

DATA SHEET

CO₂ Sensors

Low Power Range—COZIR[®]



DESIGN • MANUFACTURE • CUSTOMISE • CONFIGURE



FEATURES

- Low power/energy consumption - 3.5mW
- Measures up to 1% CO₂ concentration
- Vibration and shock resistant
- Solid-state; no moving parts, no heated filaments
- Self-calibrating^a
- Digital (USART) output
- > 15 years lifetime
- Optional temperature & humidity outputs available
- Available cased or uncased^b



Supply Voltage



Power Consumption



Operating Temp



Output Digital



Response Time



BENEFITS

- Ideal for low power and battery applications
- Up to 50X lower power than typical NDIR CO₂ sensors
- Low maintenance
- Suitable for wireless, portable, wearable and self-powered systems



TECHNICAL SPECIFICATIONS

Supply voltage	3.25—5.5V _{DC} (3.3V recommended)
Current ^c	<1.5mA (average) 33mA Peak
Power consumption ^c	3.5mW
Output type	3.3V TTL level USART
Temperature	
Operating:	0°C to +50°C (standard) -25°C to +55°C (extended)
Storage:	-30°C to +70°C
Humidity	0—95% Rh, non-condensing
Start-up time ^d	1.2s



CO₂ MEASUREMENT SPECIFICATIONS

Sensing method	Non-dispersive infrared (NDIR) absorption
Sample method	Diffusion
Measurement range	0—2000ppm, 0—5000ppm, 0—1% CO ₂
Accuracy ^e	±50ppm / ±3% of reading
Calibration	Auto calibration ^a
Non linearity (voltage output)	< 1% of FS
Pressure dependence ^f	0.13% of reading per mbar in normal atmospheric conditions
Operating pressure range ^g	500mbar—10bar 900-1100mbar (with T and RH)
Response time, T90 ^h	30sec—3mins

Need help? Ask the expert
Tel: + 44 (0)1236 459 020
and ask for “Technical”



NOTES

- Enabled by default. For correct operation, the sensor must experience CO₂ concentrations close to fresh air at some time in an 8 day period.
- Uncased is a non-standard configuration and is intended for use with an external housing. Care must be taken to ensure the sensor is protected from dust and external light sources once installed.
- Power measurements for standard CO₂ sensor with 2 readings per second. Temperature & humidity measurements increase power consumption.
- Time to a valid reading is determined by digital filter setting; typically 4-8 seconds.
- All measurements are at NTP unless otherwise stated.
- Calibrated for 1013mbar. SST can supply advanced pressure correction advice when operating outside normal atmospheric conditions.
- External pressure calibration required.
- Response time to a step change in gas level is dependent on application/filter/flow rate/diffusion.

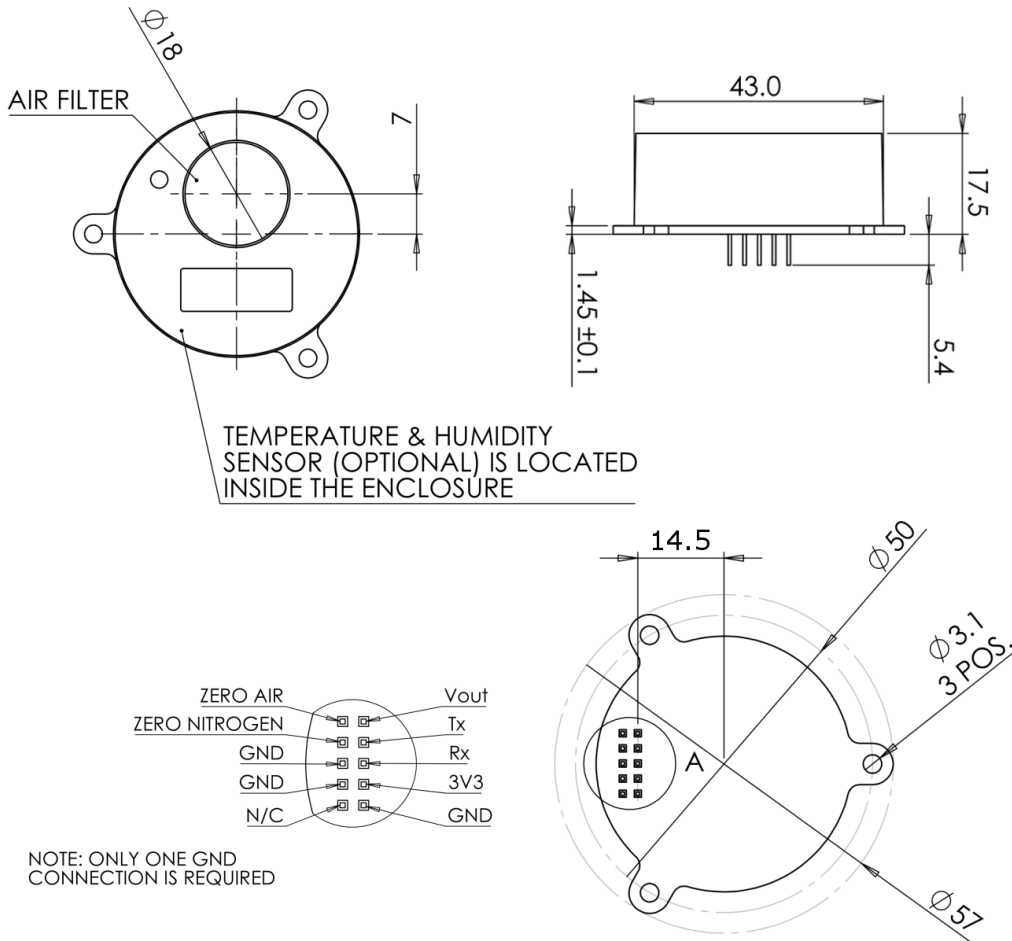
OPTIONAL SPECIFICATIONS

Temperature & Humidity Measurement¹

Sensing method	Humidity; Capacitive Temperature; Bandgap	
Measurement range	-25°C to +55°C 0—95% Rh	
Resolution	0.08°C 0.08% Rh	
Output	Digital only (not analogue)	
Absolute accuracy	± 1°C	0°C to 55°C
	± 3% Rh	20°C to 55°C
	± 2°C	over full temp. range
	± 5% Rh	over full temp. range
Repeatability	± 0.1°C	
	± 0.1% Rh	

OUTLINE DRAWING & ELECTRICAL CONNECTIONS

2x5 0.1" header. All dimensions shown in mm.



Designation	Pin	Pin	Designation
GND	1	2	N/C
+3.3V	3	4	GND
Sensor Rx (In)	5	6	GND
Sensor Tx (Out)	7	8	Nitrogen Zero
Analogue Output	9	10	Fresh Air Zero

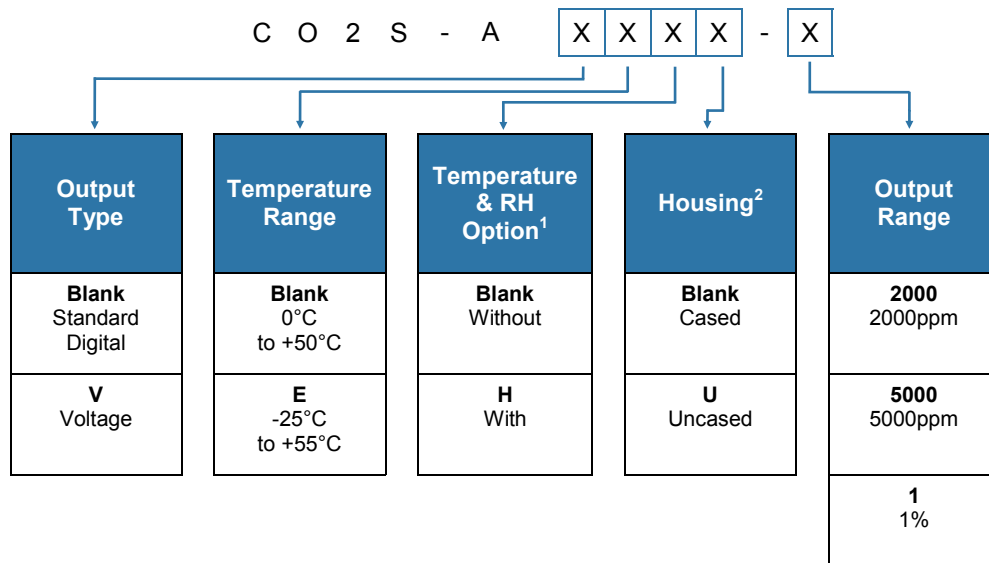


i) Temperature and humidity derived from Sensirion SHT21 chip. Please request datasheet for full details.



ORDER INFORMATION

Generate your specific part number using the convention shown below. Use only the numbers that correspond to the sensor option you require — omit those you do not.



NOTES:

1. Temperature & humidity option not available on voltage output variant.
2. Uncased is a non-standard configuration and is intended for use with an external housing. Care must be taken to ensure the sensor is protected from dust and external light sources once installed.

EXAMPLES:

- CO2S-A-V-2000 = Voltage output, 0°C to 50°C, without temperature & humidity (option not available with voltage output), cased, 2000ppm.
- CO2S-A-EHU-1 = Digital output, -25°C to 55°C, with temperature & humidity option, uncased, 1%.

CAUTION

Do not exceed maximum ratings and ensure sensor(s) are operated in accordance with their requirements.
Carefully follow all wiring instructions. Incorrect wiring can cause permanent damage to the device.
Do NOT use chemical cleaning agents.

Failure to comply with these instructions may result in product damage.

INFORMATION

As customer applications are outside of SST Sensing Ltd.'s control, the information provided is given without legal responsibility. Customers should test under their own conditions to ensure that the equipment is suitable for their intended application.

For technical assistance or advice, please email:
technical@sstsensing.com

General Note: SST Sensing Ltd. reserves the right to make changes to product specifications without notice or liability. All information is subject to SST Sensing Ltd.'s own data and considered accurate at time of going to print.