FLYMASTER

GPS LS

Light and simple, yet full of features

User Manual

v 1.0

GPS LS

Index

User Manual
v 1.0

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1. GPS LS

Flight page and buttons

1- Battery level

2- GPS status

3- Máx. climb rate

4- Current Glide ratio

5- Integtated analog Vario

6- Vario

7- Ground Speed

8- Max. sink rate

9- Wind speed

10 - Wind direction

11- Distance from Take Off

12-Heading

13- Thermal ball

14- Distance to thermal

15- Altimeter

16- Volume level

17- Clock/Flight Time

18- UP Key/Sound level

19 - Menu/Power

20 - Alt1-Alt2/DOWN Key

21 - Reset Alt2 / ENTER

22- Velcro

23- Serial number

24- Hardware reset

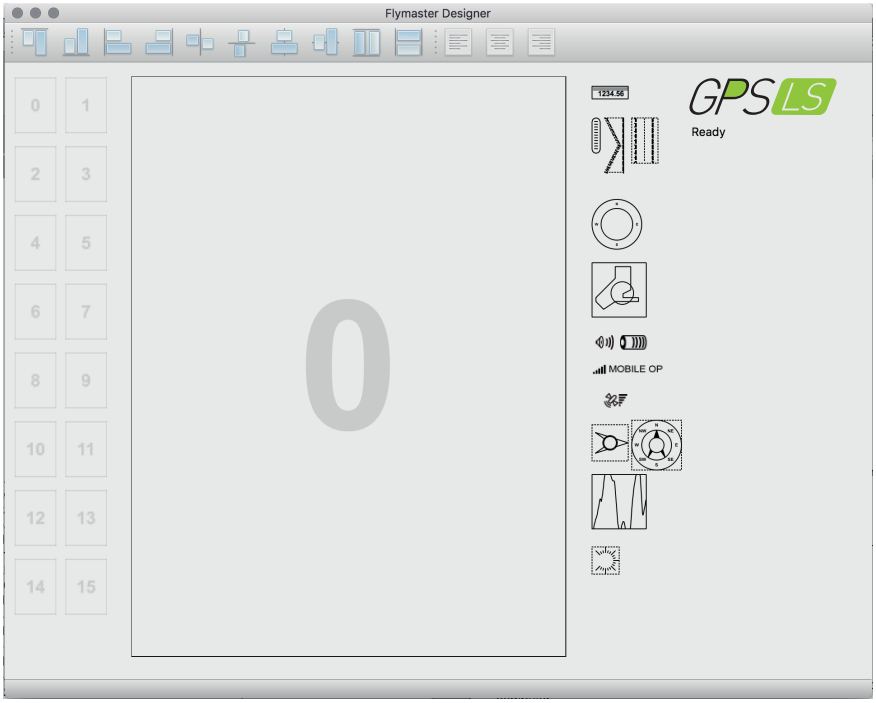
25- Lanyard hole

2. Display layout

Flight page

Battery level - This indicates the battery level of your instrument.
GPS status - This indicates the quality of the GPS signal. When blinking is searching for GPS signal, when fixed with 2D or 3D mode means that the instrument is ready to fly.
Máx. climb rate - This value indicates the maximum climb rate achieved during the current flight.
Current Glide ratio - This field indicates your current glide ratio.
Analog Vario- This indicates graphically, your current vario ratio.
Vario - This value indicates the instant climb/sink rate, numerically.
Ground Speed - This value indicates your ground speed.
Max. sink rate - This value indicates the maximum sink rate achieved during the current flight.
Wind speed - This value indicates the calculated wind speed.
Wind direction - This rotational arrow indicates where the wind comes from. Your position is on the center of the wheel.
Distance from Take Off - This value indicates your straight line distance from T.O.
Heading - This value indicates your heading in degrees.
Thermal ball - This rotational ball indicates the position relative to you of the last thermal. Your position is on the center of the wheel.
Distance to thermal - This value indicates the distance from the last thermal.
Altimeter - This value indicates your current altitude.
Volume level - This indicates the volume level of the GPS LS speaker (Mute, Low, Medium, High).
Clock/Flight Time - This value indicates the current time. Also it shows the current flight duration.

3. Designer software



Designer in an application, available for Mac OS, Windows and Linux, developed by Flymaster. **Designer** allows you to manage the entire range of Flymaster instruments including the GPS LS.
For the GPS LS the following functions are available:

- Firmware upgrade
- Download and sync your flights to Flymaster Cloud Flights (see chapter 8)

1. Download the Designer from: https://www.flymaster.net/downloads#

2. Install it on your computer

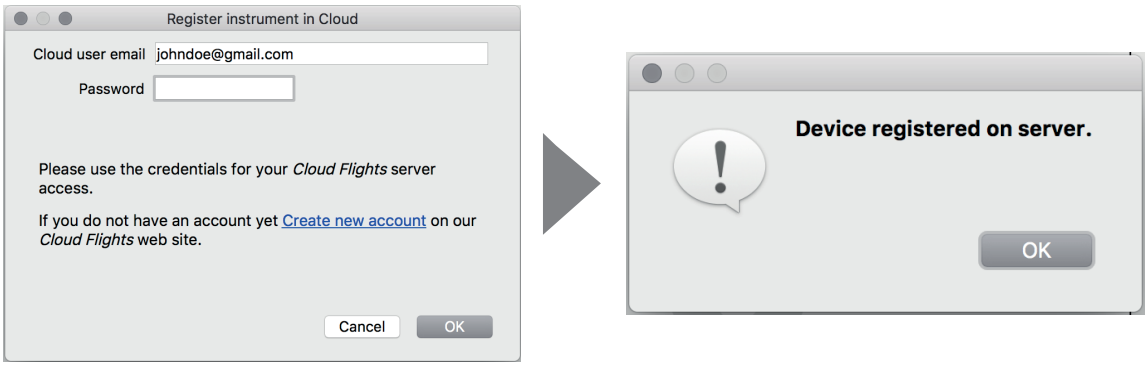
3. Run the Designer

4. Connect the GPS LS with the supplied Micro-USB cable to your computer. Turn ON the GPS LS.

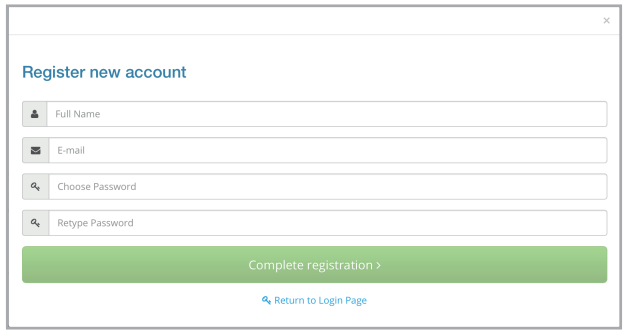
5. Click on the instrument logo

3.1. Designer software

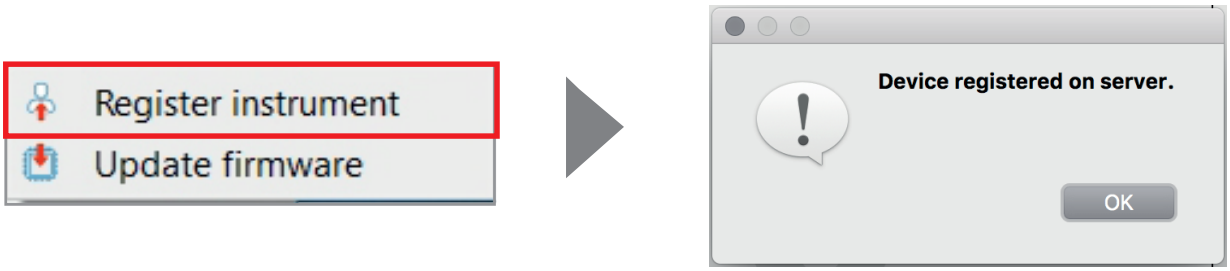
6. Register instrument : If you already have an account on the Flymaster network, just log in with your Cloud user email and password.



7. If you don't have an account, create one. During the account creation process a verification email will be sent to the provided email, so be sure to use a valid email account. If you do not receive the verification email within a couple of minutes double check you spam to be sure it hasn't been snagged.



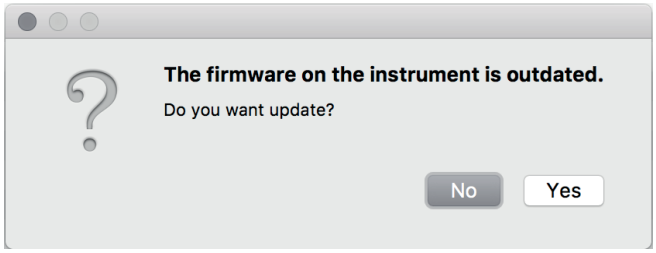
7.1. Now you can register you instrument.



4. Firmware update

Automatic update

1. Connect the GPS LS with the supplied Micro-USB cable to your computer. **Turn ON the GPS LS.**
2. Run the Designer
3. The Designer should detect an outated version of the firmware and will prompt you to update.



4. Click “Yes” and the GPS LS shoud load the firmware and reboot itself.

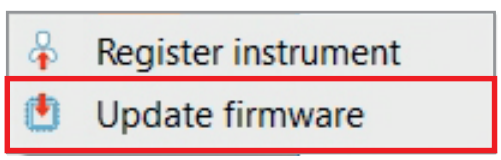
Manual update

If for some reason the Designer does not detect the outdated firmware version, or if want to use any previous firmware version, you can force a manual firmware install.

1. Connect the GPS LS with the supplied Micro USB cable to your computer. **Turn ON the GPS LS.**

2. Run the Designer

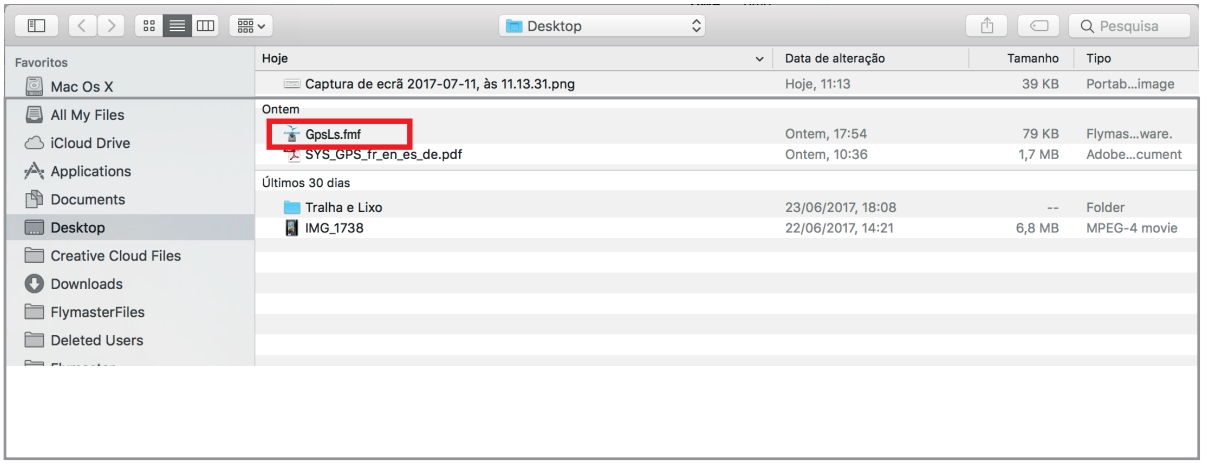
3. Click on the instrument logo and choose “Update firmware”



(Continues on next page)

4.1. Firmware update

4. Choose the firmware file, that can be downloaded at:
https://www.flymaster.net/downloads?product=Gps%20LS
on the tab: Downloads



5. The Gps LS shoud load the firmware and reboot.

5. Reset and Fail Safe mode

If for any reason your GPS LS becomes unresponsive or does not boot up, please try the following procedures.

1. Reset the GPS LS

Insert a paper clip into the reset hole and push it gently. **Do not use extreme force or use a sharp tip tool to do this operation.**

2 . Put the GPS LS into "fail safe" mode: keep the Power/Menu button pressed, while pressing the reset button. The GPS shoud display **"SAFE"** text on the graphic area. The firmware can now be installed by using manual update (chapter 4), or, exit the "fail safe mode", pressing the reset button again.

6. Place and secure the GPS LS

There are 4 recommended options to secure your GPS LS for flying. Remember to allways secure the GPS LS with the supplied safety lanyard.

1. On the riser

Using the supplied velcro piece

2. On the cockpit

No accesory needed

3. On the harness

Using the optional arness adapter

4. On the leg

Using the optional leg strap

7. Battery

Charging the Gps LS

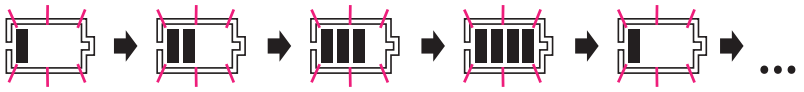
1. Use the supplied Micro-USB cable.

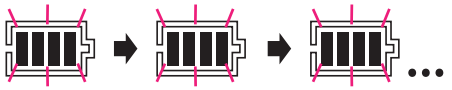
2. Use any 5V USB charger with at least 1A output. The Gps LS also charges when connected to a computer.

3. **When the GPS LS is OFF** and connected to the power source the display shows the message "**CHRG**". When the battery is fully charged the display shows the message "**FULL**". In both cases the battery icon will show an animation of the battery charging and status. If the GPS LS detects some problem with the battery the display shows the message "BAD", this can be caused by trying to charge the instrument in an excessively hot environment, or a damaged battery.

When the **GPS LS is ON** and the instrument is connected to any power supply (computer or wall charger), the battery icon will show an animation of the battery charging and status.

Battery status:


Battery is charging


Battery is charging but is near full charge


Battery capacity is below 20%


Battery capacity is between 20% to 40%


Battery capacity is between 40% to 60%


Battery capacity is between 60% to 80%


Battery capacity is between 80% to 100%

The flight time with the battery fully charged is around 35 hours. This is a estimated duration. External factors such as temperature and natural ageing of the battery may affect these durations.

8. Basic settings

Basic settings for a quick start:

Setting the time and date: Press **Power/Menu** key, press **UP** or **DOWN** key until **TIME** or **DATE** appears on the display. Press **ENTER** to start the setup , and change the values with **UP** and **DOWN** keys. Press **ENTER** to confirm. Press **MENU** to exit to main menu and again to return to the flight page.

Get your ALT1 from GPS: Press Menu - Use UP and DOWN until AL1-GPS is visible. Press enter do edit the required setting. You can set it to YES, NO, or AUTO. Use **UP** or **DOWN** to change the setting. Press **ENTER** to accept the value. Press **MENU** to exit to main menu or to the flight page.

Time and flight duration: After a flight is started, the time (clock) and the flight duration are displayed alternately.

Setting the altimeters: Press **Power/Menu** key, press **UP** or **DOWN** key until **ALTI** appears on the display. Pressing **UP** or **DOWN** will change between **ALT1 or ALT2**. Press **ENTER** to edit any of the selected altimeter, use **UP** or **DOWN** to change the values. Press **ENTER** to accept the value. Press **MENU** to exit to main menu or to the flight page.

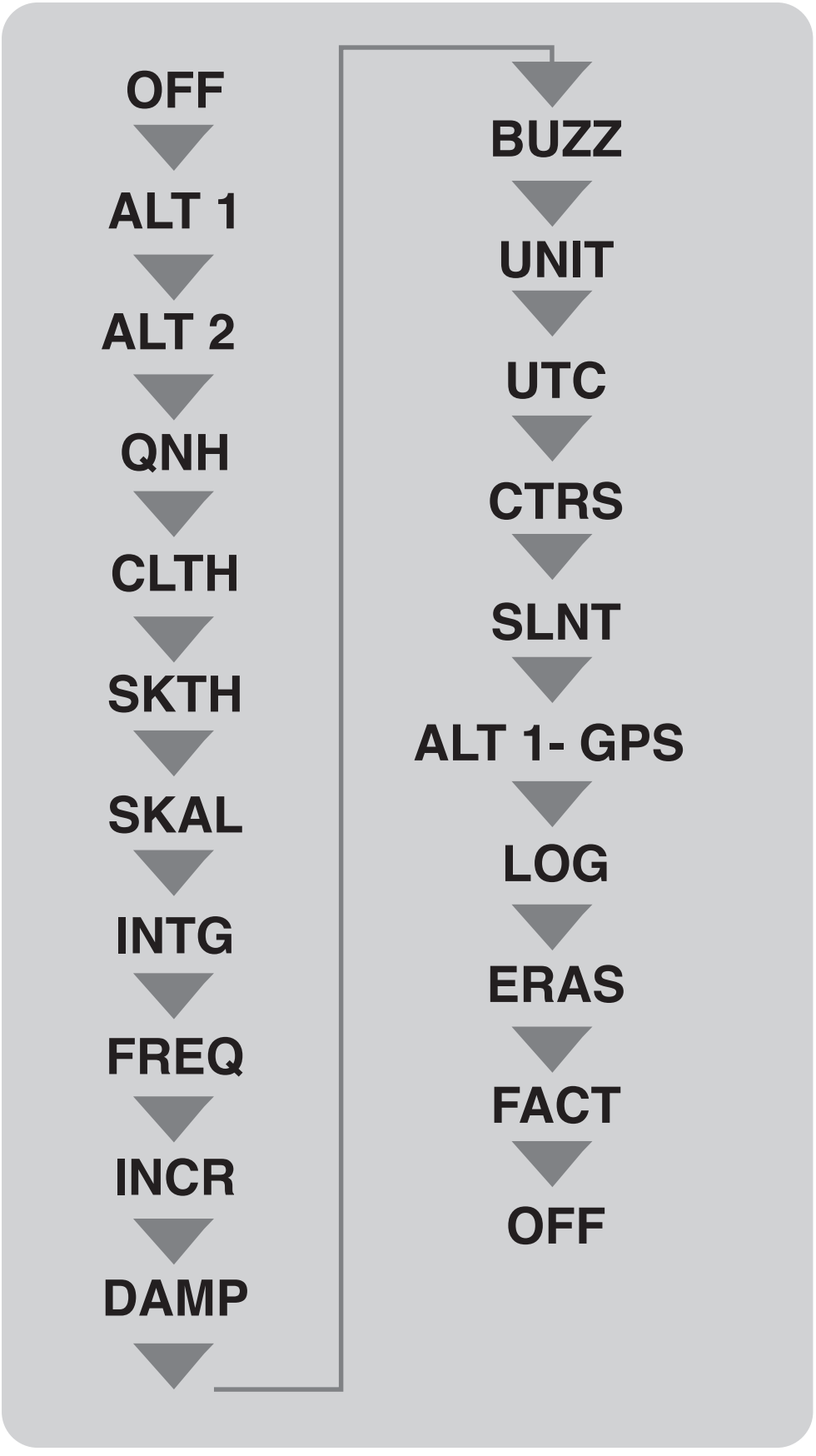
Get your ALT1 from GPS: Press Menu - Use UP and DOWN until AL1-GPS is visible. Press enter do edit the required setting. You can set it to YES, NO, or AUTO. Use **UP** or **DOWN** to change the setting. Press **ENTER** to accept the value. Press **MENU** to exit to main menu or to the flight page.

Changing units : Press **Power/Menu** key, press **UP** or **DOWN** key until **UNIT** appears on the display. Press **ENTER** to edit the units. Use **UP** and **DOWN** keys to change value between meter/ms and feet/ftminx100 and press **ENTER** to accept. Press **MENU** to exit to main menu or to the flight page.

Adjust the speaker volume : On the main screen, press up/volume key to change the speaker volume, each press selects a louder volume level, when the maximum volume is reached pressing it again will mute the speaker and restart the process.

Restore the GPS LS to factory defaults: Press **Power/Menu** key, press **UP** or **DOWN** key until **FACT** appears on the display. Press **ENTER**, select **YES** with the **UP** or **DOWN** key. Press **ENTER** to restore to factory defaults. Press **MENU** to exit to main menu or to the flight page.

9. Menu sequence



10. Advanced settings

OFF - Turns the GPS LS OFF

ALTI 1 - Altimeter 1

ALTI 2 - Altimeter 2 - **Get your ALT1 from GPS:** Press Menu - Use UP and DOWN until AL1-GPS is visible. Press enter do edit the required setting. You can set it to YES, NO, or AUTO. Use **UP** or **DOWN** to change the setting. Press **ENTER** to accept the value. Press **MENU** to exit to main menu or to the flight page.

QNH - Setting the altimeter (ALT 1 and ALT2), allows the user to adjusts the barometric altimeter. A barometric altimeter calculates altitude based on atmospheric pressure , and should not be confused with the GPS altitude,
Since atmospheric pressure can vary substantially with meteorological conditions, and so with time, the barometric altitude also varies according. In order to have the correct altitude for a certain place the altimeter should be calibrated.
Calibrating the altimeter can be achieved by entering the know altitude of the location. Entering an altitude automatically calculates the QNH, which is the local barometric pressure adjusted to sea level.
Alternatively, the altimeter can be calibrated by adjusting the QNH for the local, and time. Changing the QNH will adjust the barometric altitude.

CLTH - The Climb Threshold defines the rate of climb at which the vario will start beeping. The frequency of the first beep is defined through the Base Frequency parameter,and steadily increases according the Increments parameter value.
The default value for Climb Threshold is 0.1m/s. This means that beeping starts once the instantaneous vario value goes above 0.1m/s.

SKTH - The Sink Threshold is the rate of descent at which the vario will emit a low frequency sound. Contrary to the climb sound the sink sound is continuous. The deeper the sink rate the lower the sound frequency.
Default value for this parameter is -2 m/s, we suggest setting a value lower than the natural sink rate of the glider when flying on speed bar in still air.

SKAL - The Sink Alarm defines a vertical speed value at which a sound (alarm siren) starts to be produced. For example, if the Sink Alarm is set to -10m/s, then if the instantaneous vario goes below -10m/s, and alarm will be fired. This alarm can be used to identify high vertical speeds, as for example, in a spiral dive. The Sink Alarm parameter can vary from 0 to -25m/s. Set the Sink Alarm to 0 (ZERO) to disable the alarm.

INTG - The Integrated vario is calculated by integrating the vertical speed during a period of X seconds defined by this value.

10.1 Advanced settings

FREQ - The audio frequencies can be adjusted to match the user's preference, by setting the Base Frq and Increments.
The Base Frq is the first frequency used to produce the initial sound which corresponds to the climb threshold (by default 0.1 m/s). Later, as the climb rate increases, a bip, bip sound is produced for which the cadence, and frequency, also increase. The Base Frq can be set from 500 to 1500 Hz. The higher is the frequency value, the higher pitched the sound is. The preset value for Base Frq is 700 Hz.

INCR - The Increments parameter sets the frequency increment for each 0.1 m/s climb rate increase. The increments can be set from 1 to 99 Hz. The preset value for Increments is 10 Hz. Considering an Increments value of 10, and Base Frq of 700 Hz, the vario frequency at 1 m/s is 800 Hz.

DAMP - The GPS LS vertical speed calculation is based on air pressure variations. It is very seldom to have air pressure absolutely stable. Turbulence caused by air moving near the sensor is suficient to cause small variations in pressure. For this reason the GPS LS filters (averages) the pressure data to prevent constantly detecting tiny pressure variations. The value that defines how must the pressure is filtered is the Damper. Setting a lower damper value caused the GPS LS to become more responsive but harsher. Inversely a higher value causes the GPS LS to be less responsive but smoother. The default value is 8.

BUZZ - Is so called because of the sound it emits, which resembles a buzzing sound.
The buzzer sound is produced when the rate of climb is close to, but has not yet reached the specified Climb threshold (see 13.3.1). This value is set between 0 and 9 with each unit corresponding to be 0.1 m/s, ie. 3 is 0.3m/s. Subtracting this decimal value from the climb threshold will give us the value at which the GPS LS will start buzzing.
For example with the GPS LS default values, Climb threshold=0.1m/s, and Buzzer=3 (0.3m/s) the buzzing with start at -0.2m/s because 0.1 - 0.3= -0.2. In this case at 0.1m/s directly below the Climb threshold the GPS LS will emit a constant sound varying rapidly in pitch from around 100hz to the set base frequency at which the first beep is emitted. This is the buzzer sound and may resemble a growl noise. Setting the Buzzer value to 0 (zero) will disable the buzzer feature.
Although the Buzzer will sound very annoying on the ground it becomes an amazing companion in flight allowing the pilot to pick-up thermals he would have usually missed.

10.2 Advanced settings

UNIT - Sets the GPS LS units to Metric or Imperial units.

UTC - Using GPS data, the GPS LS automatically adjusts the internal clock to the Universal Coordinated Time (UTC). The user should adjust the UTC offset so that the time displayed by the GPS LS matches the local time.

CTRS - Sets the contrast of the display.

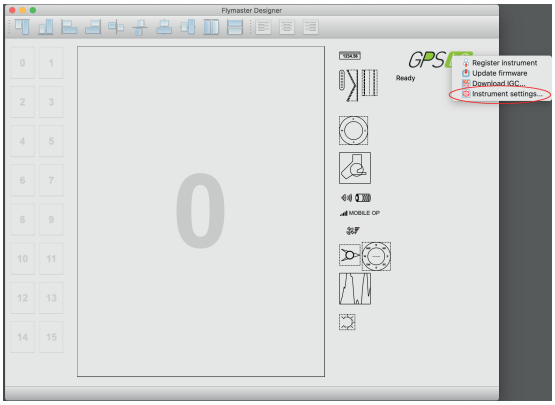
SLTN - Setting Auto silent option ON will keep the GPS LS 's sound quiet until a Start Flight has been detected. This function avoids listening the vario sound while waiting to take off. The audio will then be kept active until the GPS LS is switched off. The default value for the auto silent parameter is ON.

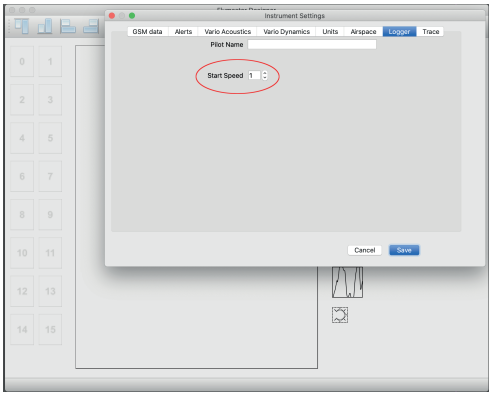
To set the start speed to allow start you track log and to start the vario sound:

1 - Connect your GPS LS , turned ON, to the Designer software:

1.1 - Click on instrument's logo and choose "instrument settings"

1.2 - On the tab "logger" choose your start speed.





10.3 Advanced settings

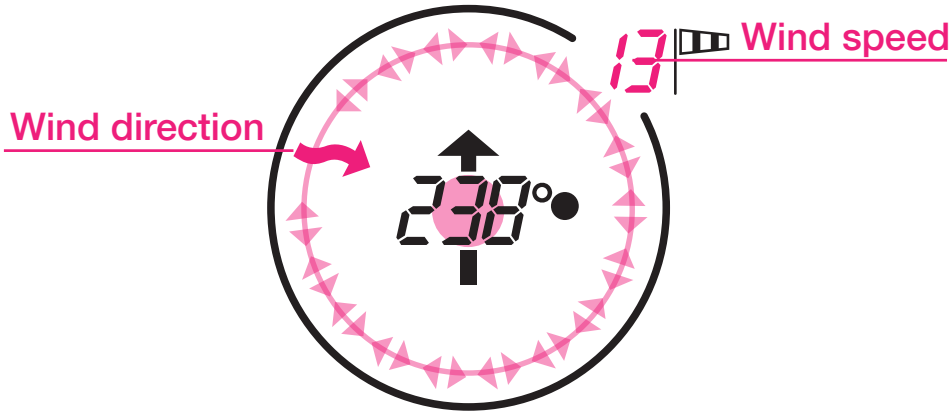
ALT 1 - GPS - The Get from GPS can also be set to Auto, with this value being stored in the settings. When Auto is selected, after being turned On, the GPS LS will automatically set the altimeter to the GPS altitude (once the a valid GPS signal exists), or whenever the pdop value is lower than the previous one.

LOG - Shows the recorded flights into the GPS LS internal memory.

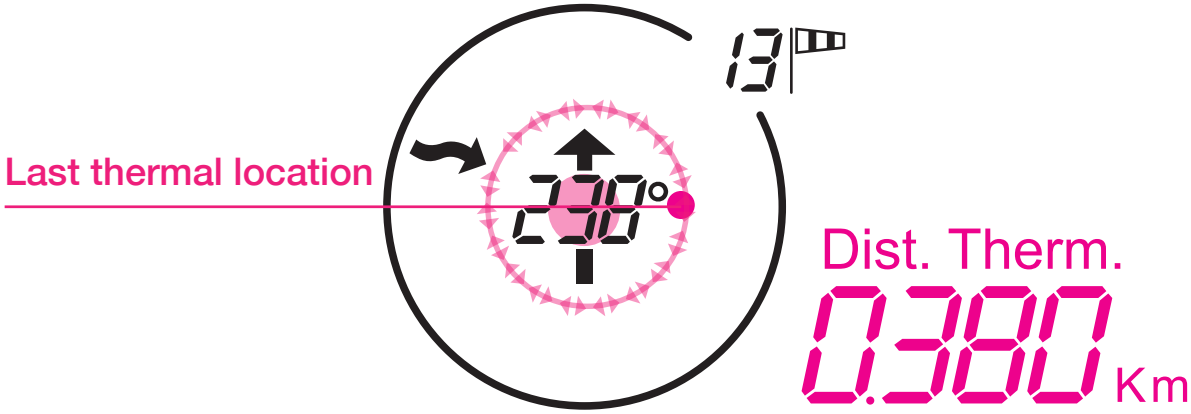
FACT- Restore al the values to factory defaults.

10.4 Advanced settings

Thermal and wind indicator:



Wind indicator - The outside arrow (wind direction) will rotate in both directions indicating **from where the wind is blowing**, considering the center of the circle is your position. The upper right data indicates the wind speed.



Last thermal - The moving ball (last thermal location) will rotate in both directions indicating **the location of the last thermal**, considering the center of the circle is your position. The data field “Dist. Therm.” indicates the distance from the thermal.

11. Flights log

To see your flights log:

- Press **MENU**, then press **UP** or **DOWN** key until you see **“LOG”** on the display.

Use the **UP** key or **DOWN** key to scroll between the flights.

* The flight start time, flight duration and flight date are shown in sequence

11.1 Flights log

Erase one flight from flights log:

- Press **MENU**, then press **UP** or **DOWN** key untill you see **“LOG”** on the display.

Press **ENTER** to enter the **LOG**.

Use the **UP** key or **DOWN** key to scroll between the flights.

Press enter in the logged flight you want to delete, and **DEL** will appear on the display, with the word **NO**.

Use the **UP** or **DOWN** key to select **YES.**

Press **ENTER** to confirm.

The flight is now erased from the **LOG.**

Press **MENU** to go back.

11.2 Flights log

Erase all flights at once from flights log:

- Press **MENU**, then press **UP** or **DOWN** key untill you see **“ERAS”** on the display.

Press **ENTER** to select erase funcion.

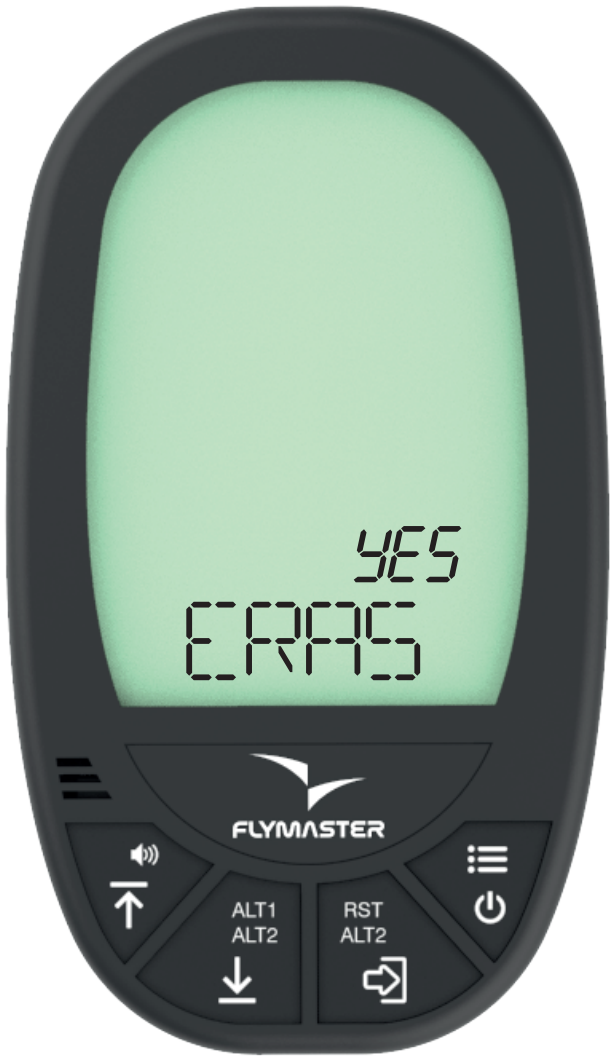
The word **NO** will appear on the display on the **ALT1** field.

Use **UP** or **DOWN** key to change it to **YES**.

Press **ENTER** to confirm.

The word **WAIT** will appear during the erase process.

Press **MENU** to go back.



12 Downloading flights

Dowloading flights from the GPS LS:

1. Download the IGC file:

1.1 - Turn ON you GPS LS, and connect it to the Designer software.

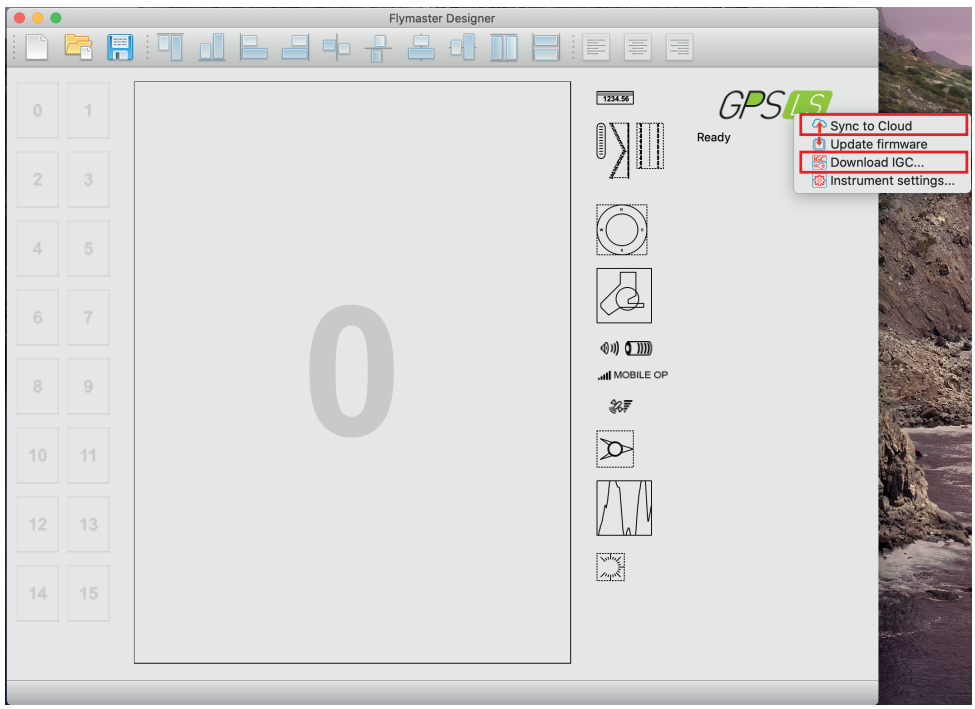
1.2 - Click on instrument's logo and chooose "Download IGC". Save the file.

2. Using Flymaster Cloud Flights:

2.1- Be sure you have a Flymaster account and you intrument is registered in your account. (Chapter 3)

2.2 - Turn ON you GPS LS, and connect it to the Designer software.

2.3 - Click on Vario Ls logo and "Sync to Cloud"

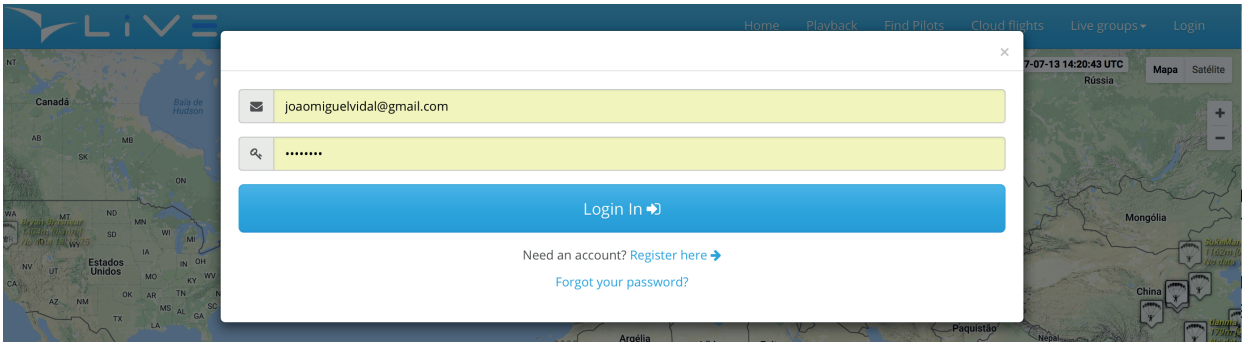


2.4 - . If there is a new flight not yet sync'd with your account the Designer will send it to Cloud Flights.

12.1 Downloading flights

2.5 - Go to www.flymaster.net and click on “Flights” - “Cloud flights”

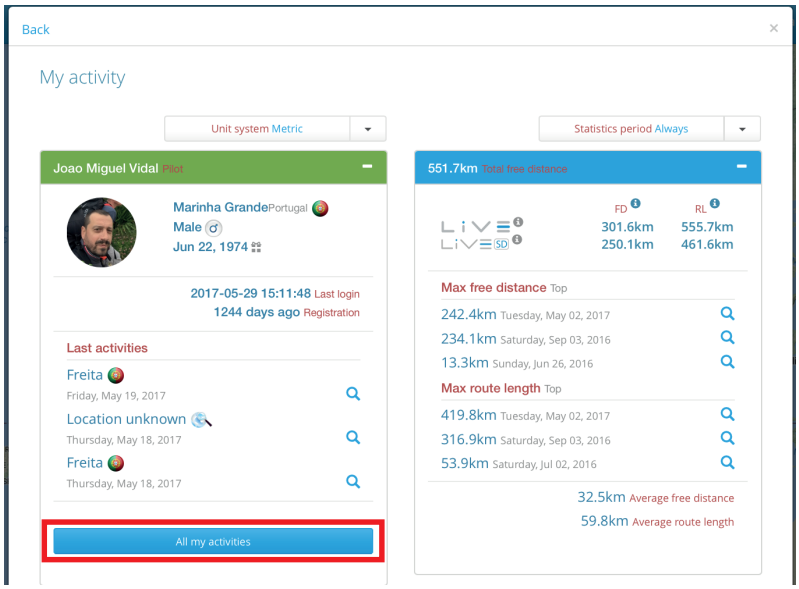
2.6- Log into your account



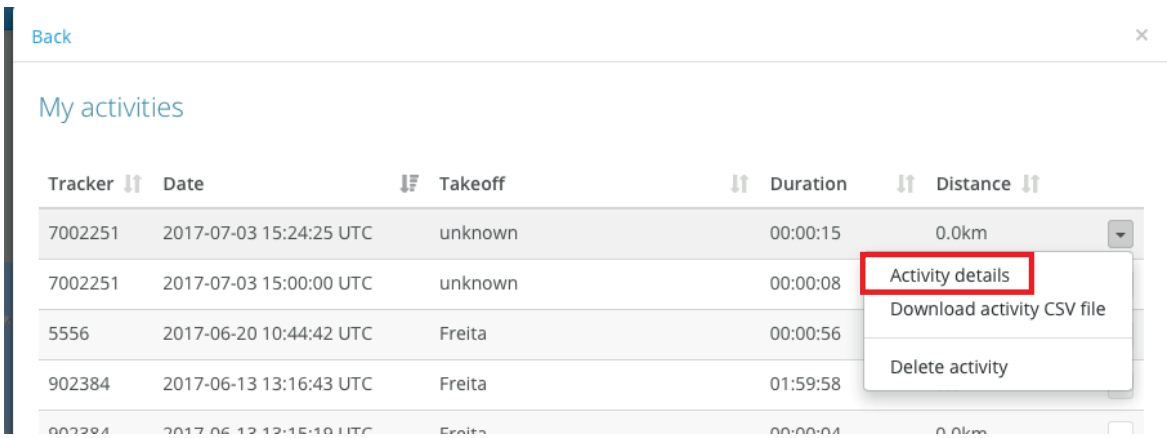
2.7- Go to “my activity”

12.2 Downloading flights

2.8 - In your activity resume, click on " All my activities"



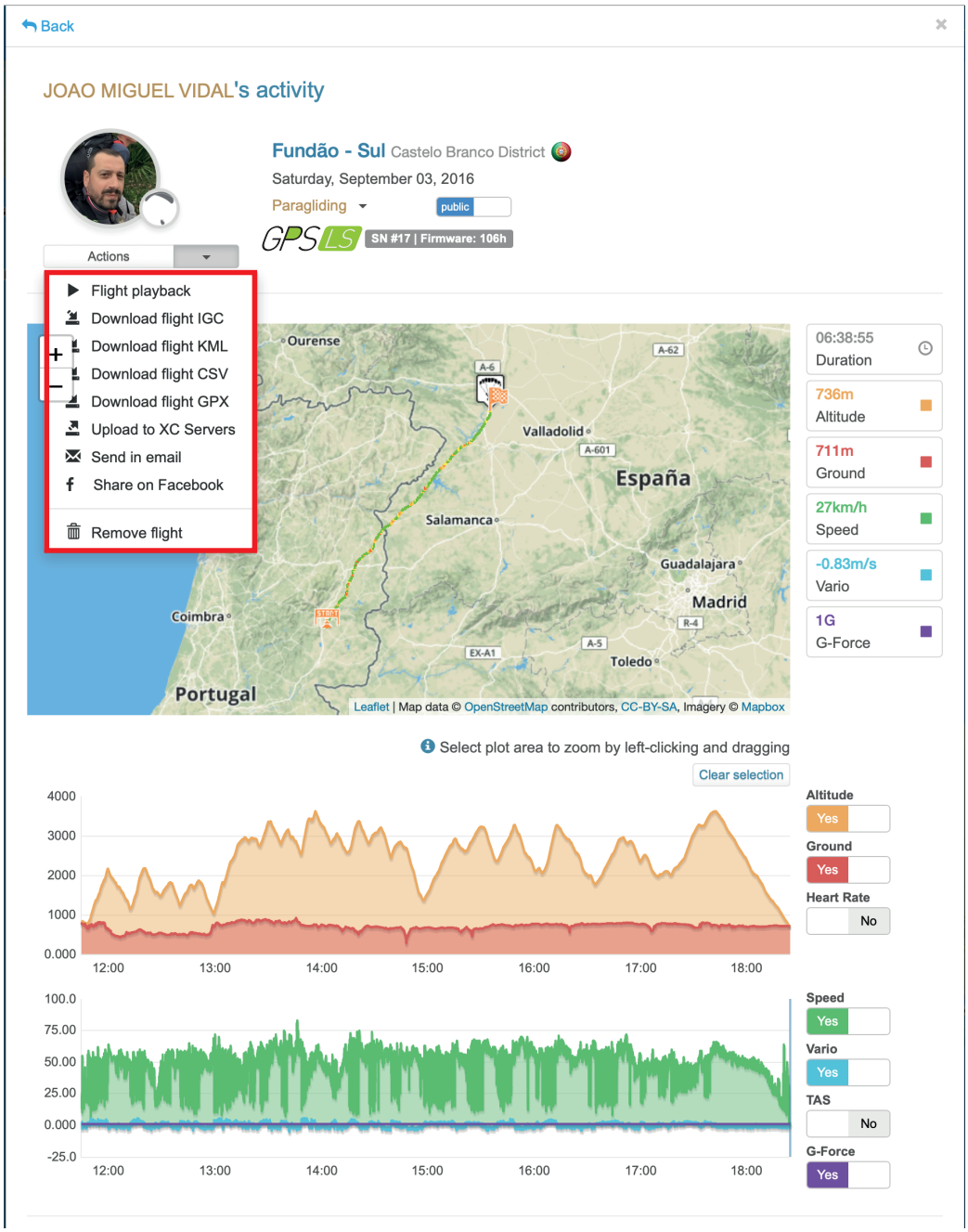
2.9 - Click in "activity details" to choose the flight you want to analyse or download,



12.3 Downloading flights

2.10- Here you can see the flight details.

It's possible to playback, download IGC, download it several formats, send it by email, share it in Facebook or delete it from your flights list.



13. Important notes

Warnings:
Take care of your instrument by cleaning regularly. Do not open the GPS LS, doing this will void your guarantee. Do not expose your Vario LS to extreme temperatures, high or low, this will permanently damage it. Avoid leaving fully exposed to the sun, or in temperatures bellow -10°C.
Ensure that the product is well in position before taking off. Flymaster cannot be held responsible for the loss of the product during the flight (takeoff included).

Battery
This product uses a lithium-ion battery. Do not expose to temperatures above 50 ° C (120 ° F). Risk of fire, explosion or burning. If leakage and contact with liquid leaking from the battery, clean thoroughly with water and seek medical advice immediately. For safety reasons and to extend battery life, charging can be done in an ambient temperature range.
Temperatures: Standard operation: 0 ° C (32 ° F) to +45 ° C (113 ° F) short-term storage: -20 ° C (-4 ° F) at 60 ° C (140 ° F) Storage long term -20 ° C (-4 ° F) at 25 ° C (77 ° F).
Do not check out, or do not attempt to remove the battery, which is not user replaceable. If battery problem, please contact Flymaster support.

Notice to users regarding collection and disposal of batteries and electrical and electronic equipment.
LITHIUM-ION BATTERY AND ELECTRONIC CIRCUIT IN THIS PRODUCT CAN NOT BE ADDED TO THE HOUSEHOLD WASTE. To allow proper recycling, please bring it to a collection point for.
Directive 2002/96/EC applies within the European Union. For the procedure applicable in countries outside the European Union, please check with local authorities
DO NOT ATTEMPT RECHARGING THE DEVICE WITH A DIFFERENT USB CORD THAN THE ONE PROVIDED. RATING : 5VDC 500mA.

CE Mark
This product meets the requirements of the CE mark as part of a residential, commercial or light industrial.
About this document
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