Indoor Air Quality sensor Temperature / Humidity / CO_2 / PM2.5 / PM10 / TVOC

EXT-KA-SE200P provides real-time accurate measurements of IAQ to allow for increased credit from building certification (e.g. LEED, WELL, RESET). IAQ sensor comes with multiple power, connectivity, and installation options. EXT-KA-SE200P provides integration with Power over Ethernet (PoE)

Technical data

Electrical data	Nominal voltage	USB-C (5V 1.8A DC) / DC 12...30 V
	Power over Ethernet PoE	IEEE 802.3af (PoE), Type 1, Class3 IEEE 802.3at (PoE+), Type 2, Class3 PD maximum power ≤10 W PSEs: Midspan and endspan supported Cable: Cat5 (Cat5e, Cat6, and Cat6a)
	Connection wireless	2.4 GHz 802.11 b/g/n; security standards supported: 64/128 WEP, WPA-PSK, WPA2-PSK, WPA, WPA2 Personal
Data bus communication	Communication	Modbus RTU BACnet/IP Local and cloud MQTT Open API Cloud
Functional data	Application	Air
	Coverage area	Area: 325 m^2 [3500 ft^2] Space types and layouts should be considered in accordance with project requirements.
Measuring data	Measured values	CO_2 TVOC PM2.5, PM10 Relative humidity Temperature
Specification PM2.5 PM10	Sensing element technology	Laser particle sensor (light scattering)
	Measuring range	Mass concentration range: 0...1000 µg/m^3
	Accuracy	±3 µg/m^3 (0...30 µg/m^3) PM2.5: ±10% of measured value (30...1000 µg/m^3) PM10: ±15% of measured value (30...1000 µg/m^3)
	Typical response time	≤10 s
	Sensor output resolution	1 µg/m^3
Specification CO_2	Sensing element technology	Non-dispersive infrared (NDIR) ABC logic
	Measuring range	400...2000 ppm Up to 10000 ppm extended range
	Accuracy	±3% of measured value ±40 ppm

Technical data

Specification CO_2	Accuracy note	Comply with ANSI/ASHRAE Standard 62.1-2022 at 25°C.
	Typical response time	<120 s (T90)
	Sensor output resolution	1 ppm
Specification TVOC	Sensing element technology	Multi-pixel metal oxide sensor (MOx)
	Measuring range	0...60000 ppb
	Accuracy	±15% ±8 ppb
	Typical startup time	0.4 ms
	Sensor output resolution	1 ppb
Specification temperature active	Measuring range	-20...100°C
	Accuracy	±1°C
	Long term stability	<0.03°C [0.054°F]/yr (under normal RH/T operating range)
	Typical response time	>2 s
	Sensor output resolution	0.01°C
Specification Humidity	Measuring range	0...100% RH
	Accuracy	±5% RH
	Long term stability	<0.25% RH/yr
	Typical response time	>8 s (depends on the surrounding surface and the airflow in the final application environment)
	Sensor output resolution	0.01% RH
Safety data	Degree of protection IEC/EN	IP20
	EU Conformity	CE Marking
	Ambient humidity	Max. 95% RH, non-condensing
	Ambient temperature	0...50°C [32...122°F]
Materials	Housing	PC UL94V-1

Product Features

Operating mode

Temperature: Typical value for operation in normal RH/T operating range. Higher drift values may occur due to contaminant environments with vaporised solvents, out-gassing tapes, adhesives, packaging materials, etc. Temperature response times strongly depend on the type of heat exchange, the surrounding surface and the airflow in the final application environment.

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

CO_2: Extended exposure to concentrations below 400 ppm may result in incorrect operation of ABC algorithm and should be avoided. Sensor provides readings in the extended range up to 10,000 ppm, but the accuracy may be lower than that specified in the table.

PoE (Power over Ethernet)

Total length of cabling up to 100 m. However, we do not recommend using cables longer than 50 m to guarantee the stability of power and data transmission.

Product Features

Target gas profile TVOC

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

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

Sampling process Diffusion

Data storage and logging

Frequency of readings (log interval): 1 minute, 1 hour, 1 day

Data push interval: 1 minute (customisable upon request)

Onboard memory: 1 hour of data

Recommended lifetime of sensor unit

CO_2: 15 years

Temperature: 10 years

Humidity: 10 years

Particulate matter: 1.3 years (>200 µg/m^3), 2 years (<100 µg/m^3)

Warranty and durability

Standard warranty: 2 years (excluding replaceable sensor module)

Expected lifespan: 5 to 7 years

Remarks

General remarks concerning sensors

Calibration via hot-swappable sensor modules for sensor modules

Particulate matter: Calibrated against standardised aerosol mix

TVOC: Calibrated against ethanol

Indicators and Operation

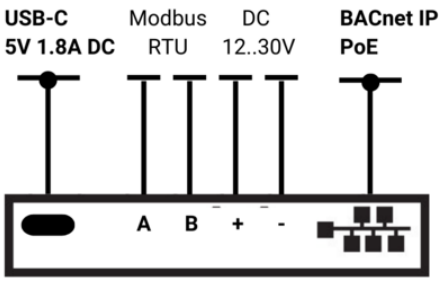
Complies with
IMDA Standards
DA107974

Accessories

Electrical accessories

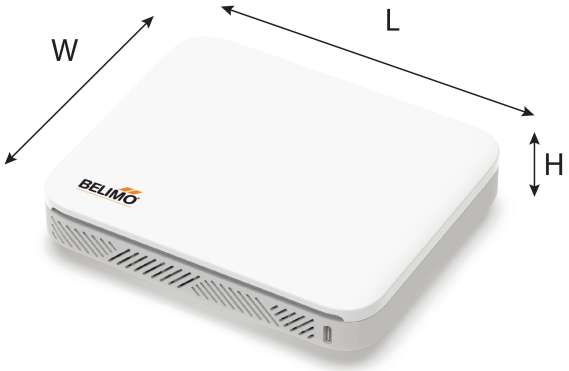
Description	Type
Sensor module, PM2.5 PM10	EXT-KA-KM200
Sensor module, TVOC	EXT-KA-KM203

Wiring diagram



Modbus RTU /BACnet IP / PoE

Dimensions



Type	L [mm]	W [mm]	H [mm]	kg
EXT-KA-SE200P	155	129	34	0.37