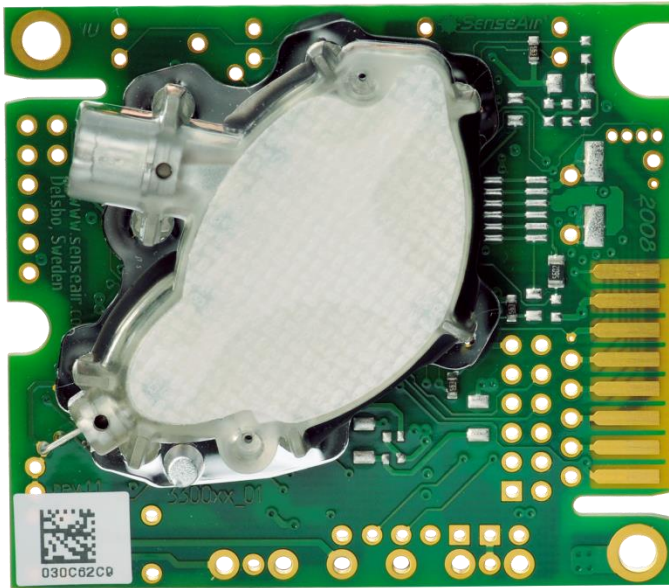


CO₂ Engine[®] ELG

Sensor Module for environment parameters logging



CO₂ Engine[®] ELG is a sensor module for CO₂ concentration, temperature and relative humidity.

CO₂ Engine[®] ELG is designed for low-power application with demand for multiple measurement parameters. The adjustable measurement interval, results in average power consumption that can be reduced to less than 52 µA (measurement every 60 minutes).

The module is as all other sensors from Senseair[®] designed for high volume production with full traceability by sensor serial number on all manufacturing processes and key components. Every sensor is individually calibrated and is provided with UART digital interface

STANDARD SPECIFICATION

Measured gas	Carbon dioxide (CO ₂)
Operating Principle	Non-dispersive infrared (NDIR)
Measurement range	0-5000ppm
Measurement range °C	-30-60
Measurement range RH	0-100%
Accuracy	±30ppm ±3% of measured value
Dimensions	51 x 57 x 12mm (L x W x H)
Life Expectancy	>10 years
Operation temperature range	0-50°C
Operation humidity range	0-95%RH (non-condensing)
Power supply	
G+ referred to G0	Max rating: 5.5-12VDC
Vbat+ referred to G0	Max rating: 4.75-12VDC
Power consumption	<150mA peak current (averaged during IR lamp ON) <250mA peak power (averaged during IR lamp start-on)
Communication	I ² C, UART (ModBus)

APPLICATIONS

This platform is designed to be a low power OEM module for integration into host apparatus, such as battery operated products and sensors with radio transmitters. Any application where power consumption is important to keep at a minimum without sacrificing the performance.

KEY BENEFITS

- Low-power consumption
- Individually calibrated
- Maintenance-free
- High quality
- Long term stability

CO₂ Engine[®] ELG Technical Specification

General Performance:

Storage Temperature Range	-40–70°C, (no condensation)
Storage Environment	Non-condensing, non-corrosive ¹
Sensor Life Expectancy	>10 years
Maintenance	Maintenance-free ²
Self-Diagnostics	Complete function-check of the sensor module
Operating Temperature Range	0–50°C
Operating Humidity Range	0–95%RH, (non-condensing) ³
Operating Environment	Non-corrosive environment ³ . Residential, commercial, industrial spaces used in HVAC (Heating Ventilation and Air-Conditioning) systems

Electrical / Mechanical:

Power Input	4.75–12.0VDC max rating, powered via Vbat+ ^{4,5} 5.50–12.0VDC max rating, powered via G+ ^{4,6}
Average Current Consumption	~60mA average during active measurement sequence (~12s)
Peak Current Consumption	<150mA peak current (averaged during IR lamp ON, 100 msec) <250mA peak power (during IR lamp start-up, the first 50 msec)
Electrical Connections	Vbat+, G+ and G0
Dimensions	51 x 57 x 12mm (Length x Width x Height)

CO₂ Measurement:

Operating principle	Non-dispersive infrared (NDIR)
Sampling Method	Diffusion
Response Time (T _{1/e})	<25 sec gas diffusion time
Measurement Period	5 min to 0.5 year interval (a measurement period less than 5 min can be used, but then specified accuracy on RH and temperature measurements are not guaranteed)
Measurement Range	0–5000ppm
Repeatability	±20ppm ±1% of measured value
Accuracy ⁷	<±30ppm ±3% of measured value
Pressure Dependence	+1.6% reading per kPa deviation from normal pressure, 101.3kPa

Temperature Measurement:

Measurement Range (T)	-30–60°C
Accuracy ^{8,9}	±0.4°C (@ 25°C)
Response Time	<6min (Air velocity of 0.15m/s)
Measurement Interval	>5min

Relative Humidity Measurement (RH):

Measurement Range	0–100%RH (non-condensing)
Accuracy ^{8,9}	±3%RH (@ 20–80%RH)
Measurement Interval	>5min

Note 1: SO₂ enriched environments excluded

Note 2: When using ABC (Automatic Baseline Correction) algorithm of Senseair. ABC is enabled in default configuration

Note 3: Sensors are 100% tested in production at 45°C / 85%RH / 1000ppm CO₂ for one (1) hour. For applications continuously operating in high humidity, contact Senseair for further information.

Note 4: Notice that absolute maximum rating is 12V, so sensor can not be used with 12V±10% supply.

Note 5: Unprotected against reverse connection!

Note 6: Power supply via protection circuit

Note 7: Accuracy is specified over operating temperature range at normal pressure 101.3kPa. Specification refers to certified calibration mixtures. Uncertainty of calibration gas mixtures (±1% currently) is to be added to the specified accuracy for absolute measurements.

Note 8: Specification is provided by Sensirion.

Note 9: Accuracy is defined after minimum five (5) minutes measurement period.

Document	Rev	Page
PSH 127	2	2 (2)