

# Instruction Manual

Blow type ionizer

## [ Ionizer Model ZappAURA ]

Thank you for purchasing the Ionizer ZappAURA. As to the use of this equipment, you must have sufficient considerations after reading this manual carefully because it deals with alternating currents with high voltage of 2500V, although the equipment is not stipulated as high-voltage equipment in the electric equipment standard. Please read this manual before using the product in order to fully understand its functions. Also make sure to store this manual so that it can be referred to in the future.

### Warning

- This Product is not specified as an Explosion-proof Type. Do not use this unit at a location or an atmosphere, in which combustible gas or solvent is handled, or else ignition or explosion may occur.
- A high voltage is applied to the discharge needle. Do not allow any conductive material, including your finger, any part of your body, wire or any tool to get close to the needle, or an electrical shock accident or a malfunction of the Unit may occur.
- The tip of the discharge needle is sharp, be careful not to touch the discharge needle.

## 1. Safety Precautions

Read this instruction manual before installation, wiring, operation, or maintenance of the product in order to achieve maximum performance. Improper use of this product may cause an accident resulting in injury or death, or may lead to a malfunction of this product. Our company will not be held liable for any usage outside this product Specifications or any accident caused by noncompliance with the Safety Precautions.

<b>Danger</b>	Failure to follow instructions may lead to death or serious injury.
<b>Warning</b>	Failure to follow instructions may lead to injury.
<b>Caution</b>	Failure to follow instructions may lead to product damage (product malfunctions, etc.).

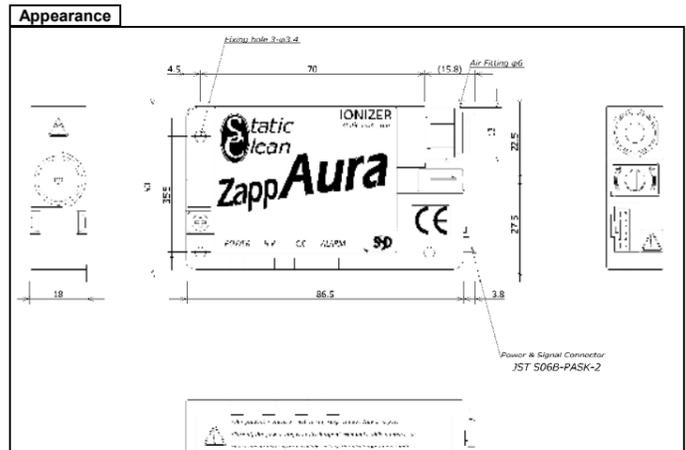
## 2. Precautions for CE Marking

This product complies with the following EU Directives and EN standards.

- EMC Directives: EN61000-6-2 / EN61000-6-4
- Low-voltage Directive: EN61010-1
- Overvoltage Category (Installation Category): I
- Pollution Degree: 2
- When selecting a power supply for use with this product, always use a power supply that has been certified by EU Notified Body (as a Limited Power Source as defined in IEC/EN60950-1 or IEC/EN61010-1) or optional AC adapter.
- Use only the power supply and signal cable included with the product to connect this product to the power supply.
- Install this product in accordance with the installation and wiring instructions described in this instruction manual.

## 3. Outline

This IONIZER consists of the following parts: Optional Nozzles, an electrode, a high-voltage transformer, and the body of ZappAURA in which has warning display circuit at the time of abnormal condition. It applies high-frequency-high-voltage from the high-voltage transformer to the discharge needle inside, giving off alternating current corona discharge toward the optional nozzle, and produces positive and negative air ion. It transfers the air ion by air. The ion air neutralizes static of charged objects located away and removes dust stuck to the charged objects. The characteristic of this equipment is that it can transfer ion air by using the optional air tube in addition to air-blowing directly through the air nozzle. The nozzle chooses it to a use, and can fit the main unit.



Name	Indication	Color	description
Power supply	POWER	Green	Lights up when the power supply is turned ON.
High voltage output	H.V	Green	Lights up when a high voltage output is in a normal operating state.
Cleaning Check	C.C	Yellow	Lights up when a dirt or wear of the discharge needle is detected.
High voltage abnormality	ALARM	Red	Lights up when abnormal high voltage output occurred, and high voltage output is halted.

## 4. Specifications

List of Specifications	
Model No.	ZappAURA
Discharge Method	High frequency AC corona discharge method
Power-supply voltage	24 V DC ± 10%
Capacity	2.4VA
High voltage output	2,500V approx. (3pF,100M ohm)
Applicable fluid	Air (dried clean air)
Air pressure range	7.25 to 87psi (0.05 to 0.60 MPa) *1
Supplied air flow	40 to 220 liter/min
Dimensions: (mm)	86.5L x 18W x 50H (Main Unit only)
Weight	78 g approx. (Main Unit only)
Environment	Indoor, Altitude up to 2000m
Ambient temperature	32 to 104°F ( 0 to 40°C)
Ambient humidity	65% or less ( No condensation allowed )
High voltage abnormality (ALARM) Output	NPN and photo relay output Maximum allowed current: 100 mA Applied voltage: 30 V DC or less
Cleaning check (C.C) output	NPN and photo relay output Maximum allowed current: 100 mA Applied voltage: 30 V DC or less
Discharge stop signal (HV-OFF) input	Discharge OFF: Short-circuited to 0V Discharge ON: Open (Residual voltage : 0.5V or less)
Quantity of produced ozone	0.05 ppm or less(Measured Distance 300mm)
Ion balance	± 15 V or less
Material	Enclosure: ABS, Cover: Stainless, Discharge needle: Tungsten
Accessories	Instruction manual, Power supply and signal cable, Caution label (English) *2

\*1. The applicable pressure range depends on the nozzle to be used. Check that the table below.

\*2. Use as necessary.

- Ranges of air pressure (gauge pressure) in case of combining ZappAURA and the following nozzles are as follows.

ANS(or ANS-US)	7.25 to 87psi	ANC100 ~ C500	7.25 to 72.5psi
ANNT	7.25 to 72.5psi	ANST	7.25 to 43.5psi
AN100B ~ 300B	7.25 to 87psi	AN60S	7.25 to 87psi
AN100BL ~ 200BL	7.25 to 87psi	ANF	7.25 to 87psi
AN120PSP	7.25 to 72.5psi		

## 5. Installation and Wiring

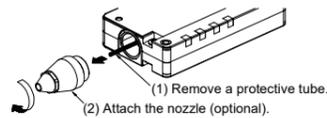
### Warning

- Be sure to turn OFF the power and air before installing the product.

### Caution

- This product cannot be used by its own. Be sure to fit the optional nozzle for use of this product.
- If the air includes water and oil, the electrode gets dirty, the ability to remove electricity is lowered, or causing deterioration of the electrode
- Always check this manual to ensure that the product wiring is done correctly. Errors in wiring could lead to problem or abnormal operation of the product.

- Since a protective tube is stuck on the discharge needle in the nozzle fitting part, be sure to remove it before attaching the optional nozzle.



- For installation of the product, pay attention to the contamination by oil/water, high temperatures or high humidity. Especially, avoid a place subject to dew condensation.

- This product emits ozone into an atmosphere. Do not use this product in an enclosed space.
- Equipment used around the product should have ozone-prevention measures. In addition, check regularly that nearby equipment will not be affected by exposure to ozone.

### Installation

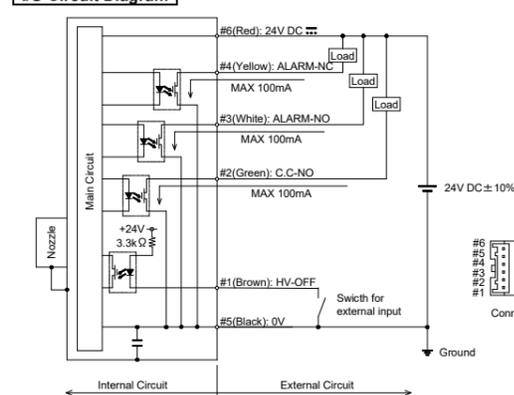
- Install it at a designated place by using fixing holes (3 - φ3.4). In case install as vertical use with optional flame "ANFM".
- Tightening torque on housing to the main body should be 20 N·cm or less.

### Wiring

- Wire attached power supply and signal cable as follows.

Color	Signal name	I/O	Description
Red/Pink	DC+24V	—	Power supply +24V
Black/Gray	0V	—	Power supply 0V
Yellow	ALARM-NC	Output	The signal is turned off when error happens.(NC)
White	ALARM-NO	Output	The signal is turned on when error happens.(NO)
Green	C.C-NO	Output	The signal is turned on when Lights up when a dirt or wear of the discharge needle is detected. (NO)
Blown	HV-OFF	Input	When the signal is short circuited to 0V, discharge stops.

### I/O Circuit Diagram



Note1: Use mechanical switch or photo coupler or relay for external input. If the grounding potential of external device to use for external input and the grounding potential of this product use are different, the external device used for external input should have an insulated on/off procedure for the 0V line.



- Be sure to carry out the grounding procedure (according to the class D procedure).
- Check that Frame of the Machine is grounded. If not grounded, be sure to fix the grounding class D procedure. When you contact it with this product, connect 0V (black) and the grounding point of the power supply and signal cable to be common. But when 0V and the grounding point are not connected to be common, do not connect 0V line to the grounding point. And in the case of use with an optional AC adapter, this product need not be properly grounded.

### Air piping

- Use the air as the fluid for discharging.
- Attach an air tube (with an outside diameter of φ6 mm) to the air inlet of the ionizer.
- Connect the air tube via the regulator to the air supply (Air compressor).
- Supply cleaned air (not containing water or oil) to the ionizer.

## 6. Operation

### Warning

- Always supply the power of this product with applying air. Otherwise, the ozone concentrations inside the ionizer would increase due to electric discharge, which may cause detrimental effect on the main body and its surroundings.

- 1) Install the equipment at a designated place, and conduct power supply wiring, grounding wiring, and air piping.
- 2) Supply DC24V through the power source connector of the equipment. The power source of high voltage starts and corona discharge is generated at the discharge electrode, producing air ion. When the power source is supplied, the green LED (in the normal condition) is lit on.
- 3) Open the main valve of air equipment (installed by your company), and supply air to the nozzle with designated pressure after adjusting the pressure adjuster. Ion air is blown out from the nozzle and static electricity of the charged object placed in the air-flow is neutralized and removed. Pay attention to excessive air pressure, which will lower the effect of removing electricity. (See the table under "Air Pressure Working Range" under "4. Specifications" for the working range of air pressure.)
- 4) When you attach the tube to the nozzle, move the tip of the tube closer to the charged object and blow ion air.

## 7. LED state and Output

	LED state			Output			High-Voltage out Discharge needle	
	POWER	H.V	C.C	ALARM	ALARM-NC	ALARM-NO		C.C-NO
Normal	○	○			ON	OFF	OFF	ON
H.V abnormality	○			○	OFF	ON	OFF	OFF
Cleaning Check	○	○	○		ON	OFF	ON	ON
HV-OFF	○				ON	OFF	OFF	OFF
Power OFF					OFF	OFF	OFF	OFF

Note1: When ALARM (red LED) lights up, turn the power back on or turn on and off Discharge stop signal (HV-OFF) input. But if the abnormal factor is not removed, ALARM (red LED) will light up once more.

## 8. Maintenance

### Warning

- Before care and maintenance of the product, make sure to turn OFF the power and air. Otherwise damage or operating problems may occur.
- The tip of the discharge needle is sharp, be careful not to touch the discharge needle.

### Caution

- Clean the discharge needle periodically even if no Cleaning Check signal is output. (Once per 2 weeks recommended)

- Since the insulator, which is a part of the electrode of removing electricity, gradually becomes deteriorated with exposure to alternating high-voltage electric field, it is necessary to regard it as an expendable supply. The expected life span is thought to be 20,000 hours even if sufficient maintenance is conducted, and replacement is recommended. If the maintenance is not sufficient, its life span will be shorter. The maintenance is very important. This equipment is supposed to be placed at a place where it is free from water and oil, etc.... If it were splashed with water, oil, or paint, wipe it out with waste or cloth.

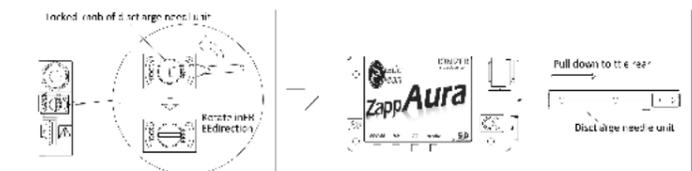
- Attachment of contamination to the tip of the discharge needle will deteriorate the static and elimination effect. If deterioration of the static elimination effect is observed, clean the needle and its surrounding area using a nylon brush etc. (Never use a wire brush for cleaning the needle.)

- The discharge needle is a consumable material, and requires occasional replacements when you used it for a long term.

### Replacing the discharge needle unit

- 1) Rotate the knob at the rear of the discharge needle unit in the direction of FREE (counterclockwise) by the screwdriver.
- 2) Pull down the discharge needle unit to the rear.

- 3) After cleaning the discharge needle, and install the discharge needle to the main unit, rotate the locked knob of the discharge needle unit in the LOCK direction (clockwise) until the locked knob is securely locked with the main unit. Tightening torque is 8 to 10N·cm.



### Caution

- When you install the discharge needle unit to the main unit, rotate the locked knob to the LOCK direction, and lock it surely. Otherwise high voltage abnormality lighting up, and dying out of removing electricity.
- Do not apply any shock to main unit by dropping it on the floor, etc. This may cause damage to this product.

### Removing the discharge needle

- 1) Remove the discharge needle unit from the main unit.
- 2) Remove the discharge needle from the discharge needle unit by pulling it forward. Optional Parts for replacement: (Discharge needle including O-ring) DZ-W25



## 9. Troubleshooting

Problem	Main case	Remedy
The power cannot be supplied to the product.	Input power supplied off	Check the input power supply of 24V DC to confirm that it is correctly supplied.
	The power and signal cable is not connected correctly.	Check that the power and signal cable is connected correctly.
High voltage Abnormality indicator (ALARM) lights up.	Discharge needle unit is not installed	Check that the discharge needle unit to confirm that it is correctly installed and securely locked
	Short circuited	Check that the discharge needle is free from conductive materials.
	Internal circuit is broken	Turn off the power, and then turn the power back on.
Cleaning Check indicator (C.C) lights up.	Dirt on discharge needle	C.C indicator remains light even after the discharge needle has been cleaned, clean the area around the needle is dirty.
	Wear on discharge needle	Replace the entire discharge needle unit with a new one.
	Abnormal discharge	Check that the discharge needle is free from conductive materials.

## 10. Cautions

- This product was designed and manufactured as parts for use in General Industrial Machinery.
- Do not use this product for any purpose other than charge removal.
- Do not disassemble or remodel the product.
- This product emits ozone into an atmosphere. Do not use this product in an enclosed space.
- Do not insert any foreign objects into the product. Doing so may result in a short circuit or current leakage, and cause fire or electrocution.
- If the product emits any abnormal odors or sounds, smoke, or heat, turn OFF the main power immediately, remove the power cord, and contact your point of purchase. Failure to do so may result in fire or a short circuit.
- Do not directly touch the discharge needle with your hands.
- Make sure the polarity of DC power as + (Positive) and - (Negative).
- Do not turn ON the ionizer immediately after you have turn it OFF, or else an abnormal output is supplied. After turning OFF the ionizer, wait 1 second or more before turning it ON again.
- Do not use power supply and signal cable provided with the products, for a moving section. Otherwise, they may break down.
- Avoid scratching the cords of the sensor switch lead wires, etc. Letting the cords be subject to scratching, excessive bending, pulling, rolling up, or being placed under heavy objects or squeezed between two objects, may result in current leaks or defective continuity that lead to fires, electric shocks, or abnormal operation.
- Do not pull out the connectors while the power is ON. Also, do not apply unnecessary stress on the connector. It could result in erratic equipment operation that could lead to personal injury, equipment breakdown, or electrical shocks, etc.
- For safety purposes, power OFF if you plan on not using the product for an extended period of time.

### Letter of Guarantee

1. This product has passed the inspection carried out by our company. This product will be subject to repair or replacement, free of charge, of any failed or broken part, if a failure or a breakage should occur during the guarantee period under the condition of normal use, caused by a defect in the design or manufacture by our company.
2. The Period of Guarantee: One (1) year starting from the date of delivery.
3. Any repair work or replacement for any failure or breakage caused by any of the following reasons will be carried out by the user bearing the cost:
  - (1) Any failure or breakage caused by usage or storage not under the normal condition.
  - (2) Any failure or breakage caused by an unauthorized repair or a modification carried out by other person than our company, or not in accordance with the specifications provided by our company.
  - (3) Any failure or breakage caused by a disaster or force majeure such as fire, natural calamity, or an act of God.
  - (4) Any failure or breakage caused by any other reason that cannot be attributable to our company.

Product Name	Ionizer (Blow-type ionizer)	Model Name	Ionizer model ZappAURA
Serial Number	Date of Delivery	Inspection Seal	

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