

DATA SHEET

CO₂ Sensors

Robust Range—ExplorIR[®]-W



DESIGN • MANUFACTURE • CUSTOMISE • CONFIGURE

FEATURES

- Low power / energy consumption—3.5mW
- Measures up to 100% CO₂ concentration
- Miniature format; vibration and shock resistant
- Solid-state; no moving parts, no heated filaments
- Digital (UART) output
- > 15 years lifetime
- Optional temperature & humidity outputs available



Supply Voltage



Power Consumption



Operating Temp



Output Digital



Response Time



BENEFITS

- Reliable in harsh, volatile environments
- 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 system

TECHNICAL SPECIFICATIONS

Supply voltage ^a	3.2—5V _{DC} (3.3V recommended)
Current ^a	<1.5mA (average) 33mA Peak
Power consumption ^a	3.5mW (at 3.3V)
Output type	3.3V TTL level UART
Temperature	
Operating:	0°C to +50°C (standard) -25°C to +55°C (extended)
Storage:	-30°C to +70°C
Humidity ^b	0—95% Rh, non-condensing
Start-up time ^c	1.2s

CO₂ MEASUREMENT SPECIFICATIONS

Sensing method	Non-dispersive infrared (NDIR) absorption
Sample method	Diffusion
Measurement range	0—5%, 0—20%, 0—100%
Accuracy ^d	±70ppm / ±5% of reading (100% range ±300ppm ±5% of reading)
Non linearity (voltage output)	< 1% of FS
Pressure dependence ^e	0.15% of reading per mbar in normal atmospheric conditions
Operating pressure range ^f	500mbar—10bar 900-1100mbar (with T and RH)
Response time, T90 ^g	10sec—2mins (configurable via filter and application) Reading refreshed twice per sec.

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



- Power measurements for standard CO₂ sensor with 2 readings per second. Temperature & humidity measurements increase power consumption.
- For extended operation in high temperature and humidity environments, contact SST.
- 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. External pressure calibration required.
- External pressure calibration required.
- Response time to a step change in gas level is dependent on application/filter/flow rate/diffusion.

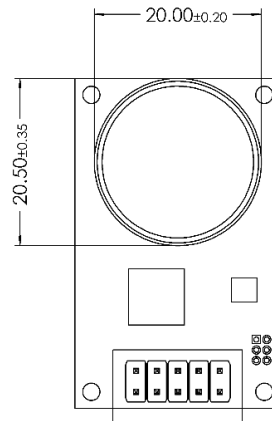
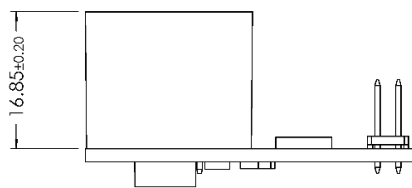
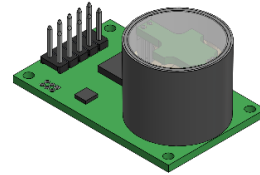
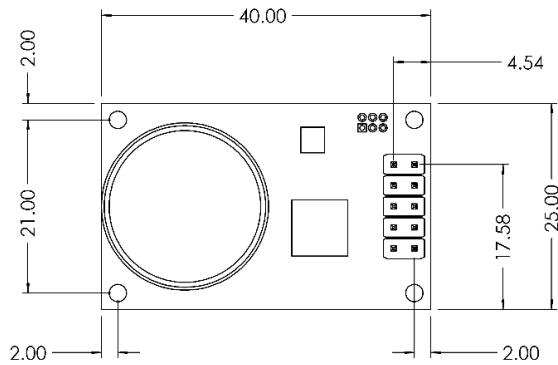
OPTIONAL SPECIFICATIONS

Temperature & Humidity Measurement^h

Sensing method	Humidity; Capacitive Temperature; Bandgap	
Measurement range	-25°C to +55°C 0—95% Rh	
Resolution	0.08°C 0.08% Rh	
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	

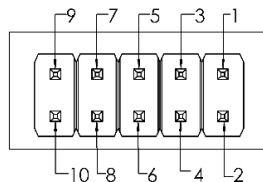
OUTLINE DRAWING & ELECTRICAL CONNECTIONS

2x5 0.1" header. PIN 1 is identified on the dimensional drawing. All dimensions shown in mm.



A

DETAIL A
SCALE 3 : 1

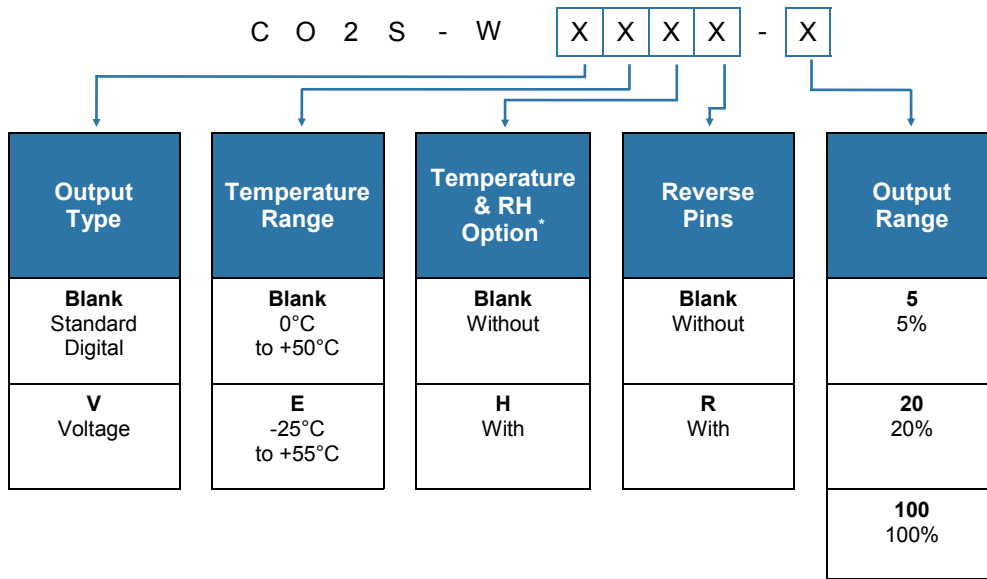


FUNCTION	PIN #	PIN #	FUNCTION
FRESH AIR ZERO	10	9	ANALOGUE OUTPUT
NITROGEN ZERO	8	7	SENSOR Tx (OUT)
GND	6	5	SENSOR Rx (IN)
GND	4	3	+3.3V
N/C	2	1	GND



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.



* **NOTE:** Temperature & humidity option not available on voltage output variant.

EXAMPLES:

- CO2S-WHR-100 = Standard digital output, 0°C to 50°C, with temperature & humidity option, with reverse pins, without split, 100% range.
- CO2S-WV-20 = Voltage output, 0°C to 50°C, without temperature & humidity option (option not available with voltage output), without reverse pins, 20% range.

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.