



Canāree iX6 Vape Detector with Noise Metering ***Configurable Indoor Air Quality Monitor complete with Vape/Smoke Detection*** ***Product Specification***

Product Summary

Canāree iX family of products are AI-based intelligent Indoor Environment Monitors (IEM) that detect various gases and particulate aerosols in real-time, capable of identifying sources of pollution as well as providing feedback on mitigation steps to clean the air, reduce health risks, and other environmental factors that affect inhabitants like vape and smoke.

There are two different types of X models – a ceiling mounting type iX, and a wall mounting hub called Canāree iXD. Multiple iX devices can be configured to communicate with an iXD unit via WIFI or PoE. iXD unit has a touch screen display to monitor real-time data from every iX-device connected, and from the device itself. All models can operate as stand-alone device and can be IoT enabled when connected to a networked device such as Wireless Access Points or any Windows PC / Mac running Piera’s SenseiAQ Software.

The base Canāree iX model, the iX6, includes as standard, Piera Systems’ own intelligent particle sensor, the IPS7100, volatile organic compounds (VOC), temperature, relative humidity, pressure, and noise sensors. The iX6 can be customized to include additional sensors such as CO₂ (NDIR-based), CO, NO₂, SO₂, O₂, O₃, ammonia, and vibration detectors. Please refer to the product lineup (Section 3) for more details.

All Canāree iX models collect real-time air quality data locally and send that data to Piera’s SenseiAQ cloud for remote monitoring, analysis and alerting. SenseiAQ then displays the data on a dashboard (or on iXD screen itself) including Air Quality Index (AQI) scores, color-coded to 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 iX6

Features

- AI/ML based compact indoor environment monitoring
- Industry leading advance particulate sensor IPS-7100 (2nd gen)
- Customizable various environment sensors*
- Supports wireless/wired network
- OTA firmware update capability
- Built-in VSD (Vape/Smoke Detection) module
- Intelligent health risk analysis
- High accuracy and reliability
- 7 in full color touch screen display*
- LED air quality status indicator*
- Modular sensor replacement for IPS-7100

* Features may be only available for specific models.

Applications

- Indoor air quality / environment monitoring & management systems
- Hospitals, office spaces, college campuses, hotel/shared living and industrial environments
- Smart fire detection
- Vape/smoke/wildfire smoke detection with real-time alerts and notifications
- Cannabis detection
- Air quality mitigation (air purifiers, HVAC systems)
- Smart buildings and Building Management Systems (BMS)
- Health risk assessment, hazardous gas detection

1. Sensor Specifications

1.1. Hardware

Features	Specifications	
	Canāree iX	Canāree iXD
Power consumption	0.8A	1.2A
Physical dimensions	5 in diameter, 1.5 in height	4 in x 7.5 in x 2 in
Weight	200g	400g
Software supported	SenseiAQ (Windows / MacOS) Application	
Cloud reporting support	Microsoft Azure IoT Hub, BMS Web Polling	
Storage temperature range	-40°C to +80°C	

Table 1. Canāree hardware specifications

1.2. Embedded Sensors

Parameter		Conditions	Value	Units
Particle Sensor	Particle Count (PC) Resolution	-	1	#/L
	Mass Concentration (PM) Resolution	-	0.1	ug/m ³
	Effective Particle Count Concentration (PC) Range ¹	-	<100,000,000	#/L
	Particle Count (PC) Precision ² (≤PC2.5)	0 – 100,000 #/L	±10,000	#/L Ave.
		> 100,000 #/L	±10	% Ave.
	Particle Count (PC) Precision ² (>PC2.5)	0 – 200,000 #/L	±20,000	#/L Ave.
		> 200,000 #/L	±10	% Ave.
	Effective Mass Concentration (PM) Range ¹	-	<6,000	ug/m ³
	Mass Concentration (PM) Precision ² (≤PM2.5)	0 – 10 ug/m ³	±1	ug/m ³ Ave.
		>10 ug/m ³	±10	% Ave.
	Mass Concentration (PM) Precision ² (>PM2.5)	0 – 50 ug/m ³	±5	ug/m ³ Ave.
		>50 ug/m ³	±10	% Ave.
Particle Size Bin Allocation (PC: differential, PM cumulative)	PC0.1 ³	0.05 to < 0.1	um	
	PC0.3	0.1 to < 0.3	um	
	PC0.5	0.3 to < 0.5	um	
	PC1.0	0.5 to < 1.0	um	
	PC2.5	1.0 to < 2.5	um	

Piera Systems Inc. reserves the right to make corrections, modifications, enhancements, improvements and other changes to its products and services at any time and to discontinue any product or service without notice. Please contact Piera Systems anytime to obtain the latest relevant information.

		PC5.0	2.5 to < 5.0	um
		PC10	5.0 to < 10	um
	Start-up Time ⁴	Default: 5 (until stable output)	>2.5	s
	Count Sampling Time	Default: 0.2	≥0.1	s
	Data Output Interval	Default: 1 (0.2 in debug mode)	≥0.1	s
	Recommended replacement cycle ⁵	Continuous operation	1	Yr
	Air flow rate	Standard atmosphere	0.13	LPM
	Laser Wavelength	Typical	658	nm
	Laser Diode Power Consumption ⁶	Typical	3.5	mW
	Coverage area	3m height	30	m ²
Operating range	-10 to +60°C, 0 to 95% RH			
Gas Sensors	VOC (Formaldehyde, Toluene, Benzene, Hydrogen, Organic solvent, xylene) precision	-	±7	%
	CO operation range	-	1 – 1,000	ppm
	CO ₂ operation range	-	<10,000	ppm
	CO ₂ accuracy	-	±50+5% m.v	ppm
	NO ₂ operation range	-	0.05 – 10	ppm
	SO ₂ operation range	-	0 – 20	ppm
	NH ₃ operation range	-	1 – 500	ppm
	O ₂	-	0 – 30	%
O ₃	-	0 – 5	ppm	
Temp, RH, Pressure, Sound	Response time	±0-63%	8	s
	Accuracy tolerance	<80% RH	±1.5	%
	Hysteresis	@ 25 °C	±0.8	%
	RMS noise	-	0.12	Pa
	Sensitivity error	-	±0.1	%
	Temperature coefficient offset	-	±1.3	Pa/K
	Temperature operation range	-	-40 – 105	°C
Sound level sensor	30Hz – 8kHz	35 – 120 ±2	dB	

Table 2. Canaree iX series specifications

1. Device will report data with accuracy specified on this datasheet within the respective ranges. The precision is not guaranteed beyond the ranges.
2. Device-to-device variation based on average readings over multiple sampling concentration levels using 1.5% potassium chloride solution at 25 °C and 50%RH. Piera uses GRIMM 11D for individual device calibration. Different reference instruments may yield different data under various conditions.
3. Extrapolated data. Contact Piera Systems for further details.
4. 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. The start-up time may be longer depending on the environment where device is being used in.
5. Lifetime may vary depending on different operating conditions.
6. Complies with the IEC60825-12 specification.

2. Ordering Information

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

Unit pricing and discounts have been submitted to the RFX portal submission as per Tender 19788.

MSRP \$ 699.00

Piera Systems Inc. reserves the right to make corrections, modifications, enhancements, improvements and other changes to its products and services at any time and to discontinue any product or service without notice. Please contact Piera Systems anytime to obtain the latest relevant information.

3. Product Lineup

Features & Options		iX				iXD	
		iX6	iX7	iX10	iX13	iXD10	iXD13
Standard Sensors	Particulate (0.1um – 10um)	o	o	o	o	o	o
	VOC	o	o	o	o	o	o
	Temperature	o	o	o	o	o	o
	Relative humidity	o	o	o	o	o	o
	Pressure	o	o	o	o	o	o
	CO ₂		o	o	o	o	o
Optional Sensors	CO			o	o	o	o
	NO ₂			o	o	o	o
	NH ₃			o	o	o	o
	SO ₂				o		o
	O ₂				o		o
	O ₃				o		o
	Sound level sensor	o	o	o	o	o	o
Features	7 in touch screen display					o	o
	Vape/Smoke detection	o	o	o	o	o	o
	Smart fire detection	o	o	o	o	o	o
	Marijuana detection	o	o	o	o	o	o
	Health risk assessment	o	o	o	o	o	o
	Hazardous gas alert	o	o	o	o	o	o
	AI/ML based pollution classification	o	o	o	o	o	o
	Aruba AP USB support	o	o	o	o	o	o
	Wired network	o	o	o	o	o	o
	Wireless ethernet	o	o	o	o	o	o
	Bluetooth	o	o	o	o	o	o
	PoE	o	o	o	o	o	o
	Static IP support	o	o	o	o	o	o
	BMS support	o	o	o	o	o	o
	LED indicator	o	o	o	o		
	802.11AF (PoE + 48V)	o	o	o	o	o	o
	Micro HDMI output					o	o
SD Card local storage	o	o	o	o	o	o	
Battery backup	o	o	o	o	o	o	

Table 3. Canāree product lineup and features

4. Technical Summary

Inside every Piera Systems Canāree model iX6 is the Piera’s patented Intelligent Particulate Sensor (IPS) - a highly sensitive, photon-counting optoelectronic particulate sensor. Utilizing Piera’s custom particle counting integrated circuit as a core processor, the IPS is compact and consumes low power while acquiring data rapidly, categorizing particulates based on their size. The IPS-7100 outputs seven bins, or channels, of particle sizes. The IPS features an adjustable sensitivity control that provides superior accuracy and versatility.

Using a unique algorithm to identify different particulates, the IPS is suitable for precise real-time airborne particulate matter monitoring, down to ISO class 7 cleanroom

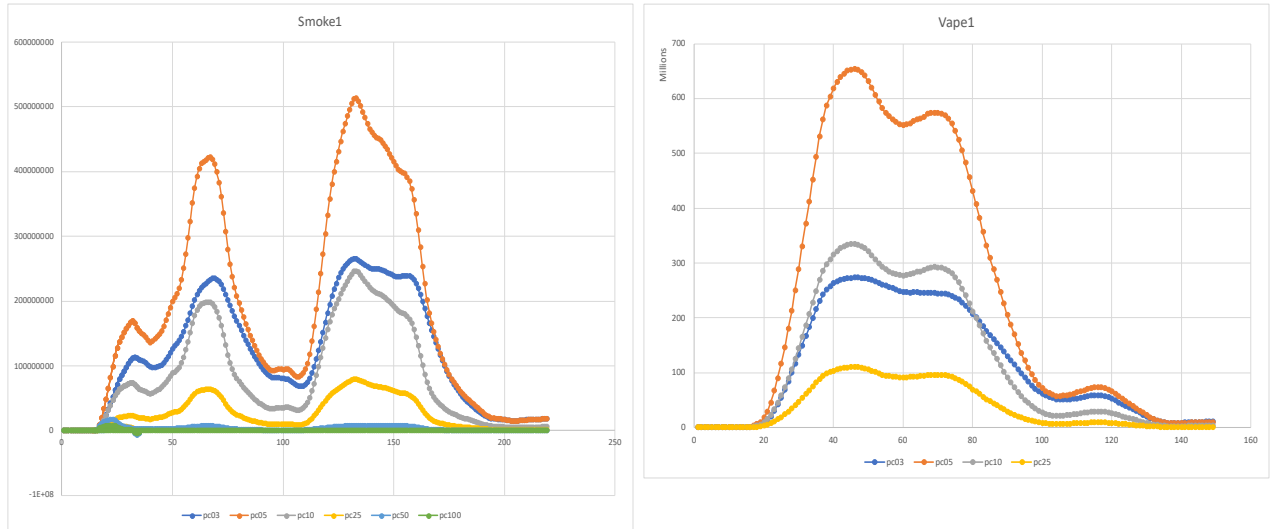


Piera Systems Inc. reserves the right to make corrections, modifications, enhancements, improvements and other changes to its products and services at any time and to discontinue any product or service without notice. Please contact Piera Systems anytime to obtain the latest relevant information.

environment. Each Piera IPS is tested and calibrated in a controlled environment.

Vape and Smoke Detection

With the IPS, data is collected on particle count and particle size across 7 channels. As a result, pollution profiling now becomes possible. Pollutants like vape, cigarette smoke or wildfire smoke present themselves



like signatures (see Fig. 1).

Fig. 1 – Vape and Smoke Time Series Signatures

To classify, or profile a particular pollutant, requires accurate particle count and size data from multiple bins or channels over time. For a detailed explanation of how the patented Canāree vape detection technology works, please [watch this short 9 min. Youtube video made by our AI/ML technology partner](#), macso.ai

Scientists from many research organizations agree with Piera’s belief that, by combining the IPS particle data together with data from other sensors like temperature, humidity, or volatile organic compounds (VOCs), multiple pollutants can be detected in a process called ‘sensor fusion’. Such pollutants include mold, construction dust, diesel smoke, allergens and more.

IPS Vape/Smoke Detection Specs

Detection Accuracy:	95-96%
Response Time (sec):	< 10
Coverage Area (sq. ft):	400-800 (assuming 8 ft ceilings)
Self-Test & Diagnostics:	Yes
Self-Cleaning:	Yes
MTBF (years):	8 (assuming regular indoor/office/school use)

Noise Metering

To address the noise metering requirement, the Canaree iX6 uses a sound level meter that registers values in decibels (db). The sensor can be triggered to alert on any desired level of noise. As per this standard Noise Level chart (Fig. 3), shouting can register about 90-95db. When setting up the Canaree iX6 to alert on a set noise level, you can select 95db as the trigger condition.

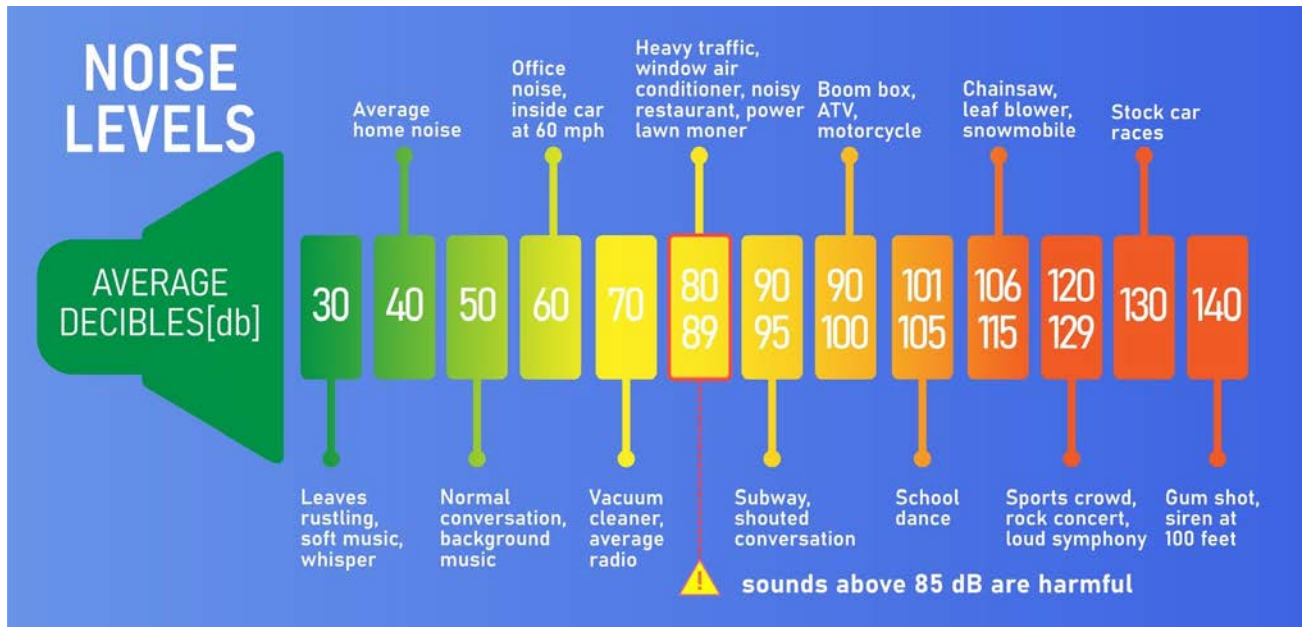
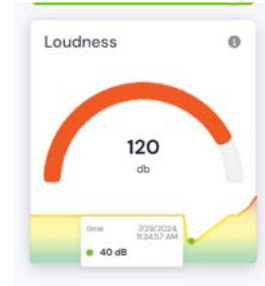


Fig. 3 – Noise Level Chart in decibels (db)

Dynamic Range: 30db to 120db (+/-2db)
Frequency Range: 30Hz to 8kHz

5. Connectivity and Monitoring

POE or WiFi

The Canaree iX Series supports both Wireless LAN (802.11n) or Wired Ethernet (with PoE+ support) for fully standalone operation with the ability to control external Internet-of-Things (IoT) devices like security cameras, relays, or interoperate with Building Management Systems (BMS) using standard HTTPs and JSON APIs. Redundant Power can be provided by using both POE+ and USB for backup power, with failover from Wired to Wireless ethernet for transport.

Piera Systems and HPE Aruba Networking

Piera Systems and HPE Aruba have a long history of pioneering air quality monitoring and vape/smoke

Piera Systems Inc. reserves the right to make corrections, modifications, enhancements, improvements and other changes to its products and services at any time and to discontinue any product or service without notice. Please contact Piera Systems anytime to obtain the latest relevant information.

detection for schools, hospitals and hospitality clients. A presentation of the [Partner Solution Overview can be found on the HPE Technology Partner web page.](#)

HPE Aruba Networking’s secure and agile infrastructure is the ideal way to support Piera’s Canāree sensors in applications of any size. Adding Piera System’s future-proof air quality monitoring to your existing HPE Aruba Networking infrastructure can result in higher standardized test scores, reduce the spread of respiratory illness, decrease absences while saving energy and improved student health by lowering vape/nicotine addiction rates.

Plug and Play USB installation allows the Canāree model i5 to be deployed anywhere an HPE Aruba Networking AP is installed or planned in an ideal ceiling mounted location without additional expensive conduit or installation costs. Power and secure IoT communications are provided by the HPE Aruba Networking APs. Piera Systems Canāree Air Quality Monitoring solutions can be quickly, securely and cost effectively deployed using HPE Aruba Networking Access Points.

Leverage existing HPE Aruba Networking access points for Piera System’s air quality monitoring and vape/smoke detection helps customers to reduce costs, simplify installation and deliver real-time analytics to quickly and cost-effectively monitor indoor air quality and screen for vaping or cigarette smoke.

SenseiAQ Air Quality Monitoring-as-a-Service

All Canāree models collect real-time air quality data locally and send it to the cloud for remote monitoring, alerting and analysis. SenseiAQ software displays the data on a dashboard monitoring multiple devices including Air Quality Index (AQI) scores, color-coded to 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 (Fig. 2).

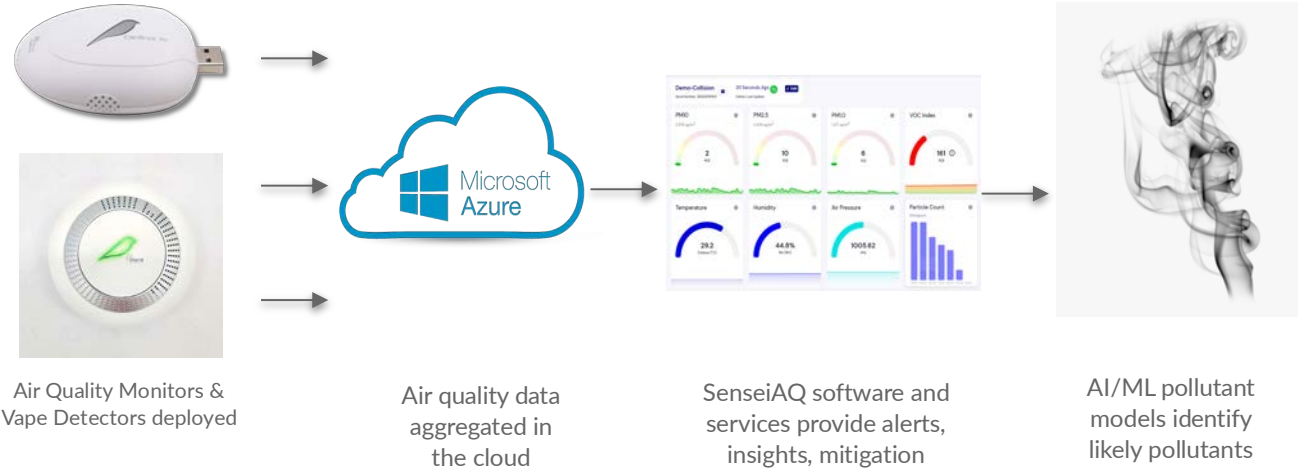


Fig. 2 – Canāree Ecosystem

SenseiAQ software is included with all Canāree monitors and detectors at no additional cost, including 90 days of Air Quality Monitoring Service (AQMS). Alerting is enabled for SMS texts and emails. These alerts include the detection of a pollutant like vape or smoke, but also power and Wi-Fi outages too. Extended warranty beyond the first year is available with the purchase of a maintenance contract.

Piera Systems Inc. reserves the right to make corrections, modifications, enhancements, improvements and other changes to its products and services at any time and to discontinue any product or service without notice. Please contact Piera Systems anytime to obtain the latest relevant information.

6. Accessories

Wired Cage



Wall mount, 9-gauge steel wire cage (7" x 7" x 3.25").

Signage



AODA-compliant "No Vaping – Smart Sensors Installed" signage for schools (6" x 9").

POE Injectors



POE Injector Adapter, 30W, 10/100/1Gbps.. Up to 390 ft (120m)

Power Supply



5V/3A power adapter for WiFi only deployment. 5.5x2.1mm tip.

7. Notes

7.1. Warning, Personal Injury

Do not use this product as safety or emergency stop devices or in any other application where

Piera Systems Inc. reserves the right to make corrections, modifications, enhancements, improvements and other changes to its products and services at any time and to discontinue any product or service without notice. Please contact Piera Systems anytime to obtain the latest relevant information.

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 datasheet 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.

7.2. 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.

7.3. 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.

EXCEPT FOR THE WARRANTIES EXPRESSLY SET FORTH HEREIN, PIERA MAKES NO WARRANTIES, EITHER EXPRESS OR IMPLIED, WITH RESPECT TO THE PRODUCT. ANY AND ALL WARRANTIES, INCLUDING WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSLY EXCLUDED AND DECLINED.

Piera Systems Inc. is only liable for defects of this product arising under the conditions of operation provided for in the data sheet and proper use of the goods. Piera explicitly disclaims all warranties, express or implied, for any period during which the goods are operated or stored not in accordance with the technical specifications.

Piera does not assume any liability arising out of any application or use of any product or circuit and specifically disclaims all liability, including without limitation consequential or incidental damages. All operating parameters, including without limitation recommended parameters, must be validated for each customer's applications by customer's technical experts. Recommended parameters can and do vary in different applications.

Piera reserves the right, without further notice, (i) to change the product specifications and/or the information in this document and (ii) to improve reliability, functions and design of this product.

About Piera Systems

In response to wildfires and a pandemic, the world has realized the importance of clean air and clean water. Piera Systems' mission to make air quality monitoring and measurement as accurate, simple, and pervasive as temperature measurement will facilitate a major improvement in the health of all humans.

The Canāree family of air quality monitors and vape/smoke detectors use a patented microchip and AI/ML techniques to identify pollution sources such as vape, smoke, cooking, construction dust, wildfire smoke, and more. The SenseiAQ air quality monitoring platform will monitor and alert users to poor air quality and pollution events. Piera Systems has over 200 customers across various market segments like schools, hospitals, hotels, property managers, and manufacturers of air quality monitors, air purifiers and other HVAC equipment.

Canāree was selected as a CES® 2023 Innovation Awards honoree, as well as the 2023 AI Product of the Year by the Edge/AI Alliance.



**2023 Edge/AI
Product of the Year**



**2023 CES
Innovation Award**



3359 Mississauga Road, Mississauga, ON L5L 1C6 Canada
www.pierasystems.com Phone: +1.647.374.0101

Piera Systems Inc. reserves the right to make corrections, modifications, enhancements, improvements and other changes to its products and services at any time and to discontinue any product or service without notice. Please contact Piera Systems anytime to obtain the latest relevant information.