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AIYONG INSTRUMENTS

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OFFICIAL WEBSITE

Anti-static
Contact Tronovo

STATIC CONTROL DEVICES



ESD Audit Kit

It can help you complete the on-site inspection to see if it meets the anti-static requirements of the EPA area.

- Charged Plate Monitor**
Professional MC158 → 07
- Wrist & Foot ESD Tester**
MP321 → 11
- Surface Resistance Tester**
MR63 → 17

P07
→

Ionizing Bar Type

It is suitable for the elimination of static electricity on wide workpieces such as films and sheets, and is commonly used in automation equipment.

- No-blow Ionizing**
Ultra-Small DB52 → 21
- No-blow Ionizing**
Ultra-compact DB72
- No-blow Ionizing**
DB52H
High Speed → 25
- Blow Ionizing**
DB531
Powerful → 27
- Double Blow Ionizing**
DB732 → 29

P21
→

Ionizing Fan Type

Suitable for installation in the work area, it can more effectively neutralize the electrostatic charge in a large area.

- Fan Type Ionizer**
PLC DF231P → 33
- Fan Type Ionizer**
PLC DF241P → 35
- Auto Cleaning Fan Type Ionizer**
RS485 DF261R → 37
- Smart Fan Type Ionizer**
DF462 → 39
- Smart Hf Fan Type Ionizer**
PLC LED lighting DF46X/A → 41

P33
→

Ionizing Gun Type

It is suitable for static elimination and dust removal before and after parts assembly, and hand-held manual work.

- Pulse Air-gun Ionizer**
Dust detection lamp DG25P → 53
- Powerful Ion Air Gun**
Pulse AC DG53B → 55
- Nozzle type static eliminator**
Pulse AC DG53T → 56

P53
→

Ionizing Nozzle

Point type, which can be easily assembled into the equipment for effective static elimination or dust removal locally.

- Smart ion nozzles**
PLC control DN252 → 57
- Induction Type HF Ionizing nozzle**
Ultra-small DN253 → 59
- Ion Wind Snake**
High-frequency AC DN543M → 61
- Two-Nozzle Ion wind snake**
DN543D → 62
- Ion bottle washing gun**
DN721 → 65

P57
→

Meas & Protection

In electronics manufacturing, ensure the safety of equipment to reduce the potential risk of static electricity discharging the product.

- Rotate Cleaning Ring Ionizer**
DN532 → 67
- Ion Duster Box**
ED431 → 69
- Equipment Ground Monitor**
MM644R → 72
- Single-Wire Wrist Strap On-line Monitor**
→ 73
- Dual-Wire Wrist Strap On-line Monitor**
→ 74

P67
→

SINCE 2006

With more than 18 years of experience in the electrostatic prevention and control industry, we provide solutions to electrostatic problems in various industries.

MORE 50 PATENT

Mastering the core technology, these patents are the embodiment of the market competitiveness and continuous innovation ability of Egypt.

HIGH-TECH COMPANY

The most valuable honor is the affirmation of Aiyong in technological innovation, product research and development, intellectual property rights, etc.

Clients & Industries We Serve:

Automation industry	Film/Plastic/Injection Molding	Painting/smearing industry
Electronics industry	Automotive industry	packaging industry
Semiconductor industry	Food/Medicine	Textile industry
Displays/Panels	Print/Print	New energy materials



Company

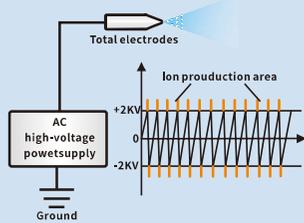
- High-tech enterprises
- Small technology-based business
- CE/ROHS environmental protection certificate
- ISO9001 quality management system
- Intellectual property management system
- Member of Shanghai Anti-static Industry Association
- Member of the Anti-Static Equipment Branch

Founded in 2006, the Electrostatic Division of Aiyong is a subsidiary of Aiyong Group in the field of R&D and manufacturing of electrostatic neutralization, electrostatic charging, electrostatic measurement, and electrostatic precipitator.

We meet your various requirements with perfect products, excellent performance, reasonable prices, and fast response ability through reliable product development and manufacturing.

High-frequency AC method

The high-frequency AC method refers to the method of applying a high-frequency and high-voltage to the discharge needle. The applied voltage ± 2 kV or more, and the cycle of positive and negative ions is 70,000Hz.



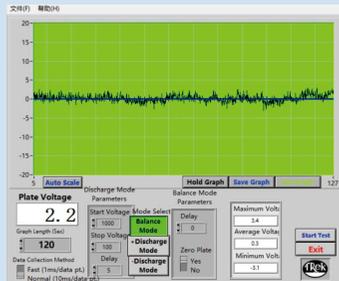
ADVANTAGES

- Stable ion balance (no adjustment required)
- Static removal is fast
- Ions are delivered through pipelines
- Can be used up close
- High level of security

SHORTCOMING

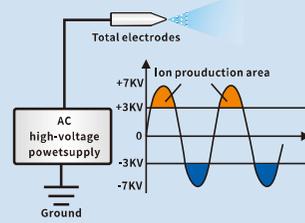
- No obvious disadvantages

120s ion balance measurement



Power frequency AC mode

The power frequency AC method refers to the method of applying a high-frequency voltage on the discharge needle, applying a voltage of ± 3 kV or more, and the generation cycle of positive and negative ions is 50 or 60Hz.



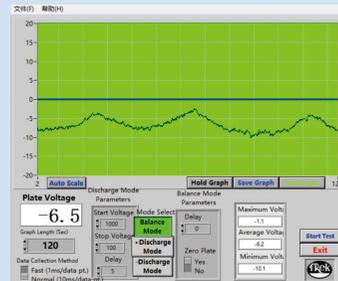
ADVANTAGES

- Ion balance is good
- price is cheap

SHORTCOMING

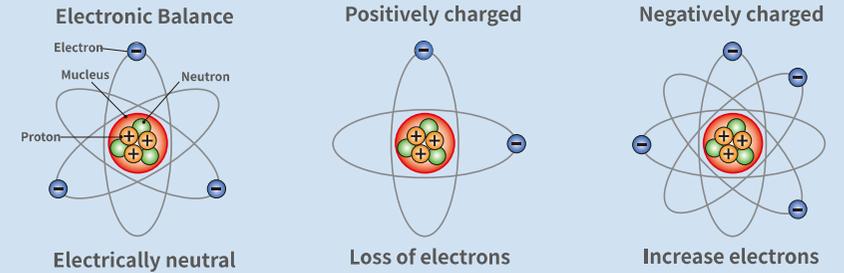
- Ion balance lower than high-frequency AC method
- Voltage fluctuation is prone to uneven elimination of static electricity
- Ions cannot be transported through pipes
- Static removal speed is slow
- High voltage, relatively poor safety

120s ion balance measurement



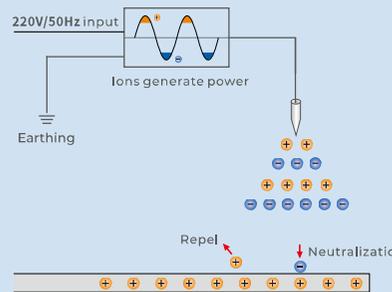
What is ESD and how it works?

ESD is an abbreviation for electrostatic discharge. In normal cases, the positive charge of the proton band is the same as the negative charge of the electron band, so the atom as a whole is electrically neutral. Neutral atoms will cause electrons to move due to friction, contact, or stripping, and if they carry excess electrons, they will become negatively charged, and conversely, if they lose electrons, they will become positively charged.



Remove static schematic

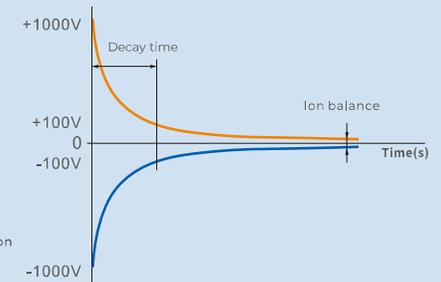
The electrostatic eliminator can neutralize the charge on the object, which is mainly through the ionization of molecules in the air to generate air ions with positive and negative polarity, and these air ions are transmitted to the charged object, the ions of opposite polarity attract each other to neutralize the static electricity, and the ions of the same polarity are disassembled from each other and quickly disappear in the atmosphere, so as to achieve static elimination.



Decay time and ion balance

The electrostatic removal time is the time it takes to reduce the charge of a live object with a \pm of 1000V to ± 100 V.

Ion equilibrium refers to the degree to which the object may approach 0 V when positive and negative ions are continuously irradiated. The closer it is to 0V, the better the ionization balance. In addition, if the ionization balance is poor, the target may become electrified.



PREVENT DUST ADHESION

Through the ion air gun dust is removed from the lens assembly to prevent defects

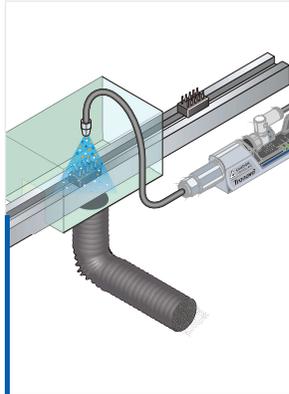
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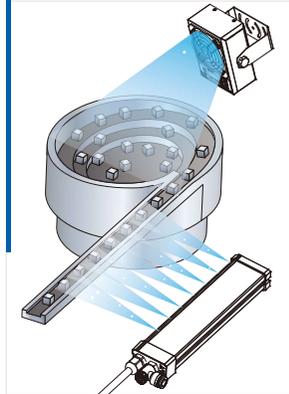
PREVENT GARBAGE, DUST

Add a dust hood through an ion nozzle Dust removal, dust collection, and prevention of foreign matter adhesion



PREVENT CLOGGING

The vibrating plate uses an ionizing blower to cover a wide area Ion rods are installed on the direct vibration track No wind to remove static electricity

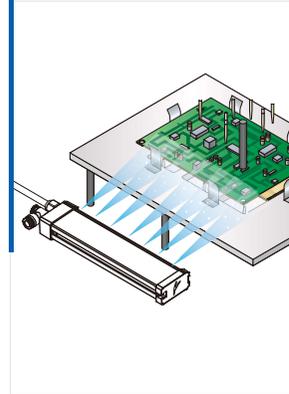


03

PREVENT DAMAGE TO THE FIXTURE

Prevent damage to parts caused by jigs It can be prevented before it happens

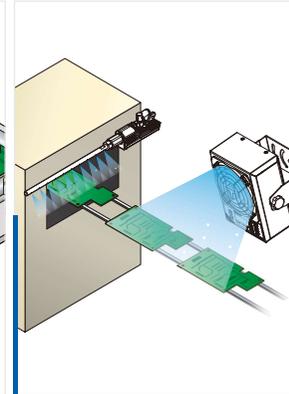
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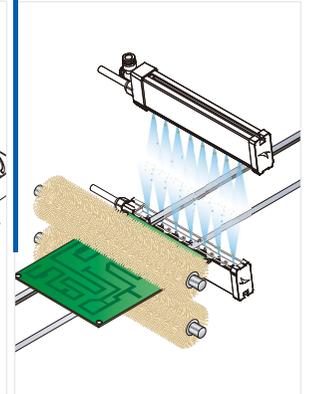
PREVENTS ELECTROSTATIC DAMAGE

PCB A before and after placement Static elimination is possible for the entire substrate



PREVENTS ADSORPTION

Foreign matter is removed by ionic air Ensure the cleanliness of the PCB board



06

MC158 Charged Plate Monitor

The charging pad monitor is the instrument of choice for evaluating air ionizers. The LCD display can clearly display the test parameters and results, it can not only measure AC, pulsed AC, pulsed DC and steady-state DC ion generators, but also the higher dynamic measurement range, which enables more accurate measurement of the performance of high-frequency AC ion generators. The separable test plate design is ideal for testing in tight environments or process equipment, allowing operators to easily place the test plate where it needs to be tested without worrying about the impact of the equipment body on the test results.

- **The 7-inch high-definition touch screen is easy to operate**
Humanized interactive experience, all data can be intuitively displayed on the same screen
- **Test different types of ionizers**
Includes room ionization system, AC/DC/HF ion blower, ion gun, ion nozzle, pulsed AC/DC ion rod
- **Complies with IEC and ANSI standard test methods**
IEC 61340-5-1 and ANSI/ESD STM3.1 standards



★ Featured Functions

- **High accuracy / wide range measurement**
0.1V voltage resolution, DC to 80 Hz
- **measurement of temperature and humidity**
Temperature and humidity have a direct impact on the electrical properties of the product being measured
- **Pass determination and screenshot functions**
It supports a USB flash drive, and can also be connected to a computer using a USB or LAN interface
- **Built-in large-capacity lithium battery**
It can be used without an external power supply

👤 Fields of application

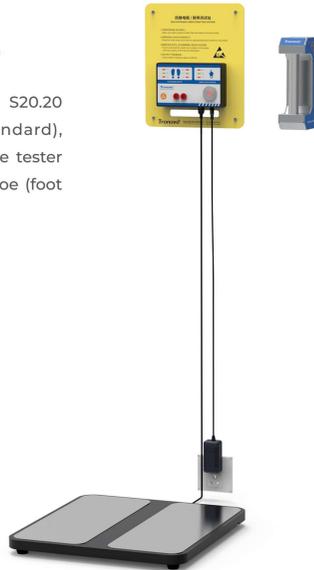
- **Air ionizer performance evaluation**
Measurement of "Static Elimination Speed" and "Ion Equilibrium/Residual Voltage"
- **ESD protection management system certification audit equipment**
Third-party ESDA or IECQ electrostatic protection system certified testing instruments
- **Dissipation test for Anti-static products**
Anti-static clothing, tweezers, brushes, packaging materials, seats, table mats, turnover boxes, etc
- **Human walking electrostatic voltage test**
Measure the voltage of flooring materials and footwear in combination with people in accordance with ANSI ESD STM97.2 and IEC 61340-4-5 standard test methods

📄 Specifications

Model	MC158	MC157	MC156
Bandwidth	DC to 80 Hz (-3dB)		
Display the screen	7-inch multi-touch capacitive screen, display resolution 1024×600		
Voltage range	0~±1150VDC or peak AC		
Voltage accuracy	0~100V: ≤±3V 100~1000V: ≤±2.5%		
Zero-point stability	≤6V/min (no incident ion current, plate voltage drifts with time)		
Timing range	0.1~180s		
Timing resolution	0.01s	0.1s	0.1s
Ion collection plates	Included: 150×150 mm (6×6 in) [ANSI/ESD STM3.1 compliant], cable length: 2 m Optional: 25×25 mm (1×1 in) [Small space measurement], cable length: 2 m		
Colored curve display	•	•	—
Judgment function	•	•	—
Body voltage test	•	—	—
Computer software	•	—	—
Instrument interface	USB Host / USB Device / LAN(option)		—
Battery operating time	Built-in lithium battery, continuous operation time of more than 5 hours		
power supply	Powered by a 12VDC, 2A, 2.1mm jack charger		
Environment	0~+50°C, 10~80%RH (Note: Do not condense it)		
Volume / weight	245×145×265mm / Approx. 2.8kg (main unit including tablet)		
Warranty	Two-year		

MP32X SERIES Wrist Strap/Foot Ground Tester

According to IEC 61340-5-1 (European standard), ANSI/ESD S20.20 (American standard), SJ/T10694 (electronic industry standard), GJB3007A (military standard), the human body comprehensive tester conducts accurate testing of the wrist strap and anti-static shoe (foot ring) grounding of ESD protection zone (EPA) personnel.

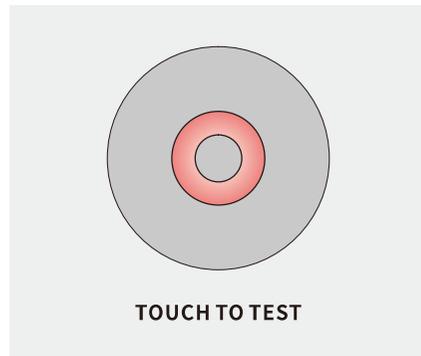


★ Featured Functions

- Solid-state touch test buttons**
 Keep your tests accurate and extend the life of your tester
- The DIP sets the test range**
 Freely configure the control scope of wristbands and electrostatic footwear
- Built-in electrostatic discharge**
 Automatically discharges static electricity from the human body during measurement
- Control signals for turnstiles or automatic doors**
 Relays control electronic door locks, lights, buzzers, or air shower doors
- Background light reminds the indication function**
 Position the test button and indicate the operating status
- Supports gloved measurements**
 Operators are allowed to test anti-static shoes while wearing gloves or finger covers
- Multi-scenario installation**
 It can be installed on turnstiles, floor standing or wall mounting
- Adjustable alarm sound volume**
 The sound intensity is appropriate when the alarm is generated
- 3 sets of high-brightness LED status indicators**
 Indicate the wrist strap, left shoe, and right shoe resistance values high/pass/low

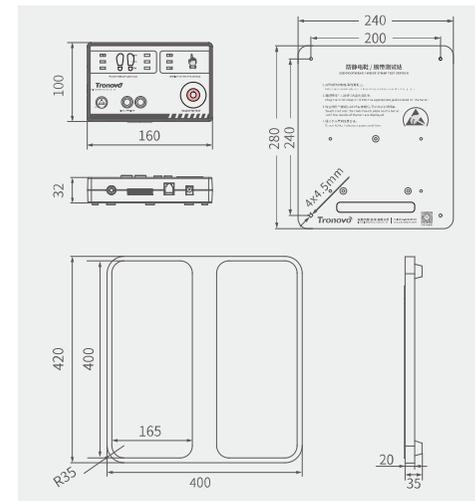
🔗 Solid-state touch test buttons

The test key uses an inner/outer metal conductor, and the test starts by holding down the test button with your finger to connect the inner/outer conductor. The use of solid-state test keys can avoid mechanical damage and is durable and not easily damaged.



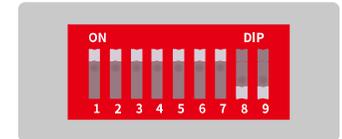
📏 Specifications

Model	MP32X SERIES
Single wire range	Low limit: 750KΩ Max limit: 10MΩ / 35MΩ
Shoes range	Low limit: 100KΩ / 750KΩ Max limit: 35MΩ / 100MΩ / 500MΩ / 1GΩ
Power	100-240V AC to 12V DC/2A, cable 1.5m
Test voltage	9V DC (Open Circuit)
Accuracy	± 10% or ±20% (500M or 1GΩ set)
Relay output	1A@30VDC
Operating temp	5-30°C, 21-30°C (500M or 1GΩ set)
Humidity	80% or <50% max. (500M or 1GΩ set)
Test meter size	160x100x32mm, weight: 0.3KG
Footrest size	400x420x35mm, weight: 5.3KG
Net weight	The main body is about 6 kg
Warranty	One-year



🔗 The DIP Adjust resistance range

The upper limit, upper and lower limit of anti-static bracelet can be set through the DIP switch on the left side of the device according to the requirements of the control conditions.



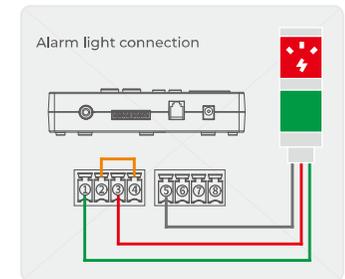
🔗 Built-in Human static discharge

During the measurement, the fingers touch the test piece to realize the automatic release of human static electricity, and ensure that the static electricity value brought by employees entering the workshop is within a safe range.



🔗 It is used for turnstile control signals

Relay terminals can be integrated with electronic door locks, revolving doors, lights, buzzer turnstiles, etc., so that personnel can only enter after passing the test.



MP34X SERIES Wrist Strap/Foot Ground Tester

The multi-functional human body comprehensive tester can test single-wire, double-wire wrist straps and work shoes, installed at the EPA (electrostatic control area) inlet, and accurately test whether the resistance of the human body through the wrist strap and the grounding of work shoes is qualified, prevent electrostatic damage, and make your working environment safer and more reliable!



ESD triple turnstile installation case

Combined with the three-roller gate, wing gate, swing gate, air shower chamber and electronic door lock as the flow channel control, the grounding resistance test of the human body is carried out when entering the electrostatic protection area (EPA).

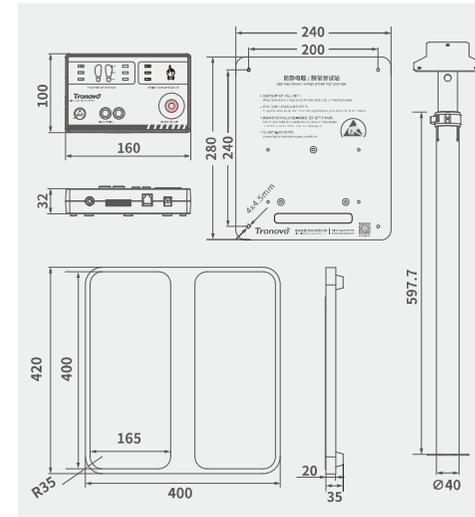


★ Featured Functions

- **Solid-state touch test buttons**
Keep your tests accurate and extend the life of your tester
- **The DIP sets the test range**
Freely configure the control scope of wristbands and electrostatic footwear
- **Built-in electrostatic discharge**
Automatically discharges static electricity from the human body during measurement
- **Control for turnstiles or automatic doors**
Relays control electronic door locks, lights, buzzers, or air shower doors
- **Background light reminds the indication**
Position the test button and indicate the operating status
- **Supports gloved measurements**
Operators are allowed to test anti-static shoes while wearing gloves or finger covers
- **Multi-scenario installation**
It can be installed on turnstiles, floor standing or wall mounting
- **Adjustable alarm sound volume**
The sound intensity is appropriate when the alarm is generated
- **3 sets LED status indicators**
Indicate the wrist strap, left shoe, and right shoe resistance values high/pass/low
- **Supports both single- and double-wire wrist strap measurements**
Dual ports are provided to increase the life of the plug and dial

Specifications

Model	MP34X SERIES
Single / Double wire wrist range	Low limit: 750KΩ Max limit: 10MΩ / 35MΩ
Shoes range	Low limit: 100KΩ / 750KΩ Max limit: 35MΩ / 100MΩ / 500MΩ / 1GΩ
Power	100~240V AC to 12V DC/2A, cable length 1.5m
Test voltage	9V DC (Open Circuit)
Accuracy	± 10% or ±20% (500M or 1GΩ set)
Relay output	1A@30VDC
Opera temp	5~30°C, 21~30°C (500M or 1GΩ set)
Humidity	80% or <50% max. (500M or 1GΩ set)
Test meter size	160x100x32mm, Weight: 0.3KG
Footrest size	400x420x35mm, Weight: 5.3KG
Net weight	The main body is about 6.8 kg
Warranty	One-year



🧤 Test with gloves or finger cots

If you are wearing gloves or finger covers, you cannot start the test current due to the high resistance, so you need to choose an inductive grip.



🌀 Single / Double wrist strap test

The dual-loop anti-static wrist strap uses two conductive wires to more effectively lead the electrostatic discharge to ground.



🌀 Dual Shoe Test Plate

According to the static management code, each foot needs to be measured, and the feet are designed independently, and the left shoe and right shoe can be tested at one time.



ESD TURNSTILE GATE SYSTEM

According to IEC 61340-5-1 (European standard), ANSI/ESD S20.20 (American standard), the human body comprehensive tester accurately tests the wrist strap and anti-static shoe (foot ring) grounding of ESD protection zone (EPA) personnel.

- **Solid-state touch test buttons**
Keep your tests accurate and extend the life of your tester
- **3 sets of high-brightness LED status indicators**
Indicate the wrist strap, left shoe, and right shoe resistance values high/pass/low
- **The DIP sets the test range**
Freely configure the control scope of wristbands and electrostatic footwear
- **Support single and double wire wrist strap measurement**
Dual ports are provided to increase the life of the plug and dial

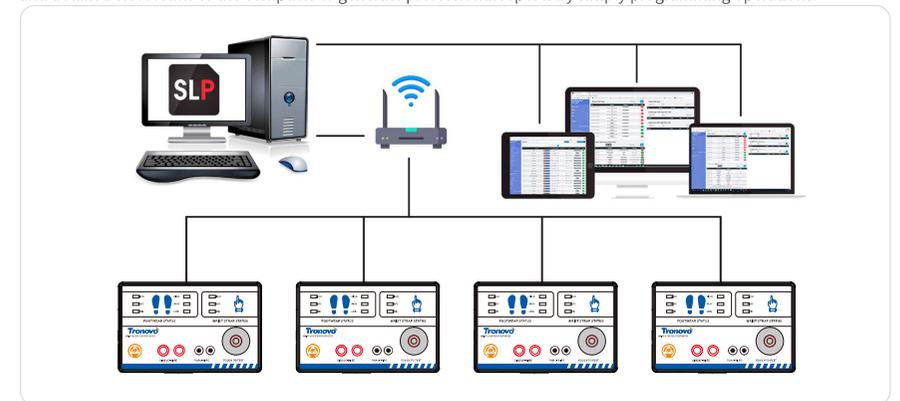


Order selection

Order No.	MP321A	MP321C	MP321E	MP341A	MP341C	MP341E	MP342E
Wrist strap	Single-line	●	●	●	●	●	●
	Two-line	—	—	—	●	●	●
Shoes two-foot test	●	●	●	●	●	●	●
Relay output	—	●	●	—	●	●	●
RS485 interface	—	—	—	—	—	—	●
Human static discharge	●	●	●	●	●	●	●
Adjust resistance range	●	●	●	●	●	●	●
Adjust sound volume	●	●	●	●	●	●	●
Parts list	Backplate	●	●	—	●	—	—
	Stand	—	●	—	—	—	—
	Stand Foot Plate	—	●	—	—	—	—
	Gates Foot Plate	●	—	●	●	—	●
Installation	wall-mounted	vertical	Turnstile only	wall-mounted	vertical	Turnstile only	Turnstile only
ESD glove test fixture	OPT.	OPT.	OPT.	OPT.	OPT.	OPT.	OPT.

ESD Access Control-Data Management Case

The MP342E tester integrates efficient 485 communication capabilities to achieve independent and accurate testing of the left and right feet of electrostatic bracelets and anti-static shoes. The device can measure and record test data in real time. Through its open communication protocol, users can easily export the test time, card number, job number and detailed test results to the computer to generate professional reports by simply programming operations.



MR43

Auto Ranging Surface Resistivity Checker



The MR43 is an affordable and reliable surface resistance tester for checking surface resistance and ground resistance. Pressing the test button automatically generates a test voltage of 10V or 100V, and the instrument can be used for performance evaluation tests on different work surfaces, floors, chairs, carts, clothing, and packaging materials. Measurements can be made using the built-in measuring electrode on the bottom of the instrument, or in combination with other probes.

Featured Functions

- Digital display, high precision**
The resistance values are clearly visible
- Fully automated measurements**
The resistance range and test voltage are automatically selected for you
- Complies ANSI/ESD S20.20 and IEC61340-5-1**
Meets the general specifications for anti-static detection
- Temperature and humidity measurement**
Resistance measurements are important
- Long-lasting lithium battery**
There is no need to remove the battery
- Innovative interface design**
Rugged, high-performance test leads
- Abundant probes (optional)**
Built-in parallel resistivity probe for use with 5lb weight, two-point probe, or concentric ring probe

Specifications

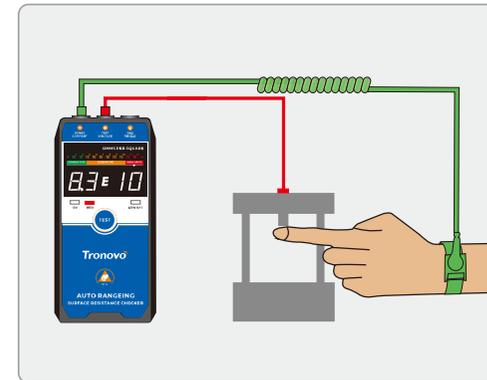
Model	MR43
Range	1.0x10 ³ ~ 1.0 x10 ¹²
Accuracy	±10%、±20% (≥1.0x10 ¹¹)
Displayed	LED
Test Voltage	10V or 100V ±5% (Auto)
Test Mode	CONT
Battery	2x3.7V Li-ion battery
Standby	480 hours standby or about 8000 measure
Alarm	Voltage less than 30% of total charge
Interface	TYPE C
Environment	Temp: 0 to 50°C Humidity: 35 to 80%RH
Weight	285g
Warranty	One-year

Table of limits of controlled substances

Anti-static Items	Product Approvals / Limit Requirements	
All Types Of Floors	10 ⁴ ~ 10 ¹⁰	Point-to-point resistance
Working Surface	10 ⁵ ~ 10 ⁹	Point-to-point resistance
All Kinds Of Walls	10 ⁵ ~ 10 ¹⁰	Surface resistivity
Seats, Running Cars	10 ⁵ ~ 10 ¹⁰	Point-to-point resistance
Smock	10 ⁵ ~ 10 ¹⁰	Point-to-point resistance
Gloves, Finger Covers	10 ⁵ ~ 10 ⁹	Point-to-point resistance
Anti-static Tools	10 ⁹	Point-to-point resistance
Store Shelves	10 ⁵ ~ 10 ⁹	Point-to-point resistance
Shoe Harness (socks)	10 ⁵ ~ 10 ⁹	Point-to-point resistance
Curtain	10 ⁵ ~ 10 ¹⁰	Point-to-point resistance
Equipment	10 ⁵ ~ 10 ⁹	Point-to-point resistance
Antistatic Agents	10 ⁵ ~ 10 ⁹	Surface resistivity
Conveyor Belts	10 ⁵ ~ 10 ⁹	Point-to-point resistance

Resistance test of gloves and finger cuffs

ANSI/ESD SP15.1 specification, wear gloves or finger gloves and anti-static wrist straps, touch the lower contact of the electrode with your fingers, lift the entire electrode, and test the resistance value.



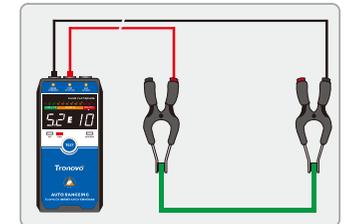
Electrode/resistivity measurement

The parallel electrode method meets the requirements of the ASTM-D-257 standard and can be used to quickly measure the surface resistance of flat materials.



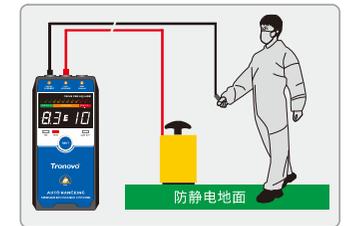
Irregular material resistance test

SAEJ645 specification, the clamp electrode is clamped at both ends of the material to be measured, and the clamp electrode is suspended to measure the resistance value.



Human body + shoes + floor test

ANSI/ESD STM97.1 specification, 1 weighted electrode is placed on the anti-static floor, and the hand-held grip electrode measures the grounding resistance of the human body.



MR63 Digital Surface Volume Resistivity Meter



The MR63 is a comprehensive anti-static measuring instrument for checking surface and ground resistance, measuring the impedance or resistance of all conductive, antistatic, and electrostatic venting surfaces, as well as the relative humidity and temperature that affect electrical properties. Designed according to the international standard "EOS/ESD, CECC, ASTM and UL" test procedures, it can be used for material testing of all consumables and supplies required for production lines, such as different table mats, floor coating layers, lacquer surfaces, plates, wrist straps, ankle straps, anti-static overalls, shoes (shoe covers), various PE bags and containers of different specifications

★ Featured Functions

- **Digital display**
Easy-to-read color TFT display
- **ESD fast determination**
The indicator provides a visual indication of dissipation, conductivity, or insulation
- **Complies ANSI/ESD S20.20 and IEC61340-5-1**
Meets the general specifications for anti-static detection
- **Measure temperature and humidity**
This is important for resistance measurement results
- **Fully automated measurements**
The resistance range and test voltage are automatically selected for you
- **Voice broadcast**
Increase test productivity
- **Abundant probes (optional)**
Built-in parallel resistivity probe for use with 5lb weight, two-point probe, or concentric ring probe

🔗 Dissipative Pass Limit Indicator

The measured value is indicated by means of an LED display and indicator light, which indicates whether the value is conductive, dissipative or insulated. The user can set the resistance range of dissipation according to the production demand.

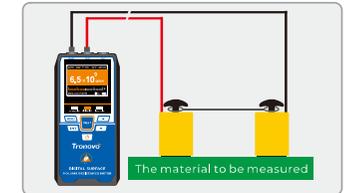


🔗 Specifications

Model	MR63
Range	1.0x10 ³ ~ 1.0 x10 ¹²
Accuracy	±10%, ±20% (≥1.0x10 ¹¹)
Displayed	TFT color screen
Test Voltage	10V / 100V ±5% (AUTO)
Test Mode	AUTO, CONT, OFF, Set time: 5-120S
ESD Indicator	●
Voice	●
Temp & H Test	●
Display	●
Language	Chinese / English
Battery	2×3.7V Li-ion battery
Standby	240 hours
Interface	TYPE C
Environment	Temp: 0 to 50°C Humidity: 35 to 80%RH
Weight	350g
Warranty	One-year

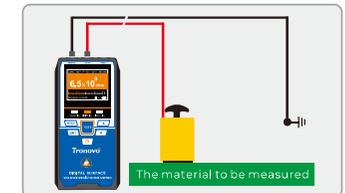
🔗 Point-to-point resistance testing

The ANSI/ESD TR53 specification places 2 weights on the material to be measured at a distance of 10 inches (25.4 cm) for a small area and a distance of 36 inches (91.44 cm) for a large area.



🔗 Ground resistance test

In the ANSI/ESD TR53 specification, one weight is placed on the material to be measured, and the other wire is plugged into the matching ground clamp for ground measurement.



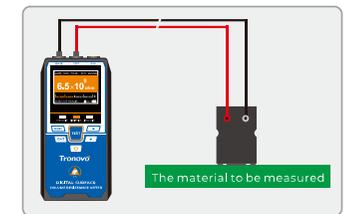
🔗 Test the two-point resistance of the material

ANSI/ESD STM11.13 specification, connect the test table and the two-point electrode, press the two-point electrode vertically on the material to be measured, and press the probe to the bottom (about 0.47kg pressure) to measure the surface resistance.



🔗 Surface resistance/resistivity test

In the ANSI/ESD STM11.11 specification, the concentric electrodes are placed on the material to be measured, and the geometric factor is set to X10 in the test table, and the conversion factor is the surface resistivity.



RESISTANCE METERS SELECTION GUIDE

ITEM	Order No.	MR43	MR43RE	MR43FT	MR43RB	MR43RS	MR43Pro
		MR63	MR63RE	MR63FT	MR63RB	MR63RS	MR63Pro
	Purpose	Easy Material Evaluation	Anti-static Economy	Anti-static Engineering	Internal quality control	Dedicated factory audits	Packaging Engineer Test suit
1	TM-CR	-	-	-	-	-	•
2	TM-BE	-	-	-	-	-	•
3	TM-IS	-	-	-	-	-	•
4	TM-HHE	-	-	-	-	•	•
5	TM-CE	-	-	-	-	•	•
6	TM-2P	-	-	-	-	•	•
7	TM-CAFE	-	-	-	-	•	•
8	TM-2PS	-	-	-	•	-	•
9	TM-RME	-	-	•	-	•	•
10	TM-RM2	-	•	•	•	•	•
11	TM-CS36	-	•	•	•	•	•
12	TM-CS10	-	•	-	•	•	•
13	TM-BOX2	•	•	•	•	•	•
14	TM-SCC	•	•	•	•	•	•
15	TM-TVC	•	•	•	•	•	•
16	TM-GSC	•	•	•	•	•	•
17	TM-GC	•	•	•	•	•	•
18	TM-CC	•	•	•	•	•	•

* Further test accessories can be purchased separately



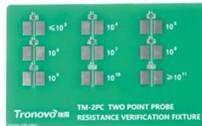
TM-2PS
TWO-POINT PROBE SHIELD

Two-point probe is used with a resistance meter to measure surface resistance of small areas for ESD Compliance. The probe has two conductive rubber electrodes and spring loaded mechanism which results in good surface contact and even pressure during measurements.



TM-2P
TWO-POINT PROBE

Two-point probe measures point-to-point surface resistance of small areas. Spring loaded contact pins, connects to meters with banana plugs.



TM-2PC
VERIFICATION FIXTURE

verification of the Two-Point-Probe, Checks resistance values.



TM-RM2
RESISTANCE MEAS ELECTRODE

5lb Disk Electrode Probes are designed to test point-to-point (RTT) and point-to-ground resistance (RTG) in accordance with ESD Association Standards. The probe can be used to make measurements on floors, mats, workbenches, garments, seating.



TM-CAFE
GLOVE CAFE TEST ELECTRODE

Glove Probe is designed to evaluate ESD gloves according to ANSI ESD20.20. The probe's weight ensures excellent contact on ESD glove measurements. The rugged clamp is fitted with conductive contact points for resistance meter cable.



TM-CE
CLAMPING ELECTRODES

clamp electrode is designed to measure IC tubes, embossed pocket tapes and other planar or non-planar materials in ESD areas.



TM-BE
BOTTOM ELECTRODE

It is used for measuring volume resistance test with ring electrode



TM-RME
EXTENSION ROD

Extension Handle For Use with Probes handle eliminates the need to bend to pick up and move ESD probes while testing ESD floors. Extends the handle of standard ESD probes by three feet.



TM-CR
CONCENTRIC RING ELECTRODE

Concentric Ring Probe is used with a surface resistance meter to take volume resistance, point-to-point resistance, surface resistance and resistance-to-ground measure. (Ref: ANSI/ESD STM11.12)



TM-WRTA
WRISTBAND RESISTANCE TEST

Wristband Resistance Test Resistance of the wristband interior and exterior is determined. (Ref: ANSI/ESD S1.1)



TM-HHE
HAND-HELD ELECTRODE

Hand Probes is held in the hand and ensures excellent contact with skin while performing Walking Tests and other resistance measurements.



TM-TP
TRAINING PADDLE

ESD TRAINING PADDLES



TM-CS10
TWO-POINT PROBE SHIELD

36 & 10 inch length cable spacers with insulated end, includes 2 different lengths (36 and 10 inches) convenient for measuring point-to-point, idea for use with TM-RM2 5-lb conductive rubber electrodes.



The square minimaturization of static elimination rods achieves superior performance and safety with its extreme size. The ion rod achieves a high electrostatic elimination efficiency while minimizing its size, significantly surpassing other similar products on the market. The ion rod uses our patented technology of airtight high-voltage plug and flexible coaxial shielded cable to achieve a superior performance to traditional plugs, and has also achieved significant improvements in safety, durability and ease of use, making it ideal for removing static electricity in many narrow scenes.

Featured Functions

- **Small cross-section**
Easy to install in confined spaces
- **Resistive coupling technology**
There is no electric shock, ensuring the safety of the operator
- **Effectively removes static electricity**
Uniform power dissipation, can act on the distance below 10cm
- **Reliable connection – patent protected**
High-voltage plug with flexible coaxial shielded cable
- **Low maintenance costs**
Prevent damage caused by unclean compressed air
- **Safe to use**
Easy to wipe aluminum and flame-retardant environmentally friendly materials
- **Easy to install**
The back of the rod body has a special strip notch, and the mounting bolts can be moved

Typical dissipation time

The rod is 400 mm long, and each dot represents the static dissipation time from +1000V to +100V

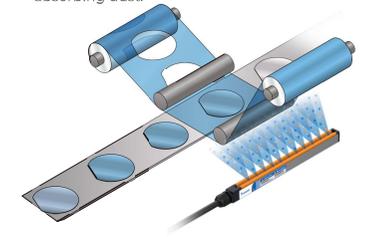


Specifications

Model	DB51
Coupling	Resistive
Discharge	≤0.3S (distance 50mm)
Range	25-150mm
Distance	50-100mm / recommend
Dimensions	150-1500mm / customized
Material	Aluminium
Emitters	SS
Cables	2.5m
Temperature	+5°C to +45°C, humidity: 35 to 70%RH
Warranty	One-year

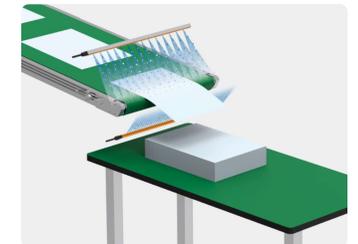
Protective film static elimination

When the protective film is peeled off, a large amount of static electricity is generated. It is advisable to use an ion rod to prevent the peeling membrane from clogging or absorbing dust.



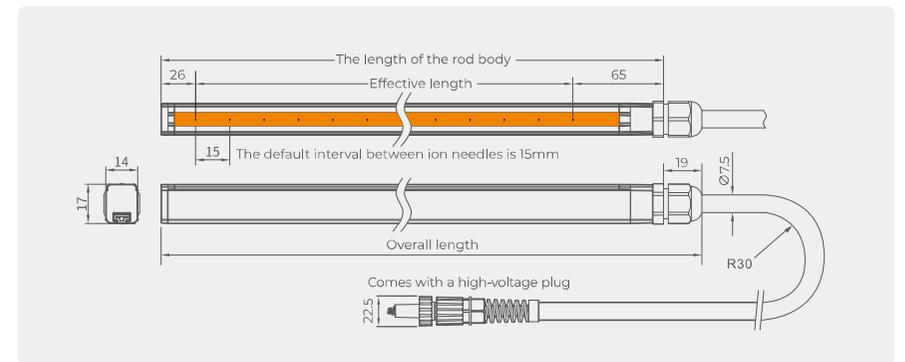
Product stacking static elimination

In the printing delivery and stacking place, the bag making machine and the film cutting machine have problems such as uneven collection and electric shock, it is advisable to use ion rods to remove static electricity.



Suitable Static Control Power Include:

- DP511 Single-channel, fault indicator
- DP522 Dual-channel, digital display, 24V input, PLC control, ion balance and frequency adjustable





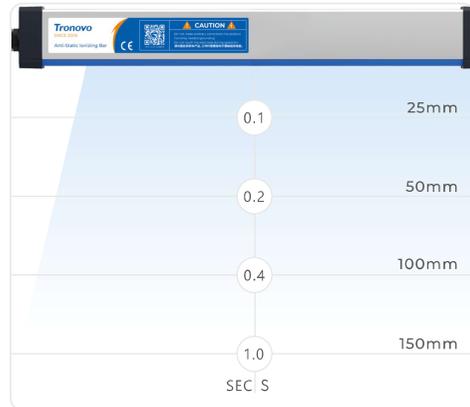
The ultra-powerful electrostatic elimination rod innovatively adopts the ultra-dense discharge needle and resistive coupling design to achieve super performance and efficient static elimination. Compared to the previous high-power ion bars, the super static elimination rod can eliminate interfering electrostatic charges at a faster speed, ensuring a high level of performance and reliability even in high-speed machines and high electrostatic charges. The strong ion field allows the ion rod to be mounted farther away from the material, making it ideal for many applications.

★ **Featured Functions**

- **Enhance the efficiency of static elimination**
Ultra-dense discharge needles spaced 10mm apart to form denser ion
- **Resistive coupling technology**
There is no electric shock, ensuring the safety of the operator
- **Superior static elimination**
Extremely fast power dissipation, which effectively destatizes high-speed coils
- **Reliable connection—patent protected**
Hermetically sealed high-voltage plug with flexible coaxial shielded cable
- **No wind to remove static electricity**
It can be applied to a distance of less than 20cm
- **Safe to use**
Environmentally friendly materials of aluminum and flame retardant PVC for easy wiping
- **Easy to install**
The back of the rod body has a special strip notch, and the mounting bolts can be moved

🕒 **Typical dissipation time**

The rod is 400 mm long, and each point represents the static dissipation time from +5000V to +500V

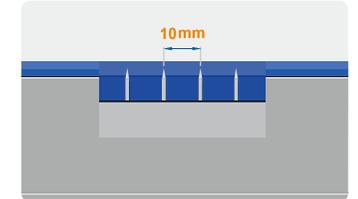


📏 **Specifications**

Model	DB52H
Coupling	Resistive
Discharge	≤0.2S (distance 50mm)
Range	25+200mm
Distance	50mm+150mm / recommend
Dimensions	150+3000mm / customized
Material	Aluminium
Emitters	Tungsten
Cable	2.5mcustom length available)
Temperature	+5°C to +45°C, humidity: 35 to 70%RH
Warranty	One-year

★ **Provides ionization performance**

Installed farther away from the material, even if the machine is running fast and the electrostatic charge is high, it can effectively eliminate static electricity.

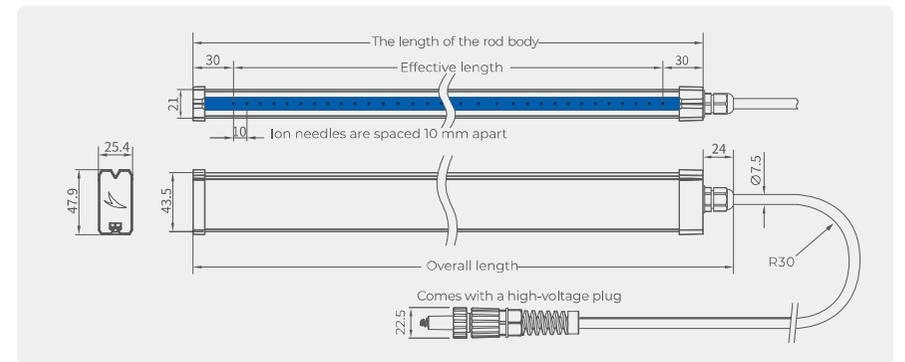


🏭 **Static elimination of film winding**

In high-speed applications such as rewinding and unwinding, slitting, coating, rewinding, etc., it solves the electrostatic problems of a large number of film industries.

Suitable Static Control Power Include:

- DP712
- DP511
- DP522





DB72

Ultra-compact Ionizing Bar

TECHNOLOGY

DECAY

AC

≤0.5S

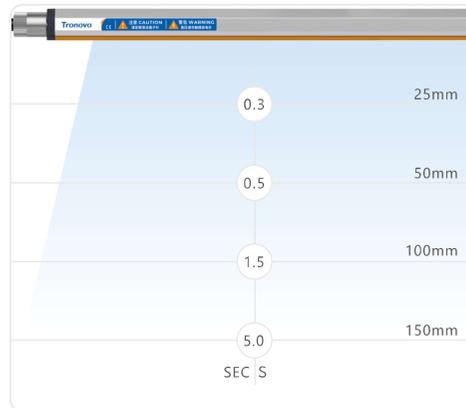
The circular structure of the ion rod provides the ability to adjust it at any angle when fixed, and this circular design gives it advantages in terms of space utilization, aesthetics and ease of use. The ion rod eliminates static electricity quickly and efficiently, and its special alloy electrodes ensure a long service life, bringing lasting value to customers. The design and performance of this ion bar make it ideal for many industries, including plastics, paper, films, and other areas of manufacturing where static electricity needs to be eliminated.

★ Featured Functions

- **Circular structure design**
It is highly adaptable and can be adjusted at any angle
- **Inductive coupling technology**
There is no electric shock, ensuring the safety of the operator
- **Effectively removes static electricity**
Uniform power dissipation, can act on the distance below 10cm
- **Reliable connection – patent protected**
High-voltage plug with flexible coaxial shielded cable
- **Low maintenance costs**
Prevent damage caused by unclean compressed air
- **Safe to use**
Easy to wipe aluminum and flame-retardant environmentally friendly materials
- **Easy to install**
The back of the rod body has a special strip notch, and the mounting bolts can be moved

🕒 Typical dissipation time

The rod is 400 mm long, and each point represents the static dissipation time from +5000V to +500V



📏 Specifications

Model	DB72
Coupling	Induction
Discharge	≤0.5S (distance 50mm)
Range	25+100mm
Distance	50mm / recommend
Dimensions	150+2000mm / customized
Material	Aluminium
Emitters	SS
Cables	2.5m
Temperature	+5°C to +45°C, humidity: 35 to 70%RH
Warranty	One-year

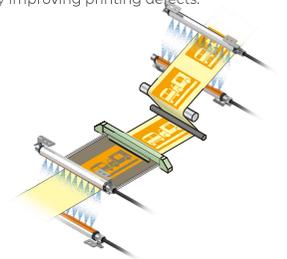
Suitable Static Control Power Include:

DP712-7.0KV



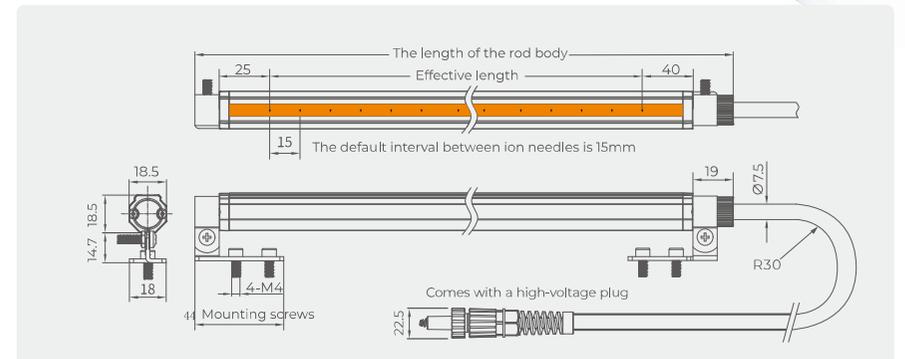
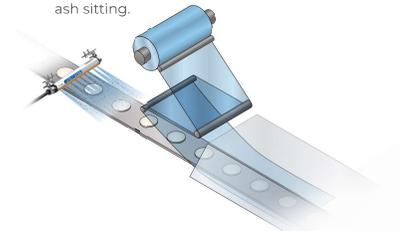
🏭 Printing Static Removal

In printing-related processes such as conveying printed films and coating inks, uneven printing occurs due to static electricity. The use of ion rods reduces the amount of electricity carried in each process, thereby improving printing defects.



📦 Packaging material bite-in

It is recommended to use an ionic rod that can eliminate static electricity at high speed without wind to prevent process defects caused by the attachment of garbage and ash sitting.





After tens of thousands of customers have been installed and used on site, the ultra-high repurchase rate has proved its excellent quality and performance. Its innovative technology and high-grade materials enable it to quickly, effectively and reliably remove surface static electricity from the production process even at medium to high speeds. The design with air source gives it the ability of ionic air knife, which can act on a long distance of more than 50cm. Thanks to its high-speed airflow, it is able to blow away foreign matter adsorbed by static electricity, making it a powerful assistant in industrial production and a trusted choice for customers.

★ **Featured Functions**

- **Excellent stability**
High-quality materials guarantee long-term results
- **Resistive coupling technology**
There is no electric shock, ensuring the safety of the operator
- **Efficient anti-static performance**
Quickly eliminates static electricity and remains effective at faster web speeds
- **Reliable connection - patent protected**
Hermetically sealed high-voltage plug with flexible coaxial shielded cable
- **Longer range**
It can be applied to a distance of more than 60cm
- **Safe to use**
Environmentally friendly materials of aluminum and flame retardant PVC for easy wiping
- **Easy to install**
The back of the rod body has a special strip notch, and the mounting bolts can be moved

★ **Typical dissipation time**

The rod is 400 mm long, 0.3 MPa, and has a power consumption time and ion equilibrium from +1000V to +100V



★ **Specifications**

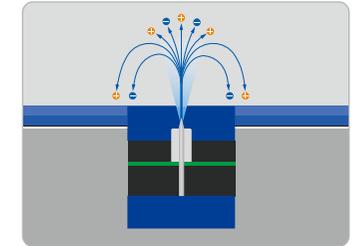
Model	DB531
Coupling	Resistive
Discharge	≤0.6S (Distance 300mm)
Balance	≤ ±30V (AVE) * pulse static control power
Range	25+100mm+600mm
Dimensions	150+3000mm / customized
Airflow	0.1~0.7Mpa
Air Input	8mm
Material	Aluminium
Emitters	Tungsten
Cable	2.5m
Temperature	+5°C to +45°C, humidity: 35 to 70%RH
Warranty	One-year

Suitable Static Control Power Include:



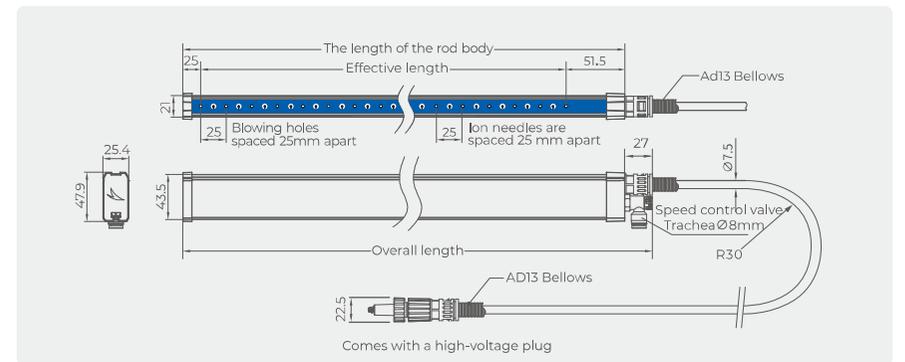
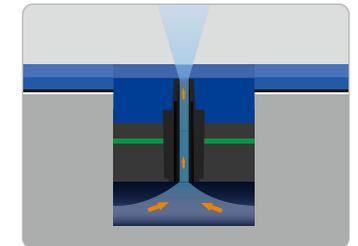
★ **Designed to improve service life**

ion needle is isolated by a ceramic magnetic column, which can solve the aging and powder loss problems of epoxy resin caused by high temperature and redox reaction.



★ **Improve the efficiency of the ion rod**

The special air duct structure of the mold is used to make the ion air flow more uniform and improve the working efficiency of the static elimination rod.



DB732

High Performance Ionizing Bar

TECHNOLOGY	BALANCE	(+) Decay
AC	± 30V	≤ 1.5S



The performance of the static elimination rod meets the strict requirements of the electronics industry for the EPA electrostatic discharge protection zone ionizer, and the residual voltage is less than ±35V. The aluminium enclosure is suitable for use in cleanrooms due to its oxidation resistance and low particle emissions, and the light profile of the aluminium ensures good character requirements and visual integration in the cleanroom. The tungsten alloy electrode ensures a long service life, allows for quick and direct replacement of the ionization needle, and is also very convenient for later maintenance. The square structure, together with a special bar holder, allows for precise axial adjustment of the angle.

★ Featured Functions

- **Excellent stability**
Electrical, pneumatic separation
- **Inductive coupling technology**
Ensure the safety of operators
- **Excellent ionic balance**
Comply with electronic industry standards, below ±35V
- **Suitable for dust-free workshops**
Maintain the cleanliness of the clean room
- **Two-row air vent design**
Increase ionic air coverage
- **Safe to use**
Easy to wipe aluminum and PVC eco-friendly materials
- **Comes with an angle adjustment bracket**
The back of the rod body has a special strip notch, and the mounting bolts can be moved

🕒 Typical dissipation time

The rod is 400 mm long, 0.3 MPa, and has a power consumption time and ion equilibrium from +1000V to +100V



📋 Product Specifications

Model	DB732
Coupling	Induction
Discharge	≤1.5S (Distance 300mm)
Balance	≤ ±30V (AVE) Distance 300mm
Range	25+100mm+600mm
Dimensions	150+3000mm / customized
Airflow	0.1-0.7Mpa
Air Input	6mm×2
Ozone	≤0.04ppm not exceeding
Material	Aluminium
Emitters	Tungsten
Cable	2.5m (custom length available)
Environment	+5°C to +45°C, humidity: 35 to 70%RH
Warranty	Two-year

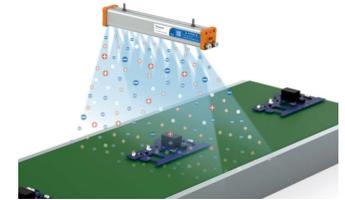
🔌 Suitable Static Control Power Include:

- DP702-4.0KV
- DP702-4.6KV
- DP702-5.6KV
- DP702-7.0KV



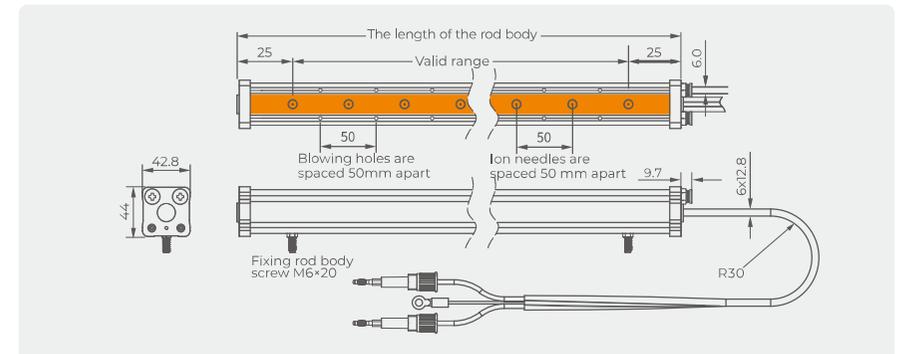
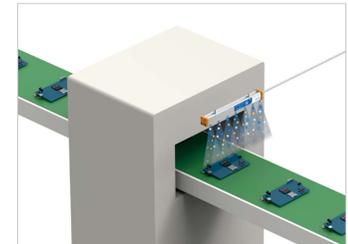
🔍 Semiconductor static elimination

The electronics industry uses static elimination rods to eliminate static electricity for FPC, PCBA boards, integrated circuits and other electronic products.



🔍 SMT SMT electrostatic protection

Before and after PCBA mounting, static electricity can be eliminated on the entire substrate to prevent static damage.



DP712
STATIC CONTROL POWER
AC



DP714
STATIC CONTROL POWER
AC

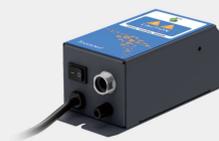


The ion power supply using the power frequency AC mode has a simple structure and is not prone to failure, which can ensure the stable operation of the production line. The patented connector makes the connection between the ion rod and the power supply very safe, and will not cause heat generation and fire accidents. Simple and proven high-voltage transformers achieve high load capacity as an affordable performance solution for a wide range of applications requiring static elimination, such as printing, coding, packaging, painting, and other industrial applications.

Specifications

Model	DP712	DP714
Input voltage	230 V AC 50/60 Hz / Customize 110 V AC 50/60 Hz	
Input power	Max. 35 VA	
Output voltage	4.6kV / 5.6kV / 7.0kV AC	
Output current	< 5mA	
Output frequency	50/60 Hz	
Output channel	2-CH	4-CH
Protection current	•	•
Environment	Temperature: 0 to 50°C Humidity: 35 to 80%RH	
Dimensions	185 x 158.5 x 105.7 mm	
Weight	Approx 2.7 kg	
Warranty	One-year	

DP511
STATIC CONTROL POWER
Pulse AC method



DP522
STATIC CONTROL POWER
Pulse AC method



DP531
STATIC CONTROL POWER
Pulse AC method



The pulsed AC method enables not only "breeze de-energization" and "high-speed de-energization" applied to compressed air, but also "windless de-energization" that does not require the use of compressed air. Alternately apply "+" and "-" voltages on 1 discharge pin. Since the amount of ions generated is large, a large number of ions can be released, so it is possible to discharge electricity in a short time. The pulse frequency can be used in the range of 50 Hz (short-range and moving workpiece de-energization) ~ 1 Hz (long-distance and spatial de-energization) depending on the application situation.

Specifications

Model	DP511	DP522	DP531
Input voltage	110~240V AC 50/60Hz	24 V DC ±5%	110~240V AC 50/60Hz
Input power	Max. 30 VA		
Output voltage	4.0kV / 5.0kV / 6.0kV / 7.0kV AC		
Output current	< 5mA		
Output frequency	1-50Hz (1Hz step, default 30Hz)		
Output connection	1-CH	2-CH	1-CH
One-key reset	—	•	•
Airflow detection	—	—	•
Ion balance adj	—	•	•
Anomaly protection	—	•	•
Signal control	—	•	•
Environment	Temperature: 0 to 50°C Humidity: 35 to 80%RH		
Dimensions	180 x 75 x 70 mm		180 x 100 x 70 mm
Weight	Approx 750g		Approx 850g
Warranty	One-year		

DF231 DF231P

Small HF Ionizing Air Blower



TECHNOLOGY

High-freq AC

BALANCE

±10V

DECAY

≤2.0S

The compact and slim design can be easily installed inside the device regardless of the installation position. It can quickly eliminate static electricity and has a stable ion balance, providing the best protection against static damage of the component. When an abnormality is perceived, an alarm signal is output, and the power supply is cut off at the same time to prevent problems before they occur. In the case of contamination of the electrode pin, etc., the self-diagnosis needs to be cleaned, and an alarm signal is output.

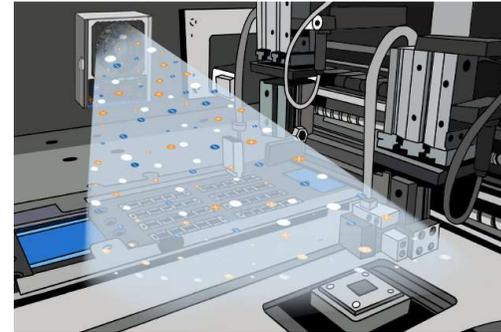
★ Featured Functions

- Compact and slim design**
The ultra-thin thickness is only 39mm
- High-frequency AC technology**
Extremely stable ionic balance
- The new ion needle detection function has been upgraded**
Ion needle abnormal maintenance warning
- Four automatic alarm functions**
The abnormal status can be displayed intuitively
- 5 levels of air volume adjustment**
The air volume can be adjusted by pressing a button
- Signal input/output control function**
It has IO control interface and wireless and wired networking functions

🔍 Feature comparison table

Product model	DF231	DF231P	
High Speed Fan (RPM)	5500	5500	
The ion needle is replaceable	●	●	
5-speed wind speed	●	●	
Key lock function	—	●	
Alarm sound switch	—	●	
Ion needle function	—	●	
Alarm	Emitters alarm	—	●
	Temperature alarm	—	●
	Fan alarm	●	●
	High-voltage alarm	●	●
I/O interface	●	●	
WIFI / Ethernet interface	—	OPT	

🔍 Static elimination inside the device

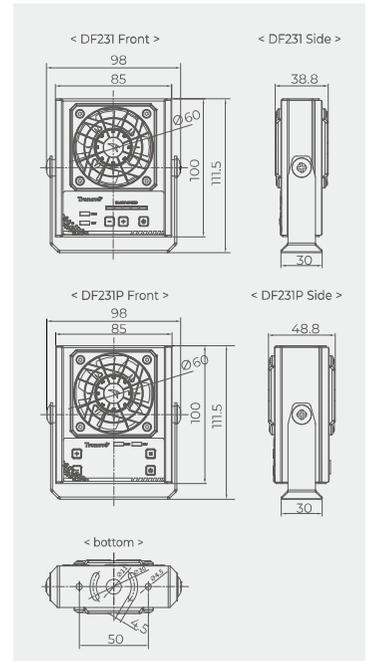
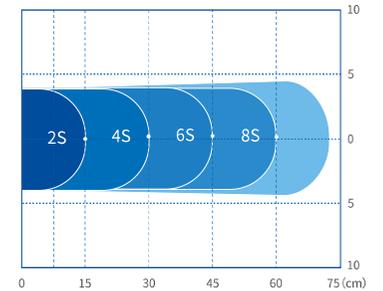


📋 Specifications

Model	DF231	DF231P
Voltage	24VDC±5%	
Power	4.5W	5W
Discharge	≤2.0S(Max Airflow)	≤1.5S(Max Airflow)
Balance	≤ ±10V (AVE)	
Technology	High-frequency AC mode, about ±2KV, 70KHz	
Airflow	5~24CFM	5~26CFM
Airflow area	6×45cm	6×60cm
Noise	60dBA @ 100cm	
Ozone	≤0.04ppm @ 15cm	
Alarm	Fan Alarm	Fan Alarm
	High Voltage Alarm	High Voltage Alarm
Interface	—	WIFI / Ethernet
	I/O input and output	I/O input and output
Material	Discharge needle: tungsten, housing: SUS 304	
Temperature	0~+45°C (note no condensation), 35~75%RH	
Dimensions	111.5×98×38.8mm	111.5×98×48.8mm
Weight	Approx. 0.3Kg	Approx. 0.37Kg
Warranty	One-year	

🕒 Typical dissipation time

According to the American ESD Institute's ANSI/ESDS20.20-2021 standard, each point represents the static dissipation time from 1000V to 100V at maximum wind speed. * Shown as DF231 parameters.



DF241 DF241P

High Frequency Ionizing Air Blower



TECHNOLOGY	BALANCE	DECAY
High-freq AC	±10V	≤1.5S

The 70,000 Hz high-frequency technology achieves a high level of static elimination. Compared to conventional low-frequency and DC methods, the high-frequency AC method can effectively generate positive and negative ions while creating a stable ion balance at high ion concentrations. This means that stable ion equilibrium and efficient static elimination can be achieved regardless of the set distance.

★ Featured Functions

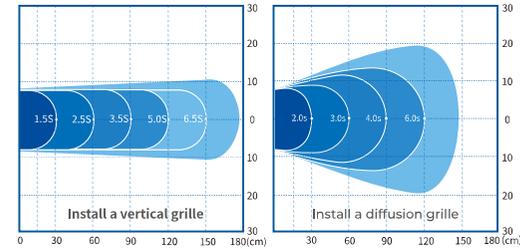
- **High-frequency ionization technology**
Extremely stable ionic balance
- **The new ion needle detection function has been upgraded**
Ion needle abnormal maintenance warning
- **Four automatic alarm functions**
The abnormal status can be displayed intuitively
- **Vertical and diffusion grilles are available**
It can meet the needs of a wide range and a long distance of static elimination
- **Designed for reassuring safety**
When the grille is removed, the high-voltage circuit and fan stop
- **5000RPM high speed fan**
12 speeds to adjust the light wind to the strong wind to meet the needs of different sites
- **Signal input/output control function**
It has IO control interface and wireless and wired networking functions

🔗 Feature comparison table

Model	DF241	DF241P
High Speed Fan (RPM)	5000	5000
Angle louver	●	●
Straight louver	●	●
Quickly change Emitters pin	●	●
12-speed wind speed	●	●
Emitters Dirt Check	—	●
Alarm	Emitters alarm	●
	Fan alarm	●
	louver open alarm	●
	High-voltage alarm	●
I/O interface	—	●
WIFI / Ethernet interface	—	OPT

🕒 Typical dissipation time

According to the American ESD Institute's ANSI/ESDS20.20-2021 standard, each point represents the static dissipation time from 1000V to 100V at maximum wind speed.



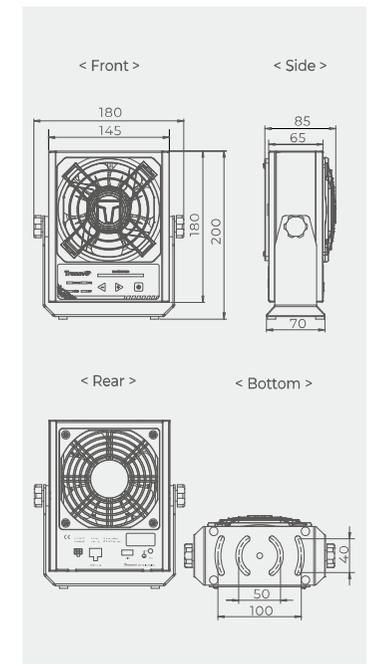
📋 Specifications

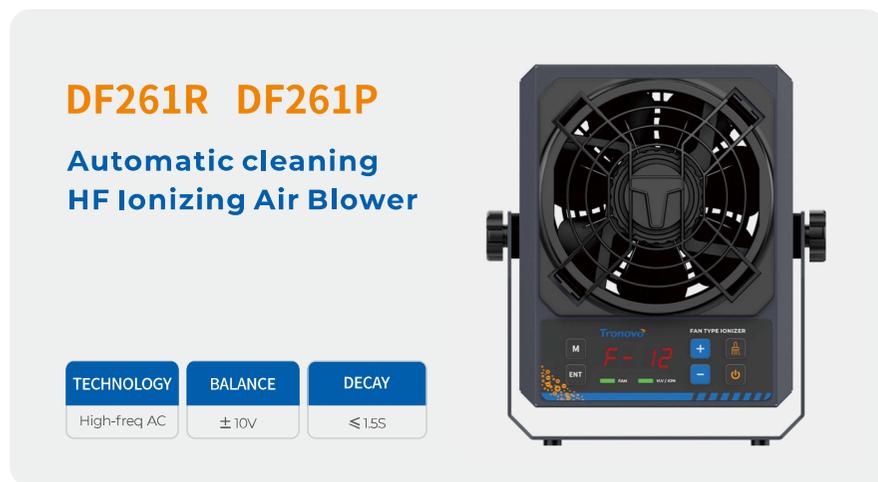
Model	DF241	DF241P
Voltage	24VDC±5%	
Power	16W	
Discharge	≤1.5 S @ 30cm (Max Airflow)	
Balance	≤ ±10V (AVE)	
Technology	High-frequency AC mode, about ±2KV, 70KHz	
Airflow	10~120CFM	
Airflow area	20×150cm (Angle), 40×120cm (Straight)	
Audible Noise	45~75dBA @ 100cm (min~max airflow)	
Ozone	≤0.04ppm @ 15cm	
Alarm	-	Check
	-	FAN
	Case	Case
	H.V	H.V
Interface	-	I/O signals
Material	Discharge needle: tungsten, shell: metal, grille: ABS	
Temperature	0~+45°C (note no condensation), 35~75%RH	
Dimensions	200×180×85mm (including stand) / Approx. 1.3Kg	
Warranty	One-year	

🔍 Ion needle dirt detection function

Always monitor the level of dirt in the ion needle. When maintenance is required, the signal output and the CHECK indicator will be notified by turning green to red.

* This function is only available on the DF241P.





Equipped with an automatic ion needle cleaning system, it can reduce the frequency of manual cleaning of the ion needle, improve the effect of static removal, and prolong the service life of the ion needle. The high-volume fan is equipped with a larger blade and a powerful motor to provide a faster and longer distance for static removal by providing strong wind power.

★ Featured Functions

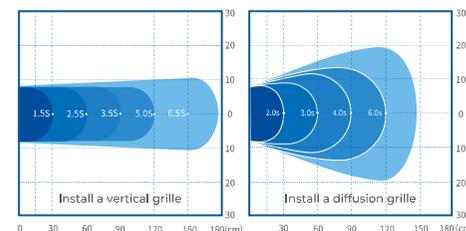
- **High-frequency ionization technology**
Extremely stable ionic balance
- **Digital display**
Convenient interactive experience
- **Automatic ion needle cleaning system**
It is possible to make an appointment to clean the ion needle at a set time
- **Eliminate static electricity in a wide range**
Control the fan airflow and increase the wind speed
- **Up to 6 alarm functions**
You can display abnormal status
- **Designed for reassuring safety**
When the grille is removed, the voltage and fan stop immediately
- **A variety of communication interfaces**
Support IO control or RS485, network monitoring function

🔍 Specifications

	DF261R	DF261P
Model	DF261R	DF261P
Voltage	24VDC±5%	
Power	18W	
Discharge	≤1.5 S @ 30cm (Max Airflow)	
Balance	≤ ±10V (AVE)	
Technology	High-frequency AC mode, about ±2KV, 70KHz	
Airflow area	20×150cm (Vertical type), 40×120cm	
Noise	40~72dBA @ 100cm	
Ozone	≤0.04ppm @ 15cm	
Material	Tungsten, shell: metal, grille: ABS	
Temperature	0~+45°C, 35~75%RH	
Size / weight	200×180×100mm ,Approx. 1.5Kg	
Warranty	One-year	

🕒 Typical dissipation time

According to the American ESD Institute standard: ANSI/ESDS20.20-2021 standard, each point represents the static dissipation time from 1000V to 100V at high wind speeds.

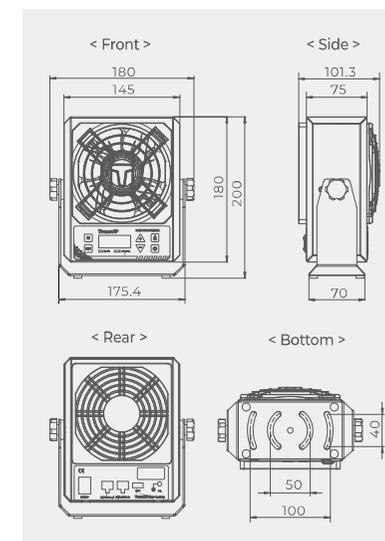


🔍 Feature comparison table

Product features	DF261R	DF261P
High Airflow Fan (CFM)	180	180
LED display	●	●
Automatic cleaning	●	●
One-click cleaning	●	●
Reverse vacuuming	●	●
Emitters Dirt Check	—	●
Angle louver	●	●
Straight louver	●	●
Quickly change Emitters pin	●	●
12-speed wind speed	●	●
Alarm	High-voltage alarm	●
	Fan alarm	●
	Temperature alarm	●
	Louver open alarm	●
	Cleaning alarm	●
	Emitters alarm	—
I/O interface	—	●
RS485 interface	●	—
Centralized interfaces	●	●
WIFI / Ethernet interface	OPT	OPT

🔍 Ion needle cleaning system

The ion needle of the ion blower is easy to absorb dust during use, which affects the efficiency of corona discharge, and more seriously, it affects the ion balance and power dissipation speed, and the automatic ion needle cleaning system will automatically clean the ion needle according to the set time.





The 70,000Hz high-frequency ionization technology uses a high-volume fan to provide a stable ion balance and high-speed static elimination efficiency, with a scheduled cleaning function, automatic cleaning of the ion needle to reduce daily maintenance work, the ionizing fan has six self-alarm monitoring functions, and each air outlet is equipped with a status indicator to display the operating status and ion abnormalities in real time.

★ Featured Functions

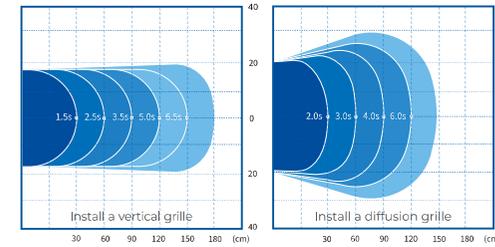
- **High-frequency ionization technology**
Extremely stable ionic balance
- **Digital display**
Convenient interactive experience
- **Automatic cleaning of ion needles**
The time can be set according to the environmental conditions
- **Wide range of static removal**
Tinned copper wire is not easy to oxidize
- **Up to 6 alarm functions**
You can prevent the setting parameters from being changed
- **Key lock function**
It is possible to prevent arbitrary changes to the setting parameters
- **Audible alarm**
With two LED front panel displays

🔗 Feature comparison table

Model	DF462	
High Speed Fan (RPM)	180	
12-speed wind speed	●	
LED status indicator for air outlets	●	
Key lock, audible alarm function	●	
Ion needle dirt detection function	●	
Alarm	Emitters Dirt Check	●
	Fan abnormality alarm	●
	Temperature alarm	●
	Automatic cleaning alarms	●
	louver open alarm	●
High-voltage alarm	●	
WiFi / Ethernet interface	OPT	

🕒 Typical dissipation time

According to the standard of the American ESD Association: ANSI/ESDS20.20-2021 standard, each point is expressed in Static dissipation time from 1000V to 100V at maximum wind speed.

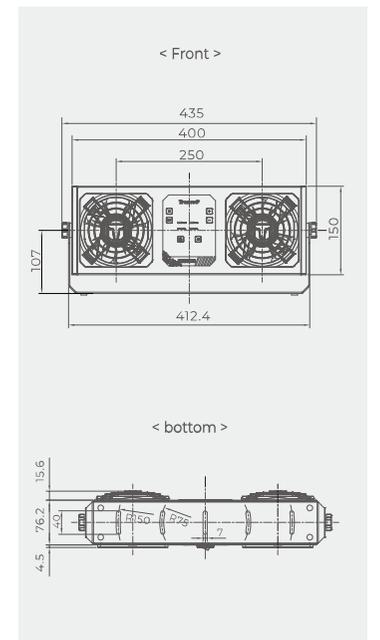
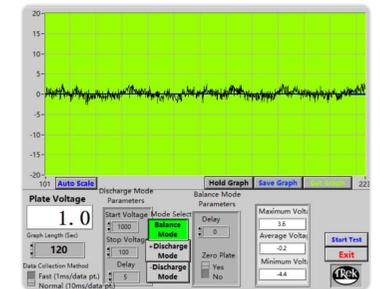


📄 Specifications

Model	DF462
Voltage	100-240VAC ±5% 50/60Hz
Product power	35W
Discharge	≤1.5 S @ 30cm (Max Airflow)
Balance	≤ ±10V (AVE)
Technology	High-frequency AC , about ±2KV, 70KHz
Airflow	Max 5.2m/s ,17~180CFM
Airflow area	40×150cm (Vertical Type), 60×120cm
Audible Noise	50-75dBA @ 100cm
Ozone	≤0.04ppm @ 15cm
Alarm	Fan Alarm (FAN)
	High Voltage Alarm (H.V)
Working status (independent display)	Working status (independent display)
	Working status (independent display)
WiFi interface	Yes (OPT)
Grounding	C (capacitor) ground
Material	Tungsten, shell: metal, grille: ABS
Temperature	0~+45°C (note no condensation), 35~75%RH
Dimensions	435×182×96.3cm, Approx 3.24Kg
Warranty	One-year

📊 Extremely stable ion balance

The product meets the requirements of ANSI/ESD S20.20 and IEC 61340-5-1 certification for ionizer products, and the residual voltage limit is less than ±35V. The ion equilibrium voltage fluctuation measured by the CPM monitor is less than ±5V.





For electronics manufacturing and assembly, high-frequency ionization technology and high-speed fans are used to eliminate static electricity at high speeds with low maintenance requirements. Reliable wiring design, built-in appointment function of the ion needle cleaning brush, reduce the frequency of maintenance. The ionizing fan has 5 kinds of self-alarm monitoring functions, and each air outlet is equipped with a status indicator to display the operating status and ion abnormalities in real time.

★ **Featured Functions**

- **AC high-frequency technology**
High efficiency, fast speed and good effect of static electrostatic removal
- **Support remote monitoring**
5 abnormal alarm functions, independent tyure alarm indicator
- **Simple maintenance**
Self-cleaning ion needle, needle ring removal
- **Comply with the requirements of electronic industry specifications**
ANSI/ESD S20.20 ECG1340-5-1
- **Automated control**
I/O interface as standard, operating signal fault signal
- **5000rpm high speed fan**
12 levels of wind speed can be adjusted to meet different operating scenarios
- **2200V safe voltage**
Ion needles have a long life, durability and few failures

🔗 **Feature comparison table**

Product category		Hanging series
High Speed Fan (RPM)		5000
12-speed wind speed		●
LED status indicator for air outlets		●
Key lock, audible alarm function		●
LED lighting indicator		●
Alarm	Fan abnormality alarm	●
	Temperature alarm	●
	Automatic cleaning alarms	●
	louer open alarm	●
	High-voltage alarm	●
I/O interface		●
WIFI / Ethernet interface		OPT

📏 **Specifications**

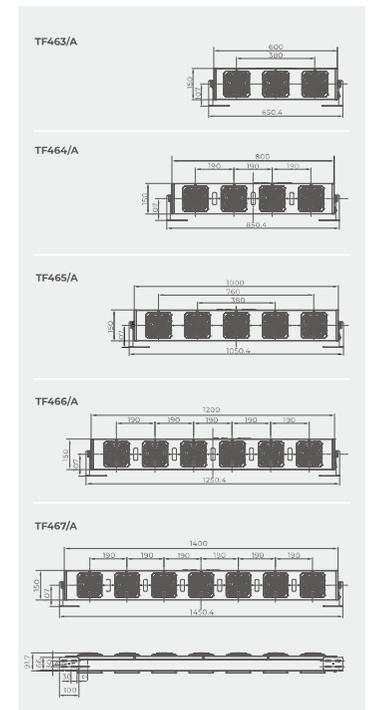
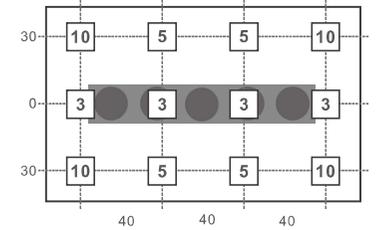
Model	DF46X / A series
Voltage	100-240VAC ±5% 50/60Hz
Discharge	≤ 1.5 S @ 30cm (Max Airflow)
Balance	≤ ±10V (AVE)
Technology	High-frequency AC, about ±2KV, 70KHz
Airflow	Max 5.2m/s, 10-120CF
Audible Noise	60~85dBA @ 100cm (min~max airflow)
Ozone	≤ 0.05ppm @ 15cm
Light	Fan Alarm (FAN)
	High Voltage Alarm (H.V)
I/O interface	Working status (independent display)
	PLC, input and output signals
WIFI interface	Option
Grounding	C (capacitor) grounded
Material	Tungsten, shell: metal, grille: ABS
Temperature	0~+45°C (note no condensation), 35~75%RH
Warranty	One-year

👤 **Order Information**

Model	Information Notes
DF463	3-Fan / 45W / 600×150×91.7mm / about 4.8KG
DF463A	3-Fan / 50W / 600×150×91.7mm / about 5.0KG / LED light
DF464	4-Fan / 60W / 800×150×91.7mm / about 5.8KG
DF464A	4-Fan / 70W / 800×150×91.7mm / about 6.0KG / LED light
DF465	5-Fan / 75W / 1000×150×91.7mm / about 6.8KG
DF465A	5-Fan / 87W / 1000×150×91.7mm / about 7.0KG / LED light
DF466	6-Fan / 90W / 1200×150×91.7mm / about 7.8KG
DF466A	6-Fan / 105W / 1200×150×91.7mm / about 8.0KG / LED light
DF467	7-Fan / 110W / 1400×150×91.7mm / about 8.8KG
DF467A	7-Fan / 130W / 1400×150×91.7mm / about 9.0KG / LED light

🕒 **Typical dissipation time**

The DF46X ionizing blower is 45cm away from the CPM monitor, and the CPM test board is 15cm away from the desktop. Each point represents the time from 1000V to 100V at maximum wind speed.



DF721

Desktop Ionizing Air Blower



TECHNOLOGY	BALANCE	DECAY
AC	±15V	≤25S

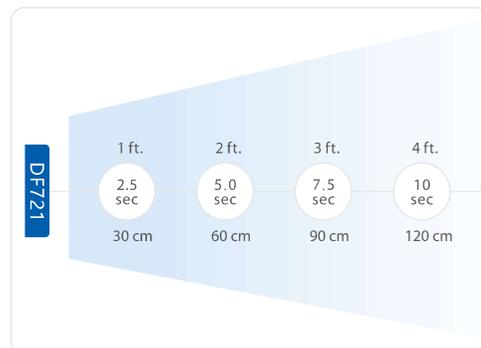
Ionizers use AC ionization technology to provide a stable ion balance that quickly eliminates static electricity from the work table. The lightweight and small design makes it easy to place it anywhere on the table. Excellent performance, provide good anti-static damage protection of the product, and also prevent dust particles from adsorbing on the product. Built-in ionic needle cleaning brush simplifies maintenance procedures.

★ Featured Functions

- **The dissipation time is fast**
Quickly eliminates static electricity
- **Lightweight in size**
Directly to the work desktop
- **The dissipation time is fast**
Quickly eliminates static electricity
- **Easy maintenance**
Built-in ionic needle cleaning brush
- **The wind speed is adjustable**
The wind is as strong as you like
- **Ionization indicator**
Visualize the status of your work
- **CE certificate**
Higher quality assurance

🕒 Typical dissipation time

According to the American ESD Institute's standard: ANSI/ESD520.20-2021, each point indicates the static dissipation time from 1000V to 100V at high wind speeds.

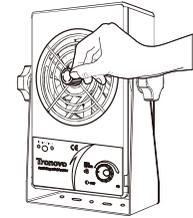


📋 Specifications

Model	DF721
Voltage	220V/50Hz or 110V/60Hz (customized)
Power	30.0W
Discharge	≤ 2.5 S @ 30cm (Max Airflow)
Balance	≤ ±15V (AVE)
Technology	AC
Airflow area	40cm X 90cm
Airflow	45~110 CFM
Audible Noise	50dB minimum and 90dB maximum
Temperature	Temperature: 0 to 40°C Humidity: 35 to 80%RH
Ozone	≤ 0.03ppm
Installation	Fitted with metal brackets/seats
Weight	2.6kg
Dimensions	200 X 104 X 248mm
Option	Dust filter
Warranty	One-year

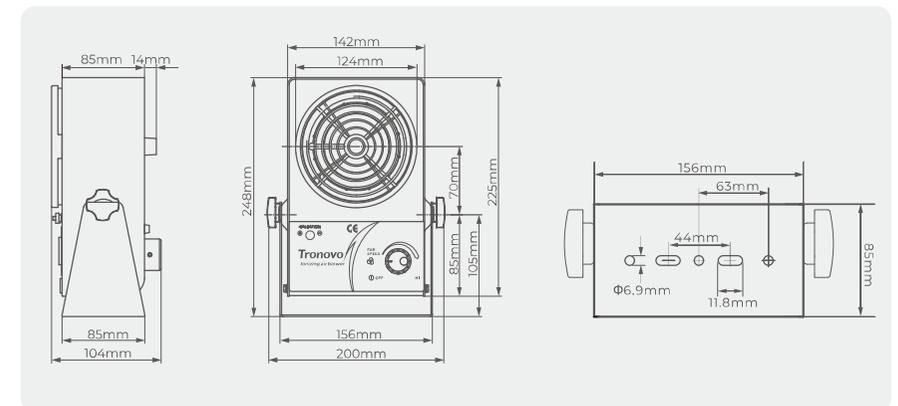
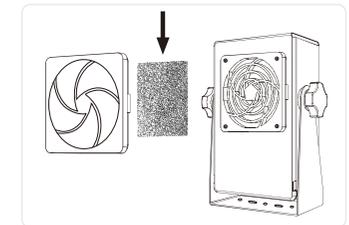
🧼 Built-in manual cleaning brush

Rotation removes accumulated dirt on the ion needle and removes the ionization device. The accumulated dust on the ion blower effectively reduces the failure of the ion blower rate, improve the service life of the ionizing blower.



🌀 Filter cleaning cover (optional)

In dusty environments, it is recommended to install a filter





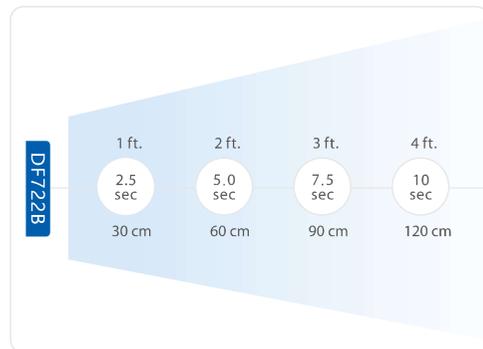
Ionizers use AC ionization technology to provide a stable ion balance that quickly eliminates static electricity from the work table. The lightweight and small design makes it easy to place it anywhere on the table. Excellent performance, provide good anti-static damage protection of the product, and also prevent dust particles from adsorbing on the product. Built-in ionic needle cleaning brush simplifies maintenance procedures.

★ **Featured Functions**

- **The dissipation time is fast**
Quickly eliminates static electricity
- **Lightweight in size**
Directly to the work desktop
- **The dissipation time is fast**
Quickly eliminates static electricity
- **Easy maintenance**
Built-in ionic needle cleaning brush
- **The wind speed is adjustable**
The wind is as strong as you like
- **Ionization indicator**
Visualize the status of your work
- **CE certificate**
Higher quality assurance

🕒 **Typical dissipation time**

According to the American ESD Institute's standard: ANSI/ESDS20.20-2021 each point indicates the static dissipation time from 1000V to 100V at high wind speeds.

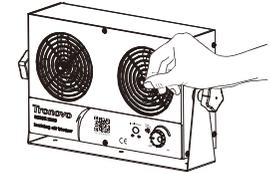


📋 **Specifications**

Model	DF722B
Voltage	220V/50Hz or 110V/60Hz (customized)
Power	60W
Discharge	≤ 2.5 S @ 30cm (Max Airflow)
Balance	≤ ±15V (AVE)
Technology	AC
Airflow area	60cm X 90cm
Airflow	2 X 45~110 CFM
Audible Noise	50dB minimum and 90dB maximum
Temperature	Temperature: 0 to 40°C Humidity: 35 to 80%RH
Ozone	≤0.03ppm
Installation	Fitted with metal brackets/seats
Weight	4.2kg
Dimensions	394 X 97 X 230mm
Optional	Dust filter
Warranty	One-year

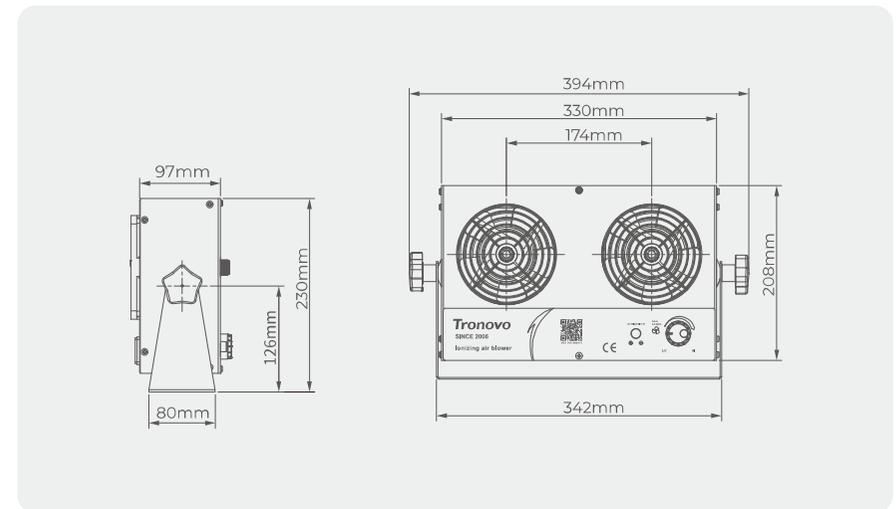
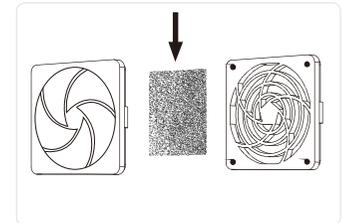
🧼 **Built-in manual cleaning brush**

Rotation removes the accumulated dirt on the ionization needle, removes the accumulated dust on the ionization device, and improves the service life of the ionizing blower.



🌀 **Filter cleaning cover (optional)**

In dusty environments, it is recommended to install a filter



DF821 DF821C

Desktop
Ionizing
Air Blower



TECHNOLOGY	BALANCE	DECAY
Steady-State DC	±10V	≤2.0S

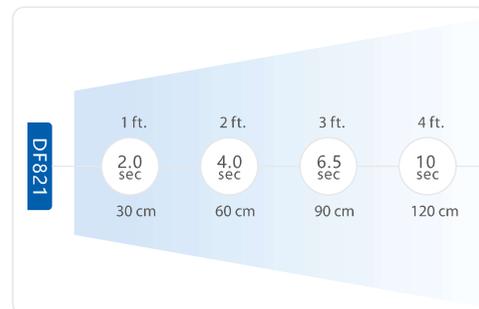
It adopts advanced closed-loop control circuit system, with stable performance and adjustable ion balance, large ion airflow coverage area and wide wind adjustment range. It adopts a new type of double high-pressure release to ensure the stability of the ionizing fan in any environment, and is an economical DC ionizing fan that can meet the needs of high requirements for static removal and has stable performance.

★ Featured Functions

- **Steady-state DC ionization technology**
Quickly eliminates static electricity
- **The dissipation time is fast**
Directly to the work desktop
- **The wind is strong and the size can be adjusted**
The air volume can be controlled at will, and the speed is steplessly regulated
- **Stable ion balance (can be calibrated)**
Ensure that the product is in protection
- **The ion needle is automatically cleaned**
when the machine is turned on
Simplified maintenance procedures

🕒 Typical dissipation time

According to the American ESD Institute's standard: ANSI/ESDS20.20-2021 each point indicates the static dissipation time from 1000V to 100V at high wind speeds.



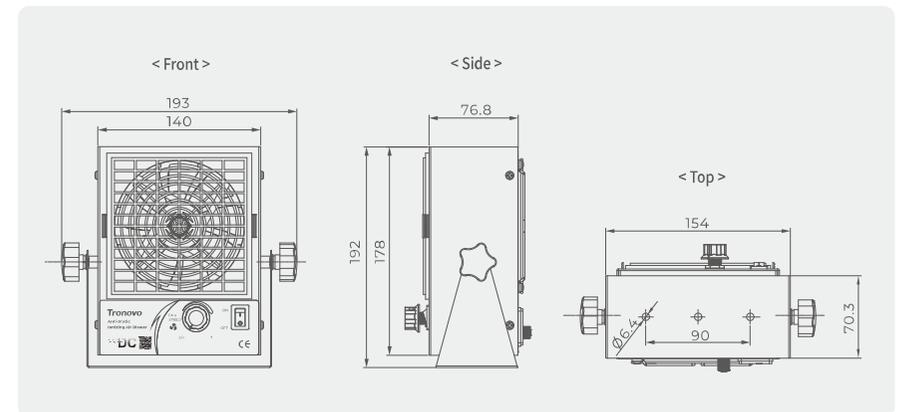
📄 Specifications

Model	DF821	DF821C	DF821CD
Voltage	220V/50Hz or 110V/60Hz		24V DC
Auto Clean	—	•	•
Power	14W	16W	16W
Discharge	≤ 2.0 S @ 30cm (Max Airflow)		
Balance	≤ ±10V (AVE)		
Technology	Steady-State DC		
Airflow area	30cm X 90cm		
Airflow	35~70 cfm		
Audible Noise	50dB minimum and 90dB maximum		
Temperature	Temperature: 0 to 40°C Humidity: 35 to 80%RH		
Ozone	≤ 0.03ppm (measured at 15cm in front of the fan)		
Installation	Fitted with metal brackets/seats		
Weight	1.3kg		
Dimensions	64 X 195 X 205mm		
Warranty	One-year		

🔧 Replaceable design of ion needles



⚡ Ion balance adjusted



DF711W DF711WB

Extended Coverage Ionizing Air Blower



TECHNOLOGY	BALANCE	DECAY
AC	±15V	≤25S

Using AC ionization technology and a large coverage design, ± 10V instinctive balance circuit, built-in cleaning brush and high-voltage ionization display light, it provides stable ion balance and rapid static elimination, which can be applied in different electronic and medical equipment production environments, protect electronic components that are extremely sensitive to static damage, and also prevent dust particles from adsorbing on the product, and provide warm air to make operators feel comfortable.

Featured Functions

- **Large coverage for fast static elimination**
No blind spots, through-strip air outlets
- **Built-in ionic needle cleaning brush**
Simplify maintenance
- **Ion work indicator**
It is easy to check the output of ions
- **It has a warm air heating function**
Make the operator feel comfortable
- **Stable ionic equilibrium**
Protects electronic components that are extremely sensitive to electrostatic damage
- **The wind is strong canbe adjusted**
The air volume can be controlled at will, and the speed is steplessly regulated

Typical dissipation time

According to the American ESD Institute's standard: ANSI/ESDS20.20-2021, each point indicates the static dissipation time from 1000V to 100V at high wind speeds.

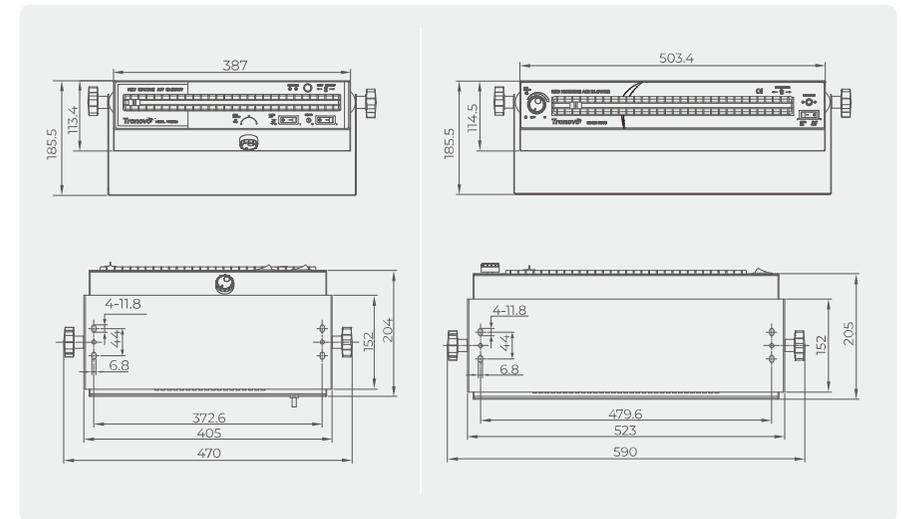


Specifications

Model	DW711W	DW711WB
Voltage	220V/50Hz or 110V/60Hz (customized)	
Power	45W / 380W (Heater)	
Discharge	≤ 2.5 S @ 30cm (Max Airflow)	
Balance	≤ ±15V (AVE) @ 300mm	
Technology	AC	
Airflow area	60cm X 90cm	70cm X 90cm
Airflow	60~90 CFM	60~220 CFM
Audible Noise	50dB min and 90dB max	
Temperature	Temp: 0 to 40°C Humidity: 35 to 80%RH	
Ozone	≤ 0.03ppm	
Installation	Fitted with metal brackets/seats	
Weight	6kg	7kg
Dimensions	470 X 205 X 186mm	590 X 205 X 186mm
Warranty	One-year	

Warm air heating function

The products are used in a wide range of applications, from electronic and medical device assembly to testing and packaging; It is more commonly used in the assembly and testing of components in the flat panel display industry.



**DF722 DF723
DF724**

**Wide Coverage
Ionizing Air Blower**



TECHNOLOGY	BALANCE	DECAY
AC	±15V	≤25S

Ionizing fans feature AC corona technology with excellent ion balance and fast static elimination speed, variable wind speed regulation that produces a balanced flow of positive and negative ions without calibration, and the equipment is used in many industries and manufacturing applications where static electricity needs to be addressed. Suspended ionizers provide superior anti-static performance over the entire working face. We can also have built-in lamps and heaters to protect sensitive electronic components from static electricity while providing greater convenience and comfort for the operator.

Featured Functions

- **Large coverage for fast static elimination**
The entire workbench can be covered
- **Built-in ionic needle cleaning brush**
Simplify maintenance
- **Stable ionic equilibrium**
It is easy to check the output of ions
- **Air inlet filter is standard**
Filters dust and other debris from the air
- **The wind is strong can be adjusted**
It can quickly eliminate static electricity

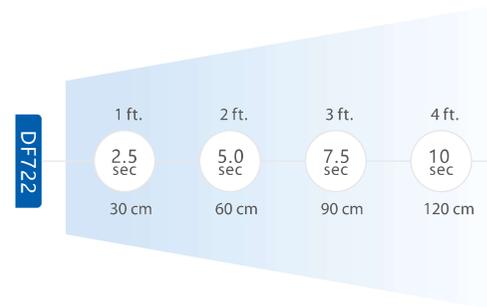
Workbench installation effect

Suspended ionizing blower can eliminate electrostatic charge in areas that are not easy to contact, and is an ideal equipment for preventing electrostatic pollution and damage in electrostatic protection areas such as electronic assembly lines, pharmaceutical manufacturing assembly lines, printing, packaging tables, maintenance stations and air shower equipment.



Typical dissipation time

According to the American ESD Institute's standard: ANSI/ESDS20.20-2021, each point indicates the static dissipation time from 1000V to 100V at high wind speeds.



Machines with warm air heating

With the optional mounting bracket, you can place the ionizing blower on the table and adjust the blowing angle according to the needs of the site. If you choose a machine with warm air heating, it will be more comfortable for the operator in winter, especially in northern or less air-conditioned production halls.



Specifications

Model	DF722	DF723	DF724
Voltage	220V/50Hz or 110V/60Hz (customized)		
Power	60W (Heater function on)	90W (Heater function on)	120W(Heater function on)
Discharge	≤ 2.5 S @ 30cm (Max Airflow)		
Balance	≤ ±15V (AVE)		
Technology	AC		
Airflow area	40 X 120cm	60 X 120cm	110 X 120cm
Airflow	2 X 45~110CFM	3 X 45~110CFM	4 X 45~110CFM
Audible Noise	≤65db	≤75dB	≤85dB
Temperature	0 to 40°C, 35 to 80% RH (non-condensing)		
Ozone	≤0.03ppm (measured at 15cm in front of the fan)		
Weight	4.2kg	5.2kg	7.6kg
Dimensions	400 X 168 X 126mm	600 X 168 X 126mm	1100 X 168 X 126mm
Optional	Metal bracket		
Warranty	One-year		

PULSE AIR-GUN IONIZER

Air-gun type ionizer that can remove dust in a single burst using pulsed ion air



Equipped with a working indicator, Visualize the operating status of the ion air gun



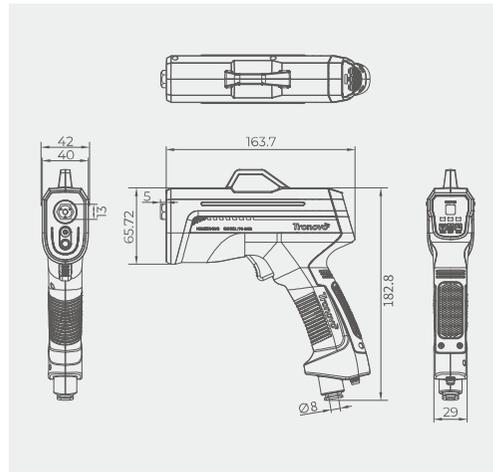
Typical dissipation time features pulse air modes in addition to the standard continuous mode.



Specifications

Model	DG25	DG25P
Voltage	24V DC±5% (dedicated AC adapter)	
Current	0.5A or less	
Discharge	0.65 ^{*1}	
Balance	≤ ±10V (AVE) ^{*1}	
Input gas	0.15~0.7MPa	
Air temperature	0 to +50°C	
Connect	Outer diameter ø8, inner diameter ø6	
Ozone	≤0.03ppm @ 30cm	
Pulse mode	—	•
Trigger linkage	—	•
Lighting mode	•	•
Operating env	0~+50°C (note no condensation), 35~65%RH	
Size / weight	182.8×163.7×42mm / Approx. 350g	
Warranty	One-year	

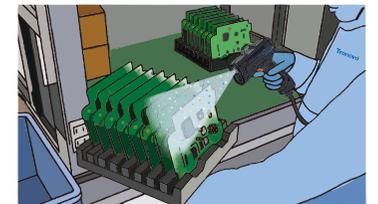
*1 Measurement results at a mounting distance of 150 mm and a supply air pressure of 0.2 MPa (representative value)



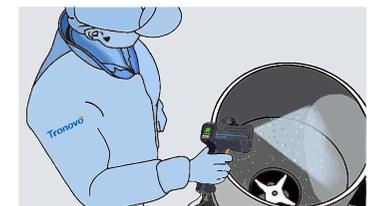
Enter the workshop to clean the dust



Circuit board cleaning surface dust



Maintenance pulverizer dust removal



Dust removal before body painting





We combine ion nozzle technology with handheld air guns to effectively clean a wide range of shapes. As a professional cleaning tool, the ion air gun is widely used in profiles, plastic sheets, automobile bodies and components, electronic assembly, packaging cleaning, containers, blister packaging, paint booths and other fields. An air filter can be optionally fitted upon request, and a spring-hook balancer is available as an option for easy and labor-saving operation.



Ionic nozzle is ideal for static elimination, contaminant and dust removal of prior to assembly, packaging, painting, or finishing. Compared to traditional compressed air cleaning methods, ionic air nozzles not only effectively eliminate electrostatic charges, but also completely blow away surface contaminants. Neutral surfaces treated with ion nozzles will no longer re-adsorb airborne contaminants from the manufacturing process, ensuring long-lasting cleanliness.

★ **Featured Functions**

- **Adjustable ion balance and frequency**
DP522 and DP531 Ion Control Power Only
- **Efficient electrostatic and dust removal**
Effectively remove surface contaminants and particles
- **Powerful purging power**
Capable of producing a strong and concentrated stream of ionic air
- **Ergonomic design**
The grip part conforms to the curve of the palm and can be operated comfortably for long periods of time
- **High safety, gas and electricity control**
Only DP531 ion control power
- **Durability**
High-quality materials and manufacturing processes are used
- **Longer service life**
AC pulse technology can reduce nozzle electrode losses

📄 **Specifications**

Model	DG53B	DG53T
Discharge	≤1.0S (Distance 50mm)	
Balance	≤ ±30V [(AVE) * pulse static control power	
Airflow	0.1~0.7Mpa	
Piping entry	BOTTOM	TOP
Connecting	10mm	
Emitters	Tungsten	
Cables	2.5m	
Environment	+5°C to +45°C, humidity: 35 to 70%RH	
Warranty	One-year	

Suitable Static Control Power Include:

DP712 TP5301 TP5502 TP5501CA

★ **Featured Functions**

- **Adjustable ion balance and frequency**
DP522 and DP531 Ion Control Power Only
- **Small size and easy to install**
It is suitable for use in industrial environments and clean room environments
- **Efficient electrostatic and dust removal**
Effectively remove surface contaminants and particles
- **Good durability and reliability**
High-quality materials and manufacturing processes are used
- **High safety, gas and electricity control**
Only DP531 ion control power
- **Easy to maintain**
Ion needles are easy to clean and replace, reducing maintenance downtime
- **Longer service life**
AC pulse technology can reduce nozzle electrode losses

📄 **Specifications**

Model	DN53B	DN53T
Discharge	≤1.0S (distance 50mm)	
Balance	≤ ±30V [(AVE) * pulse static control power	
Airflow	0.1~0.7Mpa	
Piping entry	TOP	BOTTOM
Connecting	8mm	
Emitters	W - Tungsten	
Cables	2.5m	
Environment	+5°C to +45°C, humidity: 35 to 70%RH	
Warranty	One-year	

Suitable Static Control Power Include:

DP712 TP5301 TP5502 TP5501CA

DN251 DN252

Ultra-HF Ionizing nozzle



TECHNOLOGY

High-freq AC

BALANCE

±10V

DECAY

≤0.6S

The ultra-small design aims at the workpiece in tight locations to remove dust and contaminants while eliminating static electricity. There are a wide variety of nozzles, so you can choose according to your application. By using a high-frequency AC method, an extremely stable ion balance is achieved. Since the ion balance is not affected by the supply air pressure and the installation distance, there is no need to perform cumbersome adjustments after installation.

★ Featured Functions

- **High-frequency AC ionization technology**
Extremely stable ionic balance
- **Ultra-compact design**
It can be easily assembled into the inside of the device
- **There is a wide variety of nozzles**
Different types can be selected according to the application
- **Easy to maintain**
The ion needles can be easily removed and cleaned
- **Signal input/output function**
Automate connectivity with IO communication
- **Reassuring safety design**
24V DC power supply, no need for high-voltage cables
- **Operating status indicator**
Real-time display of operating status and ion anomalies

🔍 Feature comparison table

Model	DN251	DN252
Voltage	24VDC±5%	
Current	0.3A or less	
Discharge	0.6 sec @ 15cm (supply air pressure 0.6 Mpa)	
Balance	≤ ±10V (AVE)	
Air pressure	0.15~0.7MPa	
Air temperature	0 to +50°C	
Connecting	Outer diameter ø6, inner diameter ø4	
Ozone	≤0.03ppm @ 30cm	
I/O interface	—	Yes
Environment	0~+55°C (note no condensation), 35~65%RH	
Dimensions	33×110×20.8mm / Approx. 120g	
Warranty	One-year	

🔍 There is a wide range of nozzles

Diffusion wind air nozzles
NO.TN-SN02



Plastic Round air nozzles
NO.TN-SN05



Plug connector air nozzles
NO.TN-SN03



Point Pattern Adjustable Air Nozzles
NO.TN-SN04



Flat Air Nozzles
NO.TN-SN06



90 Degree Air Nozzles
NO.TN-SN07



Stick type side blow nozzle
NO.TN-SN08

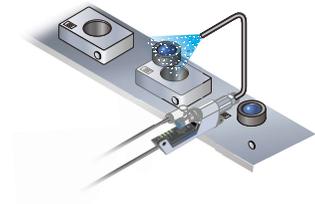


Rod side blow nozzle + bendable hose
NO.TN-SN09



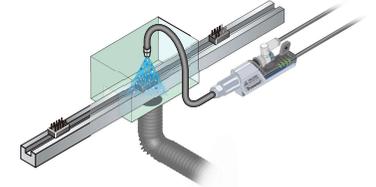
🔍 Dust removal when assembling the lens

It can release a large flow of ionized air, which can be used to remove dust and garbage attached to the lens locally, and to improve optical defects.



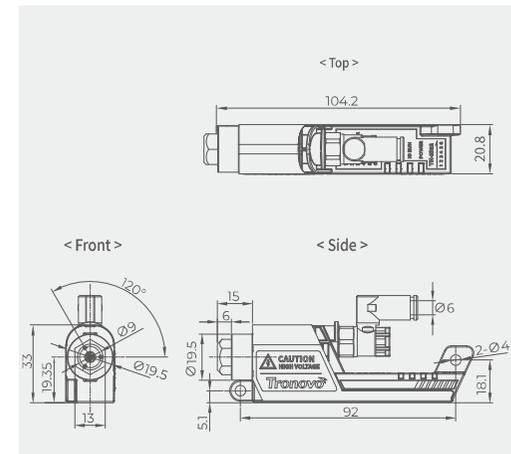
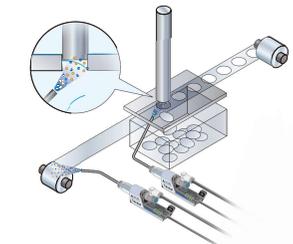
🔍 Electrostatic precipitation of connectors

For the assembly process of parts with contacts, such as connectors and switches, it is best to remove dust by ionizing air. Strong ionizing air can be used to peel off foreign matter and prevent re-adhesion.



🔍 Prevents adhesion to perforated molds

It is possible to eliminate local static electricity in the gap between the processing machine and the film, and to prevent process defects such as film clogging and adhesion by blowing ionized air.



DN253

GAS-ELECTRIC CONTROL HF Ionizing nozzle



TECHNOLOGY

High-freq AC

BALANCE

±10V

DECAY

≤ 0.6S

In Charge neutralization is important for removing particles from the surface, which can be difficult to remove once they are adsorbed on the charged surface of the material. Inductive ionizing nozzles based on high-frequency AC technology, miniaturized design, suitable for automated processes and cleaning applications with general space constraints. This model is equipped with a proximity sensor, and when the object is close to the sensing surface to the operating distance, the strong ionized air force can effectively remove the object attracted by the particles.

★ Featured Functions

- **Ultra-small design**
Static elimination in tight locations
- **Adopt SMC solenoid valve**
Reliable action and stable performance
- **24V DC power, no controller required**
Convenient installation on production site
- **Abnormal detection of discharge needle**
Tips for abnormal maintenance of dirty needle
- **Excellent ion balance**
In line with the electronic industry control requirements
- **Safe design and simple maintenance**
With "check function" and "abnormal discharge monitoring function"
- **Optional variety of air nozzle accessories**
Demand for electrostatic dust removal in different scenarios

📏 Specifications

Model	DN253
Voltage	24VDC±5%
Current	0.5A or less
Discharge	0.6 sec@15cm
Balance	≤ ±10V (AVE)
Air pressure	0.15~0.7MPa
Air temperature	0 to +50°C
Connect	6mm
Ozone	≤0.03ppm@30cm
Sensing distance	100±10mm
Environment	0~+55°C, 35~65%RH
Dimensions	125×35.5×55.7mm / Approx. 240g
Warranty	One-year

Conventional (Power Frequency AC)

high pressure (+3KV)
0V
high pressure (-3KV) → Time

The number of occurrences of positive and negative ions
50Hz → 50 times/sec
0.02 seconds/time

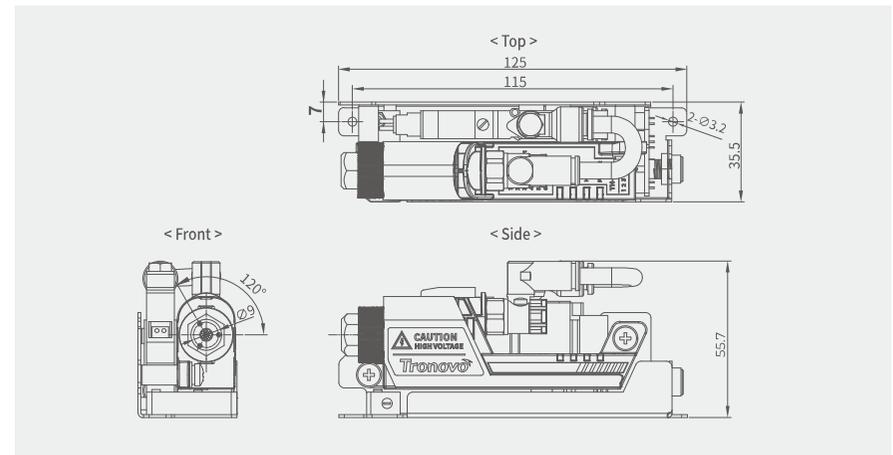
Ions cannot be transported through pipes
In the case of ions in the hose, the amount of ions is small and the volume is neutralized

High-frequency AC method

high pressure (+2KV)
0V
high pressure (-2KV) → Time

The number of occurrences of positive and negative ions
70KHz → 70,000 times/s
0.000015 seconds/time

Ions can be transported through pipes
In the case of ions in the hose, the amount of ions is too large to be neutralized



**DN243
DN243M**

**HF Ionizing
Wind Snake**

TECHNOLOGY	BALANCE	DECAY
High-freq AC	±10V	≤1.0S

In the electronics industry, static control is crucial. The high-frequency ionic wind snake is a powerful assistant that meets the electrostatic control standards, equipped with a photoelectric sensor, which inducts and blows ionic wind, frees your hands, easily controls the airflow, and makes the operation more convenient. The products are manufactured with high-quality materials, undergo strict quality control and testing, and have a long service life and low failure rate.

★ Featured Functions

- Efficient electrostatic dust remov**
Ensure that there is no charge residue on the surface of the product and improve the yield
- Easy to operate - photoelectric sensor**
Induction is the blowing of ionic air, making the operation more convenient
- Flexibility**
Serpentine tube design, easy to adapt to various angles
- Design safety**
Prevent the risk of ablation in the field due to anomalies
- Excellent ion balance**
electronic industry control requirements
- Durable**
Manufactured with high-quality materials
- Ozone Reduction Design**
Compressed air and ion co-control
- Optional foot switch**
Free hands, easy control airflow

🔍 Specifications

Model	DN543	DN543M
Voltage	110V-240V, 50/60Hz	
Discharge	≤1.0S (Distance: 100mm)	
Balance	≤ ±10V (AVE)	
Sensing distance	100+500mm Adjustable	
Technology	High-frequency AC, approx. ±2KV, 70KHz	
Air pressure	0.15~0.7Mpa	
Connecting	8mm	
Barometer	Not	—
Ozone	≤0.04ppm	
Emitters	Tungsten	
Run status	High-voltage alarm, power alarm, maintenance alarm, work indicator	
Environment	+5°C to +45°C, humidity: 35 to 70%RH	
Warranty	One-year	
Option	Foot switch (DN-FP01), air filter (DN-AF01)	

**DN543
DN543D**

**Ionizing
Wind Snake**

TECHNOLOGY	BALANCE	DECAY
Pulse AC	±50V	≤1.5S

The ionic air snake with power frequency technology provides efficient static elimination and dust removal, and also has a good price/performance ratio. Due to its simple structure, it can maintain stable performance no matter what kind of production environment. It is widely used in various fields such as printing, packaging, plastics, spraying, etc., which affect production efficiency and product quality, and ionic wind snakes can effectively solve these problems.

★ Featured Functions

- Efficient and stable**
Capable of stable ion output
- Easy to operate - photoelectric sensor**
Induction is the blowing of ionic air, making the operation more convenient
- Flexibility**
Serpentine tube design, easy to adapt to various angles
- Design safety**
Prevent the risk of ablation in the field due to anomalies
- Simple maintenance**
The structure is simple and easy to maintain
- Affordable**
It has a good cost performance
- Option foot switch**
Hands-free, easy airflow
- Option air filter**
Filters compressed air from impurities

🔍 Specifications

Model	DN543	DN543D
Voltage	220V±5%	
Discharge	≤1.5S (Distance: 100mm)	
Balance	≤ ±50V (AVE)	
Sensing distance	100+500mm Adjustable	
Technology	AC	
Air pressure	0.15~0.7Mpa	
Connecting	8mm	
Number snake	1	2
Ozone	≤0.04ppm	
Emitters	Tungsten	
Ion indication	Work indicator	
Environment	+5°C to +45°C, humidity: 35 to 70%RH	
Warranty	One-year limited warranty	
Option	Foot switch (DN-FP01), air filter (DN-AF01)	



DN721

Ionizing Wind Snake

TECHNOLOGY	BALANCE	DECAY
Pulse AC	± 50V	≤ 1.5S

The ionic air snake with power frequency technology provides efficient static elimination and dust removal, and also has a good price/performance ratio. Due to its simple structure, it can maintain stable performance no matter what kind of production environment. It is widely used in various fields such as printing, packaging, plastics, spraying, etc., which affect production efficiency and product quality, and ionic wind snakes can effectively solve these problems.

★ Featured Functions

- **Efficient and stable**
Capable of stable ion output
- **Flexibility**
Serpentine tube design, easy to adapt to various angles
- **Adaptable**
Maintain efficient static elimination under different conditions
- **Simple maintenance**
The structure is simple and easy to maintain
- **Affordable**
It has a good cost performance

📄 Product Specifications

Model	DN721
Power	10W
Discharge	≤ 1.5S
Balance	≤ ±30V (AVE) * pulse static control power
Technology	AC / Pulse AC
Air pressure	0.15~0.7Mpa
Connecting	8mm
Number of snake	1 / 2 (purchase on demand)
Ozone	≤ 0.04ppm or less
Discharge needle	Tungsten
Ion indication	Work indicator
Environment	+5°C to +45°C, humidity: 35 to 70%RH
ION power	DP712, TP5301, TP5502, TP5501CA
Warranty	One-year



DC71 DC71B

Intelligent induction blowing device

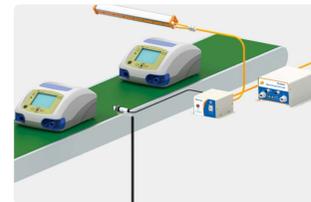
In industrial production, the operator needs to complete the blowing by pressing the action, and can not free his hands, and the use of ionizing air rods, the air pressure of the normal spray brings a waste of energy. The intelligent induction blowing device can effectively solve this problem, when the sensor senses the object, the ion rod starts to blow, the object stops blowing after leaving the sensor, and when the object stays under the sensor, the blowing time can be controlled by the time relay.

★ Featured Functions

- Infrared induction of gas
- The sensing distance is adjustable
- The jet time is adjustable
- DC 24V power supply
- The sensor can be fixed in a variety of ways

🔄 Intermittent anti-static electricity

Combined with ionic rod or ionic nozzle, compression can be saved Gas consumption to achieve the purpose of saving gas and energy



📄 Product Specifications

Model	DC71	DC71B
Voltage	DC 24V	
Sensing distance	10~30cm	
Time adjustable	5~30 seconds (customizable)	
Input air	8mm	
Output air	8mm	
Air pressure	0.1~0.8Mpa	
Indication	The red light is on and it works normally	
Sensor holder	Not	Yes
Material	Iron dusting	
Weight	250g	
Environment	Temp: 0 to 50°C Humidity: 35 to 80%RH	
Dimensions	135 X 113 X 81.5mm	
Warranty	One-year	

DN561

Bottle Washing Ion Gun



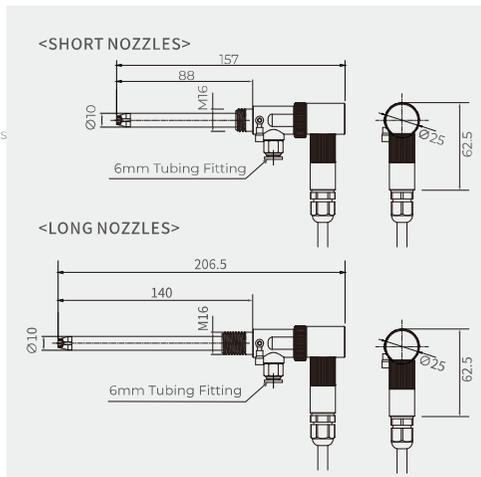
TECHNOLOGY
Pulse AC

DECAY
≤1.0S

In the production of plastic bottles, bottle washing is an indispensable and critical step. With the continuous innovation of science and technology, ionized air washing technology has gradually emerged and become the mainstream bottle washing method by virtue of its many advantages such as energy saving and environmental protection, excellent cleaning effect, convenient maintenance and low use cost. The all-in-one air washing head of the high-pressure ionized air washing bottle gun is made of GMP standards, easy to clean, non-toxic, and has no shedding to ensure the safety of drug contact.

★ Featured Functions

- **Adjustable ion balance and frequency**
Pulse AC Controller (only supported by high-end configurations)
- **The material is in line with GMP standards**
Suitable for use in industrial/cleanroom environments
- **Efficient static removal**
It can be used for high-speed production
- **Compact installation and maintenance**
Easy to clean and reduces dimension time
- **Longer service life**
AC pulse technology reduces nozzle electrode losses
- **Safe to use**
24V DC power supply
- **Support IO control**
It has the functions of remote control and abnormal alarm



DN522

Circular Static Electrode



TECHNOLOGY
AC

DECAY
≤1.0S

Circular static eliminators are ideal for filling machinery and equipment such as plastic blow molding machines, pipe extrusion, vertical molding filler packaging machines, etc. Its 360-degree ionization design effectively eliminates static electricity on the surface of the filler material and ensures product quality. By precisely controlling the electrostatic charge, the system effectively avoids the retention of filler material in the sealed area of the bag, and at the same time eliminates unsightly "electrostatic adhesion", making your product more beautiful and tidy. The inner diameters range from 35 mm to 300 mm to meet different specifications.

★ Featured Functions

- **360-degree ionization**
Helps eliminate static electricity across the entire surface
- **Resistive coupling technology**
There is no electric shock, ensuring the safety of the operator
- **Powerful ion generation capabilities**
Quickly eliminates static electricity and remains effective even at high speeds
- **Reliable connection - patent protected**
The ion needle can be removed and cleaned
- **Signal input / output function**
Leverage IO communication to achieve connectivity
- **Safe to use**
No high-voltage cables are required
- **Easy to use and install**
Real-time display of status and exceptions

📏 Dimensions

No.	Inner mm	Outer mm
①	35	110
②	50	125
③	65	140
④	80	155
⑤	100	175
⑥	120	195
⑦	140	215
⑧	160	235
⑨	180	255
⑩	200	275
⑪	220	295
⑫	240	315
⑬	260	335
⑭	280	355
⑮	300	375

🏭 Packaging machine application

Extruded products will cause product shaking due to static electricity, and vertical packaging will cause material clamping problems due to static electricity.





DN532
**Rotate
Cleaning
Ring Ionizer**

TECHNOLOGY	BALANCE	DECAY
Pulse AC	±15V	≤1.5S

It consists of a rotating six-head nozzle and a unique circular static eliminator. The compressed air drives the nozzle to rotate at a high speed of up to 60 revolutions per second, and the resulting pulsed ionized air flow sweeps across the product surface up to 240 times per second, blowing dust and impurities off the product surface from different angles, especially for irregular products with complex surface shapes or grooves.

★ Featured Functions

- **Innovative cyclone cleaning system**
Contactless 360-degree surface for powerful dust removal
- **Proprietary performance**
The air pulsates by purging by rotating the cleaning nozzle
- **Deep cleaning**
Effectively cleans surfaces with complex shapes and gaps
- **Static neutralization**
Circular ionizers are used to remove electrostatic charges
- **Greater coverage**
It can be used in combination to clean large objects with a large appearance
- **Diverse installation methods**
It can be easily integrated with transmission lines, robot arms, and dust collection systems

🔍 Product Specifications

Model	DN532-112mm
Power	10W
Coupling	Resistive
Discharge	≤1.5S (distance 100mm)
Balance	≤ ±30V (AVE) * pulse static control power
Range	100mm→600mm
Disc size	112mm / customizable
Air pressure	0.1~0.6Mpa
Connect	8mm
Emitters	Tungsten
Cables	2.5m
Environment	+5°C to +45°C, humidity: 35 to 70%RH
Power	DP712, TP5301, TP5502, TP5501CA
Warranty	One-year



DN551
**Ionizing
Air
Knives**

The ionic air jet consists of an ion rod and an air jet. The ion rod produces a large number of ions under high pressure, and a large number of ions are brought to the surface of the object to be eliminated through the thin sheet air curtain blown by the air knife, and the static electricity on the surface of the product is neutralized, and the air curtain can also blow off impurities such as dust on the surface. It has the characteristics of strong wind pressure, low noise, fast electrostatic neutralization speed, long effective action distance and wide range of action, which can significantly improve production efficiency and product quality.

★ Featured Functions

- **Pulsed AC ionization technique**
More ion, faster static velocity
- **Eliminate static electricity and blow away dust**
It is especially suitable for dust removal on the surface of workpieces with static electricity
- **Curtain-shaped airflow**
No blind spots, effective cleaning of complex-shaped surfaces
- **Extremely low maintenance**
Reliable operation and adaptability to harsh industrial environments
- **Greater coverage**
It can be used in combination to clean large objects with a large appearance
- **Diverse installation methods**
It can be easily integrated with transmission lines, robot arms, and dust collection systems

🔍 Product Specifications

Model	Effective	Air/min	Input	Noises
DN551-150mm	150mm	0.45m ³	2×8mm	52dB A
DN551-200mm	200mm	0.62m ³	2×8mm	55dB A
DN551-300mm	300mm	0.94m ³	2×8mm	59dB A
DN551-400mm	400mm	1.25m ³	3×8mm	63dB A
DN551-500mm	500mm	1.57m ³	3×8mm	65dB A
DN551-600mm	600mm	1.88m ³	4×8mm	69dB A
DN551-700mm	700mm	2.20m ³	4×8mm	70dB A
DN551-800mm	800mm	2.51m ³	5×8mm	74dB A
DN551-900mm	900mm	2.83m ³	5×8mm	76dB A
DN551-950mm	950mm	2.99m ³	5×8mm	78dB A

Static Control Power Include:

DP712	TP5301	TP5502	TP5501CA
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ED431 ION DUSTER BOX



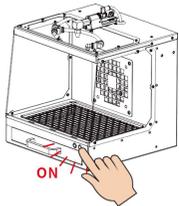
ED456M ION DUSTER WORKSTATION



1 device, 3 functions! ION DUSTER BOX

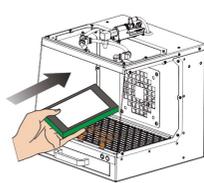
1 TURN ON THE POWER

Set the working mode of the dust box



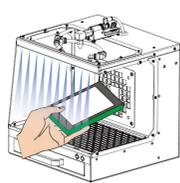
2 PRODUCT PLACEMENT

Photoelectric sensors detect the presence of workpieces



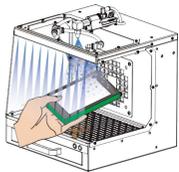
3 WINDSCREEN ACTIVATION

The air curtain can block and isolate the dust inside



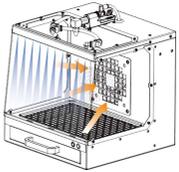
4 IONIZED WIND

Start to remove static electricity, and assist air blowing to start dust removal



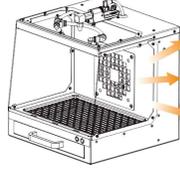
5 DUST RECOVERY

Stop removing static electricity and dust



6 DUST REMOVAL

The dust collector stops working



Product Specifications

Model	ED431	ED442	ED456M	ED452MB
Size	310X305X300mm	400X400X400mm	710X505X1560mm	
Ionizing	1 Nozzle	2 Nozzle	6 Nozzles	2 Ion air bar
Discharge	±10V / ≤0.5S	±10V / ≤0.5S	±10V / ≤0.5S	±130V / ≤1.0S
Technology	High-frequency AC		High-frequency AC	AC
Squirting method	Upper air outlet		Upper air outlet	Air out up and down
Lighting mode	Dust on the workpiece is also clearly visible		Matching	
Assists insufflation	Improve dust collection efficiency		Yes	
Wind curtain	It can effectively isolate dust		Matching	
Working mode	Time setting: Continuous, timer [2, 5, 10s, 15s]		Time setting: continuous, timer [0~30s]	
Dust is discharged	Ø76 flange to dust bag or vacuum cleaner			
Body Material	Stainless steel		Stainless steel/aluminum	
I/O interface	PLC, input and output signals		—	
Product power	Single AC 100~240V (50Hz/60Hz) 50W		Single AC 220~240V (50Hz/60Hz) 1000W	
Warranty	One-year			

The electrostatic precipitator consists of a rack, a clean air valve or ionizing air bar, a dust hood, an ionizer, a sensor, or a foot switch. Whether in the purification workshop or in the ordinary factory area, manual cleaning of product workpieces can be realized, and the efficiency is much higher than that of ordinary manual cleaning. The working width and suction direction will be customized according to the customer's requirements, and the number of air valves depends on the size and shape of the workpiece to be cleaned.

DC72

FFU static elimination net



It is widely used in semiconductor, precision electronics, electronic assembly, pharmaceutical manufacturing and assembly industries, mainly used to eliminate excess electrostatic charge in space, maintain space electrostatic balance, reduce the adhesion of particles in space, and reduce particle pollution, so that particles can be filtered out by air conditioning purification system. Its working principle is to ionize the air into a large number of positive and negative ions, and then send the positive and negative ions to the surface of the object through the air flow to neutralize static electricity, so as to achieve the purpose of eliminating static electricity and preventing static electricity.

★ Featured Functions

- Pin header design form
- Eliminates static electricity quickly
- The ionic airflow covers a large area
- Uninterrupted airflow
- It is suitable for the lower air outlet of the equipment with static discharge
- Equipped with a high-voltage safety power supply
- Compact, robust and easy to install

🌿 Fields of application

- Go to the electrostatic air shower door
- Decontamination workbench
- Anti-static wardrobes
- Precision Optics Workshop
- Anti-static storage cabinet
- Clean sheds/chambers
- Semiconductor production lines
- LCM panel assembly

📄 Product Specifications

Model	DC72
Input voltage	220V/50Hz or 110V/60Hz (customized)
Output voltage	AC4.0KV~5.6KV
Power	30W
Temperature	-10°C~+50°C
Cable	2m
Dimensions	Customized
Ozone	0.088PPM
Balance	≤±100V
Distance	100mm~3000mm
Warranty	One-year

MM641R MM644R

Equipment ground monitor



To avoid the equipment is not grounded or grounding effect is not good, resulting in damage to the instrument, malfunction, resulting in EOS, ESD damage to the product, or even personnel contact with the machine shell and cause the risk of electric shock, we are your static grounding gatekeepers, and at the same time to monitor a number of instruments of the equipment grounding status, to ensure that the production line of static grounding and grounding of the equipment are all foolproof!

★ Featured Functions

- **Independent 4-way resistance monitoring**
Independent 4-way resistance monitoring
- **Conforms to international and industry standards for static electricity**
Meets ANSI/ESD S20.20 specification requirements
- **High Definition TFT Display**
Instantly displays the current ground resistance value.
- **Programmable upper and lower alarm thresholds**
Alarm parameters can be freely set.
- **RS485 Communication method**
Enabling remote monitoring and data processing
- **Alarm output signal**
External red and green alarm lights can be connected.
- **Grounding anomaly record**
Automatically stores and leaves a record of any abnormal grounding conditions.
- **Line resistance deviation correction**
More accurate measurements regardless of the distance from the device

📄 Product Specification

Model	MM641R	MM644R
Voltage	24VDC±5%	
Monitor channel	1	4
Monitor Resistance	0-900Ω ±1Ω	
Resolution	0.1Ω	
HI alarm limit set	1-900Ω adjustable, factory default 10Ω	
Low alarm limit set	0-899Ω adjustable, factory default 0Ω	
Grounding anomaly record	Have	
Alarm output signal	Have	
Line Resistance Correction	Have	
Administrator mode	Have	
Communication interface	RS485	
Environments	+5°C to +45°C, Humidity: 20 to 85% RH	
Volume/Weight	80x80x150mm / Body approx. 650g	
Warranty	One year	

MM311 MM312

Wrist Strap On-line Monitor



Continuous monitoring of the wristband improves product quality and productivity, while eliminating the need for routine testing and recording of results. According to ANSI/ESD-S1.1 Clause 6.1.3 Functional Testing: "The system resistance of the wristband should be checked daily to ensure proper values. Daily testing can be omitted if used for continuous monitoring."

In ESD TR20.20 clause 5.3.2.4.4, a typical test procedure is recommended: "The wrist strap should be checked daily for routine use. However, how to ensure the continuity of product quality in production, then reliable grounding, as well as continuous monitoring of the wrist strap should be considered is required."

★ Featured Functions

- **Real-time monitoring and alarming**
Designed for continuous monitoring of single-loop wrist straps
- **Sensitivity is adjustable**
Support different human impedance matching adjustments
- **The bracelet jack is linked to the power switch**
Make sure the power switch is turned on when the ESD bracelet is plugged in
- **SUS304 stainless steel housing**
Meets the high hygienic standards of the clean room
- **Remote alarm function**
The operating status signal output, which can be connected to the alarm light or networking
- **There is no noise in the operation**
SMT chip placement process, good reliability and strong anti-interference ability

🔍 Specifications

Model	MM311	MM312
Station	1	2
Use	Single-loop / single-wire wrist strap	
Monitor value	0.75M Ω ~10M Ω (Sensitivity adjustable)	
Accuracy	<0.1s	
Self-locking	Yes	
Power adapter	100~240VAC input voltage, output 12VDC/1A	
Material	SUS304	
Dimensions	104×58×27mm	138×66×31mm
Weight	170 g	260 g
Environment	0~+55°C (note no condensation), 35~65%RH	
Warranty	One-year	

MM321 MM322

Dual-wrist Strap On-line Monitor



Compared with the traditional single-loop bracelet, the dual-loop anti-static bracelet has the advantages of double protection, enhanced safety, improved reliability and special work requirements in terms of electrostatic protection. The dual-loop online monitoring alarm can alarm according to the preset upper and lower limit thresholds. Once the resistance value on the wristband exceeds the preset value, the online monitor will send out an audible alarm and flash warning signal to remind the user to check and deal with the electrostatic problem and ensure the safety of the work.

Some working environments have stricter requirements for static electricity protection, especially when it comes to the operation or operation of sensitive electronic devices, the dual-loop bracelet is used with an online monitor, which can provide higher electrostatic protection performance to meet the needs of these special working environments.

★ Featured Functions

- **Real-time monitoring and alarming**
Designed for continuous monitoring of dual-loop wrist straps
- **The upper and lower limits of the monitoring threshold can be adjusted**
Compatible with different national and industry standards
- **SUS304 stainless steel housing**
Meets the high hygienic standards of the clean room
- **Remote alarm function**
The operating status signal output, which can be connected to the alarm light or networking
- **There is no noise in the operation**
SMT chip placement process, good reliability and strong anti-interference ability
- **Relay output function (customized)**
Use the output signal to control the start and stop of high-voltage equipment

🔍 Specifications

Model	MM321	MM322
Station	1	2
Use	Dual-loop / dual-wire wrist strap	
Monitor value	0.75MΩ~10MΩ / 35MΩ (adjustable)	
Accuracy	±10%	
Discharge time	<0.1s	
Power adapter	100~240VAC input voltage, output 12VDC/1A	
Material	SUS304	
Dimensions	104×58×27mm	138×66×31mm
Weight	Approximately 160 g	Approximately 240 g
Environment	0~+55°C (note no condensation), 35~65%RH	
Warranty	One-year	

Table 1: Grounding/Equipotential Bonding Requirements

Technical Requirement	Implementing Process ⁽⁴⁾	Test Method:	Required Limit(s)
Grounding/Bonding System	Equipment grounding Conductor	ANSI/ESD S6.1	<1.0 ohm impedance
	Auxiliary Ground	ANSI/ESD S6.1	< 25 ohms to the ⁽⁶⁾ Equipment Grounding Conductor
	Equipotential Bonding	ANSI/ESD S6.1	<1.0x10 ⁹ ohms ⁽⁶⁾

Table 2: Personnel Grounding Requirement

Technical Requirement	Product Qualification		Compliance Verification	
	Test Method(s)	Required Limit(s)	Test Method(s)	Required Limit(s)
Wrist Strap System	ANSI/ESD S1.1 (Section 6.11)	< 3.5 x 10 ⁷ ohms	ESD TR53 Wrist strap Section	< 3.5x10 ⁷ ohms
Footwear/Flooring System - (Both limits shall be met) ⁽⁶⁾	ANSI/ESD STM97.1	<1.0 x 10 ⁹ ohms	ESD TR53 Footwear Section	<1.0x10 ⁹ ohms ⁽⁷⁾
	ANSI/ESD STM97.2	< 100V volts Peak	ESD TR53 Flooring Section	<1.0x10 ⁹ ohms ⁽⁷⁾

Table 3: EPA ESD Control Items

Technical Requirement	ESD Control Item	Product Qualification		Compliance Verification	
		Test Method	Required Limit(s) ⁽⁹⁾	Test Method	Required Limit(s)
EPA	Worksurface ⁽⁹⁾	ANSI/ESD STM4.1	Point-to-point <1.0 x 10 ⁷ ohms	ESD TR53 Work Surface Section	Point to Ground <1.0 x 10 ⁹ ohms
			Point to Groundable Point <1.0 x 10 ⁹ ohms		
	Wrist Strap	ANSI/ESD S1.1	0.8 x 10 ⁶ to 1.2 x 10 ⁶ ohms	For compliance verification of a Wrist Strap System, see Table 2.	
	Wristband	ANSI/ESD S1.1	Interior <1.0 x10 ⁵ ohms		
			Exterior, >1.0 x10 ⁹ ohms		
	Personnel Ground Wrist Strap Connection (non-monitored)	ANSI/ESD S6.1	Point to Ground < 2 ohms	ESD TR53 Grounding Equipotentia Bonding Systems Section	Point to Ground ⁽¹⁰⁾ < 2 ohms
	Continuous Monitors	User-defined	User-defined	ESD TR53 Continuous Monitors Section	Manufacturer defined
	Footwear	ANSI/ESD STM9.1	Point to Groundable Point <1.0 x 10 ⁹ ohms	For compliance verification of the Footwear/Flooring System, see Table 2.	
	Foot Grounders	ANSI/ESD SP9.2	Point to Groundable Point <1.0 x 10 ⁹ ohms		
	Flooring	ANSI/ESD STM7.1	Point to Point <1.0 x 10 ⁹ ohms		
Point to Groundable Point <1.0 x 10 ⁹ ohms					

Table 3: continued next page

Technical Requirement	ESD Control Item	Product Qualification		Compliance Verification	
		Test Method	Required Limit(s) ⁽⁹⁾	Test Method	Required Limit(s)
EPA	Seating	ANSI/ESD STM12.1	Point to Groundable Point <1.0 x 10 ⁹ ohms	ESD TR53 Seating Section	Point to Ground <1.0 x 10 ⁹ ohms
	Ionization	ANSI/ESD STM3.1	Decay time User-defined	ESD TR53 ¹¹ Ionization Section	Decay time User-defined
			Offset Voltage(Peak) -35 volts<Voffset< 35 volts		
	Shelving ⁹ (When used to store unprotected ESDS items)	ANSI/ESD STM4.1	Point to Point <1.0 x 10 ⁹ ohms	ESD TR53 Worksurface Section	Point to Ground <1.0 x 10 ⁹ ohms
			Point to Groundable Point <1.0 x 10 ⁷ ohms		
	Mobile Equipment ⁹ (Working Surfaces)	ANSI/ESD STM4.1	Point to Point <1.0 x 10 ⁹ ohms	ESD TR53 Worksurface Section	Point to Ground <1.0 x 10 ⁹ ohms
			Point to Groundable Point <1.0 x 10 ⁷ ohms		
	Electrical Soldering Desoldering Hand Tools	ANSI/ESD S3.1	Tip to Ground or Groundable Point <2.0 ohms	ESD TR53 Electrical Soldering Desoldering Hand Tools Section	Tip to ground or groundable point <10 ohms
			Tip voltage <20mV		
			Tip leakage <10mA		
Static Control Garment	ANSI/ESD STM2.1	Point to Point <1.0 x 10 ¹¹ ohms	ESD TR53 Static Control Garment Section	Point to point <1 x 10 ¹¹ ohms	
Groundable Static Control Garment	ANSI/ESD STM2.1	Point to Point and Point to Groundable Point <1.0 x 10 ohms ⁹	ESD TR53 Grounded Static Control Garment Section	Point to Groundable Point <1 x 10 ⁹ ohms	
Groundable Static Control Garment System	ANSI/ESD STM2.1	Point to Point and Point to Groundable Point <1.0 x 10 ohms ⁹	ESD TR53 Grounded Static Control Garment System Section	Point to Groundable Point <1.0 x 10 ⁹ ohms	

Table 4: Packaging Requirements

Material properties	Product Qualification		Compliance Verification	
	Test Method	Required Limit(s) ⁹	Test Method	Required Limit(s)
Conductive packaging	ANSI/ESD STM11.11 ANSI/ESD STM11.12 ANSI/ESD STM11.13	<1.0 x 10 ⁴ ohms	ESD TR53 Packaging Section	<1.0 x 10 ⁴ ohms
Dissipative packaging	ANSI/ESD STM11.11 ANSI/ESD STM11.12 ANSI/ESD STM11.13	≥ 1.0 x 10 ⁴ ohms <1.0 x 10 ¹¹ ohms	ESD TR53 Packaging Section	≥ 1.0 x 10 ⁴ ohms <1.0 x 10 ¹¹ ohms
Discharge shielding (bag only)	ANSI/ESD STM11.31	< 20 nJ	ESD TR53 Packaging Section	≥ 1.0 x 10 ⁴ ohms <1.0 x 10 ¹¹ ohms

5. The maximum resistance value between any ESD-controlled item and a common contact.
6. Human body voltage generation tests should be performed regularly to verify that the voltage is less than 100V.
7. 1.0x10⁹ohms is the upper limit specified in this standard. The user should use the maximum resistance value of the shoe and the floor measured by the article introduction work, so that the combination can still meet the voltage requirement of <100V.
8. If the standard involves multiple resistance test steps, these metrics apply to each step.
9. Due to the wide range and diversity of work surfaces, special requirements are difficult to determine, and point-to-point and point-to-ground resistance values below 1.0x10⁹ohms should be considered if there is a risk of CDM models.
10. If there is resistance in the line, the limit must be adjusted to less than 5.0x10⁵ohms.
11. Additional information on periodic testing of ionizers can be found in ANSI/ESD SP3.3.