CO2 Sensors
GS-TR***

Description:

This Transmitter range can be supplied with any combination of Carbon Dioxide (CO2), Temperature and Relative Humidity. With three 0-10V outputs, an on board relay and the ability to select between Analogue or Thermistor temperature output, our transmitter range is one of the most versatile units available. With optional signature traffic light display, the sensor can provide a clear, bold indication of the air quality in the monitored space.
This cost effective sensor range is ideal for any application, including natural and demand controlled ventilation, as well as for integrating with our range of gas safety systems.

Technical Specification:

Power Supply:	24V AC/DC ±10%
Power Consumption:	50Ma Max
Analogue Outputs:	3x 0-10V
Thermistor Output:	10K3A1
VFC Output:	SPST - 100mA @ 24V Max
CO2 Range:	0 - 2,000 ppm
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:	±0.3°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:	30 seconds
IP Rating:	IP40
Housing Material:	Flame Retardant ABS
Colour:	Pure White (RAL9010)
Approval:	CE
Dimensions:	125(H) x 86(W) x 36mm(D)

Order Codes:

GS-TR-CO2T	Transmitter - CO2 & Temp
GS-TR-CO2TH	Transmitter - CO2, Temp & RH
GS-TR-TH	Transmitter - Temp & RH
GS-TR-T	Transmitter - Temp
GS-TR-CO2TL	Transmitter - CO2 & Temp c/w LCD
GS-TR-CO2THL	Transmitter - CO2, Temp & RH c/w LCD
TR-THL	Transmitter - Temp & RH c/w LCD
TR-TL	Transmitter - Temp c/w LCD

Features:

- 24V AC/DC Power Supply
- Pluggable terminal block for ease of installation
- Optional traffic light readout
- 3x 0-10V outputs
- Selectable Temperature output (0-10V or 10K3)
- 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

Installer Selectable Options:

The unit has two user selectable programmes to control the traffic light and volt free contact set points depending on the application. These are as follows:

Programme	Ventilation	Gas Safety
Green - Yellow	1,000 ppm	1,500 ppm
Yellow - Red	1,500 ppm	2,800 ppm
Relay Position	Normally Open	Normally Closed
Relay Set Point	1,000 ppm	4,500 ppm

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EC House, Amberley Way, Hounslow,
Middlesex. TW4 6BH. United Kingdom
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IMPORTANT – Please read carefully:

1. When the sensor is used as part of a Gas Safety system, please ensure the correct program is used (TR Jumper = GG).

2. The sensors must be continuously powered to allow the CO2 autocalibration to take place (every 8 days).

3. The use of solvents, cleaners or fine dusts near to the unit can damage the sensing elements.

4. If there is any question over the application, please contact ECP to discuss.

Mounting Location:

Application specific mounting positions should be considered, however the below guidance will be suitable for most installations. 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 Class-rooms	1500mm Above Finished Floor Level
Food Tech Rooms	2500mm Above Finished Floor Level (not within 100mm of ceiling)
Kitchens	2500mm Above Finished Floor Level (not within 100mm of ceiling)

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. Screened cable should be used at all times. The connection details for the Wall and Duct mount units are the same, the only difference is the mounting.

Wall Mount Enclosure
The wall mount enclosure is designed to fit on a standard single gas 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.

Duct Mount Enclosure
The duct mount enclosure is IP66 external to the duct and although a foam gasket is provided, additional sealant may be required to maintain the integrity of the duct (the use of solvent based sealant may damage the sensing elements). To open/close: 1. Remove securing screw from the lid of the enclosure. 2. Press on both securing clips simultaneously to release then simply open using the hinge mechanism.

Operation:

On power up, the LCD (if present) will cycle through Green, Amber, Red then white with a 30 second count down. During this 30 seconds the volt free contact will be in the default position for the selected programme and all voltage outputs will give 6.00V. 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 level, the relay output will change to the correct position for the programme and the voltage outputs will reflect relevant levels. If no CO2 sensor is present, the relay will be in an alarm state and the CO2 level on the centre line of the display with be replaced by the temperature.

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 ECP for further details. To allow calibration to take place, the sensor must be exposed to atmospheric levels (400ppm) at least once every 8 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.

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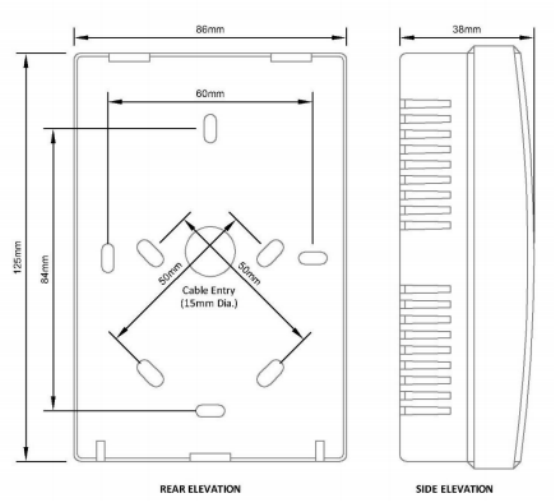
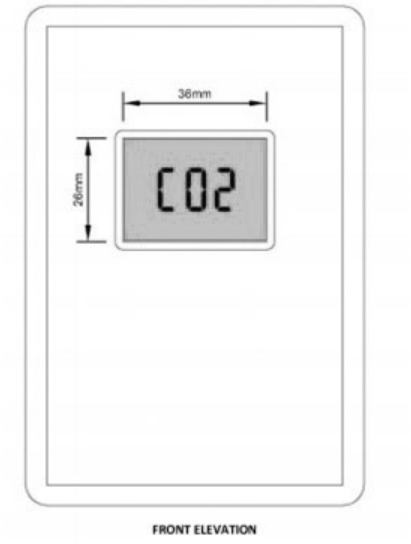
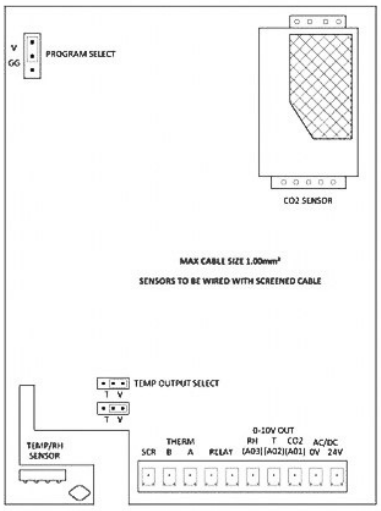
Mounting Dimensions:





Connection Details:



Programming Jumper:

	Ventilation (V)	Gas Safety (GG)
Green to Yellow	1,000ppm	1,500ppm
Yellow to Red	1,500ppm	2,800ppm
Relay Position	Normally Open	Normally Closed
Relay Setpoint	1,000ppm	4,500ppm
	There is a 50pm hysteresis on all download status changes.	

When connected to a Gas Safety System, the Gas Safety program MUST be used.

Temperature Configuration:

WARNING – whilst the unit is able to operate on 24V +10%, anything over 24V may adversely affect the temperature reading due to the additional heat generated by the voltage regulators.

The TR range has an installer selectable 0-10V or 10K3A1 Thermistor output. This is done by moving the Output Select Jumpers between 'V' and 'T'. Please note that both jumpers must be on the corresponding positions and should only be moved with the unit powered down:

- T = Thermistor
- V = 0-10V

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