

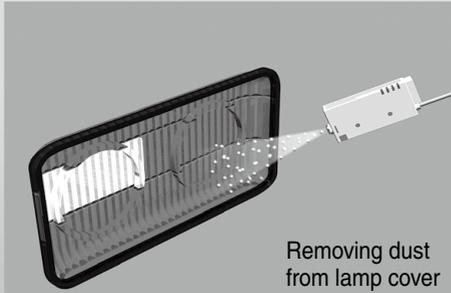
# Ionizer Nozzle type

## Series IZN10



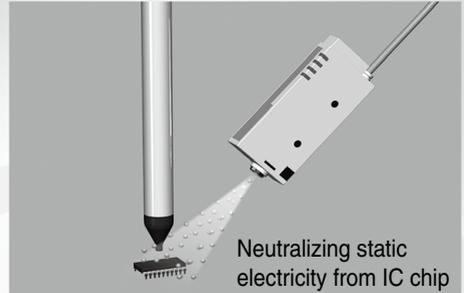
### Dust removal and static neutralization by air blow

- Eliminates dust clinging to lamp cover.



### Spot type static neutralization

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



Ion balance  $\pm 10$  v (In case of energy saving static neutralization nozzle)

Slim design: Thickness dimension **16 mm**

RoHS compliant

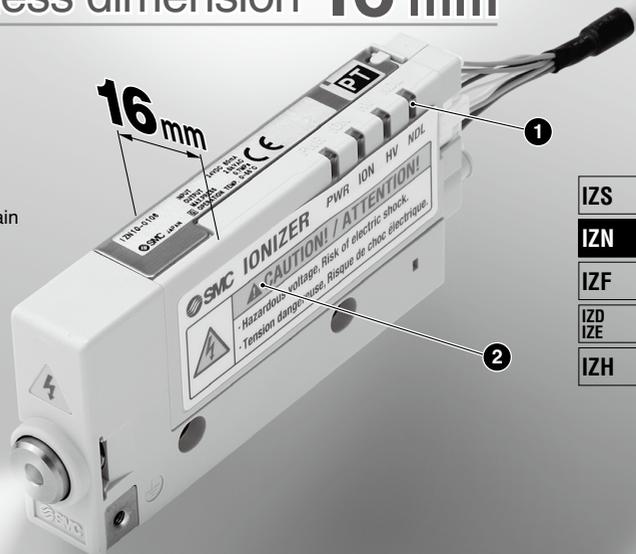
#### ① Electrode needle contamination detector

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.



IZS

IZN

IZF

IZD

IZE

IZH

# Nozzle type can be selected according to applications.

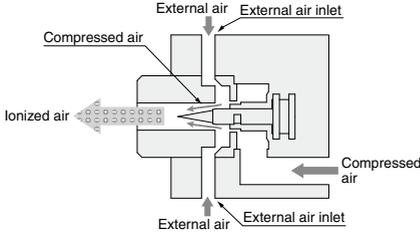
## Energy saving static neutralization nozzle

**Short range static neutralization,  
Design focuses on ion balance.**

**Ion balance:  $\pm 10$  V**

**Increases flow volume by external air intake**

**Static neutralization is possible with minimal air consumption.**



**In cases with same air consumption,  
static electricity is neutralized half the time.**

(Supply pressure 0.3 MPa)

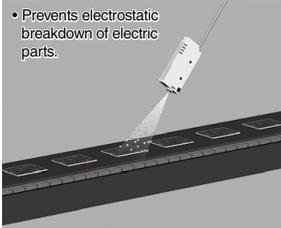
External air inlet	None	Yes
Air consumption flow rate L/min (ANR)	10	<b>10</b>
Static neutralization time* sec	5	<b>2.5</b>
Ionized air flow velocity* m/s	0.4	<b>2.5</b>

\* At 300 mm distance

Reduced by **50%**

Improved **6 times**

Neutralizing static electricity from an electric substrate



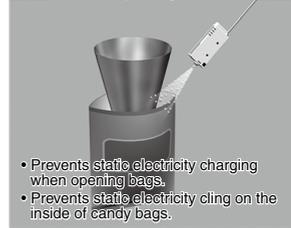
- Prevents electrostatic breakdown of electric parts.

Neutralizing static electricity from lens



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

Neutralizing static electricity from packing films



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

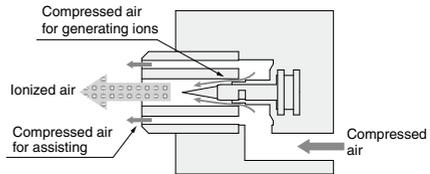
## High flow static neutralization nozzle

# Long range static neutralization and dust removal

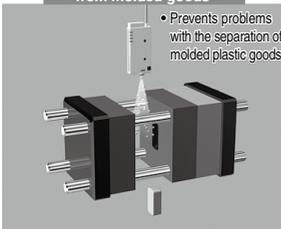
**Ionized air assisted  
by the compressed air**

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

**Ion balance:  $\pm 15$  V**



Neutralizing static electricity from molded goods



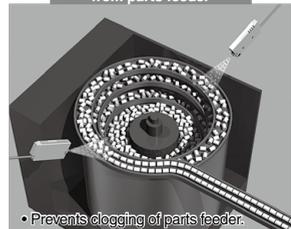
- Prevents problems with the separation of molded plastic goods.

Neutralizing static electricity from plastic cups



- Removes dust clinging to cup interiors.

Neutralizing static electricity from parts feeder

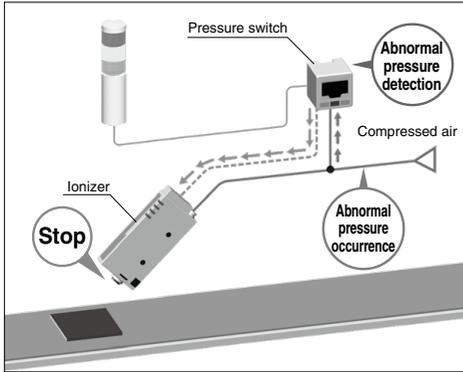


- Prevents clogging of parts feeder.

# External switch input function (2 inputs)

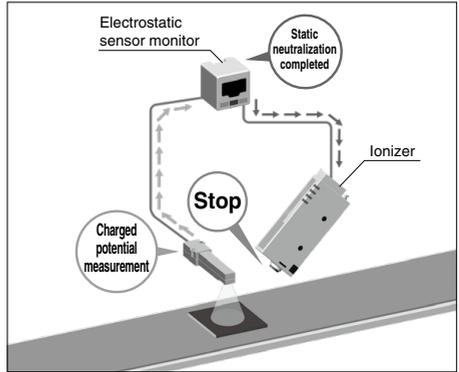
**Prevents static neutralization trouble due to pressure drop of compressed air.**

Emission of static electricity is suspended when abnormal purge air pressure is detected by pressure switch.



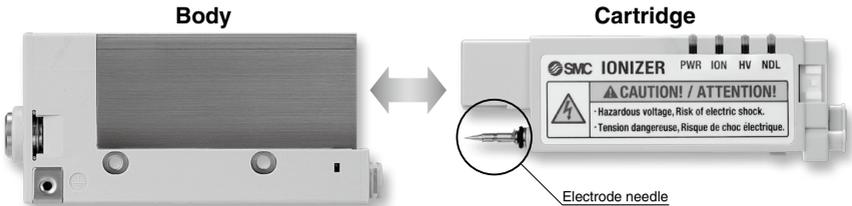
**Energy saving with electrostatic sensor**

Emission of static electricity is suspended when an electrostatic sensor detects that static neutralization 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.



● Possible to conduct maintenance without removal of body.

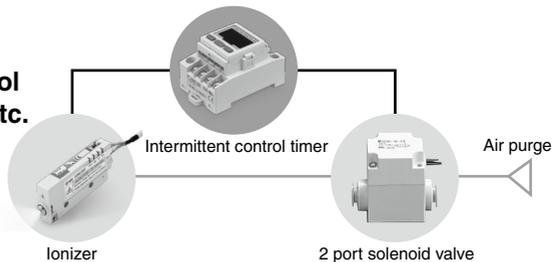
● Tools unnecessary for the installation or removal of the cartridge!

# Intermittent control timer Made to Order

## IZE110-X238

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

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



IZS

IZN

IZF

IZD

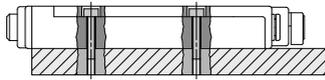
IZE

IZH

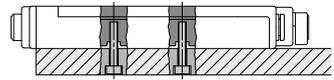
# Mounting variations

## Direct mount

### ▶ Top through-hole mounting

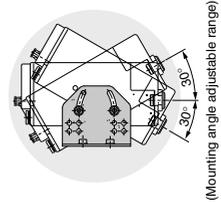
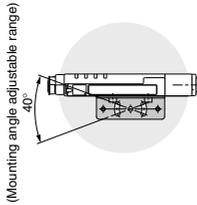


### ▶ Bottom tapped mounting

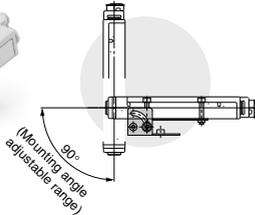


## Bracket mount

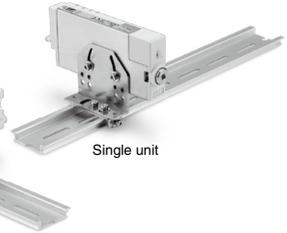
### ▶ L-bracket



### ▶ Pivoting bracket



### ▶ DIN rail mounting bracket



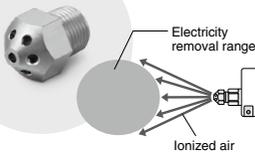
\* The L-bracket and the DIN rail mounting bracket can be used with the manifold.

# Nozzle variations

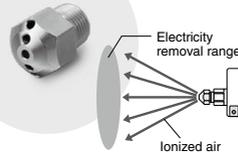
Made to Order

For the ionizer, please select a female thread type (RC1/8) for the piping.

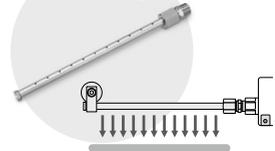
### Circular diffusion nozzle



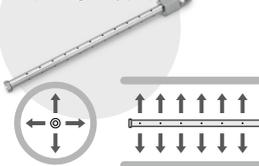
### Flat diffusion nozzle



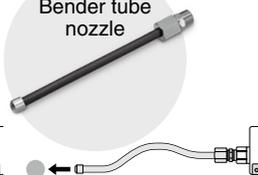
### Bar nozzle (straight type)



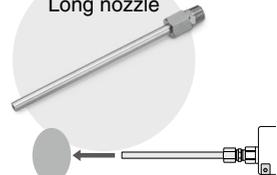
### Circumferential jet bar nozzle (straight type)



### Bender tube nozzle



### Long nozzle



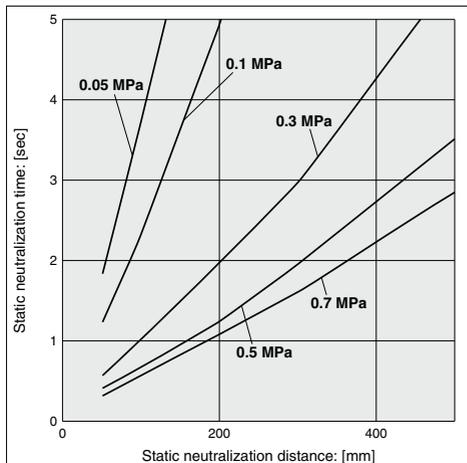
# Series IZN10

# Technical Data 1

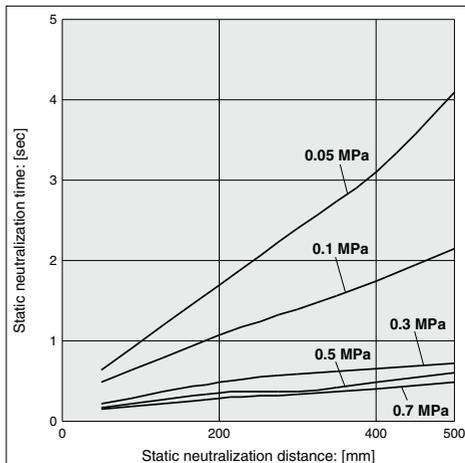
Note) Static neutralization features are based on the data using the charged plate (size: 150 mm x 150 mm, capacitance: 20 pF) as defined in the U.S. ANSI standards (ANSI/ESD, STM3, 1-2006). Use this as a guideline purpose only for model selection because the value varies depending on the material and/or size of a subject.

## Static Neutralization Characteristics (Static Neutralization Time from 1000 V to 100 V)

### (1) Energy saving static neutralization nozzle/IZN10-01



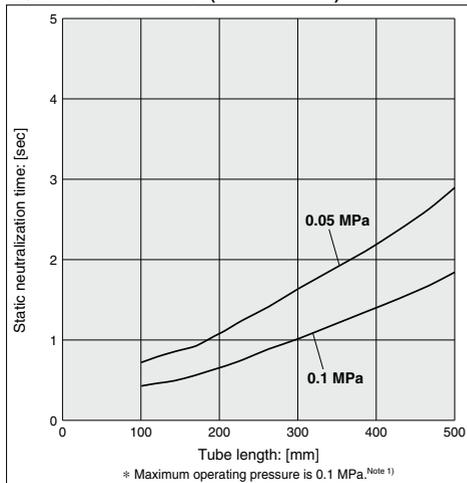
### (2) High flow rate nozzle/IZN10-02



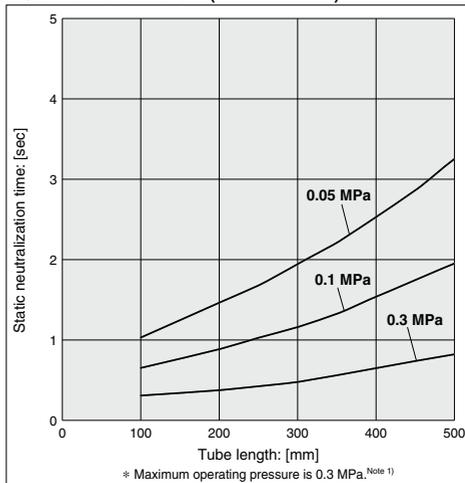
### (3) Female threads for piping/IZN10-11 With Stainless steel 316 One-touch fitting/KQG2 + Anti-static tubing/TA□

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

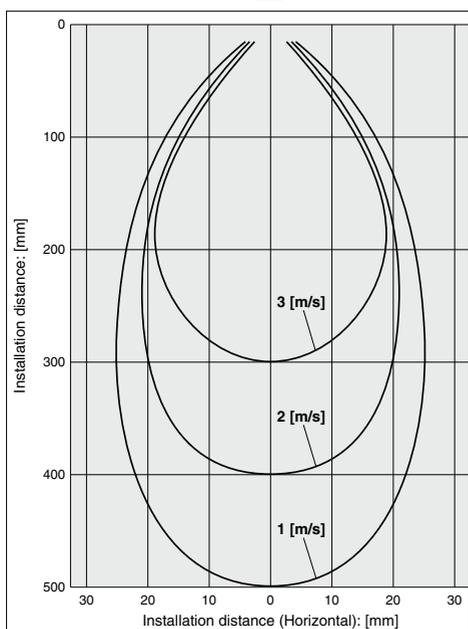
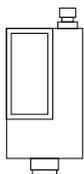
- The ion generating efficiency of the high frequency AC type ionizer will decrease when the pressure around the electrode needle reaches 0.1 MPa or more, due to its ion generating mechanism. This means that even when the electrode needle is not contaminated, the electrode needle contamination detector 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)
- When the tube is connected using the female threads for piping / IZN10-11, be sure to check static neutralization performance beforehand.

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.

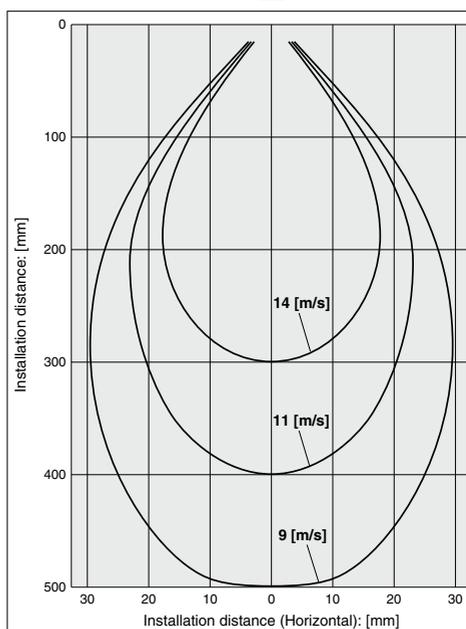
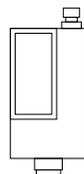
IZS  
IZN  
IZF  
IZD  
IZE  
IZH

## Blow Velocity Distribution (Supply Pressure: 0.3 MPa)

(1) Energy saving static neutralization nozzle/IZN10-01

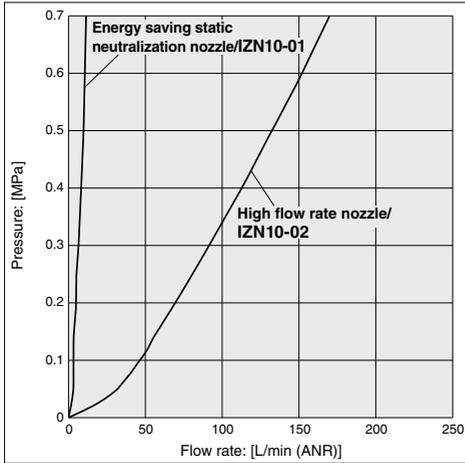


(2) High flow rate nozzle/IZN10-02

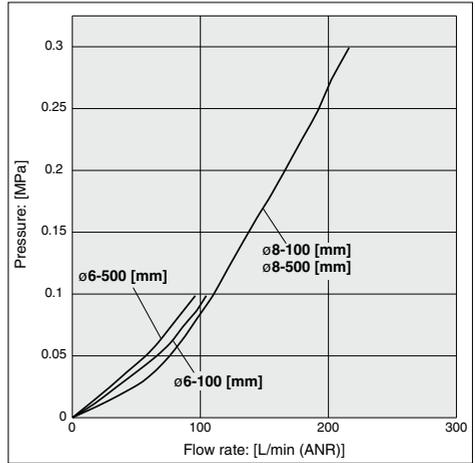


**Flow Characteristics**

- (1) Energy saving static neutralization 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.)

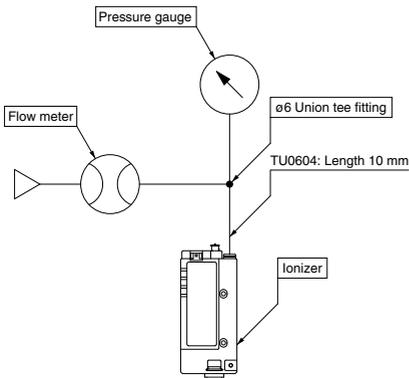
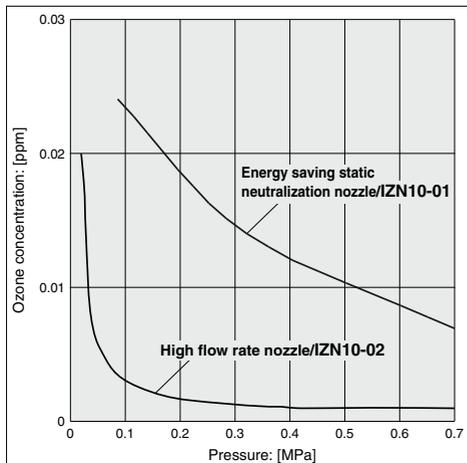


Fig. 1: Flow characteristics measuring circuit

IZS
IZN
IZF
IZD
IZE
IZH

## Ozone Concentration

- (1) Energy saving static neutralization 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.

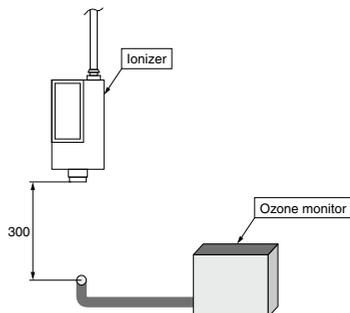


Fig. 2: Ozone condensation measuring circuit

# Ionizer Series IZN10



## How to Order

IZN10-01 P 06 - - -

High frequency AC nozzle type

Nozzle type

Symbol	Type
01	Energy saving static neutralization nozzle
02	High flow rate nozzle
11	Female threads for piping <sup>Note)</sup> Rc1/8

Note) Nozzle shape: When using the female thread for the piping, connect the fitting and the tube or nozzle to the female thread.

Output specification

Nil	NPN output
P	PNP output

Port size

06	ø6: Metric size
07	ø6.35 (1/4): Inch size
16	ø6: Metric size (Elbow)
17	ø6.35 (1/4): Inch size (Elbow)



Made to Order

X194 Without electrode needle contamination detector

\* Refer to the description below.

Bracket

Nil	Without bracket
B1	With L-bracket
B2	With pivoting bracket
B3	With DIN rail mounting bracket

\* Refer to page 682.

Power supply cable

Nil	With power supply cable (3 m)
Z	With power supply cable (10 m)
N	Without power supply cable

## Made to Order

### Without electrode needle contamination detector

How to Order	Contents/Specifications
<p>IZN10-11 - - - X194</p> <p>Fill in the standard model type shown above.</p> <p>Without electrode needle contamination detector</p>	<p>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.</p> <ul style="list-style-type: none"> <li>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.</li> </ul>

### 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.

IZS

IZN

IZF

IZD

IZE

IZH

# Series IZN10

## Accessories

### Bracket

#### • L-bracket/IZN10-B1



Fixed mounting

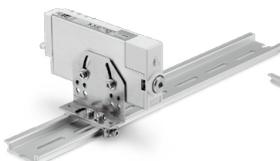


Pivot mounting

#### • Pivoting bracket/IZN10-B2



#### • DIN rail mounting bracket/IZN10-B3



Single unit



Manifold\*

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

#### Power supply cable

[Standard length]

- IZN10-CP (3 m)
- IZN10-CPZ (10 m)

[Non-standard length]

- IZN10-CP **01**-X13

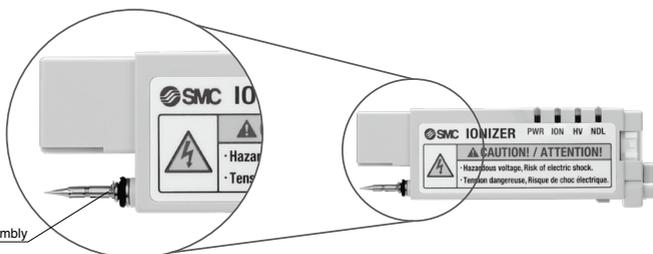
Cable length

01	1m
02	2m
⋮	⋮
20	20m



## Repair Parts

### Electrode needle assembly/IZN10-NT



Electrode needle assembly

### Body assembly: IZN10-A002-**01****06**

Nozzle type

Symbol	Type
01	Energy saving static neutralization nozzle
02	High flow rate nozzle
11	Female threads for piping Rc1/8

Port size

06	ø6: Metric size
07	ø6.35 (1/4): Inch size
16	ø6: Metric size (Elbow)
17	ø6.35 (1/4): Inch size (Elbow)



### Cartridge assembly: IZN10-A003-□

Output Type

Nil	NPN output
P	PNP output



**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**

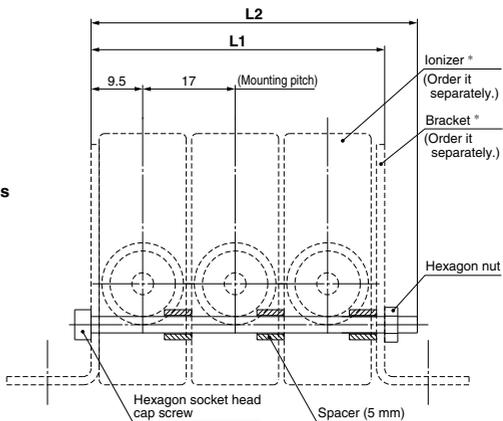
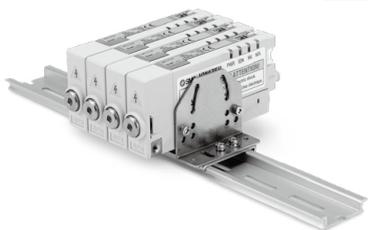
**IZN10-ES**

**Mounting pitch**

Symbol	Pitch
ES	17 mm

**Mounting stations**

Symbol	Stations
2	2
3	3
4	4



\* Prepare two brackets and ionizer separately.

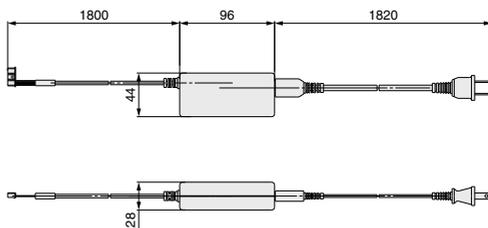
Part no.	L1	L2	Number of spacers
<b>IZN10-ES2</b>	37	40	4
<b>IZN10-ES3</b>	54	60	6
<b>IZN10-ES4</b>	71	75	8

**How to Order**

**AC adapter/IZN10-F  -X196**

**Output signal specifications**

Nil	For NPN output
P	For PNP output



**Electrode needle cleaning kit/IZS30-M2**



- IZS
- IZN
- IZF
- IZD
- IZE
- IZH

## Specifications

Ionizer model		IZN10-□□ (NPN specification)	IZN10-□□P (PNP specification)
<b>Ion generation method</b>		Corona discharge type	
<b>Method of applying voltage</b>		High frequency AC type	
<b>Discharge output</b> <small>Note 1)</small>		2.5 kVAC	
<b>Ion balance</b> <small>Note 2)</small>	<b>Energy saving static neutralization nozzle</b>	Within ±10 V	
	<b>High flow rate nozzle</b>	Within ±15 V	
<b>Ozone generation</b> <small>Note 3)</small>		0.03 ppm (0.05 ppm for energy saving static neutralization nozzle)	
<b>Air purge</b>	<b>Fluid</b>	Air (Clean dry air)	
	<b>Operating pressure</b> <small>Note 4)</small> <small>Note 5)</small>	0.05 MPa to 0.7 MPa	
	<b>Connecting tube size</b>	ø6, ø1/4 inch	
<b>Power supply voltage</b>		24 VDC ±10%	
<b>Current consumption</b>		80 mA	
<b>Input signal</b>	<b>Discharge stop signal</b>	Connected to GND (ON voltage: 0.6 V or less) Current consumption: 5 mA or less	Connected to +24 V (ON voltage: Between +19 V and power supply voltage) Current consumption: 5 mA or less
	<b>Reset signal</b>		
	<b>External switch signal</b>		
<b>Output signal</b>	<b>Discharge signal</b>	Max. load current: 40 mA Residual voltage: 1 V or less (load current at 40 mA) Max. applied voltage: 28 VDC	Max. load current: 40 mA Residual voltage: 1 V or less (load current at 40 mA)
	<b>Error signal</b>		
	<b>Maintenance signal</b>		
<b>Effective static neutralization distance</b>		20 mm to 500 mm	
<b>Ambient and fluid temperature</b>		0 to 55°C	
<b>Ambient humidity</b>		35 to 65%Rh	
<b>Material</b>		Housing: ABS, Stainless steel Nozzle: Stainless steel Electrode needle: Tungsten	
<b>Vibration resistance</b>		Durability: 50 Hz, Amplitude: 1 mm, XYZ each 2 hours	
<b>Shock resistance</b>		10 G	
<b>Weight</b>		120 g	
<b>Standards/Directive</b>		CE (EMC Directive: 2004/108/EC)	

Note 1) Measured with a probe of 1000 MΩ and 5 pF.

Note 2) Measured with a distance of 100 mm between the charged object and ionizer at an air purge pressure of 0.3 MPa.

For the static neutralization time, refer to technical data on page 1129.

Note 3) 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.

Note 4) Static electricity cannot be neutralized without air purge.

Also, failure of air purge can increase internal ozone condensation, adversely affecting the ionizer and peripheral equipment. Be sure to perform air purge while energizing the ionizer.

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.

Note 5) 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 neutralization performance with the mounting material to be used and use the nozzle at a pressure level that maintains the static neutralization performance.

## Functions

### 1. Electrode needle contamination detection

Detects lowered static neutralization performance due to contamination or wear of the electrode needle. The maintenance LED lights up and maintenance signal is generated.

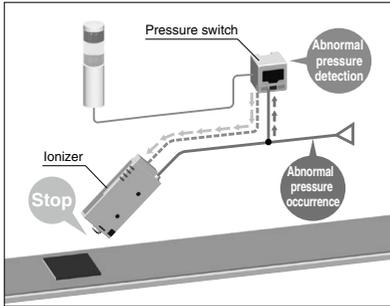
### 2. Signal inputs by external switch

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.

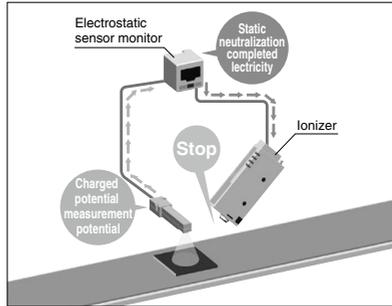
- Prevents static neutralization trouble due to pressure drop of compressed air.



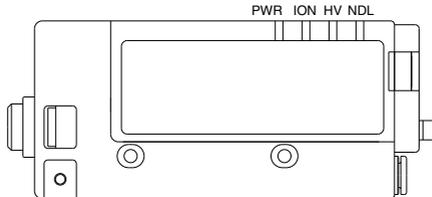
#### Example

An electrostatic meter is connected to stop discharge when static neutralization is completed.

- Energy can be saved by stopping discharge when static neutralization is completed.



### 3. Description of LEDs



Description	Symbol	Color	Contents
<b>Power supply display</b>	PWR	Green	Lights up when the power supply is turned on.
<b>Discharge</b>	ION	Green	Lights up when static electricity is discharged.
<b>Irregular high voltage display</b>	HV	Red	Lights up when an irregular current flows on an electrode needle.
<b>Maintenance display</b>	NDL	Orange	Lights up when electrode needle contamination is detected.

#### Behavior of LEDs

Items	PWR	ION	HV	NDL	Note
Normal operation (with discharge stop signal on)	○	○			Ions are being generated.
Normal operation (with discharge stop signal off)	○				Discharge stops.
Abnormal high voltage detected	○		○		Discharge stops when error is detected.
External switch signal 1	○				Discharge stops when the signal is turned on.
External switch signal 2	○				
Electrode needle contamination detected	○	○		○	Ions keep being generated even after the contamination is detected.

### 4. Alarm

Alarm item	Description	Corrective actions
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.	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	Gives notification that electrode needle maintenance is necessary. The NDL LED turns on and a maintenance output signal is turned on.	Turn off the power, clean the electrode needles, and turn the power on again.

## Wiring

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

### 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.

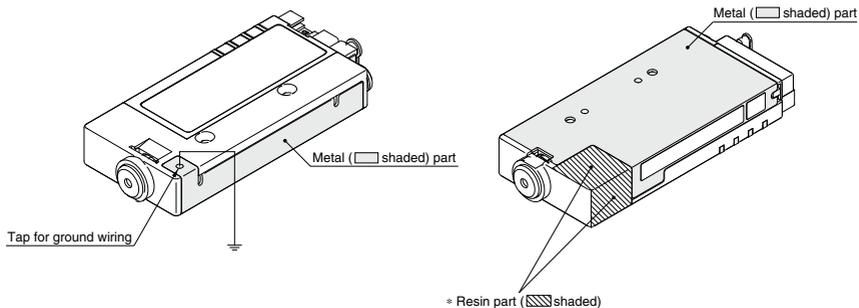
### • Output signal

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.

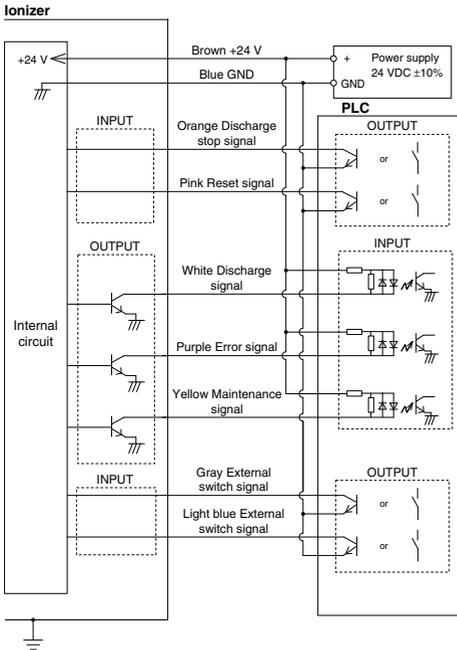
## Provide Grounding.

1. Ground the tap for ground wiring or metal (□ shaded) parts around the external face of the ionizer with a resistance of 100 Ω or less. If grounding is not provided or is incomplete, the ionizer will not be able to achieve its specified static neutralization 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.



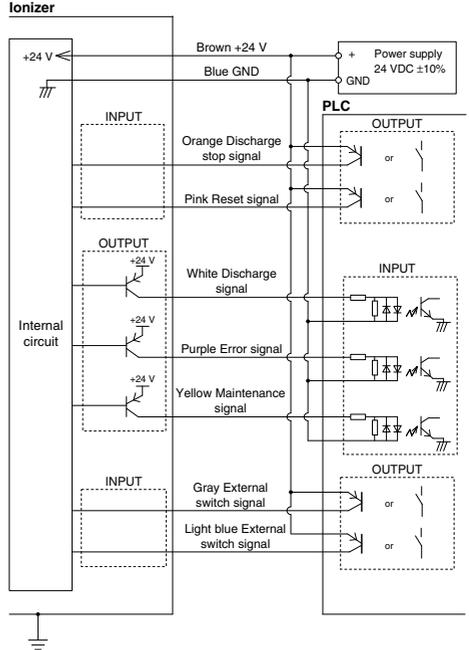
## Power Supply Cable Connection Circuit

### ■ NPN



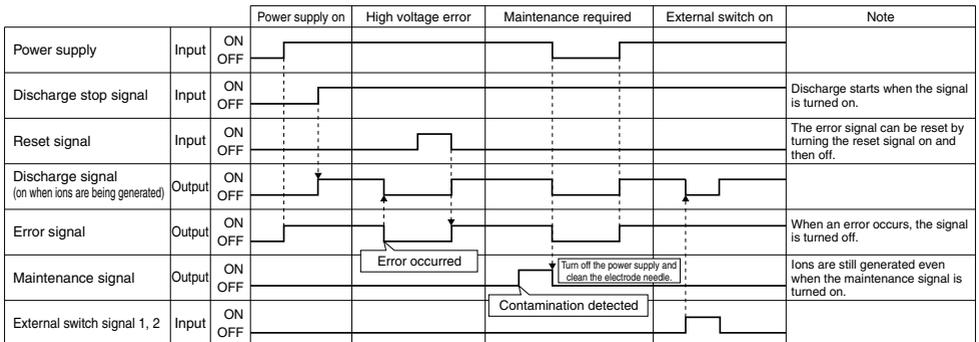
Class D grounding to external metal parts  
(no electrical connection to internal circuit)

### ■ PNP



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

## Timing Chart



IZS

IZN

IZF

IZD

IZE

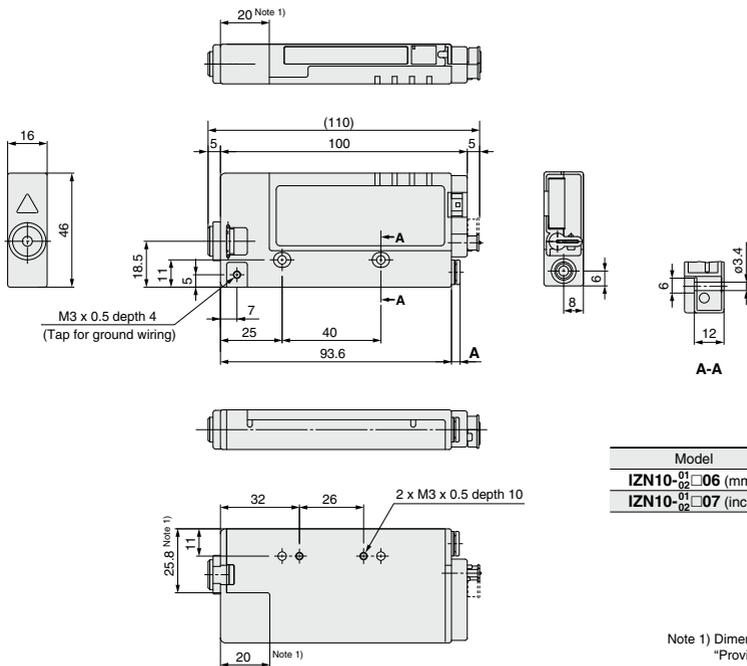
IZH

# Series IZN10

## Dimensions

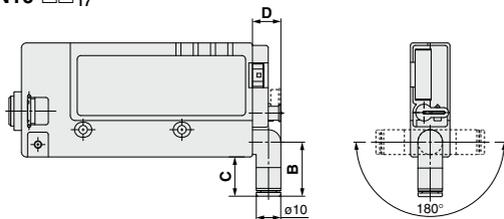
Energy saving static neutralization nozzle/IZN10-01  $\square$   $\begin{smallmatrix} 06 \\ 07 \end{smallmatrix}$

High flow rate nozzle/IZN10-02  $\square$   $\begin{smallmatrix} 06 \\ 07 \end{smallmatrix}$



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

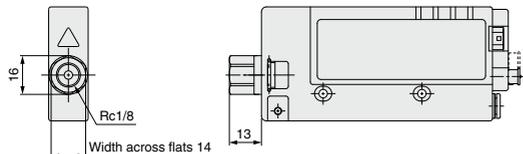
Elbow for piping port/IZN10- $\square$   $\begin{smallmatrix} 16 \\ 17 \end{smallmatrix}$



(mm)

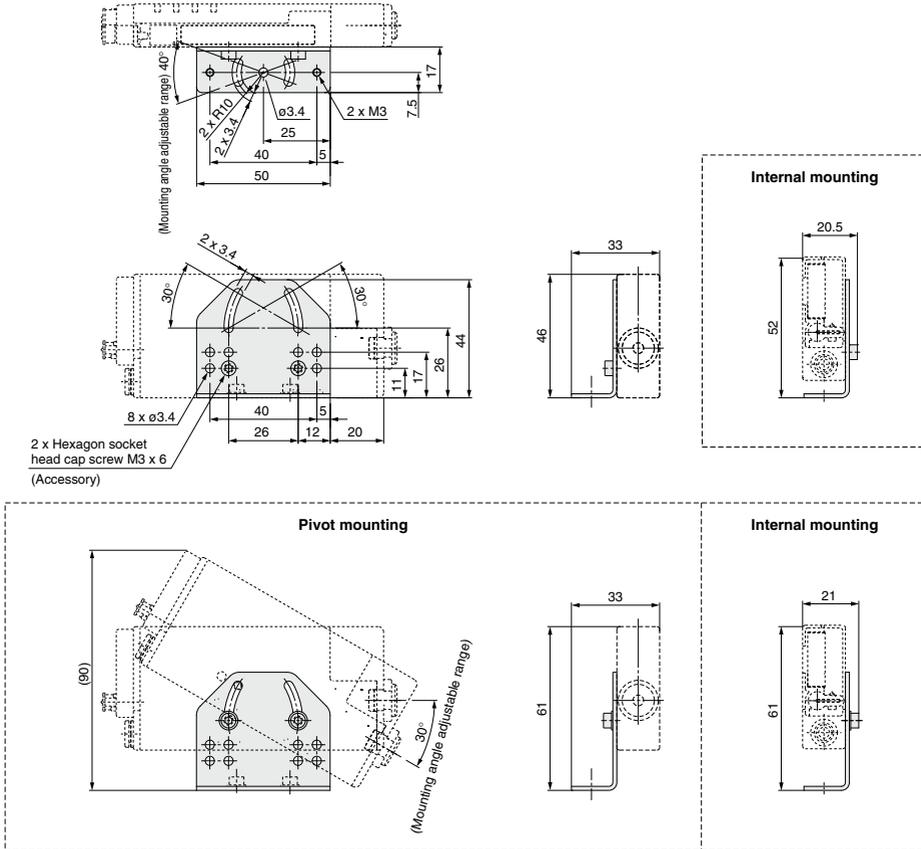
Model	B	C	D
IZN10- $\square$ 16 (mm)	22	16	11.5
IZN10- $\square$ 17 (inch)	24.5	18.5	12

Female threads for piping (Rc1/8)/IZN10-11  $\square$   $\square$

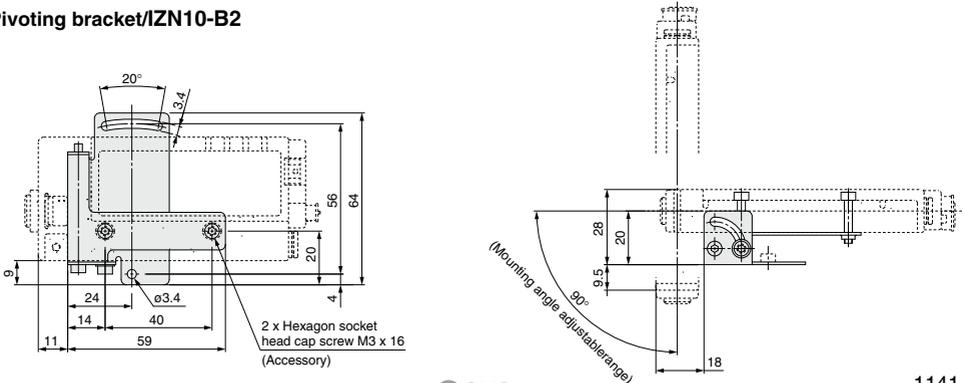


**Dimensions**

**L-bracket/IZN10-B1**



**Pivoting bracket/IZN10-B2**

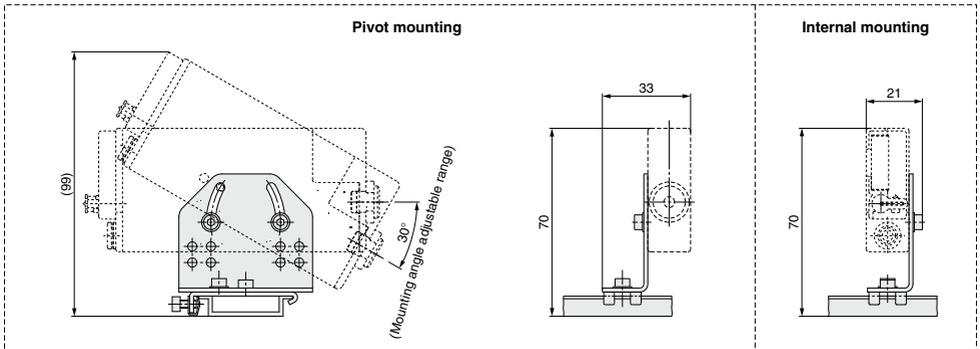
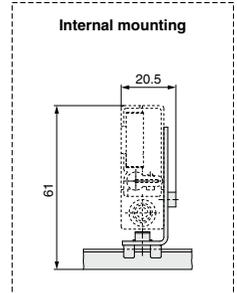
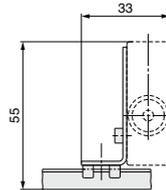
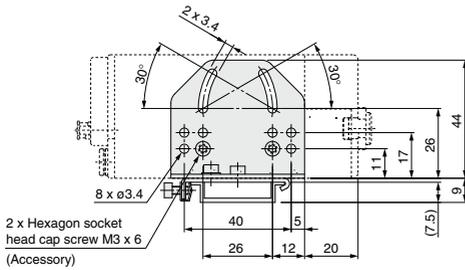
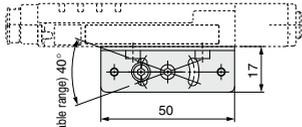


- IZS
- IZN
- IZF
- IZD
- IZE
- IZH

# Series IZN10

## Dimensions

### DIN rail mounting bracket/IZN10-B3



# Series IZN10

## Made to Order 1

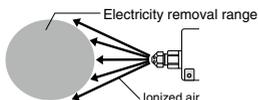
This product is an individually applicable product. For details about the delivery time and price, please consult with SMC representative.



### Nozzle Variations

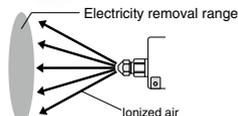
For details, refer to the product catalog available on SMC website.

#### Circular diffusion nozzle



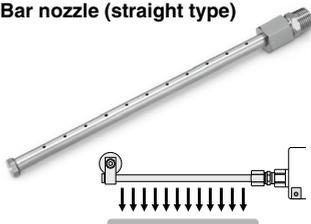
Part no.
IZN10-G-X198

#### Flat diffusion nozzle



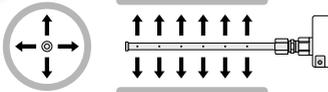
Part no.
IZN10-G-X199

#### Bar nozzle (straight type)



Part no.	Bar length (mm)
IZN10-G-100-X216	100
IZN10-G-200-X216	200
IZN10-G-300-X216	300
IZN10-G-400-X216	400
IZN10-G-500-X216	500
IZN10-G-600-X216	600

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



Part no.	Bar length (mm)
IZN10-G-X278	150

#### Bender tube nozzle



Part no.	Bar length (mm)
IZN10-G-100-X205	100
IZN10-G-200-X205	200
IZN10-G-300-X205	300
IZN10-G-400-X205	400
IZN10-G-500-X205	500
IZN10-G-600-X205	600

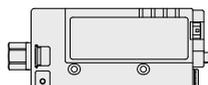
#### Long nozzle



Part no.	Bar length (mm)
IZN10-G-100-X226	100
IZN10-G-200-X226	200
IZN10-G-300-X226	300
IZN10-G-400-X226	400
IZN10-G-500-X226	500
IZN10-G-600-X226	600

For the ionizer, please select a female thread type (Rc1/8) for the piping.

(Refer to "How to Order" for page 1133.)



IZN10-11□□

IZS

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# 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.

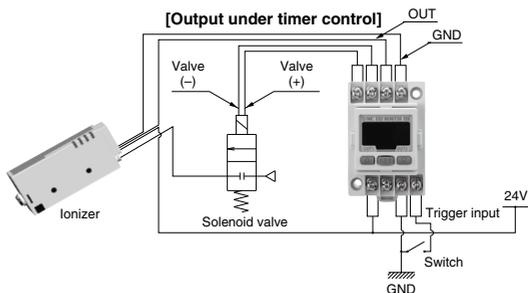
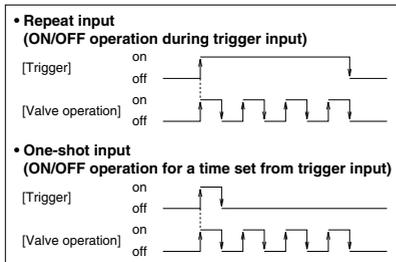


### Intermittent control timer

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



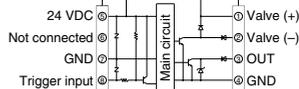
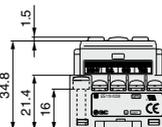
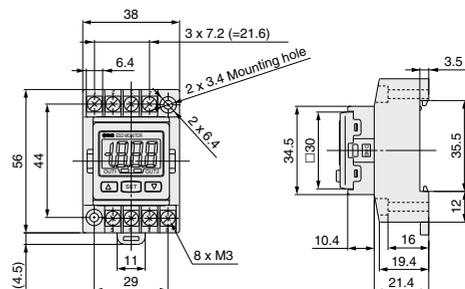
- Solenoid valves up to 24 VDC (4W) etc. are controllable.

### Specifications

Model		IZE110-X238
Power supply voltage		24 VDC±10% (with power supply polarity protection)
Current consumption		50 mA or less (Single unit only)
Connection valve		24 VDC 4 W or less
OUT <sup>(NO)</sup>	Max. load current	80 mA
	Max. applied voltage	30 VDC
	Residual voltage	1 V or less (At load current 80 mA)
	Short circuit protection	With short circuit protection
Trigger input		No-voltage input, Low level input 10 ms or more, Low level 0.4 V or less
Indicator light		(Green/Red)
Environmental resistance	Enclosure	IP40
	Operating temperature range	Operating: 0 to 50°C, Stored: -10 to 60°C (with no freezing or condensation)
	Operating humidity range	Operating/Stored: 35 to 85% RH (with no condensation)
	Withstand voltage	1000 VAC for 1 minute between terminals and housing
	Insulation resistance	50 MΩ or more (500 VDC measured via megohmmeter), between terminals and housing
	Vibration resistance	10 to 150 Hz at whichever is smaller of 1.5 mm amplitude or 20 m/s <sup>2</sup> acceleration, in X, Y, Z direction for 2 hrs. each (De-energized)
	Impact resistance	100 m/s <sup>2</sup> in X, Y, Z directions 3 times each (De-energized)
Material	Front case: PBT, Rear case: Denaturated PPE	
Weight	50 g	

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

### Dimensions/Input/Output circuit



Input/Output circuit



# Series IZN10 Specific Product Precautions 1

Be sure to read this before handling. Refer to front matter 56 for Safety Instructions.

## Selection

### ⚠ Warning

- 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.
- 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.
- 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.
- 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

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

## Mounting

### ⚠ Warning

- 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.
- 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 ionizer to other strong impact may cause failure or accident.

## Mounting

### ⚠ Warning

- 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. 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.

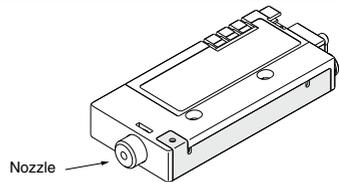
Thread size	Recommended tightening torque
M3	0.61 to 0.63 N·m

- 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.

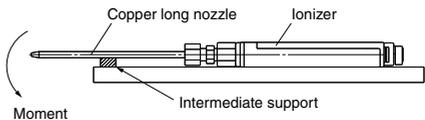
### ⚠ Danger High Voltage!

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.



- 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.



- 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.

- Installation and adjustment should be conducted after turning off the power supply.**

IZS

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# Series IZN10 Specific Product Precautions 2

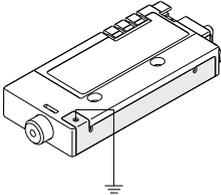
Be sure to read this before handling. Refer to front matter 56 for Safety Instructions.

## 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

1. 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.

Also, ozone condensation can increase if used in an enclosed space, which can affect the human body, so ventilation is necessary. Even if ventilation is secured, the use of two more ionizers in a narrow space can increase ozone condensation. Therefore, check that ozone condensation is not more than a standard value of 0.1 ppm in the operating environment while the ionizer is in operation.

## 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.
- l) 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.



# Series IZN10 Specific Product Precautions 3

Be sure to read this before handling. Refer to front matter 56 for Safety Instructions.

## 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 run 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 neutralization 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 neutralization 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.

IZS

IZN

IZF

IZD

IZE

IZH



# Ionizer/Nozzle Type



## Nozzles with right angles added.



● Slim design

16 mm

360° rotation



### ● 2 types of nozzles

\* Installation distance: 100 mm

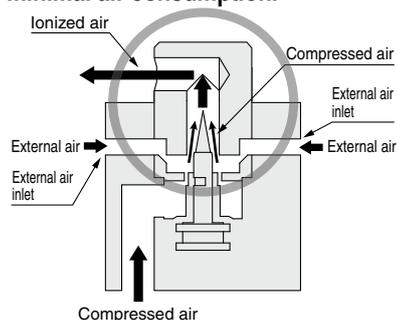
#### Energy saving static neutralization nozzle with right angles

Short range static neutralization, Design focuses on offset voltage.

Offset voltage: Within  $\pm 10\text{ V}^*$

Increases air blow flow rate by external air intake

Static neutralization is possible with minimal air consumption.



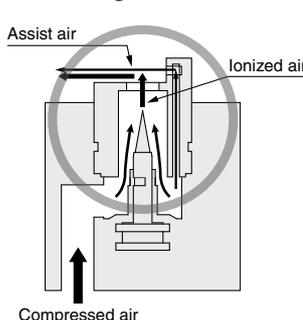
#### High flow rate nozzle with right angles

Long range static neutralization and dust removal

Ionized air assisted by the compressed air

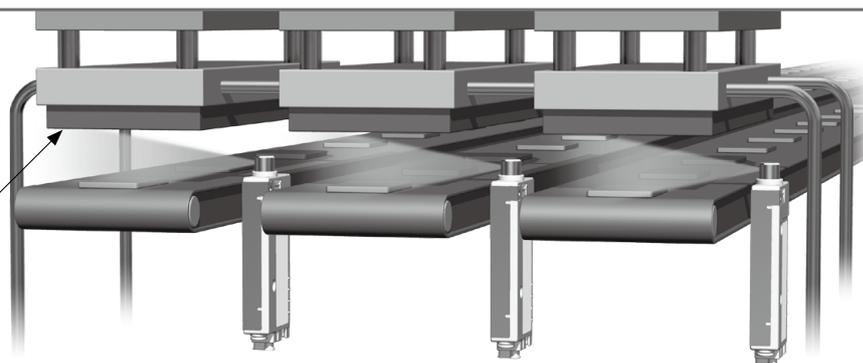
- Improved dust removal performance by the energy of compressed air.
- Suitable for static neutralization at a long distance (max. 500 mm).

Offset voltage: Within  $\pm 30\text{ V}^*$



#### Static neutralization from narrow conveyor space

Obstacle at upper portion of equipment



**IZN10-X367**



# Ionizer/Nozzle Type With Right Angles **IZN10-X367**



## How to Order

IZN10-01-06-X367

Symbol	Type
01	Energy saving static neutralization nozzle
02	High flow rate nozzle

**Nozzle type**

Nil	NPN output
P	PNP output

**Output specification**

06	07
ø6: Metric size	ø6.35 (1/4"): Inch size
ø6: Metric size (Elbow)	ø6.35 (1/4"): Inch size (Elbow)

**Port size**

Nil	Without bracket
B1	With L-bracket
B2	With pivoting bracket
B3	With DIN rail mounting bracket

**Bracket**

Nil	With power supply cable (3 m)
Z	With power supply cable (10 m)
N	Without power supply cable

**Power supply cable**

## Specifications

Ionizer model	IZN10-□□□□-□-X367 (NPN specification)	IZN10-□P□□-□-X367 (PNP specification)
<b>Ion generation method</b>	Corona discharge type	
<b>Method of applying voltage</b>	High frequency AC type	
<b>Applied voltage</b> <small>Note 1)</small>	2.5 kVAC	
<b>Offset voltage</b> <small>Note 2)</small>	Energy saving static neutralization nozzle	Within ±10 V
	High flow rate nozzle	Within ±30 V
<b>Ozone generation</b> <small>Note 3)</small>	0.03 ppm (0.05 ppm for energy saving static neutralization nozzle)	
<b>Air purge</b>	<b>Fluid</b>	Air (Clean dry air)
	<b>Operating pressure range</b> <small>Note 4)</small>	0.05 MPa to 0.7 MPa
	<b>Connecting tube size</b>	ø6, ø1/4 inch
<b>Power supply voltage</b>	24 VDC ±10%	
<b>Current consumption</b>	80 mA or less	
<b>Input signal</b>	<b>Discharge stop signal</b>	Connected to GND (ON voltage: 0.6 V or less) Current consumption: 5 mA or less
	<b>Reset signal</b>	
	<b>External switch signal</b>	
<b>Output signal</b>	<b>Discharge signal</b>	Max. load current: 40 mA Residual voltage: 1 V or less (load current at 40 mA) Max. applied voltage: 28 VDC
	<b>Error signal</b>	
	<b>Maintenance signal</b>	
<b>Effective static neutralization distance</b>	20 mm to 500 mm	
<b>Ambient and fluid temperature</b>	0 to 55°C	
<b>Ambient humidity</b>	35 to 65%Rh	
<b>Material</b>	Housing: ABS, Stainless steel Nozzle: Stainless steel Electrode needle: Tungsten	
<b>Impact resistance</b>	10 G	
<b>Weight</b>	120 g	
<b>Standards/Directive</b>	CE (EMC Directive: 2004/108/EC)	

Note 1) Measured with a probe of 1000 MΩ and 5 pF.

Note 2) Measured with a distance of 100 mm between the charged object and an ionizer at an air purge pressure of 0.3 MPa.  
For the discharge time, refer to technical data on back cover.

Note 3) Value above background level, measured with a distance of 300 mm from the air blow port at an air purge pressure of 0.3 MPa.

Note 4) Static electricity cannot be neutralized without air purge.

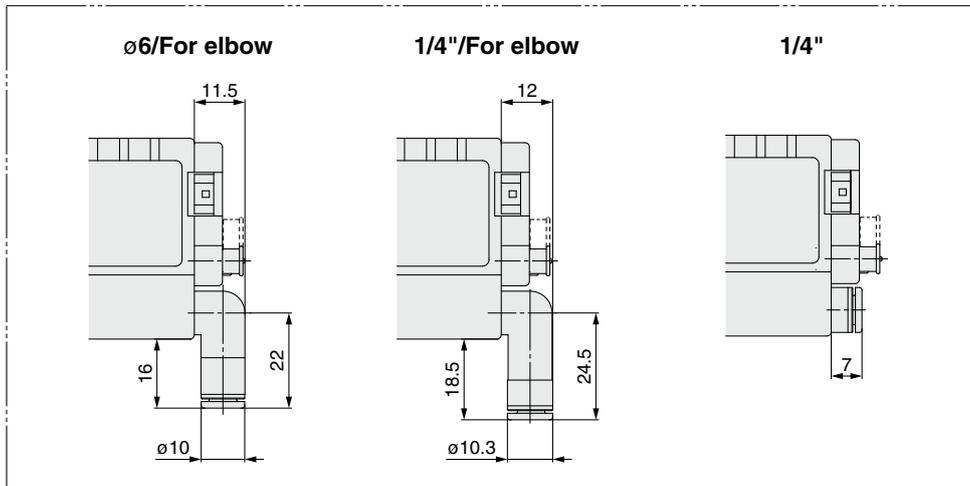
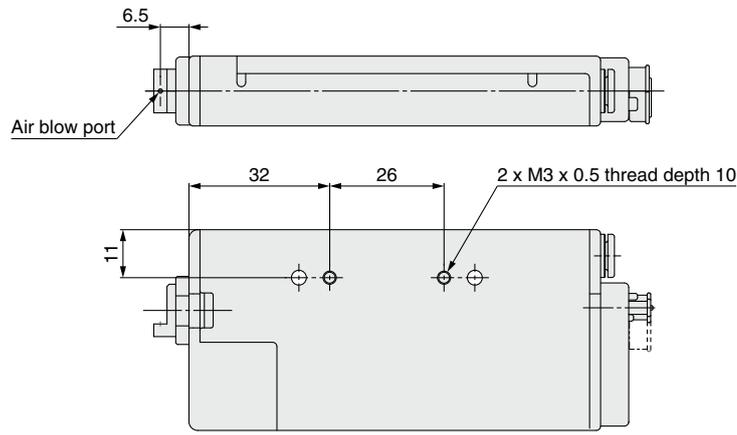
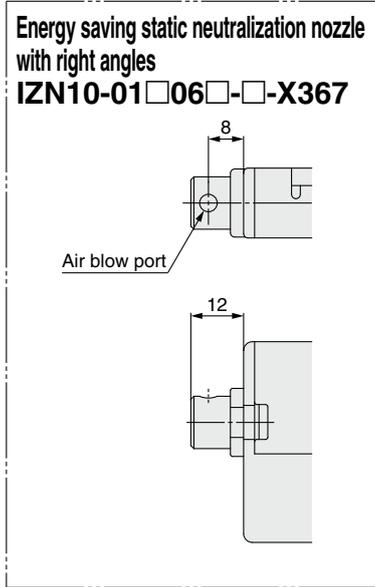
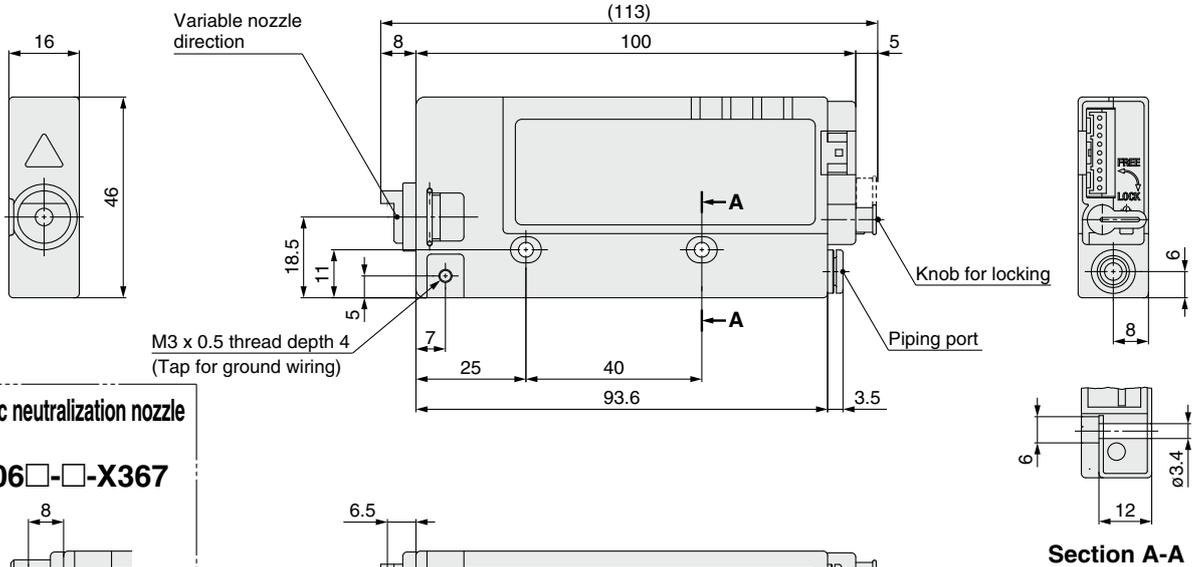
Also, failure of air purge can increase internal ozone condensation, adversely affecting the ionizer and peripheral equipment. Be sure to perform air purge while energizing the ionizer.

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.



**Dimensions**

**High flow rate nozzle with right angles**  
**IZN10-02□06□-□-X367**



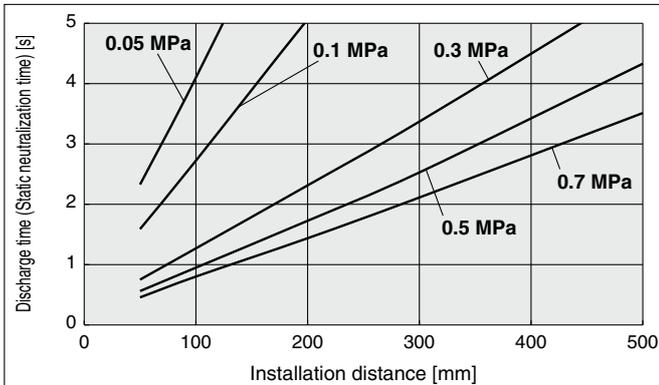
Refer to the **WEB catalog** for dimensions of the model with bracket.

# IZN10-X367

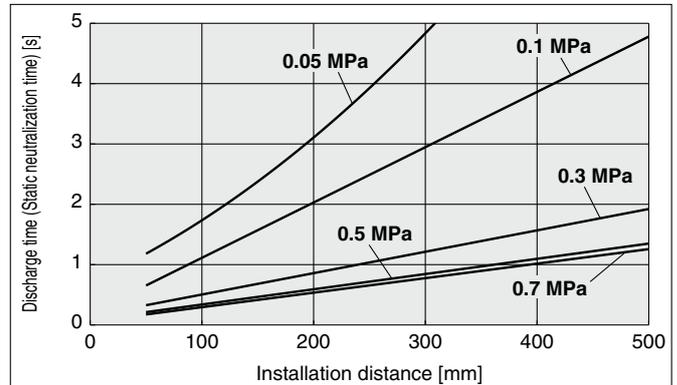
## Static Neutralization Characteristics (Discharge Time from 1000 V to 100 V)

Note) Static neutralization 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.

### ① Energy saving static neutralization nozzle with right angles: IZN10-01-X367



### ② High flow rate nozzle with right angles: IZN10-02-X367



## Flow-rate Characteristics

### ① Energy saving static neutralization nozzle with right angles: IZN10-01-X367

### ② High flow rate nozzle with right angles: IZN10-02-X367

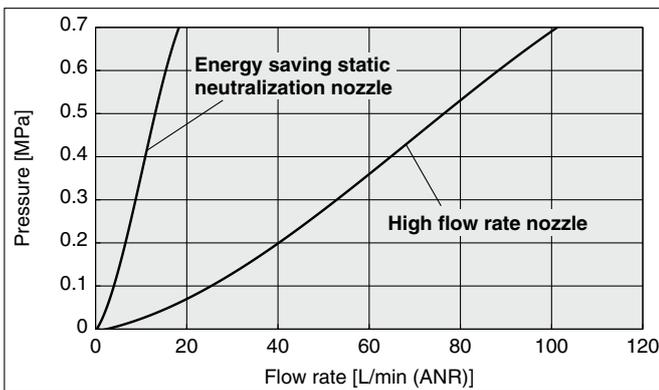
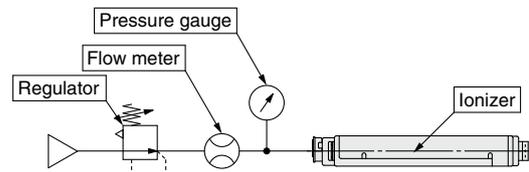


Fig. 1: Flow-rate characteristics measuring circuit



Other specifications are the same as the standard type. Refer to the **WEB catalog** for details.

**⚠ Safety Instructions** Be sure to read "Handling Precautions for SMC Products" (M-E03-3) before using.