Sontay®

GS-CO2-622

Duct Mounted $C0_2$, Temperature & RH Sensors

Features:

Benefits:

- $C0_2$ Self-calibration algorithm
- Selectable 0-10Vdc, 0-5Vdc or 4-20mA output
- Direct thermistor options available
- LCD display
- "Traffic Light" LED CO_2 indication option

- Long sensor life
- Energy saving by ventilating at the optimum $C0_2$ levels

Technical Overview

The GS-CO2-622 range combines CO_2 and Temperature or $C02$, temperature & RH sensing in one housing.

Using a non-dispersive infrared sensor for measuring CO_2 concentrations and utilizing microprocessor based electronics, the unique self-calibration algorithm offers long-term stability and accuracy. They are also fitted with a temperature output or RH & temperature output. A directly connected passive resistive temperature output is also available, as an alternative to the standard active temperature output.

The sensor can be used to ensure adequate ventilation while maximizing energy savings by ventilating at the optimum level, making these ideal for all types of ventilation in commercial buildings, industrial plants, laboratories and public spaces, such as schools.

Specification:

Outputs	0-10Vdc, 0-5Vdc or 4-20mA
Power supply	24Vac/dc
Supply current	140mA max.

Output ranges:

CO_2	0 to 2000ppm
Temperature	-20 to 50°C (-4 to 122°F)

Optional

-HR	0 to 5000ppm
-RHT	0 to 100%
-T	PTC/NTC Element Any Sontay resistive type
-TR	In range of 0 to 50°C (32 to122°F)

Accuracy:

CO_2	±30ppm +5% of reading
Temperature	±0.5°C
RH	±3%RH (20 to 80%)

Stability:

CO_2	<2% of FS over sensor life
Temperature	±0.1°C
RH	±1%RH per year

Ambient:

Temperature	-30°C to +70°C (-22 to 158°F)
RH	0 to 95% RH, non-condensing

Housing:

Material	Flame retardant ABS
Dimensions	116 x 106 x 52mm (4.57 x 4.17 x 2.05")

Probe:

Material	Delrin
Dimensions	215 x 19mm dia. (8.46 x 0.75")

Protection:

Snap-shut lid	IP54
	IP65 (see page 3 note 4)
Country of origin	UK

CE

The products referred to in this data sheet meet the requirements of EU Directive 2004/108/EC

Part Codes:

GS-CO2-622

Duct CO_2 & T transmitter 0-2000ppm

GS-CO2-RHT-622

Duct CO_2, RH & T transmitter 0-2000ppm

Suffixes (add to part code)

-T Direct resistive temperature output**

Thermistor types:

A (10K3A1)	**B** (10K4A1)	**C** (20K6A1)
H (SAT1)	**K** (STA1)	**L** (TAC1)
M (2.2K3A1)	**N** (3K3A1)	**P** (30K6A1)
Q (50K6A1)	**S** (SAT2)	**T** (SAT3)
W (SIE1)	**Y** (STA2)	**Z**(10K NTC)

Platinum types:

D (PT100a)	**E** (PT1000a)

Nickel types:

F (NI1000a)	**G** (NI1000a/TCR (LAN1))

-HR

0-5000ppm CO_2 range

-LCD

Integral LCD

-TR

Custom temperature output range scaling

-LED

3-colour LED indication for CO_2

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Note*:
Current versions are NOT loop powered and will require a common 0V connection.

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Installation:

Antistatic precautions must be observed when handling these sensors. The PCB contains circuitry that can be damaged by static discharge.

Transmitters should only be fitted to a system after airflow calibration has been carried out and preferably following full fan running of at least several days, in order that the main contaminants have been removed from the stagnant system.

1. Fit the housing to the duct with appropriate screws, or by using the optional duct mounting flange.
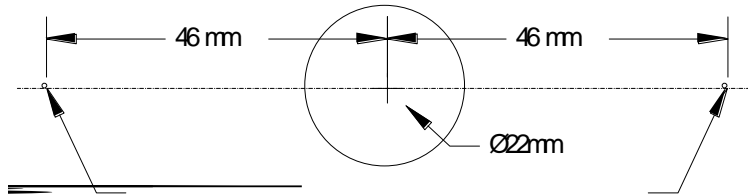
2. Release the snap-fit lid by gently squeezing the locking tab and feed the cable through the waterproof gland and terminate the cores at the terminal block (see page 4 for connection details). Leaving some slack inside the unit, tighten the cable gland onto the cable to ensure water tightness.

3. If the sensor is to be mounted outside, it is recommended that the unit be mounted with the cable entry at the bottom. If the cable is fed from above then into the cable gland at the bottom, it is recommended that a rain loop be placed in the cable before entry into the sensor.

4. Set the yellow dip-switches according to output type required (see page 4 for dip-switch details). Snap shut the lid after the connections have been made if IP65 protection is required, secure the lid with two screws provided.

5. It is recommended that screened cable be used and that the screen should be earthed at the controller. Care should be taken not to lay control signal wiring in close proximity to power or other cables which may produce significant electromagnetic noise.

6. Before powering the sensor, ensure that the supply voltage is within the specified tolerances.
Note: When using the sensor with a 4-20mA output, it is important to make all electrical connections before applying the supply voltage. If the sensor is not connected sequence, then you may see a higher reading than expected (can be as much as 55mA).

7. Allow 10 minutes before carrying out pre-commissioning checks. This will allow the electronics time to stabilise and full commissioning should not be carried out for at least 48 hours. This will enable the ABC Logic self-calibration procedure to complete.

- The **GS-CO2-622** should be installed not less than 2 metres downstream from any heating or cooling devices, source of moisture such as humidifier, fan or bend in the ductwork.
- The **GS-CO2-622** should be mounted with the holes in the probe directly into the air flow, to allow full air flow over the sensing element.

Note: When using current output mode the **GS-CO2-622** is NOT loop powered and will require a common 0V connection.

ABC Logic Self-Calibration:

When first powering the transmitter, it needs to be powered continuously for at least 2 days. This will allow the CO_2 sensors ABC Logic self-calibration system to operate correctly

Connections, Dipswitch/Jumper Settings & PCB Layout:

24V Supply + 24Vac or Vdc (see note below)
GND Supply 0V
OP1 Direct thermistor output only (see J11 settings)
OP2 Optional RH output
GND Common 0V
OP3 CO_2 Output
GND Common 0V
OVRD No connection

Main board
J10
If the outputs are set to voltage (by putting jumpers J1, J2 and J3 in the "V" position), the output can be set to either 0-10Vdc or 0-5Vdc;

J1, J2, J3
These set the output to either voltage of current:
V for voltage, I for current

J11
Selects the direct thermistor output:
T for direct thermistor

**CO_2 board**
J1
This sets the output to either voltage of current:
V for voltage, I for current

Notes:

Voltage output   Nominal voltage 24Vac/dc.

Current output   Nominal voltage 24Vac/dc 3-Wire
                  Please see note in section 6 on previous page regarding connections.

Direct thermistor output (if fitted) is between terminals OP1 and T2, polarity is independent. When using the **-T** option, they are not compensated for internal heating.
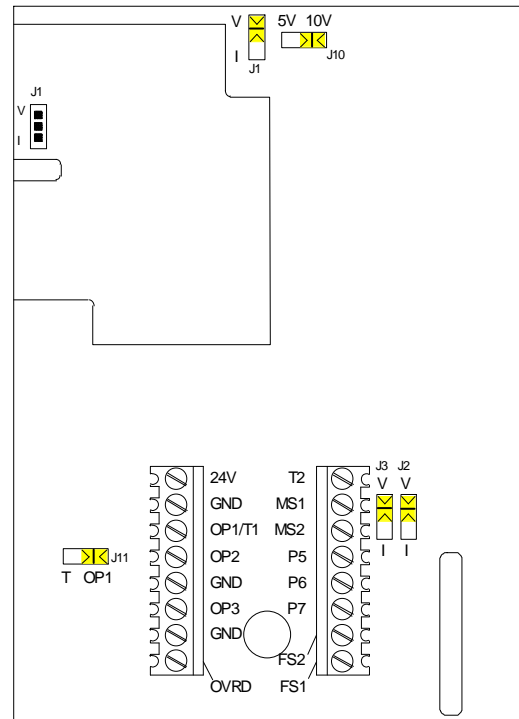
LED CO_2 Level Indication:

The LED is configured to turn from green to amber when the CO_2 level rises above 1000ppm. The colour changes to red when the CO_2 level exceeds 1500ppm. These levels are customizable, but alternative values MUST be stated when ordering, as they cannot be changed on site.