Static Clean

Instruction Manual

V0.968

Particle Trap PT Cube

Thank you for purchasing the Particle Trap PT Cube. Although this device is not specified as a high voltage device according to electrical equipment standards, it uses high AC voltages and we therefore ask that it be operated correctly after carefully reading this instruction manual. Please store this manual carefully and utilize it appropriately when required.

Safety Precautions

Because this device uses high internal voltages, there is the possibility that incorrect usage can lead to physical injury or damage to the product. This company does not accept any responsibility for uses outside the parameters of the product specifications or failure to follow these safety precautions.

Warning	This device does not conform to explosion-proof specifications. Do not install or use it in locations or atmospheric conditions where flammable gases or solvents are handled. Doing so may result in fire or explosion.
	Because high voltages are applied to the discharger, keep it away from conductive objects such as your fingers and body, wires, tools, etc. It may cause electrical shock or damage.
	Because the tip of the discharger is sharp, take sufficient care when handling it. It may cause injuries.
	Do not under any circumstances disassemble, repair, or modify this device. Doing so may cause an accident or damage.
	Connecting, installing, and maintenance must be with the power turned off. Failure to do so may cause accidents or damage.
	Because the fan rotates at high speed when the power is on, do not insert small objects etc. between the gaps in the guard. Doing so may cause an accident or damage.

Note	Because this device incorporates devices that generate high voltages, avoid installing it in wet, oily, hot, and humid locations. In particular, avoid using it in locations of high humidity and condensation.
	Be sure to ground the device. Failure to do so can cause deterioration of its neutralizing characteristics, malfunction, and damage.
	If the product does not work anymore or is no longer required, dispose of it in the appropriate manner as industrial waste.
	Carry out wiring and ducting correctly. If done incorrectly, it can lead to diminished performance and damage.
	Because this device generates high voltages, management of operation, maintenance, etc. should be carried out by a sufficiently knowledgeable and experienced person.

1. Overview of the Product

This device is a static charge/dust eliminating device that is immediately useful for removing dust attached to charged work pieces. Dust attached to work pieces is removed by blowing compressed air from nozzles installed at the top and bottom of the main unit, and the work piece and dust are neutralized by a separately installed ionizer to prevent reattachment. Clean air is discharged through a filter from outside the device by a high-power suction fan, without scattering dust outside.

2. System Structure

The device is used by supplying 100 to 240V AC via the supplied power cable and compressed air via the supplied φ8 air tube.

3. Specifications

Product Name		PARTICLE TRAP
Model		**PT Cube**
Ratings	Voltage	100V - 240VAC (50/60Hz) ±10%
	Consumption	240W max.
Ionizer	System	HDC-AC
	Ion Balance	Within ±30V*1
	Neutralizing Performance	1.0 sec or less (with compression of 87 psi)*1
Fluid		Air (clean dry air)
Compression Range		29 psi to 87 psi*2
Duct Connection Diameter		φ8 quick coupler
Blow Nozzles		Upper surface: 2 Lower surface: 1 (angles of upper surface nozzles are adjustable)
Filter Performance		Able to trap at least 98% of dust of at least 10μm
Settable Functions	Blow pulse settings	1 Hz 3 Hz 5 Hz 10 Hz Cont
	Blow interval settings	3 sec 5 sec 10 sec 15 sec Real
	Fan RPM settings	Non-stepped variable
Air Consumption	At 43 psi pressure	9.5 cfm (when pulse setting is 'Cont')
	During standby	0l/min ANR
Noise	With fan RPMs at min.	51dBA*3
	With fan RPMs at 50%	74dBA*3
Size		8.85" W x 14.17" H x 15.75" D (not including protruding parts)
Weight		19.85 lbs
Environment	Temperature	0 - 40°C (32-104°F)
	Humidity	15 – 85% (without condensation)
	Max. altitude	2000 m

*1 Measurement position was actual work position, value measured with 6" x 6" 20pF plate CPM (charged plate monitor) (neutralizing period was attenuation period from ±1000 V to ±100 V).

*2 Set compression value of the device's regulator.

*3 Measurement at position 500 mm(19.68") from front of device.

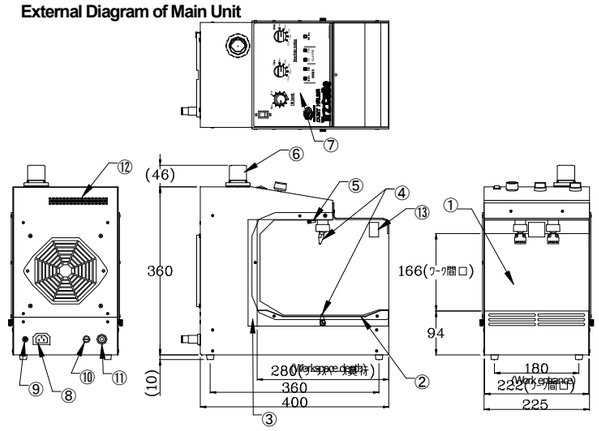
4. Items Included with the Device

Check whether any of the following items are missing, whether there are any irregularities, and whether they have been damaged during transit before use. If there is any damage or the product does not operate correctly, please contact the store (agent) or sales office where you bought the product.

- □ PT Cube main unit: 1
- □ Instruction Manual: This document
- □ Power cord: 1
- □ Work inlet covers: 3
- □ Replacement filter: 1

5. Exterior and Names and Functions of Components

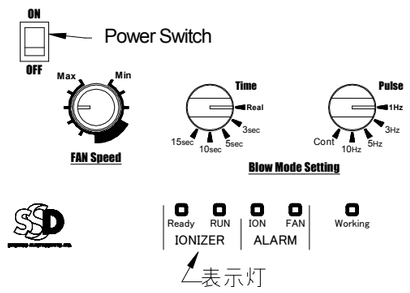
External Diagram of Main Unit



5-1 Explanation of Main Unit Components

	Component	Description
□	Work inlet	Insert the work to eliminate static charges and dust.
□	Main unit central plate	Detach this when cleaning the inside of the main unit. When detaching, remove the knurled screws (one on each side) in the sides of the main unit for holding this plate in place.
□	Filter	A filter for filtering dust removed from the work. It is disposable.
□	Blow nozzle	Two blow nozzles are arranged at the top and one at the bottom. The angles of the two blow nozzles at the top are adjustable, and their angles can be adjusted as desired to match the shape of the work piece.
□	Ionizer	A static elimination ionizer. It is arranged separately to the main air blow.
□	Regulator	Adjusts the air blow pressure. This device can be used within the range of 29 psi – 87 psi
□	Setting/Display Panel	Displays the various settings and operations. Details are described below.
□	Power cord inlet	A connector for supplying AC power. Connect the supplied power cable here.
□	Ground terminal	A terminal for grounding. You can connect an M4 terminal.
□	Fuse box	The power supply fuse box.
□	φ8 quick coupler	A coupler for connecting compressed air. Connect a φ8 air tube.
□	Terminal	For optional sensor connection
□	Optical sensor(Option)	Optical sensor

Diagram of Setting/Display Panel



5-2 Setting/Display Panel

Component		Lamps / Description
Power switch		The main switch of this device.
Blow mode setting	Pulse	Sets the pulse of the air blow. You can select 1Hz, 3Hz, 5Hz, 10Hz, or continuous air blow ('Cont').
	Time	Sets the air blow time. You can set 'Real' mode, which turns the blow on and off by means of a sensor, or a 3 sec, 5 sec, 10 sec, or 15 sec continuous air blow when sensor detecting once.
Fan speed		You can adjust the rotational speed of the suction fan. When setting toward MIN, speed decreases, and when setting toward MAX, speed increases. The higher the fan speed the stronger the suction capability, but operating noise increases proportionally. Recommended adjustment position is within the blue zone.
Ionizer	Ready lamp	This is illuminated when static charge and dust elimination preparation is complete.
	Run lamp	This is illuminated when the ionizer is running. The ionizer operates in conjunction with the air blow, and runs until 3 seconds after the air blow finishes.
Alarm	Ion lamp	This is illuminated when an irregularity occurs in the ionizer. When this is illuminated the device will not operate until reset.
	Fan lamp	This is illuminated when an irregularity occurs in the fan. When this is illuminated the device will not operate until reset.
Working lamp		This is illuminated when a work piece is detected and air is blowing. It blinks at the pulse speed when the 'Blow Mode' setting is set to 'Pulse.'

6. Installation, Wiring, and Air Ducting

6-1 Before Installing

- Install the device in a rigid flat location such as a work bench etc. Avoid installing it in unstable locations.
- Be sure to connect the ground terminal of the power cord or the ground terminal of the main unit to ground.
- Use the device indoors, and do not use it in oily or wet locations, locations where flammable gases and solvents are handled or locations with such atmospheres, or hot or humid locations..
- Check that the power of the main unit is turned off or the regulator is closed when connecting the power supply and connecting air ducting.

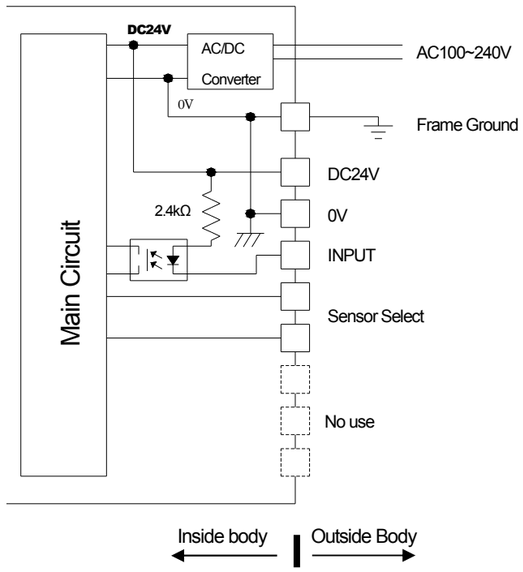
6-2 Wiring

Supply 100 to 240 VAC (50/60 Hz) to the device with the supplied power cord.

- When grounding from the ground terminal of the main unit of the device, use an M4 crimping terminal etc. and connect it firmly.

Sensor select Switch	Select the internal sensor and optional optical sensor. The terminal "SensorSelect" as "Open", it works on internal sensor. The terminal "SensorSelect" as "Close". It works on optional optical sensor. *In case use the optional optical sensor, please us the specification as DC24V supply NPN type.
Optional Sensor terminal	Connect DC24V of sensor to the Terminal "DC24V". Connect 0V of sensor to the terminal "0V"

	Connect the signal of sensor to the terminal “INPUT”.



6-3 Air Ducting

Connect a urethane or nylon tube with an outer diameter of φ8.

- Use clean, dry air as the air supply. Check that a dryer and filter are attached to the air equipment you are going to use, and if not attached, attach them.
- Check that the compressor has the following flow rates and use a compressor that has sufficient leeway.

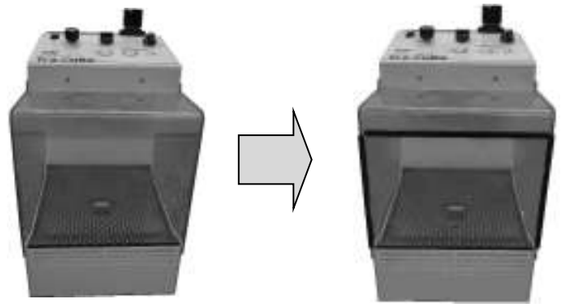
Main unit regulator setting	Max. air flow during operation
29 psi	6.3 cfm
43 psi	9.5 cfm
58 psi	11.4 cfm
72 psi	13.1 cfm

87 psi	15.0 cfm

6-4 Attaching the Work Inlet Cover

- Work inlet covers are included for preventing scratching when a work piece hits the work inlet of the device. Attach and use them as appropriate.
- Two types of black work inlet cover of different lengths (one long and one short) are provided. Fasten them at the attachment positions corresponding to their lengths.
- The work inlet covers are held between resin plates, but if these come off during use, reaffix them using adhesive glue (supplied separately).

□ Attach the work inlet cover to the transparent resin portion of the main unit inlet.



Prior to cover attachment **After attaching the cover**

7. Operation

7-1 Procedure When Starting Operation

□ Install the device in a location with a flat top and carry out wiring and air ducting.

□ Open the main valve from the compressor to supply air to the device, and adjust the pressure with the regulator of the device to the air pressure to be used (between 29 psi – 87 psi).

□ Turn the power switch of the device on, check that the ‘IONIZER’ – ‘Ready’ lamp on the main unit display panel is on, and insert a work piece. The sensor will detect the work piece and operation will begin.

- There is a warm up time of about 5 seconds from when the power switch of the device is switched on, during which time all of the lamps in the display panel of the main unit are illuminated.
- The fan usually runs when the power switch of the device is switched on.
- When blowing, the ‘Working’ lamp is illuminated in conjunction with the blow pulse. The ionizer also works in conjunction with the blow and runs until 3 seconds after the blow is turned off. The ‘RUN’ lamp is illuminated while the ionizer is running.

□ Set the fan speed and pulse of the device to match the amount of dust attached to the work piece etc.

- Although the device has a built in photoelectric sensor, it also has ‘Time’ settings for blowing continuously for 3 seconds, 5 seconds, 10 seconds, and 15 seconds after the sensor activates once, for when work detection is difficult due to the work material (transparent work pieces etc.) or you want to manage the blow time. Configure these settings accordingly.
- When the fan speed setting is fast, the suction capability increases greatly and the operating noise becomes correspondingly loud. The recommended setting is within the blue zone of the fan speed knob. Sufficient suction power also is exhibited with the main unit regulator setting at 87 psi.

7-2 Procedure When Finishing Operation

□ Turn the power switch of the device off.

□ Close the regulator of the main unit, and close the main valve from the compressor.

7-3 Alarm Cancellation Procedure

The device has a function for displaying on the main unit display panel when fan rotation stops or there is an irregularity in the ionizer. If the ‘ALARM’ display is illuminated, you can refer to **9. Troubleshooting** of this manual and reset the main unit by turning the power on again after resolving the irregularity.

- While the ‘ALARM’ display is illuminated, all of the operations of the device are stopped and remain stopped until reset.

8. Maintenance

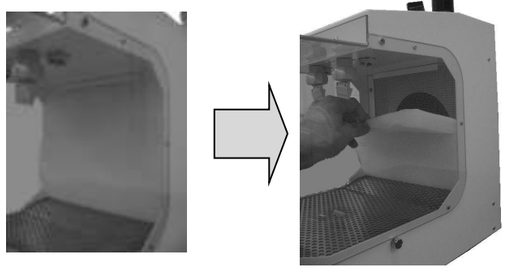
- The filter is disposable. Since the rate at which the performance of the filter decreases varies according to frequency of use and the amount of dust on work pieces, replace it appropriately according to the state of usage. If clogging becomes severe, suction capability will decrease. Be sure to use the Trz-RKF05 replacement filters, 5/pack.
- If by chance water or oil lands on the device despite having installed it in a water- and oil-free location, switch off the power as soon as possible and wipe it down with a dry rag or cloth. Take care particularly around high voltage areas and their peripheries.
- If dirt adheres to the discharger of the ionizer or its periphery, the neutralizing effect is reduced. To prevent reduction of the neutralizing effect, regularly clean the discharger and its periphery (discharger nozzle).
- When carrying out maintenance, be sure to do so after stopping the power supply and confirming that the regulator pressure of the device is 0 Mpa. Unintended operation can cause injuries, electrical shock, or damage to the main unit.

8-1 Filter Replacement Procedure

□ Check that the power switch is turned off and the regulator pressure is 0 psi.

□ Detach the filter in the work entrance direction and replace it with a new one.

- After inserting the filter between the main unit central plate and the metal mesh on the far side, pull the tab at the top of the main unit and insert it so that it is firmly attached to the metal mesh portion on the far side.
- The side of the filter that is not glossy is the front. The front is the workspace side.



8-2 Discharger Cleaning Procedure

- Although a cover is attached so that the discharger cannot be touched, the tip portion of the discharger is very sharp, therefore take sufficient care when handling it. It may result in injury.

□ Check that the power switch is turned off and the regulator pressure is 0 psi.

□ Wipe off the inside of the discharger nozzle and the tip of the discharger, and any other dirty parts with a Q-Tip etc. containing dehydrated alcohol.

- Dry the alcohol sufficiently after cleaning.

8-3 Workspace Cleaning Procedure

- Depending on the usage condition of the workspace, it may become dirty. Therefore, in order to maintain a clean workspace, it is recommended that you clean it regularly.

① Check that the power switch is turned off and the regulator pressure is 0 psi.

② Remove the knurled screws in the sides of the main unit (one on each side).

③ Remove the main unit central plate.

④ Wipe off any dirt on the workspace with a rag etc. containing alcohol.

- If you cannot remove fine dirt, you can also blow it clean with compressed air etc.

⑤ Re-attach the main unit central plate (the side with black rubber attached should face toward you).

⑥ Insert the knurled screws in the sides of the main unit.

- If you do not reinsert the knurled screws the photoelectric sensor may not operate correctly.

9. Troubleshooting

- The power will not turn on.

→Check that the wiring and power supply are set up correctly..

→The fuse may be blown. Check the fuse box in the rear side of the main unit.

***Compatible fuses are Φ6.4 x 1.18”, 250V, 10A.**

- Air blow doesn’t occur.

→Check that the compressor air is being supplied correctly.

→Check that the regulator of the device is adjusted correctly.

→Check whether the ‘ALARM’ – ‘ION’ or ‘FAN’ lamp is illuminated.

- The neutralizing effect is unsatisfactory.

→Check whether the discharger or its surroundings are dirty.

→Check that the ground of the device is reliably grounded.

→Check that there is no water or oil in the compressed air being supplied to the device. (Check that conditioners such as an air filter and dryer are attached.)

- 'ALARM' – 'ION' is illuminated.

→ Check whether the discharger or its surroundings are dirty.

→ Check that the ground of the device is reliably grounded.

→Check that there is no source of noise in the vicinity of the device.

- 'ALARM' – 'FAN' is illuminated.

→Check that no foreign objects are in the fan portion of the main unit.

10. Options

- Replacement filters (x5): Trz-RKF05

Static Clean International

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