USB Socket

Headphone Socket

Humidity Sensor

FAIRHAVEN

14 × 100 Ft

3729

Piezo Bleeper

MENU   ALTI

Power Button
(Press and Hold)

FAIRHAVEN Micro Alti 2

The Micro Alti 2 is designed as an aid for paraglider, paramotor and hang-glider pilots, providing essential information to enhance your flying experience!

Our latest models have been redesigned using today's sensors and electronics, providing ultimate sensitivity and battery life in a wristwatch size package. The option of Bluetooth to connect to phone apps makes use of the Micro Alti's rapid and accurate sensor data, to provide a greater level of information available to the user.

Getting Started

Switch on by holding the middle button pressed for a second. To switch off, go to OFF in any menu and press the middle button again for a second, or just keep the middle button pressed in any mode and it will shut down.

Press any button to move down its menu and use "Exit" to leave any sub menus.

The separate quick guide sheet gives a useful overview of the menus.

Charge the Micro Alti via the USB socket if it doesn't function.

The time clock and timers are on the left button, altimeter and barometer references are on the right and various other functions are accessed in the middle menu. After displaying a function, for example temperature or altimeter type, that function will be remembered when you return to the same button.

After checking the time, it will automatically return to the previous function without having to press it again, and after selecting the averager it will return to the current altimeter after a few seconds. If you press either of these functions a second time it will stay on that function, the vario will then be displayed above the time and altitude below the averager scale.

The middle button gives access to 3 sub menus when SUB is displayed:

The left submenu shows maximum readings for altitude, humidity etc.

The right sub menu allows you to adjust regular user settings.

The middle sub menu is accessible with a long press on SUB and gives access to less used settings, tests, serial number etc. Remember to use EXIT to leave any of the sub menus.

The Micro Alti 2 is shipped with default settings so it's ready to fly, but you can customise your settings in the right SUB menu though if it's not quite right for you.

The ALTI button

Three types of altimeter and barometers are accessed with the ALTI button. A quick press shows the altimeter or barometer name before displaying the reading, a further press while the name is displayed moves to the next.

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.

QNH1 and **QNH2** can be set to the height of the hill or airfield, or a pressure reference.

After selecting QNH, hold the ALTI button to enter Height adjustment mode (H) then use left and right buttons followed by a press on the middle button to store the displayed height, or you can skip to Pressure setting mode (P). This is adjusted in the same way and is usually set to the pressure given by the local airfield.

ALT1 and ALT2, can be zeroed with a long press and can be used as your take-off reference. ALTI 1 measures altitude in 10cm steps (or 4 inches) reverting to 100cm steps above 1999.9

The next option on the ALTI button is **BARO**. This will indicate your local barometric pressure which will usually differ from barometric pressure in weather reports which are referenced to sea level. Increasing altitude will cause a decrease in pressure by approx 1mB per 30 feet above sea level, decreasing at higher altitudes.

This is followed by **PRESSURE CHANGE** which records how local air pressure changes over time and can give an indication of a potential trend in the weather, for example when a low pressure system is approaching. Allow an hour or so for the trend indicator to register any change or leave it on overnight before you fly.

In PRESSURE CHANGE 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. The display segments can be reset and the current pressure will be displayed after a long press on the ALTI button.

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.

The TIMER button
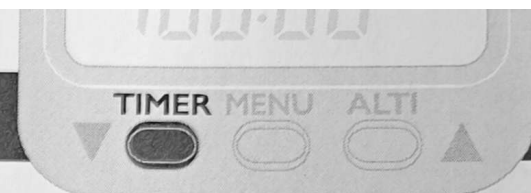
The TIMER button gives access to the **time clock, alarm timer and stopwatch.**

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. Press again to keep the clock displayed along with the vario.

Clock setting: A long key press allows you to set the clock. First hours will flash and can be adjusted with the left and right keys, use the middle button to set hours and then set minutes in the same way.

Next is the **ALARM** timer which can be used to set a reminder or time events. If you are using your Micro Alti with a paramotor headset, the alarm timer can be used as a prompt when your fuel tank is likely to be low or half full, providing you first familiarise yourself with your fuel consumption. The alarm timer will permanently store the setting, so the same duration can be used again.

Alarm setting: A long key press on the TIMER button allows hours to be set using the left and right buttons followed by pressing the middle button. Minutes can then be set in the same way. Press the middle button again to begin the countdown and ALARM ON will be displayed before returning to the altimeter.

When the alarm sounds, press the middle button to silence it. You can cancel the alarm at any time by returning to ALARM and holding the left button, this will be confirmed with ALARM OFF. Switching off the Micro Alti will also cancel the alarm.

The last option on the TIMER button is the **STOPWATCH**.

STOPWATCH AUTO START (flight timer) can be initiated with a long key press on the left button and READY will be displayed. The stopwatch will then start as soon as height changes by +/- 30 feet or 10 metres.

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. Press any other key to exit.

The MENU Button
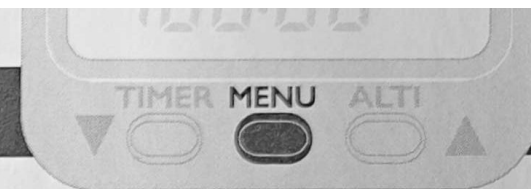
The middle button labelled MENU (SET on earlier models) provides access to various other functions.

The first item is the **averager**. This is a useful tool to find your overall rate of climb when flying conditions create short bursts of lift and sink.

The averager is selected on the middle button along with the averaging time, e.g. AV 20 (20 second averaging). It will return to the current altimeter after a few seconds but a further press keeps it in averager mode along with the altimeter reading. The averager is shown as a black band of petals and the normal vario rate is also shown as a single flashing petal in this mode. The audio tones will still respond quickly if lift or sink is encountered.

The **averager** can be adjusted to smooth out variations of lift and sink over a 1 to 60 second period and can be set with a long press on the middle button or in the right SUB menu, which is explained further down the manual.

The **vario** is displayed next (shown with a V) and has a numerical readout of 0.1 metres per second in this mode and a resolution of up to 10mm per second on the petal display. The sensitivity of the petal display can be set with a long press or in the right SUB menu.

Battery shows the actual battery voltage. The upper segments of the display will only indicate while charging, after which a full charge is indicated with around 80% of the segments showing, which is around 4 volts. "BAtt" will flash whenever the battery voltage drops to level "2" on the battery display. For best battery life, recharge if it becomes empty. The time clock has a separate back-up battery and is recharged along with the main battery.

The **G-Meter** is the next option on the middle menu and this shows the strength of gravitational or centrifugal force acting on the pilot and normally indicates approximately 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). The **maximum G-force** encountered during your flight can be checked after a long press and is also shown the left sub menu. This will be permanently stored and will only be updated if higher G-force is registered. This reading can be reset to 1G with a long key press. The G-Meter can be recalibrated if necessary, in the middle sub menu.

Next is **temperature** 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.

Humidity % is indicated with H and can be a useful indication of air saturation as you approach cloud formations. A long press will indicate the maximum humidity since it was last reset. A further long press will display the current humidity again after sampling the atmosphere for a few seconds.

FM RADIO

This option is included as many people use devices to listen to music in flight and the Micro Alti is a convenient choice as the vario tones are blended with the radio. While we don't encourage activity that might distract from the task of flying, listening to music is generally allowed if done with due caution and does not divert your attention; for example on cross country flights, and away from obstacles or groups of other paragliders. You may consider using a single 'over the ear' headphone so that you can still listen out for other aircraft. While you are on the ground, you may want to catch a weather forecast, keep up with the sport or pass the time waiting for the perfect opportunity to fly!

Operating the radio

Plug an earpiece or headphones into the socket on the top of the Micro Alti.

The radio is switched on with a long press on the FM RADIO option. Left and right buttons change the radio stations stored in memories 0-9. (Several frequencies are already stored for testing, so it should find a station straight away). A further press on the middle button allows the radio to be manually tuned using the left and right buttons. A long press on the middle button allows the frequency to be stored to a memory which can be selected with left and right buttons and a final press on the middle button.

Next on the radio menu is the volume control which is operated with the left and right buttons, followed by the MONO/STEREO control, then

EXIT and OFF. (EXIT will leave the radio on after pressing the left or right buttons, OFF will exit with the radio switched off).

Storing stations: A long press on the middle button in memory mode will cause it to begin scanning and the radio will stop when it finds a station. You can press again to continue scanning or use the left and right buttons to chose a memory number, then press the middle button to store the station. A long press on left or right will exit scanning mode without storing a station.

The vario tones are sent to the headphone socket along with the radio, so the volume of the radio should be adjusted to give a suitable blend.

Note: If FM is indicated on the display the radio will be switched on and consuming power!

Bluetooth option

If your Micro Alti is equipped with Bluetooth, the Bluetooth option will appear on the middle menu button after FM Radio. After pairing with your app, it will connect every time you switch on without having to do anything else!

First install your app, we recommend XCTrack, although it should work with most Android and Apple apps. Swipe down on the XCTrack screen and choose Preferences, scroll down to Connections & Sensors, chose External sensors, Bluetooth sensor, OK.

Scroll down to find 'Micro Alti BLE' which should appear shortly along with its MAC address, and select it from the list. Use the back button on the app to go to the main screen and 'Bluetooth Connected' should soon appear. Enjoy your flight!

Note: Ensure that your Micro Alti is fully charged before use and it should last for an average day's flying.

If you are using audio tones on the app, switch off the Micro Alti's tones to save power it will sound less confusing! Keep the FM Radio switched off to save power or you could use an external USB battery if required, in a flight deck etc.

When Bluetooth is switched on, it will give short flashes on the blue LED. If the Micro Alti cannot find the device it is paired with, it will switch off Bluetooth after 10 Minutes to save power and stop transmitting. You can switch Bluetooth back on by using the middle button to go to the Bluetooth menu. Use a long press on Bluetooth to enter the menu and after a right key press and it will start counting down again from 600 seconds.

If you don't want Bluetooth on each time the Micro Alti is switched on, you can switch off 'Bluetooth On Power Up'.

The second option on the Bluetooth Menu is 'MODE'. BLE (Bluetooth Low Energy) is the usual mode and is compatible with many of the current apps and phones. Left and right buttons can be used to select ULTRA LOW (BLE), which keeps Bluetooth power to a minimum and is ideal to use while flying, or Bluetooth Classic which is the original Bluetooth standard and may be needed with certain older apps or

phones and will use a little more power. To use Bluetooth classic you will have to first pair the Micro Alti with your phone in your phone's settings and 'Pair New Device'.

If you need to know the Bluetooth MAC address, press the middle button to go to ADDRESS. The full address will scroll past but you should only need to remember the last few digits that it ends on to distinguish it from any other device.

The final Bluetooth menu option is FIRMWARE, which shows the Bluetooth firmware revision installed, which should be Version 1238 or later.

In XCSoar you can add a barometric altitude widget using the Customise icon to see the altitude readings sent from the Micro Alti.

If you have problems connecting your Micro Alti, make sure that your phone and Micro Alti are not connected to any other device, ensure that Bluetooth on the Micro Alti is still switched on. (Turning Bluetooth off and back on, on the Micro Alti and phone may also help). Wait while your phone/tablet scans for Bluetooth devices, it can take about a minute to discover a new device. Once paired, it should work every time!

You can send vario tones etc from your app to a Bluetooth headset or earpiece while it is still connected to your Micro Alti, if your phone/tablet allows for this, but we'd recommend disconnecting other devices when you first try to connect your Micro Alti.

Sub Menus

Press the **middle button** to go to SUB MENUS, then **left and right buttons** to access the two main sub menus, continue down the menus with the middle button. The middle sub menu is explained later in the manual.

Left Sub Menu

The left Sub Menu shows **maximum and minimum readings** relating to your flight. All readings are stored permanently and can be individually reset with a long key press on the middle button. Vario and G-Meter readings are visually represented on the petal display starting from the left with a maximum vario value of 19.

Maximum lift is followed by **maximum altitude**, then **maximum sink**, followed by **minimum altitude**. High and low altitude is indicated with H and L. This is followed by maximum and minimum **temperature** then maximum **humidity** (H %) and maximum **G force**. **EXIT** followed by left or right buttons returns to the clock or altimeter displays.

Right Sub Menu

BEEP SOUND - Allows the sound to be turned off or on by selecting 'n' or 'Y' with the left and right buttons. Selecting 'A' allows the tones to turn on automatically if barometric pressure changes by more than 1mB. This will silence the vario until you begin flying.

The next option affects the configuration of the headphone socket:

In is the normal setting when the **internal** piezo sounder is used.

P sets the output to drive an **external** piezo sounder which can be added inside a helmet or headset.

H will reduce the internal piezo sound and conserve power if a **headset** is plugged in.

AVERAGER SETTING - Allows the averaging display to be set between 1- 60 seconds using the left and right buttons.

SENSITIVITY - Sets the sensitivity of the vario scale. When full, the secondary scale continues by removing segments from the centre of the display as the climb/descent rate increases.

Setting	Petal sensitivity	Full scale	Secondary scale	
10	5 mm/s	50 mm/s	0.1 m/s	DEMO setting
9	10 mm/s	0.1 m/s	0.2 m/s	^ More sensitive
8	20 mm/s	0.2 m/s	0.4 m/s	
7	50 mm/s	0.5 m/s	1 m/s	DEFS (Flying defaults)
6	0.1 m/s	1 m/s	2 m/s	
5	0.2 m/s	2 m/s	4 m/s	Thermal flying
4	0.5 m/s	5 m/s	10 m/s	Parachuting
3	1 m/s	10 m/s	20 m/s	General Aviation
2	2 m/s	20 m/s	40 m/s	v Less sensitive
1	4 m/s	40 m/s	80 m/s	Free fall

VOLUME - Sets the volume of the bleeper in 20 steps. Use the left and right buttons to set the level as required. This does not affect the headset volume. Lower volume levels will give slightly longer battery life.

UP Threshold (UP th) - This sets the climb rate at which the vario begins to bleep. The threshold can be adjusted with the left and right buttons to prevent excessive triggering.

DOWN Threshold (DN th) - A continuous tone Indicates that the glider is descending. You may wish to set the down threshold to only respond when you are descending rapidly, as a warning that you are in rapidly sinking air.

WEAK LIFT FINDER - The "Weak Lift" or "Thermal Finder" is used to indicate rising air even when the glider itself is not ascending! This would usually be set to the sink rate of the glider, then if rising air reduces the rate of sink above this point, the Weak Lift Finder will start to chirp and speeds up as level flight is approached. The default threshold is set to 1100 mm/second, which is typical for modern paragliders. Left and right buttons adjust the threshold and the Weak Lift Finder tones can be switched off or back on with a long press on the middle button, indicated by Y or n.

VARIO DAMPING - This controls how quickly the vario's audio and visual indications respond to changes in height. 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.

PACE of tones - 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 higher 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.

Unit - Allows metric or imperial units to be selected.

1. Metric altimeter and vario in metres per second.

2. Altitude in feet and vario in feet (x100) per minute.

3. Altitude in feet and vario in metres per second.

4. Imperial altimeter and vario, barometer and QNH pressure setting in inches of mercury.

5. Metric altimeter and vario, barometer and QNH pressure setting in millimetres of mercury.

TONE OPTIONS - Use left and right buttons to select the options below.

1. VARIO AUDIO - The audio tone system indicates rate of climb and descent.

2. G-METER AUDIO – Provides a range of tones (similar to the vario) to indicate G force, providing audible feedback in acrobatics and training.

3. INSTANT VARIO – Combines information from the G-sensor and barometric sensor to provide an immediate audio lift response.

Middle Sub Menu

The middle sub menu is accessible with a long press on SUB and gives access to less-used settings, tests, serial number etc. Short presses on the middle button cycle through the options below, use left and right buttons to change settings. A long press on the middle button will go back up the menu.

DEMO - Sets the Micro Alti to be highly responsive to demonstrate its operation.

Lift tone=3cm/second, Lift finder threshold=1.1m/s, sink threshold=80cm/s.

DEFS - Loads typical flying defaults: Lift tone=10cm/second, Lift finder threshold=1.1m/s, sink threshold=2m/s.

SHUT DOWN TIMER – Automatically shuts off the Micro Alti when there is no activity, to save the battery. The timer can be set from 1 minute to 6 hours. If any buttons are pressed or the pressure changes by more than 1mB, the timer will reset and the Micro Alti will stay awake.

When the Micro Alti is about to shut down, it will bleep and show "SHUTTING DOWN" on the screen.

The countdown timer can be disabled if set to OFF. It will also be disabled when in PRESSURE CHANGE mode, so that the pressure trend can be monitored over a long period.

LED on - Switches the blue Lift LED on or off. (Off will slightly prolong battery life).

USB on/off - Enables the USB port for communication with other devices.

BLUETOOTH FIRMWARE UPDATE - used to load or update the Bluetooth firmware.

DATA FORMAT - Select NMEA or hexadecimal data formats with right or left buttons.

CHG.H/CHG.L - Changes from high to low battery charging to extend battery lifetime.

EXIT - Use left or right buttons to exit, or exit further down the menu.

PIZO CHECK - Bleeps to check the piezo bleeper.

LCD CHECK - Turns all LCD segments on.

CONTRAST - Changes the contrast of the LCD.

G th - Provides a threshold to prevent the G-Meter from randomly triggering the tone system.

G CAL - 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 the left button. The G-Meter will then calibrate itself and will be ready for use. If the right button is pressed, factory defaults will be restored.

CLOCK ADJUST - Allows adjustment if the clock is running fast or slow.

QNE Adjust - Allows the QNE reading to be adjusted to compensate for small changes in the pressure sensor. We don't recommend that this is undertaken without having a precision reference for comparison. This is also accessed with a 10 second press on QNE in the ALTI menu.

BARO Adjust - Allows the Barometric pressure reading to be adjusted to a known reference, taking into account your height above sea level. Note that QNE and Barometric pressure will both change when adjusted. QNE will always be zero when barometric pressure equals 1013.25mB.

FW VERSION - Shows the firmware version. Fairhaven will occasionality provide updates to improve features and operation of the Micro Alti 2.

SN (serial number) - Displays the Micro Alti's unique serial number. (You may wish to take a note of this).

DEBUG mode - Sends live data variables to the USB port which can be viewed with a terminal program for fault analysis.

ERROR CODE - Shows last error logged by the processor for debugging. Usually 2083 (power off).

EXIT - Use left or right buttons to exit.

Headphone/external bleeper socket

As well as having an internal audio sounder or "bleeper" the Micro Alti's headphone socket can connect to an **external piezo 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 extra piezo bleeper can still be heard when mounted near to the ear, in the padding of the helmet.

Any type of stereo earbuds can be used too, or the Micro Alti can be connected to an intercom for tandem or sailplane gliding, to your paramotor headset auxiliary input, or with an earpiece if you have impaired hearing. You can set the Micro Alti to suit a headset or piezo bleeper in the settings sub menu. The volume of the vario tones in the headset is independent of the volume settings for the internal bleeper, which can be turned off if not required.

Note: When using a piezo extension bleeper, use a stereo jack plug and leave the jack's ring unconnected. (Fairhaven can supply this part).

Audio tones

The **lift tone** is a "bleep-bleep" that increases in rate and pitch as rate of climb increases.

The **thermal finder tone** is a short chirp that increases in frequency above the glider's sink rate and the sink tone is continuous tone that starts high and reduces in frequency indicating sinking air. Use the Right Sub Menu to customise the vario's tone response.

Mounting

The Micro Alti 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 can supply a velcro strap that can be cut down as required and adhesive Velcro pads that will stick to most surfaces and can be sewn onto clothing. Additionally we supply a lanyard which should be fastened through the strap retainer on the rear of the Micro Alti and slipped around your wrist or riser for extra security. Ensure that this will not entangle with lines or controls.

The strap retainer on the back of the Micro Alti can be fixed horizontally or vertically if fitted to your risers, or removed if the Micro Alti is mounted onto a flat surface. Take care when replacing the 4 screws. Engage the threads by turning the screws slightly anti-clockwise before tightening. Do not over tighten.

Battery

The battery is a 100mA rechargeable type that can give up to 3 days of continuous use and is automatically recharged when the Micro Alti is plugged in to any USB 5 volt supply, such as a computer, phone charger, sat-nav lead or solar charger and we have included a charger that plugs into your car's cigarette lighter socket.

Charging is indicated with a red LED and a charge of less than and hour can be sufficient for a day's use. The charger will switch off and the light will extinguish when fully charged. If the FM radio or Bluetooth is in use, battery life will be around 8 hours maximum.

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.