Electronics Albatross Android Device Based Application Instructions

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Introduction

The “Albatross” is Android device based application which is used together with Snipe / Finch / T3000 unit to deliver a pilot the best vario – navigation system. With the Albatross, pilot will see all relevant information needed during the flight on customized nav-boxes. All graphic design was set in such way to deliver all information as intuitive as possible to reduce pressure on the pilot. Communication is done via USB cable on high speed baud-rates delivering high refresh data to the pilot. It works on majority of Android devices versioned from Android v4.1.0 forward. Recommended are devices with Android v8.x and later as they have more resources to process data and redraw navigation screen.

Key features of the Albatross

- Intuitive graphic design
- Customized nav-boxes
- Customized colors
- Fast refresh rate (up to 20Hz)
- Easy to use

Using the Albatross application

Main menu

First menu after power up sequence can be seen on picture below:

Pressing “FLIGHT” button will offer the pilot a before flight selection / setting page where specific parameters are selected and set. More about that is written in “Flight page chapter”.

By selecting “TASK” button, pilot can create a new task or edit a task which is already in database. More about that is written in “Task menu chapter”.

Selecting “LOGBOOK” button will show history of all recorded flights in past which are stored on internal flash disk with its statistic data.

Selecting “SETTINGS” button allows user to change application and operation settings

Selecting “ABOUT” button will show basic info of version and list of registered devices.

Flight page

By selecting “FLIGHT” button from main menu, user will get a preflight page where he can select and set specific parameters.

Plane: clicking on this will give user a list of all planes in his database. It is up to the user to create this database.

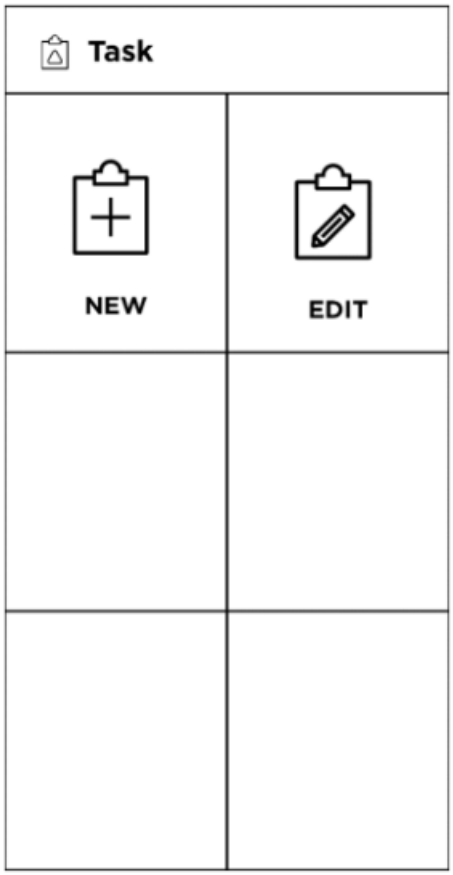
Task: clicking on this will give user a chance to select a task which he wishes to fly. He will get a list off all tasks detected inside Albatross/Task folder. The user must create the tasks in the Task folder

Ballast: user can set how much ballast he added to the plane. This is needed for speed to fly calculations

Gate time: This feature has an on/off option on the right. If off is selected then on main flight page upper left time will show UTC time. When gate time option is enabled then user must set gate opening time and application will count down time before gate will be opened in format “W: mm:ss”. After gate time is opened, format “G: mm:ss” will countdown time before gate is closed. After gate is closed user will see “CLOSED” label.

Pressing Fly button will start navigation page using the selected plane and task.

Task page



In task menu user can choose if he wishes to create a new task or edit already created task.

All task files which Albatross is able to load or edit have to be saved in *.rct file name and stored in the Android device internal memory inside Albatross/Task folder!

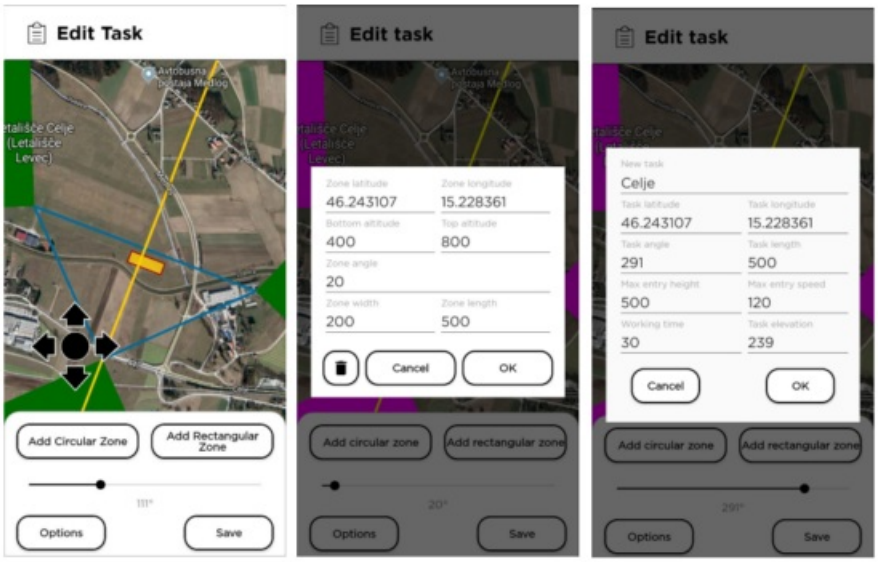
Any new created task will also be stored in the same folder. File name will be the name of task which user will set under task options.

New / Edit task

By choosing this option, user is able to create a new task on the device or edit an existing task from task list.

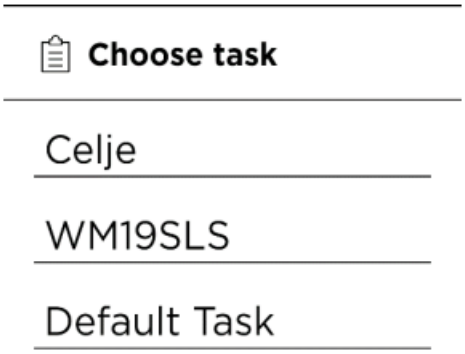
1. Select start position: To zoom in use swipe with two fingers or double tap on the location to be zoomed in. Once start location is selected make a long press on it. This will set a task with starting point on the selected point. To fine set the exact position user should use jogger arrows (up, down, left right)
2. Set task orientation: With slider on bottom of page, user can set orientation of the task to correctly position it to the map.
3. Set task parameters: By pressing Option button, user has access to set other task parameters. Set the name of the task, length, start altitude, working time and base elevation (elevation of ground where task will be flown (above sea level).
4. Add safety zones: User can add circular or rectangular zone with a press on a specific button. To move zone to right location it hast to be selected for edit first. To select it, use middle jogger button. With every press on it user is able to switch between all objects on map at the time (task and zones). The selected object is colored in yellow color! Direction slider and Options menu will then change active object properties (task or zone). To delete safety zone go under options and press “trash can“ button.

5. Save the task: For task to be saved to Albatross/Task folder user must press SAVE button! After that it will be listed under load task menu. If back option is used (Android back button), task will not be saved.



Rectangular zone is selected | Rectangular zone options | Task options

Edit task



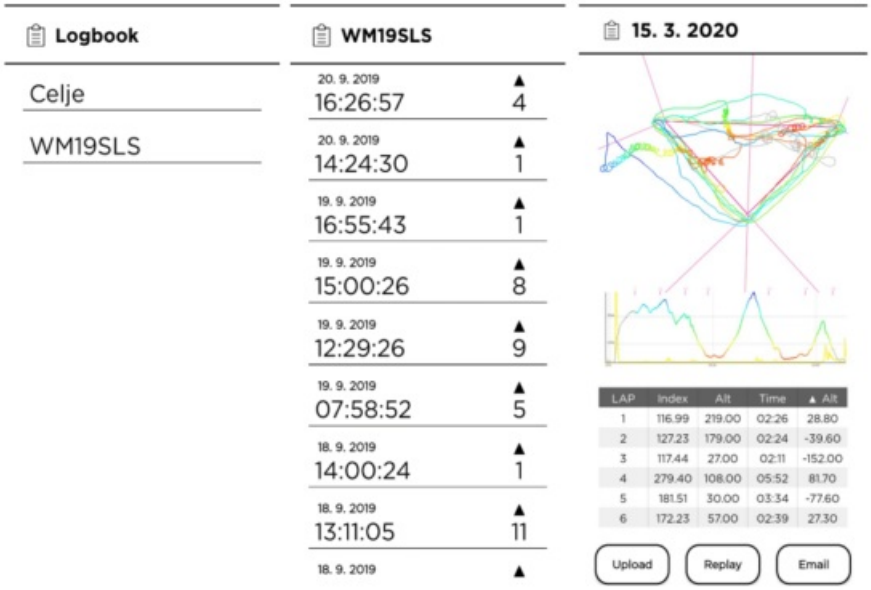
Edit task option will first list all task found inside Albatross/Task folder. By selecting any task from the list, user will be able to edit it. If name of the task is changed under task options, it will be saved to different task file, else old / current task file will be overwritten. Please refer to “New task section” how to edit task once selected.

Logbook page

Pressing on Logbook page will show a list of tasks that have been flown.

Clicking on a task name user will get a list of all flights sorted from newest to the oldest. In title there is a date at which flight was flown, bellow is a task starting time and on right a number of triangles flown.

Clicking on a specific flight more detailed statistic about the flight will be shown. At that time user can replay the flight, upload it to soaring league web site or send it to his email address. Picture of the flight will be shown only after uplaoding the flight to GPS triangle League web page with Upload button!



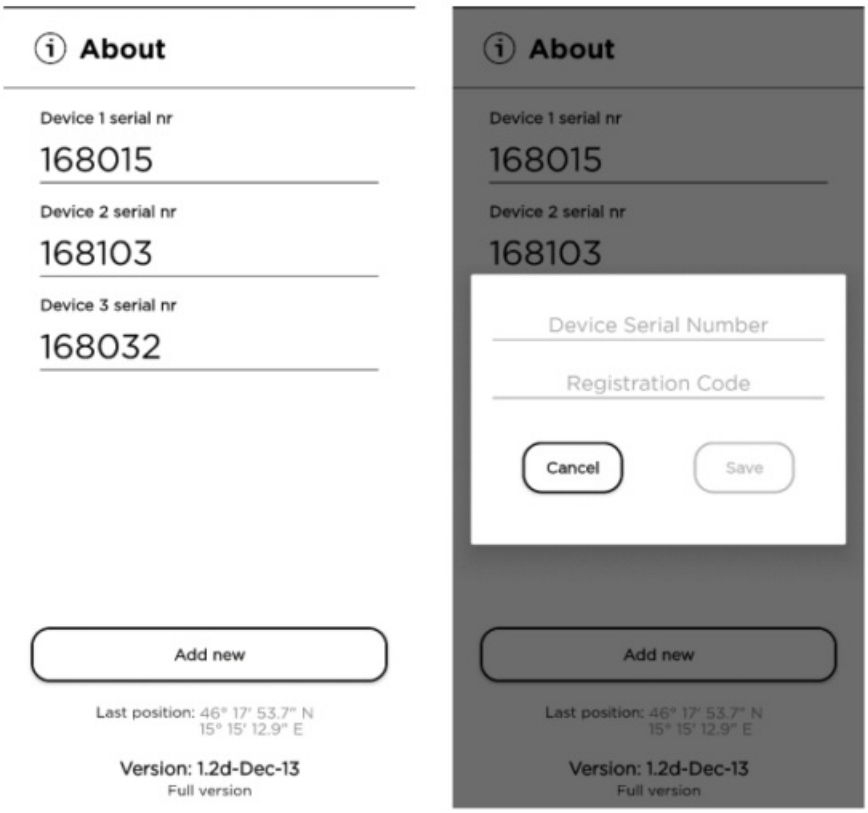
Upload: pressing to it will upload flight to GPS Triangle League web site. User need to have an online account on that web site and enter log in information under Cloud setting. Only after flight is uploaded image of the flight will be shown! Web site address: www.gps-triangle league.net

Replay: Will replay the flight.

Email: Will send an IGC file containing the flight to a predefined email account entered in Cloud setting.

Info page

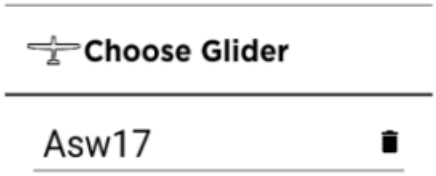
Basic information as registered devices, application version and last received GPS position can be found here. To register a new device press “Add new” button and dialog to enter device serial number and registration key will be shown. Up to 5 devices can be registered.



Settings menu

Pressing on settings button, user will get a list of gliders stored in the database and choose which glider settings he wishes to select.
With Albatross v1.6 and later, majority of settings are linked to a glider. Only common settings for all gliders in list are: Cloud, Beeps and Units.
First select a glider or add a new glider to the list with “Add new” button. To remove glider from list press “trash can” icon in glider line. Be careful with that as there is no return if pressed by mistake!

Any change made is automatically saved when pressing android back button! There is no Save button!



Under main settings menu a different group of settings can be found.

Glider setting refers to all settings based on the glider which has been selected before entering into settings.

Under warning settings different warning options can be seen. Enable / disable warnings which user wishes to see and hear. This is global settings for all gliders in data base.

Voice setting has a list of all voice announcements supported. This is global settings for all gliders in data base.

Graphic settings is used to define different colors on main navigation page. This is global settings for all gliders in data base.

Vario/SC settings refers to vario parameters, filters, frequencies, SC speed etc… TE parameter is glider based parameter, others are global and are the same for all gliders in database.

Servo settings gives user ability to set operations which will be made at different servo pulse detected by onboard unit. This are glider specific settings.

Units settings gives opportunity to set desired units to shown data.

Cloud settings gives ability to set parameters for online services.

Beeps settings gives ability to set parameters for all beeps events during the flight.

Glider

Glider specific settings are set here. Those settings are used in IGC log file and for calculating different parameters needed for best efficient flying

Glider name: name of glider which is shown on glider list. This name is also saved in IGC log file

Registration number: will be saved in IGC file Competition number: tail markings – will be saved in IGC file

Weight: weight of glider at minimum RTF weight.

Span: wing span of glider.

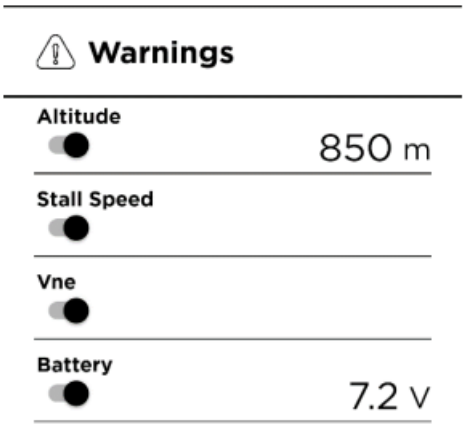
Wing area: wing area of glider

Polar A, B, C: Coefficients of polar of the glider

Stall speed: minimum stall speed of glider. Used for Stall warning

Vne: never exceed speed. Used for Vne warning.

Warnings



Enable / disable and set limits of warnings in this page.

Altitude: altitude above ground when warning should came.

Stall speed: when enabled voice warning will be announced. Stall value is set under glider settings

Vne: when enabled never exceed speed warning will be announced. Value is set in glider settings.

Battery: When battery voltage drops under this limit voice warning will be announced.

Voice settings

Set voice announcements here.

Line distance: announcement of off track distance. When set to 20m Snipe will report every 20m when plane has deviated from ideal task line.

Altitude: Interval of altitude reports.

Time: Interval of working time remaining report.

Inside: When enabled “Inside” will be announced when sector of turnpoint is reached.

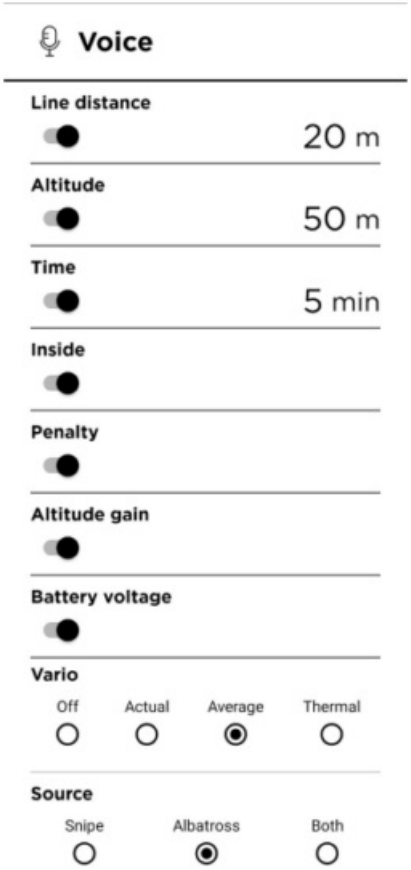
Penalty: When enabled number of penalty points will be announced if a penalty has been assed when crossing start line.

Altitude gain: When enabled, altitude gain will be reported every 30s when thermalling.

Battery voltage: When enabled, Battery voltage will be reported on Snipe unit every time voltage drops for 0.1V.

Vario: Set which kind of vario is announced every 30 s when thermaling.

Source: Set on which device voice announcement should be generated.



Graphic

User can set different colors and enable / disable graphical elements in this page.

Track line: color of the line which is an extension of glider nose

Observers zone: Color of point sectors

Start/Finish line: Color of start finish line

Task: Color of task

Bearing line: Color of line from nose of the plane to the point of navigation.

Navbox background: Color of background in navbox area

Navbox text: Color of navbox text

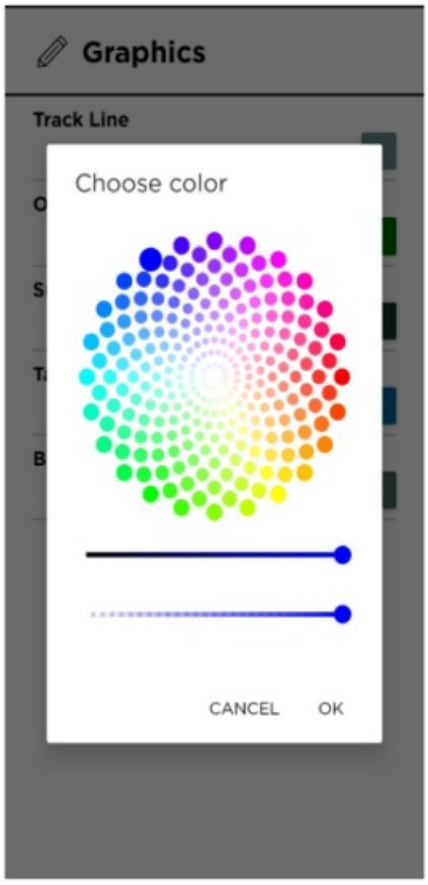
Map background: Color of background when map is disabled with long press

Glider: Color of glider symbol

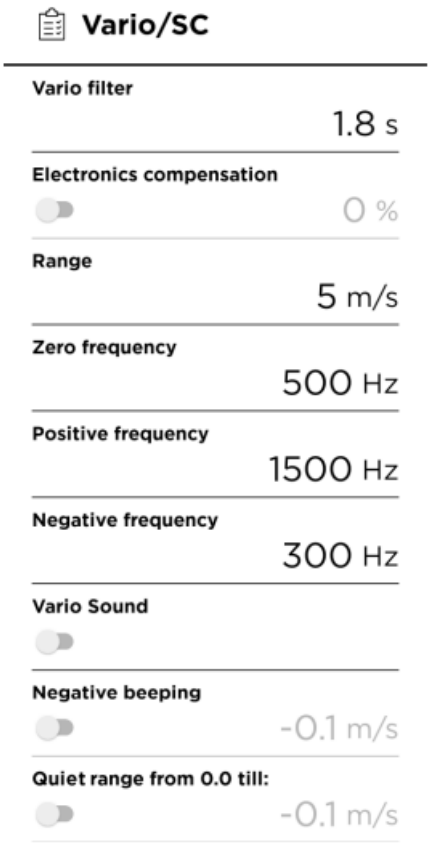
Tail: When enabled, glider tail will be drawn on map with colors indicating rising and sinking air. This option takes a lot of processor performance so disable it on older devices! User can set duration of tail in seconds.

Tail size: User can set how wide dots of tail should be.

When color is changed such color selector is showed. Choose starting color from the color circle and then use lower two sliders to set darkness and transparency.



Vario/SC



Vario filter: Response of vario filter in seconds. The lower the value the more sensitive the vario will be.

Electronic compensation: Read manual of Raven to see which value should be set here when electronic compensation is selected.

Range: Vario value of maximum / minimum beep

Zero Frequency: Frequency of vario tone when 0.0 m/s is detected

Positive Frequency: Frequency of vario tone when maximum vario is detected (set in range)

Negative Frequency: Frequency of vario tone when minimum vario is detected (set in range)

Vario sound: Enable / disable vario tone on Albatross.

Negative beeping: Set threshold when vario tone will begin beeping. This option only works on Snipe unit! Example on picture is when vario is indicating -0.6m/s sink then Snipe is already generating beeping tone. Useful to set here sink rate of glider so vario will indicate that air mass is already slowly rising.

Quiet range from 0.0 till: When enabled, vario tone will be quiet from 0.0 m/s till entered value. Minimum is -5.0 m/s

Servo

Servo options are linked to each plane in database separately. With them user can control different options via one servo channel from his transmitter. As special mix must be set on transmitter to mix different flight phases or switches to one channel used to control Albatross.

Please make at least 5% difference between each setting!

When servo pulse matches the set value, action is performed. To repeat the action, servo pulse must go out of action range and return back.

Actual value is showing current detected servo pulse. System must be powered up an RF link established for this!

Start/Restart will arm / restart task

Thermal page will jump directly to thermal page

Glide page will jump directly to glide page

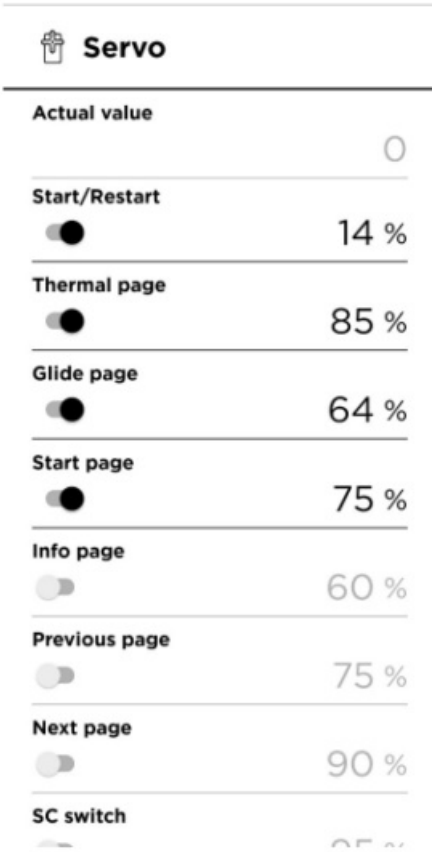
Start page will jump directly to start page

Info page will jump directly to info page

Previous page will simulate press on left arrow in flight screen header

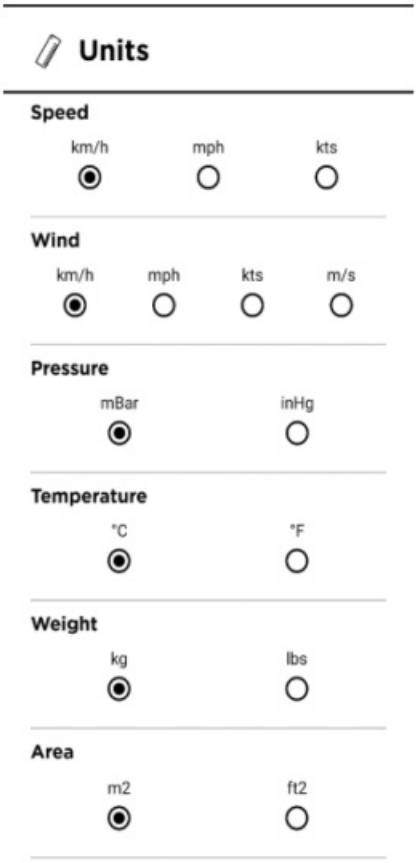
Next page will simulate press on right arrow in flight screen header

SC switch will switch between vario and speed command mode. (needed for MacCready flying which comes in near future) Works only with Snipe unit!



Units

Set all units for displayed information here.



Cloud

Set all cloud settings here

User name and surname: Name and surname of the pilot.

Email account: Enter predefined email account to which flights will be sent to when pressing to Email button under logbook.

GPS Triangle league: Enter username and password used on GPS Triangle league web page to upload the flights

directly from Albatross app by pressing upload button under logbook.

Beeps

Set all beeps settings here

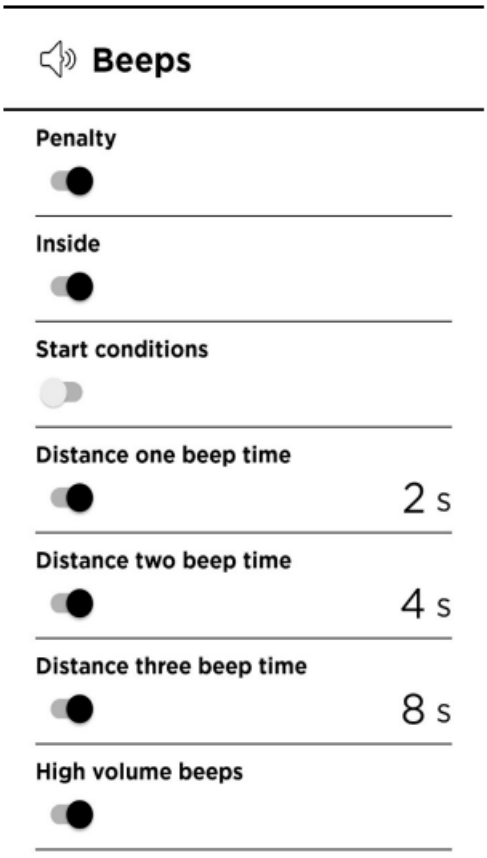
Penalty: When enabled user will hear a special “penalty” beep on line crossing if speed or altitude was to high. Works only with Snipe unit.

Inside: When enabled and glider enters into turn point sector, 3 beeps will be generated indicating to pilot that point has been reached.

Start conditions: Not jet implemented…planed for future

Distance beeps are working only with Snipe unit. This is a special beep which alerts pilot at preset time before he will reach turn point sector on task. User ca set time of each beep and turn it on or off.

High volume beeps are working only with Snipe unit. When this option is enabled all beeps on Snipe unit (penalty, distance, inside) will be generated with 20% higher volume than vario beep volume so it can be heard more clearly



Flying with Albatross

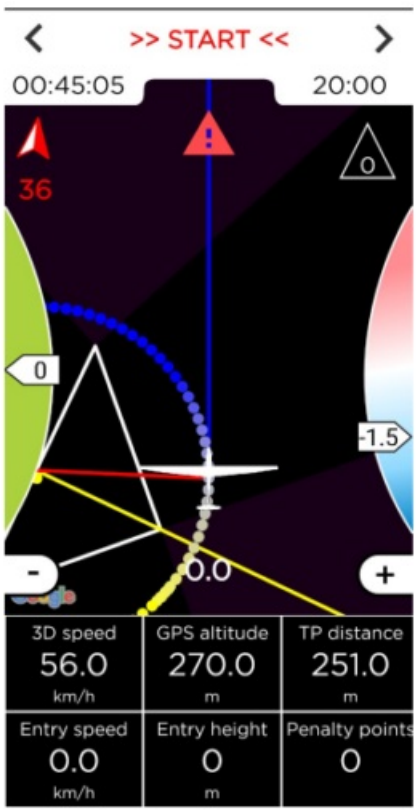
Main navigation screen looks like on picture bellow. It has 3 major parts

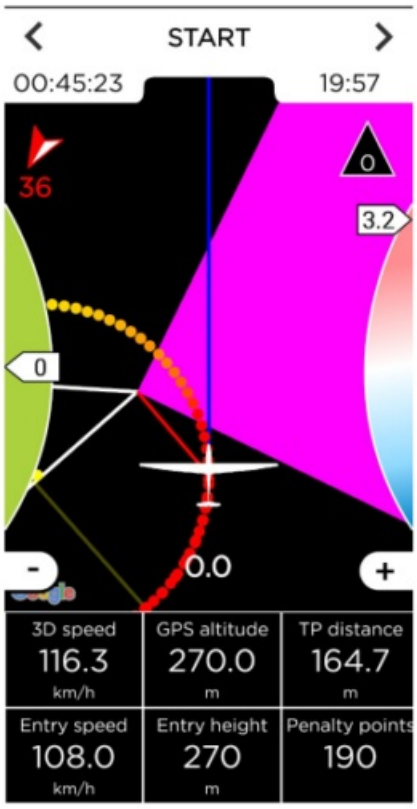
Header:
In header the name of selected page is written in center. User can have START, GLIDE, THERMAL and INFO page. Each page has the same moving map but different navboxes can be set for each page. To change page user can use left and right arrow in header or use servo control. Header also contains two times. Right time will

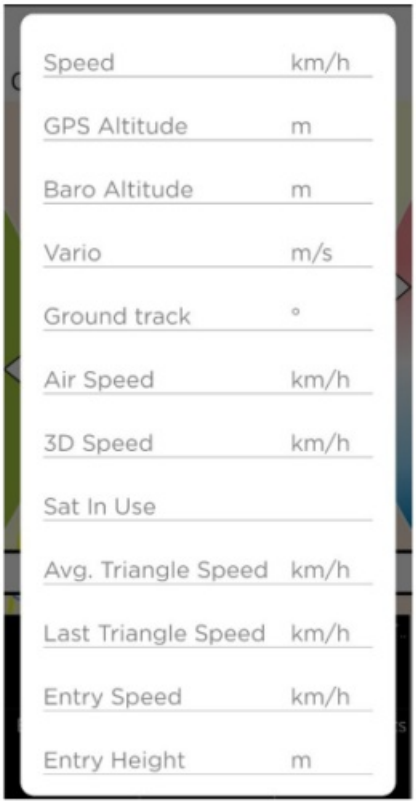
always indicate remaining working time. On the left time user can have UTC time in hh:mm:ss format when gate time on Flight page is disabled. In case gate time on Flight page is enabled then this time will show gate time information. Please refer to Flight page “Gate time” description.
START page header has additional option to ARM the task. By pressing on START label the task will be armed and the font color will turn red and adding >> << on each side: >> START << Once start is enabled crossing the start line will start the task. Once start is armed all other page titles in header are colored in red.

Moving map:
This area contains a lot of graphic information for pilot to navigate around the task. Main part of it is a task with its turn point sectors and start/finish line. In upper right part triangle symbol can be seen which will show how many completed triangles are made. On left upper side a wind indicator is shown.
Arrow is presenting a direction from which wind is blowing and velocity.
On right side a vario slider is indicating vario movement of plane. This slider will also contain a line which will show average vario value, thermal vario value and MC value set. Pilot goal is to have all lines as close together and this indicates a good centered thermal.
On left side airspeed slider is showing pilot his airspeed. On this slider user will be able to see a red limits indicating its stall and Vne speed. Also a blue area will be shown indicating best speed to fly at current conditions.
In lower part there are + and – buttons with value in the middle. With this two buttons user can change it’s MC value which is shown as value in the middle. This is needed for MacCready flying which is planned to be release in early months of year 2020.
There is also exclamation point symbol at top center of moving map indicating that current speed and altitude are above starting conditions so penalty points will be added if crossing the starting line would happen at this moment.
Moving map also has option to enable / disable Google maps as background. User can do that with long press on moving map area. Press it for at least 2s to toggle map on / off.
To zoom in use zoom gesture with 2 fingers on moving map area.
When flying try to cover track and bearing line. This will direct plane to the shortest way towards the point of navigation.

Navboxes:
On the bottom there are 6 navboxes with different information’s. Each navbox can be set by user what to show. Make a short click on navbox which needs to be changed and navbox list will appear.







Revision history

21.3.2021	v1.4	removed assist line under graphic s ettings added polar coefficients under glide r added quiet range for vario beep added user name and surname und er cloud
04.06.2020	v1.3	added source option under Voice s ettings added high volume beeps option u nder Beeps setting
12.05.2020	v1.2	added battery voltage option under voice settings tail duration and size can be set un der graphic settings negative beeping offset can be set under Vario/SC settings added SC switch option under serv o settings added beeps setting

15.03.2020	v1.1	added cloud settings description of email and upload button on logbook vario sound added under vario setting
10.12.2019	v1.0	new GUI design and all new option description added
05.04.2019	v0.2	Pair key parameter is not important anymore with newer version of Snipe firmware (from v0.7.B50 and later)
05.03.2019	v0.1	preliminary version

Documents / Resources

	Electronics Albatross Android Device Based Application [pdf] Instructions Albatross Android Device Based Application

References

- GPS Triangle League
- Home ~ RC Electronics