

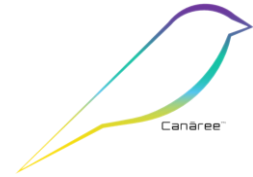


Canāree™ Air Quality Monitor

A1 / I1 / I5

Compact and Complete Air Quality Monitoring

Product Specification



Product Summary

Canāree is a compact Air Quality Monitor (AQM) that monitors air quality in real-time. A-Series models are USB-only devices that can be IoT enabled when connected to a networked device such as Wireless Access Points or any Windows PC / Mac running SenseiAQ Software. I-Series models support Wireless-LAN (using 2.4gHz 802.11n) for standalone operation. Additional gas sensors are available depending on models including Biogenic Volatile Compounds (BVOC), temperature, relative humidity, pressure, and CO₂. in the Canāree I5. Please refer to the product lineup section for more details.

All Canāree models collect real-time air quality data locally and send data to the cloud for remote monitoring and analysis. SenseiAQ™ software displays the data on a dashboard including Air-Quality-Index (AQI) scores, color-coded for EPA Standards along with vape/smoke/AQ alerts. APIs are available to support third party integrations such as Air Quality Management Systems (AQMS), Building Management Systems (BMS) and IoT Device Management.

Canāree utilizes Piera's Intelligent Particle Sensor series 7100, and Bosch BME688 (I5 models). Using data from the sensors and unique algorithms to identify different particulate sources, Canāree can classify sources of air-pollution such as smoke (tobacco, wildfire), vape, cooking, dust and noxious gas detection for indoor applications. Embedded gas sensor within Canāree is also capable of measuring the sum of VOCs/contaminants in the surrounding air providing orthogonal information regarding the ambient air.



Fig. 1. Canāree AQM



Fig. 2. SenseiAQ software

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Features

- Ultra-high sensitivity for detecting airborne particulates (PM0.1 – PM10), BVOC, CO₂, temperature, relative humidity and pressure*
- Fast data acquisition and sampling with interval adjustment option
- Connects to SenseiAQ™ software
- Easy plug-and-play
- Power saving mode
- Fan control and cleaning mode
- OTA firmware update capability
- Built-in VSD (Vape/Smoke Detection) module
- High accuracy and reliability
- LED air quality status indicator

Applications

- Indoor air quality monitoring, AQI reporting
- Ventilation systems
- Smoke/vape detection
- Wide-range particle detection

- ⚠ Do not obstruct the air inlet and outlet during operation.
- ⚠ This product is not intended for replacing smoke alarms.
- ⚠ Intended for indoor use. Outdoor conditions may affect the sensor performance.

* Features may be only available for specific models.

Product Lineup

Models		A1	I1	I5
Sensor Output	PM (0.1 – 10)	o	o	o
	VOC AQI			o
	Temperature			o
	Relative Humidity			o
	Pressure			o
	eCO ₂			o
Key Features	Vape/Smoke Detection	o	o	o
	USB UART	o	o	o
	WIFI		o	o
	Bluetooth		Available	Available
	LED Status Indicator	o	o	o

Table 1. Canāree product lineup and features

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1. Technical Specifications

1.1. Embedded Sensors

Parameter		Conditions	Value	Units	
Particle Sensor	Particle Count (PC) accuracy ¹	-	±10	%	
	Particle Count (PC) resolution	-	1	#/Liter	
	Particle Count (PC) limit	Referenced @ 2.5um PC bin	1,000,000	#/Liter	
	Mass Concentration (PM) limit ²	Referenced @ ≤2.5um particle size	6,000	ug/m ³	
	Binning output range for particle counts (Differential)	PC0.1		≤0.1	um
		PC0.3		0.1 - 0.3	um
		PC0.5		0.3 - 0.5	um
		PC1.0		0.5 - 1.0	um
		PC2.5		1.0 - 2.5	um
		PC5.0		2.5 - 5.0	um
		PC10		5.0 - 10	um
	Binning output range for mass concentration (Cumulative)	PM0.1		≤0.1	um
		PM0.3		≤0.3	um
		PM0.5		≤0.5	um
		PM1.0		≤1.0	um
		PM2.5		≤2.5	um
		PM5.0		≤5.0	um
	PM10		≤10	um	
Start-up time ³	Default: 5 (until stable output)	>2.5	s		
Count sampling time	Default: 0.2	≥0.1	s		
Data output interval	Default: 1	≥0.1	s		
Lifetime ⁴	24h/day operation	>8	Years		
Coverage area	3m (10ft) height	30	m ²		
Operating range	0 to 95% RH (non-condensing)	-10 to +60	°C		
Gas Sensor	Unit-to-unit deviation	IAQ	±15	%	
	Gas scanning interval	-	10.8	s/scan	
		BVOC	-	ppm	
eCO ₂	-	ppm			
Temp, RH, Pressure Sensor	Response time	T0-63%	8	s	
	Accuracy tolerance	-	±3	%	
	Hysteresis	-	≤1.5	%	
	RMS noise	-	0.12	Pa	
	Sensitivity error	-	±0.25	%	
	Temperature coefficient offset	-	±1.3	Pa/K	
	Absolute accuracy	-	±0.5	°C	
Operating range	300 – 1,100 hPa, 0 to 100% RH, -40 to +85°C				

Table 2. Canaree specifications

1. Deviation from reference counter (GRIMM 11D model year 2006) based on average readings over 3-minute period. The accuracy is verified after calibration using a Smoke Detector Tester Spray, SDI LLC. Contact Piera Systems for further details.
2. Mass concentration limit is estimated for PC2.5. May vary depending on size and density of particles.
3. Start-up time is 5 second by default. Any data output during this period should be discarded. Subject to change depending on the user settings for the count sampling time.
4. Lifetime may vary depending on different operating conditions.

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1.2. Hardware

Technical Data	
USB-Serial Driver	Silicon Labs CP2102 UART Bridge
Wireless LAN Support *	802.11n 2.4 GHz using WPA2/PSK/AES (Client)
Power Consumption *	100mA @ 5.5v (Continuous Operation) A-Series 120mA @ 5.5v (Continuous Operation) I-Series
Total Airflow	0.1 LPM
USB Connector Type	Type A - USB 2.0, (max 10' cable extension)
Physical Dimensions	9cm x 7cm x 2cm (3.54" x 2.76" x 0.79")
Weight *	50g (1.76 oz)
Software Supported	SenseiAQ (Windows / MacOS) Application
Cloud Reporting Support	Microsoft Azure IoT Hub
Power Saving and Cleaning Mode	Supported
Storage Temperature Range	-40°C to +80°C

Table 3. Absolute minimum and maximum ratings

* Varies depending on models. The table is based on Canāree I5.

2. Installation

2.1. Using Host Devices via USB

Single or Multiple Canāree A1 devices can be plugged into any Host Device. Host Devices include Wireless Access points, PC's, Smart TV's, iOS/Android phones. Canāree A1 has been validated and works with HPE-Aruba Wireless Access Points (ArubaOS V8.8 or later). Piera Systems is an HPEAruba Solution Partner. Canāree I models can also be connected in the same manner, if desired.

2.2. Using Wireless LAN

Canāree I-Series Models (i1, i5) operate stand-alone IoT Devices if they are connected to power via USB, and communication can be established via WIFI to the Sensei Cloud Service. I-Series support 802.11n and WPA2 PSK Security modes with AES Encryption as well as DHCP or Static IP Addressing.

2.3. Configuration

Via SenseiAQ Software running on host device or remotely. Device automatically registers on Piera Systems MS Azure Cloud service and is ready for use after it is plugged into Host's USB port, or manual configuration from SenseiAQ is required for WIFI and Bluetooth.



3. Cloud Support

3.1. Microsoft Azure

Standard 1 year of SenseiAQ Cloud Monitoring included with the purchase of product.

3.2. Other Public and Private Cloud Services

Contact Piera Systems support@pierasystems.com.

4. Ordering Information

Please visit www.pierasystems.com or email to info@pierasystems.com.

5. Important Notices

5.1. Warning, Personal Injury

Do not use this product as safety or emergency stop devices or in any other application where failure of the product could result in personal injury. Do not use this product for applications other than its intended and authorized use. Before installing, handling, using or servicing this product, please consult the data sheet and application notes. Failure to comply with these instructions could result in death or serious injury.

If the Buyer shall purchase or use IPS for any unintended or unauthorized application, Buyer shall defend, indemnify and hold harmless Piera and its officers, employees, subsidiaries, affiliates and distributors against all claims, costs, damages and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if Piera shall be allegedly negligent with respect to the design or the manufacture of the product.

5.2. ESD Precautions

The inherent design of this component causes it to be sensitive to electrostatic discharge (ESD). To prevent ESD-induced damage and/or degradation, take customary and statutory ESD precautions when handling this product.

5.3. Warranty

Piera warrants solely to the original purchaser of this product for a period of 12 months (one year) from the date of delivery that this product shall be of the quality, material and workmanship defined in Piera's published specifications of the product. Within such period, if proven to be defective, Piera shall repair and/or replace the product, in Piera's discretion, free of charge to



the Buyer, provided that:

- notice in writing describing the defects shall be given to Piera within 14 (fourteen) days after their appearance;
- such defects shall be found, to Piera's reasonable satisfaction, to have arisen from Piera's faulty design, material, or workmanship;
- the defective product shall be returned to Piera at the Buyer's expense; and
- the warranty period for any repaired or replaced product shall be limited to the unexpired portion of the original period.

This warranty does not apply to any equipment which has not been installed and used within the specifications recommended by Piera for the intended and proper use of the equipment.

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