



Operation Manual

PRODUCT NAME

Separate Controller Ionizer / Slim Bar Type

MODEL / Series / Product Number

IZT44 series

SMC Corporation

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Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “**Caution**,” “**Warning**” or “**Danger**.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)^{*)}, and other safety regulations.

*) ISO 4414: Pneumatic fluid power - General rules and safety requirements for systems and their components
ISO 4413: Hydraulic fluid power - General rules and safety requirements for systems and their components
IEC 60204-1: Safety of machinery - Electrical equipment of machines - Part 1: General requirements
ISO 10218-1: Robots and robotic devices - Safety requirements for industrial robots - Part 1: Robots
etc.

	Danger	Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.
	Warning	Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
	Caution	Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

Warning	
1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.	
Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.	
2. Only personnel with appropriate training should operate machinery and equipment.	
The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.	
3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.	
1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.	
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.	
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.	
4. Our products cannot be used beyond their specifications. Our products are not developed, designed, and manufactured to be used under the following conditions or environments. Use under such conditions or environments is not covered.	
1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.	
2. Use for nuclear power, railways, aviation, space equipment, ships, vehicles, military application, equipment affecting human life, body, and property, fuel equipment, entertainment equipment, emergency shut-off circuits, press clutches, brake circuits, safety equipment, etc., and use for applications that do not conform to standard specifications such as catalogs and operation manuals.	
3. Use for interlock circuits, except for use with double interlock such as installing a mechanical protection function in case of failure. Please periodically inspect the product to confirm that the product is operating properly.	



Safety Instructions

Caution

We develop, design, and manufacture our products to be used for automatic control equipment, and provide them for peaceful use in manufacturing industries.

Use in non-manufacturing industries is not covered.

Products we manufacture and sell cannot be used for the purpose of transactions or certification specified in the Measurement Act.

The new Measurement Act prohibits use of any unit other than SI units in Japan.

Limited warranty and Disclaimer/Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”. Read and accept them before using the product.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.*2)

Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.

2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.

This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.

3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

***2) Vacuum pads are excluded from this 1 year warranty.**

A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.

Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.

2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.



Limitations of Use

Selection

Warning

1) This product is intended for use in general factory automation equipment.

- If considering using the product for other applications (especially those indicated in (4) on page 3), please consult SMC beforehand.

2) Use within the specified voltage and temperature range.

- Operation with a voltage other than that specified can cause malfunction, damage to the product, electric shock or fire.

3) Use clean compressed air as fluid. (Air quality Class 2.4.3, 2.5.3, 2.6.3 or higher according to ISO 8573-1: 2012 is recommended.)

- Never use flammable gas or an explosive gas as a fluid and never use this product in the presence of such gases.
- This may lead to fire or explosion. Please contact SMC if using for fluids other than compressed air.

4) This product is not designed to be explosion proof.

- Never use in an atmosphere of potentially explosive dust, flammable gas or explosive gas. Fire or an explosion can result.

Caution

1) Clean room specification is not available.

- When using in a clean room environment, confirm the required cleanliness before use.
- Fine particles are generated due to wear of emitters and motor sliding during operation.

Mounting

Warning

1) Reserve an enough space for maintenance and wiring.

- Please take into consideration that the connectors, need enough space for it to be easily attached/detached.
- To avoid unreasonable stress applied to the connector mounting parts, bending of the cable should be more than the minimum bending radius.
- If the cable is bent in an acute angle or load is applied to the cable repeatedly, it may cause malfunction, wire damage or fire.

Minimum bending radius: Power supply cable : 40mm, High voltage cable : 30mm

NOTE: This is an allowable bend radius at 20°C. Bend radius should be larger at lower than 20°C.

2) Wiring high voltage cable

- Use specified cable holder (IZT40-E1 or IZT40-E2) for installing high voltage cables.
- Follow the items below when installing high voltage cables. If items below are not followed, insulation performance of high voltage cable decreases, causing the failure of this product, leading to electrical shock or fire.
 - a. Do not cut the cable.
 - b. Keep the minimum bend radius of the cable.
 - c. Do not tighten the cable too much by tying band. Do not deform the cable by placing object on the cable.
 - d. Avoid the factor of cable runaway such as cable duct.
 - e. Do not twist or damage to the cable. If the cable is damaged, it should be replaced.

3) Fix the high voltage cable connector using 2 screws included in accessory.

- Fix the connector using 2 cross recessed pan head screws (M4 x10) referring to Table 1.

4) Mount to the flat surface and do not apply impact load or excessive external force.

- Mounting on an uneven surface will apply excessive force to the housing and bracket, which may lead to damage or failure.
- Do not drop or apply excessive shock. Otherwise, damage or an accident may occur.

5) Install the product so that the bar does not have an excessive deflection.

- For a bar length of 740mm or longer, support the bar at both ends and in the middle by using brackets. If the bar is held only at the both ends, self-weight of the bar causes deflection, resulting in damage or deformation to the bar.

6) Avoid using in a place where noise (electromagnetic wave and surge) is generated.

- If the product is used in an environment where noise is generated, it may lead to malfunction or deterioration or damage of the internal elements.
- When the presence of noise is suspected, take preventive measures against noise and avoid the crossing wires such as power line and high voltage line.

7) Tighten the screws to the specified torque.

- If the screws are tightened in excess of the specified torque range, it may damage the mounting screws or mounted areas.
- If the tightening torque is insufficient, the mounting screws and brackets may become loose.

Table1. Reference of tightening torque

Parts	Product No.	Connection	Screw	Tightening torque	Note
DIN rail mounting bracket	IZT44-B1	Controller with high voltage power supply	M4x6 4pcs.	1.30 to 1.50Nm	DIN rail mounting bracket
		DIN rail	M4x6 2pcs.	1.30 to 1.50Nm	Install to DIN rail
High voltage cable (Controller side)	IZTB44	Controller with high voltage power supply	M4x10 2pcs.	0.49 to 0.53Nm	High voltage cable installation
High voltage cables (Bar side)	IZT43-A002	Bar	M3x6 1pc.	0.30 to 0.40Nm	High voltage cable installation
Cable holder	IZT40-E□	Location	M4x8 (Recommended) 2pcs.	0.19 to 0.20Nm	Wiring High voltage cable

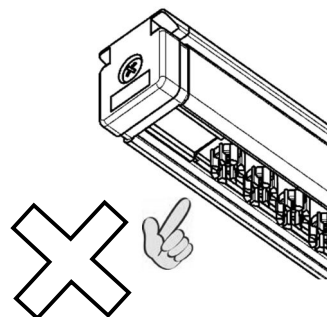
8) Do not directly touch the emitters.

- Do not directly touch the emitter with your finger. If the needle sticks to your finger, or electrical shock makes an instantaneous rapid body motion to escape from the shock, causing injury.
- If emitter or cartridge is damaged by tools, etc., it may interfere with the specified function and performance, and may also cause operation failure and accident.



High voltage caution

The emitter carries high voltage. If foreign matter is inserted or human body touches the emitter, electrical shock or instantaneous reaction of body to escape from the shock, causing injury.



9) Do not affix any tape or labels to the controller or bar.

- If the tape or label 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, causing malfunction, breakage, electric shock or fire.

10) Be sure to remove power supply to the controller and bar before starting the product installation.

- If installation or adjustment is performed being supplied with power, electric shock, failure or injury can result.

11) Do not damage the cable or apply a heavy object or pinch the cable. Avoid repeatedly bending or stretching the cable.

- It may cause an electric shock, fire, or breaking of wire.

12) Do not carry this product by holding its cables.

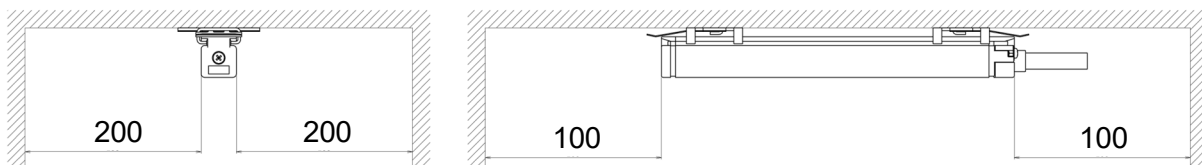
- It may cause an injury or damage to the product.

13) This product may cause interference if used in residential premises.

⚠ Caution

1) When installing this product, provide the space shown in the figure below from a wall or structure.

- If there are electrically conductive objects such as walls or structures close to the bar, generated ions may not reach the target object effectively or product failure or electric shock can result due to dielectric or short-circuit.



Unit : mm

2) After installation, verify the performance of this product.

- The performance of the product varies depending on the surrounding installation and operating conditions. After installation, verify the performance of this product.

3) Use specified brackets for fixing.

- If use a bracket other than specified bracket, the functions of this product may not operate normally.

Electrical Connection

Warning

- 1) Before wiring, ensure that the power supply capacity meets the specification and that the voltage is within the specification. Product damage or malfunction can result.
- 2) To maintain product performance, the power supply should be UL Class 2 certified by National Electric Code (NEC) or evaluated as a limited power source according to UL60950.
- 3) To maintain the product performance, ground the product with an earth ground cable with a resistance of 100 Ω or less. If the product is not grounded, it is not possible to secure the performance and may lead to product failure or malfunction.
- 4) Wiring (including insertion and removal of the power supply connector) should never be carried out with the power supply ON. Otherwise, an electrical shock or accident may occur.
- 5) Use specified cable for connecting the controller and bar for this product. Do not disassemble or retrofit them. Disassembling or modifying the product may cause product, electric shock or fire. The product will not be guaranteed if it is disassembled and/or modified.
- 6) Ensure the safety of wiring and surrounding conditions before supplying power.
- 7) Do not connect or disconnect the connectors (including power source) while the power is supplied. Failure to follow this procedure may cause product malfunction.
- 8) If the power and high voltage cables are routed together, the product may malfunction due to noise. Route the Ionizer wires separately.
- 9) Confirm that the wiring is correct before operation. Incorrect wiring will lead to product damage or malfunction.

Operating / Storage Environment

Warning

- 1) **Operate the product in the specified fluid temperature range and ambient temperature range.**
 - Operating fluid temp. and ambient temp. range: Controller 0 to 40°C, bar 0 to 50°C, AC adapter 0 to 40°C.
 - Do not use the product 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 the corona discharge phenomenon. Do not use the product in an enclosed space as ozone and nitrogen oxides exist, even though in marginal quantities.
- 3) **Environments to avoid**
 - Never use or store under the following conditions. These may cause an electric shock, fire, etc.
 - a. Use in the environment which ambient temperature is out of the product specification.
 - b. Use in the environment which ambient humidity is out of the product specification.
 - c. Environment where abrupt temperature changes may cause condensation.
 - d. Environment where corrosive gas, flammable gas or other volatile flammable substances are stored.
 - e. Environment where the product may be exposed to conductive powder such as iron powder or dust, oil mist, salt, organic solvent, machining chips, particles or cutting oil (including water and any liquids), etc.
 - f. Paths of direct air flow, such as air conditioners.
 - g. Enclosed or poorly ventilated environment
 - h. Locations which are exposed to direct sunlight or heat radiation.
 - i. Areas where strong electromagnetic noise is generated, such as strong electrical and magnetic fields or supply voltage spikes.
 - j. Environment where static electricity is generated to the product.
 - k. Locations where strong high frequency is generated.
 - l. Locations which are subject to potential lightning strikes.
 - m. In an area where the product may receive direct impact or vibration.
 - n. Areas where the product may be subjected to forces or weight that could cause physical deformation.
- 4) **Controller, bar and AC adapter are not resistant to lightning surge.**

Maintenance / Check

Warning

1) Perform maintenance regularly and clean the emitters.

- Check regularly that the product is not operating with undetected failures.
- The maintenance must be carried out by an operator who has sufficient knowledge and experience.
- If the product is used for an extended period with dust present on the emitters, the product performance will be reduced.
- Perform neutralizing performance test and set maintenance cycle for periodic cleaning.
- Emitter contamination level is different depending on the installation environment.
- If the performance is not recovered after cleaning, it is possible that emitters are worn. Replace the bar.

2) Be sure to remove power supply to the controller bar before cleaning the emitter or replacing the bar.

- Never touch the emitter with the power supplied to the controller or bar. Electric shock may cause injury.
- Securely mount or remove the High voltage cable referencing the instructions shown "11. Maintenance".

3) Do not disassemble or modify the product.

- Disassembling or modifying the product may cause product, electric shock or fire. The product will not be guaranteed if it is disassembled and/or modified.

4) Do not operate the product with wet hands.

- Never operate the product with wet hands. It may cause electric shock or other accidents.



High voltage caution

- 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 product, as this can cause loss of product functionality, and there is also a risk of electric shock and earth leakage.

Handling

Caution

1) Do not apply excessive external force or shock (100m/s² or more) to the product

- Even if there are no problems with the appearance of the controller or bar, the damage of the internal components may cause malfunction.

2) Hold the ends and the middle of the bar so that moment load is not applied.

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

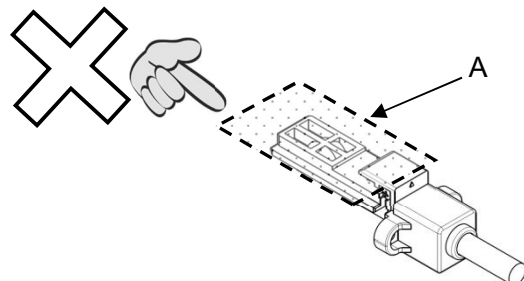
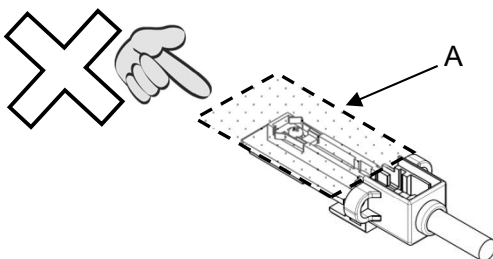
3) Power cable must be connected and disconnected by hand.

- Open and close too much may damage the drain cock.
- Hold the connector by hand and straightly pull it out.

4) If smoking, fire or smell occurs in the product, immediately shut off the power supply.

5) Do not touch the A part of the high voltage connector by hand. Be careful so that moisture or foreign matter does not adhere to the connector.

- Keep the high voltage connector free from contamination. Adhesion of oil or foreign matter on the A part may cause high voltage electric leakage.
- If moisture, oil, or foreign matter adheres to the A part, wipe it with ethanol.



High voltage connector

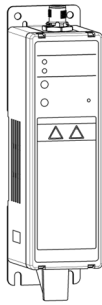
1. System construction

- IZT44 series consists of the bar (ion generator) and controller with High voltage power supply. It is necessary to combine each equipment.

Table2. IZT44 Table of combination

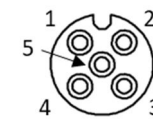
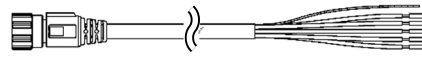
Series	Controller with High voltage power supply module	Ion generator (Bar)
IZT44	IZTC44	IZTB44

Controller for IZT44



IZTC44 - □□ / controller with High voltage power supply

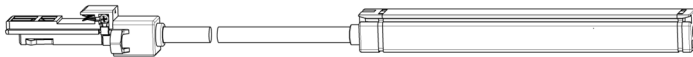
Power cable



Socket
A-coded
(Normal key)

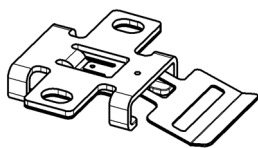
IZT44 - CP□ / Power cable

Bar (Ion generating part. Common to IZT44 and IZT45)

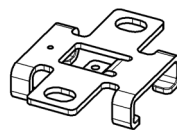


IZTB44 - □ - □ / Bar

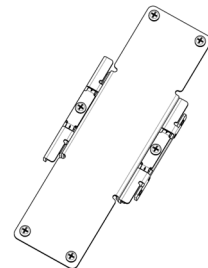
Bracket



IZT44-BE
End bracket

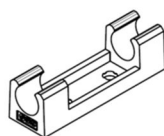


IZT44-BM
Intermediate bracket

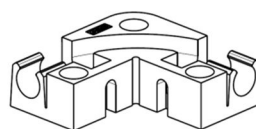


IZT44-B1
DIN rail mounting bracket for controller with high voltage power supply

High voltage cable holder

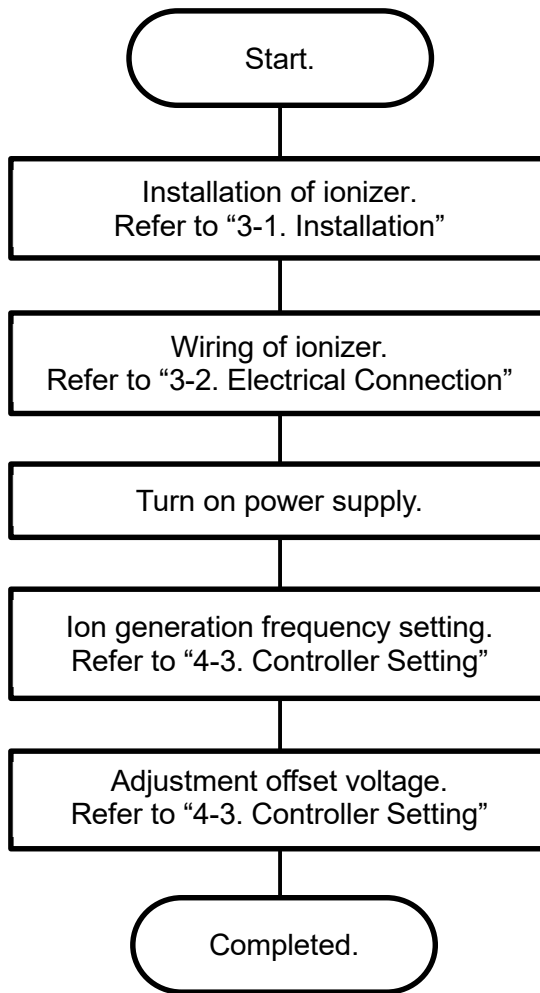


IZT40-E1
High voltage cable holder (Straight)



IZT40-E2
High voltage cable holder (Elbow)

2. Procedures to Operation



3. Installation and Electrical connection

- The performance of the product varies depending on the surrounding installation and operating conditions. It is recommended to investigate in advance any processes and parts where static electricity disturbances occur. Verify that the required conditions have been met in order to effectively remove static electricity before installation.
- After installation, verify the performance of this product.

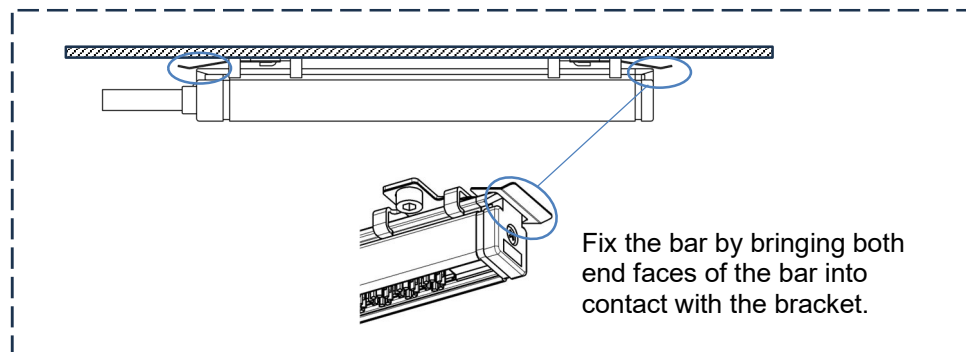
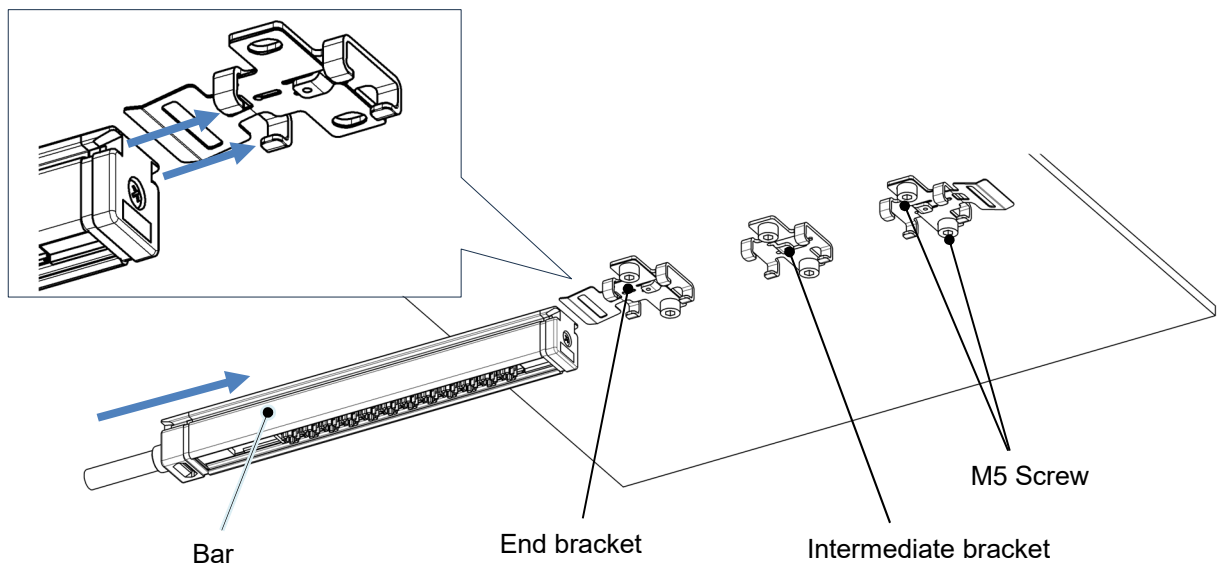
3-1. Installation

3-1-1. Precautions for Installation

- Be sure to stop power supply to the product before starting the product installation.
- Do not affix any tape or labels to the bar. Dielectric phenomenon may occur due to ions arising from such substances, resulting in electrostatic charging or electric leakage.

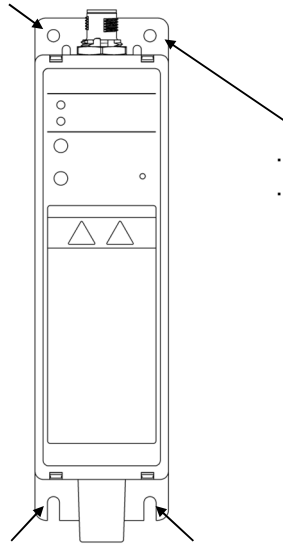
3-1-2. Installation of bracket for bar

- Fix the bracket to the specified position using M5 screws.
- Refer to "7. Outline Dimensions" for details. (The screws should be prepared by the user. Fixed part thickness 2mm, Recommended mounting screw is M5x8)
- Align the grooves on the bar with the end brackets and slide them into place.
- When using intermediate brackets (for bar lengths of 740 mm or longer), install them so that the distance between them and the end brackets on both ends is the same.
- Make sure that the bar is secured after sliding it to the prescribed position.



3-1-3. Installing the controller

- The controller with high-voltage power supply can be installed with screws or on a DIN rail using DIN rail mounting bracket.

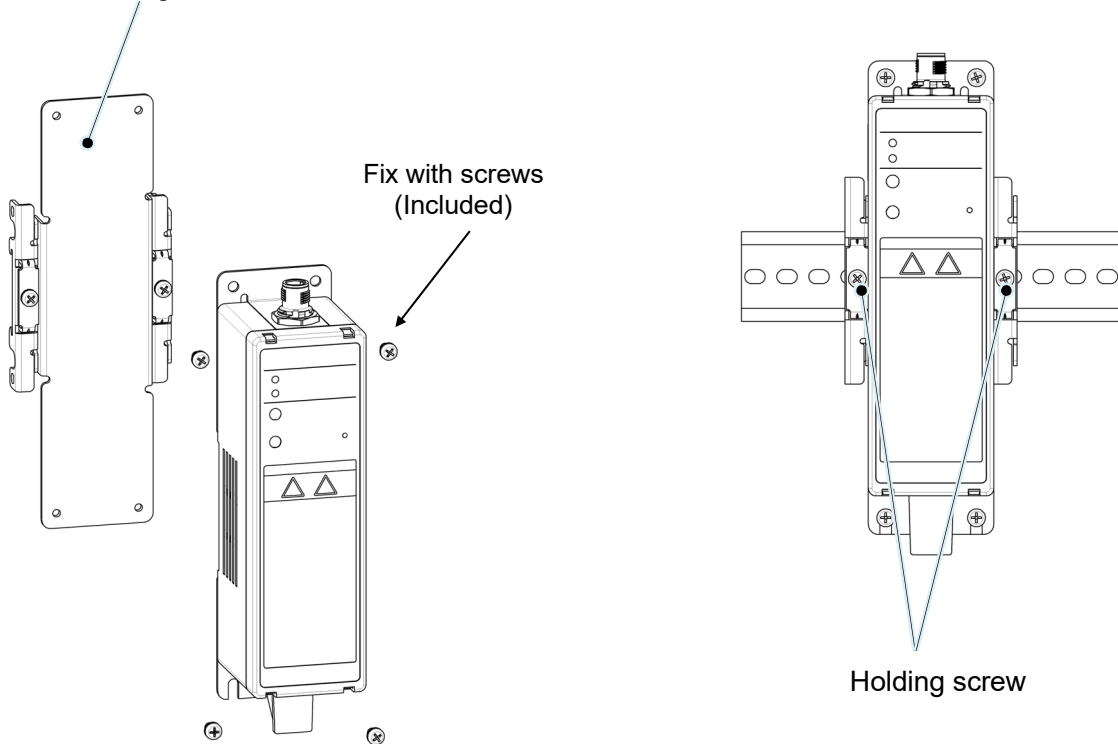


- Fixed part thickness 1.5mm.
- Recommended mounting screw is M4x6
(The screws should be prepared by the user.)

- Use an optional DIN rail mounting bracket.
- Attach the controller to the bracket with the screws provided.
- After installing the DIN rail mounting bracket, fix the bracket to the DIN rail using screws.

Tightening Torque: 1.30 to 1.50 Nm

IZT44-B1
DIN rail mounting bracket for controller



3-1-4. Routing of cables

- Do not apply excess stress to the mounting part of the connector.
- When the cable is bent, maintain the minimum bend radius.
Minimum bending radius Power supply cable : 40mm
High voltage cable: 30mm

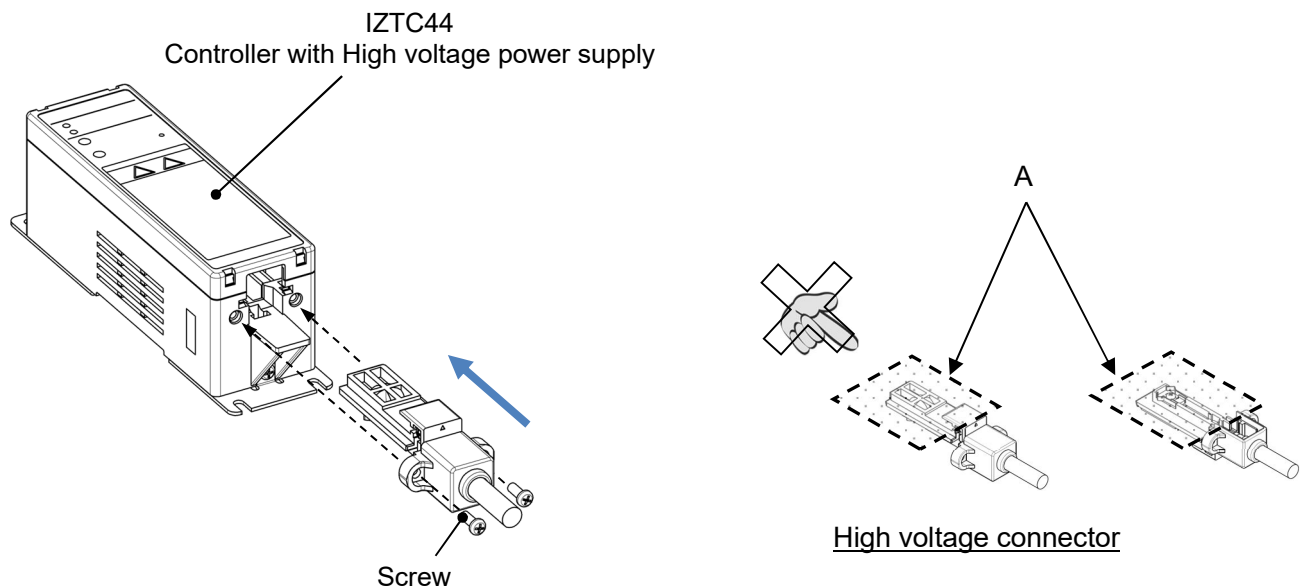
1) Power supply cable

- This cable supplies power to this product.
When removing the power supply cable, pull it out straight.
If mounted or removed in an inappropriate direction, the connector may be damaged and cause operation failure.
- Fix the cable around the connecting part so that stress is not applied to the connector.
- Connect the lead wires according to the wiring diagram. Unused wires should be cut short, or protected using insulation tape.

2) High voltage cable

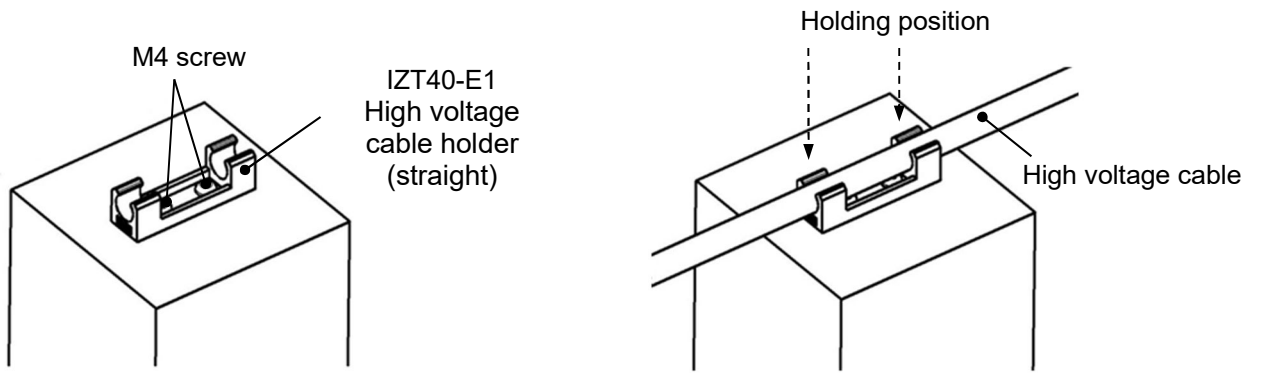
- Connect the connector of the high voltage cable to the IZT44 controller.
- When connecting and disconnecting the high voltage cable, hold the plugs together with the plug bodies, and insert or pull out straight. If mounted or removed in an inappropriate direction, the mounting part of the modular jack may be damaged and cause operation failure.
- Do not touch part A when handling the plug. Be careful so that moisture oil or foreign matter does not adhere to the plug. Adhesion of moisture, oil or foreign matter on part A may cause high voltage electric leakage. If they adheres to part A, wipe it with ethanol.
- After connecting the high voltage cable to the controller, fix the cable using 2 cross recessed pan head screws (M4x10) included with the product.

Tightening Torque: 0.49 to 0.53 Nm

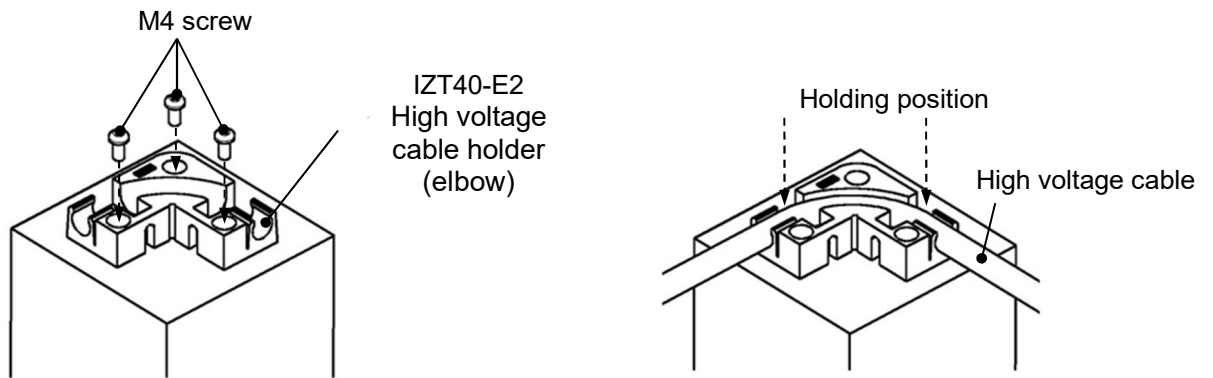


- When installing the high voltage cable, use the specified high voltage cable holder.
- For installation of the High voltage cable holder (straight), use 2 cross recessed pan head screws.
(The screws should be prepared by the user. Fixed part thickness 1.6mm, Recommended mounting screw is cross recessed pan head screw M4x6)
- For installation of the High voltage cable holder (elbow), use 3 cross recessed pan head screws.
(The screws should be prepared by the user. Fixed part thickness 3.8mm, Recommended mounting screw is cross recessed pan head screw M4x8)
- When they are used in layers, select the screw length considering the thickness of the high voltage cable holder (14.8 mm/holder).
- When holding the high voltage cable to the cable holder, align the cable in the holding position and mount it by pressing the cable.

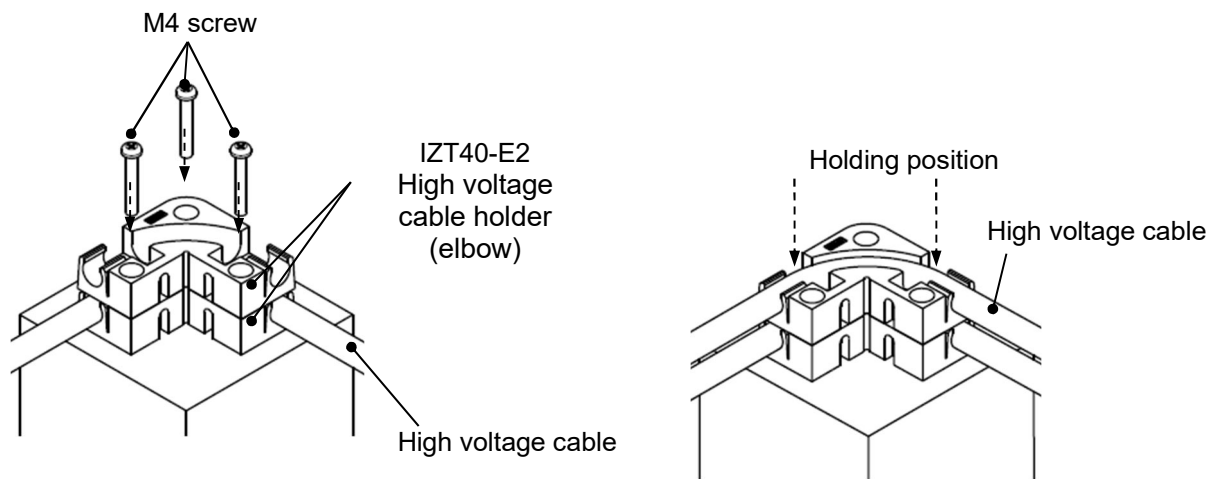
Tightening torque: 0.19 to 0.21 Nm



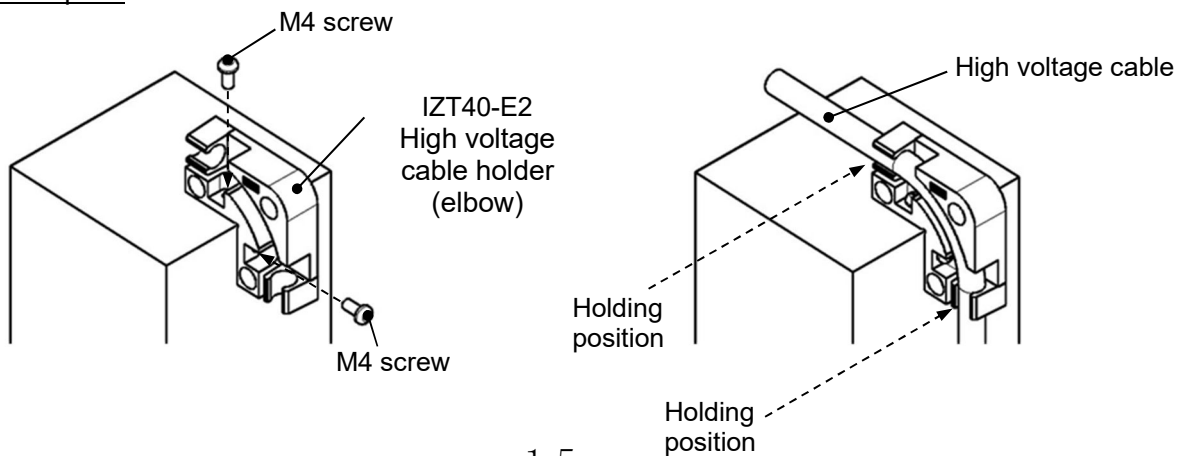
Installation example 1



Installation example 2



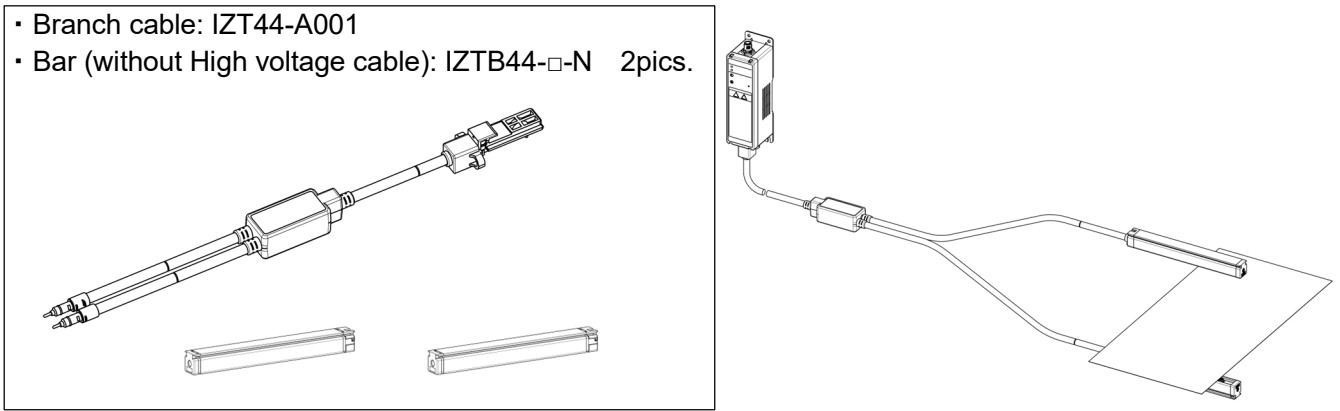
Installation example 3



3-1-5. Bar branch wiring

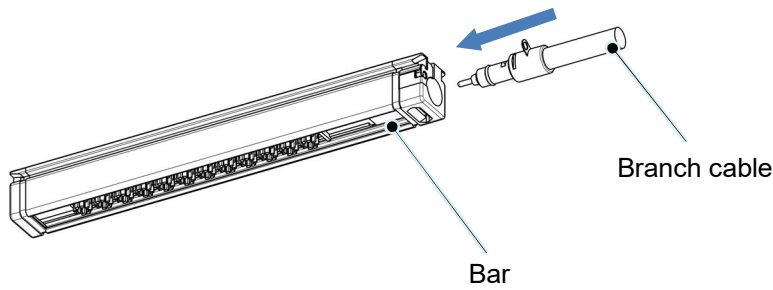
- By using branch cables, two bars can be connected to one controller.
- When using this product, please select the following combination.

- Branch cable: IZT44-A001
- Bar (without High voltage cable): IZTB44-□-N 2pics.



Assembly procedure

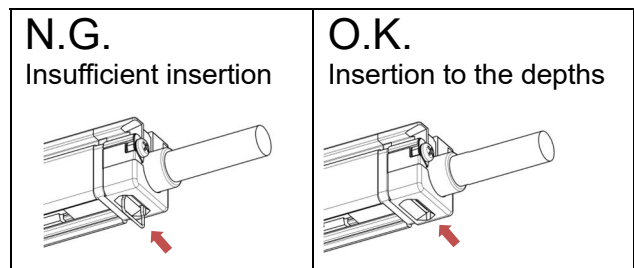
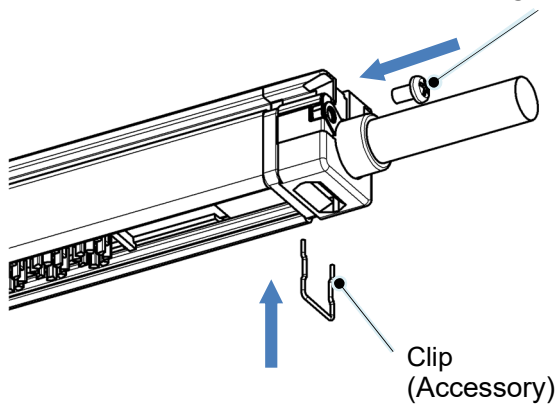
(1) Insert the branch cable into each bar.



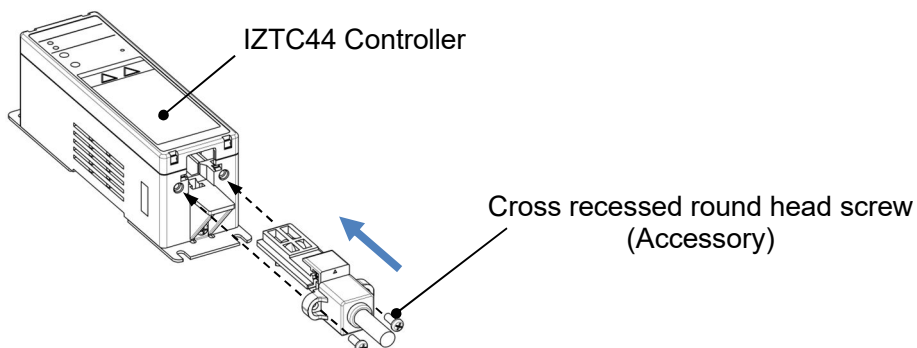
(2) Fasten with clip and screw. Insert the clip firmly all the way to the back to prevent it from falling out.

Cross recessed head machine screw (Accessory)

Tightening torque 0.3 to 0.4Nm



(3) Install the bar and insert the branch cable into the controller and fix it with screw.



3-2. Electrical connection

- Wire power cables according to the wiring diagram and table.
- Do not apply excess stress to the mounting part of the controller connector.
- When the power supply cable is bent, maintain the minimum bend radius. Minimum bend radius: 40 mm
- Unused wires should be cut short, or protection using insulation tape.

3-2-1. Ground the F.G. cable

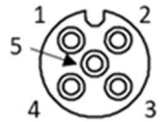
- Make sure to ground the F.G. cable with a ground resistance of 100Ω or less.
- The F.G. cable is used as a reference electric potential for static neutralization (Functional earth). If the F.G. cable is not grounded, an optimal ion balance cannot be obtained, and it may damage this product and power supply.

3-2-2. Grounding at DC mode

- When an ionizer is used in DC mode, make sure to ground the F.G. cable (green) and DC(-) cable (blue) of the input power supply with a resistance of 100 ohms or less. Without grounding the DC(-) cable, the ionizers and/or power supply may be damaged.

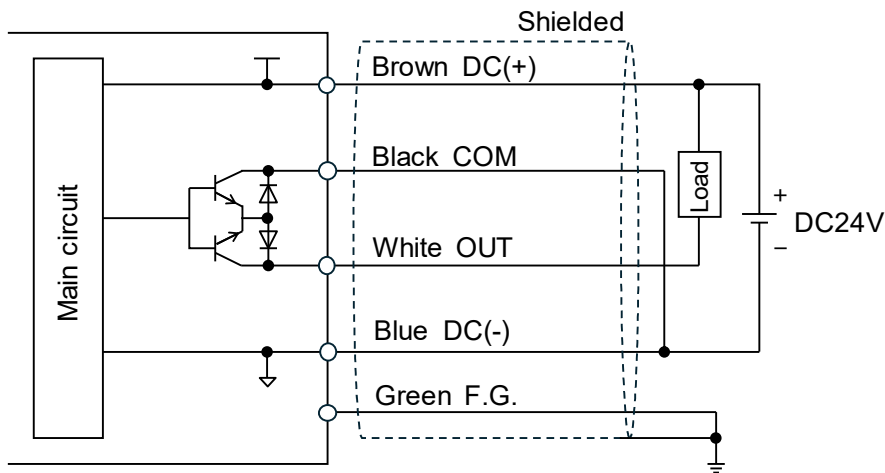
Table.3 IZT44 Wiring table (NPN / PNP can be selected by common wiring.)

No.	Cable color	Signal	Description
1	Brown	DC(+)	Connect the power supply to operate the ionizer.
2	Blue	DC(-)	
3	Green	F.G.	Frame ground.
4	Black	COM	Common terminal for error signal. NPN output: Connected to 0V (Negative common) PNP output: Connected to DC+24V (Positive common)
5	White	OUT (B contact)	Error signal. OFF when there is problem.

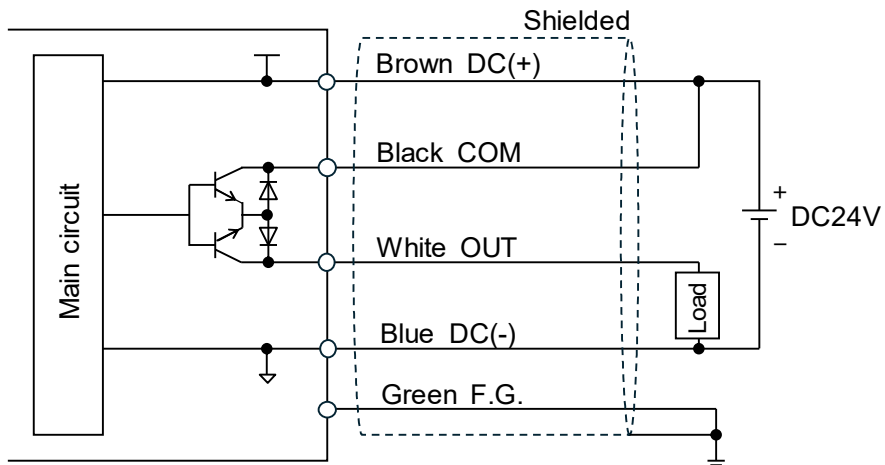


Connector
Pin No.

NPN output

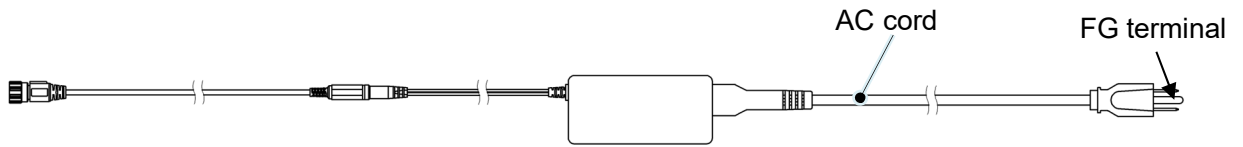


PNP output



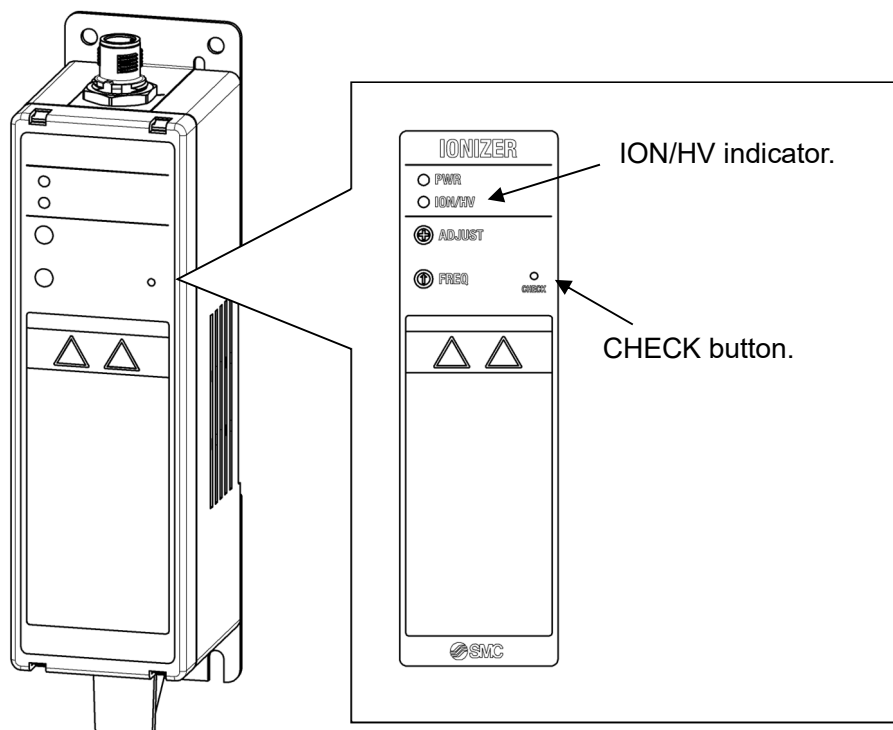
3-2-3. Connecting of the AC adapter

- Perform F.G. wiring with the ground terminal (F.G.) of the AC cord when AC adapter is used. If the AC cord is plugged in, plug it into a grounded outlets with less than $100\ \Omega$. Use an AC cord with ground terminal, if it is prepared by the user.
- The ground terminal (F.G.) is used as a reference electric potential for static neutralization. If the ground terminal is not grounded, the Ionizer will not be able to achieve the optimal offset voltage (ion balance).
- When an AC adapter is used, the output signal cannot be used.



3-3. How to check output signal

- Pressing the CHECK button output an error signal to check the wiring and check the operation of an equipment.
- When the CHECK button is pressed, the error signal is off for 5 seconds.
- During the check, the ION/HV indicator flashes orange.
- During the check, ion generation does not stop.
- This function cannot be used when an error signal is output due to an abnormality in the product.
- Do not press with pointed on conductive objects as this may cause damage.



3-4. Timing chart

1) During normal operation

		Display	Status	Normal operation		
				Power ON	Power OFF	Power ON
Input	Power supply +24VDC	—	ON OFF			
	Output check (CHECK button)	—	ON OFF			
Output	Error signal (Normally ON)	—	ON OFF			
Display	Power display	PWR	ON OFF			
	Static neutralization (green)	ION/HV	ON OFF			
	Incorrect high voltage (red)		ON OFF			
	Output check (orange)		ON OFF			
Ion generation status	Generate Stop					

2) When error occurs.

		Display	Status	Abnormality of the power supply	Abnormality of the High voltage	Abnormality of the CPU	The bar not connected
				Error	Error Power OFF Power ON Note1)	Error Power OFF Power ON Note1)	Error Power OFF Power ON Note1)
Input	Power supply +24VDC	—	ON OFF				
	Output check (CHECK button)	—	ON OFF				
Output	Error signal (Normally ON)	—	ON OFF				
Display	Power display	PWR	ON OFF				
	Static neutralization (green)	ION/HV	ON OFF				
	Incorrect high voltage (red)		ON OFF				
	Output check (orange)		ON OFF				
Ion generation status	Generate Stop						

Note1) The problem can be resolved by supply the power again after resolving the cause of the abnormality.

3) When check the output signal.

		Display	Status	Check the output signal	
				Power ON	CHECK button ON
Input	Power supply +24VDC	—	ON OFF		
	Output check (CHECK button)	—	ON OFF		
Output	Error signal (Normally ON)	—	ON OFF		
Display	Power display	PWR	ON OFF		
	Static neutralization (green)	ION/HV	ON OFF		
	Incorrect high voltage (red)		ON OFF		
	Output check (orange)		ON OFF		
Ion generation status	Generate Stop				

Note2) Ion generation does not stop while the output signal is being checked.

4. Setting

4-1. Name of Parts

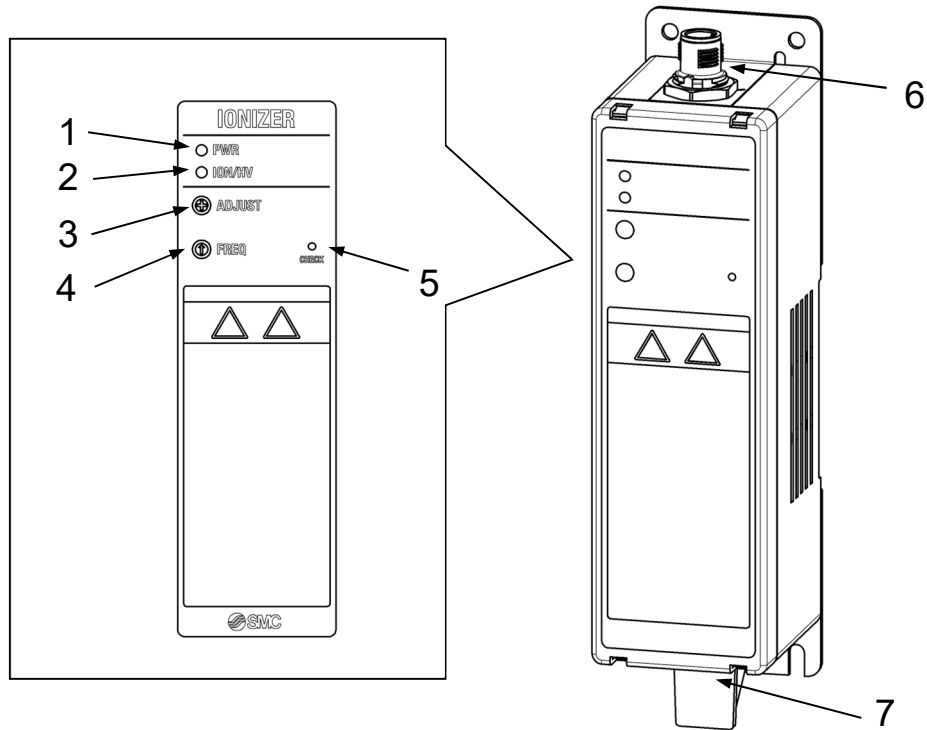


Table4. Name of controller IZTC44 parts

No.	Name	Indication	Type	Description
1	Power supply LED	PWR	LED (Green)	ON during normal operation. Flashes in case of abnormality.
2	Static neutralization / High voltage error LED	ION/HV	LED (Green/Red /Orange)	Lights up green during static neutralization, lights up red or blinks red in case of abnormality. Blinks orange during output check.
3	Offset voltage adjustment trimmer	ADJUST	Trimmer	Used to set offset voltage adjustment.
4	Frequency set switch	FREQ	Rotary switch	Used to set ion generating frequency.
5	CHECK button	CHECK	Push button	Outputs a signal for confirmation.
6	Power supply connector	—	M12 Connector	Connect the power cable.
7	High voltage cable connector	—	Connector	Connects to the High voltage cable of the bar.

4-2. Operation modes

- There are two operation modes for this product: AC mode and DC mode (operation continuously emitting either positive or negative ion).

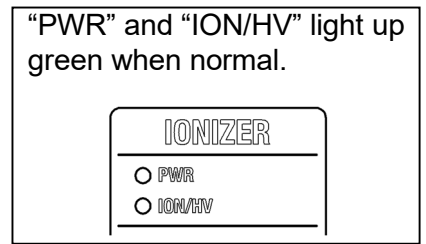
1)AC mode

- Ions of different polarity are generated alternately according to the frequency set by the frequency set switch.
- If the Offset voltage (Ion balance) is displaced by the installation environment of the ionizer, adjust the offset voltage.
- Refer to “4-3. Controller setting” for the frequency setting and the adjustment of the Offset voltage (Ion balance).

2)DC mode

- Positive ions are generated when "8" is set for the Frequency set switch. Negative ions are generated by setting "9".

4-3. Controller setting



Power is supplied



[Frequency setting]
Set the ion generation frequency with the frequency setting switch.



[Adjustment of the Offset voltage]
Offset voltage adjustment with trimmer.

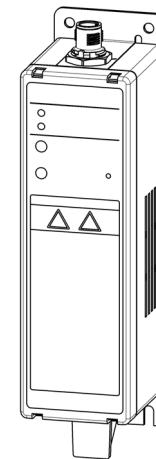
Offset voltage adjustment trimmer

Clockwise: offset to positive
Counterclockwise: offset to negative

Frequency setting switch

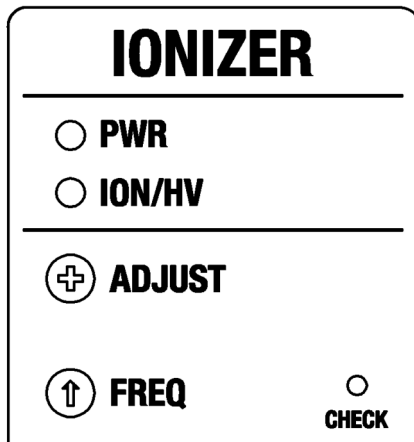
Table5. Ion generation frequency

No.	Ion generation frequency Hz
0	1
1	3
2	5
3	8
4	10
5	15
6	20
7	30
8	DC +
9	DC -



4-4. Alarm function

- When a problem occurs, an output signal or LED notification is generated.



Display

Table6. Alarm list

Alarm name	Operation after alarm	LED		Description	How to return to work after a problem is solved
		PWR	ION/HV		
Abnormality of the power supply	Stop	Green (flash)	OFF	When the connected power supply voltage is outside of the specification.	To be reset automatically.
Abnormality of the high voltage	Stop	Green (ON)	Red (ON)	When the high voltage is discharged abnormally.	Turn the power off and on again.
Abnormality of the CPU	Stop	Green (flash)	Red (flash)	When CPU operates abnormally due to noise etc.	Turn the power off and on again.
The bar is not connected	Stop	Green (ON)	Red (flash)	The bar is not connected to the controller.	Turn the power off and on again.

1) Abnormality of the power supply

- When the power supply connected to this product is not within the specified range of 24 V +/-10%, the error signal is OFF, PWR LED is flashing(green) and ION/HV LED is OFF.
- When the alarm occurs, the ion generation will be stopped.
- The problem is automatically released by changing the power supply voltage to 24V+/-10%.

2) Abnormality of the High voltage

- When abnormal discharge occurs during this product operation, the error signal is OFF, and ION/HV LED is ON (red).
- When the alarm occurs, the ion generation will be stopped.
- After resolving the cause, supply power again.

3) Abnormality of the CPU

- If the controller CPU operation is abnormal due to electrical noise, the error signal is OFF, PWE LED is flashing (green) and ION/HV LED is flashing (red).
- When the alarm occurs, the ion generation will be stopped.
- To prevent noise, perform the following actions and take countermeasures.
 - I . If the source of noise is nearby, move this product away from the source.
 - II . Route the power line and this product cables separately.
 - III . If noise may enter the product from the power supply, install a noise filter to this product power supply.
- After resolving the cause, supply power again.

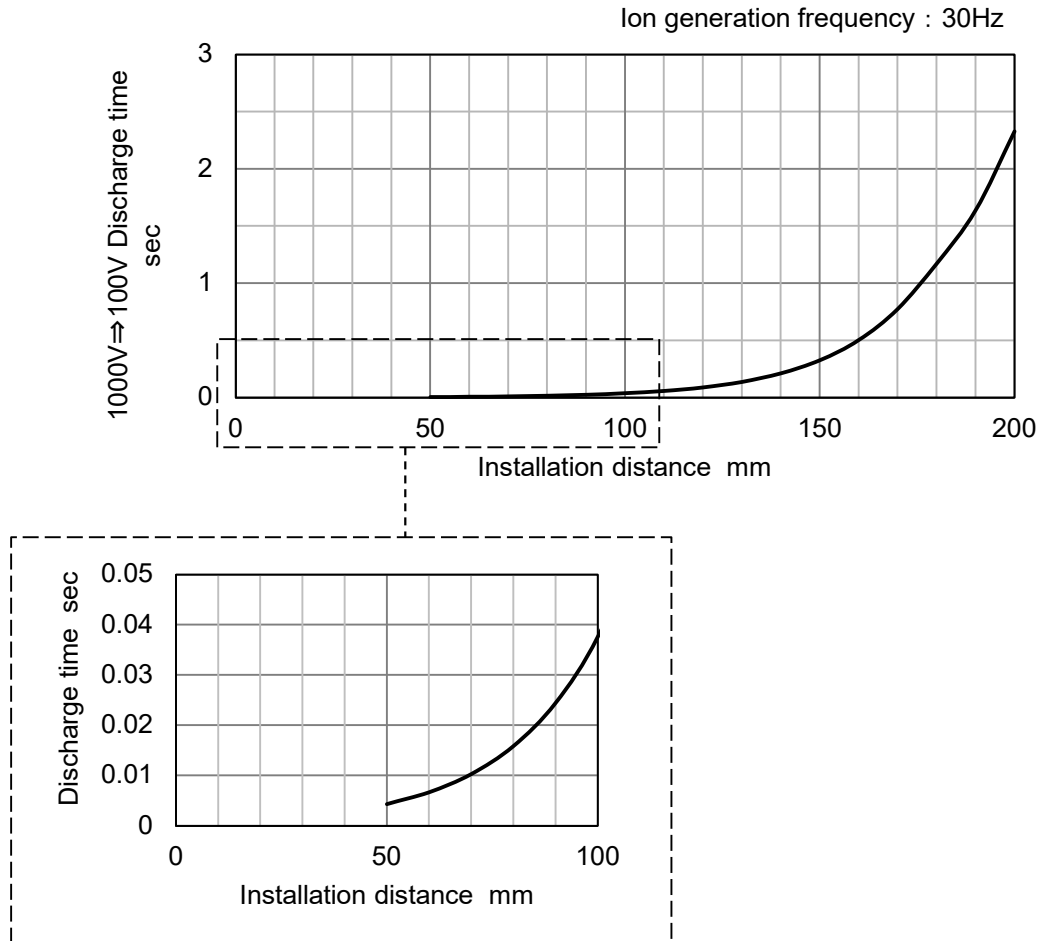
4) The bar not connected

- If the bar is not connected to the controller, the error signal is OFF and ION/HV LED is flashing (red).
- After the bar connecting to the controller, supply power again.

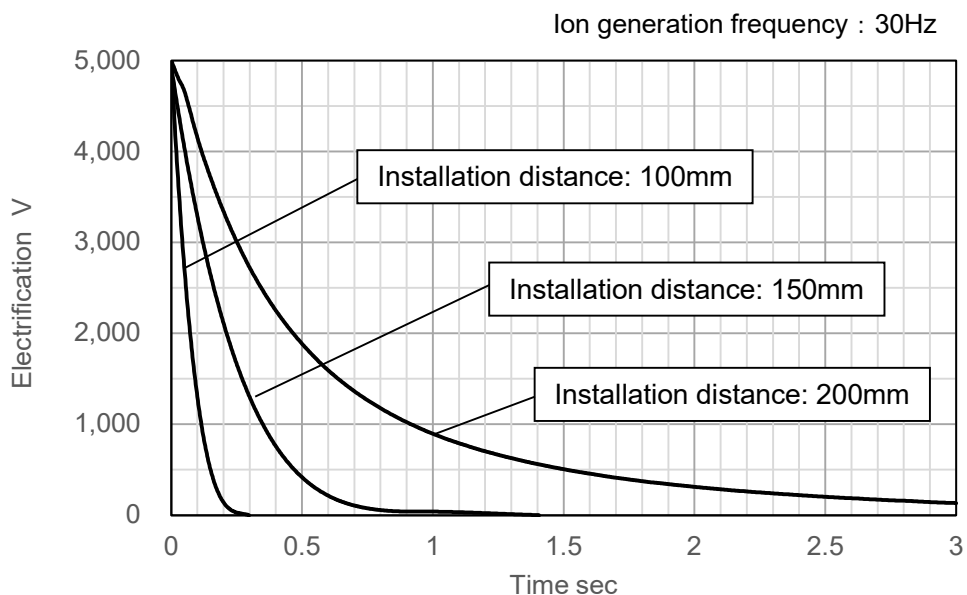
5. Performance

- Performance data shown in this chapter is based on an electrified plate (dimensions: 150 x 150 mm, electrostatic capacity: 20pF) defined by ANSI standard (ANSI/ESD STM3.1-2015). Use this data as a guideline for selection, as the performance data may vary depending on the material and size of the workpiece.

(1) Installation distance and Discharge time



(2) Electrification of workpiece

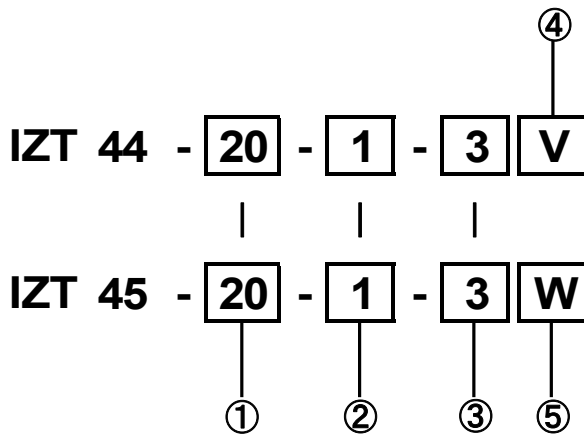


6. How to Order

6-1. Product number of multiples.

- The product number consists of the controller, high voltage power supply module and bar (1 of each).
- When multiple high voltage power supply modules and bars are added to one IZT45 controller, choose the equipment according to the product number for a single unit.

Bar + High voltage power supply module + Controller



① Bar length

Symbol	Length(mm)	Symbol	Length(mm)
20	200	56	560
26	260	62	620
32	320	68	680
38	380	74	740
44	440	92	920
50	500	128	1280

*The number of included brackets differs depending on the bar length.(Refer to the table below.)

Number of brackets for bar

Bar length (mm)	End bracket	Intermediate bracket
200~620	2	None
680~1280		1

② High voltage cable length

Symbol	Length(m)
1	1
2	2
3	3

*The number of included high voltage cable holders differs depending on the high voltage cable length.(Refer to the table below.)

Number of included high voltage cable holders

Symbol	Straight	Elbow
1	1	1
2	2	1
3	3	1

③ Power supply cable length

Symbol	Length(m)
3	3
5	5
10	10
N	None

*To use AC adapter, specify "N", and select AC adapter with the option number.

④ DIN rail mounting bracket for controller of IZT44

Symbol	For controller
Nil	None
V	Included

⑤ DIN rail mounting bracket for controller of IZT45 and high voltage power supply module.

Symbol	For controller	For high voltage power supply module
Nil	None	None
U	Included	Included
W	Included	None
Y	None	Included

6-2. Product number for single unit. (for individual Parts)

Bar

IZTB 44 - 20 - 1 -

① Bar length

Symbol	Bar length (mm)
20	200
26	260
32	320
38	380
44	440
50	500
56	560
62	620
68	680
74	740
92	920
128	1280

② High voltage cable length

Symbol	Length(m)
1	1
2	2
3	3
N	None

* The number of included high voltage cable holders differs depending on the high voltage cable length.(Refer to the table below.)

* When using a branch cable, indicate with "N" and select a branch cable from the accessories.

Number of included high voltage cable holders

Symbol	Straight	Elbow
1	1	1
2	2	1
3	3	1

③ Bar bracket

Symbol	For bar
Nil	None
B	Included

*The number of included brackets differs depending on the bar length.(Refer to the table below.)

Number of brackets for bar

Bar length(mm)	End bracket	Intermediate bracket
200~620	2	None
680~1280		1

High voltage power supply module

IZTP 41 - L -

①

① DIN rail mounting bracket

Symbol	Model
Nil	None
Y	Included

Controller

IZTC 44 - 3 V

②

IZTC 45 - 3 W

① ③

① Power supply cable length

Symbol	Length(m)
3	3
5	5
10	10
N	None

② DIN rail mounting bracket for controller of IZT44

Symbol	Model
Nil	None
V	Included

③ DIN rail mounting bracket for controller of IZT45

Symbol	Model
Nil	None
W	Included

6-3. Accessories (for individual Parts)

Power supply cable

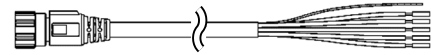
IZT 44 - CP **3**

IZT 45 - CP **3**

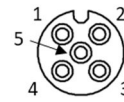
①

① Power supply cable length

Symbol	Length(m)
3	3
5	5
10	10

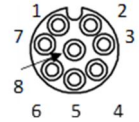


For IZT44



Socket
A-coded
(Normal key)

For IZT45



Socket
A-coded
(Normal key)

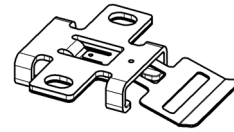
Bracket for bar

IZT 44 - B **E**

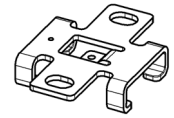
①

① Bar bracket

Symbol	Type
E	End bracket
M	Intermediate bracket



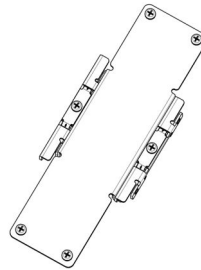
IZT44-BE
End bracket



IZT44-BM
Intermediate bracket

DIN rail mounting bracket for IZT44 controller with High voltage power supply

IZT 44 - B1



IZT44-B1

For controller with high voltage power supply

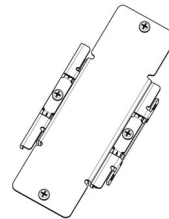
DIN rail mounting bracket for IZT45 controller and High voltage power supply module

IZT 40 - B **1**

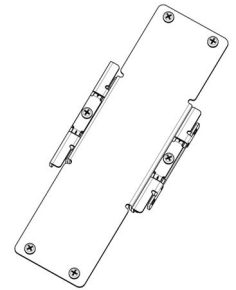
①

① DIN rail mounting bracket

Symbol	Type
1	For controller
2	For High-voltage power supply module



IZT40-B1
For controller



IZT40-B2
For High voltage power
Supply module

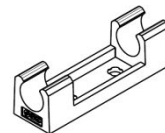
High voltage cable holder

IZT 40 - E **1**

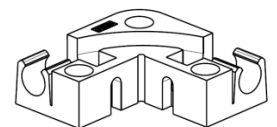
①

① Highvoltage cable holder

Symbol	Type
1	Straight
2	Elbow



IZT40-E1
High voltage cable holder
(Straight)



IZT40-E2
High voltage cable holder
(Elbow)

6-4. Accessories Sold separately

AC adapter

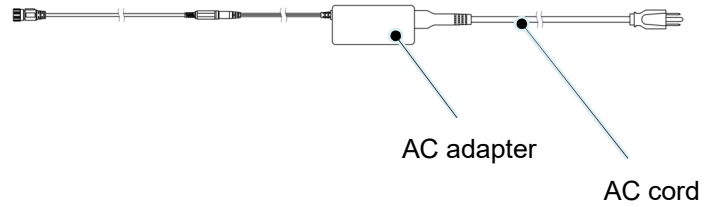
IZT 44 - CG 1

IZT 45 - CG 1

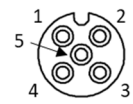
①

① AC cord

Symbol	Type
1	With AC cord
2	Without AC cord

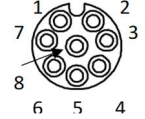


For IZT44



Socket
A-coded
(Normal key)

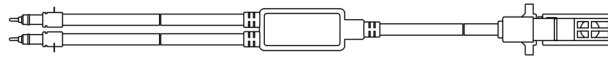
For IZT45



Socket
A-coded
(Normal key)

Branch cable

IZT 44 - A001



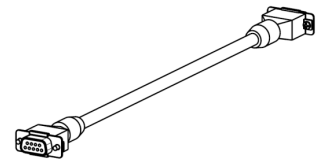
Separate cable

IZT 43 - A002 - 1

①

① High voltage cable length

Symbol	Length(m)
1	1
2	2
3	3



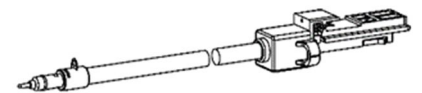
High voltage cable assembly

IZT 43 - A002 - 1

①

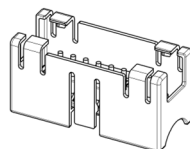
① High voltage cable length

Symbol	Length(m)
1	1
2	2
3	3



Cleaning kit

IZT 44 - M3



7. Outline Dimensions

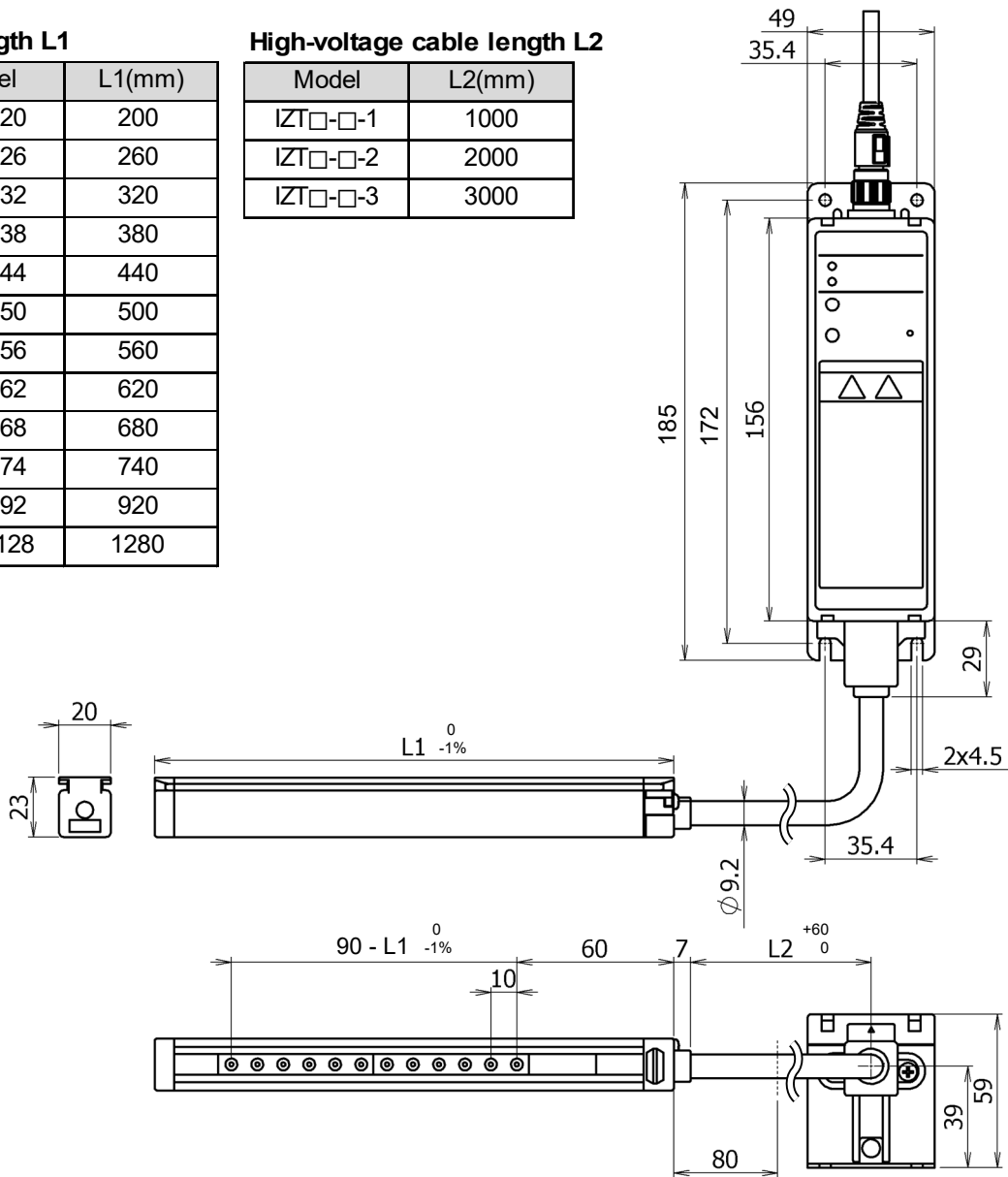
Ionizer IZT44

Bar length L1

Model	L1(mm)
IZT□-20	200
IZT□-26	260
IZT□-32	320
IZT□-38	380
IZT□-44	440
IZT□-50	500
IZT□-56	560
IZT□-62	620
IZT□-68	680
IZT□-74	740
IZT□-92	920
IZT□-128	1280

High-voltage cable length L2

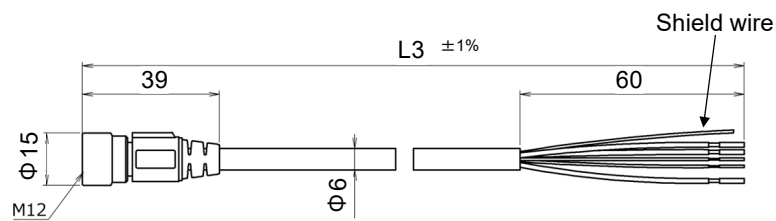
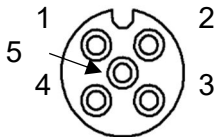
Model	L2(mm)
IZT□-□-1	1000
IZT□-□-2	2000
IZT□-□-3	3000



Required space for connector
insertion / removal

Power cable

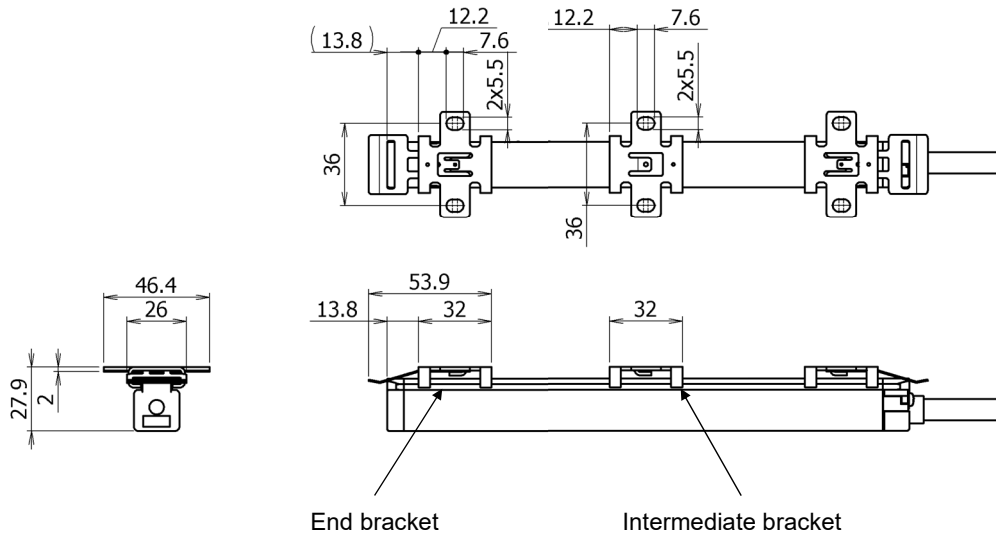
Socket
A code (Normal key)



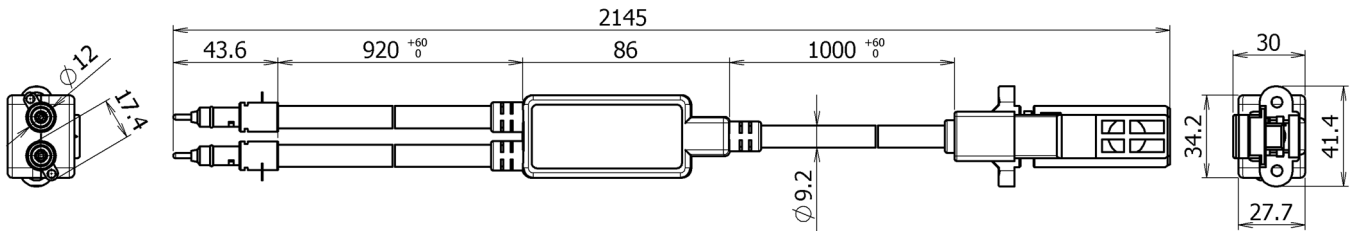
L3(mm)
3000
5000
10000

NO.	Cable color	Signal name	Conductor Nominal Cross Section / Size	Insulator O.D.	Sheath Material
1	Brown	DC(+)	0.2mm ² /AWG24	1.2mm	Lead-free PVC
2	Blue	DC(-)	0.2mm ² /AWG24	1.2mm	
3	Green	F.G.	0.2mm ² /AWG24	1.2mm	
4	Black	COM	0.08mm ² /AWG28	1.0mm	
5	White	Error signal	0.08mm ² /AWG28	1.0mm	

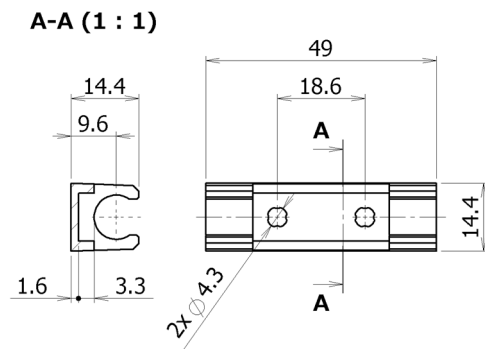
End bracket
Intermediate bracket



Branch cable / IZT44-A001

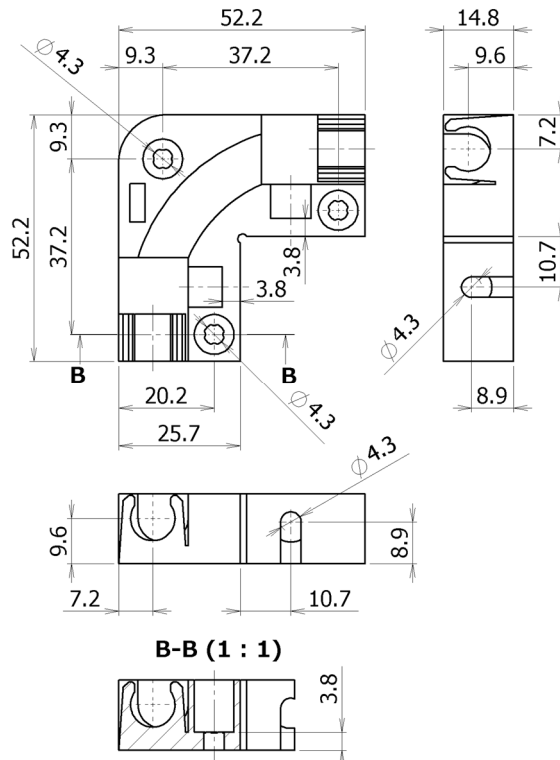


High voltage cable holder (Straight)



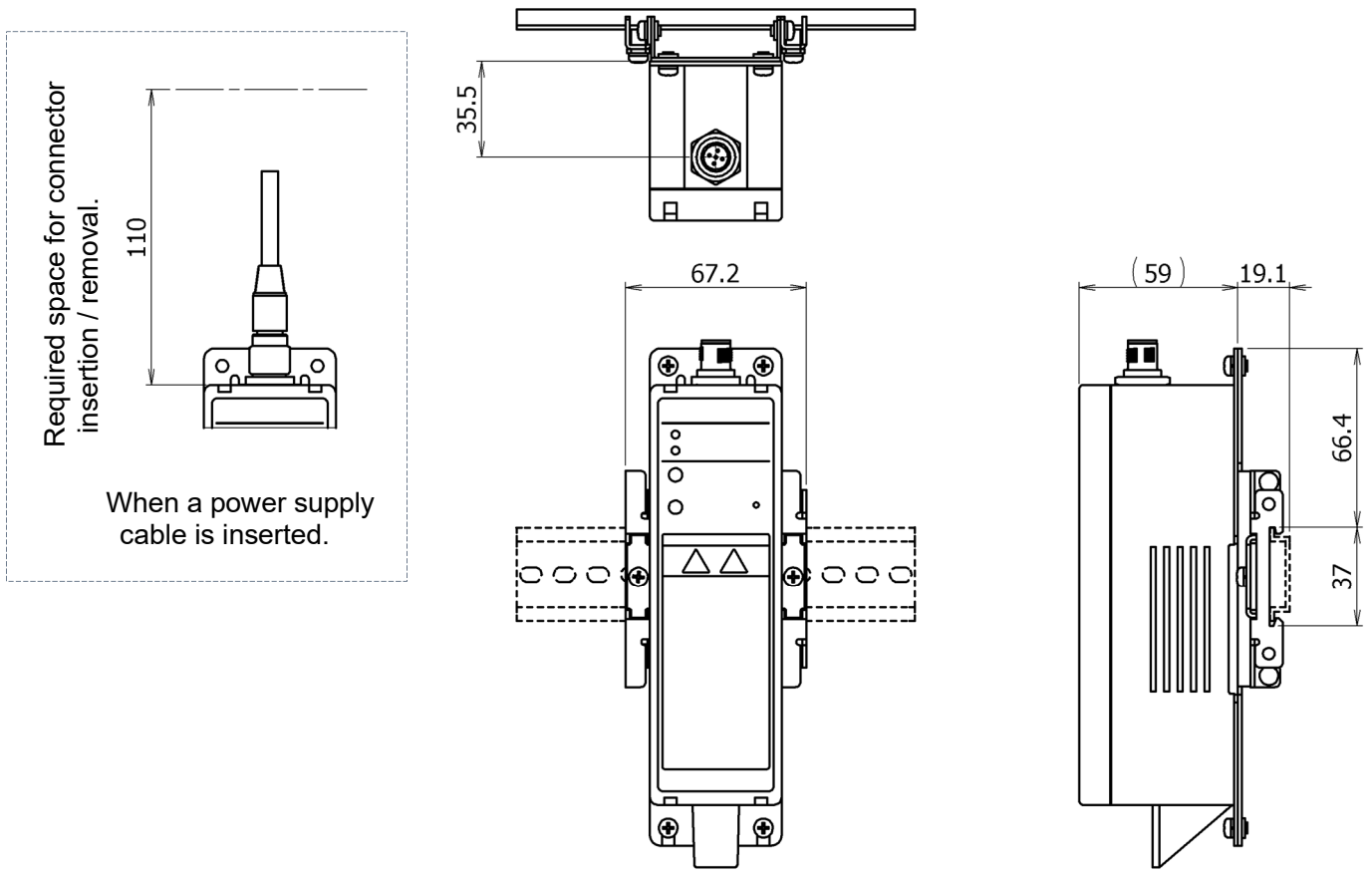
Recommended:
 Cross-holed pan head screws M4x5

High voltage cable holder (Elbow)

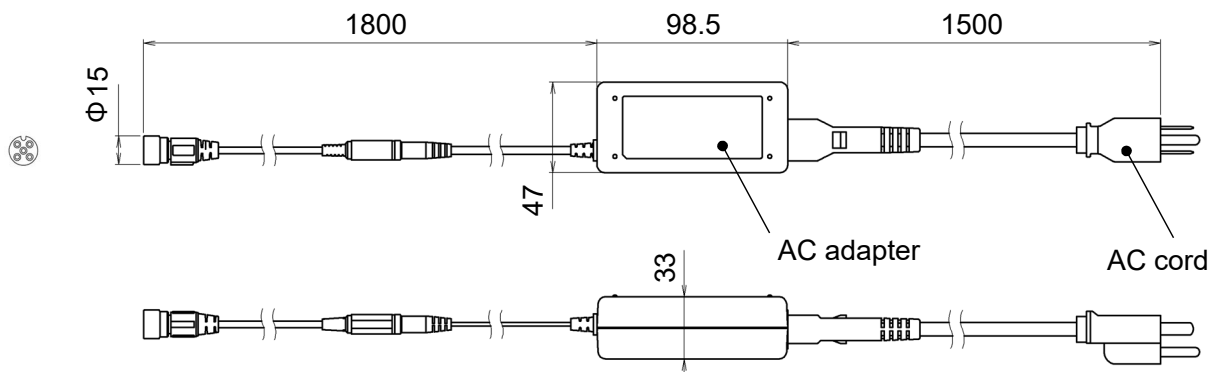


Recommended: Cross-holed pan head screws M4 x 8

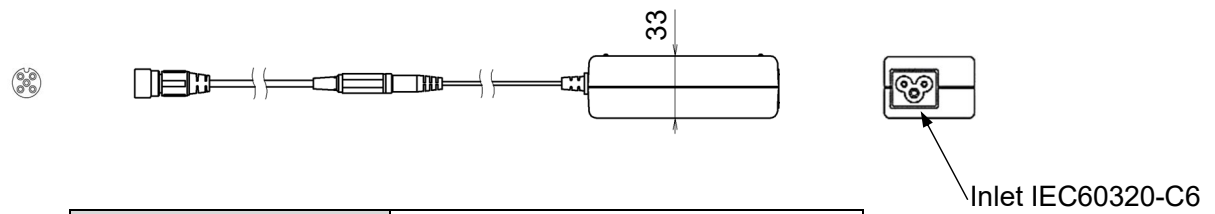
When a DIN rail mounting bracket is used (IZT44-B1)



AC adapter (with AC cord) / IZT44-CG1



AC adapter (without AC cord) / IZT44-CG2



Input voltage	AC100V to 240V, 50/ 60Hz
Output current	1.9A
Ambient temperature	0 to 40°C
Ambient humidity	35 to 65%Rh(No condensation)
Weight	IZT44-CG1: 365g IZT44-CG2: 200g
Standard	IEC62368-1

8. Specification

Ionizer model		IZT44	IZT45
Ion generation method		Corona discharge type	
Method of applying voltage		Pulse AC、DC Note3)	
Applied voltage		±7,000V	
Current consumption		0.5A or less	0.6A or less (+0.5A or less per ionizer when connected)
Power supply voltage		DC24V±10% (AC100-240V : AC adapter. Applicable when only one high voltage power supply module is used)	
Switch input	NPN type	-	Range : DC5V or less Current consumption : 5mA or less Note5)
	PNP type	-	Range : 19VDC to supply voltage Current consumption : 5mA or less Note5)
Switch output (open collector)	NPN type	Max. load current : 100mA Residual voltage : 1V or less (at 100mA of load current) Max. supply voltage : 26.4VDC Note4)	Max. load current : 100mA Residual voltage : 1V or less (at 100mA of load current). Max. supply voltage : 26.4VDC Note5)
	PNP type	Max. load current : 100mA Residual voltage : 1V or less (at 100mA of load current) Note4)	Max. load current : 100mA Residual voltage : 1V or less (at 100mA of load current) Note5)
Function		High voltage abnormality detection, Check output	Auto balance, Maintenance detection, High voltage abnormality detection, Ion generation stop input, Check output
Ambient and fluid temperature	Controller, High voltage power supply module	0 to 40°C	
	Bar	0 to 50°C	
Ambient humidity		35 to 80%Rh (no condensation)	
Material	Controller	Cover : ABS, Aluminum	Cover : ABS, Aluminum Switch : Silicone rubber
	High voltage power supply module		Cover : ABS, Aluminum
	Bar	Cover : ABS, PBT, Emitter : Tungsten High voltage cable : Silicone rubber, PVC, Stainless steel	
IP Protection Rating	Controller	IP20	IP20
	High voltage power supply module		IP20
	Bar	IP40	
Standard / Directive		CE (EMC directive, RoHS directive), UKCA	

Note 3) Apply cathode or anode to DC.

Note 4) Can be switched by wiring.

Note 5) Can be switched by controller operation.

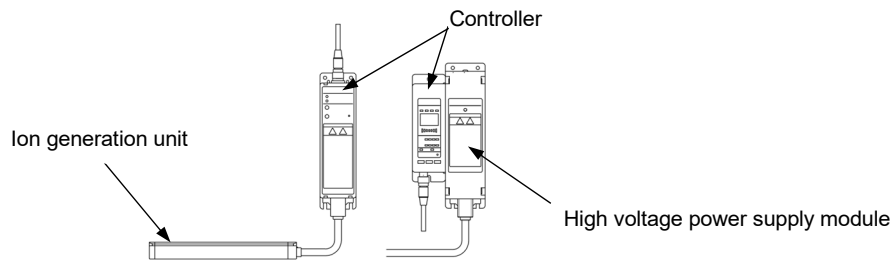
Weight [g]

	Controller	High voltage power supply module
IZT44		440
IZT45	220	690

Bar length mm	200	260	320	380	440	500	560	620	680	740	920	1280
High voltage cable 1m	250	275	305	330	360	385	415	440	470	495	575	740
High voltage cable 2m	365	395	420	450	475	500	530	555	585	610	690	855
High voltage cable 3m	480	510	535	565	590	620	645	670	700	725	810	970



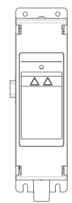
9. Interchangeability

- IZT44/45 can be used in combination with the following existing products. (Individual order)







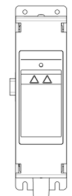
		Controller					High voltage power supply module				
		IZTC40	IZTC41	IZTC41-L	IZTC44	IZTC45	IZTP40	IZTP41	IZTP43	IZTP41-L	IZTP43-L
Ion generation unit	Bar (Air purge available)	IZTB40	○				○				
		IZTB40		○				○			
		IZTB40			○					○	
		IZTB40				○					
		IZTB40					○			○	
	Nozzle	IZTN43		○					○		
		IZTN43			○						○
		IZTN43					○				○
	Slim bar	IZTB44	○				○				
		IZTB44		○				○			
		IZTB44			○					○	
		IZTB44				○					
IZTB44						○			○		

- (1) When the bar is used with an existing IO-Link controller.

Bar	Controller	High voltage power supply module
IZTB44 	IZTC41-L 	IZTP41-L 

- (2) When using existing air purgeable bar IZTB40 with M12 power cable.

Bar	Controller with High voltage power supply
IZTB40 	IZTC44 

Bar	Controller	High voltage power supply module
IZTB40 	IZTC45 	IZTP41-L 

10. Troubleshooting

	Status	Possible causes	Investigation method and possible causes	Countermeasures
Does not operate	The product does not turn ON. (PWR LED is OFF)	Insufficient supply voltage or current.	Check the voltage and current values of the power supply.	Operate at the specified voltage and current referring to [7. Specifications].
		Power supply incorrectly wired.	Check the power supply wiring.	Ensure connections are in accordance with [3-2.Electrical connection].
LED is flashing/ON.	HV:OFF	Voltage of the power supply is out of range.	Check the voltage values of the power supply.	Operate at the specified voltage referring to [7. Specifications].
		Abnormality of the High voltage	1) Check the emitter for contamination.	1) If dust or dirt is found on the emitter, clean the emitter referring to the operation manual.
			2) Check whether there is arcing between the bar and workpiece to be neutralized.	2) If there is arcing between the workpiece to be neutralized and the bar, increase the distance between them until arcing no longer occurs.
			3) Check whether the ionizer is used in an environment subject to condensation or moisture.	3) The ionizer must not be used in environments subject to condensation or moisture.
			4) Check the High voltage connector for contamination.	4) If dust or dirt is found on the connector, clean the connector.
Abnormality of the CPU	1) Check if there is any high current equipment installed near the ionizer. 2) Check if the power supply cable or the separate cable is routed together with any high power cable.	1) If any high current equipment is nearby, either move it away or consider an alternative location for the ionizer. 2) Route the ionizer wiring separately to high power cables. 3) Install a noise filter to the controller power supply.		
No output signal	The bar not connected	The bar not connected	Check the bar (high voltage cable connector) is connected.	If the connection does not resolve the problem, clean the high-voltage cable connector.
		Output wired incorrectly.	Check the wiring.	Ensure all connections are in accordance with [3-2.Electrical connection].
		Circuit protection operation due to signal overcurrent.	Check the signal load current.	Ensure that the maximum load current is not exceeded referring to [7. Specifications].
		Insufficient adjustment of offset voltage.	Check the offset voltage by the measurement equipment such as the charged plate.	Adjust offset voltage referring to [4-3. Controller setting].
Poor neutralizing performance	The effect of the ionizer is small from the time of installation.	Ionized air is not reaching the workpiece to be neutralized.	1) Check if it is effective by moving it closer to the workpiece. 2) Check if an external airflow could interfere with the flow of ionized air from the ionizer.	1) Install the bar close to the workpiece. 2) If an external airflow is having an effect, consider shutting off the air flow or otherwise changing the installation so that ionized air is not interfered with.
		1) Distance to the workpiece is far.	3) Check to see if there are any obstructions in the path where the ionized air reaches the workpiece to be neutralized.	3) If there is an object between or near the ionizer and the workpiece to be neutralized, ionized air may be blocked or adsorbed and not reach the workpiece.
		2) Interference with airflow.	4) Compare the static elimination effect of ionized air generated from the ionizer with other ionizer running and stopped to see if the ionized air generated from the ionizer is being interfered with by ionized air generated from other ionizer.	4) If other ionizer is nearby installed, ionized air may interfere, resulting in reduced ionizer performance. Refer to [Limitation of use] before installation to avoid interference.
		3) Ionized air blocked or adsorbed by obstacles.		
		4) Ionized air from a nearby ionizer is interfering.		
The effect of the ionizer became small after use.	Ion generation rate decrease due to emitter contamination on the emitter. Ion generation volume is low due to contamination on the emitter.	Ionizer potential reference is off.	Check F.G. (green wire) is connected.	The ionizer neutralizes static electricity relative to ground, ensure F.G.(green wire) always has a ground connection of less than 100Ω.
		Ion generation volume is low due to contamination on the emitter.	Check the emitter for contamination.	If dust or dirt is found on the emitter, clean the emitter referring to [10.Maintenance].
		Ion generation rate decrease due to emitter degradation or damage.	Clean the emitter with the maintenance kit and check the static neutralization effect.	If the effect is small even after maintenance of the emitter, replace the bar.

11. Maintenance

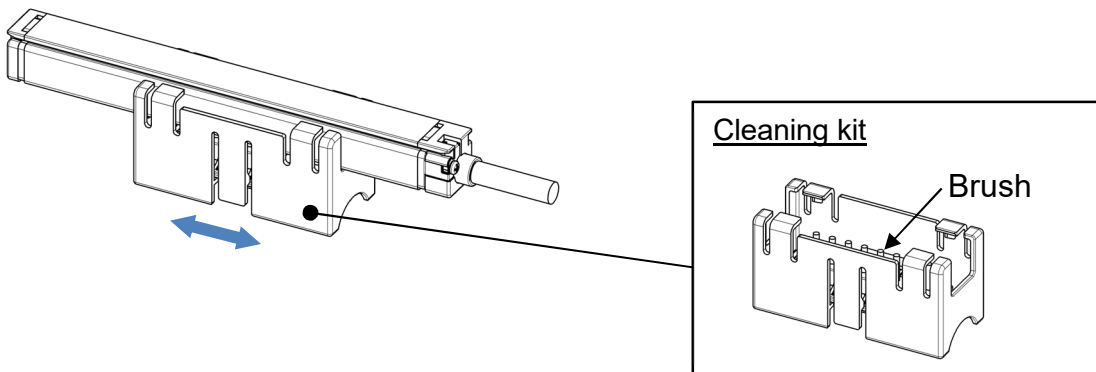
Warning

- A high voltage generating circuit is mounted onto this product.
- Verify that the power supply is OFF when performing maintenance.
- Never disassemble or modify the product, as this can cause loss of product functionality and a risk of electric shock and earth leakage.
- Do not touch the end of the emitters. They have a sharp end and touching them directly with your fingers may cause injury.
- Only people who have sufficient knowledge are allowed to clean the emitters.

- If this product is used for an extended period of time, contamination such as dust will stick to the emitters, reducing the static neutralization performance.
- Perform neutralizing performance test and set a maintenance cycle for periodic cleaning.
- Emitter contamination level is different depending on the installation environment, etc.
- If the emitter is worn out or damaged, the static electricity elimination performance will decrease.

Cleaning procedure of emitter

- It is highly recommended that the emitter cleaning kit (IZT44-M3) is used to clean the emitter needles.
 - a. Before cleaning the emitters, shutoff the power supply.
 - b. Place the cleaning kit on the bar so that the brush touches the emitter and move it along the groove to clean it.

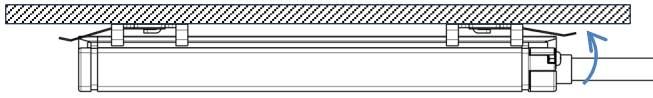


- If you do not have a cleaning kit, an alcohol saturated cotton ball can be used for cleaning the electrodes. Use caution to prevent damage to the electrode needles.
- The alcohol used should be reagent ethanol class 1 99.5vol% or more.

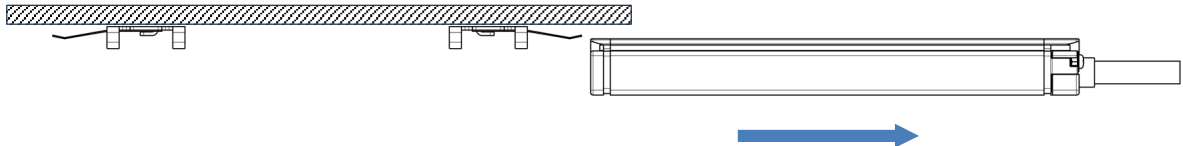
Bar Replacement

- If ionization is still not possible after cleaning the emitter, the emitter may be worn or damaged. If this is the case, replace the bar according to the following procedure.

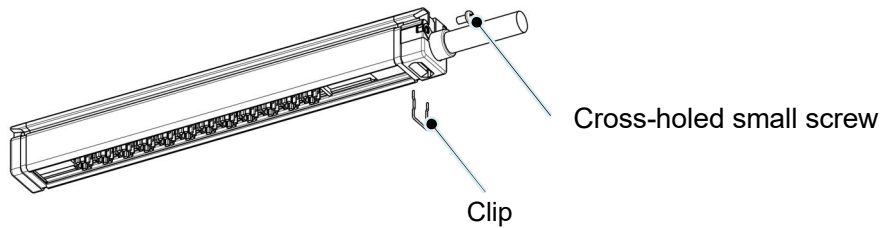
(1) Raise the lever on the end bracket.



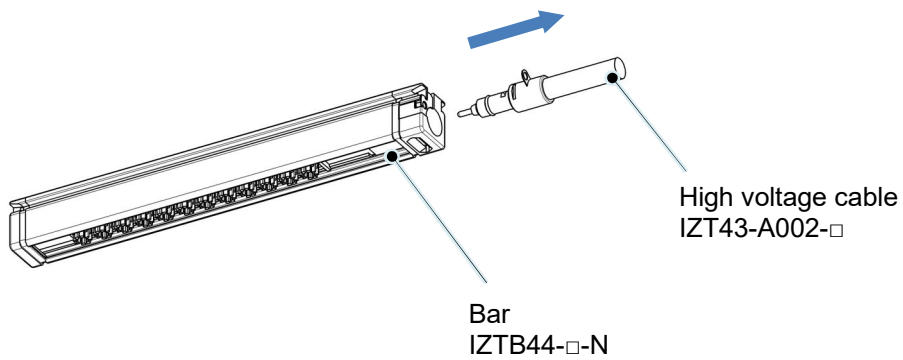
(2) Slide the bar out.



(3) Remove the clip and the cross-holed small screw from the bar.



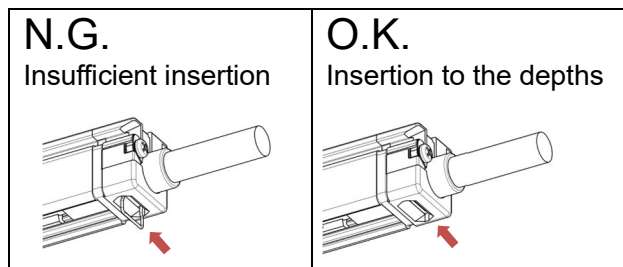
(4) Disconnect the high voltage cable.



- For installation, reverse the above steps.

Tightening torque for small screws with cross holes during installation 0.3 to 0.4Nm

- Insert the clip firmly all the way to the back to prevent it from falling out.



Revision history

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Note: Specifications are subject to change without prior notice and any obligation on the part of the manufacturer.
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