Proposal of suitable static control device for your application.
Solve your problems caused by static electricity.

Static electricity causes a variety of problems at production sites. Although invisible to the human eye, it is continuously generated and may impact production efficiency and even quality before you have a chance to realize it.

Are these problems occurring at your production site?

Adhesion of contamination and dust
Static electricity causes contamination and dust to adhere to workpieces. Need to be aware when manipulating delicate workpieces which requires a high degree of cleanness.

Adhesion of workpieces to each other and jamming or clogging
Workpieces with a static charge sometimes adhere to each other and clog machinery, preventing materials from moving normally on manufacturing lines and lowering production efficiency.

Damage to electronic components and circuits
As ICs use increasingly miniaturized and high-density designs, damage to components and circuits due to their lower withstanding voltages has become an issue. Even a small amount of static electricity can cause reduced yields.

These problems can be solved by eliminating static charges from workpieces and manufacturing processes.

Static control devices from Panasonic Industrial Devices SUNX are highly effective at eliminating static electricity at production sites.
Workpieces

Static electricity countermeasures sounds simple enough, but the potential problems and necessary measures vary depending on the type of workpiece. The following pages explain how to choose the best static remover that will increase charge removal performance for various types of workpieces.

Which type of workpiece is giving you trouble?

Electrical / electronic components
Connectors, capacitors, switches, etc.

P.06

Semiconductors
Bare chips, IC pallets, wafers, etc.

P.07

Circuit boards
Electronic circuit boards

P.08

Glass
LCD screens, etc.

P.09

Films
Medicine and food packaging materials, protective sheets, etc.

P.10

Resins
Plastic parts, etc.

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Types of problems

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<thead>
<tr>
<th></th>
<th>Electrical / electronic components</th>
<th>Semiconductors</th>
<th>Circuit boards</th>
<th>Glass</th>
<th>Films</th>
<th>Resins</th>
<th>Workbench</th>
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</thead>
<tbody>
<tr>
<td>Contamination / dust</td>
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<tr>
<td>Electrostatic damage</td>
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Note: For more information, please refer to individual product pages.
Charge removal strategies

Consider which of these two methods of charge removal performance to prioritize depending on the purpose for which you need to eliminate / remove static electricity and the conditions.

- **Prioritizing ion balance**
  - Ion balance refers to the balance of positive and negative ions that are supplied from discharge needle of the static remover. High-performance units will be able to keep the ion balance extremely close to 0 V and to maintain the balance close to 0 V for extended periods of time. The effects of poor ion balance include an inability to precisely eliminate static electricity and accumulation of the opposite charge.
  - **The high-frequency AC method is advantageous** when prioritizing ion balance.
  - In the high-frequency AC method, a high-frequency, high-voltage signal is applied to a single discharge needle.

- **Advantages**
  - Best ion balance
  - Ability to transport ions with a nozzle
  - Ability to use even at close distances

- **Disadvantages**
  - Slower removal speed
  - Need for air-based ion transport

- **Recommended workpieces**
  - Semiconductors, electric / electronic components, etc.

- **Recommended products**
  - ER-VS02, ER-VW, etc.

- **Prioritizing charge removal speed**
  - Charge removal speed refers to the time it takes to eliminate the charge on a positively or negatively charged workpiece. Generally, this time is expressed as the time in seconds that it takes to reduce a 1,000 V charge to 100 V, with faster times indicating a higher level of performance. Slower charge removal speeds may have effects such as incomplete charge removal, more man-hours, and longer takt times.
  - **The pulse AC method is advantageous** when prioritizing charge removal speed.
  - In the pulse AC method, a DC high-voltage signal is alternately applied to a single discharge needle.

- **Advantages**
  - Fast charge removal
  - Airless charge removal

- **Disadvantages**
  - Charge removal irregularities due to fluctuating voltage
  - Inferior ion balance compared to the high-frequency AC method

- **Recommended workpieces**
  - Resin parts, film material, etc.

- **Recommended products**
  - ER-X
It is necessary to choose a static remover capable of providing coverage for the target workpiece or area.

**Charge removal area**

**Small-area**
Efficient charge removal is possible by concentrating ions in a small area.
- ER-V502
- ER-Q
- EC-G02
- ER-X001

**Medium-area**
This is the standard charge removal area. Most static electricity removal devices operate within this area.
- ER-F
- ER-VW
- ER-X

**Wide-area**
This area is appropriate for use with wide workpieces such as films or FPD substrates or when eliminating static electricity from a space.
- ER-X
- ER-TF

**Air method**
Ions generated by the device can be transported by these three methods.

**Compressed air type**
Ions are transported by applying compressed air from an external source.

**Advantages**
- Allows charge removal over short to long distances.
- Since a large number of ions can be transported in a short period of time, charge removal times are shortened.
- Ions can be transported over greater distances.
- Charge removal capacity can be varied comparatively easily by changing the air pressure.
- This approach has a high level of cleanliness.

**Disadvantages**
- Requires equipment such as tubing and a compressor.
- Imposes running costs.

**Fan type**
Ions are transported by a small, built-in fan.

**Advantages**
- This approach is well suited to charge removal at medium distances.
- Installation is simple, allowing this type of system to be used immediately as a static electricity countermeasure.
- Does not require equipment such as tubing.

**Disadvantages**
- Nearby dust may be ingested into the fan.

**Airless type**
Ions are transported by Coulomb’s force without using air movement.

**Advantages**
- This approach is well suited to charge removal at close distances.
- Charges can be removed without the effects of air movement, for example scattering of minuscule parts and film flutter.
- Does not require equipment or impose associated costs.
- Operates quietly without any wind or motor noise.

**Disadvantages**
- It is difficult to use this approach to remove charges at a distance.
Removing dust from connectors and switches

Dust removal using ionized air is ideal for use in assembly processes of components with contacts, for example connectors and switches. The **ER-VS02** strips away foreign matter with a powerful stream of ionized air and prevents it from re-adhering.

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Preventing jamming in part feeders

By combining the **ER-F**, which can eliminate static electricity over a large area thanks to its wide-angle louvers, and the **ER-Q**, which incorporates a super-compact fan for local charge removal, you can reduce the incidence of jamming throughout feeder processes without needing to use compressed air.

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Preventing electrostatic damage to camera module elements

Reducing the charge to near zero with the high-frequency AC type **ER-VW** provides an ideal means of preventing damage to camera modules, which have a low withstand voltage.

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Removing dust while separating TAB protective film

An extremely large amount of static electricity is generated when separating film, attracting contamination and dust. It is recommended to use the **ER-X**, which delivers high-speed charge removal performance with either airless or low-airflow operation, to prevent adhesion of contamination, which can keep film from adhering properly to ICs.
A large amount of static electricity is generated when separating, cleaning, and drying wafer sheets. It is recommended to use the ER-VW or ER-X, which can accommodate wafers of up to 300 mm (11.811 in) in diameter, to eliminate static electricity before wafers are passed to the next process.

Removing static electricity during BG sheet separation

The ER-VW, which offers excellent ion balance and multiple units connection that can accommodate a variety of IC tray layouts, is ideal for stopping electrostatic damage of ICs before and after the final inspection process.

Preventing electrostatic damage during bonding

Bare chips that have been cut from wafer during the dicing process are among the devices that are most susceptible to electrostatic damage. During bonding, it is recommended to reduce the charge to ±10 V or less through charge removal of small area with the ER-VS02.

Eliminating static electricity during IC tray stacking

The ER-VW, which offers excellent ion balance and multiple units connection that can accommodate a variety of IC tray layouts, is ideal for stopping electrostatic damage of ICs before and after the final inspection process.
Circuit boards

**Eliminating static electricity after circuit board cleaning**
During cleaning, circuit boards pick up a large electrostatic charge due to friction as they are transported. To keep contamination from re-adhering to the boards, it is recommended to use the ER-X, which can eliminate large amounts of static electricity at high speeds.

**Eliminating static electricity when transporting circuit boards**
Electrostatic damage sustained while mounting components on circuit boards is rapidly becoming a serious problem due to the miniaturization of components and patterns. The ER-VW and ER-F, which can eliminate static electricity over the entire surface of a circuit board, can be used effectively to ensure quality before and after mounting of components on precision circuit boards.

**Eliminating static electricity during loading of circuit boards into in-circuit testers**
When test pins are brought into contact with a circuit board carrying an electrostatic charge, component or testing system can cause damage. Such problems can be prevented with the ER-VW or ER-VS02, which offer excellent ion balance.

**Managing circuit board charges**
Even if the workpiece and system are the same, the amount of charge carried by individual workpieces varies with slight environmental changes such as movements of nearby people, temperature, and humidity. By installing an inline EF-S1, a compact, low-cost electrostatic sensor, you can continuously monitor variations in charge so that you can implement simple, visible electrostatic countermeasures.
Glass

Contamination / dust

Dealing with foreign matter when applying films
Adhesion of contamination during touch panel or glass circuit board application processes can cause contact and appearance defects. Because the ER-X can perform airless or low-airflow charge removal without stirring up dust, it is ideal for preventing adhesion of contamination.

Electrostatic damage

Eliminating static electricity when transporting glass circuit boards
Separating glass circuit boards from the surface with which they are in contact when transporting them generates a large amount of static electricity, causing a variety of problems including workpiece damage and contamination adhesion. Optimal charge removal in such applications can be implemented by using the ER-X, which can drive two heads with a single controller, to eliminate static electricity from both sides of the glass.

Adhesion / clogging

Eliminating static electricity when lifting glass sheets
Lifting glass sheets off a metal stage generates a large amount of static electricity and may cause the glass to crack under certain conditions. The ER-X, a compact device that delivers high-speed charge removal performance, is ideal for use in addressing this issue.

Contamination / dust

Cleaning bottles
Contamination inside bottles that will be used to hold medicines or cosmetics can have a significant negative effect on the quality of the product. The ER-VS02 can be used to eliminate static electricity inside the bottle by means of nozzle transport and prevent re-adhesion of the contamination.
Films

**Contamination / dust**

**Preventing jamming of packaging material**

It is recommended to prevent adhesion of contamination and dust, which can cause process defects, with the ER-X, which provides airless, high-speed charge removal capability.

**Adhesion / clogging**

**Keeping knockout material from sticking to punches**

By adding ionized air from the ER-VS02, which can perform small area charge removal between processing machines and film, you can prevent process defects in the form of film jamming and sticking.

**Adhesion / clogging**

**Eliminating static electricity when separating protective tape**

A large amount of static electricity is generated when separating protective tape. The ER-X, which can perform high-speed charge removal, is ideal for use in preventing jamming of separated tape and inclusion of dust.

**Contamination / dust**

**Eliminating static electricity before and after screen printing**

Printing irregularities and contamination adhesion caused by static electricity can occur during a variety of printing-related processes, including the transport of printing film and application of ink. The incidence of printing defects can be reduced by using the ER-X, which can perform charge removal with two heads driven by a single controller, to reduce the amount of charge in each process.
Resins

Preventing adhesion of molded parts to molds
Highly charged molded parts can cause mold damage, incomplete ejection, and dust ingestion. High-speed charge removal for molded parts can be performed by fine-tuning frequency and the amount of positive and negative ions with the ER-X.

Removing dust during instrument panel assembly
If dust adheres to an automobile instrument panel, it may cause a quality defect. The ER-X, which can perform high-speed charge removal without stirring up dust, is ideal for use in preventing contamination and dust adhesion.

Removing dust during lens assembly
The ER-VS02, which can supply large volumes of ionized air, can reduce the incidence of optical defects by removing dust and contamination of small area that would otherwise adhere to the lens.

Removing dust during food product cup transport
Static electricity generated during the transport of food product cups can attract dust and hair, causing the container to be contaminated with foreign matter. The ER-X can perform charge and dust removal across a wide area for rows of numerous food product cups.
Note: Always ground antistatic sheets and mats and static removers.

Example electrostatic countermeasures

1. Conductive erector
2. Antistatic sheet
3. Antistatic mat
4. Conductive tray
5. Conductive work clothes
6. Conductive work boots
7. Wristband

Note: Always ground antistatic sheets and mats and static removers.
Contamination / dust

**Preventing charging of the entire work area**

The ER-TF provides coverage of the entire work area on a cell production bench and can be mounted on a shelf or pipe or used in a freestanding configuration.

**Contamination / dust**

**Preventing charging in the immediate work area**

The compact ER-F can be placed wherever there is space on a workbench to quickly remove static electricity in front of workers.

**Removing dust during film separation**

The EC-G02 quickly removes dust that has adhered to film due to static charges generated as it separates with pulse ionized air.

**Removing dust during electronic circuit board assembly**

Dust removal starts when you place the workpiece inside the EC-B. Dust is exhausted from the device so that it does not re-adhere to the workpiece.
Usable in various applications thanks to outstanding ion balance, powerful dust removal capability, and a variety of nozzles
Can be installed in confined locations. Reliably removes dust from vicinity of workpieces.

Produces excellent ion balance
The adoption of high-frequency AC method allows extremely stable ion balance to be achieved. Because the ion balance is not affected by the pressure of air supplied or by the setup distance, no troublesome adjustments are required after setup.

Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Designation</th>
<th>Spot type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model No.</td>
<td>ER-VS02</td>
<td></td>
</tr>
</tbody>
</table>

| Supply voltage / current consumption     | 24 V DC ±10 % / 70 mA or less |
| Charge removal time (±1,000 V → ±100 V)  | 1 sec. or less |
| Ion balance                              | ±10 V or less |
| Supplied air flow                        | 500 l/min. (ANR) or less |
| Air pressure range                       | 0.05 to 0.7 MPa |
| Discharge method                         | High-frequency AC method |
| Weight                                    | 120 g approx. |

Note: Please refer to product catalog and specifications for more details.
**ER-V series Nozzle variations**

### Dispersion type
Disperses air.

**ER-VAS**

### Bar nozzles

#### Straight type
Ensures a wide effective charge removal area with a straight bar nozzle.

**ER-VAB**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Effective charge removal length</th>
</tr>
</thead>
<tbody>
<tr>
<td>ER-VAB020</td>
<td>200 mm 7.874 in</td>
</tr>
<tr>
<td>ER-VAB032</td>
<td>320 mm 12.598 in</td>
</tr>
<tr>
<td>ER-VAB065</td>
<td>650 mm 25.591 in</td>
</tr>
</tbody>
</table>

**ER-VAB□□□N**
Made to order with an effective charge removal length from 100 to 640 mm 3.937 to 25.197 in, specified in 10 mm 0.394 in units. (For an effective charge removal length of 180 mm 7.087 in, refer to ER-VAB018N.)

#### Bar & flexible type
Included a conductive tube that can be bent or cut as desired and a joint nozzle.

**ER-VAB-AT**

**ER-VAB-ATL**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Tube length</th>
<th>Tube diameter</th>
<th>Minimum bending radius</th>
</tr>
</thead>
<tbody>
<tr>
<td>ER-VAB□□□</td>
<td>500 mm 19.685 in</td>
<td>ø8 mm ø0.315 in</td>
<td>R25 mm R0.984 in</td>
</tr>
</tbody>
</table>

### Tube nozzles

#### Shape-preserving type
Bends easily and maintains its shape, so there's no need to secure the tube in place.

**ER-VAJK**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Tube length</th>
<th>Tube diameter</th>
<th>Minimum bending radius</th>
</tr>
</thead>
<tbody>
<tr>
<td>ER-VAJK10</td>
<td>112 mm 4.409 in</td>
<td>ø10 mm ø0.394 in</td>
<td>R40 mm R1.575 in</td>
</tr>
<tr>
<td>ER-VAJK30</td>
<td>312 mm 12.283 in</td>
<td>ø10 mm ø0.394 in</td>
<td>R40 mm R1.575 in</td>
</tr>
<tr>
<td>ER-VAJK50</td>
<td>512 mm 20.157 in</td>
<td>ø10 mm ø0.394 in</td>
<td>R40 mm R1.575 in</td>
</tr>
</tbody>
</table>

#### Flexible type
This conductive tube can be bent as desired. Since it can be cut freely, it can accommodate a variety of applications.

**ER-AT50**

**ER-VAJT-64**

<table>
<thead>
<tr>
<th>Tube length</th>
<th>Tube diameter</th>
<th>Minimum bending radius</th>
</tr>
</thead>
<tbody>
<tr>
<td>500 mm 19.685 in</td>
<td>ø6 mm ø0.236 in</td>
<td>R15 mm R0.591 in</td>
</tr>
</tbody>
</table>
Featuring two powerful nozzles in a thin-profile form

You’ll find the ER-VW hard at work in a variety of environments thanks to the ease with which it accommodates different layouts.

Compact and thin design

The thickness of the unit is 18.9 mm (0.744 in). Even so, the nozzle angles can be adjusted, so that they can still be installed in places where there are space restrictions, such as inside other equipment or along several adjacent production lines.

Nozzle angle adjustment mechanism

The angles of the two nozzles can be adjusted within a range of approximately 190° by screwing down the ends of the nozzles. After adjusting the angle, turn the ends of the nozzles to tighten them and secure them at that angle. This allows the nozzle angles of the ER-VW to be adjusted easily after installation.

Easy connection possible

The joint kit (optional) can be used to connect up to a maximum of 5 ER-VW units. The air supply part is connected via quick connection joints, and the power supply and input / output signals can also be connected easily using connection cables with connectors at both ends.

Specifications

<table>
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<th>Item</th>
<th>Designation</th>
<th>Spot type</th>
<th>ER-VW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply voltage / current consumption</td>
<td>24 V DC ±10 % / 120 mA or less</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charge removal time (±1,000 V → ±100 V)</td>
<td>1 sec. or less</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ion balance</td>
<td>±10 V or less</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supplied air flow</td>
<td>60 ℓ/min. (ANR) or less</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air pressure range</td>
<td>0.05 to 0.5 MPa</td>
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<tr>
<td>Discharge method</td>
<td>High-frequency AC method</td>
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<td></td>
</tr>
<tr>
<td>Weight</td>
<td>110 g approx.</td>
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</tbody>
</table>

Note: Please refer to product catalog and specifications for more details.
No need for compressed air!
Introducing exceptional freedom of installation in a super-compact size

The ER-Q supplies clean air from its built-in fan in an energy-efficient manner.

Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Designation</th>
<th>Model No.</th>
<th>Compact fan type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply voltage / current consumption</td>
<td>24 V DC ±10 % / 200 mA or less</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charge removal time (±1,000 V → ±100 V)</td>
<td>1.5 sec. approx.</td>
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<td></td>
</tr>
<tr>
<td>Ion balance</td>
<td>±10 V or less</td>
<td></td>
<td></td>
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<tr>
<td>Discharge method</td>
<td>High-frequency AC method</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>110 g approx.</td>
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</tr>
</tbody>
</table>

Note: Please refer to product catalog and specifications for more details.

Compact body with outstanding installation freedom

With a super-compact body that measures just $W33 \times H60 \times D65$ mm $W1.299 \times H2.362 \times D2.559$ in, the ER-Q can be installed as if it were a sensor. A knob lets you adjust airflow to suit your application.

Outstanding charge removal performance

A proprietary, high-frequency AC design and sirocco fan deliver outstanding charge removal performance with exceptional ion balance, even at low airflow settings. The ER-Q is particularly well suited for use in spot charge removal applications with semiconductor post-processes and electronic component fabrication equipment.
Helping save time with high-speed charge removal made possible by high ion volume
Multifunctional type can be used for both airless and low-airflow charge removal.

**Pulse AC method for high-speed charge removal**

Since the pulse AC method alternately applies positive and negative voltages to a single discharge needle, it yields high ion generation volume and releases a large volume of ions, allowing for rapid charge removal. This makes it ideal for applications requiring high cleanliness and precision.

**Automatic ion balance control function**

The ER-X series automatically maintains the set ion balance by sensing the ion generation volume. It adjusts its operation based on changes in the environment and workpiece, ensuring consistent performance.

**Specifications**

- **Model No.**
  - ER-X001
  - ER-X008
  - ER-X016
  - ER-X032
  - ER-X048
  - ER-X064
  - ER-XC02

- **Supply voltage / current consumption**
  - 24 V DC ±10% / 450 mA or less when connecting 1 head, 800 mA or less when connecting 2 heads

- **Charge removal time**
  - 0.3 sec. or less
  - 1 sec. or less

- **Ion balance**
  - ±30 V or less

- **Maximum air pressure**
  - 0.5 MPa

- **Discharge method**
  - Pulse AC method

- **Weight**
  - ER-X001: 370 g approx.
  - ER-X008: 220 g approx.
  - ER-X016: 410 g approx.
  - ER-X032: 350 g approx.
  - ER-X048: 280 g approx.
  - ER-X064: 780 g approx.
  - ER-XC02: 130 g approx.

*Note: Please refer to the product catalog and specifications for more details.*
Popular new type capable of charge removal throughout a cell production bench area

With a new approach and large charge removal area, the ER-TF series overcomes dissatisfaction with existing antistatic devices.

**Easy maintenance**

Discharge units can be removed with a single touch, making it easy to clean them or replace them as they naturally wear down. Units can also be cleaned with a commercially available ultrasonic cleaner.

**Available quiet fan cover (optional)**

An available fan cover reduces fan suction noise without reducing air volume.

**Safe design**

A monitoring function stops discharge operation if any foreign material or object is detected in the discharge unit. This capability provides peace of mind when working with the unit since you can rest assured that the high-voltage circuit will stop if your finger approaches the unit.

**Flexible layout**

Thanks to its space-saving design, the ER-TF series delivers a sufficiently large charge removal area while allowing you to make effective use of your workspace. It can be mounted on a shelf or pipe or placed directly on the working surface. The unit adapts flexibly to the local working environment.

**Specifications**

<table>
<thead>
<tr>
<th>Item</th>
<th>Designation</th>
<th>Wide-area fan type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model No.</td>
<td>ER-TF04</td>
<td>ER-TF06</td>
</tr>
<tr>
<td>Supply voltage / power consumption (Accessory AC adapter)</td>
<td>100 to 240 V AC ±10 % (50/60 Hz) / 80 VA or less</td>
<td></td>
</tr>
<tr>
<td>Charge removal time (±1,000 V → ±100 V)</td>
<td>1 sec. approx.</td>
<td></td>
</tr>
<tr>
<td>Ion balance</td>
<td>±10 V or less</td>
<td></td>
</tr>
<tr>
<td>Discharge method</td>
<td>Steady-state DC method</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>1.0 kg approx.</td>
<td>1.2 kg approx.</td>
</tr>
</tbody>
</table>

Note: Please refer to product catalog and specifications for more details.
A compact shape for reducing workbench clutter

One of the industry’s smallest 120 mm 4.724 in (fan diameter) class units at just W150 × H166 × D62 mm W5.906 × H6.535 × D2.441 in

Low-airflow models available

Equipped with discharge needle fouling detection function

Two exchangeable louvers to suit your needs

Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Standard fan type</th>
<th>Low-volume fan type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>ER-F12A</td>
<td>ER-F12SA</td>
</tr>
<tr>
<td>Supply voltage /</td>
<td>24 V DC ±10 %</td>
<td>24 V DC ±10 %</td>
</tr>
<tr>
<td>current consumption</td>
<td>700 mA or less</td>
<td>400 mA or less</td>
</tr>
<tr>
<td>Change removal time</td>
<td>1 sec. approx.</td>
<td>1.5 sec. approx.</td>
</tr>
<tr>
<td>Ion balance</td>
<td>±10 V or less</td>
<td>±10 V or less</td>
</tr>
<tr>
<td>Discharge method</td>
<td>High-frequency AC method</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>790g approx.</td>
<td></td>
</tr>
</tbody>
</table>

Note: Please refer to product catalog and specifications for more details.
Air-gun type ionizer that can remove dust in a single burst using pulsed air

A new approach to dust removal that lets you aim ions directly where they are needed.

The EC-G02 features two pulse air modes in addition to the standard continuous mode.

Pulse mode

The EC-G02 features a high-brightness white LED above the ionized air outlet, allowing you to target and spray dust revealed by the light with a stream of ionized air.

Compact, highly usable design

A high-voltage power supply circuit and solenoid valve are built into the air gun, providing a high level of usability and eliminating the need to install an external controller or route thick, high-voltage cables. Additionally, since the lightweight unit weighs just 270 g, it reduces stress on the operator, even when used for extended periods of time.

External input

External input allows the unit to be used in combination with a foot switch or other device.

No-oil compliance

All parts along the air path (air nozzle, solenoid valve, joints, etc.) are no-oil compliant.

Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Model No.</th>
<th>EC-G02</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply voltage / power consumption</td>
<td></td>
<td>100 to 240 V AC ±10 % 50/60 Hz / 30 VA or less</td>
</tr>
<tr>
<td>Charge removal time</td>
<td></td>
<td>Approx. 0.5 sec. or less</td>
</tr>
<tr>
<td>Supplied air flow</td>
<td></td>
<td>300 ℓ/min. (ANR) or less</td>
</tr>
<tr>
<td>Air pressure range</td>
<td></td>
<td>0.05 to 0.50 MPa</td>
</tr>
<tr>
<td>Discharge method</td>
<td></td>
<td>High-frequency AC method</td>
</tr>
<tr>
<td>Weight</td>
<td></td>
<td>270 g approx.</td>
</tr>
</tbody>
</table>

Note: Please refer to product catalog and specifications for more details.

Features

Improved dust removal effectiveness thanks to pulse (intermittent) air

Since pulse air causes dust to oscillate and lifts it up, even difficult-to-dislodge dust inside concave pockets can be easily removed. The EC-G02 can deliver greater dust removal effectiveness than continuous airflow models.
Compact dust collection and removal features
Solve dust-related issues caused by static charges in cell production.

Three discharge modes
The EC-B features two pulse air modes in addition to the standard continuous mode.

White LED illumination
Three white LEDs illuminate the work area, increasing visibility and helping ensure you don't overlook any dust that has adhered to workpieces.

Dust collecting fan
A powerful dust collecting fan exhausts dust quickly, preventing re-adhesion of dust.

Specifications
<table>
<thead>
<tr>
<th>Item</th>
<th>Model No.</th>
<th>EC-B01</th>
<th>EC-B02</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply voltage (Accessory AC adapter)</td>
<td></td>
<td>100 to 240 V AC ±10 % 50/60 Hz</td>
<td>100 to 240 V AC ±10 % 50/60 Hz</td>
</tr>
<tr>
<td>Power consumption</td>
<td></td>
<td>80 VA or less</td>
<td>90 VA or less</td>
</tr>
<tr>
<td>Charge removal time (±1,000 V → ±100 V)</td>
<td></td>
<td>Approx. 0.5 sec. or less</td>
<td>Approx. 0.5 sec. or less</td>
</tr>
<tr>
<td>Ion balance</td>
<td></td>
<td>±10 V or less</td>
<td>±10 V or less</td>
</tr>
<tr>
<td>Supplied air flow</td>
<td></td>
<td>300 l/min. (ANR) or less</td>
<td>500 l/min. (ANR) or less</td>
</tr>
<tr>
<td>Air pressure range</td>
<td></td>
<td>0.05 to 0.5 MPa</td>
<td>0.05 to 0.5 MPa</td>
</tr>
<tr>
<td>Discharge method</td>
<td></td>
<td>High-frequency AC method (includes ER-VS02)</td>
<td>High-frequency AC method (includes ER-VS02)</td>
</tr>
<tr>
<td>Weight</td>
<td></td>
<td>6.5 kg approx.</td>
<td>13 kg approx.</td>
</tr>
</tbody>
</table>

Note: Please refer to product catalog and specifications for more details.

Note: Calculated using operating conditions at Panasonic Industrial Devices SUNX’s Head Office Plant, 8 hours per day × 20 days.
Continuously check invisible static electricity with an inline sensor.

The EF-S1 series continuously monitors equipment status while the line is operating so you can take immediate action in the event of a malfunction.

Electrostatic sensor
EF-S1 SERIES

A new approach to electrostatic measures

Unlike handheld measuring instruments, the EF-S1 series is mounted on the line so that it can make measurements continuously while the line is operating. This approach has the additional benefit of reducing the level of variation in measurements made by different workers in different positions and at different distances.

Easy data management using analog output

A device such as a data logger can be used to collect and analyze data, which is useful when carrying out inspections of factors such as ionizer setup angle and the number of devices installed.

Easy-to-read 2-color dual display

The controller is equipped with a red and a green display. Current values and threshold values can be viewed at a glance.

Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Designation</th>
<th>Sensor head</th>
<th>Controller</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EF-S1HS</td>
<td>EF-S1C</td>
<td></td>
</tr>
<tr>
<td>Supply voltage / current consumption</td>
<td>24 V DC ±10 % / 50 mA or less</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measurement range (Range mode)</td>
<td>8.0 to 20.5 mm (±1 kV range mode) 21.0 to 100 mm (±2 kV range mode)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Display range (Measurement range)</td>
<td>-1,000 to 1,000 V (±1 kV range mode) -1,999 to 1,999 V (±2 kV range mode)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repeatability</td>
<td>±0.3 % F.S.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analog output</td>
<td>Output voltage: 1 to 5 V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>90 g approx. 65 g approx.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1) Please refer to product catalog and specifications for more details.
2) Also available with a measurement range of 150 mm and a display range of ±10 kV.

Selection Guide Catalog 23
Please contact:

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