SENSING IONIZER
General Catalog
Select the best type for your application and mounting location

KEYENCE offers a wide variety of models to meet the needs of a new era of improved productivity and quality in the workplace.

High-speed static elimination and high-precision ion balance

**Pulse AC method**

The SJ Series has adopted the pulse AC method that applies alternating high voltage to the electrode probe, producing ions of both polarities. Compared to the conventional AC method, the amount of ions generated is higher and the oscillating frequency can be changed. Therefore, the pulse AC method can be used in all conditions, from high-speed moving applications to static elimination of a work area.

- **AC method**
  - Ion generation
  - Movement direction
  - There are periods when no positive (+) or negative (-) ions are generated, therefore the positive (+) and negative (-) ions are distributed separately and cannot eliminate static effectively.

- **Pulse AC method**
  - Ion generation
  - Movement direction
  - The positive (+) and negative (-) ions are uniform and provide ideal static elimination. (At 33 Hz)

**High-precision ion balance with the I.C.C. method**

By sensing the ion current generated by the potential difference between the electrode probe and the amount of charge for a workpiece, this method performs calculations and controls the supplied ions based on the amount of charge to achieve rapid static elimination. The I.C.C. method provides high-precision ion balance control for rapid and effective static elimination.

**Conventional method**

- Ion generation
- Fixed

**I.C.C. method**

- Ion generation
- Varies pulse width
- Automatically adjusts and controls the amount of ions
No need for complicated sensor installation
I.C.C. control with built-in automatic sensing and feedback

Automatically control ion balance

The I.C.C. method supplies the optimal balance of ions according to the detected charge, so it does not require any additional calibration during installation or maintenance. This provides quick and effective static elimination.

- **No need for initial adjustment of ion balance**
  Since the amount of generated ions is controlled automatically, the ion balance does not need to be adjusted.

- **Ions supplied for high-speed static elimination**
  Because the ions are supplied according to the amount of charge, high-speed static elimination is possible.

- **Constant monitoring of ion balance for long-term stability**
  Automatic adjustment compensates for deterioration in ion balance due to build-up on the electrode probe.

Built-in Display

**Sensing ionizer**

It is difficult to know whether a static eliminator is working properly since static is invisible. The built-in display found on KEYENCE static eliminators allows users to monitor elimination status and determine the appropriate time for maintenance.
Static eliminators are suitable for almost any industry

**WIDE AREA**

**BAR TYPE**

[Static elimination in wide areas]

**Typical applications**
- Prevention of foreign material adhesion to heat seals
- Static elimination in air shower spaces
- Prevention of dust adhesion to sheet materials
- Elimination of sawdust when cutting building materials
- Prevention of dust adhesion to bumpers

With the combination of the KEYENCE designed pulse AC method and I.C.C. method, the bar-type static eliminators enable uniform static elimination at high speeds. The SJ Series bar-type static eliminators are suitable for applications that require stable static elimination over a wide area, such as prevention of static electricity during part transfer, prevention of dust adhesion to sheet materials, and static elimination in a workspace.

**MEDIUM AREA**

**BLOWER TYPE**

[Static elimination in medium sized areas]

**Typical applications**
- Static elimination when filling pharmaceuticals
- Static elimination in labeling processes
- Static elimination from parts feeders
- Prevention of film adhesion in cutting processes
- Prevention of dust adhesion to resin bottles

The blower-type static eliminators carry ions generated by corona discharge via the air from the blower fans. Electrostatic charge is eliminated from a charged object by this positive and negative ion-carrying air. The SJ Series blower type is suitable for static elimination of an object with uneven surfaces. It can even be used on the human body. Because the human body is similar to a conductor, the blower type provides static elimination effects simply by applying the ion-carrying air to the human body.

**NARROW AREA**

**SPOT TYPE**

[Static elimination in narrow areas]

**Typical applications**
- Static elimination of pillow type packaging machines
- Static elimination in chip pick-and-place processes
- Prevent mixing of foreign materials in shrink packaging
- Elimination of dust from resin components
- Static elimination to prevent parts from remaining in molds

With their small size, the SJ Series spot-type static eliminators can be used to eliminate static electricity from a focused point. Combined with a high air supply pressure, the spot-type static eliminators can be used to blow off dust while eliminating static electricity, thus preventing re-adhesion of dust.
**Static elimination for wide areas, covering both short and long operating distances**

For static elimination of a target, the type of static eliminator used varies depending on target size, static elimination time required, and the static eliminator’s operating distance. The bar-type static eliminators enable static elimination under user-required conditions by using an air purge function, and by adjusting the positive/negative ion generation frequency.

**Simple Installation**

The SJ Series blower-type static eliminators are suitable for many applications, ranging from bench-top use to fixed mount installation. Since it delivers ions via air from the built-in blower, the static elimination area and speed can be determined by simply adjusting the air capacity. Even for new users, the SJ Series blower-type static eliminators allow for easy installation and simple use.

**Selectable head attachments**

The SJ Series spot-type static eliminator provides several head attachments as optional accessories in addition to the small-sized static elimination head, which allows for flexible use where static elimination must be incorporated into a user’s equipment. With this variety of head attachments, the spot-type static eliminators enable static elimination of varying configurations in focused areas.
BAR TYPE  SJ-H Series
Suitable for high-speed static elimination in wide areas, including clean room environments

Ultra-High Speed, Sensing Ionizer

Highest static elimination capacity in the industry

The I.R.G. (Insert Ring Ground) structure provides the world’s-highest static elimination speed.

*Newly developed*  [5 times faster than conventional models]

The SJ Series bar-type adopts the I.R.G. structure that incorporates the GND plate essential for ion generation into the ionizer body. This GND plate is externally mounted on conventional models.

The I.R.G. structure directs the flow of generated ions toward the target object, instead of toward the GND plate. This structure increases the quantity of ions applied to the target, providing static elimination speed five times faster than conventional models.

The newly developed I.R.G. structure expands the static elimination area (two times larger than that of conventional models).

With the ring-shaped design of the built-in GND plate, the SJ Series bar type can radiate a uniform electric field in a ring pattern. Since the ions spread along the electric field, a circular, wide static elimination area can be provided. This feature is effective for applications that require wide area static elimination.

Dual I.C.C. (Dual Ion Current Control) system enables optimum static elimination.

*Newly developed*

The dual I.C.C. system is further advanced from the conventionally proven I.C.C. system found in other KEYENCE models. The SJ Series bar-type static eliminators adopt a dual I.C.C. system that can change the applied voltage in addition to the variable pulse width, thus providing more flexible control of ion generation level per unit time.

This system enables optimum static elimination relative to a change in the ambient environment (temperature, humidity, etc.) and the electrode probe condition.
The best maintenance-saving performance in the industry

The sheath air guide structure reduces maintenance downtime.

**Newly developed**

[5 times less maintenance than conventional models]

The supplied air is conveyed through a three-stage port in the probe cap, fully contained within the air chamber. The air contained in the chamber passes through the channel around the probe to generate a laminar flow. The concave structure at the air outlet blocks external disturbance, resulting in an excellent protective effect. This structure can remarkably reduce adhesion of foreign objects on the electrode probe tip. This results in five times less maintenance than conventional models.

**3-way alarm output**

The SJ Series provides the self-diagnosis function that monitors three types of abnormalities. If an abnormality is detected, the LED indicators identify the error condition and an external output is activated. Centralized control of ionizers is enabled by monitoring the external output.

- **Cleaning warning**
  Monitors reduction in ion generation level due to dirt or wear of the electrode probe.

- **Condition warning**
  Monitors a high charge level that cannot provide a sufficient static elimination effect.

- **Alarm warning**
  Monitors abnormal discharge or damage to the ionizer.

**Maintenance indicators**

The SJ Series bar-type static eliminator includes a self-diagnosis function that monitors the ion generation level. With the bar LED indicators and alarm outputs, the ionizer alerts you of the need for maintenance.

**Easy electrode probe replacement**

Since the electrode probe is attached with a PIN connector or cassette, users can easily replace the electrode probe.

**Air purge function**

The clean air supply function blows air from the area surrounding the electrode probe. This function helps to prevent dust adhesion to the electrode.

**N₂ (nitrogen) purging static elimination**

As a standard feature, N₂ purge systems used in semiconductor and liquid crystal manufacturing processes are compatible with the SJ-H Series static eliminators.
The highest static elimination capacity in the industry

**Double Port Electrode Probe**
[Double Port Electrode Probe]

*Newly developed*

In addition to the sheath air guide structure that minimizes dust adhesion, the double port electrode probe cap is used to ensure high-speed static elimination while maintaining laminar flow.

**High-density tungsten probe prevents wear**

Because of the intergranular density of its tungsten probe, the SJ-H Series can maximize the ion generation level and reduce probe damage during maintenance. Use of the high-density tungsten probe results in an improved static elimination effect and less maintenance.

*Condition: Energized for 2 months, After cleaning with alcohol*

**Low-voltage 24V wiring**

Low-voltage 24V wiring eliminates the adverse effect of discharge on cabling and surrounding equipment, allowing the construction of a highly reliable system.

**Static elimination stop function**

This function stops the applied voltage, while the main power supply remains ON, ensuring safe operation during maintenance.

**Built-in controller**

The SJ-H Series incorporates the controller and high-voltage power supply within the unit, enabling a space-saving layout.

**SJ-H Models**

*Elective length indicates the static elimination range at 50 mm (1.97") operating distance.*

<table>
<thead>
<tr>
<th>Static elimination length (Effective length)</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>380 mm 14.96&quot; (360 mm 14.97&quot;)</td>
<td>SJ-H036A</td>
</tr>
<tr>
<td>600 mm 23.62&quot; (600 mm 23.62&quot;)</td>
<td>SJ-H060A</td>
</tr>
<tr>
<td>840 mm 33.07&quot; (840 mm 33.07&quot;)</td>
<td>SJ-H084A</td>
</tr>
<tr>
<td>1080 mm 42.52&quot; (1080 mm 42.52&quot;)</td>
<td>SJ-H108A</td>
</tr>
<tr>
<td>1320 mm 51.97&quot; (1320 mm 51.97&quot;)</td>
<td>SJ-H132A</td>
</tr>
<tr>
<td>1560 mm 61.45&quot; (1560 mm 61.45&quot;)</td>
<td>SJ-H156A</td>
</tr>
<tr>
<td>1800 mm 70.87&quot; (1800 mm 70.87&quot;)</td>
<td>SJ-H180A</td>
</tr>
<tr>
<td>2040 mm 80.35&quot; (2040 mm 80.35&quot;)</td>
<td>SJ-H204A</td>
</tr>
<tr>
<td>2280 mm 89.76&quot; (2280 mm 89.76&quot;)</td>
<td>SJ-H228A</td>
</tr>
<tr>
<td>2520 mm 99.21&quot; (2520 mm 99.21&quot;)</td>
<td>SJ-H252A</td>
</tr>
<tr>
<td>3000 mm 118.11&quot; (3000 mm 118.11&quot;)</td>
<td>SJ-H300A</td>
</tr>
</tbody>
</table>
**Applications**

- **Static elimination of slitters**
- **Prevent dust adhesion to ampoules after heat treatment**
- **Prevent foreign material adhesion between heat seal layers**
- **Static elimination in the coating process of bumpers**
- **Chip removal during cutting sashes**
- **Defect prevention in the offset printing process**
- **Static elimination of unwoven cloth**
- **Defect prevention of adhesive painting on cardboard**
- **Static elimination when attaching copper plates/films**

**INDICATORS AND OUTPUTS**

Safety functions, abnormal discharge detection output, electrostatic charge monitor, and ion level alarm are standard features.
BLOWER TYPE  SJ-F Series

Suitable for continuous static elimination over wide areas at long distances

Highest Static Elimination Speed in its class

Wide-Area Sensing Ionizer

Reduce electrostatic problems by eliminating static in the entire environment, including manufactured goods and surrounding components.

300 mm (11.81”) type
SJ-F2500

FULL SPECTRUM
High-precision Ion Balance

±5V

Ion balance area diagram (Typical)

Unit: mm inch
Highest static elimination speed in its class

By combining the reputable pulse AC method and I.C.C control, the SJ-F Series has achieved the best ion production per electrode in its class. In addition, by inserting a high-power fan into the louver structure, the SJ-F Series has also achieved the fastest wide-area static elimination in its class.

High-precision ion balance of the entire area

The SJ-F Series has adopted the pulse AC method that applies alternating high voltage to the electrode probe, producing ions of both polarities. By improving the close-range ion balance that is an issue with conventional methods, high-precision ion balance has been achieved over the entire area.

Wide-range air volume adjustment

With a compact, large air volume fan and independent PWM control, wide-range adjustments become possible from ultra-low air volumes all the way to large air volumes. Any application is possible, including applying film where close range, moderate air volume is necessary, or where long-distance, high-speed static elimination is required.

Sensing ionizer

Auto-sensing and feedback functions of the I.C.C. control method are pre-installed in the device. By supplying ions at the optimal balance to the electrostatic charge, complicated initial settings and maintenance become obsolete, thus allowing increasingly effective static elimination.

600 mm(23.62") type
SJ-F5500
Low maintenance with continuous high static elimination ability

**Low maintenance**

By incorporating KEYENCE’s unique I.C.C. control method, the degradation of static elimination resulting from wear or buildup on the probes is reduced, saving on maintenance costs; up to 3 times compared to conventional models.

**Straightforward maintenance structure***

The front cover connected to the electrode unit can be removed with one hand. Cleaning of the electrode probes is also quick and easy. Furthermore, no tools are required to exchange the electrode unit, allowing a safe and rapid changeover.

*SJ-F2000 Series

**Compact installation**

A compact body has become a reality by adopting specially designed louvers. While being a space-saving, compact device, the SJ-F Series is still capable of a wide static elimination range.

**Arm-mounting option**

KEYENCE has prepared a specialized mounting bracket that directly attaches to “VESA standard” mounting arms, such as those used for liquid crystal displays. By mounting the device using a workbench pole, the static eliminator can be used in limited spaces.


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**Maintenance results during static elimination according to the I.C.C. (Typical)**

<table>
<thead>
<tr>
<th>Time Elapse (h)</th>
<th>Conventional DC type</th>
<th>I.C.C. + Pulse AC type</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>20</td>
<td>18</td>
</tr>
<tr>
<td>500</td>
<td>18</td>
<td>16</td>
</tr>
<tr>
<td>1000</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td>1500</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>2000</td>
<td>12</td>
<td>10</td>
</tr>
</tbody>
</table>

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- **Pulse width can be changed**
- **Control the amount of ions**
Applications

- Static elimination of labelers
- Prevent double feeding of workpieces
- Prevent adhesion of foreign materials during food/medical/pharmaceutical filling applications
- Prevent workpieces from sticking to the cutting machine during the cutting process
- Prevention of electrostatic discharge failures in the testing process of semiconductors
- Static elimination of in-circuit testers
- Static elimination on chip and PCB products
- Static elimination of automotive doors before coating
- Static elimination during electronics production processes
- Static elimination of automotive doors before coating
- Static elimination of lenses after cleaning
- Static elimination during shipping inspections
- Static elimination of substrates after burning
- Static elimination of windshields after cleaning
- Static elimination of headlights
- Static elimination of automotive doors before coating
- Prevent pellets from sticking to a hopper’s internal surface
- Static elimination of automotive doors before coating
- Static elimination of windshields after cleaning

Specifications
**ULTRA-SMALL, INTEGRATED SENSING IONIZER**

High-performance micro ionizer heads

**Ultra-fine nozzle**

SJ-M021

Standard probe type

SJ-M021

With the ultra-fine nozzle of ø10 mm (ø0.39”), a 0.5 MPa high-pressure air purge is possible.

C.A.B. probe type

SJ-M021G

Five times less maintenance than conventional models

High-performance micro static eliminator

**Controller**

SJ-M201

Highly functional controller with built-in static elimination status indicators
Options for a flexible design

<table>
<thead>
<tr>
<th>Selectable nozzles</th>
<th>Adapter (Straight)</th>
<th>Adapter (L-type)</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flat nozzle</td>
<td>SJ-MS1</td>
<td>SJ-ML1</td>
<td>Suitable for wide-angle, wide-area static elimination</td>
</tr>
<tr>
<td>Flat diffusion nozzle</td>
<td>SJ-MS2</td>
<td>SJ-ML2</td>
<td>Suitable for wide-angle, wide-area static elimination by changing the angle and direction</td>
</tr>
<tr>
<td>Threaded tube nozzle</td>
<td>SJ-MS3</td>
<td>SJ-ML3</td>
<td>Suitable for pin-point static elimination in limited space</td>
</tr>
<tr>
<td>Two-way branch threaded tube nozzle</td>
<td>SJ-MS4</td>
<td>SJ-ML4</td>
<td>Suitable for pin-point static elimination over multiple locations</td>
</tr>
<tr>
<td>L-type nozzle</td>
<td>SJ-ML</td>
<td></td>
<td>Suitable for static elimination by changing static elimination angle and direction</td>
</tr>
</tbody>
</table>

High-precision ion balance control: I.C.C. method

The I.C.C. method conducts high-precision sensing of electrostatic charges on the target object and automatically controls ion generation quantities for the optimum level.

Comparison of ion balance

<table>
<thead>
<tr>
<th>Charged voltage (kV)</th>
<th>Static elimination time (sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>1.0</td>
</tr>
<tr>
<td>1.0</td>
<td>1.5</td>
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<tr>
<td>1.5</td>
<td>2.0</td>
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<td>2.0</td>
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<td>4.0</td>
<td>4.5</td>
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<td>4.5</td>
<td>5.0</td>
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</tbody>
</table>

Conceptual image of the I.C.C. method

When an object with a positive charge approaches: When an object with a negative charge approaches:

Flexible installation of a ø12 mm (ø0.47”) head into existing equipment

Since the static elimination head can be mounted close to or embedded within a metal object, it is suitable for installation into small equipment, regardless of mechanical restrictions.

Ultra-small static elimination head has no limitation on installation space.

Since the SJ-M Series provides a direct static elimination structure that locates the ion generation point at the tip of the head, it enables high-speed and high-precision static elimination, where it is needed most.

<table>
<thead>
<tr>
<th>Ø12 mm (0.47”) head</th>
<th>0.5 MPa max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat resistance: 80°C (176°F) max.</td>
<td>Static elimination speed: 0.5 s</td>
</tr>
<tr>
<td>Ion balance: ±15 V</td>
<td></td>
</tr>
</tbody>
</table>

The heat-resistant design allows for use in high temperature environments

The SJ-M Series provides heat resistance of up to 80°C (176°F), enabling use for applications in high-temperature environments.

Flexible installation of a glass substrate release sheet

Preventing electrification of a glass substrate release sheet

Static elimination in the die of a molding machine

Ultra-small static elimination head has no limitation on installation space.

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</tbody>
</table>
Highly-functional controller with built-in static elimination indicators

SJ-M201

Electrostatic charge monitor
The SJ-M Series is equipped with an electrostatic charge monitor that allows the quantity and polarity of electrostatic charges on a target to be easily monitored at a glance.

Ion level monitor
The ion level monitor performs self-diagnosis of the ion emission quantity and displays the ion balance with the bar LEDs. Also, it activates the alarm output when the ion emission quantity falls below a specific level. This function allows you to monitor dust adhesion to the electrode probe.

Condition monitor
When the electrostatic charge level is extremely high, or when there is insufficient static elimination, the condition monitor activates the LED indicator and outputs an alarm signal to external equipment.

Safe operation

Low-voltage 24V wiring
Using 24V low-voltage wiring, the SJ-M Series prevents cable deterioration caused by electrostatic discharge and eliminates the influence on surrounding equipment. Because of this, the SJ-M Series maintains a highly reliable system configuration.

Abnormal discharge detection circuit
When abnormal electrostatic discharge is detected, the SJ-M Series outputs an alarm signal and simultaneously turns off the high-voltage power supply to prevent potential problems.

Static elimination stop input
With the static elimination stop input, the SJ-M Series can stop applying voltage to the electrode while the main power supply remains active, ensuring safe operation during maintenance.

Compliance with CE Marking
The SJ-M Series static eliminator ensures a high safety level in compliance with the requirements of the CE Marking standard.
Applications

Prevent contamination in shrink packaging

Static elimination of tablets after the forming process

Prevent electrostatic discharge failures on bonding machines

Prevent swarf adhesion to resin parts

Static elimination in capping applications

Static elimination of containers before inkjet printing

Static elimination during shot blasting

Static elimination of chips on embossed reels

Prevent film adhesion in the cutting process

Prevent clogged nozzles in the filling process of powders

Static elimination in the slitting process

Static elimination of metal molds

Prevent differences in measurement values of an electronic balance

Prevent separation discharge in tire packaging

Prevent separation in tire packaging
Specifications

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</thead>
<tbody>
<tr>
<td>Ion generation method</td>
<td>Corona discharge method</td>
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<tr>
<td>Structure</td>
<td>Shock-proof, resistance-coupled type</td>
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<tr>
<td>Voltage application method/applied voltage</td>
<td>Pulse AC method at 7000 V</td>
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<tr>
<td>Ion balance control method</td>
<td>Dual I.C.C. method</td>
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<tr>
<td>Ion balance ±30 V</td>
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<tr>
<td>Operating distance</td>
<td>300 mm 11.81&quot;</td>
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<tr>
<td>Control input</td>
<td>NPN open collector or non-voltage contact signal</td>
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<tr>
<td>Control output</td>
<td>NPN type photo-relay, 100 mA max. (40 V max.)</td>
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<tr>
<td>Power supply voltage</td>
<td>24 VDC-36 V ±10%</td>
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<tr>
<td>Current consumption</td>
<td>500 mA (at 24 VDC)/350 mA (at 36 VDC)</td>
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<tr>
<td>Overvoltage category</td>
<td>I</td>
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<td></td>
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<td>Pollution degree</td>
<td>2</td>
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<tr>
<td>Primary features</td>
<td>Condition alarm, ion level alarm, alarm output</td>
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<tr>
<td>Air purge connection port</td>
<td>Rc 1/8</td>
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<tr>
<td>Air purge air supply pressure</td>
<td>0.5 MPa or less</td>
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<tr>
<td>Materials</td>
<td>Electrode probe: Tungsten</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Body</td>
<td>ABS resin/PC</td>
<td></td>
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<tr>
<td>Environmental specifications</td>
<td>Static elimination range vs. static elimination time (10 Hz)</td>
<td></td>
<td></td>
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<tr>
<td>Effective length 3</td>
<td>360 mm 14.17&quot;</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Total length (A) 3</td>
<td>380 mm 14.96&quot;</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>Controller: 150 g</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Static elimination bar</td>
<td>500 g 780 g 980 g 1200 g 1400 g 1550 g 1750 g 2000 g 2350 g 2700 g 3150 g</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

1. The value is measured under the following conditions:

   - Operating distance: 300 mm 11.81"
   - Operating ambient temperature: 0 to +40°C 32 to +104°F
   - Operating ambient humidity: 30 to 85%RH (No condensation)

2. This effective length is determined based on the static elimination range at a distance of 50 mm (1.97"").

3. The total length includes the end units.

 Characteristics

- **Static elimination range vs. static elimination time (33 Hz)**
- **Static elimination range vs. static elimination time (10 Hz)**
- **Static elimination range vs. static elimination time (1 Hz)**
- **Static elimination range vs. static elimination range (Maximum air supply)**

Measurement conditions:
- Static elimination time from ±1000 V to ±100 V Using a 150 x 150 mm (5.91" x 5.91") plate monitor (20 pF).
- Model: SJ-H108A, No downflow

Relationship between air pressure and air volume according to static elimination bar length (with air supply at both sides)

Measurement conditions:
- Static elimination time from ±1000 V to ±100 V Using 150 x 150 mm (5.91" x 5.91") plate monitor (20 pF).
- Model: SJ-H108A, No downflow

Relationship between static elimination speed and operating distance according to air pressure

Measurement conditions:
- Static elimination time from ±1000 V to ±100 V Using 150 x 150 mm (5.91" x 5.91") plate monitor (20 pF).
- Model: SJ-H108A, No downflow
When the end units are attached

**Table of dimensions by model**

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A Total length</td>
<td>380</td>
<td>600</td>
<td>840</td>
<td>1080</td>
<td>1320</td>
<td>1560</td>
<td>1800</td>
<td>2040</td>
<td>2280</td>
<td>2520</td>
<td>3000</td>
</tr>
<tr>
<td></td>
<td>14.96&quot;</td>
<td>23.62&quot;</td>
<td>33.07&quot;</td>
<td>42.52&quot;</td>
<td>51.97&quot;</td>
<td>61.43&quot;</td>
<td>70.87&quot;</td>
<td>80.32&quot;</td>
<td>89.76&quot;</td>
<td>99.21&quot;</td>
<td>118.11&quot;</td>
</tr>
<tr>
<td>B Static elimination bar length</td>
<td>13.59&quot;</td>
<td>16.05&quot;</td>
<td>20.00&quot;</td>
<td>22.50&quot;</td>
<td>27.00&quot;</td>
<td>31.50&quot;</td>
<td>36.00&quot;</td>
<td>40.50&quot;</td>
<td>45.00&quot;</td>
<td>50.00&quot;</td>
<td>55.00&quot;</td>
</tr>
<tr>
<td></td>
<td>5.34&quot;</td>
<td>6.30&quot;</td>
<td>7.83&quot;</td>
<td>8.89&quot;</td>
<td>10.63&quot;</td>
<td>12.20&quot;</td>
<td>14.13&quot;</td>
<td>15.75&quot;</td>
<td>19.69&quot;</td>
<td>20.00&quot;</td>
<td>21.65&quot;</td>
</tr>
<tr>
<td>C Mounting pitch</td>
<td>365</td>
<td>385</td>
<td>425</td>
<td>465</td>
<td>505</td>
<td>545</td>
<td>585</td>
<td>625</td>
<td>665</td>
<td>705</td>
<td>745</td>
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<tr>
<td></td>
<td>14.37&quot;</td>
<td>15.20&quot;</td>
<td>16.77&quot;</td>
<td>18.31&quot;</td>
<td>19.92&quot;</td>
<td>21.53&quot;</td>
<td>23.07&quot;</td>
<td>24.65&quot;</td>
<td>26.25&quot;</td>
<td>27.94&quot;</td>
<td>29.53&quot;</td>
</tr>
<tr>
<td>D Electrode pitch and length</td>
<td>P60 x 3=180</td>
<td>P60 x 7=420</td>
<td>P60 x 11=660</td>
<td>P60 x 15=900</td>
<td>P60 x 19=1140</td>
<td>P60 x 23=1380</td>
<td>P60 x 27=1620</td>
<td>P60 x 31=1860</td>
<td>P60 x 35=2100</td>
<td>P60 x 39=2340</td>
<td>P60 x 47=2820</td>
</tr>
<tr>
<td></td>
<td>23.00&quot;</td>
<td>34.65&quot;</td>
<td>51.00&quot;</td>
<td>64.00&quot;</td>
<td>79.00&quot;</td>
<td>94.00&quot;</td>
<td>109.00&quot;</td>
<td>124.00&quot;</td>
<td>139.00&quot;</td>
<td>154.00&quot;</td>
<td>188.00&quot;</td>
</tr>
</tbody>
</table>

---

**Dimensions**

**Unit: mm inch**

![Diagram showing dimensions and parts]

**End unit (OP-84301)**

**Intermediate support bracket (OP-84300)**
When a rotating mounting bracket is attached

<table>
<thead>
<tr>
<th>SJ-H Series</th>
<th>Total length (A)</th>
<th>Mounting pitch (B)</th>
<th>Mounting pitch (C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SJ-H036A</td>
<td>451 17.76”</td>
<td>439 17.01”</td>
<td>400 15.75”</td>
</tr>
<tr>
<td>SJ-H060A</td>
<td>671 26.42”</td>
<td>652 26.07”</td>
<td>620 24.41”</td>
</tr>
<tr>
<td>SJ-H084A</td>
<td>911 35.87”</td>
<td>892 35.12”</td>
<td>860 33.86”</td>
</tr>
<tr>
<td>SJ-H108A</td>
<td>1151 45.31”</td>
<td>1132 44.57”</td>
<td>1100 43.31”</td>
</tr>
<tr>
<td>SJ-H132A</td>
<td>1391 54.76”</td>
<td>1372 54.02”</td>
<td>1340 52.76”</td>
</tr>
<tr>
<td>SJ-H156A</td>
<td>1631 64.21”</td>
<td>1612 63.46”</td>
<td>1580 62.20”</td>
</tr>
<tr>
<td>SJ-H180A</td>
<td>1871 73.66”</td>
<td>1852 72.91”</td>
<td>1820 71.65”</td>
</tr>
<tr>
<td>SJ-H204A</td>
<td>2111 83.11”</td>
<td>2092 82.36”</td>
<td>2060 81.10”</td>
</tr>
<tr>
<td>SJ-H228A</td>
<td>2351 92.56”</td>
<td>2332 91.81”</td>
<td>2300 90.55”</td>
</tr>
<tr>
<td>SJ-H252A</td>
<td>2591 102.01”</td>
<td>2572 101.26”</td>
<td>2540 100.00”</td>
</tr>
<tr>
<td>SJ-H300A</td>
<td>3071 120.91”</td>
<td>3052 120.16”</td>
<td>3020 118.90”</td>
</tr>
</tbody>
</table>

Left side of the bar (Common to all models longer than and including the SJ-H228A model)

1. Not provided for the SJ-H204A or shorter models.

Right side of the bar (Common to all models)

1. The SJ-H306A does not have this modular port.

2. SJ-H306A only.

Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SJ-C2U/C5U/C10U</td>
<td>10-pin I/O cable (2 m 6.56”, 5 m 16.40”, 10 m 32.81”)</td>
</tr>
<tr>
<td>OP-42210/OP-42211/OP-42212</td>
<td>10-pin/10-pin cable (For OP-84296) (2 m 6.56”, 5 m 16.40”, 10 m 32.81”)</td>
</tr>
<tr>
<td>SJ-C2H/C5H/C10H</td>
<td>10-pin/10-pin cable (for SJ-H036A) (2 m 6.56”, 5 m 16.40”, 10 m 32.81”)</td>
</tr>
<tr>
<td>OP-84454</td>
<td>Electrode port cleaning kit 2 for SJ-H Series</td>
</tr>
<tr>
<td>OP-84455</td>
<td>Replacement filter for electrode cleaning kit 2 (10 pieces)</td>
</tr>
<tr>
<td>OP-84459</td>
<td>Electrode tip cleaning kit for SJ-H Series</td>
</tr>
<tr>
<td>OP-84299</td>
<td>Replacement filter for electrode cleaning kit (10 pieces)</td>
</tr>
<tr>
<td>OP-84218</td>
<td>Rotating mounting bracket pair (right and left sides)</td>
</tr>
<tr>
<td>OP-84236 (Spare)</td>
<td>Electrode probe replacement kit for SJ-H Series</td>
</tr>
<tr>
<td>OP-84293</td>
<td>Tungsten electrode probe for SJ-HA (4 pieces)</td>
</tr>
<tr>
<td>OP-84296</td>
<td>Junction relay box for SJ-H Series</td>
</tr>
<tr>
<td>OP-84300 (Spare)</td>
<td>Intermediate support bracket for SJ-H Series</td>
</tr>
<tr>
<td>OP-84301 (Spare)</td>
<td>End unit for SJ-H Series</td>
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<tr>
<td>OP-84297</td>
<td>Rotating mounting bracket pair (right and left sides)</td>
</tr>
<tr>
<td>OP-84298</td>
<td>Rotating mounting bracket (intermediate)</td>
</tr>
</tbody>
</table>
## Specifications

### Main unit

<table>
<thead>
<tr>
<th>Model</th>
<th>Voltage application method</th>
<th>Applied voltage</th>
<th>Ion balance control method</th>
<th>Ion balance</th>
<th>Static elimination time</th>
<th>Operating distance</th>
<th>Maximum wind speed</th>
<th>Maximum air volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>SJ-F2500</td>
<td>Pulse AC method</td>
<td>±7000V</td>
<td>I.C.C.</td>
<td>±5V</td>
<td>Approx. 0.6 sec</td>
<td>50 mm 1.97&quot;</td>
<td>5.7 m/s 19.70 ft/s</td>
<td>141.26 CFM</td>
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<tr>
<td>SJ-F5500</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Approx. 1.0 sec</td>
<td></td>
<td></td>
<td>10.0 m3/min 353.15 CFM</td>
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<tr>
<td>SJ-F2000</td>
<td></td>
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<td></td>
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<td></td>
<td>2.5 m/s 88.29 CFM</td>
</tr>
<tr>
<td>SJ-F2010</td>
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<td>2.5 m/s 88.29 CFM</td>
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<tr>
<td>SJ-F5000</td>
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<td></td>
<td></td>
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<td></td>
<td>6.2 m/s 218.95 CFM</td>
</tr>
<tr>
<td>SJ-F5010</td>
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<td>6.2 m/s 218.95 CFM</td>
</tr>
</tbody>
</table>

**Control input**
- Static elimination interruption input: 24 VDC input
- NPN open-collector: 100 mA (40 V max.)
- Residual voltage 1 V or less
- PNP open-collector: 100 mA (24 V ±10%)
- Residual voltage 3 V or less

**Rating**
- Power supply voltage: 24VDC±10%
- Current consumption: 1.2 A 90 VA 0.9 A 65 VA 1.0 A 1.9 A

**Environment resistance**
- Operating ambient temperature: 0 to +50°C (32 to +122°F)
- Operating relative humidity: 35 to 65%
- Overvoltage category: II
- Pollution degree: 2

**Power source input type**
- KEYENCE AC adapter or DC option
- AC cord input

**Control output**
- Alarm/level alert/condition alert: NPN open-collector — 100 mA (40 V max.)
- Residual voltage 1 V or less
- PNP open-collector — 100 mA (24 V ±10%)
- Residual voltage 3 V or less

**Weight**
- Approx. 2 kg
- Approx. 5 kg
- Approx. 2 kg
- Approx. 5 kg
- Approx. 2 kg
- Approx. 4 kg

1. Measured at a distance of 300 mm (11.81") from the front of the fan
2. Measured at a distance of 300 mm (11.81") from the front of the fan and at maximum air volume

### Characteristics

#### Static elimination range and time (Typical)

**SJ-F2500**

![Graph](image1)

**SJ-F5500**

![Graph](image2)

**Measurements**
- Time required for static elimination from ±1000 V to ±100 V (Air volume: MAX)
- Plate monitor: 150 mm x 150 mm 5.91" x 5.91" (20pF)

#### Static elimination speed (Typical)

**SJ-F2500**

![Graph](image3)

**SJ-F5500**

![Graph](image4)

**Measurements**
- Time required for static elimination from ±1000 V to ±100 V (Air volume: MAX)
- Operating distance: 300 mm 11.81" Plate monitor: 150 mm x 150 mm 5.91" x 5.91" (20pF)

#### Static elimination range and time (Typical)

**SJ-F2000**

![Graph](image5)

**SJ-F5000**

![Graph](image6)

**Measurements**
- Time required for static elimination from ±1000 V to ±100 V (Air volume: MAX)
- Operating distance: 300 mm 11.81" Plate monitor: 150 mm x 150 mm 5.91" x 5.91" (20pF)

#### Static elimination speed (Typical)

**SJ-F2000**

![Graph](image7)

**SJ-F5000**

![Graph](image8)

**Measurements**
- Time required for static elimination from ±1000 V to ±100 V (Air volume: MAX)
- Operating distance: 300 mm 11.81" Plate monitor: 150 mm x 150 mm 5.91" x 5.91" (20pF)
**Series bracket for SJ-F2000**

- **U-shaped mounting**
- **Replacement electrode**

**Options**

- **OP-87147**
- **OP-87148**
- **OP-87150**
- **OP-87151**
- **OP-87152**

**Dimensions**

*Unit: mm inch*

**OP-87147**

- Capable of 360° rotation
- Rubber washer attached

**OP-87148**

- Capable of 360° rotation
- Rubber washer attached

**OP-87149**

- Capable of 360° rotation

**OP-87150**

- Capable of 360° rotation

**AC adapter**

<table>
<thead>
<tr>
<th>Type</th>
<th>SJ-U2</th>
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</thead>
<tbody>
<tr>
<td>Rating</td>
<td>Rated input 100 to 240 VAC (50/60Hz)</td>
</tr>
<tr>
<td></td>
<td>Rated output 24VDC 2.65A</td>
</tr>
<tr>
<td></td>
<td>Operating ambient temperature 0 to +35°C</td>
</tr>
<tr>
<td></td>
<td>Operating relative humidity 20 to 80% (No condensation)</td>
</tr>
<tr>
<td></td>
<td>Weight Approx. 250g</td>
</tr>
</tbody>
</table>

**Options**

- **OP-87153** Replacement electrode unit for SJ-F2000 Series
- **OP-87154** Replacement electrode unit for SJ-F5000 Series
- **OP-87155** AC adapter for SJ-F2500/2000 Series
- **OP-87147** L-shaped mounting bracket for SJ-F2000 Series
- **OP-87148** L-shaped mounting bracket for SJ-F5000 Series
- **OP-87149** U-shaped mounting bracket for SJ-F2000 Series
- **OP-87150** U-shaped mounting bracket for SJ-F5000 Series
- **OP-87151** Rubber stoppers for SJ-F2000/5000 Series
- **OP-87152** DC input cable for SJ-F2500/2000

*For details on the AC cable, contact your local KEYENCE sales office.*
Specifications

Model | Static Elimination Head | Controller Unit | SJ-M021/G SJ-M021G | SJ-M201
---|---|---|---|---
Voltage application method | Pulse AC | Pulse AC | — | —
Applied voltage | ±5.5 kV | ±5.5 kV | — | —
Rated output voltage | ±6 V | ±6 V | — | —
Ion balance control method | I.C.C. method | I.C.C. method | — | —
Static elimination time | 0.5 sec. max. | 0.5 sec. max. | — | —
Ion balance | ±15 V or less | ±15 V or less | — | —
Max. air pressure | 0.001 to 0.5 MPa | 0.001 to 0.5 MPa | — | —
Control input | Static elimination stop input | Static elimination stop input | — | —
Control output | Alarm output | Alarm output | NPN open collector 100 mA (40 V or less) | NPN open collector 100 mA (40 V or less)
Rating | Power voltage | 24 VDC ±10% | — | —
| Current consumption | 450 mA max. | 450 mA max. | — | —
Environmental resistance | Operating ambient temperature | Head | 0 to +80°C, 20 to +110°F | 0 to +40°C, 32 to +104°F
| Controller | — | — | — | —
| Operating ambient humidity | Static Elimination Head | 35 to 65%RH | — | —
| Controller Unit | Approx. 300 g | Approx. 300 g | — | —

Characteristics

[Measuring conditions]

- Applied voltage: 1000 V, Plate monitor: 150 mm × 150 mm 5.91” × 5.91” (20pF), Installation distance: 300 mm 11.81”, Air pressure: 0.5 MPa
- Nozzle type: 50 mm (1.97”) and air flow rate of 60 Nl/min (ambient operating temperature +20 to +30°C (+68 to +86°F), ambient operating humidity 40 to 60% RH (without nozzle))
- Nozzle type: 50 mm (1.97”) and air flow rate of 20 Nl/min (ambient operating temperature +20 to +30°C (+68 to +86°F), ambient operating humidity 40 to 60% RH (without nozzle))
- Air pressure varies by nozzle used. (See the chart below)

1. Inquire for derating of humidity/pressure in environments exceeding +35°C (95°F). Use clean or dry air at a temperature of -20°C ( -4°F) or less. Min. air pressure varies by nozzle used. (See the chart below)
2. During regular use, supply air at a supply temperature of +40°C (104°F) or less.
3. These values are for the High-pressure Cable Unit only.
4. When the ambient temperature exceeds +40°C (104°F), perform derating according to the following figure.
SJ-M Series

Dimensions

**SJ-M201**

**SJ-MS1** Straight flat nozzle

**SJ-MS2** Straight flat diffusion nozzle

**SJ-ML2** L-type flat diffusion nozzle

**SJ-ML3** L-type threaded tube nozzle

**SJ-ML4** L-type 2-way branch threaded tube nozzle

**SJ-M021**

**SJ-ML1** L-type flat nozzle

**SJ-MS3** Straight threaded tube nozzle

**SJ-ML4** L-type 2-way branch threaded tube nozzle

**SJ-MS4** 2-way branch threaded tube nozzle

**Options**

- SJ-C3
- SJ-U2
- OP-51607
- OP-75351
- OP-75350
- OP-75354

- Extension cable
- AC adaptor*
- Electrode unit for SJ-M021
- Electrode unit for SJ-M021G
- Fluorescent tube for SJ-M021(G)
- Discharge preventative cap for SJ-M021(G)

* For details on the AC cable, contact your local KEYENCE sales office.

**SAFETY INFORMATION**

Please read the instruction manual carefully in order to safely operate any KEYENCE product.

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