



Explosion-Proof AC Voltage Static Eliminator

AP-AB1601A / AP-AB1602A

User manual

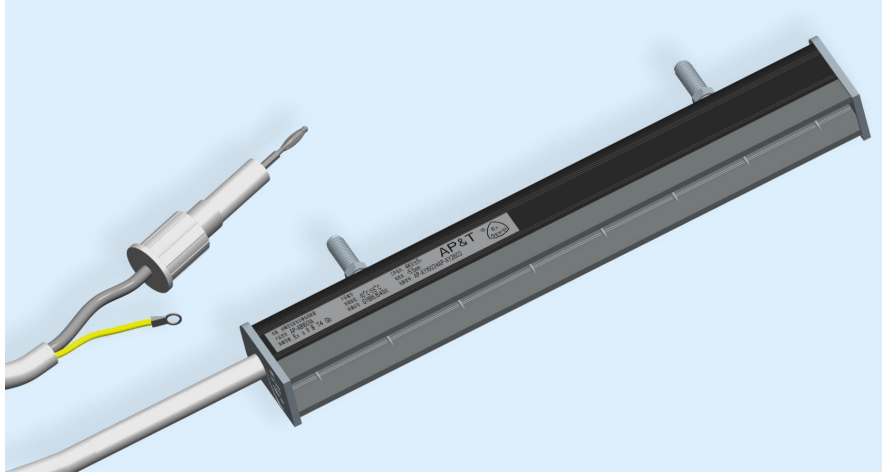
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AP-AB1601A/1602A Explosion-Proof AC Voltage Static Eliminator



Product description

AP-AB1601A / AP-AB1602A explosion-proof AC voltage static eliminator is a rod type static elimination device developed by Anping Company (AP & T) to eliminate static electricity on the surface of objects. The product explosion-proof mark is Ex s II B T4 Gb, and the explosion-proof certificate number is GYB16.1549X.

Can be widely used in printing, plastic, textile and other industries with flammable conditions.

Special conditions for product security

The explosion-proof certificate number suffix "X" indicates that the product has special conditions for safe use, as follows:

1. The product should not be used in places where conductive objects may adhere to static electricity electrodes (cannot be used if the static electricity electrodes may adhere to conductive objects such as carbon and metal foil).
2. The static electricity electrode should be installed at least 20mm away from the static electricity removal object.
3. The distance between the static elimination electrode and the mechanical frame should be more than 10mm.
4. Keep the anti-static electrode clean. It is strictly forbidden to dry-clean the electrode holder.
5. The power supply unit does not have an explosion-proof structure and must be installed in a non-hazardous place.
6. The length of the high-voltage cable is up to 8m.
7. Never open the cover.
8. It is forbidden to rub the surface of the product shell to prevent the danger of ignition due to static electricity.

Product Usage Notes

- Product allowed environment:
Temperature: (0 ~ + 50) °C, relative humidity: 35% ~ 75%, altitude: no more than 1000m.
- The product is provided with a ground terminal, and the user should be reliably grounded during installation and use.

- When the product is used and maintained on site, the principle of "Do not open with power on" must be observed.
- The user shall not replace the parts or components of the product by himself, and shall work with the product manufacturer to resolve the faults during operation to prevent damage.
- The electrical parameters of the eliminator are as follows:

Static elimination electrode			Power supply unit				
Voltage(V)	Frequency(Hz)	Needle binding capacity (pF/set)	Primary voltage (V)	Secondary voltage(V)	Frequency(Hz)	Capacity(VA)	Insulation class
4000	50 60	3.5	100 110 220	4000	50 60	25	E

- 6. The installation, use and maintenance of the product shall comply with the requirements of the product manual and the following relevant standards and specifications:

GB 3836.13–2013 Explosive environment Part 13: Repair, overhaul, repair and modification of equipment

GB 3836.15–2000 Electrical equipment for explosive gas environments-Part 15: Electrical installation in hazardous locations (except coal mines)

GB 3836.16–2006 Electrical equipment for explosive gas atmospheres Part 16: Inspection and maintenance of electrical installations (except coal mines)

GB 50257–2014 Code for construction and acceptance of electrical installations in explosion and fire hazardous environments

GB 3836.18–2010 Explosive atmospheres Part 18: Intrinsically safe systems

- Please read the instruction manual carefully before installing and using this equipment.
- The entire set of equipment must be reliably grounded during use, and the grounding resistance is less than 4 ohms; otherwise, the ion rod may be abnormal or even damaged.
- It is not suitable to use this equipment in the environment of > 70% humidity.
- It is strictly forbidden to disassemble the product without authorization, and internal maintenance and repair must be performed by professionals.
- It is strictly forbidden to touch the product with water stains, otherwise abnormalities may occur, resulting in electric shock or fire.
- When inspecting or replacing the product, please turn off the power, otherwise it may cause electric shock or fire.
- 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.
- It is strictly forbidden to touch the electrode needle while the power is on, otherwise it may cause malfunction and electric shock accident.
- 15. The discharge needle is a sharp metal object, please use it with care.
- 16. 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 failure.
- 17. Please check the power cord of the product regularly. If it is damaged, please replace it immediately, otherwise it may cause leakage and abnormal working.

Product structure features and working principles

(1) Structural characteristics:

1. It is a rod-type, horizontal active static eliminator.

2. The stick is small and exquisite.
3. Work under high voltage and micro current (μ A level).
- 4, with anti-shock function, to avoid accidental human body contact and cause injury.
5. It has a certain anti-flammability function, which can be applied to places with flammable and explosive conditions corresponding to Ex s II B T4 Gb or lower.
6. Special bar notch on the back of the body, the mounting bolt can be moved.

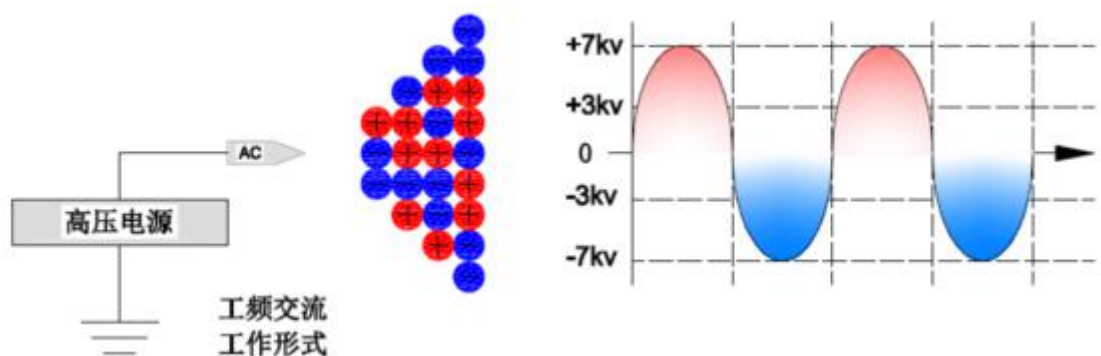
(2) working principle:

AP-AB1601 / AP-AB1602 explosion-proof AC voltage static eliminator uses high-frequency AC high-voltage, and acts on a dedicated transmitting electrode through an impedance coupling device to ionize air molecules and generate positive and negative high-voltage ions; and transport them to the static elimination The surface of the object neutralizes the positive and negative electrostatic charges to achieve the purpose of efficient and reliable elimination of static electricity.

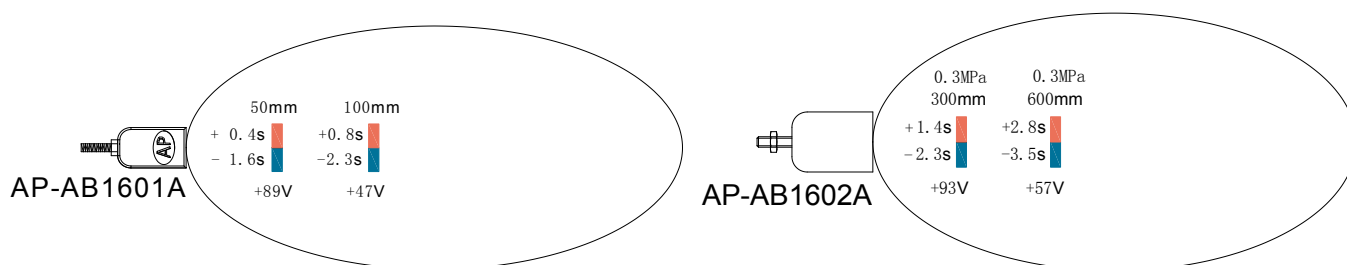
Product technical specifications:

Type	AP-AB1601A	AP-AB1602A
Explosion-proof sign	Ex s II B T4 Gb	Ex s II B T4 Gb
Explosion-proof certificate No.	GYB16.1549X	GYB16.1549X
Operating Voltage	Power frequency AC4000V	Power frequency AC4000V
Power	20W	20W
Ion emission	Power frequency AC	Power frequency AC
Transmitting electrode	SUS	SUS
Discharge structure	Resistance coupling	Resistance coupling
Electrode high voltage	$\leq 4000V$	$\leq 4000V$
Electrode pin combined capacitor	$< 3.5pF$	$< 3.5pF$
Power consumption range	L*W*H (110mm→3000mm) *300mm*100mm	L*W*H (110mm→3000mm) *300mm*600mm
Installation distance	30—100mm	100—600mm
Air pressure	——	$\leq 0.6MPa$
With throttle Air source connector	——	$\Phi 8-G1/8$ Red
Ion balance	$\leq \pm 300V $	$\leq \pm 300V $
Discharging speed	$\leq 2.5S$ (Different test conditions will result in different test data)	$\leq 2.5S$ (Different test conditions will result in different test data)
Operating temperature	0°C – 50°C	0°C – 50°C
Working humidity	$< 70\%$	$< 70\%$
Rod material	Flame retardant PVC、AL	Flame retardant PVC、AL
Dimensions	L*W*H (110mm→3000mm) *20.4mm*32mm	L*W*H (110mm→3000mm) *28.6mm*38.7mm
Installation accessories	Hex Bolts M4*20	Hex Bolts M5*20
Supporting power	AP-AY1603/2603	AP-AY1603/2603
High-voltage connection line length	2.5m(Can be customized according to requirements, the maximum length is 8m)	2.5m(Can be customized according to requirements, the maximum length is 8m)
Warranty period	1 year	1 year
Certification	CE	CE

Working way



Elimination of static electricity



Test ion rod length: 210mm, working frequency: 50Hz

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

Test equipment: Monroe 268A-1T static tester

Test voltage: $\pm 5000\text{V} \rightarrow \pm 500\text{V}$ attenuation

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

External dimensions

1、External dimensions illustration:

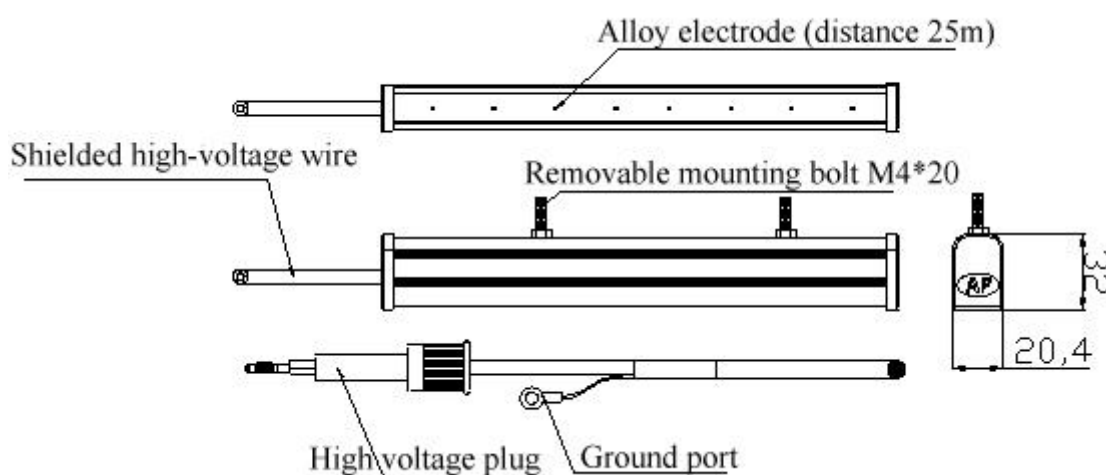


Figure 1 AP-AB1601A ion bar structure size drawing

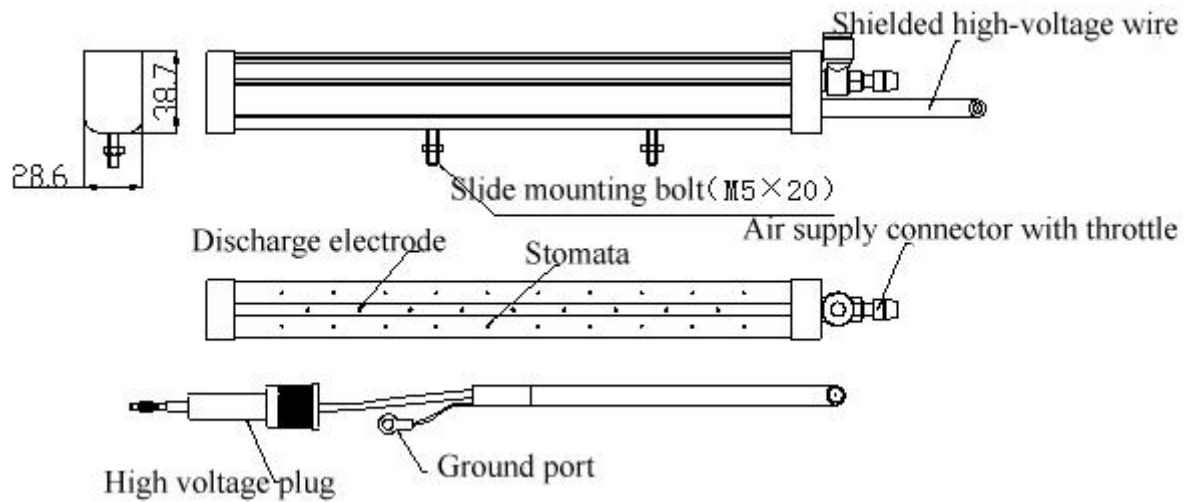


Figure 2 AP-AB1602A ion bar structure size drawing

Installation Notes

1、Installation method diagram:

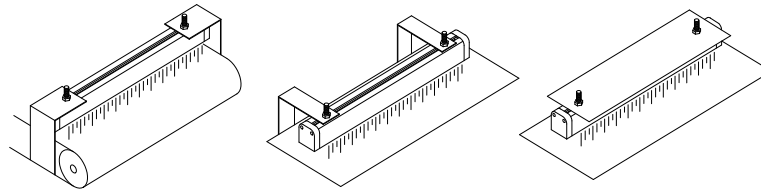


Figure 3 Installation method diagram

2、Installation technical tips:

(1) When using an ion bar, it should be placed in a work area where static electricity is eliminated. (AP-AB1601A ion rod is preferably about 30 ~ 100mm away from the surface of the object to be destaticized. The surface of the static-dissipating object is about 100 ~ 300mm, and the installation angle should be perpendicular to the surface of the charged body.

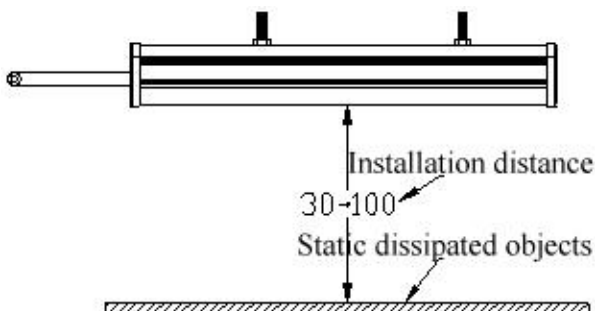


Figure 4 AP-AB1601A installation distance

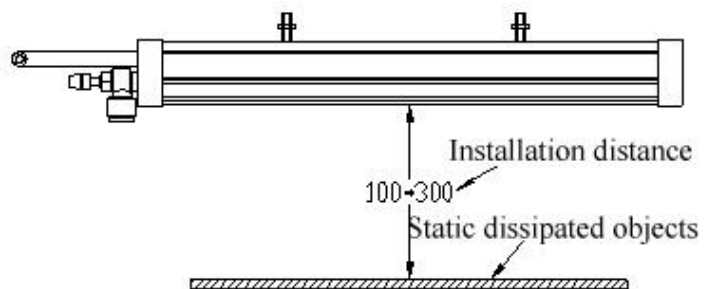


Figure 5 AP-AB1602A installation distance

- (1) The area around the electrode of the ion bar should be at least 3cm away from the metal conductor and metal grounding body. The rod body must be reliably connected to the ground wire, and the grounding resistance is less than 4 ohms.
- (2) It is not allowed to cover the surface of the ion bar.
- (3) Two AP-AB1601A ion bars should be installed side by side more than 10cm apart, and more than 20cm away from obstacles such as walls.

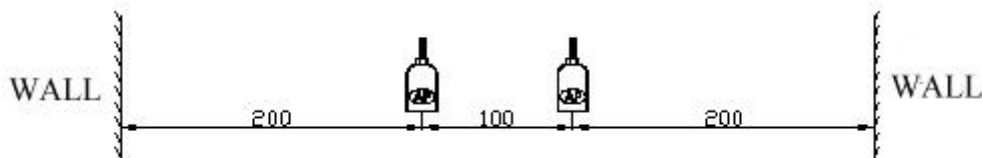


Figure 6 AP-AB1601A installation interval diagram

(4) Two AP-AB1602A ion bars should be installed side by side at least 30cm apart, and more than 20cm from obstacles such as walls.

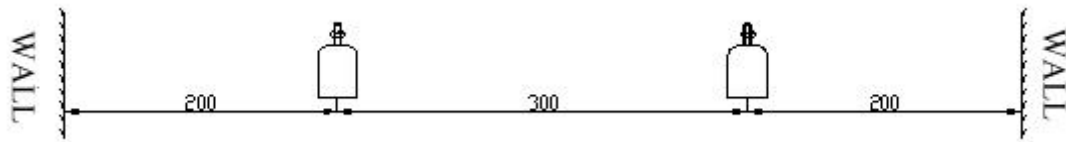


Figure 7 AP-AB1602A installation interval diagram

Operational guidance

1. Select the best power consumption location, and install the rod body and supporting high-voltage power supply firmly.
2. Insert the high-voltage plug of the connecting rod into the matching high-voltage power supply output socket.
3. Connect the ground terminal of the rod to the ground stud of the high voltage power supply.
4. Connect the air source connector of the rod body (air source type) to the air source generator and turn on the air source switch.
5. Turn on the power switch, the switch indicator light will show the power supply work, adjust the appropriate air source pressure, and make the positive and negative air ions generated at the electrode needle to neutralize the surface of the object.

Warning: When using a compressed air source, ensure that the gas entering the ion wind rod is dry and clean to avoid water vapor, grease, and dust from the air source contaminating the electrode needles and causing high-voltage insulation failures, affecting normal use.

Failure analysis and elimination

NO.	Failure phenomenon	Cause Analysis	Method of exclusion	Remark
1	Put the electrode to the ground electrode on the side of the bar to ignite	Reduced surface insulation resistance due to bar volume ash	Power off the cleaning bar	In order to ensure the good performance of this product, according to the use environment and the required electrostatic protection requirements, Regularly use an electrostatic brush, dust-free cotton swab, and dust-free cloth to dip in absolute alcohol to gently remove carbon deposits on the discharge electrode and rod.
2	Discharge electrode to other metal grounding body	The bar installation position is too close to other metal grounding bodies	In order to ensure the safe use and power dissipation performance, the installation position of the bar should be moved, and it should be more than 50mm away from other metal grounding bodies.	
3	Significantly reduced static elimination performance	Discharge needle contamination and damage	Clean or replace the ion bar	
		Incorrect orientation of the ion bar	Confirm the best installation position	

4	Reduced static elimination performance	There are conductors or other ion bars around the ion bar	Remove (moving) conductors or other ion bars	
5	Unable to discharge	Damaged high-voltage connection line	Return to factory	
		Ion bar insulation is damaged	Return to factory	
		Poor ground / no ground	Check the electrical grounding of ion bars and plant equipment	
6	Product burnout	Ion bar insulation is damaged	Return to factory	

Maintenance

1. Do not disassemble the device.
2. Do not short-circuit the high-voltage power line to avoid permanent damage to the power supply.
3. Please check the power cord of the product regularly. If it is damaged, please replace it immediately, otherwise it may cause leakage and abnormal working.
4. The power supply should be stored in a cool and dry environment.
5. When abnormality or problem is found during the use of the power supply, stop using it immediately and send the power supply to Anping Company for processing.

After sales service

1. AP-AB1601A / AP-AB1602A explosion-proof AC voltage static eliminator has undergone strict testing and aging treatment before leaving the factory, and its performance fully meets the relevant indicators marked in the instructions.
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 free of charge. However, this commitment does not apply to the following situations:
 - (1) The equipment has been altered, misused, or installed;
 - (2) Damage caused by negligence or accident such as incorrect input voltage;
 - (3) Disassemble or repair by yourself or have been repaired by other service departments.
3. Except for the repair or replacement of the parts specified here, AP & T does not assume any obligations and relevant responsibilities of the product user.

Attachments

1. Warranty card
2. Instruction
3. Certificate of conformity
4. AP-AB1601A M4 mounting bolts (2 bolts within 1 m of rod length, each 0.5 m increase in rod length, 1 additional bolt) 2 bolts within 1m, each bolt length increases by 0.5m, an additional bolt)