



SenseiAQ User's Guide

***Real-Time Air Quality Monitoring for Piera Sensors, Canaree Air Quality Monitors
Application User Guide – Version 2.0 Updated 5/23/2022***

Overview

SenseiAQ software for Piera Systems enables real time Air Quality Monitoring using data from Piera's family of Intelligent Particle Sensors (IPS) and Canaree Air Quality Monitors. It collects particle count / mass concentration data via a USB connected Piera sensor, and stores data locally on the connected device for logging and analysis. It is available as a download at no charge and supports the IPS Evaluation Kit and all Canaree series AQM's. In addition to data analysis, it displays an Air Quality Index (AQI) and events (Vape and Smoke Detection) on a dashboard, the status of the sensor and its connectivity. The SenseiAQ App can also Cloud-Enable a locally connected device providing a IoT Gateway functionality enabling the collected data to be stored, viewed and analyzed remotely through Piera's Cloud Subscription on the Sensei Website (<https://sensei.pierasystems.com>) - allowing multiple devices to be monitored remotely.

SenseiAQ Software displays real-time data on a dashboard including Particle Counts for PM10, 2.5 and 1.0 sizes which are displayed in ug/m3 (micrograms per cubic meter) The Air-Quality-Index (AQI) Score is updated every minute based on previous minutes averages of particle counts. These standards were developed to monitor outdoor Air Quality and serve as a baseline for measuring Indoor Air Quality (IAQ)

Canaree I-5 Devices support additional environmental monitors including: Temperature, Relative Humidity, Atmospheric Pressure and Volatile Organic Compounds (VOC) for which an equivalent AQI Score is generated. The VOC AQI score is based on Bosch's definition of IAQ and ranges from 0-500 with lower numbers indicating less TVOCs in the environment. Trends of VOCs and CO2 estimates are displayed as Increasing, Decreasing or Stable for the selected timeframe. Increasing levels overtime can indicate the need to ventilate the environment.

This software is provided with all Piera sensors while the Cloud-reporting functionality is included free for 90 days after which a customer must purchase yearly subscription to continue to use Piera's Air Quality Monitoring Service (AQMS)

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SenseiAQ Specifications

Software Specifications	Rating
OS Support (App Version)	Windows (7, 10 Pro / Home Edition) MacOS (High Sierra or greater)
Browser Support (Web Version)	Google Chrome, Mozilla Firefox, Apple Safari, Microsoft Edge
Distribution Package (App)	Electron Installer / Cross-Platform React Package, signed by Piera Systems
Programming Language	Node.js
USB Interfaces support	Type A - USB 2.0, Max Length 10m / 32'
Install Package Size	98Mb
Piera Hardware Supported	Piera-IPS™ Series Intelligent Particle Sensors Canāree™ Series Air Quality Monitors (AQM)
Cloud Reporting Support	Native support for Microsoft Azure IoT Hub*
API Support	Azure IoT via REST API in JSON format
Language Support	English, Spanish, French, German, Italian

*90 Day subscription included with purchase of device. Extended subscriptions available with maintenance contract.

Accessing SenseiAQ Web

SenseiAQ Web portal supports most common web-browsers and operating systems including: Google Chrome, Mozilla Firefox, Microsoft Edge and Apple's Safari including mobile versions of these browsers in both tablet and portrait modes. Access the web-portal here: <https://sensei.pierasystems.com>



Welcome to SenseiAQ

Login

Username

Password

Show Password

[Can't remember password or username?](#)

[No Account? Create account](#)

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Figure 1. SenseiAQ Login Page: An account is required to use this software.

Creating an Account

Welcome to SenseiAQ

Register account

Username

newuser

Email

newuser@mycompany.com

Password

InitialPa3sw0rd123

Confirm Password

InitialPa3sw0rd123

Show Password

Register account

Welcome to SenseiAQ

Login

Username

newuser

Password

InitialPa3sw0rd123|

Show Password

Login

[Can't remember password or username?](#)

Figure 2. SenseiAQ Create Account Page - for new users

First-time users should create a new account to login. Existing users of previous versions of SenseiAQ and login using your existing account.



Modifying your Account Information

The image shows a screenshot of the SenseiAQ account management interface. It is divided into two main sections by a vertical grey bar. The left section is titled "SenseiAQ Security" and contains three input fields: "Old Password", "New Password", and "Confirm New Password", each with the placeholder text "password". Below these fields is a dark blue "Save" button. The right section is titled "Change Email" and contains three input fields: "Current Password" (placeholder "password"), "New Email" (placeholder "user@email.com"), and "Confirm New Email" (placeholder "user@email.com"). Below these fields is another dark blue "Save" button. Both sections have an upward-pointing chevron icon in the top right corner.

Figure 3. SenseiAQ Account Page: Change your Email or Password

Clicking on the User Icon (top right corner) will expose Account options where you can change your password or reset your email address for your SenseiAQ Account.



Settings

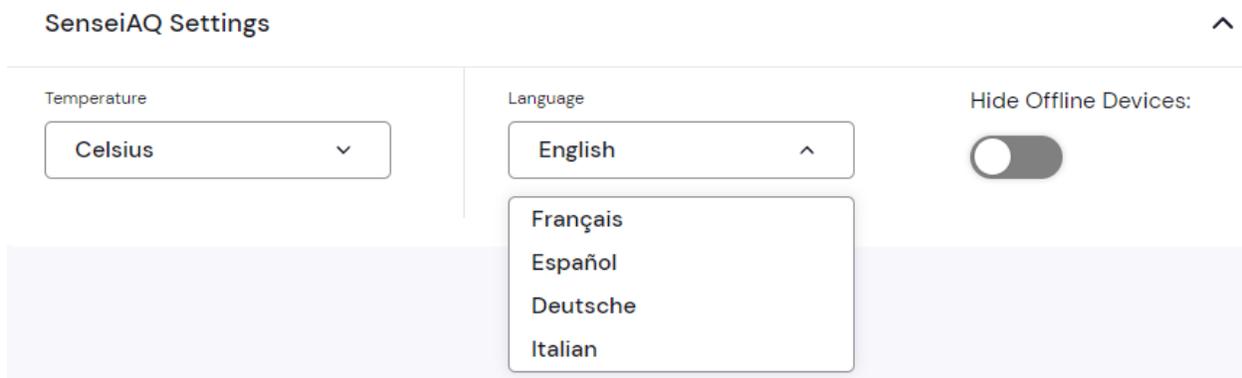


Figure 4. SenseiAQ Login Page: An account is required to use this software.

Settings tab allows you to change the display settings, language and temperature format, these settings will be remembered by your web-browser for subsequent logins.

By default Hide Offline Devices is selected. This will only show active (Online) devices in the Dashboard. Unchecking this option will allow you to view all devices registered to your account, including those currently offline.



Dashboard View

The Dashboard presents you with a single view of all your Piera AQM Devices with a summary of the most recent values displayed and a large gauge showing PM2.5 AQI Values. Summaries of Air Quality and recent alerts can be seen, as well as each device's name and online status.

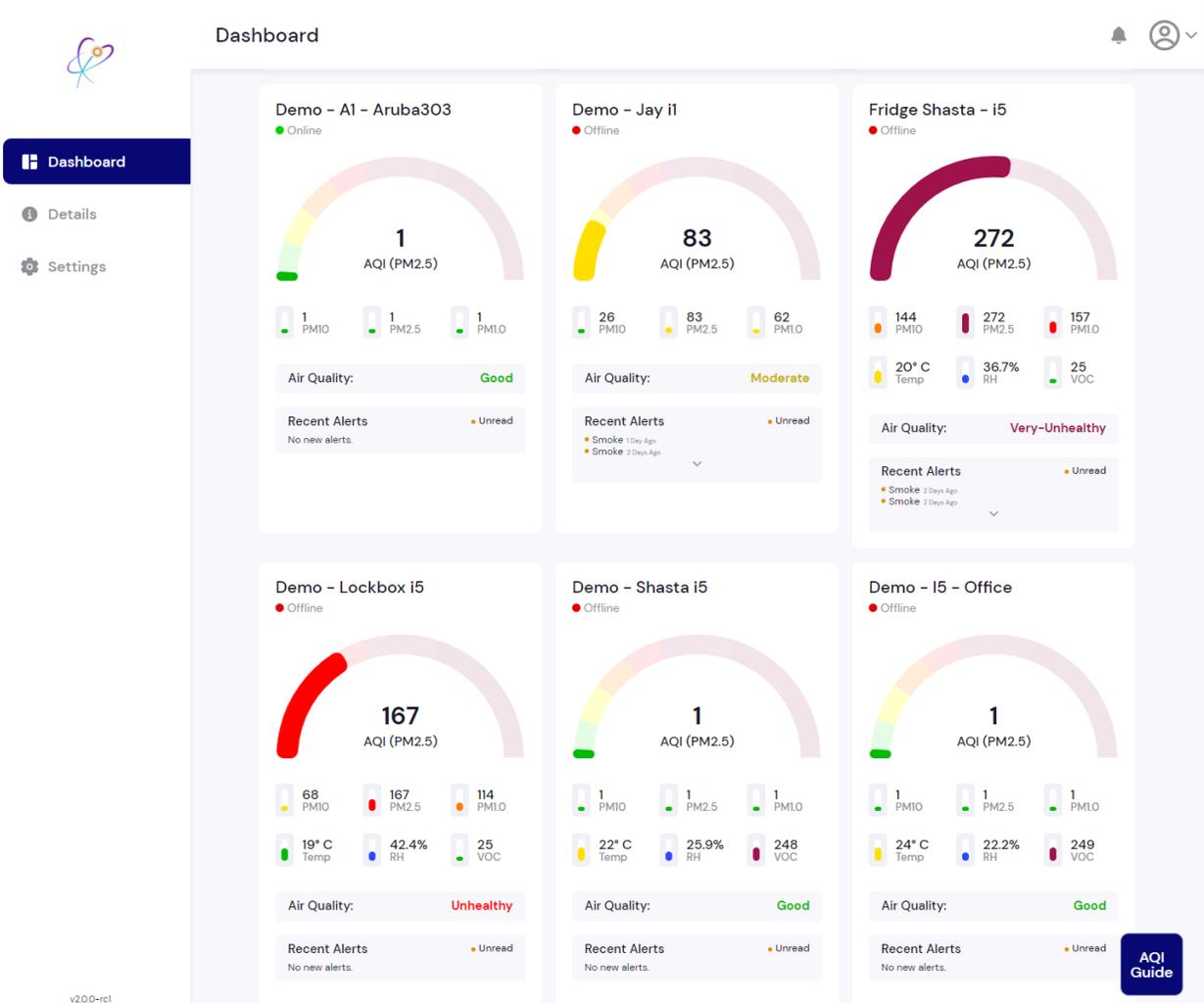


Figure 5. Initial dashboard view with multiple AQMs shown

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AQI Guide



Clicking on the AQI Guide button at any time will display the US EPA health impacts of various AQI Values displayed by SenseiAQ, along with information on the color-coding and thresholds used. Clicking More Information will link to a document detailing how to Interpret the data provided by SenseiAQ.

Air Quality Index Levels of Health Concern	Numerical Value	Meaning
Good	0-50	Air quality is considered satisfactory, and air pollution poses little or no risk.
Moderate	51-100	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.
Unhealthy for Sensitive Groups	101-150	Members of sensitive groups may experience health effects. The general public is not likely to be affected.
Unhealthy	151-200	Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.
Very Unhealthy	201-300	Health alert: everyone may experience more serious health effects.
Hazardous	> 300	Health warnings of emergency conditions. The entire population is more likely to be affected.

Figure 6. AQI Guide - Shows US EPA Thresholds for Air Quality Exposure

For more information on the US EPA's AQI Scale visit <https://www.airnow.gov/aqi/aqi-basics/>



Details Page

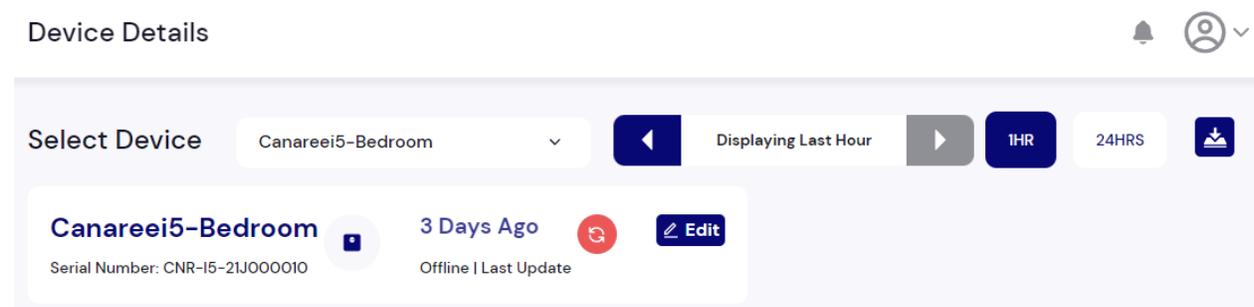


Figure 7. Details page header showing selected device and its last update.

At the top of the details page, you can select a device and a timeframe for displaying the data. By default the last hour of data will be shown. Scroll back in time or select 24 hours view to change the timeframe viewed. The device name will be shown, along with its Serial number and last update.

Naming your Device

Select the Edit button to rename your device and toggle the Public status. Note anyone with the URL can view AQM information from public devices, without logging into SenseiAQ.

Device Settings

Information

Device Name

(Empty values defaults the device name to the device ID.)

Canareei5-Bedroom

Security

Public Device

Would you like to make this device publicly accessible?
Note: Data from Public devices can be viewed and shared with anyone, including users without a SenseiAQ Login



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Figure 8. Edit Device Popup

Details Page Main Gauges



Figure 9. PM and AQI Display in SenseiAQ, selecting a specific timeframe

PM Information for the 3 largest particle bins (PM10, 2.5, 1.0) is shown on the details page, with the most recent PM and AQI score displayed on the gauges. Historical information on PM and AQI is shown under the gauge based on the time frame selected.

Clicking on a specific time on the chart will show historical information on PM, AQI and Health Impacts.



Details Page Other Gauges

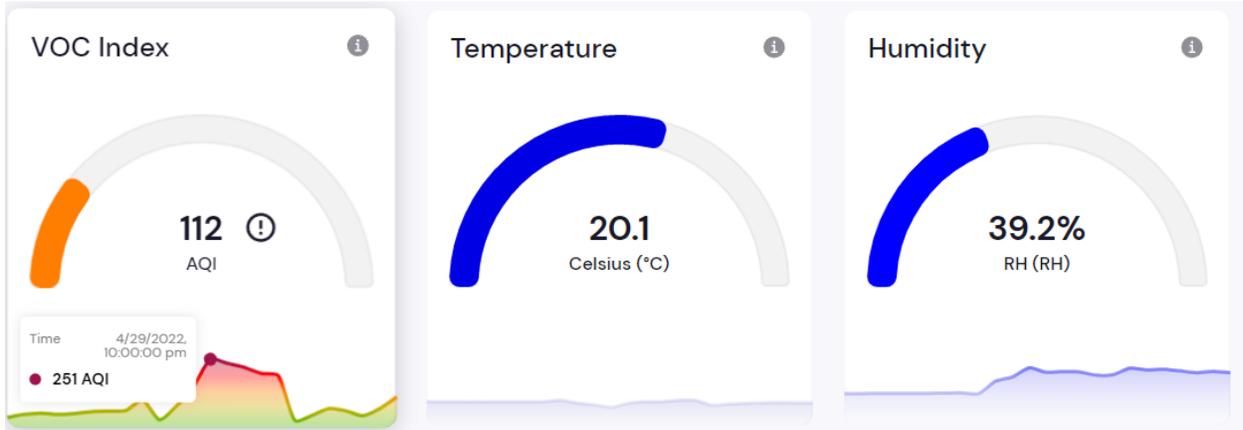


Figure 10. VOC and Environmental View - Available only on Canaree I5 Devices

Canaree I5 Devices will show additional environmental monitors, including a VOC AQI index which displays the levels and health impacts of Volatile Organic Compounds.

Clicking on the (!) Icon will show trends in CO2 and VOC Estimates to indicate if they are increasing or decreasing and suggest the need to ventilate if increasing.

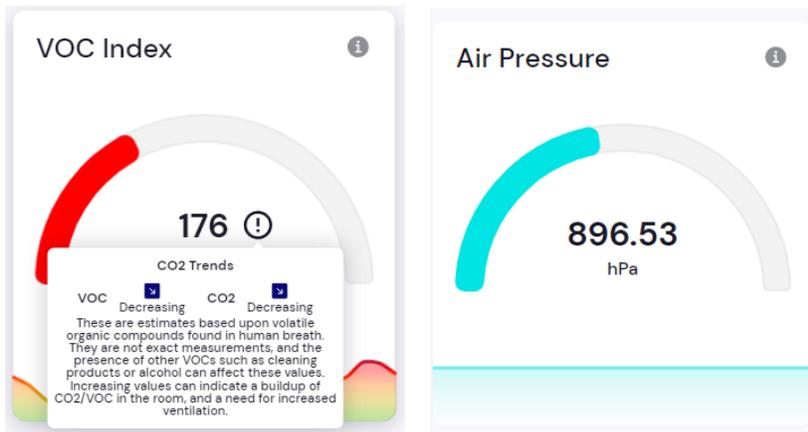


Figure 11. VOC Index information showing VOC and CO2 Estimate Trends.

Figure 12. Air Pressure gauge displayed in hPa (millibar)

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Temperature, Humidity and Air Pressure (Atmospheric Pressure or Millibars) are also shown for Canaree I5 Devices. The temperature scale can be toggled between *C and *F in the Settings tab.

The Particle Count (Histogram) shows the counts for each particle size last measured giving an indication of Particle Distribution across various sizes from PC0.1 to PC10. Clicking on a specific bin will show the Particle Counts last measured from that bin.

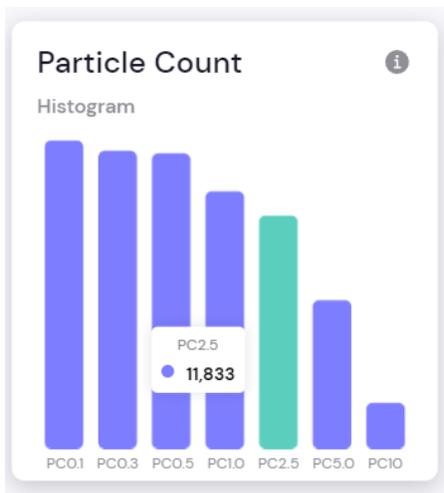


Figure 13. PC Histogram, showing particle counts in each BIN on a bar chart.



Selecting Timeframes

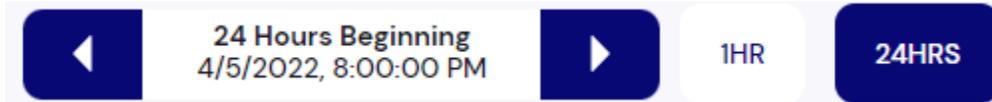


Figure 14. Timeframe Buttons on Details Page

Timeframes can be displayed in either 1HR increments or 24Hrs. With 1 hour selected the data from the most recent 60 minutes will be displayed on the time charts. Selecting the back and forward buttons will scroll the timeframe back an hour at a time. When using the 24 hour view the average of each hour's data will be displayed with the past day, or on the day selected in the timeframe. Here we are showing the last 24 hours of data beginning 4/5/22 at 8PM until 4/6/22 at 8PM. Clicking the back button will go back 1 day at a time.

Alerts View

Alerts such as Vape Smoke Detection (VSD) will be shown on the Recent Alerts view, along with a general timeframe the alert. Future versions will allow for acknowledgement and clearing of alerts by device administrators.



Figure 15. Recent Alerts for Vape Smoke Detection (VSD) and other events shown on the details page.

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Download your Data

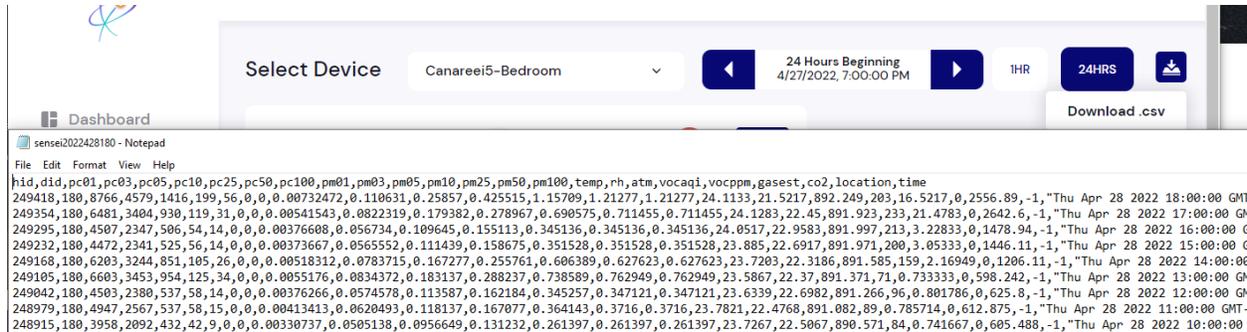


Figure 16. Download Data to CSV File for selected timeframe.

Data from selected time frames can be downloaded directly from the details page in CSV format for further analysis or use with Spreadsheets and other tools.

Analysis View

This view allows for more detailed analysis of the data in real-time and provides the ability to include or exclude certain bin(s) on a historical line chart. The charts will be updated automatically every minute with the latest data from the sensors.

Selecting a PC/PM size value will exclude that data from the chart.



Figure 17. Analysis view showing Particle Count (PC) for all bins with PC0.5 selected at a specific time.

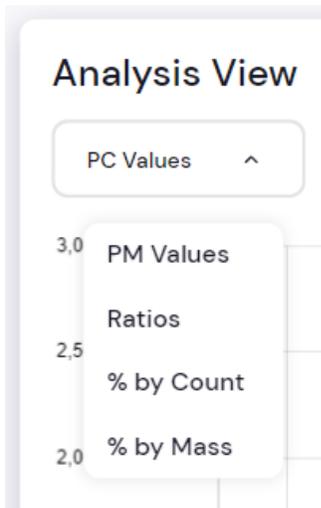


Figure 18. Analysis chart options popup



In addition to Raw Counts the Analysis tab can also display PM Values, Ratios between PM Values or Percentage by Particle Count or Mass. A “Relative to last minute” option is to compare minute averages.

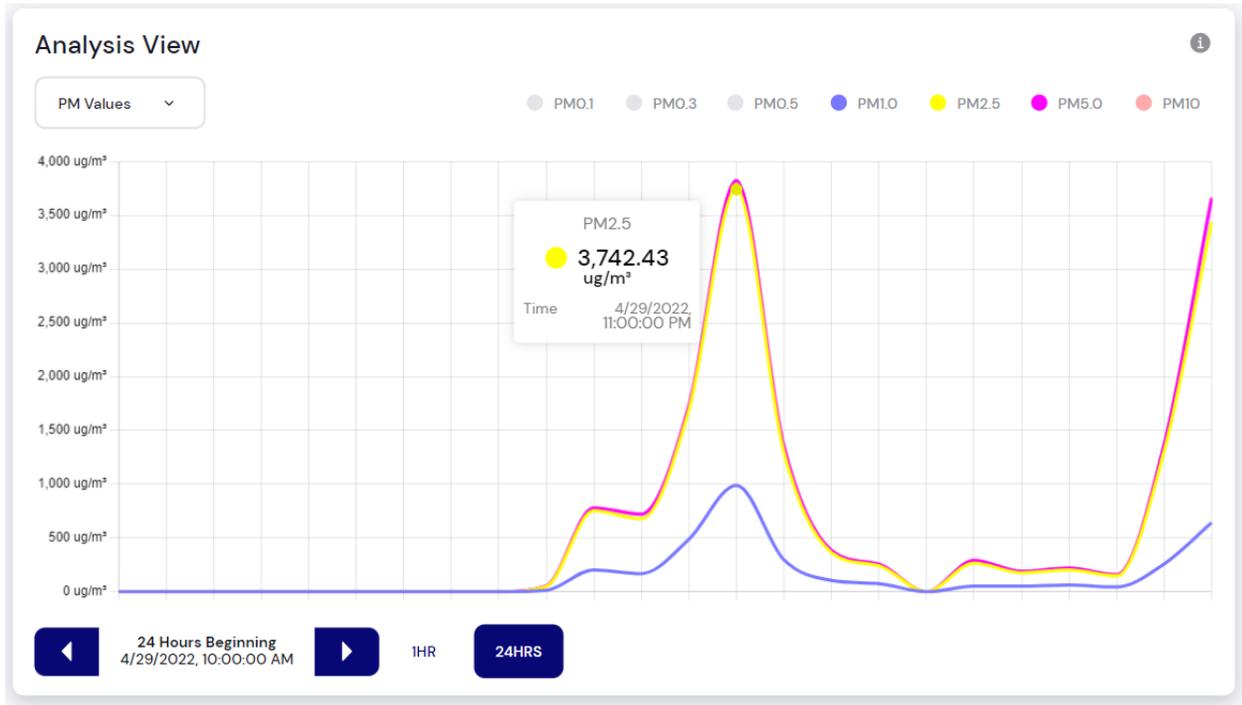


Figure 19. Analysis View showing Particle Mass (PM) Values over time PC2.5 highlighted

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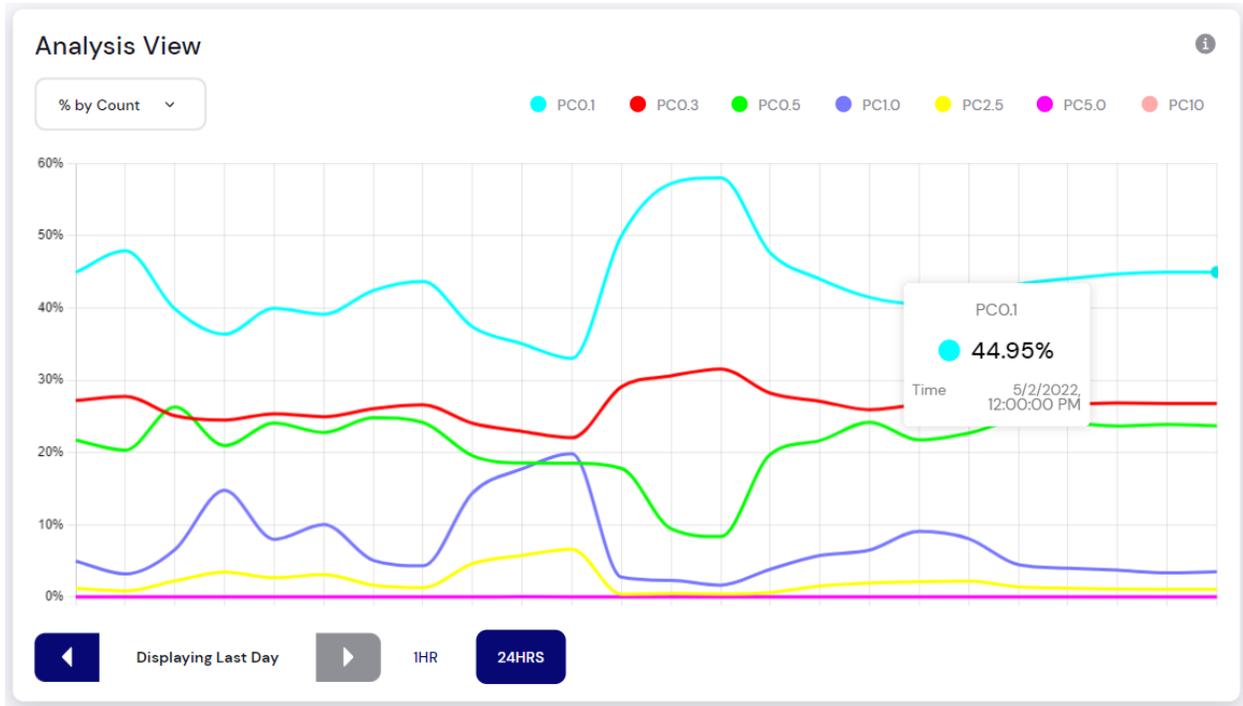


Figure 20. Analysis View with % by Count selected, Highlighting PC0.1 at a specific timeframe

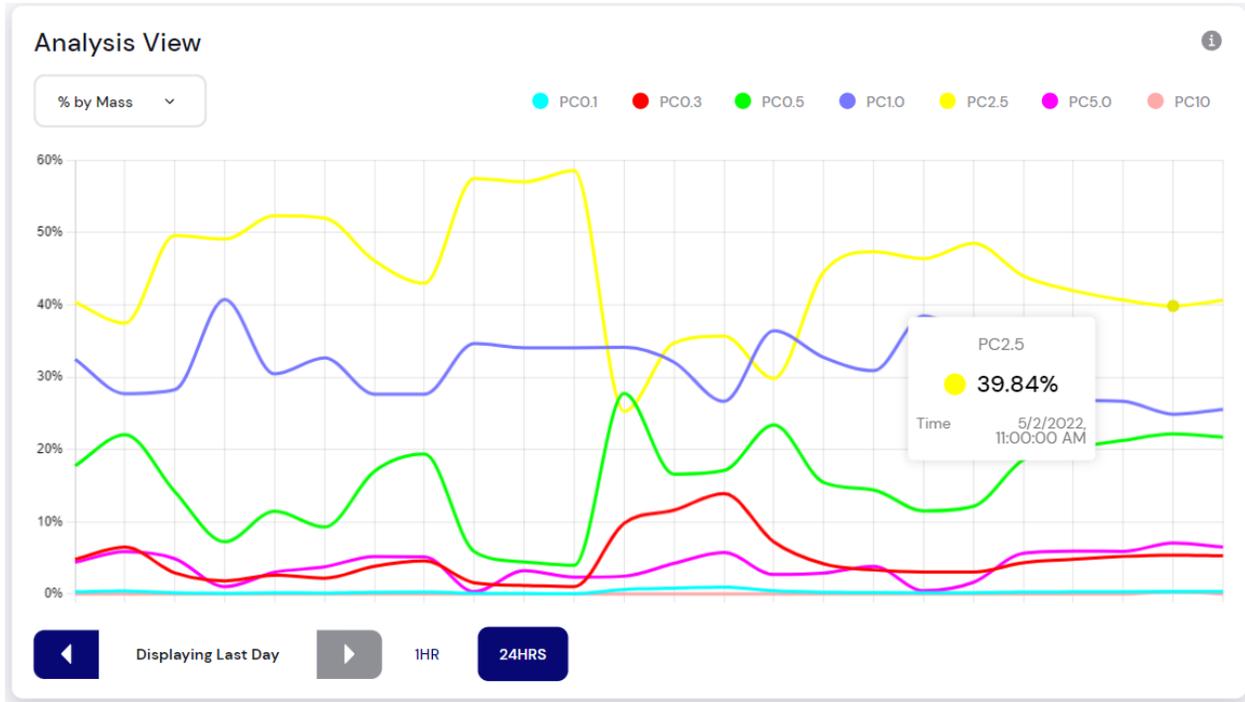


Figure 21. Analysis View with % by Mass selected, Highlighting PC2.5 at a specific timeframe

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