Commercial Carbon Dioxide Sensor 400-2000 ppm

Performance Characteristics

Part Number	C06-0802-000
Target Gas	CO$_2$
Operating Principle	Non-dispersive infrared (NDIR)
Standard Range	400 to 2000 ppm
	Up to 10000ppm extended range
Measurement Interval	4 seconds
Accuracy	$\pm$40ppm $\pm$3% of reading
Typical Response Time (T$_{90}$)	$\leq$ 120 seconds
Sensor Warm-up Time	3 mins (typically)
Repeatability	> 97%

Operation Conditions

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Temperature Range	0°C to 50°C
Operating Humidity	0 to 90% RH non-condensed
Storage Temperature	-40°C to 70°C
Expected Operating Life	10 years
Operation Voltage	4.5 to 5.5 V unprotected against surges and reverse connection
Power Consumption	300 mA peak, 30 mA average
Alarm Output, Open Collector	1000/800 ppm Normal state is conducting max 100mA. Transistor open at CO$_2$ high or at sensor failure
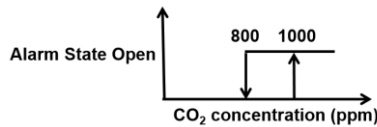
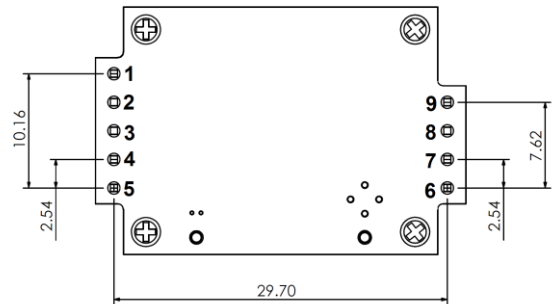|	
Serial Communication	UART, Modbus protocol
PWM Output, 1KHZ	20% to 100% duty cycle for 400 to 2000 ppm, 3.3 V push-pull CMOS output, unprotect
Maintenance	Maintenance-free for normal indoor application

Physical Characteristics

Weight	< 8 g
Size	33.5*22.5*11.7mm (max)

Outline Dimensions
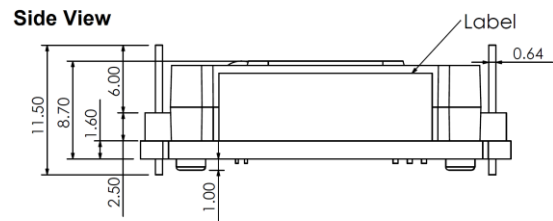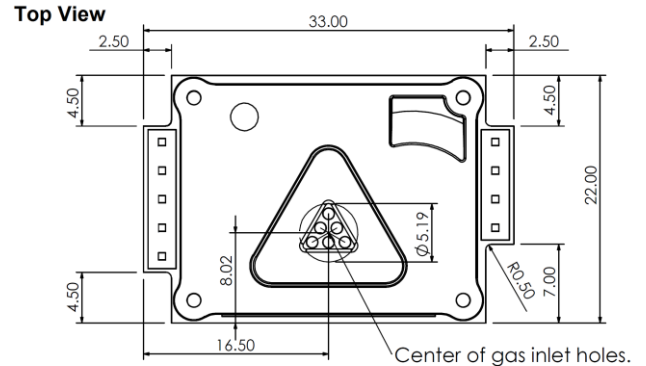
All dimensions are in millimeters. All tolerances are $\pm$ 0.20 mm

Pin Definition

1	bCAL_in /CAL_in
2	UART_R/T
3	UART_TXD
4	UART_RXD
5	DVCC_out (3.3 V)
6	Vin _(4.5~5.5V)
7	GND
8	Alarm Output
9	PWM Output

Note 1: The CO$_2$ sensor is designed to measure CO$_2$ in the range of 400-2000 ppm with the accuracy specified in the datasheet. Nevertheless, exposure to concentrations below 400 ppm may result in incorrect operation of ABC algorithm and shall be avoided when the ABC is ON.

Note 2: The CO$_2$ sensor provides readings via UART in the extended range but the accuracy is degraded.

Note 3: In normal IAQ applications, the sensor accuracy is defined after minimum three ABC periods of continuous operation. The CO$_2$ sensor normally does not require maintenance in IAQ applications. However, for some industrial applications, maintenance may be required.

Note 4: The sensor accuracy is specified over the operating temperature range and referenced to certified calibration mixtures. Uncertainty of calibration gas mixtures (±1% currently) is to be added to the specified accuracy for absolute measurements.

Note 5: See the sensor manual for Modbus address and parameter definition.