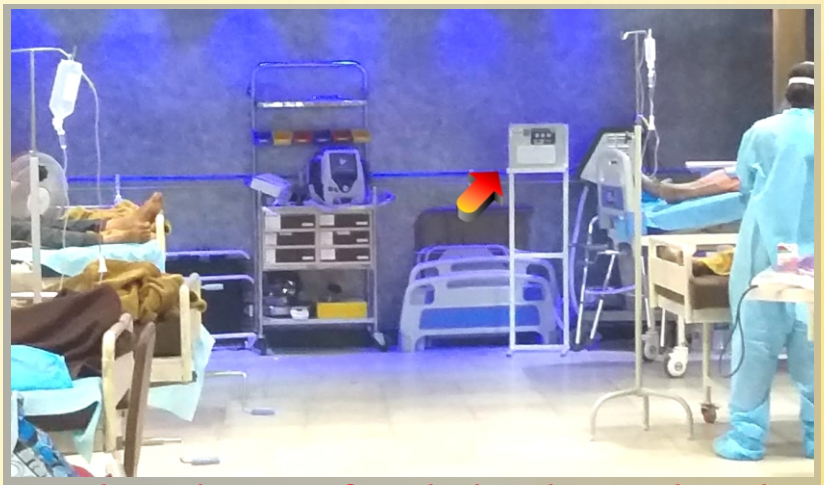
Multi-Mode Air Sanitizers

Clinic/Hospital Grade Air Purifiers

Size 3 - MMAP-03 **Size 4 - MMAP-04**

Multi-Mode Air Sanitizers from Ideas Unlimited are scientifically developed products, designed to kill airborne Covid-19 in high-risk areas like Hospitals, ICUs, densely populated work places, and reduce infection risk using multiple modes to clean and sterilize air in a room,.

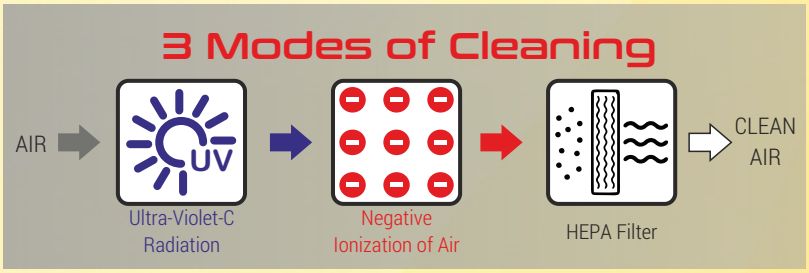


Multi Mode Air purifiers deployed in Covid Wards

Ideas Unlimited, Mysuru and JSS AHER (JSS Academy of Higher Education & Research) have collaborated to develop highly effective Multi-Mode Air Sanitizers.

These Air Purifiers have been subjected to High Viral Load Testing in a Virology lab and proven to work with high efficiency!

The 3 modes of treatment (UV, Ionization, HEPA Filter) is done at an elevated temperature in the chambers inside the Air Purifier.



TECHNOLOGY PROVEN WITH RIGOROUS TESTING IN A VIROLOGY LAB!

Developed in collaboration between:

JSS ACADEMY OF HIGHER EDUCATION & RESEARCH (DEEMED TO BE UNIVERSITY) MYSURU

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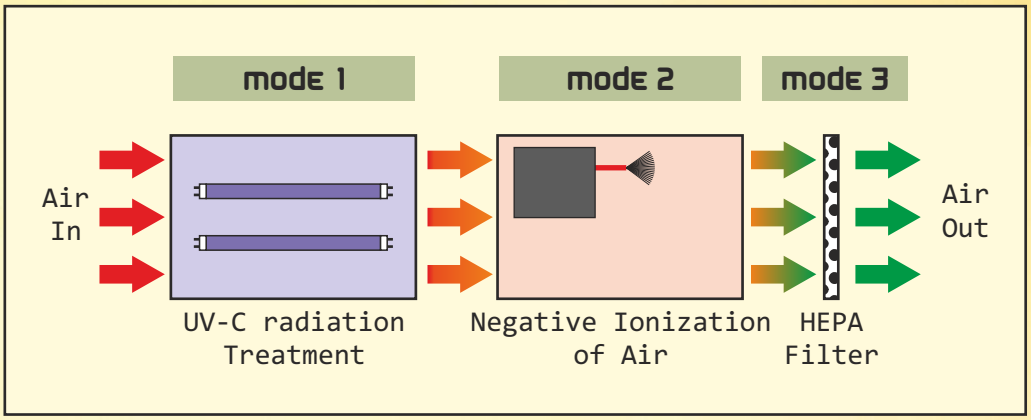
Multi-Mode Air Sanitizers Working - Explained in Detail

The Multi-Mode sanitizer draws in air from its surroundings and treats it inside using three methods.

♦ High intensity UV-C irradiation of air is done in a chamber inside, that can kill Airborne Covid-19 and other viruses, bacteria instantly. Aluminum Alloy walled chamber ensures maximum UV radiation is exposed on the air passing through chamber. Elevated temperature inside the chamber also helps in elimination of viruses and microbes. Since UV is contained in chamber it is safe for use by end users.



♦ The UV irradiated air, enters second chamber and gets ionized. The negatively charge ionized air molecules traps the particulate matter, viruses & bacteria by attaching themselves to it. Charged particles have tendency to attach to surfaces, like walls, floor of the purifier, ensuring your breathing area is clean.

♦ The UV-C irradiated, ionized air is then forced through a HEPA filter in the final stage which can filter upto 0.3 micron size particles, viruses, bacteria - greatly reducing the risk of infection to users.

Working of Multi-Mode Air Sanitizer

UV-C shield to prevent UV light from coming out.

Stand Mounting Option : Different mounting options for Multi-Mode Air purifiers are also available. The stand height designed such that it is cleaning the breathing area whether a person is sitting or standing, ensuring maximum efficiency in that zone..

Multi-Mode Air Purifiers Deployed in a Covid Ward of a Hospital for reducing secondary infection risk and improving air quality.

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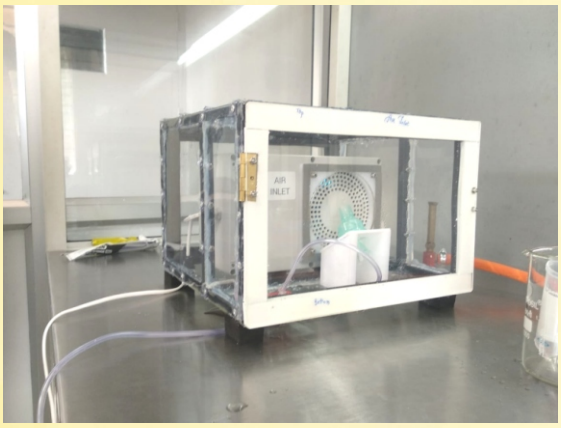
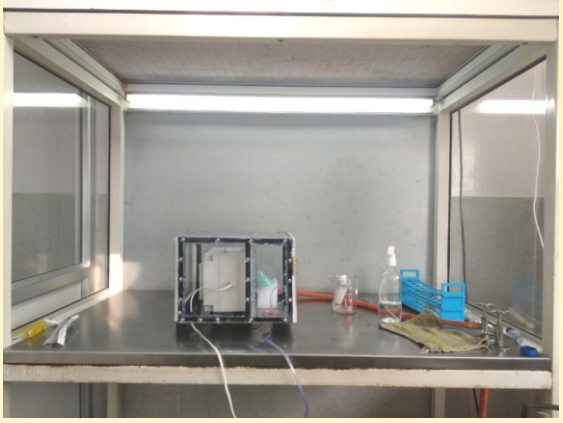
DESIGN VERIFICATION TESTS CONDUCTED IN VIROLOGY LAB

A live virus based testing was conducted to validate the design of the Multi-Mode Air Purifier at a Virology lab of JSS Pharma College in Udhagamandalam (Ooty). The tests involved nebulisation of active (live) virus in a Bio safety chamber which contained a functional Multi-Mode Air Purifier. The Air Purifier has performed very well in eliminating the high virus load applied in reasonable time frame.





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JSS COLLEGE OF PHARMACY, OOTY
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DEPARTMENT OF PHARMACEUTICAL BIOTECHNOLOGY

Mammalian Cell Culture Laboratory

In Vitro Antiviral Studies

***In vitro* antiviral studies – HSV-I**

Cell Line:	Vero (African Green Monkey, Kidney)
Virus:	HSV-1 – Viral infectivity dose 100 $TCID_{50}$ (10^{-4} virus log)
Assay:	MTT antiviral assay
Method:	Air Media Test Method
Sample:	Air Purifier Unit

Air media test

The aerosolized virus particles were filled in nebulizer during the time of deposition. Then, the prepared virus solution (HSV – 1 100 $TCID_{50}$ viral dose) was aerosolized, after which the aerosolized virus particles entered a chamber supplied by supplier. The pressure and temperature were maintained at standard atmospheric conditions. The aerosolized virus concentrations upstream and downstream of the filter were measured. The HEPA filters were removed at various time interval and submerged into solution of media for 15 min to detach the deposited virus particles from the filter sample. The antiviral activity was performed by MTT antiviral assay to detect the cell protection/viral growth in Vero cells.

Antiviral Activity Tests Samples

Cells (1×10^5 cells/ml) were seeded on 96-well tissue culture plates. After a 24 h period of incubation, the medium was removed and the HEPA filter submerged media collected at various time interval containing HSV-1 viral particles was added to the cells. As cell control, 100 µl of medium only is added and as virus control 100 µl of 100 $TCID_{50}$ dose was added. After 24hrs of incubation, the medium was removed and 50 ml of MTT solution (2 mg/ml) was added to each

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well for 4 h at 37 °C. Then, 100 µl of DMSO was added to each well in order to dissolve the formazan crystals. After gentle shaking the plates for 10 min to dissolve the crystals, the colour reaction was measured in an automated microplate reader at 540 nm. The untreated control was arbitrarily set as 100%. For each compound, the percentage of cell protection/virus inhibition was calculated with standard formula.

	Time interval in min	% Cell Viability
Virus titer[a] 4.0 – as per 100 $TCID_{50}$		
Air purifier at various time interval	05	50
	10	66
	15	80
	20	93
	25	98
	30	98
	45	100
	60	100

[a] Logarithmic 100 TCID50 value of virus per milliliter

Observation:

The antiviral activity of the air purifier was performed. In brief the HEPA filters were submerged after the exposure of virus at various time interval and the filtration efficiency of the air filter and the supplied air purifier was found to be more than 90 % after 20 minutes.

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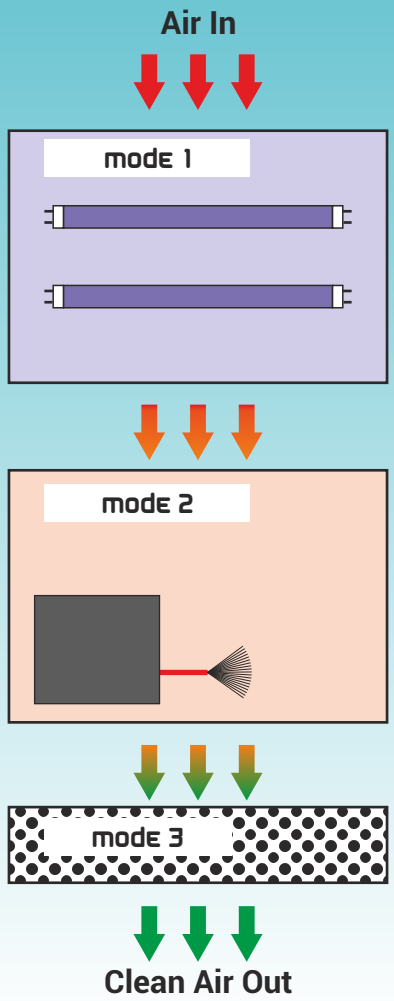
Models

Sl	Model	Product Description	Dimensions (L x B x H) mm	Optimum Area Coverage
1	MMAP-03	Hospital/Clinic Grade Multi-Mode Air Purifier - For Small rooms	250 X 120 X160	12 Ft X 12 Ft
2	MMAP-04	Hospital/Clinic Grade Multi-Mode Air Purifier - For Big Areas	300 X 180 X 250	20 Ft X 20 Ft

Model Comparison Chart

		Basic			Cleaning Mode					
Sl	Model	Portable	Clinic /Hospital grade	Dual Ion Generators	UV-C irradiation	An-Ion Generation	HEPA Filter	Forced Air System	Elevated Temp.	Stand Mount Option
1	MMAP-03		✓		✓	✓	✓	✓	✓	✓
2	MMAP-04		✓	✓	✓	✓	✓	✓	✓	✓



Air is sucked into the purifier unit and passed through multiple chambers

UV-Treatment of Air: Powerful UV-C radiation inside the first chamber at elevated temperature, designed to kill airborne viruses instantaneously

Negative Ionization of Air: Air is negatively charged and An-Ions are generated which have tendency to attach to airborne particulate matter & microbes

HEPA Filter: Air forced through HEPA filter, traps microbes/bacteria & particulates up to 0.3 microns in size.

Clean Air Comes out!

Multi-Mode Air Purifiers

Ideas Unlimited, Mysuru and JSS AHER (JSS Academy of Higher Education & Research) have collaborated to develop Multi-Mode Air Sanitizers.

Our Clinic/Hospital Grade Multi-mode Air purifiers are designed for use in High Risk areas like Covid-wards, Hospitals, Dental Clinics, and other high risk areas.

Our purifiers are unique among all the comparable products available in the market. These products use 3 Modes of Air purification, and designed to kill Airborne viruses, bacteria and reduce the risk of infection in High Risk Areas like Hospitals, ICU Wards etc!

Useful for Covid-19 front line fight.

* UV-C Radiation chamber
* Ionization of UV Treated AIr
* HEPA Filter

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Two types of mounting options available to mount the air purifiers. Pedestal stands are designed for optimum nose level height so it keeps breathing areas clean.

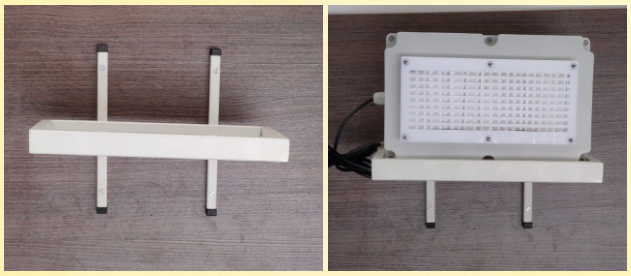
Pedestal Stand Options

MMAP-03-MNT

MMAP-04-MNT

Wall Mounting Options

MMAP-03-WALLMNT



MMAP-04-WALLMNT

Recommended Areas for use:

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