Ionizer

Potential amplitude: 25 V or less

Rapid elimination of static electricity: As little as 0.1 seconds

Dual AC type Series IZS42
Reduced potential amplitude.

Feedback sensor type Series IZS41
Feedback sensor enables the rapid elimination of static electricity.

Standard type Series IZS40
Simple operation: only power ON/OFF required.

Note 1) IZS42, Installation height: 300 mm
Note 2) Conditions/With feedback sensor
Charged voltage: 1000 V → 100 V
Discharged object: Charged plate (150 mm x 150 mm, capacitance 20 pF)
Installation distance: 200 mm (Tungsten electrode with air purge)
Potential amplitude: **25 V or less** 80% reduction compared to the conventional model

(Compared to the IZS31 series at an installation distance of 300 mm)

Potential amplitude is reduced with **SMC’s original Dual AC type ionizer**.

Static electricity elimination may be achieved without causing damage to devices which are sensitive to electrostatic discharge (ESD). Potential amplitude applied to the workpiece is reduced even when it is installed close to the ionizer.

Potential amplitude (ionizer installation distance: 300 mm)

---

**Original Dual AC type is introduced.**

- **New Dual AC type/IZS42**
  - + and - ions are discharged at the same time so that they reach the workpiece evenly mixed, which reduces the potential amplitude.

Layers of the same polarity ions reach the workpiece at the same time, which increases the potential amplitude.

---

**Standard type Series IZS40**

**Simple operation: only power ON/OFF required.**

Static electricity neutralizing speed is improved with the use of the IZS40. At 1000 mm, the static electricity neutralizing time of the IZS40 is **3.2 s**. This represents a 41% reduction in neutralizing time compared to previously released models.

---

Static electricity neutralization data when voltage is reduced from 1000 V to 100 V.

Conditions: Ion generation frequency 30 Hz  Supply pressure: 0.1 MPa

IZS40 used with high speed electrode cartridge.
Feedback sensor type *Series IZS41* (High speed)

**Rapid elimination of static electricity by a feedback sensor**

The speed of static electricity elimination has been increased by measuring the workpiece’s electrostatic potential with a feedback sensor (option) and continuously emitting ions with the opposite polarity.

**Run mode after static electricity removal (ion balance: within ±30 V) can be selected.**

- **Energy saving run mode** To reduce power consumption ion generation is halted once neutralization is complete.
- **Continuous neutralization run mode** After neutralization, the ionizer switches to AC mode. Continues to neutralize, even when the ion balance is within ±30V.

**Continuous neutralization run mode**

- **Supply pressure:** 0.1 MPa
- **Operation frequency:** 30 Hz
- **High speed electrode cartridge:** (8.6 L/min [ANR]/Cartridge)

**Removing static electricity from PCBs**

- Prevents damage caused by ESD.
- Prevents adhesion of dust.

**Removing static electricity from PET bottles**

- Trip-resistance during conveying
- Prevents adhesion of dust.

**Removing static electricity from moulded goods**

- Improves detachment from die.

**AC power supply adapter is available.**

**Suitable for static electricity elimination of resin and rubber pieces (small parts).**

- *e-con connector* is used.
Reduction of adjustment and maintenance time using an auto balance sensor

**Built-in type (Standard)**

The sensor is installed within the ionizer body and may be mounted anywhere. Monitoring the amount of ions emitted from the ionizer, the autobalance sensor maintains the initial ion balance by adjusting the +/- ion supply rate.

**Ion balance (image)**

- Time (h)
- Ion balance (V)

**High accuracy type (Option)**

- The ion balance near the workpiece is accurately adjusted.
- The object is not affected by the height of installation or interference with the ionized air flow.

**Auto balance sensor**

Measures the ion balance condition.

- Adjusts the ion balance surrounding a workpiece.

**Low maintenance electrode cartridges are used.**

- Minimizes contamination of electrodes by discharging compressed air at the electrode surface.

**2 types of electrode material**

- **Tungsten** (Cartridge colour: white): Ion balance ±30 V
- **Single crystal silicon** (Cartridge colour: grey): Ion balance ±30 V, suitable for eliminating static electricity on silicon wafers
Ions are transferred to the workpieces efficiently by using two pneumatic nozzles to improve the static electricity removal performance.

Elimination of static electricity with reduced air consumption through the use of one pneumatic nozzle.

High speed static electricity elimination cartridges and energy saving static electricity elimination cartridges are available.

- High speed cartridge
- Energy saving type cartridge

The air consumption of the energy-saving cartridge is approximately 50% less than that of the high speed cartridge.

The static electricity neutralization speed is reduced by approximately 20 to 30%.

Setting ionizer with remote control

- May be used to adjust and set several ionizers remotely.
- Can recognize and control up to 16 ionizers through address setting.
- Frequency setting
- Ion balance adjustment
- Electrode contamination detection alarm level can be adjusted (3 levels).
- Built-in sensor enable/disable may be selected.

Transition wiring may be used.

Total number of ionizers that may be connected: IZS41: Max. 8 units. IZS42: Max. 5 units.

<Conditions> Bar length 340 to 2500 mm, Power supply cable 3 m, Transition wiring cable 2 m

Reduction in labour time required to connect power supply.

IZS41

From the 7th ionizer to the 3rd ionizer

Transition wiring cable → to POWER for the 2nd ionizer

IZS42

Security functions

- Electrode cartridge drop prevention function
  Locking by double-action

- Drop prevention cover
  Extra safeguard against falling electrode cartridges

When attached to the body
## Ionizer Series IZS40/41/42

### Models and Functions

<table>
<thead>
<tr>
<th>Method of applying voltage</th>
<th>IZS42</th>
<th>IZS41</th>
<th>IZS40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dual AC</td>
<td>●</td>
<td>●</td>
<td>—</td>
</tr>
<tr>
<td>AC, Sensing AC, DC</td>
<td>●</td>
<td>●</td>
<td>—</td>
</tr>
<tr>
<td>AC, DC</td>
<td>●</td>
<td>●</td>
<td>—</td>
</tr>
</tbody>
</table>

| Sensor (Auto balance)     | Built-in type (Standard) | ●     | ●     | —     |
|                          | High accuracy type (Option) | ●     | ●     | —     |

| Feedback sensor (Option) | —     | ●     | —     |

| I/O                       | —     | ●     | —     |

| Transition wiring may be used, Note 1) | —     | ●     | —     |

| Electrode contamination detector | —     | ●     | —     |

| High voltage error detection | —     | ●     | ●     |

| Low maintenance electrode | —     | ●     | ●     |

| Electrode cartridge        | Energy saving | —     | ●     | ●     |
|                           | High speed    | —     | ●     | ●     |

| With one-touch fitting (ø6, ø8, ø10) | —     | ●     | ●     |

| Bracket mount              | —     | ●     | ●     |

| Non-standard bar length (Made to Order) | —     | ●     | ●     |

### Accessories sold separately (per series)

<table>
<thead>
<tr>
<th>Accessories sold separately (per series)</th>
<th>IZS42</th>
<th>IZS41</th>
<th>IZS40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remote controller</td>
<td>●</td>
<td>●</td>
<td>—</td>
</tr>
<tr>
<td>AC adapter</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Drop prevention cover</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Electrode cleaning kit</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

Note 1) Order transition wiring separately.
**Application Examples**

**Eliminating static electricity from films**
- Prevents adhesion of dust.
- Prevents winding failure due to creases etc.

**Eliminating static electricity on film molded goods**
- Prevents adhesion to conveyor.
- Prevents scattering of finished goods.

**Eliminating static electricity during wafer transfer**
- Prevents damage due to discharge between wafers and operators.

**Eliminating static electricity from packing films**
- Prevents the filled substance from adhering to the packing film.
- Reduces packing mistakes.

**Eliminating static electricity from lens**
- Removes dust from lens.
- Prevents adhesion of dust.

**Eliminating static electricity from parts feeder**
- Prevents clogging of parts feeder.
Series IZS40/41/42

Technical Data

Static Electricity Elimination Characteristics

1) Installation Distance and Neutralization Time (Electricity Elimination from 1000 V to 100 V)

IZS40, 41

1) Without air purge

2) With high speed electrode cartridge, with air purge

Supply pressure: 0.1 MPa (8.6 L/min [ANR] per cartridge)

3) With energy saving type electrode cartridge, with air purge

Supply pressure: 0.3 MPa (17.6 L/min [ANR] per cartridge)

Note) Static electricity elimination characteristics are based on data using a charged plate (size: 150 mm x 150 mm, capacitance: 20 pF) as defined in the U.S. ANSI standards (ANSI/ESD, STM3.1-2006). Use only as a guideline purpose only for model selection because the values vary depending on the material and/or size of objects.
IZS42

1) Without air purge

2) With high speed electrode cartridge, with air purge

Supply pressure: 0.1 MPa (8.6 L/min [ANR] per cartridge)

3) With energy saving type electrode cartridge, with air purge

Supply pressure: 0.1 MPa (4.3 L/min [ANR] per cartridge)

Supply pressure: 0.3 MPa (17.6 L/min [ANR] per cartridge)

Supply pressure: 0.3 MPa (8.6 L/min [ANR] per cartridge)

Supply pressure: 0.5 MPa (26.4 L/min [ANR] per cartridge)

Supply pressure: 0.5 MPa (13.3 L/min [ANR] per cartridge)
Series IZS40/41/42

Static Electricity Elimination Characteristics

2) Static Electricity Elimination Range

IZS40, 41
Frequency: 30 Hz

1) Supply pressure: 0 MPa

2) With high speed electrode cartridge, supply pressure: 0.3 MPa

3) With energy saving type electrode cartridge, supply pressure: 0.3 MPa

Note) Static electricity elimination characteristics are based on data using a charged plate (size: 150 mm x 150 mm, capacitance: 20 pF) as defined in the U.S. ANSI standards (ANSI/ESD, STM3.1-2006). Use only as a guideline purpose only for model selection because the values vary depending on the material and/or size of objects.
IZS42
Frequency: 30 Hz

1) Supply pressure: 0 MPa

2) With high speed electrode cartridge, supply pressure: 0.3 MPa

3) With energy saving type electrode cartridge, supply pressure: 0.3 MPa
### Static Electricity Elimination Characteristics

#### 3 Potential Amplitude

**IZS40, 41**  
Supply pressure: 0.3 MPa, frequency: 30 Hz  
With high speed electrode cartridge  
With energy saving type electrode cartridge

**IZS42**  
Supply pressure: 0.3 MPa, frequency: 30 Hz  
With high speed electrode cartridge  
With energy saving type electrode cartridge

Note: Static electricity elimination characteristics are based on data using a charged plate (size: 150 mm x 150 mm, capacitance: 20 pF) as defined in the U.S. ANSI standards (ANSI/ESD, STM3.1-2006). Use only as a guideline purpose only for model selection because the values vary depending on the material and/or size of objects.
### 4 Flow Rate — Pressure Characteristics

**With high speed electrode cartridge**

![Flow Rate — Pressure Characteristics](image)

**How to measure**

a) Single side air supply (Connecting tube: O.D. ø6 x I.D. ø4)  
   (IZS4□-340, 400, 460, 580, 640)

b) Double sided air supply (Connecting tube: O.D. ø6 x I.D. ø4)  
   (IZS4□-820, 1120, 1300)

c) Double sided air supply (Connecting tube: O.D. ø8 x I.D. ø5)  
   (IZS4□-1600, 1900, 2320, 2500)

**Feedback Sensor Detection Range**

The relationship between the feedback sensor’s installation distance and the detection range is as follows:

![Feedback Sensor Detection Range](image)

<table>
<thead>
<tr>
<th>Installation distance</th>
<th>Detection range</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>45</td>
</tr>
<tr>
<td>25</td>
<td>100</td>
</tr>
<tr>
<td>50</td>
<td>180</td>
</tr>
</tbody>
</table>

---

**Enlarged view of sensor head**

![Enlarged view of sensor head](image)
### Ionizer Series IZS40/41/42

**How to Order**

<table>
<thead>
<tr>
<th>Type</th>
<th>IZS 40</th>
<th>IZS 42</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 40</td>
<td>1600</td>
<td>1600</td>
</tr>
<tr>
<td>Type 41/42</td>
<td>1600</td>
<td>1600</td>
</tr>
</tbody>
</table>

**Made to Order**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Contents</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>-X10</td>
<td>Non-standard bar length</td>
<td></td>
</tr>
</tbody>
</table>

For n = 2, 3, 6, 11, 14, 19, 24, 31 or 34 use the standard product.

**Ordering example**

<table>
<thead>
<tr>
<th>IZS 40</th>
<th>IZS 42</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1660</td>
<td>-1660</td>
</tr>
<tr>
<td>-10B</td>
<td>-10B</td>
</tr>
<tr>
<td>-X10</td>
<td>-X10</td>
</tr>
</tbody>
</table>

**Bar length**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Bar length (mm)</th>
<th>340</th>
<th>400</th>
<th>460</th>
<th>580</th>
<th>640</th>
<th>820</th>
<th>1120</th>
<th>1300</th>
<th>1600</th>
<th>1900</th>
<th>2320</th>
<th>2500</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>With power supply cable (3 m)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>High speed cartridge</td>
<td>Tungsten</td>
<td>Silicon</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J</td>
<td>Energy saving cartridge</td>
<td>Tungsten</td>
<td>Silicon</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
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<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
</tbody>
</table>

**Input/Output specifications**

- PNP
- NPN

* When using the AC adapter no input/output function is possible, so specify "-" for this option.

**Power supply cable**

- With power supply cable (10 m)
- With power supply cable

* When only an e-con connector for the IZS40 is required, specify "N" and order separately (see page 10 for selection). The AC adapter comes with a cable.

**One-touch fitting**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>One-touch fitting</th>
<th>06</th>
<th>08</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>06</td>
<td>ø6 One-touch fitting</td>
<td>ø6</td>
<td>ø6</td>
<td>ø6</td>
</tr>
<tr>
<td>08</td>
<td>ø8 One-touch fitting</td>
<td>ø8</td>
<td>ø8</td>
<td>ø8</td>
</tr>
<tr>
<td>10</td>
<td>ø10 One-touch fitting</td>
<td>ø10</td>
<td>ø10</td>
<td>ø10</td>
</tr>
</tbody>
</table>

**Recommended piping port size**

<table>
<thead>
<tr>
<th>Bar length symbol</th>
<th>Ø6</th>
<th>Ø8</th>
<th>Ø10</th>
</tr>
</thead>
<tbody>
<tr>
<td>340</td>
<td>460</td>
<td>640</td>
<td>820</td>
</tr>
<tr>
<td>460</td>
<td>640</td>
<td>820</td>
<td>1120</td>
</tr>
<tr>
<td>580</td>
<td>820</td>
<td>1120</td>
<td>1300</td>
</tr>
<tr>
<td>640</td>
<td>1120</td>
<td>1300</td>
<td>1600</td>
</tr>
<tr>
<td>820</td>
<td>1300</td>
<td>1600</td>
<td>1900</td>
</tr>
<tr>
<td>1120</td>
<td>1600</td>
<td>1900</td>
<td>2320</td>
</tr>
<tr>
<td>1300</td>
<td>1900</td>
<td>2320</td>
<td>2500</td>
</tr>
</tbody>
</table>

- Ø6 with piping on one side
- Ø8 with piping on both sides

**Bracket**

- Without bracket
- With bracket

* The number of intermediate brackets differ depending on the bar length. (Refer to the below table.)

**Number of brackets**

<table>
<thead>
<tr>
<th>Bar length symbol</th>
<th>End bracket</th>
<th>Intermediate bracket</th>
</tr>
</thead>
<tbody>
<tr>
<td>340</td>
<td>With 2 pcs.</td>
<td>None</td>
</tr>
<tr>
<td>820 to 1600</td>
<td>With 2 pcs.</td>
<td>With 3 pcs.</td>
</tr>
<tr>
<td>1660 to 2380</td>
<td>With 1 pc.</td>
<td>With 2 pcs.</td>
</tr>
<tr>
<td>2440 to 2500</td>
<td>With 3 pcs.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Sensor</th>
<th>IZS41</th>
<th>IZS42</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>Built-in sensor</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>F</td>
<td>Feedback sensor</td>
<td>●</td>
<td>-</td>
</tr>
<tr>
<td>G</td>
<td>Auto balance sensor (High accuracy type)</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

* Feedback sensor cannot be used with the IZS42.

**Symbol**

- Made to Order

**Specifications**

- For n = 2, 3, 6, 11, 14, 19, 24, 31 or 34 use the standard product.

- The main unit is shipped fitted with electrode cartridge drop prevention cover(s) (the drop prevention cover(s) should be ordered separately).
Specifications

<table>
<thead>
<tr>
<th>Ionizer model</th>
<th>IZS40</th>
<th>IZS41-□□□□□□ (NPN)</th>
<th>IZS41-□□□□□□ (PNP)</th>
<th>IZS42-□□□□□□ (NPN)</th>
<th>IZS42-□□□□□□ (PNP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ion generation method</td>
<td>Corona discharge type</td>
<td>Corona discharge type</td>
<td>Corona discharge type</td>
<td>Corona discharge type</td>
<td>Corona discharge type</td>
</tr>
<tr>
<td>Electrode voltage type</td>
<td>AC, DC</td>
<td>AC, Sensing AC: DC</td>
<td>DC</td>
<td>AC, Sensing AC: DC</td>
<td>AC, Sensing AC: DC</td>
</tr>
<tr>
<td>Electrode voltage</td>
<td>≥7,000 V</td>
<td>≤6,000 V</td>
<td>≤6,000 V</td>
<td>≤6,000 V</td>
<td>≤6,000 V</td>
</tr>
</tbody>
</table>

**Ion balance**
- Fluid: Air (Clean dry air)
- Operating pressure: 0.5 MPa or less
- Proof pressure: 0.7 MPa

**Current consumption**
- 330 mA or less
- 440 mA or less (Sensing AC: 200 to 2000 mm, Automatic run/Manual run: 480 mA or less)
- 700 mA or less (Automatic run/Manual run: 740 mA or less)

**Power supply voltage**
- 24 VDC ±10% (100 to 240 VAC: AC adapter option)
- 24 VDC to 26.4 VDC

**Input signal**
- Discharge stop signal: Connect to GND
- Electrode contamination detection signal: Voltage range: 5 VDC or less
- Current consumption: 5 mA or less

**Output signal**
- Maintenance signal: Max. load current: 100 mA
- Voltage drop 1 V or less
- Error signal: Max. applied voltage: 26.4 VDC

**Function**
- High voltage error detection
- Ion balance control with the built-in sensor, electrode contamination detection, and ion discharge stop input
- Transition wiring
- Remote control (sold separately)
- External sensor connection

**Effective operating distance**
- 50 to 2000 mm
- 50 to 2000 mm (Sensing AC mode: 200 to 2000 mm, Manual run/Automatic run: 100 to 2000 mm)
- 50 to 2000 mm (Manual run/Automatic run: 100 to 2000 mm)

**Ambient and fluid temperature**
- 0 to 40°C
- 0 to 50°C

**Ambient humidity**
- 35 to 80% Rh (with no condensation)
- 35 to 65% Rh (with no condensation)

**Impact resistance**
- 100 m/s²

**Standards/Directive**

**Number of electrode cartridges/Bar weight**

<table>
<thead>
<tr>
<th>Bar length symbol</th>
<th>340</th>
<th>400</th>
<th>460</th>
<th>580</th>
<th>640</th>
<th>820</th>
<th>1120</th>
<th>1300</th>
<th>1600</th>
<th>1900</th>
<th>2320</th>
<th>2500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of electrode cartridges</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>9</td>
<td>10</td>
<td>13</td>
<td>18</td>
<td>21</td>
<td>26</td>
<td>31</td>
<td>38</td>
<td>41</td>
</tr>
<tr>
<td>Weight [g]</td>
<td>IZS40</td>
<td>590</td>
<td>640</td>
<td>690</td>
<td>790</td>
<td>830</td>
<td>980</td>
<td>1220</td>
<td>1360</td>
<td>1600</td>
<td>1840</td>
<td>2170</td>
</tr>
<tr>
<td>IZS41</td>
<td>740</td>
<td>790</td>
<td>840</td>
<td>940</td>
<td>980</td>
<td>1130</td>
<td>1370</td>
<td>1510</td>
<td>1750</td>
<td>1990</td>
<td>2320</td>
<td>2470</td>
</tr>
<tr>
<td>IZS42</td>
<td>860</td>
<td>910</td>
<td>960</td>
<td>1060</td>
<td>1100</td>
<td>1250</td>
<td>1490</td>
<td>1630</td>
<td>1870</td>
<td>2110</td>
<td>2440</td>
<td>2590</td>
</tr>
</tbody>
</table>

**External sensor**

- Sensor model: IZS31-DF (Feedback sensor), IZS31-DG (Automatic balance sensor) [High accuracy type]
- Ambient temperature: 0 to 50°C
- Ambient humidity: 35 to 80% Rh (with no condensation)
- Case material: ABS, Stainless steel
- Impact resistance: 100 m/s²
- Weight: 200 g (including cable weight)
- Installation distance: 10 to 50 mm (Recommended)
- Standards/Directive: CE, UL, CSA

**AC adapter (Sold separately)**

- Model: IZF10-CG, IZS41-CG
- Input voltage: 100 VAC to 240 VAC, 50/60 Hz
- Output current: 1 A
- Ambient temperature: 0 to 40°C
- Ambient humidity: 35 to 85% Rh (with no condensation)
- Weight: 220 g
- Standards/Directive: CE, UL, CSA

**Remote controller (Sold separately)**

- Model: IZS41-RC
- Type: Infrared
- Transmission capacity: 5 m [Note 3]
- Power supply: 2 AAA sized batteries (sold separately) [Note 2]
- Ambient temperature: 0 to 45°C
- Ambient humidity: 35 to 80% Rh (with no condensation)
- Weight: 33 g (excluding dry cell batteries)
- Standards/Directive: CE

**Construction**

**Series IZS40**

**Series IZS41/42**

Note 1) Varies depending on the operating conditions and environment.

Note 2) Batteries are not supplied.

Note 3) Refer to the operation manual for handling of the remote control.
Series IZS40/41/42

Accessories (for Individual Parts)

Feedback sensor
IZS31-DF

Auto balance sensor [High accuracy type]
IZS31-DG

Power supply cable
- IZS40-CP (3 m) · IZS41-CP (3 m)
- IZS40-CPZ (10 m) · IZS41-CPZ (10 m)

High speed electrode cartridge
- IZS40-NT (Material: Tungsten)
- IZS40-NC (Material: Silicon)
Energy saving electrode cartridge
- IZS40-NJ (Material: Tungsten)
- IZS40-NK (Material: Silicon)

End bracket/IZS40-BE

Intermediate bracket/IZS40-BM

Made to Order

<table>
<thead>
<tr>
<th>Model with made-to-order power supply cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Available in 1 m increments from 1 m to 9 m.</td>
</tr>
<tr>
<td>Note 1) Use standard power supply cables for 3 m and 10 m lengths.</td>
</tr>
</tbody>
</table>

For IZS40

For IZS41/42

Tungsten (Cartridge colour: White)

Silicon (Cartridge colour: Grey)

How to Order

<table>
<thead>
<tr>
<th>Type</th>
<th>Power supply cable full length</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>IZS40-CP (3 m)</td>
</tr>
<tr>
<td>41</td>
<td>IZS41-CP (3 m)</td>
</tr>
<tr>
<td>40</td>
<td>IZS40-CPZ (10 m)</td>
</tr>
<tr>
<td>41</td>
<td>IZS41-CPZ (10 m)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Cable full length</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>1 m</td>
</tr>
<tr>
<td>02</td>
<td>2 m</td>
</tr>
<tr>
<td>09</td>
<td>9 m</td>
</tr>
</tbody>
</table>

End bracket/IZS40-BE

Intermediate bracket/IZS40-BM

Note) Ionizer mounting screws attached, M4 x 8, 2 pcs.

Note) The number of intermediate brackets required, as listed below, depends on the bar length. Two end brackets are always required regardless of the bar length.

<table>
<thead>
<tr>
<th>Bar length symbol</th>
<th>End bracket</th>
<th>Intermediate bracket</th>
</tr>
</thead>
<tbody>
<tr>
<td>340 to 760</td>
<td>2 pcs.</td>
<td>None</td>
</tr>
<tr>
<td>820 to 1600</td>
<td>2 pcs.</td>
<td>1 pc.</td>
</tr>
<tr>
<td>1660 to 2380</td>
<td>2 pcs.</td>
<td>2 pcs.</td>
</tr>
<tr>
<td>2440 to 2500</td>
<td>3 pcs.</td>
<td></td>
</tr>
</tbody>
</table>

Note) The model number is for a single bracket.
Sold Separately

Electrode cartridge drop prevention cover

**IZS40-E**

<table>
<thead>
<tr>
<th>Number of fixed electrode cartridges</th>
</tr>
</thead>
<tbody>
<tr>
<td>IZS40-E3</td>
</tr>
<tr>
<td>IZS40-E4</td>
</tr>
<tr>
<td>IZS40-E5</td>
</tr>
</tbody>
</table>

**Required number of drop prevention covers**

<table>
<thead>
<tr>
<th>Bar length symbol</th>
<th>IZS40-E3</th>
<th>IZS40-E4</th>
<th>IZS40-E5</th>
</tr>
</thead>
<tbody>
<tr>
<td>340</td>
<td>—</td>
<td>—</td>
<td>1</td>
</tr>
<tr>
<td>400</td>
<td>2</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>460</td>
<td>1</td>
<td>1</td>
<td>—</td>
</tr>
<tr>
<td>580</td>
<td>—</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>640</td>
<td>—</td>
<td>—</td>
<td>2</td>
</tr>
<tr>
<td>820</td>
<td>1</td>
<td>—</td>
<td>2</td>
</tr>
<tr>
<td>1120</td>
<td>1</td>
<td>—</td>
<td>3</td>
</tr>
<tr>
<td>1300</td>
<td>2</td>
<td>—</td>
<td>3</td>
</tr>
<tr>
<td>1600</td>
<td>2</td>
<td>—</td>
<td>4</td>
</tr>
<tr>
<td>1900</td>
<td>2</td>
<td>—</td>
<td>5</td>
</tr>
<tr>
<td>2320</td>
<td>1</td>
<td>—</td>
<td>7</td>
</tr>
<tr>
<td>2500</td>
<td>2</td>
<td>—</td>
<td>7</td>
</tr>
</tbody>
</table>

Remote control/IZS41-RC

AC adapter

**IZF10-C**

For IZS40

- AC adapter

**IZS41-C**

For IZS41/42

- AC adapter

-selling separately

Ionizer Series IZS40/41/42

**Transition wiring cable**

**IZS41-CF**

- Transition wiring cable

**Made to Order**

How to Order

**IZS41-CF X13**

Model with Made-to-order transition wiring cable

Available in 1 m increments from 1 m to 9 m.

Note 1) Use standard power supply cables for 2 m, 5 m and 8 m lengths.

Note 2) Transition wiring is not possible for the IZS40.

**Electrode cleaning kit/IZS30-M2**

- Electrode cartridge drop prevention cover

Location of electrode cartridge when mounted

When attached to the body

- Transition wiring cable length

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Cable full length</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>1 m</td>
</tr>
<tr>
<td>03</td>
<td>3 m</td>
</tr>
<tr>
<td>09</td>
<td>9 m</td>
</tr>
</tbody>
</table>

* External input and output cannot be used when the AC adapter is being used.
Wiring/IZS40

Wire cables in accordance with the wiring chart.

1. Grounding of F.G. cable
   Ensure the F.G. cable (green) is grounded with a resistance less than 100 Ω.
   The F.G. connection is used as the voltage reference point. If the F.G. terminal is not properly grounded, the ionizer will not achieve the optimal ion balance. Therefore, please connect to ground with a resistance of less than 100 Ω.

2. Connection circuit ("POWER" connector)
   Wiring of the IZS40
   e-con is adopted for the connector of the IZS40. The connector can be ordered complete with cable, or just the connector on its own. When the e-con connector alone is required, order separately as an accessory.

   How to connect the cable of the connector
   1) Strip the cable as shown in the figure below. Refer to the following table for the applicable wire size.

   ![Diagram of how to connect the cable]

   Applicable wire
<table>
<thead>
<tr>
<th>AWG No.</th>
<th>Conductor cross section [mm²]</th>
<th>Finish O.D. [mm]</th>
<th>Connector model</th>
</tr>
</thead>
<tbody>
<tr>
<td>26-24</td>
<td>0.14-0.2</td>
<td>ø0.8-ø1.0</td>
<td>ZS-28-C</td>
</tr>
</tbody>
</table>

   2) Insert the prepared cable into the appropriately numbered positions on the connector. Ensure the cable is inserted to the bottom of the connector.
   3) Check that the above preparation has been performed correctly, then part A should be pressed in by hand to make a temporary connection.
   4) Part A should then be pressed in using a suitable tool, such as pliers.
   5) The e-con connector cannot be re-used once it has been fully crimped. In cases of connection failure such as incorrect order of wires or incomplete insertion, please use a new connector.

   Wiring
<table>
<thead>
<tr>
<th>Number stamped on connector</th>
<th>Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>24 VDC</td>
<td>Power supply required to operate the ionizer.</td>
</tr>
<tr>
<td>2</td>
<td>GND</td>
<td>—</td>
</tr>
<tr>
<td>3</td>
<td>F.G.</td>
<td>Ensure F.G. is grounded with less than 100 Ω for use as a voltage reference</td>
</tr>
<tr>
<td>4</td>
<td>—</td>
<td>Unused</td>
</tr>
</tbody>
</table>

Connection Circuit/IZS40

Ionizer (IZS40)

![Diagram of connection circuit]

If the cables are prepared by the user, the colours may differ from those shown in the diagram above.
### Wiring/I茨41, 42

#### Connector housing pin numbers

<table>
<thead>
<tr>
<th>Pin no.</th>
<th>Cable colour</th>
<th>Description</th>
<th>Signal direction</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Brown</td>
<td>24 VDC</td>
<td>IN</td>
<td>Power supply to operate the ionizer.</td>
</tr>
<tr>
<td>B1</td>
<td></td>
<td>GND</td>
<td>IN</td>
<td>Ensure F.G. is grounded with less than 100 Ω for use as a voltage reference.</td>
</tr>
<tr>
<td>A2</td>
<td>Blue</td>
<td>F.G.</td>
<td>IN</td>
<td>Ensure F.G. is grounded with less than 100 Ω for use as a voltage reference.</td>
</tr>
<tr>
<td>B2</td>
<td></td>
<td>Discharge stop signal</td>
<td>IN</td>
<td>Signal input to turn ON/OFF the ion discharge. NPN specification: Stops ion discharge by connecting to GND. (Starts discharging ion when disconnected.) PNP specification: Stops ion discharge by connecting to +24 VDC. (Starts discharging ion when disconnected.)</td>
</tr>
<tr>
<td>A3</td>
<td>Green</td>
<td>Maintenance signal</td>
<td>IN</td>
<td>Signal input to start the function that determines if electrode maintenance is necessary.</td>
</tr>
<tr>
<td>B3</td>
<td>Light green</td>
<td>Error signal</td>
<td>OUT(Contact point A)</td>
<td>Turns ON when power supply failure, ion discharge error, connected sensor failure, or CPU operation failure. (ON when operation is normal.)</td>
</tr>
<tr>
<td>A4</td>
<td>Grey</td>
<td></td>
<td>IN</td>
<td>Signal input to turn ON/OFF the ion discharge. NPN specification: Stops ion discharge by connecting to GND. (Starts discharging ion when disconnected.) PNP specification: Stops ion discharge by connecting to +24 VDC. (Starts discharging ion when disconnected.)</td>
</tr>
<tr>
<td>B4</td>
<td>Yellow</td>
<td></td>
<td>OUT(Contact point B)</td>
<td>Turns OFF when power supply failure, ion discharge error, connected sensor failure, or CPU operation failure. (ON when operation is normal.)</td>
</tr>
<tr>
<td>A5</td>
<td>Purple</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B5</td>
<td>White</td>
<td>Unused</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Wiring Circuit/IZS41, 42

NPN specification

Ionizer (IZS41, 42)

Internal circuit

- Power supply 24 VDC
- GND

+ DC/DC GND GND

INPUT
- Isolation circuit (Photo coupler)
  - + 24 V
  - Light green

OUTPUT
- Isolation circuit (Photo coupler)
- Isolation circuit (Photo coupler)
  - Light green
  - Discharge stop signal

- Blue (2 pcs.) GND

- Brown (2 pcs.) 24 VDC

+24 V

- PLC
- INPUT

- F.G.

- Shield

OUTPUT
- Maintenance signal
- Purple
- Error signal

PNP specification

Ionizer (IZS41, 42)

Internal circuit

- Power supply 24 VDC
- GND

+ DC/DC GND GND

INPUT
- Isolation circuit (Photo coupler)
  - + 24 V
  - Light green

OUTPUT
- Isolation circuit (Photo coupler)
- Isolation circuit (Photo coupler)
  - Light green
  - Discharge stop signal

- Blue (2 pcs.) GND

- Brown (2 pcs.) 24 VDC

+24 V

- PLC
- INPUT

- F.G.

- Shield

OUTPUT
- Maintenance signal
- Purple
- Error signal
### Dimensions

**Ionizer IZS40**

<table>
<thead>
<tr>
<th>Applicable tube O.D.</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>06</td>
<td>13</td>
</tr>
<tr>
<td>08</td>
<td>15</td>
</tr>
<tr>
<td>10</td>
<td>22</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part no.</th>
<th>n</th>
<th>L [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>IZS40-340</td>
<td>5</td>
<td>340</td>
</tr>
<tr>
<td>IZS40-400</td>
<td>6</td>
<td>400</td>
</tr>
<tr>
<td>IZS40-460</td>
<td>7</td>
<td>460</td>
</tr>
<tr>
<td>IZS40-580</td>
<td>9</td>
<td>580</td>
</tr>
<tr>
<td>IZS40-640</td>
<td>10</td>
<td>640</td>
</tr>
<tr>
<td>IZS40-820</td>
<td>13</td>
<td>820</td>
</tr>
<tr>
<td>IZS40-1120</td>
<td>18</td>
<td>1120</td>
</tr>
<tr>
<td>IZS40-1300</td>
<td>21</td>
<td>1300</td>
</tr>
<tr>
<td>IZS40-1600</td>
<td>26</td>
<td>1600</td>
</tr>
<tr>
<td>IZS40-1900</td>
<td>31</td>
<td>1900</td>
</tr>
<tr>
<td>IZS40-2320</td>
<td>38</td>
<td>2320</td>
</tr>
<tr>
<td>IZS40-2500</td>
<td>41</td>
<td>2500</td>
</tr>
</tbody>
</table>

**End bracket IZS40-BE**

**Intermediate bracket IZS40-BM**

**A-A section**
Series IZS40/41/42

Dimensions

Ionizer/IZS41, 42

<table>
<thead>
<tr>
<th>Applicable tube O.D.</th>
<th>A</th>
<th>Part no.</th>
<th>n</th>
<th>L [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>06</td>
<td>13</td>
<td>IZS4…-340</td>
<td>5</td>
<td>340</td>
</tr>
<tr>
<td>08</td>
<td>15</td>
<td>IZS4…-400</td>
<td>6</td>
<td>400</td>
</tr>
<tr>
<td>10</td>
<td>22</td>
<td>IZS4…-460</td>
<td>7</td>
<td>460</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IZS4…-580</td>
<td>9</td>
<td>580</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IZS4…-640</td>
<td>10</td>
<td>640</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IZS4…-820</td>
<td>13</td>
<td>820</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IZS4…-1120</td>
<td>18</td>
<td>1120</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IZS4…-1300</td>
<td>21</td>
<td>1300</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IZS4…-1600</td>
<td>26</td>
<td>1600</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IZS4…-1900</td>
<td>31</td>
<td>1900</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IZS4…-2320</td>
<td>38</td>
<td>2320</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IZS4…-2500</td>
<td>41</td>
<td>2500</td>
</tr>
</tbody>
</table>

End bracket/IZS40-BE

Intermediate bracket/IZS40-BM

A-A section
Dimensions

Feedback sensor/IZS31-DF

Auto balance sensor [High accuracy type]/IZS31-DG

Power supply cable

IZS40-CP

IZS41-CP

<table>
<thead>
<tr>
<th>Part no.</th>
<th>L (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IZS40-CP</td>
<td>3000</td>
</tr>
<tr>
<td>IZS41-CP</td>
<td>9800</td>
</tr>
<tr>
<td>IZS40-CPZ</td>
<td>3000</td>
</tr>
<tr>
<td>IZS41-CPZ</td>
<td>9800</td>
</tr>
</tbody>
</table>
Series IZS40/41/42

Dimensions

Remote control

Transition wiring cable/IZS41-CF

<table>
<thead>
<tr>
<th>Part no.</th>
<th>L (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IZF41-CF02</td>
<td>2000</td>
</tr>
<tr>
<td>IZF41-CF05</td>
<td>5000</td>
</tr>
<tr>
<td>IZF41-CF08</td>
<td>8000</td>
</tr>
</tbody>
</table>
# Series IZS40/41/42

## Specific Product Precautions 1

Be sure to read this before handling.

### Caution

1. **Selection**
   - **This product is intended to be used with general factory automation (FA) equipment.**
     
     If considering using the product for other applications (especially those stipulated on page 18), please consult SMC beforehand.
   - **Use this product within the specified voltage and temperature range.**
     
     Using outside of the specified voltage can cause a malfunction, damage, electrical shock, or fire.
   - **Clean specification is not available with this product.**
     
     Never use this product in the presence of such gases. Please contact us when fluids other than compressed air are used.
   - **This product is not explosion-protected.**
     
     Never use this product in the presence of such gases. Please contact us when fluids other than compressed air are used.

2. **Warning**
   - **Install the product so that the entire bar does not have an excessive deflection.**
     
     For a bar length of 820 mm or more, support the bar at both ends and in the middle by using brackets (IZS40-BM). If the bar is held only at the both ends, self-weight of the bar causes deflection, resulting in damage to the bar.
   - **Do not use this product in an area where noise (electric magnetic field or surge voltage, etc.) are generated.**
     
     Using the ionizer under such conditions may cause it to malfunction or internal devices to deteriorate or break down. Take noise countermeasures and prevent the lines from mixing or coming into contact with each other.
   - **Observe the tightening torque requirements when installing the ionizer.**
     
     If overtightened with a high torque, the mounting screws or mounting brackets may break. Also, if under tightened with a low torque, the connection may loosen. Refer to the operation manual for details.
   - **Do not touch the electrode directly with fingers or metallic tools.**
     
     If a finger is used to touch the electrode, it may get stuck or an injury or electrical shock may occur from touching the surrounding equipment. If metallic tools are used, a momentary electrical shock caused by inserting foreign matter into the electrode cartridge or touching the electrode.
   - **Do not affix any tape or seals to the body.**
     
     If the tape or seal contains any conductive adhesive or reflective paint, a dielectric phenomenon may occur due to ions arising from such substances, resulting in electrostatic charging or electric leakage.
   - **Installation should be conducted after turning off the power supply.**

### Caution

1. **Mounting**
   - **Mounting brackets may break.**
     
     Also, if under tightened with a low torque, the connection may loosen.

2. **Caution**
   - **Clean specification is not available with this product.**
     
     This product is not washed. When bringing into a clean room, flush for several minutes and confirm the required cleanliness before using. A minute amount of particles are generated due to wear of the electrodes while the ionizer is operating.

3. **Warning**
   - **Mount this product on a plane surface.**
     
     If there are irregularities, cracks or height differences, excessive stress will be applied to the housing or brackets, resulting in damage or other trouble. Also, do not drop or apply a strong shock. Otherwise, damage or an accident can occur. Also, do not drop or apply a strong shock. Otherwise, damage or an accident may occur.
### Specific Product Precautions 2

**Warning**

1. Confirm that the power supply voltage is enough and that it is within the specifications before wiring.

2. To maintain product performance, a DC power supply shall be connected per UL listed Class 2 certified by National Electric Code (NEC) or evaluated as a limited power source provided by UL60950.

3. To maintain the product performance, ground the product with an earth ground cable with a resistance of 100 Ω or less according to this manual.

4. Be sure to turn off the power supply before wiring (including attachment/detachment of the connector).

5. To connect a feedback sensor or auto balance sensor to the ionizer, use the cable included with the sensor. Do not disassemble or modify the ionizer.

6. When applying the power supply, pay special attention to the wiring and/or surrounding environment until the safety is confirmed.

7. Do not connect or remove any connectors including the power supply, while power is being supplied. Otherwise, the ionizer may malfunction.

8. If the power line and high-pressure line are routed together, this product may malfunction due to noise. Therefore, use a separate wiring route for this product.

9. Be sure to confirm that there are no wiring errors before starting this product. Faulty wiring will lead to product damage or malfunction.

10. Flush the piping before using. Before piping this product, exercise caution to prevent particles, water drops, or oil contents from entering the piping.

### Wiring/Piping

#### Transition Wiring of Ionizer

For transition wiring of ionizers, use a transition wiring cable for connection between ionizers. Use a power supply cable for connection between ionizer and power supply or external equipment. Transition wiring is not possible with the IZS40. The number of ionizers that may be connected using transition wiring varies depending on the power supply cable; the length of the transition wiring cable; the use of external sensor(s) and/or models. Refer to the table shown below “Connectable number of ionizers with transition wiring”. The IZS41 and IZS42 can be connected in the same transition wiring, but mixed wiring of the NPN and PNP I/O specifications is not possible. Please contact SMC when connecting conditions other than specified in the table below are applied.

<table>
<thead>
<tr>
<th>Connectable number of ionizers (IZS41) with transition wiring (without external sensor)</th>
<th>Bar length symbol</th>
<th>Power supply cable length: 3 m</th>
<th>Power supply cable length: 10 m</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>340</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>400</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>460</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>580</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>820</td>
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<tr>
<th>Connectable number of ionizers (IZS42) with transition wiring (without external sensor)</th>
<th>Bar length symbol</th>
<th>Power supply cable length: 3 m</th>
<th>Power supply cable length: 10 m</th>
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It is recommended that the power supply used to operate the ionizers have a current capacity twice that of the total current consumption of the ionizers to be used. Power supply voltage should be from 24 to 26.4 VDC.

An AC adapter must not be used for ionizers with transition wiring. When ionizers are connected with transition wiring, the same input signal serves as input to all the ionizers. When a signal is output from at least one ionizer in the connection, the signal will be output from the power supply cable.

Connect the power supply cable to the “POWER” connector of the 1st ionizer, and connect the “LINK” connector of the 1st ionizer to the “POWER” connector of the 2nd ionizer with a transition wiring cable. Follow the same procedure to connect subsequent ionizer(s) with transition wiring cables.

Transition wiring cable: LINK to the 1st ionizer → to POWER for the 2nd ionizer

Power supply cable: → to POWER for the ionizer
### Operating Environment/Storage Environment

**Warning**

1. Observe the fluid temperature and ambient temperature range.
   - Fluid temperature and ambient temperature ranges are: 0 to 40°C for ionizer, 0 to 50°C for feedback sensor and auto balance sensor (high accuracy type), 0 to 40°C for AC adapter, and 0 to 45°C for remote controller. Do not use the sensor in locations where the temperature may change suddenly even if the ambient temperature range is within the specified limits, resulting in condensation.
2. Do not use this product in an enclosed space.
   - This product utilizes a corona discharge phenomenon. Do not use the product in an enclosed space as ozone and nitrogen oxides exist in such places, even though in marginal quantities.
3. Environments to avoid
   - Avoid using and storing this product in the following environments since they may cause damage to this product:
     a. Avoid using in a place that exceeds an ambient temperature range.
     b. Avoid using in a place that exceeds an ambient humidity range.
     c. Avoid using in a place where condensation occurs due to a drastic temperature change.
     d. Avoid using in a place in the presence of corrosive or explosive gas or where there is a volatile combustible.
     e. Avoid using in an atmosphere where there are particles, conductive iron powders, oil mist, salt, solvent, blown dust, cutting oil (water, liquid), etc.
     f. Avoid using in a place where ventilated air from an air conditioner is directly applied to the product.
     g. Avoid using in a closed place without ventilation.
     h. Avoid using in direct sunlight or radiated heat.
     i. Avoid using in a place where there is a strong magnetic noise (strong electric field, strong magnetic field, or surge).
     j. Avoid using in a place where static electricity is discharged to the body.
     k. Avoid using in a place where static electricity is discharged to the body.
     l. Avoid using in a place where static electricity is discharged to the body.
     m. Avoid using in a place where static electricity is discharged to the body.
     n. Avoid using in a place where static electricity is discharged to the body.
   - Avoid using in a place where a force large enough to deform this product or weight is applied to the product.
4. Do not use an air containing mist or dust.
   - The air containing mist or dust will cause the performance to decrease and shorten the maintenance cycle. Install a dryer (IDF series), air filter (AF/AFF series), and/or mist separator (AFM/AM series) to obtain clean compressed air (air quality of Class 2.6.3 or higher according to ISO 8573-1: 2001 is recommended for operation).
5. Ionizer, feedback sensor, auto balance sensor, remote controller, and AC adapter are not resistant to lightning surge.

### Maintenance

**Warning**

2. When cleaning the electrode or replacing the electrode cartridge, be sure to turn off the power supply or air supply to the body.
   - Touching an electrode when it is electrified may result in electric shock or other accidents. If the electrodes are touched while the product is energized, this may cause an electric shock or accident. If an attempt to replace the cartridges is performed before removing air supply, the cartridges may eject unexpectedly due to presence of the supply air. Remove air supply before replacing the cartridges. If cartridges are not securely mounted to the bar, they may eject or release when air is supplied to the product. Securely mount or remove the cartridges referencing the instructions shown below.

![Removal of electrode cartridge](image)

1. Rotate the cartridge 90 degrees anti-clockwise.
2. Pull to remove.

![Mounting of electrode cartridge](image)

1. Insert the cartridge into the bar so that the longer side of the cartridge is mounted at a right angle to the bar.
2. Rotate the cartridge 90 degrees clockwise, and match the markings on the bar to those on the cartridge and secure.

3. Perform the detection procedure in the absence of workpieces. (IZS41, 42)

4. Do not disassemble or modify this product.
   - Otherwise, an electrical shock, damage and/or a fire may occur. Also, the disassembled or modify products may not achieve the performances guaranteed in the specifications, and exercise caution because the product will not be warranted.

5. Do not operate this product with wet hands.
   - Otherwise, an electrical shock or accident may occur.

### Handling

**Caution**

1. Do not drop, bump or apply excessive impact (100 m/s² or more) while handling.
   - Even though it does not appear to be damaged, the internal parts may be damaged and cause a malfunction.
2. When installing the product, handle the product so that no moment is applied to the controller and the ends of the bar.
   - Handling the product by holding either end of the bar may cause damage to the product.
3. When mounting/dismounting the cable, use your finger to pinch the claw of the plug, then attach/detach it correctly.
   - If the modular plug is at a difficult angle to attach/detach, the jack’s mounting section may be damaged and cause a disorder.
SMC can provide all the equipment required to supply air to the ionizer.

Consider the equipment below not only for providing an “opportunity to decrease maintenance” and “preventing damage” but also for an “energy-saving countermeasure”.

### Recommended pneumatic circuit diagram

1. **Air Dryer/Series IDF**
   - Decreases the dew point of compressed air. Limits moisture generation which can lead to damage.
2. **Air Filter/Series AF**
   - Eliminates solid foreign matter such as powder particles in the compressed air.
3. **Mist Separator/Series AFM**
   - Eliminates oil mist which is difficult to eliminate with an air filter.
4. **Digital Flow Switch/Series PF2A**
   - Decreases the air consumption by flow control.
5. **2-Color Display Digital Flow Switch/Series PFM**
   - Decreases the air consumption by setting to an appropriate pressure.
6. **Digital Pressure Switch/Series ISE30A**
   - The pressure control prevents the ability of static electricity removal from being reduced in accordance with the reduction of air pressure.
7. **2 Port Solenoid Valve/Series VX**
   - Pilot Type 2 Port Solenoid Valve for Dry Air/Series VQ
8. **Restrictor/Series AS-X214**
   - Regulates to the appropriate air volume depending upon the installation condition. Decreases the air consumption.
9. **Clean Air Filter/Series SFD**
   - Built-in capillary element nominal filtration rating: 0.01 μm
   - Hollow fiber elements with over 99.99% filtering efficiency do not contaminate work pieces.
Ionizer Series Variations

Ionizer/Nozzle type Series IZN10
Dust removal and static electricity elimination by air blow
- Eliminates dust clinging to lamp cover.

Ion balance ±10 V (In case of energy saving static electricity elimination nozzle)

Slim design: Only 16 mm thick

1 Electrode contamination detector
Continuous monitoring of electrode wear and contamination, with maintenance output signal.
Detects optimal maintenance time, reduced labor for maintenance.

2 Built-in power supply
No need for high voltage power supply and cabling.

Ionizer/Fan type Series IZF10
Compact fan type with simple functions
- Compact design: 80 x 110 x 39 mm
- Weight: 280 g
- 2 types of fans available
  ▪ Static electricity elimination time: 1.5 seconds
  (When eliminating static electricity from 1000 V to 100 V at a distance of 300 mm from the workpiece)
  ▪ Low-noise fan: 48 dB (A) (Measured at a distance of 300 mm from the workpiece)
- Rapid static electricity eliminating fan: 57 dB (A)
- Ion balance*: ±13 V
  * Based on ANSI/ESD-STM3.1-2006 standards
- With alarm function
- High-voltage error, electrode contamination detector

Electrostatic Sensor Series IZD10 / Electrostatic Sensor Monitor Series IZE11
Electrostatic Sensor Series IZD10
- The importance of the static electric control is put on confirming the “actual status”.
  ▪ Potential measurement: ±20 kV (detected at a 50 mm distance) ±0.4 kV (detected at a 25 mm distance)
  ▪ Detects the electrostatic potential and outputs an analogue voltage.
  ▪ Output voltage: 1 to 5 V (Output impedance: Approx. 100 Ω)
  ▪ Broadens your coverage of electrostatic potential measurement applications.

Electrostatic Sensor Monitor Series IZE11
- Output: Switch output x 2 + Analogue output (1 to 5 V, 4 to 20 mA)
- Minimum unit setting: 0.001 kV (at ±0.4 kV), 0.1 kV (at ±20 kV)
- Display accuracy: ±0.5% F.S. ±1 digit or less
- Detection distance correction function (adjustable in 1 mm increments)
- Supports two types of sensors (±0.4 kV and ±20 kV) through range selection.

Handheld Electrostatic Meter Series IZH10
The importance of the static electric control is put on confirming the “actual status”.
Easy-to-use handheld electrostatic meter
- Measurement range: ±20.0 kV
- Minimum display unit: 0.1 kV (±1.0 to ±20.0 kV), 0.01 kV (0 to ±0.99 kV)
- Compact and lightweight: 85 g (excluding dry cell batteries)
- Backlight for reading in the dark
- LOW battery indicator
- Peak/Bottom value indication
- Zero-clear function
- Auto power-off function
Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “Caution,” “Warning” or “Danger.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)-1, and other safety regulations.

Caution: Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

Warning: Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

Danger: Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

1. The compatibility of the product is the responsibility of the person who designs the product or decides its specifications. Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalogue information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment. The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machinery or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed. 1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.

4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions: 1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.

5. Installation on equipment in conjunction with artillery, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalogue.

6. An application which could have negative effects on people, property, or animals requiring special safety analysis.

7. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

Limited warranty and Disclaimer/Compliance Requirements

The product is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”. Read and accept them before using the product.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first. 2).

Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.

2. For any failure or damage reported within the warranty period which is clearly the responsibility of the replacement product or necessary parts will be provided. This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.

3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalogue for the particular products.

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.

2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

Safety Instructions

Be sure to read “Handling Precautions for SMC Products” (M-E03-3) before using.