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# LRP GRAVIT GPS VISION 2.4GHZ F.H.S.S.

## USER GUIDE



# LRP GRAVIT GPS VISION 2.4GHZ F.H.S.S.

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# LRP GRAVIT GPS VISION 2.4GHZ F.H.S.S.



## INTRODUCTION

Dear customer,

Thank you for choosing this LRP product. The Gravit GPS is a high-quality, high-performance quadcopter suitable for outdoor flying and aerial photography.

It is powered by 4 powerful brushless motors and equipped with a FULL-HD WiFi action-cam ex works. The high-quality 2.4 GHz 8-channel transmitter will provide efficient and full-range control and different flight modes will assist you during your flight. Since your Gravit GPS is a very complex quadcopter with many functions, we strongly advise to read through this manual carefully in order to understand all the functions and to get the maximum fun out of your Gravit GPS.

## INCLUDED IN THIS PACKAGE

- 1x Gravit GPS quadcopter
- 1x 8-channel 2.4GHz transmitter
- 4x black propellers
- 4x white propellers (spare)
- 1x Full-HD WiFi action-cam
- 1x Standard mount for WiFi action-cam

- 1x Set of accessories/mounts for WiFi action cam
- 1x 3300 mAh 3S Lipo Pack
- 1x Balance Charger
- 1x Quick Manual
- 1x 2-axis brushless gimbal with mount (#220721 ONLY)



# LRP GRAVIT GPS VISION 2.4GHZ F.H.S.S.

## TECHNICAL SPECIFICATIONS

<b>Rotor diameter</b>	240mm
<b>Overall diameter</b>	350mm
<b>Overall height</b>	170mm
<b>Weight (AUW)</b>	max. 1200g
<b>LED-lights</b>	yes
<b>Control functions</b>	up/down, forward/backward, turn left/turn right, hover sideways
<b>Transmitting frequency</b>	2.4GHz
<b>Battery technology</b>	LiPo
<b>Battery capacity</b>	3300mAh

<b>Video function</b>	yes
<b>Photo function</b>	yes
<b>GPS</b>	yes
<b>GPS functions</b>	Position Hold Headless Flying Circle RTH Cruise Geo-Fencing
<b>Camera resolution</b>	max. 1080p
<b>Flight modes</b>	Attitude Altitude Hold GPS-mode
<b>Flight controller configuration</b>	yes
<b>Propeller</b>	9443, self-tightening

### PLEASE NOTE:

The Gravit GPS ships in 2 different kinds of configurations:

- a) #220720 Gravit GPS Vision: Gravit with action-cam
- b) #220721 Gravit GPS Vision Pro: Gravit with action-cam and 2-axis gimbal

Depending on the version you have bought, the configuration and function varies.

If a chapter of this manual is only suitable for certain versions of the Gravit GPS, this will be indicated accordingly.

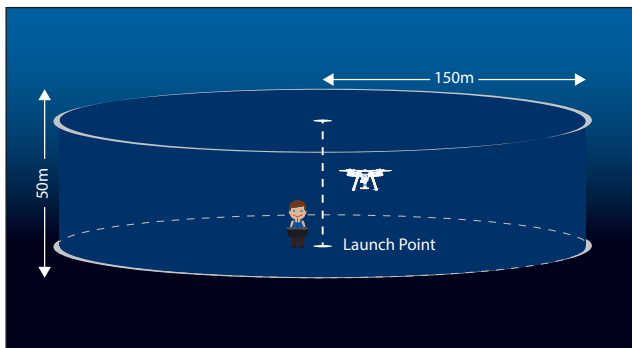
## SOME HINTS AND TIPS BEFORE YOU START

### Range of your Gravit

Your Gravit is equipped with a full range high-quality 2.4GHz transmitter system and you should not experience any range issues. In case that you are flying in an unobstructed area with no interferences around (which we STRONGLY advise), you should have a range of at least 500 m.

This is far more than you would normally fly your Gravit away and is almost beyond the line of sight for a quadcopter of this size.

**PLEASE NOTE:** For the sake of safety, the Gravit is limited to a maximum height of 50 meters and a maximum horizontal range of 150 meters ex works. Those limitations are made possible by the powerful Geo-Fencing feature of the Gravit GPS. Those limits can be changed (increased or decreased) with a software available for your Gravit. Please read more about the Geo-Fencing feature and the software in the appropriate „Software“ chapters of this manual.



### Flight Time

The standard flight time with the provided battery will be around 10 to 12 minutes, depending on the version of the Gravit you have bought. The Gravit GPS Vision #220720 is the lightest version with the longest flight time, the Gravit GPS FPV #220722 is the heaviest version with the shortest flight time (but the best functionality). The Gravit GPS Vision Pro #220721 is in between the two versions.

Please note that the flight time also depends on many other factors, like environmental conditions (wind) and flying speed and style.

If you want to increase your flight time, check out the high-capacity tuning LiPo that we are offering especially designed for your Gravit GPS. This LiPo has a capacity of 4400 mAh, which will give you extra 4-6 minutes of flight, depending on your Gravit version and flying style.

The tuning LiPo will give you a flight time of awesome 14-18 minutes.

The order no. of the tuning LiPo is #430060, you can buy it from your LRP-retailer.

### Flight speed

When you first fly your Gravit, you may note that the flight speed seems rather slow. This is because the maximum flight speed was set to 4m/s ex work. The reason for this rather slow flight speed is that the Gravit GPS is PRIMARILY a quadcopter for aerial photography.

And when shooting video, the slow speed GREATLY contributes to the good quality of the video footage. However, you may increase the speed of your Gravit, which makes it really fast and agile. You can change this setting using the configuration software freely available for the quadcopter. Please read more about this feature in the chapter „Software“ of this manual.

### Where and how to fly

Whenever you fly with your Gravit, please bear in mind that you are not allowed to fly everywhere. Always fly according to the legal requirements valid in the area/country you are flying.

We also STRONGLY advise NOT to fly in crowded or obstructed areas or near people or animals.

Always fly reasonably and respectfully and according to your piloting skill and you will get the most fun out of your hobby!

When using your camera for taking photos and shooting video, also bear in mind that you are not allowed to use a camera everywhere. In addition, other people might feel disturbed, so always ask for permission before you start to film when people are around.

When performing the compass calibration, make sure you are not near any metal objects or any other potential interferences.

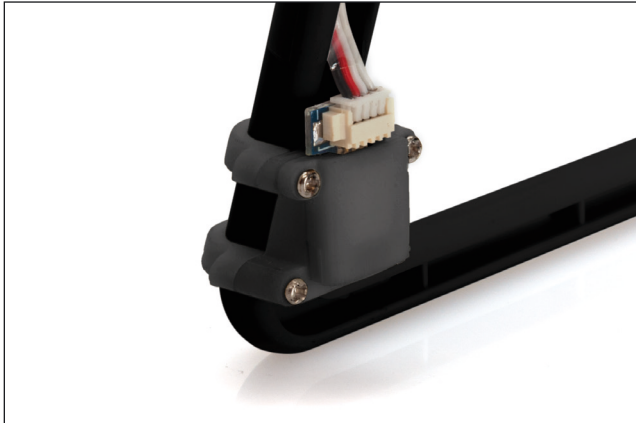


#430060

# LRP GRAVIT GPS VISION 2.4GHZ F.H.S.S.

## SOME HINTS AND TIPS BEFORE YOU START

### Take care of your Gravit's compass



Along with a lot of other electronics, your Gravit GPS is equipped with a compass module. This compass is located on the rear lower part of the left landing feet, secured in a mount. Since the compass is a very sensitive component, please take care of the following points:

- 1) Do not touch the compass directly with your hands  
If want to grab your Gravit on the landing feet, please do so on the right landing foot. The Gravit can easily be held by only one landing foot, just make sure you grab it on the top of the landing foot.
- 2) Make sure not to touch the compass with any metal tools you might be using, like screws drivers, etc.
- 3) Do not put your Gravit on metal surface or near large metal objects if possible, as this can interfere with the compass as well.

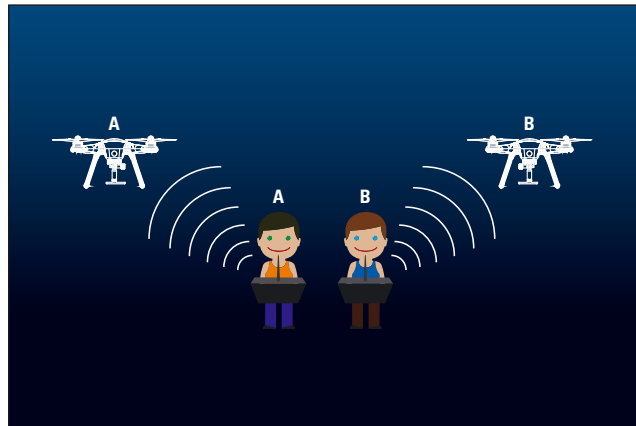
In case your compass gets deranged and does not work properly, the status-LED on the backside of your Gravit will show this by a continuous yellow light.

Try to move your Gravit to a different location. If the light continues to shine yellow, do a compass calibration according to the manual, chapter „Compass calibration“

**PLEASE NOTE:** Also check the connector that goes into the compass module on your Gravit's landing feet. If this connector is not properly seated into the compass module's socket, this will also result in a yellow status-LED.

**NEVER** fly with a compass that is not working properly, as this may lead to erroneous flight behaviour and result in damages.

### 2 or more Gravit GPS pilots



In case you are flying with 2 or more Gravit GPS models at your favorite area of flight, **PLEASE NOTE:**

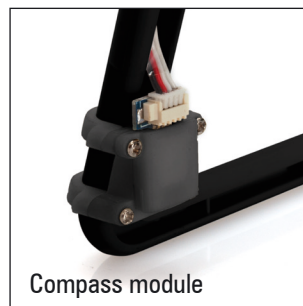
Turn on one Gravit and one TX after the other, NOT all mixed up or at the same time!

**Example:** Pilot A turns on his Gravit A first, then pilot A turns on his TX A. AFTER the Gravit A and the TX A are bound, pilot B does the same with his Gravit B and his TX B (and so forth for every further pilot).

If you strictly stick to this procedure, you can make sure that you are controlling YOUR Gravit instead of your pilot-friend's one.



## THE GRAVIT GPS



# LRP GRAVIT GPS VISION 2.4GHZ F.H.S.S.

## THE GRAVIT GPS

### The position-lights

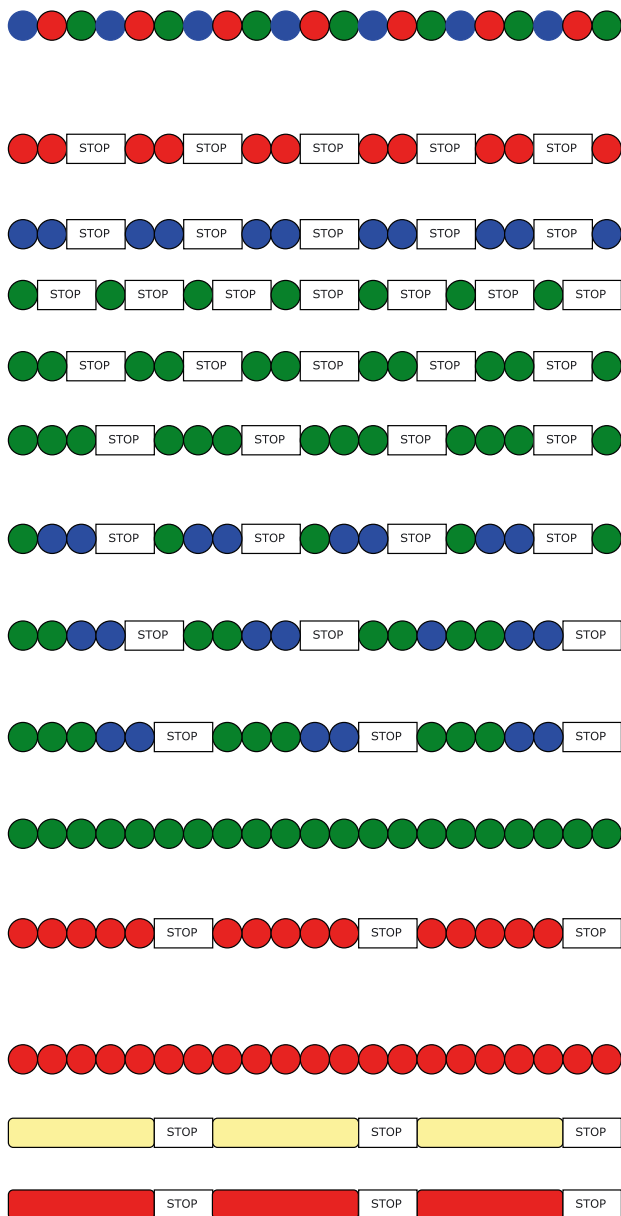
On the bottom side of your Gravit's 4 arms, there are large and bright LEDs. Those LEDs serve as position-lights and help to you to keep track of the Gravit's orientation in the sky. In addition, the LEDs make it possible to fly the Gravit in twilight. Please keep in mind that:

The 2 front LEDs are GREEN

The 2 rear LEDs are RED

### The Status-LED

Your Gravit GPS features a large, bright Status LED at back side of the bodyshell. This Status-LED is reporting on your Gravit's status as soon as the Gravit is powered on. When you look at the LED, you will notice that it's constantly emitting blinks in certain color-patterns. Those patterns will tell you all different kinds of things, you only have to understand what they mean. At the end of chapter, you will find a compilation of all the blinking-codes your Gravit might emit along with a short description of what they mean. For more detailed information on a specific blinking-code, read through the appropriate description of blinking-code's function.



#### Initialization and pre-heating phase

Duration depending on temperature conditions: lower temperatures result in longer initialization process and vice versa. At the end of the initialization process, the Gravit is playing a short melody.

2 red blinks (followed by ANY other code) always indicate that NO satellite-lock has been acquired yet → GPS-assisted features like Return-to-Home don't work

2 blue blinks signalize BALANCE MODE with full satellite lock

1 green blink signalizes ALTITUDE MODE with full satellite lock AND ALL control sticks CENTERED (= NO MOVEMENT)

2 green blinks signalize GPS-MODE with full satellite lock AND ALL control sticks CENTERED (= NO MOVEMENT)

3 green blinks signalize AOC-MODE (HEADLESS/CIRCULAR(POI)/CRUISE) with full satellite lock AND ALL control sticks CENTERED (= NO MOVEMENT)

1 green blink followed by 2 blue blinks signalize ALTITUDE MODE with full satellite lock and control sticks NOT all centered (=Quadrocopter is flying/moving)

2 green blinks followed by 2 blue blinks signalize GPS-MODE with full satellite lock and control sticks NOT all centered (=Quadrocopter is flying/moving)

3 green blinks followed by 2 blue blinks signalize AOC-MODE (HEADLESS/CIRCULAR(POI)/CRUISE) with full satellite lock and control sticks NOT all centered (=Quadrocopter is flying/moving)

Continuous green blinking signalizes Return-to-Home MODE has been activated and the Gravit is returning to its take-off position or is auto-landing (depending on the setting-details)

First level of low voltage warning has been reached, you should land your Gravit asap. Depending on the settings (see chapter "Software"), it is possible that the Gravit initiates a "return-to-home" and flies back to its take-off position and lands.

Second level of low voltage warning has been reached → Gravit will either auto-land or return-to-home (depending on settings)

The compass is not working correctly. You are near metal objects, which cause interference with the compass or you need compass calibration

IMU-calibration necessary

## FUNCTIONALITY OF A QUADROCOPTER

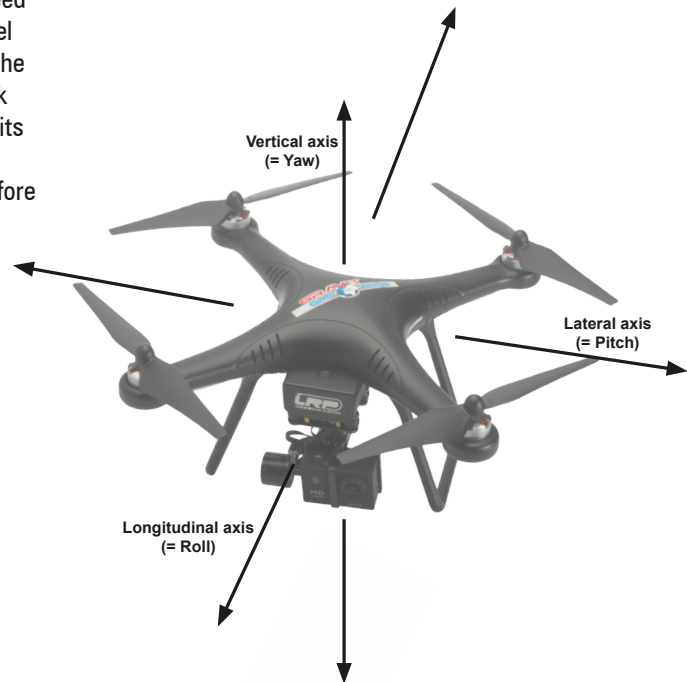
A quadcopter controls its direction of flight by varying the rotation speed of its 4 rotors. Due to the different rotation speed the rotors generate different ascending forces and the model flies in the appropriate direction. For example: If you issue the Gravit the signal to fly forwards (by pushing the throttle stick forwards), the Gravit evenly increases the rotation speed of its two rear rotors. By doing so, the two rear rotors generate a stronger ascending force than the two front ones and therefore your Gravit pitches forward and flies in the correspondent direction.

### QUADROCOPTER MOVEMENT

Movement around vertical axis = Yaw

Movement around lateral axis = Pitch

Movement around longitudinal axis = Roll



# LRP GRAVIT GPS VISION 2.4GHZ F.H.S.S.

## THE TRANSMITTER



### Transmitter - low voltage-warning

The transmitter of your Gravit has a 2-step low voltage-warning. This feature will warn you in time that the batteries of your transmitter are getting weak and should be exchanged for fresh batteries soon.

Step 1: The red power LED of your TX begins to blink slowly and the TX is emitting a continuous beep-sound

Step 2: The red power LED of your TX blinks faster, the beeping sound stops again. Shortly after, the TX switches off.

You should make sure that you replace the batteries as soon as the first low voltage-warning kicks in. Don't panic: At this

point in time, you will have plenty of time left to safely land your Gravit in case you should be flying at this moment.

### Switching flight modes with your transmitter (SWA- and SWB-switches)

You can switch between the different flight modes of your Gravit by using the two 3-way-switches on the left (SWA) and on the right side (SWB) of your transmitter. In detail, switching between the different modes works like this:

## THE TRANSMITTER

### SWB(right 3-way-switch):

The SWB is the main flight-mode switch. It switches between the "basic" 3 flight-modes as follows:

SWB in Pos. 0 (top): BALANCE-MODE

SWB in Pos. 1 (middle): ALTITUDE-MODE

SWB in Pos. 2 (low): GPS-MODE

### SWA (left 3-way-switch):

This switch is used for the special functions and flight modes.

It switches the following functions:

SWA in Pos. 0 (top): NO OWN FUNCTION, flight mode selected by switch SWB is active

SWA in Pos. 1 (middle): AOC-MODE (this can EITHER be HEADLESS, CIRCLE (POI) or CRUISE, depending on your settings, see chapter "Software")

SWA in Pos. 2 (low): Return-to-Home (RTH) , see chapter „Landing your Gravit“

**PLEASE NOTE:** AS SOON AS the SWA switch is flicked to any other position than Pos. 0 (top), that is Pos. 1 or Pos. 2 (middle or low position), IT OVERRIDES the function of SWB. Or in other words: NO MATTER which position your SWB-switch is, as soon as you move the SWA-switch to either to Pos.1 OR to Pos. 2, those functions of the SWA will be active and cancel the current function of SWB.

For example: Let's say you have flicked SWB to Pos. 1, using ALTITUDE-MODE. As soon as you flick SWA to Pos. 2, the Gravit will cancel to fly in ALTITUDE-MODE and initiate Return-to-Home as selected by SWA.

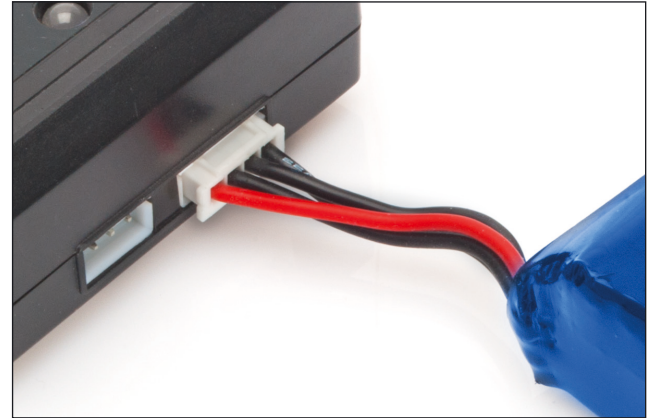
For a better understanding, here is a small table which show the DEFAULT switch-combinations of SWA and SWB and the resulting flightmode or function:

SWA Pos.	SWB Pos.	Active flight mode
0	0	BALANCE-Mode
0	1	ALTITUDE-Mode
0	2	GPS-Mode
1	Any	AOC-Mode
2	Any	RTH

Those switch assignments may be changed using the software (for details check chapter "Software").

For a detailed description of the different flight modes, please see chapter "The flight-modes".

### Charge your flight battery



Before the first operation, please charge your flight battery. To do so, connect the power-cord with your charger and a power socket and then connect the balancer-connector of your flight battery to the charger. Watch out for correct polarity when doing so.

When the battery is connected to the charger, the charging process is indicated by red LEDs. Please wait until ALL 3 LEDs of the charger have turned to green color! Only then has the LiPo been fully charged and you can disconnect it from the charger. Please note: The charger equalizes and balances the different cells of your battery during the charging process. This kind of behaviour ensures the gentlest charging process possible and dramatically increases your battery's life-span. However, charging a battery like this is relatively slow and takes around 3-5 hours. So please don't be worried if the charging process is not completed as quickly as expected. Your battery will thank it to you!

### Insert batteries into your transmitter



Please insert 4xAA batteries into your transmitter. Open the battery compartment on the back of the transmitter by sliding down the cover, insert the 4 batteries then close the cover again.

# LRP GRAVIT GPS VISION 2.4GHZ F.H.S.S.

## FLIGHT PREPARATIONS

### ONLY FOR GRAVIT GPS VISION – Check you camera mount



Make sure that the camera is properly seated in the camera cage and that the camera cage is securely connected to the mount.

The camera cage should be tightened down so that it does not move by itself when slightly touched. Make sure to adjust the camera to the desired angle. Usually, the camera should point slightly downwards in order to get good video footage later on.

### ONLY FOR GRAVIT GPS VISION PRO – Gimbal-calibration



Before you use the gimbal of your Gravit the first time, you should check it to make sure it works in an optimal way. For a detailed description of your gimbal, please check chapter „The gimbal“.

IN CASE you should notice that the gimbal is NOT working as expected, please calibrate the gimbal.

The calibration process works as follows:

- 1) Make sure that the power-connector of your gimbal is attached to power-socket of your Gravit like shown in the photo.
- 2) Make sure that the two black connectors are plugged onto the sockets of the gimbal as shown in the photo.
- 3) Before powering up you Gravit (and with it your gimbal), make sure that the camera is correctly attached and secured to the gimbal.

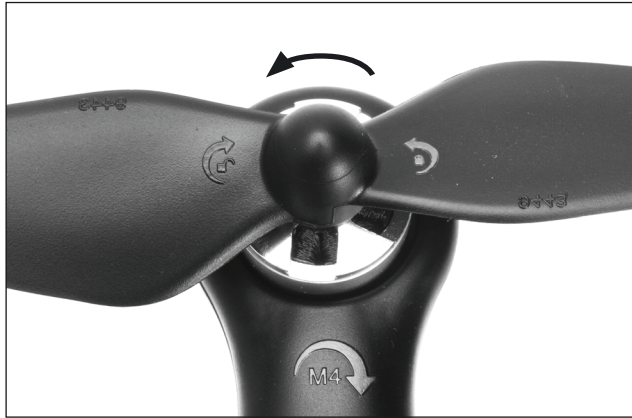
**PLEASE NOTE:** DO NOT power up your gimbal without a camera attached to it. Otherwise you may seriously damage or even destroy the gimbal.

Also make sure, that your Gravit is standing on an even surface and is not moved while performing the gimbal calibration.

- 4) Connect the flight battery to your Gravit and let it initialize.
- 5) When looking on the gimbal from the left side, you will see a small, black button on the left side of the gimbal circuit board (see photo). Press this button once. If necessary, use a small screwdriver or something similar to reach the button.
- 6) After you have pressed the button, the gimbal reboots and enters calibration mode for a short time.
- 7) Grab the camera with your hand carefully and aligned the camera in horizontal and vertical orientation as good as possible. Keep this position/orientation for a short moment until you can feel resistance from the gimbal and then release the camera.
- 8) Please note that for performing the calibration process (No. 7)), you have only a rather short time frame to do so before the gimbal enters normal operation mode again. In case you should miss the time frame and the gimbal should not aligned properly after the calibration process, please repeat the procedure until you are successful.
- 9) Your gimbal is now calibrated and ready to work. Unplug the battery from your Gravit again. In case the gimbal should not work properly later on, please repeat the calibration process.

## FLIGHT PREPARATIONS

### Mount your propellers



The propellers of your Gravit GPS are self-tightening propellers which can only be mounted in one direction. This is a security feature which prevents the props from being mounted onto the wrong motor(shaft).

To do this correctly, please have a look at the propellers.

You will see that the propellers are bearing symbols. Those symbols show you in which direction the propeller is locked (closed lock icon) and unlocked (open lock icon). The propellers are always mounted in a way that the locking direction is **CONTRARY** to the motor rotation direction (which is imprinted on each arm of the copter near the motor).

For example: If you have a motor which is rotating clockwise (as indicated by the arrow on this motor's arm), then you have to use a propeller which locking-direction is counter-clockwise, and vice versa.

To mount the propeller, just set it on top of the motor-shaft and rotate it into the appropriate direction until it is fully seated. The propeller will tighten itself when the motors are started, you don't need to tighten it up manually.

### Check the screws on regular basis

During flight operation, your Gravit is in constant movement and the screws might become loose as a result of this motion, vibration and strain on the components. This is especially true for the four screws that hold each of the four motors in place. Please check the screws on a regular basis. Take special care of the motor screws and make sure that they are always sufficiently tightened. Also, make sure to tighten the motor screws in a way that the motor will not grind against the plastic arms surrounding it. You can check this by manually spinning the motor with you hand.

Do **NOT** overt-tighten the screws by using too much force, just make sure that they are snug.

### **ATTENTION! Check wireless status of your Gravit's camera**

The wireless action camera of your Gravit is also capable of 2.4 Ghz wireless operation. This functionality is used for transferring pictures and movies from the camera to your smartphone or for configuring the camera via smartphone app. However, please be aware that the 2.4 GHz signal of the wifi action cam may interfere with the 2.4GHz signal that your transmitter is using to operate your Gravit. Therefore, we **STRONGLY ADVISE NOT TO ENABLE** the wireless function of your camera while flying your Gravit. You can enable and disable the wifi function of your camera by holding down the "OK" button on top of the camera for a few seconds when the camera is switched on.

Since the "OK" button of the camera is also used for other purposes (mainly starting and stopping a recording), please make sure not to enable the wireless function of your camera **ACCIDENTALLY** by pressing the "OK" button for too long.

For a more detailed explanation of all function of your camera, please read the appropriate chapter „The camera“ in this manual.

# LRP GRAVIT GPS VISION 2.4GHZ F.H.S.S.

## COMPASS CALIBRATION

### Compass calibration

The compass calibration is NOT necessary before EACH start. It has to be done only:

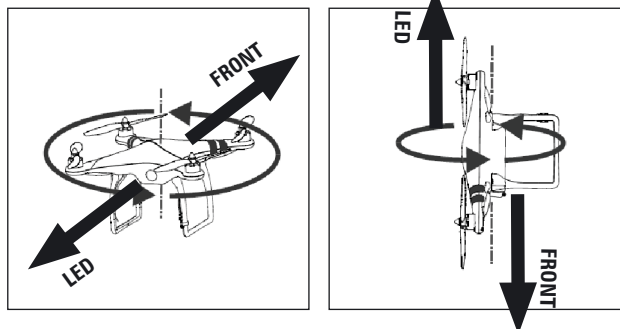
- before your maiden flight
- when you fly in an area which is hundreds or more kilometers away from your last flying area
- when you experience strange, uncontrollable flying behaviour in a GPS-assisted flight mode during your last operation
- if your Status-LED keeps on showing a yellow blinking code, which does not go away even after you have put the Gravit on different, NON-metal places.

**PLEASE NOTE:** Also check the connector that goes into the compass module on your Gravit's landing feet. If this connector is not properly seated into the compass module's socket, this will also result in a yellow status-LED.

### GRAVIT GPS VISION PRO ONLY:

Before performing the compass calibration, make sure that the gimbal is NOT connected to power. Check the red 2-pin plug that comes from your gimbal. If it is connected to the socket coming from the Gravit's bodyshell, unplug it for the duration of the compass calibration. Don't forget to plug the gimbal back in after you did the calibration.

The compass calibration is done as follows (also see pictures):



- 1) Turn on your Gravit first, then turn on your transmitter. Wait until the initialization process has been finished (during initialization, the status LED will continuously blink BLUE-GREEN-RED—PAUSE—repeat) and the Gravit is blinking either blue or blue/red (SWA/SWB=Pos.0).
- 2) Wiggle the right 3-position-switch (SWB) of your transmitter completely up and down quickly until the Status LED of your Gravit GPS is blinking green rapidly (leave SWB in top POS. 0 after doing so)
- 3) Grab the Gravit on the landing feet and hold it straight/horizontally away from you with the Status LED facing you. **IMPORTANT:** Be sure NOT to touch the compass, which is mounted on the lower rear part of the left landing gear when holding the Gravit. You can also (additionally) grab around the rear left arm of the Gravit to get a firm grip on your quadcopter.
- 4) Move slowly around your own axis in counter-clockwise direction until the rapidly blinking green Status LED is starting to blink with short pauses in between.
- 5) Tilt the Gravit forwards by 90°, so that the front is facing straight downwards and the Status LED is facing to the sky
- 6) Repeat step 3) and rotate around your own axis counter-clockwise until the Status LED is blinking a pattern again
- 7) The compass has been successfully calibrated. Put the Gravit back on the ground, the Status LED should now blink only blue. In case the status LED is also blinking red, please wait until the red blinking has stopped, indicating that enough satellites have been found.
- 8) In case the calibration fails, unplug the battery from the Gravit, turn off your transmitter and start over again.



## TAKE OFF - PREPARATIONS AND TAKE OFF

### Preparations

Before you can take-off with your Gravit GPS, you should make sure that some requirements are met and some preliminary procedures have been worked through correctly and successfully:

The camera mount (or the gimbal mount respectively) has been secured by black zip ties for transportation. Those zip ties do NOT necessarily have to be removed. But if you choose to let them on the mount and your video footage seems unusually instable or shaky, you should consider REMOVING the zip ties, as they MAY influence the result of your camera negatively

- In case you plan to use your camera, please make sure the lens protection foil has been removed from the lens
- Make sure that the connector that goes to your compass is firmly connected to the compass and has not come loose during transportation
- Your flight battery should be fully charged and the batteries of your transmitter should be full
- The battery of your camera should be charged
- Your propellers should be properly mounted and without defectives
- Your gimbal should be calibrated and working (ONLY #220721)
- DO NOT POWER UP your Gravit (and thus your gimbal) if the camera is not attached to the gimbal, as this will damage the gimbal.
- Your compass should be calibrated and working correctly
- You should have checked your Gravit for any damages or defectives
- It should not be too windy (flying in strong winds will most likely result with the loss of your Gravit!)
- It should not be too cold or too hot (flying in extreme temperatures is not recommended)
- It must not rain (your Gravit is not suited for flying in rain, beware of damages!)
- You should be in a large outside area with no constructions, houses or people around
- You should be in a place where you are legally allowed to fly
- You should keep your flight insurance documents with you (needed in many countries, please check)
- You should know the special functions of your transmitter (especially the function of SWA and SWB)
- You should be familiar with the status-LED and its blink-codes
- Both of your transmitter switches should be in Pos. 0 (top). Experienced pilots can handle this differently on their own

risk)

- Your throttle control stick (left stick) should be completely down
- The WiFi of your camera MUST BE disabled!
- You should be comfortable to fly quadcopters (and in case you are NOT, you should have someone at your side who is and who can assist you)
- You should have a decent, even, unobstructed take-off area from which to take off from.

Before taking off with your Gravit, have a close look at the status-LED on the rear side of your Gravit. The following blinking codes should PREVENT you from starting and require further actions to be taken before you can take off:

- Fast red flashes → This means that the battery is depleted, check battery voltage
- Intermittent 2 red flashes → Your Gravit has not yet acquired full satellite lock
- Long, yellow flashes → The compass of your Gravit is not working properly (see chapter "Compass calibration")
- Long, red flashes → The IMU (Inertial Measurement Unit) does not work properly (see chapter "Software" and MANUAL IMU- and TX-calibration)

**Before you take off your Gravit, make sure you have read through the chapter "Take off-preparations".**

**To take off, please do the following:**

- 1) Put your Gravit on the ground and connect the flight battery
- 2) Tuck the battery wires away inside of the battery compartment and close the battery compartment
- 3) Turn on your transmitter
- 4) Wait until the Gravit has gone through the initialization process
- 5) Make sure that the status-LED of your Gravit does NOT show an undesired LED-blinking code (see chapter "The status LED").
- 6) With your two transmitter-switches SWA and SWB being in the top position Pos. 0 (which we recommend for taking off), please wait for the red blinks to disappear, indicating that your Gravit GPS has acquired full GPS-lock.
- 7) If you want to make use of your camera (start a recording, for example), please make sure to make all the settings now, BEFORE you arm and start your motors (for details on your camera's functions, please read chapter "The camera")

# LRP GRAVIT GPS VISION 2.4GHZ F.H.S.S.

## BASIC FLIGHT OPERATION

- 8) Once your Gravit's status-LED is blinking blue only, bring the control sticks of your transmitter to the inner lower position (left stick to 5 o'clock and right stick to 7 o'clock) to arm and start the motors to idle speed.



**Please note:** If you do not raise the throttle within 2 seconds after arming the motors, the motors will stop again and you have to repeat the procedure.

- 9) Raise the throttle stick to around 80% to have the Gravit take-off quickly, then lower the throttle stick if needed until the Gravit hovers in the air. We recommend applying throttle NOT TOO slowly, the Gravit might become unstable and tip-over if you do so.
- 10) Let the Gravit hover in the air at a safe height and distance (around 5 meters) until you are sure that everything works fine and you are in control of your Gravit
- 11) Enjoy your flight!

### Basic Flight Operation

As soon as you have your Gravit up in the air, you can take full control and fly it around. This chapter will cover the basic flight maneuvers, like flying up and down, forward and backward and sideways.

To read about more advanced flight maneuvers and functions, please refer to the chapter "Advanced Flight Operation" and "The flight modes".

**PLEASE NOTE:** Your Gravit is equipped with a feature called "Geo-Fencing". This feature limits the maximum height and horizontal distance that your Gravit can fly away from the start position. EX WORKS, your Gravit is limited to 50 m of height and 150 m in horizontal distance, so keep this in mind when flying. However, those limits can be changed within the software of your Gravit (details see chapter "Software").

### Throttle control

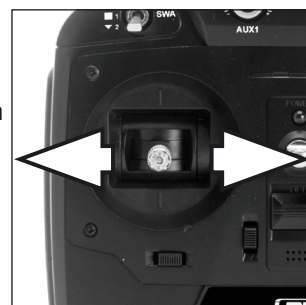
By moving the left control stick up- and downwards, you control the thrust of your Gravit. The lower the stick, the lower the thrust and vice versa. Depending on the amount of thrust you are providing with your throttle control, the Gravit will either climb or decline.



If the control stick is set to neutral/middle position, the Gravit will hover at its current flying height in the flight modes ALTITUDE and GPS (position-hold), check chapter "The flight modes". For all other flight modes, leaving the throttle stick at neutral will NOT result in triggering automatic altitude-hold controlled by the altimeter. Instead, the motors will simply apply exactly half of their maximum thrust, which will usually result in the Gravit holding its height MORE OR LESS (depending on the flight situation).

### Yaw control (rudder)

When moving the left control stick to the left and right, the Gravit will rotate around its own axis in the corresponding direction, your Gravit is "yawing".



The further the stick is pushed to either side, the faster the movement will be.

### Pitch control (elevator)

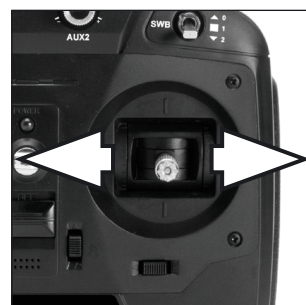
When moving the right stick forwards or backwards, the Gravit will either fly forwards or backwards, it will "pitch" towards the corresponding direction.



The further you push the stick to either direction, the faster the Gravit will fly.

### Roll control (aileron)

When you push the right stick to the left or right, the Gravit will fly sideways into the corresponding direction, it will "roll" to this side. The further you push the stick, the faster



## BASIC FLIGHT OPERATION

the movement will be.

Of course, all of those maneuvers can be combined together to more complex flight maneuvers, like for example flying a circle, or flying up and forward at the same time.

**IMPORTANT:** As soon as the battery of your Gravit is depleted beyond a certain voltage, the status LED of your Gravit will start to blink red very quickly. It is now time to bring your Gravit back home.

### Keep an eye on your status-LED

While flying, always keep a close eye on the status-LED of your Gravit.

The status-LED will tell you anytime if everything is ok and which flight mode you are currently using. For a detailed listing of all the status codes, please see chapter "The Gravit GPS, The Status-LED".

There are 3 status codes, which should specifically catch your attention and which require appropriate actions to be taken:

#### 1) Low-voltage-warning



If the status LED is starting to emit a series of fast, red blinks, then your LiPo is beginning to become depleted. You should slowly start to land your Gravit without any further delay (see chapter „Landing your Gravit“).

**PLEASE NOTE:** It may happen that the low-voltage-warning is kicking in to early if you fly maneuvers that put a lot of strain on the Gravit’s propulsion. For example, if you hover in the air and the suddenly apply full throttle, the low-voltage-warning may kick in shortly, although you are still good to go for a while. In this case, you may continue to fly. But watch out for the low-voltage-warning at any time and if it is constantly showing up, it is about time to bring your Gravit back home.

**PLEASE NOTE:** Depending on the flight mode you are using at the moment the low-voltage-warning is triggered, the Gravit behaves differently: For BALANCE and ALTITUDE mode, the Gravit will CONTINUE to fly until the second low voltage warning kicks in. When flying in GPS-mode, the Gravit will instead initiate a “Return-to-home” and fly back to its take-off position. When the second warning kicks in for BALANCE and ALTITUDE mode, the Gravit will either return to home OR auto-land, depending on your software settings (see chapter “Software”).

#### 2) Compass error



Whenever your compass is not working correctly, the status-LED will give out long yellow blinks.

When you receive this warning code, do not panic. During flight, especially when flying very tight and fast maneuvers at high speed, it might happen that the compass is SHORTLY “out of bounds” and the status-LED comes up with a yellow warning signal. In this case, stop your Gravit in the air and watch the status-LED. Most likely, it will stop to give out the yellow error code within a second or two and you can continue to fly.

Only in case the yellow warning code is continuously (or repeatedly) showing up, you should ground your Gravit and check your compass (see chapter “Compass calibration”).

#### 3) GPS-error



As soon as you notice two short, intermittent RED blinks on the status-LED of your Gravit, beware. This means that your Gravit has lost full satellite lock and you cannot use any flight modes that rely on GPS-assistance (like return-to-home, GPS-mode, and others).

IN CASE you are NOT planning to use any GPS-assisted flight functions, you may continue to fly without any worries. However, we do NOT suggest doing so, as the return-to-home and fails safe feature of the Gravit are also NOT working in this condition. So keep in mind that you are flying at your own risk while not having full satellite lock.

# LRP GRAVIT GPS VISION 2.4GHZ F.H.S.S.

## LANDING YOUR GRAVIT

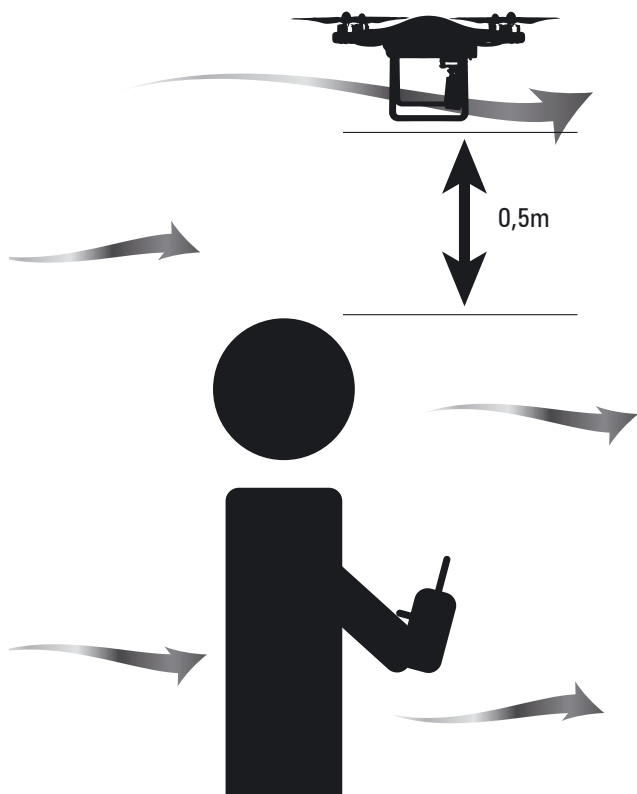
To land, you can basically choose between 3 different methods:

### 1) You bring down the Gravit manually:

If you want to land your Gravit manually, please make sure that you try to land on an even and flat surface. If you try to land on a stony or uneven surface, you risk that your Gravit is tipping over during the landing procedure and becomes damaged.

Take your time and bring down the Gravit very slowly. Try to keep it as steady and horizontal as possible and decrease the height step by step in the last few meters. After you have landed your Gravit successfully, hold down the left control stick completely and the motors will shut off a few seconds later. In case there should be no flat and even surface around, we recommend to „catch-land“ your Gravit instead, see 2)

### 2) You „catch-land“ your Gravit:



„Catch-landing“ is just what it sounds like: You do not land your Gravit on the ground, but bring it close enough to you to grab the landing feet while the Gravit is in the air and then you stop the motors. The big advantage of catch-landing is that it can be done everywhere. It does not matter whether you are standing in high grass or rocky hills. Since your Gravit does not have to come down to the ground,

the quality and condition of the landing surface does not matter. The second advantage is that you do not risk any damage on your Gravit due to potential tip-overs when attempting to land „normally“ on the ground. However, if you decide to catch-land your Gravit, beware of getting hit by the spinning propellers!

### To do the catch-landing correctly, do as follows:

- Bring down your Gravit around 0,5 meters ABOVE your head. This is very important because in case the Gravit suddenly drifts away in any direction (because of a gust of wind, for example) you won't get hit by the Gravit because it will fly/drift OVER your head.
- In case that there should be a noticeable or even strong wind: Approach the Gravit with the wind in your BACK, NOT in your face. By doing so, you can avoid the Gravit is accidentally being pushed TOWARDS you by the wind. Instead, if you approach it with the wind in your back, the Gravit is pushed AWAY from you.
- Grab one landing feet on its VERTICAL part, as closely to the bodyshell as you can get and hold it firmly. Do NOT touch the compass on the rear left landing feet during this procedure.
- Move the throttle stick completely downwards. Keep on holding the Gravit up in the air above your head UNTIL the rotors stop spinning. Now it is safe to put the Gravit anywhere you want.

### A few words on catch-landing:

- It is easier to completely lower the throttle with one hand and catch the Gravit with the other hand if you use a neck-strap for your transmitter. By doing so, single-handed transmitter operation becomes much more reliable and easier, because you don't have to physically hold the transmitter with your hand.
- If you fly with another person, ask this person to help you catch-land your Gravit. If one person operates the control sticks and a second person catches the Gravit, this second person may use BOTH hands to do so, making this procedure even more safe and reliable. However, please make sure that this person feels comfortable in doing so and knows what he or she is doing.
- Make sure that you only move your Gravit as little as possible while holding it in the air during the catch-landing procedure. Keep in mind that every movement you make is being recognised by the Gravit's electronics and is being countered by the corresponding maneuver-attempts. This can be confusing or surprising and lead to false behaviour of the person who is catch-landing.

## LANDING YOUR GRAVIT

- Switch to GPS position hold when catch-landing. By doing so, your Gravit attempts to hold its position both vertically and horizontally and stay in one place. However, use GPS-mode ONLY if you have acquired full satellite-lock and your status LED does not blink red.

### 3) Auto-land your Gravit=Return-to-Home



In order to have your Gravit return to its take-off point and land there automatically, you need to be in GPS-assisted mode.

To switch your Gravit into GPS-mode, flip the right switch of your transmitter into the lowest position. PLEASE NOTE: You can initiate a „Return-to-home“ from ANY flight-mode, but we strongly advise to do so only after switching into GPS-mode before.

To have the Gravit initiate Return-to-Home (which includes the auto-landing), flip the left switch of your transmitter to the lowest position. The status-LED of your Gravit will start to blink green rapidly and the Return-to-Home procedure will start.

**PLEASE NOTE:** The base requirement of auto-landing your Gravit is that enough satellites have been acquired during your start-up procedure.

If this was NOT the case and you took off BEFORE enough satellites were acquired and a new home point was recorded, the Return-to-Home maneuver may result in the Gravit flying towards an OLD recorded home point. This home point may be far away from your last take-off position and the Gravit may seem to fly away from you instead of towards you. If at any time you feel uncomfortable with the auto-landing or notice some unexpected behaviour of the Gravit, cancel the Return-to-Home (and auto-landing) by flipping the left switch of your TX to the top position. You are immediately back in control again.

We also do NOT recommend to auto-land your Gravit via Return-to-Home maneuver in strong winds and on une-

ven, bumpy surfaces. Both scenarios have a big chance of ending in a tip-over during the landing procedure, thus damaging your propellers and/or your Gravit.

AT ANY TIME during the landing process (no matter, which of the different landing procedures you have chosen), we recommend keeping your fingertip on the throttle control. By doing so, you can fly the Gravit upwards away from all potential collisions and start a new landing attempt all over in case that something seems to be going wrong.

- After you have landed your Gravit, open the battery tray and disconnect the LiPo battery from the power-connector of your Gravit. Then turn off your transmitter (and the Camera if necessary).

# LRP GRAVIT GPS VISION 2.4GHZ F.H.S.S.

## ADVANCED FLIGHT OPERATION

Before you start to use any of the advanced features of your Gravit, you should make sure that you are familiar with the basic control commands of your Gravit and you should be comfortable with flying the Gravit.

For information on the different flight modes of your Gravit, please read through the chapter "The flight modes".

As mentioned in the "Basic Flight Operation" chapter, you can combine the stick inputs of your transmitter to more complex flight maneuvers.

When doing so, please keep in mind the following things:

### Declining and climbing with your Gravit

When you choose to loose or gain height with your Gravit and lower or raise the throttle stick, you should make sure that you are doing so at a reasonable pace.

A quadcopter does NOT have the ability to "glide" (like a plane), it cannot fly "by itself". Therefore, you should always make sure that your throttle inputs are not too extreme. Whenever possible, increase or decrease your thrust always smoothly and slowly, NOT abruptly.

This is ESPECIALLY true when declining. When declining, do so at a slow speed and try to decline while moving, NOT on the spot.

Declining on the spot always bears the risk of getting caught by your so-called "prop wash". Think of it like that: Your quadcopter pushes air downwards to generate upwards thrust, which is keeping it in the air. The air which is pushed downwards generates a downward-pull and turbulences and if you are declining straight downwards into the downward-pull, your quadcopter might start to tumble or even crash.

### Taking video footage with your Gravit

When shooting video with the camera of your Gravit, you should also keep in mind that the way you are flying is SEVERLY impacting the quality of your video footage. No matter whether you own and fly a Gravit version WITH gimbal (#220721) or WIHTOUT gimbal (#220720), you should always consider the following points in order to get the best possible image quality from your camera:

- 1) Whenever you move your Gravit in any direction, do so slowly and smoothly.
- 2) Do not constantly change your direction of flight, as this will result in "nervous" and unsteady video footage
- 3) When shooting a longer scene while flying in the same direction, make sure you are flying with the wind in your back, not against your Gravit.

### Retain your orientation

Since your Gravit is a symmetrical object, it is more difficult to tell its orientation in the sky compared to an airplane, for example. Your Gravit is equipped with very bright LEDs on the bottom side of each arm. The front LEDs have green color, the rear LEDs have red color.

Keep this in mind in case you should loose control over the orientation of your Gravit.

When you are too far away or when flying in very bright daylight (against the sun), you will notice that the LEDs are not visible any more.

If you happen to loose control over the orientation of your quadcopter, do NOT panic. There are several things you can do to regain your orientation again:

- 1) The easiest way is to flick the SWA switch of your transmitter to the lowest Pos. 2. This will initiate a return-to-home. The Gravit will fly towards its take-off position and then attempt to auto-land. You can use this feature to bring the Gravit back into a clearer line of sight and when you regained orientation you simply cancel the return-to-home by flicking the SWA switch back to top position. Then you can continue flying normally again (please also read chapter "Landing your Gravit").
- 2) It is also possible to regain orientation by flying a certain maneuver: Fly a rather BIG circle by moving throttle upwards and either pushing the right control stick to the left or right (depending on which direction you want the circle to be flown). When the Gravit is starting to fly the circle, you will come to the point when the Gravit is flying ROUGHLY towards your direction again. At this point, let go off the right control stick and let the Gravit fly straight ahead. After a few seconds, repeat this maneuver. You can attempt to fly a smaller circle now and you can also change the rotation of the circle this time. By doing so, it should be possible to fly the Gravit closer and closer back to you until you finally regain your orientation again and fly the Gravit normally.

### When loosing control

In case you should ever loose control over your Gravit (maybe as a result of a failed maneuver or a gust of wind), let go off the right control stick and apply full (or near full) throttle. The reason for doing so is quite easy:

- 1) If you let go off the right control stick, the Gravit will stop any horizontal movement/acceleration and stabilize itself automatically
- 2) If you apply throttle, this will also help to stabilize the Gravit and the Gravit will fly upwards → That is normally a good thing, as there are no obstacles in the sky, but many on or near the ground.

So both actions will help your Gravit to stabilize and fly out of the danger-zone (which is usually near the ground, NOT up in the skies). Then you can regain control again and continue flying.

## THE FLIGHT-MODES

**Your Gravit is capable of very advanced flight modes and functions. Those functions will be covered in this chapter extensively.**

You can make use of the different flight modes by choosing it with the two 3-way-switches SWA and SWB on the top left and right front side of your transmitter.

Ex works, your Gravit has a default assignment of the flight modes to the SWA and SWB switches of your transmitter, which is as follows:

SWA Pos.	SWB Pos.	Active flight mode
0	0	BALANCE-Mode
0	1	ALTITUDE-Mode
0	2	GPS-Mode
1	Any	AOC-Mode
2	Any	RTH

Those switch assignments may be changed using the software (for details check chapter "Software").

In the following part of this chapter, you will find a detailed description of all flight modes along with the information whether:

- They need GPS-satellite lock to work (= GPS assisted)
- They make use of the barometric altimeter
- They use DEFAULT control stick configuration (the default control stick configuration is being explained in chapter "Basic flight operation")

The different flight modes are (DEFAULT SWA and SWB position for this flight mode in brackets):

### **BALANCE-mode (SWA 0 and SWB 0)**

GPS-assisted: NO

Altimeter: NO

DEFAULT stick configuration: YES

The Balance-Mode is the "basic" flight mode. We recommend it for taking off with the Gravit and for initial learning. The balance mode does NOT depend on GPS-assistance and can therefore be used WITHOUT the full reception of satellites.

When flying in balance mode, the gyro stabilizes your Gravit and limits its maximum angle of tilt so that you can still safely and easily fly, but you will NOT have automatic altitude hold, speed hold or any other advanced assistance.

Balance mode is also good for flying fast, as the flight controller will not limit the angle of tilt as restrictively as it is done in GPS-mode, for example.

Control of your Gravit is just normal "standard", all stick inputs work like described in the chapter "Basic flight operation".

**PLEASE NOTE:** This mode may NOT be assigned to any other channel/switch-position, it will ALWAYS be selected by SWA 0 and SWB 0)

### **ALTITUDE-mode (SWA 0 and SWB 1)**

GPS-assisted: NO

Altimeter: YES

DEFAULT stick configuration: YES, except for height control

The altitude mode has its name from the fact that when flying in this mode, your Gravit will hold the flying height automatically IF the throttle stick is set to center/neutral position.

This means that you will DECLINE if the throttle stick is BELOW center and you will CLIMB if the throttle stick is ABOVE center position.

Keeping it at neutral position will make the Gravit HOLD the current height.

Other than that, the controls are normal and as described in the chapter "Basic flight operation".

The altimeter needs some time to react to changes in height. For example: Let's say you are hovering in the air at a height of 10 meters. Then you begin to fly forwards. This usually results in a DROP of height, as the quadrocopter is using up a part of its thrust for flying forwards instead of upwards. The altimeter will notice the drop in height and adjust the throttle accordingly to regain/maintain the original height. This process may take some time. Depending on the style of your flying, it may become necessary to compensate for the loss of height by applying throttle manually.

The altitude mode is best suited for smooth, slow flying (shooting video, for example) and NOT for sportive, agile maneuvers.

**PLEASE NOTE:** The ALTITUDE-mode is the ONLY mode for which the altimeter is being used to maintain a specific height throughout all flying maneuvers.

# LRP GRAVIT GPS VISION 2.4GHZ F.H.S.S.

## THE FLIGHT-MODES

### GPS-mode (SWA 0 and SWB 2)

GPS-assisted: YES

Altimeter: Only for GPS-position hold

DEFAULT stick configuration: YES, except for height control

GPS-mode is the most advanced flight mode. It uses both GPS-assistance and the altimeter to provide the best support to the pilot.

Usually, this mode is being used for taking photos and shooting videos.

As a result of this, the maximum tilt angle of the Gravit (and the resulting speed as well) are reduced compared to "Balance-mode", for example.

So if you want to rip through the skies and go crazy, this surely isn't the mode for you...

The specialty of this flight mode is the "GPS-position-hold".

This feature lets your Gravit hover in the air just on spot, without movement along any axis.

Or in other words: Your Gravit does not fly into any direction and neither does it gain or lose height.

This is very interesting for taking photos or shooting video.

Technically, the GPS makes sure that your Gravit does not move on the horizontal plane, while the altimeter is ensuring that your current height is kept.

In order to enter GPS-position-hold, you have to let go off the right control stick and bring the throttle stick to center/neutral.

Depending on the wind conditions, your Gravit may not always manage to stay on spot 100%, but it will try its best to compensate for any unwanted change in position as good as possible.

### Return-to-Home-mode (RTH, SWA 2 and SWB ANY)

The Return-to-Home mode is actually not a real flight-mode. YOU do not fly the Gravit, but the Gravit flies ITSELF back home.

RTH is initiated by switching the left SWA-switch to the lowest position (Pos. 2). You can initiate the RTH ANYTIME, NO MATTER which flight mode you are currently using.

Please note that RTH will only work correctly, if you started your Gravit with full satellite lock. As soon as you initiate RTH, the status-LED of your Gravit will start to flash green rapidly.

Depending on the settings of the software, the Gravit climbs to a certain height first (default: 10 meters), before she is flies back above the take-off position and then slowly begins to auto-land.

For further details, please see chapter „Landing your Gravit“

**PLEASE NOTE:** This mode may NOT be assigned to any other channel/switch-position, it will ALWAYS be selected by SWA 2 and SWB ANY)



## THE FLIGHT-MODES

### AOC-mode(s) (HEADLESS FLYING, CRUISE or CIRCULAR, SWA 1 and SWB ANY)

Depending on the configuration of your firmware, this stick-position (SWA 1 / SWB ANY) switches to either of the so-called AOC-modes. AOC is short of "Advanced Orientation Control". BY DEFAULT, the AOC-mode which is active is CIRCULAR, but it can be set to HEADLESS FLYING or CRUISE instead by using the configuration software for your Gravit (see chapter "Software").

### CIRCULAR-mode (POI, Point of interest)

GPS-assisted: YES

Altimeter: NO

DEFAULT stick configuration: NO

Circular mode lets your Gravit fly circles around a defined point of interest. While doing so, the Gravit will attempt to keep its nose (and the camera) face towards this point of interest, so that the POI is always in the center of the camera's video footage (but filmed from different, circular positions).

In detail, the mode work like this:

- 1) First, you choose your "point of interest" by flying above the point. Such a point could be the center of a soccer field, for example.
- 2) When you are right above this point, enter CIRCULAR-mode by switching to SWA to Pos. 1 (middle). Upon switching to Pos.1, the Gravit records the GPS-coordinates for your chosen point of interest (do NOT switch to CIRCULAR mode BEFORE you are hovering over your point of interest, otherwise, the wrong coordinates will be saved and used).
- 3) The Gravit will begin to fly a circle with a radius of approximately 20 m into clockwise direction at a speed of around 1m/second. While doing so, the Gravit will re-adjust its orientation several times so that the front (and thus the camera) is always facing towards the center of the circle, which is you choosen point of interest.
- 4) The controls are DIFFERENT from the standard controls while in CIRCULAR-mode:
  - Right control stick up and down → Increase and decrease the radius of the circle the Gravit is flying
  - Right control stick to the right and left → Will either INCREASE or DECREASE (and finally reverse) the flying speed (or rotation direction respectively), depending on whether the Gravit is flying clockwise or counter-clockwise. Example: Let's assume your Gravit is circling CLOCKWISE around the point of interest (which is the default direction). To speed up its flying, you have to push the

right control stick to the right (which equals clockwise), to slow down the flight, you have to push the stick to the left (which equals counter-clockwise). If you slow down the flight, the Gravit will eventually come to a standstill and if you keep on pushing the stick into the same direction, the Gravit will start to fly COUNTER-CLOCKWISE.

- Moving throttle up and down increases and decreases height, moving the left stick to the right and left, has NO EFFECT (no yawing possible).
- 5) To end the CIRCULAR-mode, switch to any other flight mode using the SWA and SWB switches
  - 6) To set a NEW point of interest, exit and re-enter the CIRCULAR-mode

### HEADLESS (FLYING)-mode (AOC)

GPS-assisted: YES

Altimeter: NO

DEFAULT stick configuration: NO

When you enter HEADLESS-mode, the Gravit memorizes its current orientation (=it's facing of the front). As long as you stay in this mode, the flight direction of the copter will always be based on the memorized orientation when you issue flight controls, no matter what direction the copter is ACTUALLY facing.

Here is an example. Let's say that you have positioned the Gravit in front of you on the ground, facing straight AWAY from you towards NORTH with its front. Then you switch to HEADLESS FLYING-mode. Your Gravit memorizes this heading/orientation as „forward" (or NORTH) position/heading. Next you take off and rotate the Gravit by 180°, facing towards you (SOUTH) with its front. If you now issue the flight command „Fly forwards" by moving your right control stick upwards, the Gravit will actually fly AWAY from you (towards its memorized forward/NORTH position, INSTEAD of flying TOWARDS you (south) as it would normally when facing you with its front.

→ This means, once you enter HEADLESS-mode, the controls of the Gravit are „locked" relative to the heading it had when you entered the mode. If you do not switch your position, moving your control stick right will always make the Gravit fly right, no matter which orientation the Gravit's front actually has. The same goes for flying left, forward and backward.

How HEADLESS-mode should be normally used:

To get the most out of this feature, LRP advises to enable „Headless Flying" ONLY when the copter is actually facing STRAIGHT AWAY from you with its FRONT. By doing so, you can easily control the Gravit during flight because you simply have to push the control sticks into the direction you want the

# LRP GRAVIT GPS VISION 2.4GHZ F.H.S.S.

## THE FLIGHT-MODES

Gravit to fly, NO MATTER what direction/heading the Gravit's front is ACUTALLY facing → Your Gravit will always simply fly into the direction you are moving your right control stick to.

In order to have this feature work as intended, please also note that you should NOT change your location or heading when flying in „Headless“ mode. Otherwise, you will become disoriented with the controls and the feature does not make sense anymore.

**PLEASE NOTE:** You may enable or disable „Headless Flying“ anytime, no matter whether you are flying or on the ground. For best operation and results, we advise NOT to enable the function while the Gravit is moving in the air, but while the Gravit is still on the ground.

To disable HEADLESS-mode, simply switch to a different flight mode other than AOC.

### CRUISE-mode

GPS-assisted: YES

Altimeter: NO

DEFAULT stick configuration: NO

The CRUISE-mode lets your Gravit fly at constant speed. This may be convenient when shooting a movie in order to get smooth, stable image quality. When entering the CRUISE-mode, your speed will be set to around 1m/second.

The controls are as follows:

- Your left control stick may adjust the height by moving the stick up- or downwards. Moving the left control stick to the left and right does NOT have any effect.
- Your right control stick can be moved up and down to increase or decrease the speed and it can be moved to the left or right to yaw/turn into the appropriate direction (right control stick left and right replaces the function of left control stick left and right).

To exit CRUISE-mode, simply switch to a different flight mode other than AOC.

### MANUAL-mode

**PLEASE NOTE:** When switching to MANUAL-mode, the status-LED of your Gravit will give out NO signal at all. If sticks are off-center, you will get two blue blinks, but the MANUAL-mode itself does NOT have any LED-code, it does NOT share the three green blinks of the AOC-modes (HEADLESS FLYING, CIRCULAR and CRUISE)

GPS-assisted: NO

Altimeter: NO

DEFAULT stick configuration: YES

**BEWARE: Self-levelling and tilt angle limitation DISABLED!**

The MANUAL-mode is the LEAST-assisted flight mode. When flying in this mode, you won't have GPS or altimeter support, the Gravit will NOT be self-levelling and the limitation of your angle of tilt when flying into any direction will be DISBALED.

This means, that you are in full control of the quadcopter and cannot rely on any technical assistance from the flight controller. In MANUAL-mode, you can fly loopings, for example.

**LRP DOES NOT RECOMMEND USING THE MANUAL-MODE, as it will MOST LIKELY result in a crash of the Gravit. Only the most experienced pilots are capable of controlling a quadcopter in unassisted MANUAL-mode!**

**WHEN FLYING WITH ATTACHED GIMBAL AND CAMERA, WE STRICLTY ADVISE NOT TO USE MANUAL-MODE, as this will most likely damage your gimbal and result in a crash.**

**USE THIS MODE ONLY ON YOUR OWN RISK AND RESPONSIBILITY!**

**YOU HAVE BEEN WARNED ;-)**

## THE CAMERA

No matter which version of the Gravit GPS you have bought, all of them come with a high-quality, Full-HD WiFi-camera with included color-LCD. This chapter will cover all the functions of your camera in detail.

### The basic functions of your camera

When looking at the pictures below, you can see that your camera is equipped with several buttons, 2 connectors, 3 LEDs, a color-LCD, speakers and a battery compartment.

#### 1) On/Off/mode-button

The button on the front of the camera is used for turning the camera on and off.  
 → To turn the camera on, press the button once. The camera will play a melody and boot up. The camera's LCD will turn on, the red LED on top and the blue LED on the side of the camera will come up.



The LCD will show you a live-screen (start screen)

→ To turn the camera off, press and hold the button for 2 seconds and let go off it. A melody will play and the camera will shut off.

The button has two other functions as well:

→ When the camera is on and you press it shortly, the camera will cycle through its different operation-modes (see "Camera modes").

→ When you are in the options/settings menu, the button will serve as a "Back" button, bringing you back to the last screen (see "Camera settings")

#### 2) OK button

The OK button on top of the camera is used for confirming a selected option in the options/settings menu (see "Camera settings") as well as for taking a picture and to start and stop recording a movie.



In addition, it enables and disables the WiFi of your camera when it is being pressed and held for 2 seconds (see "WiFi function")

#### 3) UP- and DOWN-button

The UP and DOWN buttons on the side of the camera have function to go up and down when you are in a menu, thus changing your selected item. IN ADDITION, the DOWN button is being used for entering the settings menu when you are on the start screen of the camera.



#### 4) USB-connector

The USB-connector on the side of the camera is a Micro-USB-connector. It is used for charging the camera using a Micro-USB-cable and a suited USB-power-supply (see "Charging the camera").

The second function of the USB-port is to give out the live-camera image to a suited transmitter, for example. In order to do so, the TV-out option of the camera has to be enabled (see "Camera settings").

The third function of the USB-port is to connect the camera to the PC, using a suitable Micro-USB-cable (see "PC-connection")



#### 5) HDMI-connector

This Micro-HDMI-connector is used for connecting the camera to a display which has HDMI-inputs, for example a TV. This function will NOT be covered here, use it at your own risk and liking.



#### 6) Micro-SD-slot

The Micro-SD-slot must be equipped with a suitable Micro-SD card.

The Micro-SD card must have 4 to 32 GB and be Speed-Class 10.

Before using the card in the camera, insert the card and



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## THE CAMERA

format it using the "Format" option in the settings menu (see "Camera settings")

### 7) Power-LED

The red power-LED on the top of the camera is on when the camera is powered up.



### 8) Blue status-LED

The blue status-LED on the side of the camera is:

Solid blue when the camera is powered up

Blinking blue when the camera is recording OR when the camera's WiFi is enabled.



### 9) Red status-LED

The red status-LED on the side of the camera is indicating the charging-status when the camera is connected to a power-supply. If the red LED is ON, then the camera is being charged.

If the red LED is OFF, the camera is fully charged.

When NOT being connected to a power-supply, the LED is always off



### 10) Battery compartment

Inside the battery compartment is the LiPo battery. There is actually no need to take it out, as it can be charged while inside the camera.



### 11) Loudspeaker

Your camera is even equipped with a tiny loudspeaker, which will give out the sound when playing back a movie on the camera. Don't expect cinematic surround sound, though...



### 12) Color-LCD

The color-LCD is used for making easy adjustments to the camera and for playing back recorded video or photo.



### Charging the camera

Before you can use the camera, we advise to charge it fully first. To charge the camera, simply connect the provided Micro-USB-cable (or any other suitable cable you may have at hand) to the camera and the power-supply. Put the power-supply into a power-outlet.

The camera will power up and the red status-LED on the side of the camera will go solid red. This means that your camera is being charged.

When the camera is fully charged, the red LED will go out and you can disconnect the camera from the power-supply.

When looking at the screen of your camera, you will also see a small, green battery icon in the lower left corner of the screen. This icon will help you monitor your camera's battery status.

**Please note:** On some occasions, it may happen that the camera is starting to record a movie when connecting it to a power-supply. You will see a red "rec" text at the upper right corner of the screen then. In this case, please press the OK-button once to stop the recording.

LRP generally recommend charging the camera by connecting it to a running PC or Laptop. This method has proven to be more reliable during the development of the Gravit.

## THE CAMERA

### Camera modes

When turning on the camera, it will boot up in "Video-mode". You can check the mode that your camera is currently in by looking at the icon/symbol in the upper left corner of the screen.

To cycle through the modes, you can press the on/off/mode-button on the front of the camera repeatedly.

The camera-modes are:

- **Video-mode (indicated by video-camera-icon)**  
Video-mode is the standard mode that the camera is in when booting up. In this mode, you can record movies. To start recording a movie, press the OK button on top of the camera. A red "rec" text will appear at the upper right corner of the LCD, indicating that the camera is recording a movie. To stop the recording, press OK again
  - **Car-mode (indicated by car-icon)**  
The car mode will NOT be used with the Gravit and will not be covered here. Use it at your own responsibility.
  - **Photo-mode (indicated by a "P"-icon)**  
This is the photo mode for taking pictures. To take a picture, press the OK-button once.
  - **Playback-mode (indicated by a "Playback"-icon)**  
This mode let's you play back your recorded videos and photos.
- To display a recorded video, use the DOWN-button on the side of the camera to high-light "VIDEO", then press the OK button once.  
You will see a screenshot of your last recorded video on the LCD. In the upper right corner, you will see two numbers. The first is showing the currently selected video, the second is showing the number for videos that are stored on the Micro-SD-card. To playback a vide, press the OK button once, to select a different video, press the DOWN or UP button to cycle through the video-numbers and then press the OK button the playback the desired video file.
- To leave the playback-mode, press the on/off/mode button once.

### Camera settings

To enter the camera settings, press the DOWN button (when the camera is on).

There are two settings screens available:

- One is marked with a camera icon. That is the screen you are in by default.
- The other is marked with a gear-icon. To switch to this screen, press the OK button DIRECTLY after you have entered the settings menue by pressing the DOWN button.
- You can switch back and forth between the two screens by pressing the OK button WHEN nothing is already selected.

When you are inside a settings screen, you can:

- Press UP and DOWN to choose the next or previous point
- Press OK to confirm the selected/high-lighted point
- Press on/off/mode to get back to the previous screen

The two screens cover many different options. NOT ALL will be covered here in details. The important settings are:

#### 1) First setting screen (camera-icon):

- **Resolution** → You can switch between different resolutions and recording speeds. LRP recommends using the 1080p(30fps)setting.
- **Video quality** → Choose between Fine, Super Fine and Normal. For best quality, LRP recommends using the "Super Fine" setting
- **White balance** → LRP recommends: AUTO
- **Slow Motion** → LRP recommends: OFF
- **Date Stamp** → You can choose whether date, date and time or nothing will be stamped into the upper right side of your video.

#### 2) Second setting screen (gear-icon)

- **Sounds** → You can make sound adjustments
- **Power Save** → Set a time after which the camera shuts automatically off (when not used)
- **Screen Save** → Set a time after which the LCD shuts automatically off (when not used). Please note: When the screen has gone blank due to the Screen-Save feature, you can reactivate the screen any time by pressing any button
- **Screen rotation** → Rotates the screen AND the recorded movie/photo by 180°
- **TV-Out/FPV** → Enables/disables TV-Out over USB. This feature resets to TV-Out "OFF" every time you power-cycle the camera.

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## THE CAMERA

- **Date and Time** → This lets you set time and date (which is being saved when the camera is turned off)
- **Language** → Lets you choose between different languages
- **TV-Out** → Lets you choose between PAL and NTSC and is used for configuring the HDMI-out. **LRP recommends:** Adjust according to the technical requirements of your television.
- **Light frequency:** Here you can choose between 50 Hz and 60 Hz
- **System:** You can choose between a factory reset, SystemInfo (which will show you the firmware version) and the CardInfo, which will show how much space is still available on your Micro-SD-card. Do a factory reset in case the camera should not work properly anymore.
- **Format** → Use this option to have your Micro-SD-card formatted. **LRP recommends:** Use this option if you are either using a Micro-SD-card for the first time in the camera or if a Micro-SD-card is not being recognized by the camera anymore. **ATTENTION:** All data on the card will be erased and lost!

### PC-connection

To connect the camera to your PC, use the provided Micro-USB-cable (or any other suited cable available).

As soon as the camera is being connected to the PC, it will be installed/initialized just like a USB-memory stick or an external hard drive.

Two additional drives will appear (drive-letter or name depends on your system).

- One drive will contain a file named "SSID\_PW.cfg". You can open this file by using any text-editor. The file contains two rows. In the first row you will find the name under which the camera is identifying itself via wireless LAN ("Action cam" being the default), in the second row is the password for the wireless access-point that the camera is making up and which you will have to enter when connecting to the camera using your smartphone (this is "1234567890" as default). LRP does NOT recommend to delete or edit this file, unless you know what you are doing!
- The other drive contains the data of the Micro-SD-card you have put into the camera. When you browse the drive, you will find the 3 folders "CAR", "JPG", and "VIDEO".
  - VIDEO** contains the recorded video files
  - JPG** contains the recorded photo files
  - CAR** will not be addressed here as the CAR-function of the camera is not being used with the Gravit GPS product. You can copy, move or delete the files just like you would do with files from any other USB-removable-drive.

### WiFi function

In order to connect your smartphone to your camera using the "iSmart DV" app, you have to enable the wireless LAN of your camera. You can do this by pressing and holding the "OK" button for 2 seconds. The blue LED on the side of the camera will start to blink and on the display the message "Waiting for WiFi connection" will appear.

To DISABLE WiFi on the camera again, just press and hold the "OK" button 2 seconds again. Next, go to the W-LAN settings of your smartphone, enable wireless LAN and connect to the access point named "Action cam". Then enter the required password, it is "1234567890". For details, please refer to the manual of your smartphone.

You can now start and use the iSmart DV app.

**ATTENTION:** Since BOTH your Gravit GPS AND the wifi-camera are operating within the same frequency range, you have to make sure that the WiFi of your camera is DISABLED when flying with your Gravit GPS. Otherwise, it might come to interferences, resulting in uncontrollable behaviour and damage or crash of your Gravit.

## THE GIMBAL

(ONLY GRAVIT GPS VISION PRO #220721)

### What is the gimbal good for?

A gimbal is a electro-mechanical construction which stabilizes your camera in the horizontal and vertical axis. It does so by countering the movement of your Gravit (and your camera), thus trying to keep you camera always horizontally and vertically level. An example: If your Gravit is tilting towards the right side in order to fly to the right, your camera would normally tilt accordingly. As a result of this, the video footage would also tilt to one side, which looks unprofessional and nervous.

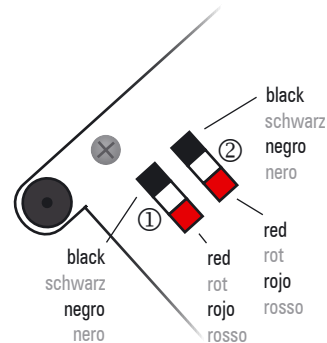
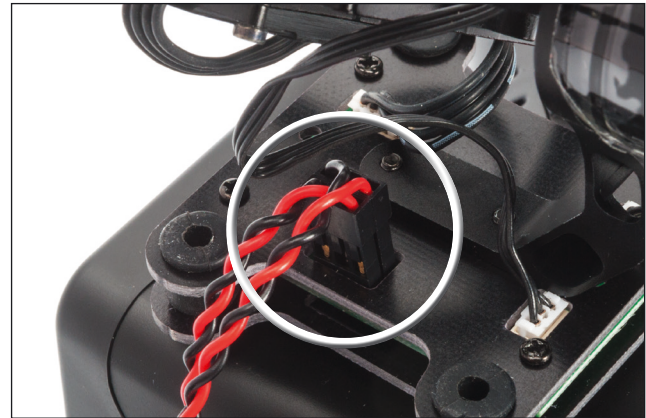
Your gimbal counters the movement of your Gravit and tries to keep the camera always aligned and level. The result is smooth and consistent video footage, even though your Gravit might be heavily moving into all directions.

In addition, the camera may be tilted down- or upwards by the gimbal. For example, you can tilt your camera 90 degrees downwards, thus filming in everything from top view.

### Before using your gimbal

Before using your gimbal during a flight, you should check the following things:

- The gimbal mount has been secured by black zip ties for transportation. Those zip ties do NOT necessarily have to be removed. But if you choose to let them on the mount and your video footage seems unusually instable or shaky, you should consider REMOVING the zip ties, as they MAY influence the result of your camera negatively.
- Is the camera firmly attached to the gimbal's mounting plate? You should NOT over-tighten the 2 screws that hold the camera with force, as this could damage the camera's housing. But the camera should be kept safe in its cage.
- Can the gimbal move freely? Check if the gimbal can roll freely before turning on the Gravit
- Is the gimbal attached tightly to the bottom-side of the copter?
- Are all 4 silicone dampers correctly sitting in the mounting plates' holes?
- Are the power- and control-wires attached correctly and tightly? Your Gimbal has to be connected to power, using the red, 2-pole connector for this. Additionally, there are two red-black wires with black connectors leading from the Gravit to the circuit board of the Gimbal. Those 2 control wires are marked with „1” and „2”. Make sure that the wiring is like shown on the pictures below.
- Does the gimbal work as expected (try on the workbench) If it does NOT, try a gimbal calibration (see chapter “Gimbal calibration”)



### Gimbal control

Your gimbal can be controlled using the AUX1 and AUX2 knobs of your transmitter. Turning those knobs does the following:

#### AUX1:

- Turn counter-clockwise to turn the camera to the left
- Turn clockwise to turn the camera to the right

#### AUX2:

- Turn counter-clockwise to tilt the camera downwards
- Turn clockwise to tilt the camera upwards



Normally, you would want the horizontal alignment always be level and do not need to rotate the camera clockwise or anti-clockwise. However, the gimbal may become slightly misaligned during a flight session and you can fine-tune and counter this by using the AUX1 and readjust the camera.



The AUX2 will probably be used more often, as it lets you play with different viewing angles. Simply adjust your camera with

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## THE GIMBAL

(ONLY GRAVIT GPS VISION PRO #220721)

AUX2 to a tilt level you want to have.

**PLEASE NOTE:** The functions of AUX1 and AUX2 depend on how the red/black gimbal wires are attached to the gimbal. If the AUX1 and 2 are attached like shown in the pictures above, AUX1 will control camera-roll and AUX2 will control camera-tilt.

If you exchange the two connectors, the functions of AUX1 and AUX2 will simply be interchanged.

You can also leave the AUX1 and 2 wires completely away. The gimbal will be fully operable, but you won't have the option to manually adjust it using the AUX1 and 2 knobs of your transmitter.

Leaving away the control wires might also be an option if you are experiencing problems with the gimbal operation when AUX1 and 2 are connected.

### Gimbal restrictions

When using a gimbal, you should note the following things:

- Do NOT fly in MANUAL-mode (see chapter "Flight modes" for details). Doing this will almost certainly damage your gimbal and Gravit
- Do NOT fly very sharp or abrupt maneuvers, as this may lead to the gimbal knocking against the gimbal mount, resulting in malfunction or damage. If you ever want to fly sporty with your Gravit, we HIGHLY recommend detaching the gimbal completely and using either no camera at all or using the provided fixed camera mount instead.
- Make sure the gimbal is secured during transportation. It should not move freely around, as this may result in a damage of the gimbal. Use some sort of padding or protection to keep it from swinging loosely into all directions.
- Do not adjust the EndPoint (Speed/maximum angle of tilt) of your Gravit to values higher than 100% when flying with the gimbal mounted (see chapter "Software" for details).
- **NEVER** power up your gimbal (Gravit) **WITHOUT** the camera being attached to the gimbal. This would almost certainly result in a damaged gimbal.

### Gimbal Tweaking

The performance of your gimbal depends on many factors and you will notice that the video footage is not always exactly the same quality-wise.

For example, things like environmental influences like temperature and wind have a strong impact on the performance of your gimbal (and thus on the quality of your video footage).

In order to get the best out of your gimbal, you can experiment with the following settings:

- 1) The 4 black silicone dampers that connect the two gimbal plates are very important to the gimbal's overall performance. If they are too soft, the gimbal will shake too much, if they are too hard, the gimbal's mount will be too stiff. The tricky thing is that the softness/hardness of the silicone dampers is strongly dependant on the temperature. High environmental temperatures will result in softer dampening, cold temperatures will result in harder/stiffer dampening. In order to compensate for this characteristic, you can do several things:  
Exchange the silicone dampers for the softer dampers of the fixed camera mount. Those are included in your package content. This will make the dampening softer.
- 2) You can use zip ties running through the silicone dampers (just like the transport securing) to make the dampening stiffer. Just take care that you don't zip them too tight, otherwise the dampening will be almost completely useless
- 3) You can also try to insert a flat foam pad or padded doubled sided adhesive sticker between the UPPER mounting plate and the bottom side of the Gravit. Make sure too use longer screws if this should become necessary in order to have the mounting plate fixed tightly to the bottom side of the Gravit. The pad will additionally help to eliminate vibrations being transferred from the Gravit to the gimbal.

### The standard camera mount



ALL versions of the Gravit come with a standard, fixed camera mount. On version #220720, this fixed mount is already attached ex works. The versions #220721 and #220722 are equipped with the gimbal ex works, but they also have the standard mount included in their boxes.

The handling of the standard camera mount is quite easy and



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there are only a few things to take care of:

- Make sure that the upper mounting plate is firmly attached to the bottom side of the Gravit with the two screws
- Make sure, that all 4 silicone dampers, which connect the two mounting plates are in their correct positions.
- Make sure that the camera is firmly pushed into its cage
- Make sure that the camera cage is fixed at the desired angle, it should NOT move around by itself
- Normally, the best shooting angle for your camera is pointing downwards at a 5-15° angle. Just experiment with the angle and check the live-image on the LCD of your camera for adjusting the cage/camera tilt according to your needs.

### Replacing Propellers



Sooner or later, you will have a defective or bent propeller on your Gravit GPS. In this case, you should replace it IMMEDIATELY.

Flying with damaged props may not only result in bad performance of your Gravit, but also impact your video-footage in a negative way. Ultimately, damaged props may lead to a crash and the destruction of your Gravit. So it is always a good thing to keep a close eye on your propellers BEFORE EACH TIME YOU FLY.

To replace a propeller, just unfasten it from the motor-shaft and replace it with a propeller of the same rotation direction.

For details on how to mount propellers on your Gravit, please see chapter "Mount your propellers". Your Gravit will be delivered with a full set of spare propellers. In case you should run out of replacement propellers, you can buy them any time from your local LRP-dealer or directly from LRP. The order number can be checked in the chapter "Spare Parts".

Your Gravit GPS may make use of two different softwares:

- 1) **Flight Tools 2.0:** This software is for configuration of your Gravit's firmware-settings. It is run on a PC using Windows 7/8/10 and you need to connect your Gravit via USB to the PC. For details, please see section "Flight Tools 2.0" in this chapter).
- 2) **iSmart DV:** This app is available for Android and iOS and can be downloaded either from the Google Play Store or from Apple's app store. This app must be installed on your smartphone if you want to access your Gravit's action cam via wireless LAN (see section "iSmart DV" in this chapter).

**PLEASE NOTE (DISCLAIMER):** The "iSmart DV" app and the "Flight Tools 2.0" software and its authors are not associated with LRP electronic GmbH in anyway and LRP is not responsible for the content, functions, availability and pricing of the software. The programmes are their authors' intellectual property and may be used according to the legal terms which apply for the application/software and the app-store or website offering it.

Also, LRP does not take any responsibility for malfunctions or damages caused directly or indirectly by the improper use of either of those programmes.

### Flight Tools 2.0

The Flight Tools software is being used to access the firmware of your Gravit and to adjust many settings within the firmware. You can download the software from our LRP-Homepage.

After downloading the software, please unpack it to any directory on your Computer. The software does not need any installation, you can simply start from the newly created directory in which you unpacked the downloaded file.

In order to use the software with your Gravit GPS, please do as follows:

- Power up your Gravit by connecting a charged battery. Make sure to REMOVE THE PROPS at first.
- Turn on your transmitter
- Take the provided Micro-USB cable (or any other you may have at hand) to connect the Gravit to a free USB port of your Windows PC (Win 7/8/10).
- To do so, carefully connect the smaller end of the cable to the Micro-USB port of your Gravit (at the rear side above the status-LED). Then connect the other end of the cable to a free USB port of your computer. It may take a while until the Gravit is correctly installed, usually your Windows will give out a short message, telling you that the USB-device has been successfully installed.
- Now you can start the software. To do so, open the directory you unpacked the downloaded programme files to and

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then double-click on the "FlightToolsV2.exe" to start the programme.

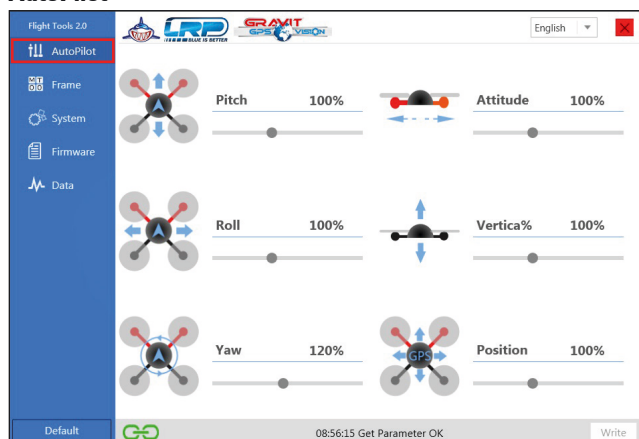
- Then check whether the Gravit has been recognized by the software. On the bottom of the software screen, it should read "Get Parameter OK". If it says "Wait for link", your Gravit has not been recognized. In this case, please close the software, unplug the Gravit and repeat the connection process.

On the LEFT side of the screen, you will notice 5 tabs, reading from top to bottom: AutoPilot, Frame, System, Firmware and Data. Each of those tabs can be accessed by moving the mouse over it. They all display different kind of information and provide options to choose from different settings and to adjust all kinds of values.

**PLEASE NOTE:** If you want the change any settings or values, you have TO SAVE those values and settings after you have changed them. To do so, please press the "Write" button in the lower right side of the screen. **If you don't do this, you values will NOT be saved!**

The 5 Tabs are in detail:

### AutoPilot



This tab provides information on the sensitivity of your Gravit's controls.

Values are being set in percentage. The default values are 100% for all controls except for "Yaw", which is set to 120%. INCREASING the values will result in a more sensitive, faster reaction to your stick inputs, DECREASING the values will result in a more delayed, slower reaction to your inputs.

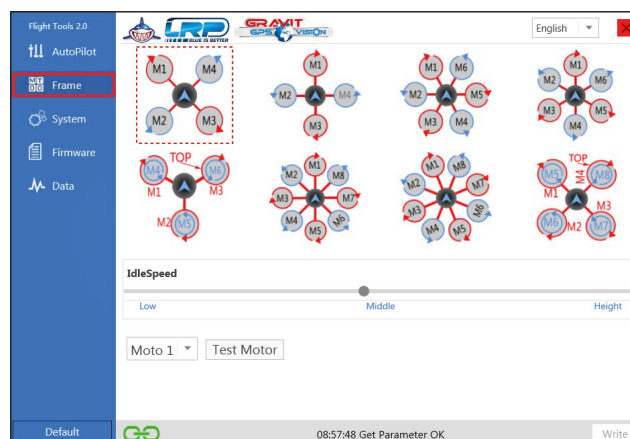
- If the values are set TOO HIGH, then the Gravit becomes twitchy and nervous.
- If the values are set TOO LOW, the Gravit will become sluggish and unresponsive

LRP recommends leaving the settings at default.

In case you should wish to experiment with the settings, do so carefully and change ONLY ONE value at a time. The go out and fly your Gravit to get a feel for the results.

Don't forget to hit the "Write" button at the lower right screen of the software to save your settings!

### Frame



In the Frame-tab, you can choose the kind of multicopter you are using, along with the settings for the idle speed and do a motor test.

The Frame MUST BE SET to the TOP RIGHT standard X-frame, which is the DEFAULT frame setting and the ONLY setting that works with your Gravit. Changing the settings to a different frame will result in a non-operable, or even damaged Gravit, so do NOT do this!

The setting for the idle speed of the motors is responsible for how fast the motors will start to turn when they are started (and in idle mode).

Moving the slider to the left will result in a SLOWER idle speed, sliding it to the right will make the motors spin FASTER at start up.

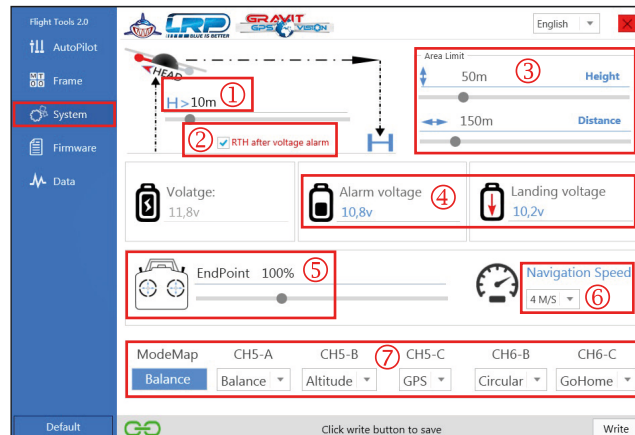
LRP recommends leaving this setting at default, which is pretty much in the middle of the slider.

At the bottom of the screen, you have the option to test the motor. Simply choose your motor via the pull-down menu and press the "Test Motor" button and the appropriate motor will spin up for a short time.

Don't forget to hit the "Write" button at the lower right screen of the software to save your settings!

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System



The System-tab is the most complex tab and allows for a wide variety of changes. In the picture above, you can see that the different functions are marked with red numbers in red boxes. The functions of those numbered options are:

- ① **Return-to-home height**  
Here you can set the minimum flight height that your Gravit shall have when returning to home.  
Example: Let's assume you fill in a value of 15 meter. This would mean that if your Gravit returns to home, it will climb to a minimum height of 15 meters BEFORE doing so. If the height is ABOVE 15 meters, it will KEEP the height. The default value is set to 10 meters.
- ② **Return-to-home after voltage alarm**  
If this options is checked, the Gravit will return-to-home after the voltage alarm is triggered INSTEAD of auto-landing on the spot.  
The default value is "checked".
- ③ **Geo-Fencing**  
Here you can set the height and distance limit for the Geo-Fencing feature by using the sliders.
  - Height can be set anywhere from 0 to 255 meters
  - Distance can be set anywhere from 0 to 1000 meters

Your Gravit will stop AUTOMATICALLY when it reaches the limits in horizontal direction (=distance) or vertical direction (=height).  
This is a safety feature which should help you from flying the Gravit too far away and out of your control/view.  
The default values are 50 m for height and 150 m for distance.

**IMPORTANT:** Before you change those values, keep the following in mind:

- a) In some countries (or areas), the maximum flight height may be restricted. Please check with your local authorities for details.
- b) When flying the Gravit too far away, you may loose it out of sight. In this case, initiate a "Return-to-home (RTH)" by switching the SWA of your TX to the lowest Pos. 2.
- c) In some countries you may NOT allowed to fly the Gravit out of your line of sight. So if you fly it too far away, you might not only loose it, but you may also violate the law.
- d) **DO NO SET THE VALUES TO VERY LOW NUMBERS OR EVEN ZERO!**

LRP strongly advises NOT to set the numbers to unreasonably low numbers. More specific, LRP does not advise to use numbers below 20 m for EITHER height or distance setting. The reason for this is that too low values will result in communication problems between the GPS and the flight controller. Please use values of at least 20 meters!

- ④ **Voltage alarms**  
In this are, you can see three voltage values:  
"Voltage" →  
This is showing the actual voltage of your connected battery. If fully charged, this should be around 12.3V to 12.6V.  
"Alarm voltage" →  
This is the FIRST low voltage threshold. When your flight battery reaches this value, the Gravit's status-LED gives out a warning signal, that is quick, red blinks. If you are in GPS mode, the Gravit will initiate a return-to-home. If you are in any other mode, you can continue to fly, but should land as soon as possible and replace the battery.  
"Landing voltage" →  
This is the SECOND low voltage threshold. When it is triggered, your Gravit will either initiate a return-to-home OR auto-land on the spot, depending on the setting you have made under point 2).

# LRP GRAVIT GPS VISION 2.4GHZ F.H.S.S.

## SOFTWARE

### ⑤ EndPoint

The EndPoint-slider is changing the maximum angle of tilt that your Gravit can have when flying into any direction.

- The HIGHER the value, the BIGGER the angle. A bigger angle will result in MORE speed.
- The LOWER the value, the SMALLER the angle. A smaller angle will result in LESS speed.

The default value of this setting is 100%, which results in a speed of approximately 4m/s.

The value can be set from 50% to 200%.

LRP does NOT recommend changing this value if you plan to use your camera and take photos and videos. Values BELOW 100% will make the Gravit unnecessary slow, values significantly ABOVE 100% will make the Gravit too speedy for gaining smooth, high-quality photos or video footage.

**PLEASE ALSO NOTE:** If your Gravit is equipped with a gimbal, do NOT use values higher than the default 100%. Otherwise, the gimbal might get damage because of the angles of tilt being too big.

Always leave this value at default when flying with a gimbal.

### ⑥ Navigation Speed

This function is NOT being used by your Gravit and is reserved for possible future upgrades. The default value is 4 m/s, do NOT change this value!

### ⑦ ModeMap

In the ModeMap section, you can reassign certain flight modes to certain SWA and SWB switch positions.

The default assignment is:

- CH5-A → BALANCE mode → MUST NOT be changed!
- CH5-B → ALTITUDE mode → can be reassigned
- CH5-C → GPS-mode → can be reassigned
- CH6-B → CIRCULAR-mode → can be reassigned
- CH6-C → GoHome (RTH) → MUST NOT be changed!

**IMPORTANT:** Do NOT change CH5-A (BALANCE) and CH6-C (GoHome) to any other mode than default, as this will result in unpredictable, uncontrollable flight behaviour. The channels are associated with your SWA and SWB switches as shown in the diagramme below:

SWA Pos.	SWB Pos.	Active/selected channel
0	0	CH5-A
0	1	CH5-B
0	2	CH5-C
1	ANY	CH6-B
2	ANY	CH6-C

As you can see, you will have the 3 channels (3 switch-positions) CH5-B, CH5-C and CH6-B for free assignment.

LRP's advise on how to handle flight mode assignments:

Basically, the flight mode assignment should be planned carefully in advance and according to your own preferences and likings.

Not all pilot have use for all flight modes, it simply depends with which intention in mind you let your Gravit fly.

- Do you plan to shoot photos and video?
- Do you want to film a certain event that happens at a certain spot?
- Or do you just want to fly and have some fun in the air with your Gravit?

To our experience, ALTITUDE- and GPS-mode should be LEFT at their default assignment, as you will typically make use of them.

We suggest to ONLY reassign CH6-B according to your needs and then to assign either AOC (=HEADLESS FLYING), CIRCULAR OR CRUISE, depending on your needs and requirements for the flight.

When reassigning the flight modes to the channels, please note the following:

AOC mode IS HEADLESS FLYING MODE in the software. So choosing AOC in the pull-down menu will set this channel to HEADLESS-mode.

To actually reassign the channels, simply click on the pull-down menu of the channel you want to reassign and then pick your desired flight mode.

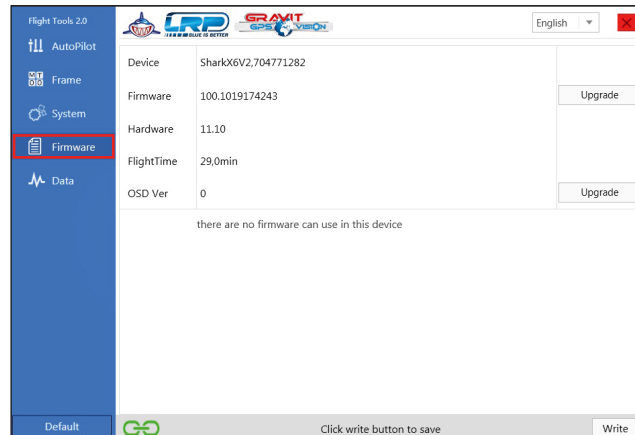
IT IS possible to assign ONE flight mode to SEVERAL channels, although this might probably not make sense in most scenarios.

We do NOT recommend using MANUAL-mode with the Gravit GPS. This mode is available and may be selected and used, but it is NOT suitable for a quadcopter like the Gravit GPS, which is equipped with a camera (or even gimbal). For details, please refer to chapter "Flight modes".

Don't forget to hit the "Write" button at the lower right screen of the software to save your settings!

## SOFTWARE

### Firmware



The firmware-tab is for information only, you cannot actually do something in it.

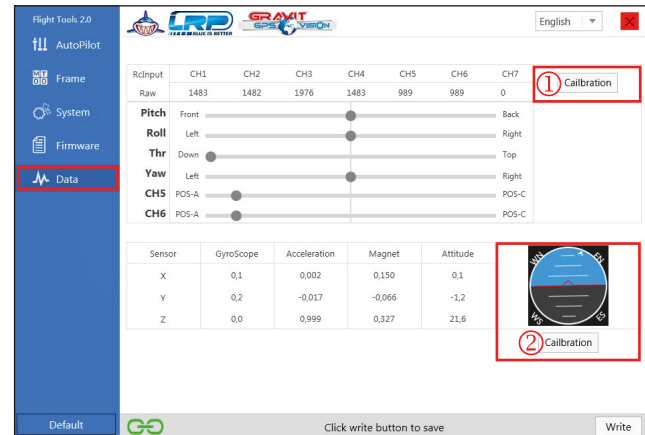
It simply gives out information about the hardware and firmware version.

The only thing that might be interesting is the information on the flight time. It is given in minutes. Please note the following concerning the flight time display:

- Flight time IS flight time. This means that when you power up your Gravit and connect it to the software, THIS time will NOT be counted towards flight time. Only if you arm the motors and fly with the Gravit will the counter be increased.
- It is very likely that your flight controller shows some minutes of flight time EX WORKS, although you have never flown the Gravit. Don't worry, you have NOT bought a used Gravit GPS. The flight time which is shown here is from the intensive quality checks that are being made before the Gravit are released to sale. Any value from 0 to 20 minutes is perfectly ok here.

**IMPORTANT:** We do NOT advise to make any firmware upgrades using the "Upgrade" button on the right side of the screen. In case upgrades should become available for your Gravit, they will be distributed in other form and will be available from the LRP homepage along with a description of HOW to do the firmware upgrade. Again, do NOT use the upgrade button in the software!

### Data



The Data-tab is being used to keep track on the sensors of your flight controller and for calibrating your IMU as well as your transmitter.

#### ① Transmitter calibration

Your transmitter is calibrated correctly EX WORKS, so normally there should not be any need to do this calibration. However, if at any time you should notice that your transmitter is "out of calibration", you can calibrate it again using this feature. For example, if you notice that your Gravit is heavily drifting to either side although the controls sticks are actually center, then it is very likely that your TX needs calibration.

To do this calibration, proceed as follows:

- Your Gravit must be powered on and connected to the software
- The TX must be powered on and bound to the Gravit
- Press the UPPER calibration button in the top right of the screen
- Follow the instructions shown on the screen
- Press "Yes" to start the calibration
- Move throttle completely up
- Move throttle completely down
- Set throttle to neutral(middle)
- Done!

# LRP GRAVIT GPS VISION 2.4GHZ F.H.S.S.

## SOFTWARE

### ② IMU (Gyro) calibration

If you ever happen to see the status-LED of your Gravit emit long, red blinks, there is something wrong with the IMU of your Gravit. Usually, the Gyro is off-set and needs calibration. In order to do the calibration, make sure that your Gravit is standing on an even, clear surface (a table is usually suited best) and then press the calibration button and confirm with "Yes". The calibration will start and it will only take a second. Done!

**PLEASE NOTE:** BOTH TX- and IMU-calibration can be done offline without the software (for example on the flight field). For details, please check chapter „MANUAL IMU- and TX-calibration“.

The rest of the screen gives out raw data received from the TX, the gyroscope, the altimeter, the accelerometer and the compass. Those values will not be covered here in detail and usually don't have to be monitored.

### iSmart DV

The iSmart DV software can be downloaded from either Google's or Apple's app-store, depending on which smart-phone you are using. Simply search for "iSmart DV" and you will be directed to the download site of the app.

Please note that the app may not run on ALL smartphones.

With the iSmart software installed, you can connect to your WiFi-action-cam and adjust settings, copy photos and videos from your camera directly on your smartphone and also watch a live-stream of the camera.

**PLEASE NOTE:** In order to connect your smartphone to the camera, it is necessary to enable the wireless LAN of your camera (for details, please see chapter "The Camera"). If you do so, please keep in mind that the wireless LAN from your camera will interfere with the 2.4GHz-control of your transmitter.

So we STRONGLY advise NOT to fly your Gravit while the wireless LAN of your camera is enabled. Always check this before flying!

The use of the app is self-explaining and will not be covered here in full detail.

Depending on the language settings of your smartphone, the app will adjust its language to match the smartphone's language if possible.

## MANUAL IMU- AND TX-CALIBRATION

Although doing IMU- and TX-calibration via the Flight Tools 2.0 software (see chapter "Software") is the most convenient way to get the job done, it could be necessary to do those calibrations "manually" (that is without the software) from time to time. When you are out on the field, you will most likely not have a laptop with you, so knowing how to perform the calibrations WITHOUT the software is very handy.

Just as a quick reminder:

- IMU-calibration needs to be done when the Status-LED of your Gravit is showing long, red blinks.
- TX-calibration needs to be done when the Gravit is not reacting properly to stick inputs anymore, or if the stick inputs seem to be out of alignment. For example, if you cannot even arm your motors with the stick-command or if your Gravit is flying fast to one side, but slowly to the other, those two things indicate that a TX-calibration might be a good idea.

### Manual IMU-calibration

1. Power on your Gravit and your TX, wait until the initialization process is complete
2. Make sure the Gravit is placed on a flat and even surface
3. Make sure that throttle is at 0 (lowest) position.
4. Quickly wiggle the RIGHT control stick to the left and right until the Status-LED is starting to blink green rapidly
5. Wait for a few seconds until the status-LED stops blinking green and is showing the normal color-codes again. Done!

### Manual TX-calibration

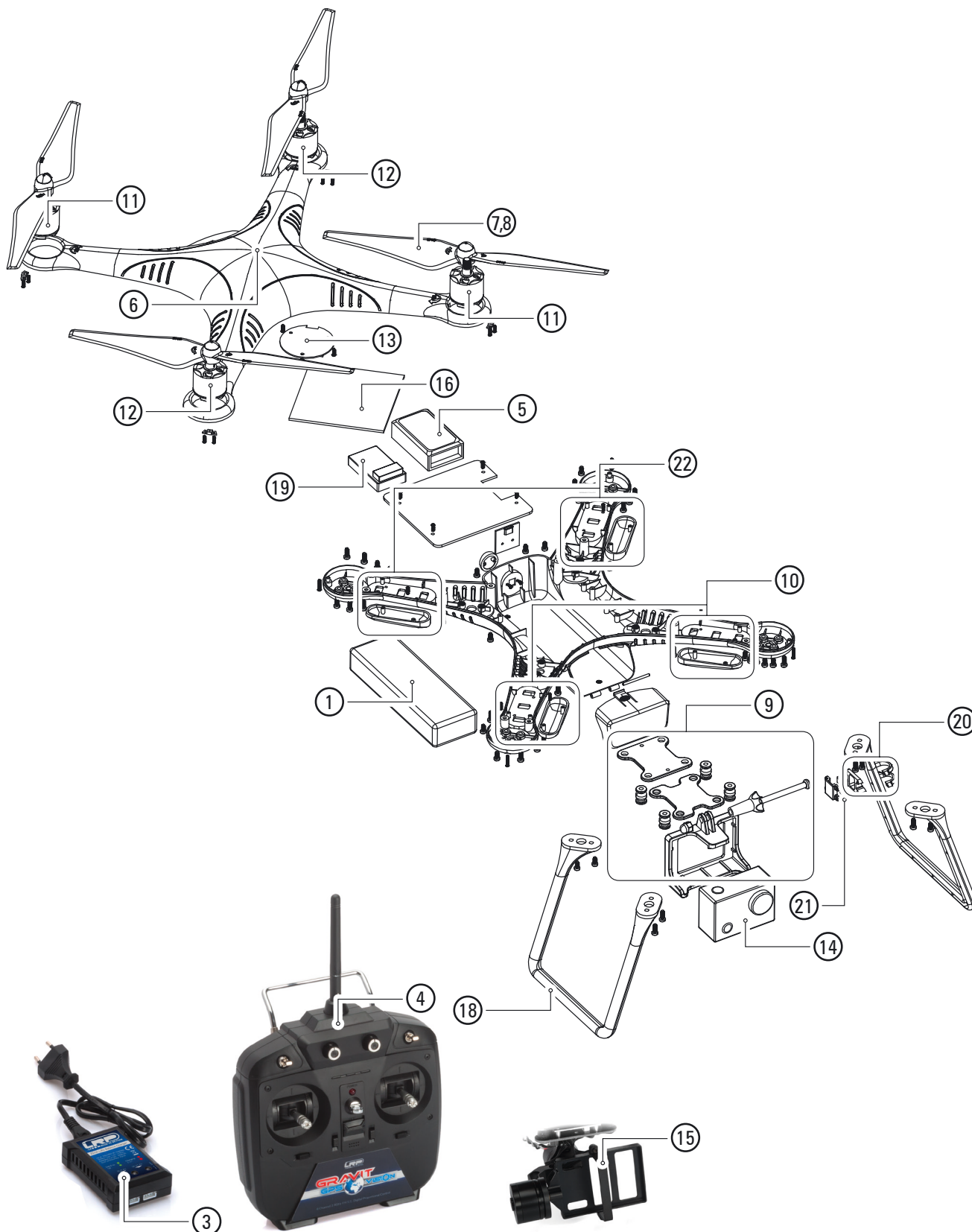
1. Put the Gravit on an even surface and remove the props for safety purposes
2. Push the throttle stick of your TX to the top position
3. Power on the Gravit and turn on the TX QUICKLY after
4. Wait for the Gravit to finish the initialization process
5. After that, the status-LED will flash blue quickly
6. Move the throttle stick completely down
7. The status-LED will flash blue slowly now
8. Move the throttle stick to the middle position as precisely as possible and IN ONE FLUID MOTION.
9. The Gravit will give out a short melody and the status-LED will give out the standard blinking-code again. Done!

## TROUBLESHOOTING GUIDE

Problem	Cause	Remedy
Status-LED is blinking yellow slowly	Compass does not work properly	Calibrate the compass (see "Compass Calibration")
	Something is interfering with the compass (for example metal objects near the compass)	Put the Gravit on another place. If this does not help, see "Compass calibration")
	The cable which leads to the compass is not (or not correctly) plugged into the socket	Carefully press the connector into the socket of the compass-module
Status-LED is blinking red slowly	The IMU of your Gravit does not work properly	Calibrate IMU, see "Software" and "MANUAL IMU- and TX-calibration"
Status-LED is blinking red quickly	Your Gravit's battery is (too) empty	Charge your flight battery, see "Flight preparations"
The Gravit is flying unwanted circles as soon as you enter GPS-mode	The compass of your Gravit is faulty	Calibrate the compass (see "Compass Calibration")
The Gravit is drifting strongly or is flying into any direction by herself	Probably the transmitter is not correctly calibrated	Calibrate your transmitter (see "Software" and "MANUAL IMU- and TX-calibration")
The Gravit is tipping over when I try to take off	Probably you are not applying enough throttle	Make sure you are in BALANCE-Mode and apply throttle very quickly upon take-off
The gimbal is not working properly	The gimbal might have become misaligned and needs calibration	Calibrate the gimbal, see "Flight Preparations/Gimbal-calibration")
	The power-connector and the control wires are not connected (or wrongly connected)	Check the connectors and wires, see "The gimbal"
Your Gravit cannot acquire full satellite lock, the 2 red blinks don't go away	You have not waited long enough. Depending on the environmental and weather conditions, it can take several minutes until your Gravit can receive enough satellites	Wait a little longer
	The place you are planning to fly does not allow for better satellite reception	Change your flying location

# LRP GRAVIT GPS VISION 2.4GHZ F.H.S.S.

## SPARE PARTS





**SPARE PARTS**

<b>Number</b>	<b>Order No.</b>	<b>Description</b>
1	222840	Flight battery 3300 mAh 11.1V 30C T-Plug
2	222841	Decal sheet (LRP-logo, TX-sticker, Gravit GPS-sticker)
3	222842	Balance-charger (EU) for 2s and 3S LiPo-batteries
4	222843	8-channel 2.4GHz transmitter
5	222844	Flight controller incl. BEC/LED-Module and wires
6	222845	Bodyshell (upper and lower side) incl. LED-covers
7	222846	Propeller white (1x clockwise, 1x counter-clockwise)
8	222847	Propeller black (1x clockwise, 1x counter-clockwise)
9	222848	Cage for Action-cam (incl. mount)
10	222849	ESC 20A for motor (green LEDs)
11	222850	Brushless motor (clockwise/CW)
12	222851	Brushless motor (counter-clockwise/CCW)
13	222852	GPS-module incl. compass
14	222853	Wireless Lan Action-Cam 1080p
15	222854	2-axis-brushless-gimbal incl. mount
16	222855	Shielding-pad for GPS-module (adhesive)
17	222856	Set of screws
18	222857	Landing feet (1 pair)
19	222858	8-channel 2.4GHz receiver
20	222859	Compass mount incl. screws
21	222860	Compass-module
22	222861	ESC 20A for motor (red LEDs)

# LRP GRAVIT GPS VISION 2.4GHZ F.H.S.S.

## REPAIR PROCEDURES / LIMITED WARRANTY

All products from LRP electronic GmbH (hereinafter called "LRP") are manufactured according to the highest quality standards. LRP guarantees this product to be free from defects in materials or workmanship for 90 days (non-european countries only) from the original date of purchase verified by sales receipt. This limited warranty doesn't cover defects, which are a result of misuse, improper maintenance, outside interference or mechanical damage. This especially applies on already used batteries or batteries, which show signs of heavy usage. Damages or output losses due to improper handling and/or overload are not a product fault. Signs of wear (loss of capacity) after intensive usage are also no product fault. Furthermore this includes the following points:

- Crash damage
- Component failure or premature wear as a result of crash damage
- Water damage or problems resulting from water/moisture intake
- Painted canopies, after they have been used

LRP does not do a warranty change of the whole product, once the product has been used. Do not send in the whole product. Only send in the defective parts, on which you want to claim warranty. If the whole product is send in, LRP will charge a service fee for the Disassembly and Assembly of the product at our discretion.

To eliminate all other possibilities or improper handling, first check all other components in your model and the trouble shooting guide, if available, before you send in this product for repair. If products are sent in for repair, which do operate perfectly, we have to charge a service fee according to our pricelist.

With sending in this product, the customer has to advise LRP if the product should be repaired in either case. If there is neither a warranty nor guarantee claim, the inspection of the product and the repairs, if necessary, in either case will be charged with a fee at the customers expense according to our price list. A proof of purchase including date of purchase needs to be included. Otherwise, no warranty can be granted. For quick repair- and return service, add your address and detailed description of the malfunction.

If LRP no longer manufactures a returned defective product and we are unable to service it, we shall provide you with a product that has at least the same value from one of the successor series.

The specifications like weight, size and others should be seen as guide values. Due to ongoing technical improvements, which are done in the interest of the product, LRP does not take any responsibility for the accuracy of these specs.

LRP-DISTRIBUTOR-SERVICE:

- check [www.LRP.cc](http://www.LRP.cc)

## WARNING NOTES

deutsch

Kein Spielzeug. Nicht für Kinder unter 14 Jahren geeignet. Bewahren Sie das Produkt außerhalb der Reichweite von kleinen Kindern auf. Beachten Sie unbedingt die folgenden Hinweise, da diese Ihr Produkt zerstören können und die Gewährleistung ausschließen. Nichtbeachtung dieser Hinweise können zu Sach- und Personenschäden und schweren Verletzungen führen! Lassen Sie das Produkt niemals unbeaufsichtigt, solange es eingeschaltet, in Betrieb oder mit einer Stromquelle verbunden ist. Im Falle eines Defekts könnte dies Feuer am Produkt oder seiner Umgebung verursachen. Vermeiden Sie falschen Anschluss oder Verpolung des Produkts. Alle Kabel und Verbindungen müssen gut isoliert sein. Kurzschlüsse können unter Umständen das Produkt zerstören. Dieses Produkt oder andere elektronische Komponenten dürfen niemals mit Wasser, Öl, Treibstoffen oder anderen elektrisch leitenden Flüssigkeiten in Berührung kommen, da diese Mineralien enthalten können, die elektronische Schaltkreise korrodieren lassen. Bei Kontakt mit diesen Stoffen müssen Sie sofort den Betrieb einstellen und das Produkt sorgfältig trocknen. Entnehmen Sie immer den Akku aus Ihrem Produkt bzw. trennen Sie das Produkt von der Stromquelle, wenn das Produkt nicht verwendet wird. Vermeiden Sie Kurzschluss, Überladung und Verpolung des Akkus oder einzelner Zellen. Dies kann zu Brandentwicklung oder Explosion führen. Öffnen Sie niemals einen Akku, eine Batterie oder einzelne Zellen. Laden Sie den Akku nur unter Aufsicht. Während der Ladung muss sich der Akku auf einer nicht brennbaren, hitzebeständigen Unterlage befinden. Desweiteren dürfen sich keine brennbaren oder leicht entzündlichen Gegenstände in der Nähe des Akkus befinden. Überschreiten Sie unter keinen Umständen den maximalen Lade-/Entladestrom, der empfohlen wird. Unter keinen Umständen darf ein NiMH/LiPo-Akku tiefentladen werden. Der Akku darf nicht mit Feuer, Wasser oder anderen Flüssigkeiten in Berührung kommen. Ladevorgang nur in trockenen Räumen durchführen. Verwenden Sie für die Ladung von LiPo-Akkus nur Lade-/Entladegeräte, die für diesen Akkutyp spezifiziert wurden. Verwenden Sie keinesfalls NiCd/NiMH Lade-/Entladegeräte. Die Aussenhaut des LiPo-Akkus darf nicht beschädigt werden. Achten Sie also unbedingt darauf, dass keine scharfen Gegenstände wie Messer, Werkzeuge, Kohlefaserkanten oder Ähnliches den Akku beschädigen können. Achten Sie darauf, dass der Akku nicht durch Herunterfallen, Schlagen, Verbiegen oder Ähnliches beschädigt wird. Beschädigte Zellen dürfen nicht mehr verwendet werden. Sollten die Zellen Verformungen, optische Beschädigungen oder Ähnliches aufweisen, so dürfen Sie diese nicht mehr verwenden. Schalten Sie immer zuerst Ihren Sender ein, bevor Sie den Empfänger oder Fahrtenregler einschalten. Der Empfänger könnte Störsignale auffangen, Vollgas geben, und Ihr Modell beschädigen. Beim Ausschalten beachten Sie die umgekehrte Reihenfolge. Erst Empfänger und Fahrtenregler ausschalten, dann Sender ausschalten. Ungleiche Batterietypen oder neue und gebrauchte Batterien dürfen nicht zusammen verwendet werden. Blockieren Sie niemals den Lüfter oder die Kühlschlitze des Produkts. Sorgen Sie für gute Luftzirkulation um das Produkt. Schließen Sie sämtliche Teile der Ausrüstung sorgfältig an. Falls sich die Verbindungen durch Vibrationen lösen, können Sie die Kontrolle über das Modell verlieren. Der Hersteller kann nicht für Schäden verantwortlich gemacht werden, die infolge von Nichtbeachtung der Sicherheitshinweise und Warnungen verursacht werden. Verwenden Sie nur Original Ersatzteile. Überprüfen Sie, ob die Antenne im Sender festgeschraubt ist. Wenn sie lose oder nicht verbundenen sein sollte, kann das Sendesignal im Betrieb unterbrochen werden. Schrauben Sie die Antenne vorsichtig fest. Wenn Sie Einstellungen am Modell vornehmen, stellen Sie vorher den Motor ab bzw. trennen Sie die Steckverbindung. Sie könnten unerwartet die Kontrolle über das Modell verlieren und es könnte dadurch eine gefährliche Situation entstehen. Das Modell und die Fernsteuerung immer ausschalten, solange diese nicht im Einsatz sind. Führen Sie vor jedem Flug einen Reichweitentest durch. Müssen am Hubschrauber Wartungs- oder Reparaturarbeiten durchgeführt werden, darf dies nur ohne angeschlossenen Flugakku geschehen. Fliegen Sie niemals unter Alkoholeinfluss! Fliegen Sie nicht in der Nähe von Stromleitungen, Funkmasten, Personen, Tieren und Wasser. Fliegen Sie niemals während oder in der Nähe eines Gewitters. Suchen Sie Hilfe und Unterstützung erfahrener Modellbauer oder Ihres Händlers wenn Sie kaum oder keine Erfahrung im Umgang mit ferngesteuerten Modellen haben.

englisch

No toy. Not suitable for children under 14 years. Keep the product out of the reach of children. Pay close attention to the following points, as they can destroy the product and void your warranty. Non-observance of these points can lead to property damage, personal and severe injuries! Never leave the product unsupervised while it is switched on, in use or connected with a power source. If a defect occurs, it could set fire to the product or the surroundings. Avoid incorrect connections or connections with reversed polarity of the product. All wires and connections have to be well insulated. Short-circuits can possibly destroy the product. Never allow this product or other electronic components to come in contact with water, oil or fuels or other electroconductive liquids, as these could contain minerals, which are harmful for electronic circuits. If this happens, stop the use of your product immediately and let it dry carefully. Always remove the battery from your product or disconnect the product from the power source, if the product is not in use. Avoid short circuits, overcharging and reverse polarity of the battery or single cells. This can lead to fire or explosion. Never open a battery or a single cell. Never leave the battery unattended while charging. During charging, the battery has to be kept on a non-flammable, heat-resistant mat. Furthermore no flammable or highly inflammable objects may be close to the battery. Never exceed the maximum charge/discharge current, which is recommended. Under no circumstances a NiMH/LiPo-battery shall be deep discharged. The battery may never get in touch with fire, water or other liquids. Only charge in a dry place. Only use chargers and dischargers, which are specified for LiPo-batteries by the manufacturer. Never use chargers or dischargers, which are specified for NiCd/NiMH-batteries! The outside of the LiPo-battery must not be damaged. Therefore take special care, that no sharp objects like knives, tools, carbon fibre edges or similar items can damage the battery. Pay special attention that the LiPo-battery does not get damaged or warped by letting it fall down, hitting it, bending it or by similar actions. Damaged packs cannot be used any longer. If the packs show signs of damage, are bent or similar, do not use the packs anymore. Always switch on your transmitter first before you switch on the receiver or the speed control. The receiver could receive interference signals, start full acceleration and damage your model. When you switch off, make sure you do so in the reverse sequence. First switch off the receiver and speed control, then switch off the transmitter. Do not use different types of batteries and do not mix new and used batteries. Do not block the fan or the cooling slits of the product. Ensure a good circulation of air around the product, while in use. Always wire up all the parts of the equipment carefully. If any of the connections come loose as a result of vibration, you could lose control over your model. The manufacturer can not be held responsible for damages, which are a result of non-observance of the warning notes and security advices. Replace only with genuine parts. Check the transmitter antenna to be sure it is not loose. If the transmitter antenna works loose, or is disconnected while the model is running, signal transmission will be lost. Do not screw the antenna forcibly. Otherwise its antenna-holding part can be damaged. When making adjustments to the model, do so with the engine not running or the motor disconnected. You may unexpectedly lose control and create a dangerous situation. Always turn off the model and the transmitter while they are not in use. Always perform an operating range check prior to your flight. If the helicopter is in need of maintenance or repair, the battery must be disconnected. Never fly under influence of alcohol! Do not fly the helicopter near power cables, radio masts, people, animals and water. Never fly during or near thunderstorms. If you have little

## WARNING NOTES

or no rc-experience at all, please feel free to seek the guidance of an experienced rc-hobbyist or your local dealer

## französisch

Ce produit n'est pas un jouet. Ne convient pas pour les enfants de moins de 14 ans. Ranger le produit hors de portée des enfants en bas âge. Absolument respecter les consignes ci-dessous sous peine de détruire le produit et d'annuler la garantie. Le non-respect de ces consignes peut être à l'origine de dommages matériels et personnels ainsi que de graves blessures ! Ne jamais laisser le produit sans surveillance tant qu'il est allumé, fonctionne ou est raccordé à une source de courant. En cas de panne, ceci peut provoquer un incendie du produit ou de son environnement. Éviter tout branchement incorrect ou polarisation du produit. Tous les câbles et raccords doivent être correctement isolés. Dans certains cas, les courts-circuits peuvent détruire le produit. Ce produit ou les autres composants électroniques ne doivent jamais entrer en contact avec de l'eau, de l'huile, des carburants ou tous autres liquides conducteurs, car ceux-ci contiennent des minéraux?? susceptibles de corroder les circuits électroniques. En cas de contact avec ces substances, il faut immédiatement interrompre le fonctionnement et soigneusement sécher le produit. Toujours retirer l'accu du produit ou débrancher le produit de la source de courant lorsqu'il n'est pas utilisé. Éviter tout court-circuit, surcharge et polarisation de l'accu ou de différents éléments. Ceci peut provoquer un incendie ou une explosion. Ne jamais ouvrir un accu, une pile ou un élément. Ne jamais l'accu se charger sans surveillance. Pendant le chargement, l'accu doit être installé sur une surface ininflammable et résistante aux températures élevées. Il convient en outre de proscrire tous objets combustibles ou aisément inflammables à proximité de l'accu. Absolument proscrire tout dépassement du courant de charge/décharge recommandé par la société. Absolument proscrire toute décharge profonde d'un accu NiMH/LiPo. L'accu ne doit jamais entrer en contact avec des flammes, de l'eau ou tout autre liquide. Uniquement effectuer les recharges dans des locaux secs. Uniquement recharger des accus LiPo avec des chargeurs/déchargeurs spécifiés pour ce type d'accu. Ne jamais utiliser des chargeurs/déchargeurs NiCd/NiMH. La surface externe de l'accu LiPo ne doit pas être endommagée. Il faut donc absolument veiller à ne pas endommager l'accu avec des objets tranchants tels que couteau, outil, chants en fibres de carbone ou autres. Veiller à ne pas endommager l'accu par une chute, un choc, une torsion ou autre. Ne plus utiliser des éléments endommagés. Si les éléments sont déformés, visiblement endommagés ou autrement altérés, ils ne doivent plus être utilisés. Toujours commencer par allumer l'émetteur avant d'allumer le récepteur ou le régulateur de vitesse. Le récepteur pourrait recevoir des signaux parasites, accélérer à fond et endommager votre modèle. Procéder dans l'ordre inverse pour l'extinction. Éteindre d'abord le récepteur et le régulateur de vitesse, puis éteindre l'émetteur. Ne pas utiliser simultanément différents types de piles ou des piles neuves avec des piles usées. Ne jamais obturer le ventilateur ou les fentes de refroidissement du produit. Assurer une circulation d'air convenable autour du produit. Raccorder tous les composants de l'équipement avec soin. Si les raccords se détachent par des vibrations, vous pouvez perdre le contrôle de votre modèle. Le constructeur ne saurait être tenu responsable pour les dommages causés par le non respect des consignes de sécurité et des avertissements. Uniquement utiliser des pièces de rechange d'origine. Vérifier l'antenne du transmetteur afin d'être sûr qu'elle ne soit pas branlante. Si l'antenne du transmetteur est branlante, ou déconnectée alors que l'appareil est en train de voler, la transmission du signal sera perdue. Ne pas visser l'antenne trop fort. Autrement, la pièce du support de l'antenne peut être endommagée. Lorsque vous faites les ajustements de votre appareil, le moteur doit être à l'arrêt ou déconnecté. Vous pouvez perdre le contrôle de manière inattendue et provoquer une situation dangereuse. Toujours effectuer une vérification de bon fonctionnement avant utilisation. Si l'hélicoptère a besoin d'être entretenu ou réparé, la batterie doit être déconnectée. Ne jamais voler sous l'influence d'alcool. Ne pas voler avec l'hélicoptère à proximité de câbles électriques, d'antennes radio, de personnes, d'animaux ou de l'eau. Ne jamais voler pendant ou près des orages.

## spanisch

Este aparato no es un juguete. No apto para niños menores de 14 años. Mantenga este producto fuera del alcance de los niños. Por favor, observe las siguientes indicaciones explícitamente, ya que de lo contrario el aparato podría sufrir daños o se podría anular la garantía. ¡La no observancia de estas indicaciones puede provocar daños personales y materiales, así como graves lesiones! Nunca deje el aparato sin vigilancia mientras está conectado, encendido o unido a una fuente de electricidad. Ya que, en caso de producirse un fallo, podría incendiarse o provocar un incendio en sus inmediaciones. Evite realizar conexiones erróneas y una polarización inversa del producto. Todos los cables y conexiones deben haber sido aislados correctamente. De lo contrario podrían producirse cortocircuitos y destruir el aparato eventualmente. Evite que los componentes eléctricos entren en contacto con agua, aceite, combustibles o cualquier otro tipo de sustancia líquida conductora de la electricidad, ya que éstos pueden contener minerales corrosivos para los circuitos electrónicos. En caso de entrar en contacto con estas sustancias apague inmediatamente el aparato y séquelo minuciosamente. Extraiga siempre las pilas del aparato o desconéctelo de la red si no va a utilizarlo. Evite que se produzcan cortocircuitos y polaridad inversa en las pilas o células individuales. De lo contrario podría producirse una explosión o un incendio. No abra nunca un acumulador, una pila ni una célula. Cargue la pila bajo vigilancia. Coloque el aparato sobre una superficie resistente al calor y no inflamable durante el proceso de carga. Así mismo no deben encontrarse objetos combustibles ni inflamables cerca de la pila. No sobrepase bajo ninguna circunstancia la corriente de carga / descarga máxima recomendada por. No descargue nunca una pila NiMH/LiPo totalmente. Evite que la pila entre en contacto con fuego, agua o cualquier otro tipo de líquidos. Cargue la pila exclusivamente en estancias secas. Cargue las pilas LiPo exclusivamente con cargadores / descargadores adecuados para este tipo de pila. No utilice bajo ninguna circunstancia cargadores / descargadores NiCd/NiMH. Evite que el exterior de la pila LiPo sufra daño alguno. Por favor, observe que la pila no pueda ser dañada por objetos puntiagudos como son cuchillos, herramientas, aristas de fibra de carbono u objetos similares. Observe que la pila no sufra daños por caídas al suelo, golpes, doladuras o causas similares. No utilice nunca pilas dañadas. No utilice las pilas en caso de presentar deformaciones, tener el aspecto de ser defectuosas etc... Conecte siempre primero el emisor antes de conectar el receptor o el regulador de velocidad. El receptor podría captar interferencias, acelerar a tope y dañar así el modelo. Para desconectar el modelo observe siempre el orden inverso. Primero desconecte el receptor, después el regulador de la velocidad y finalmente el emisor. No utilice pilas de diferentes tipos ni pilas nuevas y viejas a la vez. No bloquee nunca las rejillas de ventilación o de refrigeración del aparato. Asegúrese de que el aparato disponga de una buena circulación de aire. Conecte todos los elementos del equipo minuciosamente. En caso de que las conexiones se soltaran por causa de las vibraciones, es posible que pierda el control sobre el modelo. El fabricante no asume la responsabilidad por daños ocasionados por la inobservancia de las medidas de seguridad y advertencias. Utilice exclusivamente piezas de repuesto originales. Compruebe que la antena de la emisora esté correctamente sujeta. Si la antena del emisor se afloja o desconectara durante el vuelo se perdería la señal de mando. No apretar la antena en exceso, podría dañarse la pieza de soporte de la antena. Cuando esté realizando ajustes a su modelo, el motor ha de estar parado o desconectado. Ud. puede perder accidentalmente el control y provocar una situación de peligro. Evite siempre una prueba de

## WARNING NOTES

alcance y correcto funcionamiento antes de cada vuelo Si es necesario realizar operaciones de mantenimiento o reparación en el helicóptero, la batería debe ser desconectada previamente ¡No vuele bajo la influencia del alcohol! No vuele su helicóptero cerca de cables de electricidad, antenas, personas, animales o agua. Nunca vuele durante o en proximidad de tormentas Solicite siempre ayuda de modelistas experimentados, o del comercio donde adquirió su modelo, si no tiene ninguna o muy poca experiencia en modelos radio controlados

## italienisch

Non è un giocattolo. Non adatto a ragazzi sotto i 14 anni. Conservare il prodotto fuori dalla portata di bambini piccoli. Attenersi alle seguenti avvertenze per non danneggiare il prodotto e per non farne decadere la garanzia. La marcata osservanza delle presenti avvertenze può provocare danni a cose e persone e causare lesioni gravi! Non lasciare il prodotto incustodito quando è acceso, in funzione o sotto tensione. In caso di guasto ciò potrebbe causare fiamme al prodotto o in prossimità di esso. Evitare collegamenti errati o inversioni di polarità del prodotto. Tutti i cavi e i collegamenti devono essere ben isolati. Eventuali corti circuiti possono danneggiare il prodotto. Il prodotto o altri componenti elettronici non devono assolutamente entrare in contatto con acqua, olio, carburanti o altri liquidi a conduzione elettrica, poiché possono contenere minerali che provocano corrosione ai circuiti elettronici. In caso di contatto con tali sostanze sospendere immediatamente il funzionamento e asciugare con cura il prodotto. Se non si utilizza il prodotto, rimuovete l'accumulatore o scollegare il prodotto stesso dalla fonte di alimentazione elettrica. Evitare corti circuiti, sovraccarichi e inversioni di polarità dell'accumulatore o delle singole celle. Ciò può provocare sviluppo di incendi o esplosione. Non aprire assolutamente un accumulatore, una batteria o singole celle. Non lasciare incustodito l'accumulatore quando è in carica. Quando l'accumulatore è in carica deve poggiare su una base non infiammabile e termoresistente. Inoltre, nelle vicinanze dell'accumulatore, non ci devono essere oggetti infiammabili o facilmente combustibili. Non superare assolutamente la corrente massima di carico/scarico consigliata da. Un accumulatore NiMH/LiPo non deve mai essere scaricato completamente. L'accumulatore non deve entrare in contatto con fiamme, acqua o altre sostanze liquide. Il processo di carica va effettuato solo in luoghi asciutti. Per caricare accumulatori LiPo utilizzare solo apparecchi di carica/scarica specifici per questo tipo di accumulatori. Non utilizzare assolutamente apparecchi di carica/scarica NiCd/NiMH. Il rivestimento esterno dell'accumulatore LiPo non deve essere danneggiato. Prestare attenzione affinché oggetti acuminati, quali coltelli, utensili, bordi in fibra di carbonio o simili, non danneggino l'accumulatore. Prestare attenzione affinché l'accumulatore non subisca danni dovuti a cadute, urti, incurvatura o simili. Le celle danneggiate non si possono più utilizzare. Se le celle presentano deformazioni, danni ottici o simili, non si devono più utilizzare. Il trasmettitore va sempre inserito prima di attivare il ricevitore o il regolatore di corsa. Il ricevitore potrebbe intercettare segnali di disturbo, dare gas e, quindi, danneggiare il modello. Per la disattivazione seguire la sequenza inversa. Spegnerne prima il ricevitore e il regolatore di corsa, poi il trasmettitore. Non utilizzare insieme batterie di tipo diverso oppure batterie nuove e usate. Non bloccare in alcun caso il ventilatore o la fessura di raffreddamento del prodotto. Provvedere che attorno al prodotto ci sia una buona circolazione d'aria. Collegare con cura tutti i componenti dell'apparecchiatura. Se i raccordi si allentano a causa delle vibrazioni, si può perdere il controllo del modello. Il costruttore non è responsabile di danni causati dalla mancata osservanza delle norme di sicurezza e degli avvisi. Utilizzare solo pezzi di ricambio originali.

## japanisch

遊具ではありません。14歳以下の子供には不適です。子供の手の届かない場所に保管してください。製品を損傷したり、また、保証対象外となるため、以下の点に注意してください。これらの点を遵守しなかった場合、製品の損傷、人体への怪けにつながる場合があります。製品のスイッチがオンになっている場合、あるいは電源に接続されている場合は絶対に目を離さないでください。故障が発生した場合、製品やその周辺に火災の恐れがあります。誤った接続あるいは製品の逆の極性による接続は避けてください。全ての配線および接続は絶縁してください。ショートによって製品を損傷する場合があります。この製品あるいは他の電気部分が水、油あるいは燃料または他の電気伝導性液体と絶対に接触させないでください。これらには電気回路に損傷を与える鉱物が含まれています。もし接触してしまった場合、製品の使用を直ちに中止し、よく乾かしてください。製品を使用しない場合は、電池を取り外すか、製品を電源から切断しておいてください。ショート、過充電や電池の逆の極性あるいは単一電池を避けてください。火災あるいは爆発の恐れがあります。電池あるいは単一電池を分解したりしないでください。充電中はそばを離れないでください。充電中、電池は耐熱で耐火のマットの上に置かれなくてはなりません。更に、電池の近く可燃物や引火性のものは置かないでください。社によって推奨されている最大充電/放電電流を超えないでください。どのような場合においても、NiMH/LiPo電池は過充電ししないでください。電池は裸火、水あるいはその他の液体との接触を避けてください。充電する場合は、乾燥した場所で行ってください。メーカーによるLiPo電池用に指定された充電器や放電器のみを使用してください。NiCd/NiMH電池用に指定されたものは使用しないでください。LiPo電池の外側が損傷しているわけではありません。したがって、ナイフ、工具、カーボンファイバーのエッジやその他の鋭利な物が電池を損傷しないように注意してください。LiPo電池が落下、衝撃、曲げや同様の行為によって損傷あるいは変形したりしないように注意してください。損傷した電池は使用しないでください。損傷がある場合、または変形している場合、使用を中止してください。スピードコントロールあるいはレーザーのスイッチをオンにする前に、トランスミッターのスイッチを入れてください。レーザーは妨害信号を受信することがあり、フル加速を始め、損傷してしまう場合があります。スイッチを切る場合は、逆の手順で行ってください。最初にレーザーとスピードコントロールを切ってください。トランスミッターを切ってください。異なるタイプの電池および新旧の電池を混ぜないでください。製品のファンあるいは冷却隙間を遮断しないでください。使用中に製品の周辺に空気が良く循環するようにしてください。装備の全てのパーツを注意しながら接続してください。振動によって接続部分が緩むと、コントロールを失う恐れがあります。メーカーは警告文や安全についてのアドバイスを守らなかった理由による損傷については責任を負いません。交換は純正部品のみで行ってください。

## griechisch

Δεν είναι παιχνίδι. Ακατάλληλο για παιδιά ηλικίας μικρότερης των 14 ετών. Φυλάξτε το προϊόν μακριά από παιδιά. Προσέξτε οπωσδήποτε τις ακόλουθες υποδείξεις, δεδομένου ότι ενδέχεται να καταστραφεί το προϊόν και να μην καλύπτεται από την εγγύηση. Παραβλέψη αυτών των υποδείξεων ενδέχεται να προκαλέσει σωματικές βλάβες, υλικές ζημιές και σοβαρούς τραυματισμούς! Ποτέ μην αφήνετε το προϊόν χωρίς επίβλεψη, όσο είναι ενεργοποιημένο, όσο λειτουργεί ή είναι συνδεδεμένο με πηγή τροφοδοσίας ρεύματος. Σε περίπτωση βλάβης ενδέχεται να προκληθεί φωτιά στο προϊόν ή στον περιβάλλοντα χώρο. Αποφύγετε τη λανθασμένη σύνδεση ή την αντίστροφη πολικότητα του προϊόντος. Όλα τα καλώδια και οι συνδέσεις πρέπει να είναι καλά μονωμένα. Υγρών βραχυκυκλώματα ενδέχεται να καταστρέψουν το προϊόν. Το προϊόν αυτό ή άλλα ηλεκτρονικά εξαρτήματα δεν επιτρέπεται να έρχεται ποτέ σε επαφή με νερό, λάδι, καύσιμα ή άλλα υγρά καλούς αγωγούς του ηλεκτρικού ρεύματος, δεδομένου ότι ενδέχεται να περιέχουν ορυκτά που διαβρώνουν τα ηλεκτρονικά κυκλώματα. Σε περίπτωση επαφής με τέτοιου είδους υγρά, πρέπει να σταματήσετε αμέσως τη χρήση του προϊόντος και να το αφηστέτε να στεγνώσει προσεκτικά. Αφαιρείτε πάντα την μπαταρία από το προϊόν ή/και αποσυνδέστε το προϊόν από την πηγή ρεύματος, όταν δεν χρησιμοποιείτε το προϊόν. Αποφύγετε το βραχυκύκλωμα, την υπερφόρτιση και την αντίστροφη πολικότητα των μπαταριών ή μεμονωμένων στοιχείων τους. Ενδέχεται να προκληθεί φωτιά ή έκρηξη. Ποτέ μην ανοίγετε



## WARNING NOTES

akt på att inga vassa föremål, som knivar, verktyg, kolfiberkanter eller liknande kan skada akkumulatormotorn. Ge akt på att akkumulatormotorn inte skadas genom att trilla ner, stötas, deformering eller liknande. Skadade celler får inte längre användas. Om cellerna skulle uppvisa deformeringar, optiska skador eller liknande, så får de inte längre användas. Koppla alltid först in din sändare, innan du kopplar in mottagaren eller hastighetsreglaget. Mottagaren kan fånga in störningar, fullgas och skada din modell. När du kopplar från, ge akt på att följa den omvända ordningsföljden. Koppla först från mottagaren och hastighetsreglaget, koppla sedan från sändaren. Det är inte tillåtet att använda olika typer av batterier eller att använda nya och gamla batterier tillsammans. Blockera aldrig produktens fläkt eller kylsitsar. Sörj för att luften kan cirkulera ordentligt runt produkten. Anslut omsorgsfullt samtliga delar till utrustningen. Om förbindningarna skulle lossa genom vibrationer kan du förlora kontrollen över modellen. Tillverkaren kan inte göras ansvarig för sådana skador, vilka orsakas av att säkerhetsvarningarna och varningarna inte åtföljs. Använd endast originalreservdelar.

## russisch

Это не игрушка. Изделие не предназначено для детей младше 14 лет. Храните изделие вне зоны досягаемости маленьких детей. Выполняйте нижеследующие требования. Невыполнение их может привести к повреждению изделия и утрате права на гарантию. Невыполнение настоящих требований может привести к материальному ущербу и тяжелым травмам! Не допускается оставлять без надзора изделие, включенное в сеть. В случае возникновения неисправности это может привести к пожару. Не допускайте неправильного присоединения или неправильной полярности при подключении изделия. Все кабели и соединения должны хорошо быть изолированы. Короткие замыкания могут при определенных обстоятельствах привести к выходу изделия из строя. Не допускается контакт этого изделия или других электронных компонентов с водой, маслом, моторными топливами или другими электропроводящими жидкостями, поскольку они могут содержать минералы, вызывающие коррозию электронных схем. В случае контакта изделия с этими материалами необходимо немедленно выключить его и тщательно высушить. Если изделие не используется, необходимо извлечь из него аккумулятор или отсоединить его от источника тока. Не допускайте короткого замыкания, перегрузки и неправильной полярности аккумулятора или отдельных ячеек. Это может вести к пожару или к взрыву. Запрещается открывать аккумулятор, батарею или отдельные ячейки. Заряжаемый аккумулятор должен находиться под надзором. Во время заряда аккумулятор должен находиться на негорючей, термостойкой подложке. Вблизи изделия не должны находиться горячие или легко воспламеняющиеся предметы. Запрещается превышать максимальных значений тока заряда и разряда, рекомендуемых фирмой. Запрещается глубокий разряд никель-металлогидридных и литий-полимерных аккумуляторов. Не допускается контакт аккумуляторов с огнем, а также с водой или другими жидкостями. Процесс заряда проводят только в сухих помещениях. Для заряда литий-полимерных аккумуляторов следует использовать зарядно-разрядные устройства, предназначенные для аккумуляторов этого типа. Запрещается использовать для этой цели зарядно-разрядные устройства, предназначенные для никель-кадмиевых или никель-металлогидридных аккумуляторов. Не допускается повреждение наружной обшивки литий-полимерных аккумуляторов. Необходимо следить за тем, чтобы острые предметы, такие как ножи, инструменты, крошки углеродного волокна или т. п. не могли повредить аккумулятор. Необходимо следить за тем, чтобы аккумулятор не был поврежден в результате падения, удара, деформации или т. п. Использование поврежденных ячеек не допускается. Если при визуальном контроле обнаруживается деформация, повреждение ячейки или т. п. дальнейшая эксплуатация ячейки не допускается. Перед включением приемника или регулятора скорости следует включить передатчик. Если этого не сделать, приемник может принять сигналы помех, дать полный газ и повредить модель. При выключении действовать в обратном порядке. Вначале выключить приемник и регуляторы скорости, а затем передатчик. Не допускается совместное использование разных типов батарей или новых и использованных батарей. Не разрешается перекрывать вентиляторы или вентиляционные щели изделия. Необходимо обеспечить хорошую циркуляцию воздуха вокруг изделия. Все части оборудования должны быть надежно присоединены. В случае ослабления соединений в результате вибрации возможна утрата контроля над моделью. Изготовитель не несет ответственности за ущерб, причиненный вследствие несоблюдения указаний по безопасности и предостережений. Используйте только оригинальные запасные части.

## rumänisch

Nu este jucărie. Neadevătat pentru copii sub 14 ani. Nu lăsați produsul la îndemâna copiilor mici. Respectați obligatoriul următoarele indicații. Nerespectarea poate deteriora produsul și poate exclude garanția. Nerespectarea acestor indicații poate avea drept urmare daune materiale, vătămări corporale și răniri foarte grave! Nu lăsați produsul nesupravegheat, cât timp este aprins. În funcțiune sau conectat la rețeaua electrică. În cazul defectării se poate produce foc în produs sau în împrejurimile lui. Evitați cuplarea greșită sau polarizarea incorectă a produsului. Toate cablurile și legăturile trebuie să fie izolate corespunzător. Scurtcircuitul poate deteriora produsul. Acest produs sau alte componente electronice nu trebuie să intre niciodată în contact cu apă, ulei, carburanți sau alte lichide conductoare electrice, fiindcă acestea pot conține minerale care pot coroda circuitele electrice. La contact cu asemenea substanțe trebuie să opriți imediat funcționarea și să ușați produsul cu atenție. Când nu utilizați produsul, scoateți întotdeauna acumulatorul din produs, respectiv decuplați produsul de la rețea. Evitați scurtcircuitarea, supraîncălzirea sau polarizarea greșită a acumulatorului sau a unor celule. Aceasta poate genera incendiu sau explozie. Nu deschideți niciodată un acumulator, o baterie sau celulele individuale. Încărcați acumulatorul doar sub supraveghere. Plasați acumulatorul în timpul încălzirii pe o suprafață neinflamabilă și termorezistentă. Nu depozitați în apropierea acumulatorului obiecte ușor inflamabile. În niciun caz nu depășiți curentul maxim de încălzire/descărcare recomandat de către. În niciun caz nu descărcați excesiv un acumulator NiMH/Po. Acumulatorul nu poate intra în contact cu foc, apă, sau alte lichide. Încărcați produsul doar într-o încăpere uscată. Pentru încălzirea acumulatorului LiPo folosiți doar încălzitoare/descărcătoare specificate pentru acestea. Nu utilizați încălzitoare/descărcătoare NiCd/NiMH. Carcasa exterioară a acumulatorului LiPo nu trebuie deteriorată. Fiți atenți că obiecte ca de exemplu: cuțite, scule, margini de fibră de carbon sau asemănătoare pot să deterioreze acumulatorul. Atenție ca acumulatorul să nu fie deteriorat prin cădere, lovire, îndoire sau în mod asemănător. Celulele deteriorate nu mai trebuie folosite. Dacă celulele prezintă deformări, deteriorări vizibile sau altele similare, nu mai trebuie utilizate. Poniți întotdeauna mai întâi emițătorul înaintea pornirii receptorului și a controlului de viteză. Receptorul ar putea recepta semnale eronate, ar accelera la viteză maximă și ar deteriora modelul. La oprire respectați ordinea inversă. Opriți mai întâi receptorul și controlul de viteză, apoi emițătorul. Nu folosiți împreună tipuri diferite de baterii sau baterii noi și uzate. Nu blocați niciodată ventilatorul sau gurile de ventilație ale produsului. Asigurați circulația bună a aerului în jurul produsului. Conectați cu atenție toate componentele echipamentului. Dacă legăturile sunt slăbite din cauza vibrației, puteți scăpa modelul de sub control. Producătorul nu răspunde pentru daunele aparute în urma nerespectării indicațiilor și atenționărilor de securitate. Utilizați doar piese de schimb originale.

## WARNING NOTES

## portugiesisch

Nenhum brinquedo. Não apropriado para crianças com menos de 14 anos. Mantenha o produto fora do alcance de crianças pequenas. Preste muita atenção às seguintes indicações, visto poderem destruir o produto e anular a garantia. A não observância destas indicações pode causar danos materiais e pessoais assim como ferimentos graves! Mantenha o produto sob vigilância sempre que este estiver ligado, a funcionar ou ligado a uma fonte de corrente. Uma avaria poderá causar um incêndio no produto ou nas imediações. Evite conexões erradas ou polaridade inversa do produto. Todos os cabos e conexões têm de estar bem isolados. Curto-circuitos podem em certas circunstâncias destruir o produto. Este produto ou outros componentes electrónicos nunca devem entrar em contacto com água, óleo, combustíveis ou outros líquidos condutores de electricidade, visto estes poderem conter minerais, os quais corrompem circuitos de conexão electrónicos. Em caso de contacto com estes materiais, interrompa imediatamente a utilização do produto e deixe-o secar cuidadosamente. Retire sempre o acumulador do produto ou desligue o produto da fonte de energia, sempre que o produto não estiver a ser utilizado. Evite curto-circuitos, sobrecarregamento e polaridade inversa do acumulador ou células simples. Tal pode causar um incêndio ou explosão. Nunca abra um acumulador, uma bateria ou células simples. Só carregue o acumulador sob vigilância. Durante o carregamento o acumulador tem de estar sobre uma base não inflamável, resistente ao calor. Além disso, não se podem encontrar perto do acumulador objectos inflamáveis ou de fácil combustão. Nunca exceda a corrente máxima de carga/descarga recomendada pela. Em nenhuma circunstância o acumulador NiMH/LiPo deve ser completamente descarregado. O acumulador nunca deve entrar em contacto com fogo, água ou outros líquidos. Proceder ao carregamento só em locais secos. Utilize para o carregamento de acumuladores LiPo só carregadores e descarregadores que foram especificados para este tipo de acumuladores. Em nenhuma circunstância utilize carregadores ou descarregadores especificados para acumuladores NiCd/NiMH. O revestimento exterior do acumulador LiPo não pode ser danificado. Tome, por isso, especial atenção para que objectos pontiagudos como facas, ferramentas, bordas de fibra de carvão ou similares não possam danificar o acumulador. Preste especial atenção para que o acumulador não seja danificado por queda, pancada, flexão ou acções semelhantes. Células danificadas não podem ser novamente utilizadas. Se as células apresentarem deformações, danos ópticos ou sinais semelhantes, não as volte a utilizar. Ligue sempre primeiro o seu emissor antes de ligar o receptor ou o controlador de velocidade. O receptor poderia interceptar sinais parasitas, acelerar ao máximo e danificar o seu modelo. Para desligar siga a sequência inversa. Desligue primeiro o receptor e controlador de velocidade e só depois desligue o emissor. Não utilize diferentes tipos de baterias nem baterias usadas juntamente com baterias novas. Nunca bloqueie o ventilador nem as fendas de refrigeração do produto. Assegure-se de uma boa circulação de ar em volta do produto. Conecte sempre cuidadosamente todas as peças do equipamento. Se as conexões se soltarem através de vibrações, pode perder o controlo sobre o modelo. O fabricante não pode ser responsabilizado por danos causados pela não observância das instruções de segurança e das advertências. Utilize só peças sobresselentes originais.

## polsisch

To nie jest zabawka. Nie nadaje się dla dzieci poniżej 14 roku życia. Strzeż się produktu przed małymi dziećmi i nie przechowywać go w zasięgu ich rąk. Przestrzegaj koniecznie podanych wskazówek, brak ich przestrzegania doprowadzić może do zniszczenia produktu i wygaśnięcia prawa gwarancyjnego. Nieprzestrzeganie tych wskazówek doprowadzić może do szkód materialnych, rzeźowych, szkód zdrowotnych i obrażeń ciała. Nie pozostawiaj produktu bez nadzoru w stanie jego włączenia, eksploatacji lub połączenia ze źródłem prądu elektrycznego. W przypadku uszkodzenia dojść może do zapalenia produktu lub elementów jego otoczenia. Unikać należy nieodpowiedniego podłączenia lub zmiany biegunów produktu. Wszystkie kable i połączenia muszą być odpowiednio izolowane. Zwarcia mogą w pewnych okolicznościach doprowadzić do zniszczenia produktu. Unikać należy zetknięcia się produktu lub jego poszczególnych zespołów elektronicznych z wodą, olejem, paliwem silnikowym lub innymi płynami przewodzącymi prąd elektryczny, ponieważ ciecze te zawierają mogą minerały będące przyczyną korodowania elektronicznych układów przełączających. W przypadku zetknięcia się z tymi substancjami należy natychmiast przerwać eksploatację urządzenia, a następnie doprowadzić do całkowitego wyschnięcia produktu. W przypadku, gdy produkt nie jest używany, należy z niego wyjąć akumulatorki i odłączyć urządzenie od źródła prądu elektrycznego. Unikać należy zwarcia, przeładowań i zmian biegunów akumulatora lub poszczególnych komórek akumulatorowych. Prowadzić to może bowiem do powstania pożaru lub eksplozji. Nie należy otwierać akumulatora, baterii lub pojedynczej komórki akumulatorowej. Akumulator ładowany powinien być zawsze pod nadzorem. Podczas ładowania akumulator znajdując się powinien na niepalnym i odpornym na temperaturę podłożu. W pobliżu akumulatora nie wolno umieszczać żadnych palnych lub łatwopalnych materiałów i przedmiotów. W żadnych okolicznościach nie wolno przekraczać maksymalnego prądu ładowania / prądu wyładowywania polecanego przez firmę. W żadnym wypadku nie wolno doprowadzać do stanu głębokiego rozładowania akumulatorów NiMH/LiPo. Akumulator nie może stykać się z takimi czynnikami jak ogień i woda, a także z innymi cieczami. Procedurę ładowania przeprowadzać należy wyłącznie w suchych pomieszczeniach. Do ładowania akumulatorów LiPo stosować należy wyłącznie ładowarki i „rozładowarki” (urządzenia rozładowujące) przeznaczone dla tego typu akumulatorów. Nie należy stosować ładowarek i urządzeń rozładowujących typu NiCd/NiMH. Nie wolno dopuszczać do uszkodzenia obudowy akumulatora LiPo. W związku z tym koniecznie zwracać należy uwagę na, by takie ostre przedmioty jak noże, narzędzia, krawędzie włókien węglowych, i inne tym podobne przedmioty nie uszkodziły akumulatora. Zwracać należy uwagę na to, by akumulator nie uległ uszkodzeniu poprzez upadek z wysokości, uderzenie/zderzenie, pogięcie lub tym podobną czynność. Uszkodzone komórki nie mogą być nadal używane. W przypadku, gdy komórki wykazywać będą zdeforowania, uszkodzenia optyczne i tym podobne, należy je wymienić. Przed włączeniem odbiornika lub regulatora jazdy włączać należy najpierw nadajnik. Odbiornik mógłby odbierać sygnały zakłóceniewe (fałszywe), włączny pełny gaz uszkodzając tym samym Państwa model. W przypadku wyłączenia zachowywać należy kolejność odwrotną. Najpierw wyłączmy odbiornik i regulator jazdy, następnie wyłączyć nadajnik. Nie wolno jednocześnie używać baterii różnych typów lub baterii nowych z bateriami używanymi. Nie należy blokować wentylatora lub szczebli chłodzących produktu. Dbać należy o wystarczającą cyrkulację powietrza wokół produktu. Starannie podłączyć wszystkie części wyposażenia. W przypadku, gdy połączenia rozłączają się wskutek wibracji, można utracić kontrolę nad modelem. Producenta nie można winić za szkody, które spowodowane zostały w wyniku nieprzestrzegania wskazówek bezpieczeństwa i ostrzeżeń. Używać należy wyłącznie oryginalnych części zamiennych.

## norwiesisch

Intet leketøy. Ikke egnet for barn under 14 år. Produktet må oppbevares utilgjengelig for småbarn. Ta hensyn til følgende anvisninger, da de kan adlegge produktet og utelukke garantien. Hvis anvisningene ikke følges, kan det føre til alvorlige material- og personskader! For å oppdri produktet uten oppsett mens det er slått på, i drift eller er koblet til en strømkilde. Hvis det oppdri en defekt kunne denne sette produktet eller omgivelsen i brann. Unngå feil forbindelse eller å forbinde produktet med feil polstilling. Alle kabler og forbindelser må være godt isolert. Korteslut-



## WARNING NOTES

beröring med vand, olie, drivstoffer eller andre elektrisk ledende væsker, da disse kan indeholde mineraler, der får de elektroniske strømkredsløb til at korrodere. Ved kontakt med disse stoffer skal De straks indstille driften og omhyggeligt tørre produktet. Tag altid akkumulatoren ud af Deres produkt hhv. adskil produktet fra strømkilden, hvis produktet ikke anvendes. Undgå kortslutning, overopladning og omvendt polaritet i akkumulatoren eller enkelte celler. Dette kan føre til brandudvikling eller eksplosion. Åbn aldrig en akkumulator, et batteri eller enkelte celler. Oplad kun akkumulatoren under opsyn. Under opladningen skal akkumulatoren befinde sig på et ikke brændbart, varmebestandigt underlag. Desuden må der ikke befinde sig brændbare eller let antændelige genstande i nærheden af akkumulatoren. Overskrid under ingen omstændigheder den maksimale opladnings-/afledningsstrøm, der anbefales af. En NiMH/LiPo-akkumulator må under ingen omstændigheder dybdefaades. Akkumulatoren må ikke komme i berøring med ild, vand eller andre væsker. Gennemfør kun opladningsprocessen i tørre rum. Anvend til opladningen af LiPo-akkumulatore kun opladnings-/afledningsapparater, der er specificeret til denne type akkumulator. Anvend under ingen omstændigheder NiCd/NiMH-opladnings-/afledningsapparater. LiPo-akkumulatorens yderklædninger må ikke beskadiges. Vær altså ubetinget opmærksom på, at der ikke er skarpe genstande som knive, værktøjer, kulfiberkanter eller lign., der kan beskadige akkumulatoren. Vær opmærksom på, at akkumulatoren ikke bliver beskadiget ved nedfald, slag, bøining eller lignende. Beskadigede celler må ikke længere anvendes. Skulle cellerne udvise deformationer, optiske beskadigelser eller lignende, så må De ikke længere anvende disse. Tænd altid først for Deres sender, før De tænder for modtageren eller kørselsregulatoren. Modtageren kan optage fejlsignaler, give fuld gas og beskadige Deres model. Ved slukning bedes De overholde den omvendte rækkefølge. Sluk først modtageren og kørselsregulatoren, sluk derefter for senderen. Uéns batterityper eller nye og brugte batterier må ikke bruges sammen. Blokér aldrig ventilatoren eller produktets gæller. Sørg for en god luftcirkulation omkring produktet. Tilslut samtlige udstyrsele omhyggeligt. Hvis forbindelserne løsnes pga. vibrationer, kan De miste kontrollen over modellen. Producenten kan ikke gøres ansvarlig for skader, der forårsages som følge af manglende overholdelse af sikkerhedshenvisninger. Anvend kun originale reservedele.

### estnisch

Käesolev toode pole manguasi. Ei sobi alla 14 aastastele lastele. Ärge jätke toodet väikeste laste käealutusse. Järgige tingimata järgnevaid juhendeid, vastasel korral võib toode hävida ja garantii ei kehti. Nende juhiste eiramine võib tekitada asja- ja isikukahjusid ning põhjustada raskeid vigastusi. Ärge jätke toodet kunagi järelevalveta, kui ta on sisse lülitatud, töötab või on ühendatud vooluallikaga. Juhuslik defekt võib põhjustada toote või selle ümbruse süttimise. Vältige toote ebaõiget ühendamist või polaarsust. Kõik kaablid ja ühendused peavad olema hästi isoleeritud, lühiühendused võivad toote rikkuda. Käesolev toode või selle teised elektroonilised komponendid ei tohi kunagi kokku puutuda vee, õli, küstest või teiste elektrit juhtivate vedelikega, kuna need võivad sisaldada mineraale, mis võivad põhjustada elektrooniliste lülitusringide korrodeerumist. Nende ainetega kokku puutudes peatage kohe töö ja kuivatage toode hoolikalt. Kui te toodet ei kasuta, eemaldage alati sellest aku või lahutage ta vooluallikast. Vältige akude või üksikute akupurkide lühiühendust, ülelaadimist ja ebaõiget polaarsust. See võib põhjustada süttimist või plahvatust. Ärge kunagi avage akut, patareid või üksikuid akupurke. Laadige akut vaid järelevalve all. Laadimise ajaks asetage aku mittesüttivale kuumakindlale alusele. Akude lähduses ei tohi olla põlevaid ega kergestsüttivaid esemeid. Ärge mitte mingil juhul ületage maksimaalselt poolt soovitatud laadimis/tühendusvoolu. Mitte mingil juhul ärge laadige NiMH/LiPo-akut. Aku ei tohi kokku puutuda tule, vee ega teiste vedelikega. Laadige akut kuivades ruumides. Kasutage LiPo akude laadimiseks ainult laadimis/tühendusseadmeid, mis on määratud just sellele akutüübile. Ärge mitte mingil juhul kasutage NiCd/NiMH laadimis/tühendusseadmeid. LiPo-akude väliskihiti ei tohi kahjustada. Jälgige tähelepanelikult, et akut ei rikuks teravad esemed nt nuga, tööriistad, süsinikkiu servad vm. Jälgige, et aku ei saaks kahjustada kukkumise, löögi, muljumise vm tõttu. Kahjustatud akupurke ei tohi enam kasutada. Kujumuutuste või silmämähtavate vigastuste korral ei tohi neid enam kasutada. Enne vastuvõtja või sõidureguleerija sisselülitamist pange tööle saatja. Vastuvõtja võib vastasel korral segaväid signaale vastu võtta, täisgaasi anda ning sellega mudelit kahjustada. Väljalülitamisel toimige vastupidises järjekorras. Esmalt lülitage välja vastuvõtja ja sõiduregulaator, siis saatja. Ärge kasutage üheskoos eri tüüpi patareid või uusi ja kasutatud patareid. Ärge kunagi blokeeringe toote ventilatorit ega jahutusavasid, tagage toote ümber hea õhuvahetus. Kinnitage hoolikalt kõik varustuse osad. Kui ühendused vibratsiooni tõttu lahti tulevad, võite kaotada mudeli üle kontrolli. Tootja ei vastuta kahjustuste eest, mis on tekkinud ohutusjuhiste ja hoiatuste eiramise tagajärjel. Kasutage üksnes originaalvaruosi.

### finnisch

Tämä ei ole lelu. Ei alle 14-vuotiaiden käyttöön. Säilytä tuote lasten ulottumattomissa. Huomioi seuraavat neuvot, sillä muutoin tuote voi vioittua eikä takuu kata huolimattomasta käytöstä aiheutuneita vaurioita. Neuvojen noudattamatta jättäminen voi aiheuttaa esinevahinkoja tai vakavia henkilövahinkoja. Älä jätä tuotetta valvomatta silloin kun se on päällä, käytössä tai syttyynä verkkovirtaan. Toimintahäiriön sattuessa voivat tuote tai sitä ympäröivät materiaalit syttyä tuleen. Vältä vääriä liittäntöitä ja vastaanapaisuutta. Kaikkien johtojen ja liittäntöiden tulee olla huolellisesti eristettyjä. Oikosulku voi joissakin tapauksissa vioittaa laitetta. Tämä tuote tai muut elektroniset komponentit eivät saa koskaan altistua vedelle, öljylle, polttoainelle tai muille sähköä johtaville nesteille, koska niissä voi olla mineraaleja, jotka voivat syövyttää virtapiirejä. Jos altistuminen kuitenkin tapahtuu, sammuta laite välittömästi ja kuivaa se huolellisesti. Kun laite ei ole käytössä, irrota sen akku tai irrota tuote verkkovirrasta. Vältä akun tai yksittäisten kennojen oikosulkuja, ylläatamista tai vastaanapaisuutta. Tämä voi aiheuttaa tulipalon tai räjähdysten. Älä koskaan avaa akkua, paristoa tai yksittäisiä kennoja. Lataa akkua vain valvonnan alaisuudessa. Kun akkua ladataan, sen tulee olla palamattomalla ja kuumuutta kestäväällä alustalla. Palavat tai helposti syttyvät esineet tulee pitää erillään akusta. Älä koskaan ylitä korkeinta lataus- tai purkuvirtaa, jonka on ilmoittanut. NiMH/LiPo-akku ei saa koskaan syväpurkautua. Akku ei saa altistua tulelle eikä vedelle tai muille nestemäisille aineille. Lataa akkua vain kuivassa tilassa. Käytä LiPo-akkujen lataamiseen vain kyseiselle akkutyypille tarkoitettuja lataus- ja purkulaitteita. Älä missään tapauksessa käytä NiCd/NiMH-lataus- tai purkulaitteita. LiPo-akkujen ulko-kuori ei saa vahingoittua. Varo etteivät terävät esineet kuten veitset, työkalut, hiilikuituiset reunat tms. vahingoita akkua. Varo ettei akku vahingoitu putoamisen, iskun, taivuttamisen tai muun vastaavan seurauksena. Vahingoittuneita kennoja ei saa käyttää. Kennoja ei tule käyttää, jos niissä on näkyviä vaurioita tai merkkejä vääntymisestä tai muista vioista. Kytke aina ensin lähetin päälle ennen vastaanottimen tai nopeussäätimen päällekytkemistä. Vastaanotin voi siepata häiriösignaaleja, kiihdyttää auton täyteen nopeuteen ja vahingoittaa laitetta. Sammuttaessasi laitetta toimi päinvastaisessa järjestyksessä. Sammuta ensin vastaanotin ja nopeussäädin, sitten vasta lähetin. Älä käytä yhtäaikaan eri paristotyyppettä tai uusia ja käytettyjä paristoja samanaikaisesti. Älä tuki tuotteen tuuletinta tai jäähdytysripoja. Huolehdi riittävästä ilmanvaihdosta tuotteen ympärillä. Liitä kaikki laitteiston osat huolellisesti. Jos liitännät irtoavat tärinän takia, voit menettää pienoismallin hallinnan. Valmistajaa ei voi saattaa vastuuseen vaurioista, jotka ovat aiheutuneet turvaohjeiden ja varoitusten noudattamatta jättämisestä. Käytä vain alkuperäisiä varaosia.

## GENERAL NOTES



### WEEE NOTES

This symbol indicates that this product is not to be disposed of with your household waste, according to the WEEE Directive (2002/96/EC) and your national law. This product should be handed over to a designated collection point, e.g. on an authorised one-for-one basis when you buy a new similar product, or to an authorised collection site for recycling waste electrical and electronic equipment (EEE). Improper handling of this type of waste could have a possible negative impact on the environment and human health due to potentially hazardous substances that are generally associated with EEE. At the same time, your cooperation in the correct disposal of this product will contribute to the effective usage of natural resources. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, waste authority, approved WEEE scheme or your household waste disposal service.



### CE NOTES

Hereby, LRP electronic GmbH declares that this product is in compliance with the essential requirements and other relevant provisions of the european directive 2004/108/EC. This item is in accordance with directive 1999/5/EC. For the declaration of conformity visit: <http://www.LRP.cc/CE>



### BATTERY DISPOSAL NOTES:

Batteries and accumulators used in this product are to be disposed of separately from your household waste. Batteries and accumulators must not be disposed of as unsorted municipal waste. Users of batteries and accumulators must use the available collection framework for the return, recycling and treatment of batteries and accumulators. Customer participation in the collection and recycling of batteries and accumulators is important to minimise any potential effects of batteries and accumulators on the environment and human health due to substances used in batteries and accumulators.

# LRP GRAVIT GPS VISION 2.4GHZ F.H.S.S.

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