Indoor Air Quality sensor Temperature / Humidity / CO₂ / PM2.5 / PM10 / TVOC
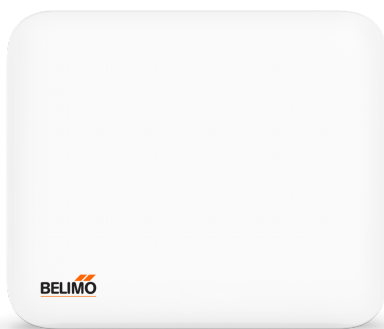
EXT-KA-SE200P provides real-time accurate measurements of IAQ to allow for increased credit from building certification (e.g. LEED, WELL, RESET). IAQ sensor comes with multiple power, connectivity, and installation options. EXT-KA-SE200P provides integration with Power over Ethernet (PoE)

Technical data

Electrical data	Nominal voltage	USB-C (5V 1.8A DC) / DC12..30V via terminal
	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	Coverage area	Area: 325 m² [3500 ft²] Space types and layouts should be considered in accordance with project requirements.
Measuring data	Measured values	CO₂ TVOC PM2.5, PM10 Relative humidity Temperature
Specification Particulate Matter	Mesurement range	Mass concentration range: 0...1000 μg/m³ PM2.5 mass concentration size range: 0.3...2.5 μg/m³
	Accuracy	±3 μg/m³ (0 to 30 μg/m³) ±10% m.v. (30...1000 μg/m³)
	Typical response time	≤10 s
	Sensor output resolution	1 μg/m³
	Sensor technology	Laser particle sensor (light scattering)
Specification TVOC	Mesurement range	0...60000 ppb
	Accuracy	±15% ±8 ppb
	Typical startup time	0.4 ms
	Sensor output resolution	1 ppb
	Sensor technology	Multi-pixel metal oxide sensor (MOx)
Specification CO₂	Mesurement range	400...2000 ppm Up to 10000 ppm extended range
	Accuracy	±3% m.v. ±50 ppm
	Typical response time	120 s by 90%

Specification CO$_2$	Sensor output resolution	1 ppm
	Sensor technology	Non-dispersive infrared (NDIR)

Specification Temperature	Mesurement range	-20...100°C
	Accuracy	±1°C
	Long term drift	<0.03°C/y (within common RH/T operating range)
	Typical response time	>2 s
	Sensor output resolution	0.01°C

Specification Humidity	Mesurement range	0...99% RH
	Accuracy	±5% RH
	Long term drift	<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	EU Conformity	CE Marking
	Ambient humidity	Max. 95% RH, non-condensing
	Ambient temperature	0...50°C [32...122°F]

Product Features

| Mode of operation	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.
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
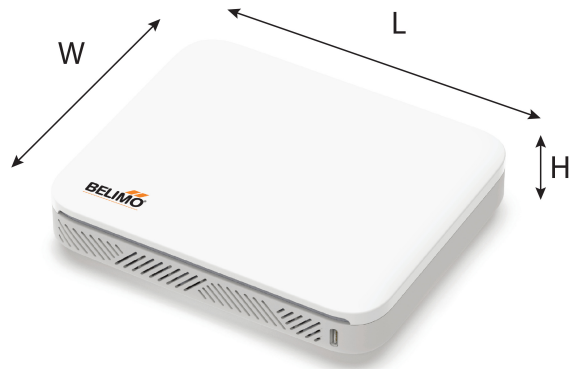
TVOC: Calibrated against ethanol

Accessories

Electrical accessories

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

Wiring diagram
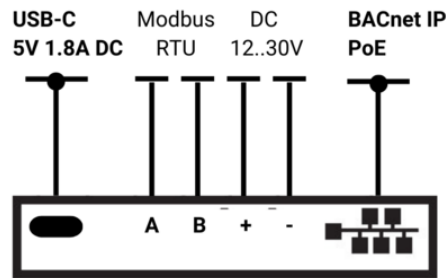
Modbus RTU /BACnet IP / PoE

Dimensions

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