



## Installation and Maintenance Manual

### Fan Type Ionizer

#### Series IZF10R



## 1 Safety Instructions

This manual contains essential information for the protection of users and others from possible injury and/or equipment damage.

- Read this manual before using the product, to ensure correct handling, and read the manuals of related apparatus before use.
- Keep this manual in a safe place for future reference.
- These instructions indicate the level of potential hazard by label of "Caution", "Warning" or "Danger", followed by important safety information which must be carefully followed.
- To ensure safety of personnel and equipment the safety instructions in this manual and the product catalogue must be observed, along with other relevant safety practices.

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

### Warning

- **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.

- **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.

- **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.

- **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.

## 1 Safety Instructions (continued)

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.

## 2 Specifications

Refer to the operation manual for this product.

## 3 Installation

### 3.1 Installation

#### Warning

- **Do not install the product unless the safety instructions have been read and understood.**

- **Provide space for maintenance, inspection and wiring.**

Install the product and cables while taking into consideration the removal of the power supply connector and cartridge case mounting/detachment during emitter maintenance.

The cable bending should not be less than the minimum bending radius so that stress is not applied to the power supply connector. If the cable is bent at an acute angle or a load is applied to the cable repeatedly, it may cause wire damage and malfunction.

Minimum bending radius: 10 mm

Note: For fixed wiring the ambient temperature should be 20°C.

- **Mount the product on a flat surface.**

If there are irregularities in the mounting surface, excessive stress will be applied to the frame or case, resulting in product damage or failure. Do not drop or apply excessive shock. Otherwise, damage or an accident may occur.

- **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 close contact with power and signal lines.

- **Apply the correct tightening torque.**

If the screws are tightened in excess of the specified torque range, the mounting bracket or screws may be damaged. If the tightening torque is insufficient, the mounting screws and brackets may become loose.

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

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

#### Caution

- **Provide sufficient space on the air intake side of this product.**

This product ventilates using a fan motor. If there is an obstruction on the air intake side of this product, ventilation will be restricted, which may reduce the product performance. When installing the product, ensure the air intake side of the fan is at least 20 mm away from any obstruction.

- **Make sure to confirm the effect of static neutralization after installation.**

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

- **Do not apply an excessive force to the finger guard.**

If an excessive external force is applied to the finger guard on the air intake side, it may be damaged.

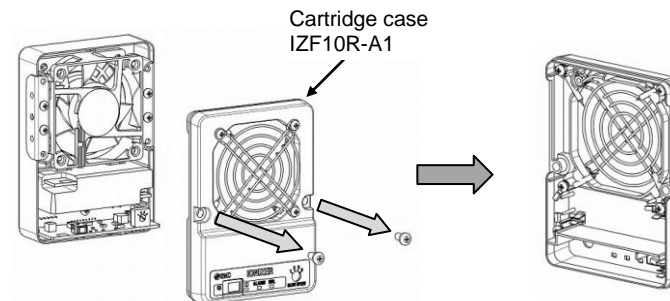
## 3 Installation (continued)

### 3.1.1 Precautions for Installation

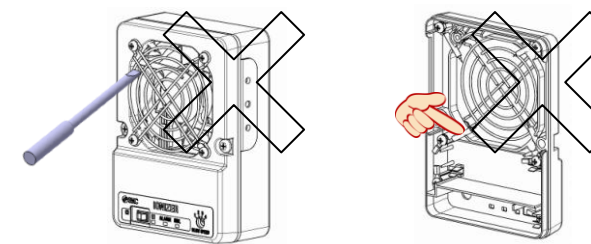
Be sure to disconnect the power supply before installing the product.

When installing this product, ensure the air intake side of the fan is at least 20 mm away from any obstruction. If there is an obstruction on the air intake side of the product, the ventilation will be restricted, which may reduce the product performance.

Install the product and cables taking into consideration the removal of the power supply connector and cartridge case mounting/detachment during emitter maintenance. The cartridge case is mounted and removed using 2 screws.



Do not directly touch the emitters. This may result in injury. Also, if a tool damages the emitters, it may interfere with the function and performance specification, and may cause operation failure.



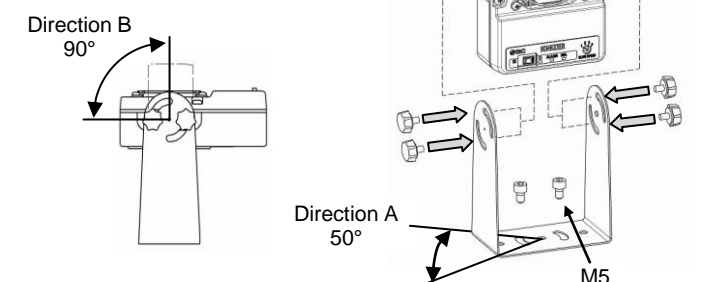
### 3.1.2 Product Body Installation

#### 1) Installation with bracket

A protective film is affixed to the bracket for delivery. Please remove the film before use.

When installing the product with a bracket, secure it with M5 screws using the mounting holes on the bottom of the bracket (the screws should be prepared by the user). Refer to "6. Dimensions" for details.

The angle adjustment range of the bracket is 50 degrees in direction A, and 90 degrees in direction B.



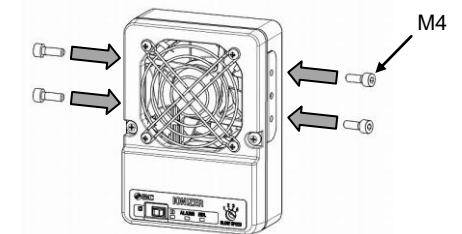
## 3 Installation (continued)

### 2) Installation without bracket

If a bracket is not used, install the product using the M4 screw holes (depth: 6 mm) on both sides of the body. Be sure to secure both sides of the body when fixing the product. (If the product is fixed on one side only, the product body may be damaged (the screws should be prepared by the user).)

Refer to "6. Dimensions" for details.

Recommended tightening torque: 1.3 to 1.5 Nm



### 3.2 Environment

#### Warning

- **Do not use in an environment where corrosive gases, chemicals, salt water or steam are present.**
- **Do not use in an explosive atmosphere.**
- **Do not expose to direct sunlight. Use a suitable protective cover.**
- **Do not install in a location subject to vibration or impact. Check the product specifications.**
- **Do not mount in a location exposed to radiant heat.**
- **Use within the specified ambient temperature range.**

The ambient temperature range specified for this product is 0 to 50°C, and for the AC adapter is 0 to 40°C. Avoid sudden temperature changes even within the specified ambient temperature range, as it may cause condensation.

- **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.

- **Environments to avoid.**

Never use or store under the following conditions. These may cause an electric shock, fire, etc.

1. Where the ambient temperature exceeds the operating temperature range.
2. Where the ambient humidity exceeds the operating humidity range.
3. Areas where abrupt temperature changes may cause condensation.
4. Areas where corrosive gas, flammable gas or other volatile flammable substances are stored.
5. 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.
6. Paths of direct air flow, such as air conditioners.
7. Enclosed or poorly ventilated areas.
8. Areas where strong electromagnetic noise is generated, such as strong electrical and magnetic fields or supply voltage spikes.
9. Areas where the product is exposed to static electricity discharge.
10. Locations where strong high frequency noise is generated.
11. Locations which are subject to potential lightning strikes.
12. Areas where the product may be subjected to forces or weight that could cause physical deformation.

- **The product does not incorporate a protection to lightning surges.**

### 3 Installation (continued)

#### 3.3 Wiring

##### Warning

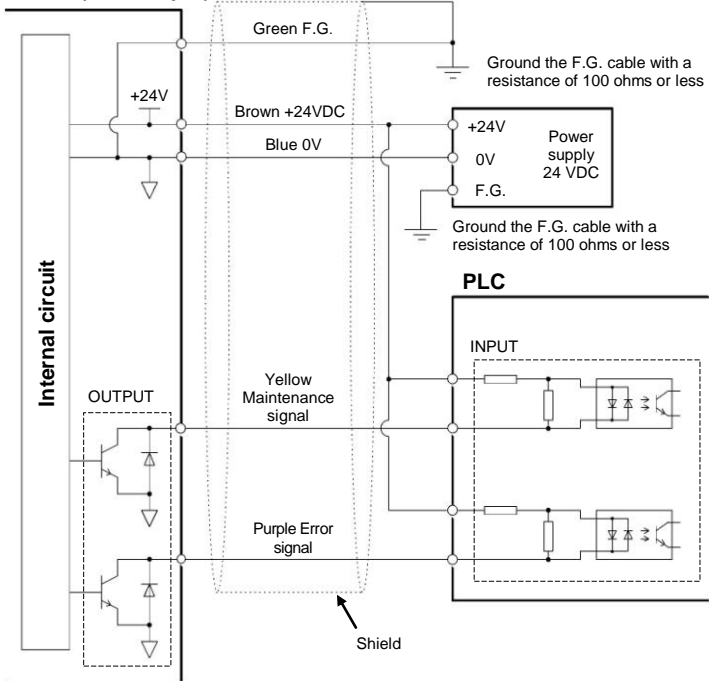
- Before wiring, ensure that the power supply capacity meets the specification and that the voltage is within the specification.
- To maintain product performance, the power supply should be UL Class 2 certified by National Electric Code (NEC) or evaluated as a limited power source according to UL60950.
- 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.
- Wiring (including insertion and removal of the power supply connector) should never be carried out with the power supply ON.
- Ensure the safety of wiring and surrounding conditions before supplying power.
- Do not connect or disconnect the connectors (including power source) while the power is supplied. Failure to follow this procedure may cause product malfunction.
- If the product wiring is routed together with power and high-voltage cables, the product may malfunction due to noise.
- Route the wires to the product separately.
- Confirm that the wiring is correct before operation. Incorrect wiring will lead to product damage or malfunction.

#### 3.3.1 Wiring

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

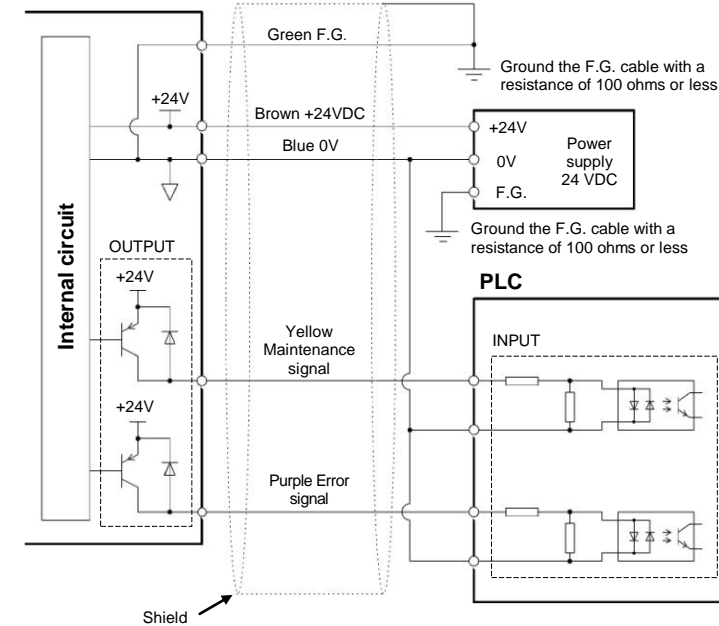
The F.G. cable is the standard electric potential for static electricity neutralization. If the F.G. cable is not grounded properly, the optimal offset voltage (ion balance) cannot be obtained, which may damage the product or connected power supply.

#### IZF10R (NPN output)



### 3 Installation (continued)

#### IZF10R (PNP output)



#### 3.3.2 Wiring of the power supply cable

The power supply cable bending radius should be greater than the minimum bending radius specified to avoid stress from being applied to the power supply connector.

Minimum bending radius: 10 mm  
Note: The ambient temperature should be 20°C for fixed wiring.

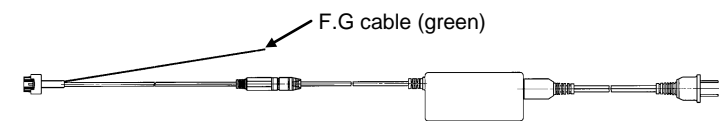
Unused wires should be cut short and insulated to avoid contacting with other wires.

Pin No.	Wire colour	Signal name	Conductor size (AWG)	Signal direction	Description
1	Brown	+24 VDC	26	IN	Power supply connection to operate the ionizer.
2	Blue	0 V	26	IN	Ground connection (resistance 100Ω or less) for use as a potential reference for the ionizer.
3	Green	F.G.	26	-	Ground connection (resistance 100Ω or less) for use as a potential reference for the ionizer.
4	Yellow	Maintenance signal	26	OUT (Contact A)	The maintenance signal turns ON when the emitter is contaminated or worn.
5	Purple	Error signal	26	OUT (Contact B)	The error signal turns OFF when a high voltage alarm or output signal over current is generated. (The signal is ON green when there is no problem.)

#### 3.3.3 Wiring of the AC adapter

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

The F.G. cable is the standard electric potential for static electricity neutralization. If the F.G. cable is not grounded properly, the optimal offset voltage (ion balance) cannot be obtained, which may damage the product or connected power supply.

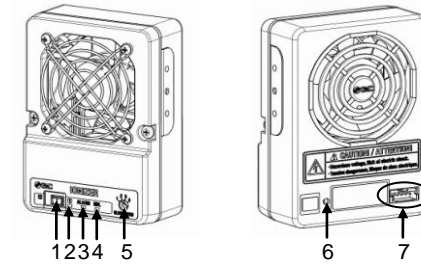


Note) The AC cord supplied is only for use in Japan.  
(Rated voltage 125 V, plug JIS C8303, Inlet IEC60320-C8)  
The external output signal cannot be used when the AC adapter is being used.

### 3 Installation (continued)

#### 3.4 Function

##### 3.4.1 Name of Parts



No.	Item	Label	Description
1	Power supply switch	-	Switch to turn the ionizer ON and OFF.
2	Power supply indicator	-	The LED is ON green when power is supplied to the ionizer, and the LED is ON orange during an incorrect high voltage alarm, or output signal over current alarm.
3	Error indicator	ALARM	The LED is ON red when an incorrect voltage alarm is generated for 100 ms or more.
4	Maintenance indicator	NDL	The LED is ON green when the emitter is contaminated or worn.
5	Air flow adjustment	BLOW SPEED	Rotary switch for adjustment of the fan motor air flow. Refer to "Adjustment of air flow" for details.
6	Balance adjustment	-	Trimmer for offset voltage (ion balance) adjustment. Refer to "adjustment of offset voltage (ion balance)" for details.
7	Power supply connector	-	Connector for the power supply cable or AC adapter.

##### 3.4.2 Alarm function

If abnormal operation of the product occurs, the user will be alerted by the external output signal or the LED operation.

Alarm	Output signal at the time of alarm	LED ON	Operation after alarm generated	Description	Action to reset alarm
Incorrect high voltage	Error output signal OFF (Contact B)	Power supply indicator (Orange) Error indicator (Red)	Stop	Incorrect high voltage discharge for more than 100 ms.	Supply power again
Excess current on output circuit	Error output signal OFF (Contact B)	Power supply indicator (Orange)	Continue	Excessive current is present at the output.	Reset automatically
Maintenance warning	Maintenance warning signal ON (Contact A)	Maintenance indicator (Green)	Continue	Static electricity neutralization function is reduced due to dirt, wear or damage to the emitters.	Supply power again

Note 1) NPN/PNP open collector output

##### 1) Incorrect high voltage

When an incorrect high voltage discharge is generated for 100 ms or more during operation, the error output signal will be turned OFF (it is ON during normal operation).

The power supply LED (Orange) and error indicator LED (Red) will turn ON to indicate the error.

When the error occurs, the fan motor rotation and ion generation will stop.

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

In order to clear the alarm, remedy the cause of the abnormal discharge and supply the power again.

##### 2) Excess current on output circuit

When excessive current flows to the output circuit, the output signal will be turned off to protect the circuit and the power supply indicator LED (Orange) will turn ON to indicate the error.

When this alarm is generated, the product will continue to operate.

To resolve the error, reduce the current to the output circuit to 150 mA or less, and the product will reset automatically.

##### 3) Maintenance warning

The maintenance signal will turn ON (it is OFF during normal operation) when static electricity neutralization performance is reduced due to contamination, wear or damage to the emitters. The maintenance indicator LED (green) will turn ON to indicate that cleaning of the emitters or replacement of the cartridge case needs to be performed.

When this alarm is generated, the product will continue to operate.

If the emitter becomes worn and the static electricity neutralization performance is not restored after cleaning, replace the cartridge case.

In order to clear the alarm, remedy the cause of the abnormality, and supply power again.

### 4 Settings

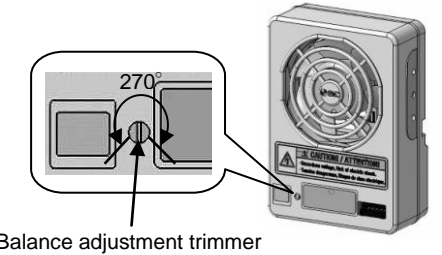
#### 4.1 Adjustment of offset voltage (ion balance)

Although the offset voltage (ion balance) of this product has been factory adjusted, readjustment may be required depending on the installation environment.

The offset voltage can be adjusted using the balance adjustment trimmer. When adjusting the offset voltage (ion balance), use a measuring instrument such as a charge plate monitor.

Rotating the balance adjusting trimmer in a clockwise direction will increase the positive ions, and rotating it in a counter-clockwise direction will increase the negative ions.

The angle adjustment range of the balance adjustment trimmer is 270 degrees as shown in the figure. If the adjustment trimmer is rotated beyond the angle adjustment range, it may damage the trimmer.



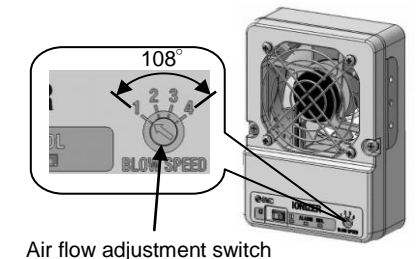
#### 4.2 Adjustment of air flow

The air flow can be adjusted using the air flow adjustment rotary switch displayed as BLOW SPEED. Adjust the air flow adjustment switch with a small flat blade screw driver.

The adjustment range of the air flow adjustment switch is 108 degrees as shown in the figure. If the adjustment switch is rotated beyond the adjustment range, this may damage the switch. If the air flow adjustment switch is placed between the markers, the fan motor may stop.

Details of the air flow adjustment switch markers and the air flow rate are shown in the table below.

Scale	Airflow [m <sup>3</sup> /min]
1	0.19
2	0.46
3	0.66
4	0.80



### 5 How to Order

Refer to the operation manual for this product.

### 6 Outline Dimensions (mm)

Refer to the operation manual for this product.

## 7 Maintenance

### 7.1 General Maintenance

#### Warning

- **Perform maintenance regularly and clean the emitters.**

It is recommended to perform maintenance every week or when the maintenance warning signal turns ON.

Periodically inspect the electrostatic sensor to check that it is operating under suitable conditions. Only a person having an adequate knowledge and experience of the system should inspect the sensor. If the product is used for an extended period for example with dust present on the emitters, the product performance will be reduced.

If the emitter becomes worn and the product performance is not restored after cleaning, replace the cartridge case.

- **Cleaning or replacing the emitters or replacing a cartridge case should never be performed with the power supply ON.**

The fan will rotate due to inertial force even when the power supply is OFF. Confirm that the fan is not moving before performing cleaning or replacing the emitters. Never perform cleaning or emitter replacement when the fan motor is rotating. The fan rotation may cause injury.

Never touch the electrodes with the power supplied to the product. Electric shock may cause injury.

- **Do not disassemble or modify the product.**

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

- **Do not operate the product with wet hands.**

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

#### Caution

- **Do not drop, hit or apply excessive shock (100m/s<sup>2</sup> or more) to the product during handling.**

Even if the body appears undamaged, the internal components may be damaged, leading to a malfunction.

### 7.2 Maintenance Warning Function and Cleaning

If the product is used for an extended period with dust present on the emitters, the product performance will be reduced.

This product incorporates a maintenance warning function which constantly monitors the emitters and warns of a reduction of the performance in the static electricity neutralization.

It is recommended to perform maintenance every week or when the maintenance warning signal turns ON.

(The maintenance frequency varies depending on the environment where the product is installed. The maintenance frequency indicated is only a guide).

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

Before cleaning the emitters, make sure that the power supply is OFF and confirm that the fan motor has stopped. Never perform cleaning or replace the emitters when the fan motor is rotating. The fan rotation may cause injury.

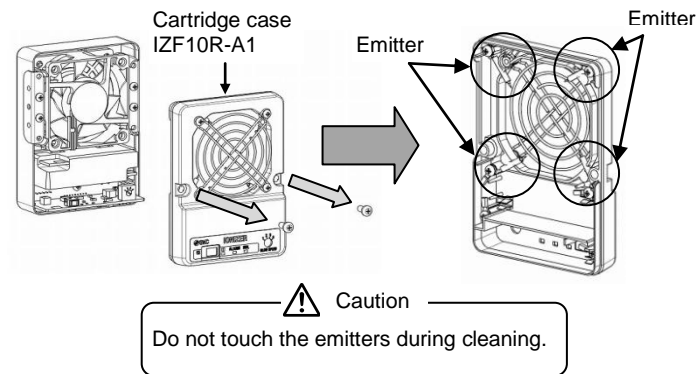
In addition, if the emitters are touched while energized, it may cause electrical shock or injury. As the emitter ends are sharp, be careful not to touch them. Otherwise, it may cause injury.

If the emitter becomes worn and the product performance is not restored after cleaning, replace the cartridge case.

## 7 Maintenance (continued)

### 7.3 Replacement and cleaning of cartridge case

1. Be sure to disconnect the power supply before installation and cleaning. The fan motor rotation will not stop immediately due to inertial force even when the power is OFF. Confirm that it has stopped before moving to the next step.
2. Remove the two screws (shown in the figure below) to remove the cartridge case.

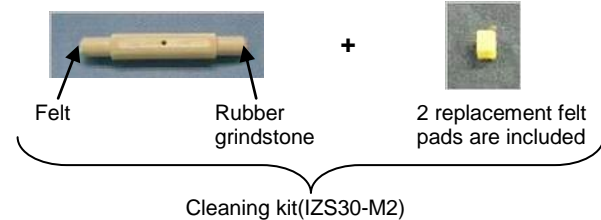


3. Four emitters are fixed in the cartridge case enclosure, and the end of each of the emitters should be cleaned. Make sure that all four emitters are cleaned.

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, repeat using the felt saturated with industrial alcohol to finish the cleaning.

If a cleaning kit is not available, saturate a cotton swab with alcohol to clean the emitters.

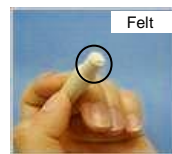
The industrial alcohol used should be reagent ethanol class 1 99.5vol% or greater.



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

Felt: Use for normal cleaning

Rubber grindstone: Use if dirt is hard and stuck to the emitters and it is not possible to remove it with felt.



4. Put the cartridge case back in its original position by following the removal procedure in reverse (Tightening torque: 0.7 to 0.8 Nm).

Take care not to get the wires caught in the enclosure when remounting.

## 7 Maintenance (continued)

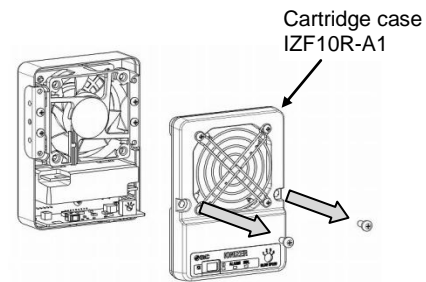
### 7.4 Replacement of Cartridge Case

If the emitters are worn out or damaged, replace the cartridge case.

Before replacing the cartridge case, make sure that the power supply is OFF and confirm that the fan motor has stopped. Never perform cleaning or replace the emitters when the fan motor is rotating. This may cause injury.

Remove the two screws (shown in the figure below) to remove the cartridge case (Tightening torque: 0.7 to 0.8 Nm).

Ensure that the wires in the product are not caught when mounting the cartridge case during replacement.



## 8 Limitations of Use

### 8.1 Limitations of use

#### Danger

- **Do not exceed any of specifications laid out in the operation manual for this product.**

## 9 WEEE Directive

This product is classified as Waste Electrical or Electronic Equipment according to the WEEE Directive 2012/19 / EU and should not be disposed of as municipal waste, in order to reduce the impact on human health and the environment.

## 10 Contacts

AUSTRIA	(43) 2262 62280-0	LATVIA	(371) 781 77 00
BELGIUM	(32) 3 355 1464	LITHUANIA	(370) 5 264 8126
BULGARIA	(359) 2 974 4492	NETHERLANDS	(31) 20 531 8888
CZECH REP.	(420) 541 424 611	NORWAY	(47) 67 12 90 20
DENMARK	(45) 7025 2900	POLAND	(48) 22 211 9600
ESTONIA	(372) 651 0370	PORTUGAL	(351) 21 471 1880
FINLAND	(358) 207 513513	ROMANIA	(40) 21 320 5111
FRANCE	(33) 1 6476 1000	SLOVAKIA	(421) 2 444 56725
GERMANY	(49) 6103 4020	SLOVENIA	(386) 73 885 412
GREECE	(30) 210 271 7265	SPAIN	(34) 945 184 100
HUNGARY	(36) 23 511 390	SWEDEN	(46) 8 603 1200
IRELAND	(353) 1 403 9000	SWITZERLAND	(41) 52 396 3131
ITALY	(39) 02 92711	UNITED KINGDOM	(44) 1908 563888

## SMC Corporation

URL : [http:// www.smcworld.com](http://www.smcworld.com) (Global) <http:// www.smceu.com> (Europe)

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