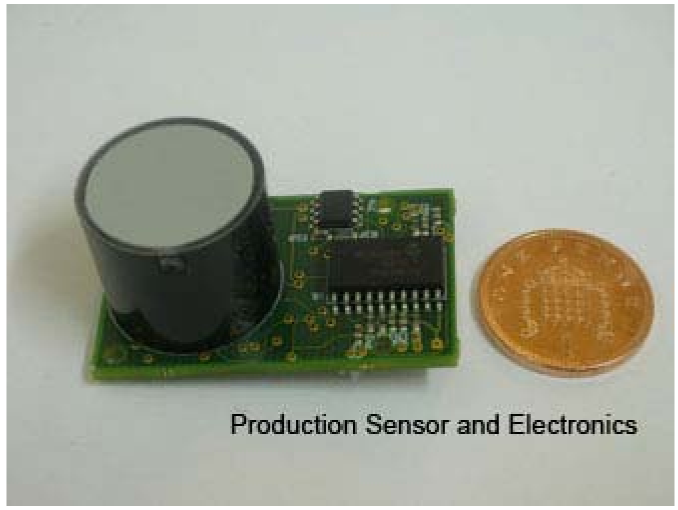
Carbon Dioxide Sensor

Miniature Solid State LED NDIR CO2 Sensor

An innovative High Speed, Real Time, Low Cost, Precision gas sensor using Al-In-Sb (Aluminium Indium Antimonde) NDIR LED technology. The base Mid IR solid state technology, developed by QinetiQ and licensed on a sole basis has been incorporated into an advanced CO2 sensor that is suitable for high volume manufacture and is targeted at a number of Carbon Dioxide Sensor applications.

This Carbon Dioxide sensor is a fast, low power NDIR sensor.

The sensor is easy to use. The standard model provides a TTL level serial output, with a temperature compensated linearised reading. With 4 readings per second, and a T90 time <5 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.

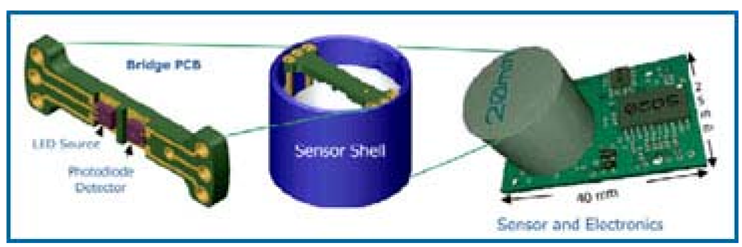


Benefits

Fast	four readings per second
Easy to use	digital output, temperature compensated and linearised.
Low Power	100mW
Solid State	no moving parts, no filaments
Wide temperature range	-25ºC to +55ºC
Useful range	0-5000ppm,0-5%,0-10%,0-20%,0-65% (higher available)

The Technology

A high performance Carbon Dioxide Sensor employing (Al-In-Sb) Indium Aluminium Antimonide 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. LED's 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. Interfacing electronics can also be constructed to suit the customer's OEM specification.

Function

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

GSS – LED NDIR 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 9v
- 20mm package

Benefits

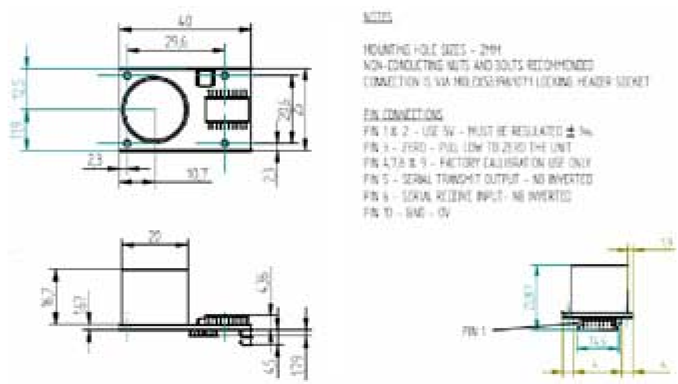
- Wide range of applications
- Low cost
- Good immunity to other gases & humidity
- Low power consumption, suitable for battery and portable applications

Specification

Standard Series CO2 Sensor

Supplied in housings suitable for a range of applications, from portable instruments through static applications with or without data logging.

System Specifications
High Speed, Real Time, Low Cost, Precision CO2 Sensor.



Operating Range	**0-5000ppm,0-5%,0 – 10%,0-20%,0-65%**
Power consumption	**100mW**
Response Time (T90)	**5 seconds**
Detection Limit (2 Std Dev at zero)	**100ppm**
Operating Voltage	**3vdc – 9vdc**
Operating Temperature Range	**–25ºC to +55ºC**
Operating Humidity range	**0-95% RH**
Output	**RS232 – 4 readings per second**

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
Greenhouses	Aircraft Atmospheres
Land Fill Gas	Atmospheric Research
Confined Spaces	Diving Gas & Equipment
Refrigeration Plant	Cryogenics
Domestic Boilers	Industrial Plant Rooms
Automotive	Ventilation Management
Tunnels	Car Parks
Mining	

Development Kit, PCB with Sensor and Electronics

To assist with development of the sensor into OEM applications, we offer a development kit. That consists of a sensor and driver electronics mounted on a support PCB which is equipped with an LCD display, a zero function button and an RS-232 DB9 (female) connector for easy connection to a PC.
The output can be viewed simply using Hyper Terminal™ or Software supplied by GSS. This can be used to begin development 'out of the box' and these kits are always available from stock for immediate delivery.