kaiterra

Sensedge

Technical Specifications

(SE-100)

Product Overview

The Sensedge provides real-time, accurate measurements of $PM_{2.5}$, TVOC, and CO_2 concentrations, as well as temperature and relative humidity readings. With multiple power, connectivity, and installation options, the Sensedge is made to the satisfaction of building owners, facility managers, tenants, and employees.

Particulate Matter Sensor Specification

01

Mass concentration accuracy for $PM_{2.5}$

0 to 100 µg/m³ : ±10 µg/m³

100 to 500 µg/m³ : ±10 %

Mass concentration size range

$PM_{2.5}$	0.3 to 2.5 µg/m³
PM_{10}	0.3 to 10.0 µm

Mass concentration range

0 to 1,000 µg/m³

Sensor output resolution

1 µg/m³

Sensor technology

Laser particle sensor (Light scattering)

Typical response time

≤10 s

Recommended lifetime

High pollution concentration (> 200 µg/m³)
1.3 years

Low pollution concentration (< 100 µg/m³)
2 years

Calibration

Calibrated against standardized aerosol mix

TVOC Sensor Specification

02

Target gas profile

Complex mixture of 22 VOCs[1] as defined by Molhave et al.

Measurement range

0 - 60000 ppb

Accuracy

±15 % ±8 ppb

Sampling process

Diffusion

Calibration

Calibrated against ethanol

Sensor output resolution

1 ppb

Sensor technology

Multi-pixel metal oxide sensor (MOx)

1 n-Hexane, n-Nonane, n-Decane, n-Undecane ,1-Octane, 1-Decene, Cyclohexane, m-Xylene, Ethylbenzene, 1,2,4-Trimethylbenzene, n-Propylbenzene, a-Pinene, n-Pentanal, n-Hexanal, Iso-propanol, n-Butanol, 2-Butanone, 3-Methyl-3-butanone, 4-Methyl-2-pentanone, n-Butylacetate, Ethoxyethylacetate, 1, 2-Dichloroethane

CO_2 Sensor Specification

03

Target gas

CO_2

Measurement range

400 to 2,000 ppm[1]
Up to 10,000 ppm extended range[2]

Accuracy[3]

± 40 ppm ± 3%
Comply with ANSI/ASHRAE Standard 62.1-2022

Typical response time

2 minutes by 90 %

Sensor technology

Non-dispersive infrared (NDIR)

Sensor output resolution

1 ppm

Recommended lifetime

15+ years

1 Extended exposure to concentrations below 400 ppm may result in incorrect operation of ABC algorithm and should be avoided.
2 Sensor provides readings in the extended range but the accuracy may be lower than that specified in the table.
3 The accuracy specification covers environments ranging from 0-50°C and 0-80% RH, and complies with indoor air quality standards ANSI/ASHRAE Standard 62.1-2022 at 25°C.

Temperature Sensor Specification

04

Measurement range

-20 - 100 °C

Accuracy

±1 °C

*Certified by WELL

Long term drift[1]

<0.03 °C/y

Typical response time[2]

>2 s

Sensor technology

Digital sensor

Sensor output resolution

0.01 °C

Recommended lifetime

10 years

1 Typical value for operation in normal RH/T operating range. Higher drift values may occur due to contaminant environments with vaporized solvents, out-gassing tapes, adhesives, packaging materials, etc.
2 Temperature response times strongly depend on the type of heat exchange, the surrounding surface and the airflow in the final application environment.
* As a RESET Certified Grade B air quality monitor, this device automatically meets technical requirements for this parameter.

Humidity Sensor Specification

05

Measurement range

0 - 100 % RH

Accuracy

±5 % RH

Long term drift

< 0.25 % RH/yr

Typical response time[1]

> 8 s

Sensor technology

Digital sensor

Sensor output resolution

0.01 % RH

Recommended lifetime

10 years

1 Humidity response times strongly depend on the surrounding surface and the airflow in the final application environment.

General Device Specifications

06

Calibration

Calibration via hot-swappable sensor modules

Data storage & logging

Frequency of readings (Log interval):
1 minute, 1 hour, 1 day
Data push interval: 1 minute[1]
Onboard memory: 8 GB (>50,000,000 data points)
Micro SD card (32GB or smaller) - SD card not included

Dimensions

Length: 184 mm (7.2 in)
Width: 146 mm (5.7 in)
Height: 48 mm (1.9 in)

Battery

Capacity & voltage: 5200 mAh @ 4.2 V
Usage time: 8 hours

Warranty & durability

Standard warranty: 1 year[2]
Expected lifespan: 5 to 7 years

1 Customizable upon request
2 Optional extended warranty with contract

Operating conditions

Operational temperature: 0 - 50 °C
Operational humidity: 5 to 95 %RH, non-condensing

Weight

800 g (1.76 lbs)

Languages

English, German, Traditional Chinese, Simplified Chinese

Display

7" full color touchscreen

Recommended Monitor Density

One monitor per 3,500ft² (325m²)
Space types and layouts should be considered in accordance with project requirements.

Certifications

Environmental: ROHS, WEEE, TDRA
Safety: FCC (US), CE (Europe), BIS (India), IC (Canada), LVD, MIC, NCC
Quality: RESET Grade B
Building automation: BTL

Power and Connectivity Options

07

Installation

Surface mount
Drywall mount

Wi-Fi

2.4 GHz 802.11 b/g/n
Security supported: 64/128 WEP, WPA-PSK, WPA2-PSK, WPA, WPA2 Personal

Ethernet

IEEE 802.3
Data rate: Up to 100 Mbps

Power

100-240V AC via USB-C (5V 1.8A DC)

Integration

Modbus/TCP
BACnet/IP
Cloud MQTT
On premise MQTT
Open API

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