fans and Gas Sensors must also be verified.

PLEASE CONTACT FLAMEFAST FOR FURTHER DETAILS.

INTERNAL BUTTONS

ENGINEER button

The ENGINEER button on the main PCB can be used to aid with commissioning. Providing the Remote Stop interface is not in alarm, holding this button then turning the key switch will energise the Gas Valve and Status outputs to aid with commissioning. This will timeout after 60 seconds unless switched off by the key switch, after which the button will need to be released and held again for use. Whilst the button is being held in, the unit counts to 60 and displays the gas pressure.

LEARN Button

The LEARN button is for use when there are Gas Sensors connected to the unit.

Pressing this button will display the Channel, Gas Type, Reading and Days until Calibration is required and Days until EOL. The unit will display 4 channels at a time for 5 seconds each (20 seconds total display).

Following the connection/removal of any gas sensors, this button needs to be held in for 30 seconds. At the end of the above mentioned 20 second status display, the unit will countdown from 10 after which it will indicate how many sensors are connected and store the data. This will then be used as a reference point to show if any sensors go 'missing' at any point.

INTERROGATE Button

Holding the INTERROGATE button will display the status of ALL inputs along with the gas pressure. This can be easily used to identify any faults. This will remain on for 5 seconds following the release of the button, after which it will display the number of days until a service is due.

TROUBLESHOOTING & MAINTENANCE

SERVICEGUARD

TROUBLESHOOTING

Any faults can be easily identified due to the clear LCD readout. The following table provides details of all faults including effects and causes:

Display Line 1	Display Line 2	Interface	Cause	Isolates
Previous Power Loss			Previous interruption in mains supply	
Transmitter Fault	Call Engineer	Pressure Transmitter	Pressure Transmitter Input less than 0.50V*	Gas
No Incoming Pressure	Call Engineer	Pressure Transmitter	Pressure less than 1mB	Gas
Low Gas Pressure	Call Engineer	Pressure Transmitter	Pressure less than 15mB	Gas
High Gas Pressure	Call Engineer	Pressure Transmitter	Pressure above 70mB	Gas
XXmB Drop in XXXsec	Check Outlets	Pressure Transmitter	If pressure test sees a drop of more than 10%*	Gas
Pressure Loss	Call Engineer	Pressure Transmitter	Pressure drops by 25%* for more than 5 seconds during operation	Gas
Fire Alarm Active	Please Reset	Fire Alarm	Fire Alarm interface open circuit	Gas, Water & Electric
Remote Stop Pressed	Please Reset	Remote Stop	Remote Stop interface open circuit	Gas, Water & Electric
Panel Stop Pressed		Panel Stop	Panel Stop pressed	Gas, Water & Electric
High CO2 Levels	Ventilate Room	CO2 VFC In	CO2 interface open circuit	Gas
Intake Fan Fail	Check Operation	Intake Fan	Intake interface open circuit	Gas
Extract Fan Fail	Check Operation	Extract Fan	Extract interface open circuit	Gas
New Sensor Found	Hold Learn to Add	Gas Sensor	FGD/FGS – New sensor found on network	Gas
Sensor Not Found	Call Manufacturer	Gas Sensor	FGD/FGS – Sensor lost on network	Gas
Sensor Error	Call Manufacturer	Gas Sensor	FGD/FGS – Sensor Error	Gas
Calibration Due	Call Manufacturer	Gas Sensor	FGD/FGS – Sensor Calibration Due within 30 days	-
Calibration Overdue	Call Manufacturer	Gas Sensor	FGD/FGS – Sensor Calibration Overdue	-
New Sensor Required	Call Manufacturer	Gas Sensor	FGD/FGS – Sensor requires replacement within 30 days	-
Replace Sensor	Call Manufacturer	Gas Sensor	FGD/FGS – Sensor requires immediate replacement	Gas
Alarm Level 1	Channel XX	Gas Sensor	FGD/FGS – Sensor in Alarm 1 condition	
Alarm Level 2	Channel XX	Gas Sensor	FGD/FGS – Sensor in Alarm 2 condition	Gas

PRESSURE TRANSMITTER

The high accuracy Pressure Transmitter is used to monitor the gas pressure that provides a 0-100 mBar output, scaled over 1-5VDC.

If the panel is displaying Transmitter Fault, this is caused by the panel not receiving at least 0.5V from the transmitter. At 0kPa the transmitter gives an output of 1 VDC across terminals 2 and 3, so it can easily be verified is the transmitter is functioning. If you are seeing less than 1V, ensure that the transmitter is receiving 24V both ends, and check the cabling.

If the transmitter does not respond to any pressure changes, this is more than likely due to a blockage of the Vent Tube (see the Wiring Diagram) as this **MUST** be left open to atmosphere. You must ensure that this is not folded or kinked, and when cutting please ensure use a sharp blade.

Where the pressure transmitter does not see a pressure drop, please ensure that it is installed into a downstream port (refer to the valve manufacturer documentation for port configuration).

GAS SENSORS

Prior to connection of any gas sensors, please ensure that each core (24V, 0V, A and B) is independent as any voltage induction to the communications terminals can cause irreparable damage to the sensor.

Any damaged sensors or address conflicts may result in multiple sensors not displaying on the system, including those that are otherwise functioning.

GAS, WATER & ELECTRIC OUTPUTS

If the panel appears to be operating correctly however there is no output to the Gas Valve, Water Valve or Electrical Contactor check that the PCB mounted radial fuses are still intact. These is located just above the mains in terminals with separate fuse for the Gas and Water/Electric (please see wiring diagram for details).

LCD

If on power-up the LCD backlight illuminates however no text can be seen, the text is too dark, or the text cells are completely dark the contrast may require adjusting. This can be done by adjusting the potentiometer located to the bottom right of the ribbon cable connector.

Is the LCD is simply displaying random characters there has been a breakdown in communication between the Main PCB and the LCD. Removing power to the panel then powering back up will re-establish the connection and the panel will return to normal operation.

CO2 SENSORS

CO2 sensors should display circa 400ppm in outdoor air. However, they are susceptible to contamination from fine dusts of cleaning solvents which can distort the infra-red optics. ‘Poisoning’ of the sensor may cause it to display a high reading.

In such instances, power cycle the sensor momentarily, then leave continuously powered for 24 hours, after which the sensor will automatically recalibrate.

Sensor should see outside CO2 levels for at least 2 hours every 7 days.

MAINTENANCE

The system must be Serviced/Safety Checked at least annually by a **FLAMEFAST APPROVED ENGINEER** and the panel has a built-in reminder. When the internal timer reaches 30 days, ‘ANNUAL SERVICE DUE’ will display during operation – this will not affect the functionality. If the system is controlling as Gas Solenoid Valve, this must be by a Gas Safe Registered Engineer as check should be made to ensure the valve closing and is not passing.

