

# Non-Air Assisted Ion Bar System Installation, Operation and Maintenance



Figure 1. EMIT Non-Air Assisted Ion Bar

## Description

The EMIT Non-Air Assisted Ion Bar System has been designed to effectively eliminate localized static charges that exist in the work area.

Ionizers are useful in preventing electrostatic charge generation, ElectroStatic Discharge, ElectroStatic Attraction, as well as preventing equipment latch-up. Per ANSI/ESD S20.20 section 6.2.3.1. Protected Areas Requirement states: "Ionization or other charge mitigating techniques shall be used at the workstation to neutralize electrostatic fields on all process essential insulators if the electrostatic field is considered a threat." Air ionization can neutralize the static charge on insulated and isolated objects by producing separate charges in the molecules of the gases of the surrounding air. When an electrostatic charge is present on objects in the work environment, it will be neutralized by attracting opposite polarity charges from the ionized air. Note that ionization systems should not be used as a primary means of charge control on conductors or people. (Reference: EN 61340-5-2 clause 5.2.9).

The Non-Air Assisted Ion Bar System is a pulsed ionizer generating both polarities of ions at a single emitter unit. It operates on alternating current (AC).

The EMIT Non-Air Assisted Ion Bar System meets the ANSI/ESD S20.20 required limit of less than  $\pm 50$  volts offset voltage (balance) tested in accordance with ANSI/ESD STM3.1. Per S20.20 Discharge Time required limits are "user defined".

## Unpacking and Inspection

EMIT Controller and Bar Assemblies were carefully packed at the factory in a container designed to protect them from accidental damage. Nevertheless, EMIT recommends careful examination of the carton and its contents for any damage. If damage is evident, do not destroy the carton or packing material. Immediately notify the carrier of a possible damage claim. Shipping claims must be made by the consignee to the delivering carrier.

The Non-Air Assisted Ion Bars are available in several sizes. There are six Controller options and several accessory items. See the following table for the list of available item numbers.

For more information on the Ion Bar sizes and dimensions, see page 2.

Item #	Description
<a href="#">50900</a>	Non-Air Ion Bar Assembly, 12", 4 Emitters
<a href="#">50901</a>	Non-Air Ion Bar Assembly, 24", 6 Emitters
<a href="#">50902</a>	Non-Air Ion Bar Assembly, 36", 8 Emitters
<a href="#">50903</a>	Non-Air Ion Bar Assembly, 48", 12 Emitters
<a href="#">50904</a>	Non-Air Ion Bar Assembly, 60", 14 Emitters
<a href="#">50905</a>	Non-Air Ion Bar Assembly, 72", 18 Emitters
<a href="#">50906</a>	Non-Air Ion Bar Assembly, 96", 24 Emitters
<a href="#">50855</a>	Controller with Digital Adjustment, 120V
<a href="#">50856</a>	Controller with Digital Adjustment, 220V
<a href="#">50940</a>	Controller with Recessed Potentiometer Adjustment, 120V
<a href="#">50941</a>	Controller with Recessed Potentiometer Adjustment, 220V
<a href="#">50945</a>	Controller with External Potentiometer Adjustment, 120V
<a href="#">50946</a>	Controller with External Potentiometer Adjustment, 220V
<a href="#">50950</a>	Ion Bar 2-to-1 Connector Set (2 per pack)
<a href="#">50952</a>	Emitter for Non-Air Ion Bar

## Installation

- I. Install the Controller console on or near the target area. It must be close enough to connect to the Ion Bar.
- II. Locate and attach the Ion bar in a position so that the air ions are directed toward the target area.
- III. Connect the Ion Bar to the back of the Controller console.
- IV. Plug the Controller console unit into an appropriate electrical outlet.

**NOTES:**

One EMIT Controller console will power up to 40 emitters. It is possible to daisy-chain bars together as long as the total number of emitters does not exceed 40. For example, item number 50902 has 8 emitters (40 ÷ 8 = 5), so up to 5 item number 50902 Bar Assemblies can be daisy-chained together using 1 Controller console. Daisy-chain bars are special order only.

The [50950](#) 2-to-1 Connector Set may be used to allow the power console to provide power to two Ion Bars.

**Operation**

**NOTE:** The following instructions apply to the 50940, 50941, 50945 and 50946 Controllers only. Please see technical bulletin [TB-6570](#) for operation instructions on the 50855 and 50856 Digital Controllers.

There are two adjustments that can be made on the controller: BALANCE (offset voltage) and RATE.

The BALANCE of positive and negative ion output can be adjusted to increase polarity bias by turning the BALANCE CONTROL, slowly turning clockwise to increase positive and decrease negative ON time pulses, or counter-clockwise to increase negative and decrease positive ON time pulses. The RATE or pulse frequency can be adjusted down to one pulse per second or up to 20 pulses per second by slowly turning the RATE CONTROL clockwise to increase and counter-clockwise to decrease the frequency.

**REMEMBER**

It is important to verify calibration after any adjustments and before using the Ion Bar System around sensitive electronics. Repeat the Balance Verification steps after all adjustments.

**IMPORTANT**

The Ion Bar System has been designed to minimize effects of localized static charges. If your processing involves generation of considerable static charges, you may need more aggressive equipment. EMIT offers a complete line of ionizers: bench top, overhead and hand ion guns to meet all ionizing requirements.

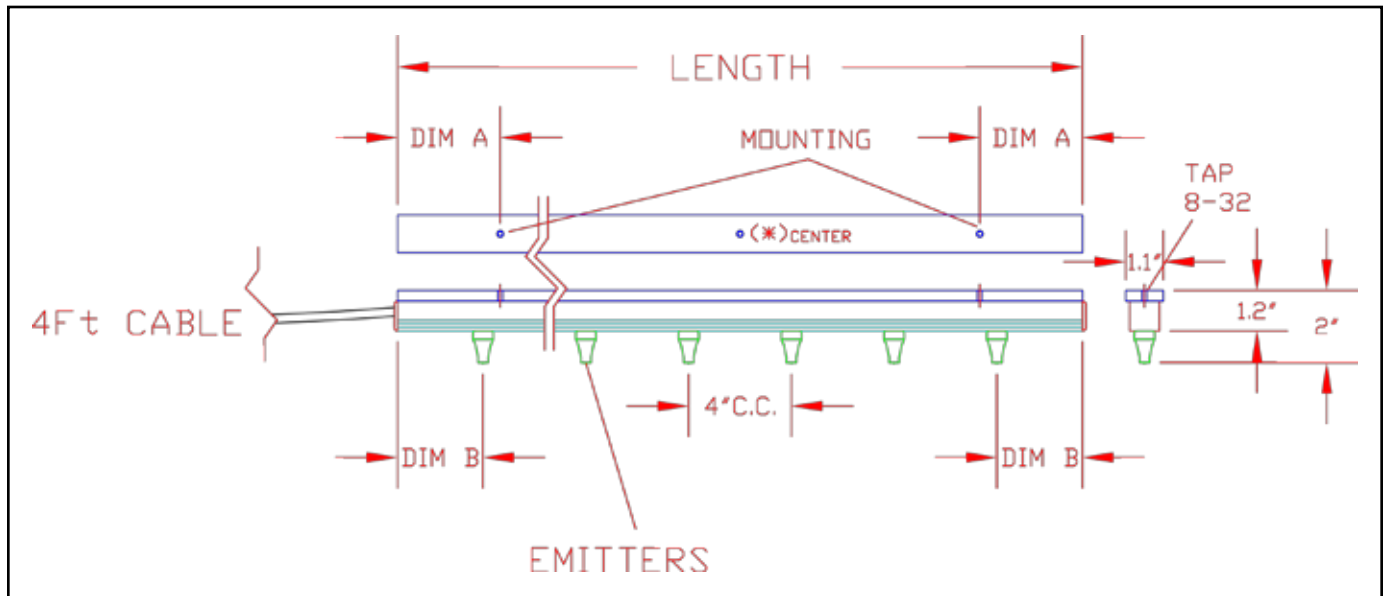


Figure 2. EMIT Non-Air Assisted Ion Bar dimensions

Item #	Length	Emitters	Mounting	Dim A	Dim B
<a href="#">50900</a>	12"	4	2	1"	1.5"
<a href="#">50901</a>	24"	6	2	1"	2"
<a href="#">50902</a>	36"	8	2	3"	4"
<a href="#">50903</a>	48"	12	2	3"	2"
<a href="#">50904</a>	60"	14	2	3"	4"
<a href="#">50905</a>	72"	18	3*	4"	2"
<a href="#">50906</a>	96"	24	3*	4"	2"

**NOTE:** Contact manufacturer for custom dimensions

**ION BAR SIZES AND DIMENSIONS**

Refer to the table and figure on page 2 learn more about the dimensions of the Non-Air Assisted Ion Bars.

**DISCHARGE TIMES**

Measurements are taken with a Charged Plate Monitor placed below two consecutive emitters.

Pulsing rate is adjustable from 1 to 20 Hz that will need to be customized depending on application requirement.

Discharge Times (±1,000V to ±100V)	Distance (inches)	Average Time (seconds)
Controller set to 2 pulses / sec (Hz)	18	< 20
Controller set to 2 pulses / sec (Hz)	12	< 5
Controller set to 1 pulse / sec (Hz)	18	< 6
Controller set to 1 pulse / sec (Hz)	12	< 2

**NOTE:** This data applies to all EMIT Non-Air Assisted Ion Bars. Values will vary with the environment and particular applications.

**Ion Bar Controllers**



Figure 3. EMIT 50940 Controller with Recessed Potentiometer Adjustment



Figure 4. EMIT 50945 Controller with External Potentiometer Adjustment



Figure 5. EMIT 50855 Controller with Digital Adjustment

**Controller Specifications**

**ITEMS 50940, 50941**

- Weight: 1.9 lbs
- Cable: 4' Length
- Operating Voltage: 120VAC 50/60 Hz (50940)  
220 VAC 50/60 Hz (50941)
- Dimensions: 5.7" L x 5.1" W x 1.7" H

**ITEMS 50945, 50946**

- Weight: 1.9 lbs
- Cable: 4' Length
- Operating Voltage: 120VAC 50/60 Hz (50945)  
220 VAC 50/60 Hz (50946)
- Dimensions: 5.7" L x 5.1" W x 1.7" H

**ITEMS 50855, 50856**

Weight: 1.6 lbs  
Operating Voltage: 120VAC 50/60 Hz (50855)  
24VDC Power Adapter  
220 VAC 50/60 Hz (50856)  
24VDC Power Adapter  
Dimensions: 4.9" L x 5.7" W x 1.65" H

**CONTROLLER COMPARISION CHART**

	50940, 50941, 50945, 50946	50855, 50856
<b>Remote Control</b>	No	Yes
<b>Input Power</b>	120 / 220VAC	24VDC
<b>Ionization</b>	Pulse DC	Pulse DC
<b>Balance</b>	DUTY CYCLE Potentiometer Adjustment	DUTY CYCLE Digital Adjustment and Display
<b>Period</b>	Potentiometer Adjustment from .05 sec to 1 sec.	Digital Adjustment Increments from .01 sec to 10 sec.

**Maintenance**

“All ionization devices will require periodic maintenance for proper operation. Maintenance intervals for ionizers vary widely depending on the type of ionization equipment and use environment. Critical clean room uses will generally require more frequent attention. It is important to set-up a routine schedule for ionizer service. Routine service is typically required to meet quality audit requirements.” (ESD Handbook ESD TR20.20 section 5.3.6.7 Maintenance / Cleaning)

Compliance Verification per ANSI/ESD S20.20 is to be per ESD TR53 using a Charged Plate Monitor or a SP3.3 Ionization Test Kit.

**Specifications and procedures subject to change without notice.**

**Limited Warranty**

EMIT expressly warrants that for a period of five (5) years from the date of purchase EMIT Ion Bars be free of defects in material (parts) and workmanship (labor). Within the warranty period, a credit for purchase of replacement EMIT Ion Bars, or, at EMIT’s option, the Ion Bar will be repaired or replaced free of charge. If product credit is issued, the amount will be calculated by multiplying the unused portion of the expected one year life times the original unit purchase price. Call our Customer Service Department at 909-664-9980 (Chino, CA) for a Return Material Authorization (RMA) and proper shipping instructions and address. Please include a copy of your original packing slip, invoice, or other proof of date of purchase. Any unit under warranty should be shipped prepaid to the EMIT factory. Warranty replacements will take approximately two weeks.

If your unit is out of warranty, call our Customer Service Department at 909-664-9980 (Chino, CA) for a Return Material Authorization (RMA) and proper shipping instructions and address. EMIT will quote repair charges necessary to bring your unit up to factory standards.

**Warranty Exclusions**

THE FOREGOING EXPRESS WARRANTY IS MADE IN LIEU OF ALL OTHER PRODUCT WARRANTIES, EXPRESSED AND IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHICH ARE SPECIFICALLY DISCLAIMED. The express warranty will not apply to defects or damage due to accidents, neglect, misuse, alterations, operator error, or failure to properly maintain, clean or repair products.

**Limit of Liability**

Electronic ionizers use high voltage corona discharge and should not be used in or near flammable or explosive environments. In no event will EMIT or any seller be responsible or liable for any injury, loss or damage, direct or consequential, arising out of the use of or the inability to use the product. Before using, users shall determine the suitability of the product for their intended use, and users assume all risk and liability whatsoever in connection therewith.