Sontay®
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GS-CO2-1001

Space Mounted CO_2 Temperature &RH Sensors

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Features & Benefits

- Selectable 0-10Vdc, 0-5Vdc or 4-20mA output
- Direct thermistor options available
- LCD display, fan speed, set point & momentary switch options
- "Traffic Light" LED CO_2 indication option
- Long sensor life
- Energy saving by ventilating at the optimum CO_2 levels

Technical Overview

The GS-CO2-1001 range combines CO_2 and Temperature or $C0_2$, temperature & RH sensing in one housing.

Using a non-dispersive infrared sensor for measuring CO_2 concentrations and utilizing microprocessor based electronics, ensures 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.

Product Codes

GS-CO2-1001	Space $C0_2$ & T transmitter 0-2000ppm
GS-CO2-RHT-1001	Space $C0_2$, 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))

Interface Options (add to part code)**

-HR	0-5000ppm CO_2 range
-SP	Resistive set point 0-10kΩ or 11-1kΩ
-FS3	Resistive 3-speed fan switch
-FS4	Resistive 4-speed fan switch
-FS5	Resistive 5-speed fan switch
-MS	Momentary switch
-LCD	Integral LCD
-LED	3-Colour LED indication for CO_2 levels

Accessories

DECOR	Decorators trim plate
GASKET	Insulating gasket (pack of 10)

** Interface Restrictions

- SP only
- MS only
- SP-MS only
- SP-FS only
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Note*:
When using the -T option, they are not compensated for internal heating.

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	0 to 40°C
Optional	
-HR	0 to 5000ppm
-RHT	0 to 100%
-T	PTC/NTC Element Any Sontay resistive type
Accuracy:	
CO_2	±30ppm ±5% of scale
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	0°C to 50°C
RH	0 to 95% RH, non-condensing
Housing:	
Material	ABS (flame retardant)
Colour	polished white finish
Dimensions	115 x 85 x 28mm
Protection	IP30
Country of origin	UK

Current output versions are NOT loop powered and will require a common 0V connection.

CE

The products referred to in this data sheet meet the requirements of EU Directive 2014/30/EU

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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.

1. Select a location on a wall of the controlled space which will give a representative sample of the prevailing room condition. Avoid sitting the sensor in direct sunlight, on an outside wall or near heat sources. An idea mounting height is 1.5m from the floor.

2. Undo the tamperproof screw at the bottom of the housing and remove the front panel from the base.

3. Using the base as a template mark the hole centres and fix to the wall with suitable screws. Alternatively the base plate can be mounted on to a conduit box or standard recessed back box. The base plate is suitable for EU & North America fixings.

4. Feed cable through the hole in the base plate of the housing and terminate the cores at the terminal block as required. Leaving some slack inside the unit.

5. Set jumper links according to output type required and replace the housing to the base plate and tighten the tamperproof screw (if required) through the lug at the bottom of the base plate.

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 3 minutes before checking functionality, and at least 30 minutes before carrying out pre-commissioning checks. This will allow the electronics time to stabilise.

Connections

Left Hand terminal Block:

24V	Supply + 24Vac or Vdc
GND	Supply 0V
OP1	Temperature output (see J11 settings)
OP2	RH output
GND	Common 0v
OP3	CO_2 output
GND	Common 0V
OVRD	0-10Vdc input to indicate occupancy or override. Note: that this can only be used if voltage output is used, as it needs a common 0V

Right Hand Terminal Block (if -T option is selected);

T**2**	Direct thermistor output only (other half of OP1 if J11 is set to T)
MS1	Momentary switch VFC output
MS2	Momentary switch VFC output
P5*	Set point
P6*	Set point, wiper
P7*	Set point
FS2	Fan speed switch output, resistive
FS1	Fan speed switch output, resistive

Voltage output	Nominal voltage 24Vac/dc.
Current output	Loop powered (no 0V connection) 24Vdc supply ONLY. 3-wire (0V connection) 24Vac/dc
Set point*	2-wire 11-1kΩ output is required use terminals P6 and P7 2-wire 0-10kΩ output is required, use terminals P5 and P6

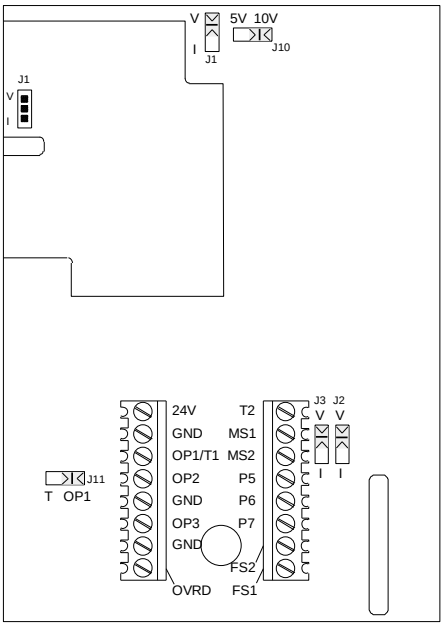
Direct thermistor output (if fitted) is between terminals OP1 and T2, polarity is independent. When using the -T option, they are not compensated for internal heating.

If using the -LCD option, when in loop powered mode the back light will not be lit. The transmitter will require a 0V connection for the back light to work (3-wire).

WEEE Directive:

At the end of the products useful life please dispose as per the local regulations.
Do not dispose of with normal household waste.
Do not burn.

Jumper Settings & Options



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

J10
If the outputs are set to voltage (jumpers J1, J2 & J3 in the "V" position), the output can be set to either 0-10Vdc or 0-5Vdc.

J11
Selects either active temperature output (current or voltage) or direct thermistor.
OP1 = active temperature output
T = direct thermistor

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

Fan Speed (if fitted)
The position of the selector switch will cause the resistance between the terminals to alter as shown below.

Switch position	Output
0	Open circuit
1	22.7kΩ
2	26kΩ
3	29.3kΩ
Auto	32.6kΩ

Set point(if fitted)
This is available in two standard values:

-	+
0kΩ	10kΩ
11kΩ	1kΩ

Using an external 1kΩ resistor (not supplied) on the terminals 0-10kΩ, 1-11kΩ can be achieved if required.

2-wire 11-1kΩ output is required use terminals P6 and P7
2-wire 0-10kΩ output is required, use terminals P5 and P6

Momentary switch (if fitted)
Rated at 24Vac/dc @ 500mA max.

Notes:

When using current output mode the GS-CO2-1001 is NOT loop powered and will require a common 0V connection.

-T 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.

-EN Terminal OP1 = Dew point Terminal OP2 – Enthalpy

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.

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