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

EXT-KA-SQ100 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.

Technical data

Electrical data	Nominal voltage	AC 100...240 V
	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 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
	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

Technical data

Specification TVOC	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	IP40
	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.

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

Expected lifespan: 5 to 7 years

Remarks

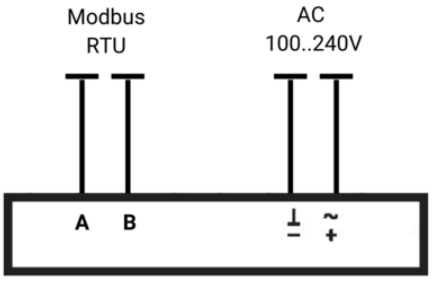
General remarks concerning sensors

Particulate matter: Calibrated against standardised aerosol mix
TVOC: Calibrated against ethanol

Indicators and Operation

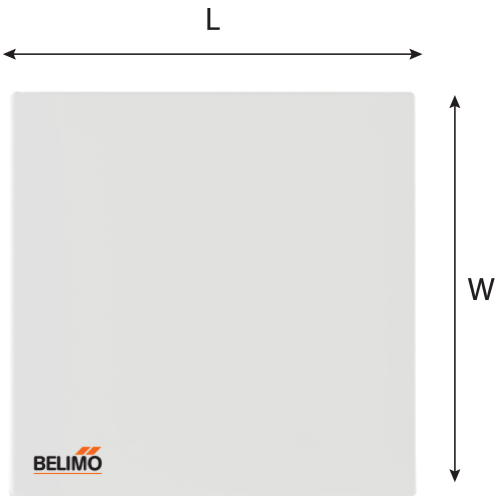
Complies with
IMDA Standards
DA107974

Wiring diagram



Modbus RTU

Dimensions



Type	L [mm]	W [mm]	H [mm]	kg
EXT-KA-SQ100	90	90	50	0.3