LP8 Data Sheet

Miniature CO2 sensor module for battery-powered applications.

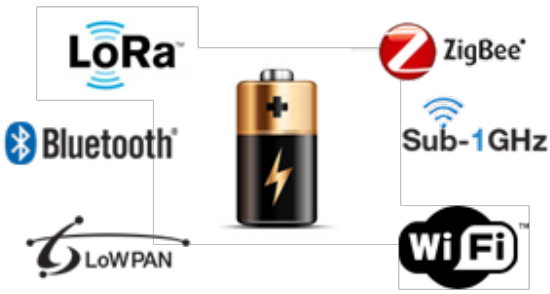
Key Benefits:

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

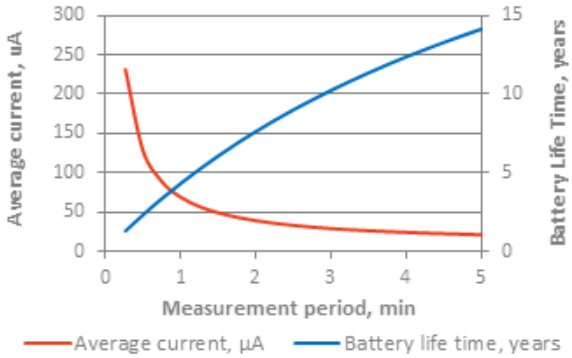
LP8 is a miniature sensor module which targets battery-powered applications. It gives full control on sensor integration into a host system and flexibility in changing the CO_2 measurement period and consequently also the power consumption. One measurement requires only 3.6 mC of charge (or energy 11.9 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.



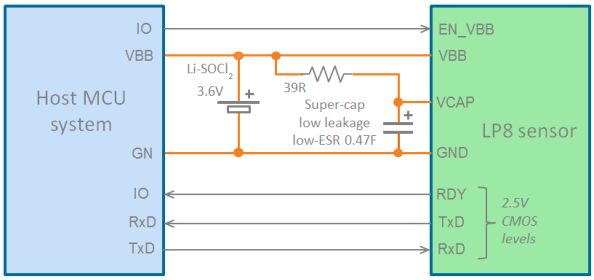
Integrate our LP8 sensor into your wireless battery-powered solution.



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

Average current calculation:

$$I_{avg} = \frac{Q_{meas}}{T_{meas}} + I_{SHDN} + I_{C\_leak}$$



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 measuring period - 60 second measuring period - 120 second measuring period	 225 µA [2,3] 61 µA [2,3] 31 µA [2,3]
CO2 measurement period	≥16 s.
Dimensions (H x W x D)	8 mm x 33 mm x 20 mm
Life expectancy	>15 years
Operation temperature range	0-50°C, 0-95% RH, non condensing
Communication	UART (host-slave protocol)

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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