Traffa

Bedienungsanleitung
Düsenausführung - Serie IZN10E

TRAFFA
TECHNISCHES BÜRO

Schneller Abbau statischer Elektrizität

Doc. no.IZ＊-OMV0005

Operation Manual

PRODUCT NAME

Ionizer - Nozzle type

MODEL / Series

IZN10E 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)*1) , and other safety regulations.

*1) ISO 4414: Pneumatic fluid power -- General rules relating to systems.
ISO 4413: Hydraulic fluid power -- General rules relating to systems.
IEC 60204-1: Safety of machinery -- Electrical equipment of machines .(Part 1: General requirements)
ISO 10218: Manipulating industrial robots -Safety.
etc.

Caution	**Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
Warning	**Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
Danger	**Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious 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. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.

2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalog.

3. An application which could have negative effects on people, property, or animals requiring special safety analysis.

4.Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

Safety Instructions

⚠Caution

1. The product is provided for use in manufacturing industries.

The product herein described is basically provided for peaceful use in manufacturing industries.
If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.
If anything is unclear, contact your nearest sales branch.

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 regulation 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.**

⚠ Caution

SMC products are not intended for use as instruments for legal metrology.

Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country.

Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

Selection

⚠Warning

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

Consult SMC before using this product for other intentions. (See Warning No. 4 on page 3)

2) Use within the specified voltage, temperature and humidity range.

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

3) Use clean compressed air as fluid. (Air quality Class 2.6.3 specified in ISO 8573-1: 2001 is recommended.)

Never use flammable or explosive gas as fluid. This may lead to fire or explosion. Please contact us when fluids other than compressed air are used.

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

Never use in an atmosphere of potential dust explosion, flammable gas or explosive gas. It may cause fire.

⚠Caution

1) Clean room specification is not available.

This product has not been cleaned. 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) Provide adequate space for maintenance, piping and wiring.

Install the product with consideration for the connector mounting, emitter cartridge assembly for cleaning of the emitter, and one-touch fitting for supplying compressed air, so that there is enough space for mounting and removal of the power cable, cartridge assembly and air tubing and for emitter maintenance, inspection and wiring.

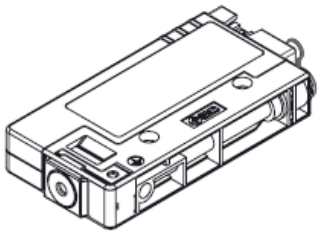
To avoid applying unreasonable stress to the connector and one-touch fitting, ensure any bends in the cable or air tubing are greater than the minimum bending radius. If the cable or air tubing is bent at an acute angle or repeated load is applied to the cable, it may cause malfunction, wire damage or fire.

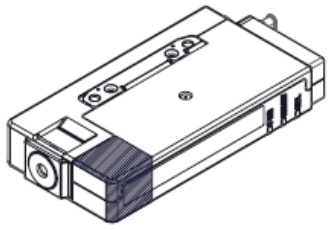
2) Mount the product to a flat surface.

Mounting on an uneven surface will apply excess force to the frame or case, which leads to damage or failure. Do not drop or apply excessive shock. Otherwise, damage or an accident may occur.

3) Keep the area specified clear when the product is mounted directly on to a base or workpiece which are connected to ground.

Mount the product with the base or work piece avoiding the area (▨ shaded) in the drawing below. If the grounded base or workpiece is too close to the area (▨ shaded), ozone concentration may increase depending on the operating conditions, causing failure of the product.





Refer to page 28 Dimensions for dimensions of the area (▨ shaded).

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

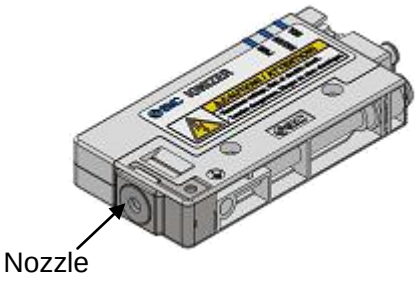
If the product is used in an environment where noise is generated, it may lead to deterioration or damage of the internal elements. Take measures to prevent noise at its source and avoid power and signal lines from coming into close contact.

5) Use a correct tightening torque.

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

6) Do not allow foreign matter or tool to enter the ionizer nozzle.

The emitter is installed in the nozzle. If conductive objects such as metal tools or the human body either contacts or comes close to the emitter, reaction to electric shock can lead to further injuries due to collision with surrounding equipment. Also, if the tool damages the emitters, it may interfere with the specified function and performance, and may also cause operation failure or an accident.



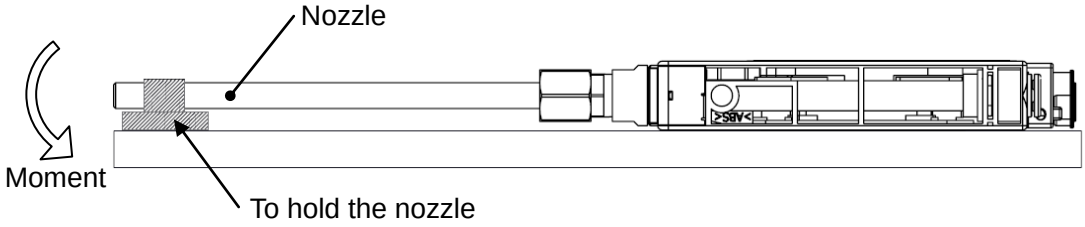
Danger High voltage

High voltage is applied to the emitters. Never touch the electrodes. Inserting foreign matter into the cartridge or touching electrode may cause electrical shock and instantaneous rapid body motion to escape from the shock. Your body may then touch the equipment around you, causing injury.

7) Avoid applying moment to the nozzle.

A moment may be applied to the nozzle depending on the shape or length of the nozzle mounted to the female threads for piping. It is possible that the nozzle or body will be damaged.

If a moment force of more than 0.05 Nm is applied, the middle of the nozzle should be supported so that the nozzle does not receive the moment.



8) Do not adhere tape or labels onto the product body.

If the tape or label contains conductive adhesive or reflective paint, it is possible that due to the dielectric effect, charge could build up causing an electro-static discharge or electrical leakage.

9) Ensure that both the power supply and compressed air supply are disconnected before commencing with the product installation.

⚠Caution

1) Make sure to confirm the effect of static neutralization after installation.

The effect of the static neutralization varies depending on the surrounding installation and operating conditions. Confirm the effect of the static neutralization after installation.

Wiring and Piping

⚠Warning

1) Before wiring, ensure that the power supply capacity meets the specification and that the voltage is within the specification.
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 according to this manual.
4) Remove the power supply before wiring (including the connector plug in/out).
5) Ensure the safety of wiring and surrounding conditions before supplying power.
6) Do not connect or disconnect the connectors (including power source) while the power is being supplied. Failure to follow this procedure may cause product malfunction.
7) Malfunctions stemming from noise may occur if the wire is installed in the same route as that of power or high-voltage cable. Route the Ionizer wires separately.
8) Confirm that there is no error in wiring before operation. Incorrect wiring will lead to product damage or malfunction.
9) Flush the piping before connecting. Verify that all dust, moisture, oil, etc. are eliminated from the piping before connecting.

Operating and Storage Environment

⚠Warning

1) Observe the fluid temperature and ambient temperature range.

The operating fluid temperature range is 0 to 55°C. The specified ambient temperature range for the Ionizer is 0 to 55°C, and for the AC adapter is 0 to 40°C. Avoid sudden temperature change even within specified ambient temperature range, as it may cause 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) Take prevention measures against ozone.

Check that all surrounding equipment have ozone protection measures in place. Perform periodic checks of the product for deterioration caused by ozone.

4) Supply compressed air when the product is in use.

If compressed air is not supplied, neutralization is not possible and ozone and NOx produced during ion generation may accumulate, causing adverse effects on the inner parts or peripheral devices. Compressed air must always be supplied during discharging.

When the product is used for intermittent ion blow, pressure fluctuations can cause instability in the corona discharge, resulting in difficulty maintaining the offset voltage specification. Ensure there are no problems with the neutralization performance when the product is used for intermittent ion blow.

5) Environments to avoid

Avoid using and storing this product in the following environments since they may cause damage to this product. These may cause an electric shock, fire, etc.

a. Areas where ambient temperature exceeds the operating temperature range.
b. Areas where ambient humidity exceeds the operating humidity range.
c. Areas where abrupt temperature changes may cause condensation.
d. Areas where corrosive gas, flammable gas or other volatile flammable substances are stored.
e. Areas 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 areas.
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. Areas where the product is exposed to static electricity discharge.
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.

6) Do not use air containing mist and/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), 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).

7) The product does not incorporate a protection to lightning surges.

Maintenance

⚠Warning

1) Perform maintenance regularly and clean the emitters.

Periodically inspect the electrostatic sensor to check if it is operated under faulty conditions. The maintenance must be carried out by an operator who has sufficient knowledge and experience.

The emitter must be cleaned when the maintenance display (NDL) LED is ON.

If the product is used for an extended period of time with dust present on the emitters, the product's ability to eliminate static electricity will be reduced. The energy saving nozzle is more susceptible to the environment than either the high flow rate nozzle or the female threads for piping because it uses the surrounding air; dust will collect on the emitter more easily.

If the emitter becomes worn and the product's ability to eliminate static electricity is not restored after cleaning, replace the emitter assembly.

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

2) The air tube and fitting must be handled as a consumable part.

The tube and fitting that are connected to the female threads for piping can deteriorate due to ozone and need to be replaced regularly, or provide protection against ozone.

3) Cleaning or replacing the emitters should never be performed while the power supply or compressed air supply are ON.

If the emitters are touched while the product is energized, this may cause an electric shock or accident.

If the cartridge assembly is removed while compressed air is supplied, the cartridge assembly will shoot out. If cartridges are not securely mounted to the bar, they may eject or release when compressed air is supplied to the product.

4) 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.

5) Do not operate the product with wet hands.

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

⚠Caution

1) Do not drop, hit or apply excessive shock (100m/s^2 or more) to the product during handling.

The inner parts may be damaged leading to malfunction even if there is no visible external damage.

2) Take care during mounting and removal of the connector.

When the power cable is connected or disconnected, pinch the connector claw together and insert or remove the plug directly in line. If connected or disconnected in an inappropriate direction, the modular jack may be damaged and cause operation failure.

1. How to Order

1-1.Ionizer body

IZN10E - 01 P 06 Z - B1 - □

High frequency AC nozzle type

Made to Order

Nozzle type

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

Input / Output specifications

Symbol	Type
Nil	NPN Input / Output
P	PNP Input / Output

Bracket

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

Power supply cable

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

One-touch fitting

Symbol	Type
06	ø6 : Metric size
07	ø6.35(1/4") : inch size
16	ø6 : Metric size (elbow)
17	ø6.35(1/4") : inch size (elbow)

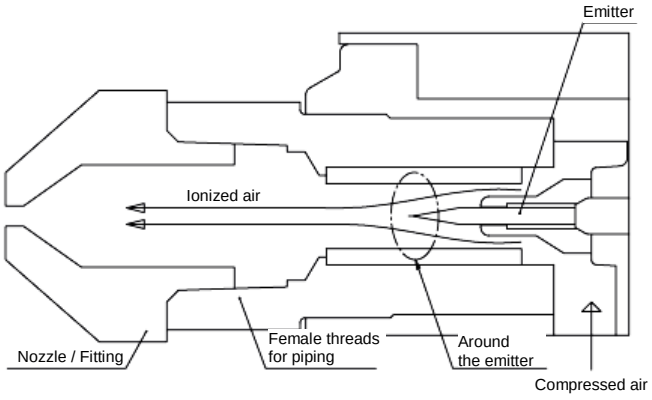
◎Cautions when using the IZN10E-11□□□-□ (Female threads for piping)

For the female threads (Rc1/8), either a Made-to-Order nozzle or a fitting/tubing combination must be prepared and connected by the user.

If a nozzle with an outlet port or I.D. of less than 4 mm is connected, the air pressure in the nozzle may increase, depending on the configuration.

The product uses a high frequency AC voltage. If the air pressure at the emitter increases during ion generation, the efficiency decreases and the maintenance alarm (signal output, maintenance LED) will be activated (refer to the figure to the right).

Neutralizing performance is low when the maintenance alarm is generated.



Female threads for piping (cross section)

The table below shows the supply pressure specifications when a Made-to-Order nozzle or fitting/tubing combination are connected.

Made-to-Order nozzle product names / Piping examples	Made-to-Order nozzle product number	Supply pressure specifications
Circular diffusion nozzle	IZN10-G-X198	0.05 to 0.1 MPa
Flat diffusion nozzle	IZN10-G-X199	0.05 to 0.1 MPa
Bar nozzle (straight type)	IZN10-G-□-X216	0.05 to 0.1 MPa
Circumferential jet bar nozzle (straight type)	IZN10-G-X278	0.05 to 0.15 MPa
Bender tube nozzle	IZN10-G-□-X205	0.05 to 0.15 MPa
Long nozzle	IZN10-G-□-X226	0.05 to 0.15 MPa
Fitting (Applicable tube O.D. 6 mm) + Tube (O.D. 6 mm, I.D. 4 mm)Note 1)	-	0.05 to 0.1 MPa
Fitting (Applicable tube O.D. 8 mm) + Tube (O.D. 8 mm, I.D. 5 mm)Note 1)	-	0.05 to 0.3 MPa

Note 1) When connecting the tubing, use a length of tubing less than 500 mm for the connection, regardless of the inside diameter size.

When using piping materials prepared by the user, secure a sectional area of 4 mm inside diameter. If using tubing, check the minimum bending radius and keep the tube length 500 mm or less.

Do not receive a moment force on the nozzle (Page 6).

1-2.Accessories

Power supply cable

IZN10E - CP [Z]

Symbol	Type
Nil	3m
Z	10m

Made-to-Order power supply cable

Available from 1 to 20 m in 1 m increment (use standard for 3 m and 10 m).

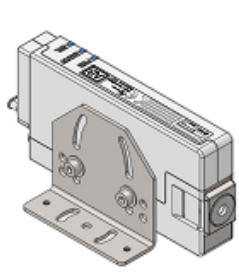
IZN10E - CP [01] - X13

Symbol	Type
01	1m
.	.
.	.
20	20m

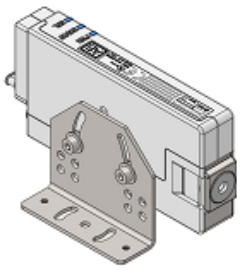
Bracket

IZN10 - [B1]

Symbol	Type
B1	L-bracket
B2	Pivoting bracket
B3	DIN rail mounting bracket

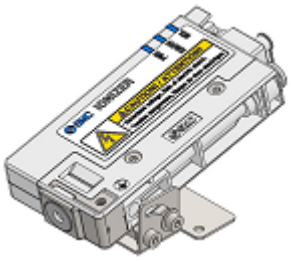


Fixed mounting

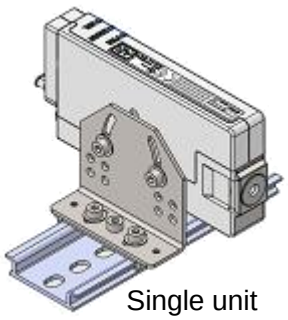


Pivot mounting

L-bracket
IZN10-B1



Pivoting bracket
IZN10-B2



Single unit

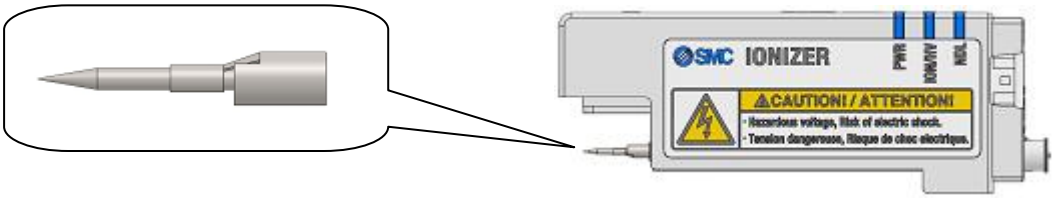
Manifold

DIN rail mounting bracket
IZN10-B3

1-3.Repair parts

Emitter assembly

IZN10E - NT



Body assembly

IZN10E - A002 - 01 06

Nozzle type

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

One-touch fitting

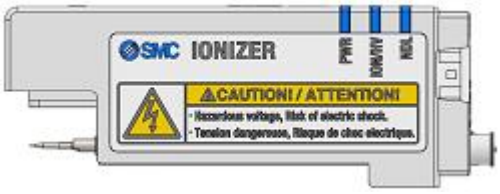
Symbol	Type
06	ø6 : Metric size
07	ø6.35(1/4") : inch size
16	ø6 : Metric size (elbow)
17	ø6.35(1/4") : inch size (elbow)

Cartridge assembly

IZN10E - A003 - P

Input / Output specifications

Symbol	Type
Nil	NPN Input / Output
P	PNP Input / Output



Cleaning kit

IZS30-M2
(Provided together with 1 felt pad grindstone, 1 rubber grindstone, and 2 replacement felt pads)

IZS30-A0201
(Provided together with 10 replacement felt pads)

IZS30-A0202
(Provided together with 1 replacement rubber grindstone)

1-4. Options

Manifold mounting parts set

Contents: Hexagon socket head cap screw, hexagon nut, spacer.
The ionizer, L-bracket or DIN rail bracket should be ordered separately.

IZN10E - ES □

Mounting pitch

Symbol	Pitch
ES	17.4mm

Mounting stations

Symbol	Stations
2	2 stations
3	3 stations
4	4 stations

AC adapter

IZN10E - C G1 - □

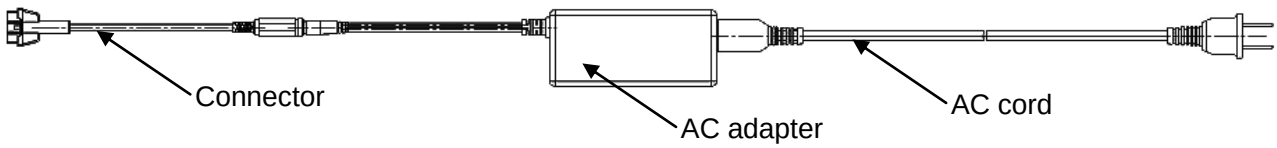
AC adapter

Symbol	Type
G1	With AC cord
G2	Without AC cord

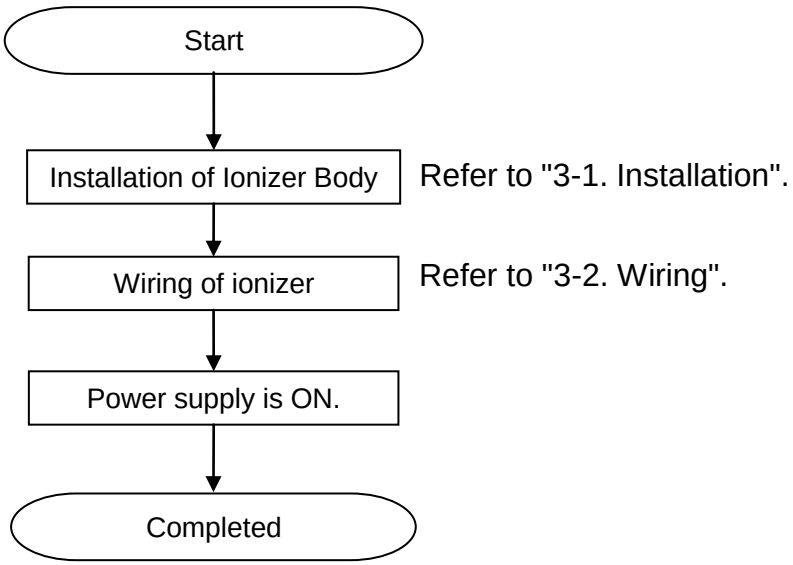
Input / Output specifications

Symbol	Type
Nil	NPN Input / Output
P	PNP Input / Output

Note) The AC cord is only for use in Japan. (Rated voltage 125V, plug JIS C8303, inlet IEC60320-C8)
Select the same input/output specification as the ionizer.
External input and output cannot be used when the AC adapter is being used.



2. Procedures to Operation



3. Installation and wiring

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.

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

3-1. Installation

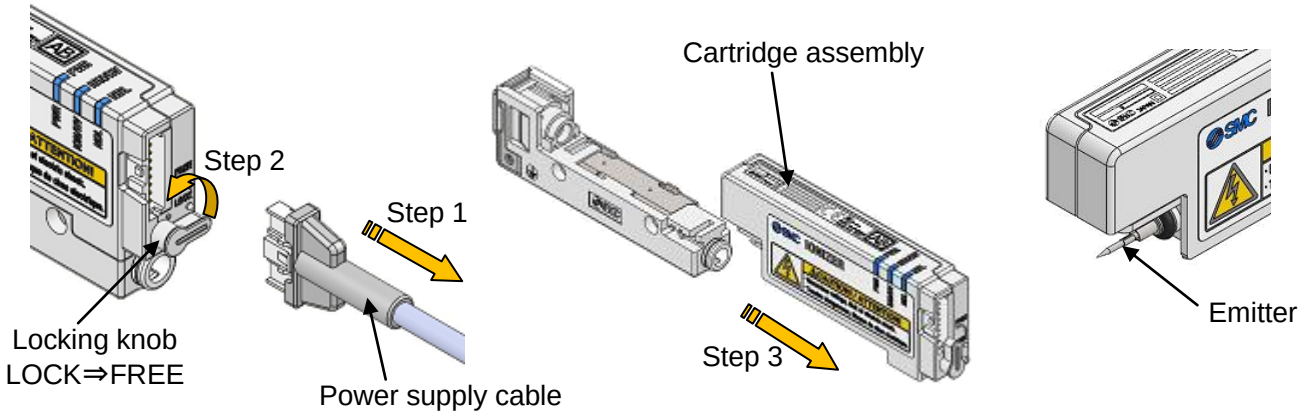
3-1-1. Precautions for Installation

Ensure that both the power supply and compressed air supply are disconnected before commencing with the product installation.

Do not affix any tape or labels to the product. 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.

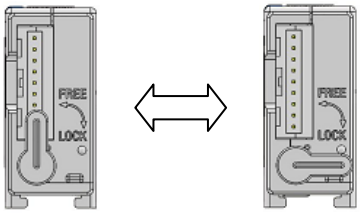
Keep sufficient space so that the cartridge assembly can be removed for cleaning and replacement of the emitter.

For cleaning or replacing the emitter, as shown in drawing step 1 to 3 below, remove the power cable and release the cartridge assembly lock by rotating the locking knob to the FREE position. Then, pull the cartridge assembly in the direction of the arrow. Do not touch the emitter when removing the cartridge assembly. (The locking knob cannot be rotated until the power cable is removed).



The procedure for mounting the cartridge assembly is the reverse of removal. Confirm that the Locking knob is in the FREE position.

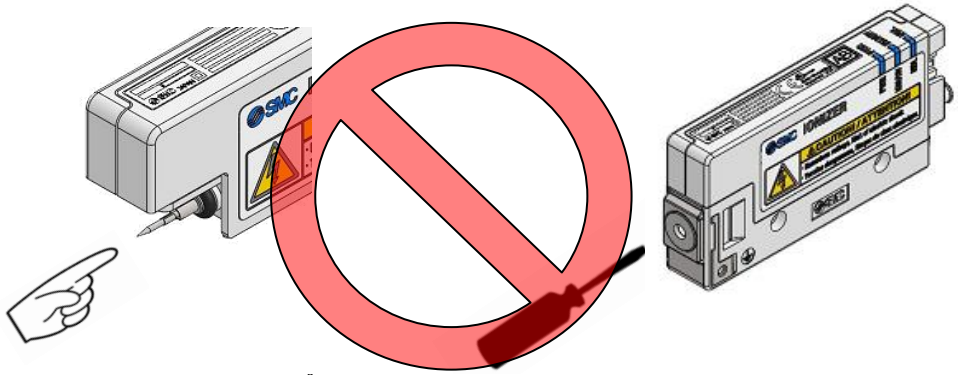
The cartridge assembly cannot be inserted while the locking knob is in the LOCK position, attempting to do so may cause damage.



FREE
Mounting and removal of the cartridge assembly

LOCK
When used

Do not directly touch the emitters with your finger or tools. This may result in injury. Also, if the tool damages the emitters, it may interfere with the specified function and performance, and may also cause operation failure and accident.



Danger High Voltage

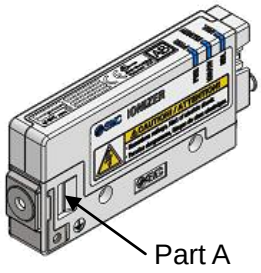
High voltage is applied to the emitters. Never touch the emitters. It may cause electrical shock.

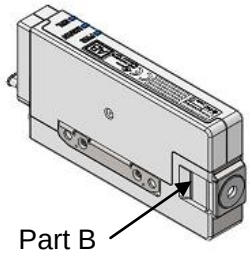
3-1-2. Ionizer Body Installation

1) Installation of the energy saving nozzle

The energy saving nozzle uses external air via the external air inlet.

The external air inlets are located in part A and part B (shown below). When an energy saving nozzle is used, do not cover the external air inlets. If the external air flow is blocked, product performance will decrease.





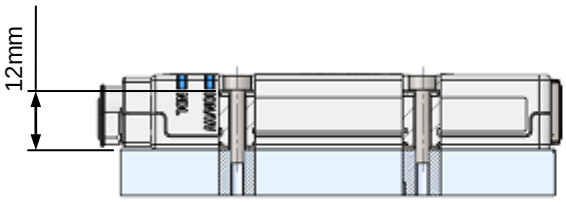
2) Installation without bracket

If a bracket is not used, install the product using either the through holes or tapped holes.

When installing the product, use M3 hexagon socket head cap screws. (The screws should be prepared by the user).

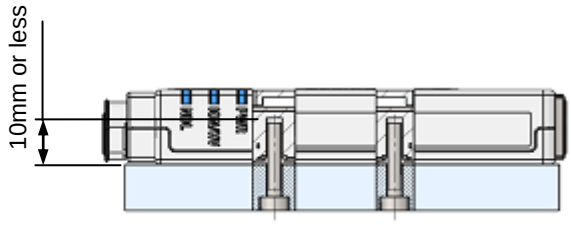
Referring to the figure below, affix the product using screws of optimum length.

M3 screw recommended tightening torque is 0.61 to 0.63 Nm.



Use a screw with a length of 12 mm more than.

Top through-hole mounting



Use a screw with maximum screw-in depth of 10 mm

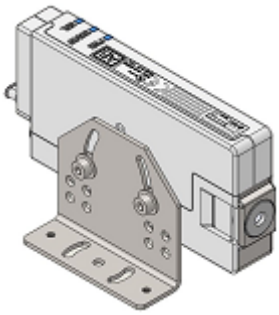
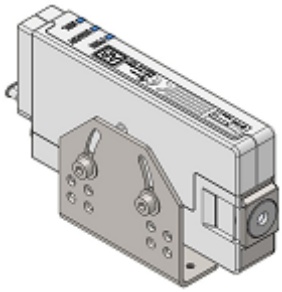
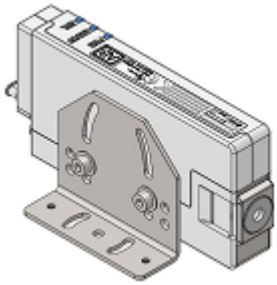
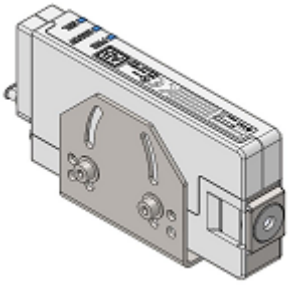
Bottom tapped-hole mounting

3) Installation with bracket

There are 3 types of bracket available (L-shaped bracket, Pivoting bracket, and DIN rail mounting bracket)

(1) L-bracket

The L-bracket can be mounted in 4 different ways as shown below.

	Outward mounting	Inward mounting
Pivot mounting		
Fixed mounting		

The bracket mounting methods are shown below.

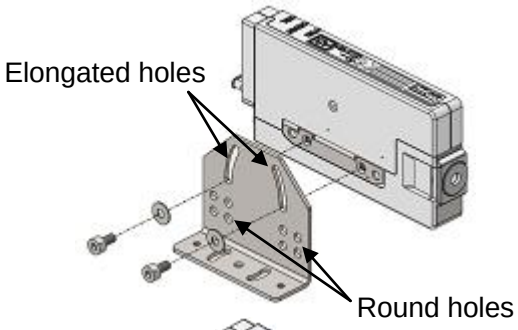
a. Mounting the product to the bracket

If angle adjustment is required after fixing the product, use the elongated holes in the bracket. If it will not be required use the round holes.

For mounting the product to the bracket, use the hexagon socket head cap screws (M3 x 6) and flat washers included with the bracket.

Refer to "Dimensions" section for details.

Tightening torque: 0.61 to 0.63 Nm



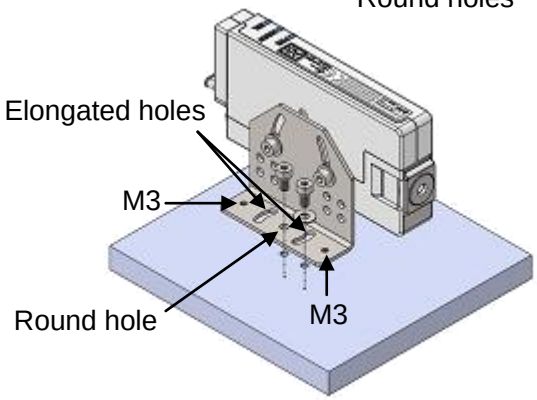
b. Mounting of the bracket

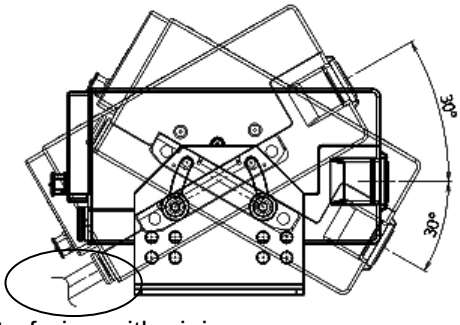
For mounting the bracket to an installation etc., use either the through holes or tapped (M3) holes and use the elongated or round holes in the base of the bracket. When angle adjustment is necessary after installation, use the elongated holes.

If the elongated holes are used, the flat washers included with the bracket must be used.

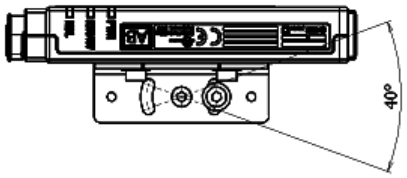
The mounting screws should be prepared by the user.

Refer to "Dimensions" section for details.





Avoid interfering with piping.



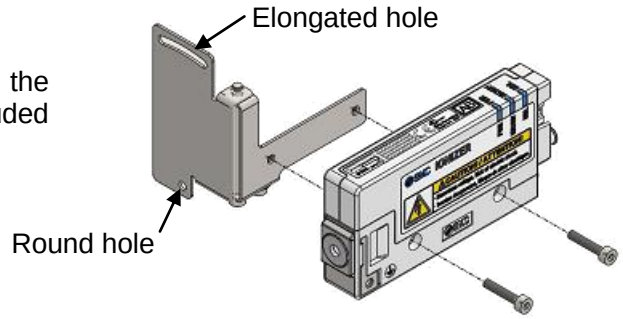
Mounting angle adjustable range of the L-bracket

(2) Pivoting bracket

a. Mounting of the product to the bracket

For mounting the product to the bracket, use the hexagon socket head cap screws (M3 x 16) included with the bracket.

Tightening torque: 0.61 to 0.63 Nm



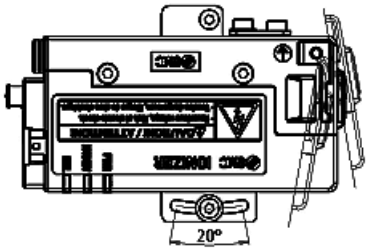
b. Fixing of the bracket

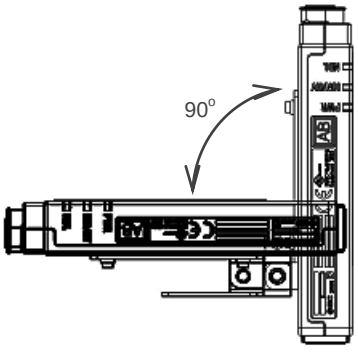
For mounting the bracket to an installation etc., use the elongated holes or round holes.

If the elongated holes are used, the flat washers included with the bracket must be used.

The mounting screws should be prepared by the user.

Refer to "Dimensions" section for details.



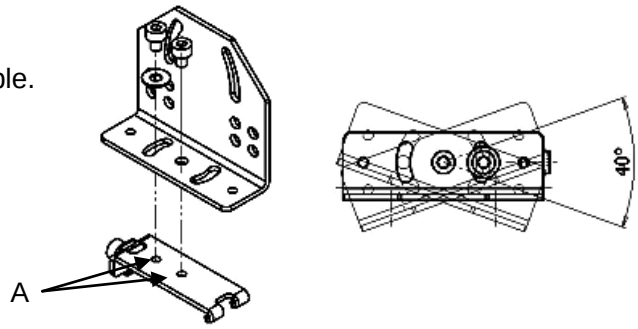


Mounting angle adjustable range of the pivoting bracket

(3) DIN rail mounting bracket

a. Angle adjustment of the DIN rail mounting bracket

The DIN rail mounting bracket angle is adjustable.
Tighten the threads A after adjusting the angle.
Tightening torque: 0.61 to 0.63 Nm

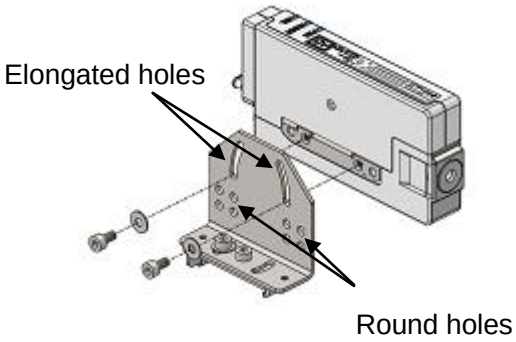


b. Mounting of the product to the bracket

If angle adjustment is required after fixing the product, use the elongated holes in the bracket. If it will not be required use the round holes.

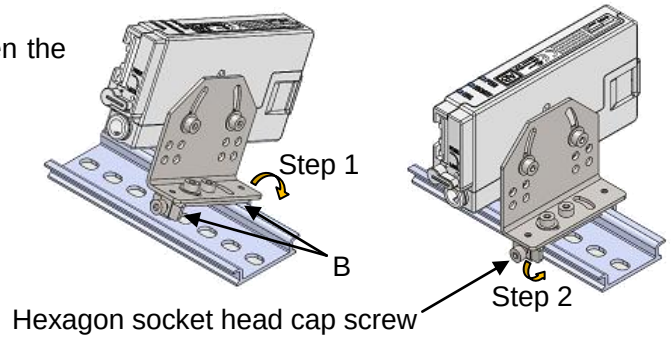
For mounting the product to the bracket, mount the L-bracket using the hexagon socket head cap screws (M3 x 6) and flat washers included with bracket.

Refer to "Dimensions" section for details.
Tightening torque: 0.61 to 0.63 Nm



c. Fixing to the DIN rail

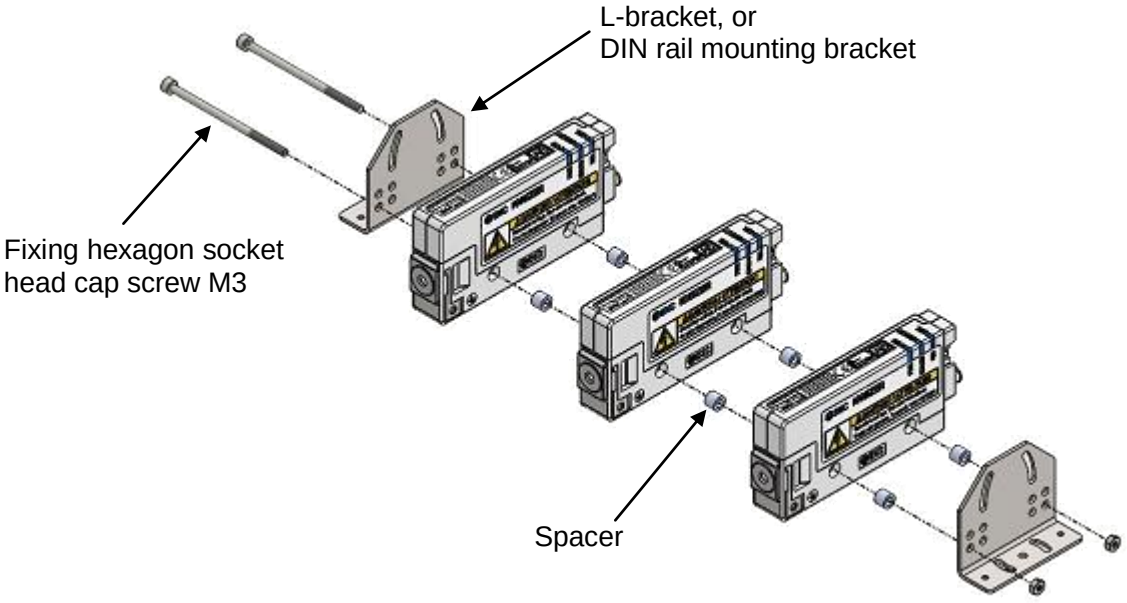
Place the DIN rail in the groove B and tighten the hexagon socket head cap screw.
Tightening torque: 0.61 to 0.63 Nm



4) Manifold mounting

The spacers packed together with the parts set must be used for assembly. Their purpose is to create a common ground connection.

Refer to the drawing below for assembling (when 3pcs. are connected).
Tightening torque: 0.61 to 0.63 Nm



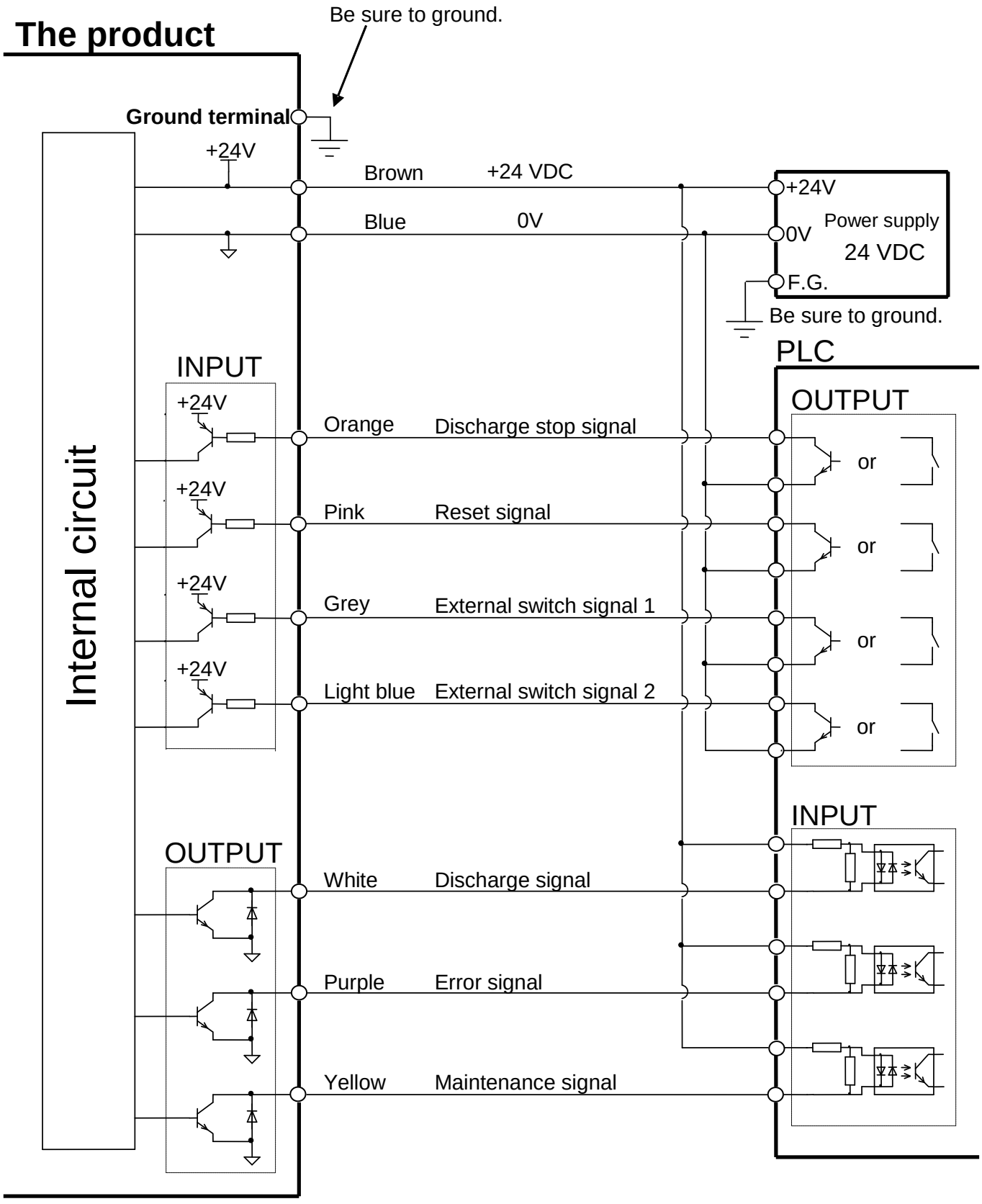
3-2. Wiring

3-2-1. Connection Circuit

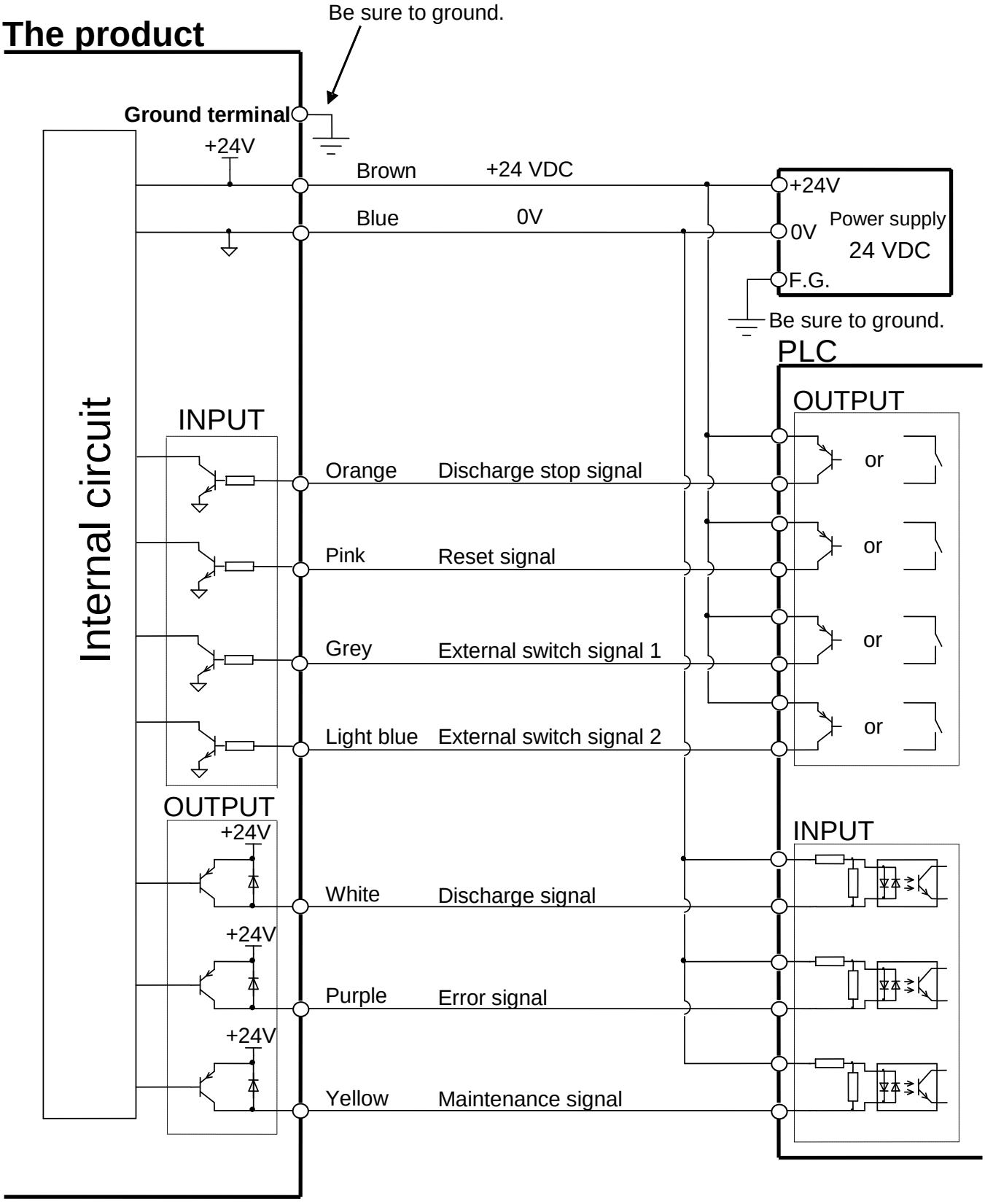
Wire power cables according to the connection circuit and wiring chart.
Make sure to ground the ground terminal with a ground resistance of 100Ω or less.
The ground terminal is used as a reference electric potential for static neutralization. If the ground terminal is not grounded, the Ionizer will not be able to achieve the optimal offset voltage (ion balance).

Connection circuit

NPN Input / Output

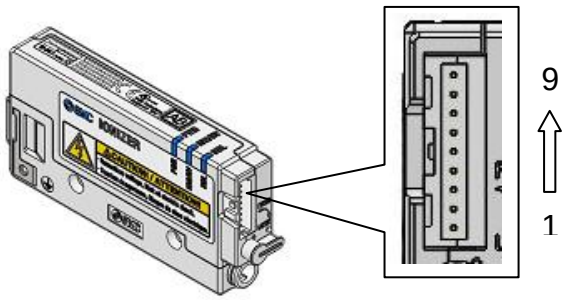


PNP Input / Output



3-2-2. Wiring of the power supply cable

Fix the cables with more than the minimum bending radius to prevent an excessive stress from being applied to the cables and/or connectors.



Minimum bending radius : 30 (mm)

Note) This is an allowable bend radius at 20°C. When the cables are bent at a lower temperature than 20°C, it may cause unreasonable force to be applied to the connectors.

Unused electric wires should be cut short or insulated to avoid contacting with other electric wires.

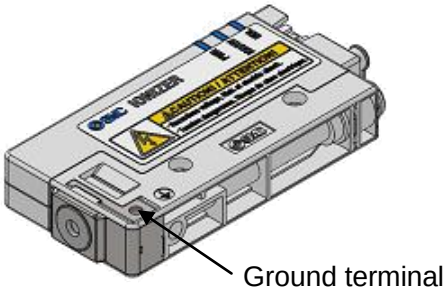
Wiring

Pin No.	Cable color	Signal name	I/O	Description
1	Brown	+24 VDC	IN	Power supply connection to operate the product.
2	Blue	0V	IN	
3	Orange	Discharge stop signal	IN	Signal input to turn ON/OFF the ion discharge. NPN specification: Starts ion discharge by connecting to 0V. (Stops discharging ion when disconnected.) PNP specification: Starts ion discharge by connecting to +24 VDC. (Stops discharging ion when disconnected.)
4	Pink	Reset signal	IN	Input signal to clear error signal. (If the source of error is not eliminated, an error signal will be output again after inputting the reset signal)
5	White	Discharge signal	OUT (Albeit contact)	The signal is ON while the product is discharging.
6	Purple	Error signal	OUT (Break contact)	The signal is OFF when the power supply, high voltage or CPU is abnormal. (The signal is ON green when there is no problem.)
7	Yellow	Maintenance signal	OUT (Albeit contact)	The signal is ON when the neutralizing performance has decreased.
8	Grey	External switch signal 1	IN	Product can be turned ON/OFF by connecting an external switch. NPN specification: Connect the switch between 0V and the external switch signal. Electric discharge stops when the connected switch is ON. PNP specification: Connect the switch between +24VDC and the external switch signal. Electric discharge stops when the connected switch is ON.
9	Light blue	External switch signal 2	IN	

3-2-3. Ground connection

Make sure to ground the ground terminal with a ground resistance of 100Ω or less.

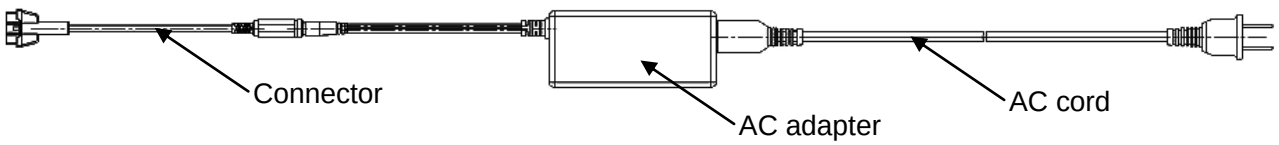
The ground terminal is used as a reference electric potential for static neutralization. If the ground terminal is not grounded, the Ionizer will not be able to achieve the optimal offset voltage (ion balance).



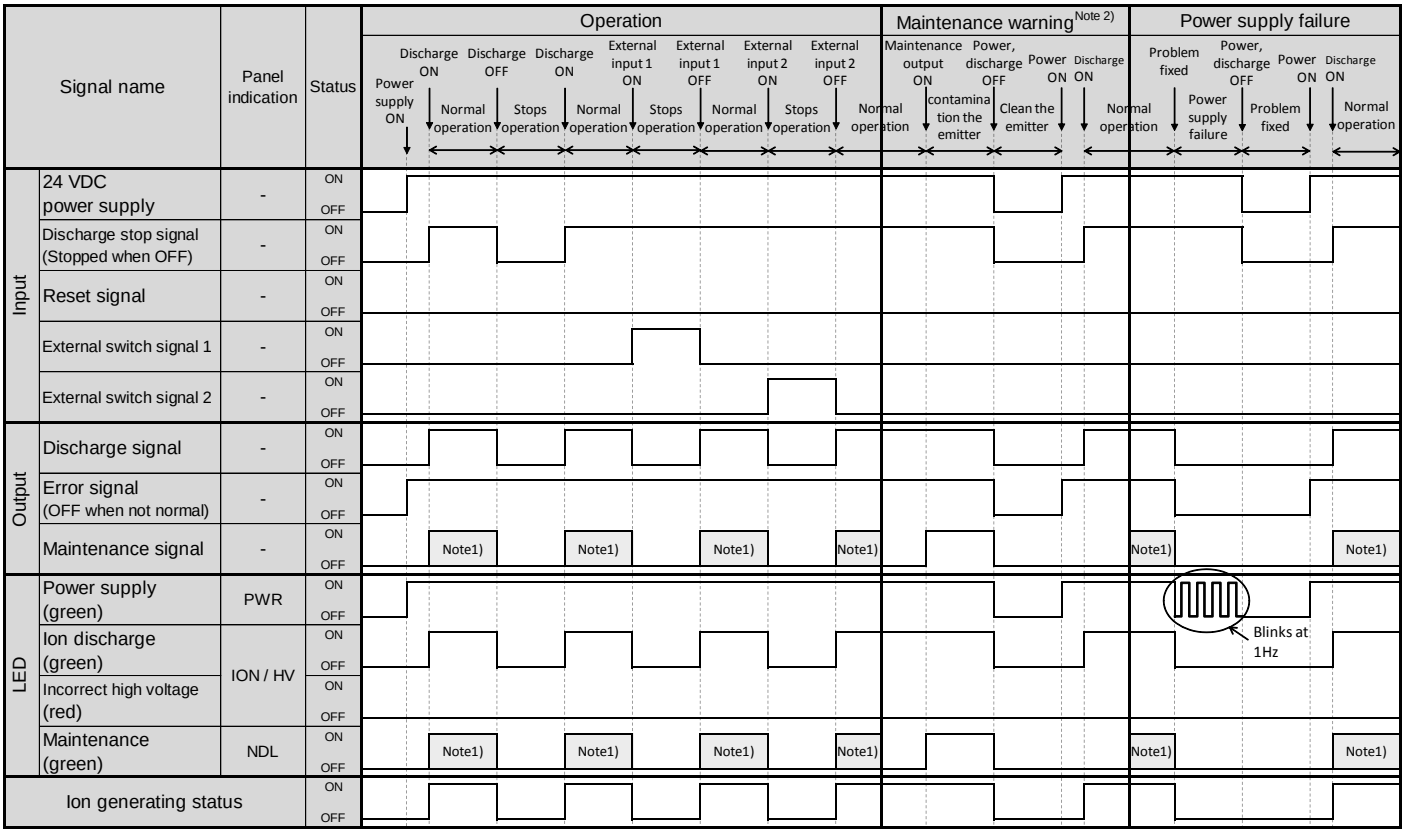
3-2-4. AC adapter

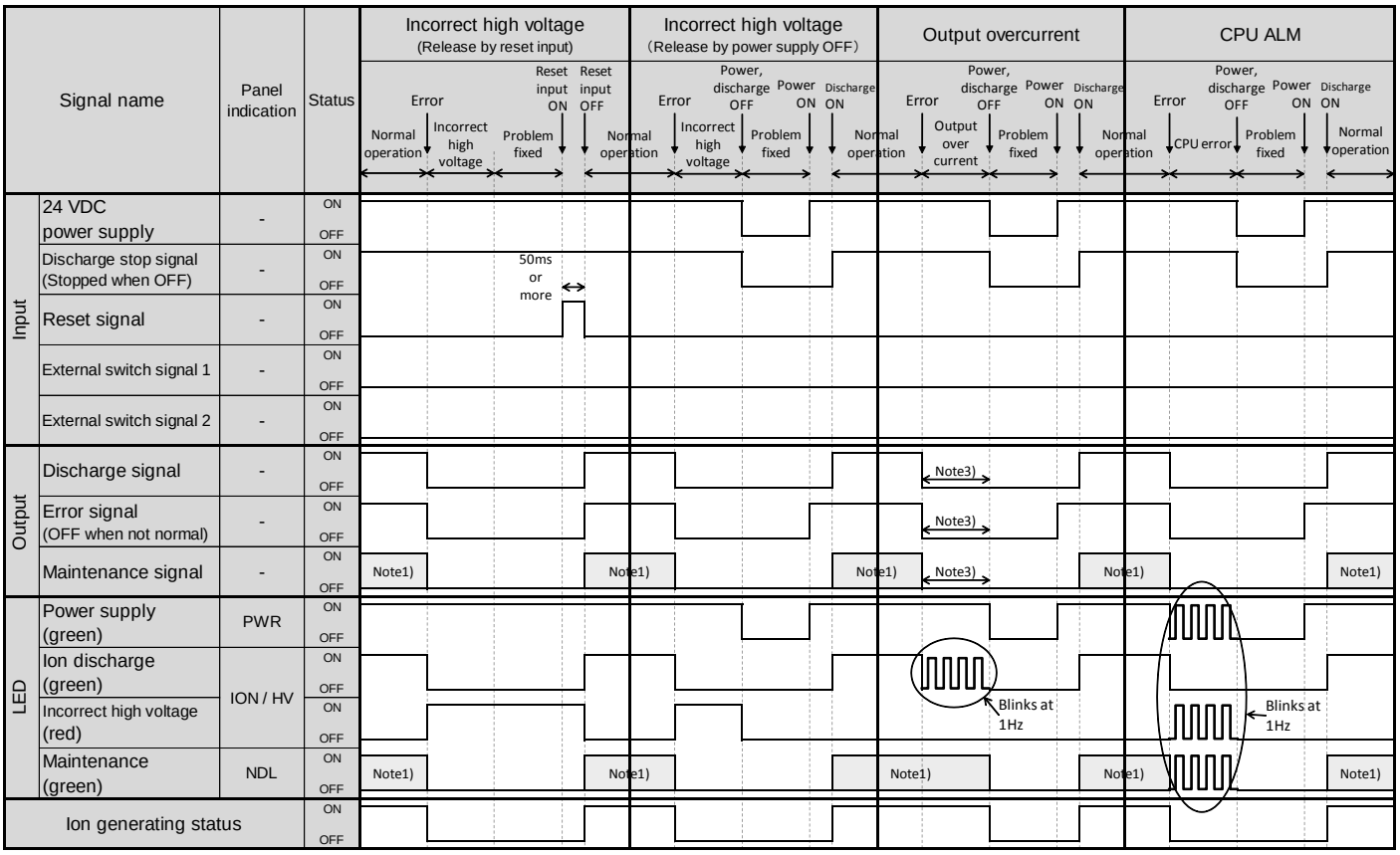
Select the same input/output specification as the product.

If the product input/output specification and AC adapter input/output specification are different, the product will not operate.



3-3. Timing chart

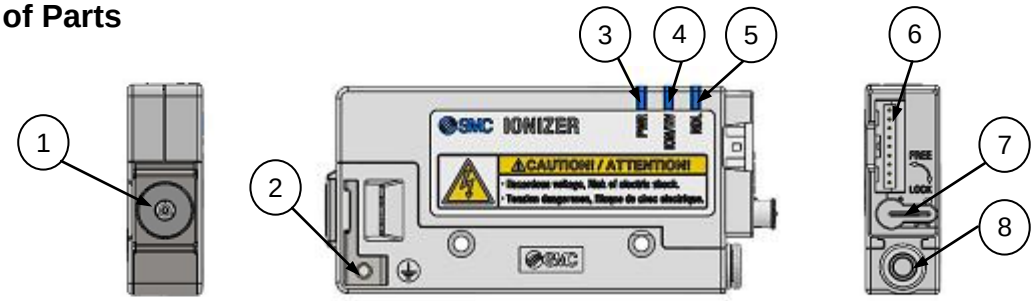




Note 1) LED is ON (signal output is ON) when neutralization performance has decreased.
Note 2) The emitter should never be cleaned while the power supply and compressed air are supplied to the product.
Note 3) If overcurrent is generated, the output signals of discharge, error, and maintenance limit current to protect the output circuit. (Only the output where the overcurrent occurs)

4. Function

4-1. Name of Parts



No.	Description	Symbol	Type	Description
1	Nozzle	-	-	Discharges ionized air
2	Ground terminal	⏚	Terminal	Reference point for neutralization. Connect to Ground with 100 Ω or less.
3	Power supply indicator	PWR	LED (Green)	LED is ON when the power supply is ON; LED flashes when the power supply or CPU is abnormal.
4	Ion discharge / Incorrect high voltage LED	ION/HV	LED (Green/Red)	Green LED is ON: discharge in progress Green LED flashing: Overcurrent at output Red LED is ON: high voltage error Red LED flashing: CPU error
5	Emitter maintenance indicator	NDL	LED (Green)	LED is ON: ion generation decreased LED flashing: CPU error
6	Connector	-	Connector	Connector for power supply and input/output signals.
7	Locking knob	-	Knob	Knob for locking the cartridge assembly. Power cable can be mounted/removed only when the knob is in the LOCK position.
8	Piping port	-	One-touch Fitting	Port for compressed air supply.

4-2. Emitter maintenance alarm and cleaning

If the ionizer is used for an extended period of time, contamination such as dust will stick to the emitters, reducing the static neutralization performance.

This product has a function which continuously monitors the discharge from the emitter. When the neutralization performance decreases due to contamination, it is indicated by the maintenance signal and LED.

It is recommended to clean the emitters when the maintenance alarm is generated, or every two weeks.

(The cleaning frequency varies depending on the environment where the ionizer is installed.)

If the ionizer performance does not recover after cleaning the emitters, it can be assumed that the emitters are damaged or worn. If wear or damage of the emitters is detected, replace the emitter assembly.

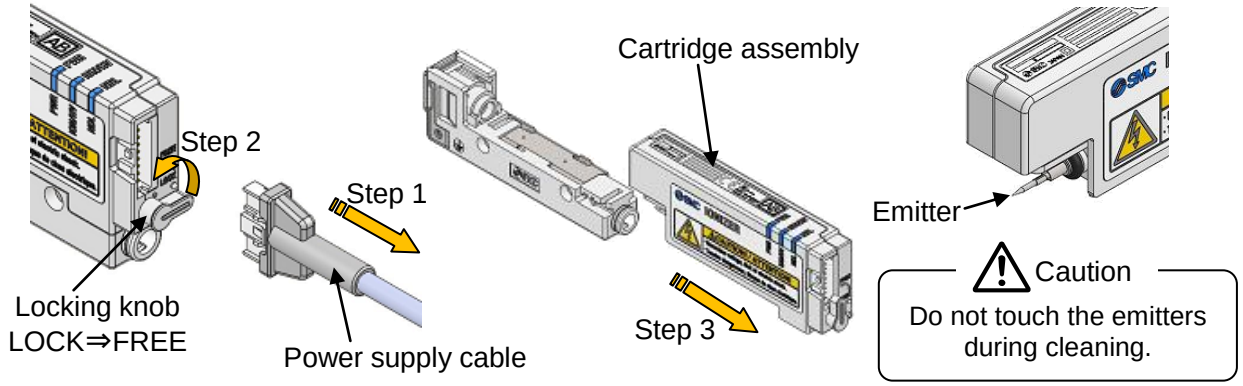
Clean the emitters using the cleaning kit [IZS30-M2] or a cotton bud soaked in alcohol.

Cleaning of the emitters should never be performed while the power supply or compressed air supplied to the product.

In addition, if the emitters are touched while they are energized, it may cause electric shock or an accident. As the emitter ends are sharp, be careful not to touch them. Otherwise, it may cause injury.

- Mounting/Removal of the cartridge assembly and cleaning of emitter

1. Ensure that the power supply and compressed air supply are disconnected before removing the power cable.
2. Turn the locking knob of the cartridge assembly to the FREE position to release the lock.
   (The locking knob cannot be operated until the power cable is removed).
3. The cartridge assembly can be removed by pulling it in the direction of the arrow. Take care with the emitter when removing the cartridge assembly.



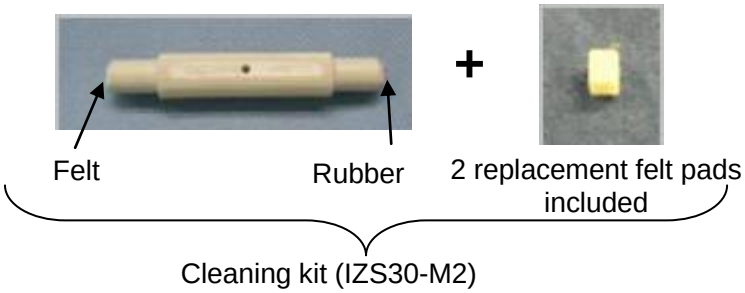
4. Clean the emitter mounted to the cartridge assembly.

– Cleaning of the emitter –

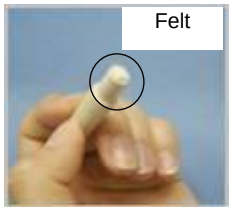
Using the cleaning kit, saturate the felt with industrial alcohol, insert it into the emitters and rotate several times to clean. If the dirt does not come off, use the rubber grindstone to clean the emitters in the same way. After that, again use the felt saturated with industrial alcohol to finish the cleaning.

If a cleaning kit is not available, saturate a cotton swab with alcohol [Note 1)] to clean the emitters.

Note 1) The industrial alcohol used should be reagent ethanol class 1 99.5vol% or greater.



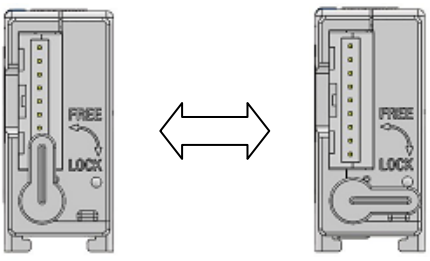
The cleaning kit has a felt pad and a rubber grindstone. Choose the felt pad or rubber grindstone depending on the level of contamination to effectively clean the emitters.



Use for normal cleaning

Use if dirt cannot be removed with felt.

5. The procedure for mounting the cartridge assembly is the reverse of removal. Confirm that the locking knob is in the FREE position. The cartridge assembly cannot be inserted while the locking knob is in the LOCK position, attempting to do so may cause damage.



FREE
Mounting and removing of the cartridge assembly

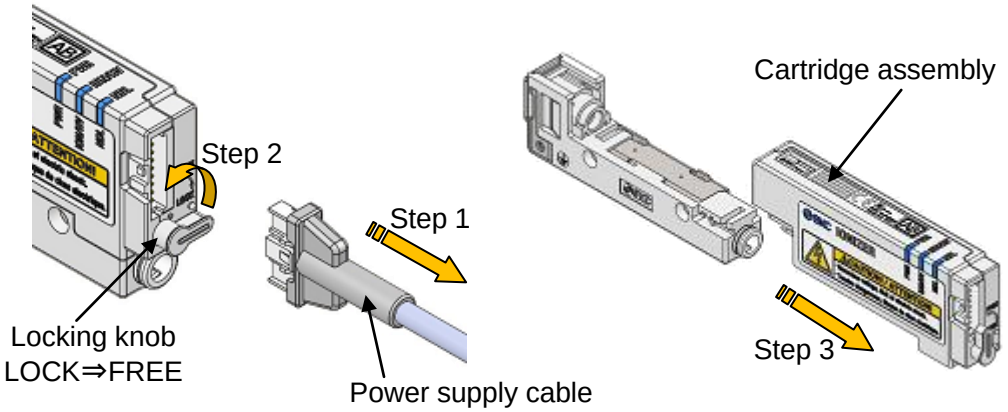
LOCK
When used

4-3. Replacement of the emitter assembly

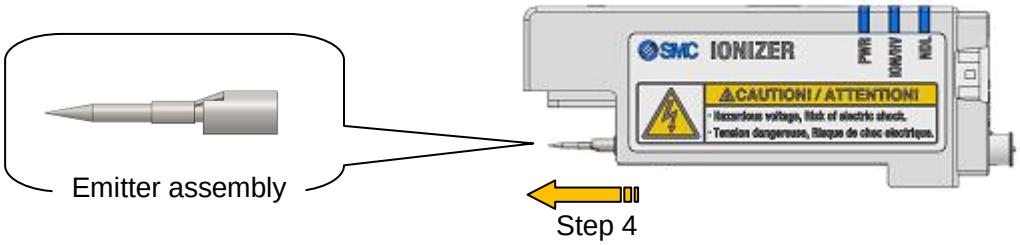
If the emitters are worn out or damaged, replace the emitter assembly.

- Mounting/Removal of the cartridge assembly and replacement of emitter

1. Ensure that the power supply and compressed air supply are disconnected before removing the power cable.
2. Turn the locking knob of the cartridge assembly to the FREE position to release the lock.
   (The locking knob cannot be rotated until the power cable is removed).
3. The cartridge assembly can be removed by pulling it in the direction of the arrow. Take care with the emitter when pulling the cartridge assembly.



4. Hold the emitter assembly (which is mounted to the cartridge assembly) using tweezers and pull out in the direction of the arrow. To avoid injury take care not to touch the very sharp emitter ends.



5. When mounting a new emitter assembly to the cartridge assembly, use gloves and tweezers to ensure the emitter is not contaminated. (Do not touch the emitter assembly with bare hands).

6. The procedure for mounting the cartridge assembly is the reverse of removal.

4-4. Alarm function

If abnormal functioning occurs during operation, the user is alerted by the external output signal or LED operation.

Alarm name	Status of the parallel I/O signals	ON LED	LED blinking (Blinks at 1Hz)	Operation after alarm + ions are generated	Product	How to release error after recovery
Power supply failure	Error signal OFF (Break contact) Discharge signal OFF(Albeit contact) Maintenance signal OFF (Albeit contact)	-	PWR (Green)	Stop	When the connected power supply voltage is outside of the specification.	Auto
Incorrect high voltage	Error signal OFF (Break contact) Discharge signal OFF(Albeit contact) Maintenance signal OFF (Albeit contact)	ION/HV (Red)	-	Stop	When abnormal high voltage is discharged.	Reset signal input Turn the power on again
Output signal over current	-	-	ION/HV (Green)	Continue	Over current is present on the output circuit and protection circuit is activated	Auto
CPU ALM	Error signal OFF (Break contact) Discharge signal OFF(Albeit contact) Maintenance signal OFF (Albeit contact)	-	PWR (green) ION/HV (red) NDL (green)	Stop	When CPU operates abnormally due to noise etc.	Turn the power on again.
Maintenance warning	Maintenance signal ON(Albeit contact)	NDL (Green)	-	Continue	When static neutralization performance is reduced due to contamination, wearing or breakage of emitters.	Input ion discharge signal Turn off the power and then on again.

1) Power supply failure

When the power supply connected to the product is not within the range of 24 V +/-10%, the error signal will be turned OFF (ON when it is normal), the discharge signal will be turned OFF, and the PWR LED (green) will flash to indicate the error.

When the failure occurs, ion generation will be stopped.

To resolve the error, reset the product automatically by connecting a power supply which provides a power supply voltage of 24 V +/-10%.

2) Incorrect high voltage

When incorrect emitter discharge is detected during operation, the error signal will be turned OFF (ON when it is normal), the discharge signal will be turned OFF, and the ION/HV LED (red) will be ON to indicate the error.

When the failure occurs, ion generation will be stopped.

The incorrect electric discharge could be caused by condensation or dust on the emitters.

To resolve the error, input the reset signal or supply power again after remedying the cause of the incorrect electric discharge.

3) Output signal over current

When excessive current flows to the output circuit, the current will be limited to protect the circuit and the ION/HV LED (green) will flash to indicate the error.

The product operates even when excessive current is generated in the output circuit.

To resolve the error, reset the product automatically by reducing the current to the output circuit down to 40 mA or less.

4) CPU error

When the CPU makes an abnormal operation due to noise or other reasons, the error signal will be turned OFF (ON when it is normal), and the PWR LED (green), ION-HV LED (red) and NDL LED (green) will flash to indicate the error.

When the failure occurs, ion generation is stopped.

To prevent noise, perform the following actions and take countermeasures.

1. Keep the product away from sources of noise.
2. Route the power line and cable of the product separately.
3. Install a noise filter to the power supply of the product.

To resolve the error, supply power again after fixing the cause of the error.

5) Maintenance warning

The maintenance signal is ON when static electricity neutralization performance has decreased due to contamination, wear or damage to the emitters. The NDL LED (green) will turn ON to indicate that cleaning or replacement of the emitters needs to be performed.

The product continues operation even when the maintenance warning has been generated.

When emitters are contaminated, the error can be solved by cleaning them. However, when they are worn out or damaged, it is necessary to replace the emitter assembly.

To resolve the error, input the discharge stop signal or supply power again after remedying the cause of the error.

When the female threads for piping option is used, the maintenance signal will turn ON if the nozzle pressure increases (causing the ion generation to decrease) due to the nozzle type.

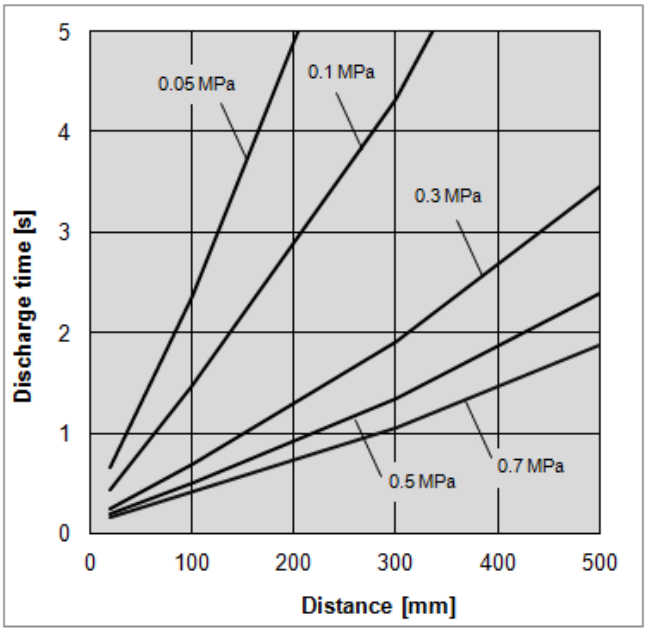
5. Performance

Performance given in this chapter is based on an electrified plate (dimensions: 150 x 150mm, electrostatic capacity: 20pF) defined by ANSI standard (ANSI/ESD STM3.1-2006). Use this data as a guideline for selection, as the performance data may vary depending on the material and size of the work piece.

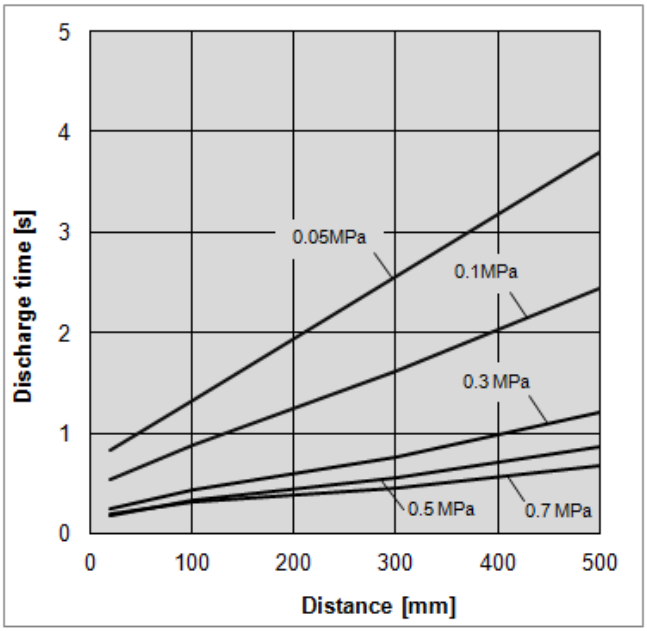
5-1.Basic characteristics

Static Neutralization Characteristics (Discharge time from +1000V to +100V)

Energy saving nozzle / IZN10E-01



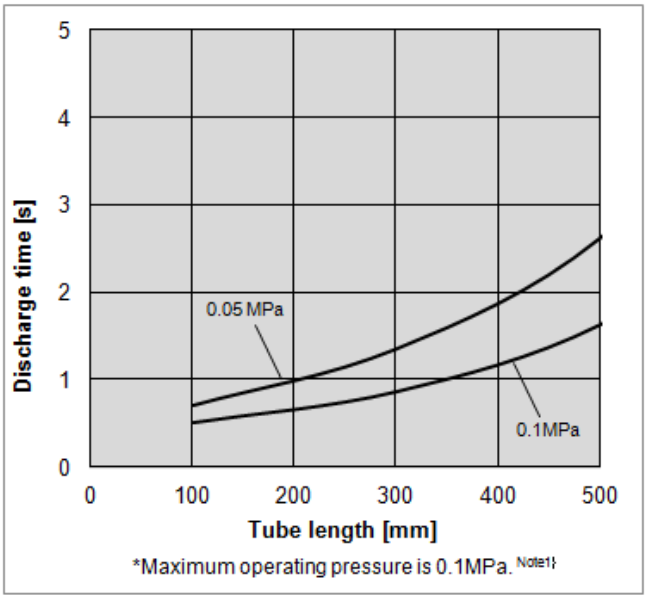
High flow rate nozzle / IZN10E-02



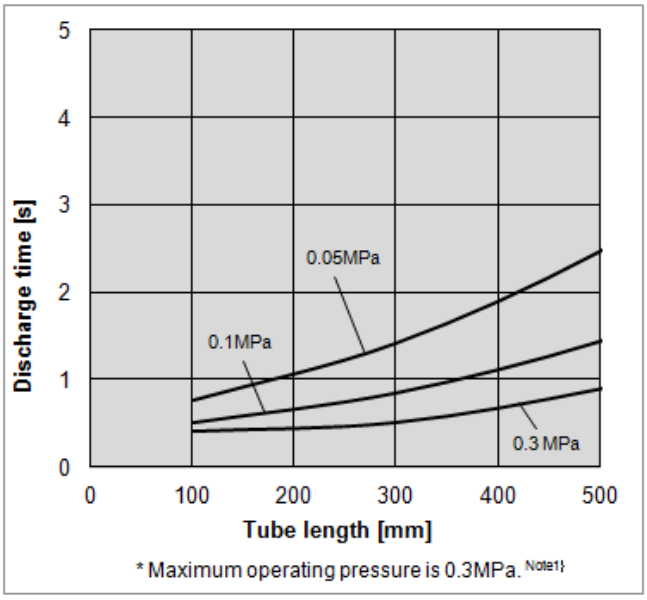
Female threads for piping / IZN10E-11[Note1)Note2)] With Stainless steel 316 One-touch fitting + Anti-static tubing

* Discharge time measured 50mm from the tube end.

Tube I.D.: 4mm



Tube I.D.: 5mm

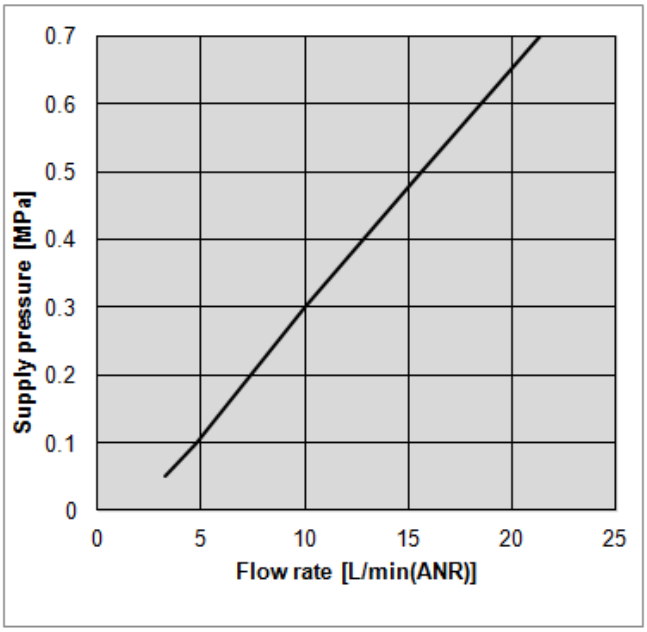


Note 1) Refer to "Cautions when using the IZN10E-11☐☐☐-☐(Female threads for piping)" on page 9.

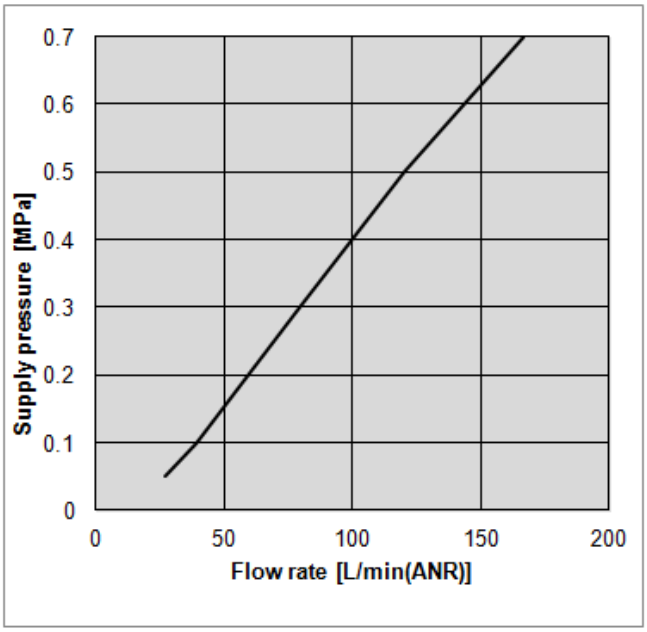
Note 2) The product generates a small amount of ozone. Please use ozone resistant tube and fitting for connecting to the female threads for piping of the product. Also, check regularly that nearby equipment will not be affected adversely by exposure to ozone.

Flow Rate Characteristics

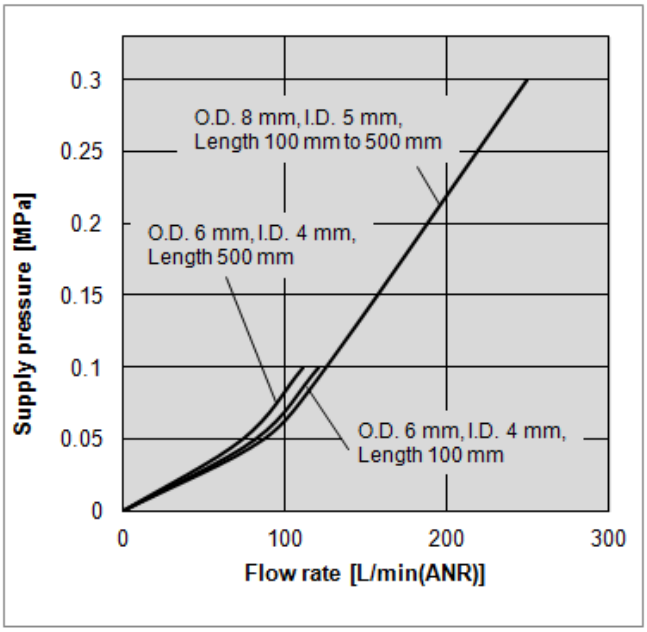
Energy saving nozzle / IZN10E-01



High flow rate nozzle / IZN10E-02



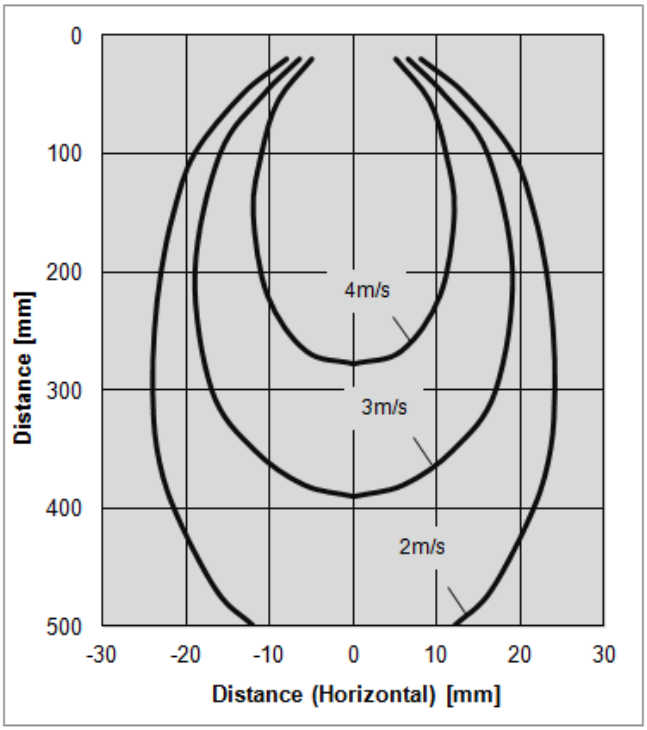
Female threads for piping / IZN10E-11
With Stainless steel 316 One-touch fitting + Anti-static tubing



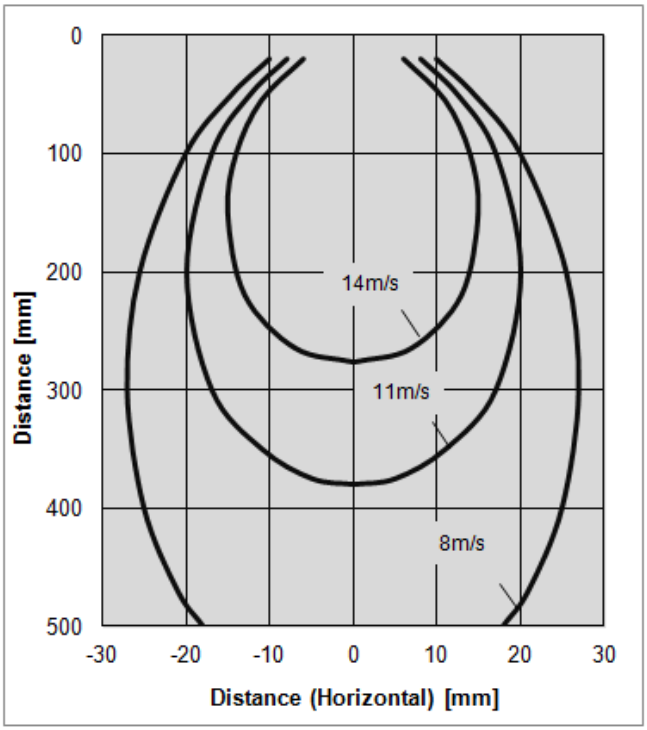
Note) Pressure exceeding the specified supply pressure will generate maintenance warning and turn on the LED.
Refer to "Cautions when using the IZN10E-11□□□-□(Female threads for piping)" on page 9.

Blow Velocity Distribution (Supply Pressure: 0.3 MPa)

Energy saving nozzle / IZN10E-01

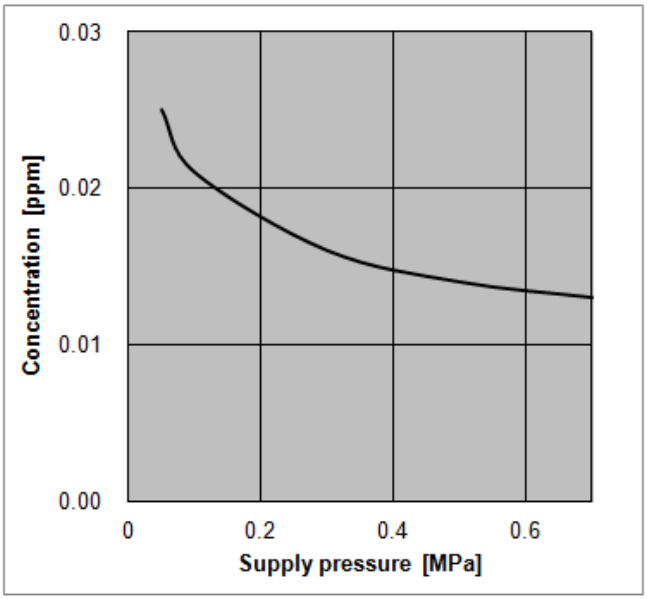


High flow rate nozzle / IZN10E-02

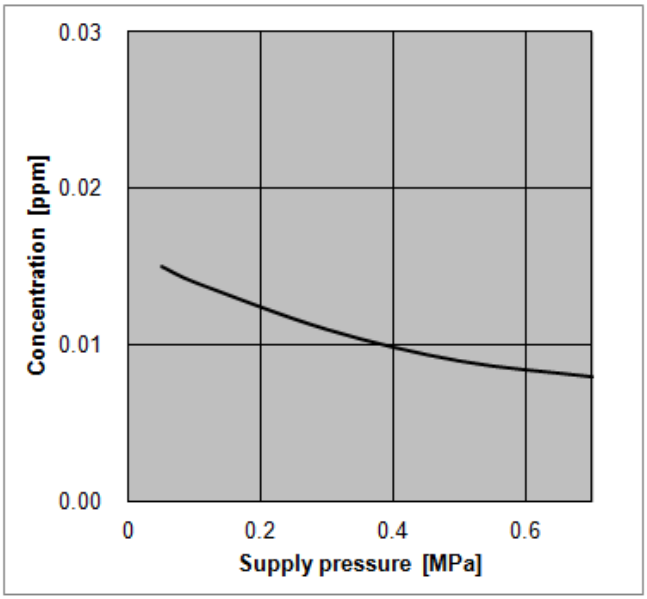


Ozone Concentration

Energy saving nozzle / IZN10E-01



High flow rate nozzle / IZN10E-02

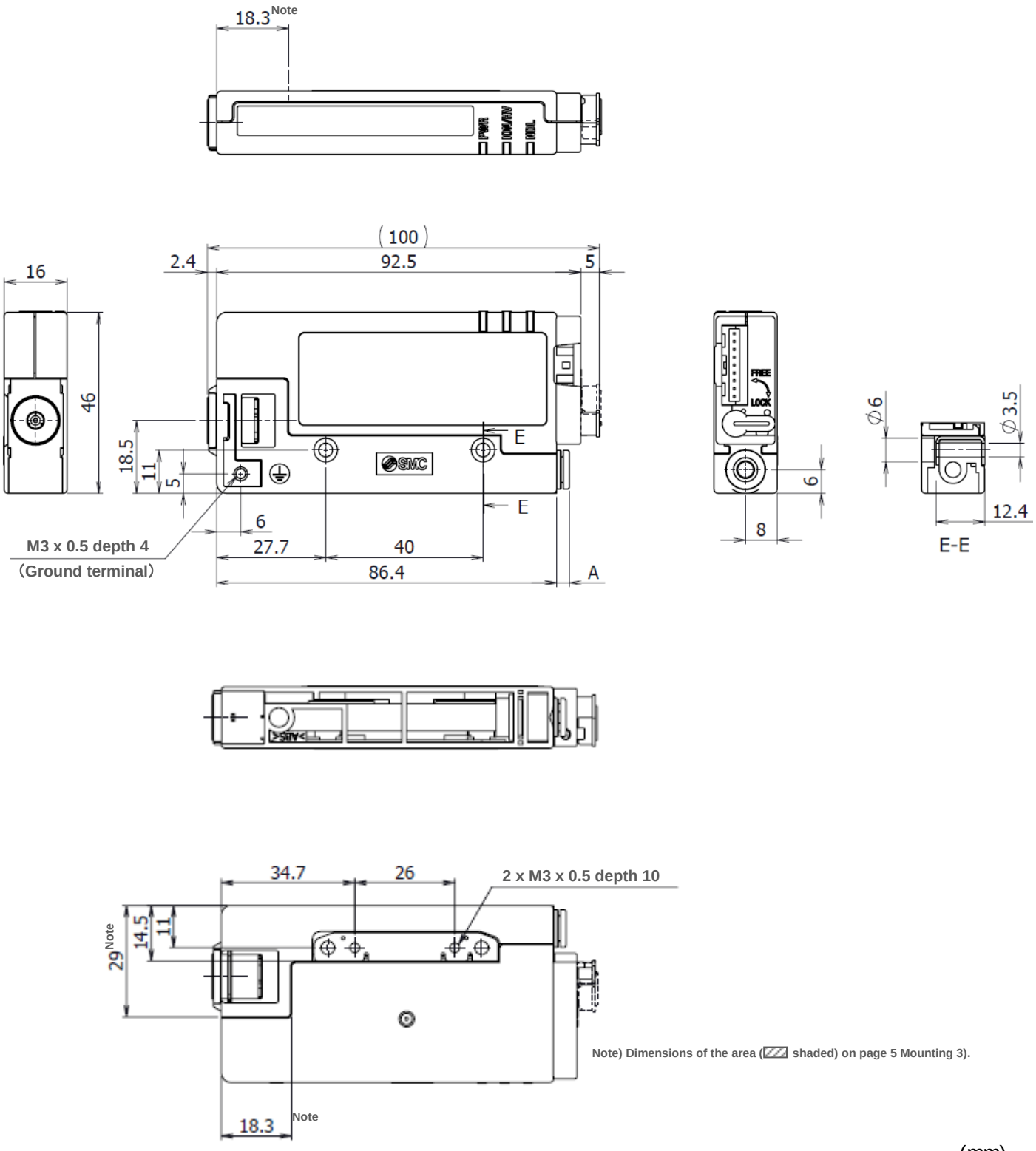


Note) Ozone concentration can increase in enclosed spaces.
Check the ozone concentration of the operating environment before using.

6. Dimensions

Energy saving nozzle／IZN10E-01☐ 06 07

High flow rate nozzle／IZN10E-02☐ 06 07

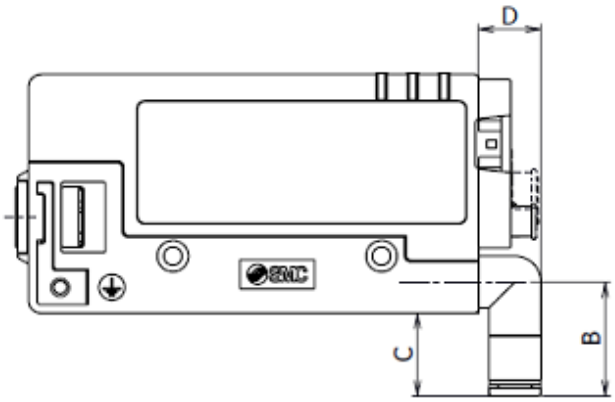


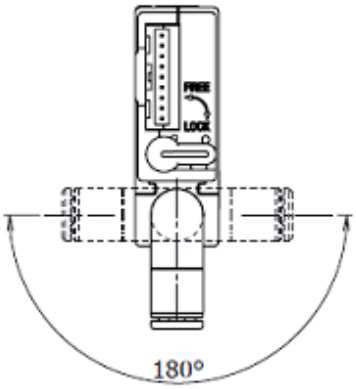
Note) Dimensions of the area (▨ shaded) on page 5 Mounting 3).

(mm)

Models	A
IZN10E- 01 02 ☐06	3.5
IZN10E- 01 02 ☐07	7

One-touch fitting (Elbow)／IZN10E-☐☐$^{16}_{17}$

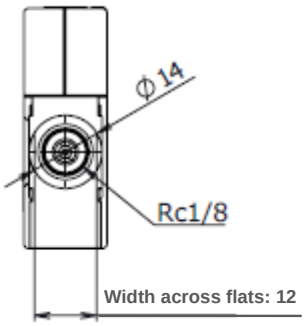


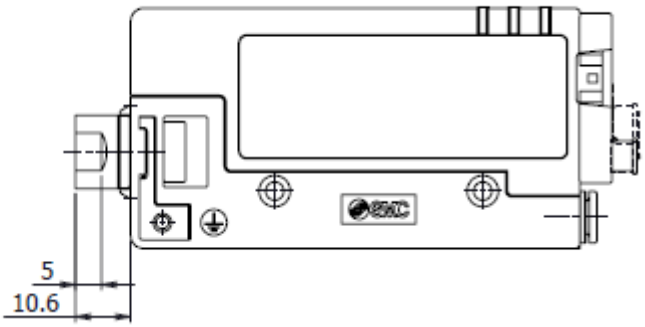


(mm)

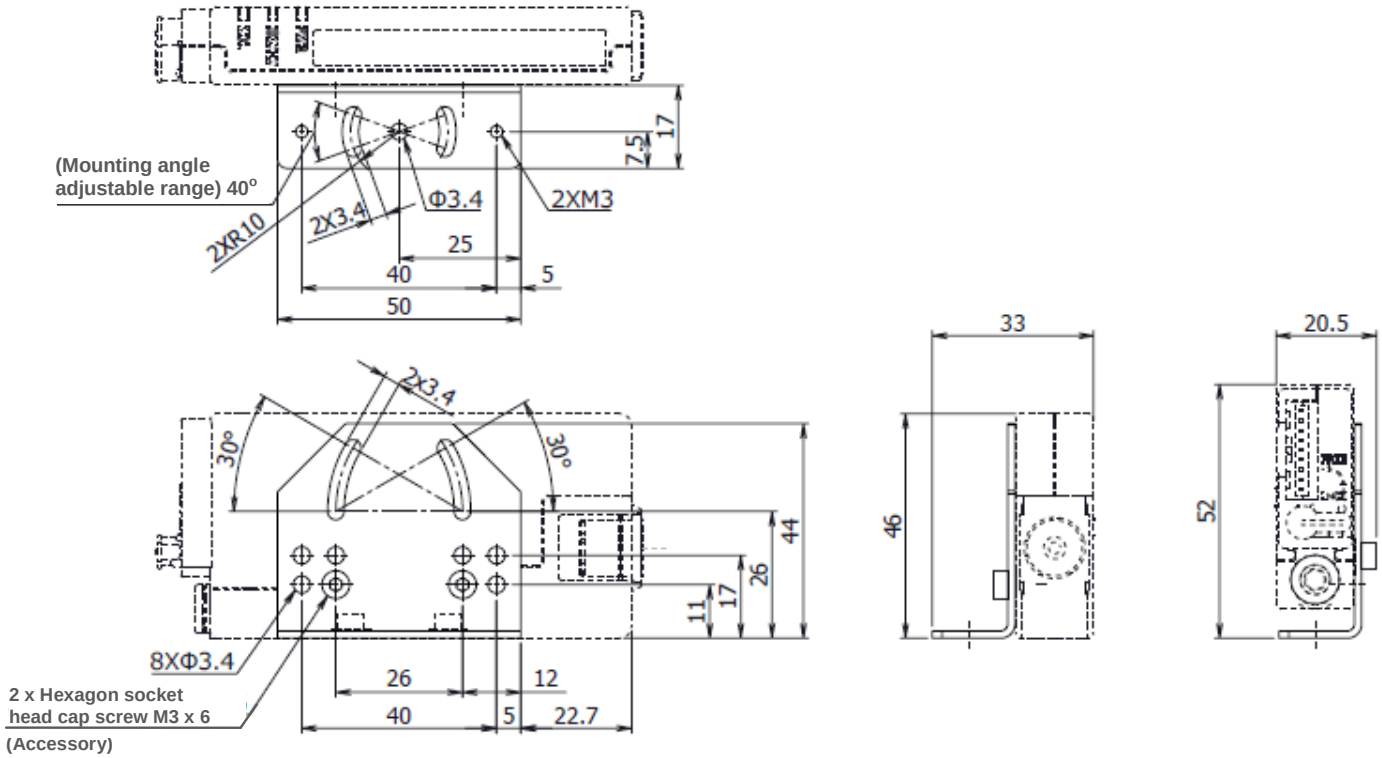
Models	B	C	D
IZN10E-☐☐16	22	16	11.5
IZN10E-☐☐17	24.5	18.5	12

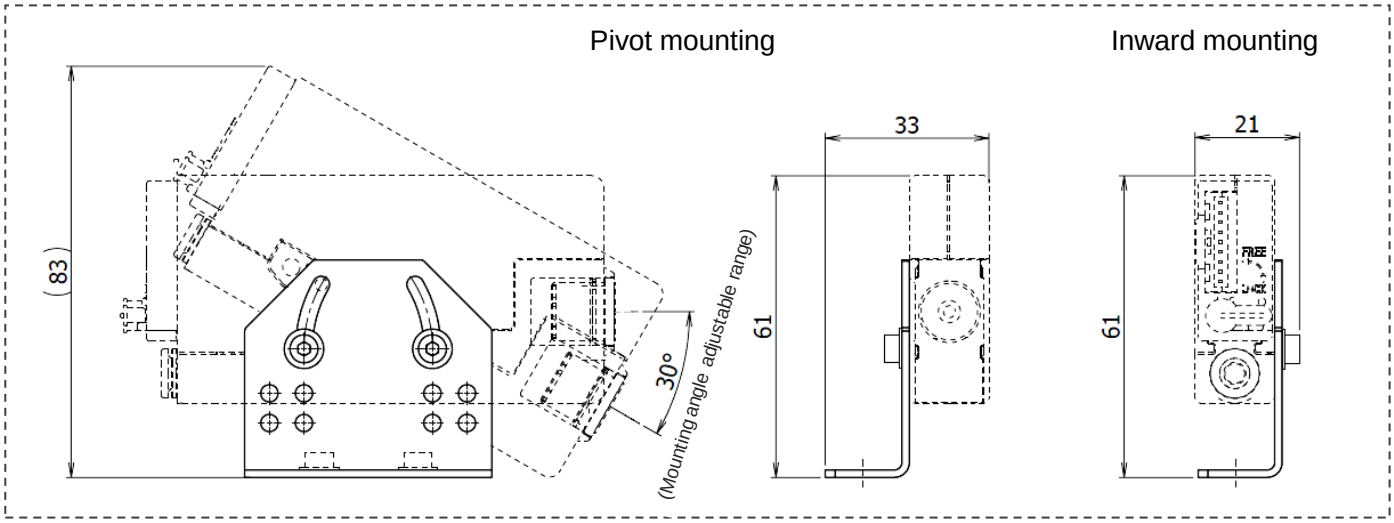
Female threads for piping／IZN10E-11☐☐



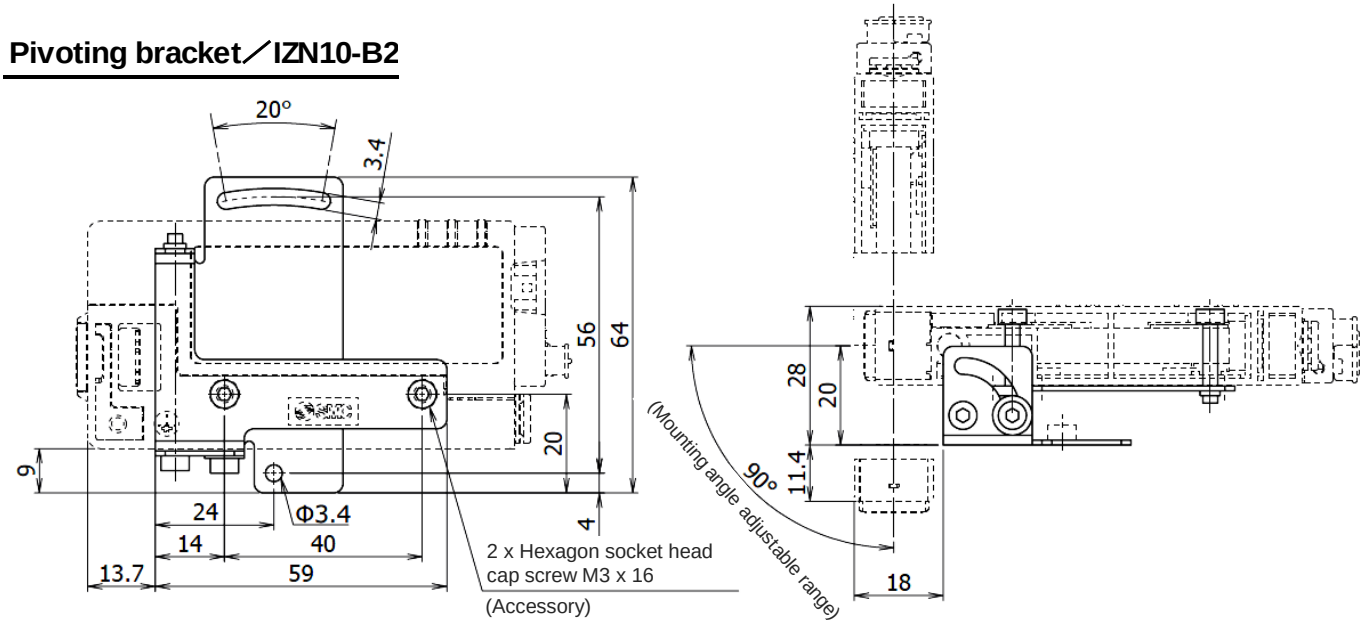


L-bracket／IZN10-B1

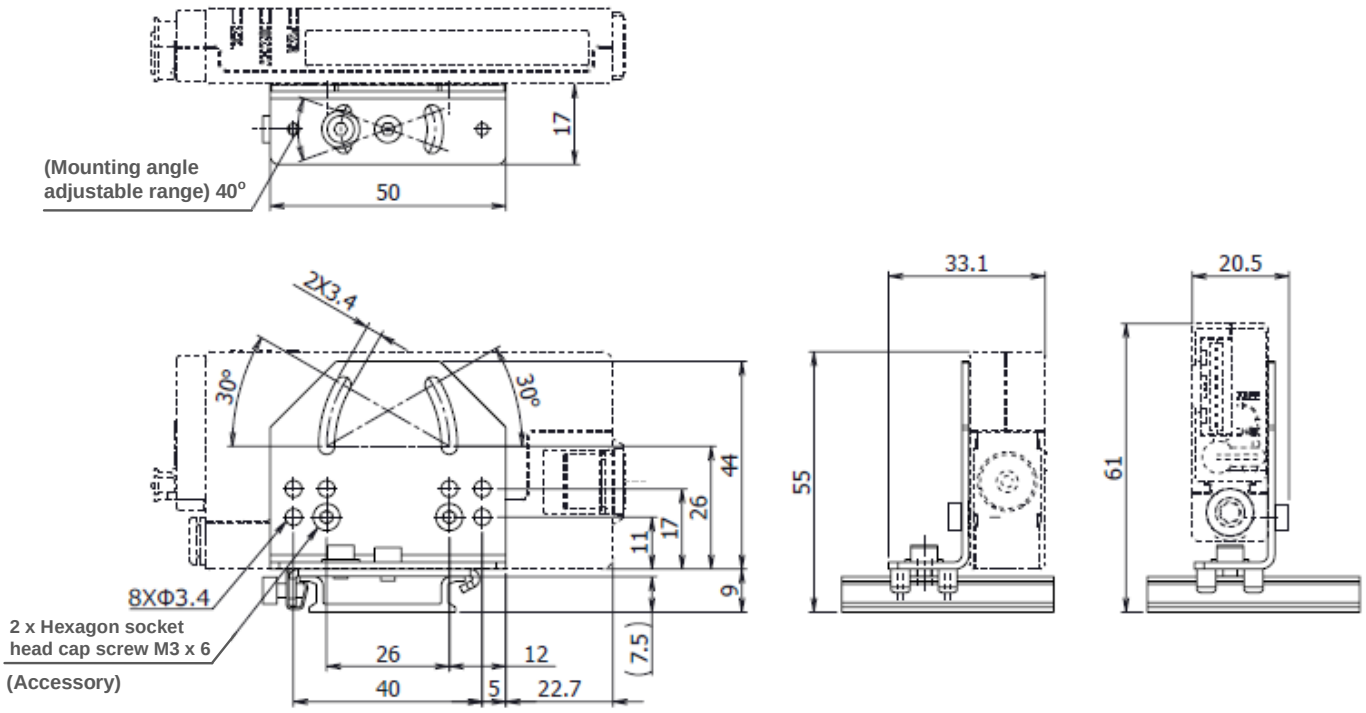


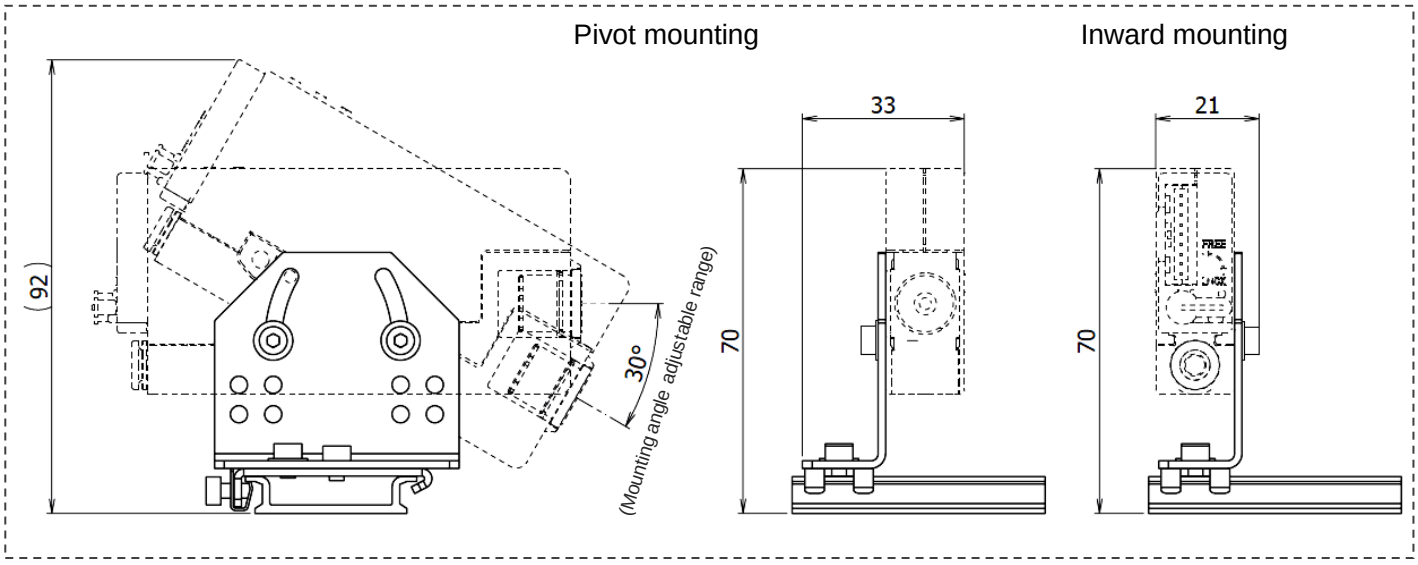


Pivoting bracket／IZN10-B2

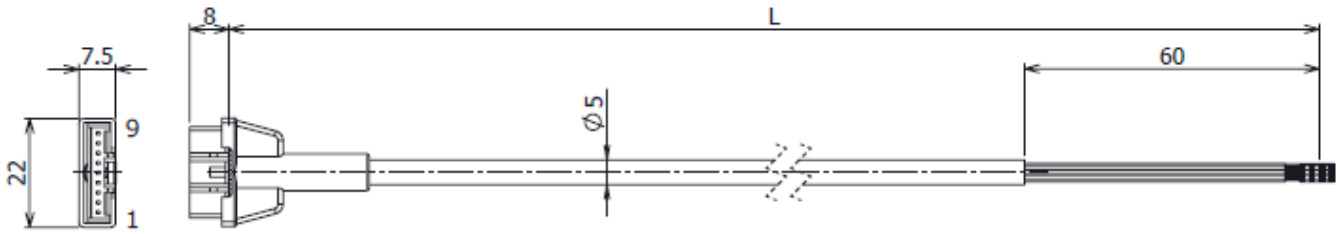


DIN rail mounting bracket／IZN10-B3





Power supply cable／IZN10E-CP☐

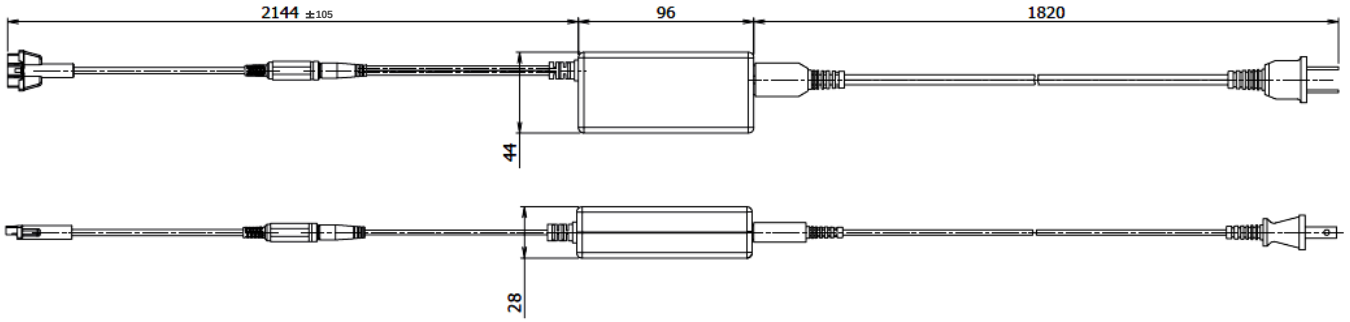


(mm)

Models	L
IZN10E-CP	3000
IZN10E-CPZ	9800

Number of cable wire/Size		9pcs./AWG26
Conductor	Nominal cross section	0.15mm^2
	O.D.	0.5mm
Insulator	O.D.	0.95mm Brown, Blue, Orange, Pink, White, Purple, Yellow, Gray, Light blue
Sheath	Material	Lead-free PVC
	O.D.	5mm

AC adapter／IZN10E-C☐-☐



Models	AC cord	Input / Output signal
IZN10E-CG1	Included	NPN
IZN10E-CG1-P	Included	PNP
IZN10E-CG2	Not included	NPN
IZN10E-CG2-P	Not included	PNP

7. Specifications

Models		IZN10E-□ (NPN)	IZN10E-□P (PNP)
Ion generation method		Corona discharge	
Method of applying voltage		High frequency AC type	
Applied voltage Note 1)		2.5kVAC	
Offset voltage Note 2) (ion balance)	Energy saving nozzle	+/- 10V	
	High flow rate nozzle	+/- 15V	
Air purge	Fluid	Air (Clean dry air)	
	Operating pressure Note 3),Note 4)	0.05 to 0.7 MPa	
	Tube O.D.	ø6 ・ø1/4 inch	
Power supply voltage		24VDC+/-10%	
Current consumption		80mA or less	
Input signal	Discharge stop signal	Connected to 0 V Voltage range: 5 VDC or less Current consumption: 5mA or less	Connected to +24 V Voltage range: 19 VDC to power supply voltage Current consumption: 5mA or less
	Reset signal		
	External switch signal 1		
	External switch signal 2		
Output signal	Discharge signal	Maximum load current: 40 mA Residual voltage: 1 V or less (Load current at 40 mA) Maximum applied voltage: 26.4 VDC	Maximum load current: 40 mA Residual voltage: 1V or less (Load current at 40 mA)
	Error signal		
	Maintenance signal		
Effective static neutralization distance		20 mm to 500 mm	
Ambient temperature（During operation/storage）		0 to 55 °C	
Ambient humidity（During operation/storage）		35 to 65% Rh (With no condensation)	
Material	Housing	ABS, Stainless steel	
	Nozzle	Stainless steel	
	Emitter	Tungsten	
Impact resistance		100m/s^2	
Weight of the body	Energy saving nozzle	70g	
	High flow rate nozzle	70g	
	Female threads for piping	75g	
Weight of the bracket	L-bracket	30g	
	Pivoting bracket	40g	
	DIN rail mounting bracket Single unit	40g	
Standard / Directive		CE (EMC directive 2014/30/EC)	

Note 1) Value measured with probe of 1,000MΩ and 5pF.

Note 2) Measurement values based on a charged plate (dimensions: 150 x 150 mm, electrostatic capacity: 20pF) defined by ANSI standard (ANSI/ESD STM3.1-2006). Distance between charged plate and ionizer: 100 mm, Air purge: 0.3 MPa (energy saving nozzle) / 0.1 MPa (high flow rate nozzle).

Note 3) Charge elimination is not possible without air purge. Air has to be purged during ion generation to avoid adverse effect on the product and peripheral equipment due to the increase of ozone concentration in the nozzle.

Note 4) If air purging is stopped during operation temporarily, turn the discharge stop signal input OFF to prevent the increase of ozone concentration in the nozzle.

Note 5) Refer to cautions on page 9 if IZN10E-11□□□-□(Female threads for piping) is used.

Models		IZN10E-C□-□
Input voltage Note 6)		100 to 240 VAC, 50/60 Hz
Output voltage		24 VDC
Output current		1 A max
Ambient temperature	When used	0 to 40°C
	Storage	-20 to 60°C
Ambient humidity	During operation/storage	10 to 90%RH
Applicable standard / directive		CE, cUL

Note 6) For AC cable type, the rated voltage of the AC cable included in accessories is 125 V. (Page 12).

Error	No.	Status	Possible causes	Investigation method and possible causes	Countermeasure
Product does not operate	1	No power ("PWR" LED is OFF.)	Power supply incorrectly wired	Check whether both brown wires are connected to + 24 VDC and both blue wires are connected to 0V.	Ensure all connections are in accordance with [3-2. Wiring].
	2	Red "PWR" LED is ON.	Power supply voltage is out of range	Check the power supply input is within the range of 24 VDC +/-10%.	Ensure the power supply is in the rage of 24 VDC +/- 10%.
	3	Red "ION / HV" LED is ON.	Abnormal high voltage discharge	1) Check the emitter for contamination. 2) Check whether there is arcing between the product and workpiece to be neutralized. 3) Check whether the ionizer is used in an environment subject to condensation or moisture.	1) If dust or dirt is found on the emitter, clean the emitter referring to [4-2.Emitter maintenance alarm and cleaning cycles]. 2) If there is arcing between the workpiece to be neutralized and the product, increase the distance between them until arcing no longer occurs. 3) The ionizer must not be used in environments subject to condensation or moisture.
	4	LED of PWR(green), ION/HV(red), NDL(green) will flash.	CPU malfunction caused by noise	1) Check if there is any high current equipment installed near the product. 2) Check if the power supply 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 product. 2) Route the ionizer wiring separately to high power cables. 3) Install a filter to the product power supply.
Output failure	5	No output signal	Output circuit wired incorrectly	Check the output specifications (NPN / PNP) and wiring of white, purple and yellow wires.	Ensure all connections are in accordance with [3-2. Wiring].
	6	"ION / HV" LED is flashing green	Output circuit wired incorrectly (over current)	Check the output specifications (NPN / PNP) and wiring of white, purple and yellow wires.	Ensure all connections are in accordance with [3-2. Wiring].
Abnormal input	7	Unable to input a signal	Input circuit wired incorrectly	Check the input specifications (NPN / PNP) and wiring of the orange, pink, gray and light blue wires.	Ensure all connections are in accordance with [3-2. Wiring].
No/poor neutralizing performance	8	An emitter surface is contaminated	Reduction of ion generation due to the dust or dirt on the emitter	Check the emitter for contamination.	If dust or dirt is found on the emitter, clean the emitter referring to [4-2.Emitter maintenance alarm and cleaning cycles].
	9	Emitter is bent, chipped or worn out.	Reduction of ion generation due to bending, chipping or wear of the emitter	Examine the emitter tip with a magnifier.	Replace the emitter, referring to [4-3. Replacement of the emitter assembly]
	10	Green "NDL" LED is ON.	1) Dust or dirt on the emitter 2) Wearing or breakage of the emitter.	Examine the emitter tip with a magnifier.	1) If dust or dirt is found, clean the emitter referring to [4-2.Emitter maintenance alarm and cleaning cycles]. 2) In case of wear or damage, replace the emitter, referring to [4-3. Replacement of the emitter assembly].
	11	"ION / HV" LED is OFF	Discharge stop signal is OFF, or external switch signal 1 or 2 is input	Check if the discharge stop signal (orange) is off, or external switch signal 1 (grey) or external switch signal 2 (light blue) is input.	When performing neutralization, turn on the discharge stop signal, and turn off the external switch signals 1 and 2.
	12	Ionized air is not reaching the workpiece to be neutralized	1) Compressed airflow insufficient 2) Interference with airflow	1) Check that the supply pressure and flow rate are sufficient. 2) Check if an external airflow could interfere with the flow of product air from the ionizer.	1) If flow rate is insufficient, check the supply pressure or improve the supply circuit such as air piping. 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.
	13	There are obstacles/obstructions between the workpiece to be neutralized and the product.	Ionized air blocked or absorbed by obstacles	Check that there are obstacles which could absorb ions on the path used for supplying ionized air to the workpiece to be neutralized.	Objects between the product and workpiece to be neutralized will be blocked off or absorb the ionized air. Ensure there are no objects between, or near to, the product and workpiece to be neutralized.
	14	Two or more ionizers are installed close to each other	Interference with ionized air	Check if ionized air from nearby ionizers is interfering with that of the main ionizer, by starting and stopping the nearby ionizers and seeing if the performance of the main ionizer is affected.	If ionizers are installed close together, they may interfere with each other, and cause a decrease in performance.
	15	No ground is connected	Displacement of the offset voltage	Check if ground terminal indicated as "mark of terminal ⏚ " is grounded correctly.	The product performs neutralization referenced to ground. Ensure ground terminal is grounded with less than 100 Ω.

TRAFFA
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