EP0401045 – ION 1000 Ionizer

Description

The ION-1000 is a compact, lightweight, and stationary DC ionizer with auto-balancing (self-adjustment) for your workspace.
The unit is typically placed at one end of a workbench or in the area that needs to be neutralized. It can also be mounted on a wall or placed on a shelf. The best discharge times are achieved within a range of 30 cm to 120 cm directly in front of the blower. Discharge time increases with greater distances.

Ionizers are useful for
, neutralize electrostatic charges, and prevent electrostatic discharges. According to ANSI/ESD S20.20 Section 6.2.3.1, Requirements for Protected Areas: “Ionization or other charge-suppression techniques shall be used in the workplace to neutralize electrostatic fields when electrostatic charging is a problem.”

Air ionization can neutralize static charges on insulated objects by blowing separate charges (with opposite charge or polarity) through the air onto the object.

Please note that ionizers should not be used as the primary means of charge control on conductors or persons. (Reference: EN 61340-5-2:1, Clause 5.2.9): “The primary method for preventing static charge is the direct grounding of static-dissipative materials and persons.”

A control program must address insulated materials that cannot be grounded (such as most common plastics) or persons who cannot be grounded via conductive heel straps, ESD shoes (on ESD floors), or wrist straps.”

Air ionization is not a substitute for grounding methods. Rather, it is part of a comprehensive control program. Ionizers should be used where effective grounding is not possible, and they provide an additional layer of safety alongside other static control methods.

In cleanrooms, air ionization is often the only way to prevent or neutralize electrostatic charges. (ESD Handbook ESD TR20.20 Ionization, Section 5.3.6.1 Introduction and Purpose / General Information).
The ionizer operates on a direct current (DC) basis, in which so-called emitters (both positive and negative ion emitters) are supplied with high voltage. Corona discharge generates both positively charged and negatively charged ions. An internal sensor ensures a balance between these ions (auto-balancing).

EMIT ionizers comply with the ANSI/ESD S20.20 minimum standard of a ±50-volt offset voltage. All EMIT ionizers also exceed the parameters required by ANSI/ESD STM3.1, with a self-balancing range of only ±5 to ±25 volts.

SIM Software

The ionizer is fully compatible with the EMIT SIM software. The EMIT SIM software provides a platform for monitoring and recording all activities of your EMIT Smart products. Save time and money with automatic monitoring of ionizers and monitors. The software also allows you to create activity schedules as well as calibration and maintenance schedules.

Package Contents

- 1 ION-1000 ionizer (desktop unit) 1 power cord
- 1 emitter cleaning kit
- 1 calibration certificate

Features and Components

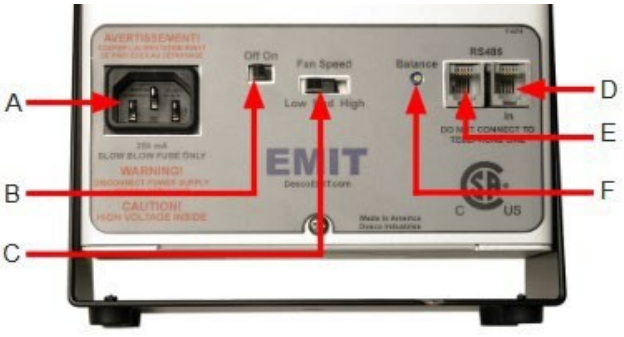

Figure 2:
Connections and Switches (Rear Panel)

A. Power supply connection
B. Main On/Off Switch
C. Fan speed: LOW/MEDIUM/HIGH Left position = LOW (low speed) Center position = MEDIUM (medium speed) Right position = HIGH (high speed)
D. RS-485 input for EMIT software communication
E. RS-485 output for EMIT software communication
F. Ion balance adjustment. Turn the potentiometer to the right (clockwise) for a positive adjustment. Turn the potentiometer to the left (counterclockwise) for a negative adjustment.

Installation

Place the unit in a desired location so that airflow is not restricted. Make sure the unit is turned off (the on/off switch on the back of the unit is in the OFF position). Plug the power cord into the unit and then into the appropriate outlet.

Operation

1. Set the fan speed to LOW, MED, or HIGH on the back of the unit. Higher fan speeds result in faster neutralization.
2. Position the ionizer so that the maximum airflow reaches the object or area to be neutralized.
3. Turn on the ionizer. The first time you turn it on, the device will perform a self-test. An audible signal will sound, and the LED will cycle through red, yellow, and green. Once the green LED remains lit, the self-test is complete and the ionizer is ready for use.

Maintenance

All ionization devices require regular maintenance to ensure proper operation. Maintenance intervals vary greatly depending on environmental conditions (temperature, humidity, dust levels, etc.) and the type of use (continuous operation, high fan speed). Shorter maintenance intervals are recommended for use in cleanrooms.

To ensure smooth operation, it is important to establish precise maintenance schedules. These routine maintenance procedures are also essential for meeting the quality requirements specified in the ESD Manual TR20.20, Section 5.3.6.7, Maintenance/Cleaning. EIA-625 recommends a complete inspection of ionizers every 6 months. However, this may not be sufficient for many monitoring programs.

Cleaning the Emitter Tips

Under normal conditions, the ionizer will attract dust and dirt, especial to the emitter tips. To maintain optimal neutralization and ensure smooth operation, the emitters should therefore be cleaned regularly. To do this, use the included emitter cleaning kit or swabs moistened with isopropyl alcohol.

If there are problems with the power supply or voltage (auto-balancing), the device automatically switches to shutdown mode. When this happens, ionization stops,

the LED changes from green to red, and an alarm sounds. This shutdown mode can be reset by turning the device off and then back on.

- Turn off the device and unplug it from the power outlet.
- Loosen the screw on the fan grille and swing the grille to the side.
- Clean the emitter tips using the cleaning kit or a swab moistened with isopropyl alcohol.
- Swing the grille back into position and tighten the screw again.
- Plug the power cord back in and turn the device on.
- Check the ionizer's performance using *the Aebinbei* lmduCnhga3rge-Plate Monitor
- The emitter tips do not need to be replaced during the device's normal service life and under normal use. However, if it becomes necessary to replace the emitters, they are available as replacement parts.

Settings and Adjustments

The Zero-Volt Ionizer features auto-balancing for the even production of both positive and negative ions. However, if necessary, the output of positive or negative ions can be adjusted. To do this, use a screwdriver to turn the potentiometer (see Figure 2) to the right (clockwise) for a positive adjustment. Turn the potentiometer to the left (counterclockwise) for a negative adjustment.

WARNING!

These maintenance instructions must be carried out only by qualified personnel. Do not attempt to open the housing or touch internal parts or circuits.

Please note: When opening the unit, the power cord must always be unplugged from the unit

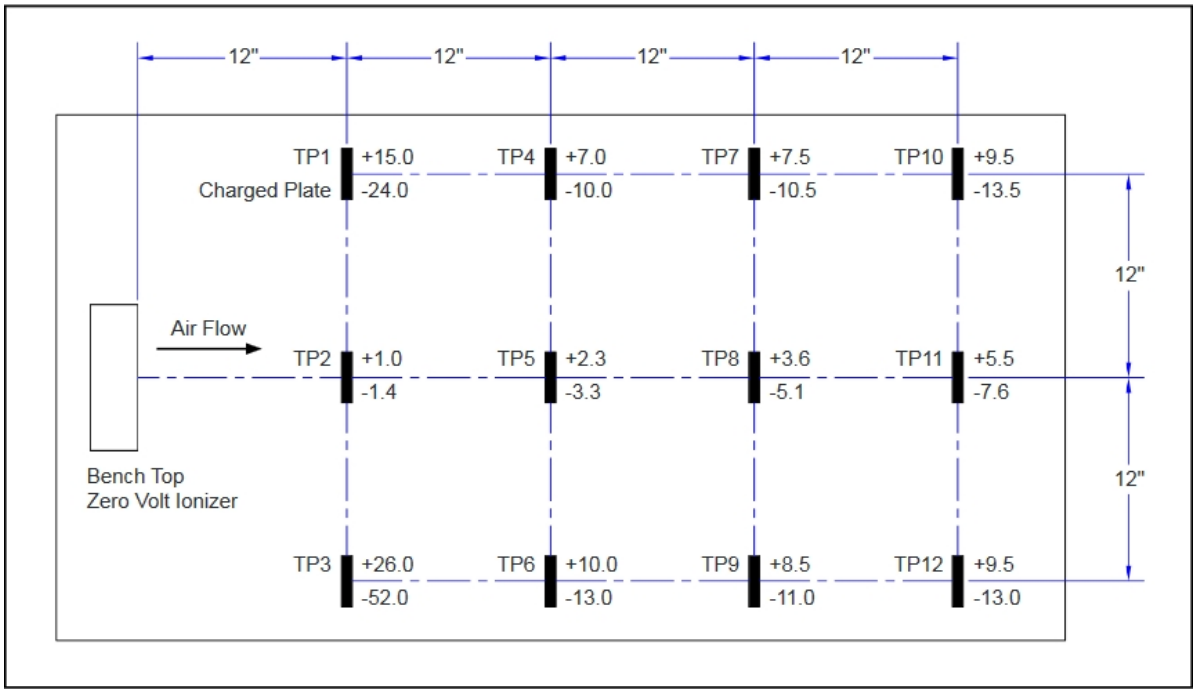

Figure 4: Neutralization times in seconds (at maximum fan speed = HIGH)

Fan speeds:
LOW/MEDIUM/HIGH

(at a distance of 12" = 30 cm from the ionizer)
±3 volts typical
±25 volts maximum (temperature range: 18°C–27°C, relative humidity: 15% 65%)

Housing:

Dimensions

Stainless steel housing