Ionizer Nozzle type

Series IZN10

Dust removal and static electricity elimination by air blow

- Eliminates dust clinging to lamp cover.

Spot type static electricity elimination

- Prevents electrostatic breakdown of electric parts.
- Prevents detachment failure.

RoHS compliant

1. Electrode needle contamination detector
   Outputs maintenance signal when detects stain or wear of an electrode needle always.
   Detects optimal maintenance time, reduced labor for maintenance.

2. With built-in power supply substrate
   High-voltage power supply cable/external high-voltage power supply are unnecessary.

Ion balance $\pm 10 \text{v}$ (In case of energy saving static electricity elimination nozzle)

Slim design: Thickness dimension 16 mm

Removing dust from lamp cover

Eliminating static electricity from IC chip

Product Images

16 mm
Nozzle type can be selected according to applications.

**Energy saving static electricity elimination nozzle**

**Short range static electricity elimination, Design focuses on ion balance.**

Ion balance: ±10 V

Increases flow volume by external air intake

Static electricity elimination is possible with minimal air consumption.

In cases with same air consumption, static electricity is eliminated in half the time.

(Supply pressure 0.3 MPa)

<table>
<thead>
<tr>
<th>External air inlet</th>
<th>None</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air consumption flow rate L/min (ANR)</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Static electricity elimination time sec</td>
<td>5</td>
<td>2.5</td>
</tr>
<tr>
<td>Ionized air flow velocity m/s</td>
<td>0.4</td>
<td>2.5</td>
</tr>
</tbody>
</table>

*At 300 mm distance

Reduced by 50%  
Improved 6 times

Eliminating static electricity from an electric substrate

• Prevents electrostatic breakdown of electric parts.

Eliminating static electricity from lens

• Removes dust from lens.
• Prevents adhesion of dust.

Eliminating static electricity from packing films

• Prevents static electricity charging when opening bags.
• Prevents static electricity cling on the inside of candy bags.

**High flow static electricity elimination nozzle**

**Long range static electricity elimination and dust removal**

Ionized air assisted by the compressed air

• Improved dust removal performance by the energy of compressed air.
• Suitable for static electricity elimination at a long distance (max. 500 mm).

Ion balance: ±15 V

Eliminating static electricity from molded goods

• Prevents problems with the separation of molded plastic goods.

Eliminating static electricity from plastic cups

• Removes dust clinging to cup interiors.

Eliminating static electricity from parts feeder

• Prevents clogging of parts feeder.

• Prevents electrostatic breakdown of electric parts.
• Removes dust from lens.
• Prevents adhesion of dust.
• Prevents static electricity charging when opening bags.
• Prevents static electricity cling on the inside of candy bags.
External switch input function (2 inputs)

Prevents static electricity elimination trouble due to pressure drop of compressed air.
Emission of static electricity is suspended when abnormal purge air pressure is detected by pressure switch.

Energy saving with electrostatic sensor
Emission of static electricity is suspended when an electrostatic sensor detects that static electricity elimination is completed.

Easy maintenance
Possible to conduct maintenance on the electrode needle without removal of body.
No need to readjust the nozzle angle when the ionizer is restarted.

Intermittent control timer
A digital timer that can control ON/OFF switches of valves etc.
Improved dust removal effect under low air consumption by intermittent ion blowing

IZE110-X238
Made to Order
**Mounting variations**

### Direct mount
- Top through-hole mounting
- Bottom tapped mounting

### Bracket mount
- L-bracket
- Pivoting bracket
- DIN rail mounting bracket

- The L-bracket and the DIN rail mounting bracket can be used with the manifold.

### Nozzle variations
- Circular diffusion nozzle
- Flat diffusion nozzle
- Bar nozzle (straight type)
- Circumferential jet bar nozzle (straight type)
- Bender tube nozzle
- Long nozzle

For the ionizer, please select a female thread type (RC1/8) for the piping.
Series IZN10
Technical Data 1

Static Electricity Elimination Characteristics
(Static Electricity Elimination Time from 1000 V to 100 V)

Note 1) If a pressure over the maximum operating pressure is applied, the electrode needle contamination detector will work and turn on the LED.

- The ion generating efficiency of the high frequency AC type ionizer will decrease when the pressure around the electrode needle reaches 0.1 MPa or more, due to its ion generating mechanism. This means that even when the electrode needle is not contaminated, the electrode needle contamination detector may work depending on the condition of the connected tube and other reasons.

- In the range where the contamination detection signal is generated, a small amount of ions are still generated, so it can be used in some operating conditions. In this case, please consider using a type without the contamination detector. (Page 1133)

Note 2) The ionizer generates a small amount of ozone. Select ozone-resistant fittings for the female threads for piping. Also, regularly check there is no deterioration due to ozone.

(1) Energy saving static electricity elimination nozzle/IZN10-01
(2) High flow rate nozzle/IZN10-02

(3) Female threads for piping/IZN10-11 With Stainless steel 316 One-touch fitting/KQG2 + Anti-static tubing/TA

* Static electricity elimination time at a distance of 50 mm from the end of tube.
KQG2H06-01S + TA 0604 (Tube I.D.: 4 mm)
KQG2H08-01S + TA 0805 (Tube I.D.: 5 mm)

Note) Static electricity elimination features are based on the data using the 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 this as a guideline purpose only for model selection because the value varies depending on the material and/or size of a subject.

* Maximum operating pressure is 0.1 MPa.
* Maximum operating pressure is 0.3 MPa.
Blow Velocity Distribution (Supply Pressure: 0.3 MPa)

(1) Energy saving static electricity elimination nozzle/IZN10-01
(2) High flow rate nozzle/IZN10-02

Installation distance: [mm]
Installation distance (Horizontal): [mm]

<table>
<thead>
<tr>
<th>Installation distance: [mm]</th>
<th>Installation distance (Horizontal): [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>500</td>
<td>500</td>
</tr>
</tbody>
</table>

3 [m/s]
2 [m/s]
1 [m/s]
14 [m/s]
11 [m/s]
9 [m/s]
Flow Characteristics

(1) Energy saving static electricity elimination nozzle/IZN10-01
(2) High flow rate nozzle/IZN10-02
(3) Female threads for piping/IZN10-11
     With Stainless steel 316 One-touch fitting/KQG2
     + Anti-static tubing/TA

Note) When a pressure above each line is used, the electrode needle contamination detector will work and turn on the LED.
(Refer to the bottom note 1 on page 1129.)
Ozone Concentration

(1) Energy saving static electricity elimination nozzle/IZN10-01
(2) High flow rate nozzle/IZN10-02

Note) Ozone condensation can increase in an enclosed space. Check the ozone condensation of the operating environment before using.
### Made to Order

#### Without electrode needle contamination detector

<table>
<thead>
<tr>
<th>How to Order</th>
<th>Contents/Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>IZN10-11</td>
<td>With this specification, contamination detection signal is not generated when the pressure around the electrode needle increases due to tube piping etc. This specification is recommended when the tube needs to be extended.</td>
</tr>
<tr>
<td></td>
<td>• The ion generating efficiency of the high frequency AC type ionizer will decrease when the pressure around the electrode needle reaches 0.1 MPa or more, due to its ion generating mechanism, and the contamination detection signal will be generated. However, in the range where the contamination detection signal is generated, a small amount of ions are still generated, so it can be used in some operating conditions.</td>
</tr>
</tbody>
</table>

#### Nozzle Variations (P.1143)

Various nozzles are available according to the installation conditions or applications.

- Circular diffusion nozzle
- Flat diffusion nozzle
- Bar nozzle (straight type)
- Bender tube nozzle
- Circumferential jet bar nozzle (straight type)

#### Intermittent control timer (P.1144)

It is possible to perform the intermittent ion blow through the ON/OFF control of the valve, etc.
Series IZN10

Accessories

Bracket
- L-bracket/IZN10-B1
- DIN rail mounting bracket/IZN10-B3
- Pivoting bracket/IZN10-B2

Power supply cable
[Standard length]
- IZN10-CP (3 m)
- IZN10-CPZ (10 m)

[Non-standard length]
- IZN10-CP 01-X13

Cable length

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1m</td>
</tr>
<tr>
<td>2</td>
<td>2m</td>
</tr>
<tr>
<td>20</td>
<td>20m</td>
</tr>
</tbody>
</table>

Manifold
* The L-bracket and the DIN rail mounting bracket can be used with the manifold.

Repair Parts

Electrode needle assembly/IZN10-NT

Body assembly: IZN10-A002-0106

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Type</th>
<th>Nozzle type</th>
<th>Port size</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Energy saving static electricity elimination nozzle</td>
<td>ø6: Metric size</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>High flow rate nozzle</td>
<td></td>
<td>ø6.35 (1/4): Inch size</td>
</tr>
<tr>
<td>11</td>
<td>Female threads for piping Rc1/8</td>
<td></td>
<td>ø6: Metric size (Elbow)</td>
</tr>
<tr>
<td>07</td>
<td></td>
<td></td>
<td>ø6.35 (1/4): Inch size (Elbow)</td>
</tr>
<tr>
<td>16</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Cartridge assembly: IZN10-A003-
Options

Manifold mounting parts set
This set consists of a hexagon socket head cap screw, spacer and hexagon nut.
Note) The ionizer, L-bracket and DIN rail mounting bracket need to be prepared separately.

How to Order
IZN10 – ES

Mounting pitch

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Pitch</th>
</tr>
</thead>
<tbody>
<tr>
<td>ES</td>
<td>17 mm</td>
</tr>
</tbody>
</table>

Mounting stations

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Stations</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

How to Order
AC adapter/IZN10 – F – X196

Output signal specifications

<table>
<thead>
<tr>
<th>Nil</th>
<th>For NPN output</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>For PNP output</td>
</tr>
</tbody>
</table>

Electrode needle cleaning kit/IZS30-M2
### Specifications

<table>
<thead>
<tr>
<th>Ionizer model</th>
<th>IZN10-□□□ (NPN specification)</th>
<th>IZN10-□□□P (PNP specification)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ion generation method</strong></td>
<td>Corona discharge type</td>
<td>High frequency AC type</td>
</tr>
<tr>
<td><strong>Method of applying voltage</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Discharge output</strong>&lt;sup&gt;Note 1)&lt;/sup&gt;</td>
<td>2.5 kVAC</td>
<td></td>
</tr>
<tr>
<td><strong>Ion balance</strong>&lt;sup&gt;Note 2)&lt;/sup&gt;</td>
<td>Energy saving static electricity elimination nozzle</td>
<td>Within ±10 V</td>
</tr>
<tr>
<td></td>
<td>High flow rate nozzle</td>
<td>Within ±15 V</td>
</tr>
<tr>
<td><strong>Ozone generation</strong>&lt;sup&gt;Note 3)&lt;/sup&gt;</td>
<td>0.03 ppm (0.05 ppm for energy saving static electricity elimination nozzle)</td>
<td></td>
</tr>
<tr>
<td><strong>Air purge</strong></td>
<td>Fluid</td>
<td>Air (Clean dry air)</td>
</tr>
<tr>
<td></td>
<td>Operating pressure&lt;sup&gt;Note 4)&lt;/sup&gt;</td>
<td>0.05 MPa to 0.7 MPa</td>
</tr>
<tr>
<td></td>
<td>Connecting tube size</td>
<td>ø6, ø1/4 inch</td>
</tr>
<tr>
<td><strong>Power supply voltage</strong></td>
<td></td>
<td>24 VDC ±10%</td>
</tr>
<tr>
<td><strong>Current consumption</strong></td>
<td></td>
<td>80 mA</td>
</tr>
<tr>
<td><strong>Input signal</strong></td>
<td>Discharge stop signal</td>
<td>Connected to GND (ON voltage: 0.6 V or less) Current consumption: 5 mA or less</td>
</tr>
<tr>
<td></td>
<td>Reset signal</td>
<td>Connected to +24 V (ON voltage: Between +19 V and power supply voltage) Current consumption: 5 mA or less</td>
</tr>
<tr>
<td></td>
<td>External switch signal</td>
<td></td>
</tr>
<tr>
<td><strong>Output signal</strong></td>
<td>Discharge signal</td>
<td>Max. load current: 40 mA Residual voltage: 1 V or less (load current at 40 mA) Max. applied voltage: 28 VDC</td>
</tr>
<tr>
<td></td>
<td>Error signal</td>
<td>Max. load current: 40 mA Residual voltage: 1 V or less (load current at 40 mA)</td>
</tr>
<tr>
<td></td>
<td>Maintenance signal</td>
<td></td>
</tr>
<tr>
<td><strong>Effective static electricity elimination distance</strong></td>
<td></td>
<td>20 mm to 500 mm</td>
</tr>
<tr>
<td><strong>Ambient and fluid temperature</strong></td>
<td></td>
<td>0 to 55°C</td>
</tr>
<tr>
<td><strong>Ambient humidity</strong></td>
<td></td>
<td>35 to 65%RH</td>
</tr>
<tr>
<td><strong>Material</strong></td>
<td>Housing: ABS, Stainless steel Nozzle: Stainless steel Electrode needle: Tungsten</td>
<td></td>
</tr>
<tr>
<td><strong>Vibration resistance</strong></td>
<td>Durability: 50 Hz, Amplitude: 1 mm, XYZ each 2 hours</td>
<td></td>
</tr>
<tr>
<td><strong>Shock resistance</strong></td>
<td>10 G</td>
<td></td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>120 g</td>
<td></td>
</tr>
</tbody>
</table>

<sup>Note 1</sup> Measured with a probe of 1000 MΩ and 5 pF.
<sup>Note 2</sup> Measured with a distance of 100 mm between the charged object and ionizer at an air purge pressure of 0.3 MPa.
<sup>Note 3</sup> Value above background level, measured with a distance of 300 mm from the front of the nozzle at an air purge pressure of 0.3 MPa.
<sup>Note 4</sup> Static electricity cannot be eliminated without air purge.
When the air purge is stopped temporarily during operation of the ionizer, the discharge is stopped with the discharge stop signal input turned OFF to avoid increase in internal ion concentration.
<sup>Note 5</sup> Nozzle shape: The operating pressure upper limit of the female thread for the piping (IZN10-11□□□□□□□□□□□□□□□□) may vary depending on the mounting material. Since the ion generation efficiency decreases if the pressure around the electrode needle is 0.1 MPa or more as described in Note 1) on page 1129, check the static electricity elimination performance with the mounting material to be used and use the nozzle at a pressure level that maintains the static electricity elimination performance.
Functions

1. Electrode needle contamination detection
   Detects lowered static electricity elimination performance due to contamination or wear of the electrode needle. The maintenance LED lights up and maintenance signal is generated.

2. Signal inputs by external switch
   There are 2 ports for external switch signal inputs.
   - Example
     Emission of static electricity is suspended when abnormal purge air pressure is detected by pressure switch.
     - Prevents static electricity elimination trouble due to pressure drop of compressed air.
   - Example
     An electrostatic meter is connected to stop discharge when static electricity elimination is completed.
     - Energy can be saved by stopping discharge when static electricity elimination is completed.

3. Description of LEDs
   - Description: Power supply display, Discharge, Irregular high voltage display, Maintenance display
   - Symbol: PWR, ION, HV, NDL
   - Color: Green, Green, Red, Orange
   - Contents:
     - Power supply display: Lights up when the power supply is turned on.
     - Discharge: Lights up when static electricity is discharged.
     - Irregular high voltage display: Lights up when an irregular current flows on an electrode needle.
     - Maintenance display: Lights up when electrode needle contamination is detected.

Behavior of LEDs

<table>
<thead>
<tr>
<th>Description</th>
<th>PWR</th>
<th>ION</th>
<th>HV</th>
<th>NDL</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal operation (with discharge stop signal on)</td>
<td>○</td>
<td></td>
<td>○</td>
<td></td>
<td>Ions are being generated</td>
</tr>
<tr>
<td>Normal operation (with discharge stop signal off)</td>
<td></td>
<td>○</td>
<td></td>
<td></td>
<td>Discharge stops.</td>
</tr>
<tr>
<td>Abnormal high voltage detected</td>
<td></td>
<td></td>
<td>○</td>
<td>○</td>
<td>Discharge stops when error is detected.</td>
</tr>
<tr>
<td>External switch signal 1</td>
<td>○</td>
<td></td>
<td></td>
<td>○</td>
<td>Discharge stops when the signal is turned on.</td>
</tr>
<tr>
<td>External switch signal 2</td>
<td></td>
<td>○</td>
<td></td>
<td>○</td>
<td></td>
</tr>
<tr>
<td>Electrode needle contamination detected</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>Ions keep being generated even after the contamination is detected.</td>
</tr>
</tbody>
</table>

4. Alarm
   - Alarm item: High voltage error, Maintenance electrode needle
   - Description:
     - High voltage error: Gives notification of the occurrence of an irregular current, such as high-voltage leakage. The ionizer stops discharging, turns on the HV LED. When error occurred, the signal output is turned off.
     - Maintenance electrode needle: Gives notification that electrode needle maintenance is necessary. The NDL LED turns on and a maintenance output signal is turned on.
   - Corrective actions:
     - High voltage error: Turn off the power, solve the problem, then turn the power on again. If the error is solved during operation, turn the reset signal off and then on.
     - Maintenance electrode needle: Turn off the power, clean the electrode needles, and turn the power on again.
**Series IZN10**

**Wiring**

<table>
<thead>
<tr>
<th>No.</th>
<th>Cable color</th>
<th>Description</th>
<th>I/O</th>
<th>Wiring requirement</th>
<th>I/O</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Brown</td>
<td>Power supply +24 V</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Blue</td>
<td>Power supply GND</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Orange</td>
<td>Discharge stop signal</td>
<td>Input</td>
<td>○</td>
<td></td>
<td>When the signal is turned off, discharge stops.</td>
</tr>
<tr>
<td>4</td>
<td>Pink</td>
<td>Reset signal</td>
<td>Input</td>
<td></td>
<td></td>
<td>When the signal is turned on and then off, the error signal is reset.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Input</td>
<td>When the signal is turned off, normal operation continues.</td>
</tr>
<tr>
<td>5</td>
<td>White</td>
<td>Discharge signal</td>
<td>Output</td>
<td></td>
<td></td>
<td>The signal stays on during discharge</td>
</tr>
<tr>
<td>6</td>
<td>Purple</td>
<td>Error signal</td>
<td>Output</td>
<td></td>
<td></td>
<td>The signal is turned off when an error occurs</td>
</tr>
<tr>
<td>7</td>
<td>Yellow</td>
<td>Maintenance signal</td>
<td>Output</td>
<td></td>
<td></td>
<td>The signal is turned on when maintenance is due.</td>
</tr>
<tr>
<td>8</td>
<td>Gray</td>
<td>External switch signal 1</td>
<td>Input</td>
<td></td>
<td></td>
<td>When the signal is turned on, discharge stops.</td>
</tr>
<tr>
<td>9</td>
<td>Light blue</td>
<td>External switch signal 2</td>
<td>Input</td>
<td></td>
<td></td>
<td>When the signal is turned on, discharge stops.</td>
</tr>
</tbody>
</table>

**Note)**

Wiring requirement

○: Minimum wiring requirement for ionizer operation.

- **Input signal**
  - NPN: The signal is turned on when the power supply GND is connected, and turned off when disconnected.
  - PNP: The signal is turned on when the power supply 24 V is connected, and turned off when disconnected.

- **Output signal**
  - NPN: The signal is turned on when the output transistor is energized (by the power supply GND inside the ionizer), and turned off when de-energized.
  - PNP: The signal is turned on when the output transistor is energized (by the 24 V power supply inside the ionizer), and turned off when de-energized.

**Provide Grounding.**

1. Ground the tap for ground wiring or metal (shaded) parts around the external face of the ionizer with a resistance of 100 \( \Omega \) or less. If grounding is not provided or is incomplete, the ionizer will not be able to achieve its specified static electricity elimination performance. Also, the maintenance signal will be generated.

2. If the product is used under the conditions that the pressure around the electrode needle becomes 0.1 MPa or more depending on the piping conditions stated in Note 1) on page 1129, avoid to mount the grounded base or workpiece on the resin part (shaded) at locations marked with an asterisk shown in the Fig. below. If the grounded base or workpiece is mounted on the resin part (shaded) under these operating conditions, the ozone concentration around the high-voltage generation substrate inside the ionizer chassis increases, causing the substrate to break. For details about the dimensions of the resin part (shaded), refer to the dimensions on page 1140.
Power Supply Cable Connection Circuit

- **NPN**

![NPN circuit diagram]

- **PNP**

![PNP circuit diagram]

Class D grounding to external metal parts (no electrical connection to internal circuit)

### Timing Chart

<table>
<thead>
<tr>
<th></th>
<th>Power supply</th>
<th>Input</th>
<th>Discharge stop signal</th>
<th>Input</th>
<th>Reset signal</th>
<th>Input</th>
<th>Discharge signal (on when ions are being generated)</th>
<th>Output</th>
<th>Error signal</th>
<th>Output</th>
<th>Maintenance signal</th>
<th>Output</th>
<th>External switch signal 1, 2</th>
<th>Input</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power supply on</strong></td>
<td>ON</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>ON/ON</td>
<td>OFF</td>
</tr>
<tr>
<td><strong>High voltage error</strong></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>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Maintenance required</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>External switch on</strong></td>
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<tr>
<td><strong>Note</strong></td>
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<tr>
<td><strong>Discharge starts when the signal is turned on.</strong></td>
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<tr>
<td><strong>The error signal can be reset by turning the reset signal on and then off.</strong></td>
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<tr>
<td><strong>When an error occurs, the signal is turned off.</strong></td>
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<tr>
<td><strong>Ions are still generated even when the maintenance signal is turned on.</strong></td>
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</tbody>
</table>

**Power Supply**

- **24 VDC ±10%**
- **GND**

**Internal circuit**

- **Class D grounding to external metal parts (no electrical connection to internal circuit)**

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**Power Supply Cable Connection Circuit**

**Ionizer Series IZN10**

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**Timing Chart**

- **Note**

- **Class D grounding to external metal parts (no electrical connection to internal circuit)**
**Series IZN10**

### Dimensions

**Energy saving static electricity elimination nozzle/IZN10-01**

**High flow rate nozzle/IZN10-02**

**Dimensions**

<table>
<thead>
<tr>
<th>Model</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>IZN10-06</td>
<td>3.5</td>
</tr>
<tr>
<td>IZN10-07</td>
<td>7</td>
</tr>
</tbody>
</table>

Note 1) Dimensions of the resin part stated in "Provide Grounding" on page 1138.

**Elbow for piping port/IZN10-16**

**Female threads for piping (Rc1/8)/IZN10-11**

<table>
<thead>
<tr>
<th>Model</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>IZN10-16</td>
<td>22</td>
<td>16</td>
<td>11.5</td>
</tr>
<tr>
<td>IZN10-17</td>
<td>24.5</td>
<td>18.5</td>
<td>12</td>
</tr>
</tbody>
</table>
Ionizer Series IZN10

Dimensions

L-bracket/IZN10-B1

Pivot mounting

Internal mounting

Pivoting bracket/IZN10-B2

2 x Hexagon socket head cap screw M3 x 6
(Accessory)

2 x Hexagon socket head cap screw M3 x 16
(Accessory)
Series IZN10

Dimensions

DIN rail mounting bracket/IZN10-B3

2 x Hexagon socket head cap screw M3 x 6
(Accessory)

Pivot mounting

Internal mounting

(Mounting angle adjustable range)
**Series IZN10**

**Made to Order 1**

This product is an individually applicable product. For details about the delivery time and price, please consult with SMC representative.

### Nozzle Variations

**Circular diffusion nozzle**

![Circular diffusion nozzle](image)

- Electricity removal range
- Ionized air

**Part no.**

- IZN10-G-X198
- IZN10-G-X199

**Flat diffusion nozzle**

![Flat diffusion nozzle](image)

- Electricity removal range
- Ionized air

**Part no.**

- IZN10-G-X205

**Bar nozzle (straight type)**

![Bar nozzle (straight type)](image)

**Part no.**

- IZN10-G-100-X216
- IZN10-G-200-X216
- IZN10-G-300-X216
- IZN10-G-400-X216
- IZN10-G-500-X216
- IZN10-G-600-X216

**Circumferential jet bar nozzle (straight type)**

![Circumferential jet bar nozzle](image)

**Bender tube nozzle**

![Bender tube nozzle](image)

**Part no.**

- IZN10-G-100-X205
- IZN10-G-200-X205
- IZN10-G-300-X205
- IZN10-G-400-X205
- IZN10-G-500-X205
- IZN10-G-600-X205

**Long nozzle**

![Long nozzle](image)

**Part no.**

- IZN10-G-100-X226
- IZN10-G-200-X226
- IZN10-G-300-X226
- IZN10-G-400-X226
- IZN10-G-500-X226
- IZN10-G-600-X226

For the ionizer, please select a female thread type (Rc1/8) for the piping. (Refer to “How to Order” for page 1133.)

**For details, refer to the product catalog available on SMC website.**
**Series IZN10**

**Made to Order 2**

This product is an individually applicable product. For details about the delivery time and price, please consult with SMC representative.

### Intermittent control timer

A digital timer that can control ON/OFF switches of valves etc.

**Application:** Improved dust removal effect under low air consumption by intermittent ion blowing

- **Changeable frequency:** 0.1 to 50.0 Hz
- **Set individual ON and OFF times:** 0.1 to 99.9 seconds
- **Display of accumulated number of changes**
  It can be used for maintaining valve or cylinder operation.

**Switch output (Output under timer control)**

- **2 types of trigger input**
  - **Repeat input** (ON/OFF operation during trigger input)
    - [Trigger] on
    - [Valve operation] off
  - **One-shot input** (ON/OFF operation for a time set from trigger input)
    - [Trigger] on
    - [Valve operation] off

- **Solenoid valves up to 24 VDC (4W) etc. are controllable.**

### Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>IZE110-X238</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply voltage</td>
<td>24 VDC±10% (with power supply polarity protection)</td>
</tr>
<tr>
<td>Current consumption</td>
<td>50 mA or less (Single unit only)</td>
</tr>
<tr>
<td>Connection valve</td>
<td>24 VDC 4 W or less</td>
</tr>
<tr>
<td>OUT (A)</td>
<td></td>
</tr>
<tr>
<td>Max. load current</td>
<td>80 mA</td>
</tr>
<tr>
<td>Max. applied voltage</td>
<td>30 VDC</td>
</tr>
<tr>
<td>Residual voltage</td>
<td>1 V or less (At load current 80 mA)</td>
</tr>
<tr>
<td>Short circuit protection</td>
<td>With short circuit protection</td>
</tr>
<tr>
<td>Trigger input</td>
<td>No-voltage input, Low level input 10 ms or more, Low level 0.4 V or less</td>
</tr>
<tr>
<td>Indicator light</td>
<td>(Green/Red)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental resistance</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure</td>
<td>IP40</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>Operating: 0 to 50°C, Stored: –10 to 60°C (with no freezing or condensation)</td>
</tr>
<tr>
<td>Operating humidity range</td>
<td>Operating/Store: 85% RH (with no condensation)</td>
</tr>
<tr>
<td>Withstand voltage</td>
<td>1000 VAC for 1 minute between terminals and housing</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>50 MΩ or more (500 VDC measured via megohmmeter), between terminals and housing</td>
</tr>
<tr>
<td>Vibration resistance</td>
<td>10 to 150 Hz at whichever is smaller of 1.5 mm amplitude or 20 m/s² acceleration, in X, Y, Z direction for 2 hrs. each (De-energized)</td>
</tr>
<tr>
<td>Impact resistance</td>
<td>100 m/s² in X, Y, Z directions 3 times each (De-energized)</td>
</tr>
<tr>
<td>Material</td>
<td>Front case: PBT, Rear case: Denaturated PPE</td>
</tr>
<tr>
<td>Weight</td>
<td>50 g</td>
</tr>
</tbody>
</table>

Note) Do not use a load that generates surge voltage.

### Dimensions/Input/Output circuit

- **Solenoid valves up to 24 VDC (4W) etc. are controllable.**
- **Intermittent control timer**
  - **Changeable frequency:** 0.1 to 50.0 Hz
  - **Set individual ON and OFF times:** 0.1 to 99.9 seconds
  - **Display of accumulated number of changes**
    - **Switch output (Output under timer control)**
      - **2 types of trigger input**
        - **Repeat input** (ON/OFF operation during trigger input)
          - [Trigger] on
          - [Valve operation] off
        - **One-shot input** (ON/OFF operation for a time set from trigger input)
          - [Trigger] on
          - [Valve operation] off
  - **Solenoid valves up to 24 VDC (4W) etc. are controllable.**

**Ionizer**

- **24 VDC**
- **Out**
- **GND**

**Solenoid valve**

- **Valve (+)**
- **Valve (–)**
- **Switch**
- **Trigger input**

**Dimensions/Input/Output circuit**

- **2 types of trigger input**
  - **Repeat input** (ON/OFF operation during trigger input)
    - [Trigger] on
    - [Valve operation] off
  - **One-shot input** (ON/OFF operation for a time set from trigger input)
    - [Trigger] on
    - [Valve operation] off

**Solenoid valves up to 24 VDC (4W) etc. are controllable.**
**Warning**

1. This product is intended to be used with general factory automation (FA) equipment.

   If considering using the product for other applications (especially those stipulated in 4 on front matter 56), please consult with SMC beforehand.

2. 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.

3. Use clean compressed air for fluid.

   This product is not explosion proof. Never use a flammable gas or an explosive gas as a fluid and never use this product in the presence of such gases. Please contact us when fluids other than compressed air are used.

4. This product is not explosion-protected.

   Never use this product in locations where the explosion of dust is likely to occur or flammable or explosive gases are used. This can cause fire.

**Caution**

1. This product is not washed. When bringing into a clean room, flush for several minutes and confirm the required cleanliness before using.

**Warning**

1. Reserve an enough space for maintenance, piping and wiring.

   Please take into consideration that the One-touch fittings for supplying air, need enough space for the air tubing to be easily attached/detached.

   To avoid excessive stress on the connector and One-touch fitting, please take into consideration the air tubings minimum bending radius and avoid bending at acute angles.

   Wiring with excessive twisting, bending, etc. can cause a malfunction, wire breakage, fire or air leakage.

   Minimum bending radius: Power supply cable............35 mm

   (Note: Shown above is wiring with the fixed minimum allowable bending radius and at a temperature of 20 °C. If used under this temperature, the connector can receive excessive stress even though the minimum bending radius is allowable.)

   Regarding the minimum bending radius of the air tubing, refer to the instruction manual or catalog for tubing.

2. If the ionizer is to be mounted directly, mount it on a flat face.

   If the mounting face is curved, distorted and/or uneven, excessive force will be applied to the ionizer, which may cause damage and failure of the ionizer. Also, dropping or exposing the ioniser to other strong impact may cause failure or accident.

**Warning**

3. 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.

4. Observe the tightening torque requirements when installing the ionizer. Refer to the following table for tightening torques for screws, etc.

   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.

<table>
<thead>
<tr>
<th>Thread size</th>
<th>Recommended tightening torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>M3</td>
<td>0.61 to 0.63 N·m</td>
</tr>
</tbody>
</table>

5. Do not allow foreign matter or tools to enter the nozzle.

   The inside of the nozzle contains electrode needles. If a metal tool makes contact with the electrode needles, it can cause electric shock, resulting in a sudden movement by the operator that can cause further injuries such as hitting the body on peripheral equipment. Also, if the tool damages the electrode needle, the ionizer may fail or cause an accident.

**Danger High Voltage!**

Electrode needles are under high voltage. Never touch them as there is a danger of electric shock or injury due to an evasive action against a momentary electrical shock caused by inserting foreign matter in the electrode cartridge or touching the electrode needle.

6. Do not apply moment to the nozzle.

   If a copper long nozzle is mounted horizontally, moment will be applied to the nozzle. Then if vibration occurs, the nozzle can be damaged. If a moment of 0.05 N·m or more will be applied, mount a support to the middle part of the nozzle so that the moment is not applied to the nozzle.

7. Do not affix any tape or seals to the main unit.

   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.

8. Installation and adjustment should be conducted after turning off the power supply.
**Wiring/Piping**

**⚠️ Warning**

1. Before wiring confirm if the power supply voltage is enough and that it is within the specifications before wiring.
2. Always use a UL listed Class 2 output 24 VDC power supply.
3. Be sure to ground with a resistance of 100 Ω or less to maintain the product performance.

If such grounding is not provided, not only may static electricity removal capability be disrupted but electric shocks may also result and the ionizer or power supply may break down.

4. Be sure to turn off the power supply before wiring (including attachment/detachment of the connector).
5. When applying the power supply, pay special attention to the wiring and/or surrounding environment until the safety is confirmed.
6. Do not connect or remove any connectors including the power supply, while power is being supplied. Otherwise, the ionizer may malfunction.
7. 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.
8. Be sure to confirm there are no wiring errors before starting this product.

Incorrect wiring will lead to damage or malfunction to the product.
9. Flush the piping before using.

Before using this product, exercise caution to prevent particles, water drop, or oil from entering the piping.

**Operating Environment/Storage Environment**

**⚠️ Warning**

2. Take preventative measures against ozone.

Equipment used around the ionizer should have ozone-prevention measures.

Also, regularly check that there is no deterioration due to ozone.
3. The ionizer cannot be used without air purge.

Without air purge, not only will the ionizer be unable to eliminate charge, but also the internal ozone condensation will increase and adversely affect the ionizer and peripheral equipment. Therefore, be sure to perform air purge when energizing the ionizer.

4. Observe the fluid and ambient temperature range.

Fluid and ambient temperature ranges are 0 to 55°C for the ionizer. Do not use the ionizer in locations subject to sudden temperature changes even if the ambient temperature range is within the specified limits, as condensation may result.
5. 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 of 0 to 55°C.

b) Avoid using in a place that exceeds an ambient humidity range of 35 to 65% Rh.

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 the main body is electro-statically discharged.

k) Avoid using in a place where a strong high frequency occurs.

l) Avoid using in a place where this product is likely to be damaged by lightning.

m) Avoid using in a place where direct vibration or shock is applied to the main body.

n) Avoid using in a place where there is a force large enough to deform this product or weight is applied to the product.
6. 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.

Supply clean compressed air by using an air dryer (Series IDF), air filter (Series AF/AFF), and mist separator (Series AFM/AM)

7. The ionizer is not designed to withstand lightning.
**Maintenance**

**⚠️ Warning**

1. Periodically (for example, every two weeks) inspect the ionizer and clean the electrode needles.
   Conduct a regular maintenance to see if the product is running having a disorder.
   Maintenance should be conducted by a fully knowledgeable and experienced person about the equipment. Using for long periods of time will lower the static electricity eliminating performance, if particles attach to the electrode pin. When the maintenance signal LED lights up, clean the electrode needle.
   Replace the electrode cartridge, if the pins are worn and the static electricity eliminating performance does not return even after being cleaned.

**⚠️ Danger High Voltage!**

This product contains a high voltage generation circuit. When performing maintenance inspection, be sure to confirm that the power supply to the ionizer is turned off. Never disassemble or modify the ionizer, as this may not only impair the product’s functionality but could cause an electric shock or electric leakage.

2. The tube and fitting must be treated as consumable parts.
   The tube and fitting that are connected to the female piping ports of the ionizer can deteriorate due to ozone and need to be replaced regularly or use an ozone-resistant type.

3. When cleaning the electrode pin or replacing the electrode cartridge, be sure to turn off the power supply to the main body.
   Touching an electrode needle when it is electrified may result in electric shock or other accidents.

4. Do not disassemble or modify this product.
   Otherwise, an electrical shock, damage and/or a fire may occur. Also, the disassembled or modified 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**

**⚠️ Warning**

1. Do not drop, bump or apply excessive impact (10 G 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 mounting/dismounting the cable, use your finger to pinch the claw of the modular plug, then attach/detach it correctly. Otherwise, modular plug mounting section may be damaged and cause a disorder.