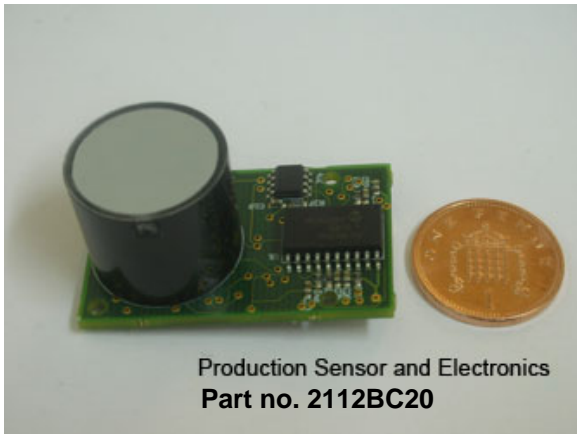


# C20 MINIATURE CO2 SENSOR

## FEATURES

- High speed
- Real time sensing
- Low power consumption – typically 100mW
- High accuracy
- High poison resistance & long-term stability
- Various voltages available from 3.3v to 5.5v
- 20mm package



## BENEFITS

- Wide range of applications
- Low cost
- Good immunity to other gases & humidity
- Low power consumption, suitable for battery and portable applications

The C20 Carbon Dioxide CO<sub>2</sub> sensor is a fast response, low power miniature solid state non-dispersive infrared (NDIR) sensor. Utilising Aluminium Indium Antimonide NDIR LED technology, the sensor is suitable for an extensive range of applications

The sensor is easy to use. The standard model provides a TTL level serial output, with a temperature compensated linearised reading. With two readings per second and a T90 time of less than five seconds, the sensor is fast and can be used to measure rapid changes in gas concentrations.

Leading edge LED technology allows the sensor to run at low power – less than 100mW running at full speed. No signal processing is required – just plug it in, power it up and read the data.

## THE TECHNOLOGY

This high performance Carbon Dioxide Sensor employs Aluminium Indium Antimonide (Al-In-Sb) technology on Gallium Arsenide wafer substrate. The sensor can be supplied either as a standard RS232 output or adapted to meet customer applications. The Carbon Dioxide measured output is temperature compensated and linearised.

This new solid state NDIR technology employs an LED and a matched Photodiode, manufactured to operate within a narrow optical band centred on 4.26µm. LEDs, by nature, are stable, long-life light emitters. The optical housing employs a simple but efficient optical path that collects the emitted radiation on the photodiode.



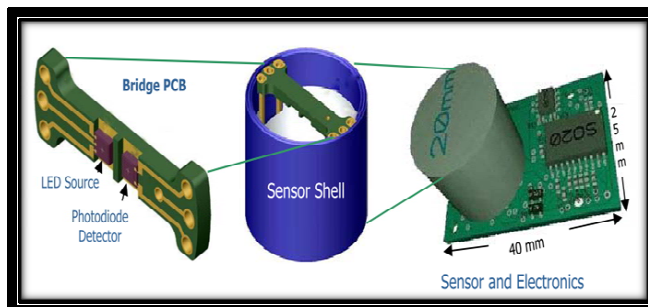
# C20 MINIATURE CO2 SENSOR

## APPLICATIONS

- Modified Atmospheres
- Combustion Control
- Indoor Air Quality
- In Vehicle Drowsiness
- Stowaway Detection
- Classroom Monitoring
- Cellar & Gas Stores
- Incubators (Poultry)
- Boats (Engine and Galley)
- Shipping Containers
- Tunnels
- Car Parks
- Mining
- Greenhouses
- Aircraft Atmospheres
- Land Fill Gas
- Atmospheric Research
- Confined Spaces
- Diving Gas & Equipment
- Refrigeration Plant
- Cryogenics
- Domestic Boilers
- Industrial Plant Rooms
- Automotive
- Ventilation Management

## FUNCTION

The LED and Photodiode pair is mounted on a bridge PCB over a lensed mirrored reflector. The resultant high efficiency optical path transfers the emitted narrow band light at  $4.26\mu\text{m}$  from the LED through the gas to an adjacent Photodiode. The inherently stable characteristics of this solid state technology ensures reliable performance. For higher specification and low cost systems alike, this technology delivers speed, low power consumption and stability.



# C20 MINIATURE CO2 SENSOR

## SPECIFICATIONS

<b>Operating Principle:</b>	Non-dispersive infrared (NDIR) absorption. Gold-plated optics. Patented solid state source and detector
<b>Gas Detected:</b>	Carbon Dioxide
<b>Sample method:</b>	Diffusion
<b>Measurement Ranges:</b>	Standard: 0 – 5 % Optional: 0 – 20 % Optional: 0 – 65 % Optional: 0 – 100 % Optional: Other ranges available on request
<b>Accuracy:</b>	+/- 5% of reading +/- 50ppm (measure at STP)
<b>Response Time (T90):</b>	4 seconds – 2 minutes (user configurable filter response)
<b>Recommended Warm-up Time:</b>	< 2 minutes operational. 10 minutes for maximum accuracy
<b>Non Linearity:</b>	<1% of FS
<b>Detection Limit (2 Std Dev at zero):</b>	100ppm
<b>Pressure Dependence:</b>	0.13% of reading per mm Hg
<b>Operating Pressure Range:</b>	500mb – 40bar (measured at 200ppm. External pressure calibration required)
<b>Humidity Range:</b>	0 - 95% RH, non-condensing

## Electrical/Mechanical Specifications

<b>Operating Voltage:</b>	3.3 – 3.6 Volts, 4.7 – 5.5 Volts, DC Analogue output module available 0.5 – 4.0 Volts
<b>Power Consumption:</b>	< 100mWatts average
<b>Wiring Connections:</b>	Molex 533981071 locking header plug. The mating part is Molex 51021-1000. Solder connection to four plated through holes
<b>Output Signal:</b>	RS232 – 2 readings per second (please enquire for others available)

**Temperature Measurement** (for indication only – non-calibrated)

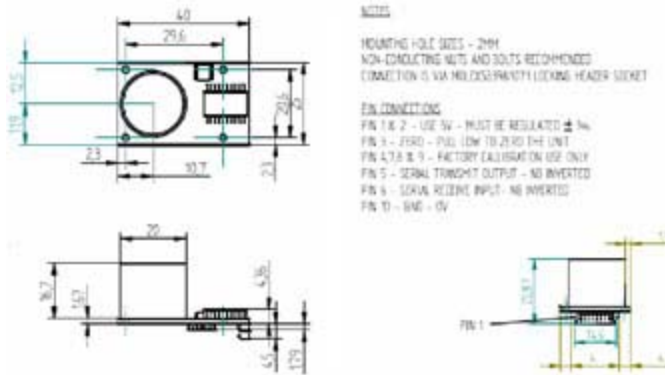
<b>Operating Temperature Range:</b>	-25°C to +55°C
<b>Digital Resolution:</b>	+/- 0.1°C
<b>Absolute Accuracy:</b>	+/- 2°C
<b>Relative Accuracy:</b>	+/- 0.2°C



# C20 MINIATURE CO2 SENSOR

## Physical Specifications

<b>Storage Conditions:</b>	-30°C to +70°C
<b>Expected Operating Life:</b>	> 6 years in normal use from date of manufacture
<b>Part no.:</b>	2112BC20
<b>Accessories:</b>	Development Kit, part no. 2112BC20-KIT



## DEVELOPMENT KIT

To assist with development of the sensor into OEM applications, Euro-Gas offers a development kit consisting of a sensor and driver electronics mounted on a support PCB. This is equipped with an LCD display, a zero function button and an RS232 DB9 (female) connector for easy connection to a PC. The output can be viewed simply using Hyper Terminal TM or Euro-Gas Software. This can be used to begin development 'out of the box'.



Development Kit, PCB with Sensor and Electronics  
Part no. 2112BC20-KIT

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