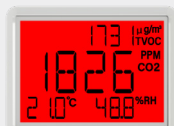
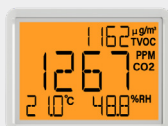
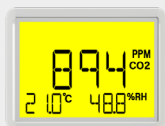


CO₂, TVOC, TEMP & RH MONITOR (CO2M) C/W RELAY OUTPUT (100-240V AC)



| OVERVIEW |

The Flamefast Carbon Dioxide, Total Volatile Organic Compounds (TVOC), Temperature and Relative Humidity Monitor provides a bold visual indication of air quality using our signature multicolour backlit display, as well as having a digital readout to display the current levels/concentrations.

CO₂ levels are considered a good indication of general air quality, whilst VOCs cover a wide range of airborne contaminants from furnishings, solvents etc.

With a built-in mains rated volt free contact, the unit can be easily interfaced with Ventilation and Window Control Systems, as well as Gas Safety Systems. Or it can simply be used as a visual indicator to advise further ventilation is required.

The unit offers four pre-set programs, two aimed at ventilation and two aimed at gas safety, however with the USB-C interface, every setting of the unit can be configured, including the display behaviour, alarm levels, relay behaviour and much more.

| KEY FEATURES |

- 100-240V AC Power Supply
- Bold Multicoloured Indication
- CO₂ Parts Per Million Readout
- TVOC $\mu\text{g}/\text{m}^3$ Readout
- USB-C Interface for full customisation
- Mains rated volt free contact output
- Typical 10+ year life expectancy
- Self-calibrating CO₂ sensor
- UK MANUFACTURED

DIMENSIONS

Height 125mm | Width 86mm | Depth 36mm

TECHNICAL SPECIFICATION

Power Supply	100-240V AC 50/60Hz
Power Consumption	3W Max
VFC Output	SPST - 5A @ 230V Max
Audible	60dB @ 30cm
CO ₂ Range	0 ~ 10,00ppm
CO ₂ Accuracy	± 40 ppm +3% @ NTP
CO ₂ Display Resolution	1ppm
CO ₂ Sensing Method	Non Dispersive Infra-red (NDIR)
CO ₂ Typical Sensor Life	10+ Years
TVOC Range	0 ~ 2,000 $\mu\text{g}/\text{m}^3$
TVOC Accuracy	$\pm 5\%$ @ NTP
TVOC Display Resolution	1 $\mu\text{g}/\text{m}^3$
TVOC Sensing Method	Metal-oxide (MOx)
TVOC Typical Sensor Life	10+ Year
Temp Range	0 ~ 50°C
Temp Accuracy	$\pm 0.5^\circ\text{C}$ @ 25°C
Temp Display Resolution	0.1°C
RH Range	0 ~ 100%
RH Accuracy	$\pm 2\%$ @ 20 ~ 80%
RH Display Resolution	0.1%
Operating Conditions	Temp 0 ~ 50°C Humidity 0 ~ 95% (NC)
Sampling Method	Diffusion
IP Rating	IP40
Housing Material	PC/ABS
Colour	Pure White (RAL9010)
Approvals	CE, UKCA

INSTALLER SELECTABLE OPTIONS

Audible Alarm	Enable / Disable
Backlight	Enable / Disable
Temperature Readout	Enable / Disable
RH Readout	Enable / Disable
Display	Concentrations / Ventilation Performance

The unit has four user selectable programmes to control the display colour and volt free contact set points depending on the application. These are as follows;

PROGRAMME	VENTILATION		GAS SAFETY	
Green - Yellow	800ppm / 530 $\mu\text{g}/\text{m}^3$		800ppm / 530 $\mu\text{g}/\text{m}^3$	
Yellow - Amber	1000ppm / 935 $\mu\text{g}/\text{m}^3$		1500ppm / 935 $\mu\text{g}/\text{m}^3$	
Amber - Red	1500ppm / 1620 $\mu\text{g}/\text{m}^3$		2800ppm / 1620 $\mu\text{g}/\text{m}^3$	
Relay Set Point	800ppm / 530 $\mu\text{g}/\text{m}^3$	1000ppm / 935 $\mu\text{g}/\text{m}^3$	2800ppm	4500ppm
Relay Position	N/O	N/O	N/C	N/C
Audible Alarm	5000ppm			

PART NUMBERS & COMMON ACCESSORIES

PART NO	DESCRIPTION
CO2M	CO ₂ , Temp & RH Monitor (230V)
CO2M-AQ	CO ₂ , TVOC, Temp & RH Monitor (230V)

INSTALLATION & OPERATION

CO2M

TECHNICAL SPECIFICATION

Power Supply	85 – 305V AC 50/60Hz
Power Consumption	3W Max
VFC Output	SPST – 5A @ 230V Max
CO2 Range	0 - 10,000ppm
CO2 Accuracy	±40 ppm +3% @ NTP
CO2 Display Resolution	1ppm
CO2 Sensing Method	Non-Dispersive Infra-red (NDIR)
CO2 Typical Sensor Life	10+ Year
TVOC Range	0 - 2,000µg/m ³
TVOC Accuracy	±5% @ NTP
TVOC Display Resolution	1µg/m ³
TVOC Sensing Method	Metal-oxide (MOx)
TVOC Typical Sensor Life	10+ Year
Temp Range	0 - 50°C
Temp Accuracy	±0.5°C @ 25°C
Temp Display Resolution	0.1°C
RH Range	0 - 100%
RH Accuracy	±2% @ 20 - 80%
RH Display Resolution	0.1%
Operating Conditions	Temp 0 - 50°C Humidity 0 - 95% (NC)
Sampling Method	Diffusion
Warm-up Time	5 Seconds
Material	PC/ABS
Colour	Pure White (RAL9010)
Approval	CE, UKCA

IMPORTANT – Please read carefully

1. This product must be installed by a competent/qualified person in accordance with all relevant regulations and legislations.
2. This product must be mounted flush to the wall (or similar) using secure fixings to prevent access to the rear.
3. Be sure to isolate the mains supply before removing the unit fascia.
4. The sensors must be continuously powered for auto-calibration purposes.
5. The use of solvents, cleaning fluids or fine dusts near to the unit can damage the sensing elements.
6. If there is any question over the application, please contact to discuss.
7. This product must be connected to an accessible 5A fused spur.
8. If this equipment is used in a manner not specified by the manufacturer, protection provided may be impaired.
9. This product is designed for indoor use with standard atmospheric conditions.

MOUNTING LOCATION

Application specific mounting positions should be considered, however the below guidance will be suitable for most installations.

Typical Mounting Heights:

Application	Mounting Height
General Areas	1500mm Above Finished Floor Level
Science Classrooms	1500mm Above Finished Floor Level*
Food Tech Rooms	1500mm Above Finished Floor Level*
Kitchens	2000mm Above Finished Floor Level (not within 100mm of ceiling)

*If the CO2 sensor is in a high traffic area of directly in front of a workstation, the height may be increased to 2000mm Above Finished Floor Level, provided this is not within 100mm of the ceiling to avoid false readings.

Important Notes:

- Do not install directly above any appliance or burner.
- Do not install in high velocity air streams (near an air Inlet/Outlet).
- Do not install next to doors or opening windows.
- Do not install in direct sunlight.

INSTALLATION

All installation details shown on the wiring diagram should be followed carefully, failure to do so could result in irreparable damage to the unit.

ENCLOSURE

The wall mount enclosure is designed to fit on a standard single gang junction box or conduit box. Please take care when tightening fixing screws as overtightening can distort the plastic.

To open/close:

1. Remove securing screw from the bottom of the enclosure.
2. Insert a flat screwdriver into the slot behind the screw and apply pressure until the bottom of the enclosure releases.
3. Pull the front of the enclosure outward from the bottom then up to release hooks securing the top.
4. When closing, hook the clips into place, then push the bottom until the securing clip fully engages.

TEMPERATURE & RELATIVE HUMIDITY

The temperature and humidity sensor is located in the bottom left corner of the PCB. If the lower vents on the enclosure are obstructed, the restricted airflow may cause an increase in the displayed temperature.

When installing the unit on cavity walls, it may be necessary to seal the rear cable entry to ensure that the measured temperature is not that of air originating from within the wall cavity.

OPERATION

On power up, the LCD will cycle through Green, Yellow, Amber, Red then White with all segments lit to prove the correct operation of the display. During this warm-up, the volt free contact will be in the default position for the selected programme.

Once the warm-up is complete, the LCD will display the levels for any connected sensors, provide a traffic light indication based on live CO2/TVOC level, and the relay output will change to the correct position for the programme.

If no CO2 sensor is present and the Gas Safety programme is selected, the relay will be in an alarm state.

MAINTENANCE

Due to the Automatic Background Calibration (ABC) algorithm, the sensor is effectively maintenance free. Some applications may require this to be disabled – please contact for further details. To allow calibration to take place, the sensor must be exposed to atmospheric levels (400ppm) at least once during each calibration period – the first calibration is after 24 hours, then every 7 days.

The VOC sensor should be kept free from dust and debris.

If the sensor is installed as part of a Gas Safety system, the sensor should be 'bump' tested by applying a CO2 test gas, although the same result can be achieved by breathing on the sensor.

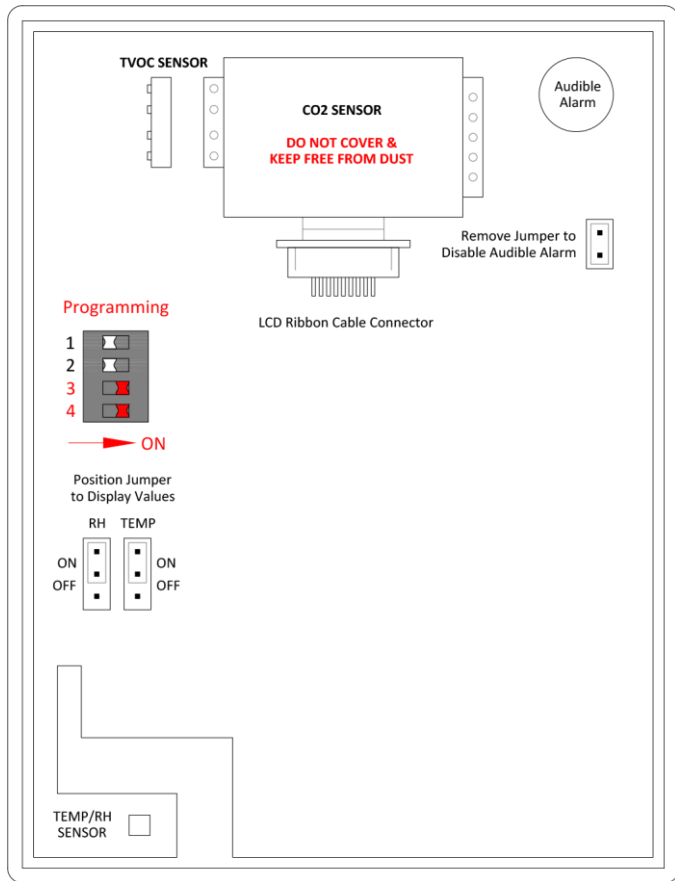
TROUBLESHOOTING

If the unit is not providing a CO2/TVOC reading, please ensure that the relevant sensor has not become dislodged in transit. Power the unit down, remove and refit if required.

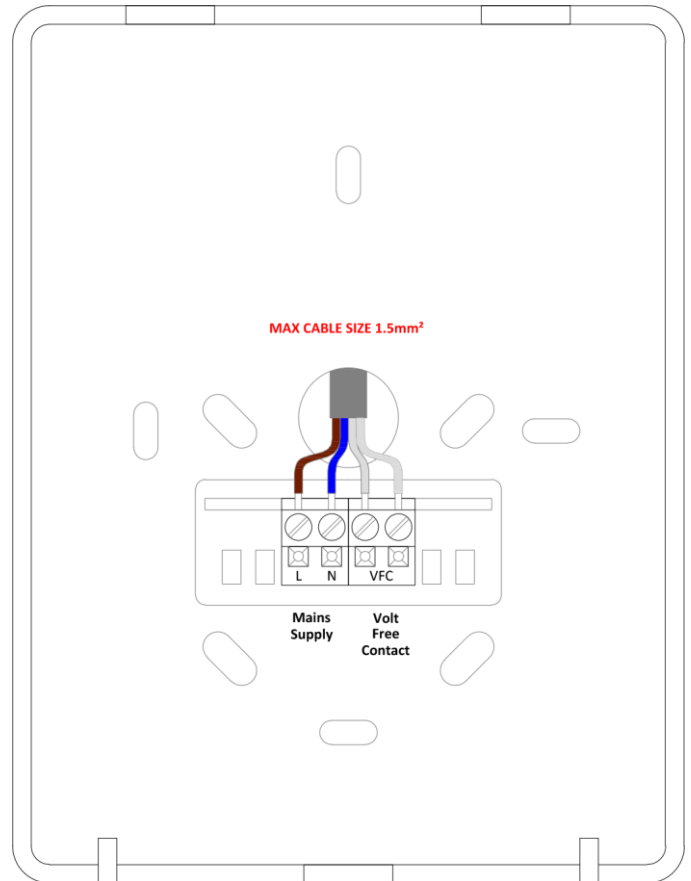
If the LCD is not displaying correctly, check that the ribbon cable is correctly inserted into the header. The header is released by sliding parallel to the PCB.

CONNECTIONS & CONFIG

FRONT



BACKPLATE (NTS)



PROGRAMMING SWITCHES

	OFF	ON
Switch 1	Traffic Light On	Traffic Light Off
Switch 2	Display CO2 and/or TVOC Concentration	Display: Green Vent Good Yellow Vent OK Amber Vent Poor Red Increase Vent
Switch 3	MODE SELECT	
Switch 4	Ventilation Control / Gas Safety System Interlock	

USB INTERFACE – PROGRAM CUSTOMISATION

Each of the four selectable programs can be factory configured to meet project specific requirements. The programmable fields are as follows:

- Display Colour Control CO2/TVOC/Temp/RH (any combination)
- Audible Control CO2/TVOC/Temp/RH (any combination)
- Relay Control CO2/TVOC/Temp/RH (any combination)
- Activation/Deactivation Delay on Relay and Audible
- Hysteresis on All Alarm Conditions
- CO2 Auto Calibration On/Off
(this will require the sensor to be manually calibrated periodically)
- Default Relay Position (Normally Closed / Normally Open)
- Reading Offsets
- Temp Display (°C / °F)

Please contact us to discuss any customisation.

ON ↑

	VENTILATION		GAS SAFETY	
	Prog 1	Prog 2	Prog 3	Prog 4
Green to Yellow	800ppm / 530µg/m3	800ppm / 530µg/m3	800ppm / 530µg/m3	800ppm / 530µg/m3
Yellow to Amber	1,000ppm / 935µg/m3	1,000ppm / 935µg/m3	1,500ppm / 935µg/m3	1,500ppm / 935µg/m3
Amber to Red	1,500ppm / 1620µg/m3	1,500ppm / 1620µg/m3	2,800ppm / 1620µg/m3	2,800ppm / 1620µg/m3
Relay Position	Normally Open	Normally Open	Norm Closed	Norm Closed
Relay Setpoint	800ppm / 530µg/m3	1000ppm / 935µg/m3	2,800ppm	4,500ppm

There is a 50ppm / µg/m3 hysteresis on all downward status changes.

**WHEN CONNECTED TO A GAS SAFETY SYSTEM,
PROGRAMS 3 OR 4 MUST BE USED**