

# MICRO **ALTI VARIO** *plus*

multifunction altimeter and vario  
for paragliding, hang gliding and paramotor pilots



## MANUAL

**FAIRHAVEN**  
altivario.com



# Quick Guide



Switch the Micro Alti on by sliding the switch on the right side toward the top corner. The Micro Alti will cycle through the display and bleep when it is ready. Charge the Micro Alti via the USB socket if it doesn't function.

This manual will begin with a brief introduction to each function and a full description is given later in the manual. Time, altitude and other displays show examples of typical readings.

To begin exploring the Micro Alti, press each button and take a look at the menus. The displayed functions can be adjusted by pressing each button for about 2 seconds.



So, **Short** key presses are used to **select** the functions and and long key presses **affect** the functions associated with each button.

***Note** that when the altimeter is displayed it won't respond to very brief key presses, this avoids inadvertent operation when you are flying.*

Miscellaneous functions such as **Averager**, **G-Meter**, **Temperature** etc. are accessed from the **SET** button and changes to how the Micro Alti responds; **Volume**, **Thresholds**, **Units** etc. are accessed with a long initial press on the SET button. To do this you may have to leave the SET menu by pressing ALTI or TIMER, then press SET for 2 seconds. Most of the items on this menu can be adjusted with the **TIMER** and **ALTI** buttons, this is shown in the manual and on the Micro Alti as: **v** and **Λ**

**To finish, keep pressing the SET button to reach the end of the menu.**

# ALTI Button



## Short Press

Function	Display
<b>Alti 1</b>	1 3687 5Et
<b>Alti 2</b>	H 2 789
	P 1002
<b>Barometer</b>	baro  trend
<b>QNE</b> 1013.25mB (Sea level reference)	

## Long Press (After selecting **ALTI** function in the left column)

### Adjustment

**Sets alti to zero (+/- 1)**

**Adjust height:**

H is displayed. Use **V** and **Λ** press [**SET**]

**Adjust to pressure reference (QNH) :**

P is displayed. Use **V** and **Λ** press [**SET**]

**baro** flashes, then pressure is shown below vario.

**Barometer trend** (t flashes.)

Scale indicates rising and falling air pressure to predict weather trend.

Scale is 0.25mB per segment

**Reset trend** (Long press in trend mode resets to current pressure)

(To set QNE see **Detailed instructions** on page 6)

# TIMER Button



## Short Press

Function	Display
<b>Time clock</b> (example)	17:57
<b>Alarm timer</b> (example)	A 2:50™
<b>Tip!</b> Keep the up or down buttons pressed to rapidly change settings.	SEt (Flashing) AL On AL OF
<b>Stopwatch</b>	5
<b>Auto start</b>	AUTO
<b>Stopwatch Start/Pause /Continue</b>	

## Long Press *(After selecting **TIMER** function in left column)*

### Adjustment

**Set hours** Use **V** and **A** press **SET**  
**Set minutes** Use **V** and **A** press **SET**

**Set hours** Use **V** and **A** press **SET**  
**Set minutes** Use **V** and **A** press **SET**

### Press **TIMER** to start Timer

(Alarm on)

Long press on **TIMER** stops **Alarm**  
(Alarm off).

Long press on **TIMER** to activate. Stopwatch starts when altitude varies by +/- 30ft/10m.


Stop the timer manually after landing to record flight duration. *Other functions can still be used when the stopwatch is running. You can skip Auto if not required.*

Long press on **TIMER** to resets Stopwatch

# SET Button



## Short Press

Function	Display
<b>Averager</b>	Avg 30
<b>G Meter</b>	0
<b>G Meter Maximum</b>	1.25 0 2.36 <sup>MAX</sup>
<b>Temperature (deg C) (e.g.)</b>	t 28.0
<b>Maximum Lift</b>	L, Ft <sup>MAX</sup>
<b>Maximum Height</b>	3729 <sup>MAX</sup>
<b>Maximum Sink</b>	5.175 <sup>MAX</sup>
<b>Minimum Height</b>	-238
<b>Battery level</b> (Shown in segments)	 bAtt

## Long Press (After selecting **SET** function in left column)

Adjustment
Long press holds the display in <b>Averager</b> mode and <b>AL</b> is displayed.
<b>Reset</b> maximum G reading
Displays temperature in <b>Fahrenheit</b> (e.g.) <b>82F</b>
Reset Lift
Reset Max height to current altitude. 1- indicates a reading higher than can be displayed.
Reset Sink
Reset Minimum height to current altitude. 1- indicates a reading higher than can be displayed.
Displays battery <b>Voltage</b> e.g. <b>3v75</b>

# Changing Settings



## Long *initial* press on **SET**

(Not available if already using **SET** menu. Exit **SET** menu by pressing **ALTI** and return with a long key press)

Function	Display	Adjustment
<b>Averager</b>	<i>Av 30</i>	<b>V</b> and <b>A</b> adjusts averaging time in seconds.
<b>Volume</b>	<i>Vol</i>	<b>V</b> and <b>A</b> adjusts volume.
<b>Up threshold</b>	<i>UPth</i>	<b>V</b> and <b>A</b> adjusts the threshold at which up tones begin.
<b>Find threshold</b>	<i>Find</i>	<b>V</b> and <b>A</b> adjusts the threshold at which thermal finder tones begin.
<b>Down threshold</b>	<i>dnth</i>	<b>V</b> and <b>A</b> adjusts the threshold at which down tones begin.
<b>Damping factor</b>	<i>dF</i>	<b>V</b> and <b>A</b> adjusts the speed of the vario's response.
<b>Tone rate</b>	<i>PRCE</i>	<b>V</b> and <b>A</b> adjusts the spread of the tone and interrupt scales.
<b>Units</b>	<i>Unit</i>	<b>V</b> and <b>A</b> sets units: <b>1.</b> Metres <b>2.</b> Feet <b>3.</b> Metric vario, alti in feet.
<b>G-Meter</b>	<i>GSEt</i>	Hold <b>SET</b> button, place on a flat surface, press <b>SET</b> , G-meter will calibrate and continue to:
<b>Serial number</b>	<i>n</i>	(unique serial number scrolls across the screen).
<b>Restore defaults</b>	<i>DEFS</i>	Long press to restore defaults.

# Detailed Instructions



## The ALTI button

Three types of altimeter and the barometer are accessed with the **ALTI** button.

***Note:** Keys have to be pressed for one second when the altimeter is displayed which prevents inadvertent changes to the altimeter readings.*

**QNE** indicates altitude relative to the standard pressure of 1013.25mB. This is equivalent to pressure at mean sea level defined by the International Standard Atmosphere.

A **one second** press of the **ALTI** button moves the display to **ALTI 1**, this can be zeroed with a long key press and can be used as your ground or take off reference.

Press the **ALTI** button again to give **ALTI 2**. This altimeter can be set to a given height or a pressure reference (**QNH**).

Hold the **ALTI** button when alti “**2**” is showing on the left and **H** will be displayed showing height setting mode.

Use the UP and DOWN arrows **V** and **Λ** (**TIMER/ALTI** keys) to set your height to a known reference such as the height of the hill or airfield.

Press the **SET** button to store this setting and **P** is then indicated. The up and down arrows can then be used to set a pressure reference (**QNH**) if required, for example when QNH is given by an airfield. The **SET** button can be used to skip either one of these setting procedures.



The last option on the **ALTI** button is the **barometer** indicated by “**baro**” (when this option is first selected). This will indicate your local barometric pressure which will usually differ from barometric pressure in weather reports etc. which are referenced to sea level. Your altitude will cause a decrease in pressure by approx 1mB per 30 feet above sea level (This holds true at low altitudes but the rate of change reduces with increasing altitude).

With the barometer displayed, hold the **ALTI** button to reveal the **barometric trend** indication (flashing **t** in the display). This shows how local air pressure is changing over time and can give an indication of a potential change in the weather. This function will be affected if you fly or change altitude and is only provided as a guide if you are deciding whether to fly. Allow an hour or so for the trend indicator to register any change or leave it on overnight before you fly.

In **TREND** mode the segmented scale indicates in quarter millibar increments. Current pressure is indicated by a flashing segment while other segments will have registered previous pressure excursions. These indications are relative to the pressure displayed when the trend indicator was first selected and can be reset to current pressure with a long press on the **ALTI** button so you can compare the difference.

QNE can be adjusted to compensate for small changes as the altimeter's pressure sensor ages. We don't recommend that this is undertaken without the user having at least one precision reference. To change QNE, hold the **ALTI** button for 10 seconds until it gives a double bleep, change the altitude reading with the **V** and **Λ** keys, finally press **SET**, **Λ**, **SET** to store the setting.

## The SET button

The **SET** button is used to check various readings (with a short press) and change settings associated with the current display (with a long press). For example changing the temperature display from degrees Celsius to Fahrenheit. The SET button is also used to **set preferences** such as volume and thresholds, but to do this you will have to leave the SET menu (by pressing ALTI) and then press SET for 2 seconds. See “**Changing Settings**” later in the manual.

The first option on the **SET** menu is always the **Averager**. This is a useful tool to find your overall rate of climb when flying conditions create short bursts of lift and sink.

In averager mode **Av** is displayed followed by the preset averaging period, for example **Av 30**. The averaged rate of climb is displayed on the vario scale but the audio tones will still respond quickly if lift or sink is encountered.

The Micro Alti will return to the normal altimeter/vario display after 10 seconds to avoid further key presses. However if you hold the **SET** button in while the averager is displayed the display will “lock” and won’t keep returning to the normal display. In this mode **AL** is displayed but you can still return to the normal alti/vario display manually by pressing **ALTI**.

The averager can be adjusted to smooth out variations of lift and sink over a 5 to 60 second period. Press the SET button for 2 seconds to

enter settings mode and **Av** followed by the time period will appear. The Up and down buttons, **V** and **Λ** can then be used to set the required averaging period. Finish by pressing **SET** to continue to the end of the settings menu.

The average lift or sink is also displayed as a blinking segment in the normal vario mode but as this can complicate the display, it can be switched off by setting the averaging time to zero.

The **G-Meter** is the next option on the SET menu and this shows the strength of gravitational or centrifugal force acting on the pilot in any direction and normally indicates 1G at rest, displayed as **G 1\_00**

Higher “G” may be encountered during a turn or dive and the G-Meter will indicate this to 2 decimal places, for example: **G 2\_15** (i.e. just over twice the Earth’s gravitational force).

A further press of the **SET** button gives the **maximum** G-force encountered during your flight, so the example above would be indicated as **G 2\_15 MAX** This will be permanently stored and will only be updated if higher G-force is registered. This reading can be reset back to 1.00 G with a long key press.

The forth menu option is **temperature** of the vario in degrees Celsius which equates to local air temperature if the vario is not heated by sunlight or body temperature etc. A long press gives temperature in Fahrenheit.

The next options on the SET button gives **maximum and minimum readings** relating to your flight. All readings are stored permanently and

can be individually reset with a long key press. So the Micro Alti can store your personal height record although you will probably want to reset max and min lift. Minimum height can be used to check your lowest point below take-off, to a maximum of -999 feet or -999 metres. Maximum altitude is 19,999 feet and over 6000 metres.

**Maximum LIFT** is shown first followed by **maximum altitude**, then **max sink** followed by **minimum altitude**.

**Battery level** is the final display on this button. A long key press gives the actual battery voltage. The upper segments of the display will only indicate while charging, after which a full charge is indicated with around 75% of the segments showing. i.e. around 4 volts. **“batt”** will flash whenever the battery voltage drops to level “2” on the battery display. Recharge the vario otherwise the time clock may need to be set again if required, and to keep the battery in good condition. No other settings are affected if the battery is allowed to run down completely and the battery is protected from over-discharge.

***Tip\*** The averager always appears first on the **SET** button menu. However if, for example you are interested in regularly checking the temperature, press the **SET** button until temperature is displayed and then press the the **ALTI** button to return to the usual alti/vario display. Temperature will now always appear straight after the averager when the **SET** button is next used, so it will always be easy to find!*

## Changing settings

A long initial press on the **SET** button allows the user to make changes according to the user's preferences. If you are already using functions on the **SET** button you will first have to leave this mode by pressing **ALTI** before returning with a long key press.

**Option 1. Volume (Vol).** The **v** and **Λ** buttons allow the volume to be set as required. This does not affect the headset volume which you can set internally according to your headset type. See *P14*.

**Option 2. UP threshold (Upth).** This sets the climb rate at which the vario begins to beep. The threshold is indicated on the vario's numerical display in metres/sec plus 0.1m/s for each segment visible in the vario display.

**Option 3. Thermal Finder (Find).** The Thermal Finder is used to indicate rising air, even when the glider itself is not ascending! Typically this would be set to the sink rate of the glider, for example: -400fpm or -2 metres/second. Then, if rising air reduces the rate of sink above this point the Thermal Finder will start to chirp and speeds up as zero sink is approached. The Thermal Finder can be switched off if it is set to zero.

**Option 4. Down Threshold (dnth).** A continuous tone Indicates that the glider is descending. You may wish to set the down threshold to respond only when you are descending rapidly as a warning that you are in sinking air.

**Option 5. Damping Factor (dF).** This controls how quickly the vario's audio and visual indications respond to changes in height or pressure.

A short response will cause the vario to respond quickly but it may respond too readily to small changes such as when wind is buffeting the vario. You may prefer a slower response which will average out small and rapid variations. Once you are flying the Micro Alti will tend to silence until lift is detected.

**Option 6. Tone Rate (*PACE*).** This sets the scale of the vario's tones. So if you are generally searching for small amounts of lift such as when ridge-soaring, a high setting will make the vario more responsive to small altitude changes. If on the other hand you are used to flying at high climb rates, such as when thermalling, a lower setting will be more useful as the audio tones will vary more gradually over a larger range.

**Option 7. Units (*Unit*).** Allows metric or imperial units to be selected (options 1 and 2) or metric vario and imperial altitude (option 3). Metric units are altitude in metres and lift/sink in metres per second. Imperial units are altitude in feet and lift/sink in feet (x100) per minute.

**Option 8. (*GSet*).** Provides calibration of the G-Meter which may need to be set up initially or if the G-Meter does not show approximately 1G at rest. To do this, press and hold the **SET** button and "Flat" will appear in the display. Place the Micro Alti on a flat, stationary surface and press **SET**. The G-Meter will then calibrate itself and will be ready for use.

**Option 9. Serial Number.** The Micro Alti's unique serial number, scrolls across the screen in pairs of digits, (you may wish to take a note of this).

**Option 10. Restore defaults (*defs*).** A long key press will restore the Micro Alti to factory settings.

## The **TIMER** button

The **TIMER** button gives access to the time clock, alarm timer and stopwatch. An initial press of the **TIMER** button shows current **time** and will automatically revert to its previous mode (current altimeter, temperature etc.) without further key presses after 2 seconds. A long key press when the clock is displayed allows you to set the clock. First hours will flash and can be adjusted with the **V** and **Λ** keys, use the **SET** button to **set hours** and then **set minutes** in the same way.

A second press gives the **Alarm timer** which can be used as an alarm clock, or if you are using your Micro Alti with a paramotor and headset, the alarm timer can be used to time your fuel usage in cross country flying, providing you are familiar with your paramotor's fuel usage and allow for sufficient reserve. The alarm timer will permanently store the last used time period, so the same duration can be used again without having to set it.

Alarm mode is indicated with **Alar** and an **A** in the vario display. A long key press on the **TIMER** button allows the hours and minutes to be set in the same way as the clock. **SEt** will flash and a final key press on **SET** begins the alarm countdown and **AL** on is displayed. A long key press on **SET** when in the alarm display mode will cancel the alarm and **AL oF** is displayed. Switching off the Micro Alti will also cancel the alarm but the duration will have been stored ready for next time.

The third press on the **TIMER** key gives the **stopwatch** display. **Auto** (flight timer) can be initiated with a long key press and **SEt** will be

displayed. The stopwatch will then start as soon as height changes by +/- 30 feet/10M. The stopwatch can also be **started**, **paused** and **restarted** with further key presses and can be **zeroed** with a long press on the **TIMER** button. **TIM** flashes when the stopwatch is running.

## Mode Switch

Next to the power switch is the **Mode Switch**. This will silence the vario in the middle position (excluding alarms), sliding the switch across to the position nearest the power switch will put the Micro Alti into **Low Power mode**. This will consume less power while displaying only the clock or altitude and can be useful to extend the battery life when hiking or when the displayed battery level is low. Slide the switch to the position furthest away from the power switch to return to normal operation.

## Headphone/external bleeper socket

As well as having an internal audio sounder or “bleeper” the Alti Vario has a socket for an external bleeper that can be worn under the helmet or inside a headset cup. This is particularly useful to paramotor fliers who make use of thermals to extend their flights. For helmets that are open around the ears, the bleeper can be mounted in the padding of the helmet.

Link Position		Volume
<b>1</b>	<b>Near side</b>	<b>Low</b>
<b>2</b>	<b>Middle</b>	<b>Medium</b>
<b>3</b>	<b>Near USB</b>	<b>High</b>



Any type of stereo earbuds can be used too, or the Alti Vario can be connected to an intercom for tandem or sailplane gliding, to your paramotor headset auxiliary input, or as an aid if you have impaired hearing.

You can set the Alti Vario to match your headset type and volume preference with a moveable link inside the case, situated behind the power switch. Use the lower settings for headphones and the higher settings for an external piezo bleeper. Headset volume is independent of the volume settings for the internal bleeper.

**Note:** *When using a piezo extension bleeper, use a stereo jack plug and leave the jack's ring unconnected. (Fairhaven can supply this part). With an intercom or piezo earpiece, use a mono jack, this will connect a filter to give a smoother sound.*

**Reassembly:** *Take care when replacing the 4 screws. Engage the threads by turning the screws slightly anti-clockwise before tightening. Do not over tighten.*

## Audio tones

The lift tone is a “bleep-bleep” that increases in rate and tone frequency to indicate lift. The thermal finder tone is a short chirp that increases in frequency as the glider's sink rate decreases and the sink tone is continuous tone that starts high and reduces in frequency indicating sinking air. See “Changing Settings” to customise the vario's tone response.

## Mounting

The Alti Vario can be mounted on your wrist, over a coat sleeve or on your risers, or it can be panel-mounted in sailplane gliders etc. We supply a spare strap that can be cut down as required and 2 adhesive Velcro pads that will stick to most surfaces and can be sewn onto clothing. The strap retainer can be fixed horizontally or vertically or removed if the Micro Alti is mounted onto a flat surface. Additionally you may wish to tie a loop of cord to the strap retainer and pass the cord around your wrist or riser for extra security. Ensure that this will not entangle with lines or controls.

## Battery

The battery is a 100mA re-chargeable Lithium Polymer type that is automatically re-charged when the Micro Alti is plugged in to any USB 5 volt supply, such as a computer, phone charger, satnav lead or solar charger and we have included a neat little charger that plugs into your car's cigarette lighter socket.

The Micro Alti lights up when charging and a full charge of one hour will supply the Alti Vario for up to 5 days of typical use, but even a short charge is sufficient for most flights. The charger will switch off automatically and the light will extinguish at the end of the charge period.

**Note:** *This product is designed as an aid in the sport of amateur flying under visual flight rules. It is not guaranteed for use in obstacle or aircraft avoidance.*

*The specification may change from time to time and firmware upgrades can be provided if required.*



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