

WHAT'S IN YOUR AIR?

Find out with one of our Evaluation Kits

Sense, measure and identify Air Quality
and Particulate Matter in real-time



Two Low cost, easy to use Evaluation Kits for Piera's Intelligent Particle Sensors and Air Quality Monitors:

1. PEK for testing, evaluation and integration of IPS Sensors into any application
2. CEK for evaluating Piera's Canaree Air Quality Monitor
 - Kits include (1) Piera-7100 series Intelligent Particle Sensor with 7 particle size and count bins from PM0.1-PM10.0
 - Bin sizes of PM0.1, 0.3, 0.5, 1.0, 2.5, 5.0, 10 report particle count, size and mass concentration
 - SenseiAQ software for control, measurement, reporting, analysis of PM data either on PC, Mac, Android, or Piera's MS Azure IOT hub
 - Documentation
 - Remote Support
 - \$199/kit, additional sensors \$80
 - PEK includes a USB Interface Cable to connect sensor via USB interface to a PC (Windows or Mac)
 - I²C, UART, USB Interfaces enable a plug in replacement for existing
 - CEK includes one Canaree Air Quality Monitor
 - Plugs into the USB port on any device running Windows, MacOS, Android for use as stand-alone or networked device
 - Utilize the USB port on HPE-Aruba Access Points for a complete Indoor Air Quality Monitoring as a Service Solution

Quickly Start Measuring Air Quality with One of Our Evaluation Kits

Whether you are an expert on Air Quality or just getting started our Evaluation Kits will quickly and affordably answer the question What's in your Air? Kits include the hardware, documentation and our SenseiAQ software to evaluate and integrate our sensors or Canaree Air Quality Monitors.

Select our **PEK (Piera-IPS Evaluation Kit)** if you want to integrate one of our Software Defined IPS devices into your application. The kit includes an interface cable that mates to the IPS connector and plugs into the USB port on a PC. You can purchase additional IPS units and connect them one at a time or multiple devices simultaneously with additional cables.

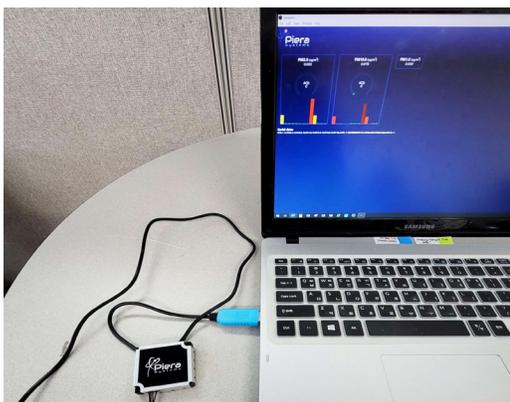
Select our **CEK (Canaree Evaluation Kit)** when you want a complete Air Quality Monitoring solution using a single device or a network of them indoors or outdoors.

Piera's IPS devices use a breakthrough approach for detecting and measuring the quantity and size of particles suspended in air. Unlike existing PM sensors that are inaccurate, low-resolution and slow, IPS has superior accuracy, detects ultra-fine particles, counts every particle and its size in real time with low power consumption. IPS uses a patented, photon-counting custom Integrated Circuit (PSC-1) to deliver a highly sensitive optoelectronic particulate sensor which correlates with expensive reference instruments at a low cost. IPS devices are available in fixed bin sizes or can be programmed over a wide range of particle sizes allowing a single sensor to be used in many applications.

For the first time, applications can take advantage of low-cost accurate, detailed, real-time data about PM count and size. The data can be analyzed using algorithms and ML/AI to classify sources of PM. An example is our proprietary vape/smoke algorithm which generates alerts in the presence of vape and cigarette smoke reporting also the magnitude, duration and dissipation. Through additional testing and using data from other sensors Piera or you can classify additional PM sources through their unique signatures.

Detection of Ultra-Fine Particles (<PM1.0 micron) is unique to optical sensors at this price and will detect health threats that would otherwise go undetected and can impact people with underlying respiratory and health conditions. Unlike other sensors, IPS accuracy and particle count distribution over its full range compensates for changes in Relative Humidity. When coupled with additional sensors for humidity, pressure, temperature, and gases, IPS Sensors deliver a superior Air Quality Monitoring Solution.

APPLICATIONS



- Air Quality Monitoring and reporting
- Air Purifiers and treatment systems
- HVAC equipment
- Smart Spaces (home, office, retail, industrial)
- Chemical detection
- Vape/smoke detection
- Spectrum analyzer for noxious gases
- Digital Health Applications
- Pollen Detection
- Silica Dust Dosimeters
- Masks for mining and other industrial uses

PIERA 7100 SENSOR SPECIFICATIONS

Particulate Matter Sensor Specifications	Conditions	Value	Units
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 (MC) limit ²	Reference @ ≤2.5um particle size	6,000	ug/m ³
Particle detection size bins	Mass and Number per bin	0.1 ³ , 0.3, 0.5, 1.0, 2.5, 5.0, 10.0	um
Lower limit of detection	-	<0.1	um
Minimum sampling time	-	>0.1	s
Startup time	-	6 @0.2 s sample time	s
Lifetime ⁴	24h/day operation	>8	years
Dimensions	-	4.6 x 4.15 x 1.24	cm
Weight	-	26	g
Operating temperature range	-	-10 to +60	°C
Operating humidity range	-	0-95% (non-condensing)	RH
Storage temperature range	-	-40 to +80	°C
Electrical Specifications			
Interfaces	-	I ² C, UART, USB	-
Supply voltage	-	4.5 - 5.5	Vdc
Average supply current	Measurement-mode	65	mA

- 1 Deviation from reference counter (GRIMM 11D model year 2006) based on average readings over a 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 detection limit is estimated for PC2.5. May vary depending on size and density of particles.
- 3 PC0.1 and PM0.1 are estimated by extrapolation.
- 4 Lifetime might vary depending on different operating conditions.

CANAREE SPECIFICATIONS

Specifications of Canaree	
Size	7cm x 5cm x 1.4cm (2.75" x 2" x 0.5")
Weight (g)	35 grams (~1.2 ounces)
Power	5.0V @ 80mA (0.4W over USB, continuous operation)
Coverage	~10m ² , 100ft ²
# Supported Sensors	Unlimited
Communications Protocol	USB to local device or to MS Azure Cloud
Certifications	CE, KETI
Sampling Time(s)	>0.5 (adjustable)
Onboard LED	Status Indicator
Software Supported	SenseiAQ (Windows / MacOS) Application
Cloud Reporting Support	Microsoft Azure IoT Hub
Lifetime	8 Years (may vary due to conditions)
Power Saving Mode	Supported (through SenseiAQ)
Cleaning Mode	Supported (through SenseiAQ)

SenseiAQ Software for Real-Time Air Quality Monitoring

SenseiAQ software for Piera Systems collects live-data from USB-connected Piera IPS sensors for real-time logging and analysis of Particulate Matter (PM) as well as alerting on Air Quality Index (AQI) fluctuations over time. SenseiAQ can be installed on a PC or also Cloud-Enables a locally-connected sensor providing an IoT Gateway functionality on a Client PC, Mac or Android device ensuring the data can be stored, viewed and analyzed remotely through the Piera Systems Cloud Solution based on MSFT IoT Hub.



Fig. 1. SenseiAQ dashboard

SenseiAQ Software displays the data on a dashboard including Air Quality Index (AQI) Scores, color-coded based on EPA Limits and alerts for vape/smoke and particle count thresholds and distributions. The software is provided with all Piera sensors while the Cloud-reporting functionality is included for all customers under a yearly subscription / maintenance agreement.

Features

- Displays Real-Time Particulate Mass concentrations PM0.1 – PM10
- Auto Calculates and displays latest AQI scores every 60 seconds (user defined)
- Dashboard displays PM1.0, PM2.5 and PM10.0 values in ug/m³ and corresponding AQI for each PM Size
- Color-Coded AQI Values correspond to EPA Guidelines for PM concentrations
- Fast data acquisition and sampling (1 sec.)
- Supports Windows, MacOS, Android OS
- IoT-Enables USB-connected Piera sensors
- Supports Export to CSV for local data logging, backup or analysis in MSFT Excel

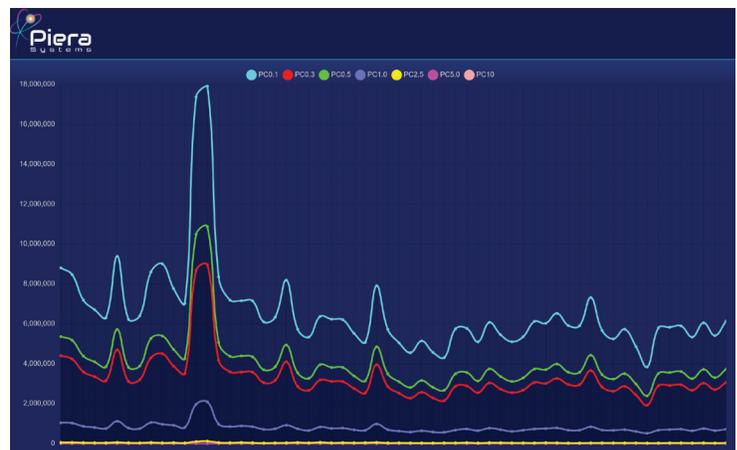


Fig. 2. SenseiAQ analysis charts

Testing, Calibration, Correlation, Certification

All IPS devices are tested and calibrated with Grimm 11-D reference instruments prior to shipment. Certification completed at PM1.0, 2.5, 10 by Korea Electronics Technology Institute. For details, contact Piera Systems.

