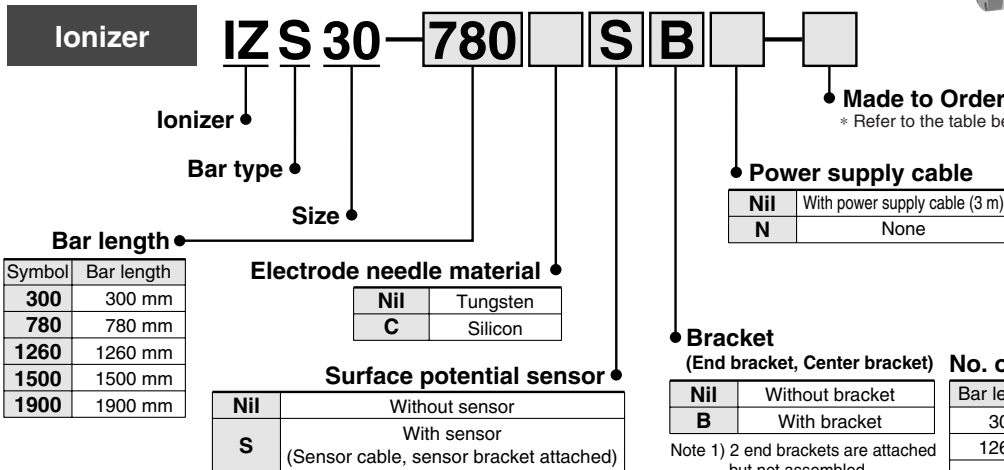


Ionizer / with surface potential sensor

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 1) 2 end brackets are attached but not assembled.

Note 2) The number of center brackets differ depending on the bar length. (Refer to the right table.)

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

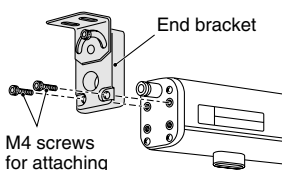
- Electrode needle material:
- Tungsten / IZS30-NT
 - Silicon / IZS30-NC



Electrode needle cleaning kit / IZS30-M2

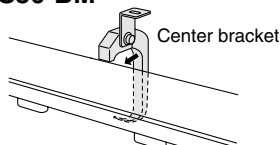


End bracket / IZS30-BE



M4 screws for attaching

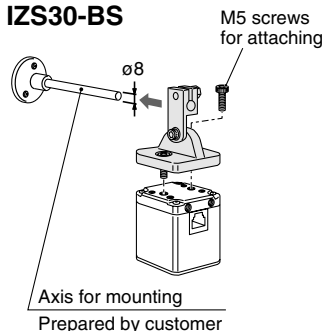
Center bracket / IZS30-BM



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



Axis for mounting Prepared by customer

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 <small>Note 1)</small>		±30 V or less				
Air purge	Operating fluid	Air (clean and dry)				
	Air supply flow rate <small>Note 2)</small>	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	100 mA or less				
	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	FET (open drain), 28 V DC, 100 mA or less				
	Sensor irregularity					
	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

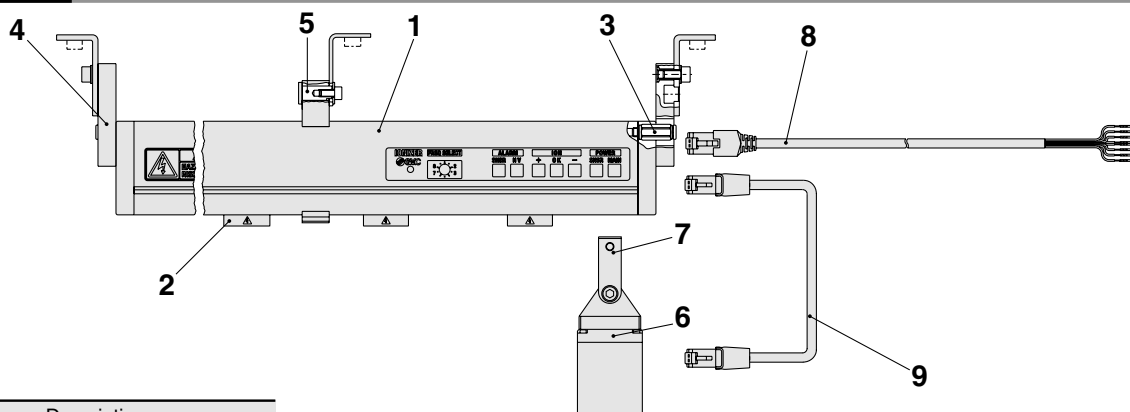
Note 1) In case where air purge is performed between a charged object and an ionizer at a distance of 300 mm.

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.

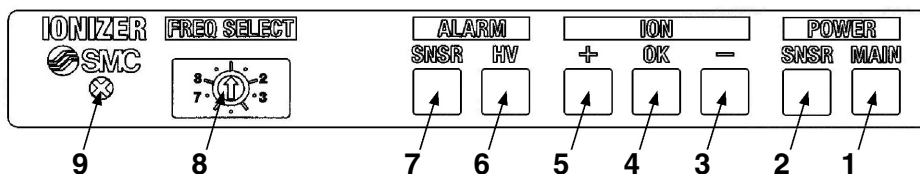
Applied Voltage Waveform Image

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

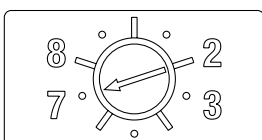
2. Output Signal

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

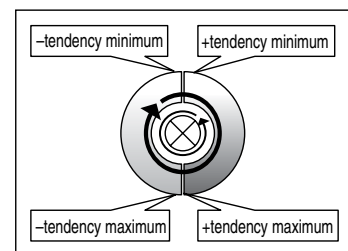
When the pulse DC mode is set, the ion balance may change depending on the installation condition. Therefore, adjustment with the ion balance adjustment trimmer may be required.

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

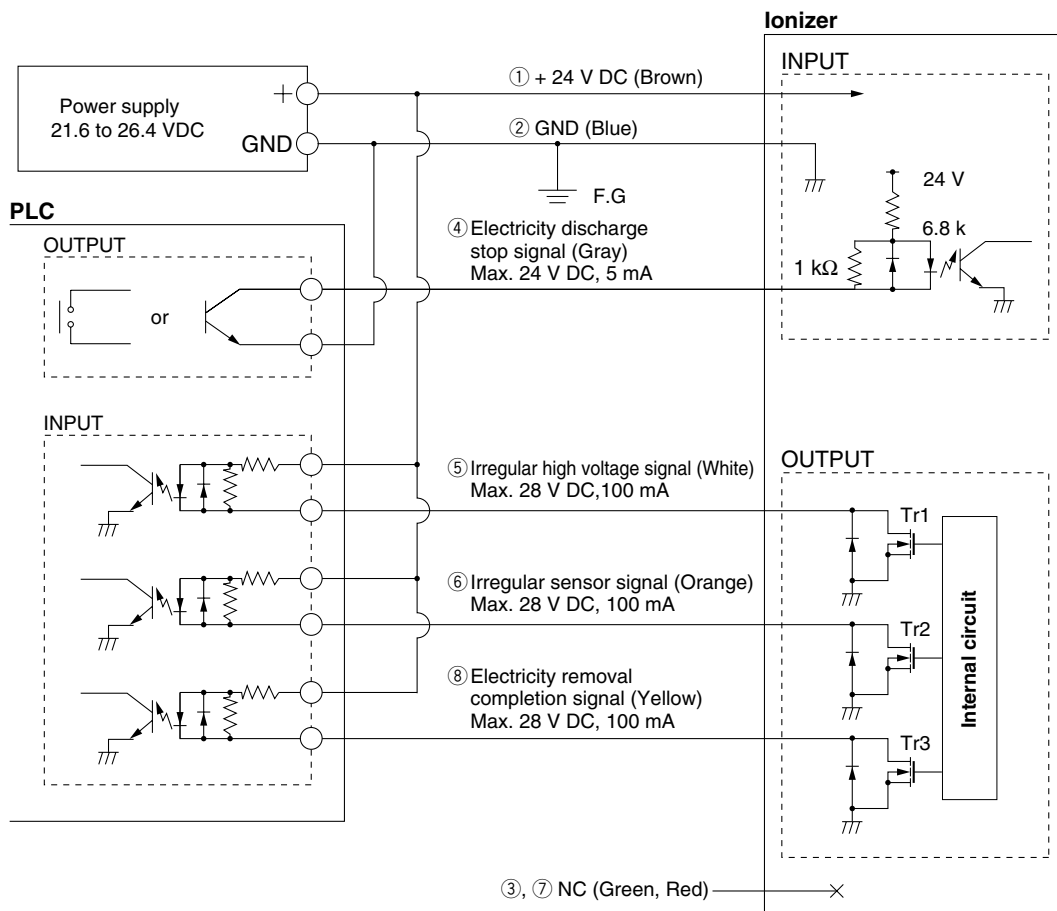
No.	Lead wire color	Contents	Functions
1	Brown	21.6 to 26.4 V DC	Power supply DC +24V
2	Blue	GND	Power supply 0 V. Be sure to ground it according to class D.
3	Green	NC	—
4	Gray	Electricity discharge stop signal	Connect with 0 V during operation. Stop electricity discharge when the terminal is turned 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)



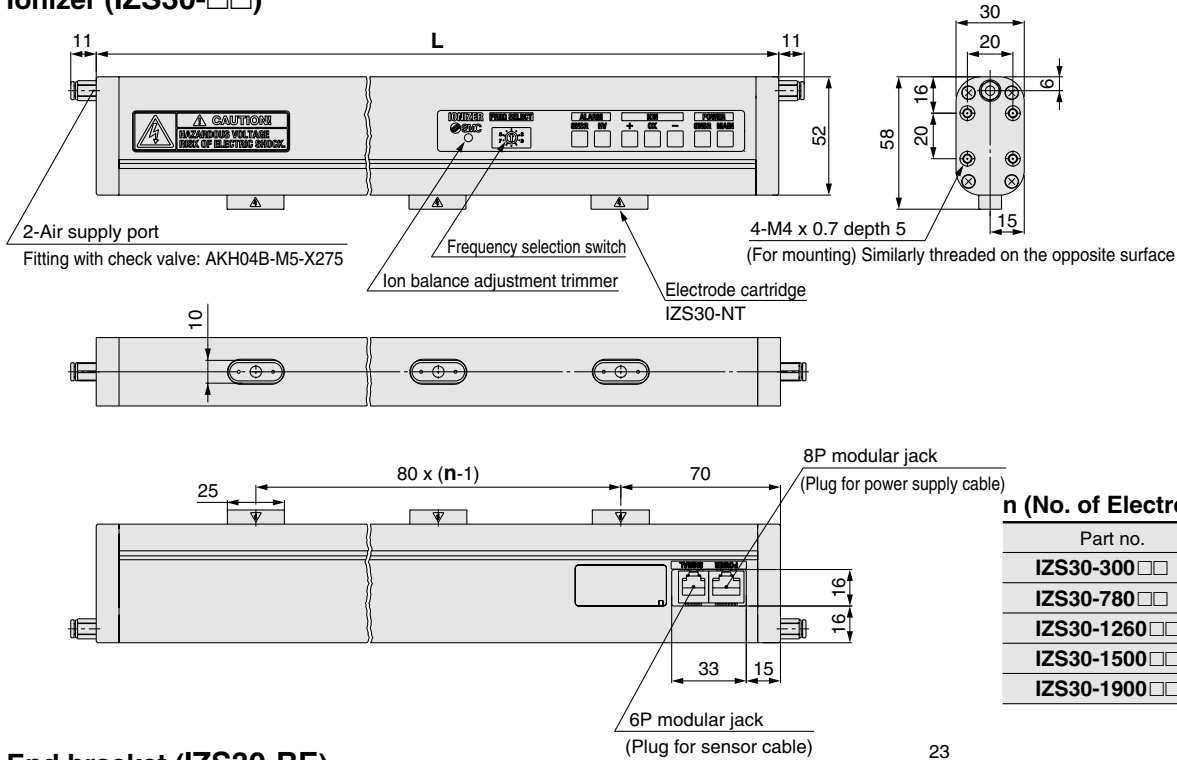
Note 1) (): Lead wire coverage color of the dedicated cable.

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.

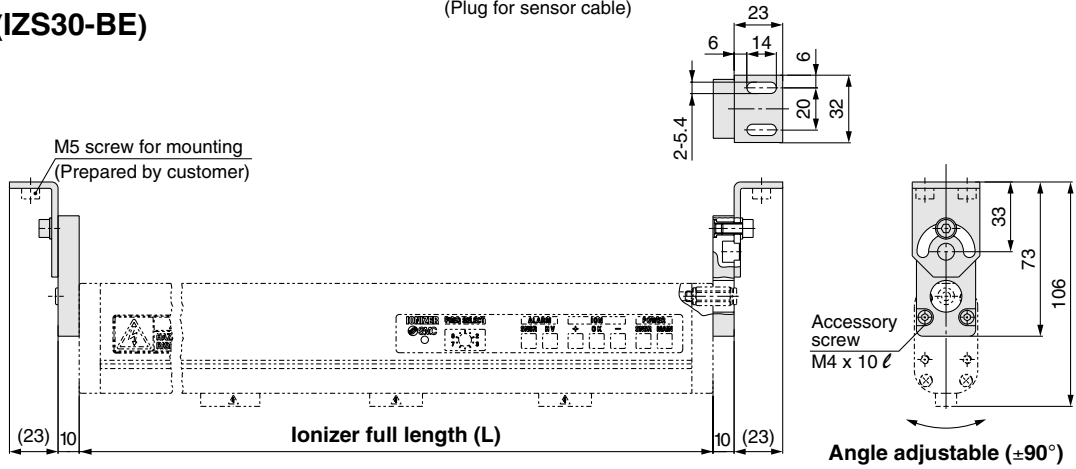
Note 3) Lead wires 6 (Irregular sensor signal) & 8 (Electricity removal completion signal) will only provide a signal when the surface potential sensor is used.

Dimensions

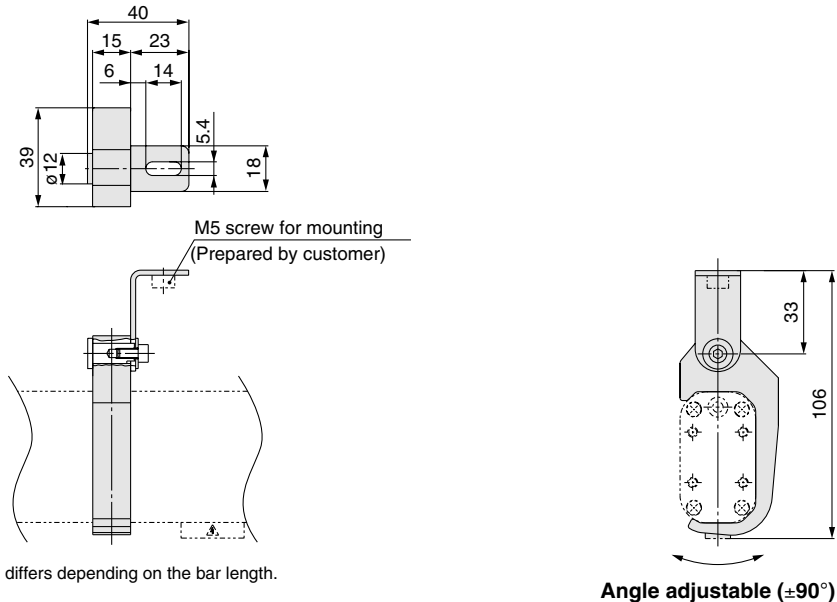
Ionizer (IZS30-□□)



End bracket (IZS30-BE)



Center bracket (IZS30-BM)

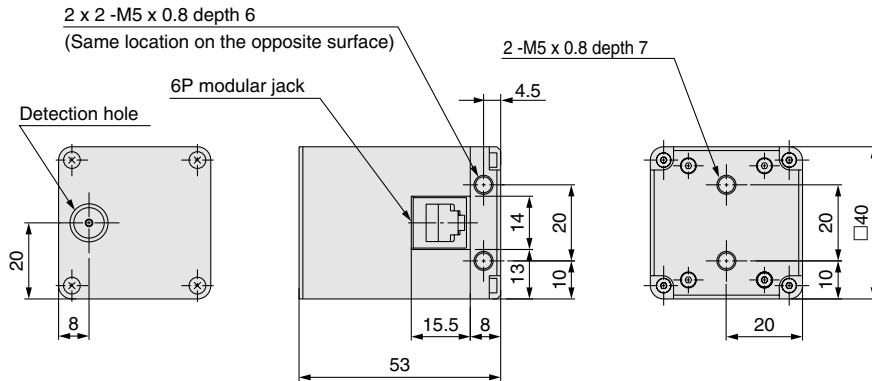


Note) The number of center brackets to be attached differs depending on the bar length.
(Refer to "How to Order" on page 3.)

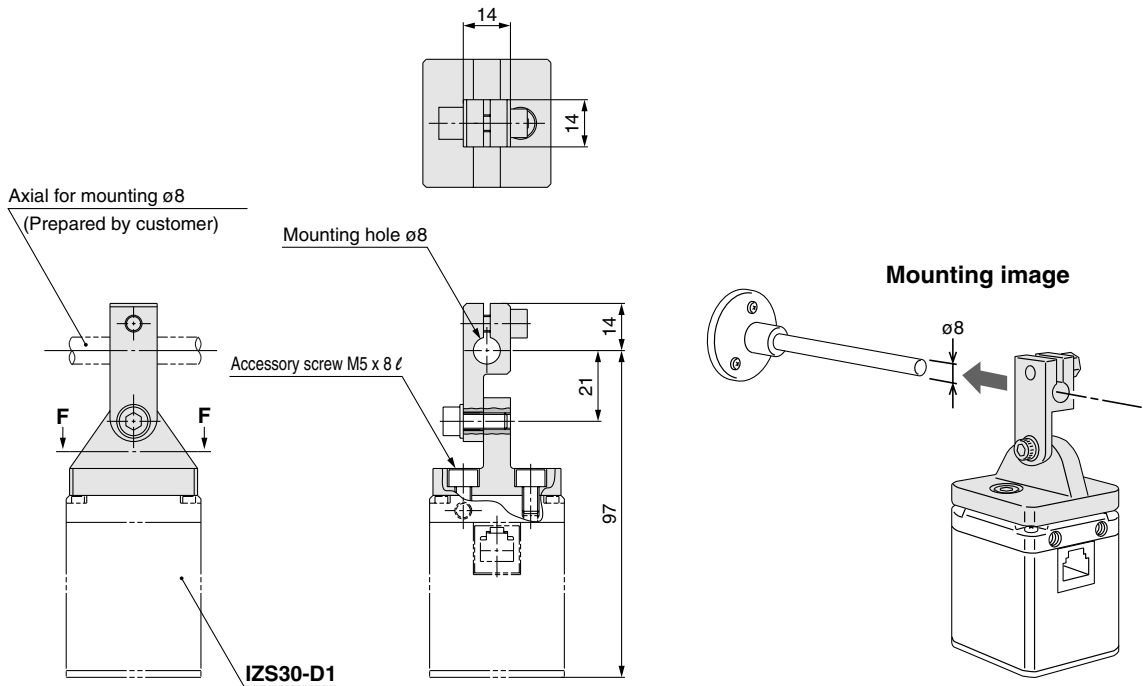
Series IZS30

Dimensions

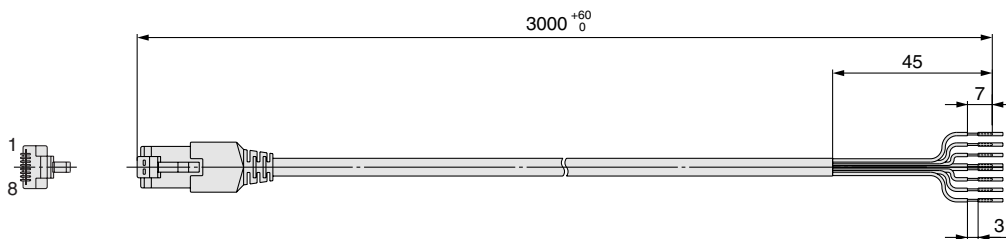
Surface potential sensor (IZS30-D1)



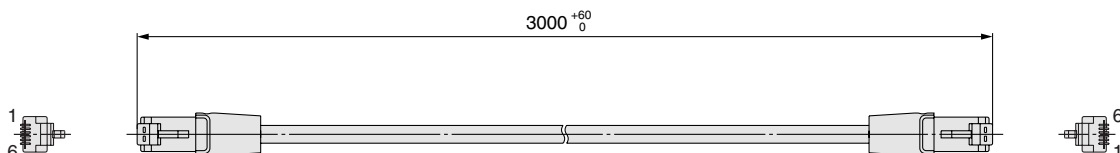
Sensor bracket (IZS30-BS)



Power supply cable (IZS30-CP)



Sensor cable (IZS30-CS)



Series IZS Made to Order

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

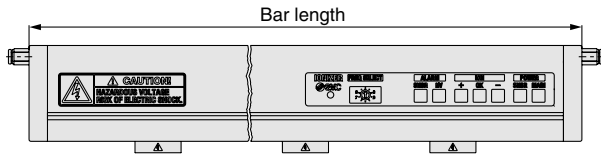


1 Non-standard bar length compliant (80 mm pitch)

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

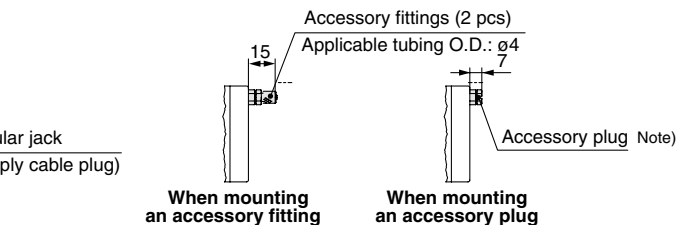
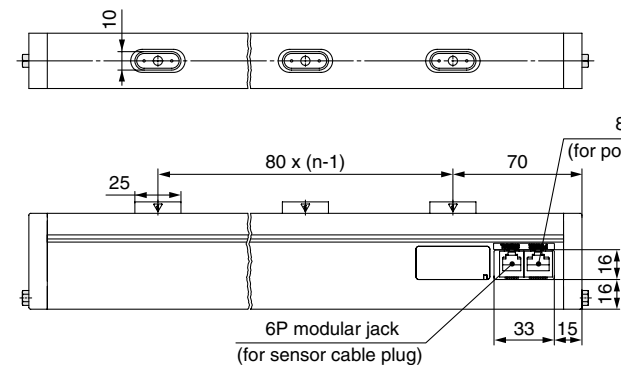
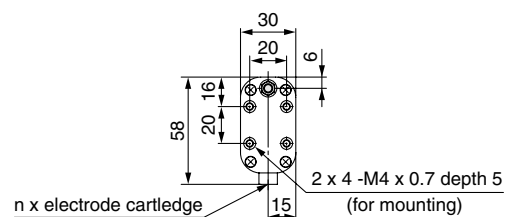
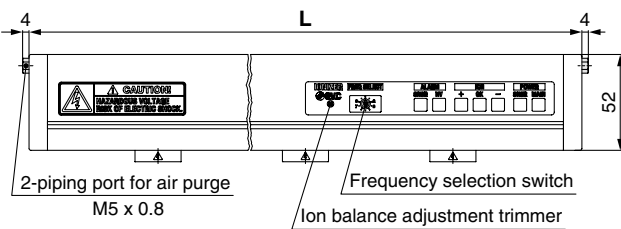
Changing the fitting with check valve to a hose nipple, resulting in reduced particle generation from the one-touch fitting with a check valve.

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

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

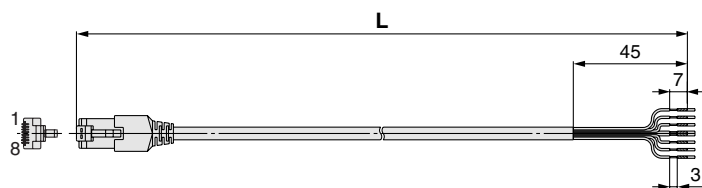
* Refer to page 7, "Power Supply Cable, Wiring Table" for wiring diagrams.

How to Order

IZS30-CP **M** -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