Canāree Air Quality Monitor

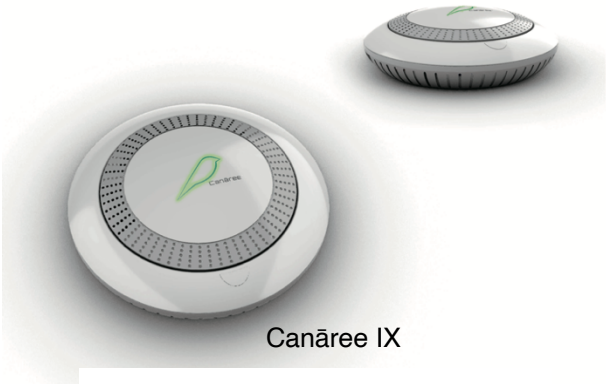
IX Series

Configurable Indoor Air Quality Monitor complete with Vape/Smoke Detection

Product Specification

Product Summary

Canāree IX series 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 custom feedbacks on mitigation methods, health risks, and other environmental factors that can affect inhabitants.



Canāree IX

There are two different types of IX 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 SenseiAQ Software.

Canāree IXD

Piera Systems' advanced particle counter – IPS7100, Volatile Organic Compounds (VOC), temperature, relative humidity, pressure, NDIR-based CO_2 sensors are offered as standard in the base models for Canāree IX and IXD. The base models can be customized to include additional sensors such as ammonia, CO, NO_2, SO_2, O_2, O_3, sound, and vibration detectors. Please refer to the product lineup section for more details.

All Canāree IX series models collect real-time air quality data locally and send that data to the cloud for remote monitoring and analysis. SenseiAQ™ software displays the data on a dashboard (or on IXD screen itself) 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.

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
- Smoke/vape/wildfire detection with real-time alerts and notifications
- Marijuana 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/m³
	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/m³
	Mass Concentration (PM) Precision [2] (≤PM2.5)	0 – 10 ug/m³	±1	ug/m³ Ave.
		>10 ug/m³	±10	% Ave.
	Mass Concentration (PM) Precision [2] (>PM2.5)	0 – 50 ug/m³	±5	ug/m³ Ave.
		>50 ug/m³	±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
		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	$_T$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. Canāree 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.

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
	O2				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. Important Notices

4.1. 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.

4.2. 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.

4.3. 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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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.