PRECIS-ION™

Air Ion Counters

by AlphaLab, Inc.

MODEL AIC3Pro QUICKSTART GUIDE & FAQ

Key Features:

The Precis-Ion™ AIC3Pro Air Ion Counter measures ions over a wide range without sacrificing precision by providing two operational scales:

- 10 to 2 million ions per cubic centimeter (for measuring low-level and ambient conditions)
- 20,000 to 200 million ions per cubic centimeter (for measuring air ion generators)

Dual-Read Mode with SUM:

- displays both positive and negative ions at the same time
- SUM displays the total number of ions present

Long-term Recording of ion levels directly on to included, easily accessible, external MicroSD card.

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

Durable, Aluminum, Lighweight Handheld Case:

- measures 6.5” x 3” x 1.5” (165mm x 76mm x 38mm)
- weighs less than 13oz. (368 grams)

Peak Hold Feature displays the highest ion level until reset or power down.

Selectable Averaging can be set to none, or from 1 to 15 seconds for stable readings.

Selectable Automatic Re-zeroing for long-term unattended operation and data capture.

Data Streaming, Recording and Display via AlphaApp Windows PC software.

Versatile 3-in-1 combo accessory:

- easily slides on as a fold-out kickstand
- mounts to a standard tripod
- or attaches to a wall with included hardware

On-board temperature and humidity sensors, data included on display and when streaming/recording.

Introduction:

The Precis-Ion™ Air Ion Counter Model AIC3Pro is a true ion density meter, based on the Gerdien Tube condenser. During operation, a fan draws air (and the ions in that air) in through the top intake grill. The AIC3Pro counts and displays the number of air ions and the air exits from the bottom outlet.

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

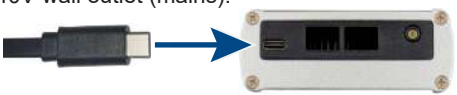
Do not use plastics, adhesives, labels or stickers above this point. These Insulating materials may hold a static electric charge and repel ions, especially at higher ion concentrations.

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

Charging the AIC3Pro:

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 AIC3Pro 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 AIC3Pro:

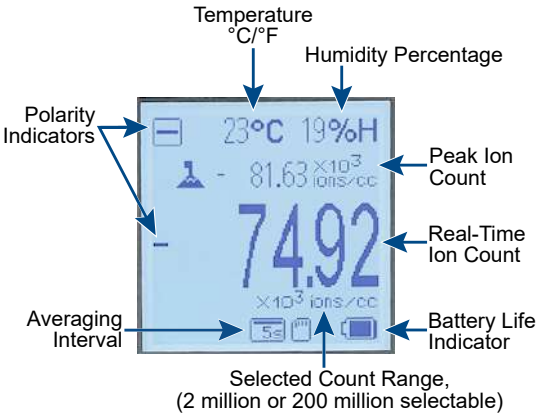
A 10ft. (3 meter) ground cable is included with connectors for grounding (earthing) to standard wall outlets (mains), ESD mats, or metal water pipes.

Always connect the AIC3Pro 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!

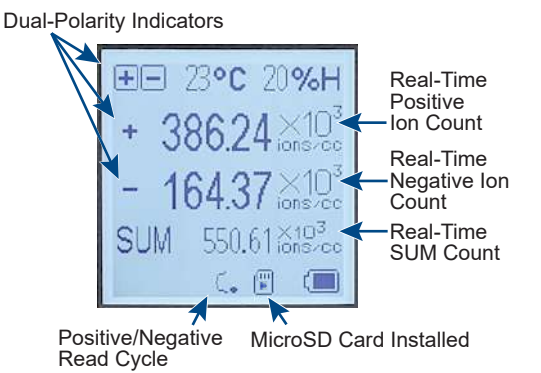
Reading the Main Display:

The AIC3Pro Air Ion Counter features a crystal clear, brightly backlit,128x128 pixel display that displays the following:



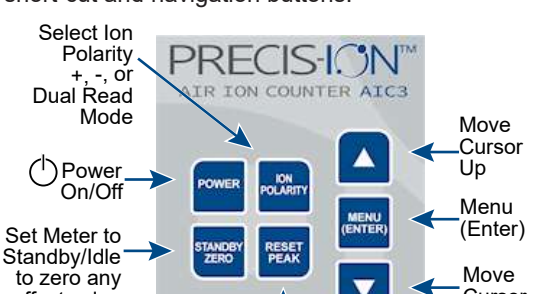
Reading the Dual Display:

This mode allows for the measurement and display of both ion polarities side-by-side, with the same scale setting. At the same time, the SUM feature adds the total number of positive and negative ions and displays the number in real time.



Button Functions and Menu:

The AIC3Pro features 12mm, easy-press, short-cut and navigation buttons:



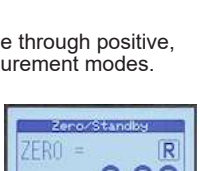
Power:

To turn the meter on or off, press the Power button. An auto-shutoff may also be established under the 'Display Menu' settings to save battery life.

Selecting Ion Polarity:

Press the Ion Polarity button to cycle through positive, negative or dual-read polarity measurement modes.

Standby/Zero Function:



Standby/Zero Screen

The AIC3Pro 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 requred. The Standby/Zero button allows access to this zeroing process (the zero settings menu also provides access to this screen). Offsets may be removed manually by pressing the up or down arrow buttons, and automatically by pressing 'Reset Peak'. Because the unit is sensitive during manual and automatic zero, place the AIC3 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. (See 'Menu, Zero Settings' to see further zero options, such as setting an automatic zero interval for long-term measurements).

Button Functions and Menu cont'd:

Reset Peak Function:

The AIC3Pro Peak Mode continuously displays the highest ion level in real time as well as the highest ion level measured since the last peak reset. To reset this number,simply press the Reset Peak button. Peak Mode is not available during Dual Read mode with SUM feature.

Main Menu:

Press the Menu(Enter) Button to access the main menu. From this screen, use the up and down arrow buttons to highlight, select and change meter settings.

Main Menu Screen

Menu, Start Recording:

To record air ion measurements press the Menu(Enter) button, and then press the Menu(Enter) button again to select recording. A 'Recording' sign will appear briefly and the SD card icon will flash while the meter is collecting data. To stop recording, double-press the Menu(Enter) button again.

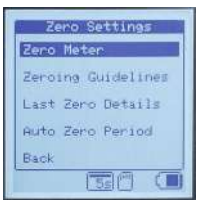
Recording Sign and Micro SD Card Icon

Records can be uploaded later with AlphaApp software for Windows PC (see AlphaApp section for more detail).

The AIC3Pro features an easy-access **External MicroSD card slot** with a 8gb card pre-installed. That's over 110,000 hrs. of data recording (and the meter supports up to 32gb)!

Menu, Zero Settings:

Press Menu(Enter) Zero Meter to re-zero the AIC3Pro Air Ion Counter (see Standby/Zero for more detail). Zeroing Guidelines provides tips for zeroing the AIC3Pro ion counter. Last Zero Details posts date, time, offset, temperature, and humidity data at the last re-zero performed. Auto-Zero Period allows for an automatic re-zero at regular intervals from none to 3hrs, 6hrs, 12hrs, or 24hrs.



Zero Settings Screen

Button Functions and Menu (cont'd):

Menu, Data Settings:

The Data Settings Screen contains settings to toggle scale and peakhold, select default polarity, and set averaging period.

Data Settings Screen

Menu, Data Settings, Toggle Scale:

There are two scale ranges: 1999.99 x10^3 (resolution: 10 ions to 2 million ions max scale) for low-level, average spaces, and 199.999 x10^6 (resolution: 20,000 to 200 million ions max scale) for high ion concentrations.

Toggle Scale Screen

Menu, Data Settings,Toggle Peakhold:

Select Toggle Peakhold to turn Peak Display on or off. Peak Hold is not available during Dual Mode with SUM.

Menu, Data Settings, Default Polarity:

When the AIC3Pro 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:

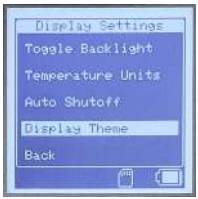
Averaging Period Screen

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. Therefore, it is normal for the ion level to fluctuate irregularly as air is drawn into the meter. To provide more stable readings the AIC3Pro Air Ion Counter imposes five second averaging as a factory default. Averaging may be set to none or from 1 to 15 seconds by selecting the averaging menu shown here. If averaging is set to none, the meter will be less stable, displaying true ion activity in real time with immediate response. If the averaging is set at 15 seconds, the meter is most stable, but response will be slower and peak ion activity is averaged out.

Button Functions and Menu (cont'd):

Menu, Display Settings:

Press Menu(Enter) to view the display settings, where the Backlight can be turned on or off, Temperature Units selected, an Auto Shutoff interval set from 5 to 60 minutes, or a Dark Theme enabled.



Display Settings Screen

Menu, Record Settings:

In this menu, Recording Rate intervals can be set in normal mode to single, or from 1 second up to 60 seconds. In Dual-Read with SUM, the interval is always set at 15 seconds (7.5 seconds each positive/negative).

Record Settings Screen

Select Set Time/Date stamp to change the time and date shown in records. SD Card Info contains all relevant info on the removable MicroSD data card.

Menu, About:

Selecting About from the Menu provides information on the AIC3 Model Revision, Firmware Version, Date of Manufacture, and Factory Calibration Data.

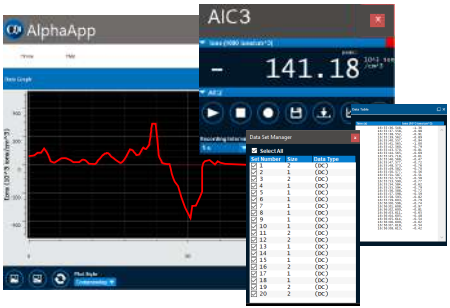
About Meter Screen

Using the Electric Field stability (ESD special plastic) cap:

Use the included electro-static discharge cap to shield the meter from electric field interference for the most stable readings of ions at very low levels (1999.99 x10^3 or 2 million scale). Simply slide the cap over the top 1/2" of the meter until it seats firmly and proceed to measure. Remove the cap when measuring high ion concentrations (199.999 x10^6 or 200 million scale).

AlphaApp Windows PC Software Utility:

To download the AlphaApp data logging software utility, go to: https://www.alphalabinc.com/alphaapp Once the software is installed, connect the AIC3Pro Air Ion Counter via the included USB-C to USB-A cable. With AlphaApp, measurements can be streamed directly, recorded at selectable intervals and displayed visually or numerically with expandable graph or table.



Spec Table:

Ion Polarity	Positive or Negative Ions - Selectable
	Dual Read with SUM (AIC3Pro Only)
Ion Scale Range	Maximum 2 million or 200 million ions/cc - Selectable
Ion Resolution	10 ions/cc (2 million scale), 100 ions/cc (200 million scale)
Ion Accuracy	+/- 20%, repeatability 5%
Averaging	None or 1-15 seconds - Selectable
Peak Value	Continuously saved, peak reset - 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
Accessories	ESD stability cap, Earthing ground cable w/ connectors
	3-in-1 Kickstand, Wall Mount, and Tripod Mount
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)

3-in-1 Accessory: Kickstand, Tripod Mount, or Wall Bracket

1 To use as a Kickstand:

2 To use as a Tripod Mount:

The Combination Accessory comes with a standard 1/4" threaded insert on the back to mount on any tripod


Rear View


B. Clip into Tripod

A. Screw the tripod removable plate adapter into 1/4" threaded insert

3 To use as a Wall Bracket:

Using included hardware:


A. Mark and drill 4 holes in wall


B. Clean holes and tap in plastic sleeves


C. Align Combination Accessory with plastic sleeved holes. Screw 4 screws to wall, being careful not to overtighten.

Need more Precis-Ion™ AIC3Pro accessories?
visit www.alphalabinc.com

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 effected 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 AIC3Pro Air Ion Counter. These materials can charge up and repel ions, leading to inconsistent readings.

Will the AIC3Pro measure tourmaline?
No. Non-radioactive minerals such as tourmaline do not emit ions unless heated.

Does the AIC3Pro Air Ion Counter measure ions from ionizers or ion generators? Yes.

Frequently Asked Questions cont'd:

Does the AIC3Pro Air Ion Counter measure ions from hair dryers, air ion purifiers or ion filtration systems?
Yes.

When should I use the x10^3 (2 million) and x10^6 (200 million) scales?
The x10^3 or 2 million scale is ideal for low-level, average indoor rooms, evaporating water and radon gas emissions. Use the x10^6 or 200 million scale for high ion concentrations from ionizing air filtration systems, air ionizers, high voltage arcs and radioactive minerals.

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 factory settings are: 5 second averaging, negative polarity, and scale is x10³ (2 million max).

Does the AIC3Pro Air Ion Counter read radon gas?
The AIC3Pro 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/cm³ of ***both*** positive and negative ions) are measured indoors without an apparent source, radon may be the cause.

Can I connect the AIC3Pro 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 AIC3Pro is Designed and Manufactured by:

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