

Ionizer

With surface potential sensor

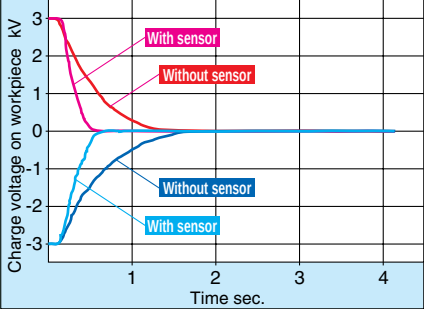
Series IZS30



Discharge time 0.3 seconds

Conditions / Static buildup decreased from 3000 V to 300 V
 Discharged object: Electrostatic charged plate (150 mm x 150 mm, Capacitance 20 pF)
 Installation distance : 200 mm from workpiece (Tungsten electrode with air purge)

Positive and negative electric charge on a workpiece is measured and discharged by a continuous flow of cancelling ions.



<Conditions>
 Height when installed: 250 mm
 Air purge: 20 l/min (ANR)
 Discharged object: Electrostatic charged plate (150 mm x 150 mm, Capacitance 20 pF)
 Operating frequency without sensor: 33 Hz

New
 Silicon added to the choice of electrode needle materials!
 Made-to-Order options now available!

Controller, Built-in high voltage power supply



One-touch fitting with check valve

(Both ends: standard equipment)

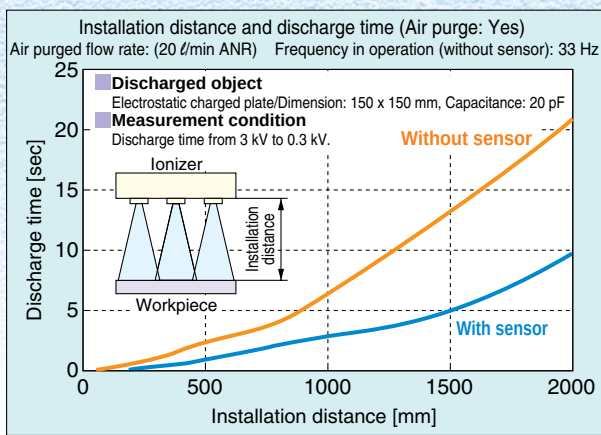


Surface potential sensor

Measures the polarity of a discharged object, as well as the amount of charged electricity.

The effects by the installation distance is reduced.

Feedback control by the external sensor reduces the time needed for eliminating electricity which is caused by the body installation distance.



Electrode needles are made in a cartridge.

Can replace it with a single touch.



Power consumption: **4 W** while eliminating static electricity, **2.5 W** while standing by
(When a surface potential sensor is used.)

- Automatically stops generating ions when the static electricity has been eliminated.
- Automatically controls the generation of ions and turns the compressed air on/off depending on the existence of a charged material. (Solenoid valve is prepared by customer.)

Continuously emits ions of reversed polarity to charged objects as a result of feedback from the external sensor.
(Mode changes to pulse DC mode when a sensor is not used.)

Mode	Ion emission image	Action	How to use
Sensing DC mode (with sensor)		Continuously emits ions of reversed polarity to charged objects as a result of feedback from the external sensor.	Can eliminate static electricity depending on the charged status of the material. Suited for a rapid elimination of static electricity.
Pulse DC mode (without sensor)		Alternatively emits positive and negative ions.	Suited for a continuous material such as a sheet of film and/or for eliminating static electricity in a specific space.

A charged object image

Following 3 modes, dependent on the application, can be selected.

1 Sensing DC mode

Automatic operation by feedback control

Features

1 High-speed static electricity elimination

- Eliminating electricity is possible according to the electrostatic charged status.
- Continuously emits ions with reversed polarity by the external sensor signal.

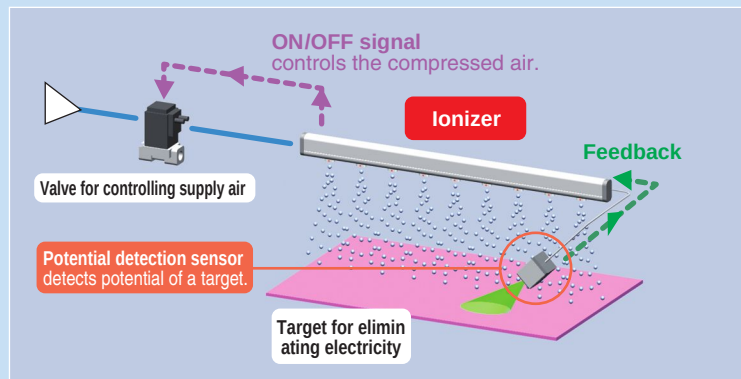
2 The effects by the installation distance are reduced.

- Feedback control by the external sensor reduces the time needed for eliminating electricity which is caused by the body installation distance.

3 ON/OFF control automatically after eliminating electricity

- Ion generation and/or blown air suspension are possible by the electricity removal completion signal. (Energy saving)
- (Separately supply a solenoid valve for controlling air.)

Feedback control by the potential detection sensor



2 Pulse DC mode

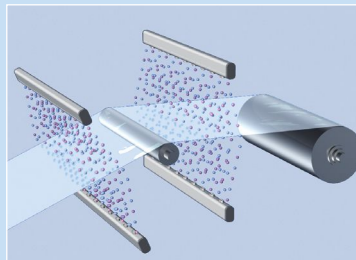
Can emit positive/negative ions at a certain cycle for general purpose.

Suited for a work piece with charged electricity spots, continuous work piece or small work piece which cannot be identified by the sensor

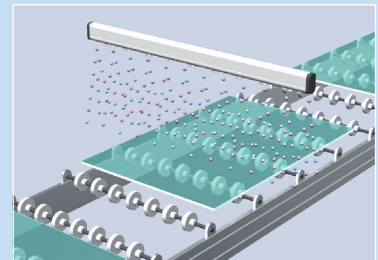
Switch frequency is variable.

Setting cycle 1, 3, 5, 8, 10, 15, 20, 33 Hz

Eliminating static electricity on a film



Eliminating static electricity on a glass substrate



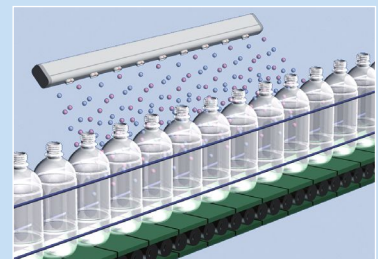
3 DC mode

Generates positive/negative ions.

- Suitable for a high-speed transfer work piece with unchanged charged polarity or applicable to static electricity rough elimination at a high-voltage
- Possible to charge electricity positively for static electricity painting, etc.

Exercise measures such as earthing because equipment other than a work piece can be electrically charged.

Prevents particles from adhering to the PET bottles when molding or eliminates electricity when conveying or loading.



New

Silicon needle is added to the electrode needle material.

Suited to the case where the heavy metal powders (tungsten) dropping could be the problems.



Made to Order

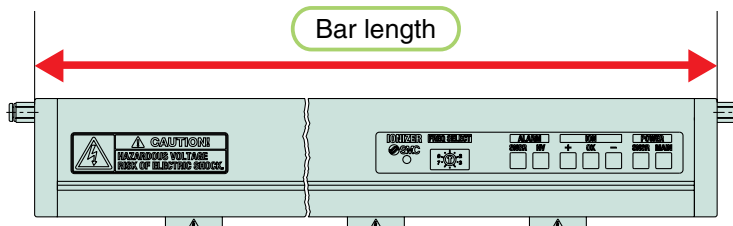
Non-standard bar length compliant (80 mm pitch)

* For details, please refer to page 10.

Compliant bar length (mm)

380, 460, 540, 620, 700, 860, 940, 1020, 1100, 1340, 1420, 1580, 1660, 1740, 1820, 1980, 2060, 2140, 2220, 2300

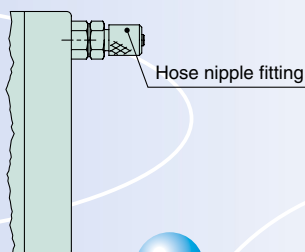
(Manufactured upon receipt of order for 1340 mm or greater length)



Changing its fittings, low particle generation spec.

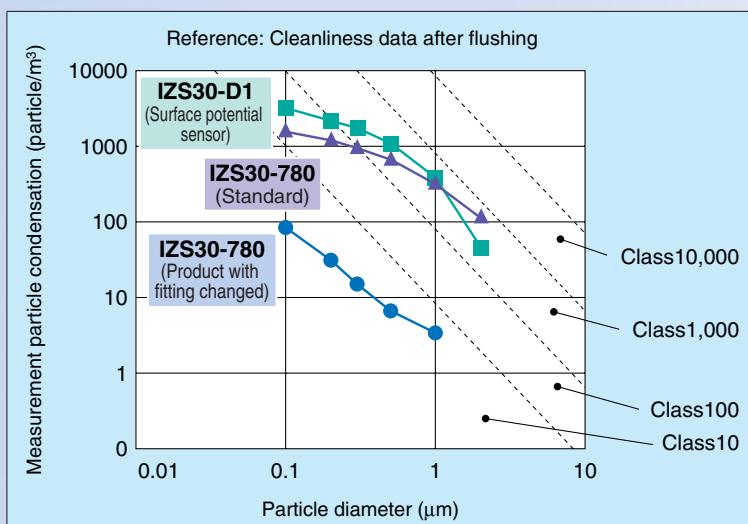
Changing the fitting with check valve to a hose nipple.: Equivalent to Class 10

Note) One-touch fitting with a check valve will be changed to a hose nipple.



Power supply cable variations (Made to Order)

5 m, 7 m, 10 m (Standard: 3 m)

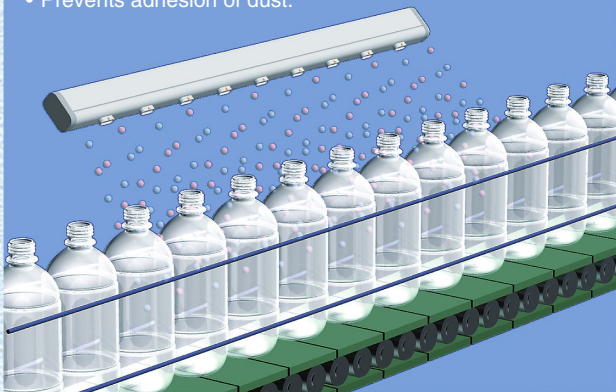


Series IZS30

Application Examples

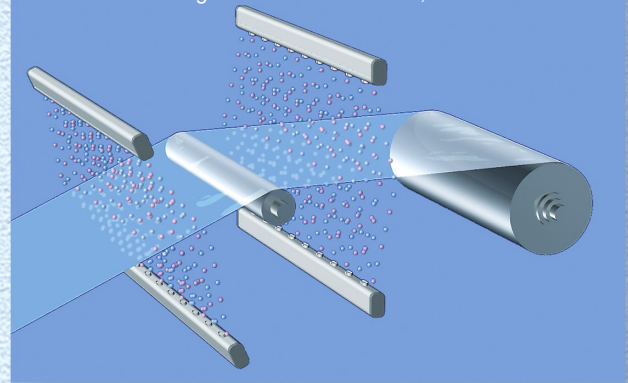
Eliminating static electricity on PET bottles

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



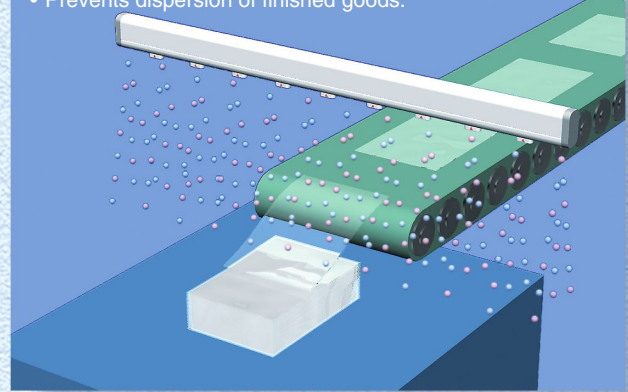
Eliminating static electricity on a film

- Prevents adhesion of dust.
- Prevents winding failure due to wrinkles, etc.



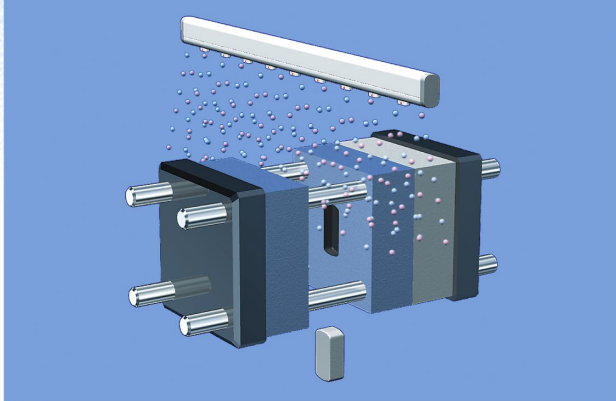
Eliminating static electricity on film mold goods

- Prevents attaching to conveyer.
- Prevents dispersion of finished goods.



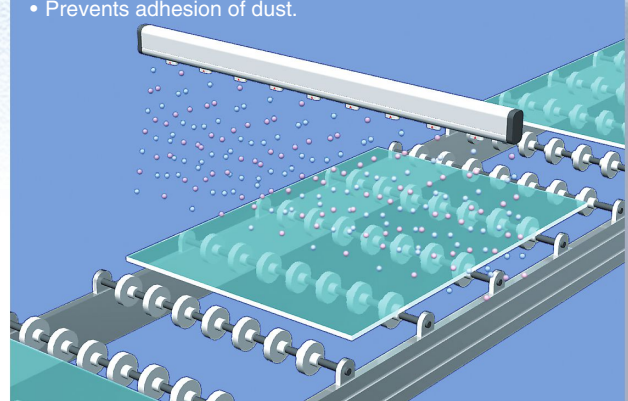
Eliminating static electricity on mold goods

- Improves detachability of mold goods from a die.



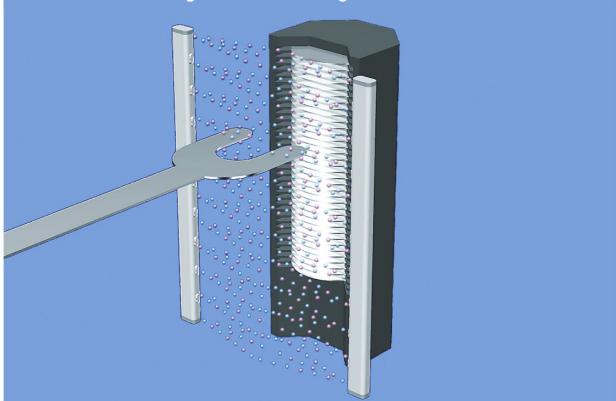
Eliminating static electricity on a glass substrate

- Prevents breakage due to adhesion and discharge.
- Prevents adhesion of dust.



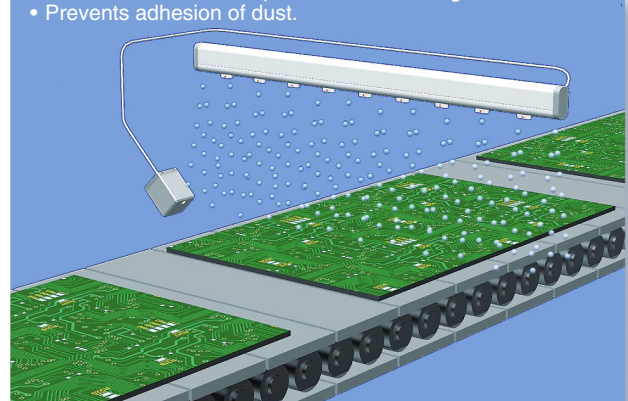
Eliminating static electricity wafer transfer

- Prevents breakage due to discharge between wafers and hands.



Eliminating static electricity on an electric substrate

- Prevents element disruption due to discharge.
- Prevents adhesion of dust.



Series IZS30

Technical Data 1

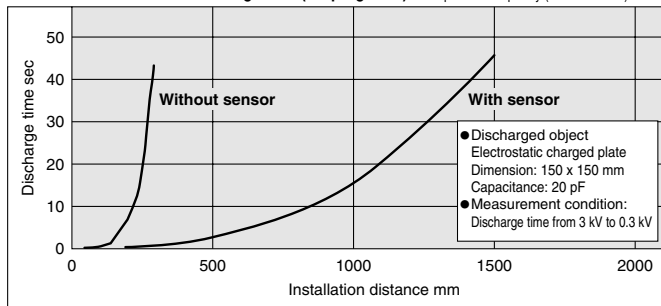
Electricity Removal Characteristics

Note) The electricity removal characteristics are based on data from using an electrostatic charged plate (Dimension: 150 x 150 mm, Capacitance: 20 pF). Use this table as a guideline since the data changes depending on an object's material and size.

1) Installation distance and discharge time

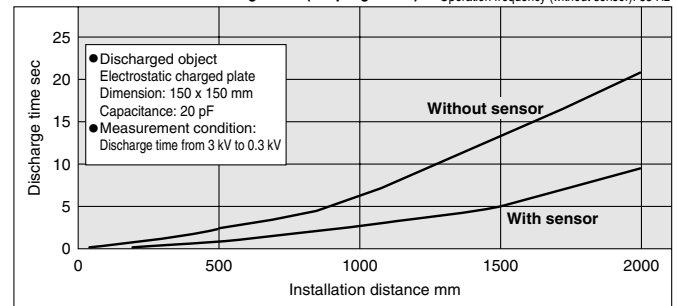
Installation distance and discharge time (Air purge: No)

Operation frequency (without sensor): 33 Hz



Installation distance and discharge time (Air purge: Yes)

Air purge volume: 20 l/min (ANR)
Operation frequency (without sensor): 33 Hz

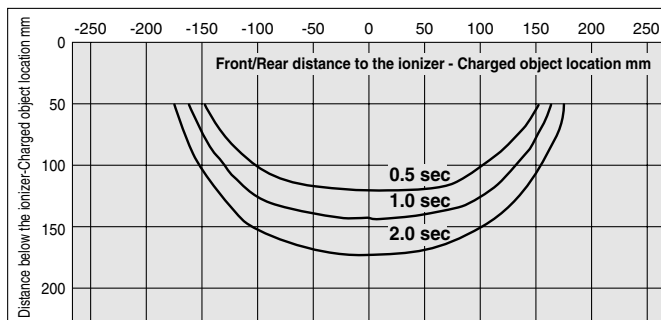


2) Electricity removal range

Ionizer depth direction (Air purge: No)

IZS30-□

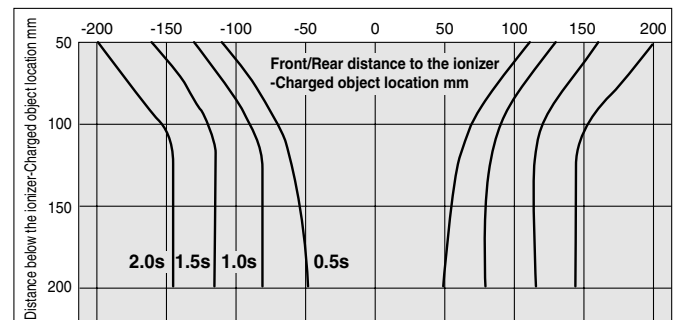
Surface potential sensor: None
Operation frequency: 33 Hz



● Discharged object
Electrostatic charged plate
Dimension: 150 x 150 mm
Capacitance: 20 pF
● Measurement condition:
Discharge time from 3 kV to 0.3 kV

Ionizer depth direction (Air purge: Yes)

Air purge volume: Based on flow rate
by "Specification" on page 4.
Surface potential sensor: None
Operation frequency: 33 Hz

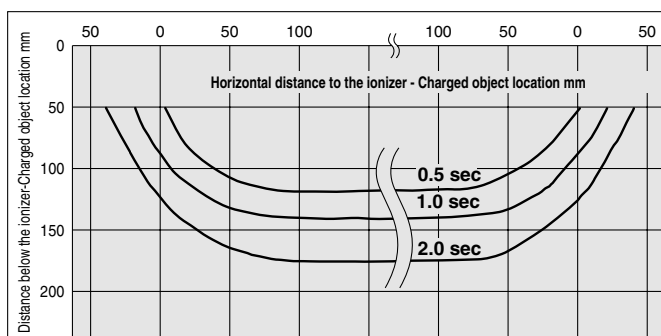
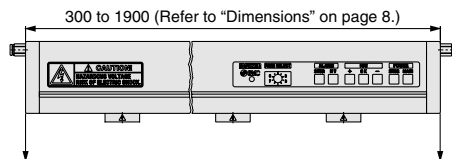


● Discharged object
Electrostatic charged plate
Dimension: 150 x 150 mm
Capacitance: 20 pF
● Measurement condition:
Discharge time from 1 kV to 0.1 kV

Horizontal distance to the ionizer
(Air purge: No)

IZS30-□

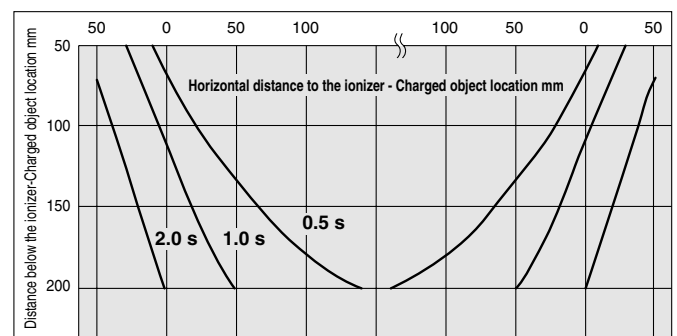
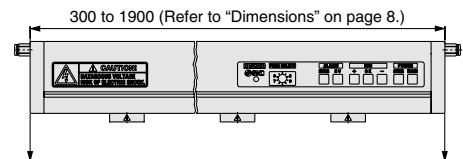
Surface potential sensor: None
Operation frequency: 33 Hz



● Discharged object
Electrostatic charged plate
Dimension: 150 x 150 mm
Capacitance: 20 pF
● Measurement condition:
Discharge time from 3 kV to 0.3 kV

Horizontal distance to the ionizer
(Air purge: Yes)

Air purge volume: Based on flow rate by "Specification" on page 4.
Surface potential sensor: None
Operation frequency: 33 Hz



● Discharged object
Electrostatic charged plate
Dimension: 150 x 150 mm
Capacitance: 20 pF
● Measurement condition:
Discharge time from 1 kV to 0.1 kV

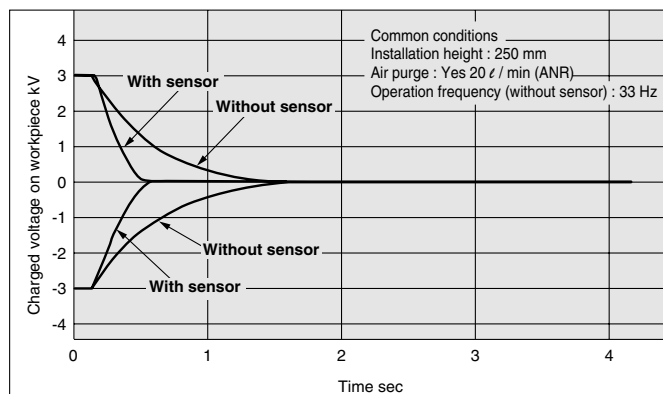
Series IZS30

Technical Data 2

Electricity Removal Characteristics

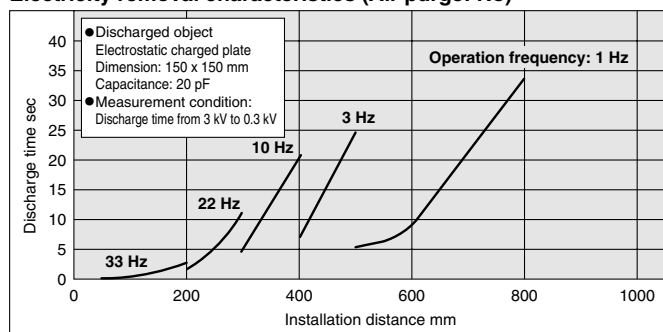
Note) The electricity removal characteristics are based on data from using an electrostatic charged plate (Dimension: 150 x 150 mm, Capacitance: 20 pF). Use this table as a guideline since the data changes depending on an object's material and size.

3) Installation distance and discharged time

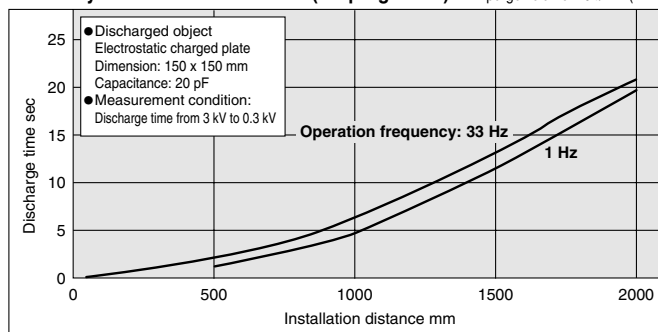


4) Operation frequency and discharge time (without surface potential sensor)

Electricity removal characteristics (Air purge: No)



Electricity removal characteristics (Air purge: Yes) Air purge volume: 20 l/min (ANR)

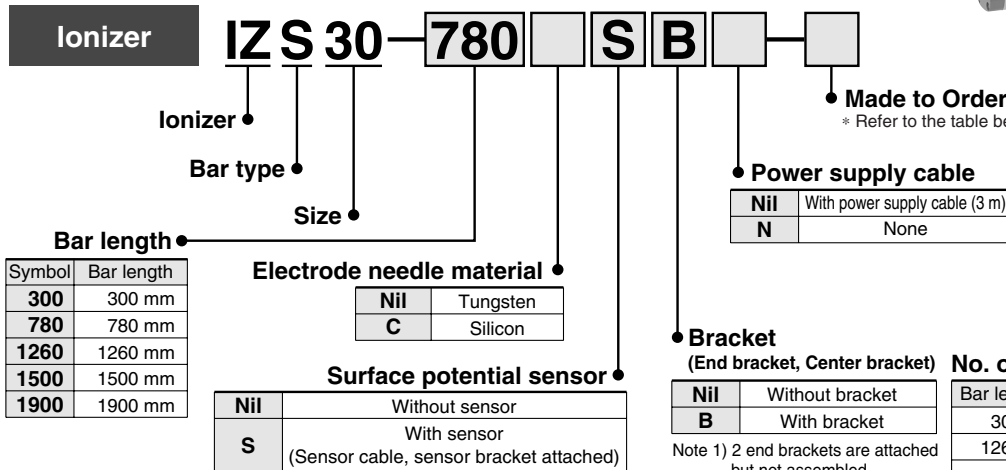


Ionizer / with surface potential sensor

Series IZS30



How to Order



Power supply cable made-to-order component

Part no.	Contents
IZS30-CPM-X13	Power supply cable 5 m
IZS30-CPL-X13	Power supply cable 7 m
IZS30-CPZ-X13	Power supply cable 10 m

* When ordering, select "N" (without power supply cable) to the body and order this cable separately.

No. of center brackets

Bar length (mm)	Quantity
300, 780	None
1260, 1500	With 1 pc.
1900	With 2 pcs.

Note) For center bracket quantity of the non-standard bar length (-X10), refer to page 10.

Made to Order

Symbol	Specifications / Contents
-X10	Non-standard bar length compliant (80 mm pitch) 380, 460, 540, 620, 700, 860, 940, 1020, 1100, 1340, 1420, 1580, 1660, 1740, 1820, 1980, 2060, 2140, 2220, 2300 (Manufactured upon receipt of order for 1340 mm or greater length)
-X12	Changing its fittings, low particle generation spec. Changing the fitting with a check valve to a hose nipple.

Surface Potential Sensor, Bracket and Accessories

Surface potential sensor / IZS30-D1



Cable

- Sensor cable 3 m / IZS30-CS
- Power supply cable 3 m / IZS30-CP



Sensor cable Power supply cable

Electrode cartridge

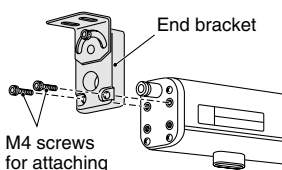
- Electrode needle material:
- Tungsten / IZS30-NT
- Silicon / IZS30-NC



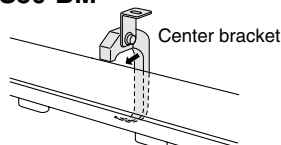
Electrode needle cleaning kit / IZS30-M2



End bracket / IZS30-BE



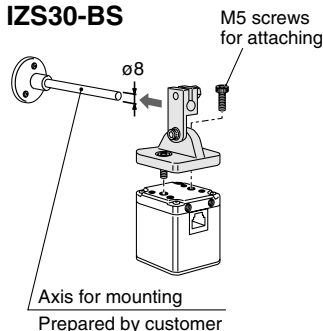
Center bracket / IZS30-BM



Note) The number of center brackets required, as listed below, depends on the bar length.

Bar length (mm)	Quantity
300, 780	Not required
1260, 1500	1 pc.
1900	2 pcs.

Sensor bracket / IZS30-BS



Driver for ion balance adjustment trimmer / IZS30-M1



Specifications

Ionizer

Ionizer model		IZS30-300	IZS30-780	IZS30-1260	IZS30-1500	IZS30-1900
Type		Bar type				
Ion generation method		Corona discharge type				
Method of applying voltage		Pulse DC method				
Output for emitting electricity		±6000 V				
Ion balance Note 1)		±30 V or less				
Air purge	Operating fluid	Air (clean and dry)				
	Air supply flow rate Note 2)	20 ℓ/min (ANR)	50 ℓ/min (ANR)	85 ℓ/min (ANR)	110 ℓ/min (ANR)	135 ℓ/min (ANR)
	Operating pressure	0.7 MPa or less				
	Connecting tube O.D.	ø4				
Power supply voltage		21.6 VDC to 26.4 VDC				
Current consumption	Sensing DC mode	150 mA or less				
	While eliminating static electricity					
	While standing by	100 mA or less				
Pulse DC mode		100 mA or less				
Input signal		Emission of static electricity is suspended. NPN transistor (open collector), or contact signal with no voltage				
Output signal	High voltage irregularity					
	Sensor irregularity	FET (open drain), 28 V DC, 100 mA or less				
	Static electricity removal is completed.					
Effective discharge distance		50 to 2000 mm				
Operating ambient temperature, Operating fluid temperature		0 to 50°C				
Operating ambient humidity		35 to 80% Rh (with no condensation)				
Material		Cover of ionizer (ABS); Electrode needle (Tungsten/Silicon); Sensor body (Aluminum alloy)				
Vibration resistance		Durability 50 Hz Amplitude 1 mm XYZ each 2 hours				
Shock resistance		10 G				
Weight		330 g	710 g	1100 g	1410 g	1930 g

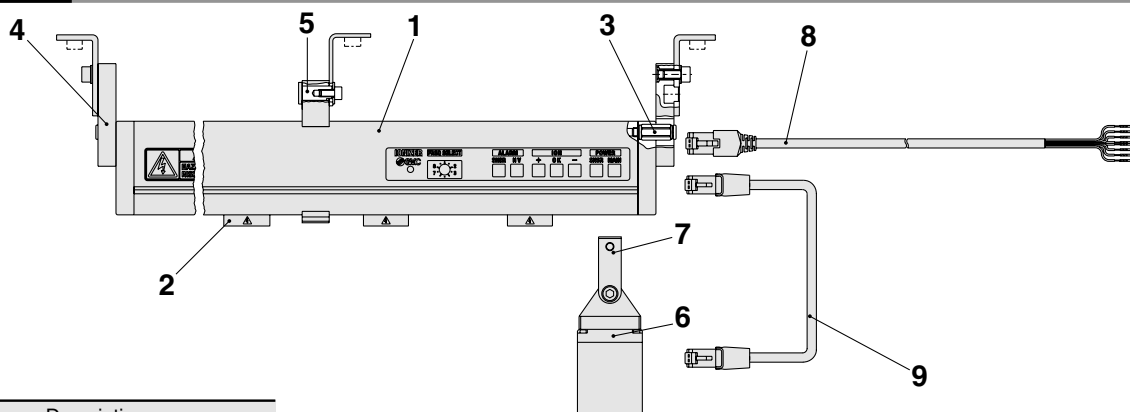
Note 1) In case where air purge is performed between a charged object and an ionizer at a distance of 300 mm.

Note 2) The minimum flow rate that can eliminate electricity between a charged object and an ionizer at a distance of 2000 mm. Using a lower flow rate is possible if the distance is short.

Surface Potential Sensor

Surface potential sensor model	IZS30-D1
Detection method	Rotating sector method
Power supply voltage	5 V DC (electricity supplied from the ionizer)
Current consumption	Ionizer included in the sensing DC mode
Effective detection distance	50 mm or less
Operating ambient temperature	0 to 50 °C
Operating ambient humidity	35 to 80% Rh (with no condensation)
Vibration resistance	Durability 50 Hz Amplitude 1 mm XYZ each 2 hours
Shock resistance	10 G
Weight	150 g

Construction



No.	Description
1	Ionizer
2	Electrode cartridge
3	Fitting with check valve
4	End bracket
5	Center bracket

No.	Description
6	Surface potential sensor
7	Sensor bracket
8	Power supply cable
9	Sensor cable

Functions

1. Operation Mode

There are 3 different operation modes for the IZS30, which can be selected based on the application and operating condition.

Operation mode	Operation	Features	Precautions
Sensing DC mode	The surface potential sensor detects the polarity of a charged object and continuously emits ions with the opposite polarity.	The discharge time can be shortened. After determining the existence of a charged object and that the elimination of static electricity is completed, the high voltage power supply and/or pneumatic valve may automatically turned ON/OFF. (The pneumatic valve may turn ON/OFF when the signal for static electricity removal is completed, however a pneumatic valve will be required.)	The elimination of static electricity is not performed successfully even though the surface potential sensor is used. • A large workpiece with an uneven electrical charge. • A workpiece which shifts quickly. • Static electricity elimination of the entire area and the consecutive objects.
Pulse DC mode	Alternatively emits positive and negative ions with a cycle of 1 Hz to 33 Hz.	In the case of eliminating static electricity in the entire space and/or consecutive objects, static electricity removal is possible when the ion balance is stable.	1) Adjustment of the actual equipment is required since the results from eliminating static electricity may differ depending on the distance of the charged objects, operating conditions, etc. 2) The surface potential on a workpiece located directly under the ionizer, changes at a certain cycle, even after the static electricity has been eliminated. If a lower frequency is selected, the amplitude of the surface potential may become large.
DC mode	Alternatively emits positive and negative ions.	Can also be used to build up an electrical charge on an object.	Parts other than the object need to be appropriately grounded to prevent from being charged.

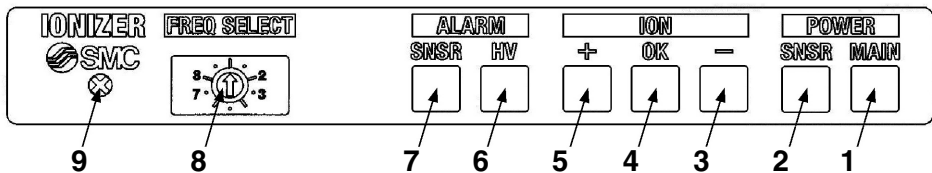
Applied Voltage Waveform Image

Mode	Ion emission image
Sensing DC mode (with sensor)	
Pulse DC mode (without sensor)	
Image of an electrostatic charged object	

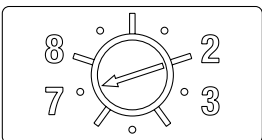
2. Output Signal

Signal type	Functions
Static electricity removal is completed. (when using surface potential sensor)	Output when electricity removal on a static electricity charged object is completed or when there is no charged object.
High voltage irregularity	Notification that an irregular voltage is being supplied. The signal will be released by resetting the power supply after the possible cause is located and/or turning ON/OFF the signal for stopping the discharge of static electricity.
Sensor irregularity	Notification that the selector knob of the surface potential sensor does not rotate normally. The signal will be released by resetting the power supply after the possible cause is located and/or turning ON/OFF the signal for stopping the discharge of static electricity.

3. Explanation of the front panel



- 1. Power supply display..... Illuminates Green when power is supplied. Blinks when the power supply voltage is below the specification.
- 2. Sensor display..... Illuminates Green when the surface voltage sensor is connected.
- 3. Minus display..... Illuminates Blue when negative ions are generated.
- 4. Static electricity removal completion display..... Illuminates Green when the electricity removal is finished while sensing in the DC mode.
- 5. Plus display..... Illuminates Orange when positive ions are generated.
- 6. Irregular high voltage display..... Illuminates Red when an irregular current, such as a high voltage leakage occurs.
- 7. Irregular sensor display..... Illuminates Red when the surface potential sensor has any problems while sensing in the DC mode.
- 8. Frequency selection switch..... Selects the frequency for the pulse DC mode.



- | | |
|-----------------|--|
| No. 0..... 1 Hz | No. 5..... 15 Hz |
| 1..... 3 Hz | 6..... 22 Hz |
| 2..... 5 Hz | 7..... 33 Hz |
| 3..... 8 Hz | 8..... + (Generates positive ions only.) |
| 4..... 10 Hz | 9..... - (Generates negative ions only.) |

- 9. Ion balance adjustment trimmer..... Enables the ion balance to be adjusted, which can vary due to the installation environment, etc.
For adjusting information, refer to "How to adjust the ion balance" on page 6.

Determining the Model and Settings

1. Sensing DC mode

1) Selection of bar length

Select the appropriate length suited for a work size by referring to "Electricity Removal Characteristics (reference) 2) Electricity removal range (See page 1.)", etc.

2) Installation of the ionizer

Installation of the ionizer: Install within 200 to 2000 mm of the object requiring electricity removal.

For discharge time refer to the information in "Electricity Removal Characteristics (reference) and 1) Installation distance and discharge time (See page 1.)".

3) Installation of a surface potential sensor

Position the detection hole at the charged surface and install it within 50 mm of the object.

(Position the detection hole as close as possible to the object which needs static electricity removal.)

4) Wiring

Connect the ionizer and surface potential sensor with the dedicated cable.

When the ionizer and surface potential sensor are connected with a dedicated cable, the sensing DC mode is automatically selected.

Use the dedicated cable for power supply and the individual input/output. For a wiring table, refer to the "Power Supply Cable, IZS30-CP Wiring Table (See page 7.)".

5) Air piping

In case of single sided piping, the fitting on the opposite does not need to be plugged because a fitting with check valve is used.

Use $\varnothing 4$ piping. Regarding the air flow, refer to "Specifications" on page 4.

In case the piping length is too long, piping on both sides is required to obtain the required flow rate.

2. Pulse DC mode/DC mode

1) Selection of bar length

Determine the length suited for a work size, referring to the information in "Electricity Removal Characteristics (reference) and 2) Electricity removal range (See page 1.)".

2) Installation of the ionizer

Install the ionizer within 50 to 2000 mm of the object requiring electricity removal.

Regarding discharge time, refer to the information in "Electricity Removal Characteristics (reference) and 1) Installation distance and discharge time (See page 1.)".

3) Selection of ion generation frequency

Set the selection switch with a screwdriver. Refer to the information in "Electricity Removal Characteristics (reference) and 4) Operation frequency and discharge time".

The selection switch's screwdriver slot is in the shape of a small arrow shape. To set, point the tip of arrow to the requested position for setting.

By setting the switch to "8" or "9", it will change to the DC mode which will constantly emit a + or - ion.

4) Wiring

For the power supply and/or input/output, use the dedicated cable.

For a wiring table, refer to the "Power Supply Cable, IZS30-CP Wiring Table (See page 7.)" and "Connection circuit (See page 7)".

5) Air piping

In case of single sided piping, the fitting on the opposite does not need to be plugged because a fitting with check valve is used.

Use $\varnothing 4$ piping. Regarding the air flow, refer to "Specifications" on page 4.

■ How to adjust the ion balance

When the pulse DC mode is set, the ion balance may change depending on the installation condition. Therefore, adjustment with the ion balance adjustment trimmer may be required.

How to adjust

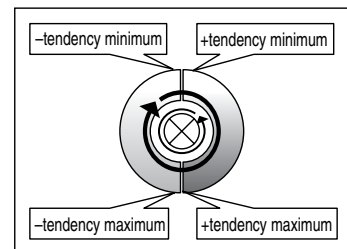
1) Install the measurement equipment at the same distance as the work.

2) Adjust to approximately 0 V by using the ion balance adjustment trimmer, while reading the ion balance on the measurement equipment.

- Vary the trimmer by small increments. (5° or less)
- The ion balance adjustment trimmer will continue to rotate clockwise/counterclockwise, as shown on right. However, the ion balance will vary (One revolution, 360°, equals one cycle).

The condition of the ion balance changes when rotating the trimmer clockwise and rotating counterclockwise results in the opposite ion balance.

0V → +tendency minimum → +tendency maximum → -tendency maximum → -tendency minimum



Precautions : Use an insulated screwdriver when adjusting the ion balance adjustment.

If a metal screwdriver touches the trimmer, the values will change substantially and adjustment will not be possible.

Wiring, Connection Circuit, and Input/Output Operations

Power Supply Cable, IZS30-CP Wiring Table

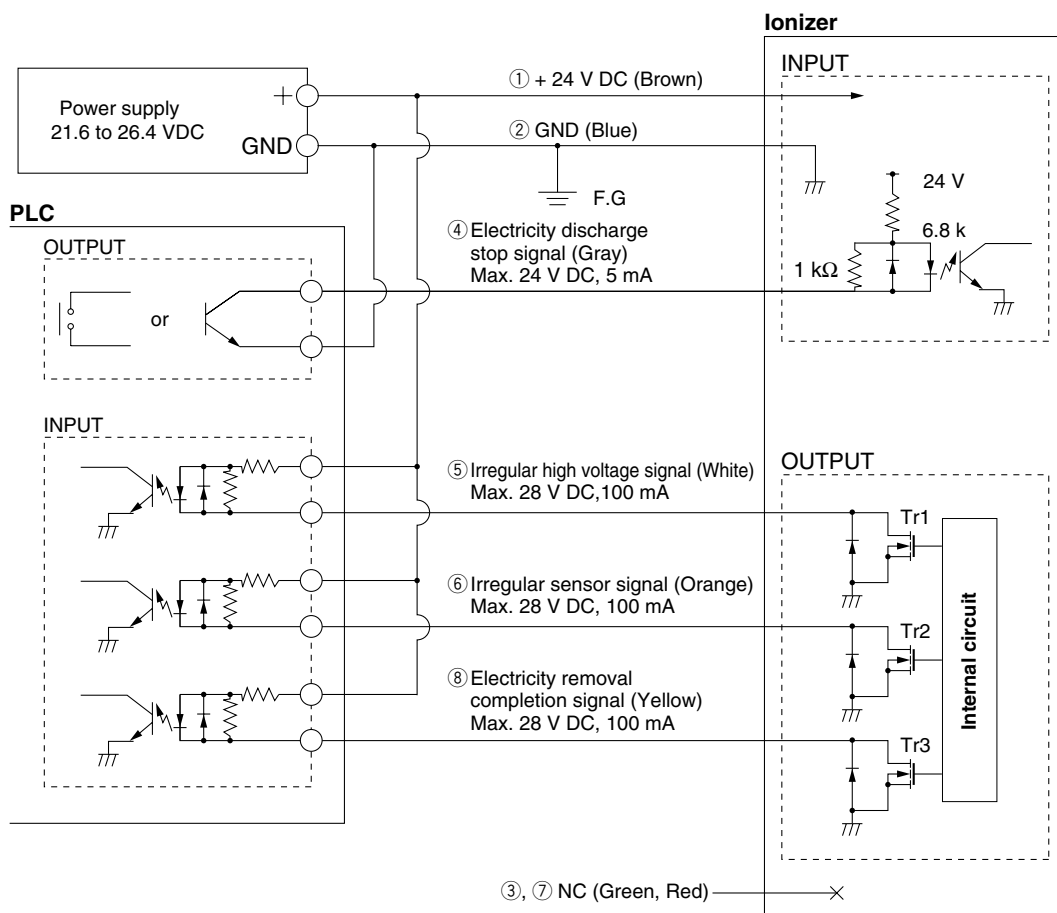
No.	Lead wire color	Contents	Functions
1	Brown	21.6 to 26.4 V DC	Power supply DC +24V
2	Blue	GND	Power supply 0 V. Be sure to ground it according to class D.
3	Green	NC	—
4	Gray	Electricity discharge stop signal	Connect with 0 V during operation. Stop electricity discharge when the terminal is turned off.
5	White	Irregular high voltage signal	Outputs a signal when an irregular current occurs.
6	Orange	Irregular sensor signal	Outputs a signal when a surface potential sensor irregularity occurs.
7	Red	NC	—
8	Yellow	Electricity removal completion signal	An ON/OFF signal is used to notify that the static electricity is being removed or has finished.

Note) 6, 8: Only functions when the surface potential sensor is used.

Input/Output Operations

No.	Description	Lead wire color	Input/Output	Operations
4	Electricity discharge stop signal	Gray	Input	When operating, the static electricity discharge will stop by removing the GND and short circuit terminal.
5	Irregular high voltage signal	White	Output	Connection circuit Tr1 will be powered when an irregularity occurs.
6	Irregular sensor signal	Orange	Output	Connection circuit Tr2 will be powered when an irregularity occurs.
8	Electricity removal completion signal	Yellow	Output	Tr3 is not powered when the electricity removal is completed.

Connection circuit
Ionizer (POWER connector)



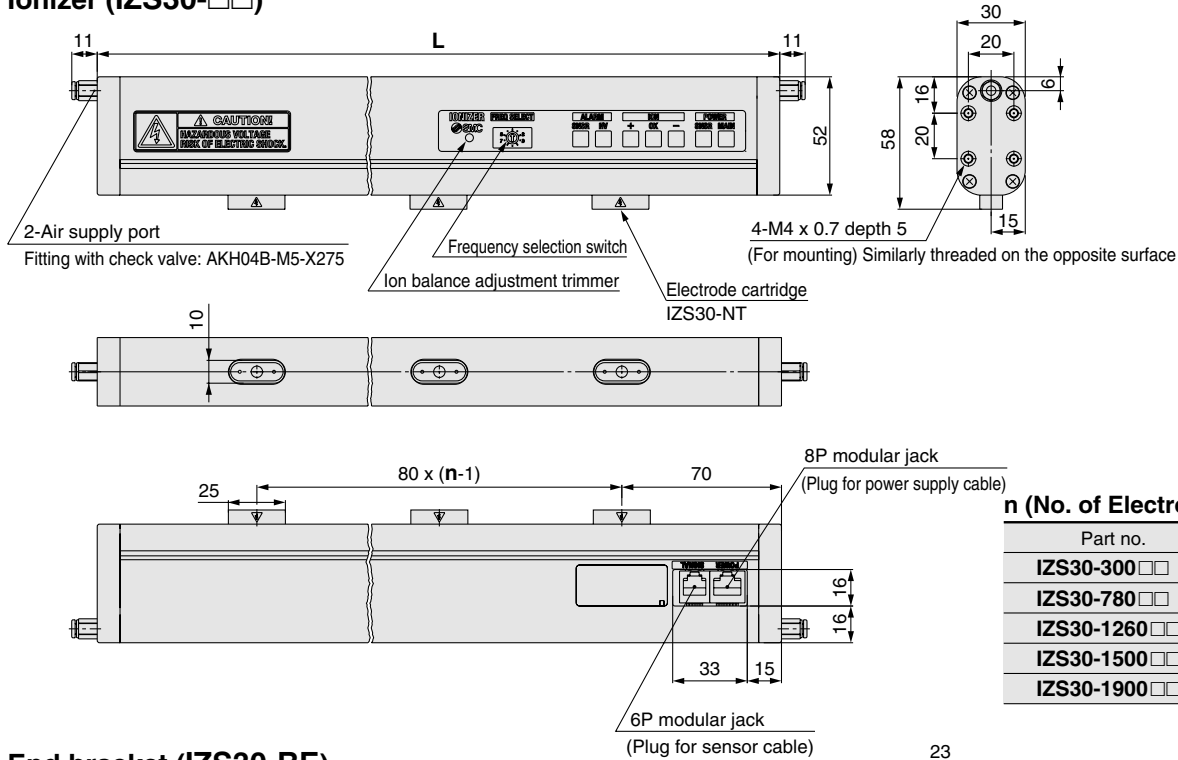
Note 1) (): Lead wire coverage color of the dedicated cable.

Note 2) Connect lead wire 4 (Electricity discharge stop signal) to GND when operating the ionizer and the operation will stop when the terminal is removed.

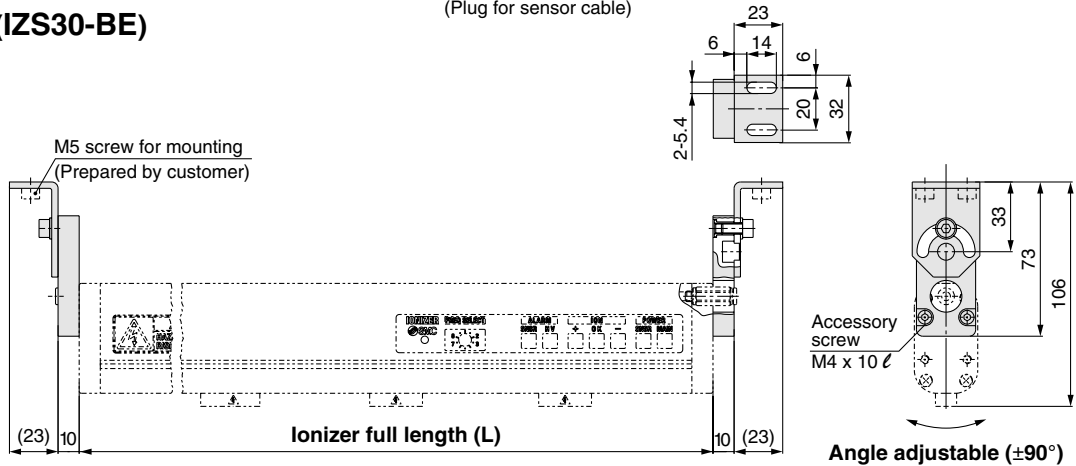
Note 3) Lead wires 6 (Irregular sensor signal) & 8 (Electricity removal completion signal) will only provide a signal when the surface potential sensor is used.

Dimensions

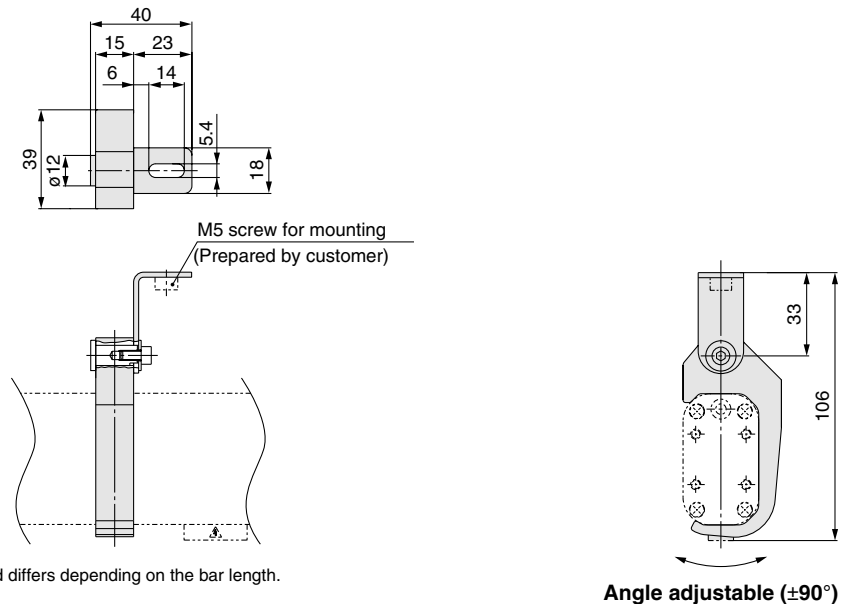
Ionizer (IZS30-□□)



End bracket (IZS30-BE)



Center bracket (IZS30-BM)

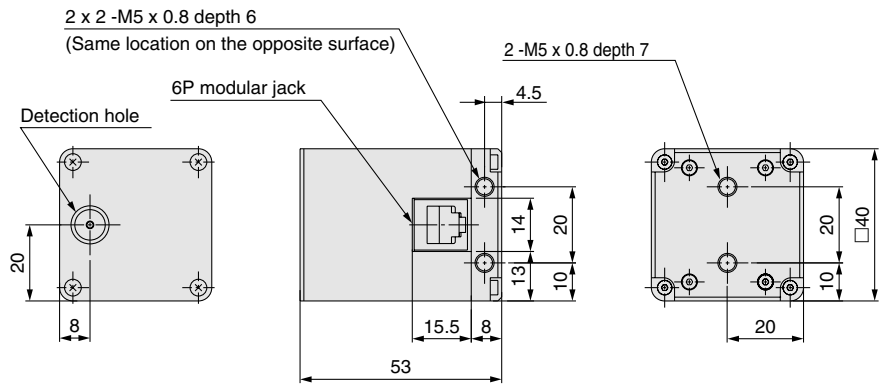


Note) The number of center brackets to be attached differs depending on the bar length.
(Refer to "How to Order" on page 3.)

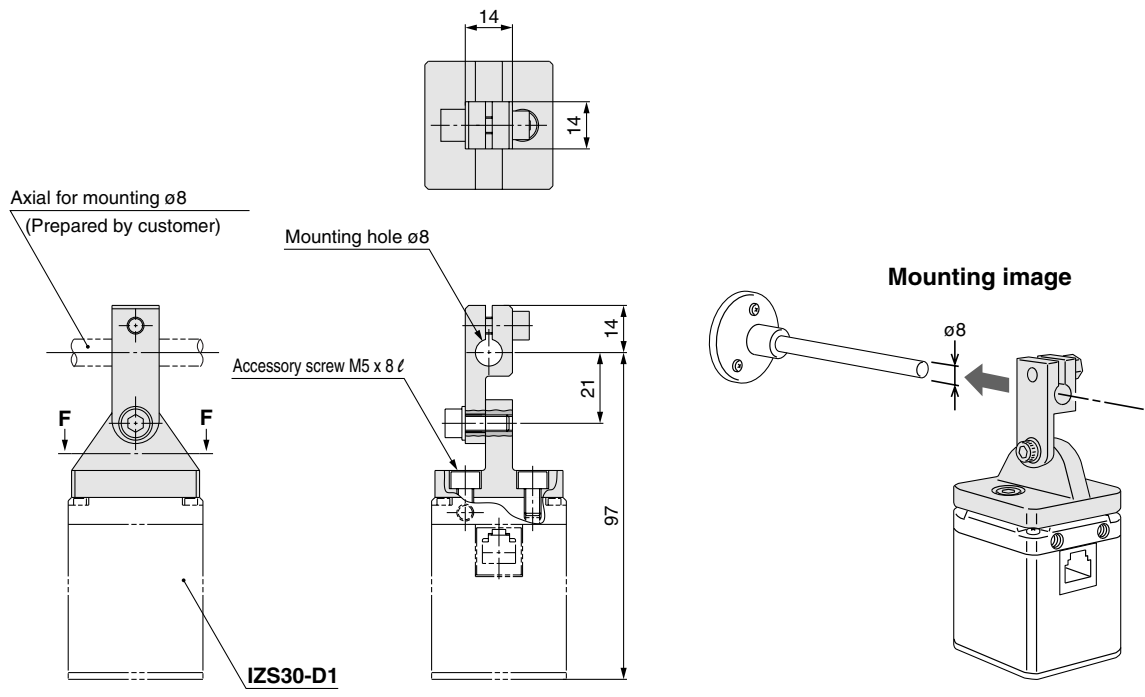
Series IZS30

Dimensions

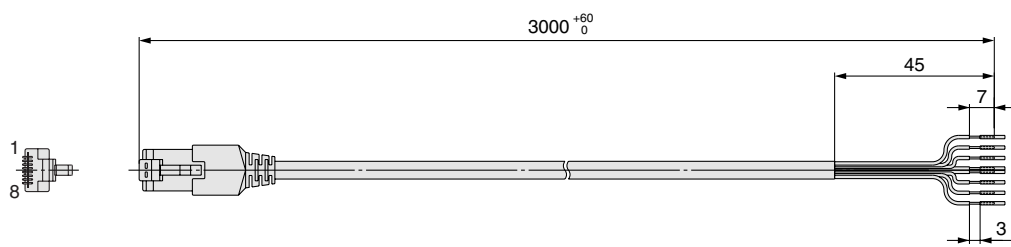
Surface potential sensor (IZS30-D1)



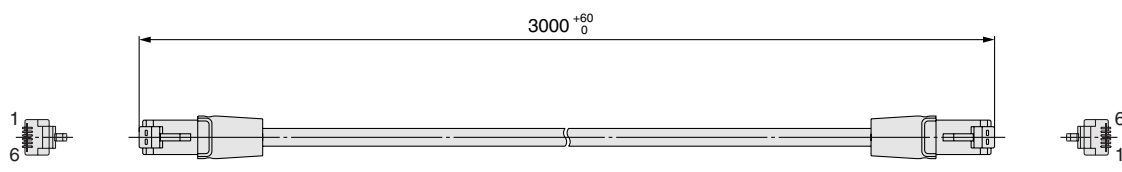
Sensor bracket (IZS30-BS)



Power supply cable (IZS30-CP)



Sensor cable (IZS30-CS)



Series IZS Made to Order

For detailed dimensions, specifications and delivery time, please contact SMC.



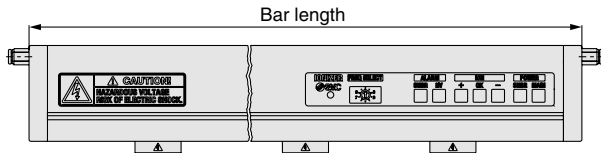
1 Non-standard bar length compliant (80 mm pitch)

Symbol

-X10

Compliant bar length (mm): 360, 460, 540, 620, 700, 860, 940, 1020, 1100, 1340, 1420, 1580, 1660, 1740, 1820, 1980, 2060, 2140, 2220, 2300
* Manufactured upon receipt of order for 1340 mm or greater length.

* For "How to Order", refer to page 3.



No. of Center Brackets

Bar length (mm)	Quantity
380 to 700	None
860 to 1580	With 1 pc.
1660 to 2300	With 2 pcs.

2 Changing its fittings, low particle generation spec.

Symbol

-X12

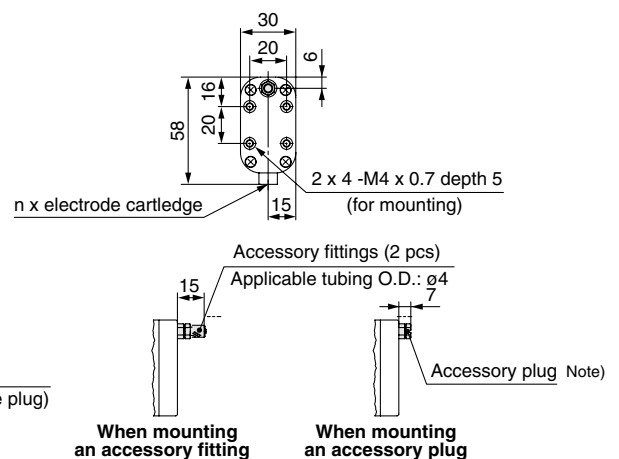
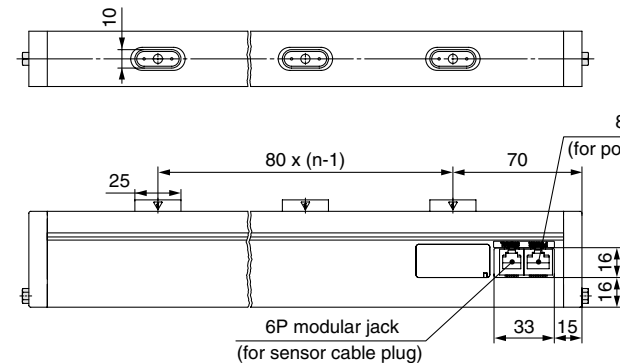
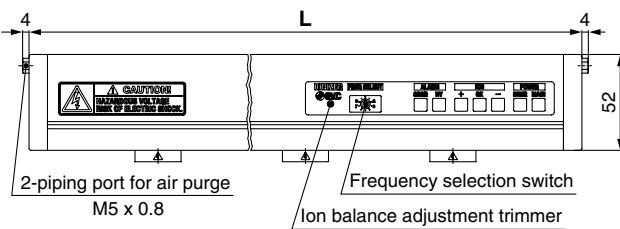
* For "How to Order", refer to page 3.

Changing the fitting with check valve to a hose nipple, resulting in reduced particle generation from the one-touch fitting with a check valve.

⚠ Caution

This product is not washed. If required for use in a clean room, please confirm that the product meets the required cleanliness by flushing for several minutes prior to use.

Dimensions



n (No. of Electrode Cartidges), L

Part no.	n	L (mm)
IZS30-300□□□□-X12	3	300
IZS30-780□□□□-X12	9	780
IZS30-1260□□□□-X12	15	1260
IZS30-1500□□□□-X12	18	1500
IZS30-1900□□□□-X12	13	1900

Note) Plug the other side using the accessorised plug in case of the single sided fitting connection. (We recommend that both sides should be connected when the bar length is 1260 mm or greater.)

3 Power supply cable, made-to-order component

Symbol

-X13

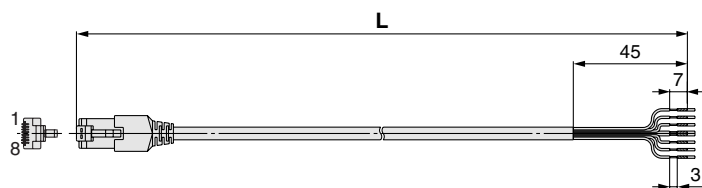
* Refer to page 7, "Power Supply Cable, Wiring Table" for wiring diagrams.

How to Order

IZS30-CPM-X13

Power supply length
total length

M	5 m
L	7 m
Z	10 m



L Dimension

Part no.	L (mm)
IZS30-CPM-X13	5000 ⁺⁶⁰ ₀
IZS30-CPL-X13	7000 ⁺⁶⁰ ₀
IZS30-CPZ-X13	10000 ⁺⁶⁰ ₀



Series IZS30

Safety Instructions

These safety instructions are intended to prevent a hazardous situation and/or equipment damage. These instructions indicate the level of potential hazard by a label of "**Caution**", "**Warning**" or "**Danger**". To ensure safety, be sure to observe ISO 4414 Note 1), JIS B 8370 Note 2) and other safety practices.

 **Caution :** Operator error could result in injury or equipment damage.

 **Warning :** Operator error could result in serious injury or loss of life.

 **Danger :** In extreme conditions, there is a possible result of serious injury or loss of life.

Note 1) ISO 4414 : Pneumatic fluid power --General rules relating to systems

Note 2) JIS B 8370: General Rules for Pneumatic Equipment

Warning

1. The compatibility of pneumatic equipment is the responsibility of the person who designs the pneumatic system or decides its specifications.

Since the products specified here are used in various operating conditions, their compatibility for the specific pneumatic system must be based on specifications, or post analysis and/or tests to meet the specific requirements. The expected performance and safety assurance will be the responsibility of the person who has determined the compatibility of the system. This person should continuously review the suitability of all items specified, referring to the latest catalog information with a view to giving due consideration to any possibility of equipment failure when configuring a system.

2. Only trained personnel should operate pneumatically operated machinery and equipment.

Since the product generates a high voltage, handling it incorrectly can be dangerous. Assembly, handling, and repair of pneumatics systems should be performed only by trained and experienced operators.

3. Do not service the machinery/equipment or attempt to remove components until safety is confirmed.

1. Inspection and maintenance of the machinery/equipment should only be performed after confirming that safety precautions such as grounding, electric shock prevention, and various other types of damage prevention have been taken.
2. When equipment is to be removed, confirm the safety process as mentioned above. Turn off the supply pressure for this equipment and exhaust all residual compressed air in the system.
3. Before the machinery/equipment is restarted, take measures to prevent short circuiting and other such electrical failures.

4. Avoid using the product in the following conditions or environment. However, if the product must be used in these conditions, please contact SMC first and be sure to take all necessary safety precautions.

1. Conditions and environments beyond the given specifications, or if product is used outdoors.
2. Installation on equipment in conjunction with atomic energy, railway, air navigation, vehicles, medical equipment, food and beverages, recreation equipment, emergency stop circuits, clutch and brake circuits in press applications, or safety equipment.
3. An application which has the possibility of having negative effects on people, property, requiring special safety analysis.



Series IZS30 Specific Product Precautions 1

Be sure to read this before handling.

Selection

⚠ Warning

1. Do not use this product for purposes other than for removing static electricity in the general industry or working with charged objects.
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.

Contact us when fluids other than compressed air are used.

⚠ Caution

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

Mounting

⚠ 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.....20 mm
Sensor cable.....20 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. Mounting on a plane surface.

If there are irregularities, cracks or height differences, excessive stress will be applied to the frame or case, resulting in damage or other trouble. Also, do not drop or apply a strong shock. Otherwise, damage or an accident can occur.

3. Avoid using with a strong magnetic noise source.

A malfunction may occur.

Place the ionizer away from the strong magnetic source, for example on another panel, etc.

4. Observe the tightening torque. (Refer to the "Instruction Manual" attached to the product.)

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.

Mounting

⚠ Warning

5. Do not touch the electrode pin directly with fingers or metallic tools.

If a finger is used to touch the electrode, it may get stuck or an injury or electrical shock may occur from touching the surrounding equipment.

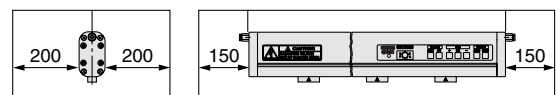
In addition, if the electrode or cartridge is damaged with a tool, the specification will not be met and damage and/or an accident can occur.

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

⚠ Caution

1. Install the IZS30 series away from a wall as illustrated below.

If a wall is located closer than the illustration below, the ions generated will not be able to reach the object which requires static electricity removal and therefore result in a decrease in efficiency.



Unit: mm

Wiring, Piping

⚠ Warning

1. Confirmation of the power supply

Before wiring confirm if the power supply voltage is enough and that it is within the specifications before wiring.

2. In order to prevent an electrical shock, ground (class D) this product according to the instructions in the instruction manual.

If a commercially available switching regulator is used, ground the FG and minus terminals.

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

4. Use the dedicated cable for the ionizer and the surface potential sensor.

Do not disassemble or rebuild this product.

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.



Series IZS30

Specific Product Precautions 2

Be sure to read this before handling.

Operating Environment, Storage Environment

Warning

1. Observe the operating fluid temperature and ambient temperature range.

The operating fluid temperature and ambient temperature range are 0 to 50 °C for both the ionizer and the surface potential sensor. When using at 5 °C or lower, exercise caution to prevent freezing. Also, do not use this product in places where the temperature may change dramatically even within the ambient temperature range, since the condensation may occur.

2. Environments to avoid

Avoid using and storing this product in the following environments since they may cause damage to this product. Take appropriate measures in an unavoidable case.

- a) Avoid using in a place that exceeds an ambient temperature range of 0 to 50 °C.
- b) Avoid using in a place that exceeds an ambient humidity range of 35 to 80 % 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 static electricity is discharged to the main body.
- 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.

3. 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 (IDF series), air filter (AF/AFF series), and mist separator (AFM/AM series).

4. The ionizer and the surface potential sensor are not protected against a surge caused by a lightning.

Regarding protection against a surge from a lightning, take appropriate measures on the equipment side.

Maintenance

Caution

1. Perform maintenance regularly and clean the electrode pin.

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 a long period of time will lower the static electricity eliminating performance, if particles attach to the electrode pin.

Replace the electrode cartridge, if the pins are rough and the static electricity eliminating performance does not return even after being cleaned.

2. When cleaning the electrode pin or replacing the electrode cartridge, be sure to turn off the power supply to the main body.

3. Do not disassemble or rebuild this product.

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

Handling

Warning

1. Do not drop, bump or apply excessive impact (more than 10 G) 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.

If the modular plug is at a difficult angle to attach/detach, the modular jack's mounting section may be damaged and cause a disorder.

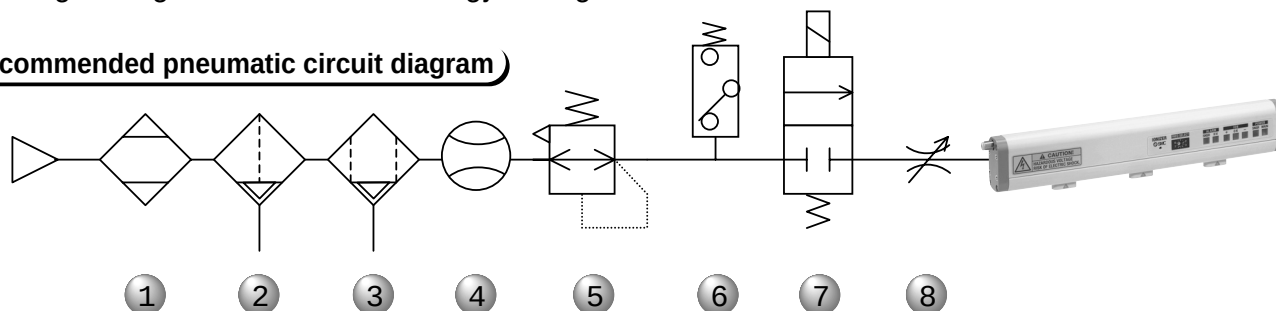
3. Do not operate this product with wet hands. Otherwise, an electrical shock or accident may occur.

Related Products

SMC can provide all the equipment required to supply air to the ionizer.

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

Recommended pneumatic circuit diagram



1 Air Dryer / Series IDF

Decreases the dew point of compressed air. Limits moisture generation which can lead to damage.



2 Air Filter / Series AF

Eliminates solid foreign matters such as power particles in the compressed air.



3 Mist Separator / Series AFM

Eliminates oil mist which is difficult to eliminate with an air filter.



4 Digital Flow Switch / Series PFA2

Decreases the air consumption by flow control.



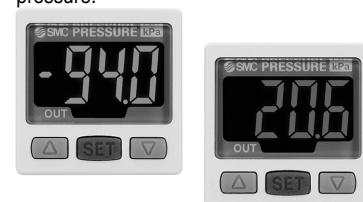
5 Regulator / Series AR

Decreases the air consumption by setting to an appropriate pressure.

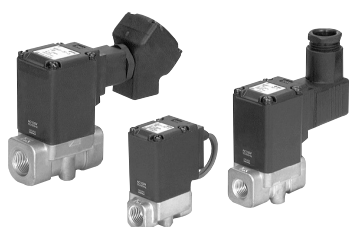


6 Digital Pressure Switch / Series ISE30

The pressure control prevents the ability of static electricity removal from being reduced in accordance with the reduction of air pressure.



7 2 Port Solenoid Valve / Series VCA



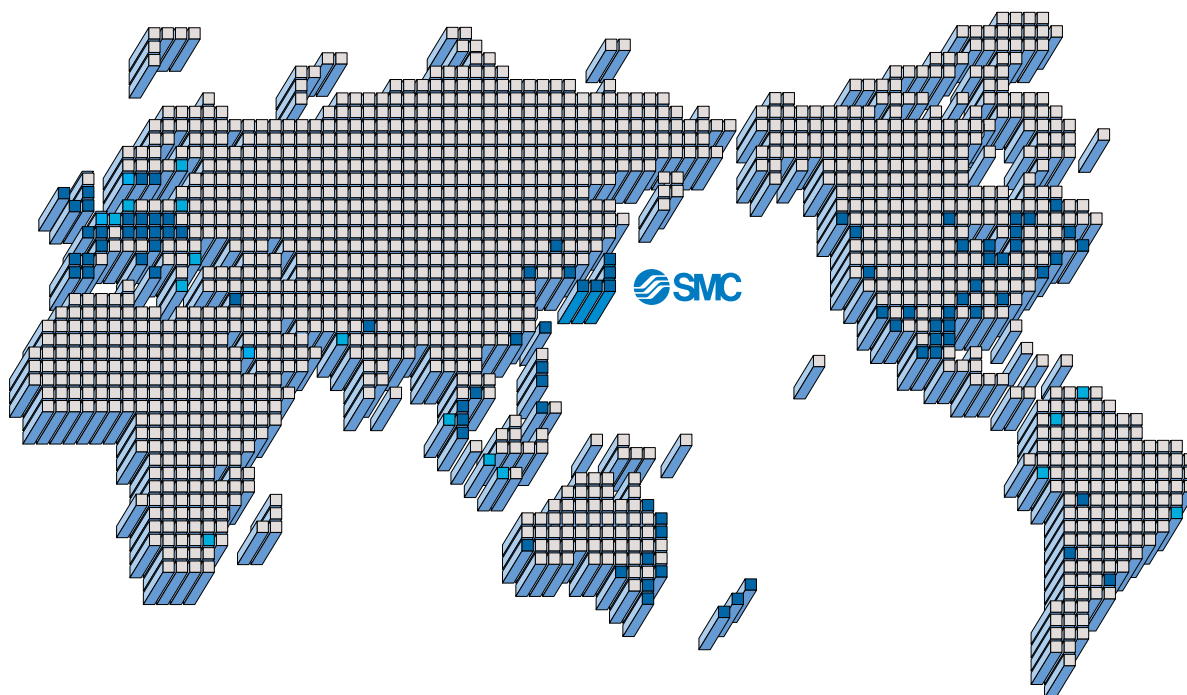
8 Throttle Valve / Series AS-X214

Regulates to the appropriate air volume depending upon the installation condition. Decreases the air consumption.





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