



**ICARUS Instruments, Inc.**

**AltAlert 3070 Pilot's Operating Handbook**

**Icarus Instruments, Inc.**  
**7000 Carroll Avenue**  
**Takoma Park, MD USA 20912**

**301 891 0600**

**Fax 301 891 0666**

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If you already have a CDI switch and annunciators, the **CDI** mode may be disabled. See section on Special Parameters to disable **CDI** mode. Units are shipped from the factory with **CDI** mode enabled.

### 1.3 SET Mode

**SET** mode is two CW clicks from **TARG** mode and is used to set the dwtimer, decision altitude, destination elevation, fuel timer, and clock. Once **SET** mode is selected, use the small switch (not pushed in) to locate which item you wish to set. The small knob acts like the mode switch in that you can turn it in either direction to get to the sub-mode that you want. All sub-modes under **SET** mode will be referenced as **SET/Dtmr**, **SET/Da**, **SET/Dest**, **SET/Fuel**, and **SET/Clk**. In all cases, after entering in the desired number, **TARG** mode will be automatically selected.

#### 1.3.1 SET/Dtmr (Set Dwtimer)

Let's say you want to set the dwtimer for timing an approach or holding pattern.. After selecting **SET** mode, **Dtmr** appears since it is the first item in the **SET** mode. After a short interval you will see **0:00** flashing or the previous time that had been set. Use the large switch to set in the minutes and the small switch to set in the seconds. After a few seconds, **TARG** mode will be selected. The dwtimer will not start until you select **DTMR** mode, which is one CCW click of the mode switch from **TARG** mode. The dwtimer will count down from a maximum of 9 minutes and 59 seconds.

**Shortcut:** If you want to set in 2:50 (two minutes,fifty seconds), turn the small switch CCW to get to 50 seconds much faster than turning it CW.

#### 1.3.2 SET/Da

Use the **SET/Da** mode to set in the rounded-up Decision Altitude for an ILS approach. To set the Da , select **SET** mode, then select **Da** using the small switch. If the published decision altitude is 1,748 feet, enter 1,800. The DA alert will occur when you reach 1,800 feet. This is simply a reminder that the real DA is approaching. Of course, you can set in a higher altitude such as 1,900 or 2,000 feet if you want.

The maximum altitude for DA is 9,900 feet. So forget using this mode if you are landing at La Paz, Bolivia, altitude 13,288 feet. The **APP** mode (Approach mode) is used to actually select the DA for use during an ILS approach. See **APP** mode below.

**Shortcut:** If you select **APP** mode without first setting in a Da, you will be prompted to enter a Da. After entering in the Da, **APP** mode will be automatically selected. If you then want to cancel **APP** mode because you are not yet descending on the ILS, simply

select **TARG** mode. Note: Once you enter in a Da and you want to change it, you must use the **SET/Da** mode described above.

### 1.3.3 SET/Dest

Use the **SET/Dest** mode if you decide to go to an airport other than your original destination. To set the Destination elevation, select **SET** mode, then select **Dest** using the small switch. Be sure to set in the new destination's elevation so the **GEAR** alert will function properly. Use the two switches to set in the new destination's altitude. **TARG** mode will automatically be selected after entering in your new destination elevation.

Note: the maximum altitude that you can enter is **Set/Dest** mode is 9,900 feet (**9.9**). So forget La Paz, Bolivia as a destination; it's over 13,000 MSL.

### 1.3.4 SET/Fuel

Use **SET/Fuel** mode to set the long term fuel timer. To set the FUEL timer, select **SET** mode, then select **Fuel** using the small switch. Then use the big switch to set hours and the small switch to set minutes. The fuel timer will automatically start when you set in a time. **TARG** mode will then be automatically selected.

You can view the progress of the FUEL timer by simply selecting **FUEL** mode at any time. When the time has expired, you will get a flashing **FUEL** alert accompanied by three pairs of beeps. The elapsed time will *continue to accumulate*, unless you *restart* the FUEL timer by *entering a new time* in **SET/Fuel** mode, even if you want to time the same interval again.

For example, you want to burn fuel from one tank for 45 minutes, and then you want to switch tanks and burn fuel from this tank for 45 minutes. You would set the fuel timer to 0:45. After 45 minutes elapses you will get the Fuel alert. Then select **SET/Fuel** mode and 0:45 will display (the original fuel burn time). Change the time from 0:45 to 0:46 and back to 0:45 using the small switch. This *new* time will start the fuel timer again. If you decide to continue to run on the original tank, the fuel timer will continue to count up past the 0:45 when the alert occurred until you enter a new fuel time.

### 1.3.5 SET/Clk

To set the clock, select **SET** mode, then select **Clk** using the small switch. The time format is in 24 hour military format. You can set in UCT (GMT or ZULU time) instead of local time if you wish. The large switch sets hours and the small switch sets minutes. You can turn either switch CW or CCW to get to the number you want. This clock is run from an internal 10 year lithium battery. It is accurate to better than one minute/month. **TARG** mode will automatically be selected after setting the clock.

#### 1.4 DTMR (Downtimer) Mode

The **DTMR** mode is used to start the downtimer. Simply turn the mode switch one CCW click from **TARG**. If you are performing an approach that requires timing, you set in the the published MAP (missed approach time) from the plate using the **SET/Dtmr** mode. When you wish to start the downtimer, simply select **DTMR** mode. The time will display as it counts down. Normally you would then select **TARG** mode to monitor your minimum descent altitude. The timer will continue to run and will display flash **0:00** and generate two pairs of beeps when the time has expired. You can visit the **DTMR** mode at any time to see how much time is remaining.

**Shortcut:** If you select **DTMR** mode without first setting in a time, you will enter **SET/Dtmr** mode automatically where you can set the desired time. However you must then start the timer at the appropriate point by selecting **DTMR** mode.

If you are using the **DTMR** mode to time a repetitive event such as a holding pattern, you can re-start the timer after it has expired to time the same activity using the previously set time interval.

#### 1.5 APP (Approach) Mode for ILS Approaches only

**APP** mode ( two CCW clicks from **TARG** mode) is used to generate an alert at Decision Altitude rounded **up** to the nearest 100 feet or more. This **DA** (Decision Altitude) alert is for use on ILS approaches only. Its purpose is to remind you that the Decision Altitude is coming up soon. The alert occurs **at the altitude entered as DA, not at a higher altitude** as when a **LEVL** alert is issued prior to reaching a target altitude. Of course, you can set in any altitude above the published DA as your own DA alert.

The **APP mode** must not be used during a non-precision approach because the DA alert only occurs once. You should always use the normal target mode for non-precision



**The AltAlert's main purpose is to draw your attention to the pressure altimeter. You must use your pressure altimeter exclusively for all altitude information in all phases of flight.**

## **1.6 FUEL Mode**

**FUEL** mode is used to view the elapsed time of the fuel timer. The fuel timer is started when it is set in SET/Fuel mode. The **FUEL** alert occurs when the elapsed time matches the time set in **SET/Fuel** mode. The **FUEL** timer will continue to count up until a new time is entered in **SET/Fuel** mode. **FUEL** mode automatically returns to **TARG** mode after a few seconds.

The **FUEL** mode may also be used as a flight time instead of a fuel timer. Simply set in a time longer than you expect to fly in **SET/Fuel** mode. The fuel timer will simply count time in hours and minutes. You may view the elapsed time in **Fuel** mode.

## **1.7 CLK Mode**

The **CLK** (Clock) mode is used to view the current time. A Military 24 hour format is used. A single click of the mode switch will bring you back to **TARG** mode. The time may be set in the **SET/Clk** mode.

## **1.8 ALT Mode**

**ALT** mode is used to view your encoder altitude *corrected* for the entered barometric pressure. This altitude is the same as the altitude that the ATC radar system computes and displays for the controller for your aircraft. It is likely that this altitude will not correspond exactly to your pressure altimeter due to normal encoder/altimeter discrepancies. If you are at the encoder transition point, you may see some flicker in your altitude. This is normal.

If you see more than a 200 foot difference between your altimeter and the altitude displayed in **ALT** mode, you should have your encoder and altimeter checked for accuracy.

If you are flying at Flight Level 180 or higher, the **ALT** mode will display your altitude in a flight level format with an **FL** in front of the altitude. Flight Level 230 shows as **F230**. These FL displays show pressure altitude referenced to 29.92".

A single click of the mode switch will return you to **TARG** mode. If you try to set a target while in **ALT** mode, nothing will happen. You must be in **TARG** mode to set a new target. However, any alert while in **ALT** mode will bring you back to **TARG** mode. If your pressure altimeter should fail, you may use the **ALT** mode as a coarse backup altimeter.

## 2.0 AUX (Auxiliary) Mode

The **AUX** mode is used to set seldom changed parameters in your AltAlert's parameter memory. These parameters may be changed temporarily (this flight only) or permanently (active when unit is powered up). The **AUX** mode is normally used to change the brightness of AltAlert's display for night flying. Since full brilliance is desired for daylight flying, the 1/2 or 1/4 setting is selected temporarily for night flight.

After selecting **AUX** mode, you use the small switch to select the desired parameter. The default parameter is **Disp** for Display Brightness. Then use the large switch to select the desired value for the selected parameter. For example, after **Disp** shows, the large switch will select **Full**, **1/2**, **or 1/4**. After selecting the desired value, you can simply wait for **TARG** mode to appear if you want to *temporarily* set the parameter. Or you can push in the small switch (mode switch) and turn it for the parameter to be *permanently* stored.

The most frequently asked question about the AltAlert is how to permanently store the parameters. After changing a parameter such as Home elevation, simply push in the small switch and turn it one click either way. This will store the parameter in a memory that will be accessed the next time the AltAlert is turned on.

The other parameters that can be changed in **AUX** mode are:

**Loud** This controls the loudness of the audio. There are seven levels plus Off. As you select different levels, you will hear them in your headphones.

**Wndw** This controls the cruise deviation window. The choices are 100 or 200 feet. 200 feet is the recommended setting. If your pressure altimeter and encoder are matched exactly, the 200 foot setting will give you a climb or dive alert at 150 feet from your target altitude. The 100 foot setting will give the alert when you are only 50 feet off altitude. Since most encoders have an error with respect to the altimeter, this is not a recommended setting.



## 1.1 Level-off Alert

The **LEVL** alert accompanied by a three step tone will alert you that you are approaching the altitude you have set in as the current target altitude. This alert can occur from 1000 to 100 feet from the target altitude in hundred foot steps. For fast climbing piston aircraft, a setting of 300 feet gives plenty of warning to level off. For turbine aircraft 800 to 1000 feet is a better setting. See section on AUX mode on how to change the LEVL alert offset to match your aircraft's climb rate. If you have an altitude-hold autopilot, press the hold button after the **LEVL** alert when you have reached your desired altitude.

Note: The **LEVL** alert tells you that your desired target altitude will soon be reached. The AltAlert does not provide any alert as the target altitude is reached. If you inadvertently go past the target altitude, you will get climb or dive alerts.

## 1.2 Climb and Dive Alerts

The **CLMB** alert will occur if you descend below the current target altitude by either 100 or 200 feet. It is accompanied by short beeps. You can set the number of beeps to 1, 3 or 10 in the **AUX** mode using the Cdbp (Cruise deviation beeps) parameter. Three beeps seems about right for most pilots.

The **DIVE** alert will occur if you climb above the current target altitude by either 100 or 200 feet. It is accompanied by short beeps. The number of beeps is the same as for the **CLMB** alert.

You may also get a **CLMB** or **DIVE** alert after you have received the **LEVL** alert, but *prior* to reaching your target. This is just a friendly reminder to continue your climb or descent toward the target. If you inadvertently continue *past* the target altitude, you will get a **CLMB** or **DIVE** alert until you get back to the target altitude. These alerts will continue about every ten seconds until you have reached the target altitude.

When you are descending for a landing and want the AltAlert to **remain quiet**, simply set in a target altitude above your current altitude. This will prevent any **LEVL** alerts and **CLMB/DIVE** alerts.

Note: If you get **CLMB** or **DIVE** alerts and you are level at the proper altitude as shown on your pressure altimeter, there are two possible causes: The barometric pressure is set















## 1.2 Leaving Special Parameter Mode

When you have finished setting these special parameters, push in the small switch and turn it either way while holding it in. This will store the parameters permanently and put you back in target mode.

