



AiroClean420™

Photocatalytic Air Purifying Technology

Owner's / Maintenance Manual



Model

AIRO-50XL

Congratulations

By purchasing an *AiroClean420* photocatalytic air purifying system, the most advanced and effective airborne pathogen reduction system available, you've positioned yourself as a leader in your industry. The *AiroClean420* products were developed from NASA technology and use a patented process to kill airborne Powdery Mildew, Mold, Botrytis, as well as other Bacteria, Viruses, and pathogens in Cannabis Cultivators & Grow facilities. The same process breaks down VOC's, like ethylene gas, formaldehyde and many odors, into micro amounts of harmless carbon dioxide and water vapor. *AiroClean420* systems generates ZERO EMISSIONS (i.e. No Ozone or other toxic chemicals and gas).

Important Safety Instructions

For your safety and protection, read this entire Owner's Manual before you attempt to install or use your *AiroClean420* system. Keep this safety information where you can refer to it if necessary.

DO NOT run cord under carpeting. **DO NOT** cover cord with throw rugs, runners, or similar coverings. **DO NOT** route cord under furniture or appliances. Arrange cord away from traffic area and where it will not be tripped over.

Cautions & Symbols on Unit



Warning

WARNING: If you spray any types of chemicals or cleaning agents in the room that contains that *AiroClean420* unit(s), please turn off the *AiroClean420* unit(s) during this spray period as well as (1) hour after spraying is complete (to allow for all residues to dissipate).

The various sprays and cleaning agents could possibly harm the catalyst located inside the *AiroClean420* reactor bed.

Technology

As contaminated pathogenic air is processed through the photocatalytic reactor, the patented green technology, intergrated with Photocatalytic Oxidation (PCO), works in unison to destroy harmful airborne microbes and dismantle volatile organic compounds (VOC) while not producing any by-products. Clinical studies show a 99.999987% plus kill rate for microbials and removal of VOC's. The *AiroClean420* technology is a FDA listed medical device. *AiroClean420* is energy efficient, consuming less Energy then (2) 100 watt light bulbs.

Titanium dioxide (TiO²) is a component photocatalyst material used in the device. A unique process is used to create the patented TiO² formula that coats the catalyst material. When this material is irradiated with the ultraviolet photons from the *AiroClean420* proprietary lamps inside, hydroxyl radicals and super-oxide ions are formed. These species will oxidize (reduce to trace elements of carbon dioxide and water) volatile organic compounds (VOC's) adsorbed on the catalyst surface. They will also kill and decompose airborne pathogens like powdery mildew, mold, botrytis, bacteria and yeast. Because the organic material is completely oxidized by this process, the photocatalytic reactor is self-cleaning relative to organic material on the catalyst surface. *AiroClean420* does not generate nor use ozone and/or any other type of gas or chemical.

Our Air Sanitation technology has been in commercial use since 1999. The technology has been deployed in a broad base of global food and agricultural companies. We have proven strong efficacy with eradication of all forms of airborne fungal diseases such as Powdery Mildew. As mentioned above, all the kill happens inside our reactor bed without using and/or producing any gas or chemical - thus, we do not claim to clean surfaces. It is important that your room, where *AiroClean420* is installed, has reliable environmental controls and pest management practices to work in conjunction with the technology in order to optimize your facilities sanitation.



Figure 1

AiroClean420 uses truly breakthrough technology to remove airborne pathogens. It works by drawing in air through its Air Entry Port and then forcing it through its Reactor Bed where a photo-catalytic reaction kills living organic matter like mold/fungi, bacteria and viruses and breaks down organic gases (VOC's) like ethylene.

Installation

NOTE: The AIRO-50XL unit will perform the best when it is located within the active air current that occurs within your facility. This allows for a greater distribution of the units processed (clean) air.

It appears that in most facilities – the most active air current tends to be in the center of the room.

Thus, we recommend that the AIRO-50XL unit be hung, from the ceiling, as close to the center of your room as possible. The unit should be hung upside down (see figure 2) and at the level that is flush with the bottom of your light fixtures.

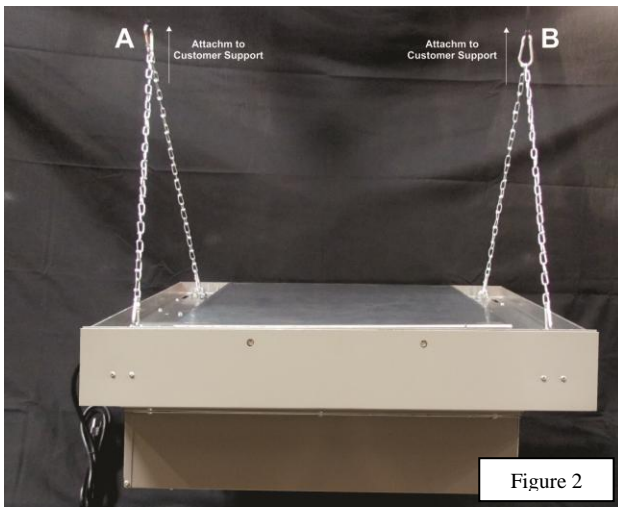


Figure 2

- 1) Take the unit carefully out of its shipping box.

NOTE: The unit will also come in two basic parts: base unit and the unit lid. Upon receiving the AiroClean420 unit, both sections will be securely fastened together. See below for installation instructions.

NOTE: The air exiting the unit will be warm. Do not let any objects touch the air exit port or get trapped inside the air intake hood vent (see figure 1 on above).

NOTE: If installing multiple units, attempt to put the units equal distance from each other. Hang from the ceiling and as close to center as possible as described above. The unit's air exit port must be at least 36" away from any obstructions.

- 2) You will see on the underneath side of the AIRO-50XL there are 4 U-clamps that will be used to hang the AIRO-50XL unit from the ceiling. See figure 3 on page 4.
- 3) The manufacturer has included 2 harnesses (one for the left side and one for the right side. These are interchangeable). Please attach the harness per Figure 3 below (i.e. Hook 1 to u-clamp left top corner. Hook 2 to u-clamp lower left corner. Hook 3 to top right corner u-clamp. Hook 4 to lower right corner u-clamp. Hooks A & B will be used to attach the unit to your ceiling in step #6 on page 4.

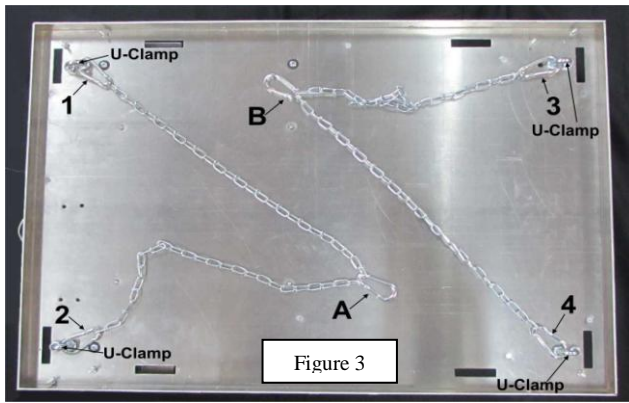


Figure 3

4) Prior to attempting step #5 on this page – ensure that the AIRO-50XL lid is securely in place by pressing in each of the top four corners on the lid itself.

NOTE: Refer to page 6 for more information on how the Quick Release Fasteners, on the AIRO-50XL lid, function.

WARNING: If the AIRO-50XL lid is not properly secure, prior to installation, seriously bodily harm can occur if the lid falls off.

NOTE: The unit weighs 36 lbs. Make sure that your installation materials can properly support the unit. If you have any doubt about the security of the mounting surface, contact an engineer or other individual with knowledge of the ceilings construction.

5) You will need to provide the material to attach the harness to your ceiling. Attach two supporting lines to your ceiling- One from hook A to the ceiling support and one from hook B to the ceiling support. The manufacturer would recommend you use the same material that is used to hang your light fixtures (i.e. thread rod, metal chain, metal cable, etc.) **See figure 4 below.**

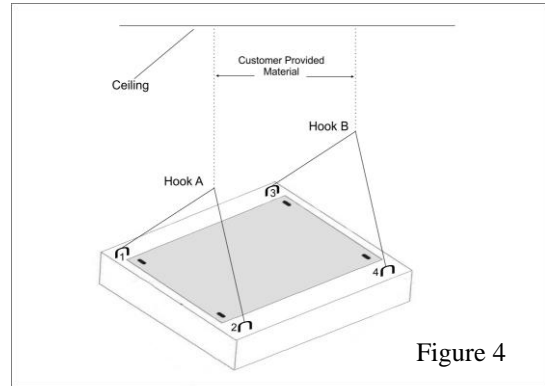


Figure 4

6) Once you have securely hung the AIRO-50XL and insured that the unit's lid is securely fastened, next, plug the AIRO-50XL into your power source and turn the unit on.



System Start Up

DO NOT supply power to the *AiroClean420* unit until it is completely installed, and its cover is securely fastened.

As the unit turns on, the green power indicator light should come on and a very light hum can be heard from the fan in the unit.

(Do not remove the cover when the unit is plugged in.)

NOTE: If proper power is supplied to the unit and the green LED light goes out, call for service.

Maintenance

Because the expected life span of the *AiroClean420* proprietary lamps used in systems is approximately one year, all lamps must be changed every 12 months. In addition, the protective 4" filter needs to be changed every grow season. This filter keeps dirt out of the *AiroClean420* reactor chamber. Failure to change this filter on a timely basis will reduce the unit's photocatalytic reaction and will cause the unit to not operate at its maximum capacity and efficiency. The catalyst material should never need to be replaced. Contact KES or your *AiroClean420* distributor to schedule your annually lamp change.

Changing the *AiroClean420* Proprietary Lamps

Lamp Warning -Use of any lamps other than those supplied by KES may result in the malfunctioning of the *AiroClean420* unit, as well as compromise its pathogen killing effectiveness. Use of any other lamps will void warranty.

Caution: Be sure unit is unplugged before beginning service.

1) Disconnect the power source. Make certain all power is turned off to the unit.

NOTE: Carefully unhook the *AiroClean420* unit from the mounting hardware attached to your ceiling. Then you can place the unit on a work table to replace the lamps.

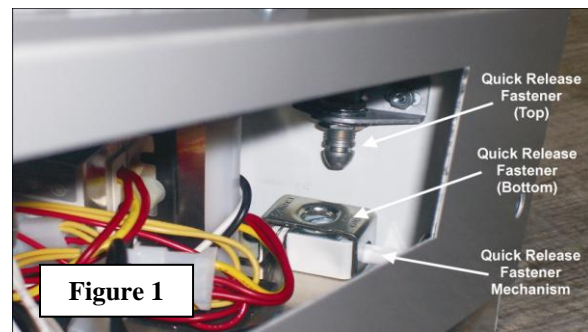
To unhook the unit, simply disconnect clamps A & B from your ceiling support. **See figure below.**



Quick Release Fastener

Release the fasteners by locating the four access holes along the four corners of the cover and simply inserting a screwdriver (or some other object that will fit into the access holes) and push in the release mechanism (see picture) for the fastener. Repeat this process for the remaining three fasteners (i.e. one on each end of cover).

NOTE: A "POP" will sound when the fastener has been released.



Once all four fasteners have been released, remove the cover from the unit and set aside.

Important: When attaching the cover back onto the unit, simply align each corner of the cover with the unit, then, press down on each corner, when done correctly, you should hear a "CLICK" noise when each of the fasteners is locked back in place. Pull up on each corner. If one corner is loose, push down again until you hear the fastener "CLICK" into position.

NOTE: Prior to disconnecting any of the wiring harness, observe how the unit is currently wired. **See Fig. 2 on page 6. Here are a few helpful tips.**

- Each ballast will run a group of 4 lamps (this group of 4 consists of 2 sets of 2 lamps which will be explained below).
- Each set of ballast will have a total of 4 wires coming off its outlet side – 2 red wires and 2 yellow wires. **See figures 3, 4, & 5 on page 6 and wiring diagram on page 8.**

- Each set of 2 lamps will have (1) yellow wire going to one lamp and (1) red wire going to the second lamp. These 2 lamps are then connected via a small jumper wire (either white or black – these jumpers are interchangeable). See wiring diagram on page 8. Repeat the above for the second set of 2 lamps. Once completed, you have a group of 4 lamps wired into (1) ballast.

NOTE: KES recommends that you replace 4 lamps at a time. This will help to ensure that the replacement lamps are wired correctly.

3) Starting at the end closest to the fan – take the first group of 4 lamps and disconnect the white and black jumpers. Then, on the other side of the lamp, disconnect the red and yellow wires. See Figures 2, 3, & 4.

NOTE: To aid in removing the lamp, wet the grommets with a small amount of tap water or a cotton ball or swab

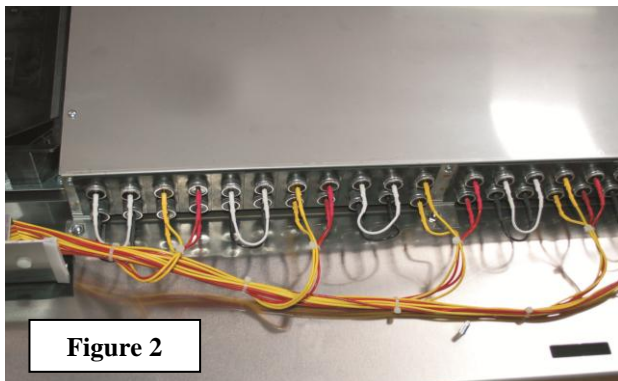


Figure 2

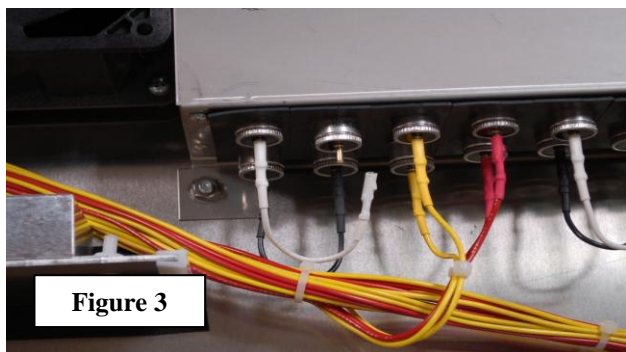


Figure 3

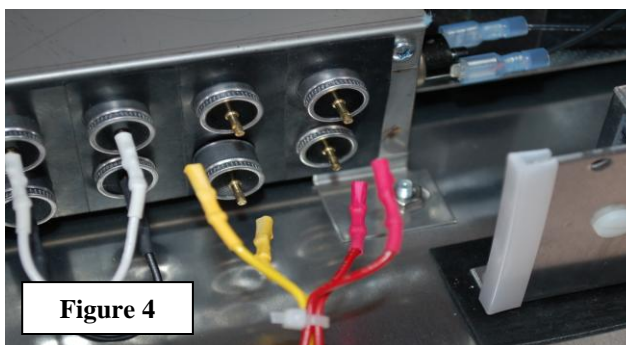


Figure 4

on each lamp, and firmly sliding it out of the rubber grommet. See figure 5 below.

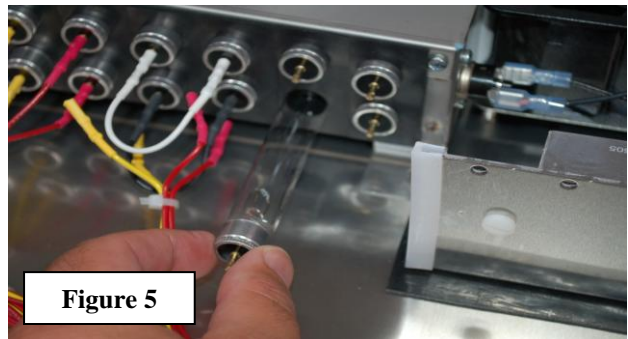


Figure 5

5) Place the old lamps to the side out of the way.

NOTE: Using the wet cotton swab (from above), slightly moisten the ends of the new lamps prior to inserting into the rubber grommets.

6) Insert (4) new AiroClean420 proprietary lamps (provided by manufacturer) into the rubber grommet in the reactor bed.

7) Re-connect all wires that were disconnected in step #3 above.

8) Repeat the above steps for the remaining groups of lamps.

9) Reinstall cover.

10) Once all lamps have been replaced, take all of the old lamps and discard according to your local regulations, which pertain to disposal of UV and related lamps.

11) Turn the power back on. Unite is ready to operate.

Filter Replacement Instructions

Please note that the 4" protective filter should be replaced after every grow cycle. The purpose of this protective filter is to keep dust/dirt out of the AiroClean420 reaction chamber. Failure to change this protective filter will cause the AiroClean420 unit to not work at maximum capacity and efficiency.

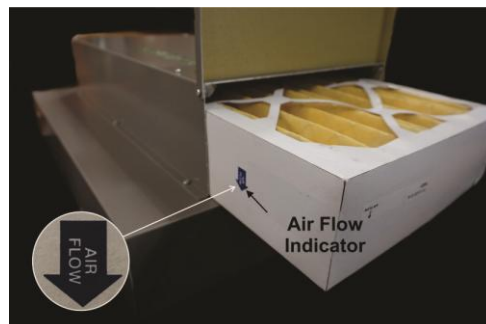
1. Turn the unit(s) off.
2. Remove, but do not discard the (2) screws that hold the Filter Door closed. **See image below.**



3. Swing the door open and remove the filter by pulling it straight out and discard. **See image below.**



4. With the new filter in hand, take note that the air-flow arrow points down.



NOTE: Air-Flow Arrow points down. See image above.

5. Insert filter completely making sure it is flush with the edge of the intake cover.
6. Swing the door closed and reapply the (2) screws being careful not to over tighten.
7. Turn unit(s) back on.

Limited Warranty

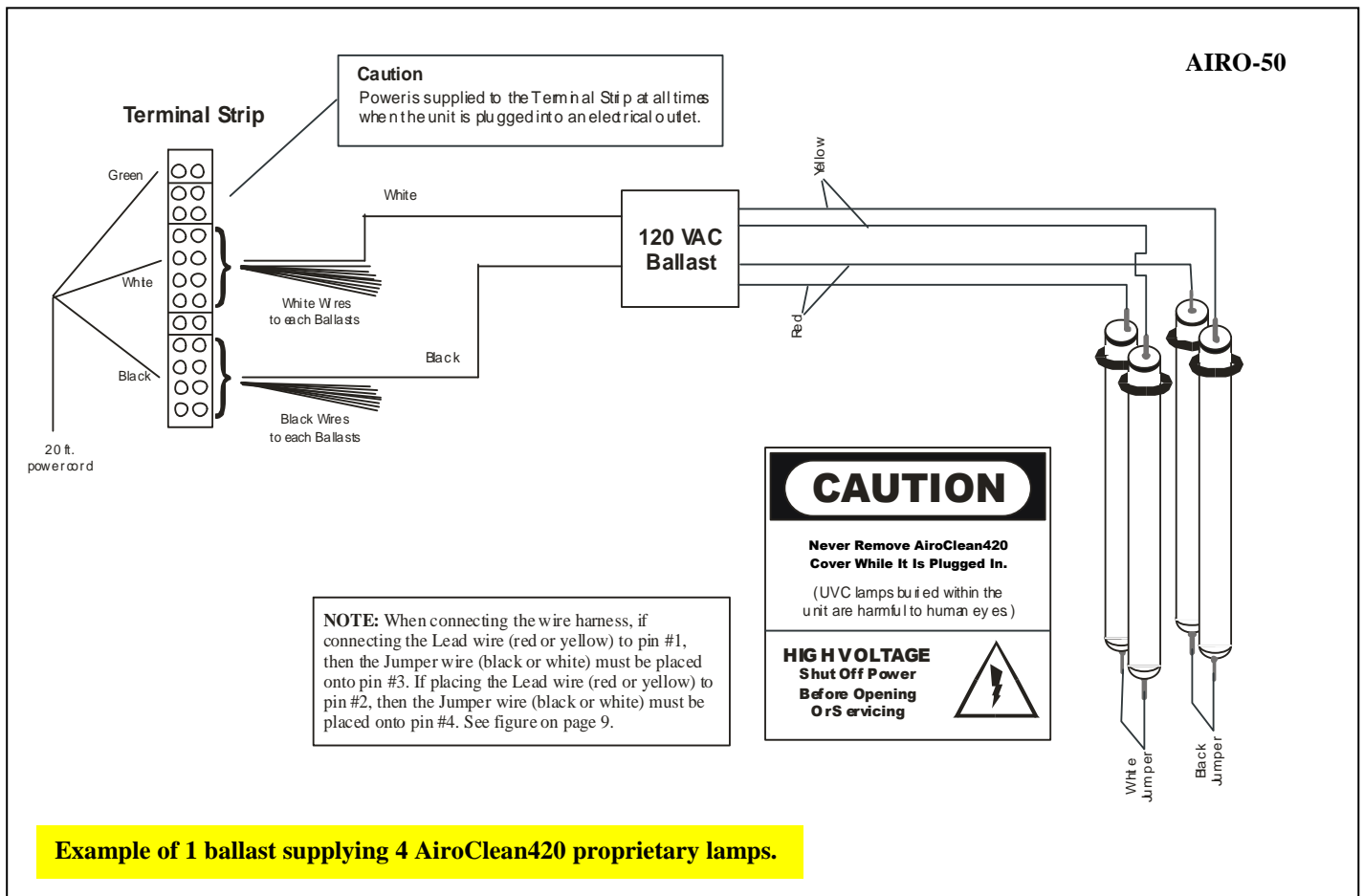
KES offers a three year from date of invoice limited warranty on the material and workmanship of all metal, plastic and electrical components of this system, not to include lamps, labor, or returned freight charges. This warranty does not cover loss of or damage to any parts of this system not installed in accordance with the furnished installation and maintenance instructions. At its option, KES will repair or replace any components, which upon inspection KES finds to be defective. KES will only repair or replace components if the components have been installed in accordance with the furnished instructions and that there have been no misuse or negligence. Use of any lamps other than those provided by KES may result in the malfunctioning of the AiroClean420 unit, as well as, compromise its pathogen killing effectiveness. Use of any other lamps will void warranty.

Specifications

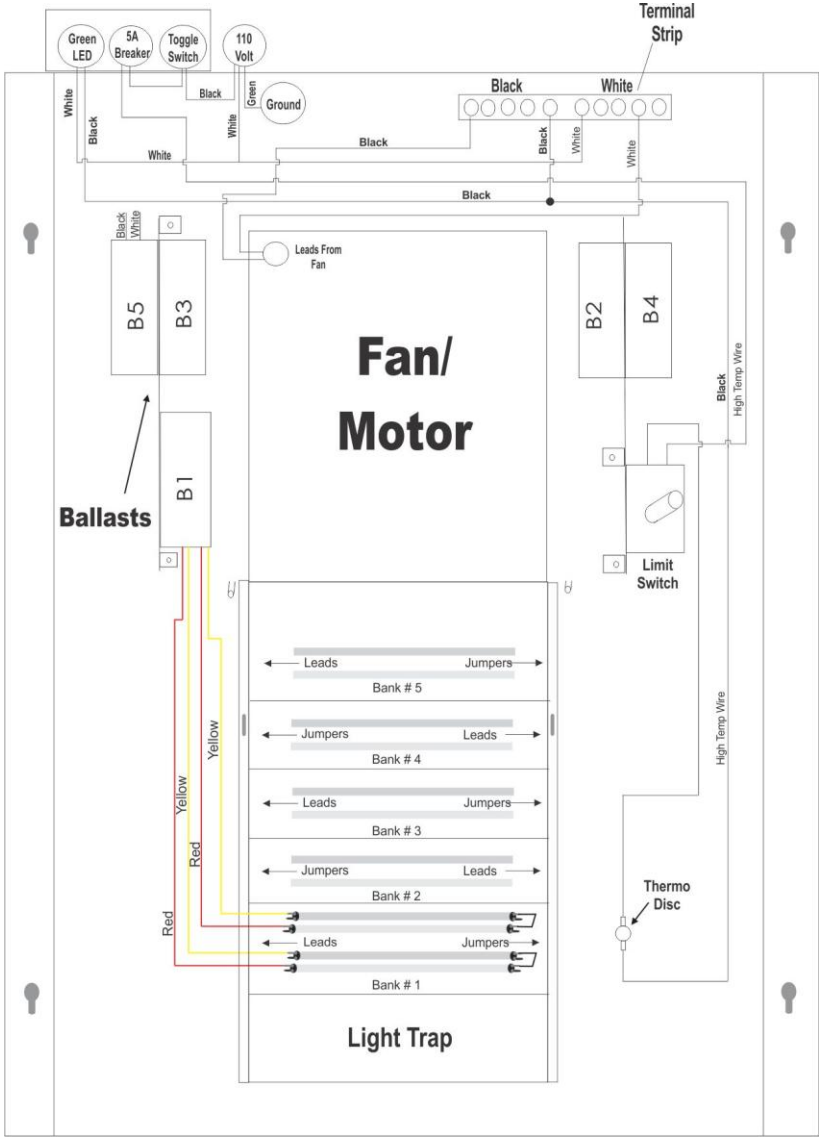
SPECIFICATIONS AIRO-50

Power Cord Length (Custom Lengths Available)	6 Ft	Unit Dimensions	27.5" x 18.5" x 9" (.699 M x .476 M x 0.139 M)
Power (Pre-Set / Non-Switchable)	120 Volt	Unit Dimensions With Shipping Box	33" x 24" x 13" (.838 M x .609 M x 0.330 M)
Recommended Available Amps	2 Amps	Unit Weight	36 lbs (16.329 KG)
Power Consumption In Watts	180 Watts	Shipping Weight (Excluding Pallet Weight If Used)	44 lbs (19.958 KG)

Wiring Diagrams



AIRO-50 Wiring Diagram



Maintenance Replacement Reminder

On behalf of KES Science & Technology, we would like to thank you for the purchase of your new AiroClean420XL unit(s).

Please note that every 12 months, the lamps inside your AiroClean420XL unit(s), need to be replaced to ensure the unit continues to function properly and eliminates airborne organics like Powdery Mildew and other Fungal Diseases.

Approximately 60 days prior to your required lamp change (i.e. 12 months after purchase) you will receive a friendly reminder via mail and email to purchase your replacement lamps.

Attached below is a schedule for you to fill in at your convenience that will help keep track of your annual lamp replacements. If you have any questions regarding the unit or the lamp replacement kits, do not hesitate to contact the number at the bottom of the page.

Event	Replacement Date
Purchase of the AiroClean420XL Unit	
Lamp Kit Replacement 1 (12 months from purchase)	
Lamp Kit Replacement 2 (24 months from purchase)	
Lamp Kit Replacement 3 (36 months from purchase)	
Lamp Kit Replacement 4 (48 months from purchase)	
Lamp Kit Replacement 5 (60 months from purchase)	

Filter Replacement Reminder

On behalf of KES Science & Technology, we would like to thank you for the purchase of your new AiroClean420XL unit(s).

The protective 4" filter needs to be changed every grow season. This filter keeps dirt out of the AiroClean420XL reactor chamber. Failure to change this filter on a timely basis will reduce the unit's photocatalytic reaction and will cause the unit to not operate at its maximum capacity and efficiency.

Attached below is a schedule for you to fill in at your convenience that will help keep track of your filter change. If you have any questions regarding the unit(s) or the filter, do not hesitate to contact the number at the bottom of the page.

Event	Replacement Date
Purchase of AiroClean420XL Unit	
Filter Replacement (1st Grow Cycle)	
Filter Replacement (2nd Grow Cycle)	
Filter Replacement (3rd Grow Cycle)	
Filter Replacement (4th Grow Cycle)	
Filter Replacement (5th Grow Cycle)	
Filter Replacement (6th Grow Cycle)	