

Sensor Data LP8

Miniature CO₂ sensor module for battery-powered applications



Key benefits

- 3.6 mC power usage per measurement (11.9mJ@3.3V)
- Miniature size (SD S8 format)
- A wide supply voltage range enables a variety of battery options
- Adjustable measurement period by host
- Adjustable ABC period by host

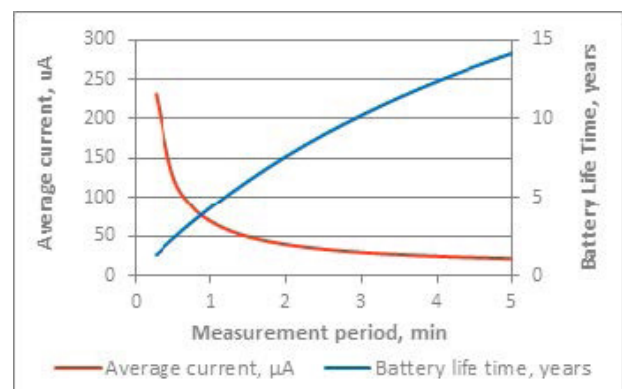
LP8 is a miniature sensor module which targets battery-powered applications. It gives full control on sensor integration into a host system and flexibility in changing the CO₂ measurement period and consequently also the power consumption. One measurement requires only 3.6 mC of charge (or energy 11.9 mJ having 3.3V on the battery).

A wide supply voltage range (2.9-5.5V) enables a variety of battery options for powering the sensor. For example three alkaline 1.5V batteries, or a single 3.6V Li-SOCl₂ battery for a more compact alternative.

LP8 provides a relatively simple communication protocol which allows customer to change measurement period on the fly and control ABC (Automatic Background Calibration) period. Background and zero-gas calibrations are also implemented in a simple manner.



Integrate our LP8 sensor into your wireless battery-powered solution.



Estimated 2600 mAh battery life-time (super-cap 8µA leakage, w/o battery voltage monitor option).

Please check www.sensordata.nl for more information

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Technical specifications

Average current calculation

$$I_{avg} = \frac{Q_{mea}}{T_{meas}} + I_{SHDN} + I_{C_leak}$$

Where:

I_{avg} = Average current consumption

T_{meas} = Measurement period set by host

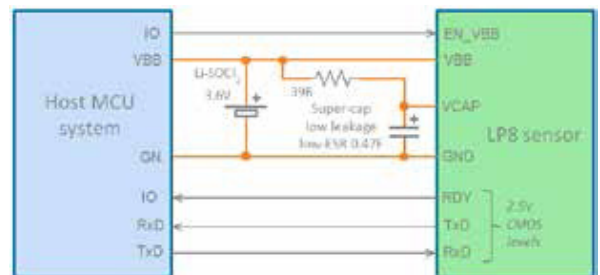
Q_{meas} = Charge per measurement

I_{SHDN} = Shutdown current of sensor (option of measurement battery voltage by 400k resistor network connected to ADC adds 12µA)

I_{C_leak} = Leakage current of optional super-capacitor on host site

Example: Host system sets measurement period to 1 minute. Eaton Bussman PM-5R0H474-R (0.47F 5V) external super-capacitor is used (8µA leakage) to limit peak current to 2 mA.

$$I_{avg} = \frac{3600 \mu C}{60 s} + 1 \mu A + 8 \mu A = 69 \mu A$$



STANDARD CONFIGURATION

Measured Gas	Carbon dioxide (CO ₂)
Operating principle	Non-dispersive infrared (NDIR)
Measurement range	0 to 10.000 ppm
Accuracy CO ₂	±50ppm ±3% of reading ^{1,4}
RMS noise CO ₂	14 ppm @ 400 ppm at 25°C 25 ppm @ 1000 ppm at 25°C
Accuracy temperature	±0.7°C
Power supply	2.9 – 5.5V
Peak current	125 mA
Shutdown current	1 µA ^{2,3}
Charge per measurement	3.6 mC
Energy per measurement	11.9 mJ @ 3.3V
Average current having	
- 16 second per measuring period	225 µA ^{2,3}
- 60 second per measuring period	61 µA ^{2,3}
- 120 second per measuring period	31 µA ^{2,3}
CO ₂ measurement period	≥16 s.
Dimensions (H x W x D)	8 mm x 33 mm x 20 mm
Life expectancy	>15 years
Operation temperature	0-50°C, 0-95% RH, non condensing
Communication	UART

Note ¹: 15 – 35°C, 20 – 60% RH after minimum 3 weeks of continuous operation with ABC enabled

Note ²: Option of measuring battery voltage adds 12 µA

Note ³: External super-capacitor leakage is not considered

Note ⁴: Spec is ref. to uncertainty of calibration gas mixtures +-1%

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