PRECIS-ION™

Air Ion Counters

by AlphaLab, Inc.

MODEL AIC3ST QUICKSTART GUIDE & FAQ

The Precis-Ion™ AIC3ST Air Ion Counter measures both positive ions and negative ions over a wide range without sacrificing precision. The AIC3ST is ideal for measuring ambient, naturally occurring ion sources and to see if ionizers are increasing the ion levels. The AIC3ST has a range from 10 to 2 million ions per cubic centimeter.

Key Features Include:

Rechargeable LiPol Battery charges via USB-C with included 5V charger, or from any laptop, PC or external USB power source.

Durable, Aluminum, Lightweight Handheld Case measures 6.5”x 3”x 1.5” (165mm x 76mm x 38mm) and weighs less than 13 oz. (368 grams).

Selectable Averaging can be set to either ‘none’ for real-time measurements, or to 10 seconds for smoother readings.

Data Streaming, Recording, Graphical Display and Data File Creation capability via AlphaLab’s AlphaApp Windows PC utility software.

On-board Temperature and Humidity Sensors display in real time and can be streamed and recorded via AlphaApp.

Made in USA by AlphaLab, Inc., the world leader in atmospheric ion measurement for over 30 years, with unlimited online support to help solve all your questions.

Introduction:

The Precis-Ion™ Air Ion Counter Model AIC3ST is a true ion density meter, based on the Gerdien Tube condenser. During operation, a fan draws air in through the top intake grill. The AIC3ST counts and displays the number of air ions and air exits from the bottom outlet.

Do not block the air intake. This will affect meter function!

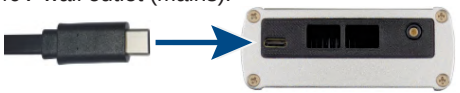
Do not use plastics, adhesives, labels or stickers above this point. These Insulating materials may hold a static electric charge and repel ions, especially at higher ion concentrations.

Do not block the air outlet. This will affect meter function!

Charging the AIC3ST:

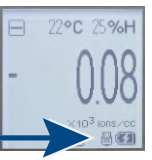
The meter fully charges in 4-5 hours with the included 6ft. USB-C to USB-A cable. Operating battery life is 6-7 hours with the backlight on, 7-8 hours with the backlight off, and 37 hours in standby mode.

Connect the USB-C cable end at this point near the fan outlet at the base of the meter. Connect the other end to the included charger and plug into a 110-240V wall outlet (mains).



To show successful connection to USB power when the AIC3ST meter is turned off, this message will appear briefly. The meter will continue to charge after the message disappears.

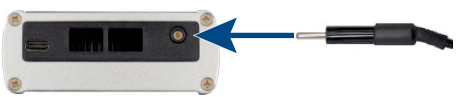
These icons will appear if USB power is connected while the meter is powered on to indicate that the unit is charging.



Grounding the AIC3ST:

A 10ft. (3 meter) ground cable is included with connectors for grounding (earthing) to standard wall outlets (mains), ESD mats, or metal water pipes.

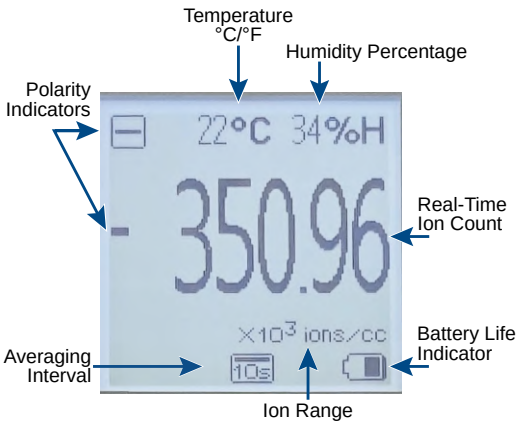
Always connect the AIC3ST meter to **Earth Ground** unless held in the hands (the body grounds the meter) especially when measuring high air ion concentrations emitted from air ionizers.



Warning! Be sure static electricity is removed by properly grounding the meter prior to connecting to desktop or laptop PC. Failing to do so may damage the AIC3ST and/or the computer!

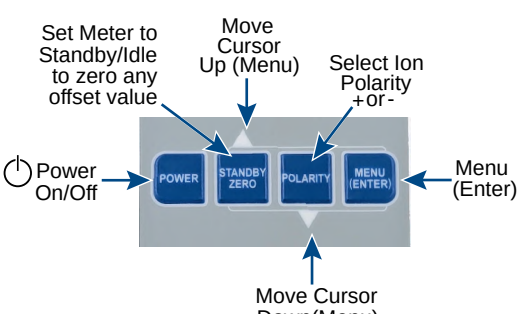
Reading the Main Display:

The AIC3ST displays the following:



Button Functions and Menu:

The AIC3ST features 12mm, easy-press, short-cut and navigation buttons:



Button Functions and Menu (con't):

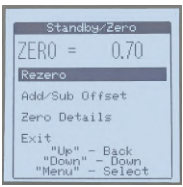
Power:

To turn the meter on or off, press the Power button. An auto-shutoff time can be set by pressing 'Menu', then 'Display Settings' to save battery life.

Selecting Ion Polarity:

Press the Ion Polarity button to switch between positive and negative measurement modes.

Standby/Zero Function:



Standby/Zero Screen

The AIC3ST Air Ion Counter comes factory calibrated (gain and zero point established) and ready to use. If some time has passed, temperature has changed, or if an offset greater than .05 is present, re-zero may be required. The Standby/Zero button allows access to this zeroing process (the zero settings menu also provides access to this screen). Offsets can be removed automatically by selecting 'Rezero' or manually by selecting 'Add/Sub Offset' and using the up and down white arrow buttons. Because the unit is sensitive during both automatic and manual zeroing, place the AIC3ST on a stable surface away from materials that may hold a static charge such as plastics and away from any ion sources like air ionizers when zeroing the meter.

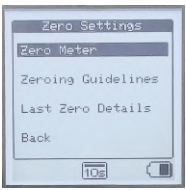
Main Menu:

Press the Menu(Enter) button to access the main menu. From this screen, use the white up and down arrow buttons to change meter zero, data, display and system settings

Main Menu Screen

Menu, Zero Settings:

Press Menu(Enter) Zero Meter to re-zero the AIC3ST Air Ion Counter (see Standby/Zero for more detail). Zeroing Guidelines provides tips for zeroing the AIC3ST ion counter. Last Zero Details posts date, time, offset, temperature, and humidity data at the last re-zero performed.

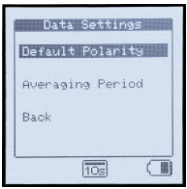


Zero Settings Screen

Button Functions and Menu (cont'd):

Menu, Data Settings:

The Data Settings Screen contains settings to select default polarity and set averaging period.

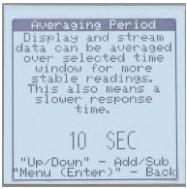


Data Settings Screen

Menu, Data Settings, Default Polarity:

When the AIC3ST Air Ion Counter is powered on, the default polarity is set to "-" negative ions. Use this menu to change the default to positive ions, dual mode, and back again.

Menu, Data Settings, Averaging Period:

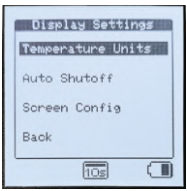


Averaging Period Screen

The default averaging is set to 'none', meaning no averaging is employed. In a typical environment, ions do not mix well. There can be large clusters of ions in one area with almost no ions just a few inches away. It is normal for the ion level to fluctuate irregularly. The averaging setting can be changed to '10 seconds' to provide steadier readings. Exiting the averaging period menu will save this setting until it is changed back to 'none'.

Menu, Display Settings

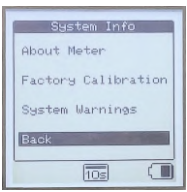
From this menu, temperature units can be changed from Celcius to Fahrenheit, auto-shutoff timer set at 5, 15, 30 and 60 minutes or none, display contrast can also be adjusted, and the backlight turned off or on.



Display Settings Screen

Menu, System Info

Selecting System Info from the Main Menu provides information about the AIC3ST meter (model revision, firmware version, and date of manufacture), factory calibration data, and logs any important warning messages.



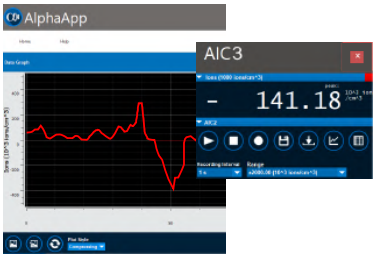
System Info Screen

AlphaApp Windows PC Software Utility:

To download the AlphaApp data logging software utility, go to: https://www.alphalabinc.com/alphaapp and click on:

DOWNLOAD ALPHAAPP (v1.2.2b)

Once the AlphaApp software is installed, ensure that the AIC3ST is connected to ground, then connect the meter to your Windows PC via the included USB-C to USB-A data cable. With AlphaApp, measurements can be streamed directly, recorded at selectable intervals and displayed visually or numerically with expandable graph or table. AlphaApp will also allow data to be saved as a .csv file.



AIC3ST Specifications Table:

Ion Polarity	Positive or Negative Ions - Selectable
Ion Scale Range	10-2,000,000 ions/cc
Ion Resolution	10 ions/cc
Ion Accuracy	+/- 20%, repeatability 5%
Averaging	None or 3 seconds - Selectable
Temp. Sensor	+/- 0.2 °C, Displayed in Celcius or Fahrenheit - Selectable
Humidity Sensor	+/- 2% Relative Humdity
Meter Zero	Zero reference verification and Self-test
Environmental	-1°C to 43°C, 0-85% RH Non Cond, Wind, <15km/hr (9mph)
Display	128x128 pxl LCD, Backlight, Dark Theme - Selectable
Battery	2,000mAh rechargeable lithium-ion, UN38.3 certified
	4-5 hr charge time
USB-C Charger	110-240V, 50-60Hz, .35A, Output: 5VDC, 1A or more
Meter Size	6.5625" x 3" x 1.5" (166.7mm x 76.2mm x 38.1mm)
Meter Wt.	12.9 oz. (366 gr)
Carry Case Size/Wt.	12" x 10.6" x 2.7" (305mm x 269mm x 69mm), 1.1 lbs. (.5kg)

Frequently Asked Questions:

Ion Basics (or How Air Ions Work):
Air Ions are positively or negatively charged atoms or molecules. Ions are created by energy sources such as evaporating water, electrical arcs, frictional rubbing or static, high heat or flame and radioactive isotopes. Nearly all positive “+” natural ions come from radioactivity. Natural negative ”-” ions come from radioactivity and evaporating water. Forest fires, thunderstorms, and lightning can produce positive “+” and negative “-” ions, but these ions are not produced under everyday conditions. Indoors, near ground level or in a basement, most “+” ions come from radon gas. Because concentrations of “+” ions can attract “-” ions, high concentrations of “+” and “-” ions are often found together.

If an ion source emits the same amount of negative and positive ions, don’t they cancel eachother out?
Both positive and negative can coexist for a time, although at high concentrations their lifespan is shortened.

Are ions affected by temperature and humidity?
No. The amount or life-span of ions are not effected by temperature or humidity.

For more information, refer to our article “About Air Ions” @ https://www.alphalabinc.com/about-air-ions/

What are safe levels of positive or negative ions?
Ions are not harmful. However, if there are high levels of positive and negative ions indoors with no apparent source, high levels of radon is likely the cause.

Are there hazards associated with high ion sources?
Sources of high ion activity can be radioactive, high-temperature or high voltage. Use appropriate safety measures when taking ion measurements from these sources.

Do Plastics(Insulators) or other materials affect the measurement of air ions?
Yes. Avoid using plastic, tapes or adhesives near the air intake of the AIC3ST Air Ion Counter. These materials can charge up and repel ions, leading to inconsistent readings.

Will the AIC3ST measure tourmaline?
No. Non-radioactive minerals such as tourmaline do not emit ions unless heated.

Does the AIC3ST Air Ion Counter measure ions from ionizers or ion generators? Yes.

Frequently Asked Questions cont'd:

Does the AIC3ST Air Ion Counter measure ions from hair dryers, air ion purifiers or ion filtration systems?
Yes. Ionizers of any kind may emit large quantities of ions, so distance the AIC3ST away from these units to avoid overranging when measuring.

What are the best uses for the AIC3ST?
The AIC3ST 2 million scale is ideal for low-level, average indoor rooms, evaporating water and radon gas emissions, and to check for ion levels from ionizers in the spaces where you work and live.

Do high concentrations of ions mitigate (destroy) viruses, bacteria, or air-born contaminants? Will an air ionizer make the air cleaner?
Very high concentrations of ions have been proven to remove floating particulates in the air over time. Positive "+" and negative "-" air ions collide with larger particles and bond with them, making these particles heavier and/or more charged until they stick to walls, floors and other surfaces, slowly cleaning the air. However, study is still being done to determine to what degree ions directly impact viruses or bacteria.

What are the factory default settings for averaging, polarity and scale?
The AIC3ST factory settings are: 5 second averaging, negative polarity, and scale is always set to x10^3 scale (2 million max).

Does the AIC3ST Air Ion Counter read radon gas?
The AIC3ST Air Ion Counter does not read gases such as radon directly. However, because radon is radioactive and emits alpha particles, which create ions, they are capable of reading these ions. If high concentrations of ions (typically >1,000/cm^3 of ***both*** positive and negative ions) are measured indoors without an apparent source, radon may be the cause.

Can I connect the AIC3ST to an external data logger?
No. Currently, there is no analog support for the AIC3Pro Air Ion Counter. However, our Windows PC data logging software, AlphaApp, is available for free to download. (see AlphaApp in this guide for more information).

What do I do if the meter fails to auto-zero?
This may occur if the sensor is dirty or there is dust or debris lodged in the sensor chamber. With the meter turned off, blow out the unit with clean, compressed air. Then, turn the meter back on and retry zeroing.

Frequently Asked Questions cont'd:

What if the meter seems to be malfunctioning?
Make sure that the meter is fully charged - a low battery may cause the unit to malfunction. This also may be caused by dirt or debris in the sensor chamber, such as lint, dust or hair (see above instructions - what to do if the meter fails to zero).

Does AlphaLab, Inc. provide factory calibration with certificates?
Yes. We provide calibration with certificates by request on all AlphaLab, Inc. products for a fee. For more information, visit this webpage on our site: https://www.alphalabinc.com/calibration/

What is the manufacturer's warranty?
Every AlphaLab, Inc. meter comes with a one-year limited warranty from the date of purchase under normal use and service.

If you have questions about the function of your meter, please visit www.alphalabinc.com/support or email us at mail@trifield.com

More Questions?

Go to www.alphalabinc.com
or Call Toll-Free (USA) 1-800-658-7030
(Or Call 1-801-487-9492)
WEEKDAYS 9am-5pm MST

The Precis-Ion™ Air Ion Counter Model AIC3ST is Designed and Manufactured by:

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