

DESCO TECHNICAL BULLETIN TB-3095

Pencil Type Ionizer Installation, Operation and Maintenance



Made in Japan

*Figure 1. Desco 50692 Pencil Type Ionizer*

Description

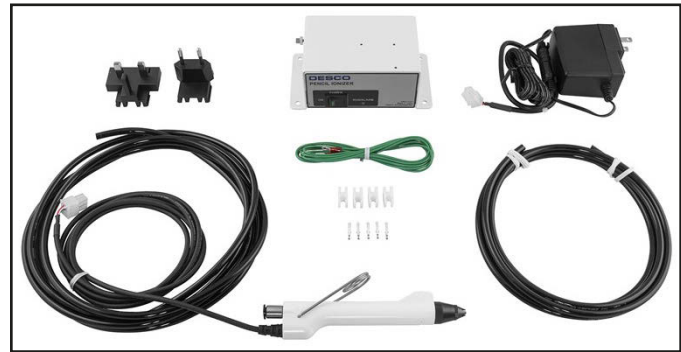
The Desco [50692](#) Pencil Type Ionizer uses compressed clean dry air (CDA) to neutralize electrostatic charges and dislodge dust and debris in tight, compact spaces. It is an ideal choice when cleaning parts and assemblies in electronic, medical device, and semiconductor applications. It is commonly used in applications such as mobile phone manufacturing, PCB assembly, watch making, and the cleaning of optics and wafers. Less than 1 second discharge times with ± 15 volt balance meet the required limits of ANSI/ESD S20.20 and ESD TR53.

“There is sometimes a need to provide static control in a small defined area or location. This may be done to provide static control within production equipment, in mini-environments, or to facilitate particle removal from part of a product. Ionizers used for this purpose may be blow-off guns or nozzles that work with a supply of compressed air or nitrogen. They may use either nuclear, soft x-ray or any of the previously described types of corona ionization technology. It will be important to choose a method of ionization and cleanliness of the gas supply that is appropriate to the work area.” (ESD handbook ESD TR20.20 section 5.3.6.5.2.4 Point-Of-Use Ionization)

“Necessary non-conductors in the environment cannot lose their electrostatic charge by attachment to ground. Ionization systems provide neutralization of charges on these necessary non-conductive items (circuit board materials and some device packages are examples of necessary non-conductors). Assessment of the ESD hazard created by electrostatic charges on the necessary nonconductors in the work place is required to ensure that appropriate actions are implemented, commensurate with risk to ESDS [ESD sensitive] items”. (ANSI/ESD S20.20 Foreword)

Packaging

- 1 Controller
- 1 Pencil Ionizer
- 1 Air Tube, 6 mm O.D. x 8' L
- 1 Air Tube, 6 mm O.D. x 6' L
- 1 Ground Wire, 6' L
- 4 Tube Holders
- 1 Power Adapter, 24 VDC, with interchangeable plugs (North America, UK, Europe)

*Figure 2. Packaging contents*

Features and Components

Controller

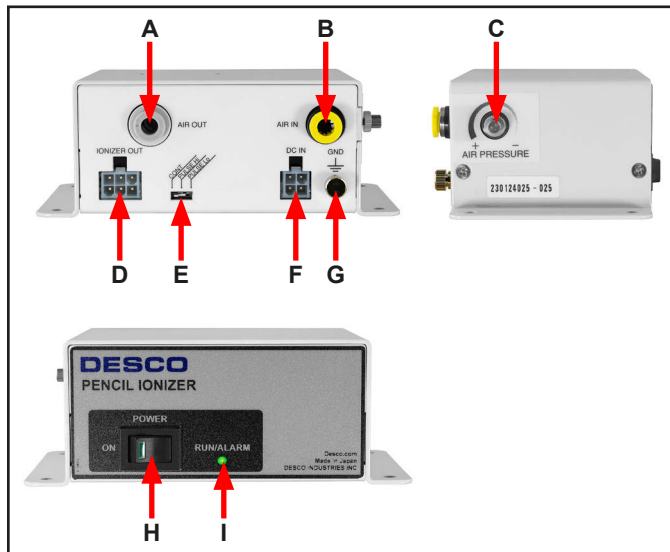


Figure 3. Controller features and components

A. Air Out Port: Supplies compressed air to the pencil ionizer via a 6 mm air tube.

B. Air In Port: Accepts compressed clean dry air (CDA) via a 6 mm air tube.

C. Air Pressure Regulator: Controls the pressure supplied to the Pencil Ionizer.

D. Ionizer Power Connector: Supplies power to the Pencil Ionizer.

E. Air Mode Switch: Toggles the output setting of the air emitted by the pencil ionizer. CONT is continuous air. PULSE Hi is pulsed emission at 100 ms per cycle with a pulse width of 50 ms. PULSE Lo is pulsed emission at 200 ms per cycle with a pulse width of 100 ms.

F. Power Connector: Connect the power adapter here.

G. Ground Terminal: Grounds the controller. Connect the ground wire here.

H. Power Switch: Toggle to ON to power the system. Toggle to the opposite side to power the system OFF.

I. Operation Indicator: Illuminates green during normal operation. Illuminates red if troubleshooting is required.

Pencil Ionizer

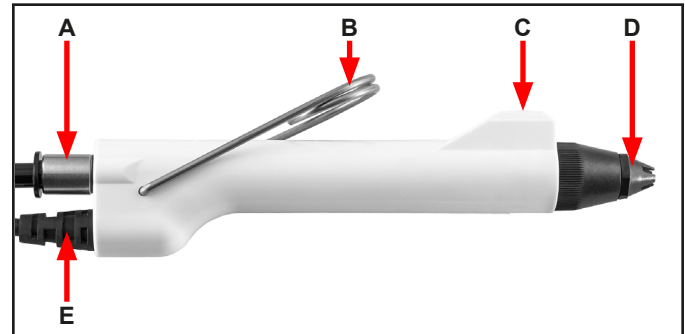


Figure 4. Pencil Ionizer features and components

A. Air In Port: Accepts compressed air from the controller via a 6 mm air tube.

B. Hanging Hook: Use to hang the pencil ionizer when not in use.

C. Trigger: Press to output ionized air through the nozzle.

D. Nozzle: Outputs ionized air when the trigger is depressed.

E. Power Cable: Receives power from the controller.

Installation

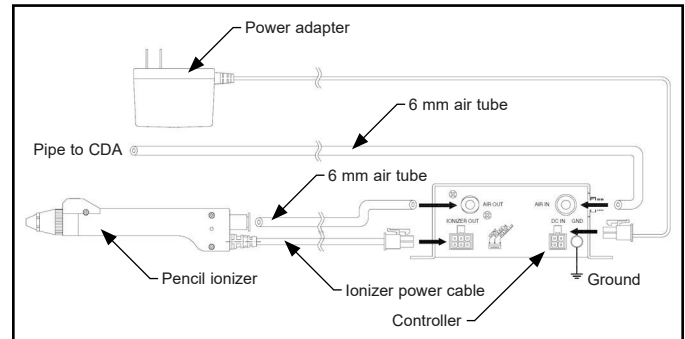


Figure 5. Wiring the Pencil Type Ionizer

1. Ensure that the power and air are set to OFF before wiring and piping the product. Avoid installing the Pencil Type Ionizer in areas with oil, water, high temperature, or high humidity. This product emits ozone into the atmosphere. Do not use it in an enclosed space.
2. Install the controller on a surface where its power switch and indicator LED are visible. Use its four 4.5 mm mounting holes if desired.
3. Use the ground wire to connect the controller to equipment ground. The face plate screw of a grounded AC wall outlet may provide a convenient connection point.
4. Connect the pencil ionizer's power cable to the controller.

5. Connect the power adapter to the controller.
6. Install the 6' air tube to the pencil ionizer. Connect the opposite end of the tube to the AIR OUT port on the controller.
7. Install the 8' air tube to the AIR IN port on the controller. Connect the opposite end of the tube to a clean dry air (CDA) source.
8. Use the air tube holder to combine the air tube and ionizer power cable for improved handling.

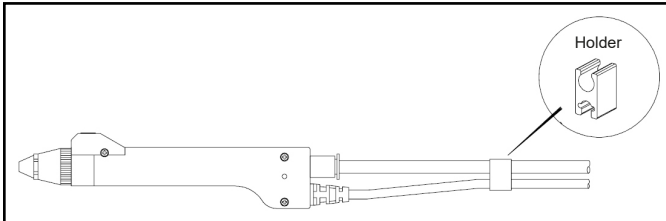


Figure 6. Installing an air tube holder

Operation

WARNING:

- Do not operate the main unit by turning the nozzle toward a human body, especially to the face or to the eye of a person. This may cause serious injury to the person.
 - Do not let the nozzle of the main unit touch conductive or live parts.
 - Always supply air when using this product. The ozone concentration inside the ionizer would increase due to electric discharge. This may damage the ionizer.
 - This product emits ozone. Do not use this products in an enclosed space.
1. Turn ON the controller's power switch.
 2. Open the main valve of the clean dry air (CDA) supply, and supply 7 to 87 psi air pressure to the controller.
 3. Operate the controller's pressure regulator to the desired level.
 4. Use the air mode switch on the controller to select the desired setting.
 5. Hold the pencil ionizer, and point its nozzle at the area to be neutralized. Press the trigger to emit ionized air.
 6. When shutting down the product, turn the controller OFF, and close the air supply's main valve.



Figure 7. Using the Pencil Type Ionizer

Maintenance

WARNING: Always turn OFF the power and air to the product before performing any maintenance. The tip of the emitter point is sharp. Avoid contact.

Cleaning the Emitter Point

To maintain optimum neutralization efficiency and operation, cleaning should be performed on a regular basis. Use the Desco [60506](#) Emitter Point Cleaner or a swab dampened with isopropyl alcohol to clean the ionizer's emitter point.

1. Shut OFF the controller and the air supply.
2. Remove the nozzle from the pencil ionizer.
3. Gently clean the emitter point using a swab dampened with Isopropyl alcohol. Screw the nozzle back onto the ionizer when complete.

The emitter point is a consumable part, and its operational time is over 20,000 hours. The controller uses a solenoid valve that is rated for 50,000,000 open/close operations.

Troubleshooting

Problem: Power is not being supplied to the product.

Remedies:

1. Verify that the power adapter is connected to an appropriate electrical receptacle.
2. Verify that the power adapter is properly connected to the back of the controller.

Problem: Ionized air is not being emitted from the nozzle.

Remedies:

1. Verify that the valve for the compressed air supply is open.
2. Inspect the air pressure regulator on the controller, and verify that it is open.

Problem: The controller's operation indicator illuminates red and abnormally discharge occurs.

Remedies:

1. Clean the emitter point inside the ionizer's nozzle.
2. Verify that no conductive objects are near the ionizer's emitter point.
3. Verify that the nozzle is not making contact with any grounded objects.

Specifications

Input Voltage and Frequency (External Adapter)	AC/DC Power Adapter Power Input: 100-240 VAC, 50/60 Hz Power Output: 24.0 VDC @ 1.0 A Cable Length: 7.5 ft. (2.3 m)
Operating Temperature	32 to 104° F (0 to 40° C)
Environmental Requirements	Indoor use only Maximum relative humidity of 65%. No condensation allowed.
Neutralization (Discharge) Time at 6", 40 psi	< 1 second
Balance (Offset Voltage) at 6", 40 psi	±15 V
Ion Emission	High frequency AC
Dimensions (Pencil)	0.7" Dia. x 6.1" L (18 mm Dia. x 154 mm L)
Dimensions (Controller)	5.3" W x 2.0" H x 3.0" D (135 mm x 50 mm x 75 mm)
Weight (Pencil)	0.2 lbs. (95 g)
Weight (Controller)	1.3 lbs. (570 g)

Capacity	10 VA
High Voltage Output	2,500 VAC approx.
Applicable Fluid	Clean dry air (CDA)
Air Pressure Range	7 to 87 psi
Supplied Air Flow	6.7 CFM
Abnormality Output	MOSFET relay output (B contact) Maximum allowed current: 100 mA Applied voltage: 30 VDC or less
Buzzer Output	Buzzer ON at abnormal discharging
Ozone	0.04 ppm or less
Construction	Pencil: PBT Controller: SECC
Country of Origin	Japan

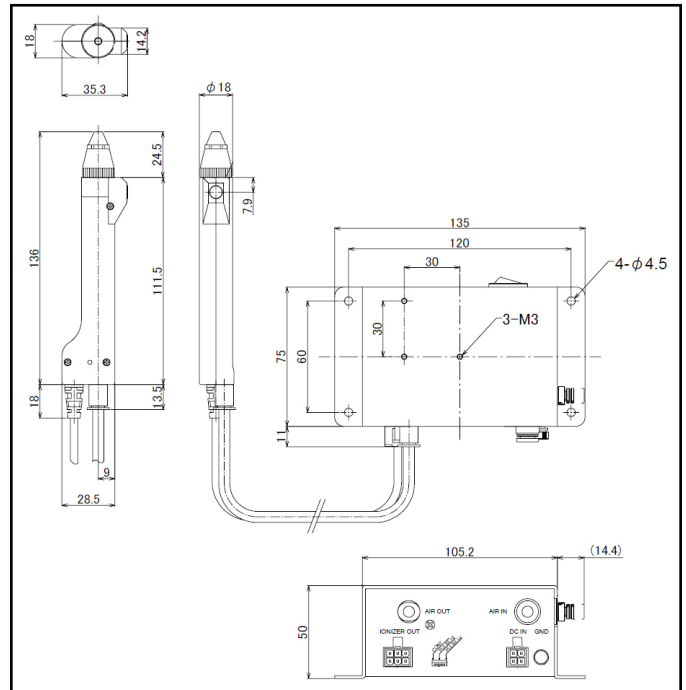


Figure 8. General dimensions (mm)

Limited Warranty, Warranty Exclusions, Limit of Liability and RMA Request Instructions

See the Desco Warranty:

[Desco.com/Limited-Warranty.aspx](https://desco.com/Limited-Warranty.aspx)