

# ETS Products Philippines Air Disinfection System AP 90

Destroys Coronavirus and other malignant Contaminants



# Why ETS Products Philippines Air Disinfection Systems?

Founded in 2018, ETS Products Philippines is the latest member of the German owned ETS Group of Companies. Under German Management, and strategically located in the Clark Freeport Zone, ETS Products Philippines focuses on the design & manufacture of High Tech Air Disinfection Solutions.

- **99.99%** Proven Efficacy in Virus Removal
- **99.96%** Proven Efficacy in Bacteria Removal
- **99.71%** Proven Efficacy in PM 0.3 Removal
- **720 m<sup>3</sup>** Proven PM 0.3 Clean Air Delivery Rate

- Removes microscopically fine Particles down to 0.001 $\mu$
- Cleans the Air of unwanted Aerosols and Odours
- Eliminates Volatile Organic Compounds (VOCs)

Customizable for Interior Designs

# Technology at a Glance

By replicating and enhancing nature's own cleaning process, ETS Air Disinfection Systems go beyond any traditional air purification technology.

- **Coarse-Filter**  
The Coarse-Filter removes particles >2.5 micron such as human hair, pollen, mould, etc.
- **HEPA H13 Filter**  
The medical grade HEPA H13 Filter catches 99.95% of particular matter (PM) and microbes >0.3 micron
- **Activated Carbon Filter**  
The Activated Carbon Filter removes volatile organic compounds (VOCs), odours, and other gaseous pollutants from the air
- **UVC-TiO<sub>2</sub> Photo Catalyst**  
Through Photocatalytic Oxidation the UVC-TiO<sub>2</sub> catalyst changes malignant contaminants into water, carbon dioxide and detritus. Intracellular mass and DNA/HNA of virus and bacteria will be destroyed, thus eliminated.
- **Bi- Polar Plasma**  
The Plasma, created in the air outlet, emits bipolar ions into the room space, oxidizing pollutants (toxins, VOCs), dismantling the walls of virus and bacteria and remove odours of any organic nature.

## Safely Removes

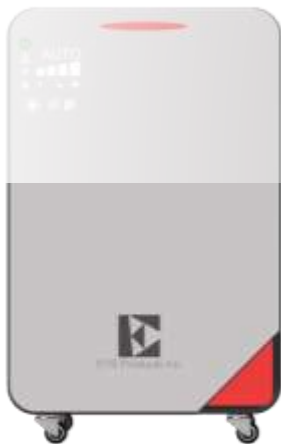


➤ **99.99% Proven Efficacy in Virus Removal**

➤ **99.96% Proven Efficacy in Bacteria Removal**

# AP 90 Specifications

The AP 90 is designed to cater for a variety of commercial and residential spaces with an area of up to 90m<sup>2</sup>



<b>Rated Voltage</b>	<b>220V-240V</b>
<b>Rated Frequency*</b>	<b>50Hz / 60Hz</b>
<b>Rated Power</b>	<b>117W</b>
<b>Maximum Noise Level</b>	<b>&lt;65 dB</b>
<b>CADR</b>	<b>720m<sup>3</sup>/h</b>
<b>Weight</b>	<b>15.6 kg</b>
<b>Dimensions</b>	<b>729mm x 490mm x 244mm</b>
<b>Ambient Temperature</b>	<b>5°C – 40°C</b>
<b>Relative Humidity</b>	<b>≤80%</b>

\*depending on country regulations

# AP-90 detailed Data

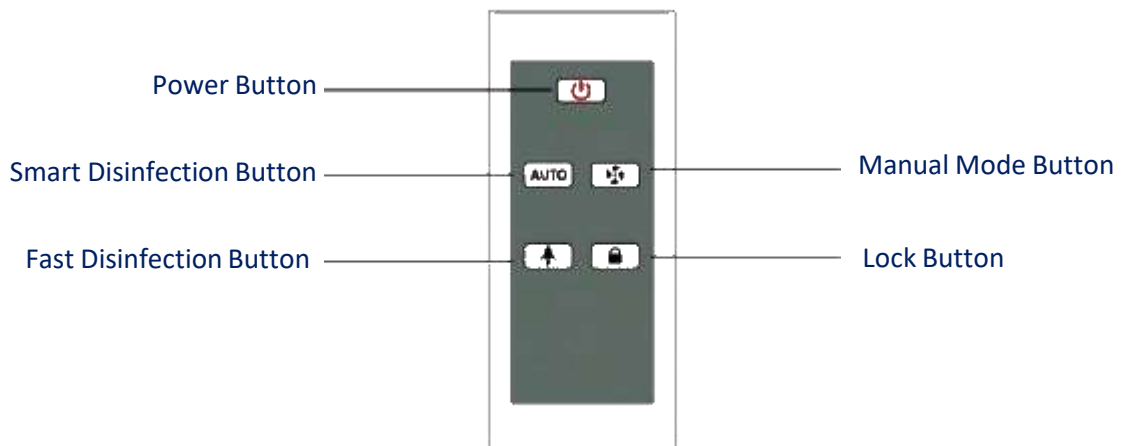
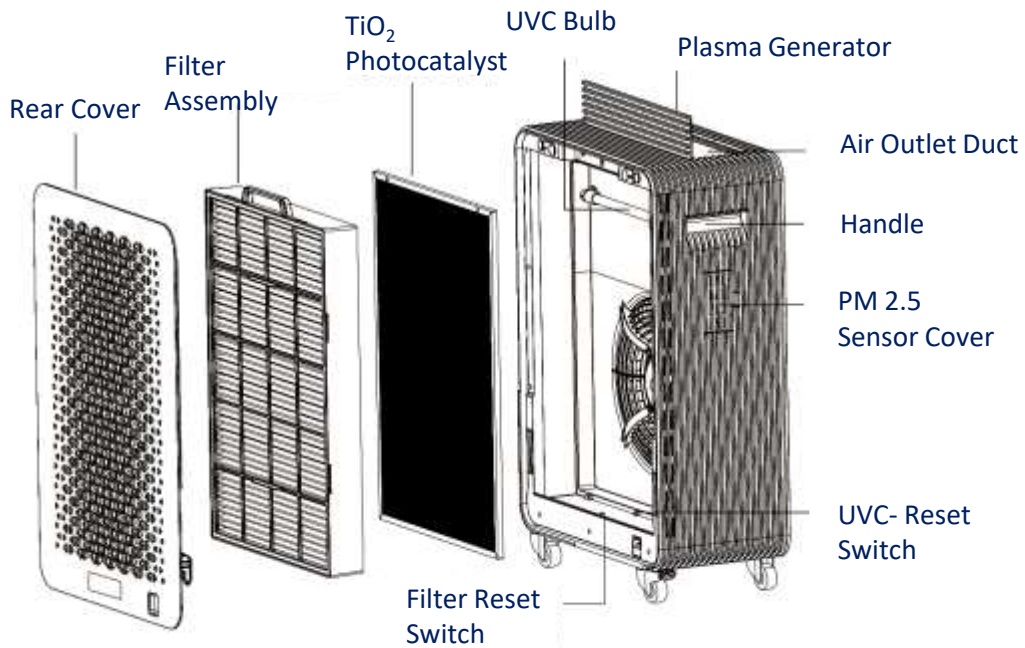
<b>Technical Data</b>	<b>AP-90</b>
Aerea	80 m <sup>2</sup>
Clean Air Delivery Rate	720 m <sup>3</sup> /h
Voltage	220 V / 230 V
Frequency	50 Hz or 60 Hz auto
Rated Power	117 W
Dimensions (mm)	729 x 490 x 244
Net Weight (kg)	15,6 kg
Ambient temperature	5 °C - 40 °C
Relative humidity	< 80%
Ozone concentration	< 0,005 mg/m <sup>3</sup>
Automatic Mode	yes
Remote Control	IR
Operation	Touch
Air Quality Display	colour change
PM 3.5 Sensor	yes (independent)
VOC Sensor	yes (independent)
Pre Filter	yes
HEPA Filter	H13 PP+PET, H14 optional
Activated Carbon Filter	honeycomb
TIO2 Titanium Dioxide Filter	yes (pholtocatalytic oxidation)
UV-C Sterilizing Lamp	yes (pholtocatalytic oxidation)
Plasma	(bi-polar)
Certification /Reports	CE, ROHS, FCC, official biological and filter function report from SGS
Viruses / Bacteria tested (Details see Report)	H1N1 + H3N2 + 5 Bacteria
Filter test	PM2.5 /PM0.3
UV-C & Filter Change Indicator	yes (after approx. 8000h)



<b>Noise (measured, 1 m / 90 °)</b>	
Level 1 (auto & manual):	36 dB
Level 2 (auto & manual):	39 dB
Level 3 (auto & manual):	52 dB
Level 4 (auto & manual):	59 dB
Turbo cleaning (manual):	62 dB

# General Overview

Modulised Systems for easy maintenance and replacement.

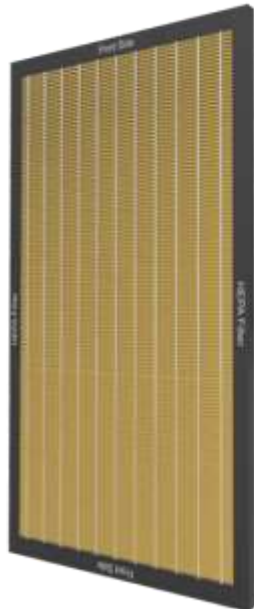


# Filter Assembly & Plasma

All AP 90 Filters are securely assembled in a Filter Compartment which allows to remove the entire filter assembly from the device.



Course Filter



HEPA H13 Filter



Activated Carbon Filter



Filter Compartment



Bipolar Ion Generator

The **bipolar ion generator** in the AP 90 is located in the air outlet duct in which it continuously creates bipolar ions through a high voltage plasma, generated between 2 electrodes. The **bipolar ions**, carried by the air stream, travel throughout the air space and attach themselves to airborne pollutants causing them to gain size and mass and drop to the floor. Pathogens will be deactivated.

# PM2.5 & TVOC Indicator Lights

The AP 90 has indicator lights for the display of PM 2.5 concentration and the concentration of TVOCs. The colour scheme is valid for both.



Blue, Excellent

Green, Moderate

Orange, Unhealthy  
for sensitive groups








Red, Unhealthy



# Panel Controls & Display Icons

The AP 90 has a combined Control / Display Panel located at the front left side of the device








Touch Button	Display Icon	Description
		<p><b>Power Button</b></p> <p>After connecting the AP 90 with the electric grid, the power button will illuminate in red. The device is now in stand- by mode. A light touch on the button will switch on the Air Purifier and the Power Button colour changes to green. The device will acknowledge with a beep.</p>
		<p><b>Smart Purification Mode</b></p> <p>The Smart Purification or Auto Mode will be activated either by default after power on, or by slightly touching the respective button when in a different mode. In smart cleaning mode the AP 90 sensors automatically detect the air quality, adjust fan speed and switch on or off the UVC-TiO<sub>2</sub> Photocatalytic Oxidation Module. The PM 2.5 indicator in the top centre and the TVOC Indicator in the bottom right will change their colour indicating different air pollution levels ranging from Blue (excellent) to Red (severe)</p>
		<p><b>Manual Mode</b></p> <p>By lightly tapping the respective button, the AP 90 switches into manual mode. The fan, with it's 4 wind speed levels, can be adjusted by repeatedly touching the button. At level 4 the UVC-TiO<sub>2</sub> Photocatalytic Oxidation Module will be activated.</p>
		<p><b>Fast Disinfection Mode</b></p> <p>Lightly touching the accordant button will activate the Fast Disinfection Mode. In this mode the fan switches to it's highest level (level 5) and the UVC-TiO<sub>2</sub> Photocatalytic Oxidation Module will automatically launch 5 minutes after activating this mode. If not interrupted by touching a different button, the Fast Disinfection will continue for 30 minutes, before automatically switching back to Smart Purification Mode.</p>

# Panel Controls & Display Icons

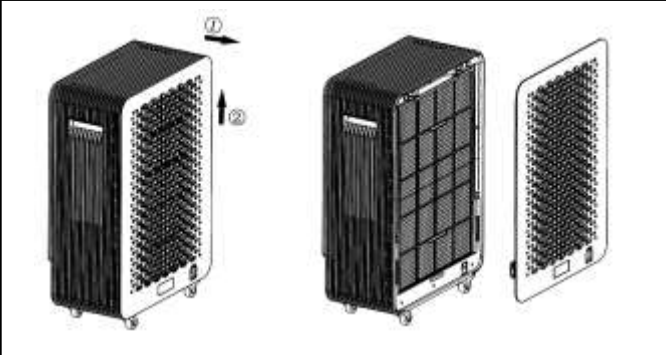
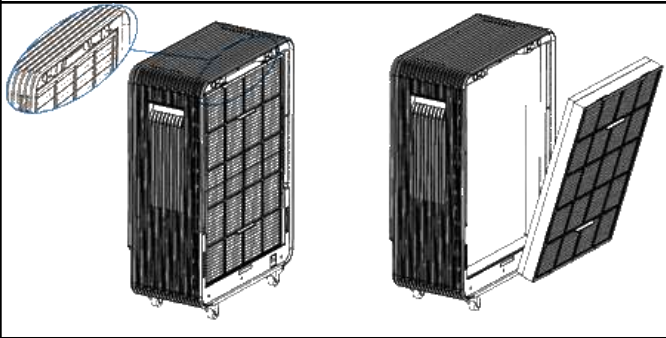
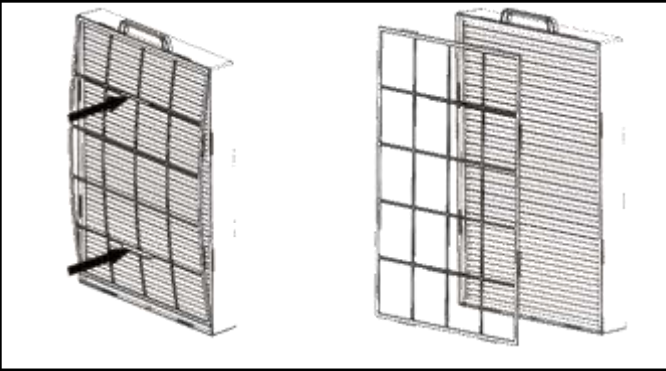
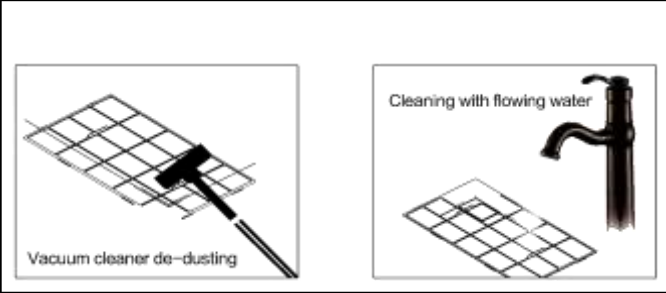
Function Buttons and Display Icons are illuminated by white light



Display Icon	Description	
	<p><b><u>Night Mode</u></b>                      The night mode will be automatically activated in Automatic Mode as soon as the environment becomes dark for more than 10 seconds. At this stage, only the power button and the Half Moon Symbol will be displayed. All other buttons or symbols as well as the air quality indicators are switched off. At the same time the fan speed is reduced to the lowest level and the flap of the air outlet will be set at an angle of 45°, thus reducing the noise level to a bare minimum. In the event air quality deteriorates, the air quality sensors will detect the change and increase the fan speed to the maximum level 2. After the ambient lighting becomes bright again for at least 10 seconds the AP 90 switches back into it's previous mode.</p>	
	<p><b><u>Lock Function</u></b>                      In order to protect the AP90 from being accidentally switched on or off, or accidentally changing a selected mode, the device is equipped with a lock function which can be activated by pressing the respective button on the remote control. Once the lock feature is activated all touch buttons on the front control panel and all buttons on the remote control except the lock button are deactivated. To unlock, the lock button has to be pressed again.</p>	
<p style="text-align: center;"><b><u>Replacement Reminder</u></b></p> <p>The AP 90 records the operating hours of the HEPA H13 Filter, the Activated Carbon Filter and UVC Light Bulb. Once the service life comes close to its end, the accordant symbol starts flashing. Once either the filters or the bulb has reached their maximum operating hours, the control symbol lights constantly, the UVC Bulb or the respective Filter has to be replaced.</p>		
 <b>UVC-Bulb Replacement</b>	 <b>HEPA Filter Replacement</b>	 <b>Activated Carbon Filter Replacement</b>

# Cleaning Guide Line

The AP 90 Course filter can be easily cleaned by vacuuming or under flowing water. It is recommended to clean the filter every 3 months.

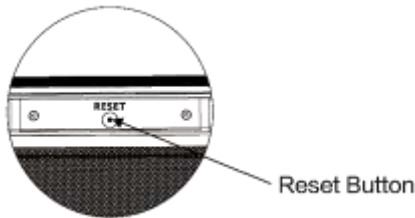
	<p><b>Step 1</b></p> <p>Disconnect the AP 90 from the power grid. Remove the rear cover by slightly pulling it out at the top and lifting it up</p>
	<p><b>Step 2</b></p> <p>Remove the filter assembly by rotating the 2 levers on the top by 90 degrees and pull it out by the handle.</p>
	<p><b>Step 3</b></p> <p>Grasp the 2 handles (arrows) on the coarse filter and remove the latter form the filter assembly by pulling until it drops out.</p>
	<p><b>Step 4</b></p> <p>The coarse filter can be cleaned by using a vacuum cleaner or a brush with water and a cleaning agent. Only re-install the filter after completely dry.  <b>Note:</b> The 2 handles have to face outwards when re-assembling.</p>
<p><b>Reassembly</b></p>	<p><b>Step 5</b></p> <p>Re-assembly of coarse filter and filter assembly by reversing the above described steps</p>

# Filter & UVC Bulb Replacement

The AP 90 indicates that either the HEPA, the Activated Carbon Filter or the UVC Lamp has to be replaced by continuously displaying the according replacement icon



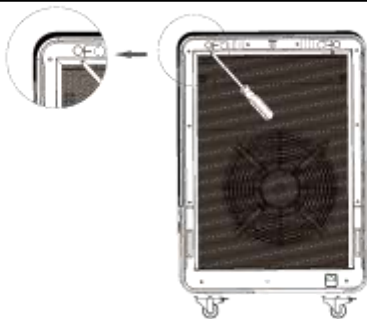
Coarse Filter   HEPA Filter   Carbon Filter   Filter Assembly Compartment



## Step 6

### Filter Replacement:

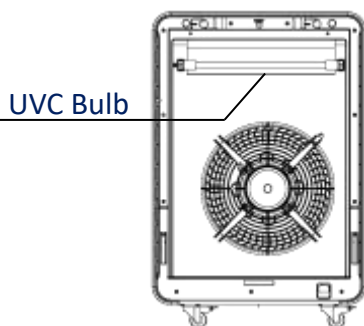
Disconnect the AP 90 from the power grid and remove the rear cover and coarse filter as described under Step 1 – 3. After removing the latter you find the HEPA filter and the Activated Carbon Filter which can be easily pulled out of the filter assembly compartment and replaced accordingly. After re-installment of the Filter Assembly Compartment, connect the AP 90 with the electric grid and 'power on'. Press and hold the 'Reset Button' until you hear a beep which indicates that the replacement had been successful and the filter replacement log is reset. Now mount the back cover.



## Step 7

### UVC Lamp Replacement:

Disconnect the AP 90 from the power grid, remove the rear cover and filter assembly as described under Step 1-2. Remove the TiO<sub>2</sub> Photocatalyst by loosening the 2 screws at the top right and left and by pulling it out.



## Step 8

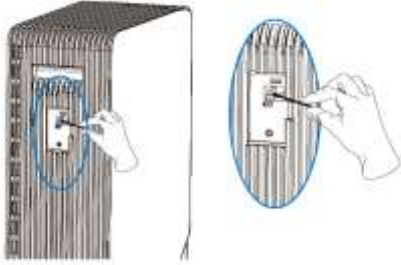
After removing the TiO<sub>2</sub> Photocatalyst the bulb is visible in the top area of the AP 90's inner compartment. By rotating the UVC Bulb 90 degrees it can be taken out from its socket. Insert the new Bulb in the same position and rotate back 90 degrees.

**Note: Always wear cotton gloves when touching a new UVC Bulb!**

After re-installment of the TiO<sub>2</sub> Photocatalyst and the Filter Assembly Compartment connect the AP 90 with the electric grid and 'power on'. Press and hold the 'UV Switch' until you hear a beep indicating that the replacement had been successful and the UVC log had been reset. Now mount the back cover.

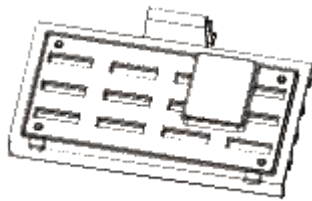
# PM2.5 Sensor Cleaning

In order to ensure a proper function of the PM2.5 Sensor it needs to be cleaned from time to time, especially if the AP 90 is operated in a highly polluted environment.



## Step 8

Remove the PM 2.5 Sensor cover on the side of the AP 90 and dry clean the sensor lens with a cotton swab.



## Step 9

Before replacing the PM 2.5 sensor cover clean it by removing dust with a cotton cloth or a hand held vacuum cleaner:

# Safety & Precautions

The AP 90 is a professional Air Disinfection Device and needs to be treated as such to ensure a maximum of efficiency and safety. Any operation or handling of the AP 90 other than specified might lead to malfunction or damage and the loss of warranty.



## WARNING

Please follow these precautions to reduce the risk of serious injuries and to eliminate the risk of damaging your AP 90.

- *Do not touch the power cord or plug with wet hands*
- *Always disconnect the AP 90 before servicing*
- *Disconnect from power grid when not used for a long period of time*
- *Do not unplug or move the AP 90 during operation.*

**Before operating the AP 90, read and follow these Safety Precautions carefully.**

**Only** operate the AP 90 with the correct voltage and correct grid frequency as stated in this document or as shown on the product label.

**Only** operate the AP 90 when all filters, the UVC Bulb and the rear cover are properly mounted.

**Only** operate the AP 90 in dry environments.

**Do Not** place any object on top of the AP 90 when not in operation. (Objects will avoid the flap to open, thus leading to malfunction or damage).

**DO Not** insert any foreign parts in the top Air Outlet when the flap is open.

**Ensure** that Air intake and Air outlet is **not blocked** and the Air Flow is not obstructed (not doing so might cause malfunctioning and damage to the AP 90).

**Ensure** to keep a circumferential clearance of at least 200mm between the AP 90 and any solid object (e.g. wall, furniture or similar).

**Ensure** that the AP 90 is placed on an even underground. (the AP 90 has a tilt angle sensor and will power off at 25 degrees).

# CE Declaration of Conformity Warranty & Spare Parts

## CE Declaration of Conformity

**ETS Group** 

Konformitätsklärung gemäß dem Gesetz über die elektromagnetische Verträglichkeit (EMVG), LVD 2004/75/EU und der Richtlinie 2004/108/EG (EMV-Richtlinie)

Hiermit erkläre ich eigenverantwortlich, dass das/ die

Luftreinigungsgeräte

AP-40, AP-90, AP-50, AP-100, AP-60, AP-120, AP-120EDM, AP-150, AP-160

Auf Grund der Konzipierung und Bauart in der von uns in Vorliebe getriebenen Ausführung den einschlägigen grundlegenden Anforderungen u.a. Bestimmungen bezüglich EMV und elektrischer Sicherheit entspricht.

Angewandte harmonisierte Normen:

- EN 55014-1:2017
- EN 55014-2:2015
- EN 61000-3-2:2014
- EN 61000-3-3:2013
- EN 603351-1:2013+A11:2014+A13:2017+A14:2019
- EN 603351-2-65:2003+A1:2008+A11:2012

Es wird die Übereinstimmung mit weiteren, für das Produkt folgende geltenden Richtlinien erklärt:

RoHS EN 2011-65/EU

Die CE Kennzeichnung wurde angebracht:



RoHS

Inverkehrbringer:

ETS Trading Hong Kong Limited, Mody Road 62, 3223 12F, Wing On Plaza, Hong Kong  
(Headquarter of ETS Group)

Andreas Wahl  
General Manager  
Verantwortlicher im Sinne des Gesetzes  
Hong Kong, 28.09.2020

  
Für und im Auftrag von  
ETS Trading Hong Kong Limited  
Authorized Signatory

We declare that all Air Disinfection Systems

AP-40, AP-90, AP-50, AP-100, AP-60, AP-120, AP-120EDM, AP-150, AP-160

based on their conception and design in the version we have put into circulation relevant basic requirements including EMC regulations and electrical safety have been met.

Applied harmonized standards:

EN 55014-1:2017  
EN 55014-2:2015  
EN 61000-3-2:2014  
EN 61000-3-3:2013  
EN 603351-1:2013+A11:2014+A13:2017+A14:2019  
EN 603351-2-65:2003+A1:2008+A11:2012

The compliance with other directives applicable to the product is declared:

ROHS EN 2011-65/EU

The CE marking was attached

## Warranty

ETS Products Philippines Inc. warrants to the original purchaser, that each ETS product shall be free of defects in material and workmanship for a period of one (1) year from the date of invoice issued by ETS Products Philippines Inc. or ETS' authorized dealer/distributor. The warranty period will expire automatically even if the product has not been fully used or installed during the warranty period. In accordance with these general warranty conditions ETS Products Philippines Inc. will either directly or through its authorized dealers/distributors correct defects affecting the product which are clearly a result of material or mechanical defects or manufacturing faults.

## Spare Parts

As manufacturer, ETS Products Philippines Inc. ensures to keep stock and availability of spare parts, such as, but not limited to Filters, UVC Bulbs, electronic and mechanical parts.

The AP 90 underwent rigorous testing and certification, conducted by one of the most renowned Certifying Institutes.



Test Report **GZF20-017834-06** Date: 17 Sep 2020

Sample Description:

Specimen No.	SGS Sample ID	Description
1	GZF20-017834.001	Equipment

**Test Result(s):**  
Identification test of air virus elimination effect\*  
Test Method: Refer to GB 21551.3-2010 Appendix A

Virus and host cell	Action Time	Serial Number	Air virus content (TCID <sub>50</sub> /m <sup>3</sup> )	Removal rate (%)
Influenza A virus H3N2 Host cell: MDCK	0 (CK)	1	2.44×10 <sup>8</sup>	-
		2	4.06×10 <sup>8</sup>	-
		3	3.08×10 <sup>8</sup>	-
	2h	1	< 97.3	> 99.99
		2	< 97.3	> 99.99
		3	< 97.3	> 99.99

>99.99% Virus elimination



Test Report **GZF20-017834-05** Date: 17 Sep 2020

Sample Description:

Specimen No.	SGS Sample ID	Description
1	GZF20-017834.001	Equipment

**Test Result(s):**  
Bactericidal performance\*  
Test Method: GB 21551.3-2010 Appendix A

The test microorganism	Action time	Serial Number	The amount of bacteria in the air (cfu/m <sup>3</sup> )	Sterilization rate (%)
Staphylococcus albus ATCC 8032	0h(CK)	1	1.2×10 <sup>8</sup>	-
		2	1.1×10 <sup>8</sup>	-
		3	1.1×10 <sup>8</sup>	-
	1h	1	35	99.96
		2	28	99.96
		3	35	99.96
Average			99.95	

99.96% Bacteria elimination

Remark:  
1. Method description: Turned on the maximum wind speed of the machine and kept it run for 1 hour in a 30m<sup>3</sup> chamber, and then used six mesh impact type air microorganism sampler JW-6 to sampling with air volume of 28.3 liters per minute.  
2. The natural decay of the microorganisms in the air has been eliminated.



The AP 90 underwent rigorous testing and certification conducted by one of the most renowned certifying institutes



Test Report

GZF20-017834-02

Date: 17 Sep 2020

Sample Description:

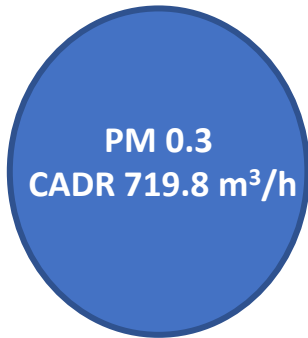
Specimen No.	SGS Sample ID	Description
1	GZF20-017834.001	Equipment

Test Result(s):

Above 0.3 $\mu$ m Clean Air Delivery Rate\*

Test Method: GB/T 18801-2015 Appendix B

Test group	Sampling time	Test Result		CADR (m <sup>3</sup> /h)
		Particle concentration (particle no/L)	Attenuation constant (min <sup>-1</sup> )	
Natural attenuation constant (k <sub>e</sub> )	0 min	9193294	0.00414	719.8
	2 min	9092920		
	4 min	9013891		
	6 min	8982067		
	8 min	8908422		
	10 min	8797281		
	12 min	8778436		
	14 min	8708252		
	16 min	8599610		
	18 min	8500295		
Total attenuation constant (k <sub>t</sub> )	0 min	6029010	0.40404	719.8
	2 min	2667015		
	4 min	1139112		
	6 min	501462		
	8 min	220662		
	10 min	97461		
	12 min	41769		
	14 min	17550		
	16 min	8073		
	18 min	4446		
20 min	1989			



# ETS Products Philippines Inc.

German Engineering made in the Philippines

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