

Specification

Pulse AC Ionizing Air Bar

01 Product Picture



02 Safety

- Do not disassemble the product without permission.
- Do not use in dangerous environment(such as flammable and explosive)
- Do not operate it with wet hands,otherwise it may cause electric shock or malfunction.
- Do not put fingers,iron wires,tools and other metal objects close to the emitter.
- Because ozone(less than 0.05ppm)is generated during the operation of the equipment,please do not use it in a confined space.
- Do not use this product in place with plenty of oil or water,high temperature and humidity,especially in places with condensation.

03 Industry Standard and System Certificate

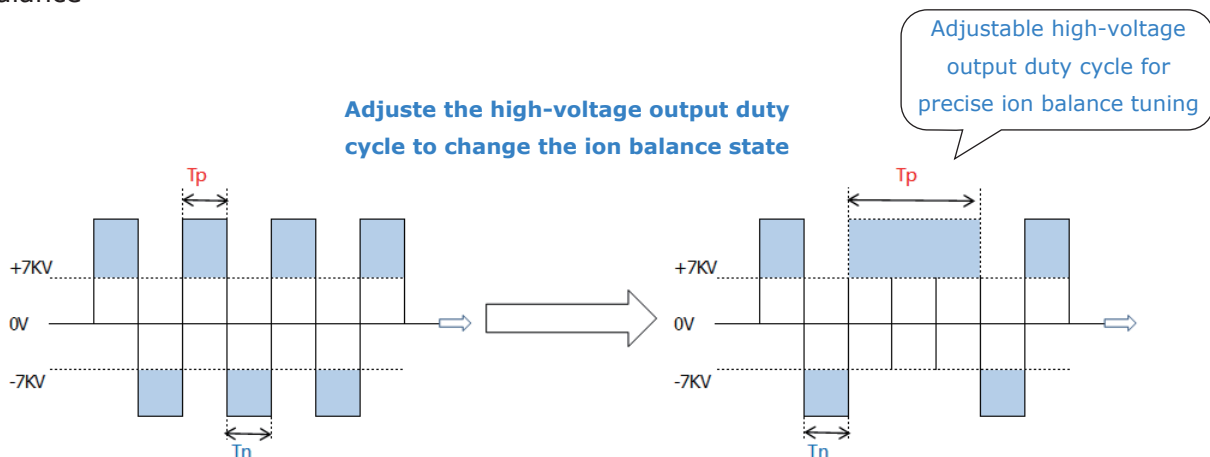
- It has passed ISO 9001:2015(certification no.:18ACM6508Q) quality management system certification.
- Comply with the limit requirements of ANSI/S20.20 for audit inspection and compliance verification testing of ionization equipment.
- Comply with ANSI/ESD STM 3.1 requirements for audit inspection and testing of ionization equipment.
- Comply with the requirements of ANSI/ESD SP 3.3 for air ionization equipment to conduct regular compliance verification tests
- Comply with the limit requirements of IEC 61340-5-1 for audit inspection and conformity verification test of ionization equipment
- Comply with the limit requirements of JESD 625-B on the verification test of ionization equipment
- Comply with the limit requirements of T/CEIA1002 on the verification test of ionization equipment.
- Comply with the limit requirements of GJB3007A-2009 on the verification test of ionization equipment.
- It has passed CE / EN 55014-2:2015 & EN 61326-1; 2013 certification
- It has passed FCC / 47 CFR FCC PART 15 SUBPART B; 2017 certification
- Comply with ISO14644-1 Class4 clean requirement

04 Product Description

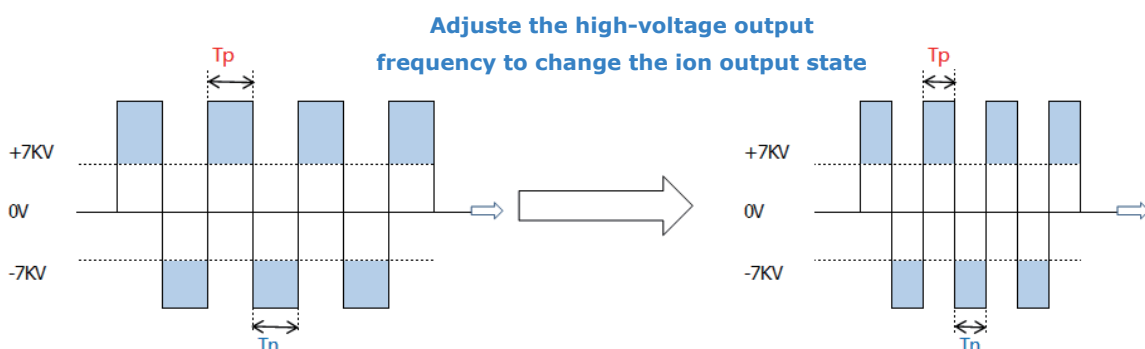
PAB pulse AC ionizing air bar

PAB pulse AC ionizing air bar adopts DC high voltage power supply, and applies voltage to the discharge emitter through alternating positive and negative DC high voltage coupling. Ionize air molecules to produce a large number of positive and negative air ions, which are transmitted to the surface of charged objects through compressed gas. It neutralizes the positive and negative electrostatic charges on the surface of the object, and the strong compressed air flow can also blow away the dust or particles on the surface of the charged object. It neutralizes the positive and negative electrostatic charges on the surface of the object, and the strong compressed air flow can also blow away the dust or particles on the surface of the charged object, so as to achieve the effect of removing static electricity and dust.

- PAB pulse AC ionizing air bar is a bar-shaped, horizontal static eliminator
- It can eliminate static electricity without wind or by adding compressed gas to eliminate static electricity
- Multiple air bars can be connected to the network to adapt to different static electricity removing needs
- Emitter quantity can be added to enhance anti-static effect
- Remote control air bar is workable(optional)
- The output ratio of positive and negative ions can be adjusted separately to adjust the ion balance



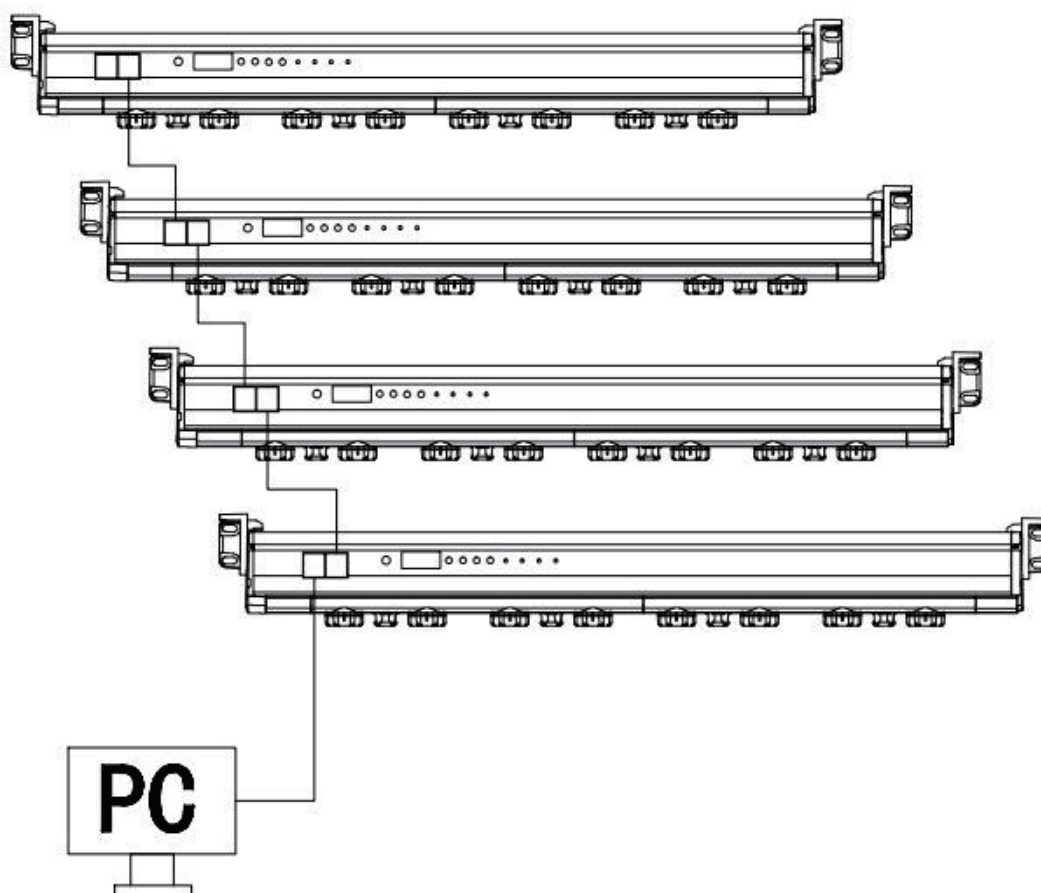
- The working frequency is adjustable, and different working conditions can be adjusted for different operation locations



05 Features and Benefits

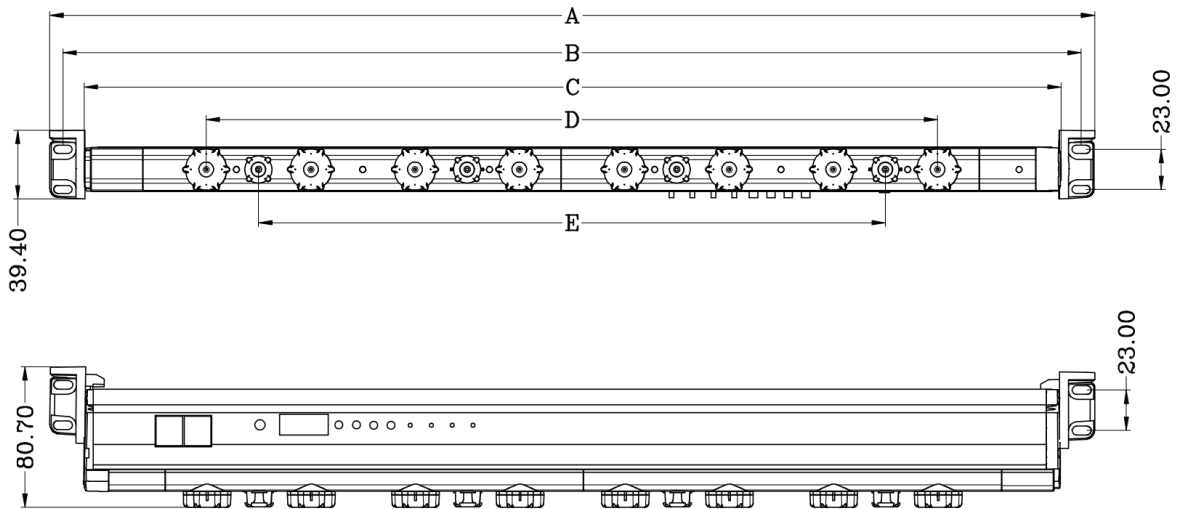
Features	Benefits
Pulsed AC Ionizing technology	Eliminate static electricity in a large area without wind or compressed air
Two ion nozzles are available, 4-hole type and 2-hole small flow type	4-hole type large flow dust removal effect is better
Ion nozzle can be replaced quickly	Easy to maintain, clean and replace
The cleaning cycle can be set freely between 50H-9999H	The yellow light on and buzzer sound prompt cleaning
Emitters are available in a variety of materials: tungsten, titanium, silicon	Different environment select different emitter
Optional pressurized air wand type A	Emitter can be added to effectively accelerate the speed of static elimination
CE FCC certification	With electromagnetic protection function, it will not interfere with other equipment

06 PAB Pulse Air Bar Networking Diagram



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Product Dimension Diagram



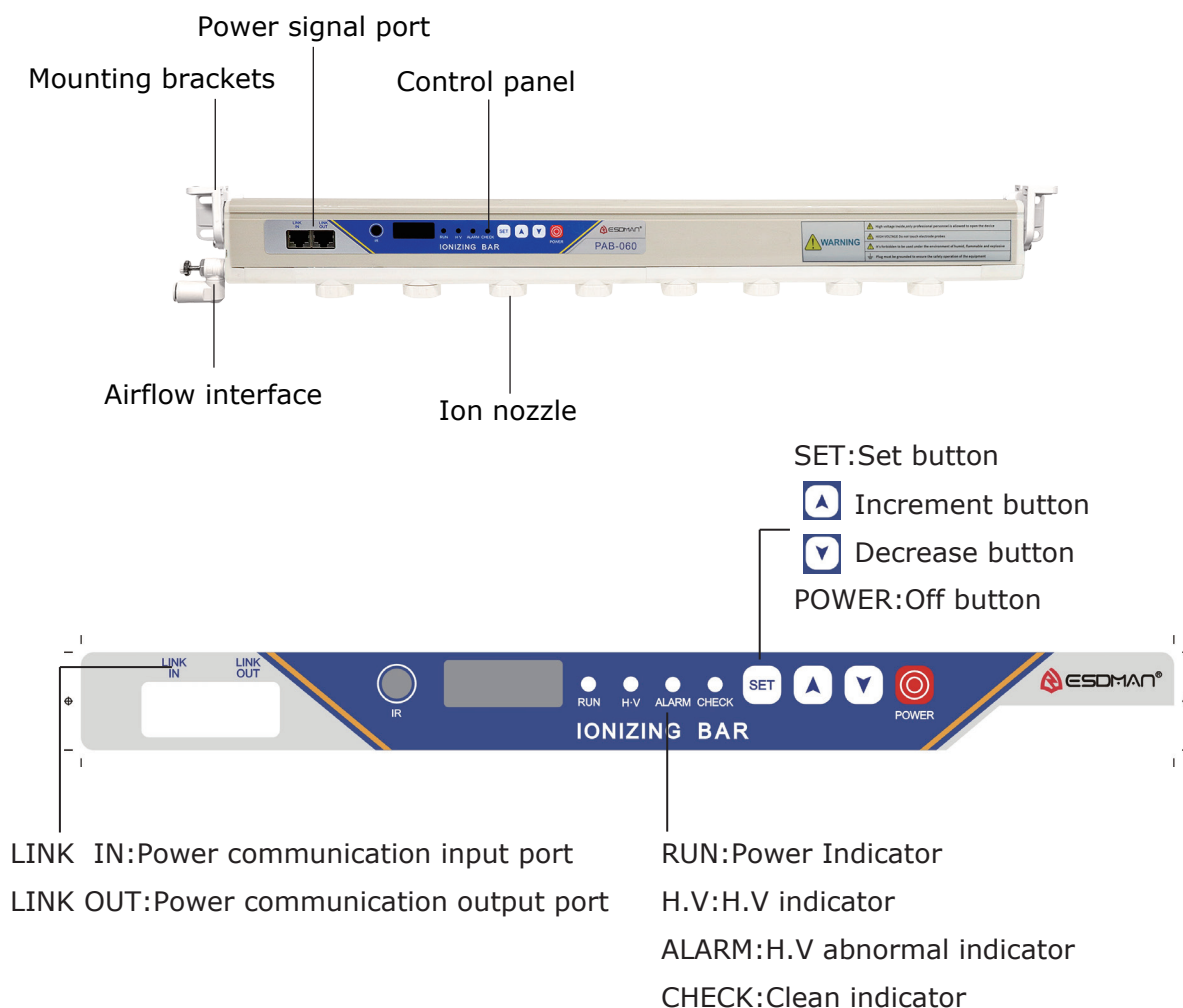
Model	Emitter Needle Qty.	A	B	C	D	E
PAB-036	4	360	345	320	180	120
PAB-060	8	600	585	560	420	360
PAB-084	12	840	825	800	660	600
PAB-108	16	1080	1065	1040	900	840
PAB-132	20	1320	1305	1280	1140	1080
PAB-156	24	1560	1545	1520	1380	1320
PAB-180	28	1800	1785	1760	1620	1560
PAB-204	32	2040	2025	2000	1860	1800
PAB-228	36	2280	2265	2240	2100	2040
PAB-252	40	2520	2505	2480	2340	2280
PAB-276	44	2760	2745	2720	2580	2520
PAB-300	48	3000	2985	2960	2820	2760

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Specification

Model	PAB-060 084 108 132 156 180 204 228 252 300
Input voltage	DC24V±5%
Current	500mA
Ion generation method	Corona discharge
Voltage	Pulse AC ±7000V
Emitter material	Tungsten/Titanium/Silicon optional
Ion balance	Adjustable within ±30V
Use distance	50-2000mm
Clean air interface	8mm
Use air pressure	Up to 0.5Mpa clean air CDA or Nitrogen
Alarm	RUN power green indicator ;H.V high voltage green indicator ALARM ; alarm red indicator CHECK clean yellow indicator
Ozone	Below 0.05ppm
Use environment	0-40℃ 20-85%RH (non condensing)
Case Material	Flame-retardant ABS
Installlation	Equipped with mounting bracket
Dimetion Dimension	Width 4 Height 8 Length 60/84/108/132/156/180/204/228/252/300(cm)
Certification	CE FCC
Warranty	1 Year

09 Product Schematic and Introduction



10 Wire Connection Method

Length above PAB-060, Schematic diagram of air bar wiring
Link IN and LINK OUT is parallel relation and can be used randomly.

Serial No.	Color	Definition
1、2、3、	White/orange,orange,white/green	Positive pole 24VDC+
4	Blue	ALARM+ / RS485+B
5	White/blue	ALARM- / RS485+A
6、7、8、	Green,white/brown,brown	Negative pole 24VDC-,GND

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Key Operation Method

When the ambient humidity is high, the ion balance may shift, and it is better to use this product at a humidity of about 50%RH.

a. Air source conection

- Connect the clean and dry compressed air pipe to the 8mm air pipe interface

b. Air flow regulation

- Equipped with SMC throttle valve, which can be rotated left and right to lock the air flow of appropriate size.

c. Connect power supply

- Insert the DC24V power output plug into the LINK IN port of the ion wind wand
- Connect the AC100-240V plug to the indoor power outlet

d. Turn on the device

- Press the POWER button to turn on,
- RUN /H.V indicator light is green The equipment is normal.

e. Device address

- Connect the software, set the device address on the PC, or you can inform the device address number when purchasing, set it at the factory and label it

f. Cleaning cycle

- After power on, the screen displays E000, which is the cumulative working time. Press the increment button to enter the cleaning cycle reminder setting.The screen displays H000, continue to press the increment button to increase in units of 50 hours. If the preset is 500 hours, press the increment button continuously, the screen will display as H500, and the device will automatically save as 500 hours and alarm. After 3 seconds, it will automatically exit the setting mode, display E000 (accumulated working time), and the factory defaults for a cleaning cycle of 500 hours

g. Working frequency

- After power on, the screen displays E000, which is the accumulated working time. Press the SET button, the screen displays the frequency between F.01-F.80,Press the increment or decrement keys to adjust to the appropriate frequency (F.01 is 1Hz / F.80 is 80Hz),Please refer to the product introduction to select the appropriate working frequency and installation distance

Installation distance and working frequency setting reference

Static elimination speed	Setting location	Operation distance(mm)	Suggested usage frequency
High	Thin film or wafer production line(short distance)	50-300	22、 33、 47、 68、 80
Middle	Clean bench or workstation(middle distance)	300-1000	5、 8、 10、
Low	Suspended ceiling usage(far distance)	100-2000	1、 3
The closer the distance used, the higher the frequency operating mode selected, resulting in lower ion balance			
The far the distance used,the lower the frequency operating mode selected to eliminate static electricity at a longer distance			

h. Ion Balance

- After the frequency adjustment is completed, if it is set to F.30, that is, the working frequency is set to 30Hz, press the SET button again, and the screen displays Hxx. For example, H60 represents the positive ion output ratio is 60%. Press the increment button to shift the balance towards the positive direction, press the decrement button to shift the balance towards the negative direction, and the offset ion balance voltage can be seen through the CPM.
- Increase or decrease the proportion of ion output to adjust ion balance, and adjust the ion balance to be less than +/- 30V
- Press the SET key to exit the adjustment mode; When Exxx is displayed on the screen, the accumulated working time is displayed and the balance setting mode is exited.

12 Installation

- Install brackets on both sides of the ionizing air bar, and fix the brackets on both sides of the bar with M4 screws
- The mounting bracket is reserved with multiple mounting holes. Use M4 screws to fix the ionizing air bar at the position that needs to be installed.

Notice:

- Make sure that the ionizing bars are arranged in four directions, left and right, front and rear, with a distance of at least 10CM from the wall
- Keep a minimum distance of 40CM between two adjacent static elimination bars
- If there is a metal ground or conductor near the installation location of the static elimination bar, keep a minimum distance of 20cm
- If the air outlets of the two ionizing air bars are installed correspondingly, keep a minimum distance of 20CM
- When installing the ionizing air bars with a length of 156/180/204/228/252/300cm, an auxiliary bracket must be installed to prevent the bar from bending
- Each ionizing air bar comes with a 6ft size power supply and power cord
- If use the networking version, please choose the appropriate length of the network cable according to the installation distance

13 Test Method

Test ion balance and decay time

Test equipment and operation method:

- Test equipment: ME-288B Charge Plate Monitor
- Accessories: CPM, ground cord, 100V-240V power adapter cord for CPM.
- The test equipment and the measured ionizer both should be grounded well.
- Align the air bar with the charge plate monitor and test at different distances such as 30cm, 40cm, 60cm, etc
- Detailed test method refer to user manual.
- Ionizing air bars are affected by factors such as ambient temperature and humidity, working frequency, bar length, installation distance, airflow pressure, etc. The test data will be different, the output ratio of positive and negative ions should be adjusted according to the specific environment to adjust to the best state.

PAB Series Pulse AC Ionizing Air bar Test Result				
Bar length: 600mm Working frequency: 30Hz Test direction: vertical downward				
Test distance(mm)	Mpa Air pressure Mpa	Static elimination performance		
		Positive charge time	Nagaitive charge time	Ion Balance
300mm	0.4	0.6S	0.7S	< ±30V
400mm	0.4	0.8S	1.0S	
600mm	0.4	1.4S	1.6S	

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Daily Maintenance

Emitter clean:


- After long-term use, there may be dust and other pollutants around the front end of the discharge needle, which can cause a decrease in the ability to eliminate static electricity. Please clean the emitter tip regularly.

Attention: Please make sure to unplug the PAB power to prevent personnel from touching the high voltage!

- Rotate and disassemble the ion nozzle from the elimination bar body, then rotate it to the left to remove it
- Clean the emitter tip with a cotton swab dipped in alcohol
- After cleaning, rotate to the right to install the ion nozzle

Replace emitter:

- Please check emitter when clean the emitter
- When the emitter tip is found to be damaged, please replace it with a new one immediately
- The emitter tip is very sharp, please be careful not to get injured when replacing it
- The replacement cycle of the emitter under normal usage environment is one year, depending on the actual usage environment



NOTICE

If the emitter is contaminated and affects the discharge performance, it should be cleaned regularly and timely .

The emitter tip is sharp and be careful not to cut your fingers.

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Abnormal Alarm

Cleaning alarm :

When the CHECK red LED light is on, the emitter needs to be turned off and cleaned. After the cleaning is completed, turn it on and the CHECK red light is off H.

H.V alarm :

When the ALARM red LED light is on, it means the high voltage is abnormal, and the ionizing air bar eliminates the static electricity abnormally. Please check if there is any conductive object in contact with the discharge needle

Malfunction	Examination	Solution
The panel indicator light and display screen do not light up	Poor contact of power cord	Make sure power cord is good and connect it again
	Power adapter incompatible	Make sure power adapter input is 100-240V AC,output is DC24V
Decreased discharge performance	Emitter contamination and damage	Clean or replace emitter
	Emitter is loosen or not	Tighten emitter
	Air bar location setting wrongly	Please set air bar location properly
H.V Alarm red light on	Abnormal discharge	Keep a distance between the air bar and the metal conductor
	Electromagnetic interference	Unplug the power and turn it on again
	H.V. module without high voltage	Return to ESDMAN
	H.V.module damage	Return to ESDMAN
Unable to eliminate static electricity	H.V.module damage	Return to ESDMAN

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Warranty

ESDMAN product have passed strict factory inspection.In case of failure,please contact our ESDMAN team and provides details of the failure

Warranty

- 12 months from the date when products arrived at the buyer’s place.

Coverage

- This product is inspected by ESDMAN QC,when it is in normal use within the warranty period,if it is damaged or fails due to poor design and manufacturing,free maintenance could be provided.

Out of coverage

- Socket and ground wires belong to the loss part and are not covered by warranty.
- Damage,breakage or failure due to abnormal use.
- Failure caused by modification or disassemble of maintenance not from ESDMAN.
- Failure caused by fire,natural disaster,flood,earthquake and other natural irresistible factors.
- Failure caused by abnormal voltage etc external factors.

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Part Included List

Air bar	1 ea	DC24V Ethernet Power Adapter	1 ea
Brackets	2 ea	M4 screws	6 ea
Test Report	1 ea	User Manual	1 ea
Network Cable (10ft)	1 ea	National Standard Power Cord(5ft)	1 ea