

**AP&T**®

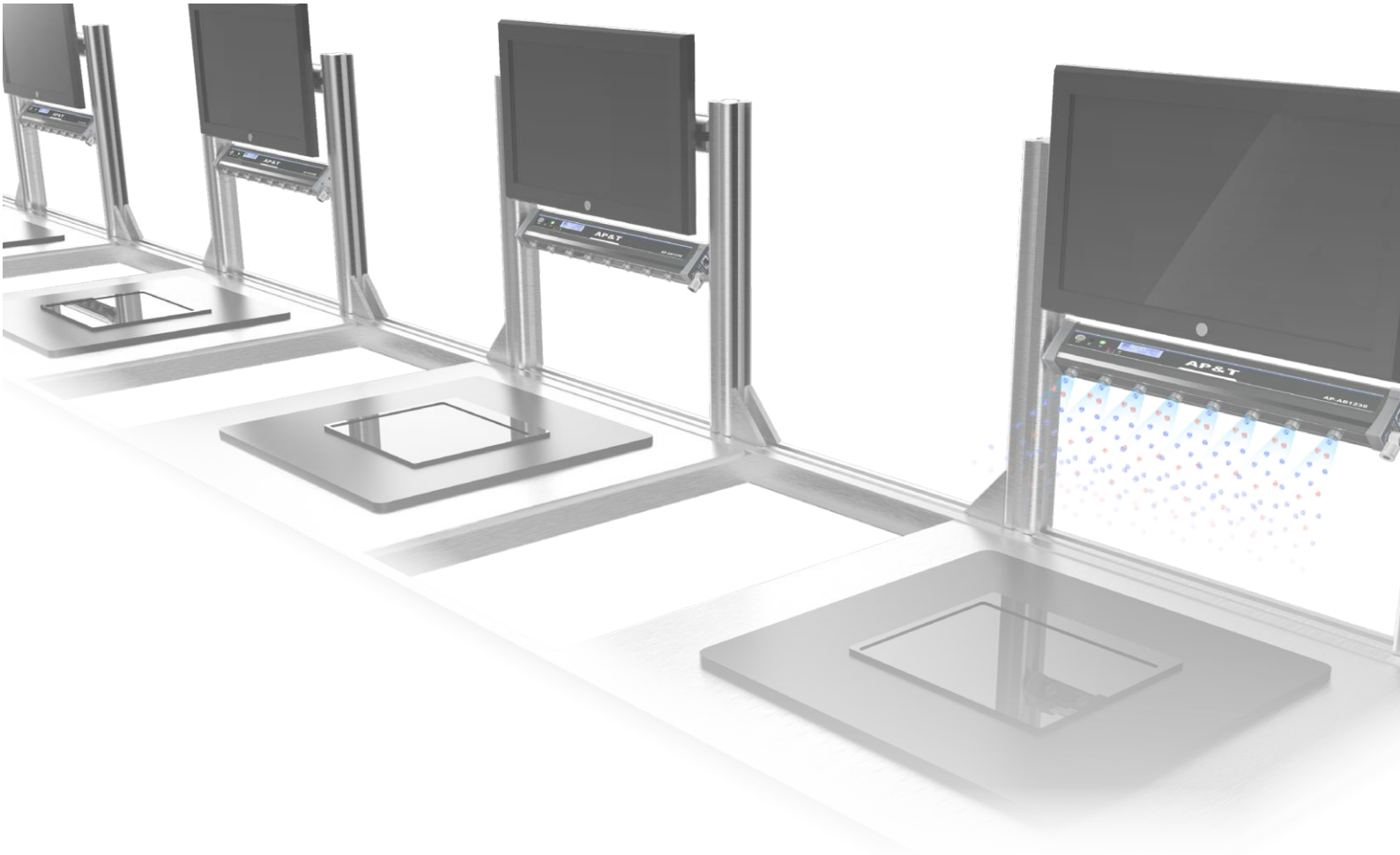
**AP-AB1238**



# Intelligent Static Removal Ion Bar

High speed Self-balancing LCD Display

Shanghai Anping Static Technology Co.,Ltd

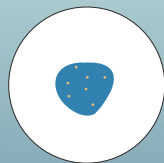


Suitable for electronics, optoelectronics,  
semiconductor and other industries

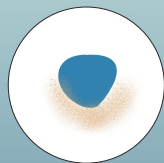
Effectively solve the problems  
caused by static electricity



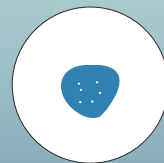
Static removal



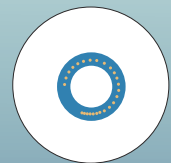
Prevent adhesion of objects



Prevent material splash



Prevent static electricity

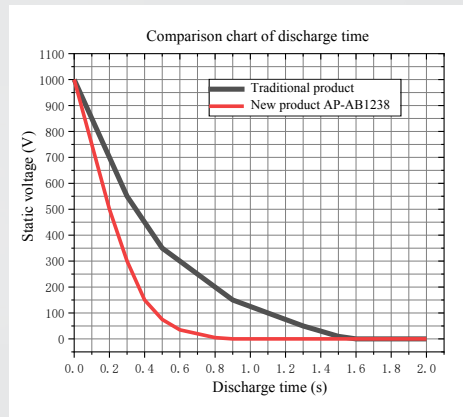
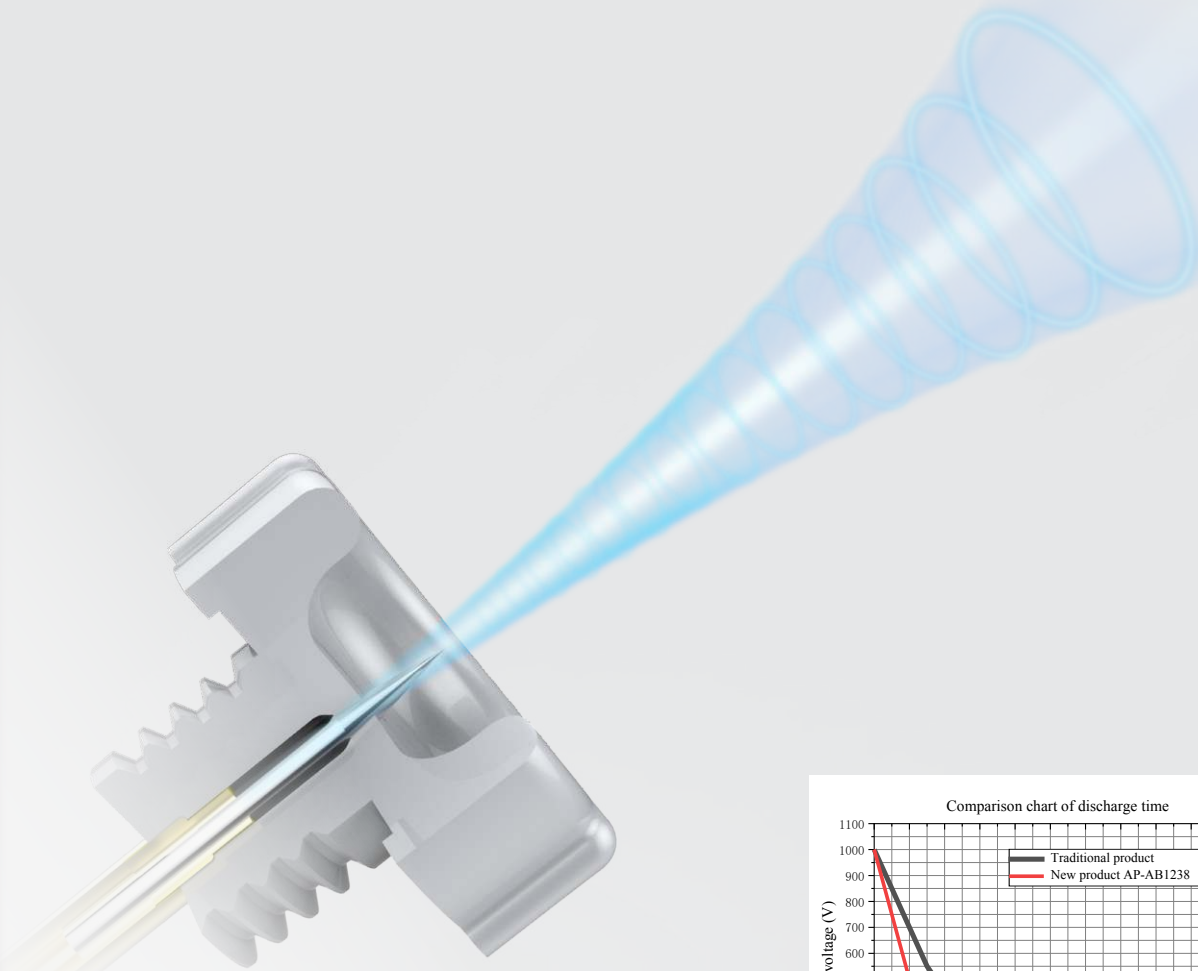


Prevent blockage of feeder

# Airflow acceleration structure

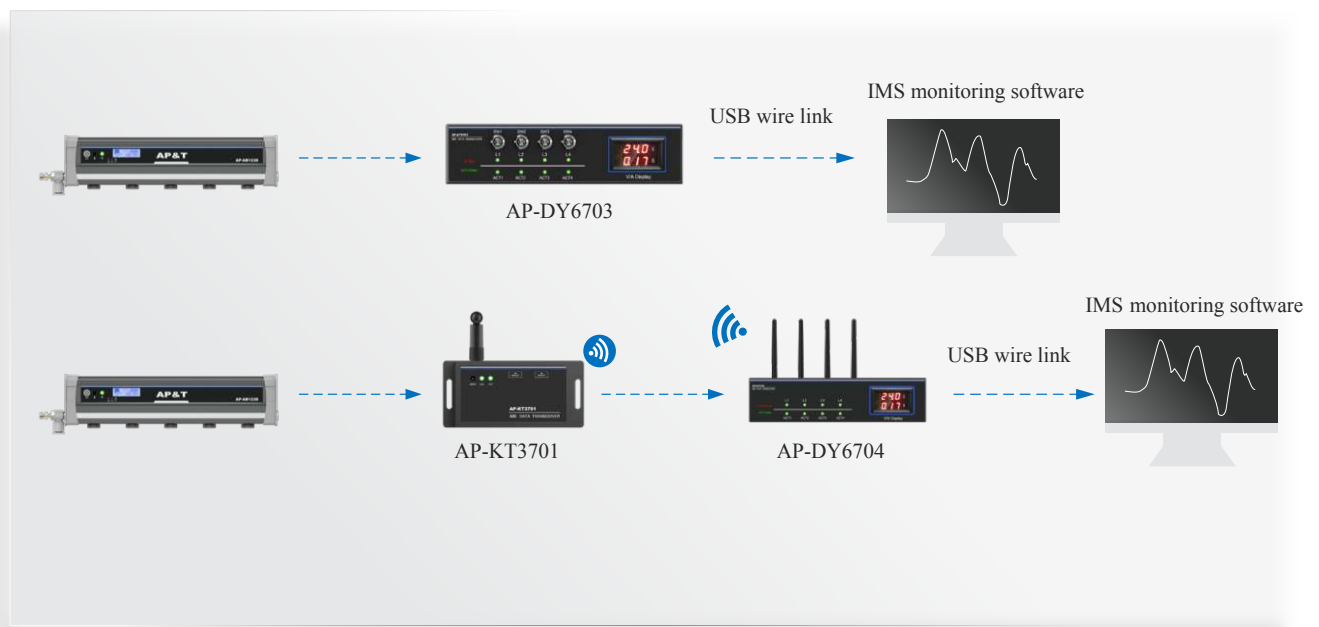
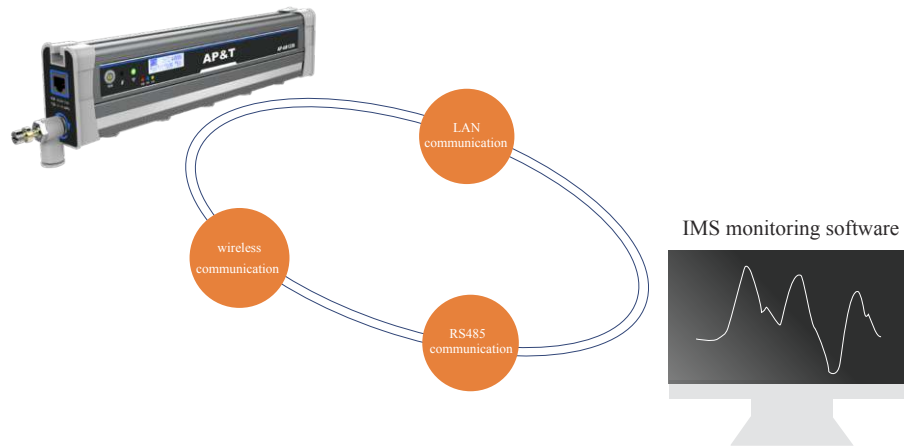
Discharge speed is two times compare to traditional structure

## Discharge speed is two times compare to traditional ion bar



# Intelligent networking

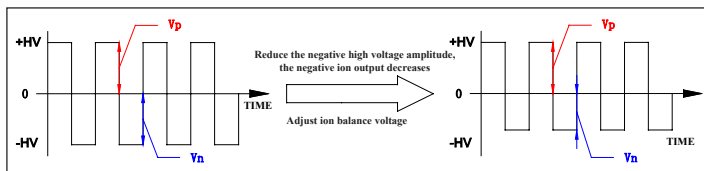
Multiple networking methods to monitor the working status of ion bar online



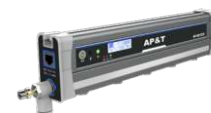
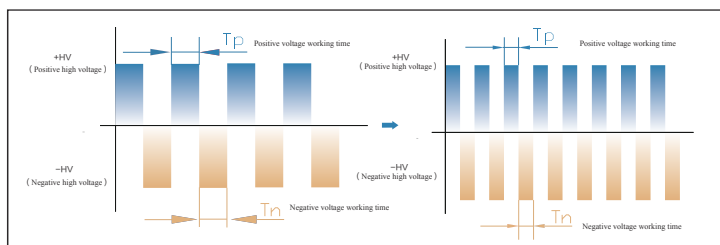
# Intelligent Remote Control

Cleaning time /ion output frequency/  
ion balance adjustable

The ion balance voltage can be adjusted by adjusting the negative high voltage amplitude remotely.



The output frequency of positive and negative ion is adjustable, which is suitable for different discharge distance to achieve faster discharge speed.



## Button function instructions

Function	Symbol	Operation instructions
Unlock		Unlock before adjusting operating parameters
Run / Pause		Device starts running when power is on. Press "STOP" to standby and no high voltage output. Press "RUN" again and the device will start working.
Adjust cleaning cycle	CT <sub>TH</sub> → +/-	Press CT <sub>TH</sub> first, then press +/- to increase or decrease the cleaning cycle. Minimum adjustment unit 1H.
Adjust duty ratio	PWM → +/-	Press PWM first, then press +/- to increase or decrease the duty ratio of positive high voltage output.
Adjust frequency	FREQ → +/-	Press FREQ first, then press +/- to increase or decrease the frequency of positive and negative ions output.
Output positive HV	CAL → IB <sub>P</sub>	Press CAL first, then press IB <sub>P</sub> , only positive high voltage output
Adjust positive HV	IB <sub>P</sub> → +/-	Press IB <sub>P</sub> first, then press +/- to increase or decrease the positive high voltage output amplitude
Output negative HV	CAL → IB <sub>N</sub>	Press CAL first, then press IB <sub>N</sub> , only negative high voltage output
Adjust negative HV	IB <sub>N</sub> → +/-	Press IB <sub>N</sub> first, then press +/- to increase or decrease the negative high voltage output amplitude
Confirm	CAL → OK	Note: Press CAL first, then press OK to confirm after adjusting the output parameter; otherwise, false alarms are likely to occur.
Reset	CAL →	Reset, Press CAL first, then press
High-voltage output default setting  (Voltage will vary according to performance debugging)	CAL → 1	Positive and negative high voltage output amplitude is : +4500V/-4000V
	CAL → 2	Positive and negative high voltage output amplitude is : +5000V/-4500V
	CAL → 3	Positive and negative high voltage output amplitude is : +5500V/-5000V
	CAL → 4	Positive and negative high voltage output amplitude is : +6000V/-5500V
	CAL → 5	Positive and negative high voltage output amplitude is : +6500V/-6000V
	CAL → 6	Positive and negative high voltage output amplitude is : +7000V/-6500V
Press IB <sub>N</sub> first, then press + when the positive voltage on flat panel detector or discharge object surface is high, press IB <sub>N</sub> first, then press - when the negative voltage on flat panel detector or discharge object surface is high until the ion balance reaches the ideal status.		

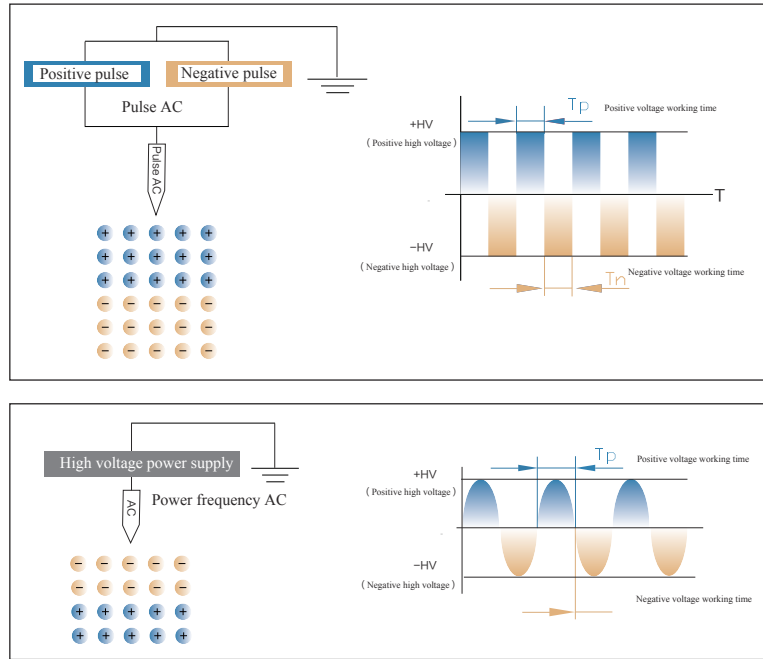
# Pulse AC

Discharge effect is better compare to power frequency AC ion bar

## Pulse AC VS traditional AC

Pulse AC method generate ions with two polarity by applying "+" and "-" high voltage alternately on each electrode needles.

Compared with power frequency AC method, the utilization rate of ion generation is higher. And its static elimination ability can be exerted no matter in short or long distance. In addition, the discharge frequency can be adjusted, which can extend the discharge distance. The output ratio of positive and negative ions can be adjusted, which is convenient for intelligent control.



## 3 situations of static electricity on the surface of the object



Decrease  $T_p$  so that the positive voltage acting capacity becomes smaller and the acting time becomes shorter. Less positive ions and more negative ions output to neutralize the excess positive charge on the surface of the object.



Increase  $T_p$  so that the positive voltage acting capacity becomes greater and the acting time becomes longer. More positive ions and less negative ions output to neutralize the excess negative charge on the surface of the object.



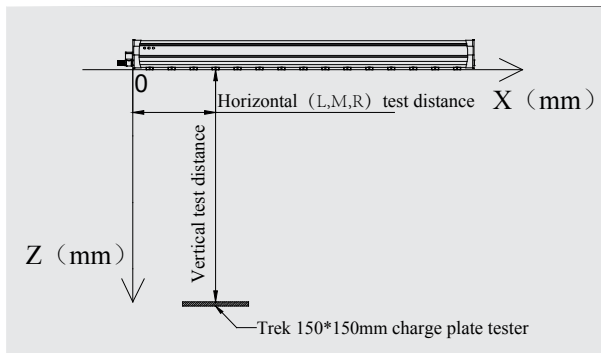
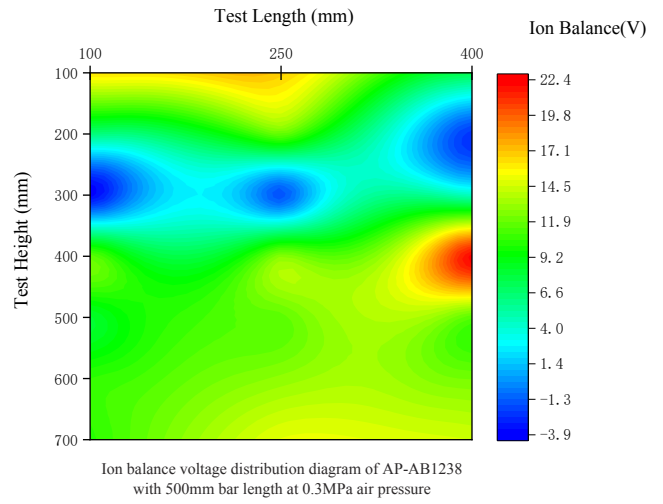
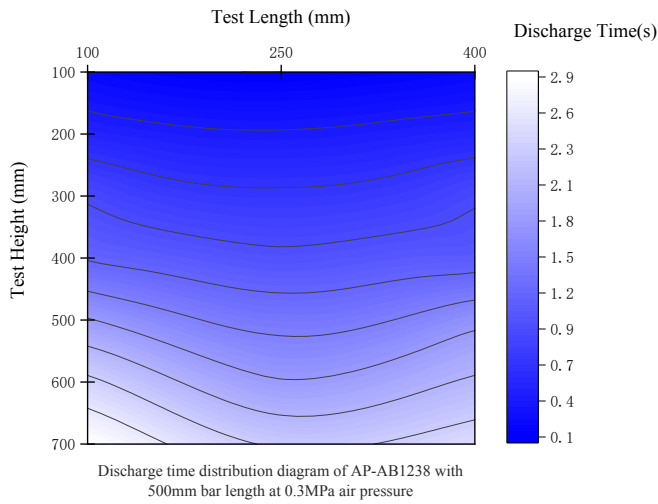
Adjust the duty ratio  $[T_p/(T_p+T_n)]$  to an appropriate ratio and send out the same amount of positive and negative ions to neutralize the static electricity on the surface of the object.

# High Efficiency Static Removal

Keep a clean production environment and stay away from static electricity

Discharging time: Discharge speed within 2 sec when distance is 300mm

Discharging distance: Up to 300mm width.



Test standard: ANSI/ESD.STM3.1, SJ/T 11446—2013  
Test instrument: Trek charge plate tester  
Test voltage:  $\pm 1000V \rightarrow \pm 100V$  attenuation  
Test environment: humidity 50 $\pm$ 5%; temperature 23 $\pm$ 3 C

# Features

Safe / Easy to use / Durable



No.1

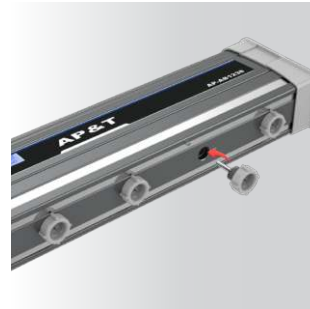
## Electroshock-proof

Protection against human electro-shock.

No.2

## Discharge part easy to replace

Twist the needle holder clockwise to replace the needles when it is damaged.



No.3

## LCD Display

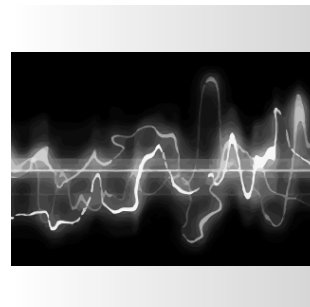
LCD Display shows working status and working parameter information in real time.



No.4

## CE certification

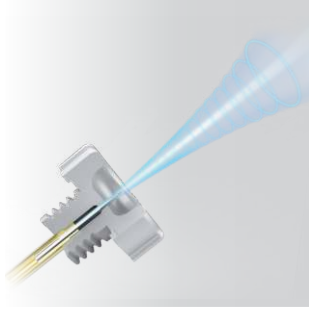
It can effectively avoid external electromagnetic interference affecting the normal operation of the ion bar which is a high-security and high-reliability static eliminator.





# Features

Safe / Easy to use / Durable



No.5

## Airflow acceleration structure

The ion bar nozzle is equipped with airflow acceleration structure, which can achieve two times of the traditional structure discharge speed.

No.6

## Standard tungsten alloy needle

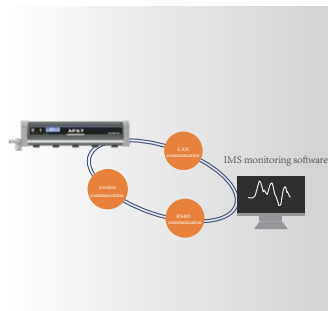
Longer life time compare to titanium and silicon materials.



No.7

## Network Monitoring

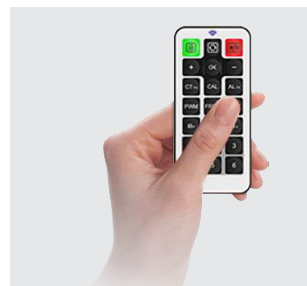
Wired network communication realisable and monitor the working status of the ion bar.



No.8

## Intelligent remote control

Ion output characteristics can be adjusted by remote control.



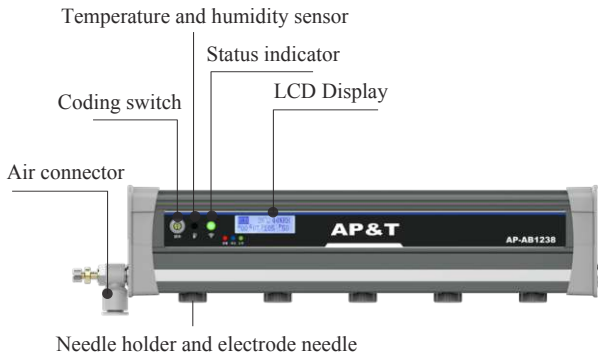
# Product Use

Product details / product size / product specification

## Product details

Front

Back



LCD parameter description		
Display content	Description	Sample graph
RUN/STOP	Run / Pause	
26°C	Temperature of the current working environment	
44%RH	Humidity of the current working environment	
^00	Working address of the device: 00	
^07	Cleaning cycle: 07 (Unit: D)	
^105	Current high voltage output frequency: 105Hz	
^50	Current high voltage output duty ratio: 50%	
HV Warning	High voltage fault alarm	

RJ45 interface	
RJ45 right port of ion bar	Green light indicates positive high voltage working and orange light indicates negative high voltage working, which flash alternately with the operating frequency.
RJ45 left port of ion bar	Green light indicates power-on and orange light flash shows communication status.

Frequency selection and coding switch information
0: Pause
1: 0.1HZ
2: 0.5HZ
3: 1HZ
4: 5HZ
5: 10HZ
6: 30HZ
7: 55HZ
8: 65HZ
9: 105HZ
A: 105HZ
B: 105HZ
C: IR/PC Frequency setting can be done remotely or online (switching between given frequencies)
D: IR/PC Frequency setting can be done remotely or online (switching between given frequencies)
E: negative high voltage output (N:95%、P:5%-105HZ)
F: positive high voltage output (P:95%、N:5%-105HZ)

Network port cable function information	
1、2 Orange White-orange	VCC: +24VDC
3 Blue	RS485+B
4 White-blue	RS485+A
5 Green	GND
6 White-green	GND
7 Brown	HVAL: Eliminator high voltage alarm
8 White-brown	ACT: Eliminator power-on indication Clean: Eliminator cleaning indication
9 Metal shield	PE

The output wiring diagrams of pins 7 and 8 are as follows:

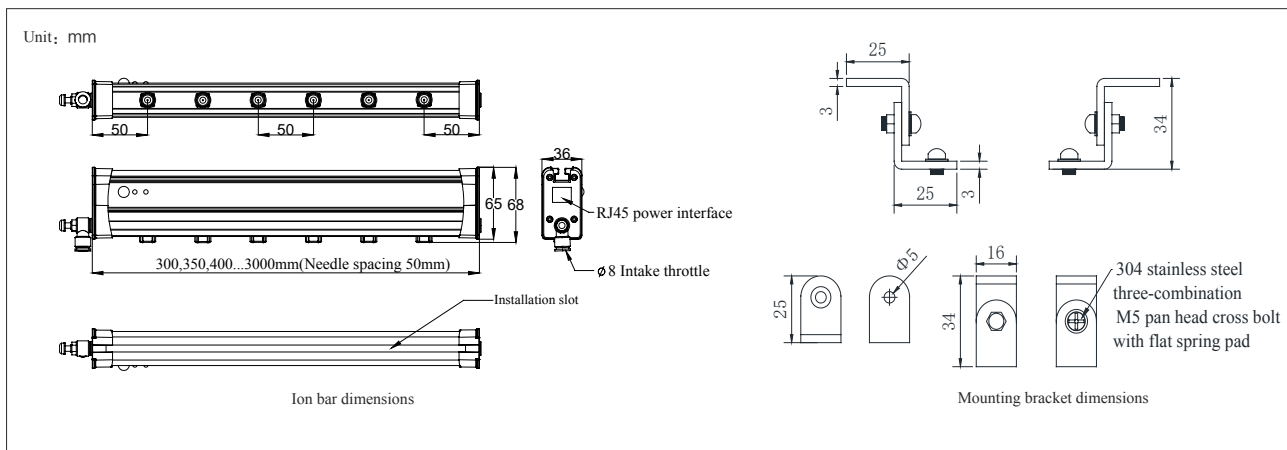
HV Alarm signal: Normal-always open, Abnormal-always close

Power signal: Normal-always close  
cleaning signal: Clean-always open

## Product specification

Model	AP-AB1238
Input voltage	DC 24V
Power	10W
Working voltage	±4000V~±7000V
Ion emission	Pulse AC
Emitter electrode	Tungsten alloy
Output frequency	0.1,0.5,1,5,10,30,55,65,105Hz; ( Ex-work setting: 105Hz)
Duty ratio	5%—95%
Discharge range	L*W*H: {250-2900 ( Needle spacing 50mm ) }*300*1000mm
Installation distance	50 → 1000mm
Ion balance	≤  ±30V  ( AVG )
Discharge time	≤ 2S
Status indicator	Green light - normal, Blue light - standby, Blue light flashing—debugging / cleaning, Red light - Abnormal high voltage
Cleaning time	Default 15 days
Signal output	RS485 communication ( 115200bps,8,1,n,n ) ( ≥ 20ms ) Collector open circuit ( < 50V/100mA )
Display output	LCD Display
Air pressure	≤ 0.6MPa
Intake throttle valve connector	Φ8-G1/8 black
Working temperature	0°C -50°C
Working humidity	< 70%
Dimensions	L*W*H: {350-3000 ( Needle spacing 50mm ) }*36*68.2mm
Bar material	Flame retardant PVC、ABS、SUS、W
Packaging accessories	180°rotatable mounting bracket, M5-12*12*4 square nut
Power adapter	GRT-240200; INPUT: 100—240VAC 50/60Hz; OUTPUT: 24VDC 2000mA dual network port output L*W*H: 123*61*40.5mm
Power cord	2.5m
Warranty	1Year
Certification	CE

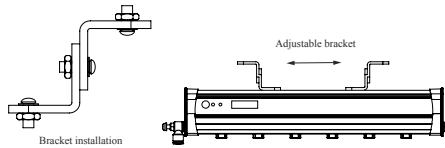
## Product size



# Products Use

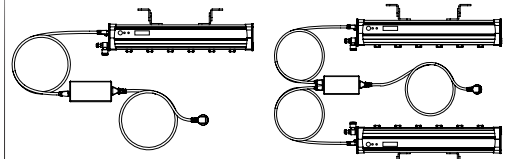
Step of use/Installation position/Packing accessories

## Step of use



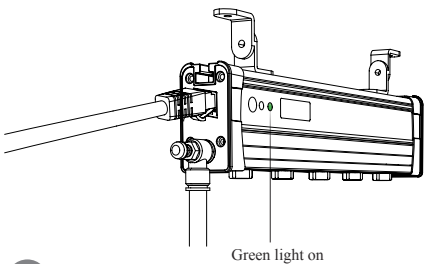
1

Take out ion bar, power adapter, power cable, stainless steel mounting bracket and other accessories from the packing box and install the stainless steel mounting bracket on the mounting slot of the ion bar base.



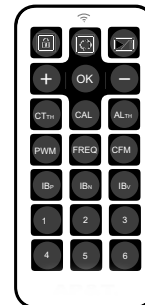
2

Insert one end of the power cable into the RJ45 connector of the power adapter and the other end into the RJ45 connector of the power adapter on the bar body. One adapter can connect up to two ion bars.



3

Connect the air source connector on the bar body to the air generating equipment and turn on the air source switch. The network port power indicator light on and the panel indicator light green shows ion bar working normally.

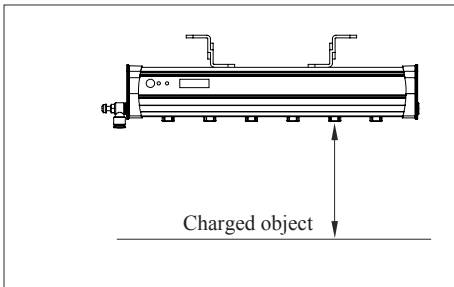


4

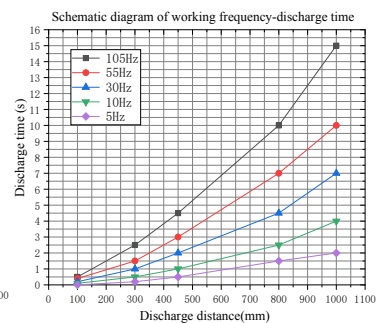
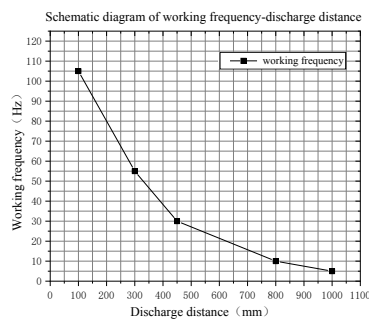
Use the remote control to adjust the voltage output parameters under the suitable airflow pressure.

# Installation position

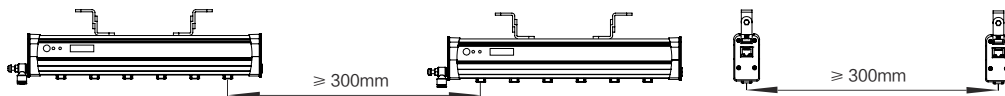
- Place the ion bar in the working area where static electricity is to be eliminated and the installation angle is perpendicular to the surface of the charged body. The working frequency and installation distance can refer to the following table according to the respective electrostatic safety and process control requirements. (Ex-work setting is 105Hz. Please refer to the instructions of operating parameter and coding switch on the panel if you need to adjust the output frequency. Configure a plate tester if you want to see the adjustment results.)



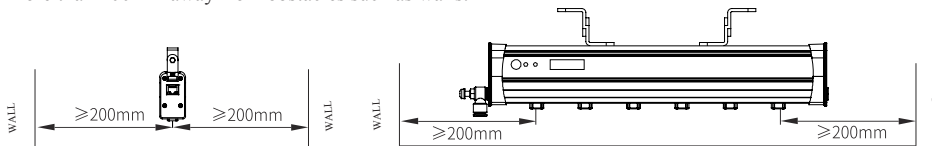
Working frequency ( Hz )	Installation distance ( mm )	Corresponding site
105	100-300	Low balance required such as optoelectronics, semiconductor devices, hard disks, etc.
55	300-400	Low balance required such as optoelectronic devices
30	300-600	Fast moving objects such as films; Low balance required such as electronic devices
10	600-800	Material filling and transfer
5	800-1000	Discharge at a long distance



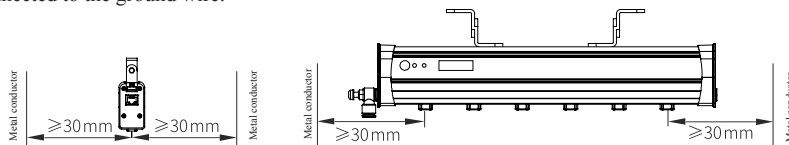
- Ion bar strip grounding electrode is not allowed to be covered by other objects.
- Two ion bars should be installed side by side with an interval of more than 300mm and should be staggered by more than 300mm if installed face-to-face.



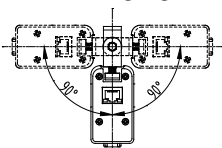
- More than 200mm away from obstacles such as walls.
















- Ion bar should be at least 30mm away from the metal conductor and metal grounding body around the electrode and the bar body must be reliably connected to the ground wire.



- The mounting angle of ion bar can be adjusted.



## Packing accessories

Part name	Picture	Part No.	Specification	Qty
Power adapter		AP2930003	GRT-240200 DC24V 2A P/N:1/2+ 5/6- network metal PE	1
National standard power cord		8YXG25110	Standard 1.8m, optional 3m/5m	1
Double-end crystal head black shield ethernet cable		8WXI00004	Standard 2.5m, optional 5m/10m	1
Single-end crystal head black shield ethernet cable		8WXI00002	FUTP CAT.5E 26AWG 4Pair Jacket PVC OD:5.6±0.2mm bag packed	Optional
L-shaped stainless steel mounting bracket		AP8038005	Height 25mm /Width 16mm/ Thickness 3mm/Aperture 5mm (measured 4.8mm)	4
Square nut		AP8933000	M5*12*12*4	2
304 stainless steel spring washer		AP8943000	M5	6
304 stainless steel flat gasket		AP8946004	M5	6
304 stainless steel pan head Phillips screw		AP8900001	M5*12	6
Hex nuts		1LML05000	M5	4
Intake throttle valve		3JTQF0801	Standard 8mm, optional 6mm	1
Needle holder		AP6620003	—	—
Remote control		AP2253011	Infrared remote control (L*W*H : 85.76*39.76*6.66)	1

**▲ Safety warning**

1. Please read the instruction manual carefully before installing and using this equipment.
2. The whole set of equipment must be reliably grounded during use, otherwise it is easy to cause abnormality or even damage to the ion bar.
3. Do not use this equipment in environment where humidity is > 70%.
4. It is strictly forbidden to use this equipment in flammable and explosive environments.
5. Unauthorized disassembly of the product is strictly prohibited, internal maintenance and repair must be performed by professionals.
6. It is strictly forbidden to touch the product with water stains, otherwise an abnormality may occur and cause electric shock or fire.
7. Power must be turned off during inspecting or replacing the product, otherwise it may cause electric shock or fire.
8. The product is ventilated with dry and clean air or nitrogen which will work abnormally or be damaged if the gas source contains water or grease.
9. The product is specially designed to eliminate static electricity. It is strictly forbidden to use it for other purposes. Any abnormal use may cause machine failure, electric shock, fire and other accidents.
10. Its strictly forbidden to touch the electrode needles when power is on, otherwise it is easy to cause malfunctions and electric shock accidents.
11. The electrode needle is a sharp metal object, please use it with care.
12. Please check the specifications of the power supply before powering on the product. Any power supply that does not meet the specifications will cause damage to the product.
13. Please check the product power cord/communication cord regularly and replace it immediately if it is damaged. Otherwise it is easy to cause problems such as electric leakage, poor communication, and abnormal operation.

**▲ Trouble shooting**

NO	Problems	Reasons	Solutions
1	The indicator on the label panel is off	Poor contact of the power cable	Check whether the power cable is in good condition and securely connected
		Power supply mismatch	Confirm the power supply specification ( INPUT: 100—240VAC 50/60Hz; OUTPUT: 24VDC 2000mA )
2	The indicator of the RJ45 interface close by the label panel is off	Poor contact of the power cable	Check whether the power cable is in good condition and securely connected
		Power supply mismatch	Confirm the power supply specification ( INPUT: 100—240VAC 50/60Hz; OUTPUT: 24VDC 2000mA )
		No power supply, power-on indicator-green light is off	Check the power supply cable
		No communication connection or communication failure, communication indicator-orange light is off	Check communication connection and software settings
3	The indicator of the RJ45 interface far away from the panel label is off	Poor contact of the power cable	Check whether the power cable is in good condition and securely connected
		Power supply mismatch	Confirm the power supply specification ( INPUT: 100—240VAC 50/60Hz; OUTPUT: 24VDC 2000mA )
		Wrong working mode—only green light on (only positive high voltage work)	Unplug the power cord and restart the ion bar; or reset the working frequency(this light is not used as a basis for judging the failure of the high-voltage module)
		Wrong working mode—only orange light on (only negative high voltage work)	
		The duty ratio is too small and the green light is dim	Adjust the duty ratio until reach good ion balance; return to the factory for maintenance if the adjustment has no effect
		The duty factor is too large and the orange light is dim	Adjust the duty ratio until reach good ion balance; return to the factory for maintenance if the adjustment has no effect
4	The LCD screen is not bright, abnormal or fuzzy	Abnormal discharge	Check whether the grounding is well and restart. Return to factory for maintenance if still fault
5	The electrostatic removal performance decreased obviously	Discharge needle is polluted and damaged	Clean or replace the discharge needle
		Whether the discharge seat is tightened	Confirm the discharge seat is tightened
		Bearing set of ion bar is improper	Confirm the best bearing set
6	The electrostatic removal performance decreased	There are conductors or other ion bar around	Remove (moving) conductors or other ion bar
7	Panel indicator red light on	Electromagnetic interference	Turn off the power switch / unplug the power cable, restart the ion bar
		Abnormal discharge	Confirm the installation location and stay away from surrounding conductors
		No power supply for high voltage module	
		High voltage module is damaged	
8	Panel indicator blue light flashes	Poor grounding of the strip grounding electrodes on both sides of the electrode needle at the bottom of the ion bar	Return to factory for maintenance
9	Unable to discharge	High voltage module is damaged	Return to factory for maintenance
		Main-board chip is damaged	
9	Unable to discharge	Main-board chip is damaged caused by poor grounding or no grounding	Check the grounding of the ion bar and plant equipment, and return to the factory for maintenance
		High voltage module is damaged or insulation of the discharge seat is damaged	Return to factory for maintenance
10	The product is smoky or burnt	High voltage module is damaged or insulation of the discharge seat is damaged	Return to factory for maintenance

#### Maintenance

1. The ion bar should be cleaned and maintained in time according to the use environment and the required electrostatic protection requirements in order to ensure the good performance of the product. That is, gently remove the carbon deposits on the discharge electrode, discharge socket, and metal discharge body with electrostatic brush, dust-free cotton swab, dust-free cloth dipped in anhydrous alcohol, which will improve its performance significantly. Note:
  - A. Operation must be done 10 minutes after power cut off.
  - B. It must be cleaned when dust or white products appear on the tip of the needle during use. Use dust-free cloth dipped in anhydrous alcohol to clean when brush can not meet the cleaning requirements.
  - C. The ion bar must be powered on after alcohol is completely volatilized after cleaning. No other organic solvent can be used to clean the ion bar.
2. If the switch working indicator light of the power plug-in port on the panel of the ion bar is off, it should be stopped and repaired by professional maintenance personnel. It can be used only after the electrical performance index is normal.

#### After-sales service

AP-AB1238 intelligent LCD display self-balancing static removal ion bar has undergone rigorous testing and aging treatment before ex-work. Its performance has completely reached the relevant indicators marked in the usage instruction.

1. AP&T makes a commitment to the customer that any defective parts inspected by AP&T will be repaired or replaced free of charge within one year from the date of purchase. However, this commitment does not apply to:
  - (1) The device is incorrectly used or installed.
  - (2) Damage caused by negligence or accident during use.
  - (3) Modified, disassembled or repaired by other service departments not authorized by Anping Company.
2. The alloy electrode is a consumable product which is not included in the scope of warranty and will be charged for replacement when repairing.
3. AP&T shall not be liable for any incorrect use of the products except for repair or replacement of parts as specified above.



# AP&T®

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Shanghai Anping Static Technology Co.,Ltd

Tel : +86-21-64517676

Fax : +86-21-64517673

Postcode : 200233

Website : [www.ap-static.com](http://www.ap-static.com)

Address : 3/F,Building 27,No.69,Guiqing Road,Shanghai,China



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