



Airesield® Confined Plasma Air Disinfection Filter Module

Installation • Operation • Maintenance Manual

Version 11 | April 2025


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You are what you breathe. Breathe Safe.

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1. Safety Information

 Read this entire manual before installing or servicing the unit. Installation must be performed by a qualified HVAC professional in accordance with NFPA 70E, NEC/CEC, and all local codes. Disconnect and lock-out power at the service disconnect before working on the equipment.

- **Risk of Electric Shock** – the Aires shield module contains high voltage (5.5 kV) circuitry. Service only with power off.
- **Arc-Flash Hazard** – verify absence of voltage with an appropriate meter. Wear PPE rated for the environment. Ensure 1” clearance from adjacent metal to avoid arcing.
- Do **not** handle the module by the perforated center section; the sharp electrode pins can cause injury.
- Never lift the Aires shield unit by its power box—the power box can detach and cause the filter to fall.
- Connection to the branch circuit must be permanent – never use an extension cord.



Failure to follow these instructions voids all warranties and may result in injury or equipment damage.

WARNING! RISK OF ELECTRIC SHOCK

Notice: Disconnect the unit from power supply before maintenance.



ARC FLASH AND ELECTRIC SHOCK HAZARD:

Arc flash and electric shock hazard warning. Please disconnect all electrical power to the Aires shield device or Air handler/furnace.

Verify that electric power is off and comply with NFPA 70E. The customer must provide earth ground to the unit, per NEC, CEC, and local codes, as applicable. Before proceeding with installation, read all installation instructions. The line side of the Aires shield control box is 110v or 220v (50 or 60 Hz) and contains live high-voltage. The only way to ensure there is no power is to disconnect power from the main breaker serving the air-handler/furnace. Please follow all local codes.

IMPORTANT

This device is to be installed by following industry Best Practices and all applicable codes. Any damage to components, assemblies, subassemblies or the frame which is caused by improper installation practices will void the warranty.

2. Introduction

The Aireshield® module is a **UL 867 and UL 2998 ozone-free certified**, confined-plasma disinfection filter that transforms any forced-air HVAC system into an active pathogen mitigation platform. It neutralizes viruses, bacteria, and mold while agglomerating sub-micron particles so they are easily captured by the downstream HVAC filters, boosting its effective MERV rating without added pressure drop.

Key Benefits

- ★ ≥ 99.9 % reduction of live SARS-CoV-2 (third-party test)
- ★ Negligible pressure drop (0.22 in wg at 500 FPM) – low energy impact
- ★ No consumables; expected service life 15 years with simple bi-annual cleaning
- ★ Certified ozone output 1 ppb UL 2998.

3. Technology Overview & Working Principle

Aireshield employs a **non-thermal, confined plasma field** generated between a central electrode pin (positive) and the downstream circular grid cutout (negative). Airborne pathogens passing through the field experience electroporation that ruptures their lipid membranes (viruses) or cell walls (bacteria), exposing genetic material and rendering them non-viable. The bipolar charge also causes fine particles to agglomerate, allowing the existing HVAC filter to capture them. **The module does not emit ions, ozone, or other by-products.**

This technology has a **provisional patent**: U.S. Prov. App. No. 63/788,543 | Title: Corona Disinfection Device. It is used in HVAC systems for the control/kill/ or deactivation of pathogens, agglomeration of ultrafine particles, elimination of biofilms, and control of certain VOC's.

Primary output voltage: factory-set 5.5 kVDC (operating range 4 kV–7.2 kV).

4. Suitable Applications

- ★ Residential homes & multi-family dwellings
- ★ Educational facilities: K-12 up to Universities
- ★ Healthcare facilities & medical offices
- ★ Offices, hotels, and retail spaces
- ★ Transportation hubs & public venues
- ★ Manufacturing plants & clean rooms
- ★ *Any conditioned space served by a forced-air system*

5. Installation

Important: Verify that the selected Aireshield size matches the HVAC filter rack. Custom sizes are available—contact Reviveaire if a standard size is unsuitable.

Install the Aireshield in the return air or mixed air inlet of the HVAC system (shown in Figure 1). The unit is connected to the air handler/furnace's power supply. It works in unison with the air handler/Furnace fan operation to assure air is moving over the Aireshield. Depending on local code requirements, additional wiring and a disconnect may be required.

However, the Aireshield module can be installed at the return air grille, supply air grille or anywhere in the ductwork (as long as there is air movement).

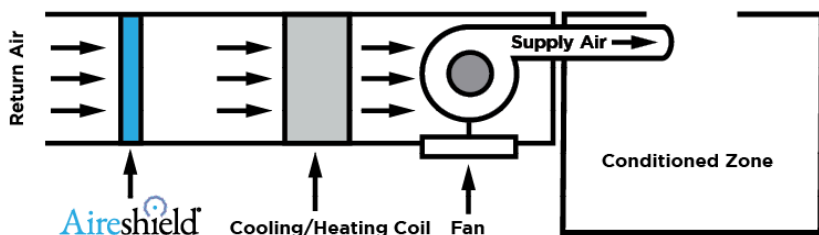


Fig 1. Typical Aireshield install diagram. Note the proper direction of airflow.

5.1 Location & Airflow Direction

1. **Return-side installation (preferred):** Slide module into the existing filter rack.
 - i. If a 1" track, simply replace the existing filter with the Aireshield.
 - ii. If a 2" track, replace the existing 2" filter with the 1" Aireshield followed by a 1" standard particle fibrous filter.
 - iii. If a 4" or 6" deeper filter track, spacers or an insert are required to keep the Aireshield secure in a stable mounting position. Contact our support for issues.
2. Ensure the **labelled airflow arrow** and **electrode pins** face the incoming airstream.
3. For vertical air handlers, following the same protocol as above
4. However, the Aireshield can be installed in any orientation as long as the front facing pins are pointing in the direction of airflow.
5. The Aireshield is not limited to being installed in an air condition, heating furnace or an air handler. The Aireshield, can be installed in any of the following:
 - iv. Return air duct grille
 - v. Supply air duct Grille/register
 - vi. Or any location within the ductwork



5.2 Electrical Connection

2. De-energize the HVAC unit at the main breaker.
3. Route the pre-terminated harness through a $\frac{3}{8}$ -in rubber grommet to the control panel.
4. **Land conductors:** Line (red or brown) → L2, Neutral (blue) → N, Ground (green or yellow) → Air Handler electrical / control panel.
 - a. **Residential:**
 - i. Can be connected to any location with power (Follow local codes).
 - ii. Most residential air handlers today offer an EAC contact (EAC stands for Electronic Air Cleaner). Please locate the EAC and plug the blue wire from the wiring harness to the EAC spade.
 - iii. Connect the brown wire from the wiring harness to the neutral port on the Air Handler board.
 - b. **Non-Residential:**
 - i. Can be connected to L1 & L2 of the fan motor (Follow local codes).
 - ii. It can be connected to any electrical/control panel power supply strip.
 - iii. Any clean power supply in the control panel, as long as it's after the fuse.
5. An airflow-proving switch is factory-wired. To bypass (for constant fan operation, or troubleshooting / testing purposes; install the supplied jumper on the two jumper pins (see Fig 2).

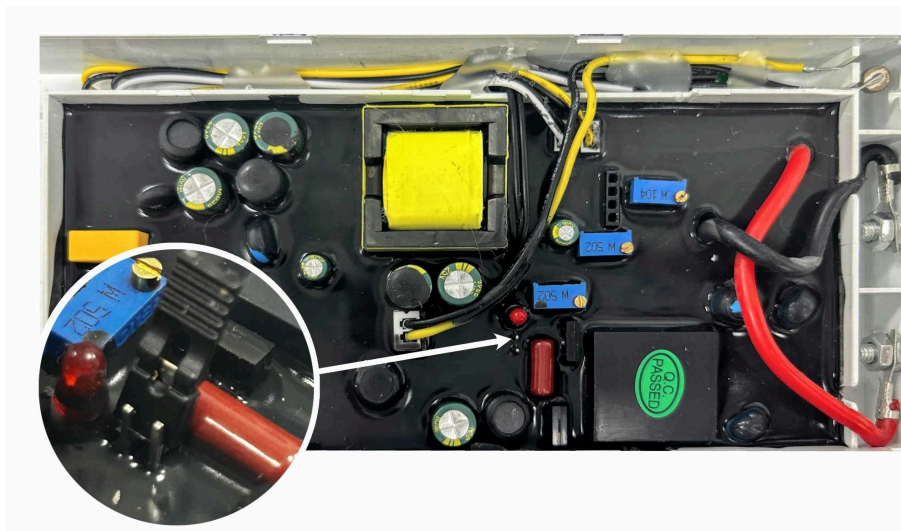


Fig 2. Circular Inset shows a close up of the JP-AIR air proving switch and the jumper behind the switch. Insert the jumper on the switch to activate the air proving switch bypass.

5.3 Commissioning Checklist

- ☐ The module should be fully seated and secured. Inserts should be utilized to ensure a secure fit. If the module is insecure, call the factory for assistance.
- ☐ Harness is not strained or pulled; no contact with sharp edges. **If strained**, please loosen the cable or reinstall with a longer harness for more slack.
- ☐ Green status LED illuminates with fan operation. If not, check wiring is correct.
- ☐ Noticeable noise or abnormal odor, if so, de-energize immediately. For odors, verify there is no packaging or foreign material on the pin side. If noisy or arching, inspect the upstream side to verify there are no metal parts within 1" (25.4 mm) from the entire face area of the Aires shield surface area.
- ☐ Record installation date on warranty card (see below)

[Fill out the online warranty form](#), or complete and print the warranty form below and mail it to 217 Market Street, Kenilworth NJ 07033 . Retain a copy for your records.

Model Number _____ Serial Number _____

Installation Date _____ Installed by _____

Owner Name _____

Address of Installation _____

6 Operation

1. Power Safety

Turn off the power breaker to the air handler/furnace and confirm power to the air handler or furnace is de-energized before servicing the Aireshield.

2. Accessing the Aireshield device installed in an air handler unit, select one of the following:

- Remove the access door or service panel to view the Aireshield device's location.
- If used in a return grill please unclip the grill via buttons or tension clamps to access the Aireshield device.
- If installed in a residential furnace, simply access the filter/coil section inside the air handler or mount on the external return air inlet of the air handler..

3. Electrical connection

- Before wiring, shut off power to the air handler/furnace and verify with volt/amp meter or that it's deenergized.
- Find and open the air handler/furnace power box (panel) to locate the wiring for Ground, Neutral, L1, L2, and L3.
- Connect the Aireshield power line to L2 to the brown wire and the N (neutral) to the blue wire on the provided wiring harness. (See Figures 3 and 4)

4. The factory setting of the power supply

- By default, the power supply waits for airflow before powering the Aireshield. To bypass the airflow sensor, insert the jumper cap as shown in Figure 2.



Fig 3 Wiring harness pigtail with Molex plug. Powerbox (Part # HE60-50TA) to pigtail harness connection.

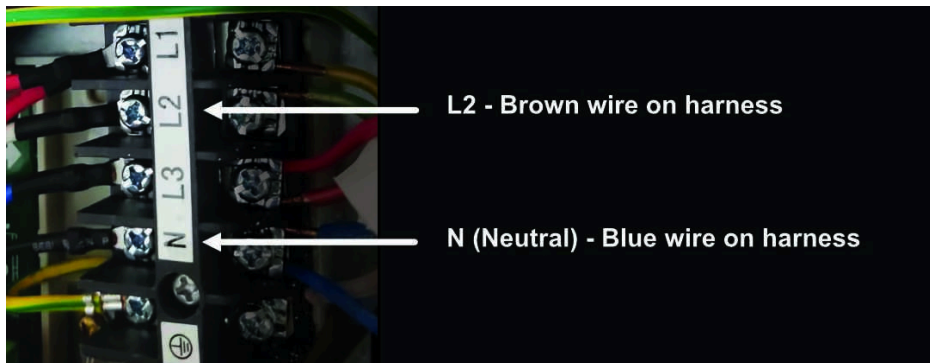


Fig 4 Wiring to a unit without an EAC port onboard. Wire the harness pigtail to L2 and N (Neutral) as indicated. REMOVE GROUND

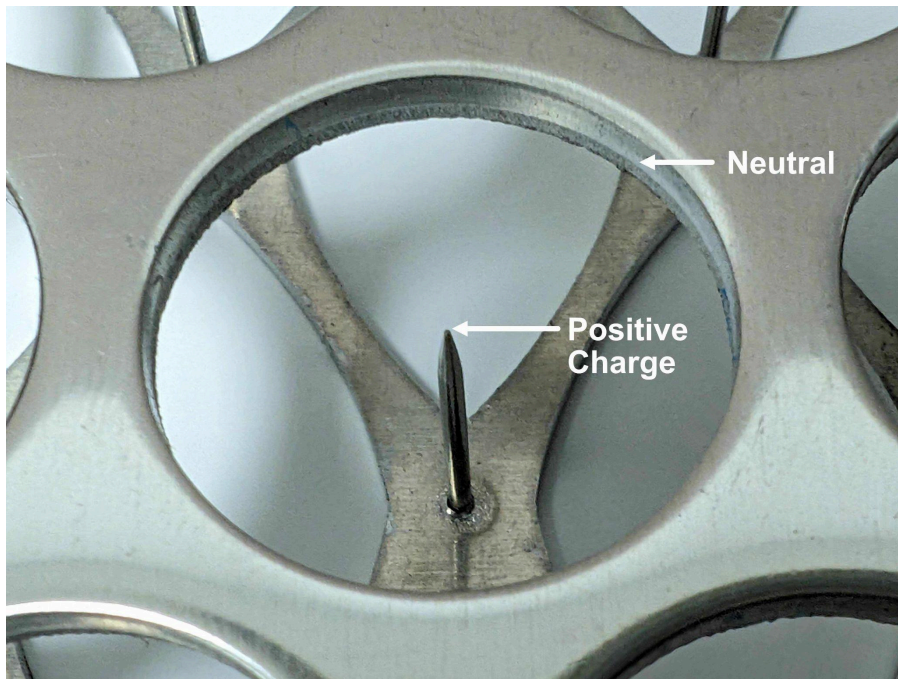


Fig 5 Airesield pin positive charge (5,500V), largest filter maximum 12 watts. Circular punchouts (Neutral)

7 Troubleshoot & Maintenance

TROUBLESHOOTING		
Visual Inspection LED Checks LED Green If green LED is illuminated	Every 6 months, perform cleaning with the wool tool or water wash.	Disconnect power. Slide the module out and disconnect the Molex plug (fig 3). Remove Mesh on the upstream side. Wipe honeycomb surfaces with soft, lint-free cloth dampened with 70 % rubbing alcohol; avoid bending pins; allow to dry completely. Perform drill bit cleaning with the wool tool or water wash.
LED Yellow If yellow LED is illuminated	Immediate cleaning is required. Otherwise, clean every 6 months as described above.	*See above for cleaning methods
LED Red If the red LED is illuminated	Inspected if the Airoshield is not working or during the 6-month cleaning	If the red LED is illuminated, then the device has encountered a problem and is not functional. Typically, this can be due to a foreign object short-circuiting the device. Inspect the device to ensure no foreign matter and perform cleaning as noted above.
MAINTENANCE		
Task	Frequency	Procedure
Alternate Cleaning Method	Every 6 months	Disconnect power. Slide the module out. Remove Mesh on the upstream side. Wipe honeycomb surfaces with soft, lint-free cloth dampened with 70% rubbing alcohol; avoid bending pins; allow to dry completely. Perform drill bit cleaning with the wool tool or water wash.
Electrical test (contractor)	Annually	Measure primary voltage (diagnostic port) $\approx 5.5 \text{ kV} \pm 10 \%$
Rinse off nylon mesh pre-screen	Every 6 months	

Tip: Set a calendar reminder or ask Reviveaire to enroll you in our free maintenance-alert program.

8. Specifications

Model name	Aireshield
Rated voltage	120–240VAC
Rated frequency	50/60Hz
Thickness	0.875 Inch
Live SARS Virus test	≥ 99.9% *
Staphylococcus albus kill rate	≥ 99.9% **
Natural bacteria death rate	≥ 90% ***
Ozone concentration	Intertek - Certified Zero Ozone ****
Local Code Jurisdiction	Local code minimum outdoor airflow design should be complied with.)
Operating Temperature	32 °F – 140 °F (0 °C – 60 °C)
Service Life	10 Years

Note:

* Innovative Bioanalysis Live SARS test

** Proved in the simulated field experiment of air sterilization, the killing rate of staphylococcus albus was 99.98% after the Aireshield has run for 2 hours

*** Proven in the simulated field experiment of air sterilization, the killing rate of Natural Bacteria 99.98% after the Aireshield has run for 2 hours.

**** UL-2998 certified by Intertek Certified Zero Ozone

9. Limited Warranty

Reviveaire warrants each Airesshield module to be free from defects in materials and workmanship for **36 months from installation (42 months from manufacture)** for both residential and non-residential applications, subject to the following:

- ❖ Installation and maintenance must follow this manual.
- ❖ Warranty covers parts only; labor and freight are the responsibility of the owner.
- ❖ The warranty is transferable with property ownership.
- ❖ Exposure to corrosive or explosive atmospheres, improper wiring, or use of non-approved power sources voids the warranty.

Airshield technologies are warranted 36 months after product installation or 42 months after manufacturing.

Warranty is limited to workmanship or defects applied to the standard operating conditions as set for the disinfection device.

RESIDENTIAL APPLICATIONS:

Airshield must be installed per the manufacturer's instructions by a certified Home HVAC contractor. Reviveaire will analyze the product and determine if the product should be repaired or replaced without cost for materials to the user/homeowner.

All labor and shipping costs to remove and reinstall the filter are by the user/homeowner.

The balance of the warranty shall remain in effect.

NON-RESIDENTIAL APPLICATIONS:

Airshield must be installed per the manufacturer's instructions by the installing contractor or Reviveaire's authorized channel partner. Reviveaire will analyze the product with the selling channel partner, and determine if the product should be repaired or replaced without cost for materials to the business.

All labor and shipping costs to remove and reinstall the filter are by the business/organization using the product. The balance of the warranty shall remain in effect.

ADDITIONAL WARRANTY NOTES:

Reviveaire technologies warranties will not include the labor cost for removing and installing the device and return shipping costs.

Consult your supplier or contractor for any service or warranty claims. Always handle the Airesshield disinfection device with care to prevent injury and avoid damaging the product.

This warranty excludes defects resulting from improper installation, misuse, use beyond Reviveaire's recommendations, accidents, or neglect of required maintenance. Warranty shall be voided if clean power is not maintained as an electrical service.

Products are not certified/designed to be used in corrosive and explosive environments, otherwise, the warranty shall be void.



Need technical help?
☎ 908-987-7089 ✉ sales@reviveaire.com 🌐 reviveaire.com | 🌐 aireshield.com

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