



Canaree™ Air Quality Monitor

A1 / I1 / I5

Compact and Complete Air Quality Monitoring

Product Specification Datasheet

Product Summary

Canaree 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 2.4gz 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 Canaree i5. Please refer to the product lineup section for more details.



Figure 1 - Canaree AQM

All Canaree 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.



Canaree 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, Canaree 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 Canaree is also capable of measuring the sum of VOCs/contaminants in the surrounding air, providing orthogonal information regarding the ambient air.

Features

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

Applications

- Enterprise monitoring of indoor air quality, AQI reporting
Ideal for Clean Rooms, Hospitals, Offices, College Campuses, Hotel/Shared living and Industrial Environments
- Smoke/vape detection with real-time alerts and notifications
- Air Quality Mitigation (Air Purifiers, HVAC Systems)



1. Canāree Product Lineup

Features		Canāree A1	Canāree I1	Canāree I5
S e n s o r s	PM (0.1 – 10)	o	o	o
	VOC AQI			o
	Temperature			o
	Relative Humidity			o
	Pressure			o
	CO ₂ Estimates			o
O t h e r s	Vape/Smoke Detection	o	o	o
	USB UART	o	o	o
	WIFI		o	o
	Bluetooth		Capable	Capable
	LED indicator	o	o	o

Table 1. Canāree product lineup

2. Technical Specifications

2.1. Hardware

Technical Data	
USB-Serial Driver	Silicon Labs CP2102 UART Bridge
Wireless LAN Support* (I-Series Only)	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
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
MTBF (24-hour operation)	8 Years ¹
Power Saving and Cleaning Mode	Supported
Storage Temperature Range	-40°C to +80°C

Table 2. Canāree hardware specifications

* Will vary depending on model

2.2. Embedded Sensors

Parameter	Conditions	Value	Units
PM	Particle Count (PC) accuracy ¹	-	±10 %
	Particle Count (PC) resolution	-	50 #/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

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	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	Default: 5 (until stable output)	>2.5	s		
Count sampling time	Default: 0.2	≥0.1	s		
Data output interval	Default: 0.2	≥0.1	s		
Lifetime ³	24h/day operation	>8	Years		
Air flow rate	Standard atmosphere	0.13	CFM		
Coverage area	3m height	30	m ²		
Operating range		-10 to +60°C, 0 to 95% RH			
Gas	Unit-to-unit deviation	IAQ	±15	%	
	Gas scanning interval	-	10.8	s/scan	
	Sensor outputs	BVOC	-	-	ppm
		CO _{2e}	-	-	ppm
CO ₂		-	-	ppm	
Temp RH, Pressure	Response time	±0-63%	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 to 1,100 hPa, -40 to 85°C, 0 to 100% RH			

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Table 2. Canāree particle sensor 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. Lifetime may vary depending on different operating conditions.

3. Installation

3.1. 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 HPE-Aruba Solution Partner. Canāree I models can also be connected in the same manner, if desired.

3.2. 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.

3.3. 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.

4. Cloud Support

4.1. Microsoft Azure

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

4.2. Other Public and Private Cloud Services

Contact Piera Systems support@pierasystems.com.

5. Ordering Information

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

6. Important Notices

6.1. Warning, Personal Injury

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6.2. 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.

6.3. 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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