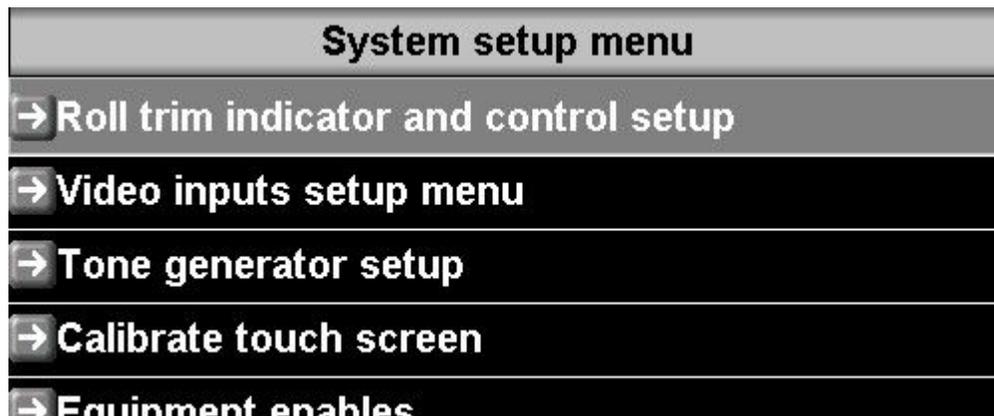


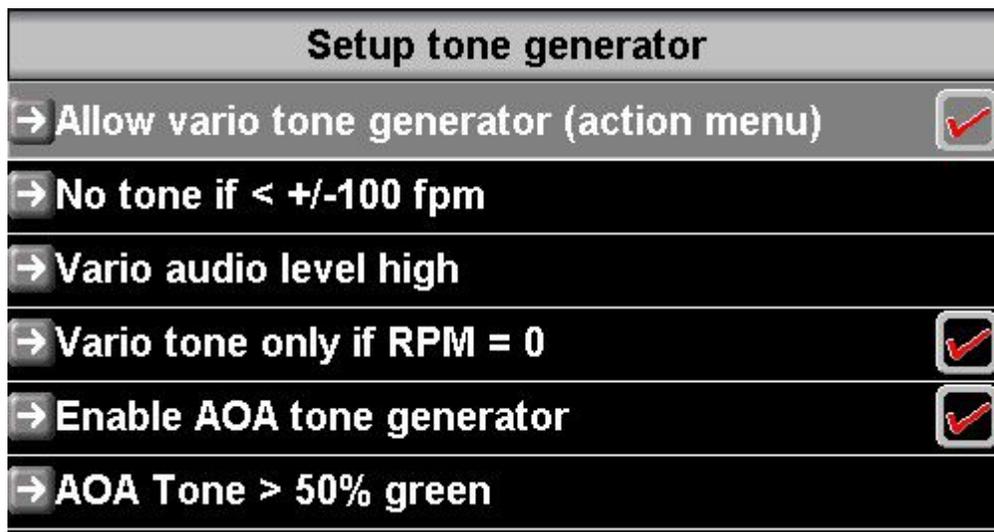
Using the tone generator on MGL EFIS systems



This guide applies to MGL EFIS systems which have firmware installed that supports a variable frequency sine wave generator. To check if your firmware supports this, find the menu “Tone generator setup” in the “System setup menu”. If you do not have this menu, ensure that you have the current firmware installed. Note: Older systems may not be able to support this feature due to hardware limitations. All MGL G3 systems support the tone generator.



Note: For a regular iEFIS (not a “Lite”), please update your iBOX firmware as part of the audio tone generator is in the iBOX (Firmware version 13 or higher). For the “Lite” no further action is needed.



The system supports two independent tone generators:

The vario tone

This produces a sequence of short tones related to the current vertical speed. Both frequency and duration of the tones is dependent on the vertical speed. The tones get higher in frequency and shorter duration as VSI increases positive (aircraft gaining altitude), conversely, they get lower in frequency and longer in duration if the aircraft is losing altitude (Glider pilots sometimes refer to this as “sad” tones).

At zero VSI the frequency of the tone is 1000Hz. It has a range of 200 to 2500 Hz.

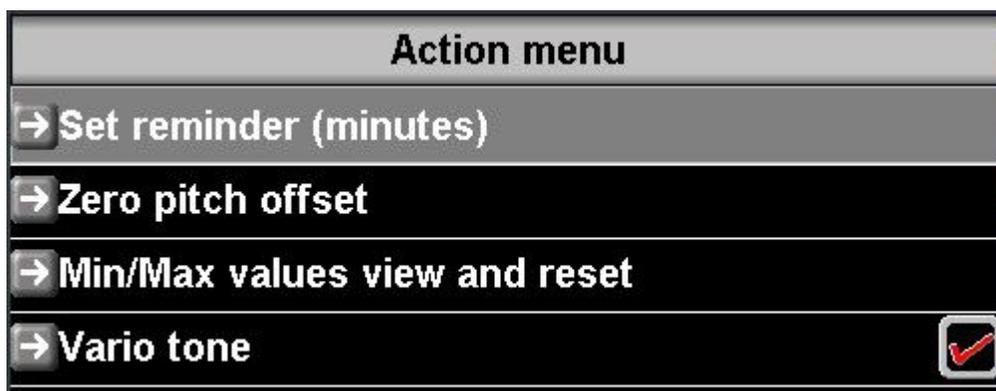
You have the following options:

- a) Generate a tone regardless of VSI
- b) Generate a tone if VSI is higher than +/-100 fpm
- c) Generate a tone if VSI is higher than +/-200 fpm

You can also disable the tone if the engine is running – this is useful for motor gliders.

You can select from 4 audio levels for the Vario tone (loudness of the tone). You may want to choose a lower audio level relative to voice annunciation or AOA tones.

The vario tone generator has a further “switch” found in the Action menu. This allows you to switch the vario function (if enabled here) on and off as you need it.



If you are designing your own EFIS screens you can further automate the vario switch. You can place a non-visual screen marker onto your screen which performs the same action as the action menu switch. You have a marker to switch the vario on or off as the pilot changes screens. This is useful for example to create a dedicated “gliding” screen (also consider adding a VSI history component to a screen like that).

If you have an iEFIS you can also use an external panel mount toggle switch to switch the Vario tone on and off. You can do this with a switch connected to an iBOX analog/digital input or to the equivalent input on an iEFIS Extender module if you have an iEFIS Lite. Select this input option in the analog and digital inputs setup menu. If selected, the switch will override the setting in the action menu (it will reflect the position of the toggle switch) and it will also override any screen markers, if used.

Note: The vario tone generator is always disabled if no flight is active. Flight detect must be active for the tone generator to work. You can use either manual or automatic flight detect.

The AOA tone

The AOA tone generator can be set to activate on particular AOA meter levels. These are roughly related to angles of attack as follows:

50% Green – about 5 degrees AOA

70% Green – about 7 degrees AOA

85% Green – about 8.5 degrees AOA

Yellow – about 10 degrees AOA

50% Yellow – about 12.5 degrees AOA

Red – about 15 degrees AOA

The actual angles to displayed angles depends mostly on the AOA calibration performed. In most cases the actual angles would be slightly less as shown here.

The AOA tone increases from 1000Hz at your set limit.

Tone duration decreases as AOA increases.

As long as you are within the green area of the AOA indicator, each tone is followed by a pause that is twice as long as the tone.

As you enter the yellow area the pause shortens to the same time as the tone making it sound more “urgent”.

As you enter the red area the tone has a fixed 500mS length with a short 100mS pause. Frequency still increases as AOA increases.

It would be advisable that the calibration flight for the AOA is performed in such a way that red is reached just before the stall break (usually in landing configuration) but still leaves a margin so corrective action can be taken by the pilot.

Note: If the AOA tone generator is enabled, the AOA alarm is automatically disabled.

Note: The AOA tone generator is always disabled if no flight is active. Flight detect must be active for the tone generator to work. You can use either manual or automatic flight detect.

Priorities

As several sources may compete for the audio output and mixing tones with voice is not desired the following priority scheme has been implemented.

Voice has the highest priority in the system. Any voice annunciation will suspend tone generation for the duration of the annunciation.

AOA tone has the next highest priority – it will suspend any tones from the Vario tone generator.

The Vario tone has the lowest priority. Any other use of the audio output will suspend the vario tone.