High-frequency AC Method

Fan Type Ionizer

ER-F SERIES

No compressed air necessary
Fan Type Ionizer  High-frequency AC Method

ER-F SERIES

A compact shape for reducing workbench clutter

Compact size of 150 × 166 × 62 mm 5.906 × 6.535 × 2.441 in
Low-volume fan type also available for various applications

An ionizer with a 120 mm 4.724 in fan diameter that has a class leading compact size for reducing workbench clutter and increasing efficiency.

Low-volume fan type with a suppressed fan speed of approx. half is available for charge removal in processes which involve handling of small parts or thin films.

* Graphs represent typical values at 300 mm 11.811 in from directly in front of air outlet, straight louver, with no filter installed.

Two exchangeable louvers to suit your needs

Just simply replace the louver to change configuration between long distance and wide area ionization.
The two louvers come with the ionizer main body.
Equipped with discharge needle fouling detection function

Additionally equipped with discharge needle fouling detection function. When discharge becomes weak due to needle fouling, the DSC indicator will flash for notification.

Remove the louver for effortless maintenance

Because the discharge needle unit is attached to the louver, exchange or maintenance of the needles is made easy without touching the main unit. A safe design where once the louver is removed, the high-voltage circuit and the fan will halt.

**ORDER GUIDE**

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<th>Type</th>
<th>Appearance</th>
<th>Charge removal time (±1,000 V → ±100 V)</th>
<th>Ion balance</th>
<th>Model No.</th>
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<tr>
<td>Standard fan type</td>
<td></td>
<td>1 sec. approx. (Note 1)</td>
<td>±10 V or less (Note 2)</td>
<td>ER-F12A</td>
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<td>Low-volume fan type</td>
<td></td>
<td>1.5 sec. approx. (Note 1)</td>
<td></td>
<td>ER-F12SA</td>
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Notes:
1) Typical value at 200 mm 7.874 in from directly in front of air outlet, fan speed MAX, straight louver, with no filter installed.
2) Typical value at 300 mm 11.811 in from directly in front of air outlet, fan speed MAX, straight louver, with no filter installed.

**OPTIONS**

<table>
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<tr>
<th>Type</th>
<th>Model No.</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>AC adapter</td>
<td>ER-FAPS-J2</td>
<td>IN: 100-240 V AC 50/60 Hz</td>
</tr>
<tr>
<td></td>
<td>ER-FAPS-EX</td>
<td>OUT: 24 V DC, 1.5 A</td>
</tr>
<tr>
<td>Discharge needle unit</td>
<td>ER-F12ANT</td>
<td>Unit with tungsten needles (1 pc.)</td>
</tr>
<tr>
<td>Air filter</td>
<td>ER-F12FX5</td>
<td>Replacement filter (5 pcs. per set)</td>
</tr>
</tbody>
</table>

Note: Please prepare an AC cable separately as it is needed.
**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Item</th>
<th>Standard fan type</th>
<th>Low-volume fan type</th>
</tr>
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<tbody>
<tr>
<td>Type</td>
<td>ER-F12A</td>
<td>ER-F12SA</td>
</tr>
<tr>
<td>Charge removal time (±1,000 V → ±100 V)</td>
<td>1 sec. approx. (Note 2)</td>
<td>1.5 sec. approx. (Note 2)</td>
</tr>
<tr>
<td>Ion balance</td>
<td>±10 V or less (Note 3)</td>
<td>±10 V or less (Note 3)</td>
</tr>
<tr>
<td>Power supply voltage</td>
<td>24 V DC ±10 %</td>
<td>24 V DC ±10 %</td>
</tr>
<tr>
<td>Power consumption</td>
<td>700 mA or less</td>
<td>400 mA or less</td>
</tr>
<tr>
<td>Discharge method</td>
<td>High-frequency AC method</td>
<td>High-frequency AC method</td>
</tr>
<tr>
<td>Discharge output voltage</td>
<td>±2 kV approx.</td>
<td>±2 kV approx.</td>
</tr>
<tr>
<td>Max. fan speed</td>
<td>5.3 m/s (Note 3)</td>
<td>4.0 m/s (Note 3)</td>
</tr>
<tr>
<td>Max. fan volume</td>
<td>3.68 m³/min.</td>
<td>2.50 m³/min.</td>
</tr>
</tbody>
</table>

**Error output**

- Output operation: OFF when discharge error or fan error detected
- Normally ON

**Discharge halt input**

- Discharge halt: Short-circuited to 0 V
- Discharge (operation start): Open

**Indicators**

- Discharge error (Red)
- Fan error (Red)
- Power (Green)
- Discharge (Green)

**Ozone generation amount**

- 0.04 ppm or less (Note 2)

**Ambient temperature**

- 0 to +50 °C (+32 to +122 °F) (No dew condensation allowed), Storage: −10 to +65 °C (+14 to +149 °F)

**Ambient humidity**

- 35 to 65 % RH (No dew condensation allowed), Storage: 35 to 65 % RH

**Grounding method**

- C (capacitor) grounding

**Material**


**Weight**

- Net weight: 790 g approx.

**Accessories**

- Straight louver: 1 pc. (Note 4), Angle louver: 1 pc., Caution label: 1 set, Rubber cushion: 1 pc.

Notes:

1) Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +20 °C +68 °F.
2) Typical value at 200 mm 7.874 in from directly in front of air outlet, fan speed MAX., straight louver, with no filter installed.
3) Typical value at 300 mm 11.811 in from directly in front of air outlet, fan speed MAX., straight louver, with no filter installed.
4) The discharge needle unit is loaded on the straight louver before shipment.

**I/O CIRCUIT AND WIRING DIAGRAMS**

**I/O circuit diagram**

- Non-voltage contact or NPN open-collector transistor
- Low (0 V): Discharge halt
- High (Open): Discharge (Operation starts)

**Symbols**

- D1: Reverse supply polarity protection diode
- Dz: Output protection diode
- D3: Input protection diode
- ZD: Surge absorption zener diode
- Tr: NPN output transistor

**Connector terminal arrangement**

- (From cable insertion side)

**Recommended wiring cable**

- Compatible wire: 25 AWG to 12 AWG (nominal cross-sectional area: 0.16 to 3.3 mm²)
- Wire stripping length: 7 mm 0.276 in (see below)

Note: Do not solder-plate the ends of wires being connected to connectors. Doing so may result in loosening of tightened screws, causing the wire to come loose.
### CHARGE REMOVAL CHARACTERISTICS (TYPICAL)

Measured using a 150 × 150 mm 5.906 × 5.906 in CPM (charge plate monitor) (At center of CPM)

<table>
<thead>
<tr>
<th>ER-F12A</th>
<th>ER-F12SA</th>
</tr>
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</table>

Solid lines in the graphs show ER-F12A. Dotted lines show ER-F12SA.

#### Charge removal field (Fan speed MAX., straight louver is mounted)

- Charge removal distance L (mm in)
- Charge removal width W (mm in)

#### Charge removal field (Fan speed MAX., angle louver is mounted)

- Charge removal distance L (mm in)
- Charge removal width W (mm in)

**PRECAUTIONS FOR PROPER USE**

- Never use this product in a device for personnel protection.
- In case of using sensing devices for personnel protection, use products which meet laws and standards, such as OSHA, ANSI or IEC etc., for personnel protection applicable in each region or country.
- Do not use this product in places where there may be a danger of flammable or combustible items being present.
- If this product is used in an airtight room, ozone emitted from this product may be detrimental. Therefore, in order for this product to be used in an airtight room, be sure to keep the room ventilated.
- Since the tip of the discharge needle is sharp, take sufficient care in handling the discharge needle.
- Clean the discharge needle regularly, otherwise optimum charge removal performance may not be obtained and fire or operating problems may occur.
- Be sure to ground the frame ground (F.G.) terminal.

### DIMENSIONS (Unit: mm in)

The CAD data can be downloaded from our website.

<table>
<thead>
<tr>
<th>ER-F12A</th>
<th>ER-F12SA</th>
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- Air outlet
- Fan speed select switch
- Power switch
- Fan error indicator (Red)
- Discharge error indicator (Red)
- Discharge indicator (Green)
- Power indicator (Green)
- Bracket
- Power connector
- Air inlet
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Panasonic:

ER-FAPS-EX  ER-FAPS-J2  ER-F12SA  ER-F12ANT  ER-F12FX5  ER-F12A