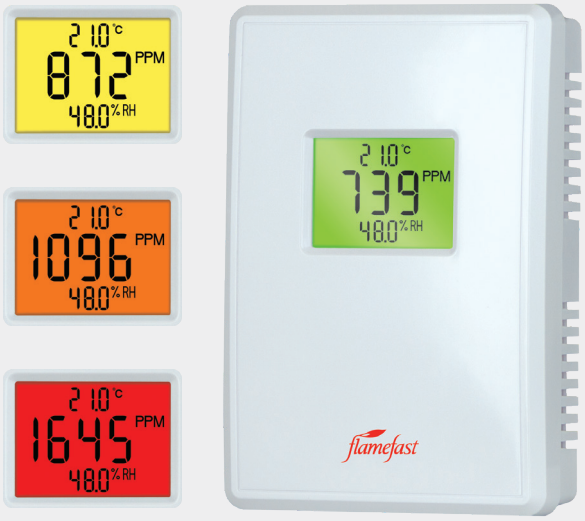
CO2, TEMP & RH MONITOR (CO2M)
C/W RELAY OUTPUT (100-240V AC)



| OVERVIEW |

The Flamefast Carbon Dioxide, 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, therefore can be used an indicator that any airborne contaminants are being removed.

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 offer four pre-set programs, two aimed at ventilation and two aimed at gas safety. These affect the display colour and relay setpoints.

| KEY FEATURES |

- 100-240V AC Power Supply
- Back plate can be pre-wired
- Clear digital readout
- Bold Multicoloured Indication
- Mains rated volt free contact output
- Typical 10+ year life expectancy
- Self-calibrating CO2 sensor
- Mounts onto any standard single gang junction box or conduit box
- **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	
CO2 Range	0 - 10,00ppm	
CO2 Accuracy	±40 ppm +3% @ NTP	
CO2 Display Resolution	1ppm	
CO2 Sensing Method	Non Dispersive Infra-red (NDIR)	
CO2 Typical Sensor Life	10+ Years	
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	
IP Rating	IP40	
Housing Material	Flame Retardant PC/ABS	
Colour	Pure White (RAL9010)	
Approval	UKCA, CE	

Installer Selectable Options

Audible Alarm	Enable/Disable
Backlight	Enable/Disable
Temperature Readout	Enable/Disable
RH Readout	Enable/Disable

Replace the CO2 PPM reading with "CO2"

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	1	2	3	4
Green - Yellow	800	800	800	800
Yellow - Amber	1,000	1,000	1,500	1,500
Yellow - Red	1,500	1,500	2,800	2,800
Relay Position	N/O	N/O	N/C	N/C
Relay Set Point	800	1,000	2,800	4,500
Audible Alarm	5,000	5,000	5,000	5,000

Part Numbers & Options/Accessories

Part No	Description
CO2M	CO2, Temp & RH Monitor

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INSTALLATION & OPERATION
CO2M

TECHNICAL SPECIFICATION

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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	Flame Retardant 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 to allow the CO2 auto-calibration to take place (every 8 days).
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.

To provide an accurate reading, clear airflow is required around the sensor. Obstructing the vents on any side of the unit may have an adverse effect on the unit operation.

Although CO2 is heavier than air, for most HVAC applications the sensors should be mounted at head height. For applications where there are stored concentrations of CO2 please refer to the Gas Detector/Sensor range.

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 heigh 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.

DIMENSION

Height - 125mm **Width** - 86mm **Depth** - 36mm

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

The temperature is taken from a thermistor bead or humidity module (when fitted), both of which are located in the bottom left corner of the PCB. This is to ensure that they are mounted away from any heat producing components.

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, 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 clear multicolour indication based on live CO2 level and the relay output will change to the correct position for the programme

If no CO2 sensor is present, 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 Flamefast 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.

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.

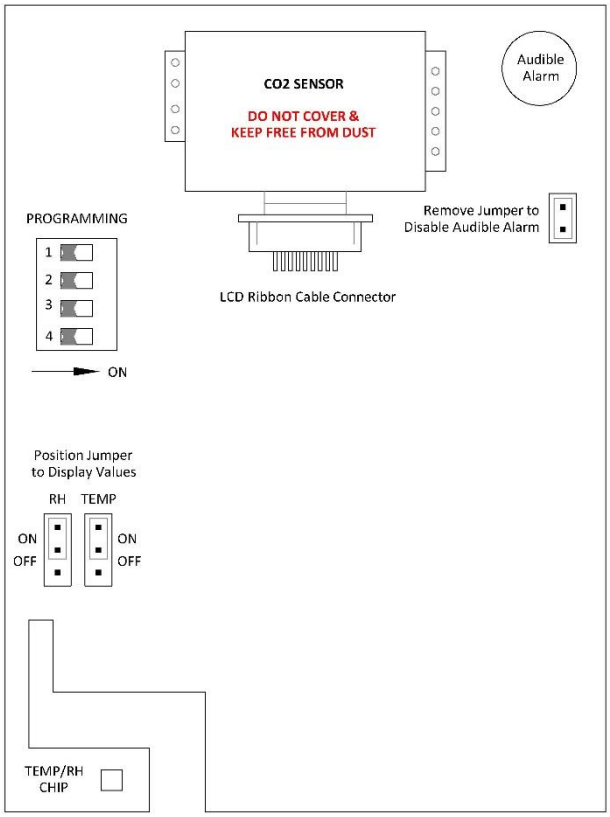
TROUBLESHOOTING

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

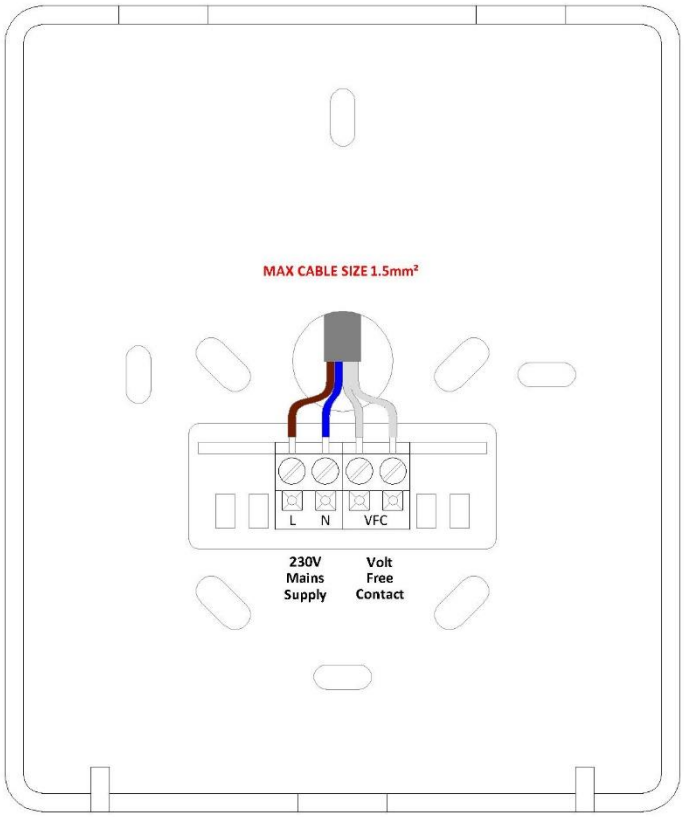
If the LCD is not displaying correctly, check that the ribbon cable is correctly inserted into the header. The header is released by sliding parallel to the PCB.

CONNECTION & CONFIG

FRONT



BACKPLATE (NTS)

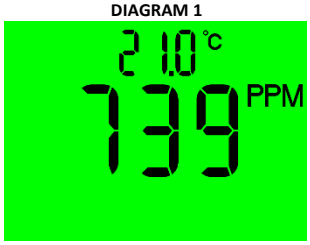


LCD CONFIGURATION

ON ↑

LCD Display	Backlight ON	Backlight OFF	See Diagram 1	See Diagram 2

DIAGRAM 1



When DIP Switch 2 is OFF an active CO2 concentration will be displayed

DIAGRAM 2

When DIP Switch 2 is ON the LCD will simply display 'CO2'

PROGRAMMING SWITCHES

ON ↑

	VENTILATION		GAS SAFETY	
	Prog 1	Prog 2	Prog 3	Prog 4
Green to Yellow	800ppm	800ppm	800ppm	800ppm
Yellow to Amber	1,000ppm	1,000ppm	1,500ppm	1,500ppm
Amber to Red	1,500ppm	1,500ppm	2,800ppm	2,800ppm
Relay Position	Normally Open	Normally Open	Norm Closed	Norm Closed
Relay Setpoint	800ppm	1000ppm	2,800ppm	4,500ppm
	There is a 50pm hysteresis on all downward status changes.			

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

CUSTOM SOFTWARE PROFILES

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/Temp/RH (any combination)
- Audible Control CO2/Temp/RH (any combination)
- Relay Control CO2/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)
- Activation/Deactivation Delay

Please contact Flamefast to discuss any customisation.