

**AP&T®**

**Space Ion Bar**  
**AP-DB1213**

**User manual**

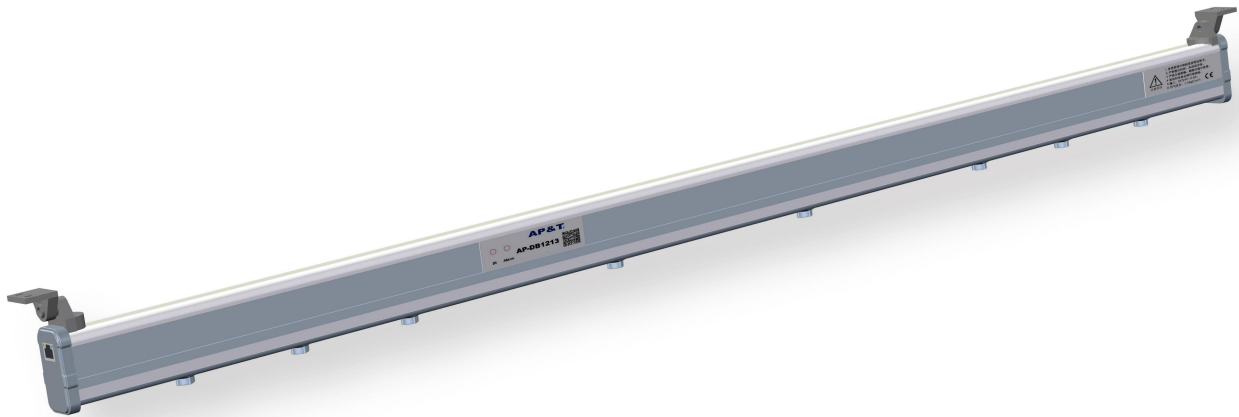
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## *AP-DB1213 Space ion bar*

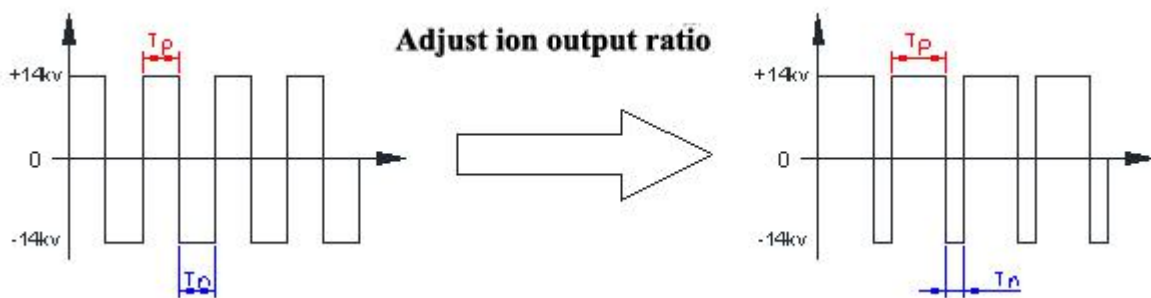


### ◆ Product description

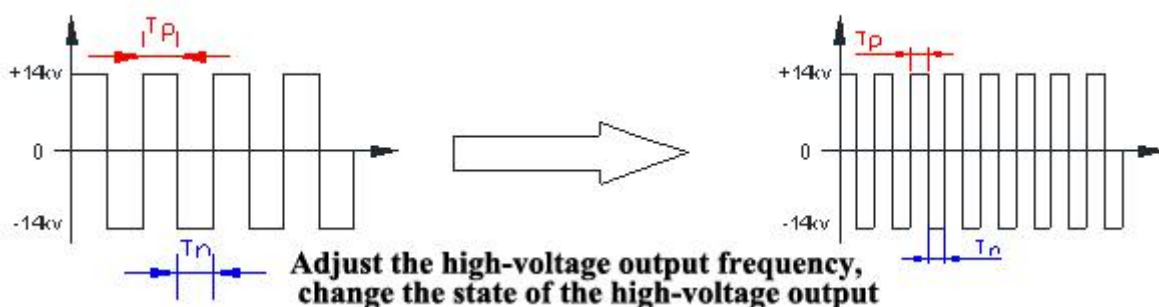
AP-DB1213 space ion bar is a static elimination device developed by Anping to eliminate static electricity in clean space. The AP-DB1213 space ion bar uses a DC high-voltage power supply and a special alloy electrode. Positive and negative DC high-voltage are applied to the positive and negative coupling electrode needles alternately to generate a corona discharge. Air ions neutralize the electrostatic charge existing in the space to achieve the purpose of efficiently and reliably maintaining the electrostatic balance in the space.

### ◆ Product Features

1. Unique discharge structure design for eliminating static electricity in space.
2. The output ratio of positive and negative ions is adjustable for adjusting the ion balance.



3. The output frequency of positive and negative ions is adjustable, which is suitable for different power consumption distances to achieve faster power consumption.



4. Sound and light alarm when high voltage is abnormal.
5. Ion output characteristics can be adjusted by remote control.
- 6, with anti-shock function to prevent electric shock injury to the human body.
7. Passed CE certification, which can effectively prevent external electromagnetic interference from affecting the normal operation of the ion rod.
8. With electromagnetic protection function, it will not cause electromagnetic interference to other equipment, making it unable to work normally.
- 9, the product contains 7 length specifications, to meet the requirements of different ionization ranges, saving the number of adapter power and ion rod installation and workload.
10. The product can be connected in series at the beginning and end to simplify wiring. Each adapter power supply can load up to 8 space bars.

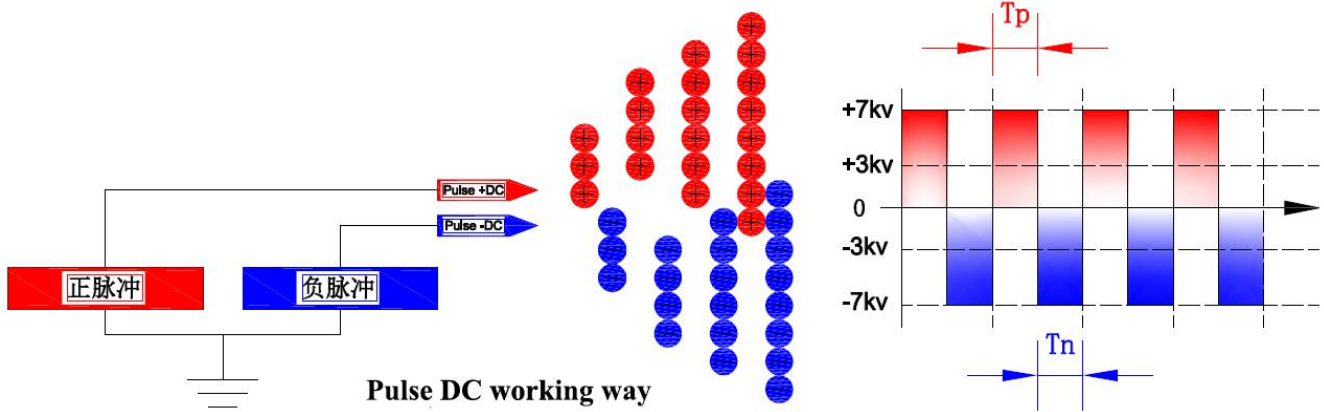
#### ◆ Industry applications

Can be widely used in electronics, semiconductor, photoelectric and other industries.

#### ◆ Performance parameter

Type	AP-DB1213
Input voltage	DC 24V
Input Current	< 160mA
Power	4W
Operating Voltage	+15KV, -13KV
Ion emission	Pulse DC or steady-state DC (transmission mode can be switched by remote control)
Transmitting electrode	Tungsten
Output frequency	0.01, 0.03, 0.05, 0.07, 0.1, 0.3, 0.5, 0.7, 1, 3, 5Hz; (Factory setting: 0.05Hz, parameters can be adjusted by remote control)
Duty factor	10%—90%(Parameter can be adjusted by remote control)
Ozone concentration	<0.1ppm(50mm from the emitter)
Alarm indication	Power network port indicator, high voltage alarm indicator (green works normally, red high voltage is abnormal)
Operating temperature	0°C-50°C
Working humidity	<70%
Dimensions	L*W*H: {750, 1150, 1550...→3150(Pitch between 200mm)}*35*63.5mm
Rod material	Flame retardant PVC、ABS、AL
Installation accessories	180 ° rotation mounting angle
Adapted power	GRT-240200: DC24V 2A, Dual network port output, 123*61*40.5mm (L*W*H)
Network cable length	2.5m
Warranty	1year
Certification	CE

#### ◆ Indication of working mode (pulse DC)



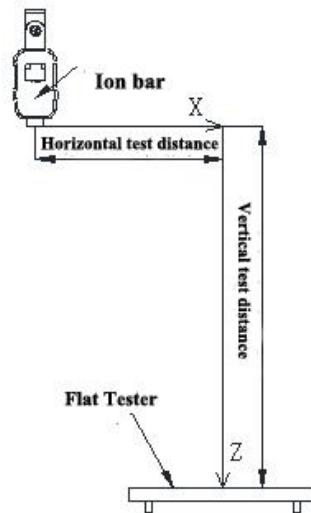
◆ Explanation of positive and negative ion output

This section explains the relationship between pulse duty cycle and static electricity elimination. On the left, a graph shows a square wave with a peak of +14kv and a trough of -14kv. The pulse width is  $T_p$  and the period is  $T_n$ . The duty cycle is defined as  $T_p / (T_p + T_n)$ . The text states: "Adjusting the high-voltage output duty cycle  $[T_p / (T_p + T_n)]$  Change the state of high voltage output".

Three cases of static electricity in the eliminated space are shown:

- The first case:** Shows an imbalance of positive ions. Text: "Adjust the  $T_p$  to be smaller, so that the energy of the positive voltage is smaller, the action time is shorter, the output of positive ions is reduced, the output of negative ions is increased, and the excess positive charge in the cleared space is neutralized."
- The second case:** Shows an imbalance of negative ions. Text: "Adjust the  $T_p$  to make the positive voltage action energy larger, the action time longer, the positive ion output increase, the negative ion output decrease, and the excess negative charge in the cleared space is neutralized."
- The third case:** Shows a balanced state. Text: "Adjust the duty cycle  $[T_p / (T_p + T_n)]$  To the appropriate ratio, deliver the same number of positive and negative ions to neutralize the static charge of the space being eliminated"

◆ Discharge effect



The test data is as follows:

Test data sheet								
Test distance Z (mm)	Test distance X (mm)	frequency (Hz)	Bar length (mm)	Discharge time (s)		Ion Balance (V)		
				+	-	MIN	AVE	MAX
1800	0	0.05	2010	34.5	37.9	-159	-15.6	163
1800	300	0.05	2010	50.6	52.1	-139	-7.9	87.3
1800	500	0.05	2010	49.7	52.4	-116	9.6	147
1800	1000	0.05	2010	82.3	84.5	-84.3	6.0	85.4

Test standards: ANSI / ESD.STM3.1, ANSI / ESD.SP3.3, SJ / T 11446—2013

Test instrument: Trek157 static tester

Test voltage:  $\pm 1000V \rightarrow \pm 100V$  attenuation

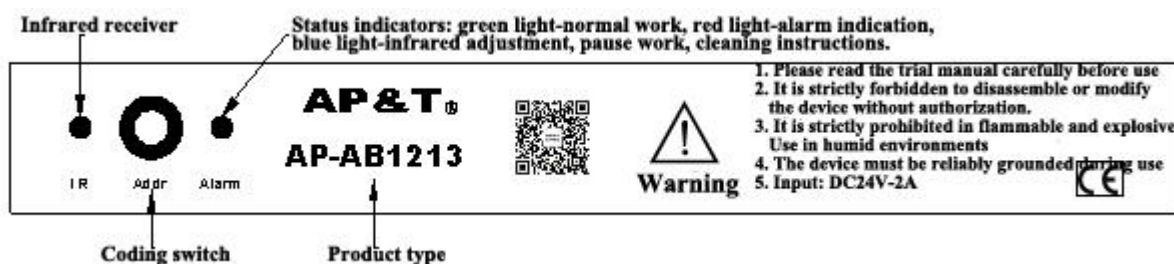
Test environment: humidity  $50 \pm 5\%$ ; temperature  $23 \pm 3 \text{ }^\circ\text{C}$

**◆ Safety alert**

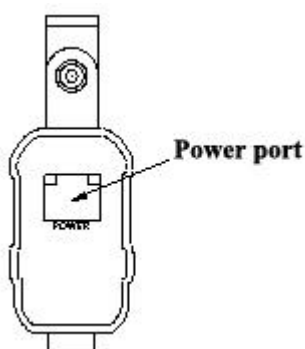
1. Please read the instruction manual carefully before installing and using this equipment.
2. The entire set of equipment must be reliably grounded during use, otherwise the ion rod may be abnormal or even damaged.
3. It is not suitable to use this equipment in  $> 70\%$  humidity environment.
4. The use of this equipment in flammable and explosive environments is strictly prohibited.
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 abnormality may occur, resulting in electric shock or fire.
7. When inspecting or replacing the product, please turn off the power, otherwise it may cause electric shock or fire.
8. Ventilation of the product is dry and clean air or nitrogen. If the air source contains moisture or grease, the product will work abnormally or be damaged.
9. The product is designed to eliminate static electricity, and other uses are strictly prohibited. Any abnormal use may cause hidden dangers such as machine failure, electric shock, and fire.
10. It is strictly forbidden to touch the electrode needle while the power is on, otherwise it may cause malfunction and electric shock accident.
11. The discharge needle is a sharp metal object, please use it with care.
12. Before powering on the product, please check the specifications of the power supply. Any power supply that does not meet the specifications will cause damage to the product or even malfunction.
13. Please check the product's power cord / communication line regularly. If it is damaged, replace it immediately. Otherwise, it may cause leakage, poor communication, and abnormal work.

**◆ Use and installation**

1. Installation and use instructions (see panel function diagram):



**Panel description**



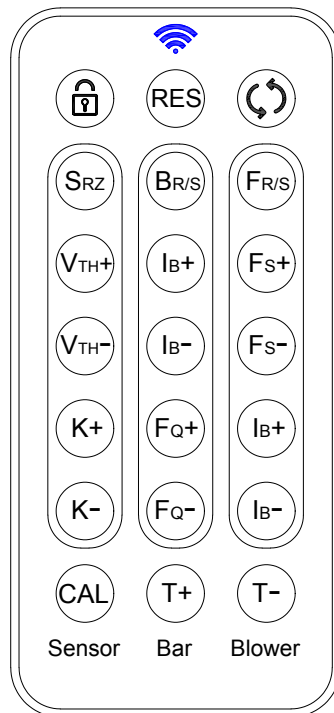
**Port description**

- (1) Select the best power-dissipation position, and install the rod and the matching power adapter firmly.
- (2) Insert one end of the power cable into the power adapter socket and the other end into the power port on the stick. The port wiring information is shown in the following table

Interface cable information		
1/2	Orange, white-orange	+VCC
3	Blue	RS485+B
4	White-blue	RS485+A
5/6	Green, white-green	GND
7	Brown	NPN-1
8	White-brown	NPN-2
9	Metal shield case	PE

1. The power indicator of the network port is on, and the indicator on the rod panel is green to show that the ion rod is working. Adjust the appropriate voltage output parameters, output positive and negative ions, and neutralize the static charges in the space.

**The instructions for using the remote control and DIP switch are as follows:**



**2.1、 Remote control basic functions:**

- BR/S: Run and Pause
- IB+/IB-: Balance adjustment (5% -95%, unit is 0.1%)
- FQ+/FQ-: Frequency adjustment (cyclic switching frequency)
- T+/T-: Cleaning time adjustment,Unit:1D=24H
- CAL+"RES": Factory setting ((encoding)Hz、 50%、 7D)

Unlock function:

- After unlocking, after any button is pressed, the delay will continue for 30s.
- After unlocking, press any button for 30s to exit and lock

**2.2、 AP-DB1213 Coding switch:**

- 0: Suspend / Modify Address

- 1: 0.01HZ
- 2: 0.03HZ
- 3: 0.05HZ
- 4: 0.07HZ
- 5: 0.1HZ
- 6: 0.3HZ
- 7: 0.5HZ
- 8: 0.7HZ
- 9: 1HZ
- A: 3HZ
- B: 5HZ
- C: 50HZ (For ordinary ion bars, add and subtract every 1 frequency)
- D: 100HZ(For ordinary ion bars, add and subtract every 1 frequency)
- E: positive (P:95%、N:5%-100HZ)
- F: negative (N:95%、P:5%-100HZ)

2.3、Indicator function:

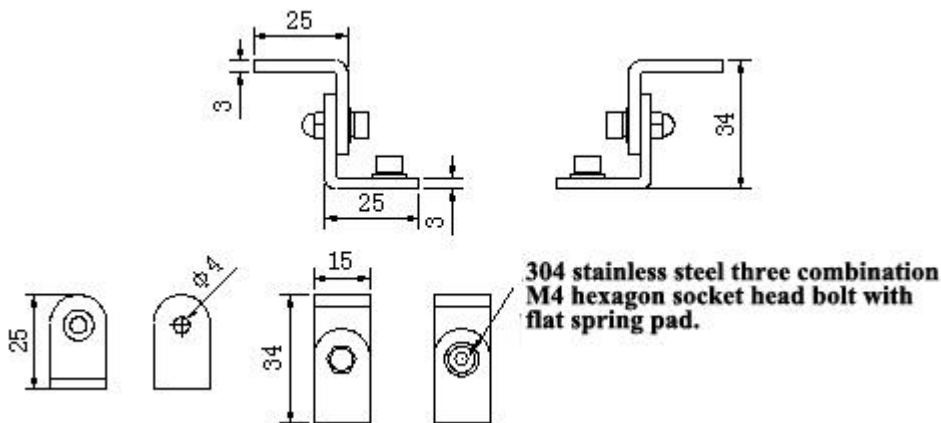
- Blue light: infrared, pause, cleaning instructions
- Green light: running

Red light: alarm indication

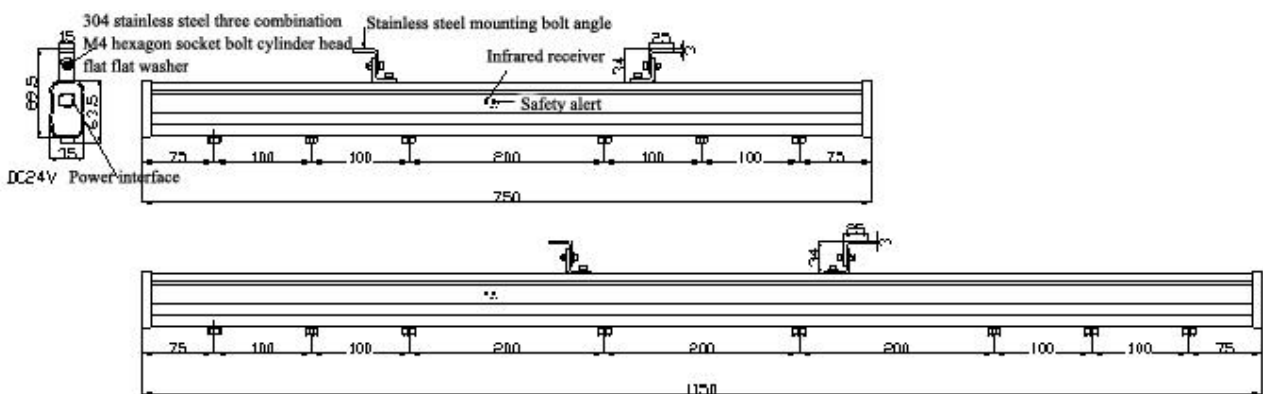
2.4、NPN function:

- 7: High voltage indication
- 8: Power-on instructions, cleaning instructions

1、 Installation dimension drawing:



Installation hanging corner size chart



Ion bar length:  $L=750+400*n$ , (n=0, 1, 2, 3, 4, 5, 6)

## Ion bar dimensions

### 4、 Technical tips:

(1) When using an ion rod, it should be placed in the work area where static electricity is to be eliminated, and the installation angle should be installed vertically.

(2) The area around the electrode of the ion rod should be at least 10cm away from the metal conductor and metal grounding body. The rod body must be reliably connected to the ground wire.

(3) Failure solution:

NO.	Problems	Possible reason	Solution
1	Power port indicator is off	Poor contact of power cord	Check whether the power cord is intact and connected firmly
		Power mismatch	Confirm the power supply model (INPUT: 100—240VAC 50/60Hz; OUTPUT: 24VDC 1000mA)
2	Significantly reduced static elimination performance	Discharge needle contamination and damage	Clean or replace the discharge needle
		Whether the discharge seat is tightened	Confirm to tighten the discharge seat
		Incorrect orientation of the ion rod	Confirm the best installation position
3	Reduced static elimination performance	There are conductors or other ion bars around the ion bar	Remove (moving) conductors or other ion bars
4	High voltage alarm (the panel indicator lights up red)	Electromagnetic interference	Turn off the power switch / unplug the power cable and restart the ion bar
		Abnormal discharge	Check the installation position and keep away from surrounding conductors
		High voltage module without power	Return to factory
		High voltage module is damaged	Return to factory
5	Unable to dissipate	High voltage module is damaged	Return to factory
		Motherboard chip is damaged	Return to factory
		Poor ground / no ground	Check the grounding of the ion rod and plant equipment
6	Product smokes or burns	Damaged high-voltage module or damaged insulation of discharge base	Return to factory

### ◆ Maintenance

1. In order to ensure the good performance of this product, it should be cleaned and maintained in a timely manner according to the use environment and the required electrostatic protection requirements, that is, use an electrostatic brush, a dust-free cotton swab, and a dust-free cloth dipped in absolute alcohol to gently remove it. The performance of carbon deposits on electrodes, discharge bases and metal discharge bodies will be significantly improved. note:

A. It must be operated 10 minutes after the power is turned off.

B. During the use of the ion bar, when the needle tip is dusty or white, it must be cleaned. When the cleaning requirements cannot be achieved with a brush, use a clean cotton swab dipped in absolute alcohol.

C. After cleaning, you must wait for the alcohol to completely evaporate before powering on. Do not use any other organic solvents to clean the bar.

2. If the switch working indicator of the power plug port on the end cover of the stick is off and not on, it should be stopped and checked and repaired by professional maintenance personnel. It can be used only after the electrical performance indicators are normal.

### ◆ After sales service

1. The AP-DB1213 space ion bar has undergone rigorous testing and aging treatment before leaving the factory, and its performance fully meets the relevant indicators marked in the instruction manual.

2. AP & T promises to users as follows: Within one year from the date of purchase, the company repairs or replaces any



spare parts that have been inspected for defects by the company for free. However, this commitment does not apply to the following situations:

- (1) The equipment is used or installed incorrectly;
  - (2) Damage caused by negligence or accident during use;
  - (3) It has been altered, disassembled, or repaired by other service departments not authorized by Anping.
3. Alloy electrodes are consumables and are not covered by the warranty. The company has to charge for replacement when repairing for customers.
4. Except for the repair or replacement of the components in this regulation, AP & T does not assume any obligations and the related responsibilities of the product users.

◆ **Packaging accessories**

1. Manual
2. Certificate of Qualification
3. Mounting bracket
4. Power adapter
5. Power connection cable
6. National standard power cable