STATIC SOLUTIONS
Reliable performance even in a severe environment.
Contents

Fan Type ............................................. 210 - 211
Nozzle Type / Gun Type ......................... 212 - 214
Bar Type ............................................. 215 - 217
Ion Parts Cleaner ................................. 219 - 220
EPA Systems ..................................... 221 - 225
Conductive Rubber Mat ....................... 222
Electrostatic Field Meter / Surface Resistance Checker ••• 223
EPA Floor Sheet ................................. 224 - 225
Clean Walker ..................................... 226 - 227
STATIC SOLUTIONS
TECHNICAL

Butterfly louvers for dispersing ions toward different directions; straight or wide.

Fan type (electrostatic neutralization)

F-6
Being compact, it is suitable for incorporation into a system.
The F-6 with a clip can be clipped onto pipe of a cell production area and used for static elimination of part shelves or nearby working areas.

F120R/S
This is the main model of bench-top type. It supports a wide range of applications from assembling into a unit to at-hand work. It has a louvers that can be switched between dispersing air and outing it straight.

CF300-E
This type supports static elimination from wide areas. It adopts a cross-flow fan. It can be installed in an area close to a conveyor or transfer system to remove static electricity from charged objects.

Environmental measures
Pb (lead), Cd (cadmium), Hg (mercury), hexavalent chromium, PBB (polybrominated biphenyl), and PBDE (polybrominated diphenyl ether)
This symbol indicates the products that conform to VESSEL’s environment measure standards compliant with the restriction of the use of certain hazardous substances (six substances listed above) (RoHS directive).

Nozzle type
(Electrostatic neutralization and dust removal)
This type eliminates static electricity and removes dust from charged objects with pinpointing precision. It is suitable for installation in equipment or transfer equipment such as vibratory bowl feeders

Ion creation method
AC high frequency
Electrostatic eliminators adopting a high-frequency transformer of 20 kHz to 70 kHz have the features of stable ion balance.

Cautions: Performance varies depending on various conditions such as temperature, humidity, and atmospheric pressure. These pieces of data are our measured values for reference and do not assure the product performance.
Gun type (dust removal)
A hand-held static eliminator intended primarily for dust removal. It adopts a piezoelectric transformer that is lightweight, compact, and high safety.

Bar type
(Electrostatic neutralization, air assist ··· dust removal)
This is a bar-type electrostatic eliminator provided with diverse width sizes. It adopts the AC pulse system, allowing you to select an optimal model according to the distance to a charged article.

AC pulse
A pulse AC system that generates positive and negative ions alternatively from individual electrodes. It creates ions in maximum periodic widths of respective positive and negative electrodes; the amount of ions is large, enabling quick electrostatic elimination to be achieved.

Ion parts cleaner
(Electrostatic neutralization, dust removal)
This is a new method of cleaning parts known as ion cleaning. It is capable of performing ion air-based static elimination and dust collection + dust absorption simultaneously.
No. F120R-E
Ionizing Fan

This type adopts a piezoelectric transformer that is safe and superior in ion generation. In addition, VESSEL’s specific capacitive coupling method in which a discharge needle is sandwiched with resin and stainless disc, enables unmatched good ion balance.

Convenient functions such as external output terminals, butterfly louver capable of switching the airflow directions, either straight or wide area.

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**Butterfly Louver**
Press outer side to disperse air.
Press center to let air out straight.

---

No. F120R-E
Ionizing Fan
Cell production in which compactness and easiness to install at setup are important.
Integrated In-line process that outputs alarms while maintaining ion balance.
VESSEL fan-type ionizers can remove static electricity in an efficient way.
No. F-6 Ionizing Mini Fan
Ionizing method: Piezoelectric high-frequency AC corona discharge  Applied voltage: 3.5kVAC

- Compact and lightweight body
- Fan speed can be adjusted in two steps.
- Provided with a clip suitable for mounting (F6CL-E)
- Provided with a general-purpose stand (F6ST-E)

No. F120R/S Ionizing Fan
Ionizing method: Piezoelectric high-frequency AC corona discharge  Applied voltage: 10kVAC (p-p) PAT.P.

- Newly developed piezoelectric transformer makes the slim and compact model.
- Butterfly louvers for changing the airflow directions.
- Fan speed can be adjusted in three steps.
- Improvement in maintenance by easy-replaceable electrode needle unit.
- Equipped with terminals for alarm signal output, convenient for incorporation into equipment.
- F120S-E is a silent type with mild airflow.

F120R-E
Silent fan with mild airflow

No. CF300-E Cross-flow Ionizing Fan NEW
Ionizing method: Piezoelectric high-frequency AC corona discharge  Applied voltage: 2.2kVAC (p-p)

- Superior ionizing performance accomplished with the cross flow fan that sends out ions evenly and widely on the wind and the front cover design that takes the ion flow into consideration.
- Volume operation allows the non-step adjustment of airflow.
- Slide-type cleaning brush is mounted on the front cover to perform maintenance of needle electrodes at any time.
- On the bottom surface of the main body, a rough filter is used, which is easy to clean and replace.
- Monitoring functions of fan motor rotation monitoring function and high voltage output
- Shut-down function.

No. L-90-E Overhead Ionizing Triple-Fan NEW
Ionizing method: Piezoelectric high-frequency AC corona discharge  Applied voltage: 10kVAC (p-p) PAT.P.

- Butterfly louver for changing the angle of wind direction from the front cover. Each front cover can be set for a desired direction - high speed spot elimination and/or wide area elimination respectively, corresponding to various applications.
- Unique capacitive-coupled needle electrodes maintain superior ion balance and long term performance.
- Lightweight design.
- Front cover can be removed by one-touch operation. Easy maintenance.

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**CE RoHS**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Power supply</th>
<th>Current consumption (mA)/Max.</th>
<th>Dacay time</th>
<th>Ion balance</th>
<th>Noise level (dBA)</th>
<th>Fan speed (m³/min)</th>
<th>Weight (g)</th>
<th>EDP No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>F6CL-E</td>
<td>24VDC±5%</td>
<td>within 10sec within 10sec</td>
<td>53</td>
<td>0.78</td>
<td>514</td>
<td>621632</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F6ST-E</td>
<td>24VDC±5%</td>
<td>within 10sec within 10sec</td>
<td>53</td>
<td>0.78</td>
<td>460</td>
<td>621631</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Decay time and ion balance: 300sec from the front of a device and max. fan speed.
Noise: 1m from the front of a device and max. air speed)
- Accessories: AC adapter AD-24-ITF6-6(100 to 240V AC), AC input cable (1.8m)
- Option: Filter set F-120FS, Filter F-120EF

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**CE RoHS**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Power supply</th>
<th>Current consumption (mA)/Max.</th>
<th>Dacay time</th>
<th>Ion balance</th>
<th>Noise level (dBA)</th>
<th>Fan speed (m³/min)</th>
<th>Weight (g)</th>
<th>EDP No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>F120R-E</td>
<td>24VDC±5%</td>
<td>within 15sec within 15sec</td>
<td>61</td>
<td>3.66</td>
<td>900</td>
<td>621650</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F120S-E</td>
<td>24VDC±5%</td>
<td>within 15sec within 10sec</td>
<td>51</td>
<td>2.21</td>
<td>900</td>
<td>621646</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Decay time and ion balance: 300sec from the front of a device and max. fan speed.
Noise: 1m from the front of a device and max. air speed)
- Accessories: AC adapter AD-24-IT-EX(100 to 240V AC) AC cable (1.8m)

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**CE RoHS**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Power supply</th>
<th>Current consumption (mA)/Max.</th>
<th>Dacay time</th>
<th>Ion balance</th>
<th>Noise level (dBA)</th>
<th>Fan speed (m³/min)</th>
<th>Weight (g)</th>
<th>EDP No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CF300-E</td>
<td>24VDC±10%</td>
<td>within 15sec within 10sec</td>
<td>52.5</td>
<td>2.5</td>
<td>29</td>
<td>621657</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Decay time and ion balance: 300sec from the front of a device and max. fan speed.
Noise: 1m from the front of a device and max. air speed)
- Accessories: AC adapter AD-24-IT-EX(100 to 240V AC) AC cable (1.8m)
- Cleaning brush

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**CE RoHS**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Power supply</th>
<th>Current consumption (mA)/Max.</th>
<th>Dacay time</th>
<th>Ion balance</th>
<th>Noise level (dBA)</th>
<th>Fan speed (m³/min)</th>
<th>Weight (g)</th>
<th>EDP No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>L-90-E</td>
<td>24VDC±5%</td>
<td>within 15sec within 10sec</td>
<td>72</td>
<td>4.7</td>
<td>4.7</td>
<td>621628</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Decay time and ion balance: 300sec from the front of a device and max. fan speed.
Noise: 1m from the front of a device and max. air speed)
- Accessories: AC adapter AD-24-IT-37(100 to 240V AC) AC cable (1.8m)
No. G2-E
Ionizing Gun

Wiring can be modified according to the real working area environment. Not obtrusive on the cell production bench. Uses cables with superior durability and flexibility.

Ion air flowing out eliminates static electricity. Built-in 70 kHz piezoelectric transformer! Outstanding ion balance within ±10 V Safe circuit with low voltage of DC 24 V
**No. G7R-E**  
**Ionizing Gun**  
Ionizing method: Piezoelectric high-frequency AC corona discharge  
Applied voltage: 2kVAC

- Compact and lightweight.  
- Ergonomically designed grip that fits your hand.  
- Equipped with a green LED light facilitating visual check of dust, and with operating status and alarm lamps.  
- Interchangeable nozzles for various applications (option)  
- Needle electrode can be easily replaced with a dedicated tool.

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**No. BBZ-E**  
**Ionizing Gun**  
Ionizing method: Piezoelectric high-frequency AC corona discharge  
Applied voltage: 2kVAC

- Built with high-intensity white LED light for clear dust detection.  
- Reinforced connector applying a ring tightening type.  
- Silent and high jetting air nozzle for concentrated dust removal.  
- Black colored body in which stain is less conspicuous  
- Long power cable (5m), enabling the model to be moved in a wider area.  
- Light-weight body, alleviating an operator's fatigue.

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**One point**  
Pipe arrangement and wiring can be changed depending on the work

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**No. G2-E**  
**Ionizing Gun NEW**  
Ionizing method: Piezoelectric high-frequency AC corona discharge  
Applied voltage: 2kVAC

- Compact and lightweight.  
- Ergonomically designed grip that fits your hand.  
- Equipped with a green LED light facilitating visual check of dust, and with operating status and alarm lamps.  
- Interchangeable nozzles for various applications (option)  
- Needle electrode can be easily replaced with a dedicated tool.
No. N-1  Super Slim Ionizing Nozzle

Ionizing method: Piezoelectric high-frequency AC corona discharge  Applied voltage: 10kVAC

- Compact design permitting placement anywhere and in any direction. Newly developed high-voltage transformer and control circuit enables unprecedented ease of use to be realized.
- Screw type nozzle is removed easily, making both nozzle replacement and cleaning of the needle electrode easy.
- Equipped with six-pole terminals enabling an abnormally high-voltage signal to emit or 24 V DC power to be daisy-chained.
- Blue lamp lights up during normal operations. When there occurs errors in high voltage, a red lamp flashes.

Standard Nozzle

No. N-3  Pinpoint Ionizing Nozzle

Ionizing method: Piezoelectric high-frequency AC corona discharge  Applied voltage: 5.6kVAC

- Compact and lightweight. Equipped with screw holes for a mounting to a system.
- Offers various nozzles as options that can be used in a variety of applications.
- Screw type nozzle is removed easily, making both nozzle replacement and cleaning of the needle electrode easy.
- Automatically stops in the event of high voltage. Equipped with alarm output terminals.
- Equipped with six-pole terminals enabling an abnormally high-voltage signal to emit or 24 V DC power to be daisy-chained.
- Green lamp lights up during normal operations. When there occurs errors in high voltage, a red lamp flashes.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Power supply</th>
<th>Current consumption (mA/m)</th>
<th>Dacay time</th>
<th>Ion balance</th>
<th>Noise level (dB(A))</th>
<th>Fan speed (m/min)</th>
<th>Weight (g)</th>
<th>EDP No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>N-1</strong></td>
<td>240DC±5%</td>
<td>58</td>
<td>within 10µs</td>
<td>within ±10V</td>
<td>96</td>
<td>190</td>
<td>80</td>
<td>621639</td>
</tr>
<tr>
<td><strong>N-3</strong></td>
<td>240DC±5%</td>
<td>90</td>
<td>within 10µs</td>
<td>within ±10V</td>
<td>99.4</td>
<td>210</td>
<td>104</td>
<td>621654</td>
</tr>
</tbody>
</table>

(Decay time and ion balance: 150µs from the front of a device, at 0.1mA, and when equipped with the standard nozzle (noise: at a measurement distance of 1m and 0.38mA, Air flow: when equipped with the standard nozzle and at 0.38mA)

- Accessories: Standard nozzle N-15N
- Needle Replacement Screwdriver G-7DR, Needle Electrode G1N-H

One point

Interchangeable nozzles for various applications (option)

Shower Nozzle and Silent Nozzle are available as options.

Daisy-chain wiring. High voltage cables stay inside the product.

Power supply to multiple ionizing nozzles is possible. Secure 24V DC wiring.
Aerodynamic body design of the thin cross sectional area enables quick static electricity elimination to be achieved without causing changes in air flow in a clean room or above in a clean bench. Being capable of setting frequency in 10 levels as well as being equipped with auto ion balance mode in which ion balance is automatically adjusted according to the polarity of a charged object, these ionizers can make adjustments according to the installation distance or the amount of charge.

### Frequency setting

<table>
<thead>
<tr>
<th>Installation place</th>
<th>Location</th>
<th>mm</th>
<th>Frequency, Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Film/conveyor</td>
<td>Close distance</td>
<td>50~300</td>
<td>20~50</td>
</tr>
<tr>
<td>Clean bench</td>
<td>Intermediate distance</td>
<td>600~750</td>
<td>8~10</td>
</tr>
<tr>
<td>Clean room ceiling</td>
<td>Long distance</td>
<td>900~1500</td>
<td>0.1~5</td>
</tr>
</tbody>
</table>
C-series

**AC Pulse Ionizing Clean Bar**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Overall length (m)</th>
<th>Discharge needle useful length (m)</th>
<th>Middle blacket (pcs)</th>
<th>Electrode needle (pcs)</th>
<th>Weight (kg)</th>
<th>EDP No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-90</td>
<td>877</td>
<td>660</td>
<td>0</td>
<td>12</td>
<td>0.9</td>
<td>621851</td>
</tr>
<tr>
<td>C-100</td>
<td>1078</td>
<td>900</td>
<td>1</td>
<td>16</td>
<td>1</td>
<td>621852</td>
</tr>
<tr>
<td>C-120</td>
<td>1318</td>
<td>1140</td>
<td>1</td>
<td>20</td>
<td>1.2</td>
<td>621853</td>
</tr>
<tr>
<td>C-150</td>
<td>1558</td>
<td>1380</td>
<td>1</td>
<td>24</td>
<td>1.4</td>
<td>621854</td>
</tr>
<tr>
<td>C-170</td>
<td>1798</td>
<td>1620</td>
<td>2</td>
<td>28</td>
<td>1.6</td>
<td>621855</td>
</tr>
<tr>
<td>C-200</td>
<td>2038</td>
<td>1860</td>
<td>2</td>
<td>32</td>
<td>1.8</td>
<td>621856</td>
</tr>
<tr>
<td>C-220</td>
<td>2278</td>
<td>2100</td>
<td>2</td>
<td>36</td>
<td>2.3</td>
<td>621859</td>
</tr>
<tr>
<td>C-250</td>
<td>2518</td>
<td>2340</td>
<td>3</td>
<td>40</td>
<td>2.6</td>
<td>621860</td>
</tr>
<tr>
<td>C-270</td>
<td>2758</td>
<td>2580</td>
<td>3</td>
<td>44</td>
<td>2.8</td>
<td>621861</td>
</tr>
<tr>
<td>C-300</td>
<td>2998</td>
<td>2820</td>
<td>3</td>
<td>48</td>
<td>3.1</td>
<td>621862</td>
</tr>
</tbody>
</table>

**Power supply**

<table>
<thead>
<tr>
<th>Current Consumption (mA)/max.</th>
<th>Decay time (msec)</th>
<th>Frequency</th>
<th>Pulse ratio</th>
<th>Voltage level</th>
</tr>
</thead>
<tbody>
<tr>
<td>24VDC±5%</td>
<td>600</td>
<td>within 0.8sec 10steps</td>
<td>±40~70%</td>
<td>60~30%</td>
</tr>
</tbody>
</table>

- 24DC±5%: 10.5kV (p-p)
- 300mA directly below at 0.3Vp-p
- Air supply pressure: 0 to 0.3MPa
- Air supply: 0.6 to 0.96m (Air supply port: PT1/8)
- Accessories: Remote controller, Power cable (5m), End brackets (included with device)
- Middle brackets (included with device)
- Power supply: C-40 and C-60
- Model No. C-40/C-60

**AC Pulse Auto Balance Mode**

- The C series are equipped with a mode to optimally adjust the ion balance automatically according to the polarity of the charged object.
- (Target distance: 50 to 100 mm)

**AC pulse method**

- Generating alternately positive ions and negative ions from each electrode. Since ions are generated at the maximum width of each positive and negative electrode cycle, the ion volume is high and static electricity can be removed quickly.

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**Hand Tools**

- Bits & Sockets
- Electric Tools
- Static Solutions
- Gasoline Engines
- Air Tools

**Vessel**

- Wide range of static elimination and size extension supporting any work environments
**SH-series**

**No. SH-series**  Compact AC Pulse Ionizing Bar (separate power supply type)

- Ion balance can be adjusted by changing a pulse ratio.
- The main body is as compact as 30 × 33 mm, ideal for installation in cramped spaces.
- Use of a branch box enables multiple bars to be operated from one power supply equipment.
- High-voltage cable can be attached/detached from the bar’s main body.

---

**No. SH-G3**  Power supply units

Ionizing method: Pulse AC corona discharge  Applied voltage: 10.5kVAC p-p

- Equipped with two sockets for connecting the SH ionizing bars.
- They can be installed and wired easily.
- With the ion balance adjustment function (pulse ratio).
- Equipped with a safety circuit that shuts down the output if overcurrent or high-voltage error occurs.
- Lightest-weight body in the industry: 1.5kg.

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**CE RoHS**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Overall length (mm)</th>
<th>Discharge needle有效 length (mm)</th>
<th>Decay time @ (sec)</th>
<th>Electrode material (pcs)</th>
<th>Weight (kg)</th>
<th>EDP No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SH-16</td>
<td>218</td>
<td>105</td>
<td>within 0.5</td>
<td>8</td>
<td>0.36</td>
<td>621541</td>
</tr>
<tr>
<td>SH-20</td>
<td>258</td>
<td>135</td>
<td>within 0.5</td>
<td>10</td>
<td>0.40</td>
<td>621542</td>
</tr>
<tr>
<td>SH-30</td>
<td>338</td>
<td>210</td>
<td>within 0.5</td>
<td>7</td>
<td>0.42</td>
<td>621543</td>
</tr>
<tr>
<td>SH-40</td>
<td>443</td>
<td>315</td>
<td>within 0.5</td>
<td>10</td>
<td>0.50</td>
<td>621544</td>
</tr>
<tr>
<td>SH-50</td>
<td>548</td>
<td>420</td>
<td>within 0.5</td>
<td>13</td>
<td>0.57</td>
<td>621545</td>
</tr>
<tr>
<td>SH-60</td>
<td>653</td>
<td>525</td>
<td>within 0.5</td>
<td>16</td>
<td>0.63</td>
<td>621546</td>
</tr>
<tr>
<td>SH-70</td>
<td>758</td>
<td>630</td>
<td>within 0.5</td>
<td>19</td>
<td>0.70</td>
<td>621547</td>
</tr>
</tbody>
</table>

Decay time: 3kHz  10.5kV-p-p  Straight down 300mA at 0.33kPa
Air supply pressure: 0 to 0.35kPa, Air supply hose diameter 40x4mm
Options: Branch box SH-SP2, Relay cable (3m) SH-EC3, Relay cable (5m) SH-EC5

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**PSE CE RoHS**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Input power supply</th>
<th>Power consumption (W)</th>
<th>Frequency (Hz)</th>
<th>Plus ratio</th>
<th>Weight (kg)</th>
<th>EDP No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SH-G3</td>
<td>100–240V AC (50/60Hz)</td>
<td>10</td>
<td>30</td>
<td>+: 40–70% ~/–60–30%</td>
<td>1.5</td>
<td>621555</td>
</tr>
</tbody>
</table>

Accessories: AC Power cable 1.8m(for 100VAC and input 2cables)
VESSEL ionizers for a variety of applications.

- Dust prevention on molded parts
- Cell production table
- Static electricity removal in a bottle
- Vibratory bowl feeder (joint nozzle + shower tube)
- Film unwinding and widing
- Glass substrate transfer
- Production of the water film
- Filling pills or capsules into a package
No. IPC-A4
Ion Parts Cleaner

With the Ion parts cleaner applying a unique dust capturing method with an adhesive gel sheet, an installation space for a dust collector or a dust is no longer needed. This gel sheet can be repeatedly used after cleaning off dust. We provide A4 and A3 sizes on the assumption of cell production work. This allows efficient dust removal work to be done according to line design.

Static electricity elimination and dust removal in a hood. Dust adhered by static electricity is neutralized in the ionized hood and then removed by powerful automatic air blow.

No. IPC-A4
Ion Parts Cleaner

Ion parts cleaners playing an important role in line design of cell production. Assembled parts and devices can be cleaned on the spot and flowed to the next process, enabling line design to be smart.
**Ion Parts Cleaner**

**No. IPC-A4**

- Ion Parts Cleaner
- Ionizing method: Piezoelectric high-frequency AC corona discharge
- Applied voltage: 10kVAC (p-p)

- Compact bench-top type of 314 mm wide and 253 mm deep
- Eliminates static electricity and removes dust with air controlled by an infrared sensor.
- Time to stop ion blow after sensing a workpiece by a sensor is settable. (1, 3, 5, 10, or 30 sec)
- Adhesive gel collects blown-off dust assuredly.
- Dust on the adhesive gel mat can be washed off with water and the gel mat can be used repeatedly.
- Dust collector is not required; this reduces power consumption significantly and, in the end, the total running cost. Moreover, pulse blow also cuts the amount of air usage.
- In the pulse mode, air is blown intermittently, exerting force of blowing off dust by vibration. It allows low- and high-speed pulses to be selected according to workpiece.
- Incorporates an air regulator.

**RoHS**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Power supply</th>
<th>Power consumption (W)</th>
<th>Current consumption (mA)</th>
<th>Dust collector airflow (m³/min)</th>
<th>Airflow (m³/min)</th>
<th>Weight (kg)</th>
<th>EDP No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPC-A4</td>
<td>24VDC±5%</td>
<td>17</td>
<td>700</td>
<td>3.5</td>
<td>150</td>
<td>6</td>
<td>621610</td>
</tr>
</tbody>
</table>

(Flow: 0.3MPa Airflow: 0.3MPa)

Operating fluid: Clean dry air (0.1 to 0.5MPa), Air supply hose diameter Φ8mm

Accessories: AC Adapter AD24-IT19E(100~240VAC), AC power cable 1.8m, Adhesive gel sheet/plate (attached on the product) (4pcs.)

**One point**

**Features of IPC-A4 and -A3**

**Dust capturing gel sheet for IPC-A4 and -A3**

Dust capturing using self-adhesive urethane gel
Adhesiveness is restored by cleaning such as washing in water.

---

**Paper-pack filter for IPC-A3**

A paper-pack filter can be attached to the exhaust port in the back of the cleaner (standard specifications).
Replacement of a flange enables the cleaner to be connected to an exhaust duct of ő75 mm.

**Air regulator equipped**

The ion parts cleaners incorporate an air regulator, allowing you to adjust the flow rate of ion air.
We provide IEC standards-compatible ESD protection items ranging from EPA working mats laid on workbenches, storage racks, and trolley surfaces, EPA flooring for PVC floors or floor coating, and to wrist straps for ESD countermeasures.

Stable conductive performance
The conductivity fluctuates easily depending on humidity variations of the usage environment. Our conductive rubber mats have achieved the superior “conductive performance” compatible with the strict selection criteria.

No. LG-100/ SG-100
Conductive Rubber Mat
Special mats through our unique and strict conductivity standards within 10⁻⁶. They maintain stable conductivity even if humidity and temperature change. Available in two colors: light green and green. A wide choice of accessories such as mat connecting gel and ground taps is also available.
EPA Working Mat

No. LG-100/SG-100 Conductive Rubber Mat
Designed for workbenches that require anti-static measures, such as in the semi-conductors industry, electronic components assembly, and others.
Heat-resistant, ideal for soldering work.
- Uniform and consistent conductive performance.
- Matte surface finish, reducing reflections and helping prevent eye fatigue, for the aim at the satisfactory working performance.
- Soft surface that resists bending.
  (Hardness A type 64)

RoHS2

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Color</th>
<th>Size (Length x Width x Thickness)</th>
<th>Weight</th>
<th>EDP No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>LG-100</td>
<td>Light green</td>
<td>10.0mm x 10.0mm x 2.0mm</td>
<td>35kg/roll</td>
<td>621464</td>
</tr>
<tr>
<td>SG-100</td>
<td>Green</td>
<td>10.0mm x 10.0mm x 2.0mm</td>
<td>35kg/roll</td>
<td>621461</td>
</tr>
</tbody>
</table>

Please contact VESSEL for availability of other colors.
Resistance value may vary depending on the conditions of the measurement environment such as the temperature and humidity.

No. EPS-GT2 Ground Tap
- Provides ground connection points for anti-static wrist straps and conductive rubber mats.
- Attach the tap to the surface, the lateral or the back side of a workbench when using.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Grounding cord (m)</th>
<th>Resistance value</th>
<th>Contents (quantity)</th>
<th>EDP No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPS-GT2</td>
<td>Approx. 3.0</td>
<td>Approx. 1MΩ between device and grounding cord (round jack)</td>
<td>20</td>
<td>621402</td>
</tr>
</tbody>
</table>

Material: Core/ABS plastic, Connection hardware/Stainless steel

No. EPC-18 Ground Cord
- Designed to connect to a mat-connecting gel (includes a hook) or grounding tap.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Resistance value</th>
<th>Length (m)</th>
<th>Contents (quantity)</th>
<th>EDP No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPC-18</td>
<td>1MΩ</td>
<td>Max. length of 1.8m (when contracted 0.5m)</td>
<td>20</td>
<td>621393</td>
</tr>
</tbody>
</table>

Accessory: 1 alligator clip

No. EPG-01/EPG-02 Mat-connecting gel
- Made from medical-grade conductive gel.
- No need for grommet; easy to ground and connect multiple mats.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Product name</th>
<th>Size (mm)</th>
<th>Contents (quantity)</th>
<th>EDP No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPG-01</td>
<td>Mat-connecting gel with hook (set of 2)</td>
<td>50 x 50</td>
<td>20</td>
<td>621481</td>
</tr>
<tr>
<td>EPG-02</td>
<td>Mat-connecting gel (set of 2)</td>
<td>50 x 50</td>
<td>20</td>
<td>621482</td>
</tr>
</tbody>
</table>
**No. Eye-02 Electrostatic Field Meter**

- A hand-held measuring instrument enabling you to measure an invisible electrostatic charge condition or ion balance of the ionizer easily.
- Maximum value (peak value)/pause can be displayed.
- LED cross mark as an index for correct measurement distance.
- Equipped with a female thread for camera screws; using with a tripod or jig enables measurements in stable state. Also provided with a plate for ion balance measurements.
- LCD has backlight and provides a bright, easy-to-see display in low light.
- Provided with a soft housing carrying case.
- Compatible with ISO 9000 traceability. A calibration table and certificate can be issued.

![Image of Electrostatic Field Meter]

**Measurement of charged potential**

**CE RoHS**

**Model No.**

<table>
<thead>
<tr>
<th>Measurement range</th>
<th>Measurement distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Static charge voltage measuring</td>
<td>0~±2220V</td>
</tr>
<tr>
<td>Ion balance voltage measuring</td>
<td>0~±150kV/LO (range)</td>
</tr>
<tr>
<td>Weight</td>
<td>170g without Ion Balance plate</td>
</tr>
<tr>
<td>EDP No.</td>
<td>621603</td>
</tr>
</tbody>
</table>

**Power source**

- 9V DC (006 battery 1pc.)
- Accessories: Ion Balance Plate×1, Ground Cord w/alligator clip×1, Carrying Case×1

**No. SRC-01 Surface Resistance Checker NEW**

- Surface resistance checker that facilitates the surface resistance measurement of floor, mat, desk and chair.
- Press and hold the measurement button switch, and the measurement value appears on the display. Automatic power off function is available.
- Voltage can be switched to measure a broad range of resistance values.
- Can measure temperature/humidity at the same time as the surface resistance value.
- Supplied with proves to measure "point-to-point resistance", "resistance to ground" and "volume resistance".
- Comes with a carrying case useful to carry all necessary items for measurement.

![Image of Surface Resistance Checker]

**With a carrying case**

Useful to carry all necessary items for measurement.

**CE RoHS**

**Model No.**

<table>
<thead>
<tr>
<th>Measurement standard</th>
<th>Measurement range</th>
<th>Applied voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECG1340-A1</td>
<td>10^2~10^15Ω</td>
<td>10V (R&lt;1,0x10^4 Ω or Q/sq)</td>
</tr>
<tr>
<td>JS-C2170</td>
<td>10^2~10^15Ω</td>
<td>100V (R&lt;1,0x10^4 Ω or Q/sq)</td>
</tr>
<tr>
<td>SRC-01</td>
<td>10^2~10^15Ω</td>
<td>100V</td>
</tr>
</tbody>
</table>

**Power source**

- 9V battery (006P type)
- Main body: Approx. 340g (including battery)
- Total weight: Approx. 6.2kg (including carrying case)

**Accessories:**

- Probe
- (inner diameter about 6mm, about 2.3kg): 2
- Curled cord for a body grounding (banana plug/ at both ends): 1
- Curled cord for measurement for the point-to-point resistance and resistance to ground (banana plug/mono plug): 2
- Crocodile clip:
- Large crocodile clip: 1
- Stainless plate1185mm×100mm: 1
- Carrying case: 1
- 9V battery (006P typemanganese dry battery): 1
- Manuals

**Resistance between 2 points on a surface.**

**Surface resistivity**

**Volume resistance**

*Accessories: 1*A battery (accessory) is included as a sample. It may be out of use before the estimated number of use with one battery. Replace with a new one in this case.

*Calibration certificate can be issued as option (payable).
EPA Floor Sheet

**No. CD-134/CD-138/CD-602 Conductive Vinyl Floor Sheet CD-leum**

Vinyl floor sheet with uniform and consistent anti-static performance. Optimal for locations where static electricity is especially harmful, such as semi-conductor plants and clean rooms.

- Uniform and consistent conductive performance.
- Using a dedicated welding wand, the floor can be laid seamlessly.
- Dust-resistant surface facilitates cleaning and maintenance.
- High level of chemical resistance to acids, alkaline substances, disinfectants, etc.

![Conductive Vinyl Floor Sheet CD-leum](image)

- Optimal for clean rooms in semi-conductor plants, electronics plants, assembly plants, and pharmaceutical plants, or hospitals, sterile rooms, etc.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Color</th>
<th>Size (Length x Width x Thickness)</th>
<th>Weight</th>
<th>EDP No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD-134</td>
<td>Beige</td>
<td>9.0m x 1.82m x 2.0mm</td>
<td>3.1kg/m²</td>
<td>621492</td>
</tr>
<tr>
<td>CD-138</td>
<td>Green</td>
<td></td>
<td>51kg/roll</td>
<td>621493</td>
</tr>
<tr>
<td>CD-602</td>
<td>Blue</td>
<td></td>
<td>621491</td>
<td></td>
</tr>
</tbody>
</table>

Optional earth plate/welding wand. If you would like to have colors other than the above, please contact us. Resistance value may vary depending on the conditions of the measurement environment such as the temperature and humidity.

**No. LS-134/LS-138/LS-5602 Anti-Static Vinyl Floor Sheet Lonstack**

Vinyl floor sheet with uniform and consistent anti-static performance. This prevents static electricity from being generated, resulting in prevention of adhesion of dust and device malfunction.

- Uniform and consistent conductive performance.
- Using a dedicated welding wand, the floor can be laid seamlessly.
- Dust-resistant surface facilitates cleaning and maintenance.
- High level of chemical resistance to acids, alkaline substances, disinfectants, etc.

![Anti-Static Vinyl Floor Sheet Lonstack](image)

- Optimal for electronics assembly plants, computer rooms, computer rooms of banks, etc.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Color</th>
<th>Size (Length x Width x Thickness)</th>
<th>Weight</th>
<th>EDP No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS-134</td>
<td>Beige</td>
<td>9.0m x 1.82m x 2.0mm</td>
<td>3.2kg/m²</td>
<td>621495</td>
</tr>
<tr>
<td>LS-138</td>
<td>Green</td>
<td></td>
<td>5.2kg/roll</td>
<td>621496</td>
</tr>
<tr>
<td>LS-5602</td>
<td>Blue (Marble)</td>
<td></td>
<td>621494</td>
<td></td>
</tr>
</tbody>
</table>

Optional earth plate/welding wand. If you would like to have colors other than the above, please contact us. Resistance value may vary depending on the conditions of the measurement environment such as the temperature and humidity.
List of EPA Flooring Properties

<table>
<thead>
<tr>
<th>Item</th>
<th>CD-lem</th>
<th>Lonstack</th>
<th>Standard</th>
<th>[Standard value]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dent size (mm)</td>
<td>23°C</td>
<td>0.73</td>
<td>0.70</td>
<td>JIS A5705 (0.3 or larger)</td>
</tr>
<tr>
<td></td>
<td>45°C</td>
<td>1.18</td>
<td>0.96</td>
<td>(1.5 or smaller)</td>
</tr>
<tr>
<td>Remaining dent size (mm)</td>
<td>0.32</td>
<td>0.32</td>
<td>0.20</td>
<td>JIS A5705 (25 or smaller)</td>
</tr>
<tr>
<td>Change rate of length due to heating (%)</td>
<td>Vertical</td>
<td>-1.40</td>
<td>-0.70</td>
<td>JIS A5705 (2.0 or smaller)</td>
</tr>
<tr>
<td>Thickness reduced by abrasion (mm)</td>
<td>Horizontal</td>
<td>0.30</td>
<td>0.20</td>
<td>Weight 1.0kg, rotate 1000 times</td>
</tr>
<tr>
<td>Hardness (A type)</td>
<td>83</td>
<td>80</td>
<td>34</td>
<td>ASTM D2240 value at 15 seconds, 20°C</td>
</tr>
<tr>
<td>Hardness (D type)</td>
<td>34</td>
<td>34</td>
<td></td>
<td>ASTM D2240 value at 15 seconds, 20°C</td>
</tr>
<tr>
<td>Staining properties</td>
<td></td>
<td></td>
<td></td>
<td>JIS A1454, drop 2ml of reagent, leave for 24 hours</td>
</tr>
<tr>
<td>Solution containing sodium hydroxide 2%</td>
<td></td>
<td></td>
<td></td>
<td>○ indicates no change</td>
</tr>
<tr>
<td>Hydrochloric acid 5%</td>
<td></td>
<td></td>
<td></td>
<td>○ indicates change in appearance</td>
</tr>
<tr>
<td>Cement paste</td>
<td></td>
<td></td>
<td></td>
<td>[There must be no significant color or luster change and swelling]</td>
</tr>
</tbody>
</table>

Construction [Please note that the construction should be performed by an authorized constructor. Please consult us for more detail, before order.]

Investigation and analyses
Investigate the current floor conditions (material, cracks, smoothness, surface strength, area and earth connected terminal) and make an estimate. (To the basic price per square meter, expenses for extra work such as crack repair are added).

Construction
EPA flooring contractor performs the construction. (Please finish removal of equipment and cure application before construction starts)

Inspection
Within certain period after installation ends, the point-to-point resistance value and resistance value to ground are measured, and a floor installation completion certificate is issued.

---

**No. AF-45 Conductive Anti-Fatigue Mat NEW**
- Same characteristics as the AF-90.
- Space-saving 600x477mm good for one person.
- Inclined marginal area prevents workers from stumbling or falling.

**No. AF-90 Conductive Anti-Fatigue Mat NEW**
- Conductive mat for fatigue alleviation from long standing work.
- Non-slip mat with embossments on the surface.
- Air pockets on the reverse side for spreading the body weight to alleviate fatigue.
- Light gray mat for easy detection of dirt, which may cause the conductive failure.
- 900mmx600mm convenient size for the working stand for cell production.

**RoHS2**
- Model No. AF-45 Gray 600x447x15 R ≤ 1.0 x 10⁸ Ω 2.0 621489
- Ground wire is not attached.

**RoHS2**
- Model No. AF-90 Gray 900x600x15 R ≤ 1.0 x 10⁸ Ω 4.2 621488
- Ground wire is not attached.

---

Conductivity R ≤ 1.0 x 10⁸ Ω

---

HAND TOOLSBITS & SOCKETselectRIC TOOLSAIR TOOLSSTATIC SOLUTIONSGASOLINE ENGINE TOOLS
No. CW-900EZ
Clean Walker Easy

No more need to peel off films! This is a self-adhesive mat made of high quality urethane gel. Place this mat indoor such as entrance to a clean room, and the dust and dirt adhered to shoes soles or trolley wheels are easily captured. The adhesiveness is restored by washing and drying.

No. CW-900EZ
Clean Walker Easy
This product is a sticky mat that utilizes the self-adherence property of urethane gel. It flexibly changes its shape against dents and projections of shoe soles and wheels of carts, collecting grit and dust well. Dirt can be removed by washing with water.
**No. CW-900B Clean Walker**

For indoor use only (for example, entrance to a clean room). Urethane gel adheres to shoe soles and catches dusts.

- High elasticity mat of 5 mm thick. Catches dust on shoes soles.
- Dust adhered on the CW-900B can be easily taken off by wiping with a damp cloth.
- Reversible (both sides can be used); running costs can be reduced.
- Indoor use only (most recommended to use at an entrance to a clean room).

If the surface gets contaminated, simply wipe it with a damp cloth.

**RoHS**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Color</th>
<th>Conductivity</th>
<th>Size (mm) Length/Width/Thickness</th>
<th>Weight (kg)</th>
<th>EDP No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CW-900B</td>
<td>Blue</td>
<td>Insulator</td>
<td>500×900×5</td>
<td>2.4</td>
<td>621485</td>
</tr>
</tbody>
</table>

**No. CW-T900 Clean Walker Tray**

Inclined tray for easy trolley access. Dedicated to Clean Walker

- Designed to be suitable for the Clean Walker size.
- The inclination allows trolleys to pass over without being jammed.
- Clean Walker mats can be removed from this tray with a little pulling force.

**RoHS**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Color</th>
<th>Conductivity</th>
<th>Size (mm) Length/Width/Thickness</th>
<th>Weight (kg)</th>
<th>EDP No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CW-T900</td>
<td>Blue</td>
<td>Insulator</td>
<td>600×1000×5</td>
<td>2.45</td>
<td>621487</td>
</tr>
</tbody>
</table>

**No. CW-900EZ Clean Walker Easy**

For dust removal from shoes soles in cleanrooms, entrance to air shower booth, or in a factory. Also good for cleaning of trolley wheels.

- Non-woven textiles are sandwiched by the urethane gel layers. A 3mm thickness, providing high strength and resistant to tears under the pressure of trolleys. It can be stuck together like floor tiles.
- 2pcs of 450×500mm: Easy to take the mats off the floor and to clean with water.
- Provided with hook holes: Hang and leave the mat dry, and the mat restores the adhesiveness.
- Indoor use only (most recommended to use at an entrance to a clean room)

2-pcs. Set

Take the mat out of the floor and wash it with water

Hang from hook holes to dry off

**Structure**

Urethane gel
Non-woven textile
Urethane gel

**RoHS**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Color</th>
<th>Conductivity</th>
<th>Size (mm) Length/Width/Thickness</th>
<th>Weight (kg)</th>
<th>EDP No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CW-900EZ</td>
<td>Light purple</td>
<td>Insulator</td>
<td>500×450×3</td>
<td>1.6 (2pcs)</td>
<td>621486</td>
</tr>
</tbody>
</table>

**One point Clean Walker**

It is an adhesive mat that applies the self-adhesive properties of urethane gel. It deforms flexibly along with the unevenness of shoes soles or trolley wheels; dust is reliably captured. Dust and contamination can be washed off with water.

**Applications**

Ideal for removing dust off shoes soles or cleaning trolley wheels indoor

- **CW-900B**
  - Air shower booths
  - Inside the plant

- **CW-900EZ**
  - Entrance to clean rooms
  - For cleaning trolley wheels