

# DATA SHEET

## CO<sub>2</sub> Sensors

### Robust Range—ExplorIR<sup>®</sup>-M



DESIGN • MANUFACTURE • CUSTOMISE • CONFIGURE

#### FEATURES

- Low power / energy consumption—3.5mW
- Measures up to 100% CO<sub>2</sub> concentration
- Miniature format; vibration and shock resistant
- Solid-state; no moving parts, no heated filaments
- Digital (UART) output
- > 15 years lifetime



#### Supply Voltage



#### Power Consumption



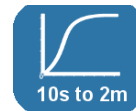
#### Operating Temp



#### 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 CO<sub>2</sub> sensors
- Low maintenance
- Suitable for wireless, portable, wearable and self-powered systems

#### CO<sub>2</sub> MEASUREMENT SPECIFICATIONS

Sensing method	Non-dispersive infrared (NDIR) absorption
Sample method	Diffusion
Measurement range	0—5%, 0—20%, 0—100%
Accuracy <sup>d</sup>	±70ppm / ±5% of reading (100% range ±300ppm ±5% of reading <sup>b</sup> )
Pressure dependence <sup>e</sup>	0.15% of reading per mbar in normal atmospheric conditions
Operating pressure range <sup>f</sup>	500mbar to 10bar
Response time <sup>g</sup>	10sec—2mins (configurable via filter and application) Reading refreshed twice per sec.

#### TECHNICAL SPECIFICATIONS

Supply voltage	3.25—5.5V <sub>DC</sub> (3.3V recommended)
Current <sup>a</sup>	<1.5mA (average) 33mA Peak
Power consumption <sup>a</sup>	3.5mW
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 <sup>b</sup>	0—95% Rh, non-condensing
Start-up time <sup>c</sup>	1.2s

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

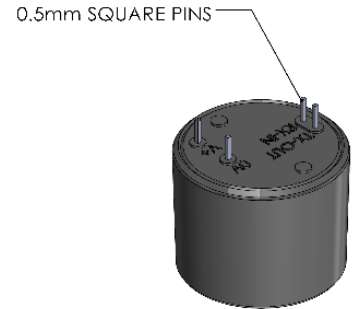
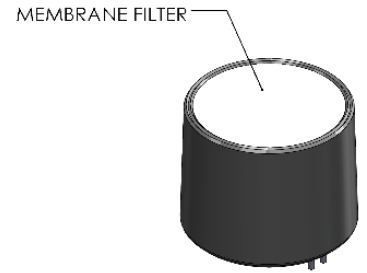
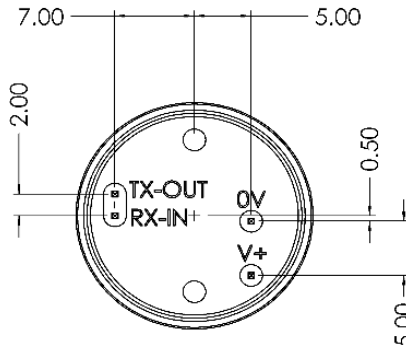
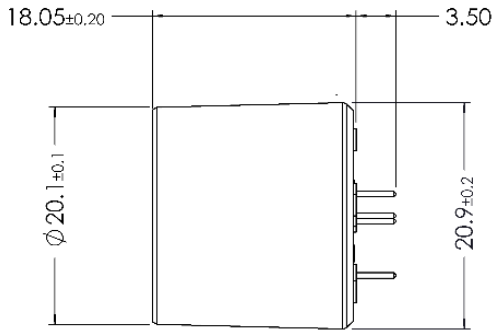


- Power measurements for standard CO<sub>2</sub> sensor with 2 readings per second. Temperature and RH% measurements increase power consumption.
- For extended operation in high temperature and humidity environments, contact SST.
- Time to a valid reading is determined by digital filter setting; typically 4-8 seconds.
- All measurements are at NTP unless otherwise stated.
- Calibrated for 1013mbar. 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.

# OUTLINE DRAWING & ELECTRICAL CONNECTIONS

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

CONNECTION	DESCRIPTION	COMMENTS
0V	GND CONNECTION	0V
V+	POSITIVE POWER SUPPLY	3V3 TO 5V
Tx-OUT	UART Tx FROM SENSOR	Voh WILL BE 3V. SENSOR OUTPUT.
Rx-IN	UART Rx TO SENSOR	USED FOR CONFIGURATION



## ORDER INFORMATION

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

C O 2 S - M - X X

Temperature Range	Output Range
<b>Blank</b> 0°C to +50°C	<b>5</b> 5%
<b>E</b> -25°C to +55°C	<b>20</b> 20%
	<b>100</b> 100%

### 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](mailto: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.