kaiterra

Kaiterra Square

Technical Specifications (SQ-100)

Product Overview

The Kaiterra Square 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 Kaiterra Square is made to the satisfaction of building owners, facility managers, tenants, and employees.

Particulate Matter Sensor Specification

Mass concentration accuracy for $PM_{2.5}$

0 to 100 µg/m3 : ±10 µg/m³
100 to 500 µg/m3 : ±10 % m.v.

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

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

Target gas

CO$_2$

Measurement range

400 to 10,000 ppm extended range

Accuracy[1]

±3 % m.v. ±40 ppm

Typical response time

2 minutes by 90 %

Sensor technology

Non-dispersive infrared (NDIR)

Sensor output resolution

1 ppm

Recommended lifetime

15+ years

1 Accuracy is specified over operating temperature range. 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.

Temperature Sensor Specification

Measurement range

-40 - 125°C

Accuracy

±1 °C

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.

Humidity Sensor Specification

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

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

General Device Specifications

Data storage & logging

Frequency of readings (Log interval):
1 minute, 1 hour, 1 day
Data push interval: 1 minute[1]
Onboard memory: 1 hour of data

Operating conditions

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

Weight

164.8 g (0.36 lbs)

Dimensions

Length: 90 mm (3.5 in)
Width: 90 mm (3.5 in)
Height: 50 mm (2.0 in)

Recommended Monitor Density

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

Warranty & durability

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

1 Customizable upon request
2 Optional extended warranty with contract

Power and Connectivity Options

Installation

Recessed dry wall mount
Recessed electrical box mount

Wi-Fi

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

Modbus (RS-485)

RS-485 Modbus/RTU

Integration

Cloud MQTT
On premise MQTT
Open API

Power

100-240 V AC (SKU: QA086403A)
12-30 V DC (SKU: QD086403A)
PoE[1]

1 Available upon request

Get in touch with us!

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