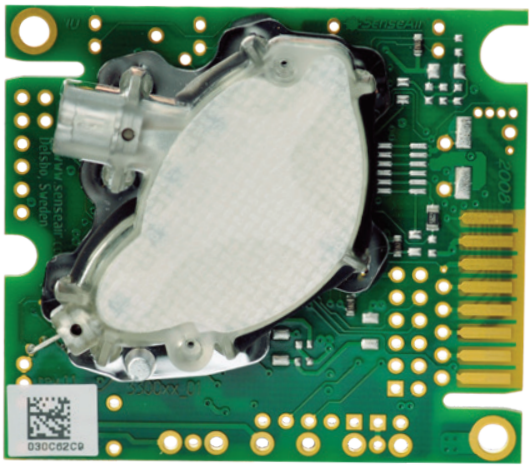
Driesen + Kern GmbH

# Senseair K33 LP T

## Low power sensor core for $CO_2$ and temperature measurement.



Senseair K33 LP T is a low power module.
The adjustable measurement interval, results in average power consumption that can be reduced to less than 52 µA (measurement 1/60 min).

$CO_2$ Engine® K33 LP T is designed for low power application. 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. Optional feature is RH.

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.

### Standard specification

| | |
|---|---|
| Measured gas | Carbon dioxide ($CO_2$) |
| Operating principle | Non-dispersive infrared (NDIR) |
| Measurement range | 0–5000ppm<br>(extended range<br>5000–10000ppm) |
| Accuracy | ±30ppm ±3% of measured value<br>Frac filter enabled [1, 2, 3] |
| Accuracy ext. range | ±30ppm ±20% of<br>measured value |
| Dimensions | 57 x 80 x 12.5mm (L x W x H) |
| Life expectancy | >15 years |
| Operation temp. range | 0–50°C |
| Operation humidity range | 0–80%RH (non-condensing) |
| Power supply | 4.75–12VDC max rating,<br>via Vbat+ |
| Power consumption | <1.5mA average<br>with 30s measurement period<br><300mA peak |
| Communication | $I^2C$, UART (Modbus protocol) |

### Key benefits

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

Note 1: Frac filter (digital filter) is enabled in sensors default configuration.

Note 2: Accuracy is specified over operating temperature range at normal pressure 101.3 kPa. Specification is referenced to certified calibration mixtures. Uncertainty of calibration gas mixtures (±2% currently) is to be added to the specified accuracy for absolute measurements.

Note 3: Accuracy is defined after minimum three (3) ABC periods of continuous operation with ABC enabled (default configuration)

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# Senseair K33 LP T Technical Specification

## General Performance:

| | |
|---|---|
| Storage Temperature Range | -30–70°C |
| Storage Environment | Non-condensing, non-corrosive [1] |
| Sensor Life Expectancy | >15years |
| Maintenance Interval | Maintenance-free [2] |
| Self-Diagnostics | Complete function-check of the sensor module |
| Operating Temperature Range | 0–50°C |
| Operating Humidity Range | 0–80%RH (non-condensing) [3] |
| Operating Environment | Residential, commercial, industrial spaces used in HVAC (Heating Ventilation and Air-Conditioning) systems [1] |

## Electrical / Mechanical:

| | |
|---|---|
| Power Input | 4.75–12.0 VDC maximum rating, powered via Vbat+<br>5.50–12.0 VDC maximum rating, powered via G+ |
| Average Current Consumption | <1.5mA average with30s measurement period |
| Peak Current Consumption | <300 mA |
| Electrical Connections [4] | Vbat+, G+ and G0 |
| Dimensions | 51 x 57 x 12.5mm (Length x Width x Height) |

## $CO_2$ Measurement:

| | |
|---|---|
| Operating principle | Non-dispersive infrared (NDIR) waveguide technology with ABC (Automatic Baseline Correction) |
| Sampling Method | Diffusion |
| Response Time (T1/e) | <1 min, 30s measurement period, unfiltered<br><3 min, 30s measurement period, frac filter enabled |
| Measurement Period | 30s [5] |
| Measurement Range | 0–5000ppm<br>extended range 5000–10000ppm |
| Accuracy [6] | ±30ppm ($CO_2$) ±3% of measured value<br>extended range ±30 ppm ±20% of measured value |
| Pressure Dependence | +1.6% reading per kPa deviation from normal pressure, 101.3kPa |

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Note 1: $SO_2$ enriched environments are excluded.

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

Note 3: For applications operating continuously in high humidity, contact SenseAir for further information.

Note 4: Different options exist and can be customised depending on the application. Please contact Senseair for further information.

Note 5: Configurable, contact Senseair for information about possible configurations.

Note 6: Accuracy is specified over operating temperature range at normal pressure 101.3kPa. Specification is referenced to certified calibration mixtures. Uncertainty of calibration gas mixtures (±1% currently) is to be added to the specified accuracy for absolute measurements.



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