



## MEMORANDUM

**Date:** January 14, 2021

**To:** Richard Terrones  
DTA Architects, Inc.  
Burlingame, CA

**From:** John Chou

**Project:** Mountain View Whisman School District

**Re:** School reopen guidance

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The following are recommendation on filtration for HVAC equipment, increase ventilation and additional remedies for the classroom to be reopened.

According to CDC, COVID 19 virus can be transmitted by large respiratory droplets larger than 5 microns that is produced by coughing and sneezing. Minimum Efficiency Reporting Values (MERV) provide efficiency of filter based on their MERV rating. Based on Table below, MERV 13 filter has 90% efficiency in filtering particle size between 3.0 to 10 microns. MERV 13 is code minimum requirement. According to EPA, HEPA filter has efficiency of 99.97% of removing airborne particles with a size of 0.3 microns. HEPA filter is primarily used in operating room in hospital or clean room for certain class of cleanliness where clean “dustless” air is required. It is used in custom air handler system in hospital where three levels of filtration are required or a HEPA recirculation fan is used in clean room environment to meet a certain class level. It is not suitable and could affect the performance on a typical HVAC system for classroom application. Due to the current situation with COVID 19, HEPA type filter could be reserved for hospital facilities and is not readily available. ASHRAE guideline and our recommendation is to install minimum of 2” MERV 13 filter on HVAC equipment for schools. Typically filter shall be replaced during change in seasons. Our recommendation is to replace filter every 2 months during the current pandemic time.



**Table 12-1 Minimum Efficiency Reporting Value (MERV) Parameters**

Standard 52.2 Minimum Efficiency Reporting Value (MERV)	Composite Average Particle Size Efficiency, % in Size Range, $\mu\text{m}$			
	Range 1 0.30 to 1.0	Range 2 1.0 to 3.0	Range 3 3.0 to 10.0	Average Arrestance, %
1	N/A	N/A	$E_3 < 20$	$A_{avg} < 65$
2	N/A	N/A	$E_3 < 20$	$65 \leq A_{avg}$
3	N/A	N/A	$E_3 < 20$	$70 \leq A_{avg}$
4	N/A	N/A	$E_3 < 20$	$75 \leq A_{avg}$
5	N/A	N/A	$20 \leq E_3$	N/A
6	N/A	N/A	$35 \leq E_3$	N/A
7	N/A	N/A	$50 \leq E_3$	N/A
8	N/A	$20 \leq E_2$	$70 \leq E_3$	N/A
9	N/A	$35 \leq E_2$	$75 \leq E_3$	N/A
10	N/A	$50 \leq E_2$	$80 \leq E_3$	N/A
11	$20 \leq E_1$	$65 \leq E_2$	$85 \leq E_3$	N/A
12	$35 \leq E_1$	$80 \leq E_2$	$90 \leq E_3$	N/A
13	$50 \leq E_1$	$85 \leq E_2$	$90 \leq E_3$	N/A
14	$75 \leq E_1$	$90 \leq E_2$	$95 \leq E_3$	N/A
15	$85 \leq E_1$	$90 \leq E_2$	$95 \leq E_3$	N/A
16	$95 \leq E_1$	$95 \leq E_2$	$95 \leq E_3$	N/A

Minimum ventilation for classroom is 0.38 cfm per square foot. A typical 950 square foot classroom is required by code to have 361 cfm of outside air to be delivered to the classroom. Our recommendation is to increase ventilation by 30%. This will increase ventilation to the space yet prevent overloading the heating or cooling capacity on the HVAC equipment.

Additional recommendation to support the re-opening effort.

1. Mountain View Whisman School District has Johnson Control EMS. They have the ability to program the system to provide 100% outside air (flush the classroom) before classroom is occupied and every time when the space is unoccupied.
2. GPS bi-polar ionization system claims that their system can effectively disable COVID virus from transmitting. See attached test report. The GPS system is very easy to be installed in the existing or new HVAC system without additional electrical or structural support. We recommend the GPS compact line for typical split fan coil system as well as rooftop unit or ductless system.
3. Adding PRICE air filtration system allows air being filtered and cleaned constantly. This is an alternate solution when the existing HVAC system is not capable to provide needed ventilation or incorporate a MERV 13 filter.

# INNOVATIVE BIOANALYSIS

creating solutions | getting results

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## SARS - CoV - 2 Neutralization by Needlepoint Bipolar Ionization, Powered by GPS

**CLIENT:** ACA/IAE

**PROJECT:** Needlepoint Bipolar Ionization "NPBI™" applied to COVID19

**PRODUCT:** ACA-RN-0001 and ACA4800GU-1, Powered by GPS DM48 - AC NPBI™ Technology

**CAP LIC NO:** 9501843

**CLIA LIC NO:** 05D1064850

**SAMPLE RECEIVED:** 05/21/2020

**START DATE:** 05/27/2020

**REPORT DATE:** 06/02/2020

**CHALLENGE VIRUS:** SARS-CoV-2

### EXPERIMENTAL SUMMARY:

Single RE22 control chambers set on a table stainless steel table with pressure verification seals. Internal working dimensions 16.5"W x 9"H x 12"D for a total cubic footage of 1.031. Under initial observation it was determined to seal the unit completely with no intake or exhaust port. Control ionization counts were performed prior to initial test. Testing and control were conducted in an average ambient temperature of 72.6 degrees Fahrenheit.

A singular fan unit was set up at a 45-degree angle to the two ionization units affixed to the testing chamber. The initial control fan speed was measured at an average of 870 Ft/m. At these airflow speeds the initial ionization saturation counts were taken so adjustment could be made to lower or raise ionization levels depending on the testing parameters needed. Under the original control section, the primary fan was set 10 inches away from ion production unit A and the average air flow speed past the ion producing nodes was 250Ft/m

Under the original control section, the primary fan was set 13 inches away from ion production unit B and the average air flow speed past the ion producing nodes was 240Ft/m. Initial observations indicated large fluctuations of ions throughout the interior of the testing chamber based in the airflow. With unit B running the Ion count fluctuated from 800 thousand ions per cubic centimeter in the center of the testing chamber directly below the ionization unit to 152 thousand ions per cubic centimeter at the exterior edges of the testing chamber.

Initial observations indicated large fluctuations of ions throughout the interior of the testing chamber based in the airflow. With unit A running the Ion count fluctuated from 1.8 million ions per cubic centimeter in the center of the testing chamber directly below the ionization unit to 600 thousand ions per cubic centimeter at the exterior edges of the testing chamber.

When looking at initial overall Ion situation of an open area with a controlled airflow we observed the below graph range. Ion count recorded in the 100 thousand range when.

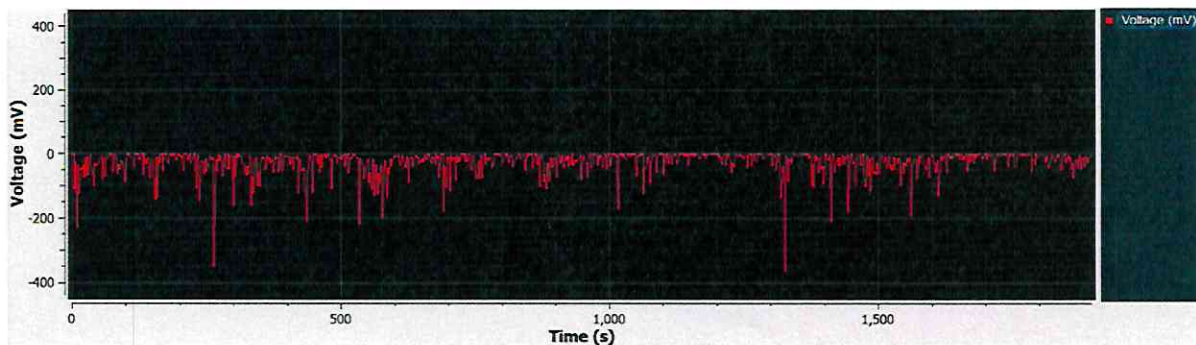
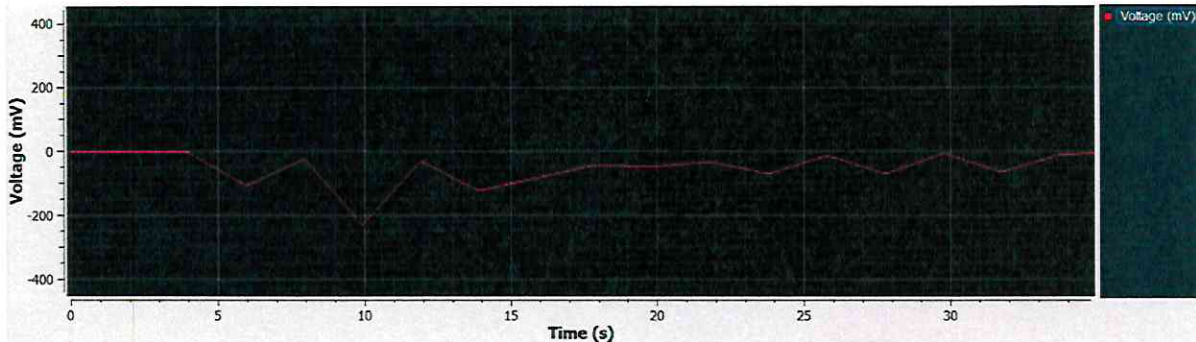
	1	2	3
Ft/m	230	330	380
FT	ION	ION	ION
4'	630	1100	1400
7'	250	240	380
11'	92	143	170
15'	21	40	arc
19'	6	24	arc
24'	6	18	9
46'			5

After control samples were completed for saturation levels a slower moving fan was introduced to lessen the airflow across the Ionization nodes to reduce the overall Ion concentration levels to something more similar to conditions found inside a standard aircraft when running the ion cleaning system. Based on historical observations the standard Ion count inside aircrafts was 10,000 – 50,000 ions per cubic centimeter. With the slower fan speed and slightly altered angle the average negative ion count inside the test chamber was reduced to an average of 27 thousand per cubic centimeter for the viral testing phase.

During viral sample testing the viral chamber had one continual ionization sensor document the overall ion counts and logged for the course of the test. The average Ion count within the testing chamber at point of viral placement was -27.2307 (+\_ 10,000) cm3. Viral cultures added to test chamber in independent sealable dishes. The initial test the ionizations units were ran for 30 minutes. Each viral sample was sealed at a pre-determined time. Sample A sealed up after 10 minutes of Ion exposure. Sample B sealed after 15 minutes of ion exposure. Sample C sealed up after 30 min of Ion exposure. After final sample was sealed the samples were removed from testing chamber and transferred to lab staff for further testing.



Attached is the continual time points for test on the minute as well as a constant graph of ion levels in the test chamber. Recommended further testing with various times and concentrations of ion levels in the atmosphere.



Secondary wave of tests recommended aerosol product upon confirmation of safety review.

Upon test results data completion determine safety of using 8x20x8 containment pod for large scale control testing.

#### **PROCEDURE:**

#### **VIRUS: SARS-CoV-2**

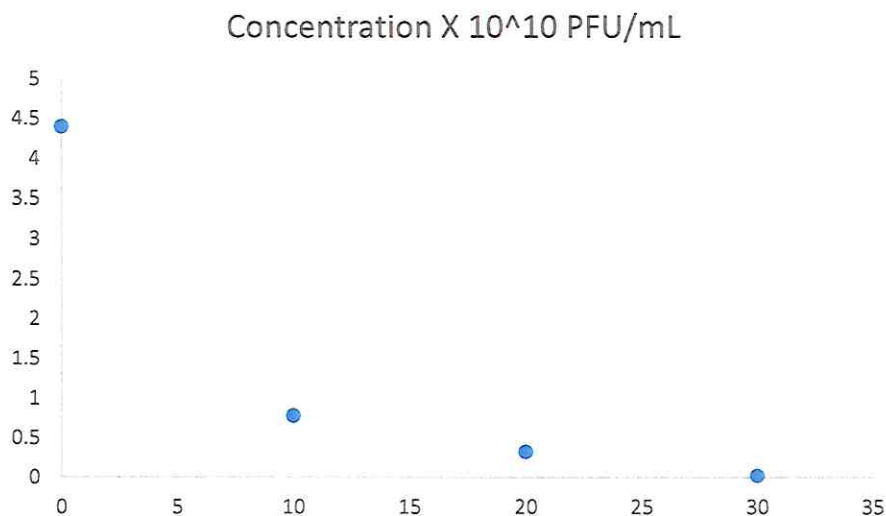
Nasopharyngeal swabs were collected on day 4 post symptom onset, placed in 2–3 mL of viral transport medium, used for molecular diagnosis, and frozen. Vero CCL-81 cells were cultured in Dulbecco minimal essential medium (DMEM) supplemented with heat-inactivated fetal bovine serum (5% or 10%) and antibiotics/antimycotics. For isolation, limiting dilution, and passage 1 of the virus, 50  $\mu\text{L}$  of serum-free DMEM was pipetted into columns 2–12 of a 96-well tissue culture plate. Then 100  $\mu\text{L}$  of clinical specimens pipetted into column 1 and serially diluted 2-fold across the plate. Then trypsinized and resuspended Vero cells in DMEM containing 10% fetal bovine serum, 2 $\times$  penicillin/streptomycin, 2 $\times$  antibiotics/antimycotics, and 2 $\times$  amphotericin B at a concentration of  $2.5 \times 10^5$  cells/mL. 100  $\mu\text{L}$  of cell suspension added directly to the clinical specimen dilutions and mixed gently by pipetting. The inoculated cultures were grown in a humidified 37°C incubator in an atmosphere of 5%  $\text{CO}_2$  and observed for cytopathic effects (CPEs) daily.

### INNOCULATION OF THE TEST CARRIER:

Sterile sealable dishes were coated with 1 mL viral suspension containing samples with a viral titer of  $4.4 \times 10^{10}$  PFU/mL crude SARS-CoV-2 virus. Using the Poisson distribution, one would determine the TCID50 value would be equivalent to roughly .7 X PFU/mL or  $3.8 \times 10^{10}$  TCID50/mL

### EFFICACY TESTING:

Viral media with a known concentration of Plaque Forming Units was applied to a sterile static dish composed of polystyrene plastic and individually sealable and exposed to bipolar ionization for a period of 10, 15, and 30 minutes. Swabs were taken of all plates and cultured by the same means as the original nasopharyngeal swab culture. Based on viral titrations it was determined that at 10 minutes 84.2 % of the virus was inactivated, at 15 minutes 92.6% of the virus was inactivated, and at 30 minutes 99.4% of the virus was inactivated.




**CONCLUSIONS/OBSERVATIONS:**

Based on the results listed above, it can be determine that hydrolysis via positively charged hydrogen ions binding to peplomers of the SARS-CoV-2 virus can render 99.4 % or viral particles are inactivated on a stagnant surface at 30 minutes. The ionization technology allows for the saturation of hemagglutinin with hydroxyl groups effectively inactivating the hemagglutinin receptors and rendering the virus ineffective and eliminating its ability to bind to and infect cells. Initial testing has demonstrated the ionizers ability to neutralize pathogen, namely SARS-CoV-2, on a static surface. Further studies are required for reproducibility testing as well as variation in environment and environmental factors.

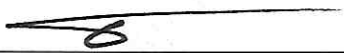
**Disclaimer:**

  
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**Dr. Dana Yee M.D Medical Director**

03 JUN 2020  
**Date**

  
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**Sam Kabbani, MS, BS, MT(ASCP), CLS  
Chief Scientific Officer, Innovative Bioanalysis**

06/03/2020  
**Date**

  
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**Albert Brockman  
Director of Biosafety, Lead Biosafety Officer**

6/02/2020  
**Date**



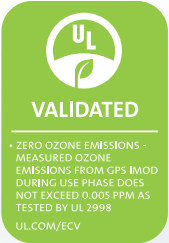
# GPS<sup>®</sup>

GLOBAL PLASMA  
SOLUTIONS



*Engineering Air for a Cleaner World™*





With over 30 patents and more than 150,000 installations worldwide using our NEEDLEPOINT BIPOLAR IONIZATION technology, also known as NPBI, GPS is truly the Indoor Air Quality (IAQ) revolutionizer.

Our proven technology delivers clean indoor air that is safe and healthy – producing neither ozone nor other harmful by-products. All our NPBI products are UL and CE approved. Through NPBI, our products purify the air by eliminating airborne Particulates, Odors and Pathogens. All this while saving you 30% on Energy consumption and lowering your carbon footprint by reducing outdoor air intake by up to 75%.

*Engineering Air for a Cleaner World™*



**GPS FACT: GPS can be installed in any system in any building...**

- Agriculture
- Airports
- Animal Care
- Arenas & Stadiums
- Banks
- Casinos
- Child Care
- Convention Centers
- Fitness
- Food Service
- Healthcare
- Hospitality
- Hospitals
- Institutional
- Manufacturing
- Office Building
- Retail
- Schools & Universities
- Senior Care
- Transportation
- Theatres
- Worship

**Truly a revolutionIZER**  
A pioneer with many innovations:

**1st**

- ... with universal power supply
- ... with auto-cleaning
- ... duct-mounted design
- ... to use carbon fiber brush needlepoint emitters
- ... with ionization bar
- ... with flexible ionization strip
- ... modular ionization bar
- ... to achieve UL 867 Ozone Standard
- ... AND ONLY to pass the RCTA DO-160 standard for aircraft
- ... to be installed on a commercial jet
- ... to be certified by FAA
- ... to be installed in commercial hand driers
- ... AND ONLY to receive UL 2998 Ozone Free Certification
- ... to receive OSPHD seismic (OSP) certification

## GPS DELIVERS P.O.P.E.



### Particle Reduction

The GPS NPBI technology reduces airborne particles (i.e., dust, pet dander, pollen) through agglomeration. The ions attach to the airborne particles. The particles are subsequently attracted to one another, effectively increasing their mass and size. The air filtration system easily captures the larger particles, increasing the capture efficiency of your HVAC system.



### Pathogen Reduction

During the GPS cleaning process the NPBI technology attacks and kills viruses, mold spores and bacteria. The ions steal away hydrogen from the pathogens, leaving them to die, and leaving you with clean and healthy indoor air.



### Odor Reduction

During the GPS cleaning process chemical, pet, cooking, and other odors are broken down into basic harmless compounds, leaving the indoor air fresh smelling and free of odor causing VOCs.



### Energy Saving

GPS' environmentally friendly cleaning process allows commercial buildings to significantly reduce the amount of outdoor air required to operate. This equates to a safer, more comfortable environment that requires up to 30% less energy to condition.

## THE GPS ADVANTAGE

	GPS NPBI	OTHER BPI	CORONA DISCHARGE	HEPA FILTERS	CARBON FILTERS	ULTRAVIOLET (UV)	UV-PCO
Produces Harmful Byproducts	None	Yes	Yes	No	No	Yes	Yes
Reduces Airborn Particles	✓	Yes	Yes	Yes	No	No	No
Destroys VOCs	✓	Yes	Yes	No	Captures	No	Yes
Kills Pathogens	✓	Yes	Yes	No	Captures	Yes	Yes
Reduces Energy Cost	30%	Yes	Yes	No	No	No	No
UL 2998 No-Ozone Certified	✓	No	No	N/A	N/A	N/A	N/A
Treats In-Room Air	✓	Yes	Yes	No	No	No	No
No Replacement Parts	✓	No	No	No	No	No	No
Auto Self-Cleaning	✓	No	No	No	No	No	No
Simple to Install	✓	No	No	No	No	No	No
Low Total Cost	✓	Yes	No	No	No	No	No

# AUTO-CLEANING NPBI

## GPS-FC48-AC™

An automatic self-cleaning, lightweight NPBI system that handles up to **4,800 CFM or 12 tons**. Designed for multiple mounting options including fan inlet, interior duct walls or floors. The composite construction allows for mounting in corrosive environments.

**UNIVERSAL VOLTAGE**

### Features

- > 400 Million + and – Ions Per cc/sec
- Universal Voltage Input (24 – 240 VAC)
- Programmable Auto-Cleaning Cycle
- Carbon Fiber Brush Emitters
- Alarm Contacts



### MAINTENANCE FREE



### Features

- > 300 Million + and – Ions Per cc/sec
- Universal Voltage Input (24 – 240 VAC)
- Programmable Auto-Cleaning Cycle
- Carbon Fiber Brush Emitters
- Alarm Contacts



**CARBON FIBER EMITTERS**

## GPS-FC24-AC™

An automatic self-cleaning, lightweight NPBI system that handles up to **2,400 CFM or 6 tons**. Designed for multiple mounting options including fan inlet, interior duct walls or floors. The composite construction allows for mounting in corrosive environments.

### APPLICATIONS

- |                      |                          |
|----------------------|--------------------------|
| • Agriculture        | • Hospitality            |
| • Airports           | • Hospitals              |
| • Animal Care        | • Institutional          |
| • Arenas & Stadiums  | • Manufacturing          |
| • Banks              | • Office Building        |
| • Casinos            | • Retail                 |
| • Child Care         | • Schools & Universities |
| • Convention Centers | • Senior Care            |
| • Fitness            | • Transportation         |
| • Food Service       | • Theaters               |
| • Healthcare         | • Worship                |

## GPS-DM48-AC™

The world's first automatic self-cleaning, duct mounted, lightweight NPBI electronic air cleaner. The maintenance free unit is designed for indoor or outdoor duct mounting and can handle up to **4,800 CFM or 12 tons**.

### SELF-CLEANING

### Features

- > 400 Million + and – Ions Per cc/sec
- Universal Voltage Input (24 – 240 VAC)
- Programmable Auto-Cleaning Cycle
- Carbon Fiber Brush Emitters
- Alarm Contacts
- 3/4 Quick-Turn Duct Adapter



**2016 IAQ GOLD AWARD WINNER**





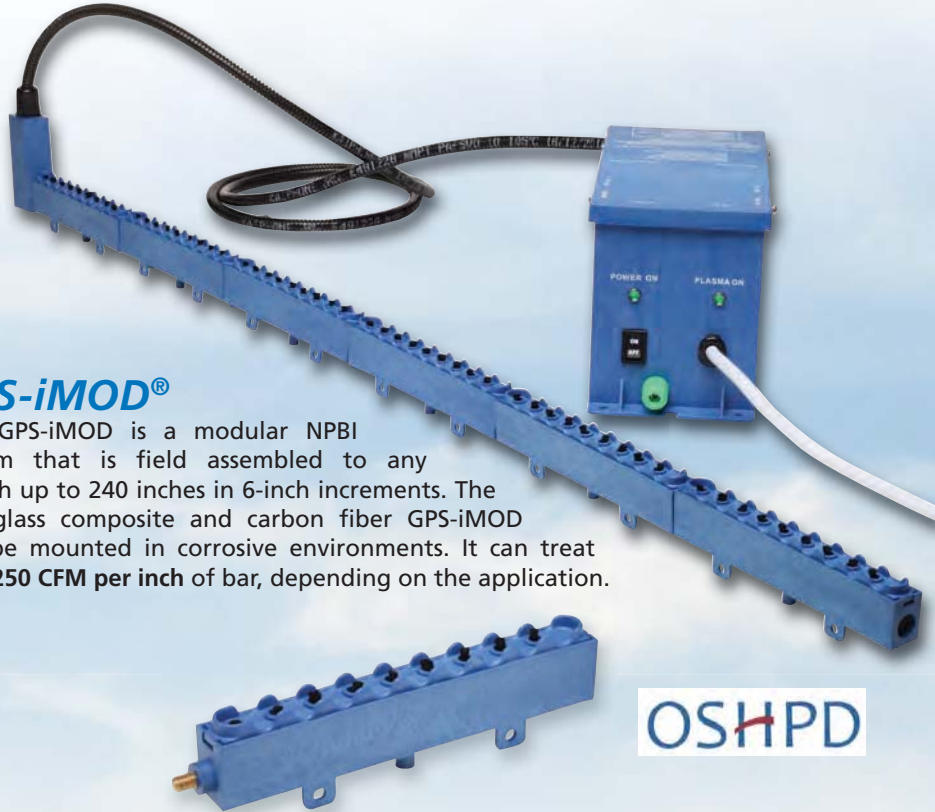
# BARS & STRIPS

## Features

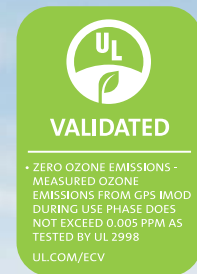
- > 140 Million + and - Ions Per Inch/cc/sec
- Universal Voltage Selector Switch
- Six HV Output Ports
- Alarm Contacts
- Illuminated On/Off Switch
- Plasma on Indication Light
- UL 2998 Ozone Free

## GPS-iMOD®

The GPS-iMOD is a modular NPBI system that is field assembled to any length up to 240 inches in 6-inch increments. The fiberglass composite and carbon fiber GPS-iMOD can be mounted in corrosive environments. It can treat 50 – 250 CFM per inch of bar, depending on the application.



OSH PD



## GPS-iRIB® 18/36

The GPS-iRIB is available in 18" and 36" lengths. They are made from a flexible chemical, heat and cold resistant Kapton® material containing a circuit with special carbon fiber ion emitters soldered into the circuit traces. This mechanism is engineered to deliver the highest level of ionization with the least amount of energy in the most compact size. **Designed for 3200 CFM or 8 tons.**

## Perfect For

- Traditional Split Systems
- Ductless Mini Splits
- Heat Pump PTACs
- Ducted Modules
- Fan Coils



## Features

- > 35 Million + and - Ions Per Foot/cc/sec
- Fold-To-Length Circuit
- Local LED Power Indication
- Integral Control Relay for BAS Interface
- Velcro® for Easy Installation
- Voltage Input 110VAC to 240VAC

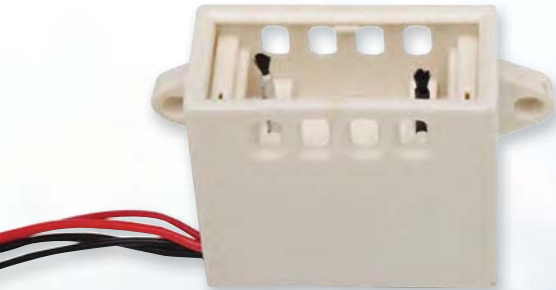


## GPS-NEMA4-OE

The GPS-NEMA4-OE is a NEMA 4X-rated fiberglass enclosure designed to house one GPS-iMOD power supply. The panel adds a superior finished look to any project while providing the required protection against foreign substances, such as water and dust, when power supplies are mounted in non-NEMA 1 rated environment.



# COMPACT NPBI



## GPS-FC-1™ / GPS-FC-2™

The GPS-FC series is designed to be mounted inside fan coils, heat pumps, PTACs, ductless mini-splits and air handlers up to **1,200 CFM or 3 tons**. Their compact size allows them to be mounted almost anywhere in just a few minutes.

### Features

- > 25 Million + and – Ions Per cc/sec
- GPS-FC-1 Powered by 110 - 120 Volts AC
- GPS-FC-2 Powered by 208 – 240 Volts AC
- Carbon Fiber Brushes
- LED Operation Status
- Carbon Fiber Brush Emitters



## GPS-FC-3-BAS™

The GPS-FC-3-BAS unit is designed to be mounted inside fan coils, heat pumps, PTACs, ductless mini-splits, and air handlers up to **3,200 CFM or 8 tons**. Its compact size and simple mounting requirements allow it to be quickly mounted almost anywhere.

### Features

- > 170 Million + and – Ions Per cc/sec
- Powered by 24 Volts AC
- Carbon Fiber Brush Emitters
- BAS Alarm Contacts
- LED Operation Status

# SENSORS & MEASUREMENTS

## GPS-iMEASURE™

The GPS-iMEASURE is the first commercially available ion detector that can be permanently mounted in the space to measure ion levels in real time and report back to a BAS.



### MONITOR IONIZATION LEVELS REMOTELY

- Auto Calibration/Auto Zero
- 0 – 1,000,000 Ions/cc

## GPS-iMEASURE-D™

The GPS-iMEASURE-D ion detector is permanently mounted in the duct downstream of any GPS ionization device. It measures ion levels in real time and reports back to a BAS. It includes three sensitivity levels: 20,000/200,000/2,000,000 ions/cc/sec that can be set based on the application and in-duct location.

### MONITOR IN-DUCT IONIZATION LEVELS

- 20,000 to 2M Ions/cc
- Input Voltage 12 to 24V AC or DC
- LED Operation Status



## GPS-iDETECT-P™

The GPS-iDETECT-P is a plenum-mounted ionization detector that confirms the output from the GPS-iMOD. The GPS-iDETECT-P provides the ability to monitor ionization status in a plenum to confirm that the ionization equipment is working properly.

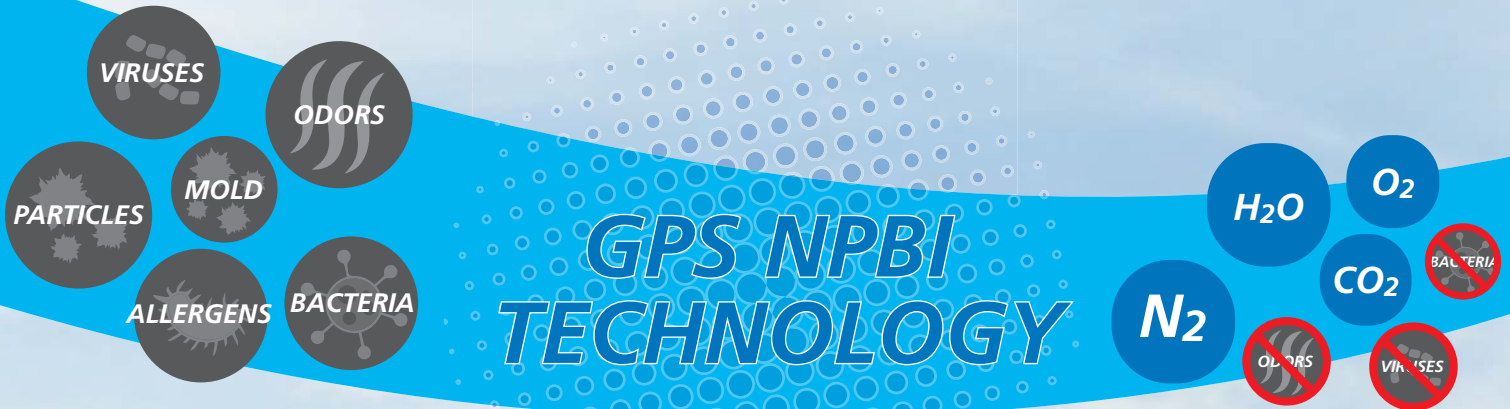


### Features

- Universal Voltage Input
- 1,000 – 200,000,000 Ions/cc (+ or -)
- 0-100% Humidity

## How Ionization Works

GPS' NPBI technology works to safely clean the air inside industrial, commercial and residential buildings. The patented technology uses an electronic charge to create a plasma field filled with a high concentration of + and - ions. As these ions travel with the air stream they attach to particles, pathogens and gas molecules. The ions help to agglomerate fine sub-micron particles, making them filterable. The ions kill pathogens by robbing them of life-sustaining hydrogen. The ions breakdown harmful VOCs with an Electron Volt Potential under twelve (eV<12) into harmless compounds like O<sub>2</sub>, CO<sub>2</sub>, N<sub>2</sub>, and H<sub>2</sub>O. The ions produced travel within the air stream into the occupied spaces, cleaning the air everywhere the ions travel, even in spaces unseen.



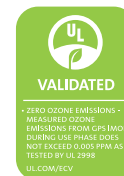
### What is an Ion you may ask?

An ion is a molecule or atom that is positively or negatively charged, meaning that it has electrons to give or needs electrons to become uncharged, thus becoming stable.

### Mother Nature's Way of Cleaning

GPS' technology generates the same ions as Mother Nature creates with lightning, waterfalls, and ocean waves. Mother Nature uses energy to break apart molecules. It is nature's way of cleansing the air naturally and creating a healthy environment. The only difference is that GPS' technology does it without forming ozone or other harmful byproducts.

*GPS' NPBI technology has been certified by UL 867 and UL 2998 to be ozone free.*



### 3rd Party Testing Summary

Pathogen	Time in Chamber	Kill Rate	Test Agency
Tuberculosis	60 minutes	69.09%	EMSL
Clostridium Difficile	30 minutes	86.87%	EMSL
Norovirus	30 minutes	93.50%	ATS Labs
MRSA	30 minutes	96.24%	EMSL
Staphylococcus	30 minutes	96.24%	EMSL
Mold Spores	24 hours	99.50%	GCA
E.coli	15 minutes	99.68%	EMSL
Legionella	30 minutes	99.71%	EMSL

**Airborne Mold Spores  
Reduced by 95%**



Owned by Accuratus Lab Services

## GPS PRODUCT CHART

AUTO-CLEANING LINE	VOLTAGE	CFM RATING	IONS/cc/sec
GPS-FC24-AC	24-240 VAC	2,400	> 300 million
GPS-FC48-AC	24-240 VAC	4,800	> 400 million
GPS-DM48-AC	24-240 VAC	4,800	> 400 million
COMPACT LINE	VOLTAGE	CFM RATING	IONS/cc/sec
GPS-FC-1	110-120 VAC	1,200	> 25 million
GPS-FC-2	208-240 VAC	1,200	> 25 million
GPS-FC-3-BAS	24 VAC	3,200	> 170 million
BARS & STRIPS LINE	VOLTAGE	CFM RATING	IONS/cc/sec
GPS-iMOD	24-240 VAC	50-250 CFM/inch	> 140 million/in
GPS-iRIB-18	110-240 VAC	3,200	> 35 million/ft
GPS-iRIB-36	110-240 VAC	3,200	> 35 million/ft

### GPS FACT: Aviation Application

GPS' technology is the only active air purification system that has been designed and approved to operate in commercial and private aircraft. Aviation applications require passing the stringent RTCA DO-160 test proving the technology does not generate EMF, line noise or interfere with the avionics in any way. This is important to note because GPS' technology is used in many healthcare applications and will not cause interference with the imaging equipment.



*Engineering Air for a Cleaner World™*

**980-279-5622**

**www.GlobalPlasmaSolutions.com**

*All technical information and advice given here are based on GPS previous experiences and/or test results. GPS gives this information to the best of its knowledge but assumes no legal responsibility. Customers are asked to check the suitability and usability in the specific application, since the performance of the product can only be judged when all necessary operating data are available. The above information is subject to change.*

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# RAP

ROOM AIR PURIFIER



**PRICE** | TERMINAL UNITS

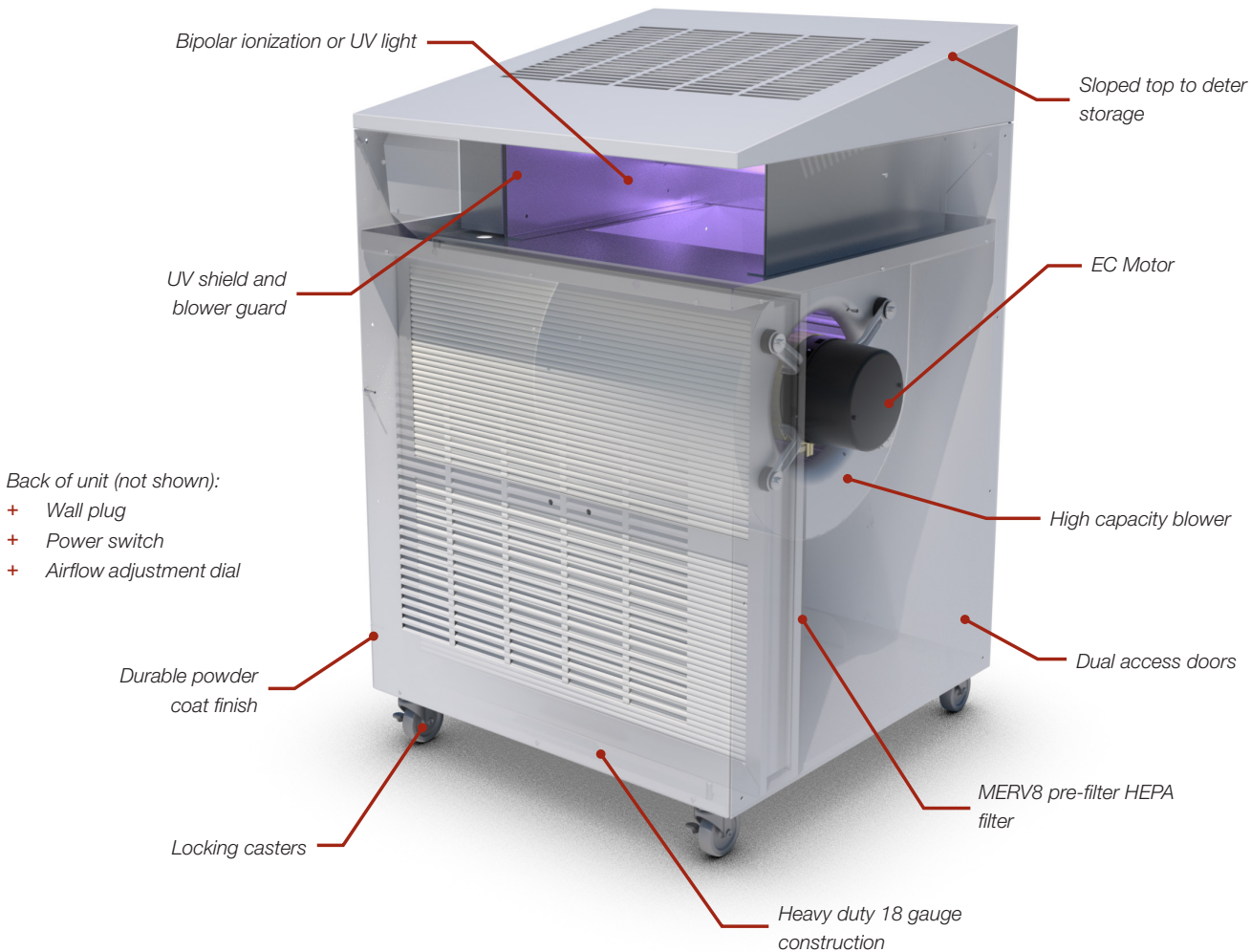


# RAP

## Room Air Purifier

In today's world, indoor air quality is an increasing concern and the ability to provide clean air to room occupants is more important than ever. Most commercial spaces focus primarily on cost and thermal comfort while air quality is based on minimum requirements, which can result in lower than optimal air quality.

The Room Air Purifier (RAP) is an ideal option for improving indoor air quality wherever and whenever you need it, particularly in high density areas like office spaces, classrooms, fitness centers, retail and restaurants. It is designed to continuously cycle air through a HEPA filter, eliminating unwanted dust particles, germs and contaminants.



The CDC (Centers for Disease Control and Prevention) recommends using portable high-efficiency air filtration systems for the safe reopening of schools and office buildings, with additional consideration to include UVGI (ultraviolet germicidal irradiation) as a supplemental technique to inactivate potential airborne viruses of common occupied spaces.<sup>1</sup>

ASHRAE (American Society of Heating, Refrigeration and Air Conditioning Engineers), the primary US organization responsible for providing building standards and guidelines related to ventilation of commercial buildings, also recommends using portable high-efficiency air filtration (HEPA) systems to protect against the SARS-CoV-2 virus in high density commercial and institutional spaces.<sup>2</sup>

<sup>1</sup> <https://www.cdc.gov/coronavirus/2019-ncov/community/office-buildings.html>

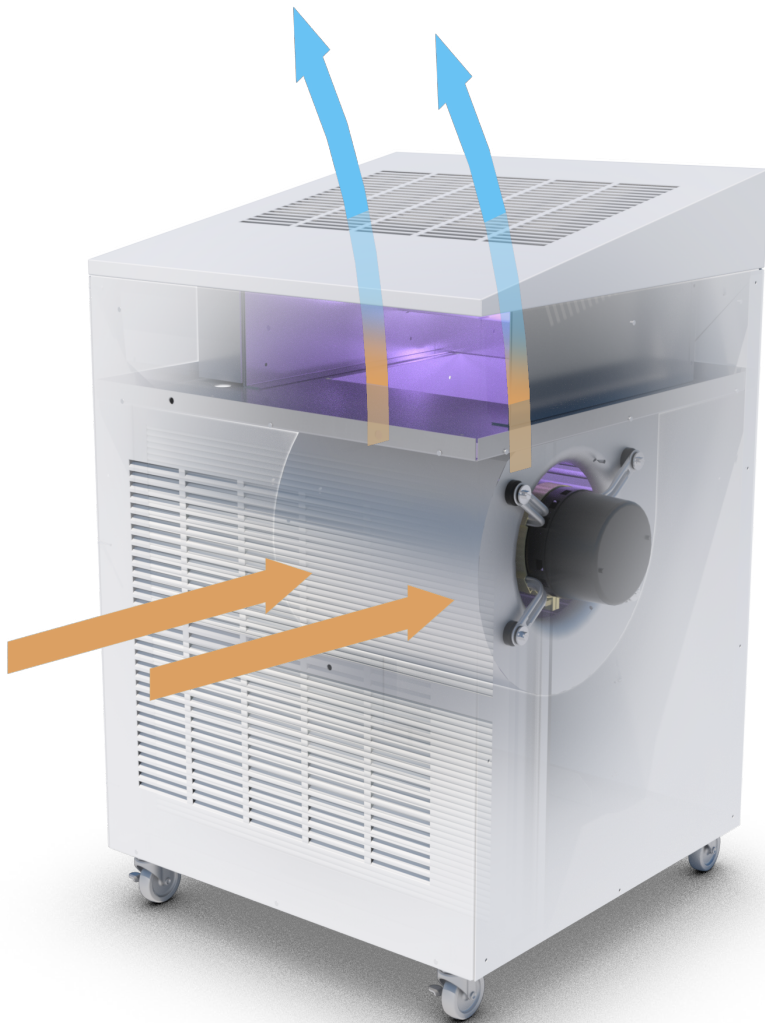
<sup>2</sup> ASHRAE Position Document on Infectious Aerosols, April 2020

# RAP

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### ENGINEERED PERFORMANCE

The RAP uses an internal fan to draw air into the return, through a HEPA filter, and then send the air back into the space through a grille. With the fan continually running, the air in the occupied space is consistently filtered to provide purified, clean air.



### TYPICAL APPLICATIONS

The Room Air Purifier (RAP) is an ideal option for any indoor spaces where additional filtration is desired, including office spaces, classrooms, hotels and more.

The RAP improves indoor air quality with air. It is designed to continuously cycle air through a HEPA filter, eliminating unwanted dust particles, germs and contaminants.

#### FEATURES

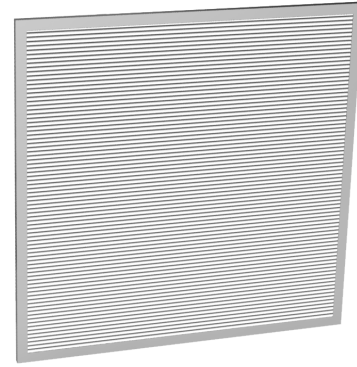
- + 150-600 cfm
- + Easily removable and replaceable HEPA filter
- + Quiet operation
- + MERV 8 pre-filter
- + Energy efficient smart EC motor
- + Adjustable fan speed
- + 115 V power cord
- + Antimicrobial powder coat finish
- + Casters provided for ease of mobility

#### OPTIONS

- + UV light treatment
- + Bi-polar ionization

### FILTERS

The air entering the RAP is pre-filtered with a MERV 8 filter. The air then passes through a HEPA filter with a gasket seal on the filter frame to create a reliable seal to prevent filter bypass. The HEPA filter has a minimum efficiency of 99.99% at 0.3µm particle size.



### UV LIGHT

The UV light provide 360-degrees of high UV-C intensity and easily mount to the exterior of supply, return or exhaust plenums or ducts, making it ideal for disinfecting air streams in HVACR equipment. Widely used in hospitals and institutional applications, UV-C energy (254nm) also lowers the cost of maintaining and operating HVAC equipment.



### BIPOLAR IONIZATION

The plasma air ionizer proactively purifies indoor air by producing positive and negative oxygen ions to neutralize harmful pollutants and odors.

Testing has proven the effectiveness of plasma air ionization technology in the reduction of MS2 Bacteriophage, a surrogate for SARS-CoV-2 (COVID-19), in indoor environments.<sup>1</sup>



<sup>1</sup> <https://blog.plasma-air.com/plasma-air-ionization-proven-to-reduce-coronavirus-surrogate-ms2-bacteriophage-by-99-in-independent-spanish-testing/>

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Room Air Purifier is simple to install, operate, and move around the space as needed.



## **PRICE** | **TERMINAL UNITS**

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