Angle of View User Guide

ABOUT MAIN VIEW

The angle of view number displays show the current angles-of-view (diagonal, horizontal, and vertical). Meanwhile the pie-wedge depicts the field of view, as seen from above. The red vertical line indicates the distance across the arc, and the blue horizontal line indicates the distance-to-subject.

(Pinch zone)

Note: white numbers (diagonal angle, vertical angle, and height of field distance) are white becaues they are not represented in the graph itself. The graph represents an "above view."

Tap the (i) button to switch to the Settings view, where you can add new focal lengths, sensor formats, and customize the distance slider.

The dashed yellow line indicates an imaginary measuring tape that lets you see how much of the frame will be occupied by a given distance, to get a sense of scale. Pinch to change its size. The size of the measure is displayed in yellow at the bottom of the view above the Range slider.

The focal length picker lets you select which focal length you want to see the angle of view for. Enter the actual mm of your lens here (don't convert it into another format first).

The Range Factor display shows the amount to multiply the measuring tape size by in order to determine the distance-to-subject necessary in order to just fit it in your shot. Range to Fit Tape is displayed below it. (See "About Range Factor," p.5).

The units control sets the displays to use feet or meters (height, width, dist.).

The range slider allows you to change the "distance to subject" (light blue number).

Aspect ratio display. Shows current aspect ratio information.

This shows the equivalent focal length (in mm) to achieve the same angle of view on the format shown above it. Here, a typical 4/3" format sensor needs an 18mm lens to get 62.0° horizontal AoV.

The format selector has five slots, each with a different sensor format. Your currently selected format and focal length determine the angles, Range Factor, focal length multipliers, and equivalents. PROTIP: You change which formats are assigned to these slots in the Format Editor (see p. 4).

This shows the focal length multipliers (often called "crop factors") necessary to convert from the format shown above it to the currently selected format. This multiplication factor is only relevant in terms of the angle-of-view, not depth of field.

Exit the configuration screen, discarding any changes that were not added or set.

Rate this app on the App store. We'd really appreciate it!

Send feedback to the devs! Please report any bugs or give feature ideas/suggestions. Feel free to support ask questions. Thanks!

ABOUT SETTTINGS VIEW
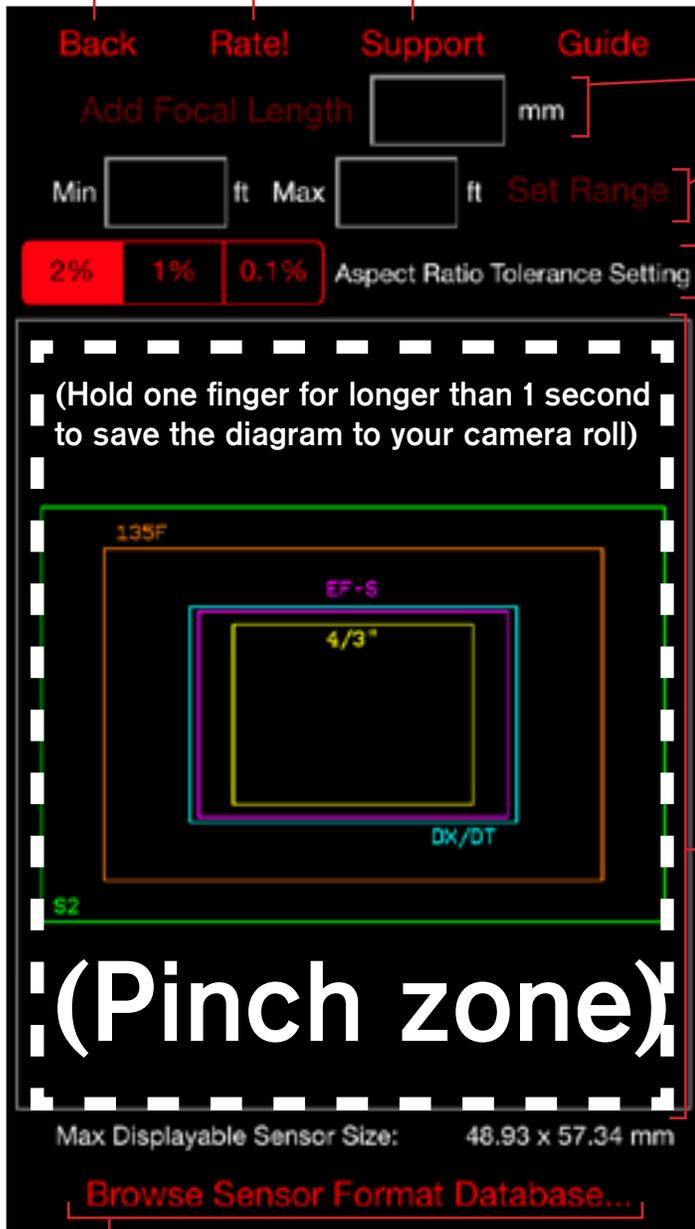
Enter a whole number and tap the "Add Focal Length" button to add a new focal length to the <u>focal length picker</u>. As of version 2.0, you can now add decimal values here, not just whole numbers.

Enter a minimum and maximum amount to fine-tune the <u>distance slider</u>. The units are feet or meters depending on whether feet or meters is selected in the main screen.

The <u>aspect ratio tolerance setting</u> determines how the app auto-calculates aspect ratios. When 2% is selected, the app rounds up to the closest rational fraction (e.g. 16:9, 4:3, etc.). When 1% or .1% is selected, the rounding is done less frequently.

For instance, on the 2% setting, a 2.35:1 aspect ratio will be displayed as 7:3, since 7/3 = 2.33, and 2.33/2.35 = 99.14% (less than a 2% deviation). However when 1% is selected, 2.35:1 will display.

NOTE: This setting is purely for display purposes, and does not affect calculations.

The <u>sensor format viewer area</u> shows to-scale representations of the five currently slotted sensor formats you've chosen. To change them out, tap on "<u>Browse Sensor Format Database...</u>" below to edit or create new sensor formats and assign them to one of the five slots on the main screen.

The rectangles you see here are actually the exact size that the sensors are in real life. Since Apple makes all its devices with the same screen width, we know exactly how wide, in millimeters, these rectangles will appear on your screen. (If you're using this app on an iPad, turn off 2x scaling mode to see the sensor sizes at the appropriate size.)

As mentioned above, tapping here will get you into the <u>Sensor Format Database</u>, where you can create new formats, edit formats, and delete formats. The following pages of this manual will describe how to do this.

PROTIP: PINCH TO RESIZE OR HIDE TEXT LABELS; HOLD FINGER TO SAVE IMAGE TO CAMERA ROLL!

ABOUT BROWSER VIEW

The Sensor Sizes database browser lets you see all your current sensor formats, sorted from smallest (at the top) to largest (at the bottom). If you upgraded from a previous version of Angle of View, your existing sensor formats ought to have imported into this version. Otherwise you'll be presented with a new set of sensor formats that are included with the app.

If your camera's sensor format is not listed, we hope that you'll go to the trouble to look it up on a website like DPReview.com or the manufacturer's site, and set up a new format for your equipment. We've tried to include as many sensor formats in the starter library as possible, but there are always new ones "cropping up." (No pun intended.)

Feel free to delete extraneous formats by swiping from right to left and tapping "Delete". You can always add them back later, manually. If you ever want to delete your sensor format database and start over, just delete the Angle of View app and re-download it. Note that this will also clear any custom focal lengths you've manually added.

To edit a format, just tap on it, and then tap "Edit" in the top right-hand corner. To create a new one, just hit "New" in the upper right-hand corner. If you currently have a format selected, just tap on it, and this will make it become deselected. Then you will see the "Edit" button will morph back into a "New" button.

Below the name of your sensor format you'll see its dimensions listed, as well as an aspect ratio that is calculated using the Aspect Ratio Tolerance setting on the previous screen.

The color of the name of the format corresponds with the colored rectangle in the sensor format size viewer in the previous screen. This helps you to easily find which one you want to edit.

The Slot number corresponds to the format's position in the format selector of the Main View. The farthest left slot starts is 0 and the farthest right slot is 4.

In case you are visually impaired, but still wish to know which color corresponds to which slot number, below is a list of each slot number and the corresponding color that is assigned to it:

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Slot 0 - Portland Green
Slot 1 - Austin Orange
Slot 2 - L.A. Cyan
Slot 3 - Honolulu Magenta
Slot 4 - Eugene Yellow
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ABOUT CREATING AND EDITING FORMATS

In the Format Editor you can edit all the variables of a sensor format or create an entirely new one.

Format Name: this is how the format will appear in the format browser. The first six letters of the name are what appears in the segmented control and shortest version of the labels in the format size viewer. PROTIP: If there is a space in the first six letters, only what comes before the space will appear in the shortest form. This lets you force neat abbreviations.

Native Dimensions: this represents the physical dimensions of the sensor.

Current Aspect Ratio: enter values for your format's current aspect ratio. If your entry differs from the native aspect ratio of the sensor, then your format will become cropped to conform to your specified aspect ratio. When cropped, the Native Dimensions fields will become locked, preserving the non-cropped dimensions; to un-crop, press Set to Native (see below).

Current Dimensions: this represents the used area of the format, considering any cropping done by aspect ratios. If you specify an aspect ratio that results in one of the sensor's physical dimensions needing to be cropped, the cropped dimension will be displayed in red. Pressing Set to Native will uncrop and restore the full-frame values (see below).

Multi-Aspect Toggle: Switches to a mode where the native diagonal size of the sensor does not change, regardless of the aspect ratio. This is also useful for setting a sensor size based on a known diagonal size.

Slot Selector: allows you to configure which slot on the Main View your sensor format will be assigned to. Each slot corresponds with a color on the Sensor Size View. Once a format has been saved to a slot, you can only unassign it by saving a different format to its slot (though you can still move it to a different slot).

As you create a sensor format or edit an existing one, Angle of View's sophisticated logic works behind the scenes, creating a potential new database entry for your sensor format. When you press Save, for an existing format you'll be presented with a dialog box to Save (overwrite), Save As (create new), or Not Yet (continue editing without saving yet). For a new format you'll only have the options, Save New and Not Yet.

Any formats you have saved will be available to load later from the Sensor Format Browser screen. You can also delete any format that is not assigned to a slot by swiping across it from left to right in the Sensor Format browser.
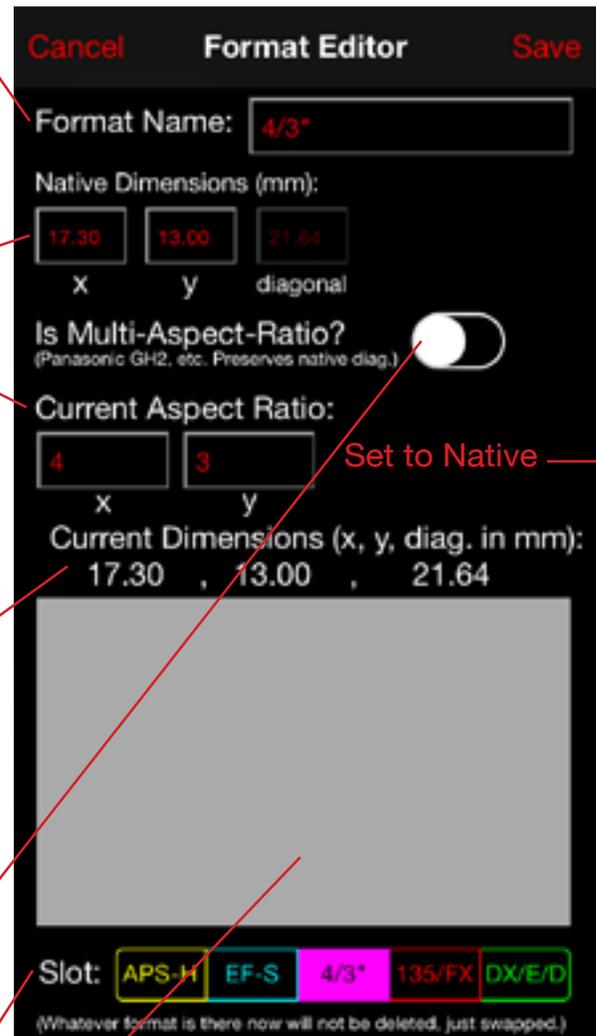
The Status Window helps you keep track of your edits. Sometimes when you make an edit, the app will auto-calculate other parts of the sensor for you. Any such automatic changes that happen based on your changes will typically be displayed here.

PROTIP: SHAKE TO UNDO/REDO YOUR CHANGES!

Anytime your format crops, the Set to Native button will light up. Pressing it will un-crop your format, returning it to its native aspect ratio and native sensor dimensions. The aspect ratio shown is affected by the Aspect Ratio Tolerance settings (see page 2).

WHAT THIS APP IS ALL ABOUT

This app is intended to be used by photography beginners, enthusiasts, and professionals to better understand the effect of different lenses and focal lengths on what a camera actually sees. It is also intended as an educational and explanatory tool for teachers and salespeople who want to help people visualize the concepts they are talking about in a conversation about photography.

WHAT THE GOALS OF THIS APP ARE

The goal of this app is to help you to free your mind from thinking about your camera's angle of view only in terms of your lens's focal length (millimeters). With this app, you can now visualize the angles themselves in terms of actual degrees, without having to look it up in a technical manual or perform complex trigonometry.

Another goal is to let you see precisely how far away you have to be from something in order to fit it into your shot. All you need to know is the size of the subject, the size of your sensor, and the focal length (millimeters) of your lens. This also helps clear up confusion about how many "times" your zoom lens is.

A third goal of this app is to let you compare various sensor formats and lens combinations together. You can compare the sizes of various formats by seeing the real-life-scale outlines of the sensor sizes, and you can quickly switch between various sensors to see what a given focal length does on different formats. You also see what focal length you'd need on other formats to achieve the same angle, and what the focal length conversion factor between them is. (Some people call this the "crop factor" but we discourage this term, since there is not necessarily any "cropping" that occurs, depending on whether or not a lens is native to a particular sensor format).

We hope people start to thinking in terms of "degrees" and "range factor" instead of "equivalent millimeters" and "zoom factor."
It's not 2005 anymore: there are tons of formats now. This app makes it easy for anyone to visualize angles, sensor sizes, and compare various lens-sensor combinations without doing any math, knowing any formulas, or needing a calculator. We hope you enjoy it!
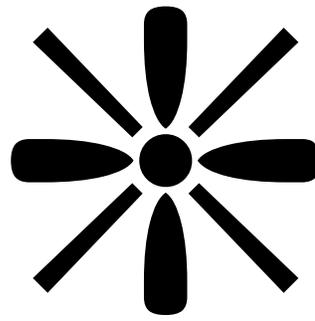
ABOUT RANGE FACTOR

The main display shows a zoom factor called <u>Range Factor</u>. (In previous versions of this app, it was called "Absolute Zoom," but in this version we've renamed it to a more useful term.)

The point of Range Factor is to help you conceptualize how far away you need to be from a subject in order to properly frame that subject. The Range Factor tells you how many times farther away you have to be from a particular subject relative to its size. The equation is:

<u>Measuring Tape Size * Range Factor =</u>
<u>Range to Fit Tape</u>

For example: On 135F-format (35mm film), a 36mm lens gives you a 62° diagonal angle-of-view at a 3:2 aspect ratio. The distance to the subject is the same as the distance across the field of view. Therefore, the Range factor would be 1.0x at a 36mm focal length on 135-format.

If a lens starts at 10mm and zooms out to 100mm, that's a 10x zoom, according to camera companies. However this is confusing because sometimes a 12x zoom might start wider, but not give anymore telephoto. Range Factor tells you how much actual telephoto you're getting.
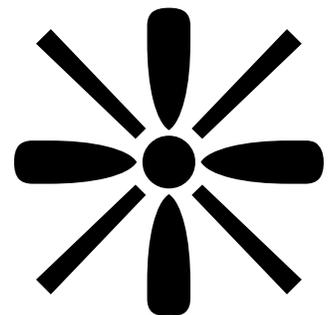
PARTING SHOTS

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Version
2.0 release

Version History:
2.0 - Oct. 2013
* ADDED support for iOS7 and iPhone 5/5S/5C
* Drops support for iOS 4 :-(
* NEW Sensor format viewer
* NEW aspect ratio tolerance percentage setting
  to fine-tune automatic calculations of aspect ratios
* NEW Format Editor!
* NEW red-on-black "darkroom" color scheme
* ADDED support for user-entered aspect ratios like
  2.35:1 or anything else
* FIXED the scaling behavior of the measuring tape
  when pinching with the pinch gesture
* FULLY MODERNIZED code under the hood
* ADDED support for decimal values in the focal
  lengths! Now you can enter any lens's actual focal
  length like 6.2mm, 10.4mm, etc.
* ADDED a few secret things that aren't enabled yet
* ADDED resizable format names in the format size
  viewer
* RENAMED "absolute zoom" to "range factor"
* ENHANCED user interface
* NEW ability to save sensor size diagram to camera roll
* plus so much more

(for old version history see the next page)

PHYSICAL SOFTWARE

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Version History:

1.1 - Aug. 2011

* Added aspect ratio display to main screen.
* Added Rate! button and Feedback button to Settings
  screen.
* Changed color schme of main display to black back-
  ground for better visibility of the color-coded displays.
  (Send email feedback if you preferred the original col-
  ors, or if you want a fully cusotmizable color scheme,
  and we'll add it in a future version).
* Fixed several bugs.
* Patched a potential crash (saved data will reinitialize to
  default values if it becomes corrupt instead of crash-
  ing).
* Enhanced behavior of distance slider.
* Added "zoom" feature for angle display. (When focal
  length is at extreme high levels, the angle no longer
  becomes a tiny sliver. Now the display zooms in on
  the subject area while the origin point now goes off
  screen.)
* Updated wording of button text in
  Settings view to more standard terminology (e.g.
  "Save As New" instead of "Add", etc.) for better
  intuitiveness/ease of use.
* AoV now remembers your choice of limits for the
  distance slider, and units for meters/feet, between
  updates or after quitting etc.