Indoor Air Quality sensor Temperature / Humidity / CO₂ / PM2.5 / PM10 / TVOC

EXT-KA-SE100 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-SE100 is equipped with 7" full colour touchscreen display for real-time monitoring.

Technical data

Electrical data	Nominal voltage	USB-C (5V 1.8A DC)
	Connection Ethernet	IEEE 802.3 (Data rate: Up to 100 Mbps)
	Connection wireless	2.4 GHz 802.11 b/g/n; security standards supported: 64/128 WEP, WPA-PSK, WPA2-PSK, WPA, WPA2 Personal
	Battery operation	Capacity and voltage: 5200 mAh @ 4.2 V
Data bus communication	Communication	Modbus TCP 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.
	Display	7" full-color touch display screen. Display languages can be selected from German, English and Chinese
Measuring data	Measured values	CO₂ TVOC PM2.5, PM10 Relative humidity Temperature
Specification Particulate Matter	Mesurement range	Mass concentration range: $0...1000 \ \mu g/m^3$ PM2.5 mass concentration size range: $0.3...2.5 \ \mu g/m^3$
	Accuracy	$\pm 10\%$ m.v. $(30...1000 \ \mu g/m^3)$ $\pm 3 \ \mu g/m^3$ (0 to 30 $\mu g/m^3$)
	Typical response time	≤ 10 s
	Sensor output resolution	$1 \ \mu g/m^3$
	Sensor technology	Laser particle sensor (light scattering)
Specification TVOC	Mesurement range	0...60000 ppb
	Accuracy	$\pm 15\% \pm 8$ 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	$\pm 3\%$ m.v. ± 50 ppm
	Typical response time	120 s by 90%
	Sensor output resolution	1 ppm

Specification CO_2	Sensor technology	Non-dispersive infrared (NDIR)

Specification Temperature	Mesurement range	-20...100°C
	Accuracy	±1°C
	Long term drift	<0.03 °C/y (over typical 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.

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: 8 GB (>50,000,000 data points)

Recommended lifetime of sensor unit	CO_2: 15 years
	Temperature: 10 years
	Humidity: 10 years
	Particulate matter: 1.3 years (>200 μg/m³), 2 years (<100 μg/m³)

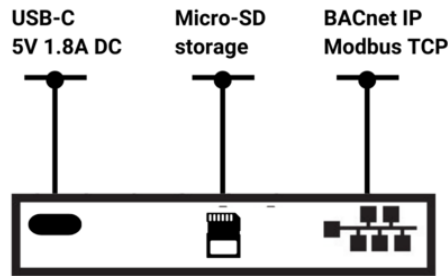| Warranty and durability	Standard warranty: 2 years (excluding replaceable sensor module)
	Expected lifespan: 5 to 7 years

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-KM100
	Sensor module, temperature, relative humidity, TVOC	EXT-KA-KM103

Wiring diagram

Modbus TCP /BACnet IP

Dimensions

Type	L [mm]	W [mm]	H [mm]	kg
EXT-KA-SE100	184	146	48	0.8