

# GPS-DM48-AC™

## Duct Mounted Auto-Cleaning Needlepoint Bipolar Ionization System

### Product Description

The GPS-DM48-AC is the world's first auto-cleaning needlepoint bipolar ionization system designed for indoor or outdoor duct mounting.





### Standard Features

Universal voltage input, integral display, programmable cleaning cycle, integral alarm contacts, 3/4 quick turn duct adapter, 6' of watertight flexible conduit, carbon fiber brushes.\*

\*Life cycle testing shows no mechanical degradation of the carbon fiber brushes due to repeated cleaning cycles



### Benefits

-  **P**article Reduction and Smoke Control
-  **O**dors Neutralized by destroying VOCs
-  **P**athogens Killed (Bacteria, Viruses, Mold), Helps to Control Allergens/ Asthma\*, Prevents Dirty Sock Syndrome
-  **E**nergy Savings of 30% by Reducing Outdoor Air Intake by up to 75%, reduces pressure loss by keeping coils clean without expensive UV system, and requires No Maintenance!

\*These statements are based on numerous customer testimonials and have not been evaluated by the FDA

### Specifications

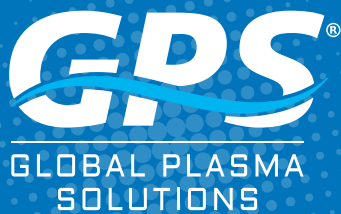
Input Voltage	24VAC to 240VAC
Power	12 Watts
Frequency	50/60HZ
Total Ion Output	>400M ions/cc/sec
Airflow Capacity	4,800 CFM or up to 12 tons
Temperature/Humidity	-20° - 140°F / 0 - 100% RH
Unit Dimensions/Weight	3.75" Dia. x 7"L / 2.31 lbs
Electric Approvals	UL, cUL, CE
Alarm Contact Rating	250VAC / 1 A
Compliance & Certifications	UL 867, OSHPD Seismic (OSP), IAQP

### Installation

- Designed for use on ducts
- Weathertight seals for external duct mounting

### Commercial Applications

- Schools and Universities
- Arenas and Stadiums
- Transportation Hubs
- Office Buildings
- Manufacturing
- Food Service
- Animal Care
- Institutional
- Senior Care
- Healthcare
- Hospitality
- Child Care
- Worship
- Theatre



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# GPS-iMOD<sup>®</sup>

## Modular Needlepoint Bipolar Ionization Air Purification System





### Product Description

The patented GPS-iMOD is a modular needlepoint bipolar ionization system that is field assembled to any length required up to 240 inches in 6-inch increments. The composite and carbon fiber construction allows the GPS-iMOD to be mounted in corrosive environments.

### Standard Features

**Power Supply:** Voltage Selector Switch, Illuminated On/Off Switch, Plasma On Indication Light, Six HV Output Ports, Alarm Contacts, Auxiliary Terminals for connection of an optional GPS-iDETECT-P™ Ion Sensor.  
**GPS-iMOD Bar:** 6" Sections, Nine Brushes per Section, up to 240" Total Length, Magnets for Easy Mounting.

### Benefits

-  **Particle Reduction and Smoke Control**
-  **Odors Neutralized by destroying VOCs**
-  **Pathogens Killed (Bacteria, Viruses, Mold), Helps to Control Allergens/ Asthma\*, Prevents Dirty Sock Syndrome**
-  **Energy Savings of 30% by Reducing Outdoor Air Intake by up to 75%, reduces pressure loss by keeping coils clean without expensive UV system, and requires No Maintenance!**

\*These statements are based on numerous customer testimonials and have not been evaluated by the FDA

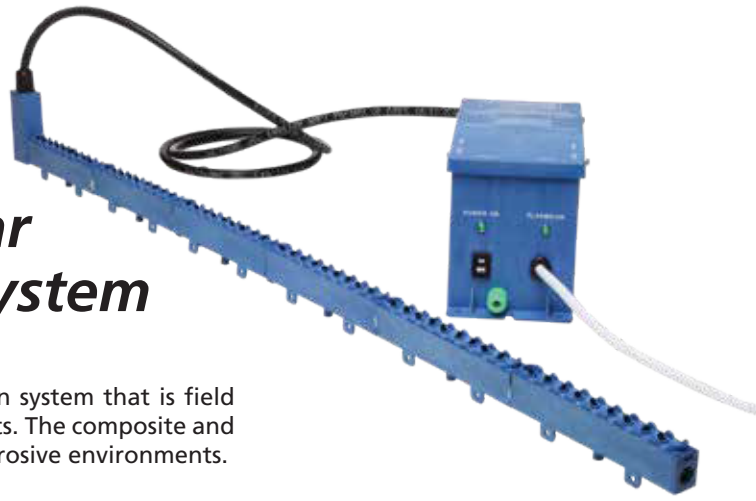
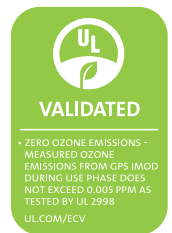
### Specifications

<b>Input Voltage</b>	24/120/208-240VAC
<b>Amps</b>	0.5A/0.12A/0.065A
<b>Temperature Range</b>	-40°F to 200°F
<b>Humidity Range</b>	0 - 100% RH
<b>Frequency</b>	50/60HZ
<b>Output Voltage</b>	5.0kV RMS
<b>Output Frequency</b>	50/60Hz
<b>Ion Output</b>	>140M ions/cc/sec per inch of bar
<b>Power Entry</b>	UL Listed, Plenum Rated Line Cord with 3 Prong Plug

<b>Electrical Listings</b>	UL, cUL, CE
<b>Compliance &amp; Certifications</b>	UL 2998, UL 867, IAQP, OSHPD Seismic (OSP)
<b>Power Unit Dimensions</b>	9.0"L x 3.25"W x 4.75"H
<b>Power Unit Weight</b>	4.63 lbs
<b>Bar Weight</b>	0.24 lbs per 6" section
<b>Bar Section Dimensions</b>	6.0"L* x 0.75"W x 1.6"H
*Length = 6.0" x iMOD Quantity + 1.20"	

### Commercial Applications

- Schools and Universities
- Arenas and Stadiums
- Office Buildings
- Manufacturing
- Transportation
- Food Service
- Animal Care
- Institutional
- Healthcare
- Hospitality



**GPS<sup>®</sup>**  
GLOBAL PLASMA  
SOLUTIONS

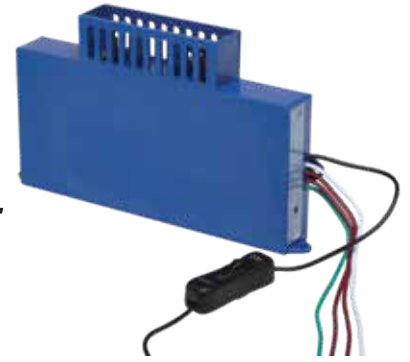
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# GPS-FC24-AC™

## 2,400 CFM Auto-Cleaning Needlepoint Bipolar Ionization System Up to 6 ton.



### Product Description





The GPS-FC24-AC is an auto-cleaning, needlepoint bipolar ionization system designed to handle up to 2,400 CFM. The unit is designed for multiple mounting options including fan inlet, interior duct wall or interior duct floor. The composite and carbon fiber construction allows the product to be mounted in corrosive environments.

### Standard Features

Universal voltage input, in-line On/Off switch, programmable auto-cleaning cycle, plasma on indication light, alarm contacts, magnets for ease of installation and replaceable carbon fiber brush emitters.\*

\*Life cycle testing shows no mechanical degradation of the carbon fiber brushes due to repeated cleaning cycles

### Benefits

-  Particle Reduction and Smoke Control
-  Odors Neutralized by destroying VOCs
-  Pathogens Killed (Bacteria, Viruses, Mold), Helps to Control Allergens/ Asthma\*, Prevents Dirty Sock Syndrome
-  Energy Savings of 30% by Reducing Outdoor Air Intake by up to 75%, reduces pressure loss by keeping coils clean without expensive UV system, and requires No Maintenance!

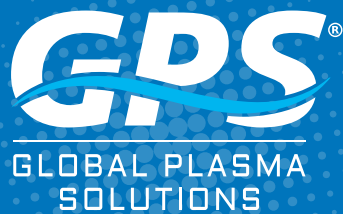
\*These statements are based on numerous customer testimonials and have not been evaluated by the FDA

### Specifications

Input Voltage	24VAC to 240VAC
Amps	0.17-0.017A operating/0.33-0.03A cleaning cycle
Power	4 Watts operating / 8 Watts cleaning cycle
Frequency	50/60HZ
Total Ion Output	> 300 Million ions/cc/sec
Airflow Capacity	0 to 2,400 CFM or up to 6 tons
Temperature/Humidity	-20°F to 200°F / 0 - 100% RH
Unit Dimensions/Weight	7.9"L x 1.1"W x 5.0"H / 1.25 lbs
Electrical Listings	UL, cUL, CE
Alarm Contact Rating	250VAC / 1A
Compliance & Certifications	UL 867, OSHPD Seismic (OSP), IAQP

### Commercial Applications

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# GPS-FC48-AC™

## 4,800 CFM Auto-Cleaning Needlepoint Bipolar Ionization System Up to 12 Ton



### Product Description





The GPS-FC48-AC is an auto-cleaning, no maintenance, needlepoint bipolar ionization system designed to handle up to 4,800 CFM. The unit is designed for multiple mounting options including fan inlet, interior duct wall or interior duct floor. The all-composite and carbon fiber construction allows the product to be mounted in corrosive environments.

### Standard Features

Universal voltage input, in-line On/Off switch, programmable auto-cleaning cycle, plasma on indication light, alarm contacts, magnets for ease of installation and replaceable carbon fiber brush emitters.\*

\*Life cycle testing shows no mechanical degradation of the carbon fiber brushes due to repeated cleaning cycles

### Benefits

-  Particle Reduction and Smoke Control
-  Odors Neutralized by destroying VOCs
-  Pathogens Killed (Bacteria, Viruses, Mold), Helps to Control Allergens/ Asthma\*, Prevents Dirty Sock Syndrome
-  Energy Savings of 30% by Reducing Outdoor Air Intake by up to 75%, reduces pressure loss by keeping coils clean without expensive UV system, and requires No Maintenance!

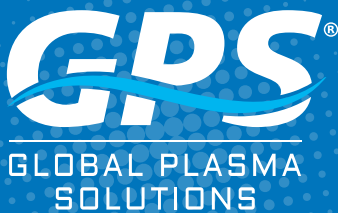
\*These statements are based on numerous customer testimonials and have not been evaluated by the FDA

### Specifications

Input Voltage	24VAC to 240VAC
Amps	0.41A to 0.041A
Power	10 Watts
Frequency	50/60HZ
Total Ion Output	> 400 Million ions/cc/sec
Airflow Capacity	0 to 4,800 CFM or up to 12 tons
Temperature/Humidity	-20°F to 200°F / 0-100% RH
Unit Dimensions/Weight	11.1"L x 1.84"W x 3.52"H / 1.32 lbs
Electrical Listings	UL, cUL, CE
Alarm Contact Rating	250VAC/ 1A
Compliance & Certifications	UL 867, OSHPD Seismic (OSP), IAQP

### Commercial Applications

- Schools and Universities
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A WHITE PAPER

# GPS Reports on Pathogen Testing



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Member ASHRAE, SSPC 62.1, TRG4-IAQP, TC 2.3 and ICC

Global Plasma Solutions, Inc.

March 1, 2020



## **Pathogen Testing**

GPS has invested substantial resources for independent testing to confirm kill rates of various pathogens using needlepoint bipolar ionization technology. Tests were conducted to measure the kill rates of

1. **Mycobacterium terrae (Tuberculosis surrogate)** - M. terrae is commonly used as a surrogate test for Mycobacterium tuberculosis as it demonstrates similar physical characteristics and is slightly more resistant but is far less dangerous.
2. **Clostridium difficile (C. diff)** – also known as Clostridioides difficile and often referred to as C. difficile or C. diff, is a bacterium that can cause symptoms ranging from diarrhea to life-threatening inflammation of the colon.
3. **Feline calicivirus (human Norovirus surrogate)** – Feline calicivirus (FCV) and human noroviruses belong to the same viral family, Caliciviridae.
4. **Methicillin Resistant Staphylococcus Aureus (MRSA)** - Methicillin-resistant Staphylococcus aureus infection is caused by a type of staph bacteria that's become resistant to many of the antibiotics used to treat ordinary staph infections.
5. **Escherichia coli (E.coli)** - E. coli are a large and diverse group of bacteria.
6. **Legionella pneumophila** - The bacterium Legionella pneumophila is the principal etiologic agent of Legionnaires' disease.
7. **Mold** - The most common indoor molds are Cladosporium, Penicillium, and Aspergillus.

## **Summary Results of GPS' Needlepoint Ion Technology**

Testing at several testing agencies produced following results:

<b>Pathogen</b>	<b>Test Time</b>	<b>Kill Rate</b>	<b>Test Agency</b>
<b>Tuberculosis</b>	60 minutes	69.09%	EMSL
<b>Clostridium difficile</b>	30 minutes	86.87%	EMSL
<b>Norovirus</b>	30 minutes	93.50%	ATS Labs
<b>MRSA</b>	30 minutes	96.24%	EMSL
<b>E.coli</b>	15 minutes	99.68%	EMSL
<b>Legionella</b>	30 minutes	99.71%	EMSL
<b>Mold Spores</b>	24 hours	99.50%	GCA

## **Industry Wide Testing**

Tests have been conducted by numerous parties throughout the world to measure the efficacy of bipolar ionization to kill harmful pathogens. Sharp Corporation conducted a series tests and produced a detailed compilation of lab results of bipolar ionization effects on various pathogens.

Pathogen	Tests/Results	Organization	Overview	Date
<b>H1N1 human Influenza Virus</b>	1m <sup>3</sup> box Time: 25 minutes <b>99.7% reduction</b>	Kitasato Institute Medical Center Hospital, Japan	Influenza that infects humans	2004
<b>H5N1 Avian Influenza Virus</b>	1m <sup>3</sup> box Time: 10 minutes <b>99% reduction</b>	Retroscreen Virology Ltd., UK Prof. John Oxford	Influenza that infects birds	2008
<b>Feline Coronavirus</b>	1m <sup>3</sup> box Time: 35 minutes <b>99.7% reduction</b>	Kitasato Institute Medical Center Hospital, Japan	Feline infectious peritonitis virus	2004
<b>Coxsackie Virus</b>	One-pass test Time: 3.3 seconds <b>98.9% reduction</b>	Kitasato Research Center of Enviro. Sciences, Japan	Virus causing summer illness	2002
<b>Polio Virus</b>	One-pass test Time: 3.3 seconds <b>98.9% reduction</b>	Kitasato Research Center of Enviro. Sciences, Japan	Virus causing infant paralysis	2002
<b>SARS Virus</b>	One-pass test Time: 3.3 seconds <b>73.4% reduction</b>	Retroscreen Virology Ltd., UK Prof. John Oxford	Virus of SARS	2005

Source: [https://global.sharp/pci/en/certified/pdf/petodor\\_01.pdf](https://global.sharp/pci/en/certified/pdf/petodor_01.pdf)

# Application of Air Ionization

## Needlepoint Bi-Polar Ionization v/s UVC

CHEMICAL	Bi-polar Ionization	UVC Light
Replacement Interval?	None ★	Annually
Produces Detectable Ozone?	No	No
Kill Mold, Bacteria and Virus?	Yes	Yes
Kills Pathogens in the Space?	Yes ★	No
Controls Odors?	Yes ★	No
Reduces Particulates?	Yes ★	No
Contains Mercury?	No ★	Yes
Electrodes Fragile?	No ★	Yes
Shock Resistant	Yes ★	No

Hazardous Disposal Req'd    No            Yes

*Note: Cleans entire coil depth, not just "line of sight".*



## % of VIRUS CONTROLLED BASED ON TECHNOLOGY<sup>1</sup>

MERV Rating	Filter Only	Filter+UVC***	Filter + Ionization*, **
6	6.2%	10%	34%
7	7%	12%	61%
8	11%	19%	84%
10	12%	35%	89%
13	46%	84%	97%
15	71%	97%	99%
16	76%	98.80%	99.90%
17 (HEPA)	99.90%	99.99%	99.999%

\*Ionization increases the filter efficiency 4-5 MERV levels

\*\*Does not take into account ionization kills in the space and on surfaces

\*\*\*UVC does not effectively kill airborne pathogens in high RH conditions<sup>2</sup>

2. ASRHAE Technical Paper on Airborne Infectious Diseases

1. 2009 EPA Tech Paper