Air Assisted Ion Bar System
Installation, Operation and Maintenance

Made in the
United States of America
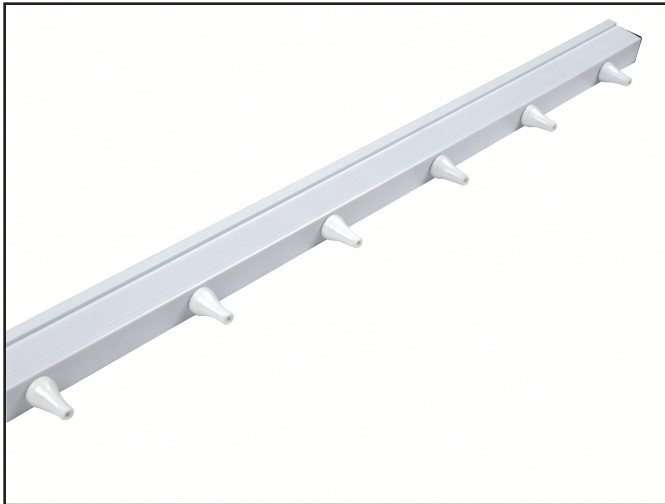

Figure 1. EMIT Air Assisted Ion Bar

Description

The EMIT 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 Air Assisted Ion Bar System is a pulsed DC ionizer. The bar's emitters have alternating polarities over the length of the bar. This design results in less ion recombination than when the same emitter is used to output both polarities.

The EMIT Air Assisted Ion Bar System meets the ANSI/ESD S20.20 required limit of less than ± 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 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.

Item #	Description
50920	Air Assisted Ion Bar Assembly, 12", 4 Emitters
50921	Air Assisted Ion Bar Assembly, 24", 8 Emitters
50922	Air Assisted Ion Bar Assembly, 36", 12 Emitters
50923	Air Assisted Ion Bar Assembly, 48", 16 Emitters
50924	Air Assisted Ion Bar Assembly, 60", 20 Emitters
50925	Air Assisted Ion Bar Assembly, 72", 24 Emitters
50926	Air Assisted Ion Bar Assembly, 96", 32 Emitters
50855	Pulsed Ion Bar Controller, North America
50856	Pulsed Ion Bar Controller, Asia
50940	Controller with Recessed Potentiometer Adjustment, 120V
50941	Controller with Recessed Potentiometer Adjustment, 220V
50950	Ion Bar 2-to-1 Connector Set (2 per pack)
50951	Emitter for Air Assisted Ion Bar
50953	Air Assisted Filter Regulator with Hose

Installation

1. Install the Controller console on or near the target area. It must be close enough to connect to the Ion Bar.

2. Locate and attach the Ion bar in a posistion so that the air ions are directed toward the target area.

3. Connect clean dry compressed air or gas to the Ion Bar's air fitting with a 1/4" flexible plastic tube.

4. Connect the Ion Bar to the back of the Controller console.

5. 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, the EMIT 50921 has 8 emitters (40 ÷ 8 = 5), so up to 5 EMIT 50921 Bar Assemblies can be daisy-chained together using 1 Controller Console. Daisy-chain bars are special order only.

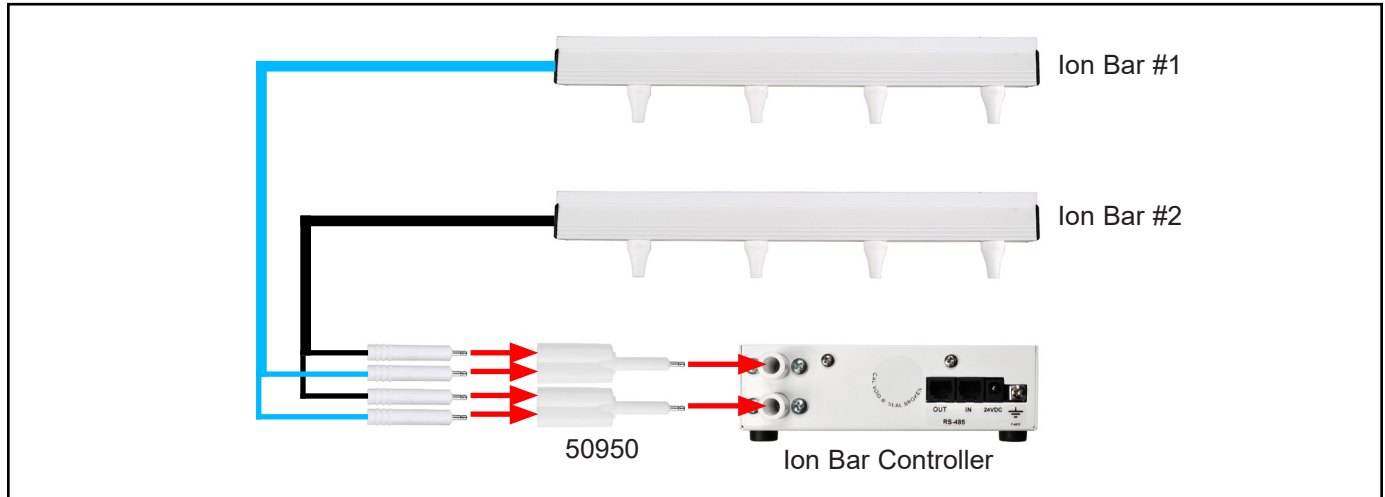The EMIT 50950 2-to-1 Connector Set may be used to power two Ion Bars with one Controller Console.

Figure 2. Using the 50902 2-to-1 Connector Set to Power Two Ion Bars
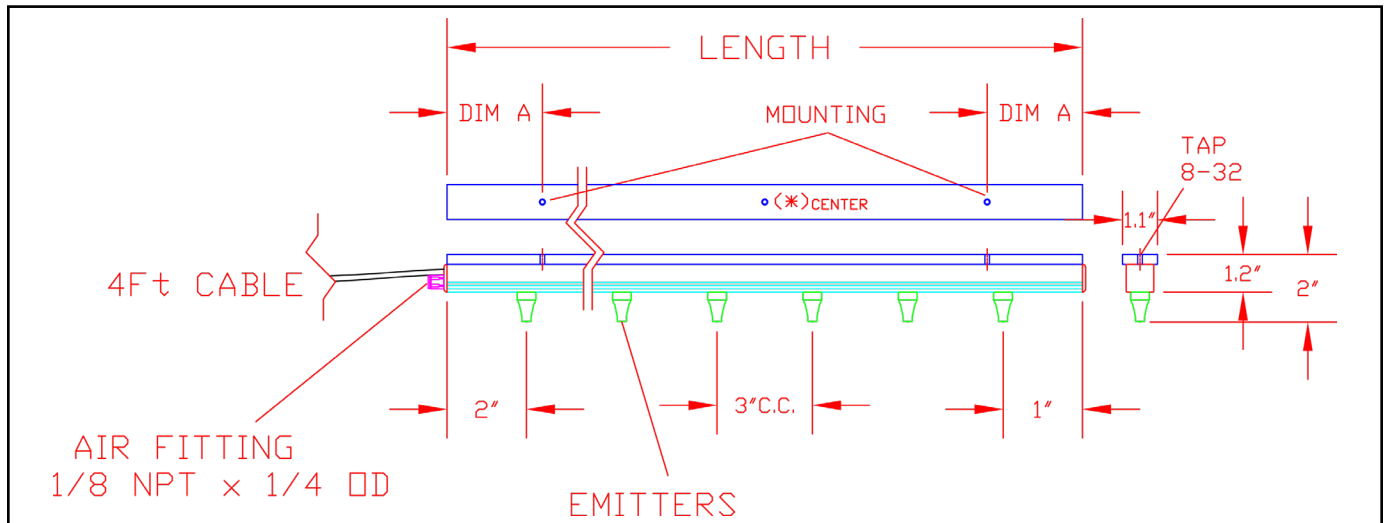
Ion Bar Sizes and Dimensions

Figure 3. EMIT Air Assisted Ion Bar dimensions

Item #	Length	Emitters	Emitter Spacing	Mounting Holes	Dim A
50920	12"	4	3"	2	1"
50921	24"	8	3"	2	1"
50922	36"	12	3"	2	3"
50923	48"	16	3"	2	3"
50924	60"	20	3"	2	3"
50925	72"	24	3"	3*	4"
50926	96"	32	3"	3*	4"

NOTE: Contact manufacturer for custom dimensions

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Operation

NOTE: The following instructions apply to the 50940 and 50941 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.

DISCHARGE TIMES
Recommended air pressure:
2-10 PSI nominal, 15 PSI maximum

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	< 10
Controller set to 2 pulses / sec (Hz)	12	< 4
Controller set to 1 pulse / sec (Hz)	18	< 4
Controller set to 1 pulse / sec (Hz)	12	< 2

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

Ion Bar Controllers

Figure 4. EMIT 50940 Controller with Recessed Potentiometer Adjustment

Figure 6. 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)
Power Consumption:	30 W
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 1.7" H

CONTROLLER COMPARISON CHART

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

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

See the EMIT Warranty - DescoEMIT.com/Warranty.aspx

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.