



Air Purification for a Healthier Lifestyle

uvaire[®]
BY FIELD CONTROLS

UV-AIRE®

The Whole House Solution.

Field Controls offers a complete line of UV-Aire products for any home or business. There are 16 duct-mounted UV-Aire models designed for forced-air heating and cooling systems. These models continuously attack airborne mold, bacteria and viruses as they circulate through your ductwork.

For homes and businesses without a forced-air system, Field Controls has developed two new portable UV-Aire models. The portable models combine the purifying power of UV with high efficiency and carbon filtration to reduce dust, pollen, odors and VOC's. See pages 6 & 7 for complete details on all UV-Aire models.

UV-500C Portable



The UV-500C and UV-1500C provide concentrated UV power in bedrooms, living rooms, and offices... where it's needed most.

UV-Aire® In-duct

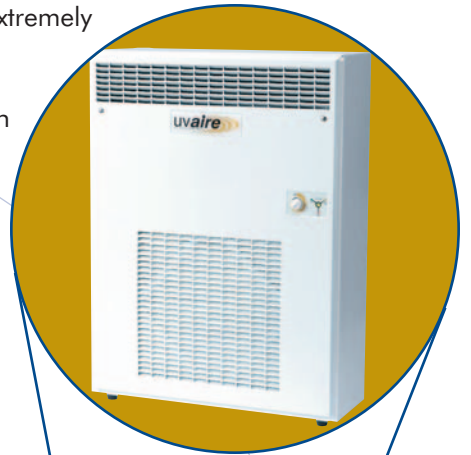


*UV-Aire is not a medical device and makes no medical claims.

Each portable model utilizes a motorized impeller with multi-speed control to quietly and efficiently circulate and treat indoor air. The UV-500C is recommended for rooms up to 500 square feet while the UV-1500C can purify areas up to 1500 square feet.

For those who require extra protection, the 24/7 benefits of the in-duct models can be enhanced with the concentrated power of the

portable units. The combined use of portable and in-duct models is an extremely effective whole house solution. This approach is recommended for anyone with allergies, a respiratory illness such as asthma, or a compromised immune system.*



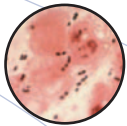
UV-1500C Portable



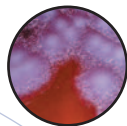
The Whole House Air Purifying System

Indoor Air: High Concentration of Biological Contaminants

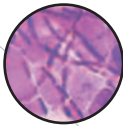
With tighter building construction in recent years, the quality of indoor air has declined dramatically.



Fungus



Mold



Bacteria

The air circulating in the ductwork of the average home or office can be concentrated with contaminants including molds, bacteria, and viruses. We fill our lungs up to



20,000 times each day. Over time, these contaminants can cause inflammation of the mucous membrane, upper respiratory problems, asthmatic conditions, headaches and flu-like symptoms.

The Sun: Nature's Outdoor Air Purifier

For years, scientists have known that one of the most effective air

purifiers is natural sunlight. Not the light we see when we look out the window, but the invisible "C" band, ultraviolet rays that make up part of the sun's light spectrum. The sun's UV-C rays act as a natural outdoor air purification system, inhibiting the growth and reproduction of bacteria, viruses, fungi and molds. However, this natural process does not occur indoors.

Ultraviolet germicidal radiation replicates the natural outdoor purification system of the sun by destroying the illness and disease-causing microbes living and multiplying in indoor air. In combination with a quality filter, it is the most effective way to reduce airborne bacteria and the health risks they represent.



The New UV-C
(Circuit Board Model)
(available in 12", 18" and 28" sizes)



The New UV-Aire
(Standard)
(available in 12", 18" and 28" sizes)

How The UV-Aire® Works

UV-Aire uses the energy from a specially designed, high intensity UV-C lamp to reduce microorganisms in the entire home as they cycle through the HVAC system. Attached to the ductwork, the UV-Aire sterilizes or kills most contaminants as they pass the lamp.

UV-Aire will also kill germs and mold that breed in drain pans and A-coils. Properly positioned, an ultraviolet system can significantly reduce indoor air contamination and prevent the growth of new microorganisms,

keeping the A-coil clean and operating efficiently.

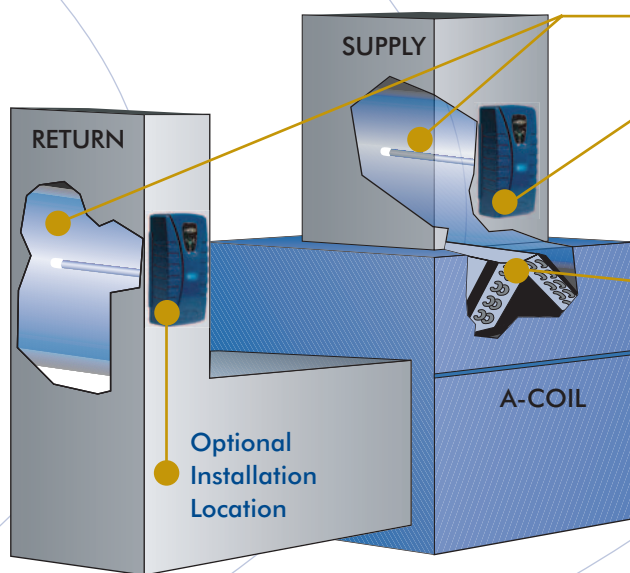
The treatment of indoor air with ultra-violet radiation has been successful in health care facilities, food processing plants, schools, and laboratories. It is safe, silent, and proven.

Since direct exposure to UV light can cause skin cancer and blindness, the most practical application is to install UV in the main supply or return duct of any central heating or cooling system. This is an ideal location since the air in the home or office will pass

through the HVAC system 40-75 times a day during normal operation and as many as 150 times a day in continuous fan mode.

UV's effectiveness is directly related to a microorganism's exposure time.

With a UV-Aire mounted in the HVAC duct, cumulative exposure can be very effective in controlling indoor bacteria, mold, viruses, and other microorganisms.



Ultraviolet Treatment Zone

Best Installation Location (downstream of the A-coil)

Coils and filters are breeding grounds for mold and bacteria. Installing the system here significantly reduces indoor air contaminants and new growth.

A-Coil

Installing UV-Aire near the coil helps maintain optimal efficiency of the HVAC system.

Filter Systems Alone Can't Solve the Problem

The majority of indoor air is conditioned by forced-air heating and cooling (HVAC) systems.

HVAC systems are a dark and damp breeding ground for mold and bacteria, particularly at the filter and air conditioning coil. The buildup of matter on the A-coil and

filter can significantly reduce the efficiency of the appliance by constricting and reducing air flow. This means increased cost to the homeowner in addition to the risk of airborne pollutants.

Air filters are a great first step, but are ineffective in trapping germs, as

most particles are simply too small, passing through the porous filter.

UV-Aire, in combination with a quality filter, turns any forced-air HVAC system into a whole house air purification system.

UV-Aire® In-Duct Solutions



STANDARD MODELS

UV-12, UV-18, UV-28, UV-12HP, UV-18HP, UV-28HP

- New design incorporates a hinged cover for easy accessibility
- Includes patent pending angle bracket and duct board mounting kit
- Installs easily and plugs into a standard 120V outlet
- All UV-HP (heatpump) models are 240V



DUAL LAMP SYSTEM

UV-18X

- Double lamp maximizes intensity and effectiveness
- Handles up to 4000 sq. ft.
- Includes patent pending angle bracket and duct board mounting kit



CIRCUIT BOARD MODELS

UV-12C, UV-18C, UV-28C, UV-12HPC, UV-18HPC, UV-28HPC

- Electronically monitors lamp life
- Audible and visual lamp replacement alerts
- Can wire into the thermostat to extend lamp life
- Can link to existing security system
- Includes all features of standard models
- All UV-HPC (heatpump) models are 240V



EXTERNAL MODELS

UV-12E, UV-18E, UV-28E

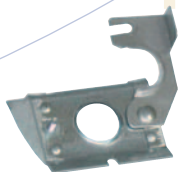
- For outdoor installations
- Ideal for gas or oil package systems
- For rooftop applications
- Hard wired for 120V, 208V or 240V



All units are UL listed.

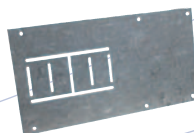
For maximum square footage and other details, see the Models and Specifications table on page 9.

Unique Features



ANGLE BRACKET WITH SWIVEL ARM

- Angle allows longer lamps to fit into smaller ducts, maximizing effectiveness
- Ensures the entire cross section of the duct is irradiated
- Swivel arm allows for easy lamp replacement
- Patent Pending



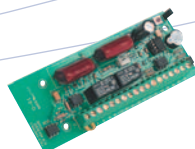
DUCT BOARD MOUNTING KIT

- Makes mounting to duct board simple
- Designed to increase stability on the duct board
- Patent Pending



IMPROVED LAMP OUTPUT

- Technical enhancement improves intensity output over the life of the lamp



CIRCUIT BOARD TECHNOLOGY

- Monitors performance and lamp life
- Audible and visual lamp replacement alerts
- Can link with existing security system
- Can wire into the thermostat circuit


UV-Aire® Portable Solutions

UV-500C PORTABLE MODEL

- Purifies air in areas up to 500 square feet
- Plugs into any standard 120V outlet
- Attractive, compact design
- 15"h x 12"w x 12"d



New




UV-500C Features

- 1 8" germicidal UV lamp
- 2 10"x10" high-efficiency/carbon filter
- 3 Heavy-duty three speed fan
- 4 Visual lamp and filter condition alert
- 5 Adjustable fan control
- 6 Built-in handles for easy portability
- 7 Non-skid rubber feet

Replacement Kit

- 4 high-efficiency/carbon filters
- 1 UV lamp





UV-1500C PORTABLE MODEL

- Purifies air in areas up to 1500 square feet
- Plugs into any standard 120V outlet
- Sits on the floor, hangs on the wall, or installs in drop ceiling
- 24"h x 18"w x 6"d



Drop ceiling installation
(side panels adapt unit to fit standard 2' x 2' grid)

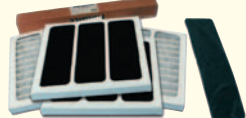


UV-1500C Features

- 1 12" germicidal UV lamp
- 2 12" x 12" high-efficiency/carbon filter
- 3 Secondary carbon filter reduces odors
- 4 Heavy-duty fan
- 5 Visual and audible lamp condition alert
- 6 Adjustable fan control
- 7 Recessed handle
- 8 Non-skid rubber feet

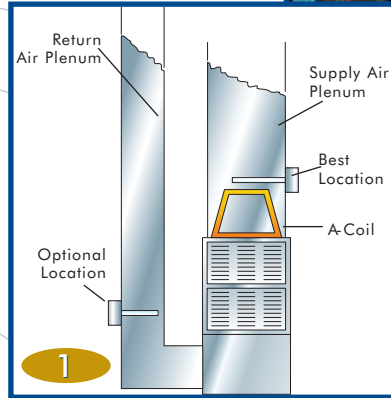
Replacement Kit

- 1 carbon filter
- 4 high-efficiency/carbon filters
- 1 UV lamp



Installation

1. Insert the unit downstream from the A-coil in the supply air plenum or downstream from the air filter in the return air plenum. Mount base on duct using the enclosed mounting screws.
2. Insert lamp through hole. Place bracket over end of tube and tighten wing nut.
3. Replace cover on unit and tighten side screw.
4. Plug into 120V outlet & place rocker switch in "ON" position.
5. Switch will illuminate & blue glow can be seen through view port when unit is operating properly.



ALWAYS wear protective goggles to shield eyes from UV damage when installing the UV-Aire.

UV-C can breakdown plastic material that is not UV resistant. Based on lab tests, positioning the lamp 30 inches or more away from plastic surfaces such as flex duct, drain pans, etc. will prevent any measurable breakdown.

Installation Options

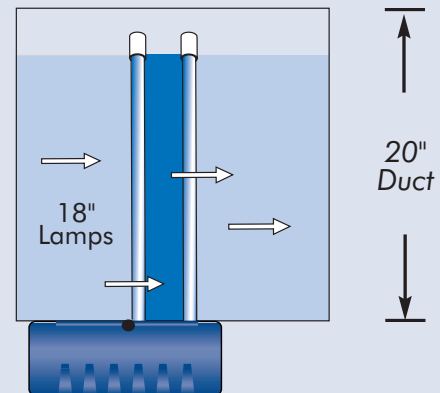
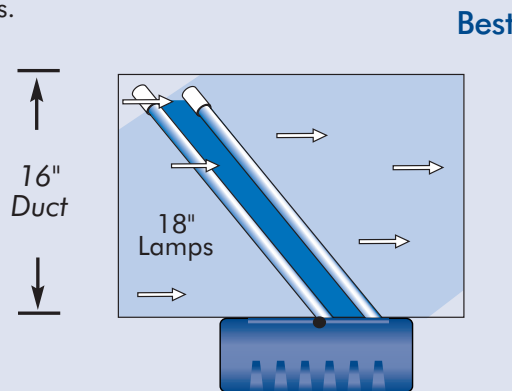
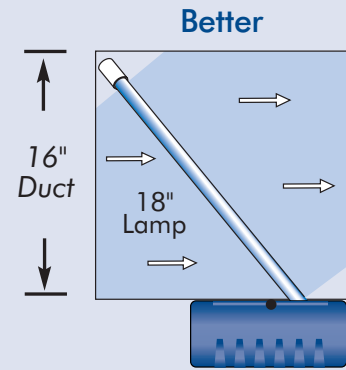
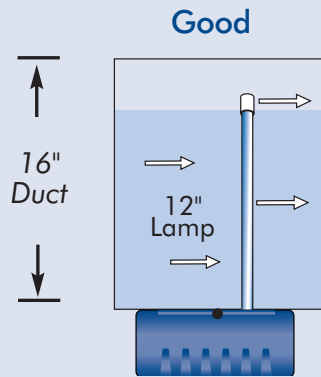
The UV-Aire can be installed in ducts nine inches and larger. Each unit comes with a duct board mounting kit and patent pending angle brackets. A dual lamp model is available for commercial applications and/or increased potency. There is also a model designed specifically for heat pumps.

Good: Standard Installation

Better: Patent Pending Angled Installation - Single Lamp

Best: Two Angled Lamps or Two Perpendicular Lamps

Note: When multiple lamps are used, spacing between lamps should be at least four inches. Angle option allows longer lamps to fit in smaller ducts.



Maintenance

Cleaning

The UV-Aire output intensity is at optimal levels when the UV lamp is clean. As buildup of dust increases, the lamp's intensity decreases. To maintain maximum benefits, lamps should be kept clean.

Lamps should be wiped with a clean cloth dampened with alcohol or ammonia and water in order to eliminate oil, dirt, and fingerprints. Conditions of the application will dictate how often lamps need to be cleaned.

Replacement

It is important that lamps be replaced when the ultraviolet output falls below minimum requirements for protection. Even though a lamp will appear to be operating effectively because it still maintains the visible blue glow, the ultraviolet output will be significantly reduced after 9000 hours of use.

To maintain maximum benefits, lamps should be replaced annually.

It is recommended to clean the lamps at least every six months.

12", 18" and 28" replacement lamps are available.

UV-AIRE® Models & Specifications

Model	Minimum Duct Width	Voltage	Amps	Hz	Watts	Circuit Board	Recommended Max. Sq. Feet	Lamp Intensity at 1 meter $\mu\text{W}/\text{cm}^2$	Product Warranty
Portables									
UV-500C	NA	120	0.4	60	36	yes	500	24	1 yr
UV-1500C	NA	120	0.5	60	30	yes	1500	37	1 yr
In-duct									
UV-12	9	120	0.5	60	30	no	1500	37	5 yr
UV-18	14	120	0.5	60	30	no	2000	73	5 yr
UV-28	22	120	1.1	60	60	no	3000	105	5 yr
UV-12E**	9	120/208/240	0.5	60	30	no	1500	37	5 yr
UV-18E**	14	120/208/240	0.5	60	30	no	2000	73	5 yr
UV-28E**	22	120/208/240	1.1	60	60	no	3000	105	5 yr
UV-12HP	9	240	0.5	60	30	no	1500	37	5 yr
UV-18HP	14	240	0.5	60	30	no	2000	73	5 yr
UV-28HP	22	240	1.1	60	60	no	3000	105	5 yr
UV-12C	9	120	0.5	60	30	yes	1500	37	1 yr
UV-18C	14	120	0.5	60	30	yes	2000	73	1 yr
UV-28C	22	120	1.1	60	60	yes	3000	105	1 yr
UV-12HPC	9	240	0.5	60	30	yes	1500	37	1 yr
UV-18HPC	14	240	0.5	60	30	yes	2000	73	1 yr
UV-28HPC	22	240	1.1	60	60	yes	3000	105	1 yr
UV-18X	14	120	1.0	60	60	no	4000	2@73	5 yr

*UV-18X includes two lamps.

**UV-E series includes aluminum NEMA 3 enclosures for external, outdoor installation.

Note: All lamps are warranted for 90 days after installation. A UV-Aire counter display is available for wholesalers and dealers. For more information, contact Field Controls.

How Effective is UV for Air Purification?

For many years, ultraviolet light has proven effective in sterilizing medical equipment, purifying water and processing food. Currently, the use of UV lights is gaining industry acceptance in HVAC applications. Microbe Management, Inc., a testing agency in

Greenville, NC, has conducted three separate tests to examine UV's effect on indoor air quality. The test results reviewed in this article conclude that UV is an integral part of a whole house approach to improving Indoor Air Quality.

Attack the Source

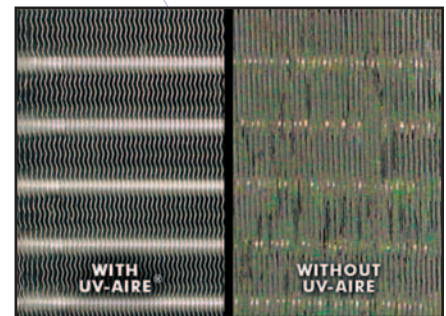
While experts disagree on the root causes of many IAQ problems, there is consensus that stopping problems at the source is crucial to long-term air quality improvement. First, the homeowner must eliminate any unwanted sources of moisture in the home such as roof leaks and drainage problems. Likewise, the air conditioning coil must be addressed since it is a natural breeding ground for molds, which thrive in a dark,

moist environment. Familiar with the rank smell generated when switching from air conditioning to heat mode? That is the smell of mold and bio-film burning off the coil. Whenever the blower is engaged, mold spores from contaminated A-coils are released into the ductwork and distributed throughout the building. These spores then seek alternative surfaces in other parts of the home to breed and multiply.

Surface Test: UV Kills and Prevents Mold on A-Coils

A specific test was designed to determine UV's effectiveness in treating mold on coil surfaces. The test simulated the damp, dark settings where A-coils are found. In this study "We took a standard A-coil, sterilized it, introduced two kinds of mold and then placed it in a controlled, moisture-laden environment," says Bernard Kane, of Microbe Management. "We created two separate chambers in our lab. One chamber was bathed in UV light. The other was not." The results were dramatic and conclusive. The side of the A-coil that was exposed to the ultraviolet light was clean and clear of mold growth. Mold continued to grow unabated on the side without UV. Subsequently,

the contaminated side was bathed in UV light and the mold was eradicated. Kane summarized the results: "Properly positioning a UV lamp over the A-coil in a residential or commercial air conditioning system can eliminate surface mold on the coil and prevent future mold growth as well."



Surface Test Results

Airborne Testing: Single Pass and Cumulative Tests

Bacteria and viruses are introduced into the building by its occupants and often cannot be controlled at the source. Therefore, it is important to attack these airborne invaders early and often, before they have an opportunity to multiply. The single pass test proves that UV effectively kills these airborne microorganisms in the duct.

Since HVAC systems typically re-circulate the air 40-75 times per day, a multi-pass, cumulative test was also conducted. Results demonstrate that repeated, multi-pass exposure to UV light dramatically reduces the concentration of bacteria and viruses throughout the home.

Single Pass Test: UV Deadly for Airborne Microbes

This study introduced a common bacterium into a galvanized air duct equipped with a UV light to determine how effective the lamp would be in reducing the bacteria with one exposure, or a "single pass". The tests were conducted at two speeds: 1125 cfm and

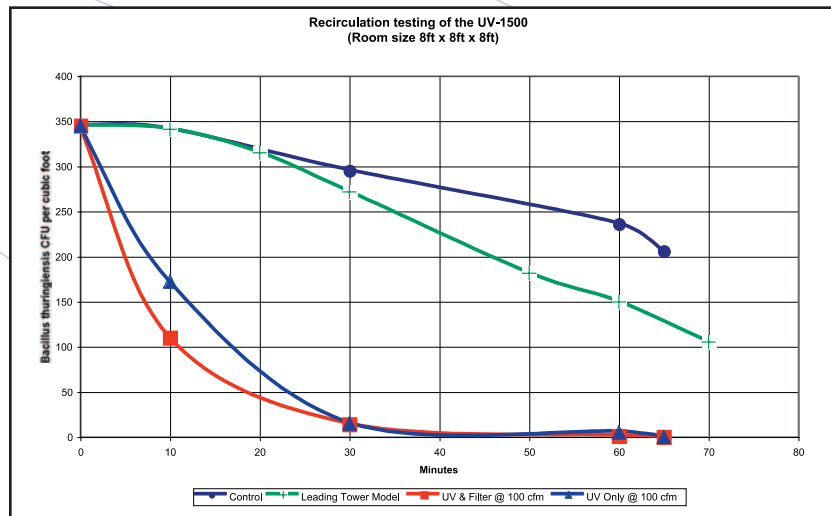
2250 cfm in an 18" x 18" duct. The UV lamp yielded at least a 90% reduction of the test bacteria with a single airflow pass at 1125 cfm and at least 71% reduction at 2250 cfm.

1. Efficiency of Bacterial Disinfection by a Duct mounted UV-Aire™ Air Purifier: by Kane Environmental Assays

Cumulative Test: Multiple Exposures Dramatically Improve IAQ

To further investigate the effectiveness of UV on indoor air quality, Microbe Management created a series of tests designed to measure the cumulative effect of UV in reducing airborne contaminants. The test was performed in a structure with two isolated 8' x 8' x 8' rooms where air could be sampled. In the control room, no UV was present, while the other room utilized a portable UV air purifier. According to Bernard Kane Ph. D., of Microbe Management, "Test results were very encouraging. In both rooms, we

introduced a resistant, spore-forming bacteria until the air was saturated with 350 colonies per cubic foot. In the room with the portable UV unit, the spore count was reduced by 50% in just 10 minutes and by 98% within 30 minutes. In the control room, without UV, more than 85% of the bacteria were still active after thirty minutes". Similarly, the leading consumer UV "tower" model was also tested, but showed only minimal effectiveness. (See chart below.)



Conclusion: UV Is An Effective Part of "Whole House" Solution

A-coil irradiation, single pass, and cumulative tests confirm that UV is an important and effective contributor to a healthier home environment. UV technology used with a quality filter (MERV rated 8 or higher) will dramatically improve Indoor Air Quality. Additionally, portable units can be used in combination with in-duct models. This combination is strongly recommended for

individuals with depressed immune systems, asthma, allergies, or other respiratory conditions. For homes without forced-air, portable UV air purifiers are recommended to enhance IAQ. Also, health care professionals, teachers and day-care workers can benefit from additional UV protection from influenza and other viruses.

Lamp Intensity

Distance from Lamp	Intensity Factor
0	354
1	127
2	69
4	32
6	20
8	14
10	14

Distance from Lamp	Intensity Factor
15	6
20	4
25	3
30	2
35	1.4
39.97	1

UV lamp intensity is rated at a distance of one meter. (See chart on page 9). To determine the intensity of ultraviolet radiation at different distances from the lamp, multiply the intensity of the lamp by the intensity factor shown in the chart above.

Example: To determine the ultraviolet intensity of the UV-18 at a distance of six inches, multiply 73 by 20 to yield 1460 $\mu\text{W}/\text{cm}^2$.

Frequently Asked Questions

Q. What is UV-C light and how does it kill bacteria?

A. UV-C is the invisible, ultraviolet, C-band radiation that makes up part of the sun's light spectrum. UV-C light prevents growth and germination of microorganisms by altering DNA and RNA and effectively sterilizing organisms. Once sterilized, they cannot reproduce, and with their short life cycles, they are effectively killed.

Q. Why use a UV light product?

A. There are two primary benefits to using UV light. The first is radiate a surface to keep mold from growing in that area. The other use is disinfecting the air stream as it passes through the HVAC system. A significant disinfection rate is accomplished with repeated circulation of air through the system.

Q. What is the importance of UV light products?

A. People spend over 90% of their time indoors. With little or no ventilation, concentrations of microorganisms will increase indoors, potentially spreading a number of diseases. With increased cases of deaths being caused by various bacterial diseases, controlling the growth and spread of pathogens is of major concern in indoor environments.

Q. How does the UV-Aire differ from other UV-C devices?

A. UV-C energy has been successfully used in many indoor environments. The UV-Aire was developed specifically for use in HVAC systems. It creates a consistent, high output of UV-C energy. The UV-Aire's intensity output maximizes microorganism disinfection and ensures cleaner indoor air.

Q. Is the product suitable for people with severe allergy or asthma problems?

A. Yes. The UV-Aire can offer relief to many allergy and asthma sufferers by reducing airborne contamination.

Q. Does the UV-Aire produce a fresh-air smell?

A. Many smells are not addressed by the UV-Aire. However, some unpleasant smells develop from the growth of microorganisms. The UV-Aire works to reduce mold and common household germs, in many cases resulting in a fresher smelling environment.

Q. Does UV light take the place of a filter?

A. No. The UV-Aire should be used in conjunction with a filter.

Q. Should the HVAC appliance fan or blower run continuously?

A. No. During normal operation of the heating or air conditioning, the blower will circulate the air over the UV lamp from 40-75 times a day, which is sufficient. During moderate weather, when neither the A/C or heat is on, it is recommended to open the windows to allow for fresh air infiltration and/or to operate the blower continuously (turn on the fan) to circulate air over the UV light.

Q. What precautions should be taken before opening or servicing the ductwork where a UV-C lamp is in use?

A. The UV-C lamp should be turned OFF prior to entering the ductwork. An external switch is provided as well as warning labels regarding service procedures. Direct exposure to UV light is not recommended, as it may cause damage to skin and eyes. Protecting the eyes with plastic protective goggles is recommended.

Q. What effects will UV-C rays have on plastics such as coil pans & flex duct?

A. If the plastic is not UV resistant, UV-C can cause a breakdown of the material over time. Based on lab tests, positioning the lamp 30 inches or more away from plastic surfaces will eliminate any measurable breakdown of plastic material.

For more FAQ's, visit our website at www.fieldcontrols.com.

Compare:

UV-Aire® In-duct



Purify air in areas up to 4000 square feet.

Utilizes the air handler of the heating/cooling system, which recirculates the air in the average home 40-75 times per day.

Does not produce ozone. Special UV lamp kills airborne mold, bacteria and viruses.

Mounts in the HVAC duct.

Does not interfere with radio or TV reception.

Change lamp after 9000 hours.

UV-500C/ UV-1500C



Purify air in areas up to 1500 square feet.

Built-in fan circulates air up to 100 cubic feet/min, ensuring necessary air changes and maximizing effectiveness.

Does not produce ozone. Special UV lamp kills airborne mold, bacteria and viruses. Carbon filter reduces odors and VOCs. High efficiency filter traps particles as small as .05 microns.

Stands alone. Can be placed anywhere.

Does not interfere with radio or TV reception.

Change filter every three months. Change lamp after 9000 hours.

Leading UV Tower Models



Clean air in areas up to 500 square feet.

No fan, or a very small fan depending on model. Minimal air flow significantly reduces air changes and minimizes effectiveness.

Some models produce ozone. Manufacturers suggest that persons with asthma, heart disease, lung disease, or breathing problems should consult with their physician before using the product.

Stand alone only. Some models must be 12" from walls or furnishings.

Some models can cause interference to radio or TV reception.

Must clean every two weeks. Change lamp after 8000 hours.

For a FREE informational video, call 252.522.3031.



FIELD CONTROLS
Solutions for the Great Indoors®