PARAMAIR
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Senseair® LP8

Sensor module for battery-powered applications

Senseair® LP8 is a miniature sensor module which targets battery-powered applications. It gives customer a full control on sensor integration into a host system, flexibility in changing of the CO_2 measurement period and consequently power consumption. One measurement requires only 3.6mC of charge (or energy 11.9mJ at 3.3V battery supply). The sensor is supposed to be switched off between measurements to minimise power consumption.

STANDARD SPECIFICATION

Operating principle	Non-dispersive infrared (NDIR)
Measurement range [CO_2]	0–2000ppm
Operation range	0–50°C, 0–85%RH non condensing
Accuracy [CO_2]	±50ppm ±3% of reading [1, 2]
RMS noise [CO_2]	14ppm @ 400ppm @ 25°C 25ppm @ 1000ppm @ 25°C
Accuracy temperature	±0.7°C
Power supply	2.9–5.5V
Peak current	125mA @ 25°C
Shutdown current	1µA [3, 4]
Charge per measurement	3.6mC
Energy per measurement	11.9mJ @ 3.3V
Average current	
16s measured period	225µA [3, 4]
60s measured period	61µA [3, 4]
120s measured period	31µA [3, 4]
Measurement period	≥16s
Dimensions max.	33.4 x 19.9 x 12.4mm (L x W x H)
Sensor lifetime expectancy	>15 years
Communication	UART (host - slave protocol)

Note 1: 10 – 40°C, 0 – 60%RH, after three ABC periods, each period followed by ABC command set in the Calculation Control byte
Note 2: Spec is ref. to uncertainty of calibration gas mixtures ±1%
Note 3: External super-capacitor leakage is not considered
Note 4: Resistor network for measuring VCAP voltage adds 14µA @ 5.5V

APPLICATION

A wide 2.9 to 5.5V supply voltage range enables long duty, if sensor is powered from three alkaline 1.5V batteries. A compact alternative is to power sensor from a single 3.6V Li-$SOCl_2$ battery.

Senseair® LP8 provides a communication protocol which allows customer changing measurement period on the fly and control ABC (Automatic Baseline Correction) period. Background- and zero calibrations are implemented.

KEY BENEFITS

- 3.6mC 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

SenseAir®

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Senseair® LP8 Technical Specification

General Sensor Performance:

Required storage/operation environment	Non-corrosive [1] and non-condensing [2]
Sensor lifetime expectancy	>15 years
Service interval and maintenance	Adjustable ABC period by host [2]
Self-diagnostics	Complete function-check of the sensor module every power ON.

Operative environment required for keeping calibrated and specified accuracy in gas measurement:

Operative temperature range	0–50°C
Operative relative humidity range	0–85%RH, non-condensing [2]

Electrical Properties:

Power supply	2.9–5.5V
Peak current	125mA
Shutdown current	1µA

Mechanical Properties:

Electrical Connections	VCAP, VBB and GND
Dimensions max.	33.4 x 19.9 x 12.4mm (Length x Width x Height)

CO_2 Measurement:

Operating principle	Non-dispersive infrared (NDIR)
Measurement Range	0–2000ppm CO_2
Accuracy	±50ppm ±3% of reading [3]
Measurement period	≥16s, adjustable by host

Temperature Measurement:

Operating principle	NTC (Negative Temperature Coefficient) Resistor
Measurement range	0–50°C
Accuracy	±0.7°C
Measurement interval	Adjustable by host

Note 1: Environments containing SO_2 excluded.
Note 2: When using ABC (Automatic Baseline Correction) algorithm of **Senseair**.
Note 3: Specification is referenced to uncertainty of calibration gas mixtures ±1%.
Accuracy is met at 10 to 40°C, 0 to 60%RH, after three ABC periods,
each period followed by ABC command set in the Calculation Control byte.

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