Static Electricity Elimination Equipment

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Ionizer/Bar Type
IZS40/41/42

P.32

Ionizer/Nozzle Type
IZN10

P.55

Ionizer/Fan Type
IZF10

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Electrostatic Sensor
IZD10/IZE11

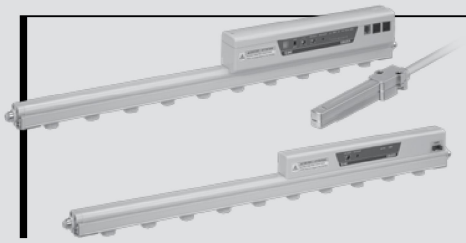
P.74

Handheld Electrostatic Meter
IZH10

SMC

CAT.NE103A

Static Electricity Elimination Equipment



Ionizer/Bar Type

Series IZS40/41/42

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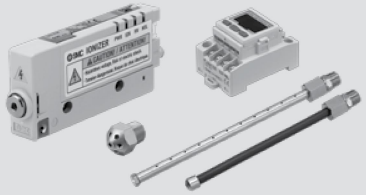

Ionizer/Nozzle Type

Series IZN10

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Ionizer/Fan Type

Series IZF10

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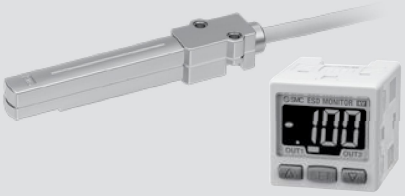

Electrostatic Sensor

Series IZD10/IZE11

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Handheld Electrostatic Meter

Series IZH10

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Ionizer

Series IZS40/41/42

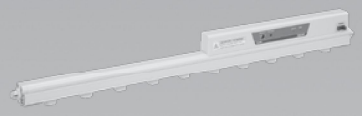
Potential amplitude: 25 V or less Note 1)
Rapid elimination of static electricity: Fastest time: 0.1 seconds Note 2)

Dual AC type *Series IZS42*

Potential amplitude is reduced with Dual AC type.

Feedback sensor type *Series IZS41*

Rapid elimination of static electricity by a feedback sensor



Standard type *Series IZS40*

Simple operation: Can be controlled by powering the ionizer ON.

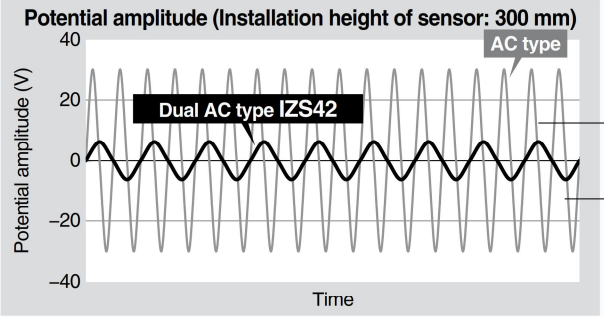
Note 1) IZS42, Installation height: 300 mm
Note 2) Conditions/With feedback sensor
Charged voltage: 1000 V→100 V
Discharged object: Charged plate (150 mm x 150 mm, capacitance 20 pF)
Installation distance: 200 mm (Tungsten electrode needle with air purge)

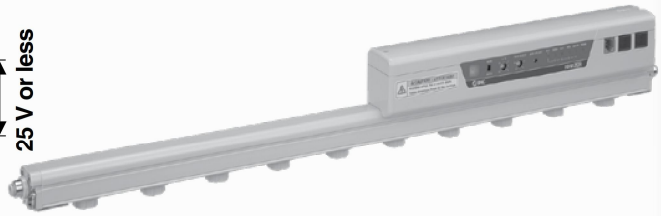
Dual AC type Series IZS42 (Potential amplitude reduction specification)

Potential amplitude: 25 V or less 80% reduction compared to the conventional model

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

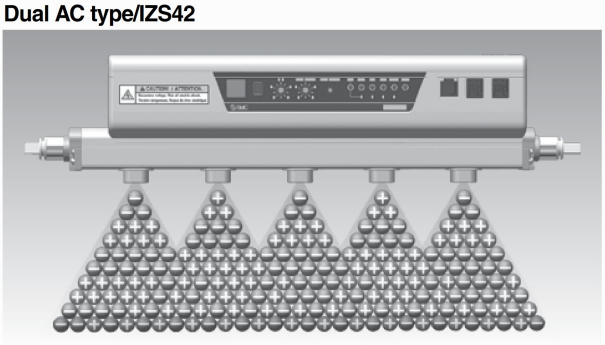
Potential amplitude is reduced with **SMC independent Dual AC type sensor**.
Static electricity elimination may be achieved without causing damage to a device which is sensitive to electrostatic discharge (ESD).
Potential amplitude applied to the applicable workpiece is reduced even if it the workpiece is mounted within close proximity of the ionizer.





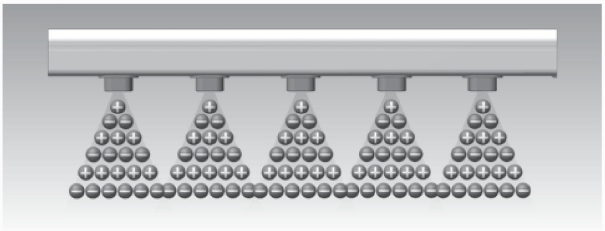
Independent Dual AC type is implemented.

Dual AC type/IZS42



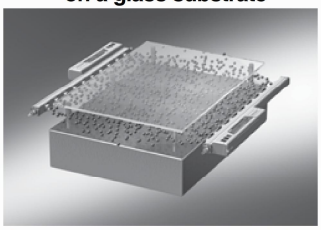
Discharges + ions and – ions at the same time to allow the + and – ions to reach the workpiece evenly, thereby reducing the potential amplitude.

AC type



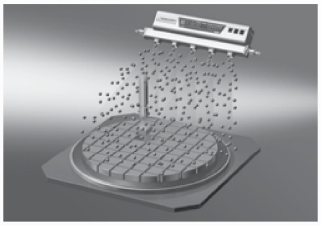
+ ion and – ion layers reach the workpiece within the same cycle, which increases the potential amplitude.

Eliminating static electricity on a glass substrate



Prevents the breakage of glass substrates due to the static electricity which is generated when the substrate is lifted from the surface plate.

Eliminating static electricity on an electric substrate



Prevents the breakage of electric substrates due to the static electricity which is generated when the substrates are picked up after dicing.

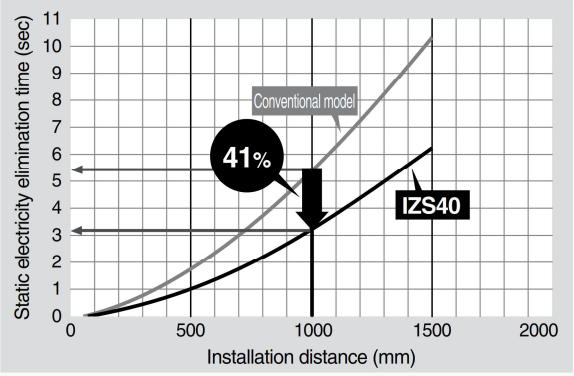
Standard type Series IZS40

Simple operation: Can be controlled by powering the ionizer ON.

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

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

Conditions: Ion generation frequency 30 Hz Supply pressure: 15 psi (0.1 MPa)
The IZS40 has a high speed static electricity elimination cartridge.

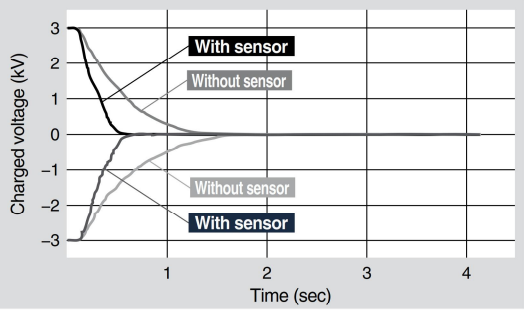


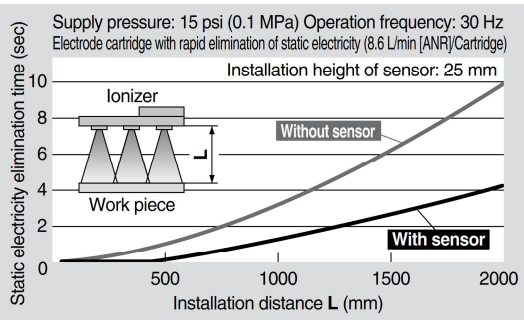
Feedback sensor type *Series IZS41* (High speed static electricity elimination specification)

Rapid elimination of static electricity by a feedback sensor

Note) An ion balance sensor is installed.

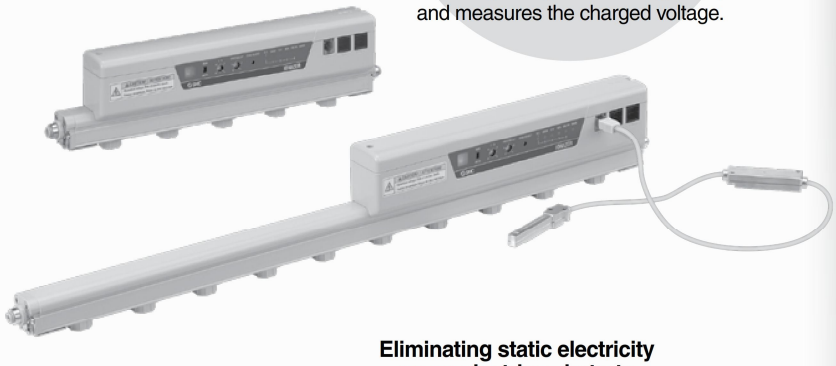
The speed of static electricity elimination has been increased by reading the workpiece's electrostatic potential by the feedback sensor (option) and continuously emitting ions with a reverse polarity.



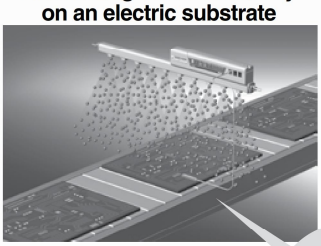


Feedback sensor

Detects the polarity of a discharged object and measures the charged voltage.

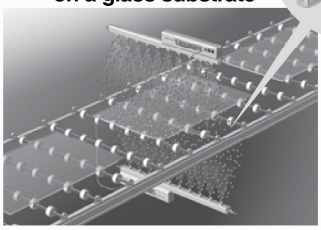


Eliminating static electricity on an electric substrate



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

Eliminating static electricity on a glass substrate



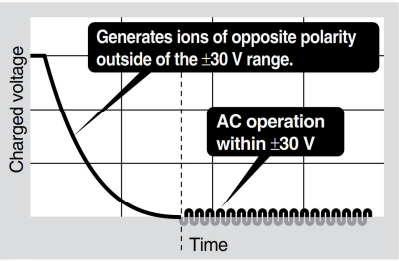
·Prevents breakage due to adhesion and discharge.
·Prevents adhesion of dust.

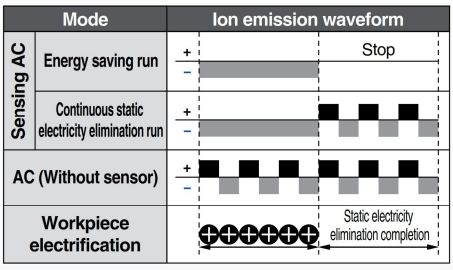
Run mode after static electricity elimination (ion balance: within ±30 V) can be selected.

■ **Energy saving run mode** Stops generating ions after static electricity elimination to reduce power consumption.

■ **Continuous static electricity elimination run mode** After static electricity elimination, the ionizer changes to AC mode. Continues to eliminate static electricity to make it approach 0 V even if the ion balance is within ±30 V.

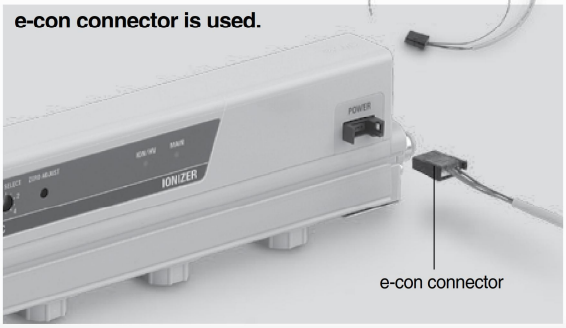
Continuous static electricity elimination run mode





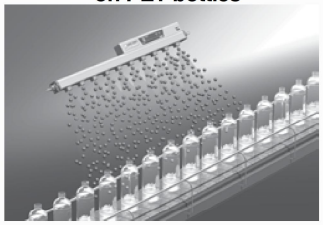
● **AC adapter power supply is available.**

e-con connector is used.



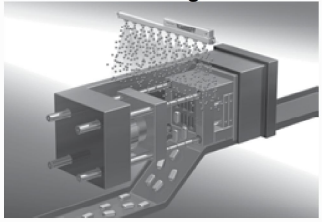
Suitable for static electricity elimination of resin and rubber pieces (small parts).

Eliminating static electricity on PET bottles



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

Eliminating static electricity on molded goods



· Improves detachability of molded goods from a die.

Reduction of adjustment and maintenance labor by auto balance sensor

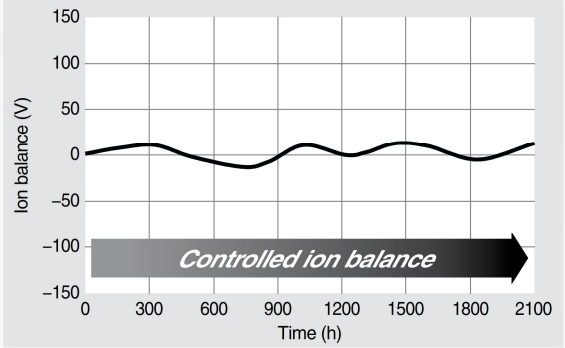
IZS 41 IZS 42

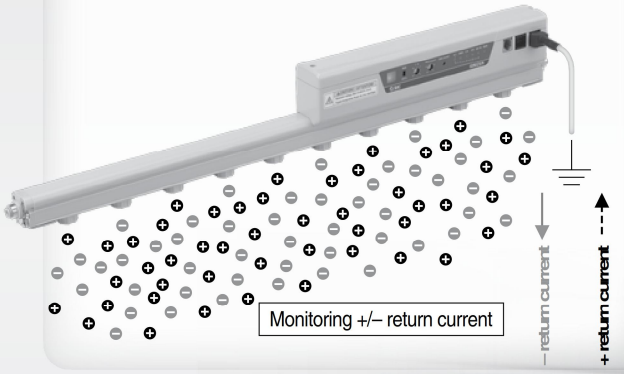
Built-in type (Standard)

The sensor is installed within the ionizer body and may be mounted anywhere.

Monitoring the amount of ion emitted from an ionizer, the auto balance sensor maintains the initial ion balance by adjusting the +/– ion supply rate.

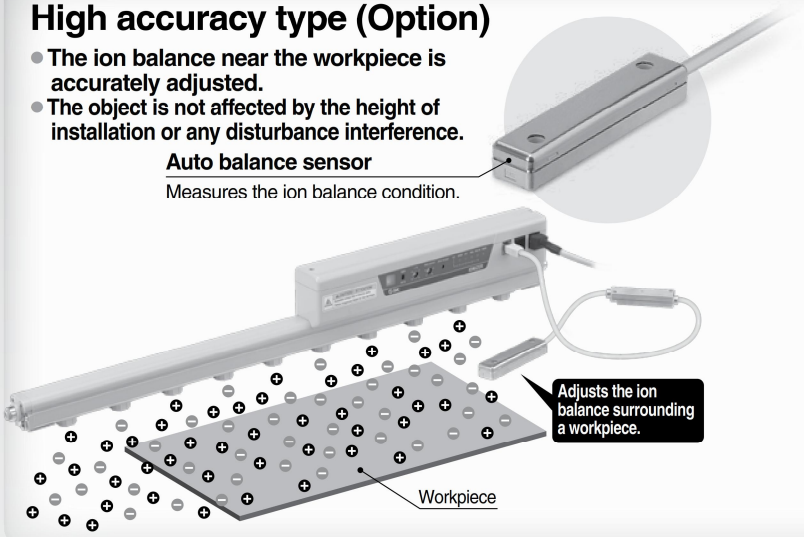
Ion balance (image)

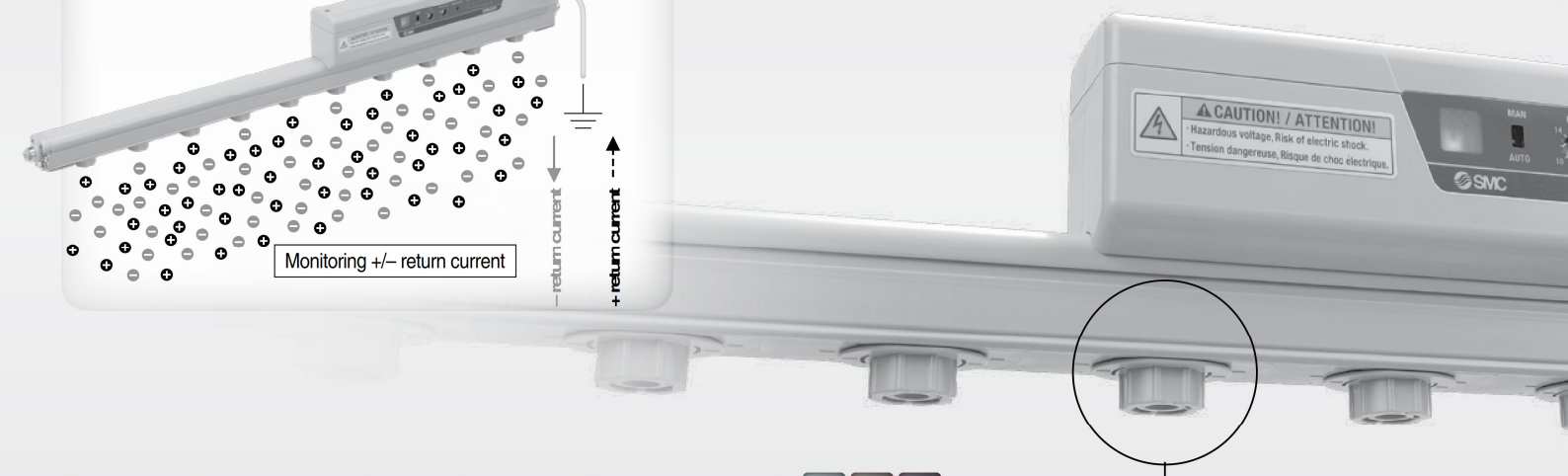




High accuracy type (Option)

- **The ion balance near the workpiece is accurately adjusted.**
- **The object is not affected by the height of installation or any disturbance interference.**

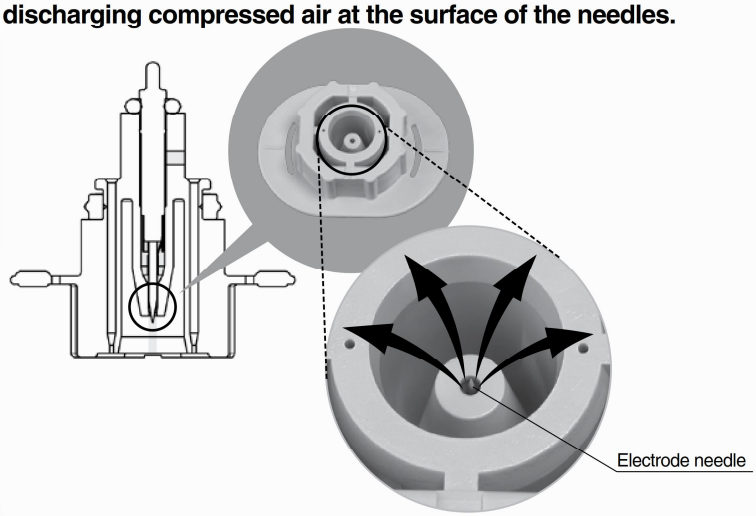




Low maintenance electrode cartridges are used.

IZS 40 IZS 41 IZS 42

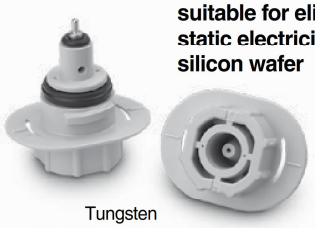
- **Minimizes contamination of electrode needles by discharging compressed air at the surface of the needles.**



Air covers the electrode needle.

- **2 types of electrode needle materials**

Tungsten : **Ion balance ±30 v**
Single crystal silicon: **Ion balance ±30 v, suitable for eliminating static electricity of silicon wafer**



Tungsten
(Cartridge color: White)

Silicon
(Cartridge color: Gray)

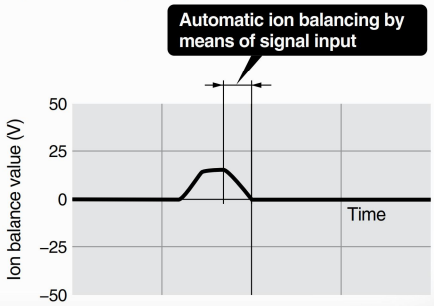
Refer to page 9 for Models and Functions.

Setting ionizer with remote controller IZS41 IZS42

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

- "Ion balance adjustment at external signal input" or "Ion balance adjustment at any time" can be selectable.

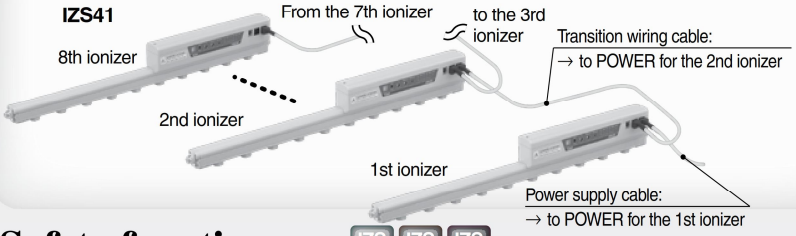
The auto balance sensor may be connected only when adjusting the ion balance.



Transition wiring may be used. IZS41 IZS42

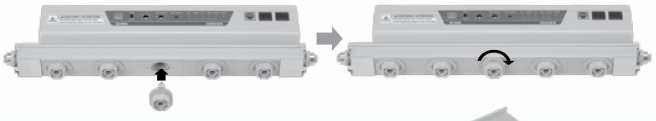
Total number of ionizers that may be connected IZS41: Max. 8 units. IZS42: Max. 5 units.
<Conditions> Bar length 340 to 2500 mm, Power supply cable 3 m,
Transition wiring cable 2 m

Reduces man hours required for connecting wires to the power supply.

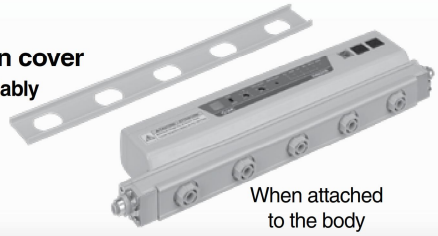


Safety functions IZS40 IZS41 IZS42

- **Electrode cartridge drop prevention function**
  Locking by double-action

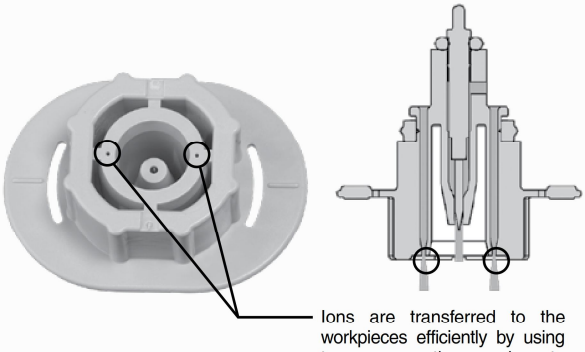


- **Drop prevention cover**
  Can even more reliably prevent electrode cartridges from dropping off.



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

High speed de-ionizing cartridge

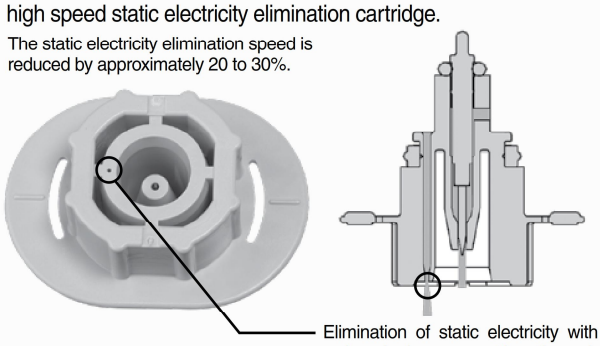


Ions are transferred to the workpieces efficiently by using two pneumatic nozzles to improve the static electricity elimination performance.

Energy saving type de-ionizing cartridge

The flow rate consumption of the energy-saving static electricity elimination cartridge is approximately **50%** less than that of the high speed static electricity elimination cartridge.

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

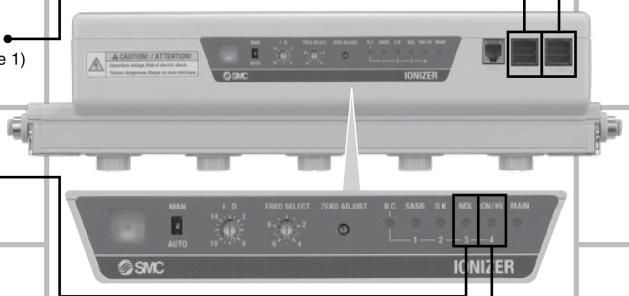


Elimination of static electricity with reduced air consumption through the use of one pneumatic nozzle.

Ionizer *Series IZS40/41/42*

Models and Functions

Series		IZS42	IZS41	IZS40
Method of applying voltage		Dual AC	AC, Sensing AC, DC	AC, DC
Sensor (Auto balance)	Built-in type (Standard)	●	●	—
	High accuracy type (Option)	●	●	
Feedback sensor (Option)		—	●	—
I/O		●	●	—
Transition wiring may be used. Note 1)		●	●	—
Electrode needle contamination detector		●	●	—
Incorrect high voltage ion discharge detection		●	●	●
Low maintenance electrode		●	●	●
Cartridge	Energy saving type de-ionizing	●	●	●
	High speed de-ionizing			
With One-touch fitting (ø6, ø8, ø10)		●	●	●
Bracket mount		●	●	●
Non-standard bar length (Made to Order)		●	●	●



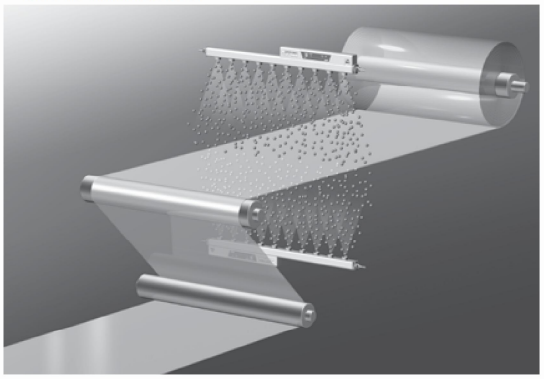
Note 1) Order transition wiring separately.

Accessories sold separately (per series)

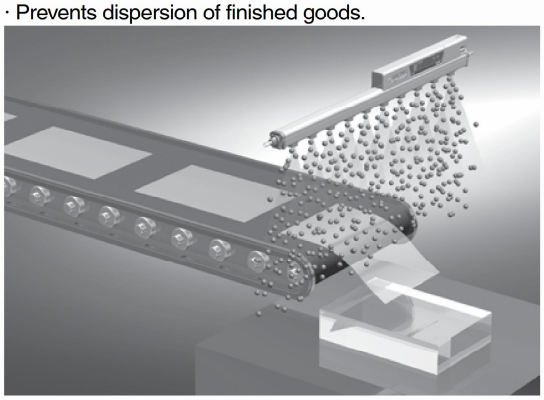
Series	IZS42	IZS41	IZS40
Remote controller	●	●	—
AC adapter	●	●	●
Drop prevention cover	●	●	●
Electrode needle cleaning kit	●	●	●

Application Examples

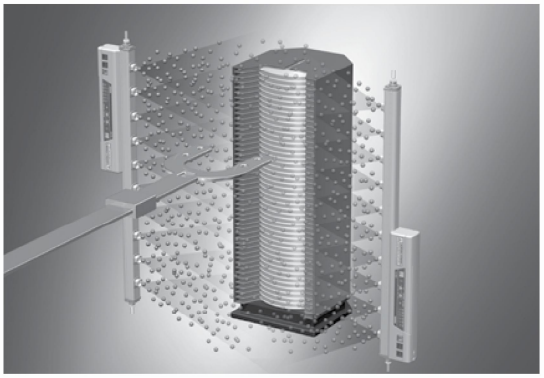
Eliminating static electricity from films
· Prevents adhesion of dust. · Prevents winding failure due to wrinkles etc.



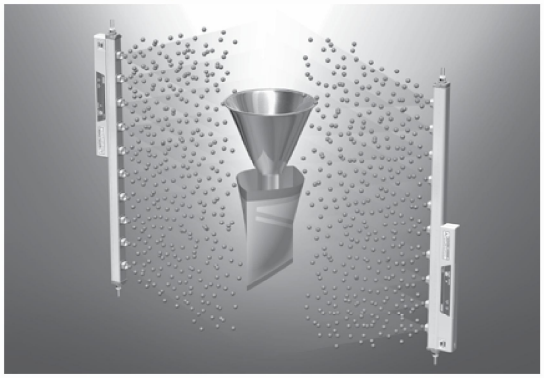
Eliminating static electricity on film molded goods
· Prevents attaching to conveyer.
· Prevents dispersion of finished goods.



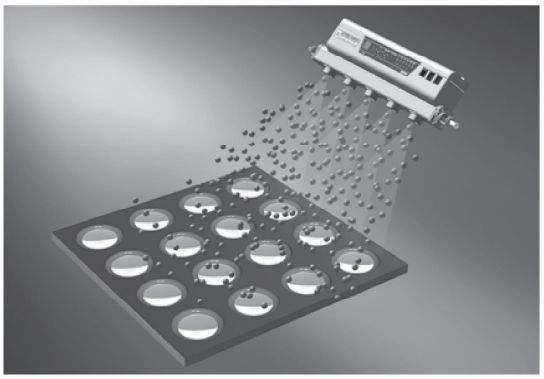
Eliminating static electricity during wafer transfer
· Prevents breakage due to discharge between wafers and hands.



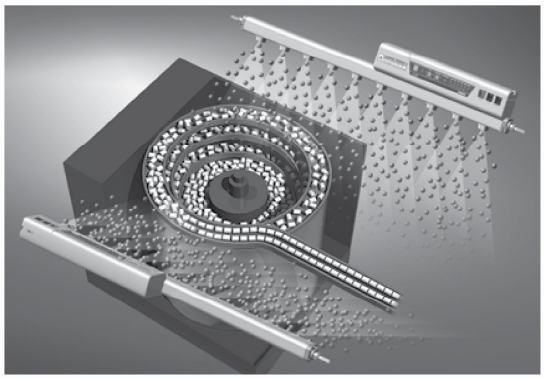
Eliminating static electricity from packing films
· Prevents the filled substance from adhering to the packing film.
· Reduces packing mistakes.



Eliminating static electricity from lens
· Removes dust from lens. · Prevents adhesion of dust.



Eliminating static electricity from parts feeder
· Prevents clogging of parts feeder.



Series IZS40/41/42
Technical Data

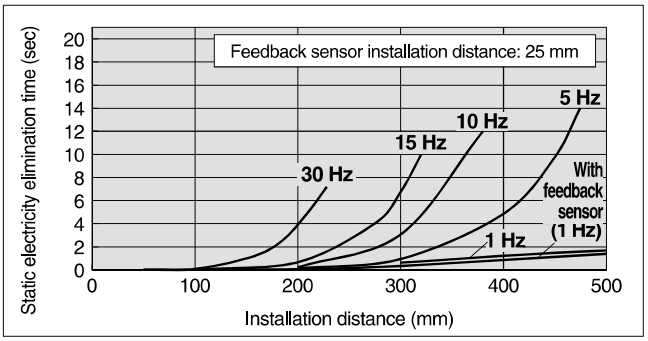
Note) Static electricity elimination features are based on the data using the charged plate (size: 150 mm x 150 mm, capacitance: 20 pF) as defined in the U.S. ANSI standards (ANSI/ESD, STM3.1-2006). Use this as a guideline purpose only for model selection because the value varies depending on the material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

Static Electricity Elimination Characteristics

① Installation Distance and De-ionization Time (Electricity Elimination from 1000 V to 100 V)

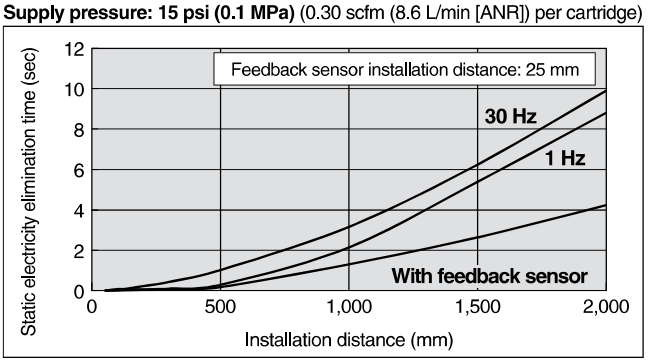
IZS40, 41

1) Without air purge

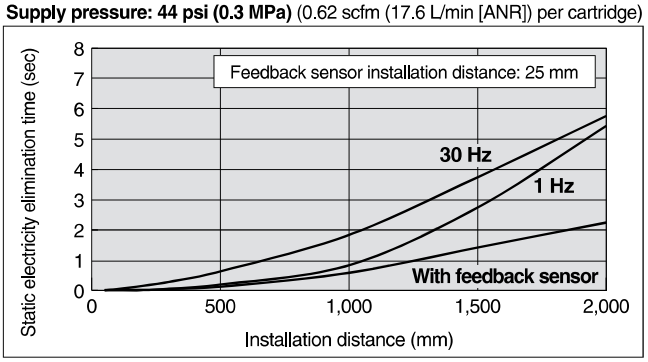


2) With high speed de-ionizing cartridge, With air purge

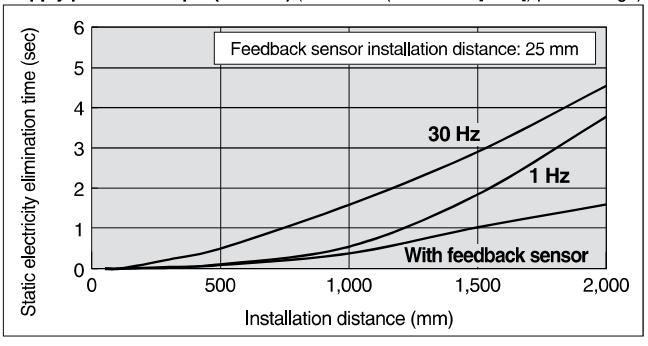
Supply pressure: 15 psi (0.1 MPa) (0.30 scfm (8.6 L/min [ANR]) per cartridge)



Supply pressure: 44 psi (0.3 MPa) (0.62 scfm (17.6 L/min [ANR]) per cartridge)

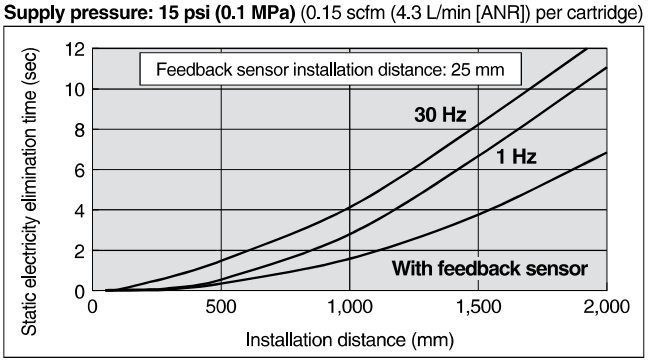


Supply pressure: 44 psi (0.5 MPa) (0.93 scfm (26.4 L/min [ANR]) per cartridge)

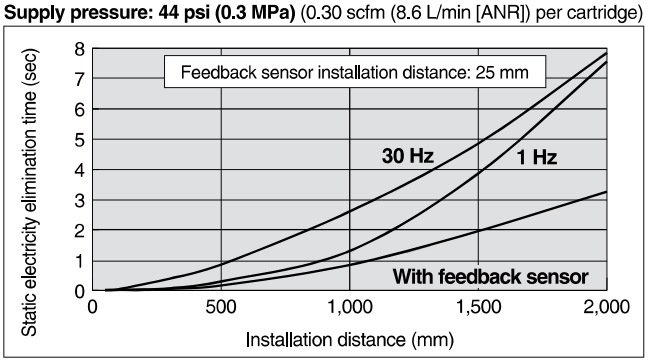


3) With energy saving type de-ionizing cartridge, With air purge

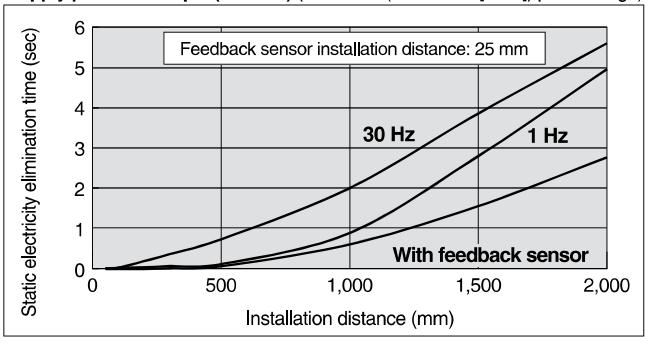
Supply pressure: 15 psi (0.1 MPa) (0.15 scfm (4.3 L/min [ANR]) per cartridge)



Supply pressure: 44 psi (0.3 MPa) (0.30 scfm (8.6 L/min [ANR]) per cartridge)

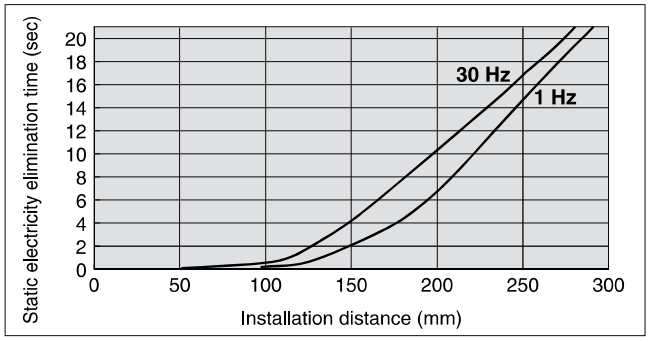


Supply pressure: 73 psi (0.5 MPa) (0.47 scfm (13.3 L/min [ANR]) per cartridge)



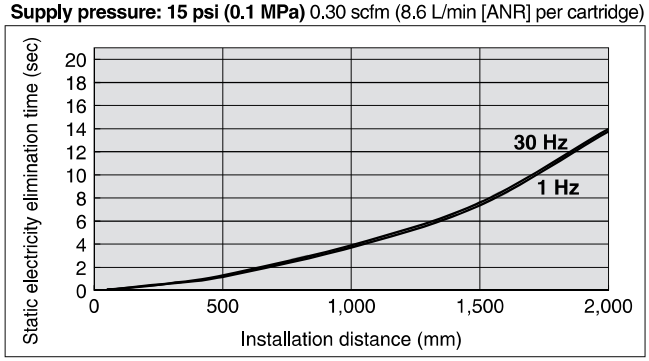
IZS42

1) Without air purge

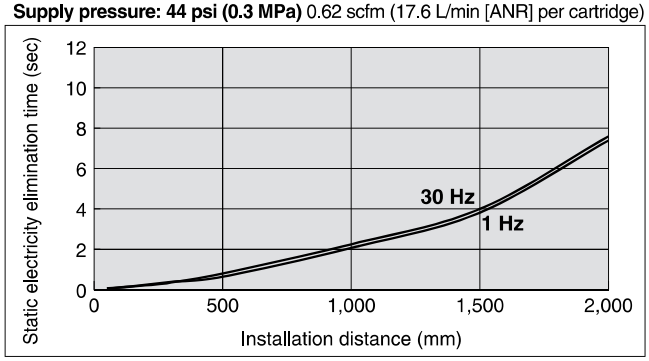


2) With high speed de-ionizing cartridge, With air purge

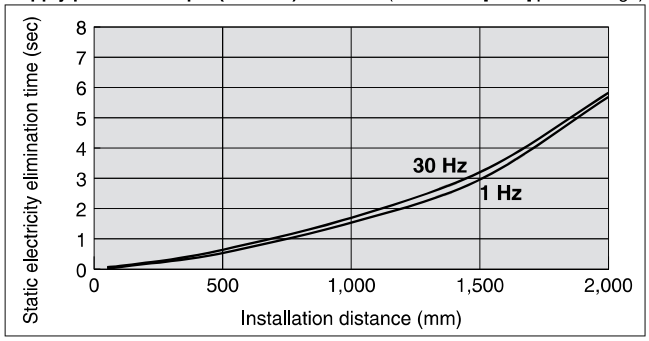
Supply pressure: 15 psi (0.1 MPa) 0.30 scfm (8.6 L/min [ANR] per cartridge)



Supply pressure: 44 psi (0.3 MPa) 0.62 scfm (17.6 L/min [ANR] per cartridge)

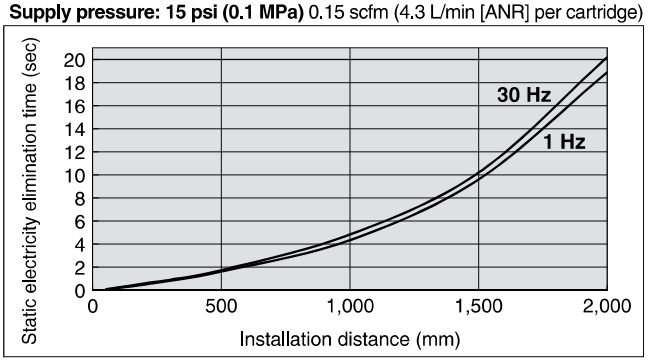


Supply pressure: 73 psi (0.5 MPa) 0.93 scfm (26.4 L/min [ANR] per cartridge)

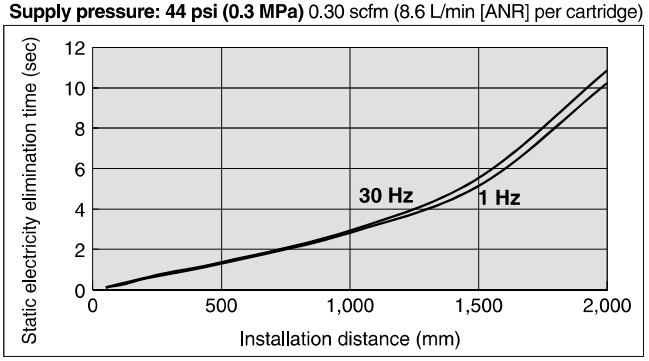


3) With energy saving type de-ionizing cartridge, With air purge

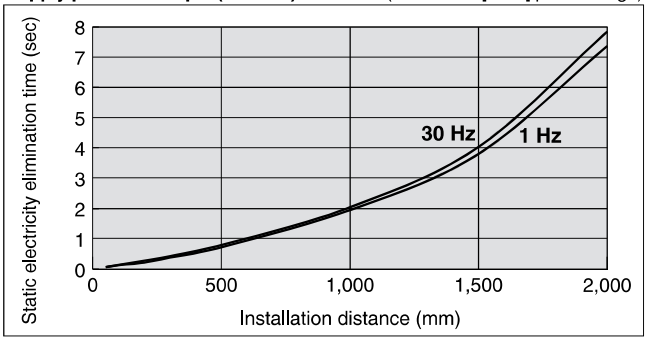
Supply pressure: 15 psi (0.1 MPa) 0.15 scfm (4.3 L/min [ANR] per cartridge)



Supply pressure: 44 psi (0.3 MPa) 0.30 scfm (8.6 L/min [ANR] per cartridge)



Supply pressure: 73 psi (0.5 MPa) 0.47 scfm (13.3 L/min [ANR] per cartridge)



Static Electricity Elimination Characteristics

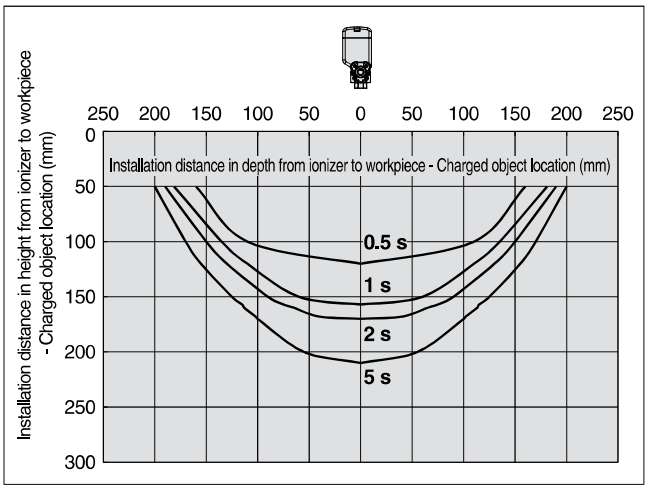
Note) Static electricity elimination features are based on the data using the charged plate (size: 150 mm x 150 mm, capacitance: 20 pF) as defined in the U.S. ANSI standards (ANSI/ESD, STM3.1-2006). Use this as a guideline purpose only for model selection because the value varies depending on the material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

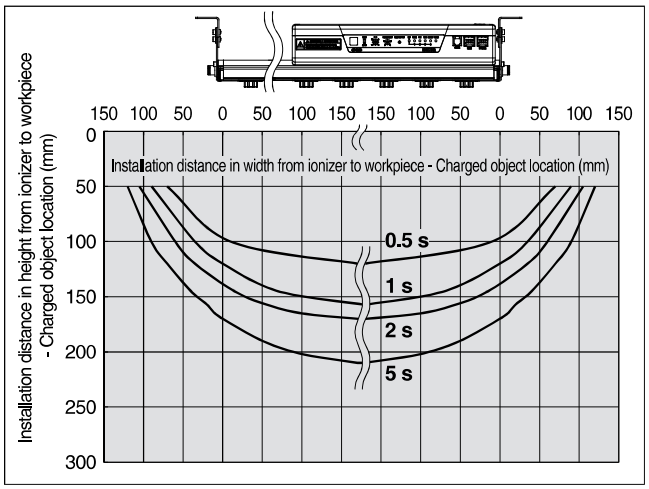
② Static Electricity Elimination Range

IZS40, 41

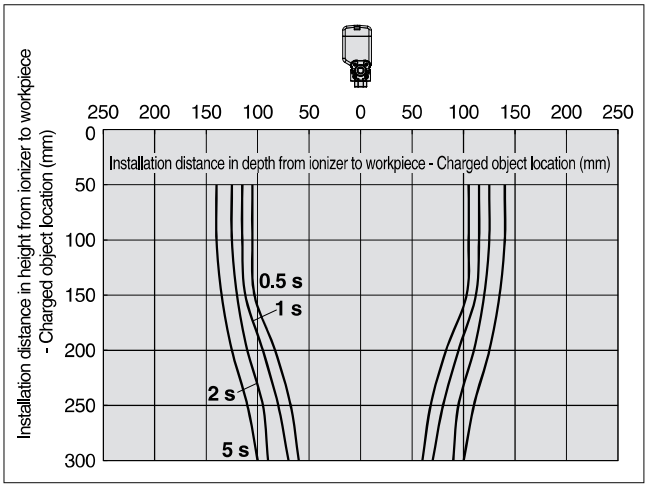
Frequency: 30 Hz

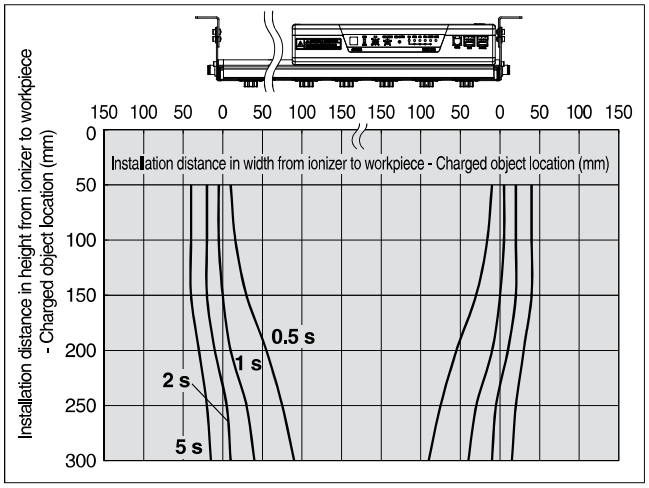
1) Supply pressure: 0 psi (0 MPa)



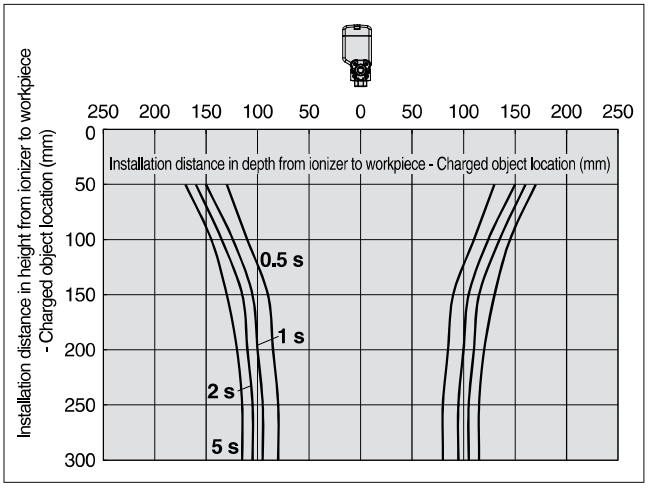


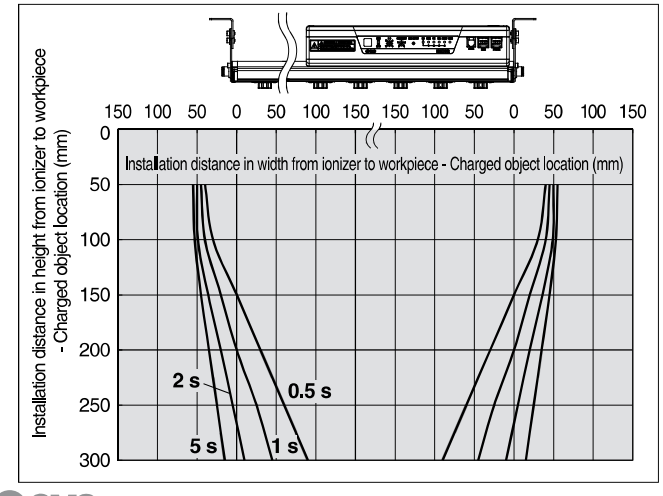
2) With high speed de-ionizing cartridge, Supply pressure: 44 psi (0.3 MPa)





3) With energy saving type de-ionizing cartridge, Supply pressure: 44 psi (0.3 MPa)

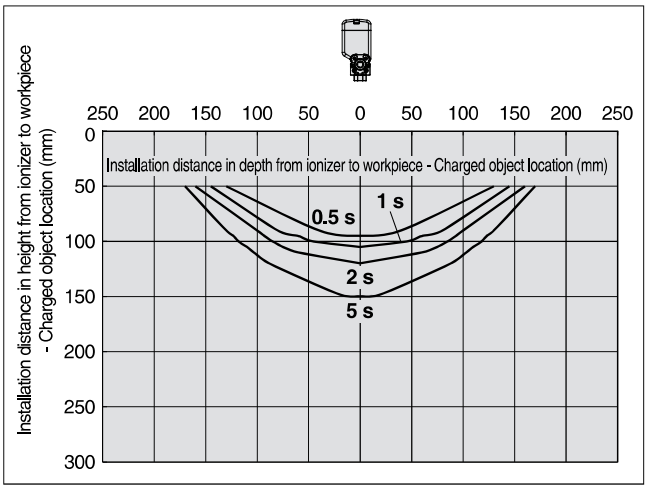


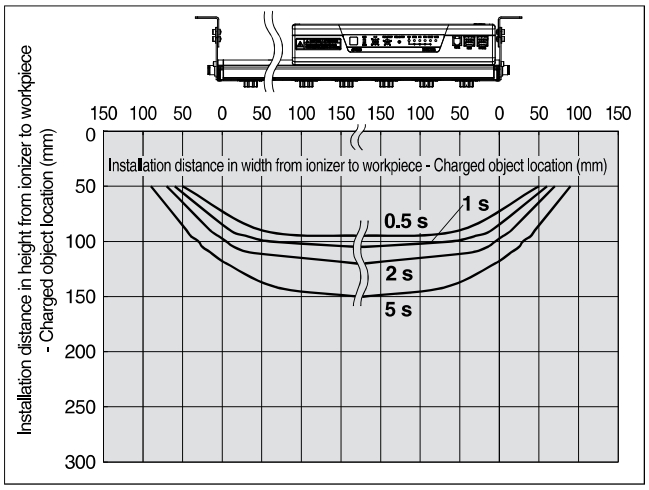


IZS42

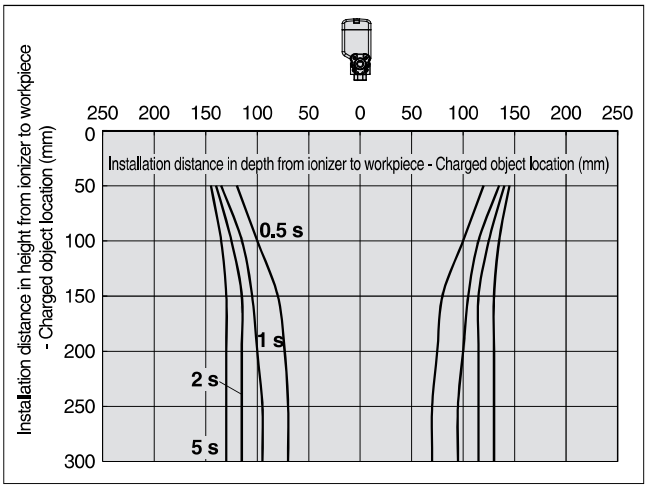
Frequency: 30 Hz

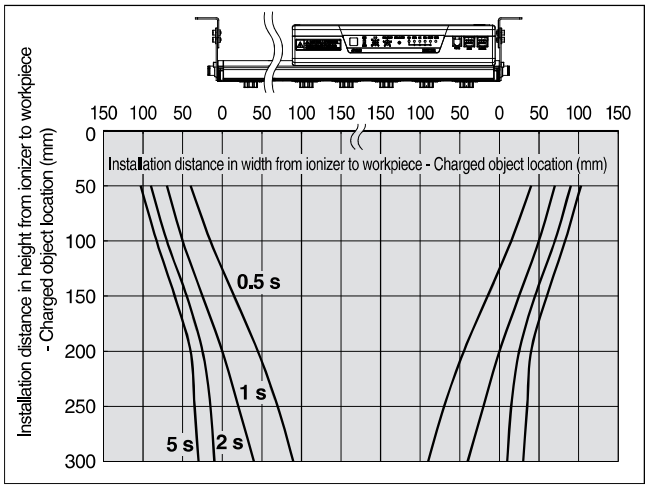
1) Supply pressure: 0 psi (0 MPa)



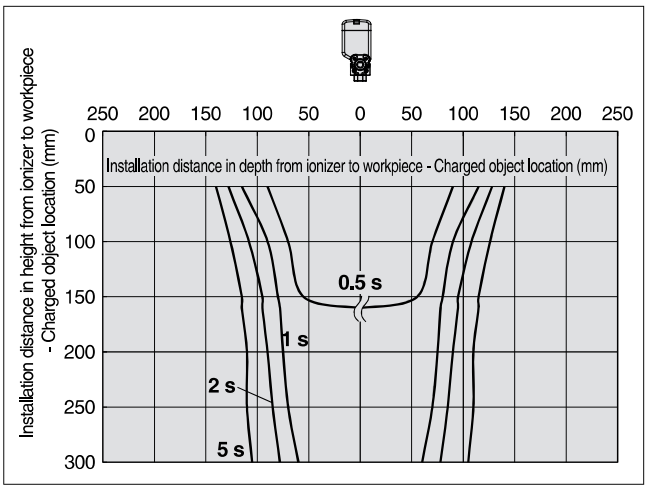


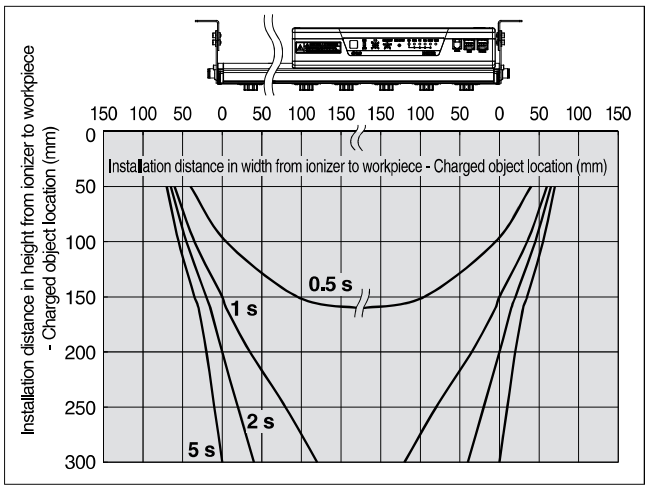
2) With high speed de-ionizing cartridge, Supply pressure: 44 psi (0.3 MPa)





3) With energy saving type de-ionizing cartridge, Supply pressure: 44 psi (0.3 MPa)





Static Electricity Elimination Characteristics

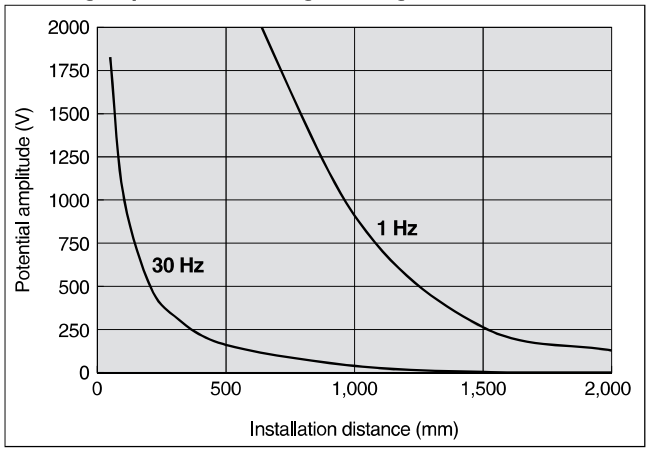
Note) Static electricity elimination features are based on the data using the charged plate (size: 150 mm x 150 mm, capacitance: 20 pF) as defined in the U.S. ANSI standards (ANSI/ESD, STM3.1-2006). Use this as a guideline purpose only for model selection because the value varies depending on the material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

③ Potential Amplitude

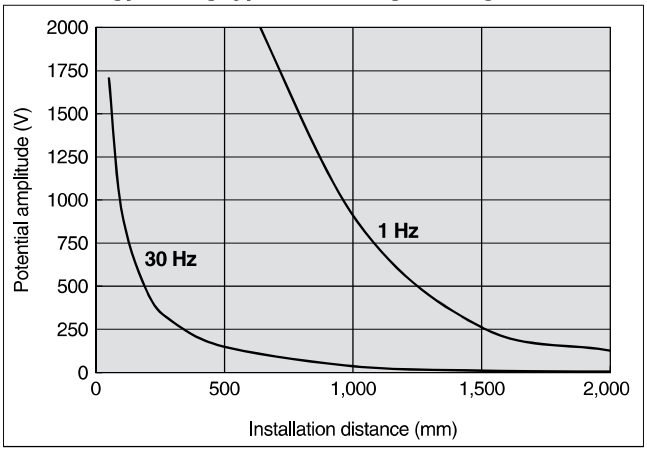
IZS40, 41

Supply pressure: 44 psi (0.3 MPa), Frequency: 30 Hz

With high speed de-ionizing cartridge



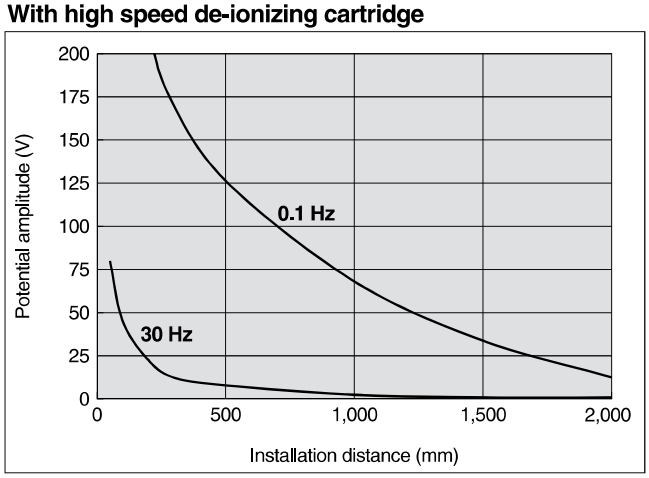
With energy saving type de-ionizing cartridge



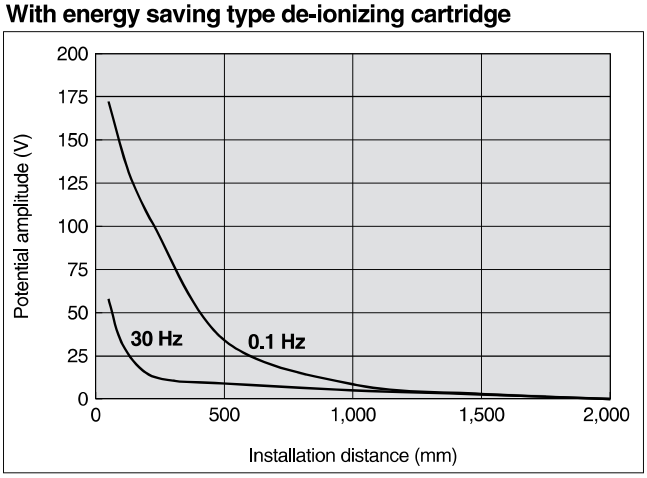
IZS42

Supply pressure: 0.3 MPa, Frequency: 30 Hz

With high speed de-ionizing cartridge

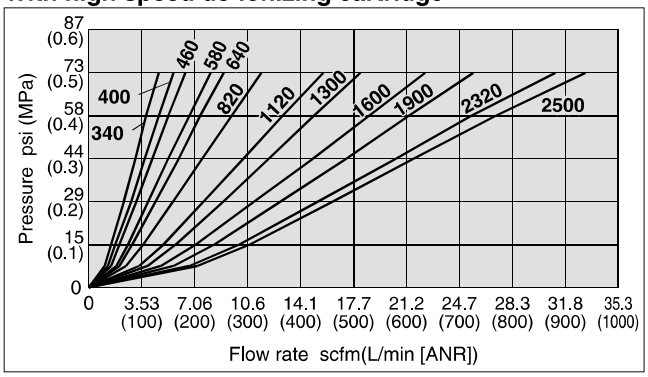


With energy saving type de-ionizing cartridge

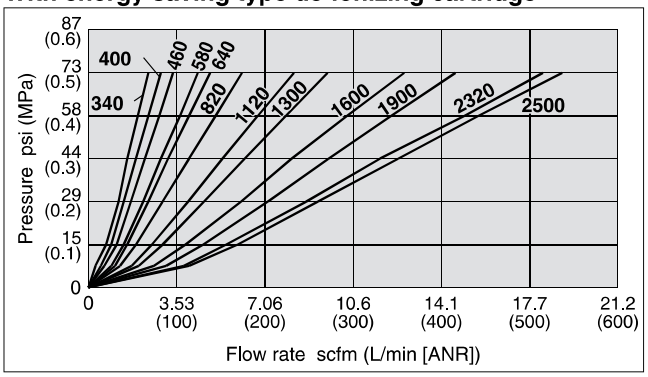


④ Flow Rate — Pressure Characteristics

With high speed de-ionizing cartridge

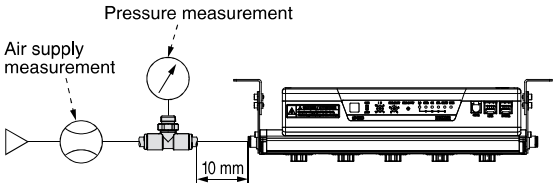


With energy saving type de-ionizing cartridge

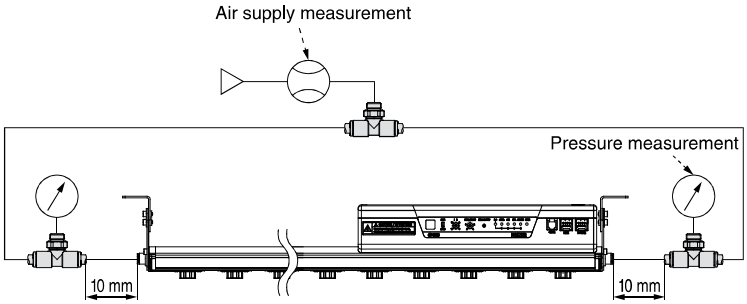


How to measure

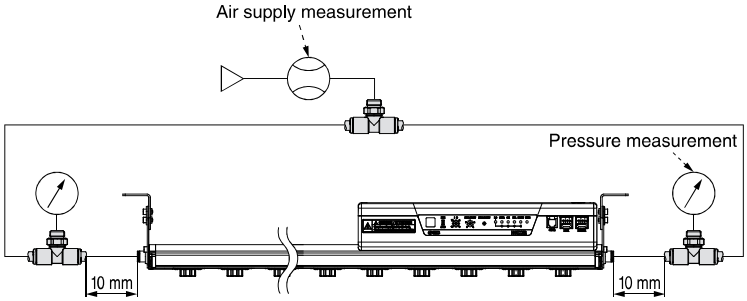
a) Single side air supply (Connecting tube: O.D. ø6 x I.D. ø4) (IZS4□-340, 400, 460, 580, 640)



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

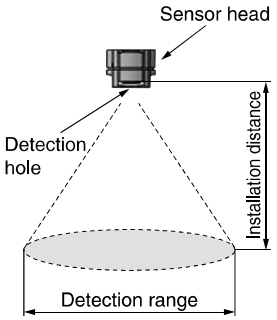


c) Both sides air supply (Connecting tube: O.D. ø8 x I.D. ø5) (IZS4□-1600, 1900, 2320, 2500)



Feedback Sensor Detection Range

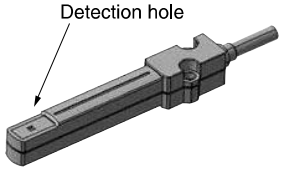
The relationship between the feedback sensor's installation distance and the detection range is as follows:



(mm)

Installation distance	Detection range
10	45
25	100
50	180

Enlarged view of sensor head



Ionizer
Series IZS40/41/42

How to Order

Type

40	Standard type

Type 40 IZS 40 – 1600 □ □ – 10 B – □

Type 41/42 IZS 42 – 1600 □ □ □ – 10 B □ – □

Bar type ● Type ● Made to Order

41	Feedback sensor type
42	Dual AC type

Sensor

Symbol	Sensor	IZS41	IZS42
Nil	Built-in sensor	●	●
F	Feedback sensor	●	—
G	Auto balance sensor [High accuracy type]	●	●

∗ Feedback sensor cannot be used for the IZS42.

Electrode cartridge type/Electrode needle material

Symbol	Electrode cartridge type	Electrode needle material
Nil	High speed de-ionizing cartridge	Tungsten
C		Silicon
J	Energy saving type de-ionizing cartridge	Tungsten
K		Silicon

Bracket

Nil	Without bracket
B	With bracket∗

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

Number of brackets

Bar length symbol	End bracket	Intermediate bracket
340 to 760	With 2 pcs.	None
820 to 1600		With 1 pc.
1660 to 2380		With 2 pcs.
2440 to 2500		With 3 pcs.

Bar length

Symbol	Bar length (mm)
340	340
400	400
460	460
580	580
640	640
820	820
1120	1120
1300	1300
1600	1600
1900	1900
2320	2320
2500	2500

Input/Output specifications

Nil	NPN
P	PNP

∗ Since input/output function cannot be used, specify "Nil" when the AC adapter is being used.

Power supply cable

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

∗ When only an e-con connector for the IZS40 is required, specify "N", and order a part (Model: ZS-28-C) separately.
∗ To use AC adapter, specify "N", and select AC adapter sold separately (on page 20). (A cord is attached to the AC adapter.)

One-touch fitting

06	ø6 One-touch fitting
08	ø8 One-touch fitting
10	ø10 One-touch fitting

∗ Refer to the table below for selection of One-touch fittings.

Recommended piping port size (mm)

One-touch fitting symbol	Applicable tube O.D. mm	Bar length symbol											
		340	400	460	580	640	820	1120	1300	1600	1900	2320	2500
06	ø6	○	○	○	○	○	●	●	●	—	—	—	—
08	ø8	—	—	—	—	—	○	○	○	●	●	●	●
10	ø10	—	—	—	—	—	—	—	—	○	○	○	○

○ : With piping on one side
● : With piping on both sides

Made to Order

Symbol	Contents	Specifications
-X10	Non-standard bar length	Symbol for producible bar length: 460 + 60 x n (n: Integer from 1 to 34) (For 2, 3, 6, 11, 14, 19, 24, 31 and 34 for n, use a standard model.)

Ordering example)

IZS 40 – 1660 □ □ – 10 B – X10

IZS 42 – 1660 □ □ □ – 10 B □ – X10

Type

41
42

Bar length

520	1000	1420	1780	2140
700	1060	1480	1840	2200
760	1180	1540	1960	2260
880	1240	1660	2020	2380
940	1360	1720	2080	2440

Symbol	Contents	Specifications
-X14	Model with electrode cartridge drop prevention cover	The main unit is shipped fitted with an electrode cartridge drop prevention cover available as an option.

Specifications

Ionizer model		IZS40	IZS41-□□ (NPN)	IZS41-□□P (PNP)	IZS42-□□ (NPN)	IZS42-□□P (PNP)
Ion generation method		Corona discharge type				
Method of applying voltage		AC, DC	AC, Sensing AC, DC		Dual AC	
Applied voltage		±7,000 V			±6,000 V	
Ion balance Note)		±30 V				
Air purge	**Fluid**	Air (Clean dry air)				
	Operating pressure	73 psi (0.5 MPa) or less				
	Proof pressure	101 psi (0.7 MPa)				
	Connecting tube O.D.	ø6, ø8, ø10				
Current consumption		330 mA or less	440 mA or less (Sensing AC, Automatic run/Manual run: 480 mA or less)		700 mA or less (Automatic run/Manual run: 740 mA or less)	
Power supply voltage		24 VDC ±10% (100 to 240 VAC: AC adapter option)				
Power supply voltage in a transition wiring		—	24 VDC to 26.4 VDC			
Input signal	**Discharge stop signal**	—	Connected to GND Voltage range: 5 VDC or less Current consumption: 5 mA or less	Connected to +24 V Voltage range: 19 VDC to power supply voltage Current consumption: 5 mA or less	Connected to GND Voltage range: 5 VDC or less Current consumption: 5 mA or less	Connected to +24 V Voltage range: 19 VDC to power supply voltage Current consumption: 5 mA or less
	Electrode contamination detection signal					
Output signal	**Maintenance signal**	—	Max. load current: 100 mA Residual voltage 1 V or less (Load current at 100 mA) Max. applied voltage: 26.4 VDC	Max. load current: 100 mA Residual voltage 1 V or less (Load current at 100 mA)	Max. load current: 100 mA Residual voltage 1 V or less (Load current at 100 mA) Max. applied voltage: 26.4 VDC	Max. load current: 100 mA Residual voltage 1 V or less (Load current at 100 mA)
	Error signal					
Function		Incorrect high voltage ion discharge detection (Ion discharge stops during detection)	Ion balance control with the built-in sensor, electrode contamination detection, incorrect high voltage ion discharge detection (stops discharge during detection), ion discharge stop input, transition wiring, remote controller (sold separately), external sensor connection			
Effective de-ionizing distance		50 to 2000 mm	50 to 2000 mm (Sensing AC mode: 200 to 2000 mm, Manual run/Automatic run: 100 to 2000 mm)		50 to 2000 mm (Manual run/Automatic run: 100 to 2000 mm)	
Ambient and fluid temperature		32 to 104°F (0 to 40°C)				
Ambient humidity		35 to 80% Rh (with no condensation)				
Material		Ionizer cover: ABS, Electrode cartridge: PBT, Electrode needle: Tungsten, Single crystal silicon				
Impact resistance		100 m/s²				
Standards/Directive		CE (EMC Directive: 2004/108/EC)				

Note) When the air purge is performed between a charged object and an ionizer at a distance of 300 mm

Number of electrode cartridges/Bar weight

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

External sensor

Sensor model	IZS31-DF (Feedback sensor)	IZS31-DG (Auto balance sensor) [High accuracy type]
Ambient temperature	32 to 122°F (0 to 50°C)	
Ambient humidity	35 to 80% Rh (with no condensation)	
Case material	ABS	ABS, Stainless steel
Impact resistance	100 m/s²	
Weight	200 g (including cable weight)	220 g (including cable weight)
Installation distance	10 to 50 mm (Recommended)	—
Standards/Directive	CE, UL, CSA	

AC adapter (Sold separately)

Model	IZF10-CG□, IZS41-CG□
Input voltage	100 VAC to 240 VAC, 50/60 Hz
Output current	1 A
Ambient temperature	32 to 104°F (0 to 40°C)
Ambient humidity	35 to 65% Rh (with no condensation)
Weight	220 g
Standards/Directive	CE, UL, CSA

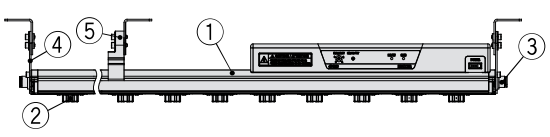
Remote controller (Sold separately)

Model	IZS41-RC
Type	Infrared ray type
Transmission capacity	5 m Note 1)
Power supply	2 AAA sized batteries (sold separately) Note 2)
Ambient temperature	32 to 113°F (0 to 45°C)
Ambient humidity	35 to 80% Rh (with no condensation)
Weight	33 g (excluding dry cell batteries)
Standards/Directive	CE

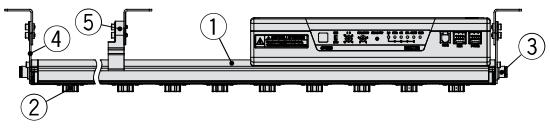
Note 1) Varies depending on the operating conditions and environment.
Note 2) Batteries are not supplied.
Note 3) Refer to the operation manual for handling of the remote controller.

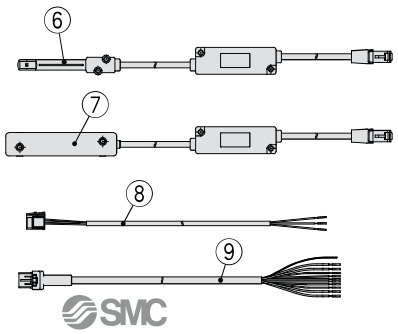
Construction

Series IZS40



Series IZS41/42





No.	Description
1	**Ionizer**
2	**Electrode cartridge**
3	**One-touch fitting**
4	**End bracket**
5	**Intermediate bracket**
6	**Feedback sensor**
7	**Auto balance sensor [High accuracy type]**
8	**Power supply cable (for IZS40)**
9	**Power supply cable (for IZS41/42)**

Accessories (for Individual Parts)

Feedback sensor
IZS31-DF

Auto balance sensor [High accuracy type]
IZS31-DG

Power supply cable

- **IZS40-CP (3 m)**
- **IZS40-CPZ (10 m)**
- **IZS41-CP (3 m)**
- **IZS41-CPZ (10 m)**

For IZS40

For IZS41/42

Made to Order

How to Order

IZS □ – CP □ – X13

Type ● — ● Power supply cable full length

40	For IZS40
41	For IZS41/42

Symbol	Cable full length
01	1 m
02	2 m
⋮	
19	19 m
20	20 m

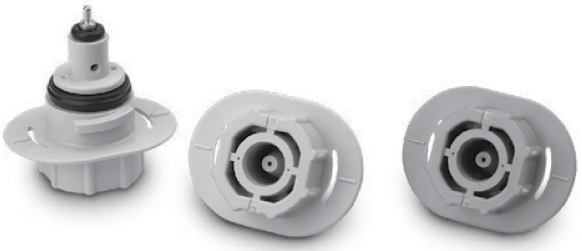
Model with made-to-order power supply cable
Available in 1 m increments from 1 m to 20 m.
Note 1) 10 m or longer power cables are not CE Marking-compliant.
Note 2) Use standard power supply cables for 3 m and 10 m lengths.

High speed de-ionizing cartridge

- **IZS40-NT (Material: Tungsten)**
- **IZS40-NC (Material: Silicon)**

Energy saving type de-ionizing cartridge

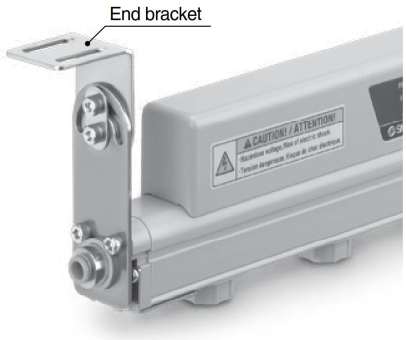
- **IZS40-NJ (Material: Tungsten)**
- **IZS40-NK (Material: Silicon)**



Tungsten
(Cartridge color: White)

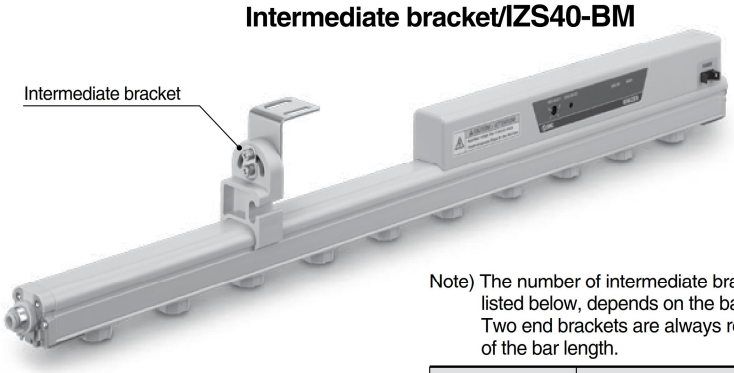
Silicon
(Cartridge color: Gray)

End bracket/IZS40-BE



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

Intermediate bracket/IZS40-BM



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

Bar length symbol	End bracket	Intermediate bracket
340 to 760	With 2 pcs.	None
820 to 1600		With 1 pc.
1660 to 2380		With 2 pcs.
2440 to 2500		With 3 pcs.

Note) The model number is for a single bracket.

Sold Separately

Electrode cartridge drop prevention cover

IZS40 − E 3

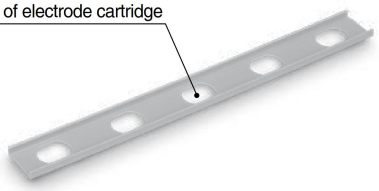
● Number of fixed electrode cartridges

IZS40-E3	3
IZS40-E4	4
IZS40-E5	5

Number of required drop prevention covers

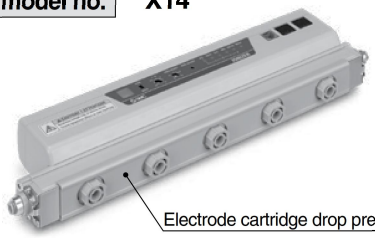
Bar length symbol	Number of required drop prevention covers		
	IZS40-E3	IZS40-E4	IZS40-E5
340	—	—	1
400	2	—	—
460	1	1	—
580	—	1	1
640	—	—	2
820	1	—	2
1120	1	—	3
1300	2	—	3
1600	2	—	4
1900	2	—	5
2320	1	—	7
2500	2	—	7

Mounted part of electrode cartridge



The model number requires the suffix "-X14" to indicate that the body is to be shipped fitted with an electrode cartridge drop prevention cover.

Standard model no. − X14



When attached to the body

Remote controller/IZS41-RC

AC adapter For IZS40

IZF10 − C

● AC adapter

G1	AC adapter + AC cord
G2	AC adapter (without AC cord)

∗ AC cord is only for use in Japan. (Rated voltage 125 V, plug JIS C8303, inlet IEC60320-C8) External input and output cannot be used when the AC adapter is being used.

For IZS40

For IZS41/42

IZS41 − C

● AC adapter

G1	AC adapter + AC cord
G2	AC adapter (without AC cord)

∗ AC cord is only for use in Japan. (Rated voltage 125 V, plug JIS C8303, inlet IEC60320-C8) External input and output cannot be used when the AC adapter is being used.

For IZS41/42

Transition wiring cable

IZS41 − CF

● Transition wiring cable

02	Full length 2 m
05	Full length 5 m
08	Full length 8 m

Made to Order

How to Order

IZS41 − CF − X13

● Transition wiring cable length

Symbol	Cable full length
01	1 m
03	3 m
⋮	⋮
19	19 m
20	20 m

Model with Made-to-order transition wiring cable
Available in 1 m increments from 1 m to 20 m.
Note 1) 10 m or longer power cables are not CE Marking-compliant.
Note 2) Use standard power supply cables for 2 m, 5 m and 8 m lengths.
Note 3) Transition wiring is not possible for the IZS40.

Electrode needle cleaning kit/IZS30-M2

Wiring/IZS40

Wire cables according to the circuitry and wiring chart.

1. Grounding of F.G. cable

Make sure to ground the F.G. cable (green) with a resistance of 100 Ω or less.

The F.G. cable is used as a reference electric potential for de-ionization. If the ground terminal F.G. is not properly grounded, the ionizer will not achieve the optimal ion balance. Therefore, please connect the ground terminal using a resistance of 100 Ω or less.

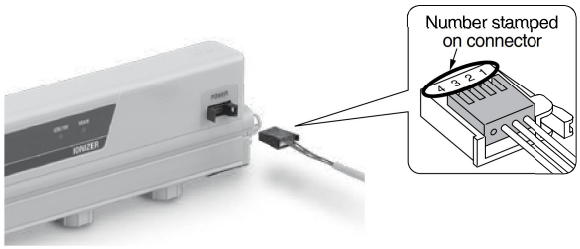
2. Connection circuit ("POWER" connector)

Wiring of the IZS40

e-con is adopted for the connector of the IZS40.

Connector with cable or without cable may be selected when placing an order for the power supply cable.

When only an e-con is required, place an order for it as a part. (Cable is not supplied.)

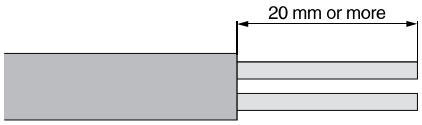


Wiring

Number stamped on connector	Description	Description
1	24 VDC	Power supply is connected to operate the ionizer.
2	GND	
3	F.G.	Make sure to ground with a resistance of 100 Ω or less to use it as a reference electric potential for ionizer.
4	—	Unused

How to connect the cable of the connector

1) Cut the cable as shown in the figure to the below. Refer to the following table for the applicable wire size.



Applicable wire

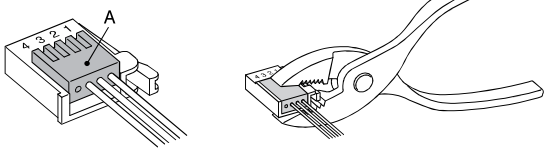
AWG No.	Conductor cross section mm²	Finish O.D. mm	Model
26-24	0.14-0.2	ø0.8-ø1.0	ZS-28-C

2) Insert the cable which was cut into the back of the connector.

3) Confirm that the cable is inserted into the back of the connector and press part A with your finger to hold tentatively.

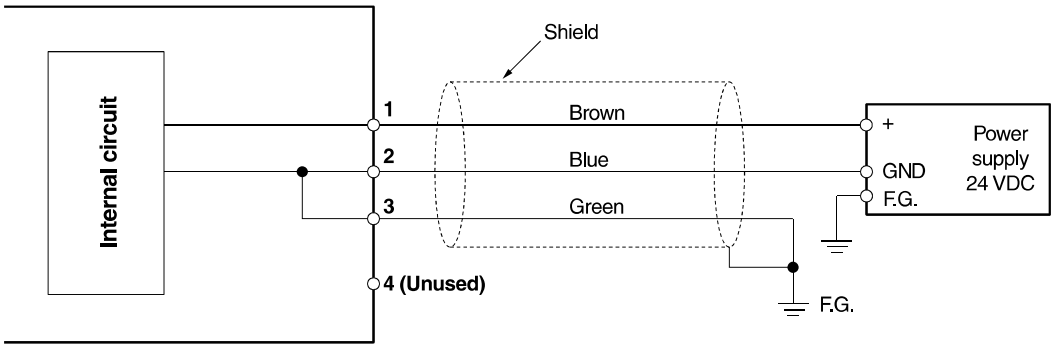
4) Use a tool such as pliers to firmly tighten the center of Part A.

5) The connector cannot be reused once crimped. If cable insertion fails, use a new connector.



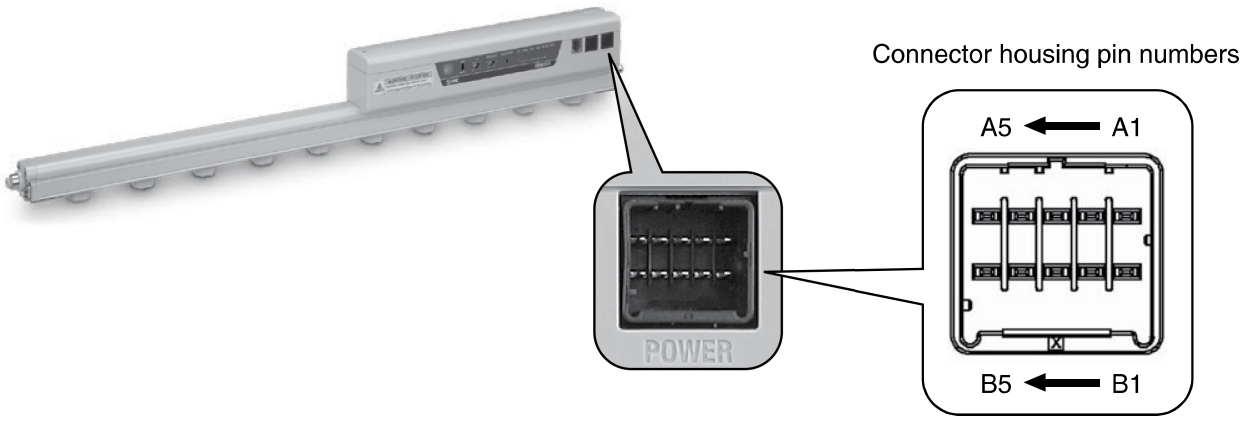
Connection Circuit/IZS40

Ionizer (IZS40)



If cables are prepared by the user, the cable colors shown in the diagram may change according to the cable colors by the user.

Wiring/IZS41, 42

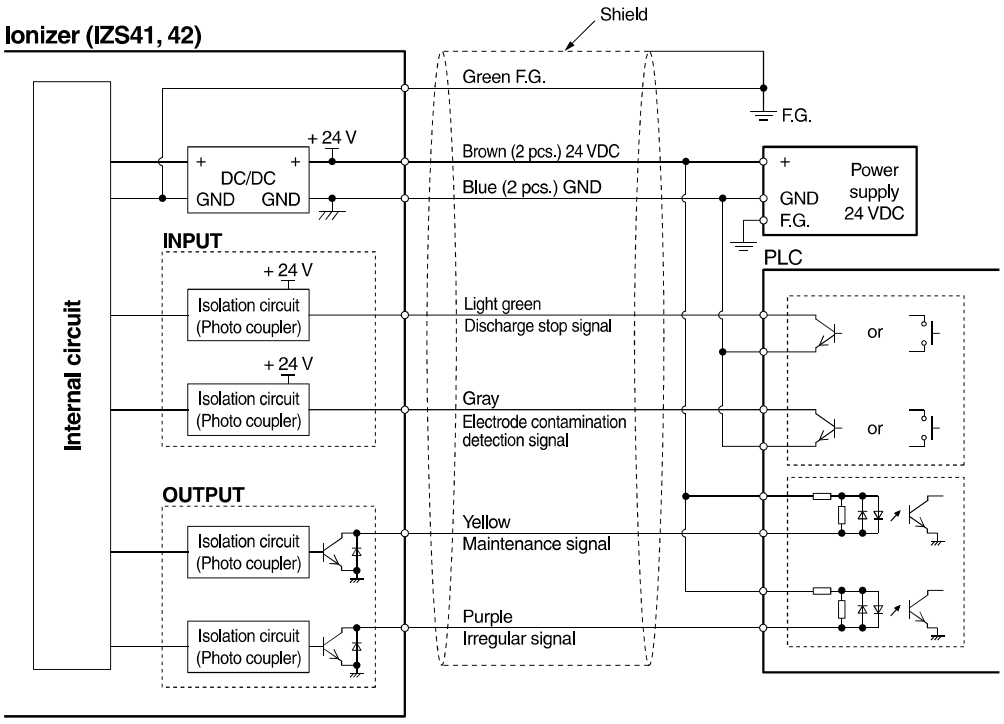


Wiring

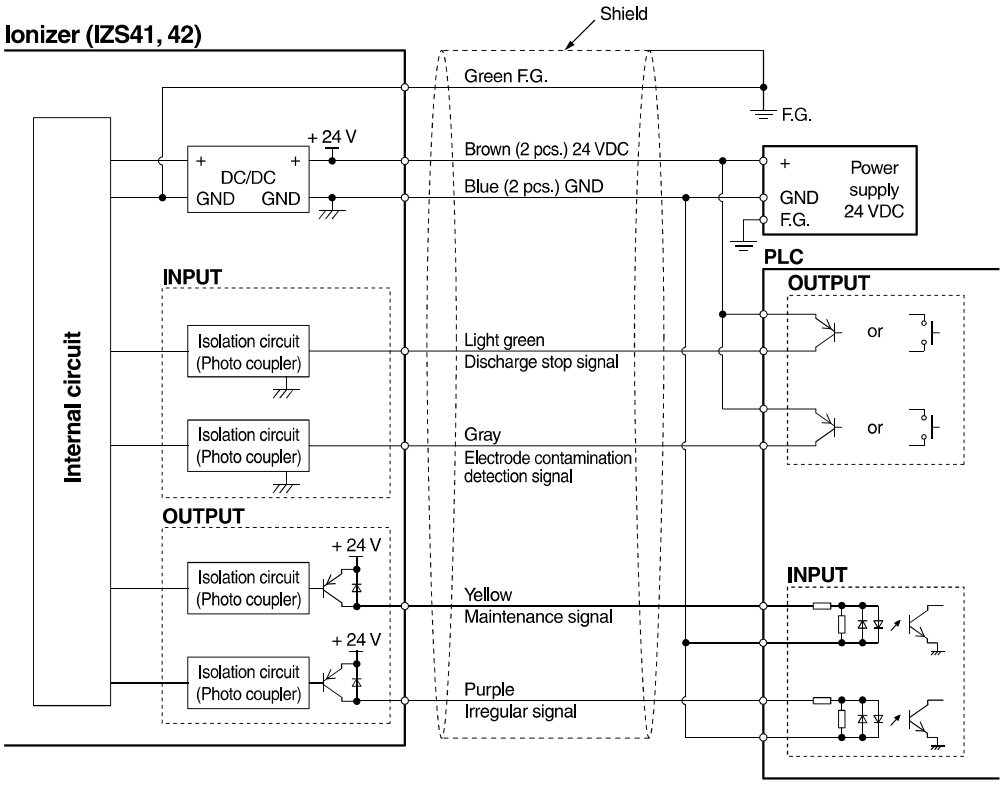
Pin no.	Cable color	Description	Signal direction	Description
A1	Brown	24 VDC	IN	Power supply is connected to operate the ionizer.
B1				
A2	Blue	GND	IN	
B2				
A3	Green	F.G.	—	Make sure to ground with a resistance of 100 Ω or less to use it as a reference electric potential for ionizer.
B3	Light green	Discharge stop signal	IN	Signal input to turn ON/OFF the ion discharge. NPN specification: Stops ion discharge by connecting to GND. (Starts discharging ion when disconnected.) PNP specification: Stops ion discharge by connecting to + 24 VDC. (Starts discharging ion when disconnected.)
A4	Gray	Electrode contamination detection signal	IN	Input signal when determining the necessity of electrode needle maintenance.
B4	Yellow	Maintenance signal	OUT(Contact point A)	Turns ON when electrode needs cleaning.
A5	Purple	Error signal	OUT(Contact point B)	Turns OFF when power supply failure, ion discharge error, connected sensor failure, or CPU operation failure. (ON when there is no problem.)
B5	White	Unused	—	

Wiring Circuit/IZS41, 42

NPN specification

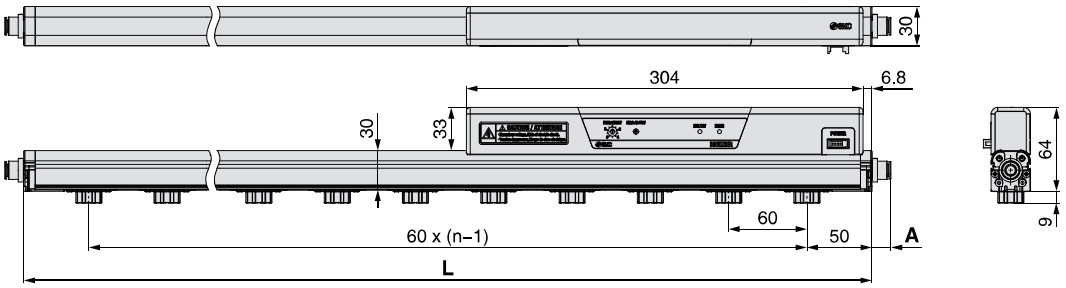


PNP specification



Dimensions

Ionizer/IZS40

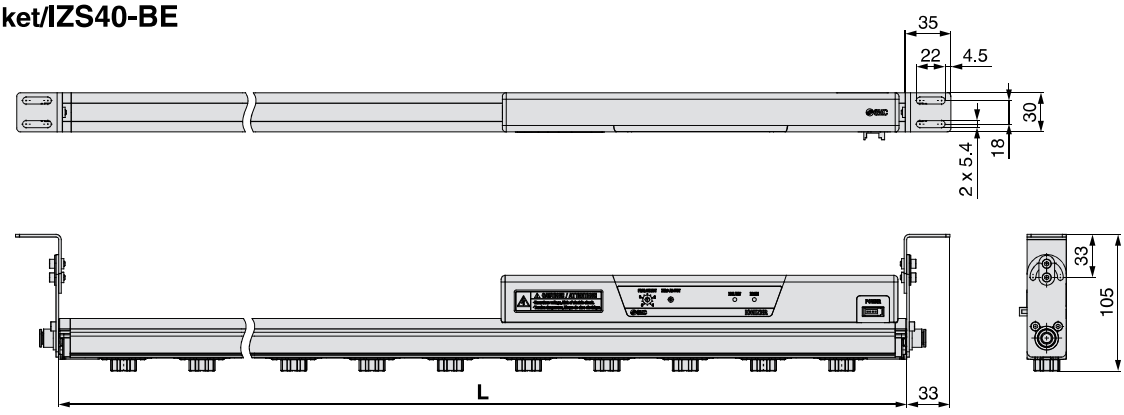


Applicable tube O.D.	A
06	13
08	15
10	22

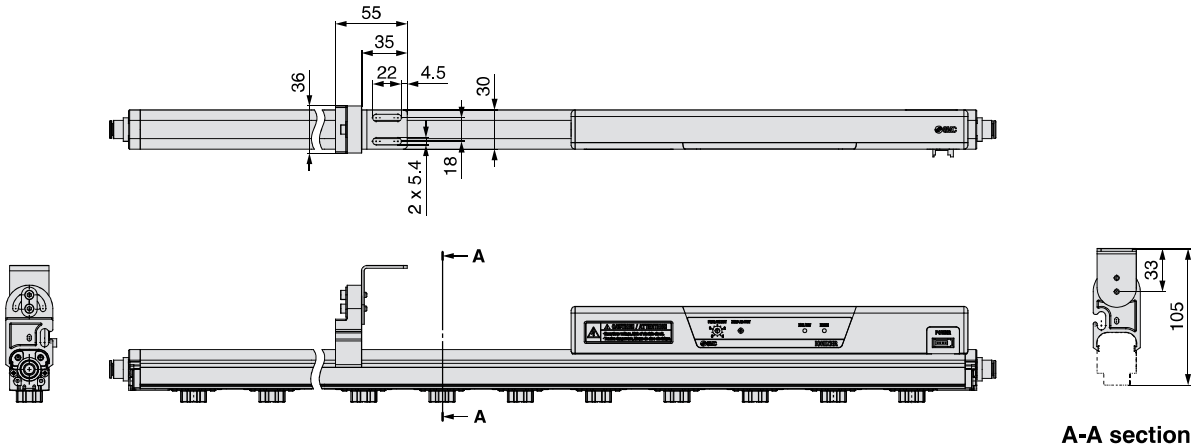
n (Number of electrode cartridges), L Dimension

Part no.	n	L (mm)
IZS40-340	5	340
IZS40-400	6	400
IZS40-460	7	460
IZS40-580	9	580
IZS40-640	10	640
IZS40-820	13	820
IZS40-1120	18	1120
IZS40-1300	21	1300
IZS40-1600	26	1600
IZS40-1900	31	1900
IZS40-2320	38	2320
IZS40-2500	41	2500

End bracket/IZS40-BE



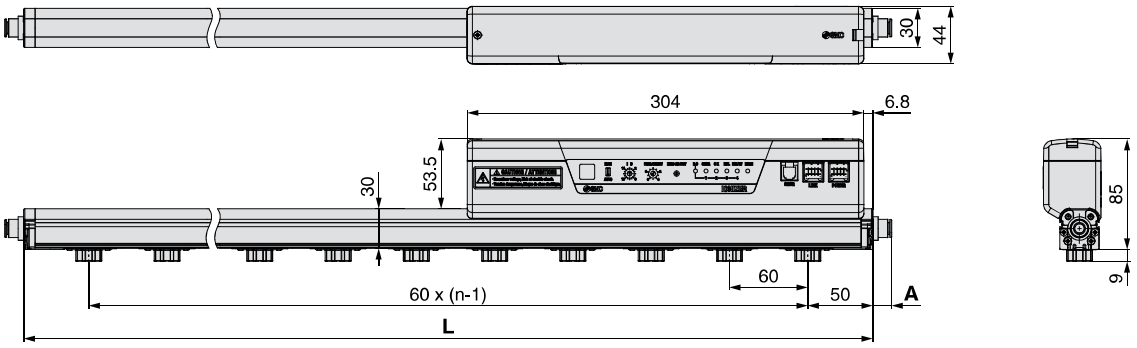
Intermediate bracket/IZS40-BM



A-A section

Dimensions

Ionizer/IZS41, 42

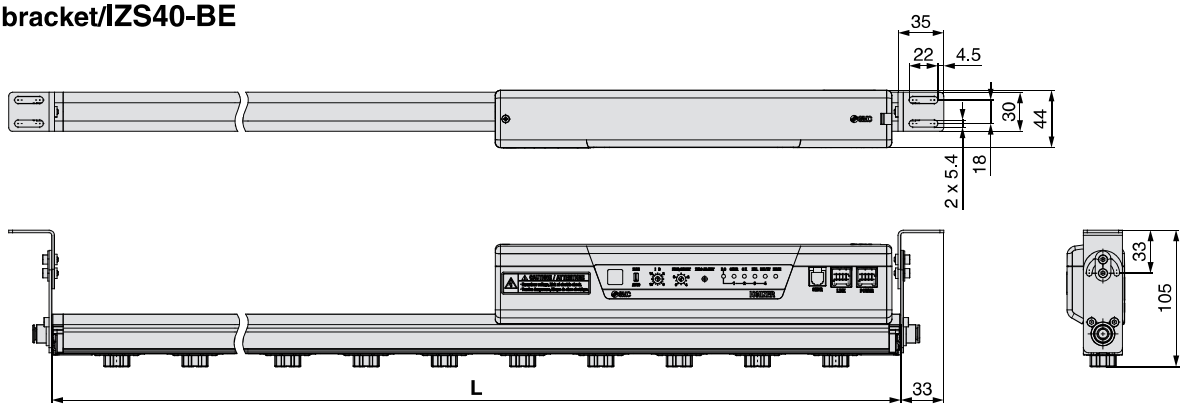


Applicable tube O.D.	A
06	13
08	15
10	22

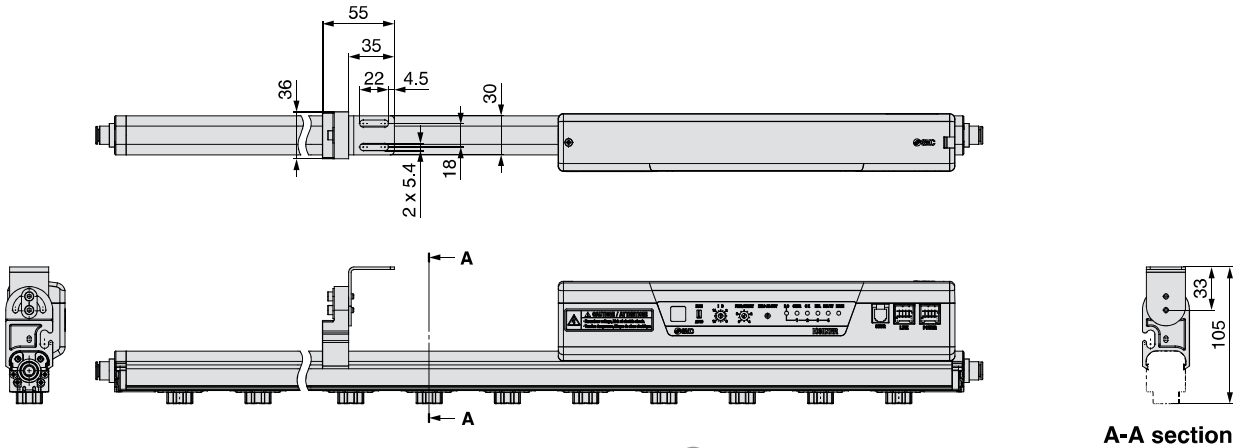
n (Number of electrode cartridges), L Dimension

Part no.	n	L (mm)
IZS4□-340	5	340
IZS4□-400	6	400
IZS4□-460	7	460
IZS4□-580	9	580
IZS4□-640	10	640
IZS4□-820	13	820
IZS4□-1120	18	1120
IZS4□-1300	21	1300
IZS4□-1600	26	1600
IZS4□-1900	31	1900
IZS4□-2320	38	2320
IZS4□-2500	41	2500

End bracket/IZS40-BE



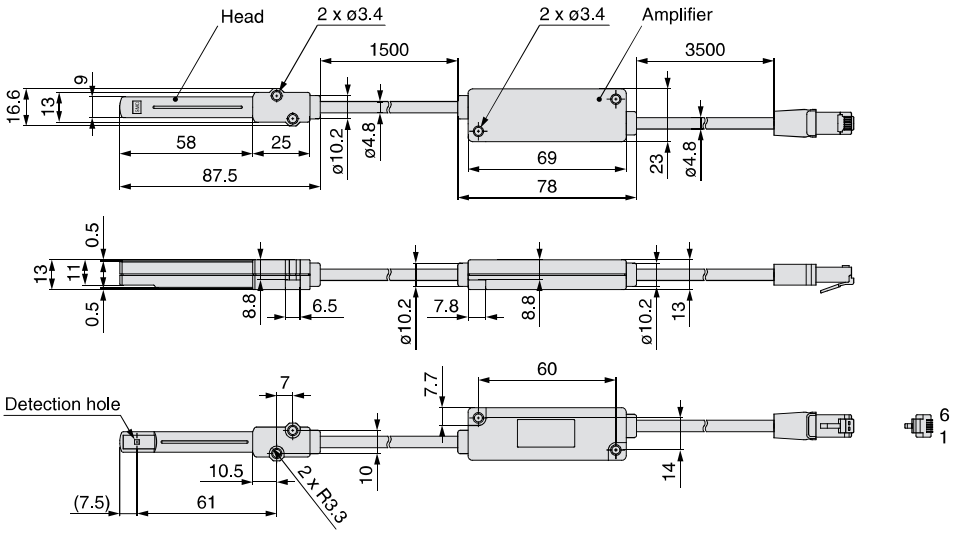
Intermediate bracket/IZS40-BM



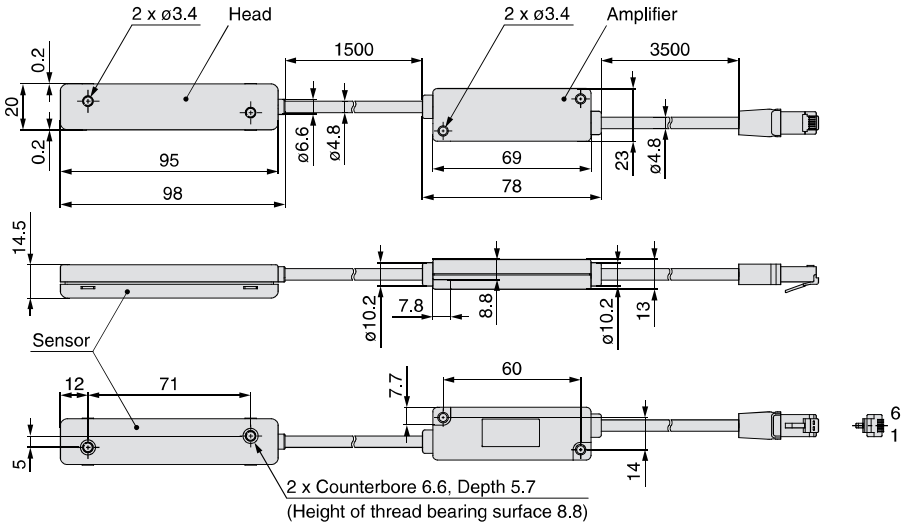
A-A section

Dimensions

Feedback sensor/IZS31-DF

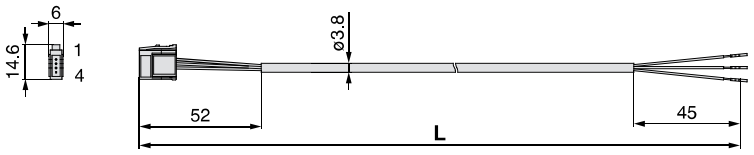


Auto balance sensor [High accuracy type]/IZS31-DG

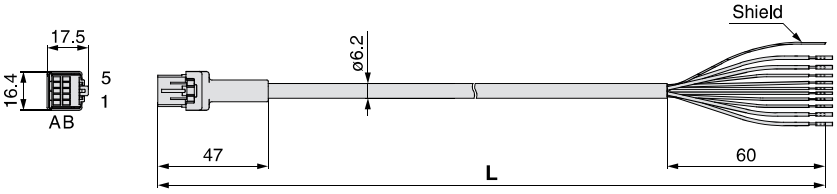


Power supply cable

IZS40-CP□



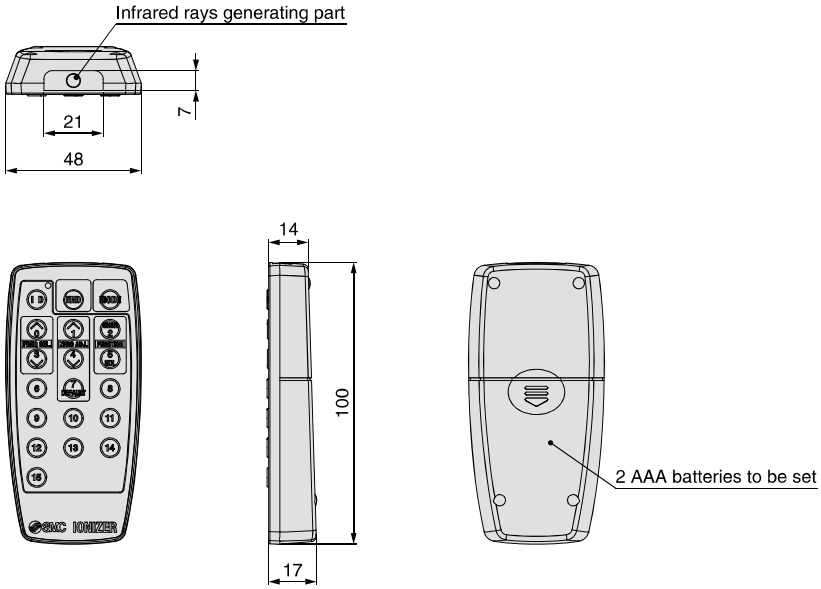
IZS41-CP□



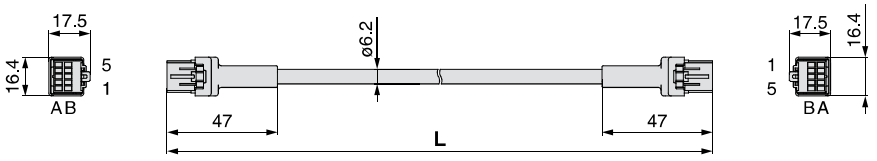
Part no.	L (mm)
IZS40-CP	3000
IZS41-CP	
IZS40-CPZ	9800
IZS41-CPZ	

Dimensions

Remote controller



Transition wiring cable/IZS41-CF□



Part no.	L (mm)
IZF41-CF02	2000
IZF41-CF05	5000
IZF41-CF08	8000

Series IZS40/41/42
Specific Product Precautions 1

Be sure to read this before handling.

Selection

⚠Caution

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

If considering using the product for other applications (especially those stipulated on Safety Instructions), please consult SMC beforehand.

2. Use this product within the specified voltage and temperature range.

Using outside of the specified voltage can cause a malfunction, damage, electrical shock, or fire.

3. Use clean compressed air as fluid. (Air quality Class 2.6.3 specified in ISO 8573-1: 2001 is recommended.) 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 proof. Never use a flammable gas or an explosive gas as a fluid and never use this product in the presence of such gases. Please contact us when fluids other than compressed air are used.

4. This product is not explosion-protected.

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

⚠Caution

1. Clean specification is not available with this product.

This product is not washed. When bringing into a clean room, flush for several minutes and confirm the required cleanliness before using. A minute amount of particles are generated due to wearing of the electrodes while the ionizer is operating.

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 cable and tube minimum bending radius and avoid bending at acute angles.

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

Minimum bending radius: Power supply cable: 38 mm
Transition wiring cable: 38 mm
Sensor cable: 25 mm

Note: Shown above is wiring with the fixed minimum allowable bending radius and at a temperature of 68°F (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 tubing, refer to the operation manual or catalog for tubing.

2. Mount this product on a plane surface.

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

Mounting

⚠Warning

3. Install the product so that the entire bar does not have an excessive deflection.

For a bar length of 820 mm or more, support the bar at both ends and in the middle by using brackets (IZS40-BM). If the bar is held only at the both ends, self-weight of the bar causes deflection, resulting in damage to the bar.

4. 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.

5. Observe the tightening torque requirements when installing the ionizer.

If overtightened with a high torque, the mounting screws or mounting brackets may break. Also, if under tightened with a low torque, the connection may loosen.

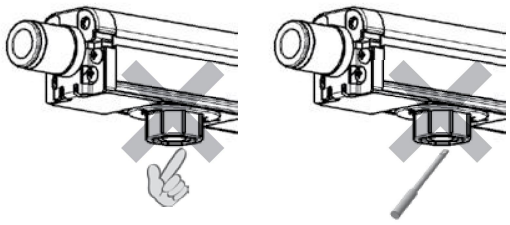
Refer to the operation manual for details.

6. Do not touch the electrode needle 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 needle or cartridge is damaged with a tool, the specification will not be met and damage and/or an accident may occur.

⚠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.



7. Do not affix any tape or seals to the body.

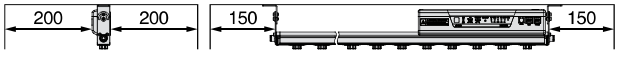
If the tape or seal contains any conductive adhesive or reflective paint, a dielectric phenomenon may occur due to ions arising from such substances, resulting in electrostatic charging or electric leakage.

8. Installation should be conducted after turning off the power supply.

⚠Caution

1. Install the IZS4□ 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 elimination and therefore result in a decrease in efficiency.



Unit: mm

Series IZS40/41/42
Specific Product Precautions 2

Be sure to read this before handling.

Mounting

⚠Caution

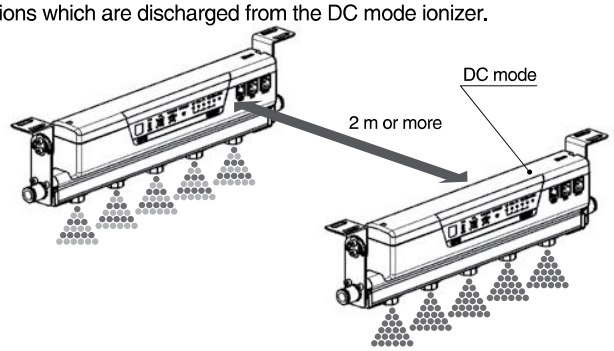
2. After installation, be sure to verify the effects of static electricity elimination.

The effects vary depending on the ambient conditions, operating conditions, etc. After installation, verify the effects of static electricity elimination.

3. When installing the IZS41 or IZS42 in proximity with an ionizer which operates in DC mode, they should be positioned at least 2 meters away from each other.

When using the IZS41 or IZS42 near the ionizer in DC mode, keep clearance of at least 2 m between them.

Ion balance may not be adjusted by the internal sensor due to the ions which are discharged from the DC mode ionizer.



Wiring/Piping

⚠Warning

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

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

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

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

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

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

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

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

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

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

Wiring/Piping

⚠Warning

11. Transition wiring of ionizer

For transition wiring of ionizers, use a transition wiring cable for connection between ionizers. Use a power supply cable for connection between ionizer and power supply or external equipment. (Transition wiring is not possible with the IZS40.) The number of ionizers that may be connected using transition wiring varies depending on the power supply cable; the length of the transition wiring cable; the use of external sensor(s) and/or models. Refer to the table shown below "Connectable number of ionizers with transition wiring".

The IZS41 and IZS42 can be connected in the same transition wiring, but mixed wiring of the NPN and PNP I/O specifications is not possible. Please contact SMC when connecting conditions other than specified in the table below are applied.

Connectable number of ionizers (IZS41) with transition wiring (without external sensor)

Bar length symbol	Power supply cable length: 3 m										Power supply cable length: 10 m									
	Transition wiring cable length (same cable length) m										Transition wiring cable length (same cable length) m									
	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
340																				
400												7 units	6 units							
460				7 units																
580											8 units									
640																				
820	8 units					5 units			4 units				5 units				4 units			
1120				6 units																
1300												6 units								
1600			7 units																	
1900											7 units									
2320																			3 units	
2500																				

Connectable number of ionizers (IZS42) with transition wiring (without external sensor)

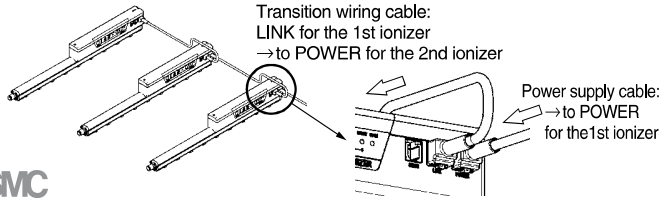
Bar length symbol	Power supply cable length: 3 m										Power supply cable length: 10 m									
	Transition wiring cable length (same cable length) m										Transition wiring cable length (same cable length) m									
	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
340																				
400																				
460																				
580																				
640																				
820		5 units					4 units				5 units		4 units				3 units			
1120																				
1300																				
1600																				
1900																				
2320									3 units											
2500																				

It is recommended that the power supply used to operate the ionizers have a current capacity twice that of the total current consumption of the ionizers to be used. Power supply voltage should be from 24 to 26.4 VDC.

AC adapter must not be used when ionizer is used in a transition wiring.

When ionizers are connected with transition wiring, the same input signal serves as input to all the ionizers. When a signal is output from at least one ionizer in the connection, the signal will be output from the power supply cable.

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



SMC

Series IZS40/41/42
Specific Product Precautions 3

Be sure to read this before handling.

Operating Environment/Storage Environment

⚠Warning

1. Observe the fluid temperature and ambient temperature range.

Fluid temperature and ambient temperature ranges are; 32 to 104°F (0 to 40°C) for ionizer, 32 to 122°F (0 to 50°C) for feedback sensor and auto balance sensor (high accuracy type), 0 to 40°C for AC adapter, and 32 to 113°F (0 to 45°C) for remote controller. Do not use the sensor in locations where the temperature may change suddenly even if the ambient temperature range is within the specified limits, resulting in condensation.

2. Do not use this product in an enclosed space.

This product utilizes a corona discharge phenomenon. Do not use the product in an enclosed space as ozone and nitrogen oxides exist in such places, even though in marginal quantities.

3. Environments to avoid

Avoid using and storing this product in the following environments since they may cause damage to this product.

a. Avoid using in a place that exceeds an ambient temperature range.
b. Avoid using in a place that exceeds an ambient humidity range.
c. Avoid using in a place where condensation occurs due to a drastic temperature change.
d. Avoid using in a place in the presence of corrosive or explosive gas or where there is a volatile combustible.
e. Avoid using in an atmosphere where there are particles, conductive iron powders, oil mist, salt, solvent, blown dust, cutting oil (water, liquid), etc.
f. Avoid using in a place where ventilated air from an air conditioner is directly applied to the product.
g. Avoid using in a closed place without ventilation.
h. Avoid using in direct sunlight or radiated heat.
i. Avoid using in a place where there is a strong magnetic noise (strong electric field, strong magnetic field, or surge).
j. Avoid using in a place where static electricity is discharged to the body.
k. Avoid using in a place where 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.

4. Do not use an air containing mist or dust.

The air containing mist or dust will cause the performance to decrease and shorten the maintenance cycle.
Install a dryer (IDF series), air filter (AF/AFF series), and/or mist separator (AFM/AM series) to obtain clean compressed air (air quality of Class 2.6.3 or higher according to ISO 8573-1: 2001 is recommended for operation).

5. Ionizer, feedback sensor, auto balance sensor, remote controller, and AC adapter are not resistant to lightening surge.

Maintenance

⚠Warning

1. Periodically inspect the ionizer and clean the electrode needles.

Periodically inspect the electrostatic sensor to check if it is operated while being out of order. Only a person having an adequate knowledge and experience about the system is allowed to inspect the sensor. If particles attach to the electrode needle by using for long periods of time, the static electricity eliminating performance will be lowered.
Replace the electrode cartridge, if the pins are rough and the static electricity eliminating performance does not return even after being cleaned.

⚠Danger High Voltage

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

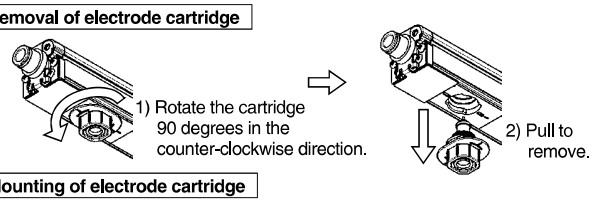
Maintenance

⚠Warning

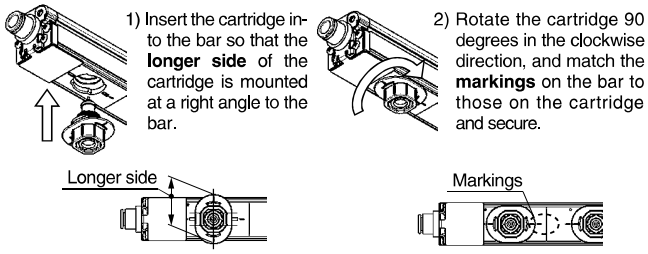
2. When cleaning the electrode needle or replacing the electrode cartridge, be sure to turn off the power supply or air supply to the body.

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

Removal of electrode cartridge



Mounting of electrode cartridge



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

4. Do not disassemble or modify this product.

Otherwise, an electrical shock, damage and/or a fire may occur. Also, the disassembled or 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

⚠Caution

1. Do not drop, bump or apply excessive impact (100 m/s² or more) while handling.

Even though it does not appear to be damaged, the internal parts may be damaged and cause a malfunction.

2. When installing the product, handle the product so that no moment is applied to the controller and the ends of the bar.

Handling the product by holding either end of the bar may cause damage to the product.

3. When mounting/dismounting the cable, use your finger to pinch the claw of the plug, then attach/detach it correctly.

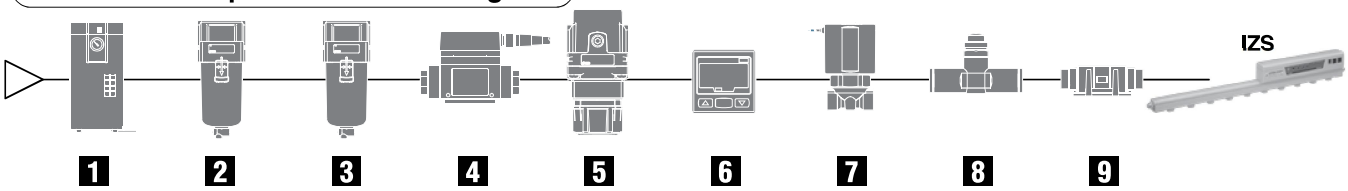
If the modular plug is at a difficult angle to attach/detach, the jack's mounting section may be damaged and cause a disorder.

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.

Best Pneumatics No.5

2 Air Filter/Series AF

Eliminates solid foreign matter such as powder particles in the compressed air.

Best Pneumatics No.5

3 Mist Separator/Series AFM

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

Best Pneumatics No.5

4 Digital Flow Switch/Series PF2A

Decreases the air consumption by flow control.

Best Pneumatics No.6

2-Color Display Digital Flow Switch/Series PFM

Best Pneumatics No.6

5 Regulator/Series AR

Decreases the air consumption by setting to an appropriate pressure.

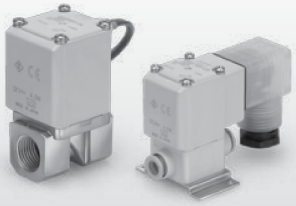
Best Pneumatics No.5

6 Digital Pressure Switch/Series ISE30A

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

Best Pneumatics No.6

7 2 Port Solenoid Valve/Series VX



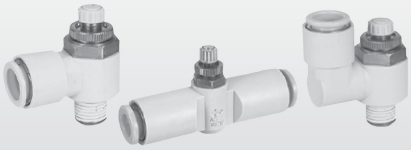
Best Pneumatics No.7

Pilot Type 2 Port Solenoid Valve for Dry Air/Series VQ

Best Pneumatics No.7

8 Restrictor/Series AS-X214

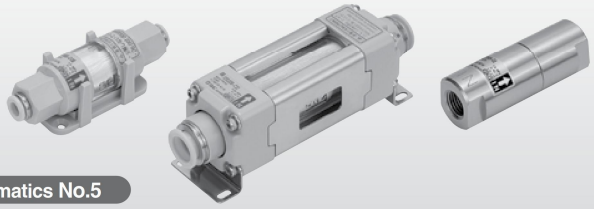
Regulates to the appropriate air volume depending upon the installation condition.
Decreases the air consumption.



Best Pneumatics No.6

9 Clean Air Filter/Series SFD

Built-in capillary element nominal filtration rating: 0.01 μm
Hollow fiber elements with over 99.99% filtering efficiency do not contaminate work pieces.



Best Pneumatics No.5