Installation / Operation / Maintenance

Staticmaster Alphaboost

Model AB-TC-1 & AB-TC-1B

Contents

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Please Observe The Following

NOTICE
Please review the information in this manual prior to operating the Alphaboost™ in a work environment.

NOTICE
Please keep this document in a convenient place to refer to as a guide.

Alphaboost™ System - General Description

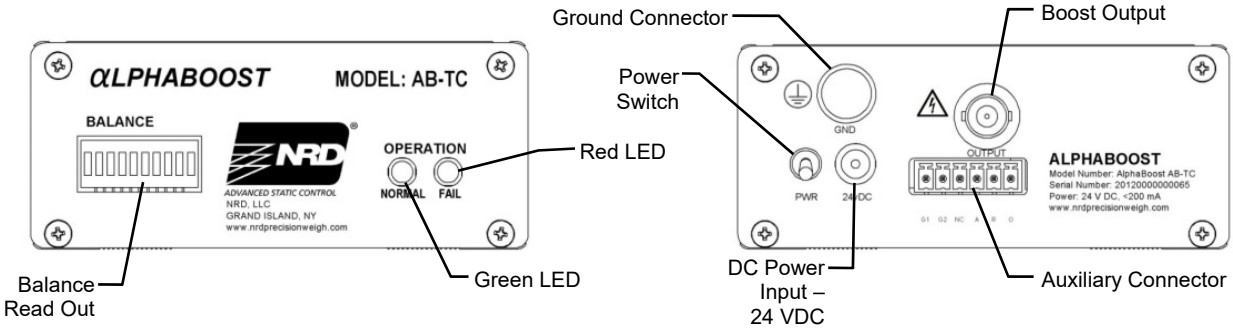
The Alphaboost™ in-tool ionizer is designed for control of static electricity in precision weighing balances and scales. It utilizes a Staticmaster® Model 2U500 Alpha source to generate air ions and the ambient air flow along with a modest acceleration voltage (called the Boost Voltage) in order to deliver the ions to the object(s) to be neutralized. The system Model AB-TC includes; (1) controller, (1) head, (1) 2U500, (1) BF3 EZ Mount. Connections are done by coaxial cable with high reliability MHV coaxial connectors.

Model: AB-TC - Controller

The AB-TC controller (see figure below) is used to create the waveform to drive the ions away from the ionizing head. It is factory preset for

- ON time for each polarity of the Boost Voltage
- The amplitude of the ionizer Boost Voltage
- The Duty Cycle of the Boost Waveform

The controller includes a readout of the duty cycle (Balance) setting of the controller with a resolution of 1%. While the setting of the timing is preset at the factory, it can be observed as the green LED flashes. The red LED indicates a failure of the controller, either by high voltage going out of regulation or polarity switching of the source stopping. The most likely cause of this alarm is a short circuit at the ionizing head caused by an external object. Such a short is not damaging to the controller.



Auxiliary Connector

The rear connector provides optional control and monitoring signals which can be used for a variety of purposes. The Pin-outs of the connector are as follows:

G1: Ground

G2: Ground

NC: No function, spare

A: Alarm Output

R: Remote shutdown

O: HV Monitor Output. Source impedance 1 GW so monitor with a 1 MW probe results in 1000:1 attenuation of signal. (±2.4 V max)

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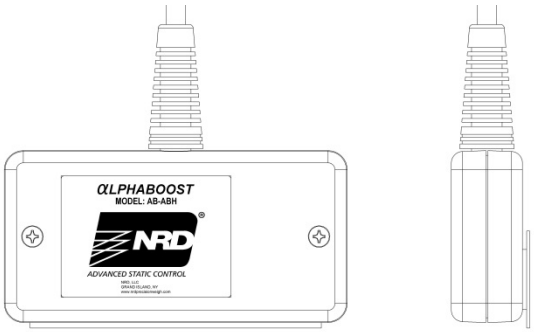
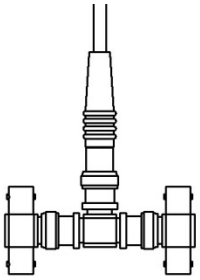
Model: AB-ABH - Ionizing Head

The Ionizer head works with the Staticmaster® model 2U500 Alpha source (sold separately). The Boost Output of the AB-TC Controller connects up to 4 ionizing heads when using the Splitter model AB-SPL (sold separately).



AB-ABH Ionizing Head

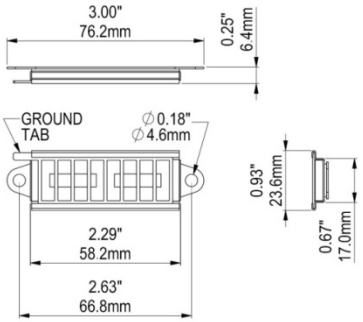


AB-SPL 1 to 4 Splitter

Model: 2U500 – Staticmaster® Ionizer

The model 2U500 Staticmaster® is a small, self-powered ion producing device which contains 500 µCi of ^{210}Po. All NRD ion sources are encapsulated in precious metals by means of a special patented process. This results in a static eliminator which resists oxidation, solvents, heat, cold and vibration.

Dimensions:



AB-TC-1B Alphie Assembly

The Alphie assembly includes:

- AB-TC Controller
- 2U500 Staticmaster®
- AB-ABH - Ionizing Head
- AB-TC – Controller
- Base

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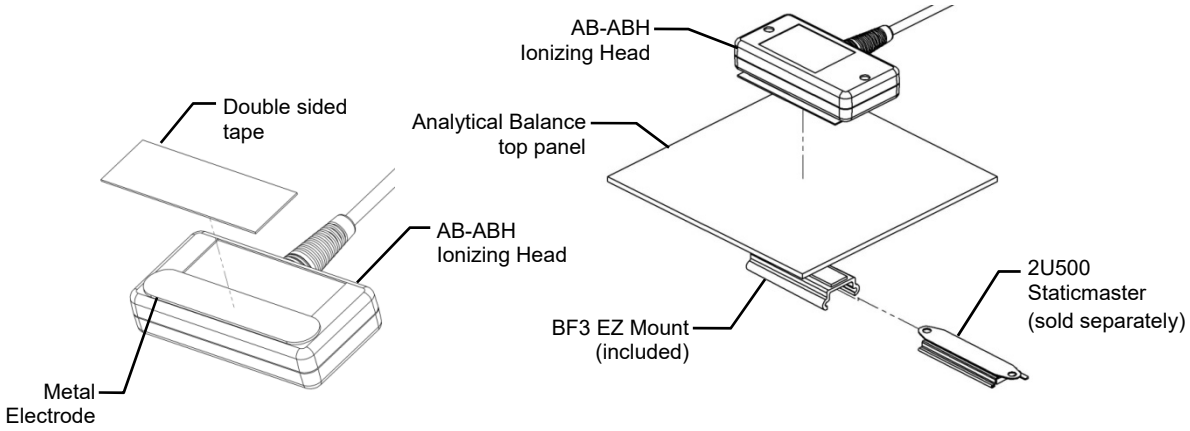
Installation

Installation of the Alphaboost™ Ionization System involves mounting and wiring the components in an arrangement that satisfies the environment and power requirements of your application. Procedures may vary according to your applications need. The Alphaboost™ Ionization System is intended to be used in an Analytical Balance application. In such an application, the ionizer can easily provide enough output to discharge samples placed on the analytical balance weighing pan. The Alphaboost™ controller is to be placed near the Analytical Balance(s) in a convenient and visible position.

Note: the Alphaboost™ Ionization System is not to be connected to a power source while being installed or serviced.

AB-ABH Ionizing Head Installation

1. Apply double sided tape to metal electrode on the AB-ABH ionizing head.
2. Attach the AB-ABH ionizing head to the outside of top panel of the Analytical Balance Draft Chamber. Center metal electrode, as close as possible, over the weighing pan.
3. Attach BF3 EZ Mount to inside of top panel of the Analytical Balance. Center under metal electrode on AB-ABH ionizing head.



2U500 Staticmaster® Installation

The 2U500 Staticmaster slides into the BF3 EZ Mount that is attached inside the Analytical Balance.

AB-TC Controller Installation

1. Locate the AB-TC Controller in a accessible and visible position that is within reach of the two (2) meter cable of the AB-ABH Ionizing Head.
2. Connect the AB-ABH Ionizing Head cable to the Boost Output connection on back of the AB-TC Controller. If connecting multiple AB-ABH Ionizing Heads, use AB-SPL Splitter. A maximum of four (4) AB-ABH Ionizing Heads can be connected to one (1) AB-TC Controller.
3. Connect the AB-TC Controller to a proper ground using ground connector on back of the controller. Without being connected to a proper ground, the AlphaBoost will exhibit an uncontrolled offset.
4. Connect the supplied 24V power supply to the power input on back of the AB-TC Controller. The AB-TC Controller requires 24V @ <200mA to operate.

Operation

Follow the steps below to correctly power the Alphaboost™ System.

1. Ensure the AB-ABH Ionizing Head(s) are connected to the AB-TC Controller according to guidelines in the installation section.
2. Plug the controller into a properly grounded outlet and turn power switch, located on the back of the unit, to "ON".
3. The green LED on the front of the AB-TC Controller should be on. If the red LED is on, or no LEDs are on, this indicates a problem. Check for loose connections and if problem continues contact NRD, LLC for assistance.

2U500 Staticmaster Ion Source

To maintain peak performance it is recommended to replace the 2U500 Staticmaster annually. Notification will be given prior to the end of each year. Upon arrival of a replacement, change out the 2U500 Staticmaster and send the old 2U500 to NRD LLC.

Cleaning

Use only a diluted IPA solution and a cleanroom-compatible cloth to clean any accumulated dirt on the controller or ionizing head(s). Change cloth frequently to ensure that the dirt is completely removed. Do not use any solvents that may damage the powder coat finish of the controller.

IEC Indications

High Voltage – the rear panel output of the AB-TC Controller is via an MHV connector. The voltage on this connector can be as high as ±2400V. Note that the source impedance is in excess of 1MW so no harm or discomfort will come to the operator by touching the contact.
The voltage source on the board is much lower impedance and, as such, contact with high voltage section of the circuit board would be painful. This instrument uses high voltages that can cause personal injury. Before servicing, shut down the instrument and disconnect the instrument from line power. It is recommended that the AB-TC Controller not be opened.

The MHV connector on the chasis and the mating cable connector are both rated at 5000V. The RG 59 cable used to connect the AB-TC Controller to the AB-ABH Ionizing Head is rated at a working voltage of 2400V.
Rear Panel Auxiliary Connector signals do not exceed 10V and require only insulation of connections to protect against 10V.

Note: if the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

 - This symbol means that there is high voltage present at this connector.

 - This symbol means that it is necessary to connect this binding post to ground for proper operation of this instrument.

 - This symbol means that in order to have safe and proper operation of the device, the user should read the manual.

Specifications:

Ionization Source:	500 µCi of ^{210}Po. (provides full ionization performance for 12 months)
Boost:	±2400 V, Output from Model AB-TC via MHV connector.
Operating Period:	500 ms
Balance Voltage:	Factory preset
Operating Range:	AB-ABH Ionizing Head, 0° C to 80° C
	AB-TC Controller, 5° C to 50° C
Power Requirement:	24 V DC, <200 mA (provided by 100 - 240 V inline power supply)
Offset Voltage:	Factory preset
Alarm Condition:	Positive or Negative Boost out of regulation by 5% or actual output ceases to cycle.
Alarm Output:	User Selectable either contact closure or pull up voltage to +5 V (user option).

	Either positive or negative logic (user option). Output on rear panel terminal strip connector.
Dimensions:	AB-ABH Ionizing Head 3.5” x 1.8” x 0.8” BF3 EZ Mount 2.4” x 1.1” x 0.5” AB-TC Controller 6.5” x 4.3” x 1.9”

Warranty

Limited Warranty

NRD expressly warrants that for a period of one (1) year from the time of purchase, the device will be free of defects in material (parts) and workmanship (labor). Within the warranty period, the device will be tested, repaired, or replaced at discretion of NRD, free of charge. Any device under warranty should be shipped prepaid to the NRD factory. Call Customer Service at (716) 773-7634 for a Return Authorization number and shipping instructions. Include a copy of your original packing slip, invoice, or other proof of purchase date.

If the device is out of warranty, NRD LLC will quote repair charges necessary to bring your device up to factory standards.

Warranty Exclusions

The forgoing express warranty is made in lieu of all other product warranties, expressed and implied, including merchantability and fitness for a particular purpose that is 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

The user shall determine the suitability of the product for their intended use, and the user assumes all risk and liability whatsoever in connection therein.