DUCT TRANSMITTER RANGE (DTR)

CO2, TVOC, TEMP & RH (24V AC/DC)

| OVERVIEW |

The Duct Mounted Transmitter range from Flamefast is one of the most cost effective air quality transmitters available, with the ability to monitor Temperature, Relative Humidity, then either Carbon Dioxide (CO2) or Total Volatile Organic Compounds (TVOC)

With a wide range of output, including three 0-10V outputs, an on board relay, and the ability to select between Analogue or a Direct Thermistor temperature output, this versatile units is suitable for most general HVAC applications.

| KEY FEATURES |

- 24V AC/DC Power Supply
- Pluggable terminal block
- 3x 0-10V outputs
- Volt free contact output
- Typical 10+ year life expectancy
- Flanged enclosure with hinged lid for ease of installation
- 180mm Duct Probe (other lengths on request)
- **UK MANUFACTURED**

DIMENSIONS

Height 158mm | Width 112mm | Depth 58mm | Probe Length 180mm

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 ~ 10,000ppm	
CO2 Output Scaling	0 ~ 2,000 / 5,000ppm	
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 ~ 100% VOC Index	
TVOC Output Scaling	0 ~ 100%	
TVOC Accuracy	±5% @ NTP	
TVOC Display Resolution	1%	
TVOC Sensing Method	Metal-oxide (MOx)	
TVOC Typical Sensor Life	10+ Year	
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	IP66 (external to duct)	
Colour	Black/Grey	
Approval	CE, UKCA	

INSTALLER SELECTABLE OPTIONS

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

PROGRAMME	VENTILATION	GAS SAFETY
Relay Position	Normally Open	Normally Closed
Relay Set Point	800ppm / 40%	4500 ppm

PART NUMBERS & COMMON ACCESSORIES

PART NO	DESCRIPTION
DTR-CO2	Duct Transmitter - CO2
DTR-CO2TH	Duct Transmitter - CO2, Temp & RH
DTR-AQ	Duct Transmitter - TVOC
DTR-AQTH	Duct Transmitter - TVOC, Temp & RH
DTR-TH	Duct Transmitter - Temp & RH

FLAMEFAST CONTROLS

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INSTALLATION & OPERATION
TR RANGE

TECHNICAL SPECIFICATION

Power Supply	24V AC/DC ±10%
Power Consumption	50Ma Max
Analogue Outputs	3x 0-10V
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RH Display Resolution	0.1%
Operating Conditions	Temp 0 - 50°C
	Humidity 0 - 95% (NC)
Sampling Method	Diffusion
Warm-up Time	30 Seconds
Colour	Wall - Pure White (RAL9010)
	Duct – Black/Clear
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. The sensors must be continuously powered for auto-calibration purposes.
4. The use of solvents, cleaning fluids or fine dusts near to the unit can damage the sensing elements.
5. If there is any question over the application, please contact to discuss.
6. If this equipment is used in a manner not specified by the manufacturer, protection provided may be impaired.
7. 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	2000mm Above Finished Floor Level (not within 100mm of ceiling)
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.

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.

If there is any possibility of the connected cables running parallel to mains, screened cable should be used. Any voltage induction can result irreparable damage to the sensor.

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 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 and the analogue outputs will provide 6V.

Once the warm-up is complete, the LCD (if present) will display the levels for any connected sensors, provide a traffic light indication based on live CO2/TVOC 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 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 us 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.

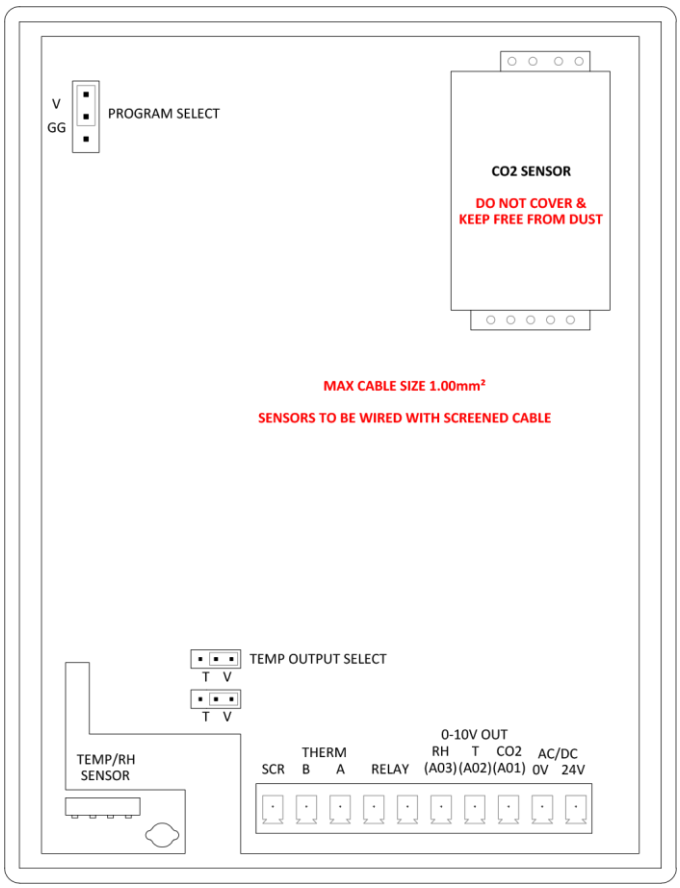
If the sensor is installed as part of a Gas Safety system, the sensor should be 'bump' tested by applying a CO2 test gas, although the same result can be achieved by breathing on the sensor.

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
TR RANGE



PROGRAMMING JUMPER

	Ventilation (V)	Gas Safety (GG)
Green to Yellow	800ppm / 40%	800ppm / 40%
Yellow to Amber	1,000ppm / 60%	1,500ppm / 60%
Amber to Red	1,500ppm / 80%	2,800ppm / 80%
Relay Position	Normally Open	Normally Closed
Relay Setpoint	800ppm / 40%	4,500ppm
	There is a 50pm hysteresis on all downward status changes.	

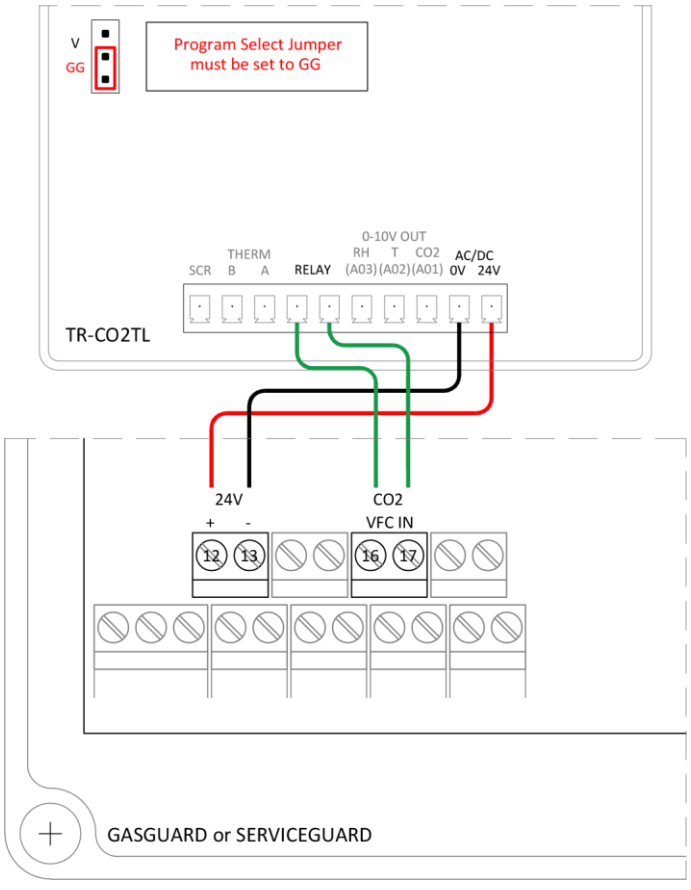
TEMPERATURE CONFIGURATION

WARNING – whist 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

WIRING TO GG/SG



WIRING TO GG/SG & BMS