

INSTRUCTION MANUAL

Bar Type Ionizer [DTY-BA11]

Thank you very much for your purchase of DTY-BA11. Although this product is not classified as a high-voltage device under any electrical equipment standard, it uses a high voltage. Please read this manual diligently to carefully and correctly handle this unit. Keep this manual on hand for your reference and consult it repeatedly as required.

Safety Precautions

There is a possibility of leading to the breakdown of the accident resulting in injury or death and the product because this product uses a high voltage in the main body when improper use. Our company shall not be held liable for any usage outside the Product Specifications or any accident caused by noncompliance with the Safety Precaution. Please appropriately install in semiconductor-fabrication equipment and other production lines, etc. and use it. An appropriate place is a place in which a suitable cover exists in the place where the temperature and humidity, etc. were managed.

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 fingers, any part of the body, wires or tools to come close to the needle. Otherwise, an electric shock or a malfunction of the unit may occur.
The discharge needle has a sharp edge. Pay special attention to handling of the needle, or you may injure yourself.
Never disassemble, repair, or remodel this unit, or else an accident or a malfunction of the unit may occur.
When any wiring, installation, or inspection work is to be carried out, make sure that the unit is disconnected from the power supply, otherwise, an accident, an electrical shock or a malfunction may be caused.

Caution

This product contains a high-voltage generating device inside the unit. Do not install the unit at a location where it may be exposed to splashing of water or oil, high temperatures, or excessive humidity. Make sure the unit is protected from condensation.
Connect this product to the ground. Failure to do so may cause the unit to the fall of the electrostatic elimination effect, malfunction or trouble.
Make sure that any unserviceable unit or any unnecessary unit should be properly disposed of as an industrial waste material.
Be sure to connect the wiring correctly. Failure to do so may result in malfunction.
This product generates a high voltage. Please do the installation, the operation, and the maintenance of this product if you have enough knowledge and the experience.

*For any other items of warning or caution, please refer to the "Safety Precautions" in the Catalog for the "Static Electricity Removing Unit; IONIZER"(Be sure to refer to the Latest Version of the Catalog.)

1.Product Overview

This product is a bar type ionizer (static electricity eliminating device) used to neutralize electrostatic buildup in locations where it is a frequent problem. It contains an ionized air emitter, and can be set up easily by supplying 24VDC from the provided cable, or by using 100-240VAC(with the optional AC adapter). It must be grounded to work correctly. The ionized air it generates quickly and efficiently. It also includes functions to detect operating trouble, ensuring that it can be used safely and reliably. It also includes functions to detect operating troubles and to provide the cleaning timer that counts electrified time, ensuring that it can be used safely and reliably.

2.System Configuration

This product is connected with DC power supply and grounding by using the power/signal cable of the attachment.
If 24VDC power is unavailable use the optional AC adapter(DTY-ZPS2). An optional extension cable(DTY-ZCE3-BA11) is available if the power/signal cable or AC adapter cable is too short to reach the installation location.

3.Specifications

3.1 List of Specifications

Type	DTY-BA11	
Input Power Source ¹	24VDC±5%	
Current Consumption	150mA	
Output Voltage	±10kV	
Displays	Power LED(Green)	When the power is ON.
	RUN LED(Green)	When the system is operating normally.
	ALARM LED(Red)	When the abnormal-discharge or the circuit is abnormal. (RUN LED is turned off.)
	CLEANING LED(yellow)	When running time passed the accumulative running time that was set up by T-SELECT.
Abnormal Output	Contact output when ALARM LED illuminates. (Contact B :24VDC 50mA MAX)	
Effective elimination distance	50mm- ²	
Ion Balance	±30V or less ³ (at measurement distance of 300mm and air pressure of 0.3MPa)	
Static elimination time	0.7sec or less ³ (at measurement distance of 300mm and air pressure of 0.3MPa)	
Generated Ozone volume	0.002ppm or less (at measurement distance of 50mm and air pressure of 0.2MPa)	
Air tube connection diameter*4	Outer diameter φ6 or φ8 quick fitting	
Range of Air Pressure Used	0.01MPa-0.50MPa	
Media	Air (Clean air devoid of moisture and oil)	
Material	Body	ABS
	Emitter electrode Emitter needle	Stainless steel Tungsten or Silicon
Operating environment	Temperature	0-40°C(Indoor)
	Humidity	15-85%RH(No condensation) Altitude up to 2000m
Safety Approvals	IEC61010-1 Over voltage category I Pollution degree 2	

*1:Use the LPS(Limited Power Source) certified with IEC/EN60950-1.

*2:The eliminate effect changes in the installation distance. Please use it examining it enough.

*3:Measured under the measuring conditions specified by Koganei.

*4:The fitting is different the electrode length. 1600 or less is φ6. 1850 or more is φ8.

3.2 Weight

Type (DTY-BA11-****)	350	600	850	1100	1350	1600
Weight g	450	650	860	1060	1260	1470

Type (DTY-BA11-****)	1850	2100	2350	2600	2850	3100
Weight g	1670	1880	2080	2290	2500	2710

*Weight don't contain the bracket etc.

3.3 Air flow

Type (DTY-BA11-****)	350	600	850	1100	1350	1600
Nozzle type	l/min (ANR)					
Standard type	95	177	255	323	362	393
Low air flow type(-A)	51	91	143	187	233	274

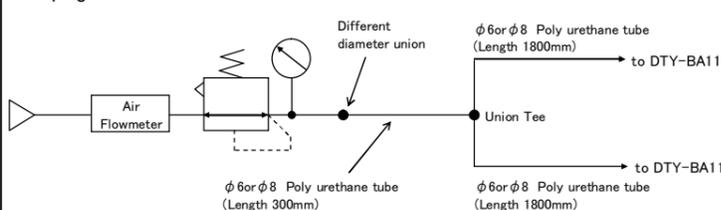
Type (DTY-BA11-****)	1850	2100	2350	2600	2850	3100
Nozzle type	l/min (ANR)					
Standard type	622	687	748	806	848	882
Low air flow type(-A)	374	425	471	515	556	598

*It is air flow when air is supplied from air pressure 0.5MPa and both sides.

*The measurement condition is as shown in the figure below.

*The air flow changes under the piping condition. Please give to me as a reference value.

Piping condition



*The same tube as the piping connection diameter of the main unit is used.
(φ6 or φ8)

4.Package Contents

On receipt of the product, please check the package for any missing parts or for any abnormality or damage that may have occurred during delivery before using the unit. In case any damage should be found or any abnormal operation should be observed, please contact the outlet (the agency) at which you purchased the product, or the nearest Koganei service station.

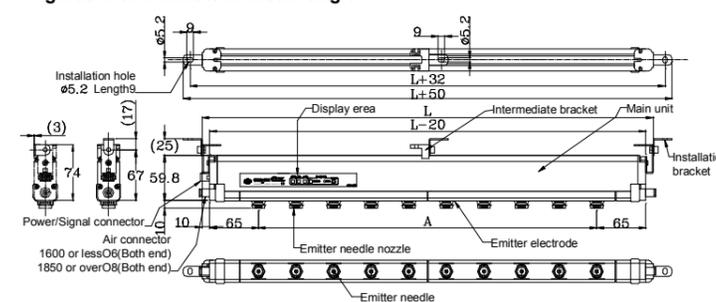
- Main unit : 1 unit
- Instruction manual : This booklet
- Installation brackets : 2 units (with 2 installation screws)
- Power/signal cable : 1 unit (length 3m)
- Intermediate brackets : listed in the table below
(Installed on product at the time of shipment)

Type (DTY-BA11-****)	350 600 850	1100 1350	1600 1850	2100 2350	2600 2850 3100
Qty.	0	1	2	3	4

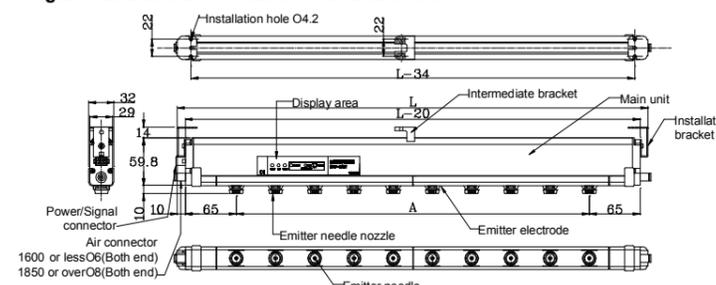
- Emitter needle nozzle detaching tool : 1unit

5. Appearance and Names/Functions of Parts

Figures with brackets to install angle

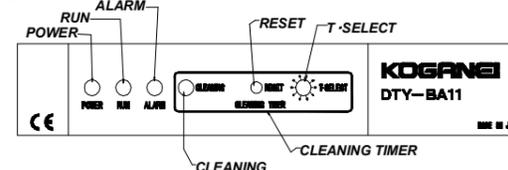


Figures with brackets to fix in vertical direction



Type	L(mm)	A(mm)	Emitter needle nozzle Qty.
DTY-BA11-350	350	50p x 4=200	5
DTY-BA11-600	600	50p x 9 =450	10
DTY-BA11-850	850	50p x 14 =700	15
DTY-BA11-1100	1100	50p x 19 =950	20
DTY-BA11-1350	1350	50p x 24 =1200	25
DTY-BA11-1600	1600	50p x 29 =1450	30
DTY-BA11-1850	1850	50p x 34 =1700	35
DTY-BA11-2100	2100	50p x 39 =1950	40
DTY-BA11-2350	2350	50p x 44 =2200	45
DTY-BA11-2600	2600	50p x 49 =2450	50
DTY-BA11-2850	2850	50p x 54 =2700	55
DTY-BA11-3100	3100	50p x 59 =2950	60

Display area

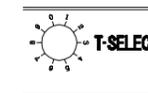


Indication	Explanation	
POWER	This green LED illuminates when the power is ON and normal.	
RUN	This green LED illuminates when the system is operating normally.	
ALARM	This red LED illuminates when a abnormal-discharge is occurring at the discharge needle or other high-voltage part of the unit, or when over current has in the unit circuits.	
CLEANING TIMER	CLEANING	When running time passed the accumulative running time that was set up by T-SELECT, the yellow LED turn on.
	RESET	Button that resets illumination of CLEANING LED.
	T · SELECT	Selector that set up the accumulative running time to illuminates CLEANING LED.

6.Installation and wiring

6.1 Configuration

This product has CLEANING TIMER function that enables you to inform proper time for cleaning. By setting up the accumulative running time, when it reaches the time, CLEANING LED illuminates. If you use this function, please set up the configuration of T-SELECT to optional number with a cabinet screwdriver.



T · SELECT No

- * Its number is set up to No.0 when shipping.
- * With this function, running time is added up by every one hour, so within one hour, this function does not work.

- *Even if the power supply cuts, the running time is not reset.
- * When CLEANING LED illuminates, that does not indicates ALARM. Please note that when CLEANING LED illuminates, this product does not work as ALARM mode
- * As amount of attached substances to discharge needles differs by atmosphere and air flow, please set up the cleaning period with your considering those elements.

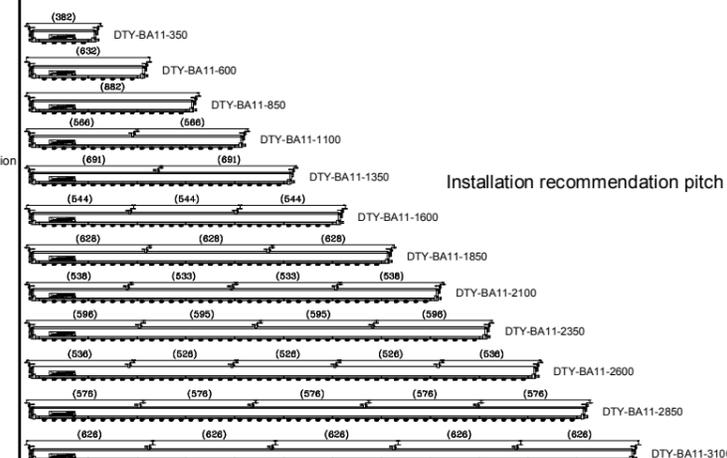
T · SELECT Configuration

T · SELECT No	0	1	2	3	4	5	6	7	8	9
Running time(h)	No function	100	300	500	800	1000	3000	5000	8000	10000

6.2 Installation

Before Installation

- *Install so that the main unit does not contact any grounded object. Such contact may result in unit malfunction. In particular, if the emitter electrode contacts the ground, a safety circuit operation failure may occur.
- *Be sure to fasten the brackets securely. Failure to do so may cause the unit (particularly longer units) to bend or twist , resulting in malfunction.



- *Install the unit onto a frame or similar structure of adequate strength. If the strength is insufficient, the unit may become unstable and fall or may cause bending of the body.

- *Be sure to check the installation location and other conditions before installing the unit. In particular, if there are problems such as vibration or level differences at the installation location, bending of the unit may occur, resulting in malfunction.

- *Before installing the unit, verify that there is no looseness of the discharge needle nozzle. If the nozzle is loose, it may fall off during installation or during operation when the power is turned ON.

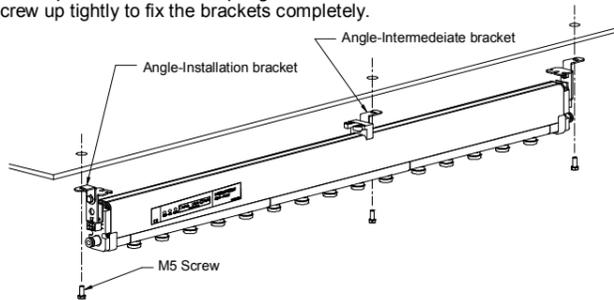
- *If there are any structural objects between the unit installation position and target for electrostatic elimination, the ions in the emitted air may be depleted, preventing the full electrostatic elimination effects from being achieved. Select a unit installation position so that no objects can interfere with the operation. Please be careful not to omit some structural objects moving nearby, when installing.

- *The distance of discharge needle nozzle from the target for electrostatic elimination is over 50mm. The electrostatic elimination effects are optimum at a distance of 50mm. As the distance increases, the effects decrease and a longer amount of time may be required for electrostatic elimination. Please confirm the elimination effect beforehand.

- *When the distance of the target and the discharge needle is too short, the abnormal discharge is generated. There is a possibility that the irregular stop of main unit and the target object break, and defend the installation distance.

6.3 Installation method when using angle-installation brackets

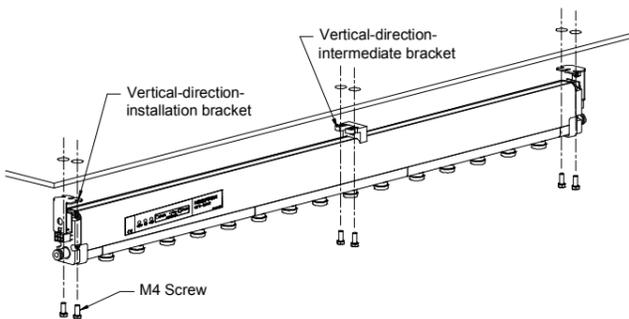
1. Please fix to the hole of $\phi 5.2$ of the bracket with the M5 screw in the place where it wants to installation bracket and intermediate bracket.
*Fix the body to proper place with M5 tapping, or with nuts from the backside.
*Fix with plane washers and spring washers.
*Screw up tightly to fix the brackets completely.



2. Set up angle, screw up M5 screws tightly.
*If tightening of M5 screws is loose, the installed angle may be changed, and may make elimination effect lower.

6.4 Installation method when using vertical-direction-installation brackets

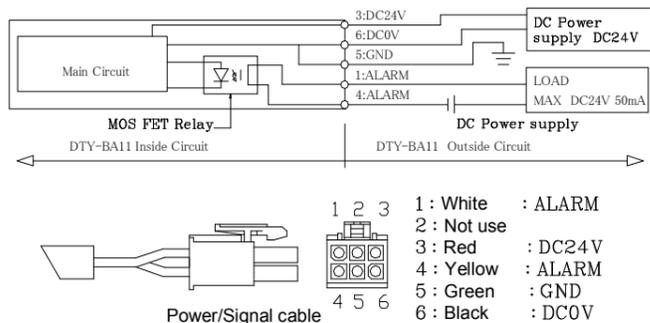
1. Remove M5 Screw of unit installation bracket and intermediate installation bracket, and remove L metal fittings.
2. Fix the unit to proper place with M4 screws in $\phi 4.2$ holes



- *Fix the unit to proper place with M4 tapping, or with nuts from the backside.
- *Fix with plane washers and spring washers.
- *The screw is a thing to tighten surely, and to fix the bracket.
- *Use two nuts per one bracket.
- *Distance between nut hole for installation and the body is narrow, we recommend you to use bolt nuts with hexagonal holes and fix with a ball-point-type wrench.

6.5 Wiring and Piping

1. Connect the provided power/signal cable as shown in the figure below.



- *Securely connect the ground wire (with a grounding resistance of 100 Ω or less).
- *Use the LPS(Limited Power Source) certified with IEC/EN60950-1.
- *Securely insert the connector.
- *The alarm wire insulation is not pre-stripped, when using the wire, strip away an appropriate amount of the insulation. The wire diameter is 22 AWG.
- *The alarm signal is a maximum of 24VDC 50mA
- *The alarm signal is as shown in the table below.

Status	Power OFF	RUN LED ON	ALARM LED ON
Contact signal	Open	Close	Open

- * An optional extension cable(DTY-ZCE3-BA11) is available if the power/signal cable or AC adapter cable is too short to reach the installation location.
- *The optional AC adapter does not come with an alarm wire connected. When using the AC adapter, verify the connector number, and then securely insert this wire into the connector in order to use it.

2. Connect a $\phi 6$ (or $\phi 8$) air tube (nylon, soft nylon, or polyurethane) to both sides of the unit.
*Don't use soft urethane tube.
*There are air connection ports on both sides of the unit. However, if sufficient air can be supplied from just one side, it is possible to supply air from one side for this product to work efficiently. In this case, be sure to use a plug for the $\phi 6$ (or $\phi 8$) air connection port on the unused side.
*The compressed air supplied must be clean, dry air. If an air filter is necessary for the air supply equipment you are using, use an in-line filter system or similar item. Refer to KOGANEI General Catalog for the selection of the air equipment.
*The maximum air pressure that can be supplied to the unit is 0.5MPa. Because this unit does not include an air pressure regulator or similar function, an air pressure regulator must be provided by the user.
*As the amount of compressed air consumed varies depending on the unit length of your model, the air pressure level, the diameter and the length of piping, use devices that are suitable for the conditions of use.

7. Operating the Product

7.1 Setup before Starting Operation

1. Check the ionizer wiring and air piping.
2. Supply air to the unit from the air equipment that is used.
*Use air pressure 0.5MPa or less.
3. Supply 24VDC power to the unit. The POWER LED and RUN LED on the unit illuminate and electrostatic elimination starts.
*If the optional AC adapter is used, supply 100-240VAC, 50/60Hz

7.2 Steps when Stopping Operation

1. Stop supplying of power to the unit.
2. Stop supplying of air.

7.3 Canceling the Alarm

- *Because this unit utilizes high voltage, if a safety or operating problem is detected, the high voltage is shut off. At this time the RUN LED turns off and the ALARM LED illuminates. The system is configured so that the system cannot be restarted until the alarm has been reset.
- *When the ALARM LED is illuminated, refer to "9. Troubleshooting" in this manual and correct the problem before restarting operation.

 1. Stop supplying of power to the unit.
 2. Remove problems referring "9. Trouble shooting" in this manual.
 3. Start supplying of power to the unit again.

7.4 Canceling operation of CLEANING

- Push the CLEANING TIMER RESET button more over 2 seconds while RUN status. Timer will be reset.
- * Even if the power supply cuts, the running time is not reset.
- * Even if the setting of T-SELECT is changed, the running time is not reset. The set time after T-SELECT is changed is compared with the running time, and it outputs is.

8. Maintenance

- *This unit should be installed and used in a location where it will not contact water, oil, or similar substances. However if water, oil, or another substance contacts the product, immediately turn OFF the power and wipe away the substance with a cloth or other item. Use particular caution at the high voltage sections and surrounding area.
- *If the discharge needle and surrounding area become fouled, the electrostatic elimination effects will be reduced. If the electrostatic elimination effects diminish, clean the discharge needle and the surrounding area periodically (in particular, the discharge needle nozzle.) for preventing drop of elimination effect.

8.1 Cleaning the Discharge Needle nozzle

- *Be sure to turn the power OFF before cleaning the discharge needle nozzle. Failure to do so may result in electric shock or malfunction of this unit.
- *The discharge needle nozzle is removable. When dust or other substances become noticeable at the location where the product is used, remove the discharge needle nozzle and take it to another location for cleaning.
- *The tip of the discharge needle is extremely sharp. Use sufficient care when handling it. The needle tip can cause injury.
- *If the discharge needle tip accidentally becomes bent or chipped, or resin part of discharge needle is damaged during cleaning, replace the discharge needle nozzle. If the discharge needle nozzle is not replaced, the full product performance will not be achieved or it may cause some accidents.

1. Stop supplying of power to the unit.
2. Stop supplying of air.
*To perform cleaning without removing the discharge needle nozzle, proceed to "4".
3. The discharge needle nozzle is counterclockwise turned with a Emitter needle nozzle detaching tool attached to the product, and it detaches it.
*It is possible that the O-ring may become stuck to the unit when the discharge needle nozzle is removed. If this occurs, remove the O-ring, taking care not to lose or damage it. If the O-ring is not reinstalled after cleaning, it will cause air leakage, preventing full performance from being achieved.
4. Use cotton swabs or a similar thing moistened with alcohol to wipe away the fouling from inside the discharge needle nozzle, the discharge needle area, and other areas that are dirty.
*If only performing cleaning without removing the discharge needle nozzle, then cleaning is now finished. Verify that the tip of the discharge needle is not

- bent or chipped, and that resin part of discharge needle is damaged.
- *Be sure to allow the alcohol to fully evaporate (dry) after cleaning.
- *When you clean discharge needles taken off from the body, do not clean needles soaked in alcohol. If you do so, it may cause residual of alcohol inside discharge needles and because of its structure, it cannot be easily dried, so it may lead to damage of the body when you apply high voltage again.
- 5. Securely reinstall the discharge needle nozzle by placing it in its original position and turning it clockwise with a discharge needle nozzle detaching tool until it stops.
*When reinstalling the discharge needle nozzle, be sure to verify that the O-ring is correctly positioned on the nozzle before installing.
- 6. Verify that the tip of the discharge needle nozzle is not bent or chipped, and that resin part of discharge needle is damaged, and that the discharge needle unit is securely installed.

8.2 Replacing the Emitter Needle Nozzle

- *Because the discharge needle nozzle is consumable part, it eventually becomes necessary to replace it. In addition, the discharge needle or the discharge needle nozzle may become bent or chipped during maintenance or due to accidents. If the tip of the discharge needle becomes worn through use or damaged, it may become impossible to achieve this product's full performance. In this case, replace with a new discharge needle.

1. Stop supplying of power to the unit.
2. Stop supplying of air.
3. The discharge needle nozzle is counterclockwise turned with a Emitter needle nozzle detaching tool attached to the product, and it detaches it.
*It is possible that the O-ring may become stuck to the unit when the discharge needle nozzle is removed. If this occurs, remove the O-ring carefully.
4. Securely install the new discharge needle nozzle by placing it in the position and turning it clockwise until it stops.
*When installing the new discharge needle nozzle, be sure to verify that the O-ring is in the designated location on the nozzle before installing.
5. Verify that the tip of the discharge needle is not bent or chipped , and that resin part of discharge needle is damaged, and that the discharge needle unit is securely installed.

9. Troubleshooting

- *The POWER LED does not illuminate.
→ Verify that the wiring and power source are connected correctly.
- *The POWER LED illuminates, but the RUN LED does not illuminate.
→ Verify that the ground wire is securely connected to the ground.
→ Check whether the ALARM LED is illuminated.
- *The ALARM LED is illuminated.
→ Check whether the discharge needle or surrounding area has become fouled.
→ Verify that no grounded objects are in contact with the unit.
→ Verify that the unit securely grounded.
→ Verify that the discharge needle nozzle is not loose.
→ Please confirm if some generation sources of electromagnetic noise are not around the product.
- *It is not eliminated effective.
→ Please confirm whether the ion air surely hits the target.
→ Check whether the discharge needle or surrounding area has become fouled.
- *Other abnormalities
→ The power supply is turned off at once for abnormality other than the above. please contact the shop where you purchased the Product (the agency), or the nearest service station of our company.

10. Optional Parts

Standard type needle nozzle (Tungsten)	: DTY-ZEM-BA11
Standard type needle nozzle (Silicon)	: DTY-ZEMSS-BA11
Low air flow type needle nozzle (Tungsten)	: DTY-ZEMA-BA11
Low air flow type needle nozzle (Silicon)	: DTY-ZEMAS-BA11
AC adapter	: DTY-ZPS2
Extension Cable (length 3m)	: DTY-ZECE3-BA11



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