antrumX™
Airflow that Makes Sense

PARTICLE SENSING

DESCRIPTION

The Sensor Pack monitors multiple air quality parameters across 16 zones, independently reporting on each. Each sensor pack contains sensors for air velocity, temperature, humidity, and pressure. With a reference to clean air, it cancels sensor drift, ensuring more accurate and consistent data compared to standard wall-mounted solutions. All required sensors for a specific application are pre-installed in one sensor pack, making calibration effortless through a tool-free replacement process.

WHY

The undeniable relationship between human well-being and air quality has been extensively acknowledged. Additionally, as per a 2019 study conducted by the Institute for Health Metrics and Evaluation, air pollution consistently ranks among the top 10 risk factors contributing to deaths. Specifically, the impact of fine airborne particles measuring less than or equal to 2.5 micrometers in diameter (PM2.5) has been rigorously studied, revealing their increasingly detrimental effects on human health—the smaller the particles, the greater their lethality. These particles are notorious for instigating various diseases such as lung cancer, arrhythmia, asthma, pneumonitis, and cardiovascular mortality. Regularly monitoring air quality through real-time measurement of PM concentration is crucial for effective management of both indoor environments and human health.

Health Concerns: Small particles like dust, pollen, pet dander, and other pollutants can worsen respiratory conditions like asthma or allergies. Monitoring helps identify high levels, allowing you to take steps to reduce exposure.

Indoor Air Quality: Small particles often indicate poor indoor air quality. Monitoring helps assess the overall cleanliness of the air you breathe inside your facility.

Optimizing Ventilation: Continuous particle monitoring helps determine the actual need for ventilation. If particle levels are consistently low, it might indicate that ventilation rates can be adjusted without compromising safety, potentially leading to energy savings by reducing the amount of conditioned air required.

Comfort and Well-being: Cleaner air can lead to a healthier, more comfortable working environment, promoting better focus, and overall well-being.

Regular monitoring helps in understanding the air quality and taking necessary steps to maintain a healthy indoor environment.

***Sensor is also available for ISO 7/8 or Class 10,000/100,000 cleanrooms and conforms to ISO 21501-4 to facilitate adaptive control to provide significant energy savings per ISO 14644-16.**

HOW IT WORKS

The device is an optoelectronic particulate sensor that utilizes photon counting readout technology, exhibiting high sensitivity. Using a built-in processor, the sensor is capable of fast data acquisition and readout, as well as categorizing particulates based on the size. Using a sizing and count algorithm to identify different particulates, the sensor is ideal for true real-time precise airborne particulate matter monitoring and particle size distribution analysis. When the particle sensor is ordered with additional sensors for humidity, pressure, and gases, the Sensor Pack helps deliver a superior air quality monitoring solution.

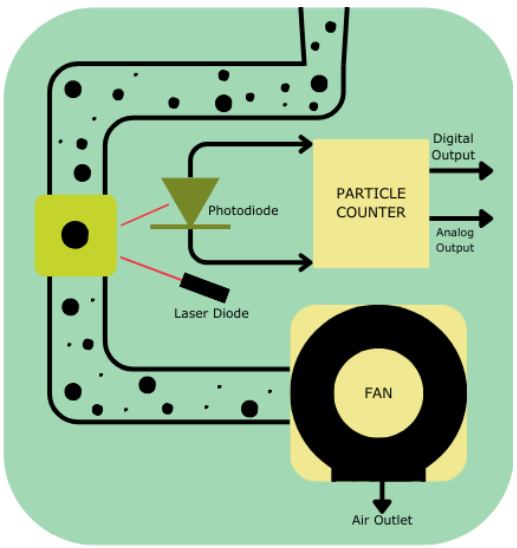

Figure 1: Particle Sensor

SPECIFICATIONS

Parameter	Value	Units
Technology	Laser	
Particle Count (PC) Range	0–1,000,000	#/L
PC Resolution	1	#/L
Particulate Matter (PM) Range	0–6,000	µg/m^3
Accuracy	± 10	%
Response[1]	20	s
Recovery[1]	20	s
Calibration	2	Year(s)

	Bins	Value	Units
PC	0.3	0.1 – < 0.3	µm
	0.5	0.3 – < 0.5	µm
	1.0	0.5 – < 1.0	µm
	2.5	1.0 – < 2.5	µm
PM	0.3	0.1 – 0.3	µm
	0.5	0.1 – 0.5	µm
	1.0	0.1 – 1.0	µm
	2.5	0.1 – 2.5	µm