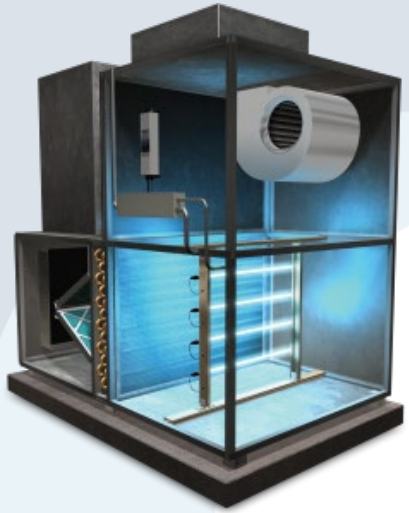
Safe Back to School

Indoor Air Quality and Portable Air Purifiers



FIELDCONTROLS

certified WBENC WOMEN'S BUSINESS ENTERPRISE

Importance of Indoor Air Quality

Past 2 years showed remote learning does not work & highlighted importance of indoor air quality (IAQ)

IAQ impacts how schools are funded and addresses their challenges

Reduce Absenteeism

- Poor IAQ causes illness and increases school absenteeism of students & teachers
- 22% of student absences were caused by respiratory illnesses JSN

Increase Test Scores

- Indoor air quality consistently improves student's standardized test scores EPA

Increase Teacher retention

- IAQ was the most cited problem leading teachers to consider leaving their school NY SB

Every school benefits from improved indoor air quality and federal funding is available

FIELDCONTROLS

Guidelines for Improving Air Quality

CDC, EPA, and ASHRAE published guidelines for improving indoor air quality and reducing transmissions

Healthy Indoor Environments

1. Eliminate the Source
2. Ventilate
3. **Add air cleaning devices**

Ventilation in Schools Guidelines

1. Maximize ventilation
2. **Use HEPA**
3. **Supplement with UVGI**

Epidemic Task Force Schools & Universities

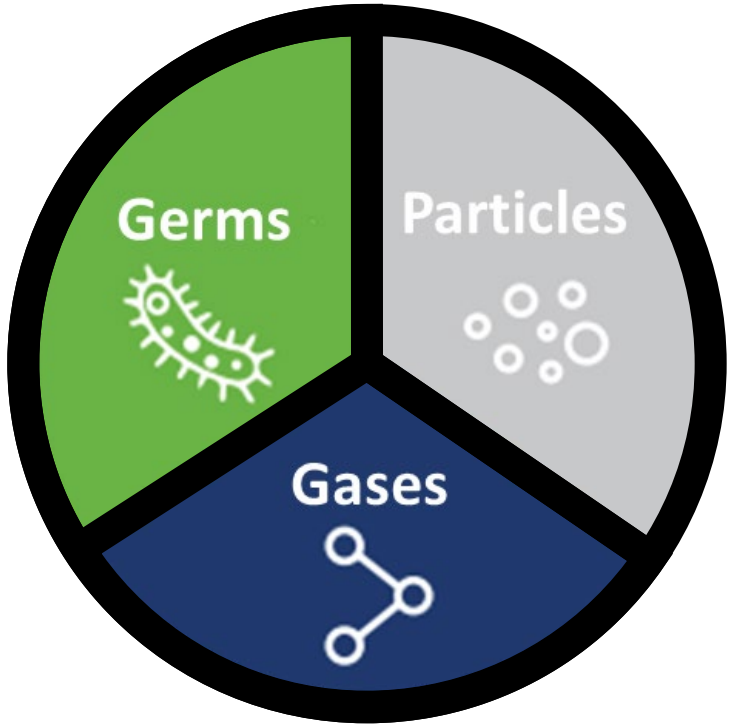
Introduce terminal or portable, all electric **HEPA/UV Machines in each classroom**

All schools benefit from improved indoor air quality and funding is available

What is in Poor Indoor Air?

Germs

- Virus: COVID-19, Influenza
- Bacteria: Tuberculosis
- Fungus: Mold



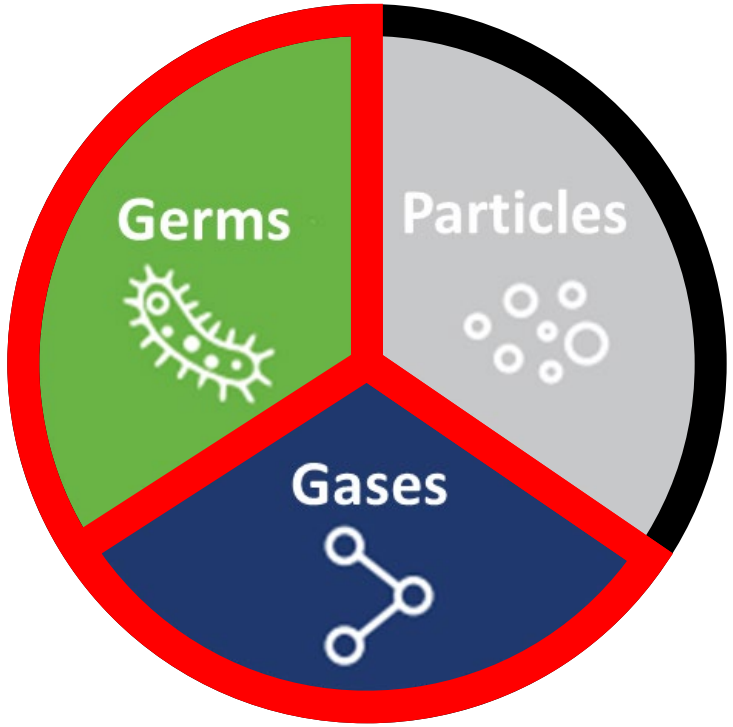
Particulate Matter (PM)

- PM_1 <1µm: Dust, Combustion particles
- $Pm_{2.5}$ <2.5µm: Smoke, Pollen, Spores
- PM_{10} <10µm: Pet Dander

Gases, Odors, & Chemicals - Volatile Organic Compounds (VOCs)

- VOCs can be gases that come from carpets, paint chemicals, and cleaning solutions
- These gases and chemicals often off-gas from indoor products and materials
- Formaldehyde and Benzene, common VOCs, are known carcinogens (NIEHS)

Typical Solutions



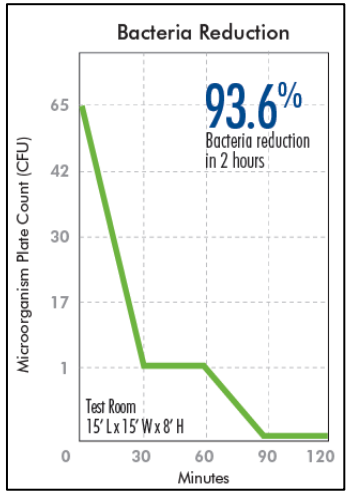
HEPA Filtration

- Pre-Filter: large particles
- H13 HEPA traps >99% of particles such as smoke, dust, dander, and pollen

Carbon Filtration

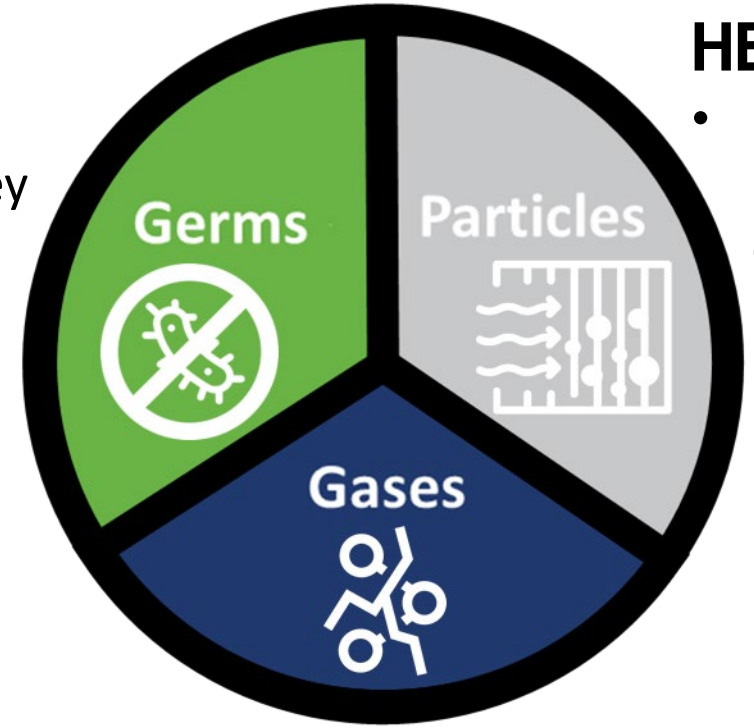
- Activated carbon absorbs toxic gases from smoke, household products, and cleaners

Purification Requires Three Technologies



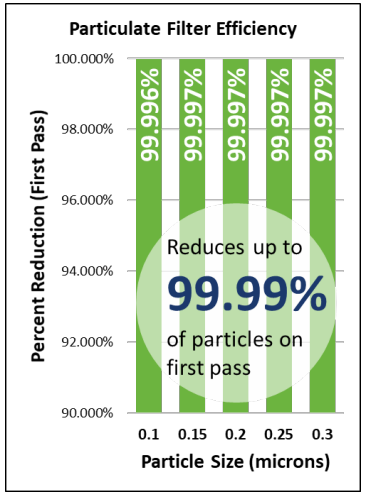
UV-C Protection

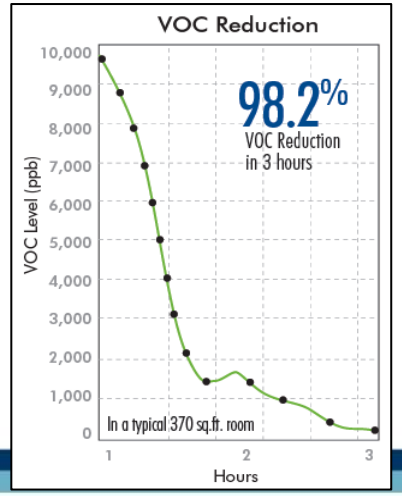
- Neutralizes viruses, bacteria, fungi as they pass by the lamp



HEPA Filtration

- H13 HEPA traps >99% of particles like smoke, dust, and pollen





PRO-Cell Technology & Carbon Filtration

Breaks down and captures chemicals

- Carbon adsorbs toxic gases from smoke, and household products
- Photo-Reactive Oxidation process breaks down VOCs into CO_2 and H_2O

FIELDCONTROLS

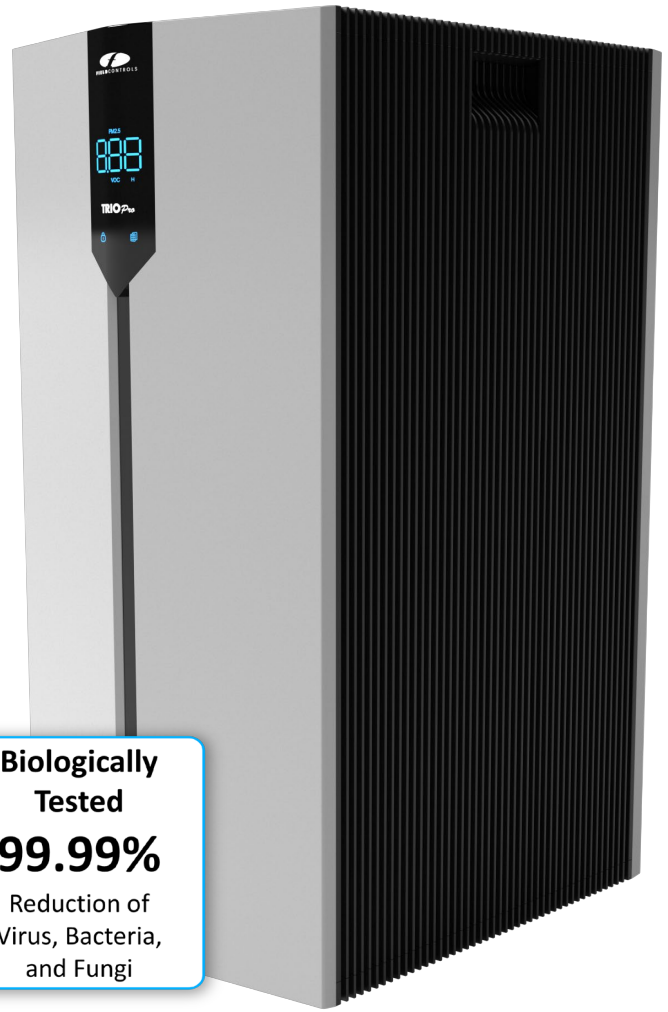
TRIO Plus – Classrooms & Offices

Coverage:	Up to 1,650 sq. ft.
Airflow:	450CFM (H13 HEPA)
CADR:	305 CADR (H13 HEPA)
UVC:	(2) 10W lamps, >30 µW/cm²@1m
Power:	120 V, 1A, 89W
Noise:	25 on low (Whisper) 54 dBA on high (light rain)
Speeds:	6 + Automatic Mode
Sensor:	Particulate PM2.5
Controls:	Timers, Child lock, Sleep Mode
Filters:	Pre-filter H13 HEPA Filter 200 g of carbon PRO-Cell PCO
Designed for:	Offices

ENERGY STAR · AHAM VERIFIDE · CALIFORNIA AIR RESOURCES BOARD · OZONE

FIELDCONTROLS

TRIO Pro – Large, High Occupancy



Biologically Tested

99.99%

Reduction of Virus, Bacteria, and Fungi

Airflow:	647CFM (H13 HEPA)
CADR:	518 CADR (H13 HEPA)
UVC:	(4) 8W lamps, >25µW/cm^2@1m
Power:	120 V, 1A, 123W
Noise:	20 on low (Whisper) 54 dBA on high (light rain)
Speeds:	5 + Automatic Mode
Sensor:	Particulate PM2.5, tVOC
Controls:	Timer, Child lock, Remote, Sleep
Filters:	Pre-filter H13 HEPA Filter 200 g of Carbon PRO-Cell PCO
Designed for:	Conference rooms Lobby's

ENERGY STAR

AHAM VERIFIDE

CALIFORNIA AIR RESOURCES BOARD

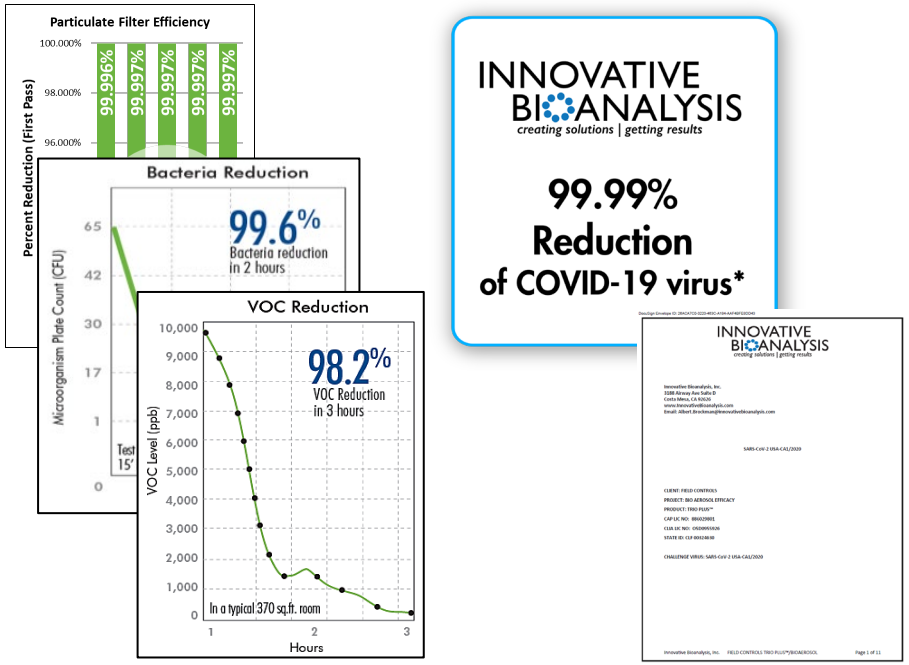
OZONE

FIELDCONTROLS

Independently Tested & Certified

Proven Technology

HEPA Filters, PRO-Cell, and UVC
Effectiveness all Independently Tested



Virus: 99.99% reduction of the active COVID-19 virus, SARS-CoV-2, in 30 minutes.
Bacteria: 99.63% reduction of Bacillus Subtilis spores in 120 minutes.
Fungi: >99.99% reduction of Staphylococcus aureus ATCC 6538.

Performance Tested & Certified

Performance verified by industry
standards and safety tested and certified

- AHAM Verified
  - Independent testing, verified for performance for Clean Air Delivery Rate (CADR)
- Energy Star Certification
  - Rated as energy-efficient air purifiers
- CARB / Ozone Certification
  - Certified to meet ozone safety standards
  - Ozone Verified (<5 ppb) by UL 867
- Safety – US & Canada Certified
  - Confirms to UL STD.507 and certified to CSA STD.C22.2 No. 187 2020 Ed.5

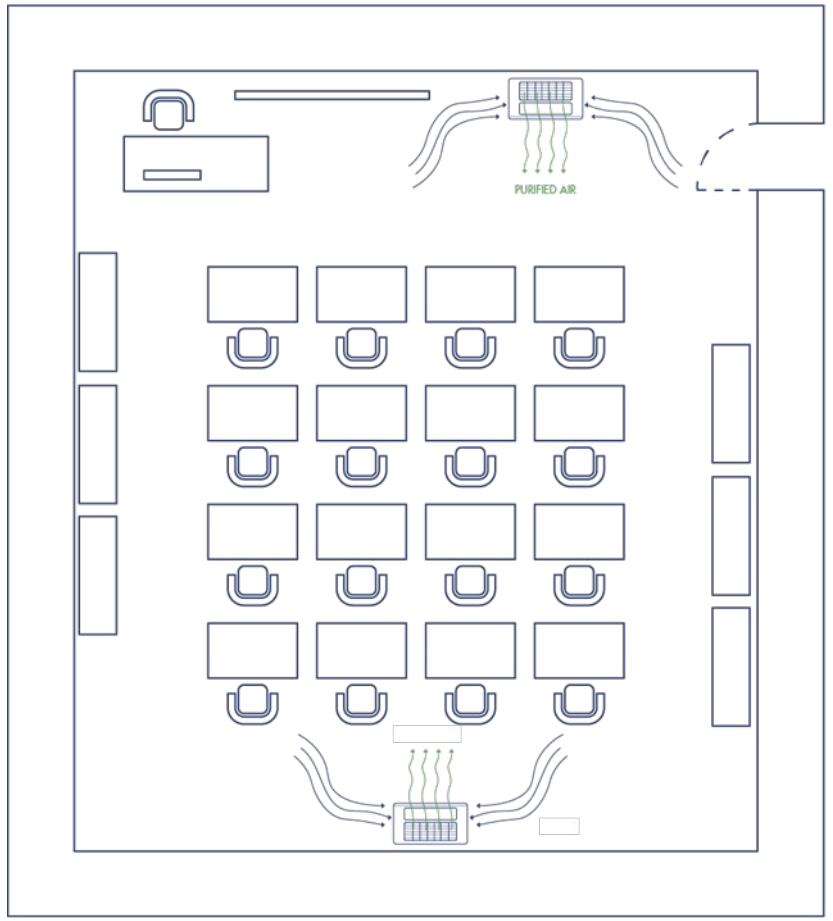
Exceeding Typical Ed. Requirements

	Meets & Exceeds	Importance
Air Purifier	HEPA >99.97 at 0.3µm	Everyone can claim “HEPA” Independent Lab report showing 99.99% at 0.1 to 0.3µm
Electrical	120V, 60Hz, >2A	Adding 100s to 1000s to each School – School must be able to handle power demand Energy Star Certified Draws 1A, 25 - 86W (Speed 1 -Turbo)
Airflow >225 CFM	440 CFM, 305 CADR **CFM** - Cubic Feet/Min **CADR** - Clean Air Delivery Rate (cfm)	Airflow can be measured in different methods and unverified TRIO Plus: 440+ CFM, lab tested Independently tested 305 CADR – AHAM Verified
Standards	AHAM Verified CARB Energy Star	AHAM Verified - Independent Industry Standard Testing and review for performance CARB – California Air Resource Board Ozone certification for Non-Ozone producing EPA Energy Star certified
Sound Level < 70 dB(A)	52 dB(A)	Not just sound – pitch/tone Higher pitch – annoying, picked up on speakers, etc.
Filters	HEPA & Carbon	H13 HEPA, Activated Carbon filter
UVC	2 x 10W UVC lamps	2 – 4 High Output UVC lamps, not just LEDs
Features	Safety Timer	Multi Fan Speed & Turbo Child Lock Timer Wheels Wall Mount

Example Solution

School District

- Every classroom (1-4 TRIO Plus / classroom)
- Nurses' rooms (TRIO Plus)
- Office spaces (TRIO Plus)
- Cafeterias (1-2 TRIO Pros)
- Gyms (1-2 TRIO Pros)



2 units / classroom is best practice for circulation

Whole Building Purification

In-Duct Purification

- Coil irradiation and air disinfection

Reliable Air Treatment

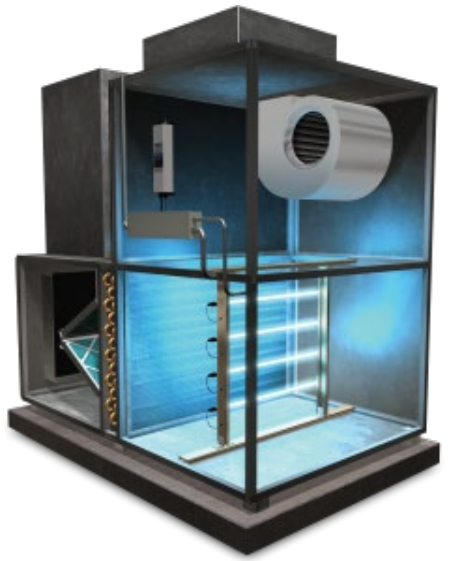
- High output and zero ozone

Installer Friendly

- Magnetic mount for ease of installation

Easy Maintenance

- UV-C shut-off for service and maintenance



FIELDCONTROLS

INNOVATIVE BIOANALYSIS
creating solutions | getting results

99.99% Reduction of COVID-19 virus*

AHAM VERIFIDE

ENERGY STAR

CALIFORNIA AIR RESOURCES BOARD

Meets California ozone emissions limit: CARB certified

Established in 1927, Part of Heico Corporation, Multinational

Focused on products that control, move, or improve the quality of air

Manufacturing HQ: Eastern North Carolina and Southern California

WOMEN OWNED™

FIELDCONTROLS

Room Coverage

Based on independent testing, modeling, and calculations; Field Controls expects the TRIO Plus and TRIO Pro products to meet the following air cycles per hour:

Air Changes /Hr.	8’ Ceilings		10’ Ceilings	
	Room Size (sq. ft.)		Room Size (sq. ft.)	
	TRIO Plus	TRIO Pro	TRIO Plus	TRIO Pro
10	330 (18x18)	485 (22x22)	264 (16x16)	385 (20x20)
6	550 (23x23)	810 (28x28)	440 (21x21)	645 (25x25)
5	660 (26x26)	970 (31x31)	528 (23x23)	775 (28x28)
4	825 (29x29)	1210 (35x35)	660 (26x26)	970 (31x31)
2	1650 (41x41)	2425 (49x49)	1320 (36x36)	1940 (44x44)

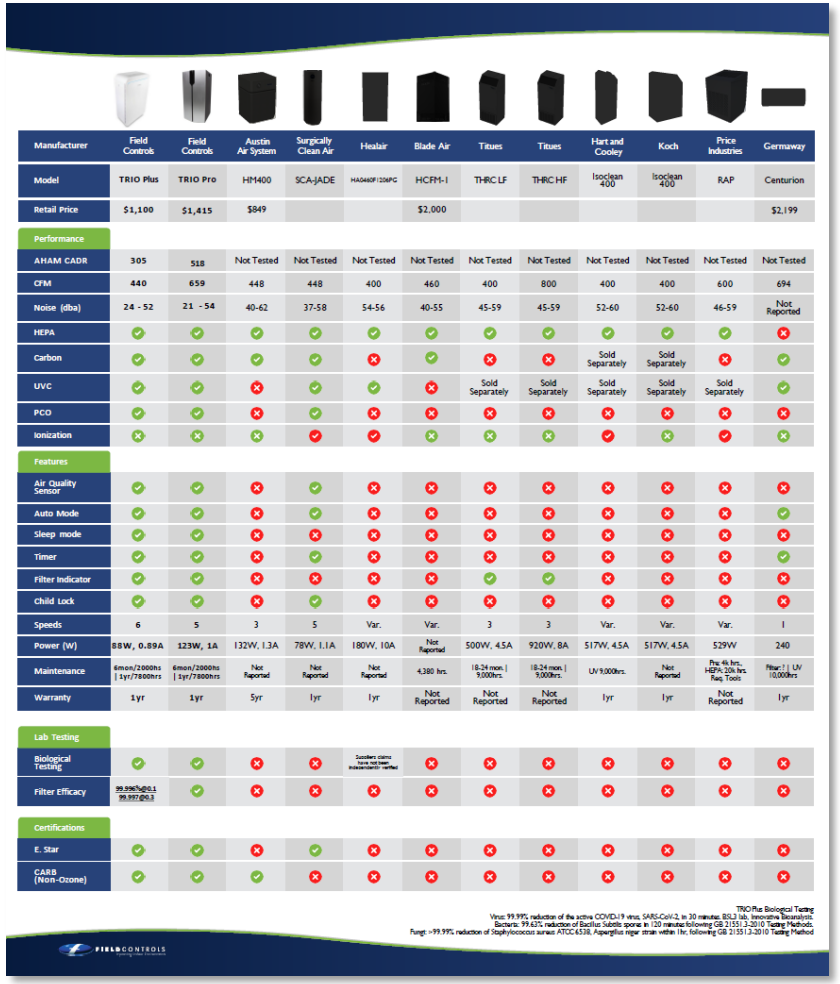



	TRIO Plus	SKYE	TRIO Pro	Commercial UV
Applications	Classrooms, Offices	Classrooms, Business, Fleet Management	Cafeteria, Auditoriums, Gyms, Conference Rooms, Lobbies	Whole Building HVAC Purification
Coverage (ft^2) (8ft ceilings) 1 ACH / 3 ACH / 5 ACH	3300 (57 x 57) 1100 (33 x 33) 660 (26 x 26)	3250 (57 x 57) 1080 (33 x 33) 645 (25 x 25)	4943 (70 x70) 1648 (40 x 41) 989 (32 x 31)	HVAC Coil irradiation Air Disinfection
Noise (dba)	24 - 52	21 – 60	20 - 58	-
CFM | CADR	440 | 305	431 | 293	659 | 518	-
Filter	H13 HEPA	**H13 HEPA**	H13 HEPA	-
UVC + PCO	**Yes**	**Yes**	**Yes**	**YES**
Air Sensor	**Yes**	**Yes**	**Yes**	-
Wi-Fi & App	No	**Yes**	No	-
Certifications: Safety / Performance / Energy / Biological	ETL Certified Prop. 65 Compliant AHAM Verified Energy Star Certified 99.99% virus, bacteria	UL Certified Prop. 65 Compliant AHAM Verified Energy Star Certified 99.99% virus, bacteria	ETL Certified Prop. 65 Compliant AHAM Verified Energy Star Certified 99% fungi	ETL & CARB Certified Prop. 65 Compliant
Weight	26.2 lbs. Wheels & Wall Mount Optional	20 lbs.	44.51 lbs. Wheels standard	N/A
Filter | Lamp Life 24/7: / Office/School Hours:	6 Mon. | 1 Yr. 1 Yr. | 1 Yr.	6 Mon. | 1 Yr. 1 Yr. | 1 Yr.	6 Mon. | 1 Yr. 1 Yr. | 1 Yr.	2 Years

FIELDCONTROLS

Head-to-Head Comparisons

Manufacturer	Field Controls	Field Controls	Austin Air System	Surgically Clean Air	Healair	Blade Air	Titues	Titues	Hart and Cooley	Koch	Price Industries	Germaway
Model	TRIO Plus	TRIO Pro	HM400	SCA-JADE	HA0460F1206PG	HCFM-I	THRC LF	THRC HF	Isoclean 400	Isoclean 400	RAP	Centurion
Retail Price	$1,100	$1,415	$849			$2,000						$2,199
Performance												
AHAM CADR	305	518	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested
CFM	440	659	448	448	400	460	400	800	400	400	600	694
Noise (dba)	24 - 52	21 - 54	40-62	37-58	54-56	40-55	45-59	45-59	52-60	52-60	46-59	Not Reported
HEPA	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗
Carbon	✓	✓	✓	✓	✗	✓	✗	✗	Sold Separately	Sold Separately	✗	✓
UVC	✓	✓	✗	✓	✓	✗	Sold Separately	Sold Separately	Sold Separately	Sold Separately	Sold Separately	✓
PCO	✓	✓	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗
Ionization	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

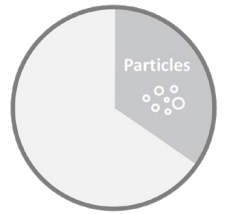


Manufacturer	Field Controls	Field Controls	Austin Air System	Surgically Clean Air	Healair	Blade Air	Titues	Titues	Hart and Cooley	Koch	Price Industries	Germaway
Model	TRIO Plus	TRIO Pro	HM400	SCA-JADE	HA0460F1206PG	HCFM-I	THRC LF	THRC HF	Isoclean 400	Isoclean 400	RAP	Centurion
Retail Price	$1,100	$1,415	$849			$2,000						$2,199
Performance												
AHAM CADR	305	518	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested
CFM	440	659	448	448	400	460	400	800	400	400	600	694
Noise (dba)	24 - 52	21 - 54	40-62	37-58	54-56	40-55	45-59	45-59	52-60	52-60	46-59	Not Reported
HEPA	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗
Carbon	✓	✓	✓	✓	✗	✓	✗	✓	Sold Separately	Sold Separately	✗	✓
UVC	✓	✓	✗	✓	✓	✗	Sold Separately	Sold Separately	Sold Separately	Sold Separately	Sold Separately	✓
PCO	✓	✓	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗
Ionization	✓	✓	✓	✗	✗	✓	✓	✓	✗	✓	✗	✓
Features												
Air Quality Sensor	✓	✓	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗
Auto Mode	✓	✓	✗	✓	✗	✗	✗	✗	✗	✗	✗	✓
Sleep mode	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
Timer	✓	✓	✗	✓	✗	✗	✗	✗	✗	✗	✗	✓
Filter Indicator	✓	✓	✗	✗	✗	✗	✗	✓	✓	✗	✗	✗
Child Lock	✓	✓	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗
Speeds	6	5	3	5	Var.	Var.	3	3	Var.	Var.	Var.	1
Power (W)	88W, 0.89A	123W, 1A	132W, 1.3A	78W, 1.1A	180W, 10A	Not Reported	500W, 4.5A	920W, 8A	517W, 4.5A	517W, 4.5A	529W	240
Maintenance	6mon/2000hrs | 1yr/7800hrs	6mon/2000hrs | 1yr/7800hrs	Not Reported	Not Reported	Not Reported	4380 hrs.	18-24 mon. | 9,000hrs.	18-24 mon | 9,000hrs	UV 9,000hrs.	Not Reported	Pre 4k hrs. HEPA 20k hrs Pwg Tools	Filter 1 | UV 10,000hrs
Warranty	1yr	1yr	5yr	1yr	1yr	Not Reported	Not Reported	Not Reported	1yr	1yr	Not Reported	1yr
Lab Testing												
Biological Testing	✓	✓	✗	✗	Suppliers claims have not been independently verified	✗	✗	✗	✗	✗	✗	✗
Filter Efficacy	99.996%@0.1 99.997@0.3	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
Certifications												
E. Star	✓	✓	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗
CARB (Non-Ozone)	✓	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗

TRIOPlus Biological Testing
Virus: 99.99% reduction of the active COVID-19 virus, SARS-CoV-2, in 30 minutes; BSL3 lab, Innovative Bioanalysis.
Bacteria: 99.63% reduction of Bacillus Subtilis spores in 120 minutes following GB 21551.3-2010 Testing Methods.
Fungi: >99.99% reduction of Staphylococcus aureus ATCC 6538, Aspergillus niger strain within 1hr, following GB 21551.3-2010 Testing Method

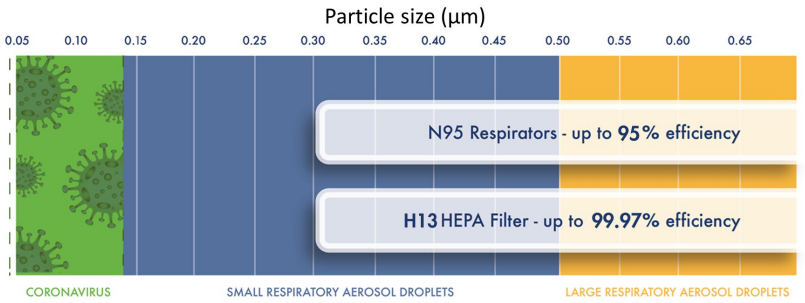
FIELDCONTROLS

Particle Capture – HEPA Filters



Standard HEPA tested to capture 99.97% of 0.3µm particles

Field Controls H13 HEPA Filters are independently tested

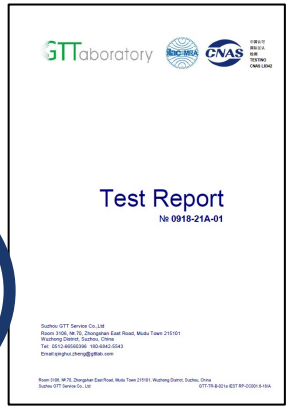


Demonstrate higher capture rate than standard HEPA:

- 99.98% @ 0.1- 0.2 µm particles
- >99.99% @ 0.2-0.3 µm particles

(Viruses: 0.004 µm – 0.1 µm)

Table 1	Filtration performance;							--
Nominal air volume flow rate (m^3/h)		480						
Test aerosol substances		KCl (10%)						
Particle size range(µm)		0.1-0.15	0.15-0.2	0.2-0.25	0.25-0.3	0.3-0.5	0.1-0.2	0.2-0.3
Sample No.	Δ Pa	Fractional efficiency (%)					Efficiency (%)	
21-0918-01	54	99.996	99.997	99.997	99.997	99.997	99.996	99.997


GTTaboratory

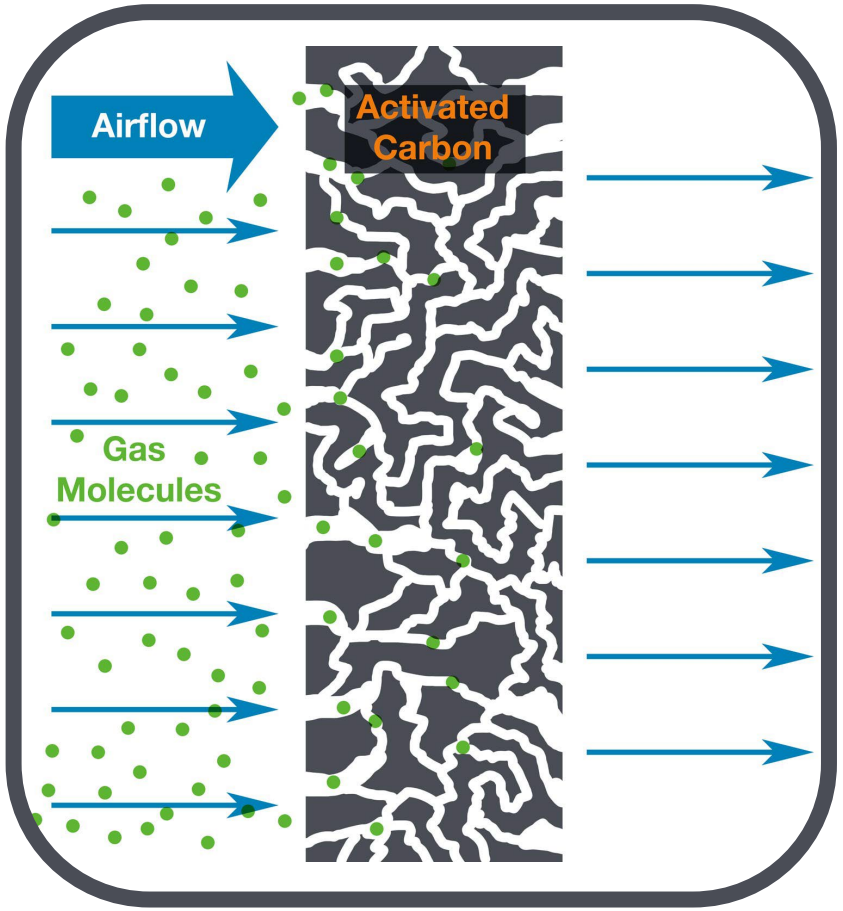
Test Report

№ 0918-21A-01

FIELDCONTROLS

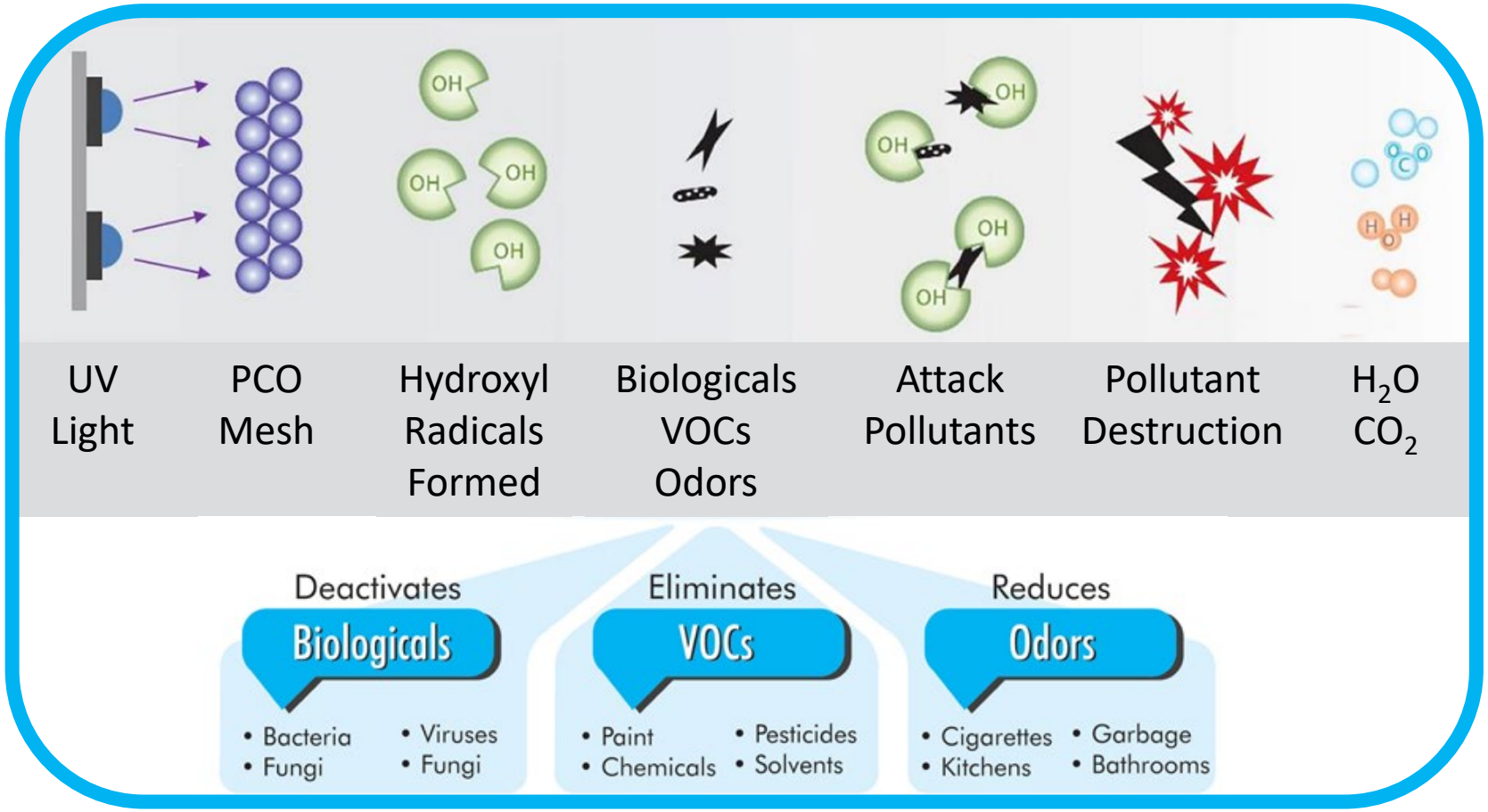
Gas Elimination - PRO-Cell & Carbon

Carbon Filter



Become saturated & off-gasses
Not long-term solution

PRO-Cell™ (Photo-catalytic Oxidation)



FIELDCONTROLS

Germ Neutralization – UV-C

- Ultraviolet Germicidal Irradiation (UVGI)/UV-C inactivates microorganisms by disrupting the DNA rendering them harmless
- Damage based on dosage: energy x time
- Widely used since 1937 cleaning and sterilizing

DNA Before UVC Exposure

DNA After UVC Exposure

"UVC radiation has effectively been used for decades to reduce the spread of bacteria, such as tuberculosis… UVC radiation has been shown to destroy the outer protein coating of the SARS-Coronavirus" – FDA

"…mechanical filtration and ultraviolet germicidal irradiation (UVGI) are effective strategies for reducing the risk of dissemination of infectious aerosols in buildings." – ASHRAE

"UVGI systems can be used to control SARS-CoV-2 as a useful ventilation tool to consider in reducing the spread of infectious pathogens" - CDC

Trio Plus UV Efficacy	UV dose required to de-activate 99%* (µW sec/cm²)	Time (h) Required @ 300 CFM (1000ft²)
Influenza	6800	3.9
Hepatitis	11600	6.7
Tuberculosis	12400	7.2

OZONE

Field Control Lamps are non-Ozone producing
(Not always the case in industry)

FIELDCONTROLS

SKYE – Modern, Fleet Management

INNOVATIVE BIOANALYSIS
creating solutions | getting results

99.99% Reduction of COVID-19 virus*

Coverage:	Up to 1,500 sq. ft
Airflow:	430 CFM (H13 HEPA)
CADR:	293 CADR (H13 HEPA)
UVC:	(1) 14W lamps
Power:	120 V, 1A, 100W
Noise:	22 dB (inaudible) 59 dB (fridge)
Speeds:	10 + Auto Mode
Sensor:	Particulate PM2.5, tVOC
Controls:	App, Timer, Child Lock
Filters:	Pre-filter H13 HEPA Filter 200 g of carbon PRO-Cell PCO
Designed for:	High-end businesses Fleet Management

c UL us LISTED

AHAM VERIFIDE

CALIFORNIA AIR RESOURCES BOARD

OZONE

FIELDCONTROLS

Branded Solutions Available

Leadtime: 3-4 wks.
Min order: 100 units