

Singapore Projects:



Ascent 2 Sciences Park Drive



ISEAS-Yusof Ishak Institute
(National University of Singapore)



Equinix SG3



Raffles Hospital



KK Woman &
Children Hospital



Avago Technologies



JTC CleanTech Two



OUE Bayfront



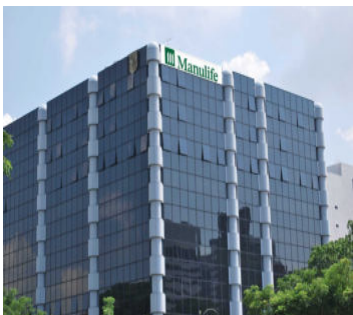
OUE Downtown



Mandarin Galley



Trinity Christian Centre



Manulife



Ikea Tampines



Amphenol FCI
Connectors



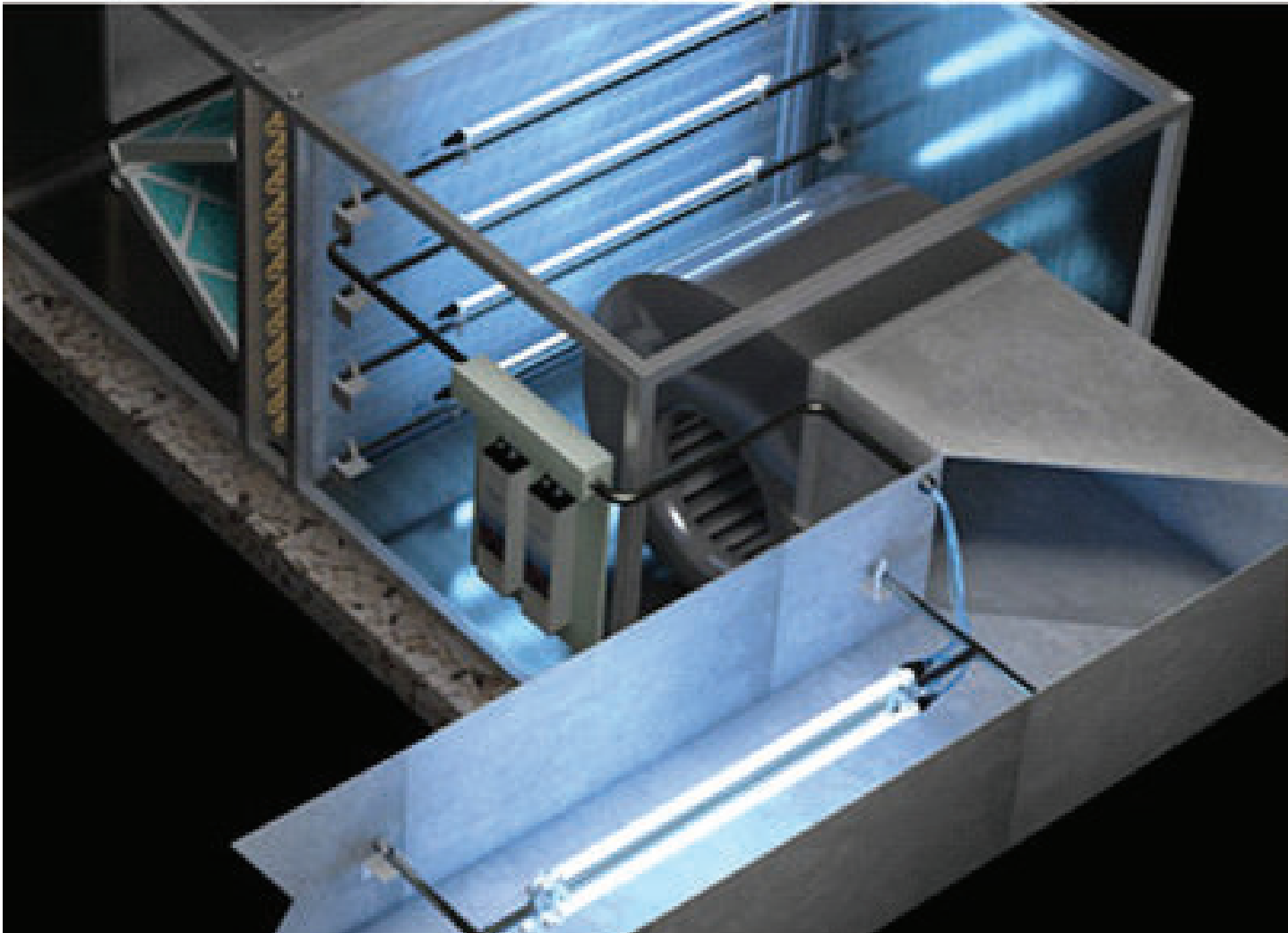
Singapore Botanic Garden
(National Parks Boards)



FRESH-AIRE UV®



Commercial Series
UV Light Disinfection



AIRWAVE QUICKER CLEANER AIR

UVC the Solution to your Bacteria, Germs, Viruses, Mold and Fungi Problem



Sole Distributor for ASEAN

Airwave Pte Ltd

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Satisfied Customers:

Airwave has installed the Fresh-Aire UV Systems across the 2 buildings.

This product is highly effective at eliminating mould, bacteria and viruses whilst also maintaining cooling coil cleanliness and maintenance frequency.

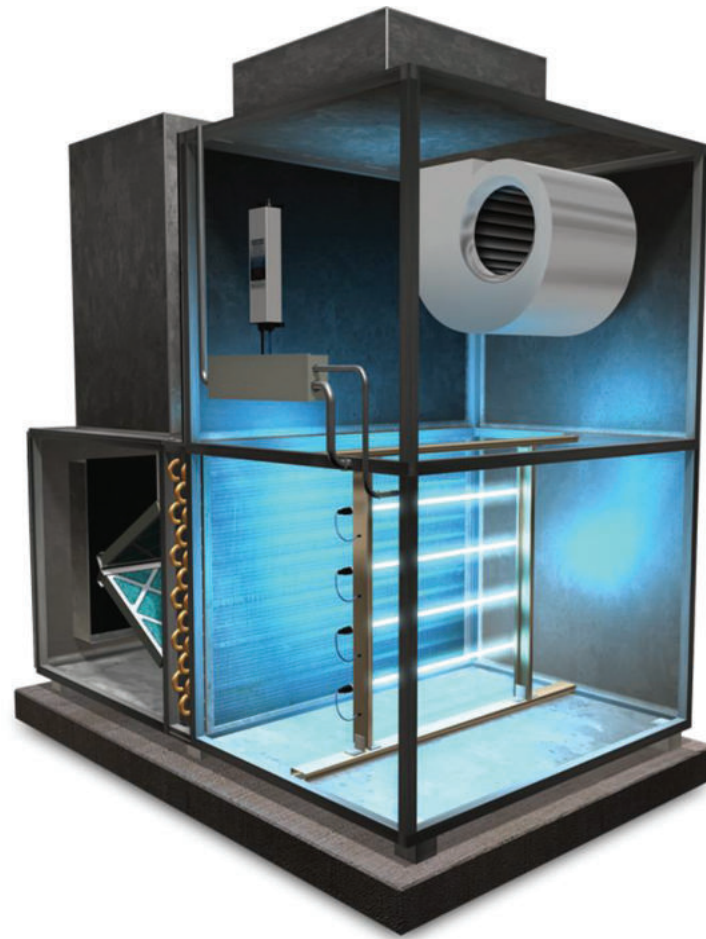


JTC CleanTech Two 



Equinix SG3

UVC Germicidal Lamp (Made In U.S.A) the Solution to Your Bacteria, Germs, Mould and Fungi Problems In The AHUs



Heating, Refrigerating, and Air-conditioning Engineers (ASHRAE) 62.1, *Ventilation for Acceptable indoor Air Quality*, allows for reduced outdoor air requirements when an 'air-cleaning' system is used to remove gaseous airborne contaminants in the re-circulated indoor air. Reducing outdoor air and the costs for conditioning it, promise significant energy savings says Dean Tompkins, PhD, P.Eng., an air purification and IAQ consultant, and past chair of the ASHRAE Technical Committee 2.3,

UV-C increases HVAC coil efficiency

UVGL is an established technology for both surface and airborne disinfection in HVAC systems. The technology works by scrambling the DNA of micro-organisms-like mould, bacteria, viruses, and allergens- that prevents them from reproducing. The UVGI lights are typically positioned downstream facing the coils in air-conditioning systems.

Although effectiveness depends on exposure time and micro-organism type, all viruses, bacteria, mould, and other microbes are destroyed by UVGI light. Microbial growth affects HVAC system efficiency by fouling interior surfaces. Biological contaminants adhere to HVAC coils, which offer ideal environments for microbial growth. If left unchecked, microbial growth can coat air conditioning coils with multiple layers. This hinders the heat-transfer process and increases static pressure, which causes longer HVAC system run times to satisfy set-point temperatures.

Keeping coils clean might be considered a maintenance and IAQ expense, but it pays back in energy efficiency. Small amounts of coil surface dirt, debris or biological growth can significantly decrease operating efficiency.

Ultraviolet germicidal irradiation (UVGI) is an established technology for both surface and airborne disinfection in HVAC systems. The technology uses ultraviolet (UV) light to scramble the DNA of micro-organisms- such as mould, bacteria, viruses, and allergens- and prevents them from reproducing. The UVGI lights are typically positioned downstream in an air handling unit (AHU) facing the coils.

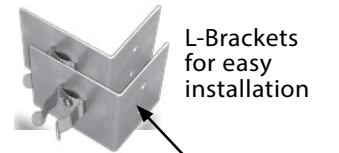
Florida Hospital, an Orlando-based healthcare system with more than 2800 beds in locations throughout the state, documented the maintenance-reducing effects of UVGI installed in air-handling units (AHUs). The facility's chief mechanical engineer (CME) Firouz Keikavousi, suggests use of UVGI improved static pressure, air velocity, and temperature in a test HVAC system.

FRESH-AIRE UV®

COMMERCIAL SERIES

Standard Commercial UV Light Kit

This system is designed to save energy and maintenance costs associated with commercial HVAC. A biofilm (mold on coils) of only 0.002" can reduce efficiency by 37%! Ultraviolet germicidal irradiation (UVGI) is the most cost-effective and practical solution. The Standard Commercial UV System from Fresh-Aire UV® offers easy and flexible installation. It includes an advanced multi-voltage water-resistant power supply. All parts (except lamps) are covered by a lifetime warranty. It also improves indoor air quality by sterilizing airborne bacteria, viruses, and allergens.



Lifetime water-resistant lamp connector

2 Lamps to 1 UV Power Supply (1 system)

18, 24, 32, 46, 60 Inch UV-C Lamps Available

1 Lamp to 1 UV Power Supply (1 system)

FEATURES

- UV-C light irradiates coil & air handler interior
- Single or multi-lamp configuration
- High quality water-resistant lamps
- Water-resistant power supply
- Normal or high output lamp(s)
- Lifetime warranty on all parts except lamp(s)
- Includes 10' cable & mounting hardware
- Optional Teflon® safety coating

BENEFITS

- Kills mold, bacteria, and viruses in the HVAC system
- Saves energy by keeping components cleaner
- Lowers maintenance costs – reduced required cleanings
- Reduces worker exposure to dangerous chemicals
- Cost effective



Lifetime water-resistant power supply

Optional Items:

UV-C Radiometer

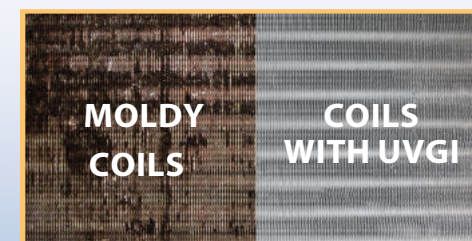
Installation: This device is used to monitor the microwatt UVC intensity ($\mu\text{w}/\text{cm}^2$) of a Fresh-Aire UV lamp (or multiple lamp installation) at start up and throughout the useful life of the lamp(s).

Design it Right

Our free BlueCalc™ service/software makes system configuration & ROI estimation easy.

Factory Enclosed UV Power Supply with Local UV Control Panel

Optional BMS interface card with Fault Signal. It can also install with BMS Commands Start, Stop, Run Status & Fault Status as optional item.



UVGI suppresses microbial growth on HVAC coils and surrounding areas



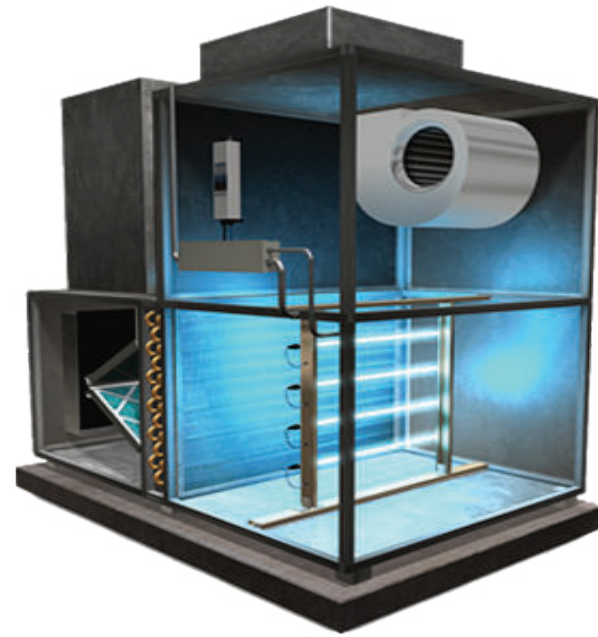
2 Year Lamp High Output (18,000 hrs)



FRESH-AIRE UV[®]

COMMERCIAL SERIES

Installation of Factory Non Enclosed Ballast in Local UV Control Panel



Factory Non Enclosed UV Ballast in Local UV Control Panel

Optional BMS interface card with Fault Signal.

It can also install with BMS Commands Start, Stop, Run Status & Fault Status as optional item.

Installation of UV Lamps inside the AHU Chamber



System Configuration

1. Determine the dimensions of the coils or area to be irradiated.
2. Use the following guidelines to estimate the number of lamps needed for proper coverage.

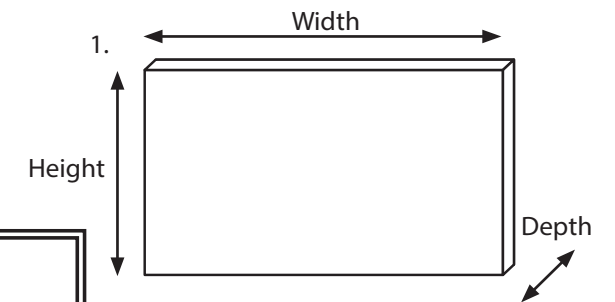
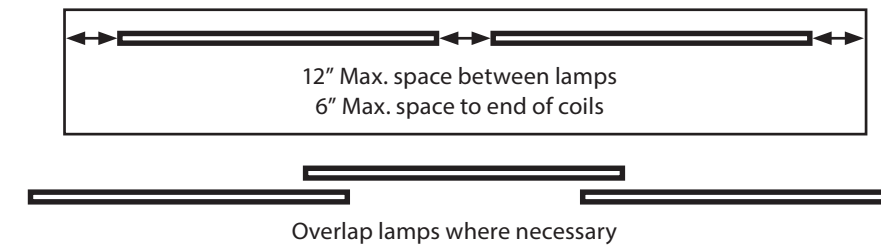
UV Lamp Configuration Guidelines

- Maximum germicidal effectiveness is within an 18" radius from UV lamp center axis
- The optimal distance between UV lamp(s) and the irradiated surface is 12"
- The distance between stacked UV lamps should not exceed 35"
- The distance between end to end UV lamps should not exceed 12"
- The distance of UV lamp ends to the edge of irradiated surface should not exceed 6"

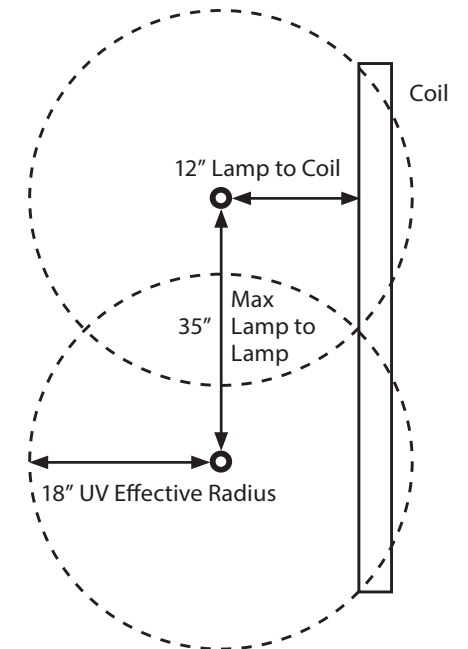
Fresh-Aire UV offers a free system configuration consultation service for commercial projects. Contact Fresh-Aire UV for details.

3. Before attaching the L-Brackets for mounting use the Optimal Irradiation Distance and Lamp Spacing diagrams to confirm that when installed the UV Lamps will be positioned properly.

Lamp Spacing

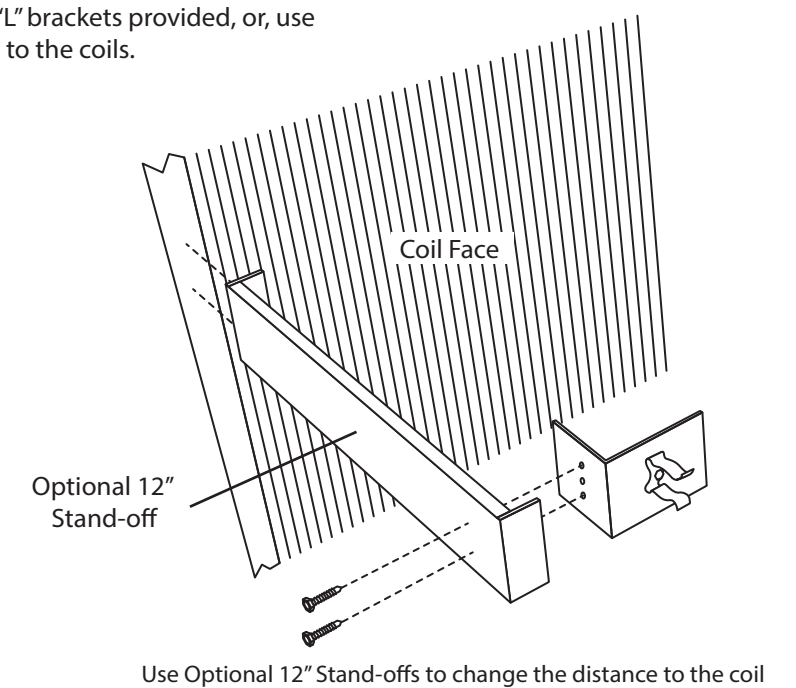
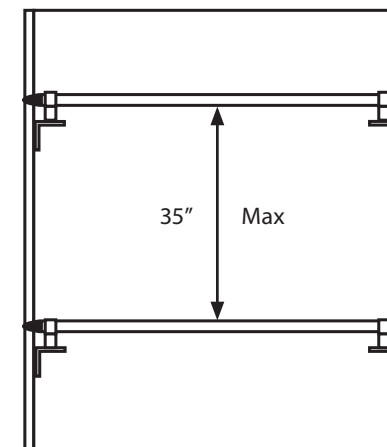


Optimal Irradiation Distance

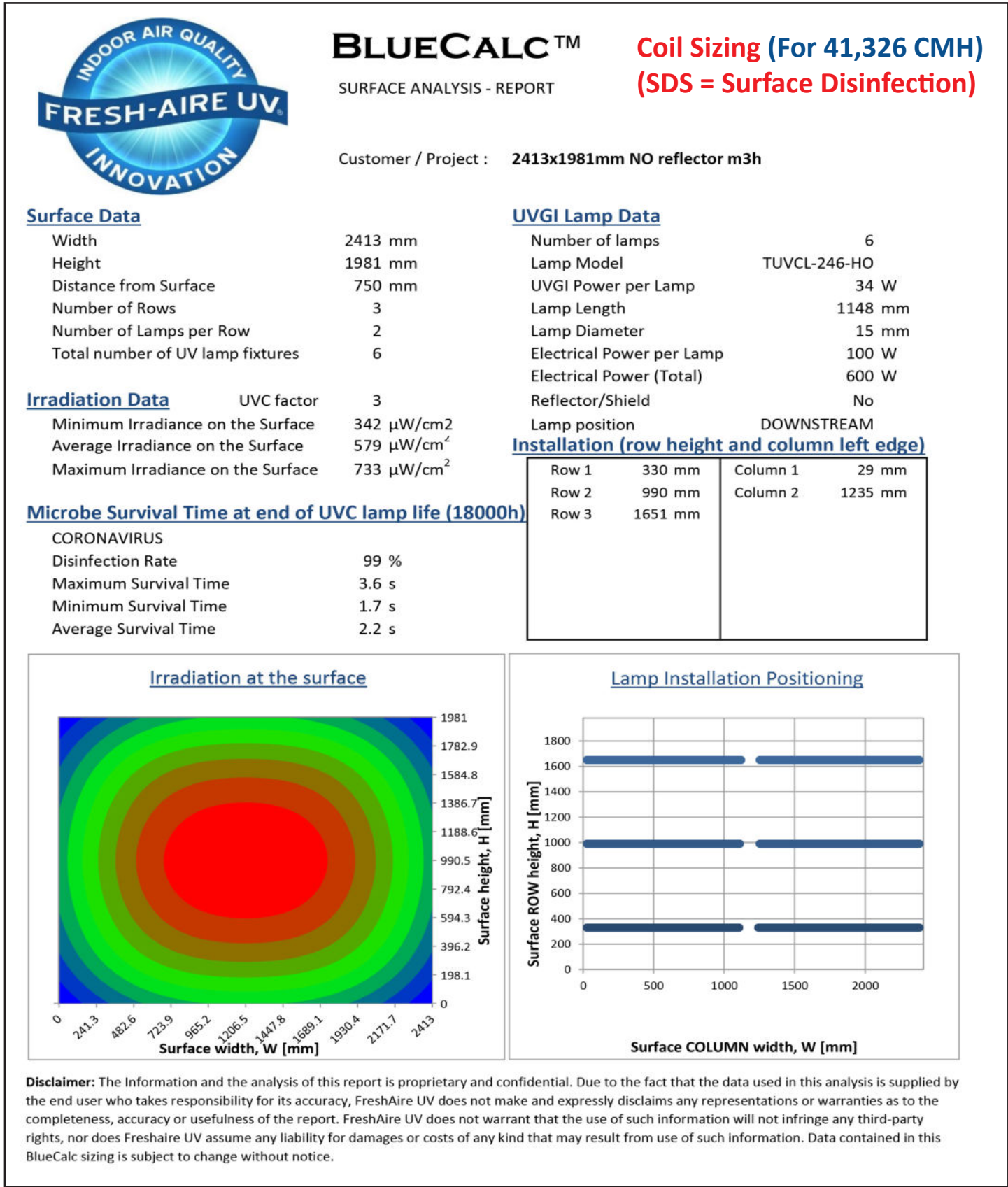


4. UV lamps are mounted into the air handler using the "L" brackets provided, or, use Optional 12" Stand-offs to achieve optimal distance to the coils.

Standard UV Spacing



Factory have 2 different method treating the air showing on the BlueCalc Report on Coil Sizing & Air Sizing for different quantity of UV lamps.



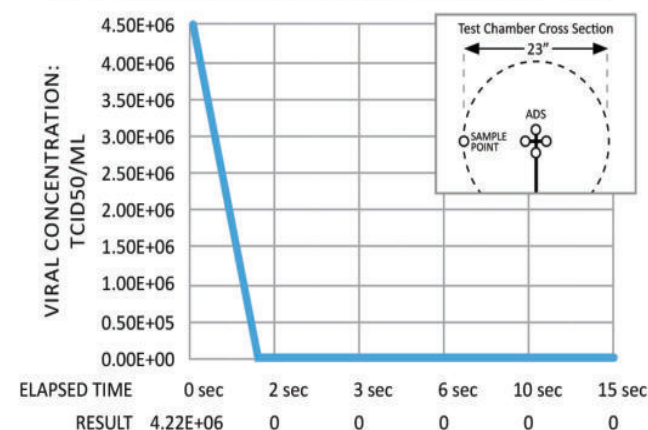
FRESH-AIRE UV®

SARS-COV-2 TEST RESULTS

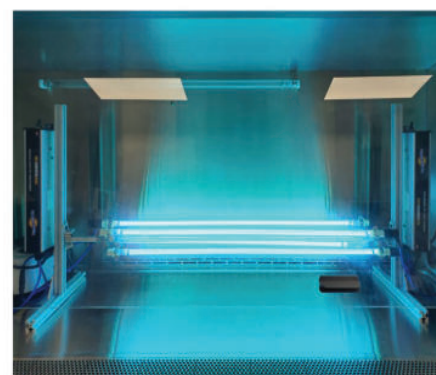


Fresh-Aire UV, a world-leader in HVAC ultraviolet disinfection systems, has successfully completed phase-1 third-party testing of their residential, commercial, and healthcare products for effectiveness against SARS-CoV-2 (the virus which cause the COVID-19 disease). In the test report titled "SARS-CoV-2 Neutralization by Germicidal UV Light System from Fresh-Aire UV" the systems delivered greater than 4-log inactivation (>99.99%) on the SARS-CoV-2 virus within 0-2 seconds of exposure to Fresh-Aire UV UVC 254nm light systems.

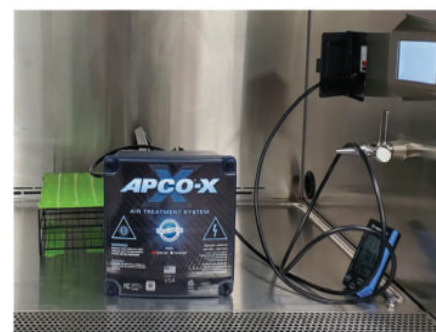
Fresh-Aire UV ADS system sampled within 23" field



The testing was conducted by **Innovative Bioanalysis** a CAP, CLIA, and AABB certified laboratory (CA, USA). The test was designed to model exposure time comparative to inactivating the SARS-CoV-2 virus in the moving airstream within the HVAC or ventilation system. Products tested were the Fresh-Aire UV ADS™ (duct-mounted airborne disinfection) for commercial and healthcare applications, Blue-Tube XL™ (HVAC coil and airborne disinfection) for commercial and healthcare applications, and APCO-X™ (HVAC coil and airborne disinfection with VOC/odor reduction) for both residential and commercial applications. Phase-2 testing is currently underway.



ADS™ in test chamber



APCO-X™ in test chamber

INACTIVATES >99.99% OF SARS-COV-2 WITHIN 0-2 SECONDS!

According to Aaron Engel, Vice-President of Business Development at Fresh-Aire UV: *"Fresh-Aire UV has been manufacturing proprietary germicidal UV systems for 20 years, and with everything we know about the SARS-CoV-2 virus combined with our testing experience, we were confident our systems would be very effective at inactivating the virus. We now have independent verification of the successful inactivation of the SARS COVID-19 virus and an even better understanding of how well our disinfection systems perform within the HVAC system, duct work and on surfaces. We are thrilled."*

Since the onset of the COVID-19 pandemic, Fresh-Aire UV has been providing UV system recommendations for residential, educational, commercial and healthcare facilities. Fresh-Aire UV systems were also used in the FDA sponsored testing of UVC's ability to disinfect and extend the life of N95 masks as published in the American Journal of Infection Control. With the latest SARS-CoV-2 phase 1 test, Fresh-Aire UV now has validation as a global provider of germicidal UV systems for air and surface disinfection.

Fresh-Aire UV is recognized the world over as a leader in the areas of UV light disinfection and indoor air quality. Our products reduce indoor air pollution, sterilize viruses, bacteria, and mold, neutralize odors and VOCs, and provide chemical-free air and surface disinfection. Fresh-Aire UV is the innovation leader with numerous patents and industry awards, including the AHR Innovation Award for Indoor Air Quality for 2011 and 2020.



AUTHORIZATION TO MARK

This authorizes the application of the Certification Mark(s) shown below to the models described in the Product(s) Covered section when made in accordance with the conditions set forth in the Certification Agreement and Listing Report. This authorization also applies to multiple listee model(s) identified on the correlation page of the Listing Report.

This document is the property of Intertek Testing Services and is not transferable. The certification mark(s) may be applied only at the location of the Party Authorized To Apply Mark.

Applicant:	Fresh-Aire UV	Manufacturer:	Triatomic Environmental, Inc.
Address:	1838 Park Lane South Jupiter, FL 33458	Address:	1838 Park Lane South Jupiter, FL 33458
Country:	USA	Country:	USA
Contact:	Mr. Chris Willette Mr. Chad Knapp	Contact:	Mr. Chad Knapp
Phone:	561-748-4864	Phone:	561-748-4864
FAX:	NA	FAX:	NA
Email:	chris@freshaireuv.com chad@freshaireuv.com	Email:	chad@freshaireuv.com

Party Authorized To Apply Mark: Same as Manufacturer
Report Issuing Office: Atlanta, GA

Control Number: 3032782

Authorized by: for Dean Davidson, Certification Manager



This document supersedes all previous Authorizations to Mark for the noted Report Number.

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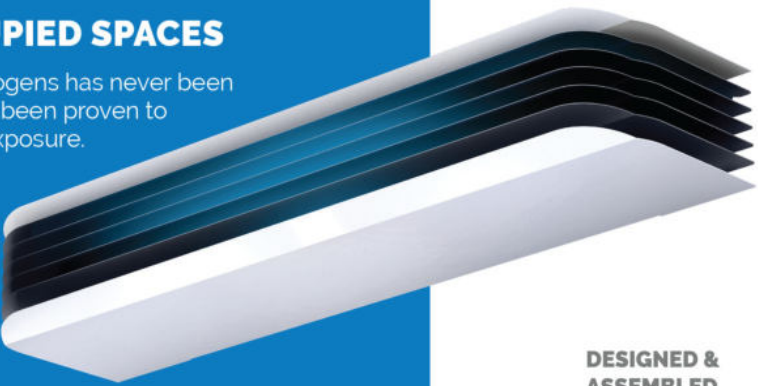
Standard(s): Luminaires [UL 1598:2018 Ed.4]
Luminaires [CSA C22.2#250.0:2018 Ed.4]



UVC Disinfection Used in Occupied Space

FEATURES/BENEFITS

Safe	Louvered UVC light is safe for occupied spaces Produces no harmful ozone
Effective	Inactivates all types of airborne viruses & bacteria APCO technology for odor and VOC reduction
Quiet	Air convection for silent operation
Practical	Single UVC germicidal lamp length: 15", 24", 32", or 60" Quick & simple installation 2 year UVC lamp life
Durable	Robust aluminum construction
Lifetime Warranty	Ensures years of trouble free operation



DESIGNED &
ASSEMBLED
IN THE U.S.A.

AIRWAVE QUICKER CLEANER AIR

UPPER AIR DISINFECTION FOR OCCUPIED SPACES

The need to protect occupied spaces from airborne pathogens has never been greater. Fortunately, Fresh-Aire UV germicidal lights have been proven to neutralize viruses, mold, and bacteria within seconds of exposure.

The Fresh-Aire UV Aire-Foil features 15" - 60" UVC lamps and is wall-mounted near ceiling height. Upper air UV-C disinfection is an ideal method to mitigate the spread of microorganisms in occupied spaces. As air naturally heats and cools it moves by convection, which continuously circulates it throughout the space. Airborne viruses and bacteria are sterilized when exposed to the UVC light field.

The Aire-Foil unit is installed at a minimum height of 7' and is designed with louvers that shield occupants from UV exposure by projecting UVC light rays parallel to the plane of the ceiling.

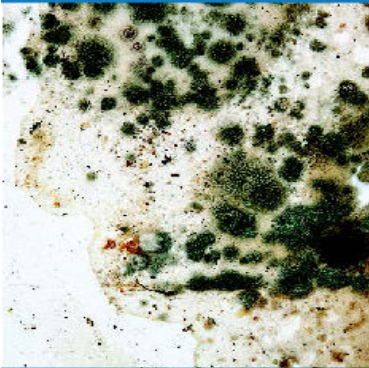


SPECS

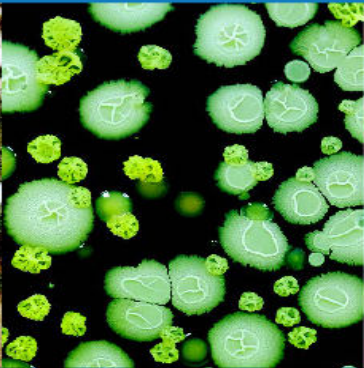
	Lamp	Dimensions in			Electrical		Application Area
CE Model Numbers		Width	Depth	Height	Input Watts	Voltage	
TUVC-UAFS-215S-HO-CE	15" (381mm)	23.9 (607mm)	6.3 (160mm)	4.6 (116.8mm)	36w	110-277 VAC	100 sq. ft.
TUVC-UAFS-224S-HO-CE	24" (609mm)	33.8 (858.5mm)	6.3 (160mm)	4.6 (116.8mm)	57w	110-277 VAC	260 sq. ft.
TUVC-UAFS-232S-HO-CE	32" (812mm)	43.7 (1109.9mm)	6.3 (160mm)	4.6 (116.8mm)	80w	110-277 VAC	390 sq. ft.
TUVC-UAFS-260S-HO-CE	60" (1524mm)	71.0 (1803mm)	6.3 (160mm)	4.6 (116.8mm)	130w	110-277 VAC	780 sq. ft.

Custom lamp options available.

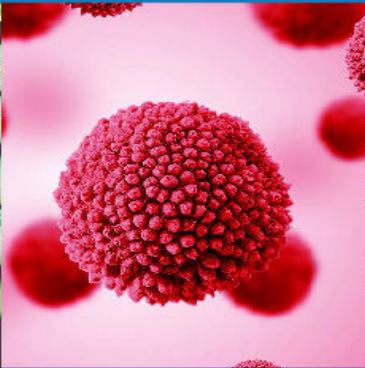
Neutralizes Mold, Bacteria, Viruses, and Allergens



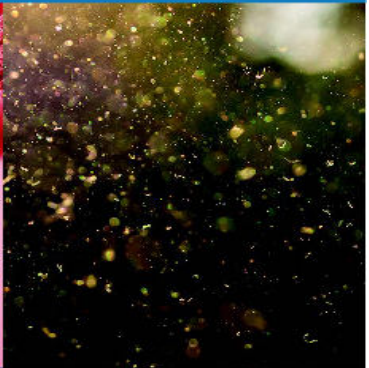
MOLD



BACTERIA



VIRUSES



ALLERGENS

FRESH-AIRE UV[®] COMMERCIAL SERIES

Environmental Surface Disinfection System (ESDS)

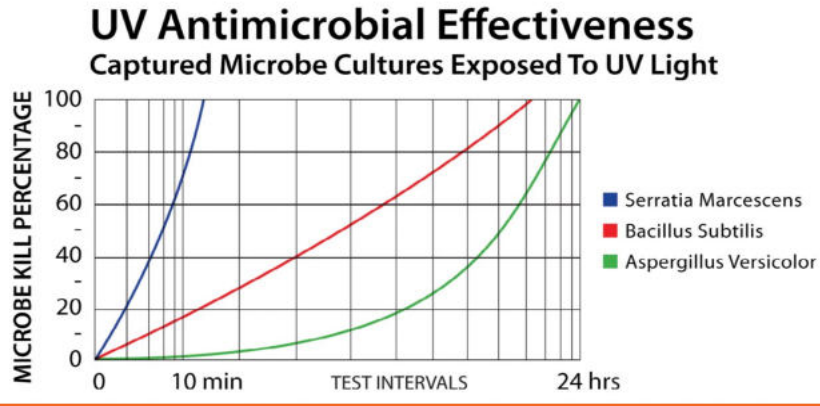
The Environmental Surface Disinfection System (ESDS) from Fresh-Aire UV[®] Commercial Series addresses the need for surface disinfection in spaces that are prone to biological contamination or where biohazards must be kept to an absolute minimum. ESDS uses germicidal UVC light to disinfect room surfaces when the area is unoccupied. The UVGI system features overhead mounted high-output germicidal UVC light fixtures. Each unit comes with an internal electronic power supply. The Fresh-Aire UV lamps included with ESDS are of the highest quality hard quartz and are encased in a shatter-proof Teflon safety coating.

Safety First

Because UVC light is dangerous to human skin and eyes the ESDS system only comes on when the area is unoccupied. A timer can be used for start and stop times. Additional safety features can include door-mounted interlock switches to prevent accidental exposure.

Proven Effective

Fresh-Aire UV Commercial Series UVC lights are proven to sterilize 99.9% of surface microbial contaminants within minutes of exposure. Fresh-Aire UV is a world leader in UV light disinfection and indoor air quality.



**Ideal for
Healthcare
& Related
Applications**



FRESH-AIRE UV[®] COMMERCIAL SERIES ESDS System

- Sterilizes biological contaminants in unoccupied rooms
- Kills airborne germs as they pass by
- Timers and Interlock switches can be used for safety
- Chemical-free disinfection

ESDS Advantages:

- No manpower needed to move disinfection equipment
- Motion sensors (optional) for safe & convenient operation
- Disinfection results within 20 minutes
- Economical yet effective option
- Dual lamps coverage to 50~80m² (Subject to layout)



KIT INCLUDES		DIMENSIONS
Aluminum fixture/ housing, 120 - 277 VAC, 2A power supply, 32" High output lamp(s), lamp connector and instruction sheet		UV light fixture: 36" L x 3.375" W x 2" H
KIT PART #	LAMP DESCRIPTION	LAMP PART #
<input type="checkbox"/> TUVCL-ESDS-232S-HO-CE	32" 18000 hrs, high output, single	TUVCL-232HO
<input type="checkbox"/> TUVCL-ESDS-232D-HO-CE	32" 18000 hrs, high output, dual	TUVCL-232HO
<input type="checkbox"/> TUVCL-ESDS-232S-TFHO-CE	32" 18000 hrs, high output, Teflon [®] single	TUVCL-232HO-TF
<input type="checkbox"/> TUVCL-ESDS-232D-TFHO-CE	32" 18000 hrs, high output, Teflon [®] dual	TUVCL-232HO-TF





BLUE-TUBE UV

Best-Selling Germicidal UV Light

BLUE -TUBE UV®

The most popular Germicidal UV Light system in the world because of its reliability, ease of installation, innovative features, and quality components.



New eco-friendly packaging makes installation and recycling easier

KILLS MOLD BACTERIA VIRUSES

Coils with
Mold

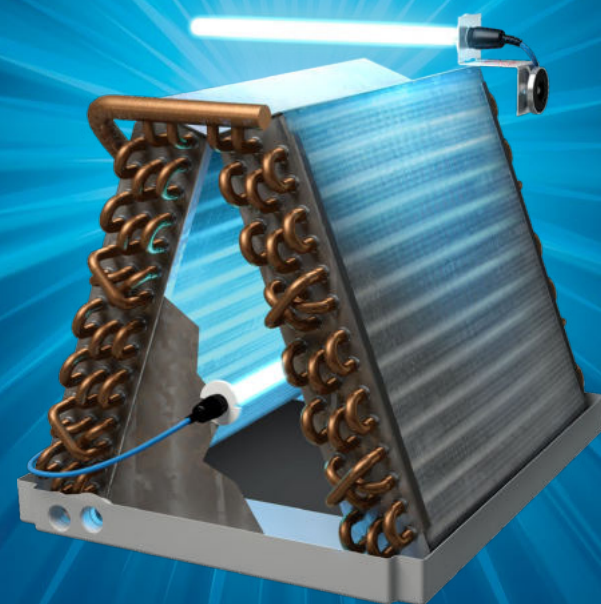


Coils with
BLUE-TUBE UV®

Improves Indoor Air Quality For Your Office



2 YEAR



BLUE-TUBE UV®

Blue-Tube UV Specifications		
UV Lamp	254 nm germicidal UV-C, quartz hot filament	
Dimensions	Lamp: 15"L x 0.74"Dia. ER Power Supply: 4.1"W x 1.7" H x 1.8"D ST Power Supply: 5.0"W x 1.1" H x 2.4"D	
ER models Electrical	18-32 VAC, 60 Hz, 0.68 Amps, 16 VA	
ST models Electrical	120-277 VAC, 50/60 Hz, 0.51 Amps/120V Thru 0.22 Amps/277V	
Kit Includes	Power Supply, 6' Lamp Cable, UV Lamp, Magnetic 'Z' Bracket, Mounting Hardware, Panel Indicator, Installation Sticker	
Warranty	Lifetime for all parts except lamp	
Part Numbers		
18-32 VAC		Replacement Lamp
TUV-BTER	1 Year Lamp	TUVL-115P
TUV-BTER2	2 Year Lamp	TUVL-215P
120-277 VAC		Replacement Lamps
TUV-BTST	1 Year Lamp	TUVL-115P
TUV-BTST2	2 Year Lamp	TUVL-215P

US patent #7,704,463



2 Year High Output
Lamp (18,000 hours)

Magnetic "Z"
Mounting Bracket

Power Supply



UV Light
Kills Germs!

Scientific studies show UV light can kill
90% of microbes within 10 minutes. After
24 hours 99.9% are killed.

Power Supply Options



"ER" 18-24 VAC



"ST" 110-277 VAC



ADS

AIRBORNE DISINFECTION SYSTEM



The Fresh-Aire UV Air Disinfection System (ADS) delivers exceptional single-pass airborne inactivation of dangerous pathogens such as viruses, bacteria, and mold. Installed parallel to the airstream, the versatile and flexible design of ADS delivers unparalleled disinfection rates by maximizing exposure time with the air. The modular design allows from 2 to 6 high-output UV-C lamps up to 60" in length*. Optional features such as our LED control center with UV sensors, BMS integration and real-time lamp monitoring guarantees the most cost-effective, sophisticated UVGI air disinfection system available.

*Sized according to CFM, duct size, air recirculation rates & target for inactivation.

FEATURES

- Choose Grid or Axial configuration for optimal performance
- System features 2-6 high-output 2 year UV-C lamps
- Available lamp lengths: 18", 24", 32", 46", or 60"
- 110-277V auto-sensing water-resistant power supply
- Includes all mounting hardware and 10' cable
- Lifetime warranty on all parts except lamps
- Can be configured for single pass or recirculation
- Optional control center with BMS integration

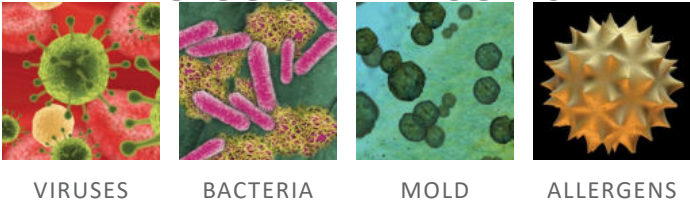
BENEFITS

- Improves Indoor Air Quality (IAQ)
- Complements filtration
- Single pass Kills up to 99.9% of microorganisms
- Effective chemical-free air disinfection
- Cost effective



Airborne Duct System in commercial AHU with Commercial UV Light Kit System for coil disinfection

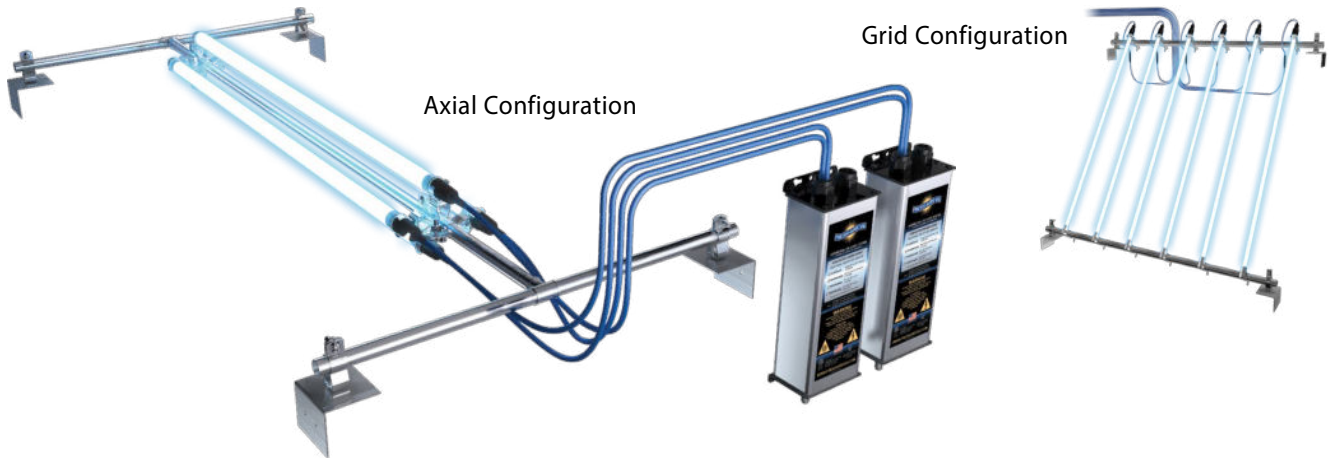
ADS STERILIZES AIRBORNE BIOLOGICAL PATHOGENS



VIRUSES BACTERIA MOLD ALLERGENS

ADS

AIRBORNE DISINFECTION SYSTEM



Fresh-Aire UV ADS Sizing Matrix & Multiple-Pass Airborne Disinfection							
Tonnage or Duct Size or CFM			Air Disinfection	ADS Model	Qty	Configuration	BlueCalc Report**
5 Ton	20 x 14	2000	Recirculation	TUVC-ADS-224 D -HO	1	Axial	View PDF
			Single Pass	TUVC-ADS-246 Q -HO	1	Axial	View PDF
7.5 Ton	20 x 18	3000	Recirculation	TUVC-ADS-224 D -HO	1	Axial	View PDF
			Single Pass	TUVC-ADS-246 Q -HO	1	Axial	View PDF
10 Ton	24 x 20	4000	Recirculation	TUVC-ADS-224 D -HO	1	Axial	View PDF
			Single Pass	TUVC-ADS-260 Q -HO	1	Axial	View PDF
15 Ton	26 x 24	6000	Recirculation	TUVC-ADS-232 D -HO	1	Axial	View PDF
			Single Pass	TUVC-ADS-260 H -HO	1	Axial	View PDF
20 Ton	32 x 26	8000	Recirculation	TUVC-ADS-246 D -HO	1	Axial	View PDF
			Single Pass	TUVC-ADS-260 H -HO	1	Axial	View PDF
25 Ton	26 x 28	10000	Recirculation	TUVC-ADS-246 D -HO	1	Axial	View PDF
			Single Pass	TUVC-ADS-260 H -HO	1	Axial	View PDF
30 Ton	38 x 30	12000	Recirculation	TUVC-ADS-260 D -HO	1	Axial	View PDF
			Single Pass	TUVC-ADS-260 Q -HO	2	Axial	View PDF
50 Ton	44 x 38	2000	Recirculation	TUVC-ADS-260 D -HO	1	Axial	View PDF
			Single Pass	TUVC-ADS-260 H -HO	2	Axial	View PDF
ADS Model Example: ADS-224 D -HO: 2 = 2 year lamp 24 = lamp length D = 2 lamps (Q = 4, H = 6) HO = High-Output							

**BlueCalc report is for reference only. Contact Fresh-Aire UV for detailed report.



Design it Right
Our free BlueCalc™ service/software makes system configuration & ROI estimation easy.