ZappAURA-II Ionizer
Instruction Manual

*Thank you for purchasing the **ZappAURA-II**. 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 2500 V, 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.*
- *This product emits ozone. Do not use in an enclosed space. The emitted ozone may be detrimental.*
- *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.*
- *When this product is used with high pressure or a large flow rate of compressed air, it produces a high noise level. Take countermeasure for noise or use protective earplugs etc., as it can be harmful to people working nearby.*

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.

⚠ Danger	*Failure to follow instructions may lead to death or serious injury.*
⚠ Warning	*Failure to follow instructions may lead to injury.*
⚠ Caution	*Failure to follow instructions may lead to product damage (product malfunctions, etc.).*

2. Precautions for CE Marking

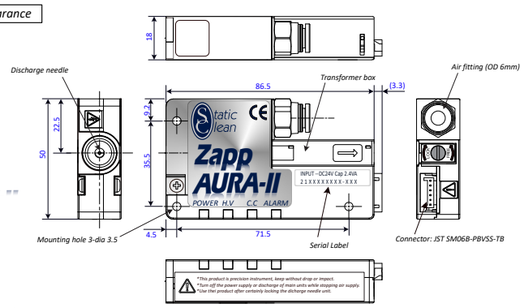
This product complies with the following EU Directives and EN standards.

- *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 an 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-II** 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 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 nozzle to air-blowing directly through the air nozzle. The nozzle chooses it to a use, and can fit the main unit.*

Appearance



- *Indication part name*

Name	Indication	Color	description
Power supply	POWER	Green	Lights up when the power supply is turned ON.
High voltage output	H.V.	Blue	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	RedLights up when abnormal high voltage output ccurred, and high voltage output is halted.

4. Specifications

List of Specifications

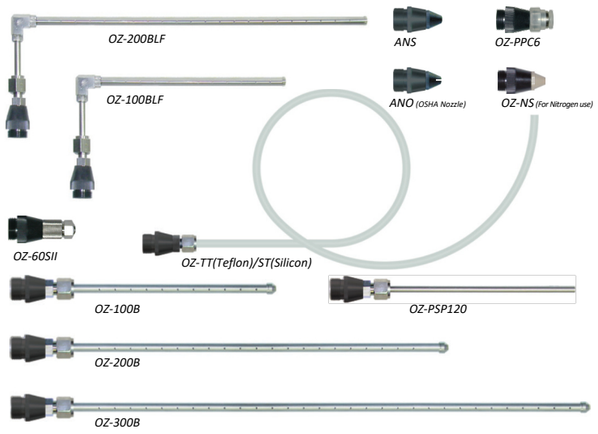
Model No.	**ZappAURA-II**
Discharge Method	High frequency AC corona discharge method
Power-supply voltage	24 V DC ± 10%
Capacity	2.4 VA
High voltage output	2,500 V approx.
Applicable fluid	Air (dried clean air)
Air pressure range	7 to 87 psi (0.05 to 0.60 MPa)*1
Supplied air flow	1.76 to 14.12 cfm (50 to 400 lpm)
Dimensions: (mm)	86.5 x 18 x 50 mm (W x H x D) (Main Unit only)
Weight	78 g approx. (Main Unit only)
Environment	Indoor, Altitude up to 2000 m
Ambient temperature	32 to 104°F (0 to 40 °C)
Ambient humidity	65 % or less (No condensation allowed)
Attach an air tube	Outside diameter of Φ6 mm
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 outputMaximum allowed current: 100 mA Applied voltage: 30 V DC or less
Discharge stop signal (HV-OFF) input	Discharge OFF: Short-circuited to 0 V Discharge ON: Open (Residual voltage: 0.5 V or less)
Quantity of produced ozone	0.05 ppm or less (Measured Distance 300mm)
Ion balance *2	±15 V or less
Material	Enclosure: PBT, Cover: Stainless, Discharge needle: Tungsten
Accessories	Instruction manual, Power supply and signal cable

**1. The nozzle was used with ANS (ANS-US). The applicable pressure range depends on the nozzle to be used. Check that the table below.*

**2. Measured value when using the nozzle ANS (ANS-US). (before shipment)*

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

ANS (ANS-US)	7~87psi	OZ-C100 ~ C500	7~72psi
OZ-TT	7~72psi	OZ-ST	7~43psi
OZ-100B ~ 300B	7~87psi	OZ-60SII	7~87psi
OZ-100BLF ~ 200BLF	7~87psi	OZ-F	7~87psi
OZ-PSP120	7~72psi		



5. Installation and Wiring

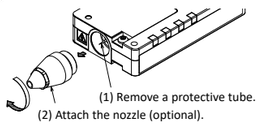
⚠ Warning

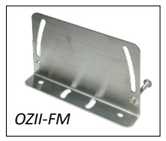
- *Be sure to turn OFF the power and air before installing the product.*

⚠ Caution

- *This product cannot be used by its own. Be sure to fit the optional nozzle for use of this product. Also, do not use the nozzle other than optional nozzles.*
- *If air includes water or oil, the discharge needle and its surrounding areas gets dirty, causing deterioration of static elimination performance.*
- *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 in an enclosed space. The emitted ozone may be detrimental.*
- *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

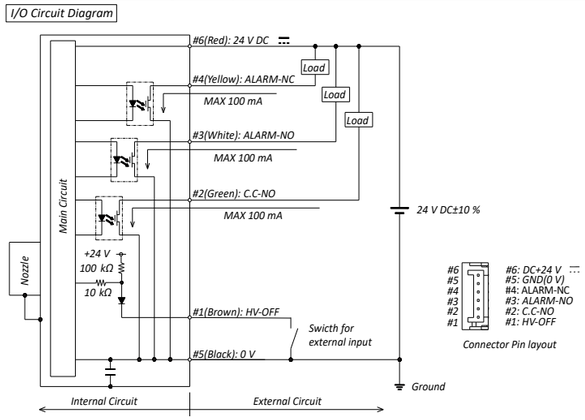
- *Install it at a designated place by using fixing holes (3 - φ3.4). In case install as vertical use with "Optional Mounting Bracket OZII-FM Available (sold separately)".*
- *Tightening torque on housing to the main body should be 20 N ·cm or less.*

Wiring

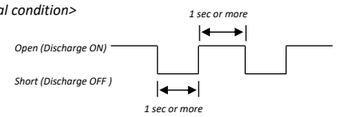
- *Wire attached power supply and signal cable as follows.*

Color	Signal name	I/O	Description
Red	DC+24 V	—	Power supply +24 V
Black	0V	—	Power supply 0 V
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)
Brown	HV-OFF	Input	When the signal is short circuited to 0 V, 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 0 V line.



Note2: When using the output signal, do not exceed the NPN and photo relay (rating Maximum allowed current: 100 mA, Applied voltage: 30 V DC or less). Using the signal which exceeds this rating may cause the device to break down. In addition, if there is a risk of external factors such as power surges causing this rating to be exceeded, please implement countermeasures into external equipment.

- *This product requires grounding wiring.*
- *To ground the product, ground 0 V (black wire) of the power supply and signal cable or ground the metal part of the case. When using the optional AC adapter (OZ III-24V), ground the AC adapter's ground wire.*

Note3: Do not ground this product if the device to which this product is attached that is not grounded in common with the 0 V line of the power supply, such as positive grounding. It may cause equipment failure or malfunction.

- *Connect the power supply and signal cable to the power signal connector of this product.*

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 DC24 V 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) Move the air discharge port of the option nozzle close to a charged object to blow ion air. Adjust the air flow rate with the regulator installed by your company.

7. LED state and Output

	LED state				Output			High-Voltage out
	POWER	H.V.	C.C.	ALARM	ALARM-NC	ALARM-NO	C.C.-NO	Discharge needle
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.*
- *Do not turn the locked knob of the transformer box while the power is on.*

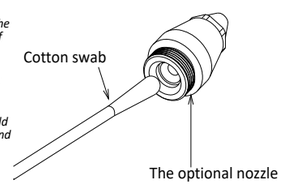
⚠ Caution

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

- *This equipment is supposedto be placed at a placewhere it is free from water and oil, etc. If itwere splashed with water, oil, or paint, wipe it out with waste or cloth.*
- *Foreign substances are liable to adhere to the discharge needle and its surrounding areas. If it becomes very dirty, the static elimination performance will deteriorate. For this reason, be sure to carry out maintenance regularly.*
- *To clean the discharge needle, remove the transformer box from the main body and clean the tip of the discharge needle with a cotton swab soaked in alcohol. Replace the discharge needle with a new needle if the contamination cannot me removed or its tip is broken.*
- *Clean the nozzle attachment section and inside of he optional nozzle of the main unit by removing the contamination adhered to these areas by wiping off the areas with a cotton swab soaked with alcohol.*

☆ *Do not use any solvent or cleaner containing a solvent. Use of a solvent may cause the main unit or the optional nozzle to deteriorate.*

- *The discharge needle will wear out bit by bit because of corona discharges. To ensure that the product should provide a stable static elimination effect, we recommend that you replace the discharge needle every 20,000 hours or approximately every 3 years of operation.*



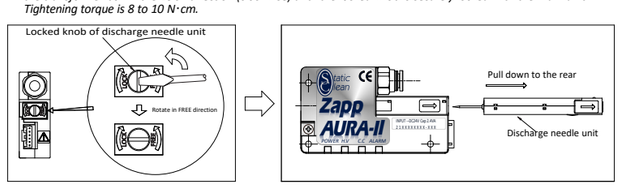
Replacingthe transformer box

(1) Stop supplying air and power.

(2) Rotate the knob at the rear of the transformer box in the direction of FREE (counterclockwise) by the screwdriver.

(3) Pull down the transformer box to the rear.

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



⚠ Caution

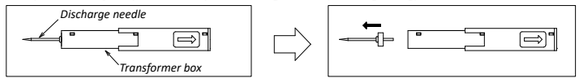
- *When you install the transformer box to the main unit, rotate the locked knob to the LOCK direction, and lock it surely. Otherwise high voltage abnormality lighting up, and dying out of removing electricity.*
- *Do not apply any shock to main unit by dropping it on the floor, etc. This may cause damage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

Removingthe discharge needle

(1) Remove the transformer box from the main unit.

(2) Remove the discharge needle from the transformer box by pulling it foreword.

Optional Parts for replacement: 5-piece discharge needle (including O-ring) set DN-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 24 V 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.	Transformer box is not installed	Check that the transformer box 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 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. It could result in injury, electric shock, fire, etc.*
- *Do not disassemble or remodel the optional nozzle which is sold separately. It could result in injury, electric shock, fire, etc.*
- *Do not use the nozzle without the internal bushing. This will reduce the static elimination performance.*
- *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. It could result in injury, electric shock.*
- *Make sure the polarity of DC power as + (Positive) and - (Negative). Be careful not to make a mistake in wiring. It could result a malfunction of the product.*
- *Do not turn ON the Ionizer immediately after you have turn it OFF, or else and 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	Air Ionizer (Brow-type Ionizer)		Model Name	ZappAURA-II	
Serial Number		Date of Delivery		Inspection	

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