

Hello, and thank you for purchasing AltitudeAlert! AltitudeAlert Mini is the first altitude preselect and alerting app for the iPhone. Please take a moment and review this User Guide to familiarize yourself with the features for using the app.

As you know, no User Guide can cover every scenario that you might encounter while flying. So please feel free to contact me either through the app website (altitudealertapp.com), or Facebook (facebook.com/altitudealert).

Let's get started!

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Setup:

When AltitudeAlert launches for the first time you will be required to allow access for the app to send you Notifications. Choose “Allow” as the app will not function correctly without allowing this access.

After agreeing to the User Agreement, you will be presented with a settings setup screen or the choice to continue to the AltitudeAlert main page. If you choose to adjust your settings at this time, go to **Notifications and Sounds** below in this section for specifics on setup.

IMPORTANT

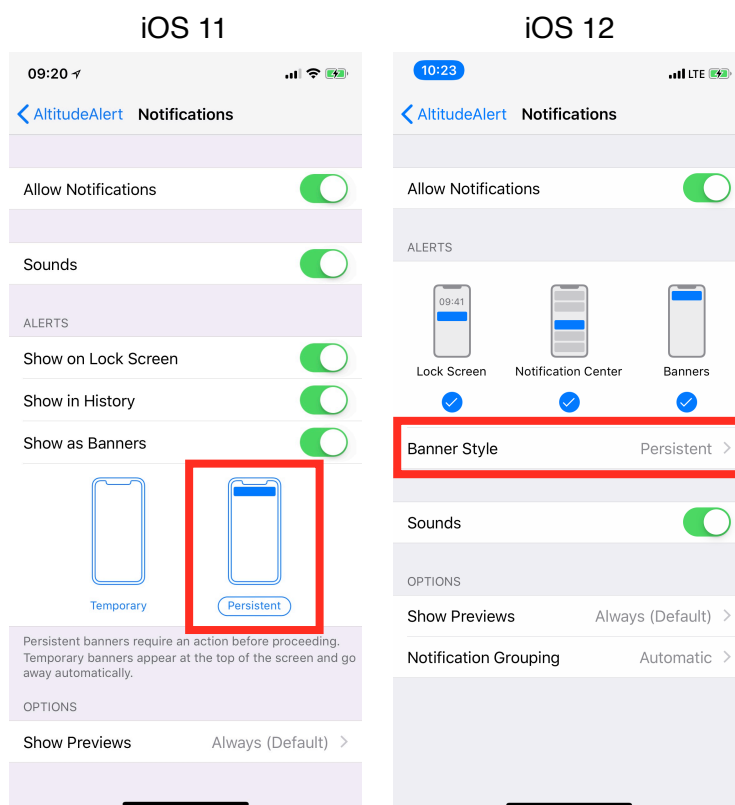
Location Service must be enabled before AltitudeAlert will operate correctly. This is simply accomplished by selecting an altitude in the **Altitude Selector** (see Altitude Selector Tab). You will then be asked to allow AltitudeAlert to use your location. Choose “Allow”. After you’ve used the App a few times, You will receive another message asking you to allow AltitudeAlert to use your location at ALL times. For best use, choose “Allow Always” as this allows AltitudeAlert to run in the background while you use other Apps on your iPhone. The status bar at the top of the iPhone will be highlighted in **BLUE** with the notice “**AltitudeAlert is Actively Using Your Location**” unless you choose always allow your location. The functionality of the App remains the same either way.

Notifications and Sounds:

Because the iOS notifications operate separately from AltitudeAlert’s aural and visual user interface notifications, configure the Notifications and Sounds in the SETTINGS app on your iPhone as follows:

Notifications:

In my personal testing, I found that the best alerting mechanism was the “PERSISTENT” alert style box type alert. “TEMPORARY” worked well but because they automatically go away after a short period of time, they’re easy to forget when the cockpit gets busy. The “ALERTS” box forces you acknowledge the alert before it will go away. That being said, configure the alert style however you desire.



Sounds:

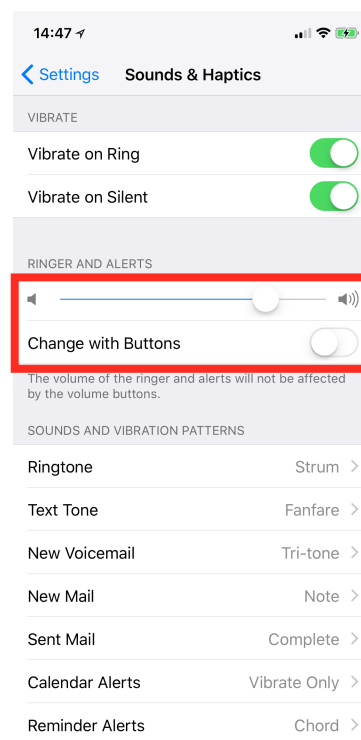
To ensure that the the iOS notifications are audible, verify that the RINGER AND ALERTS slider is set to full. For best results, make sure that “Change with Buttons” is NOT enabled (see image below). With “Change with Buttons” enabled, it can be confusing as to which volume you’re actually controlling. In my experience, leaving this setting disabled and having the RINGER AND ALERTS volume slider set above half provided the most consistent results. This is because the iPhone’s volume buttons are now set to control the “Master” audio output only.

Headset Connect:

It goes without saying, if your headset is not connected to your iPhone you will not hear any of the aural alerts. While this is not a requirement to use the app, it’s the best user experience.

Since there are so many ways to connect your headset to your iPhone, I will not cover all of the possible options. In general, the best option is to use an ANR headset with Bluetooth capability and connect it to your iPhone. Another good option is an ANR headset connected via an external 1/8” stereo audio cable from the iPhone* to a headset or intercom.

** an 1/8” adaptor will be required if your iPhone doesn’t have one.*



Using AltitudeAlert:

Using AltitudeAlert is straightforward...

- Prior to takeoff, FIRST, Set the **Altitude Selector** to the desired altitude or as cleared by ATC. Then set the altimeter setting (**ALT Setting**), **Field Elevation**, (and **Surface Temp**, if visible).
- AltitudeAlert will then monitor the reference altitude (**Ref Alt - BARO or GPS**). As you approach the altitude set in the **Altitude Selector**, an aural and visual alert will be generated (or iOS system notification when the app is running in the background. *See iOS Background Alerts Table below*).
- After reaching the selected target altitude, AltitudeAlert then monitors the altitude set in the **Altitude Selector**. If you exceed the altitude in the **Altitude Selector** by a specified margin (see **Chk ALT Alert Margin**), an alert is generated (aural and visual) advising you to correct the deviation.
- Prior to descent, set the **ALT Setting**, **Field Elevation** (and **Surface Temp**, if visible) for the destination. Then set the **Altitude Selector** to the desired lower altitude or as cleared by ATC. AltitudeAlert then generates alerts using the same criteria as above.

- If an instrument approach will be accomplished, set the DA or MDA minimums using the **DA/MDA** button. Once entered, tap the **ARM** button to arm the mode. Alerts will be generated at 100' above minimums and when reaching minimums.
- Prior to final descent for landing while VFR, press the **LAND** button to avoid any nuisance alerts during descent for landing. *Tapping **LAND** button is not necessary when the DA/MDA mode is used.*

NOTE

Regardless whether the **LAND** button is pressed or not, the Landing Mode will automatically activate when the Reference Altitude is within 1000' of the **Field Elevation**.

If using Barometric Altitude Reference (Ref Alt - BARO) - Most Typical

The first time you use AltitudeAlert you may need to “Quick Calibrate” your iPhone’s Barometric sensor to the aircraft altimeter. While airborne, with the aircraft level, make sure that the **Altitude Selector MATCHES** your aircraft altimeter. Then touch the “Quick Calibrate” Touch Zone. The **Ref Alt - BARO** will calibrate and now zero any error. See “Quick Calibrate” below for more details.

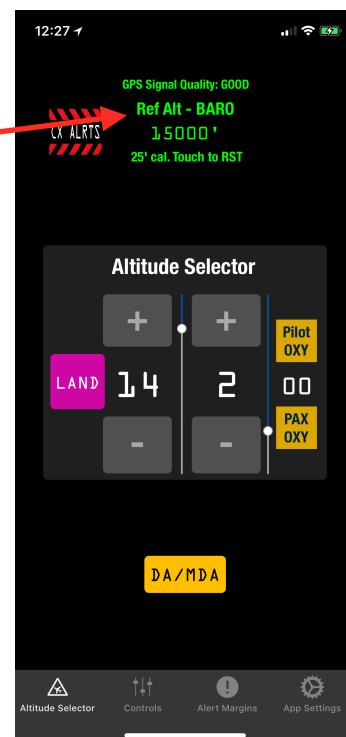
If using GPS Altitude Reference (Ref Alt - GPS) - Not Typical, pressurized aircraft

Occasionally, an erroneous alert may be generated. This occurs when the atmospheric conditions at altitude are appreciably different from the surface pressure and temperature being reported. To correct the nuisance alert: First, verify that the outside air temp (Ref OAT) and altimeter setting (**ALT Setting**) match the reported conditions. Next, if the settings are verified correct and there is still an error, use the Altitude “Quick Sync” Touch Zone to correct the error.

Altitude Selector Tab (Barometric Altitude Reference):

1. Ref Alt - BARO:

Pressure altitude, corrected by the altimeter setting (**ALT Setting**) and then rounded to the nearest 50'. Once the altimeter setting is set, it's very precise and the reference altitude should match the aircraft altimeter within a few feet. Once airborne however, it may read a bit higher than aircraft altimeter. This is because of the venturi effect created around the cockpit when the aircraft is flying. To compensate for this, a -75 ft. adjustment has been added to the reference altitude whenever the aircraft groundspeed is > 80 kts. This adjustment should nearly eliminate the error, however they're



may still be some residual error due to variations from cockpit to cockpit, and whether the interior vents are open or not. As a result, there's "Quick Calibrate" feature that eliminates any residual error. More on this below.

2. Power/CX ALRTS Button:

On the ground, the Power button is visible. Airborne the CX ALRTS button is visible and cancels all altitude and accuracy alerts (Oxygen Alerts are unaffected). Use this mode if unwanted altitude and accuracy alerts are being generated. Altitude, Atmospheric, and Field Elevation controls retain their settings. To restart alerts, select a new altitude in the **Altitude Selector** or field elevation with the **Field Elevation** controls.

3. DA/MDA Button:

Allows the setting of Decision Altitude (DA) or Minimum Decision Altitude (MDA) instrument approach procedure (IAP) minimums (See DA/MDA Minimums below).

!! ATTENTION !!

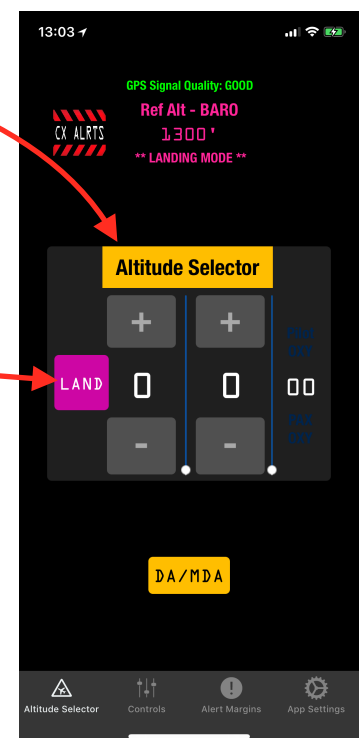
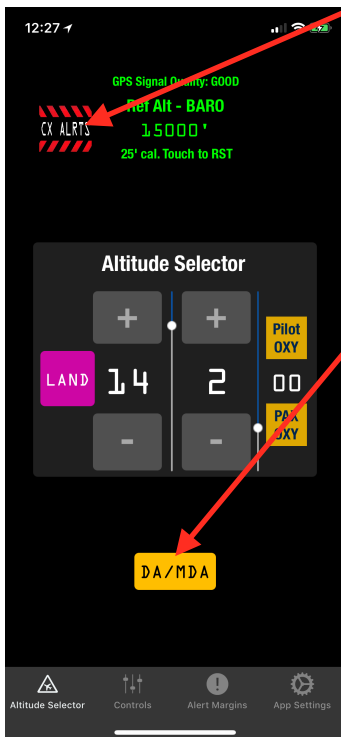
Use of the **DA/MDA** alerting feature is for REFERENCE ONLY. You must still verify any/all IFR minimums with a properly installed and certified altimeter. It's **HIGHLY RECOMMENDED** that you practice with **DA/MDA** in VFR conditions before using it while flying IFR.

4. Altitude Selector Alert:

When an altitude alert is received, the text turns black and becomes boxed amber. An aural alert is also played depending on the alert received. Additionally, when your altitude reaches the altitude set in the Altitude Selector, the box will become boxed green.

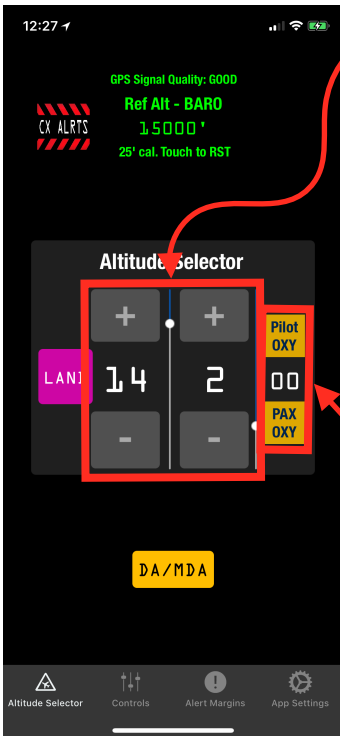
5. LAND Button:

Engages the Landing Mode. When touched, the currently selected Target altitude is zero'd out, and the display turns Magenta. In this mode, AltitudeAlert will generate an aural alert at 1000' AGL and 500' AGL respectively for situational awareness. Additionally, if the "Retractable Landing Gear" option was selected (see #11 below), "Check landing gear down" will be annunciated after the 500' alert. The accuracy of this mode is contingent on setting the correct landing field elevation with the **Field Elevation** controls (see #9 below).



NOTE

AltitudeAlert will automatically select Landing Mode when the you descend below 1000' AGL of the selected field elevation set in the **Field Elevation Controls** section.



6. Altitude Selector:

Separated by thousands and hundreds of feet. You can select any altitude between 0 and 17900'. High altitude alerts are available up to 45900' (FL459) by toggling the "Altitude Selector Limit 45900" switch located in the App Settings page* Set the altitude by using the + or - buttons OR touching on the desired slider and sliding it UP or DOWN with your finger.

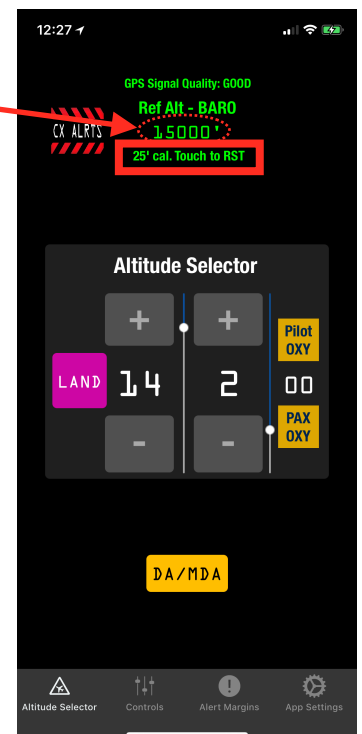
** Use caution when above 18000' (FL180). Altitude reference algorithms are optimized for alerting below 18000' (FL180).*

7. Supplemental Oxygen Alerts:

Visual and aural alerts are provided when pilot and passenger supplemental oxygen is required. The **Pilot OXY** amber light illuminates above 12500' MSL. The **PAX OXY** amber light illuminates above 14000' MSL. Both lights extinguish upon descent below the respective altitudes.

8. Barometric Altitude "Quick Calibrate" Touch Zone:

Touching the **Ref Alt** "Quick Calibrates" the **Ref Alt** to the **Altitude Selector**. This is quick and convenient way to sync and correct the **Ref Alt** for any residual error from the aircraft altimeter. Once the calibration is applied it will be retained in the app indefinitely until it is either removed (touching the "Touch Zone" again will remove the calibration) or another calibration is applied by repeating the process. The iPad's Barometric Sensor is very sensitive and is effected by the pressure in your cockpit in much the same way your aircraft's altimeter does when the alternate static source is selected. As a result, anytime you open or close outside vents in the cockpit, there will be a change in pressure. Practically speaking, you may have to recalibrate the **Ref Alt** every spring and fall as temperatures change.



Altitude Selector Tab (GPS Altitude Reference):



1. Ref Alt - GPS:

The GPS altitude corrected for GPS error, atmospheric conditions, and any manual adjustments applied.

2. Power/CX ALRTS Button:

On the ground, the Power button is visible. Airborne the CX ALRTS button cancels all altitude and accuracy alerts. Oxygen Alerts are unaffected. Useful if unwanted altitude and accuracy alerts are being generated. Altitude, Atmospheric, and Field Elevation controls retain their settings. To restart alerts, select a new altitude in the **Altitude Selector** or field elevation with the **Field Elevation** controls.

3. MAN Adj Button:

Allows you to adjust the Reference Altitude (**Ref Alt - GPS**) up/down when the Reference Altitude is in error.

4. Altitude Selector Alert:

When an altitude alert is received, the text turns black and becomes boxed amber. An aural alert is also played depending on the alert received.

Additionally, when your altitude reaches the altitude set in the Altitude Selector, the box will become boxed green.

5. **LAND** Button:

Engages the Landing Mode. When touched, the currently selected Target altitude is zero'd out, and the display turns Magenta. In this mode, AltitudeAlert will generate an aural alert at 1000' AGL and 500' AGL respectively for situational awareness. Additionally, if the "Retractable Landing Gear" option was selected in App Settings (see below), "Check landing gear down" will be annunciated after the 500' alert. The accuracy of this mode is contingent on setting the correct landing field elevation with the **Field Elevation** controls (see Controls Tab).

NOTE

Usually, the **Ref Alt - GPS** altitude is accurate to within 100' of the barometric altimeter in the aircraft. However, there are times when the altitude will exceed this (typically when the temperatures are very hot or cold, and/or when the atmospheric pressure is not lapsing at a standard rate throughout the atmosphere).

The **MAN Adj** controls allow you to correct for these errors to avoid any nuisance "Check Altitude" alerts. These corrections are the incrementally changed automatically to maintain the correct reference altitude as you climb or descend. It's recommended that you don't make an adjustment until error EXCEEDS +/- 200'. See also Altitude "Quick Sync" below

NOTE

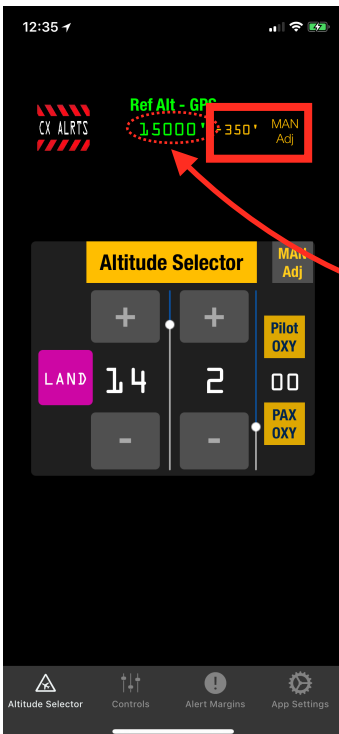
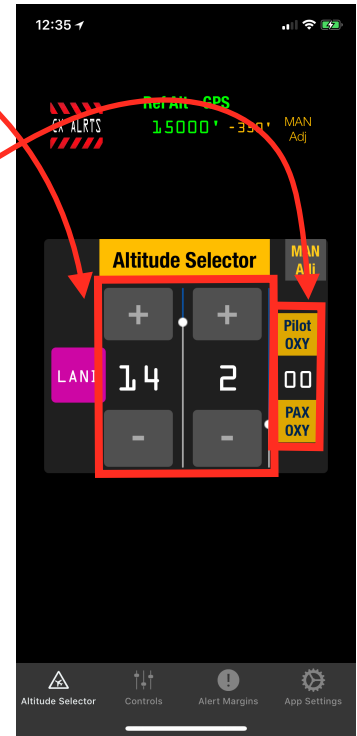
AltitudeAlert will automatically select Landing Mode when the you descend to within 1000' AGL of the selected field elevation set in the **Field Elevation** Controls section.

6. Altitude Selector:

Separated by thousands and hundreds of feet. You can select any altitude between 0 and 17900'. You can set the altitude by using the + or - buttons OR touching on the desired slider and sliding it UP or DOWN with your finger.

7. Supplemental Oxygen Alerts:

Visual and aural alerts are provided when pilot and passenger supplemental oxygen is required. The **Pilot OXY** amber light illuminates above 12500' MSL. The **PAX OXY** amber light illuminates above 14000' MSL. Both lights extinguish upon descent below the respective altitudes.



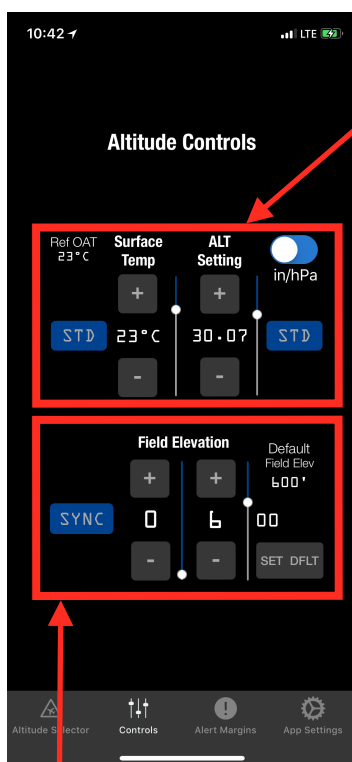
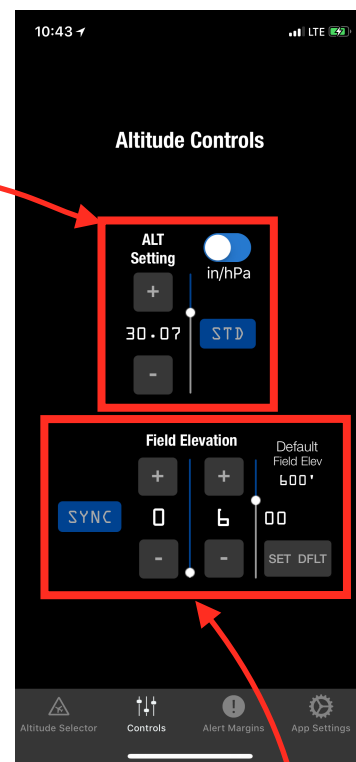
8. Altitude “Quick Sync” Touch Zone:

Touching the **Ref Alt** “Quick Syncs” the **Ref Alt** to the altitude set in the Altitude Selector using a MAN Adjustment. This is quick and convenient way to sync and correct the **Ref Alt** for any deviations from the actual aircraft altimeter.

Controls Tab:

1. ALT Setting (Barometric Altitude Reference ONLY):

Used to set the current altimeter setting by using the + or - buttons, touching on the slider and sliding it UP or DOWN with your finger, or touching the “Touch Zone” (red circle noted above, also see “Touch Zone” below) to manually input the altimeter setting (see below). A blue **STD** button resets the ALT Setting to standard atmospheric pressure (29.92 in HG or 1013 hPa). The **In/hPa Switch** allows you to set the **ALT Setting** using in of HG or hPa as the local altimeter dictates.

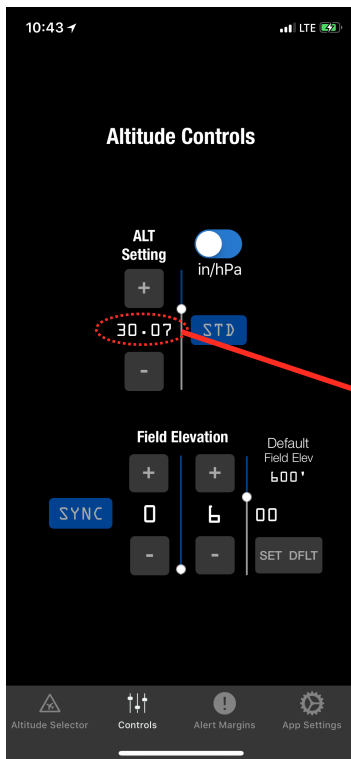


ALT Setting and Surface Temp (GPS Altitude Reference):

Used to set the surface temperature and the current altimeter setting. Ref OAT is displayed and updates automatically as the reference altitude changes. Once the cruise altitude has been reached the Ref OAT can be manually updated as necessary using the **Surface Temp** controls for Non Standard temperature changes. You can set the **Surface Temp** and **ALT Setting** by using the + or - buttons, touching on the desired slider and sliding it UP or DOWN with your finger, or touching the “Touch Zones” (see “Touch Zones” below) to manually input the temperature/altimeter setting. A blue **STD** button for both **Surface Temp** and **Surface Temp** reset the respective controls to standard atmospheric conditions (15°C, 29.92 in HG or 1013 hPa). The **In/hPa Switch** allows you to set the **ALT Setting** using in of HG or hPa as the local altimeter dictates.

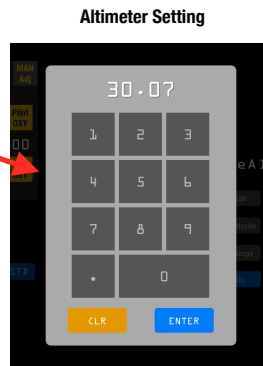
2. Field Elevation Controls:

Separated by thousands and hundreds of feet. Set prior to departure field elevation prior takeoff and destination field elevation prior to descent. If you do not set a different destination field elevation, you will be prompted to do so during descent, prior to arming minimums for an approach, or tapping the LAND button. You can set the elevation by using the + or - buttons, touching on the desired slider and sliding it UP or DOWN, or tapping the SET DFLT button to recall the Default Field Elev. The **SYNC** button allows you to sync the field elevation with the indicated reference altitude while on the ground. The Default Field Elev allows you to set a field elevation you use often. To set it, adjust to **Field Elevation** two the desired elevation. Then touch and hold the SET DFLT button. The new default field elevation is displayed and saved. To set a new default, just repeat the process. Again, to recall the Default Field Elev, tap (but do not hold) the SET DFLT button.



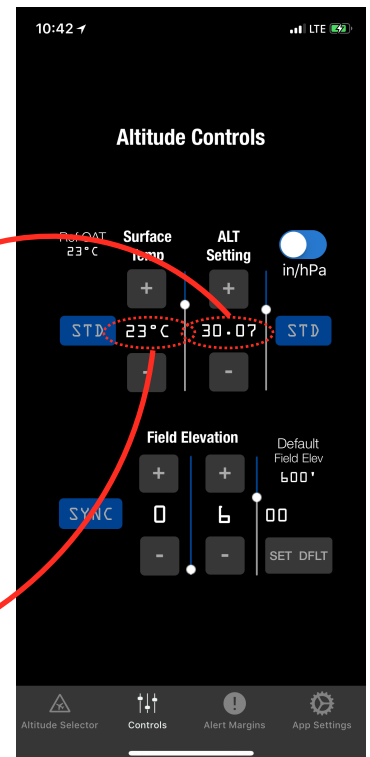
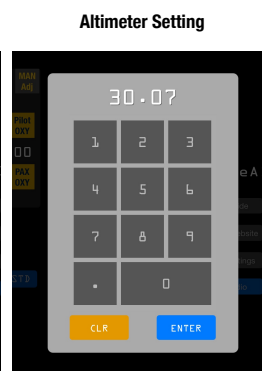
3. ALT Setting Touch Zone (Barometric Altitude Reference):

An alternative way (as opposed to using the +/- buttons or data sliders) to enter data for the corresponding value types. Touch the “Touch Zone” to open the data entry num pad. This allows you to manually enter the desired value. (See image below)

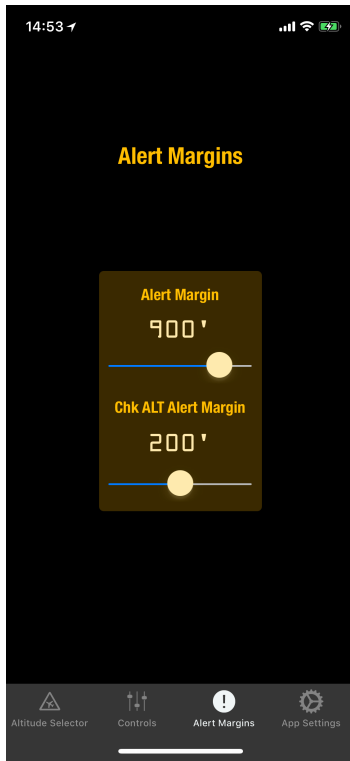


4. ALT Setting & Surface Temp Touch Zones (GPS Altitude Reference):

Touch Zones are an alternative way (as opposed to using the +/- buttons or data sliders) to enter data into the corresponding value types. Touch on the corresponding value in the Touch Zone to open a popup window. This allows you to manually enter the desired value. (See image below)



Alert Margins Tab:



Alerting Margins:

The **Alert Margin** and **Chk ALT Alert Margin** are the margins (or triggers, if you prefer) where the applicable alerts are generated. Both are individually adjustable depending on your flying style. Let's look at both...

- The **Alert Margin** is adjustable between 200' and 1000' (the default is 900'). An altitude alert is generated when the **Alert Margin** is reached from above or below the altitude set in the **Altitude Selector**.
- The **Chk ALT Alert Margin** is adjustable between 100' and 300' (the default is 200'). An check altitude alert is generated when the **Chk ALT Alert Margin** is reached from above or below the altitude set in the **Altitude Selector** AFTER the **Ref Alt - GPS** (actual aircraft altitude) is within 100' the altitude set in the **Altitude Selector**.

Let's look at an example,

Alert Margin set to 500'

Chk ALT Alert Margin set to 200'

Altitude Selector set to 5000'

The aircraft is climbing, when the you reach 4500', the **Alert Margin** will be reached and the altitude alert (single "C" chime aural alert and amber visual alert, if the app is visible) is generated. Upon reaching 5000', AltitudeAlert begins monitoring your altitude using the **Chk ALT Alert Margin**, checking for deviations. Let's say you get distracted and you start a slow descent unintentionally. When the you descend below 4800', the **Chk ALT Alert Margin** will be reached (remember, 200'. $5000' - 200' = 4800'$) and the check altitude alert (single "C" chime with spoken "Check Altitude" aural alert, flashing amber visual alert, if the app is visible) is generated.

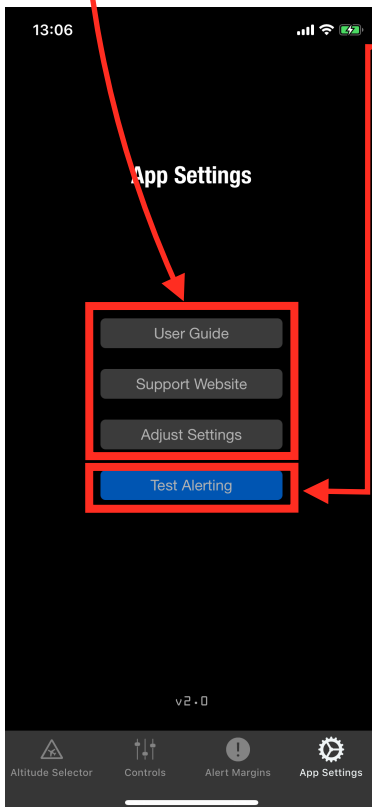
*** CAUTION ***

When the **Alert Margin** is set to 200' and the **Chk ALT Alert Margin** is set to 100' respectively, nuisance alerts may occur due to the narrow margins. As a result, setting the margins this way is not recommended for extended use.

App Settings Tab:

1. Setup & Reference Buttons:

Use these buttons to access this **User Guide**, the **Support Website** (for asking a question or giving feedback), or **Adjust Settings** to access the AltitudeAlert iOS settings page (see iOS Settings below) to adjust Notification settings or set the Land Mode to alert retractable landing gear.

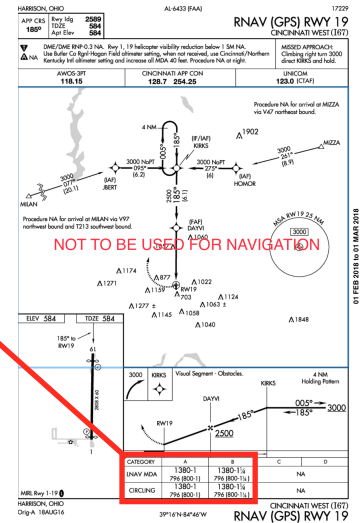
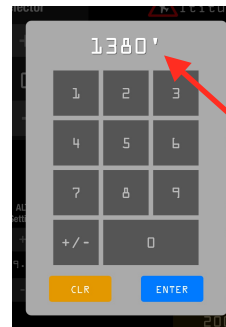


2. Test Alerting

Runs a test of many of the aural and visual alerts. This is a confidence test that takes about 14 seconds. Use this test to verify that your headphones are connected properly and to fine tune the volume level of your iPhone.

1. Tap the **DA/MDA** button.
2. Set the minimums.

If you need to change the minimums after setting or arming the mode, ARM the Mins and then tap DA/MDA button until you return to the minimums input num pad.

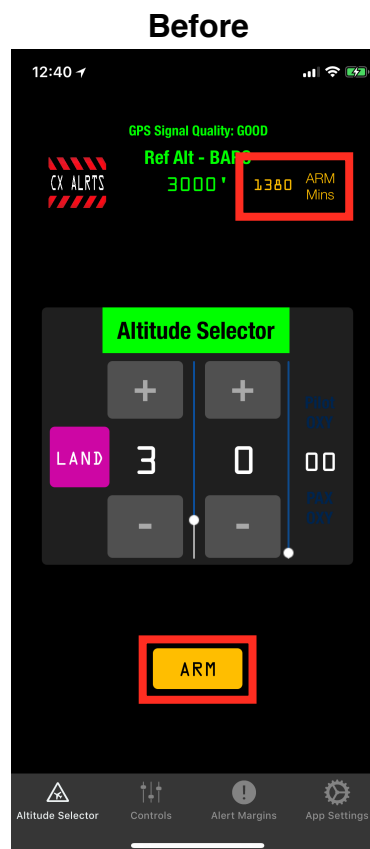


3. **ARM** the App for alerting.
 - Once armed, standard altitude alerts function normally. However, “CHK ALT” alerts are inhibited.
 - Landing Mode is automatically selected at 1000’ AGL (based on the **Field Elevation** setting). Alerts are generated at 1000’ AGL and 500’ AGL* respectively (See LAND mode above).

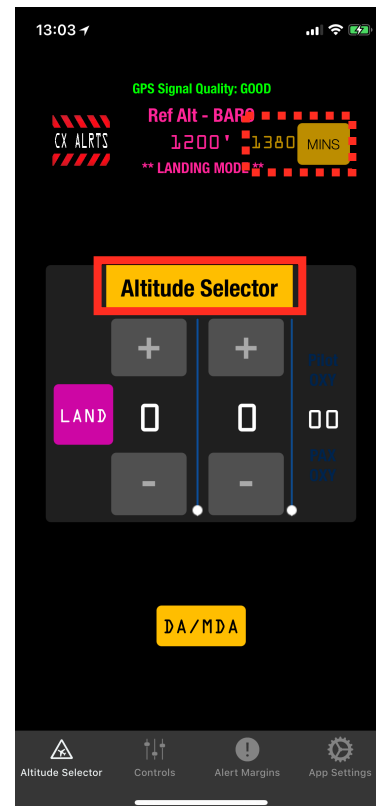
**When the aircraft is at 500' AGL and the minimums are within 100', the 500' LAND mode alert will be inhibited.*

- At 100' above minimums, "Approaching Minimums"*** is stated. Followed by "Minimums" at minimums.

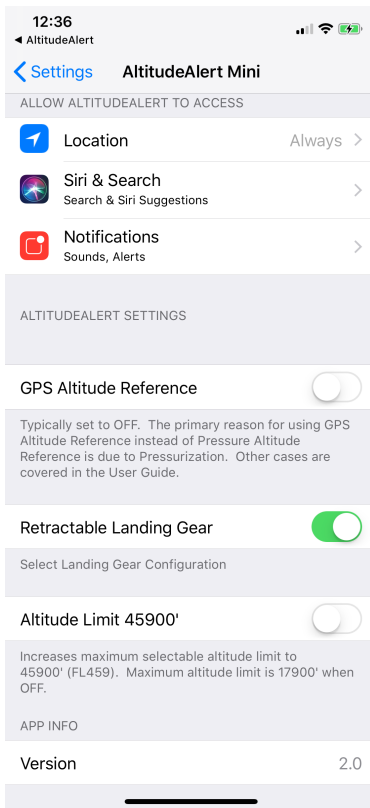
*****If the 500' LAND mode alert was inhibited and the Retractable Landing Gear Switch is ON, the "Approaching Minimums" alert will include "Check Landing Gear Down".***



4. At minimums, the MINS box and entered minimums turn amber and flash, the Altitude Selector Alert turns amber, the Altitude Selector “zeros” itself, and the DA/MDA button returns to the unarmed state.
5. If a missed approach is executed, set the missed approach altitude in the Altitude Selector. Repeat the steps above to set the minimums for the next approach.



iOS Settings Page:



altitude.

GPS Altitude Reference:

If your iPad is equipped with an internal pressure sensor then this toggle switch will be OFF by default. However, you can override the system and force the GPS to be altitude reference source. Practically, the only reason for doing this would be in the case you are flying in a pressurized aircraft. If your iPad does not have an internal pressure sensor, then this setting will always be ON.

Please note, that DA/MDA alerting is not available when GPS Altitude Reference is ON.

Retractable Landing Gear:

Turning on this switch enables the “Check Landing Gear Down” aural alert when the Landing Mode is engaged (see Altitude Selector Tab above)

“Altitude Acquired” Callout:

Defaulted to ON, turning this mode on will generate the “Altitude Acquired” callout each time the selected altitude is reached in the **Altitude Selector**. Additionally, if a “CHK ALT” alert is generated due to an altitude deviation beyond the **Chk ALT Alert Margin**, “Altitude Acquired” will be annunciated again when returning to the selected

Altitude Selector Limit 45900’:

Defaulted to OFF which limits the altitude selector to a maximum altitude of 17900’. Toggling this switch to ON increases the altitude selector limit to 45900’ (FL459). Use caution when selecting altitude above 18000’. The app alerting algorithms are optimized for use below 18000’

iOS Background Alerts Table:

The following table outlines how the alerts will be delivered when AltitudeAlert is operating in the background. Visual “Alert/Banner” refers to the style of alert selected in the App Settings.

TYPE ALERT	VISUAL “ALERT/BANNER”	AURAL
Standard Altitude Alert Chime	X	X
“Check Altitude”	X	X
“Altitude Acquired”	X	X
“Pilot Oxygen Required”	X	X
“Passenger Oxygen Required”	X	X
“1000 ft. Above Touchdown”		X
“500 ft. Above Touchdown. Check Landing Gear Down”		X
“500 ft. Above Touchdown”		X
“Approching Minimums”		X
“Approching Minimums. Check Landing Gear Down”		X
“Minimums”	X	X
iPad Pressure Sensor Failure	X	X
iPad GPS Accuracy Degradation	X	X
iPad GPS Accuracy Restored		X

Troubleshooting:

Reference Altitude Accuracy Issues:

If you are receiving an inordinate amount of accuracy alerts, i.e. “ACCY LOW”, “ALT INVLD”

- Reboot the iPhone
- Complete a “Hard Reset”. Go to <https://support.apple.com/en-us/HT201559> to see how to do this for all iPhone models supported.
- If you continue to have accuracy issues, check to make sure that the iPhone is located in a position that has an unobstructed view of the sky.
- Also make sure that the iPhone is not located near a device that emits a strong electrical field, heated windows are the most common culprit.