Help Guide for the Phantom 3 (Adv/Pro)

V. Aug-20-2015 – By Fantomas

This document is definitely not intended to replace DJI User's Manuals!

Flight Environment Requirements

These instructions are intended not only for the protection of the aircraft, but also to protect your own safety or others. Improper operation can cause serious injury and property damage.

- Before going out, be sure to check this great UAV Weather Forecast site where you will find local information on Temp/Wind/Precip/Cloud Cover/GPS Sats and even the K-Index (Reviewed Here). Note wind direction and weather conditions (actual and forecast). Do not use the aircraft in severe weather conditions. These include wind (more that moderate breeze, ie >36km/h), snow, rain and smog. Watch out for wind gusts as they are more of a problem that steady wind, especially when up in the air. To watch: High Wind/Wind Shadow-Flying Tips.

- Planning to do some winter flying, watch:
Winter R/C Flying Tips and Tips for winter flying with your Phantom - snow, fog, ice, batteries...

- Fly in open areas. Check for any hazards, high buildings, steel structures, constructions, vehicular traffic, personal property that may affect the accuracy of the onboard compass and block the GPS signal.

- Be careful when flying near tall structure/building. If you fly behind, you may lose connection. Also air/wind is a matter and if it encounters an obstruction, huge pressure shifts are taking place that might create a vortex big enough to get you into trouble.

- Stay away from obstacles, crowds, pets, birds, trees, bushes, or water. Do not fly over people or moving vehicles (the Phantom is heavy; if it drops...) and keep children away. Use common sense to stay safe and protect others from harm.

- It is recommended not to take off from any kind of metallic structure like manhole cover, top of your car, reinforced concrete and so on. Best way to take off will always be on a flat surface: ground, grass, portable landing pad…

- Reduce the chance of electromagnetic interference (EMI) by not flying in areas with high levels of electromagnetism, including cellular towers, electricity pylons or power lines. Urban environments have more EMI interference.

- Avoid interference between the Remote Control or on-board Wi-Fi device and other wireless equipment including your own or nearby houses wireless routers. This explains why it's not really wise to fly in your backyard. Also, it's a good idea to ask other persons near you and carrying a smartphone to turn then off.

- Watch out for geomagnetic/solar storms. When the K-Index is at higher level(5+), it has a direct impact on GPS and affect radio signals which can cause issues in obtaining lock in regards to satellites. To monitor the K-Index you can use the following website: Planetary K-index or this Estimated 3-hour Planetary K Index.

- Check out what are the rules/laws/regulations in your country about flying these "Unmanned Aerial Vehicles" (UAVs). At the same time, check if you need any kind of license, insurance or personal liability insurance, especially if you're planning on flying it commercially.

- Verify for airport, air traffic and restricted air space. Do not fly the aircraft within no-fly zones specified by local laws and regulations. If you're in the US or Canada, a good site to visit is the Don't Fly Drones Here web site. This map represents areas where it is not recommended to fly drones due to regulations.

- For people who have issues with weak GPS satellites locked, someone recommended this nice tool to check and see exactly how many GPS satellites should be visible based on a specified location, the day and time. Have a look: Satellite Predictor Tool (Just make sure "glonass" is unticked, otherwise you will think its fine to fly all day). There are some interesting APPS that shows GPS status, for IOS: GPS Plan and Android: GPS Test / AndroiTS GPS Test

- Do not fly if you're drunk, taking drugs, under the influence of anesthesia, dizziness, fatigue, nausea and any other conditions both physical and mental that could impair your ability.

- In case of emergency/problem…DON'T PANIC!

- Plan you flight in advance. Where are you going, what are you going to do and so on

- Remember, this is literally a "flying camera", so be sure you protect the privacy of others.

- Be sure to watch: Dude where can I fly my drone?

- And finally, try to never lose Line of Sight (LOS) with your Phantom.

***Better Fly Safe Than Sorry*!**

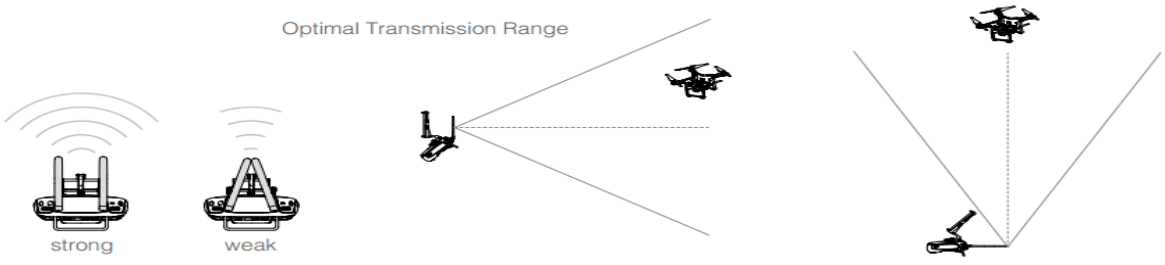
Checklists

Before you go

- **Aircraft and Remote Controller Firmware up to date.**
- **IMU / Gimbal / Remote Controller are calibrated.**
- **Batteries (Phantom, Remote Controller, Tablet/Phone) fully charged.**
- **Micro SD card inserted into Aircraft camera slot and formated as FAT32 otherwise the Camera/Video info won't be displayed (32Gb card). Check if there is enough storage space.**
- **Inspect everything for obvious defects:**
  - **o Turn motors shafts with your fingers and verify they are rotating smoothly without excessive play or binding.**
  - **o Check the motors for debris, dust, dirt... Use a pressurized duster can to remove/clean.**
  - **o Damping absorbers are in good condition, not broken or worn. Anti-Drop pins are in place and locked.**
  - **o Gimbal is functioning as normal; Camera is secure and moving normally.**
  - **o Camera lens isn't dirty, spotted, smeared.**
  - **o Check condition of Gimbal/Camera black ribbon cables. Look for tears or signs of wear.**
  - **o Battery is not swollen, leaky or damaged in any way. Contact needles and pads are clean.**
  - **o Propellers are in good condition: not chipped, broken or worn. Run finger along leading and trailing edges. Flex both Blades to check for hairline cracks.**
  - **o Remote Controller antennas are not damaged.**
  - **o Inspect the frame near the screws for stress cracks.**
  - **o From time to time, check ALL the screws (Frame/Motors and Gimbal), tighten when necessary (Do Not Overtighten).**
- **If Wi-Fi is not available onsite, Cache the map data of the area where you intend to fly by connecting to the Internet before leaving. Check out the "Preloading Maps" Section below.**

Pre-Flight

- **Remove the Gimbal Lock.**
- **Install a ND Filter (if needed).**
- **Install propellers on proper axis and tighten a bit.**
- **Mount Phone/Tablet (ensure it's firmly in place) and connect to Remote Controller using USB cable.**
- **Set Phone/Tablet Volume & Luminosity to MAX (Install hood).**
- **Turn Wifi & Bluetooth off, OR Turn Airplane Mode On OR Connect Tablet to Phone(Tethering) using 5Ghz or Bluetooth.**
- **For Nvidia Shield Tablet, make sure the "Location" is set on "Device Only" otherwise the Aircraft Location and Heading will be all wrong.**
- **Close all running apps.**
- **Do NOT use any screen recorder apps, as these can cause video lagging and blackouts.**
- **Position Remote Controller antennas properly: parallel and pointing upward. Make sure the flat sides are facing the Aircraft at all times; keep changing your body position and antennas tilt, if necessary, to keep wide flat sides of antennas pointed at Aircraft. This is more important the further the Aircraft is from the RC. Need to know: NEVER point tips of antennas directly at the P3 (like a gun barrel) - this is the lowest signal level situation.**



- **Set Remote Controller flight mode to "P-Mode" position.**

- **Insert Smart Battery, make sure it's secured.**

Power Up

- ***Turn Remote Controller power ON.***

- **Place Aircraft on level surface and locate in a safe launch and recover position.**

- **Orient Aircraft nose pointing away from operator position.**

- **Make sure the gimbal/camera is moving freely and not obstructed by tall grass or something, otherwise you will get a gimbal motor error.**

- ***Turn Aircraft power ON.***
  - **Gimbal/Camera is in a stable horizontal position.**
  - **Aircraft Status LED will blink rapidly when the Home Point is recorded.**
  - **Aircraft Status LED will slowly blinks green when the GPS signal is ok.**
  - **Remote Controller status LED should be turning green.**

- **Launch DJI App then Tap "Camera" option. DJI App detects & connects with the Aircraft.**

- **In the "Aircraft Status" window, check the current status of the Aircraft/Remote Controller/Compass.**

- **If in a new launch area, tap "Calibrate" option and follow on-screen instructions to calibrate the Compass.**

- **Cache the map data of the area where you intend to fly by connecting to the Internet before each flight. This can be done offsite, if Wi-Fi is not available onsite. Check out the "Preloading Maps" Section below.**

- **Check the Sensors values -> MC Setting/Sensors:**
  Gyroscope: All the values as close to 0.00 as possible. Slight variations are OK but the MOD should not go over 1.0.
  Acceleration: Again slight variations from 0.00 are OK for the XYZ but the MOD needs to be 1.0.
  Compass: The XYZ of the compass is its RAW readings. What you need to make sure is that the MOD value is between 1400 and 1600. I like to see mine near about 1500 and I get slight variations depending on where I fly.
  If you do not get these values: You MUST do an IMU Calibration and/or a Compass Calibration BEFORE you start flying.

- **Double-check your settings: Failsafe mode/Max Alt/Gimbal Speed/Expo/Gain/VPS on/off (for indoor flight -> MC Settings/Advanced Settings). Set RTH altitude (depends on flight location and surrounding) –> MC Settings/Advanced Settings/Failsafe Mode.**

- **Make sure to use a Clear Frequency (set manually if needed) -> Image Transmission Settings.**
  For Manual: Set Channel to Custom, and watch the noise graph for several minutes and watch for intermittent large spikes on any of the channels - be sure to avoid any of those channels.

- **Open the battery menu to check the battery status:**
  - **Confirm Low Battery Warning and Critical Battery Warning % settings.**
  - **Look at voltage per cell to make sure they all are equivalent. It's important to ensure your battery is in good health prior to takeoff. Flying with a battery that has one or more bad cells could cause the battery to discharge very quickly and/or your Phantom to shut off and drop from the sky.**
  - **Check batteries for number of cycles. Charge and discharge the battery completely once every 20 charge/discharge cycles; this will help rebalance the battery. To discharge: when you come back from a flight and the % is fairly low, just hold it off in a hover at about a foot or two off the ground - it goes fairly quickly - when you get to 8%, ease off the throttle and lands it at about 7%. If you land and let it idle, it takes forever. Then recharge it to maximum capacity. This power cycling procedure will optimize the battery.**

- **Adjust camera settings to fit your needs:**
  - **Check out the "Tips for Videography" Section**
  - **Turn on Exposure Warning or the Histogram windows to help you adjusting Exposure**
  - **Shoot at the lowest possible ISO to avoid any added noise in your footage.**
  - **Shoot at 24 or 30fps. *Video Look* is 30fps/shutter speed at 1/60. *Cinematic Look* is 24fps/shutter speed at 1/50.**
  - **If needed: set Video transmission rate to a lower setting -> Image Transmission Settings. This will lower HD Link live video resolution slightly, but the lower resolution is also less taxing on CPU, max. range is increased, and you can achieve higher frame rates. For video monitoring and shot setup, it's better to have high frame rate, stable HD Link video at slightly lower resolution than lower-frame rate, stuttering, pixelated, higher resolution video.**
  - **This is a fixed aperture camera f2.8. Exposure is then controlled by ISO and Shutter Speed variations only.**

  - **If Filming in <u>Manual Mode</u> (Be sure to keep it in Manual Mode):**
    Your goal when filming in Manual Mode is to:

- Try to adjust ISO/Shutter Speed to get EV value at or near 0
- Try to keep your ISO at a low setting - say 100 or 200, if flying in daylight.
  (This will force the shutter to compensate for exposure rather than ISO shifting.)
- Try to keep your Shutter Speed at 2 time fps

Depending on the current lighting environment, the only way you might be able to achieve this is by using the right ND filter (check out the "ND Filters" Section). If you do not have ND filter or do not want to constantly adjust the ISO/Shutter Speed, use the Auto Mode.

o If Filming in Auto Mode:
When filming in Full Auto mode, the Phantom will try to keep EV at or near 0 by constantly shifting the ISO and Shutter Speed. This might produce way too much variation in lighting. Use the AE lock in order to not have the camera change the lighting while filming is recommended. Click the screen to get a yellow square to have the camera set the lighting for that part of the image and THEN hit AE-lock. You can redo the same procedure at any time.
Note - AE-lock disengages every time you stop filming! So you have to do it every time.

o In both case, the use of a ND Filter to try to keep a low ISO and Shutter Speed at 2 time FPS (THE Golden Rule!) is highly recommended.

o If you plan to ColorGrade:
- LOG profile
- Sharpness -2
- Contrast -3
- Saturation -2
- Auto or Manual WB depending on lighting.

o If you DON't plan to ColorGrade:
- NONE profile
- Sharpness 0, -1
- Contrast 0 (maybe experiment with 1)
- Saturation 0 (maybe experiment with 1)
- Auto or Manual WB depending on lighting.

o My settings:
- Use the appropriate ND filter based on current lighting environment
- 3840x2160p (4K)
- 30FPS
- MP4
- Film in Manual Mode:
  - ISO at 100
  - Shutter Speed at 60 (or 2 time FPS)
  - If necessary: Adjust ISO(keep at min) and/or Shutter Speed(try to keep at 2 time FPS)

  OR
- Film in Auto Mode BUT be sure to use AE Lock.
- NONE profile
- Sharpness 0/-1 ; Contrast 0 ; Saturation 0
- Auto or Manual WB depending on lighting
- Gimbal Speed at 40
- Expo: All at .30 ; Attitude: 80% ; Brake: 80% ; Gain: All at 100% except Yaw: 80%

Takeoff

- Make sure Home Point is set where you are.

- DJI App flight status ok to go (Safe to fly – GPS).

- START Video/Sound recording, if needed.

- Move both control sticks to lower-inner position to start motors (CSC). Propellers should start spinning slowly.
  DO NOT perform the CSC while flying, otherwise the motors WILL stop and …

- Make sure the motors are functioning normally: no unusual noise or vibration and they are all spinning at the same rate/speed.

- Double check for nearby obstructions, people, power lines, electromagnetic interference (EMI), etc.

- Execute Auto or Manual takeoff and move to Hover position (~2m) for 30 seconds.
  - o Aircraft Status LED should be slowly flashing Green.
  - o Check stability of Aircraft (not drifting, no toilet bowl effect)
  - o Do short distance flight test.
  - o Confirm expected sticks operation.

- **All checks OK – ready to go. Otherwise LAND IMMEDIATELY and investigate the issue.**

- **Monitor Mode, Satellites Status, Aircraft Status, Remote Control and HD Video Link Signal Strength, Batteries Power Level(%) and Voltage (Should be >=3.3V. To monitor Voltage on the main screen, enable the "Show Voltage On Main Screen" setting in the "Aircraft battery" section of the DJI App settings). The colored zones and markers on the battery level indicator bar reflect the estimated remaining flight time. They are automatically adjusted according to the aircraft's current location and status. Also, it is important to follow the little "H" on the Battery Level Indicator bar, which indicates the "Power requires to return home". Pay attention to low/critical voltage warning - a flight to empty battery can cause damage to the Smart Battery and crash.**

- **Monitor Telemetry:**
  H=Height, D=Distance (from takeoff), VS=Vertical Speed, HS=Horizontal Speed and last is the distance between the surface and the Vision Positioning System's Sensors.

- **Due to the nature of using a remote constantly moving camera, you need to watch the exposure all the time in manual or things will be too dark or overexposed as you move. Try to keep your EV between 0 and 1. Negative is too dark, over 1 can be overexposed or washed out.**

- **During Flight: if Phantom ever seems to behave oddly, feel less responsive, does not fly in straight lines, is drifting or start moving without input, LAND IMMEDIATELY wherever you are and Recalibrate everything. <u>It is HIGHLY recommended you switch to ATTI before Landing, in case the Compass and GPS are out of whack.</u>**
  If a defect or malfunction has occurred, it must be corrected before the next start.

- **Keep line-of-sight with Aircraft as much as possible. Go Slow and Fly Safe.**

<u>Flight Modes</u>

P mode is preferred for most flying scenarios. Users can switch to A mode where and when P mode is unavailable. Be aware that some features are NOT available for A mode, and therefore be EXTRA cautious when fling in A mode.

1) <u>P mode (Positioning)</u>: P mode works best when the GPS signal is strong. There are three different states of P mode, which will be automatically selected by the Phantom 3 depending on GPS signal strength and Vision Positioning sensors:

a) <u>P-GPS</u>: GPS and Vision Positioning are both available, and the aircraft is using GPS for positioning, meaning the Phantom will attempt to maintain the same horizontal/vertical position in space (holds the aircraft in a fixed and stabled hover) by automatically compensating for drift and light wind whenever you take your hands off the stick.

b) <u>P-OPTI</u>: If GPS is NOT available, the aircraft will use the Vision Positioning System to hover accurately. Note that the Vision Positioning System may NOT work properly when the Phantom 3 is fling over water, over surfaces without a clear pattern, or in a low light environment.

c) <u>P-ATTI</u>: When neither GPS nor Vision Positioning is available, the aircraft is using only its barometer for positioning, so only altitude is controlled.

2) <u>A mode (Attitude-ATTI)</u>: The GPS and Vision Positioning System are NOT used for positioning. The aircraft only uses its barometer to maintain altitude. If it is still receiving a GPS signal, the aircraft can automatically return home if the Remote Controller signal is lost and if the Home Point has been recorded successfully.

In this mode, your Phantom will attempt to hold height, orientation and keep itself level by means of the Compass and IMU (the GPS module will only be used to maintain '*some*' flight stability and allow the Return to Home feature to work in case FAILSAFE activates) but it won't counteract for any horizontal drift either from wind or stick move. Therefore, your craft may drift with the wind or in the direction it was heading when you switch to ATTI (i.e. no horizontal positioning). You will notice a huge difference in ATTI mode even if there is no wind. In ATTI mode it does not slow down by itself. It has momentum and will continue flying in whatever direction it was moving until you counter that momentum with thrust in the opposite direction.

Why would you want to use this? Maybe you have been flying upwind. For an easy return, flip it into Attitude mode and let it drift back to you. Wind direction permitting, it can also be useful for smooth video. Fly upwind, start your video, and then turn on Attitude mode and let the video run as your Phantom is born along on the wind.

Need to Know: You should get used to ATTI flying mode as soon as you can because you'll have greater control of the aircraft rather than relying on automatic systems, which, lets face it, could fail at any time and without warning. A switch to ATTI mode is always a good idea if you think or suspect that the Compass and GPS are out of whack; so be prepared.

3) F mode (Function): Intelligent Orientation Control (IOC) is activated in this mode. Ensure you are familiar with IOC functions before use. *As of now, only the Course Lock is available*.

Course Lock (CL): The nose direction, at the time that CL is set, will remain the forward direction regardless of how the orientation and position of the aircraft changes. This will remain fixed until you reset it or exit CL mode. In Short, *Course Lock relates to Initial/Selected Heading*. It's like flying on an invisible, fixed grid. Example: If it took off with the nose pointing north, forward will always send it north, back will always send it south, left will always send it west, and right will always send it east. When flying in IOC Home Lock or Course Lock you can control yaw, while remaining on course. Useful, for example, if you want to track a target by flying "forward" while rotating.

Home Lock (HL): Record a Home Point (HP) and enter HL mode. The forward and backward controls will move the aircraft farther from and closer to the established Home Pont, regardless of how the orientation and position of the aircraft changes. In short: *Home Lock relates to Home Point*. Think of the craft as being on the end of a string which is the radius of a circle - shorten, it comes back; lengthen, it goes away; twirl (left or right), it goes in a circle around the home point.

Point of Interest (POI): Point of Interest. Record a point of interest (POI). The aircraft can then circle around the POI and the nose will always points toward the POI.

By default, the Flight Mode Switch is locked to P-mode. To unlock other flight modes, tap the "Mode" icon, then activate "Multiple Flight Mode".

Landing & Post-Flight

- **Make relatively slow descents if coming straight down, to avoid getting into a Vortex Ring State (VRS). Maintain lateral movement when descending to keep the quad in "clean air" (zig zag, side-to-side, circle, etc) or descend at an angle (preferably into the wind).**

- **To land, hover over a level surface and gently pull down on the throttle gently to descend. To minimize flip over (especially if it's windy), try to avoid unnecessary Forward, Backward and Lateral movement when landing. If it's really too windy, you may want to hand catch the phantom, but please know what you're doing and be very CAREFUL; you could get hurt.**

- **After landing, execute the CSC command or hold the throttle at its lowest position for 3 seconds or more until the motors stop. It is HIGHLY recommended to use the throttle stick method since there have been some situation where using the CSC command lead in flip overs. Need to Know: You DO NOT have to worry about pulling the throttle stick all the way down for more than 3 sec while in the Air; it won't shut down the motors if you do it while flying. The Phantom will NOT shut down until it feels it's not losing altitude for about 3-5 seconds (aka it's on ground now). The only thing I wouldn't try is to execute CSC while in the air. If you do a CSC while flying, this will stop the motors and your Phantom will drop like a rock. So be careful with the CSC sequence.**

- **Don't forget to stop recording after you land (wait for the recording to stop before turning off)**

- **Turn off the equipment in the following sequential order:**
  1- Phantom Smart Battery then Remove the Battery (just in case you think it's Off, while it's Not…)
  2- Remote Controller

- **If you plan to do another flight, shutdown and restart the DJI App.**

- **Before moving/storing away the Phantom: Remove Propellers, Re-Attach Gimbal Clamp.**

- **Sometimes, it can be hard to pull out the battery (humidity/temperature/slippery fingers...). So I recommend you put the Gimbal Clamp back on *before* trying to remove the battery to help protect your "very expensive" Gimbal from flopping around when trying to take off that d... battery. Someone suggested putting a bit of grease to ease up battery removal Remember: you have to protect your Gimbal (meaning: treat it with respect), otherwise you'll have issues with it.**

- **It is recommended to redo the pre-flight inspection again after your last flight of the day just to make sure you'll be ok for your next one. You wouldn't want to drive all the way up to your favorite flying location (1-2 hours away) just to find out something broke during your last flight and...spare parts are back home or you just need to tight up a few screws but...didn't bring a screwdriver.**

- **If you forget to stop recording video before turning off the phantom, and subsequently find that the video won't play on your pc, put the SD card back into the slot and power on the craft again. Leave it for about 60 seconds to finalize, then power down. You should be able to watch the video, but may lose a few seconds off the end. Need to Know: This will NOT work every time. I've lost some very good footage because of this. Lesson learned!**

Checklists – Short Version

Before you go:
- **Aircraft and Remote Controller firmware up to date**
- **IMU / Gimbal / Remote Controller are calibrated**
- **Batteries (Phantom / R/C / Tablet/Phone) fully charged**
- **Micro SD card inserted and formatted**
- **Inspect Phantom, Battery & Propellers for any damage**
- **Download/Cache Flight Area Map (if no Wi-Fi on site)**

On Site:
- **Make sure location is safe for flying**
- **Check for any hazards, obstructions, people or vehicular traffic, personal property, restricted area, etc**
- **Check for power lines, wireless or electromagnetic interference (EMI)**
- **Note wind direction and weather conditions**
- **Plan emergency landing area accounting for the above**

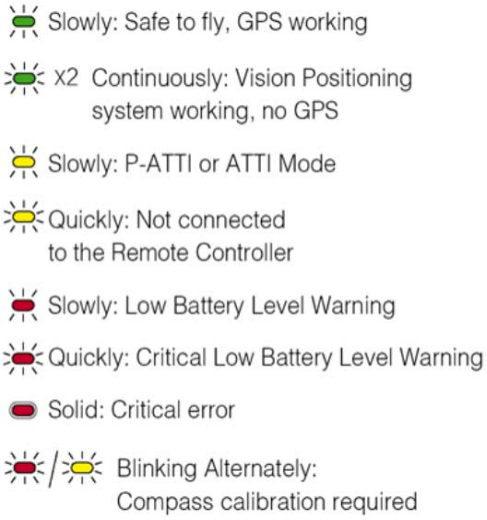
Pre-Flight:
- **Remove Gimbal Lock**
- **Install ND Filter (if needed)**
- **Install Propellers and tighten**
- **Mount Phone/Tablet to R/C and connect USB cable**
- **Set Phone/Tablet Volume & Luminosity to MAX (Install Hood)**
- **Turn Wi-Fi & BT off**
- **Close All running apps**
- **Position R/C antennas properly: parallel and pointing upward**
- **Put R/C in "P-Mode"**
- **Insert Smart Battery**

Power Up:
- **Turn R/C ON (First!)**
- **Place Phantom at a safe Take-Off Location (Home Point).**
- **Aircraft nose pointing away from operator position**
- **Gimbal not obstructed (grass)**
- **Turn Phantom ON. R/C Status Led should be turning green**
- **Launch DJI App; App detects & connects with the Aircraft**
- **Check status of the Aircraft/Remote Controller/Compass**
- **Calibrate compass (if needed)**
- **Download/Cache Flight Area Map (if needed)**
- **Check values : IMU Values (0, 1, 1400 – 1600) / Failsafe mode / RTH altitude/Max altitude/distance / Expo & Gain / Battery Status (cells)/Low-Critical Battery % settings**
- **VPS ON (if indoor flight)**
- **Adjust camera settings. Try to keep EV value at or near 0**

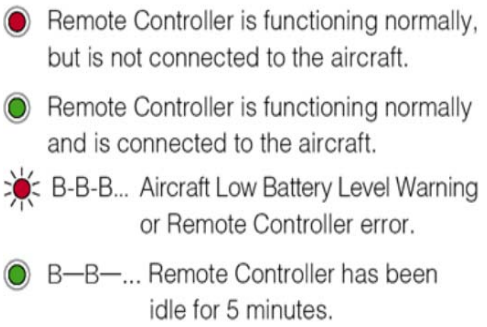
Takeoff:
- **Confirm Home Point Location on Map**
- **DJI App flight status at "Safe to fly – GPS"**
- **Start Video/Sound recording (if needed)**
- **Start Motors and Check if they are functioning normally**
- **Takeoff**
- **Hover 30 seconds & Check stability & Confirm sticks operation**
- **Monitors status, telemetry, battery and video exposure**
- **Land if Phantom ever seems to behave oddly**
- **Keep Line of Sight (LOS). Go Slow and Fly Safe**

Landing & Post-Flight:
- **Make relatively slow descents if coming straight down**
- **Hover over a level surface and gently pull down on the throttle**
- **On ground, hold the throttle down until the motors stop**
- **Stop Video/Sound recording**
- **Turn Phantom OFF (First!)**
- **Turn R/C OFF**
- **Remove Smart Battery**
- **Remove Propellers**
- **Re-Attach Gimbal Clamp**
- **Turn Off tablet/phone**

Aircraft Status Indicator



Remote Status Indicator



Aircraft LED Status

Normal	
Ⓡ Ⓖ Ⓨ ····· Red, Green and Yellow Flash Alternatively	Turning On and Self Diagnostic Testing
Ⓖ Ⓨ ····· Green and Yellow Flash Alternatively	Warming Up
Ⓖ ····· Green Flashes Slowly	Safe to Fly (P-mode with GPS and Vision Positioning)
Ⓖ X2 ····· Green Flashes Twice	Safe to Fly (P-mode with Vision Positioning but without GPS)
Ⓨ ····· Yellow Flashes Slowly	Safe to Fly (A-mode but No GPS and Vision Positioning)
Warning	
Ⓨ ····· Fast Yellow Flashing	Remote Controller's Signal Lost
Ⓡ ····· Slow Red Flashing	Low Battery Warning
Ⓡ ····· Fast Red Flashing	Critical Battery Warning
Ⓡ ····· Red Flashing Alternatively	IMU Error
Ⓡ —— Solid Red	Critical Error
Ⓡ Ⓨ ····· Red and Yellow Flash Alternatively	Compass Calibration Required

RC LED Status

Status LED	Alarm	Remote Controller Status
Ⓡ —— Solid Red	♪ Chime	The remote controller is disconnected from the aircraft.
Ⓖ —— Solid Green	♪ Chime	The remote controller is connected to the aircraft.
Ⓡ ····· Slow Blinking Red	D-D-D·····	Remote controller error.
Ⓡ Ⓖ / Ⓡ Ⓨ ····· Red and Green/ Red and Yellow Alternate Blinks	None	HD downlink is disrupted.
RTH LED	**Sound**	**Remote Controller Status**
Ⓦ —— Solid White	♪ Chime	Aircraft is returning home.
Ⓦ ····· Blinking White	D · · ·	Sending Return-to-Home command to the aircraft.
Ⓦ ····· Blinking White	DD ·· ·· ··	Return-to-Home procedure in progress.

⚠ The Remote Status Indicator will blink red and sound an alert, when the battery level is critically low.

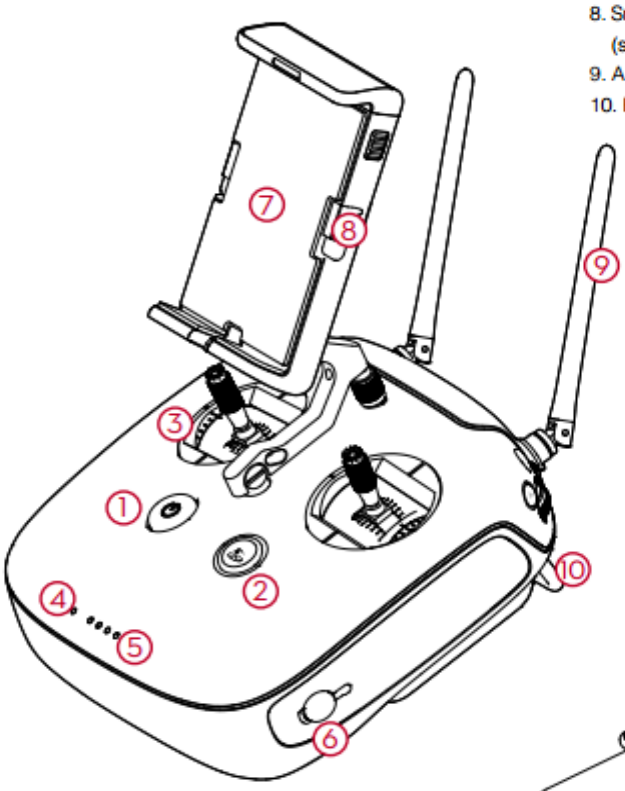
Remote Controller

This powerful Remote Controller allows you to pilot and maneuver your Phantom 3 Professional at distances over 6,000 feet (2 km)* away, while putting selected camera controls at your fingertips.

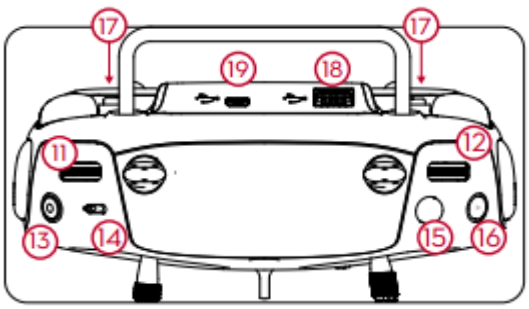
Built into your Remote Controller is a rechargeable LiPo battery and DJI Lightbridge, which when paired with a compatible mobile device gives you a live HD view from the Phantom's camera.

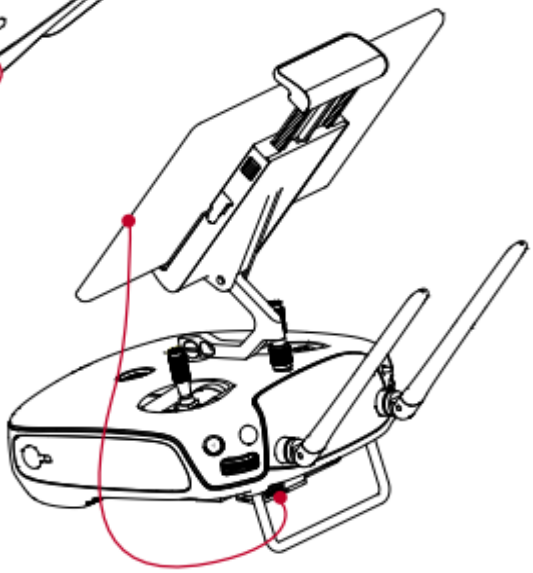
Folded

1. Power Button
2. Return to Home (RTH) Button
3. Control Sticks
4. Status LED
5. Battery Level LEDs
6. Power Port
7. Mobile Device Holder
8. Small Device Positioning Tabs (such as mobile phone)
9. Antennas
10. Handle Bar



11. Gimbal Dial
12. Camera Settings Dial
13. Video Recording Button
14. Flight Mode Switch
15. Shutter Button
16. Playback Button
17. C1/C2 Buttons (Customizable)
18. USB Port
19. Micro-USB Port





Mobile device connection

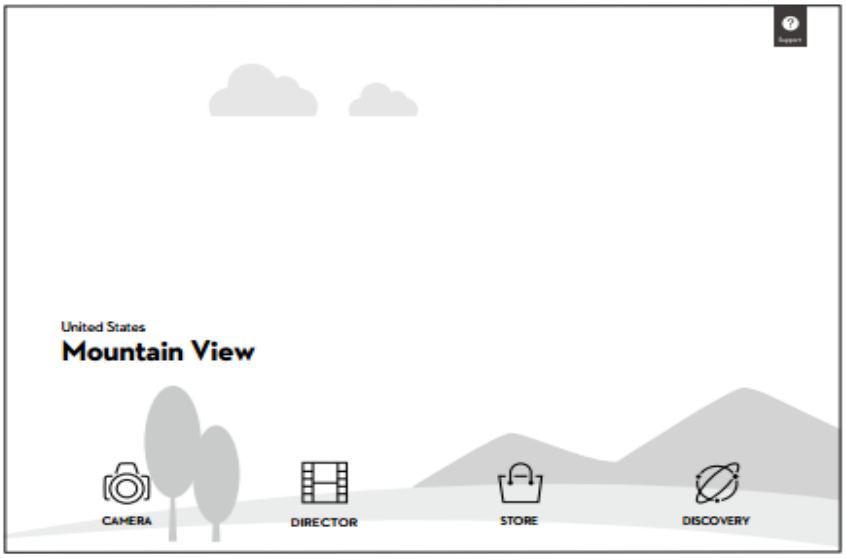
* This maximum transmission distance was tested in a lab environment and is for reference only. The maximum operating distance may vary depending on conditions in your immediate surroundings.

DJI App

<u>Need to Know</u>: Whenever you need to change/adjust settings and/or even looking though the DJI App, make sure the Aircraft powered on and connected to the Remote Controller (Led must be Green. See "Aircraft Led Status" section). Although you can open and look at the DJI App without doing any of this, many menus and options will not show up at all since they rely on connection to a working system. Also, many changes to the settings will not "hold".

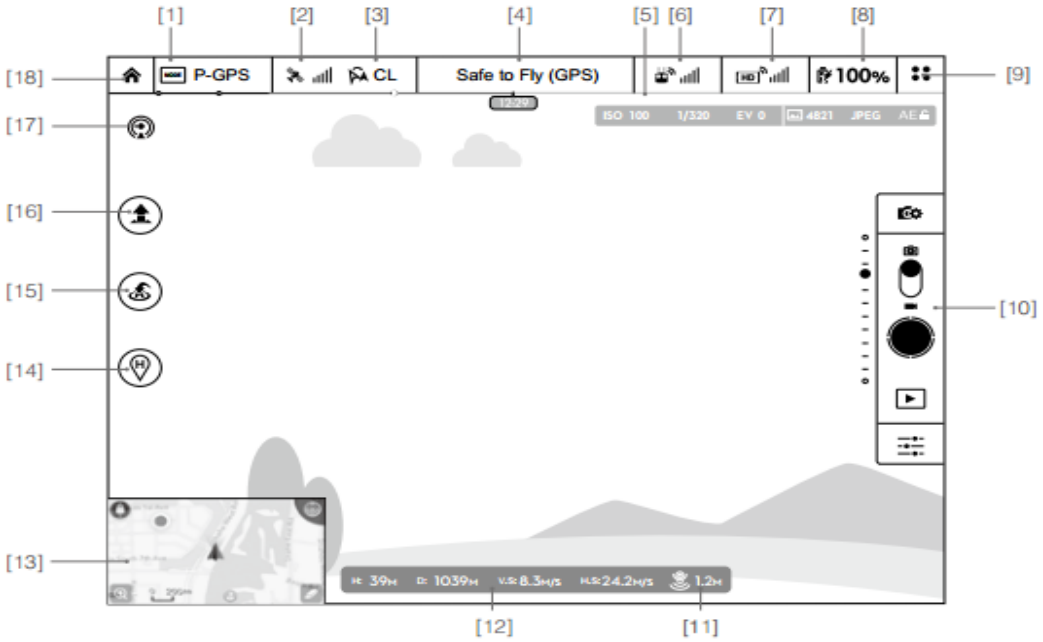
DJI Pilot App

The DJI Pilot app is a mobile application designed specifically for the Phantom 3 Professional. Use this app to control the gimbal, camera, and other aircraft functions. The app also features Map, Academy, and User Center, which are used for configuring your aircraft and sharing your photos and videos with others. It is recommended that you use a tablet for the best experience.



Camera

The Camera page contains a live HD video feed from the Phantom 3 Professional's camera. You can also configure various camera parameters from the Camera page.



[1] Flight Mode

MODE: The text next to this icon indicates the current flight mode.

Tap to configure the MC (Main Controller) Settings. These settings allow you to modify flight limits and set the gain values.

[2] GPS Signal Strength

: This icon shows the current strength of GPS signals. Green bars indicate adequate GPS strength.

[3] IOC Settings

CL : This icon displays the IOC setting when the aircraft has entered F-mode. Tap to view the IOC settings menu and select the desired IOC setting.

[4] System Status

Safe to Fly (GPS) : This icon indicates the current aircraft system status and GPS signal strength.

[5] Battery Level Indicator

: The battery level indicator provides a dynamic display of the battery level. The colored zones on the battery level indicator represent the power levels needed to carry out different functions.

[6] Remote Controller Signal

: This icon shows the strength of remote controller's signal.

[7] HD Video Link Signal Strength

HD : This icon shows the strength of the HD video downlink connection between the aircraft and the remote controller.

[8] Battery Level

100%: This icon shows the current battery level.

Tap to view the battery information menu, set the various battery warning thresholds, and view the battery warning history.

[9] General Settings

: Tap this icon to view the General Settings page. From this page, you can set flight parameters, reset the camera, enable the quick view feature, adjust the gimbal roll value, and toggle the flight route display.

[10] Camera Operation Bar

Shutter and Recording Settings

: Tap to enter various camera value settings, including color space for the recording, resolution of the videos, image size and so on.

Shutter

: Tap this button to take a single photo. Press and hold this button to select single shot, triple shot or time-lapsed shooting modes.

Record

: Tap once to start recording video, then tap again to stop recording. You can also press the Video Recording Button on the remote controller, which has the same functionality.

Playback

: Tap to enter the playback page. You can preview photos and videos as soon as they are captured.

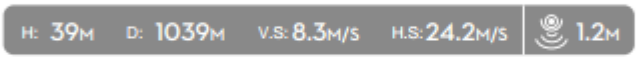
Camera Settings

: Tap to set ISO, shutter and auto exposure values of the camera.

[11] Vision Positioning

: This icon shows the distance between the surface and the Vision Positioning System's sensors.

[12] Flight Telemetry



The Vision Positioning Status icon is highlighted when the Vision Positioning is in operation.

Flight attitude is indicated by the flight attitude icon.

(1) The red arrow shows which direction the aircraft is facing.

(2) Light blue and dark blue areas indicate pitch.

(3) The angle of the boundary between the light blue and dark blue areas indicates the roll angle.

[13] Map

Display the flight path of the current flight. Tap to switch from the Camera GUI to the Map GUI.

[14] Dynamic Home Point

: Press this button to enable the dynamic home point feature, the home point then will be reset to position of the mobile device at specific time interval.

[15] Return to Home (RTH)

: Initiate RTH home procedure. Tap to have the aircraft return to the last recorded home point.

[16] Auto Takeoff/Landing

: Tap to initiate auto takeoff or landing.

[17] Livestream

: Livestream icon indicates the current video feed is broadcasting live on YouTube. Be sure the mobile data service is available on the mobile device.

[18] Back

: Tap to return to the main GUI.

Director

Director is an automatic video editor built into the DJI Pilot app. After recording several video clips, simply tap "Director" from the app's home screen. You can then select a template and a specified number of clips, which are automatically combined to create a short film that can be shared immediately.

Store

Tap "Store" to visit the official DJI Online Store to see the latest information about DJI products and easily buy new products.

Discovery

Sync pictures and videos to your mobile device, view flight logs, and check your DJI account status in "Discovery". Use your registered DJI account to login to "Discovery".

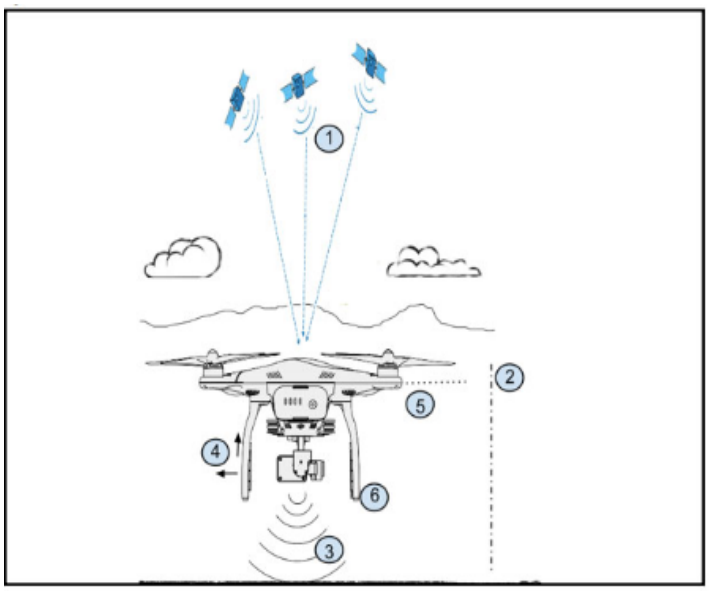
Having Issues after a DJI App Update?

If you are having issues with a new DJI App update, it is highly recommended to go in to your "Settings" then "Applications", look for the "DJI app", click to open it then click "CLEAR DATA" then relaunch the app. You will need to re login; your flight logs should come back as long as you have synced (*so remember to sync BEFORE doing this reset*).

If that doesn't work, completely uninstall then reinstall the DJI App (*here also, don't forget to sync BEFORE*).

And if that doesn't work either, reinstall the previous version.

The Basics of Flight Control in the Phantom 3

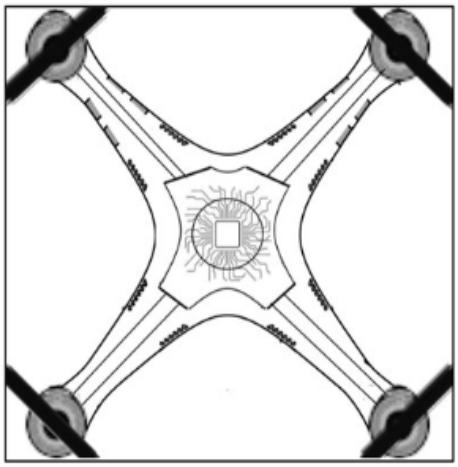


Phantom 3 Flight Control Systems

1. The *GPS* gathers satellite data in order to determine the position of the Phantom 3 - this data is also fed into the main flight controller. The Phantom 3 reads both USA (GPS) and Russian (GLONASS) satellites, resulting in much more accurately positioning than previous models.

2. A *Barometer* measures the pressure in the air, which help the Phantom know it's altitude above the ground.

3. *Sonar sensors and a bottom facing camera* combine to help the Phantom 3 know where the ground or floor is when it is within 9 feet of the ground. This system is helpful for indoor flight when no GPS is available.



Phantom Flight Controller

4. *Accelerometers* inside the Phantom 3 sense whether it is moving through the air.

5. A *gyroscope* helps keep the Phantom body level during flight.

6. A *compass* keeps basic track of which direction the Phantom is pointing.

It is the combination of all of these sensors and inputs that results in a flight systems which is extremely robust and reliable.

However, the instruments by themselves are of little good without programming and computing power - that's where the flight controller (F/C) comes in. This is the actual "central computer" of your Phantom 3 and it performs many thousands of calculations per second.

MC/ESC/COMPASS/IMU

MC: The Main Controller is the brain of the Phantom. The MC is the primary flight control computer that contains the programming firmware. It connects the IMU, GPS, Compass, ESC and R/C Receiver to achieve manage stable flight and aircraft control by issuing high speed control commands to each motor.

ESC: Each of the motors on the Phantom has an Electronic Speed Control or ESC which is an electronic circuit with the purpose to vary the motor's speed, its direction and possibly also to act as a dynamic brake. ESCs are critical to the brushless motors, essentially providing an electronically generated three-phase electric power low voltage source of energy for the motor.

Compass: While the GPS system on the Phantom 3 does a great job at locating the Phantom both geographically and vertically, it cannot tell which way the nose is pointed. That the job of the Compass.

The Flight Control Computer on the Phantom needs to know which direction the nose is pointing in order to be able to properly give the correct control commands received from the pilot. The Phantom must also transmit this information the the Pilot App for orientation display on the radar.

The compass is very sensitive to electromagnetic interference, which can produce abnormal compass data and lead to poor flight performance or flight failure. Regular calibration is required for optimal performance. Check out the "Compass Calibration" Section for more info.

IMU An inertial measurement unit (IMU) is an electronic device that measures and reports a craft's velocity, orientation, and gravitational forces, using a combination of accelerometers and gyroscopes, sometimes also magnetometers. An IMU is used to manoeuvre aircraft Phantom, among many others, and spacecraft, including satellites and landers. Recent developments allow for the production of IMU-enabled GPS devices. The IMU allows the GPS receiver to work when GPS-signals are unavailable.

The IMU Inertial Measurement Unit is a small box component on the motherboard containing three accelerometers and three gyroscopes. The accelerometers are placed so that their measuring axes are orthogonal to each other. They measure inertial acceleration, also known as G-forces.

These are really incredible devices that make miniaturization possible. You probably have one in your smart phone.

The IMU in the Phantom 3 works by detecting the current rate of acceleration using micro accelerometers, and detects changes in rotational attributes like pitch, roll and yaw using micro gyroscopes. The compass (magnetometer) assists to counter orientation drift.

The angular accelerometer measure how the Phantom is rotating in space. There is one sensor for each of the three axes: pitch (nose up and down), yaw (nose left and right) and roll (clockwise or counter-clockwise).

The linear accelerometers measure non-gravitational accelerations of the aircraft. Since it can move in three axes (up & down, left & right, forward & back), there is a linear accelerometer for each axis.

The Main Controller (MC) of the Phantom continually takes the data feed from the IMU and calculates the aircraft's current position. First, it integrates over time the sensed acceleration, together with an estimate of gravity, to calculate the current velocity. Then it integrates the velocity to calculate the current position.

The Main Controller of the Phantom also integrates inputs from the GPS system, barometric pressure sensor for altitude correction, and the magnetic compass.

IMU's aren't perfect and a major disadvantage of using IMU for navigation is that they typically suffer from accumulated errors. Because the guidance system is continually adding detected changes to its previously-calculated positions, any errors in measurement, however small, are accumulated from point to point. This leads to 'drift', or an ever-increasing difference between where the system thinks it is located, and the actual location.

Because the devices are only able to collect data in a finite time interval, IMUs are always working with averages. So if an accelerometer is able to retrieve the acceleration once per second, the device will have to work as if that had been the acceleration throughout that whole second, although the acceleration could have varied drastically in that time period. Of course modern devices are able to collect data much faster than once per second, but over time that error increases exponentially.

While IMU calibration is not performed that often, it should be one of the first things you look at when troubleshooting a problem or when performing routine maintenance. The IMU accumulates small errors as time goes on and need to be occasionally reset to perfect level. Check out the "IMU Calibration" Section for more info.

After EVERY Firmware Update

- **IMU calibration -> MC Setting/Sensors/IMU Calibration**
- **Gimbal calibration -> Gimbal/Gimbal Auto Calibration/OK**
- **Remote Controller calibration -> RC Settings/RC Control Settings/RC Calibration/Calibrate**
- **Verify that all of your previous settings are still set. You'll want to do this while your Phantom is turned and your remote controller is connected to the DJI App via your mobile device. This is important since many of the settings are saved on the Phantom itself. Check Video Settings/Camera Settings/Failsafe mode/RTH altitude/Max Alt/Gimbal Speed/Expo/Gain/ Low-Critical Battery Warning …**
- **Compass calibration -> Aircraft Status/Compass Calibrate**

If firmware update does not start when using a MicroSD, try a USB Stick.

In some occasion you may have to rebind the Remote Controller to the Phantom. Check the User's Manual for more info.

IMU Calibration

While IMU calibration is not performed that often, it should be one of the first things you look at when troubleshooting a problem or when performing routine maintenance. The IMU accumulates small errors as time goes on and need to be occasionally reset to perfect level. When to calibrate the IMU:

- **When drifting and instability becomes apparent**
- **After Firmware Updates**
- **Camera horizon is not level**
- **Receive an alert notice from the P3 MC that calibration is needed.**

Because the sensors in an IMU are so delicate, they are also very sensitive to temperature.

During the calibration process, the phantom has an internal heater that will heat it to the max temp. So if you start the IMU calibration at 25C and the max temp is 50C then the IMU calibration has accurate data from 25-50C. If you do an IMU calibration when it is already hot, 45C let's say, then it'll warm to 50C, and then you'll only have accurate data from 45-50C.

So what does this mean when you fly? The phantom starts warming up (literally using its internal heater. This is a physical warm up) to the range it was calibrated in. Calibrate it across a wider range (25-50) and when you fly in 20C weather, it only has to warm up 5 degrees. That should be 20-30 seconds or so. But if you calibrated it in the 45-50 degree range, then it needs to warm up 25 degrees. That'll take longer.

Caution: Before starting an IMU Calibration, the P3 should be "cold" (i.e. not recently flown - Or put in the frig or near an AC unit without the battery for 20 min) and must be sitting on a firm, level surface with no vibrations, other electronics, magnets (e.g., stereo speakers) or metal nearby (this includes rebar in your concrete driveway). Also, you must not touch, bump or move the P3 during the IMU calibration and you should minimize/avoid any floor vibrations (people walking nearby, doors slamming, etc.). Start the IMU Calibration, click through the message and warning screens. The IMU Calibration takes 3-10 minutes - there is a status bar that will eventually go to 100% - it may take a minute or two before it changes from 0%. Ensure you get an IMU Calibration complete message. If IMU calibration fails, power down the P3, let it cool off and start over.

After a successful IMU calibration you should get these values:

Gyroscope: ALL the values as close to 0.00 as possible. Slight variations are OK but the MOD should not go over 1.0.
Acceleration: Again slight variations from 0.00 are OK for the XYZ but the MOD needs to be 1.0.
Compass: The XYZ of the compass is its RAW readings. What you need to make sure is that the MOD value is between 1400 and 1600. I like to see mine near about 1500 and I get slight variations depending on where I fly.

I also recommend doing a "Gimbal Auto Calibration" (under "Gimbal" menu) immediately after the IMU Calibration is finished with the P3 still sitting on the same level surface. This should correct any tilted horizons you may be seeing in your videos.

Compass Calibration

Compass Calibration is very important; otherwise the flight control system will not work properly. The compass is very sensitive to electromagnetic interference, which can cause abnormal compass data leading to poor flight performance or even flight failure. Regular calibration is required for optimum performance.

When to Recalibrate:
- After any firmware/software update
- After a crash (minor or major)
- Flying in different location to last flight (far away)
- When drifting occurs in flight, i.e. Phantom does not fly in straight lines.
- When hovering, Phantom wants to fly in a circular pattern (Toilet bowl effect-TBE)
- When compass data is abnormal, the rear LED flight indicator will blink Red and Yellow (See "Led Status" section).
- Something magnetic (screw driver with magnetic tip, speaker, magnet …) got close to your compass/aircraft.
- Mechanical structure of the Phantom has changed, i.e. changed mounting position of the compass.

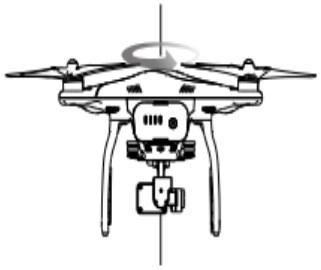
Need to Know: You do not have to calibrate your compass before every flight (meaning: don't become compass calibration crazy); this is not necessary and may actually increase your chance of having a problem. You don't want to risk introducing any issues that weren't there before by recalibrating too often. DJI recommend recalibrating only when moving far away from last flight point.

- Do the Calibration in a WIDE open space. Not in your house, your garage, near your car…
- DO NOT carry ferro-magnetic materials with you during calibration such as keys or cellular phones.
- DO NOT calibrate in areas that could have high magnetic EMI interference such as areas that are close to power lines, cell phone towers, parking structures, reinforced concrete or steel reinforcements underground.
- DO NOT calibrate beside massive metal objects (cars, buildings, fences, buried pipes & cables, etc).

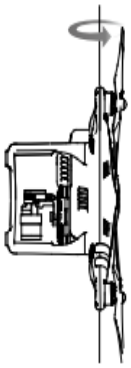
Calibration Procedures

Choose an open area to carry out the following procedures.

1. Ensure that the compass is calibrated. If you did not calibrate the compass as part of your pre-flight preparations, or if you have moved to a new location since the last calibration, tap the Aircraft Status Bar in the app and select "Calibrate", then follow the on-screen instructions.
2. Hold the aircraft horizontally and rotate 360 degrees. The Aircraft Status Indicators will display a solid green light.



3. Hold the aircraft vertically, with nose pointing downward, and rotate it 360 degrees around the center axis. Recalibrate the compass if the Aircraft Status Indicator glows solid red.



⚠ If the Aircraft Status Indicator blinks red and yellow after the calibration procedure, move your aircraft to a different location and try again.

Take Good Care of your Compass

The Compass reads geomagnetic information and assists the GPS (Global Position System) to accurately calculate the position and height of the aircraft. According to DJI one possible cause of a fly-away is a conflict between Compass & GPS data as a result of an improper compass calibration. It's been theorized that the conflict generates an error which accumulates until the Autopilot attempts to reorient and/or reposition the aircraft towards the erroneous "correct direction" or "correct position" resulting in the now infamous spin-out or fly-away.

This should convince you to make sure you calibrate your Compass and take good care of it by not flying in areas where the surrounding might affect its accuracy.

Failsafe/Return to Home

Need to Know: if Failsafe/RTH is activated, Aircraft will land straight down if inside a 20m radius of the Home Point.

A compass error might happen from time to time...When this happens you DO NOT want to engage RTH. You would want to stop and hover in ATTI and wait for the error to clear or land.

There are different types of "Failsafe" that will initiate a RTH (brings the aircraft back to the last recorded Home Point) or simply land the aircraft:

1. Failsafe RTH

The Phantom will initiate the RTH when the Remote Controller disconnects from the P3 for more than 3 seconds. RC Status LED will turn Red on the Remote Controller and Failsafe will automatically kick in the Return to Home or Land, depending on your setting in the MC Settings/Advanced Settings/RC Signal Lost.

When will Failsafe/RTH activate?

1- **The Remote Control is powered off (maybe because of dead battery).**
2- **The Phantom has flown out of effective Remote Control range**
3- **The signal between the Remote Control and the Phantom has been blocked.**
4- **There is interference causing a signal problem with the Remote Control.**

The RTH process may be interrupted and the operator may regain control of the aircraft if the remote controller signal connection is re-established.

2. Smart RTH

Pressing the RTH button on the Remote Controller or in the DJI App will always initiate RTH - hitting it again should turn RTH off again.

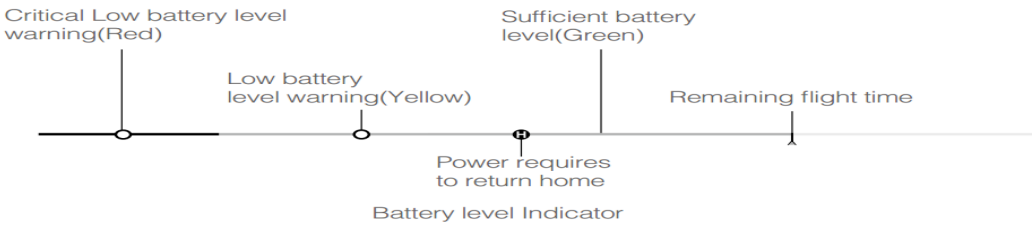
One of the very best advices I could give if you've lost visual contact of your aircraft and need to initiate a Smart RTH is to *Always give Extra Elevation* before doing anything else. Even if you can't tell it's working. This will help avoiding obstacles on the way back. If you can't see it, just assume it ascends at 6 meters a second. In 10 seconds, it should be 60 meters up.* Trust me, this save my Aircraft more than once!

3. Low Battery RTH

This works differently and depends on user adjusted settings in the Aircraft Battery Screen.
NOTE: *Check and adjust these settings only when the Aircraft is powered on and connected to the Remote and DJI App. Check them before every flight as they may change with a battery change..*

There are two settings there - Low Battery Warning and Critical Battery Warning:

- **At the Low Battery warning the DJI App will give you a warning and the option to cancel out the RTH - but if you do not cancel it, it will initiate (in which case you can still cancel the RTH by pressing the RTH button on the remote controller).**
- **At the Critical Battery warning level the Phantom will not RTH - but just descend and land. To counteract the descent (to avoid obstacles, for example) you must throttle up past 90% to keep the aircraft in the air and navigate to a more appropriate location for landing, but keep in mind than you MUST land ASAP.**



Don't take your Phantom to the limit - use LOS (line of sight) flying and your own piloting skills to bring your craft home with some juice left in the battery whenever possible.

Return to Home will NOT work and the Phantom will auto land if the home point has not been recorded successfully or the Phantom is not connected to enough satellites (GPS signal is insufficient or not active).

When RTH is activated, the Phantom will either stay at current elevation OR rise up to your manually set RTH altitude above your pre-established home point, whichever is highest, and then make a straight-line course back to your "Home Point" (Return to home (RTH)), pausing for a few seconds before descending, land and power itself off.

The aircraft cannot avoid obstacles during the Failsafe RTH; therefore it is important to set an appropriate Failsafe altitude before each flight -> MC Settings/Advanced Settings/Failsafe Mode

Note: You can still control the Phantom to a degree with the sticks in order to avoid obstacles.

RTH is an emergency function - it can save your machine however it can also kick into gear when you least expect it and could cause your Phantom to fly into a tree or other obstacle. The best advice I can give *is take some time to fully understand the failsafe and RTH functions*.

ALWAYS start up your Phantom in an open area and not underneath or near trees or buildings. This will assure a safe return to home (RTH) if the mode is triggered

"Disconnected"/"No Signal" Warning and RC Status LED

"Disconnected" Warning AND RC Status LED is GREEN means the DJI App is not communicating with your Remote Controller BUT the Remote Controller is still communicating with the P3. This will happen if the DJI App can no longer see the Remote Controller (USB Cable or Software issue) or when you start the DJI App before turning on the Remote Control. To test it: with P3+Controller+Tablet/Phone powered on and ready to fly, unplug the USB cable. "Disconnected" will be reported on screen.

What to do:
Disconnect/Reconnect the USB cable (both end). If that doesn't work, try restarting the DJI App.

YOU STILL HAVE FULL R/C/ CONTROL:
This also applies if the DJI App has crashed. The DJI App has nothing to do with flying the Phantom, it's just a pretty way to view information and change settings. Data AND Video Feed will disappear but you are still in control, so if you are flying in line of sight (LOS), then fly it back manually and if not, hit Smart RTH on the Remote Control.

This warning should rather be called "RC Signal/Link Lost"

"No Signal" Warning AND RC Status LED is GREEN means you've lost Video Signal with the Phantom.
This will happen if there is a Lightbridge communication problem/interference between the Remote Controller and the P3 or you have flown out of effective range or the signal has been blocked. To test it: With P3+Controller+Tablet/Phone powered on and ready to fly, powered off the P3. "No signal" will be reported on screen.

What to do:
Try to recover connection by turning the Remote so that the antennas face better toward your Phantom.

YOU STILL HAVE FULL R/C/ CONTROL:
Video Feed will disappear but you are still in control. They (Lightbridge and Remote Control signal) are on a different "frequency band" which is more reliable. That means although the Camera Feed has stopped working, the Remote and your stick commands are still working perfectly. This is where your piloting skills come in handy. So if you are flying in line of sight (LOS), fly it back manually or fly it using the map or radar to get it back and if not possible, hit Smart RTH on the Remote Control. Need to Know: The "No Signal" might not turn itself off until you restart the DJI App.

This warning should rather be called "Video Signal/Link Lost"

One possible fix for frequent disconnections is to go to the "Image Transmission Settings" page in the DJI App and set Channel to Custom for the Lightbridge instead of allowing the App to search for one. Then watch the noise graph for several minutes and watch for intermittent large spikes on any of the channels - be sure to avoid any of those channels. This seems to have helped mine a lot. I usually use channel 20.

"No Signal" Warning AND RC Status LED is RED means the Remote Controller lost connection with the Phantom for more than 3 seconds AND a Failsafe RTH has automatically been initiated. Be sure to check out the "Failsafe/Return to Home" Section for more info.

YOU ARE NO LONGER IN CONTROL:
If the RC Status LED turns back Green, you may regain control by cancelling the RTH.

Conclusion: DO NOT assume RTH will automatically kick in if you get "Disconnected" or "No Signal" Warning or even if the DJI App crashes. First thing you should do is to look at the left LED on you Remote Control to see if the RC is still linked to the aircraft. If the light is green, the Remote is still linked: you have full stick control and can use the RTH button, if you want. If the RC light is Red, the link is broken and it will automatically RTH.

Always be prepared for the Worst

Besides hardware/software issues, it is YOU, the operator, who is responsible to ensure the system is functioning properly prior to take-off. So, if you did not follow the proper procedures before take-off (described in details earlier), YOU AND ONLY YOU might be the person to blame for any issue occurring while flying!

While many emergencies are not planned, proper maintenance and calibration will greatly reduce the chances of an emergency situation occurring. Also, knowing the aircraft limits and your own can help you avoid situations that may lead to an emergency situation.

It is highly recommended you do some "recovery" practices in a more controlled environment (meaning, you are not in "Panic Mode") before something bad happens. If you can eliminate the confusion of what's going on when something happen then most of the time it becomes relatively "easy" to deal with. Try to initiate a Smart RTH, so you can understand what's going to happen; do some flying/landing practice in ATTI mode so you know what to expect and so on. Feel free to do as much as you can. The better you get at reacting fast under pressure, the better chance you'll be able recover your aircraft intact or with minimum damages! This is a very expensive piece of machinery, so be prepared...for the worst!

And always remember this simple rule: Don't trust anything, Test everything!

During a flight, if you encounter any kind of emergencies like when the Phantom seems to behave oddly, feel less responsive, does not fly in straight lines, is drifting, start moving without input, fly away, lose GPS, you get a compass error or when you lose Video/Telemetry Feeds or you Lose sight of the aircraft etc:

***Always give Extra Elevation** before doing anything else. Even if you can't tell it's working. This will help avoiding obstacles on the way back. If you can't see it, just assume it ascends at 6 meters a second. In 10 seconds, it should be 60 meters up. You can now go ahead and do one or more of the following:*

1- Use the Radar or FPV windows to bring the Aircraft back in sight

This applies only if you've lost Orientation and/or Location of the Aircraft. Use your ability to maneuver the remote control sticks and try to bring it back in sight.

2- Switch from P-GPS to ATTI mode in case the Compass and GPS are out of whack

You will be flying without GPS. Meaning the Phantom will not automatically hold its horizontal position and without position hold it will drift.

If the Phantom seems to respond in ATTI mode and you have some control, use your ability to maneuver the remote control sticks and try to bring it back or land straight down (if the emergency seems serious enough). From time to time, retry P-GPS mode to see if you have regained control in GPS mode.

If the Phantom is out of sight and you are unable to use the Radar or FPV (DJI App has crashed) you won't be able to fly it in ATTI mode (you'll be blind as a bat), go to step 3.

3- Initiate the Smart RTH by pressing the RTH button on the Remote Controller or in the DJI App

If GPS is lost, the Phantom will attempt to land slowly wherever it is (possibly land in a tree or crash into whatever the wind blows it into). BUT a soft landing is better than a drop.

If it has GPS or regains GPS, it may Return to Home or Land, depending on your setting in the MC Settings/Advanced Settings/RC Signal Lost. In which case you might be able to get back control by pressing the RTH button again to cancel it.

4- Send the CSC to kill the motors. You'd rather have a crash landing than a lost Phantom

Very last resort. If it's out of sight this will prevent it from getting further away but if it's out of sight you will not know if Step 3 was effective so be very careful with this one.

Unless you've completely lost visual contact of your aircraft and are not sure about the current status of the aircraft (the DJI App has crashed), you should always try ATTItude mode before Smart RTH. If the Smart RTH does not work, kill the motors before the Phantom goes out of range. It is unlikely you will be able to search several square miles and find your Phantom when it goes in a changing direction at full throttle (Fly Away).

Tips for Flying and Shooting

The DJI Phantom 3 gives the ability to create amazing videos right out of the box. Tweaking some settings and keeping some things in mind when shooting video allows us to harness the full power the the DJI Phantom 3.

The best advice is to use very tiny input on your sticks, don't do a lot of panning, etc. Aerial video generally looks the best, when movements are really smooth and slow. This is difficult to achieve with the default settings.

GAIN & EXPO Tuning: Under MC Settings -> Gain & Expo Tuning, adjust Gain & Expo of your sticks down so they get less sensitive:

Remember: The higher the value, the faster and more aggressive the copters reactions. The lower the value, the slower and more sluggish the copters reactions.

Expo: **Controls the sensitivity of your manual stick input reaction. Lower value is slower response to small movements. Higher value is faster response to small movements.**
Set Throttle Up-Down at 0.30; Rudder Right-Left at 0.30; Forward/Right-Backward/Left at 0.30

Attitude: **Control how the aircraft reacts to stick movements. High gains it will react fast (more responsive), low gains it will react slow(less responsive). Set at 80%**

Brake: **Controls the aggressiveness of returning to stability/GPS lock point. Set at 80%**

Gain**: Energy input: Increase or reduce the speed of movement/reaction.**
Set Pitch at 100%; Roll at 100%; Yaw at 80%; Vertical at 100%

Pitch -> Move Forward/Backward
Roll -> Move Left/Right
Yaw(Rudder) -> Rotate Left/Right
Throttle -> Move Up/Down

For exemple, if the above settings are used: For YAW, this will keep the speed of pivot reduced but also reduce the speed at which it will start to turn from stick input. Same for Throttle. The Gain will keep the energy input at 100% but soften the input reaction with a lower EXPO.

MAKE STICKS LONGER: On the Remote Control itself, you can make the sticks longer. Longer sticks make finer movement of the sticks easier. The way you increase the length of the sticks is to unscrew the little tops of the sticks and make the sticks shorter or longer. If they are longer (if you have long enough fingers to be comfortable) it will be easier to make fine adjustments for that buttery smooth movement we love in aerial videography.

GIMBAL: Lower the Gimbal speed! By default it is quite fast - which is fine to "look around". But it does not look good in video. I put mine about 40 or 50. But I also change the EXPO of the Gimbal so it moves very slowly if I put in a little input in the dial (front left) and increase speed if I move more. That makes it possible to make smooth gimbal movements that ease-in and ease-out. Takes some training - but these settings really help.

Camera Settings

Camera Icon – Near the top right of the main display is a small icon that looks like a camera with a small "gear" superimposed on it. Virtually everything this icon does relate to video/photo settings.

The camera aperture cannot be changed, it is fixed at f2,8. This lets a lot of light in. The camera cannot be focussed, but because it is a wide angle lens, 92 degrees, and has a fairly small sensor, everything from about 6 feet to infinity will be in focus. Exposure is controlled by the combination of shutter speed, from 8 seconds to 1/8000 seconds, and ISO which effectively changes the sensitivity of the sensor.

Manual or Auto Mode: Tapping on the settings icon (down near the lower right of the main display it's the small box/window with three lines in it) opens a window where you can adjust either ISO or Shutter Speed. If you tap on the settings icon again, you'll be back in Auto Mode...To stay in Manual mode and lock your settings you have to close the adjustment windows by swiping it off the screen. The really big clue is the camera settings icon - if it's highlighted, you're in Manual mode, if it isn't, you're in Auto.

In manual mode you can control the ISO and Shutter to adjust the exposure compensation (EV value on top right corner). The right wheel can be pressed like a button and this toggles between adjusting ISO and Shutter.

If you select automatic, in order to keep the EV at or near 0, the camera will select a suitable ISO and shutter speed for you. In most cases this will be perfect. In some cases the sky or clouds may be over exposed and come out as totally white in your picture, this is called "blowing out". If this happens you can use the right wheel to adjust the exposure either up or down to lighten the picture or in this case darken the picture. You'll see the EV value changing on top right corner. If needed, you can use the small "AE Lock" icon to lock your settings. You can also put your finger (or move the small yellow square) on the screen to change the exposure point.

The DJI App which run the Phantom 3 is not fully documented in any manual - you'll have to do some exploration to unlock various features. One which is important is the various modes for photography like HDR, Bursts, bracketing, etc. This comes up in a circular menu when you press and hold the on-screen shutter button on the Camera screen in the DJI App.

Tips for Videography

LOG-mode, DYNAMIC RANGE: To get the maximum dynamic range (detail in dark and light areas of the image) I shoot in LOG-mode (Think of LOG as if it were RAW). This is a more "flat" profile that looks dull and unsaturated and without contrast but increases the dynamic range of the footage you capture. The benefit is that you have more control in post-production to add the saturation and contrast to your video.

I Never Use the Standard set of settings. My settings: Sharpness -2, Contrast -3 and Saturation -2. The P3 standard setting is way too sharp and too contrasty. Too sharp: The P3's camera reveals an obnoxious amount of aliasing and moire. Turning the sharpness down to -2 seems to be the sweet spot. -1 still reveals way too much aliasing in things like roof shingles, fences and power lines. Too Contrasty: The standard setting can crush your shadows. So Contrast at -3 and Saturation at -2 with the LOG profile helps to maintain more dynamic range. With these settings I've found it gives the most leeway possible for post color correction and grading.

There are some problems with filming in LOG-mode; it looks boring (dull, flat and grey) straight out of the camera, and also on the monitor/iPad when you film. I live with this in order to get the maximum quality in the end-product. So if you plan to do a lot of video editing and want to color-grade anyway; shoot in LOG. If not, I would generally select "None".

EXPOSURE WARNING: Make sure you have turned on "Exposure Warning" which then makes "zebra stripes". This will show a striped black and white area in you picture where it will be over exposed or blown out. This is very useful when you shoot video. You don't want a whole lot of zebra stripes because that means that part of the image will be 100% white - with zero detail, and no chance to get any detail back in postproduction. Use the Right Hand wheel to adjust the exposure until most of the zebras disappear. Some zebra stripes are OK - and unavoidable if looking at the sun or reflections. You

just want to avoid the (whole) sky being fully blown out etc. If you wanted to have zero zebra stripes you would have to make the image too dark.

HISTOGRAM: To aid with correct exposure you can display a Histogram on the Pad or phone which graphically displays the distribution of light in the image. If the clouds or sky are burnt out there will be a peak in the histogram graph at the right hand end. If the opposite is true, say a forest of trees are showing very dark, then there will be a peak in the histogram at the LH end. Ideal is to have an equal spread of information right across the histogram, with no peaks at either the LH dark end or the RH light end. Use the Right Hand wheel to adjust the exposure so that there are no peaks at either end of the histogram. You can try this indoor, you don't have to be flying.

SHOOT IN MANUAL: In order for the camera not to do a lot of unsightly switching of the light (up and down) when the light changes I suggest you learn to use the Manual mode (the button with 3 sliders under the Shutter Button) rather than the Automatic mode. Unless you turn on Manual mode (the button under the Shutter in the app) you are in Automatic mode. In Automatic the camera will adjust the lighting a lot. That might leave undesirable effects because of the light going up and down in intensity because you are moving your camera around. In Manual you set your ISO (100 is best if there is enough light, which there will be if it is during the day). And then you set your Shutter Speed to where the lighting is good (only a few zebra stripes).

I always use manual WB. If you use Auto WB your entire scene can experience a color shift to warmer (yellow) or cooler (bluer) as you fly, yaw and descend toward the ground. Obviously that looks unprofessional if your scene starts out a warm yellow and ends looking looking cooler blue because the camera position and scene has changed so much and the camera "automatically" adjusted for it.

FRAMERATE: 24fps (30fps) is a bit short for a moving camera. If you fly or pan the camera too quickly, you'll get a stuttering effect at <= 30fps. But at <= 60fps, that effect goes away until you do some extremely fast maneuvers. The best of both worlds is 4K at 60fps, Unfortunately this camera can't do it. If you expect a lot of movement while filming: 1080p @ 60fps is going to look nicer than 4k @30fps. 4k is only 4k if there is virtually no movement. You can always reduce the fps in post-processing if you don't like the higher frame rate.

Rule of thumb to get a "Video look" is 30fps in US (NTSC) with a shutter speed of 1/60. If you want a "Cinematic look" use 24fps with a shutter speed of 1/50.

ISO: The ISO (International Standards Organization) determines the sensitivity of the sensor in your camera which, in turn, affects the exposure of your photos. The ISO scale typically starts at 100 and continues to double from this point to the boundary of your camera's capabilities: 100, 200, 400, 800, 1600, 3200, 64,000, etc. with 1/3 stops in between.

ISO is one of three determining factors of the exposure of a photo, along with aperture and shutter speed. These two affect the lens and exposure time respectively, with the ISO affecting the sensor (or film) (note: we can't change the P3's f-stop as the camera shoots at a constant f2.8 so ISO and shutter speed are the only parameters you can tweak for exposure compensation). To be more specific, the ISO determines how well exposed a photo will be by changing the sensitivity. In very basic terms, ISO is the level of sensitivity of your camera to available light. The lower the ISO number, the less sensitive it is to the light, while a higher ISO number increases the sensitivity of your camera.

As a general rule, the lower the number, the better the quality of the photo. By doubling the ISO, you're effectively doubling the exposure taken by the camera and, in turn, doubling the digital noise. This noise reduces the detail of a photo by making the image appear grainy and uneven.

Lower number = Lover sensitivity = Finer quality photos

The ISO scale is similar to shutter speed in the sense that, when doubled, the exposure is also doubled; they are proportional to one another e.g. a low ISO number would give a low exposure and a high ISO would give a high exposure – much simpler then aperture.

Which ISO and when?

ISO 100-200: Your photos will have the most detail and the best quality; great for shooting in daylight as there is no need to boost the ISO any higher. Shooting at 1600 in bright conditions would be a waste as this will result in the presence of easily avoidable grain.

ISO 200-400: For slightly darker conditions, such as in the shade or indoors where it is brightly lit.

ISO 400-800: I like to use this range when shooting with a flash indoors as it helps to produce a more even exposure with a detailed background.

ISO 800-1600: Event photographers frequently have no choice but to use this range as live events often happen in low light conditions where flash is not allowed.

ISO 1600-3200: Again, event photographers will use this range for live gigs, but it's also used in extreme low light conditions where using a tripod is not an option. ISO 3200 is the highest I tend to push my camera to as I'm not a fan of digital noise (grain).

SHUTTER SPEED: Shutter speed relates to how slow or fast the shutter on the camera is opening/closing. The faster the shutter speed(Sharp), the LESS light that gets into the camera. The slower the shutter speed(Blur), the MORE light.

In photography fast shutter speed is generally good. Less shaking, sharp images. But in video it is our enemy because high shutter speed makes us lose motion-blur, which helps the brain think the video is very fluid at 24-30 fps (less of a problem if shooting in 60fps). If the shutter speed is up above the optimal 60 for 30 fps (50 for 24 fps etc.) each frame becomes very sharp. That might sound good (and is if you want to grab stills out of your video). But it isn't. When there is movement in the video, it will appear stuttering/choppy/staccato video because every frame is quite sharp if the shutter speed is too high. That's not what we want. We want smooth.

The basic 101 golden rule shooting video is that the shutter speed in video should be about 2x the frame rate. So if you film at 30 fps, shutter speed at 60 will be good for some natural looking motion blur. This is impossible in daylight or sunlight without a Neutral Density filter. ND-filters are grey filters that cut out an even amount of all wavelengths of light (cut down the amount of light that comes to the sensor) so the shutter has to stay open longer in order to get enough light to expose each frame correctly. With an ND-filter we can get the shutter-speed down. ND-filters can also help alleviate the dreaded "jello"-effect that some people (often caused by unbalanced props and worsened by high shutter speed) suffer from. An ND-filter is (or part of) the solution. If you follow the golden rule your video with be more natural and organic.

When filming video in bright daylight without an ND-filter, it is common that the shutter speed goes as high as 1200 or higher. The P3 camera does this in order to cut down the amount of light to the sensor. If you lower it manually without an ND-filter, your image will get overexposed and washed out. Also when shooting in bright areas without an ND-filter and therefore at a high shutter speed, you should just be aware that you should aim for even less fast panning, gimbal up-down and motion in general. Smoothness is your friend for good looking video, not least from our Phantoms.

Adding an ND-filter to the DJI Phantom 3 camera allows the camera to run at a shutter speed closer to the desired 60 (at 30 fps). This helps make video more natural looking and adds motion blur when there is movement in the shot.

ROLLING SHUTTER (aka jello) is the easiest to address. ND filters will remedy most of this issue. If I can get the shutter speed down to around 50-100th not only is rolling shutter eliminated the resulting footage is much more fluid with more natural cinematic movement. I've also balanced my props. The props straight out of the box are pretty close but not dead on balanced. (Only two of my props required a bit of light sanding to balance perfectly so hat's off to DJI as they were close right out of the box.)

MOIRE AND ALIASING are going to be tricky. And trust me, unfortunately moire and aliasing are there without a doubt. *Moire* occurs in any fine geometric pattern like shingles on a roof, brick walls and corrugated tin roofs of barns. Anything with a tiny parallel lined pattern. The pattern in the image appears to be moving, dancing, sparkling or morphing as the camera moves. *Aliasing* is when say a long thin line - like a power cable extending from one tower to the next - apprears to be stairstepped in pieces as it bends vs a single fluid continuous line.

First turn the sharpness down to -2 (Under camera settings then "custom"). My tests indicate that -3 sharpness is actually dulling important detail like the leaves of tree tops, blades of grass in a field etc. Gives the footage a mushy quality vs clean detail. So it's a balance. Leaving the sharpness at the default "0" or above is.... well....horrible IMHO. Gives you a very "crispy video" look and actually exaggerates noise quite a bit. Even -1 was a bit too crispy on the edges of objects for my taste. You can alway adjust or add sharpness in post. I've found that allowing ANY camera to apply it's own, often way too heavy handed sharpening, to be dangerous. Once "crispy" it's in your footage... it's in your footage for good. If moire and aliasing are going raise their ugly heads, in-camera sharpening with make it worse.

COMPRESSION and GRASS: The video we get from our Phantoms is compressed (with the h.264 codec). So we should be aware that certain things could cause some ugly artifacts. Again, fast movement or panning or tilting the gimbal up and down (fast) can cause blockyness and artifacts in the video stream. The Phantom 3 Pro can record 4K records at 60 megabits per second - which is good, but in the world of professional digital video, it is a bit low. So we have to work with that. Filming grass, tall grass, large areas of similar color but with a bunch of tiny detail is worst case for the P3-camera. So we should be aware of this, and plan accordingly. When we film that sort of thing, it yet again helps to slow down use use smooth movement. Don't pan a lot (only very slowly) or you risk the image 'collapsing' into a green mushy mess of blockyness. We would like to avoid this so be careful if that sort of imagery fills up a large part of the frame.

FLYING: Try to be as smooth as possible. It helps to "follow thru" if you want to do a move. Try to plan it in advance. This (also) takes training - but that's part of the fun ☺

SMOOTH MOVES: In general I think what looks good in aerial videography is smooth moves. If you want to do fast flybys it is a nice trick to fly backwards so the props tilt away from the camera in order to avoid props in the frame. Less is often more when it comes to adjusting the movement when filming. Mixing in a little smooth gimbal movement to your flyby or your other move and it looks like a million dollars.

ND Filters

Neutral Density filters (ND-filters) reduce light intensity without changing color. The ND-filters reduce light in order to slow down the shutter-speed of the DJI Phantom 3 4K/1080P camera. The correct shutter-speed help eliminate "jello"-effect and help improve video quality by introducing a natural motion blur for smoother motion in video in bright daylight situations.

1. **The ND2 (0.3) filter reduce light intensity down to about 50% or 1 stop. Use in cloudy conditions or after/before sunset.**
2. **The ND4 (0.6) filter reduce light intensity down to about 25% or 2 stops. Use in cloudy conditions or daylight.**
3. **The ND8 (0.9) filter reduce light intensity down to about 12.5% or 3 stops. Use in bright daylight.**
4. **The ND16 (1.2) filter reduce light intensity down to about 6.25% or 4 stops. Use in very bright daylight.**
5. **The ND32 (1.5) filter reduce light intensity down to about 3.125% or 5 stops. Use in very bright daylight.**

ND-filters do not change the way the image looks but how the camera works. By adding an ND-filter we can lower the shutter speed of the DJI Phantom 3 camera. This has two very significant benefits:
1. **Makes video look better by introducing natural motion blur to avoid the "choppy"/"staccato" video-look when shooting in daylight.**
2. **Can eliminate or reduce "jello" (wavy vide in part of the image) effect caused by high shutter speed + micro-vibrations in cameras like the DJI cameras or GoPro-cameras that use a 'rolling shutter'.**

When shooting in bright daylight we're likely to see shutter speeds of maybe 800 or 1200 or even higher. This is way too high for nice looking video and makes the video look like it is not smooth with a natural motion blur but rather like a series of crisp single still images.

Our goal is to film with a shutter speed of around 2x the frame rate. When filming 4K video at 30 fps we will get smooth filmic looking video and natural motion blur if the shutter speed is about 60 when the image is exposed correctly (not too bright, not too dark).

How to choose the right Filter:
1. **Select “Manual Mode”**
2. **Set ISO at 100, Shutter Speed at 2 time the FPS (50 for 24fps/ 60 for 30fps)**
3. **Point camera at what you want to film**
4. **Look at the EV (which changes as you adjust ISO & Shutter to show if you are under(-) or over exposed(+)) to know which ND filter you need. Ex: if EV is +1.7, you need a ND4(2 stops) filter. Try to keep your EV between 0 and 1. Negative is too dark, over 1 can be over exposed or washed out.**

Slow Motion

If you want to slow down your footage you absolutely want to use the maximum video quality of your P3 Advanced, the 60 frames per second in 1080p. It will then be easy to play that back at 50% speed to get good clean 30 fps video in half speed slowmotion.

You could likely even do further slowmotion. Especially if your video editor (like Final Cut Pro X) allows for "Optical Flow" slow motion. If you slow your 60 fps down to quarter speed without optical flow, you will get video that plays back at 15 fps. That will look stuttery/choppy. A simple slowmotion will use "Frame Blending" where it blends a frame in between two frames. That will improve the look of the slowmotion, but not as much as "optical flow" which tries to calculate the movement between the frames and create new frames. This can - if there is a lot of motion - turn into a weird look. But it is possible to use it successfully.

Battery

Make sure you read the DJI Intelligent Flight Battery Safety Guidelines!

It's important to monitor the battery voltage in each cell of the DJI smart battery. Be aware of the following:

1) Monitor the battery to ensure all cells maintain a similar voltage.
2) Do not allow any of the battery cells to drop below 3.3V.
3) Consider landing your Phantom when *(or before)* the first battery cell reaches 3.4V.

You can display the voltage of the lowest battery cell on the main screen of the DJI App. To do so, enable the "Show Voltage On Main Screen" setting in the "Aircraft Battery" section of the DJI App settings.

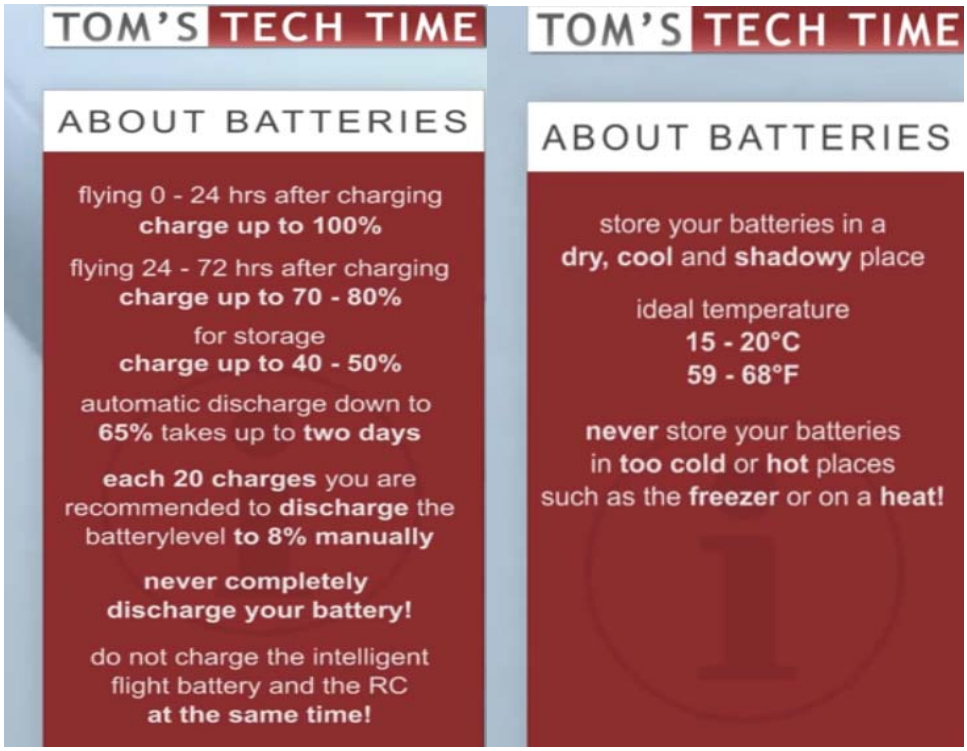
1. **New battery start-up/break-in. Fully charge it and use no more than 50%(about 10 mins) for 10 times, a failure will happen in this range. Start motors and hoover for at least 1 minute before flight. Look single cell voltage!! They need to be in the 0.02V range each other. Don't use new batteries for distance/altitude records! I would probably not fly too far for the first few flights, just in case there is something wrong with the battery.**
2. **Charge: P3 battery don't let you do what you want! Too cold or too hot stops the charger. So obey to this, cooling or warming it.**
3. **Discharge: Apart from the battery start-up process, use the trusted battery until you need it and then recharge it. There's no need to use full charge if you don't need it. Stop at 8-10% (no less than 3.1-3.2V x cell). At <3.0V cell start degrading but P3 battery doesn't allow to do that.**
4. **Temperature: If DJI App show a temp above 60°C in the aircaft, get back and land the bird as soon as you can, although Voltage seems regular and discharge rate normal.**
5. **Temperature again: Warm batteries before use if stored at <-20°C, cool batteries if stored at >40°C. For example airplane belly goes often <-20°C on some old aircrafts. For example a car trunk in a summer sunny day can reach >40°C temp very easy.**
6. **Storage: for more than a week storage, discharge battery to 30-50%, or simply stop charging at this point (charge until the third led just start to flash). P3 can auto-discharge battery to below 65% (10 days default) and the setting is in the DJI App.**
7. **The P3 battery is "intelligent". So you can't manage it as normal RC models battery. The DJI "charger" is simply a power supply. The charger is inside the P3 Battery itself.**
8. **Check regularly the battery connector on the P3 and clean contacts regularly with contract cleaning liquids. To clean into the contact hole of the battery simply slide in/out 3-4 times after cleaning the P3 contact!! This saves many battery errors during flight.**
9. **Avoid Over flying your battery. Over flying battery times can damage battery cell and life expectancy. It is recommended to bring your aircraft on the ground when battery level is around 30%.**
10. **The battery will enter hibernation mode if depleted and stored for a long period. When in hibernation mode, if you try to power on the battery, the battery power LED will show a solid red light and the battery level LEDs will all be off. You cannot manually turn off the battery power LED in this state. Leave the battery unattended for 5 minutes, and then the light will turn off. Recharge the battery to bring it out of hibernation.**

Battery Level Indicators While Charging				
LED1	LED2	LED3	LED4	Battery Level
▯	▯	▯	▯	0%~25%
▯	▯	▯	▯	25%~50%
▯	▯	▯	▯	50%~75%
▯	▯	▯	▯	75%~100%
▯	▯	▯	▯	Fully Charged

Battery Protection LED Display

The table below shows battery protection mechanisms and corresponding LED patterns.

Battery Level Indicators while Charging					
LED1	LED2	LED3	LED4	Blinking Pattern	Battery Protection Item
▯	▯	▯	▯	LED2 blinks twice per second	Over current detected
▯	▯	▯	▯	LED2 blinks three times per second	Short circuit detected
▯	▯	▯	▯	LED3 blinks twice per second	Over charge detected
▯	▯	▯	▯	LED3 blinks three times per second	Over-voltage charger detected
▯	▯	▯	▯	LED4 blinks twice per second	Charging temperature is too low
▯	▯	▯	▯	LED4 blinks three times per second	Charging temperature is too high



How the VPS – Vision Positioning System works

The DJI Vision Positioning System uses ultrasound and image data to help the aircraft maintain its current position. With the help of Vision Positioning, the P3 can hover in place more precisely and fly indoors or in other environments where a GPS signal is not available. The main components of the Vision Positioning System are located on the bottom of your Phantom 3 Professional; they include [2] two ultrasonic sensors and [1] one monocular camera.

This system combines visual data and sonar waves in a single unit, detecting both variance in patterns on the ground and current altitude. With this information, the P3 can hover in place without GPS assistance provided it can work properly with the conditions that is is operating in.

This system works as a "helper tool" when the Phantom is close to the ground or other surface - usually it self-activates when within about 3 meters (10 feet) of a solid surface. This means you could fly off the ground up to a flat roof 30 feet high - the VPS would be on for the first 10 feet as you get into the air, then it would turn off once you were over 10 feet high. Then, when you got to 35 feet or so and headed over the flat roof, it would sense the roof (5 feet below) and turn on again.

This VPS is a very sophisticated and accurate system if used within it's design limits. Please read all of the warnings, notes, and cautions associated with this device.

You can turn it off in the app if you prefer it to not be active -> MC Settings/Advanced Settings

Preloading Maps

If you are using a tablet computer or other device without a cellular connection, you'll want to preload (cache) the maps of your flying area into your device before heading out to the field. You can download maps for a large area, so your flying grounds will be available to you on your device even when not in a WiFi or Cellular networks.

Load up the map by opening the Camera windows in the DJI App when you are home (or in a wireless network), tap the Map windows to open it and then scroll through the area where you will be flying. IOS/Android should automatically cache (save) the maps and they should be still available when you go out to the field. Another option if you have both a phone and a tablet is to setup the phone as a "hotspot" when you are out at the field and connect the tablet to it with WiFi. This will allow the DJI App to continuously download and update the maps.

Note 1 - if your device has a cellular connection, you can disregard this advice as it will download the maps in real time.
Note 2 - your Phantom will still operate property if you don't have a saved or cached map - the Phantom still knows it's home point and will return there in an emergency - however the map screen on your device will not show streets, landmarks, etc.

Water Crash

If you dunk your Phantom in sea water, try these steps:

1. **Remove Battery, Shell, and Camera ASAP.**
2. **Submerge it fully in fresh water (preferably distilled) for a minute.**
   Sway it back and forth while in the water and turn it over a few times.
3. **Submerge in a container filled with rubbing alcohol for a short while.**
   Again, sway it back and forth while in the alcohol and turn it over a few times.
4. **Blow out with compressed air.**
5. **Put everything in a sealed container and cover with uncooked rice. Leave it there for a few days.**
   Shaking the container gently every so often is good.
   Once done, use an air pump to eliminate the rice grains and rice fragments from the craft.
6. **Reassemble, install new battery and try to turn it back on.**

If you dunk your Phantom in fresh water, get it out as quickly as possible and take it apart. Use a hair drier liberally and then put everything in a sealed container and cover it in uncooked rice. Leave it there for a few days before attempting to turn it back on. Good Luck!

LOG Files for DashWare

DJI App:
<android_fs>/Internal Storage/DJI/dji.pilot/FlightRecord/*.txt
Then use one of the LOG converter like http://www.djilogs.com/ or http://flylitchi.com/logs to get the CSV file to be used with the Flytrex Profile in Dashware.

DJI Ultimate Flight

The RTH altitude setting is located in the camera setting area, which slides out from the left side of the screen.

Key Points to Achieving Reliable HD Link Video

A common problem involves video stuttering and disconnect - this can be mitigated or fixed by taking the following advice from user David Mann over at DJI Forums - finding the custom channel (#6) is one of the most important steps, IMHO.

David.p.mann from DJI Forums: I can tell you it is possible with current firmware to get flawless HD Link video - even out to 4+ km under ideal conditions. Achieving this will require close attention to equipment setup/configuration, some software setting changes and, possibly, a change in the mobile device you are using. In past three weeks, I have made multiple long-distance runs between 7500 and 13,820 feet with flawless HD Link video from beginning to end, so it is possible.

Here are the key points to achieving reliable HD Link video with current firmware:

1) The DJI Pilot app is CPU intensive and will tax even the highest end mobile devices. For many devices, and this includes most Android devices (based on reports from other pilots), the iPad Mini 2/3 and iPhone 6, the DJI Pilot app can cause the device to heat up after just several minutes of live video, which can cause the device to throttle its CPU speed resulting in pixelated image, stuttering video or even a complete loss of video. On a 90F+ day, my iPad Mini 3 will overheat and start throttling CPU causing pixelated, stuttering video after only 4-6 minutes. However, with my iPad Air 2, which has a faster processor and graphics co-processor, I can fly up to three 15 to 18-minute flights back-to-back without overheating the device so long as I take precautions in points 2) and 3), below. ADVICE: If you have only been using Android devices to date, consider borrowing a friend's iPad Air 2 to see if it works better for you.

2) High ambient temperatures above 90 degrees F can aggravate problem #1, leading to even a faster onset of poor HD

Link video performance as device starts heating up and then throttling its CPU. Apple iOS devices are rated for maximum operating temperature of 95F. Android devices have similar operating temperature limits. So, if it's 98+ degrees F where you are, this is going to be a problem/challenge. ADVICE: On hot days, keep your mobile device in the shade of a tree, or try pre-cooling it in an insulated bag with a blue ice type cooling gel pad.

3) Direct sunlight on the mobile device screen can rapidly cause high device operating temperatures and CPU throttling even at ambient temperatures as low as 80 degrees F. So, use a sun hood to keep mobile device display out of direct sunlight. Even with a sun hood covering the mobile device, you'll need to stand so that the sun is not directly behind you.

4) Kill all background apps running on the Mobile Device, the DJI Pilot app should be the only one running. NOTE: other forum users using Android mobile devices recommend turning off Google Play services.

5) In General Settings screen of DJI Pilot app, turn on "Enable Hardware Decode". For devices with this capability (e.g., iPad Air 2), this will unload the CPU from having to perform some graphics decoding, which will result in cooler/faster CPU and video performance.

6) Interference from nearby WiFi repeaters, hobby aircraft remote controllers, wireless phones, wireless security cameras, numerous wireless tablets/phones operating in residential neighborhoods, etc., can cause video stuttering and loss of signal to your P3. So, do the following if signal interference from other devices is a strong possibility: 6A) Bring up HD Image Transmission Setting screen in the DJI Pilot App and monitor channels 13-20 for several minutes. 6B) Change Channel Setting from "Auto" to "Custom." 6C) Select a channel with the lowest noise levels (lowest point on the noise graph); and, preferably, one with fairly low noise levels in adjacent channels. Also, make sure that there are not any periodic large noise level spikes on the channel you are considering using. Nine times out of ten, I end up choosing Channel 20. 6D) Set the Video Transmission Rate to the lowest setting of 4 MBps. This will slightly degrade the video quality, BUT it will improve the stability and refresh rate of the video image. It is much more critical to have a high refresh rate on a slightly lower-res video image that a stuttering, low-refresh-rate high-res image.

7) Proper Antennas position for optimal signal transmission/reception: antennas should be parallel to one another with wide, flat vertical sides of antennas facing the P3. So, if P3 will be out in front of you several hundred meters or more, the antennas should be parallel to one another and pointed straight up to sky while you are holding RC. NEVER point tips of antennas directly at the P3 (like a gun barrel) - this is the lowest signal level situation. If the P3 will be directly overhead , then pointing the two antennas straight out parallel to the ground would be the best position (but this is not a very common videography situation).

Using all the above, I went from having stuttering video with P3 10 feet away from my RC with an overheating iPad Mini 3 to having fluid, stutter-free video with P3 up to 4 km from the RC using a sun-hood-protected iPad Air 2.

Fixing Video Lag Problems/CPU issues

Some users have experienced video lag, stuttering and picture breakup on their smart devices. There are solutions to these issues - however the solutions may differ for IOS vs. Android devices. Here are the basics:

Most of these problems are caused by the inability of the Smart Device CPU to keep up with all the demands being placed upon it. This creates HEAT and taxes the CPU in the smart device. When heat builds up, the CPU is often throttled down, making the problem even worse. The solutions boil down to the related items of keeping the CPU load lower and the unit cooler.

While it is certainly possible to have a bad USB cable or defective Remote, most of the problems are CPU based. Before we get to the actual troubleshooting, it's important to realize that there will always be some lag. The Phantom 3 is not designed to be "flown by camera" - rather the monitor view is for general framing of pictures and videos. It can also give you a good idea of which way the Phantom is facing, although you get the same info from the Map/Radar Screen.

Another tip - you may get excess lag and stuttering when the Phantom is very close to you. Fly it at least 50 feet away to see what the lag is.

The best device to use for the DJI App would be one dedicated to mostly that use - this means removal of many of the apps and services which are sometimes installed by default on Android devices.

Settings to change or turn off - IOS and Android
(You need to do this with the Phantom and remote powered on and your device connected, etc.)
-> General Settings\Other -> Calibrate Map Coordinates (For China Mainland) OFF
-> General Settings\Other -> Enable Amap (for China Mainland) OFF
-> General Settings\Other -> Cache (Video) locally when recording OFF
-> General Settings\Other -> Auto Clean up Video Cache (when over 2GB) ON
-> General Settings\Other -> Clear Video Cache DO IT

-> General Settings\Other -> Tutorial OFF

Android Troubleshooting

DJI gave us a list of devices compatible with the DJI App. Many other Android devices may work - but you are on your own as far as support. Slower devices, naturally, will result in more lag and video problems.

Monitoring the CPU Load:

Download an app which allows you to monitor the load of the CPU - and also allows you to stop (kill) various running tasks. I use an app called Zapper Task Killer. As you can see below, it has a screen that shows the CPU and RAM use as well as a list of programs which are using some system resources. Open Zapper on your device and check the CPU use - before you open and use the DJI app. Note the range of CPU use. Then, start up your Phantom and the Remote and the DJI App (if inside, don't put the props on) and wait until the Phantom has warmed up and is ready to fly. Start up the motors and take off and hover (if outside). Hit the video recording button (have it set on video) and then switch back in Android to the Zapper App and watch the CPU meter for a couple of seconds.

If it stays below 75% most of the time you are probably OK.
You should not have video lag and if you do, something else may be causing it. Go into the setting for the HD stream and select a custom channel instead of auto - and turn down the image quality slider at the bottom to the lowest setting possible (4mbs). Try again.
If that doesn't work then try the other tips below. If you are flying at a distance, make sure your antennas are facing the proper way for best reception.

If it regularly peaks over 80-85%, read on.

You have multiple programs hogging your CPU. First, try some manual settings to get rid of services that you don't need when flying your model (or at all). This means turning off wireless, cellular (if you have it) and bluetooth services. If your device has an airplane mode, that should turn them all off at the same time.
Check your CPU and see if the percentage has gone down by a decent amount.

In the Zapper Task Killer Screen, try the "select all" option and Kill them all. Don't worry, they will start up again either automatically or when you restart your device.

Now, with the DJI App and Phantom running, try again. How is your CPU use? If it's down, then try a bit of flying and see if your video lag problem has improved or gone away.

IOS - Apple Devices

Like for Android devices, DJI gave us a list of devices compatible with the DJI App. Many other IOS devices may work - but you are on your own as far as support. Slower devices, naturally, will result in more lag and video problems.

The first order of business is to change the DJI App settings as shown above and also turn off the bluetooth, wireless and cellular services. Also, double click the home button and quit all open apps other than the DJI Pilot App.

You can download similar CPU monitoring apps for IOS. An example is System Status Lite:

Check cable - make sure USB cable is an Apple (not 3rd party!) brand.

There is a setting for "Hardware Encode" in the DJI App for IOS - this should be checked on the faster (newer) IOS devices. Try it both ways (checked and unchecked) and see if one is better than the other.

Some of these settings may require a device and/or Phantom/Remote restart to take effect.

Summary

The problem relates to two or three things which are all related - CPU use, ambient temperature and device internal temperature. Apparently, as these devices heat up, they slow down to protect themselves.

This fixes are as stated before - remove bloatware, change settings, etc. to reduce CPU load.
BUT, add to that to keep the device as cool as possible. If you are using a cover or anything else that keeps your unit from cooling itself, remove it.

If you want to get tricky, think up ways to move heat away from the device - small portable fans, heat sinks, even a small cold pack.

Knowledge is power - knowing the CPU load and temperature on your device is a big step toward improving any lag issues. Even if your particular problem is not CPU based, having this information on hand when you support a ticket to DJI will help them with helping you.

DJI Issues

If you have experienced any issues with your Phantom 3 Advanced or Phantom 3 Professional, please see below. If your issue is not below please let DJI know and they will work to resolve it *"as soon as they can"*.

1. Non-visual live feed image, i.e. a blank screen that appears instead of a camera feed.

Reason: Certain chip pins on the SD card are not connecting properly tothe circuit causing the camera to start up abnormally, making the screen turn black.
Solution: Remove the SD card and re-install it tightly.
Further solution: The camera startup process is being refined to take into account possible connectivity issues with the SD card. If necessary, DJI will repair affected units as quickly as possible.

2. Increased lag and screen flicker.

Reason: The DJI App is extremely complex, causing it to place high demands on your mobile device's processor and power consumption. This is especially true of three functions.
a) Live feed, location map and Flight Route Recording all draw on processing power.
b) When activated, the Video Editor automatically transcodes your live feed and creates your video in real time using your phone's processor
c) When the remote controller is connected to an iOS device, your iOS device will specifically use a Central Processing Unit (CPU) core to deal with data authentication computation.

All of these functions increase the power consumption of your mobile device, in turn causing its temperature to increase. Most devices will lower processing speed when a temperature threshold is reached, slowing down the app causing lag and flicker.

Suggested solution:
a) Activate hardware decoding on your mobile device in the DJI App to reduce demands on your mobile device's CPU.
b) Choose a lower code rate under Image Transmission Quality a smaller files decode more efficiently.
c) Shut down any unused application programs, or activate "Flight Mode"
d) Keep your mobile device in a cool place whenever possible and keep it out of direct sunlight when flying outdoors.

Further solution:
We will continue to optimize the DJI Pilot app, increasing computation efficiency and lowering power consumption to ensure that it always runs smoothly

3. Flickering screen and/or a blank screen during flying.

Reason: When the Phantom is flying at an extended distance, the angle of the antennas is essential to maintain a strong signal.
Solution: Refer to the user manual and adjust the antenna angle.

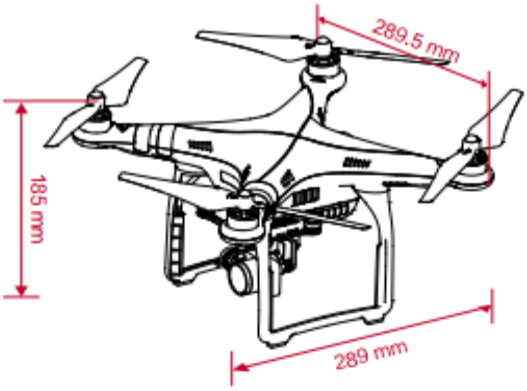
Unfortunately, the process com.google.process.gapps has stopped

Workaround for lag, overheating and crashing on Android is:

Downgrading 'google play services'
1. 'Play Store' app > Settings > Auto-update apps > "Do not..." to turn off automatic updating
2. 'Settings' app> Security > Device Administrators" and uncheck/deactivate "Android Device Manager" as a device administrator
3. 'Settings' app> Applications > Application Manager > ALL (scroll right if needed to see this option) > Google Play Services > Disable (or Uninstall)... then choose to uninstall any updates from the stock version when prompted.
4. 'Settings' app> Applications > Application Manager > ALL > Google Play Services > Enable ....this will enable the older stock version of google play services.

Ignore future upgrade requests for Google Maps etc as that will upgrade Google Play Services also. (Until there is a proper fix from DJI)

Specifications



- **Aircraft**

Weight (Including Battery)	1280 g
Max. Ascent Speed	5 m/s
Max. Descent Speed	3 m/s
Max. Speed	16 m/s (ATTI mode, no wind)
Max. Flight Altitude	6000 m
Max. Flight Time	Approximately 23 minutes
Operating Temperature Range	0°C to 40°C
GPS	GPS/GLONASS

- **Gimbal**

Angular Vibration Range	Pitch: – 90° to +30°

- **Vision Positioning**

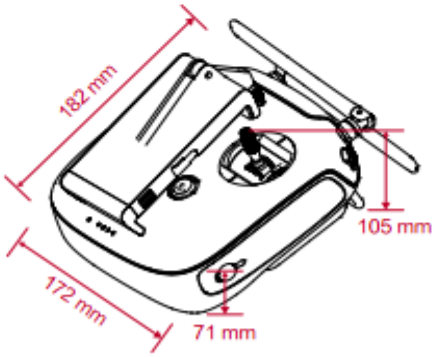
Velocity Range	<8 m/s (Altitude 2 m)
Altitude Range	30 cm-300 cm
Operating Range	30 cm-300 cm
Operating Environment	Surface with clear pattern and adequate lighting (Lux > 15)

- **Camera**

Sensor	Sony EXMOR 1/2.3" Effective pixels:12.4 M (total pixels: 12.76 M)
Lens	FOV (Field Of View) 94° 20 mm (35 mm format equivalent) f/2.8
ISO Range	100-3200 (video) 100-1600 (photo)
Electronic Shutter Speed	8 s - 1/8000 s
Image Max. Size	4000 x 3000
Still Photography Modes	Single shot Burst shooting: 3/5/7 frames Auto Exposure Bracketing (AEB): 3/5 bracketed frames at 0.7EV Bias Time-lapse
Video Recording Modes	UHD : 4096x2160p 24/25, 3840x2160p 24/25/30 FHD: 1920x1080p 24/25/30/48/50/60 HD: 1280x720p 24/25/30/48/50/60
Max. Bitrate of Video Storage	60 Mbps
Supported File Formats	FAT32/exFAT Photo: JPEG, DNG Video: MP4/MOV (MPEG-4 AVC/H.264)
Supported SD Card Types	Micro-SD, Max. capacity: 64GB. Class 10 or UHS-1 rating required
Operating Temperature Range	0°C to 40°C

- **Remote Controller**

Operating Frequency	2.400 GHz-2.483 GHz
Max. Transmission Distance	2 km (outdoors and unobstructed)
Video Output Port	USB
Operating Temperature Range	0°C to 40°C
Battery	6000 mAh LiPo 2S
Mobile Device Holder	Tablets and smartphones
Transmitter Power (EIRP)	FCC: 20 dbm; CE:16 dbm
Working Voltage	1.2 A @7.4 V



- **Charger**

Voltage	17.4 V
Rated Power	100 W

- **Intelligent Flight Battery (PH3-4480 mAh-15.2 V)**

Capacity	4480 mAh
Voltage	15.2 V
Battery Type	LiPo 4S
Energy	68 Wh
Net Weight	365 g
Operating Temperature	-10°C to 40°C
Max. Charging Power	100 W

DJI App – Expanded

By Art Burke
Leesburg, FL June 6, 2015

As this is not being created either from scratch or for profit, I have taken a few liberties. A lot of what's here is what appears in the DJI Phantom 3 Professional user manual. I've introduced numerous screen shots so unfamiliar users can see what it is they're supposed to be seeing when they search for a specific menu. There's also a lot of expand- ing/expounding, i.e., a bit more detail on some of the items.

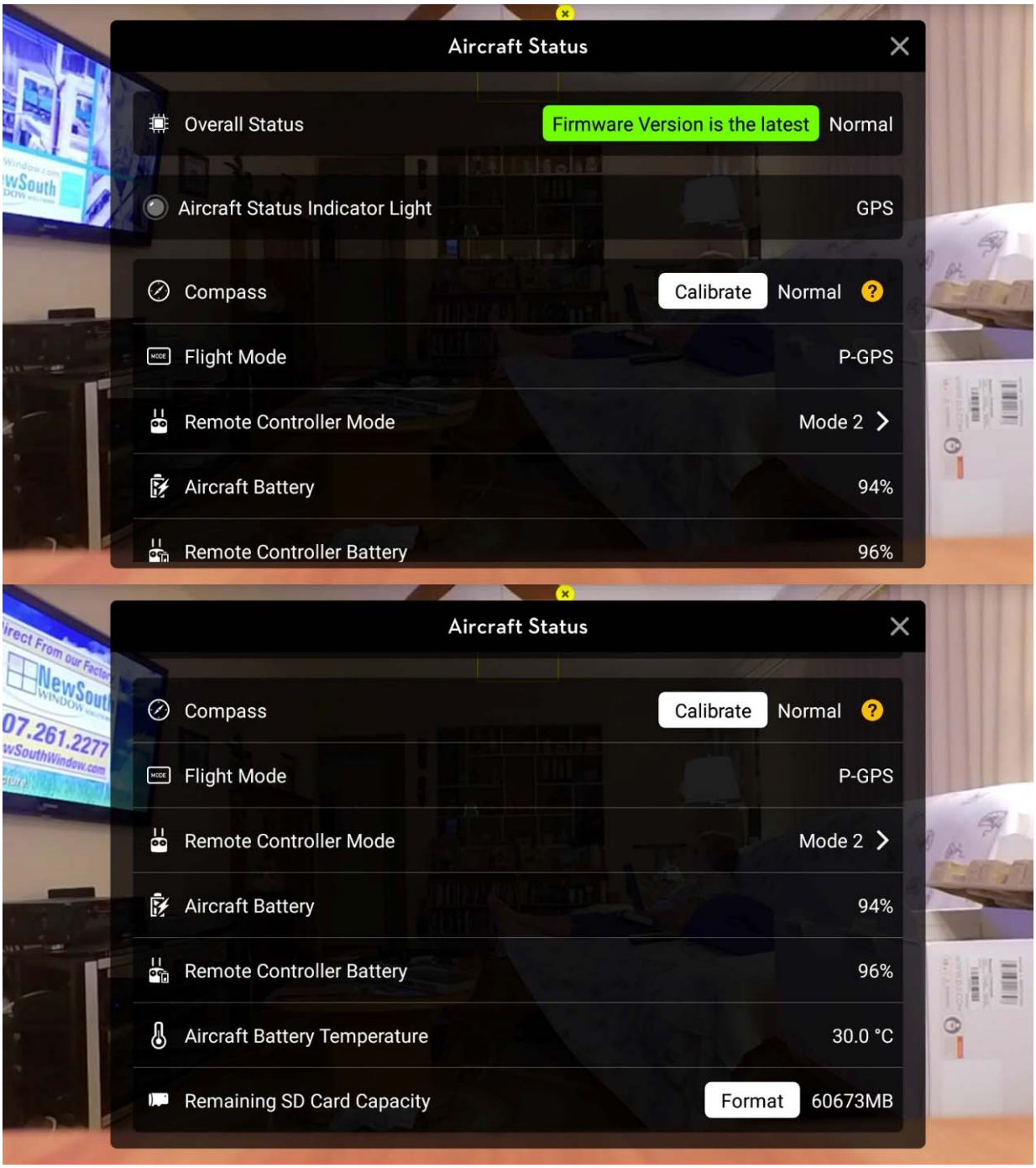
I'm not that much of a photographer. Consequently, I've not made much of an effort to expound too much on the camera settings. My attempt is only to more adequately identify what the icons are, the settings definition, etc.

As many users have already found, don't be surprised if you fire up your mobile device and cannot see some of these settings. To see *all* the various settings, you will probably need to have the Remote Controller, the Phantom and the Pilot app all running.

Last, but not least – I'm using an Android device, specifically a Samsung Galaxy S5 – a smart phone. These screenshots are what I see on my device. If there's a significant difference in what you see on your device, regardless of whether it's Apple or Android based, my apologies.

Above is the opening screen for the Pilot app. Tap CAMERA to enter the app. Tap DIRECTOR to edit video. Tap STORE to shop. Tap USER CENTER to view video, photos or examine flight logs.

Before you'll actually see the main screen of the Pilot app, you'll see a "status" screen that looks like this:



The two screenshots above unfortunately illustrate a minor problem with the Pilot app. When you see the above page, you only see part of it. There's no indication there's more

at the bottom, but, if you scroll down, you'll see the remainder of the page, as it's displayed here.

Some of the items are informational, but there are a few items that have changeable options:

Calibrate Compass

Change Remote Controller Mode

The Remote Controller Mode is generally Mode 2 in the U.S. (left stick is climb/descend and right stick is forward/backward and left/right). There are options for Mode 1, Mode 3 and a custom mode.

Format SD card. [1]

Flight Mode

MODE : The text next to this icon indicates the current flight mode. Tap to configure the MC (Main Controller) Settings. These settings allow you to modify flight limits and set the gain values.

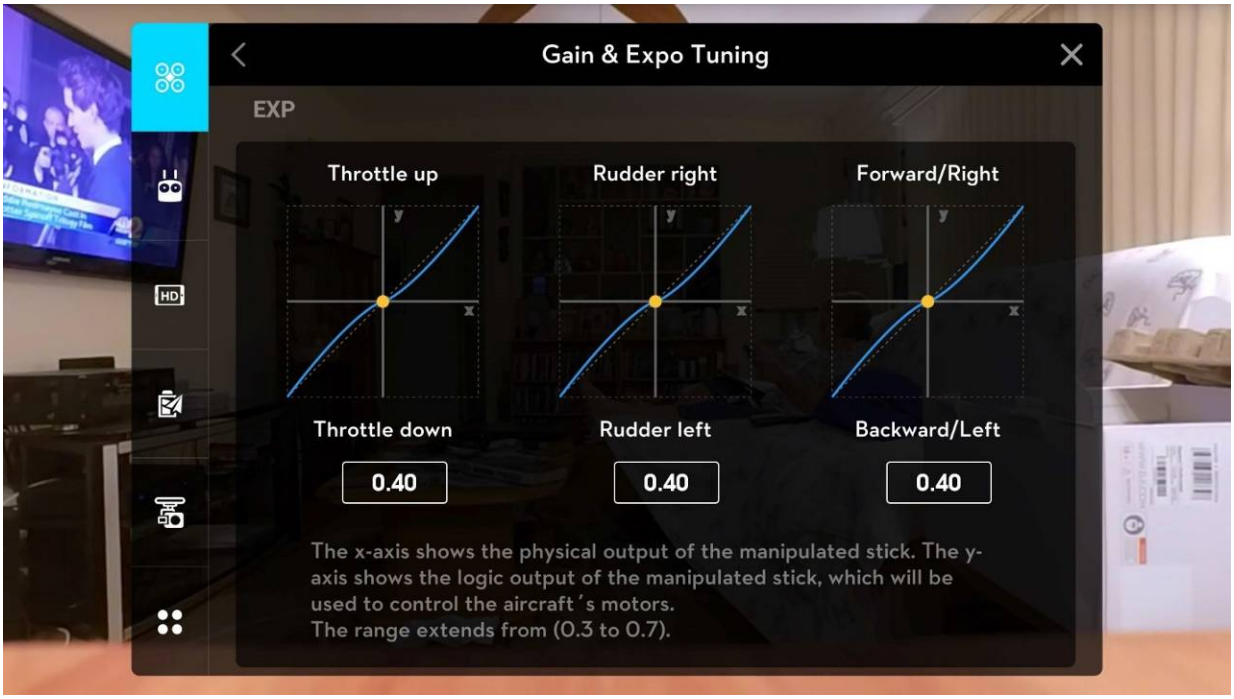
Here, you can obviously make some changes:

Maximum Altitude – anything between 10 and 500 meters.

Distance Limits

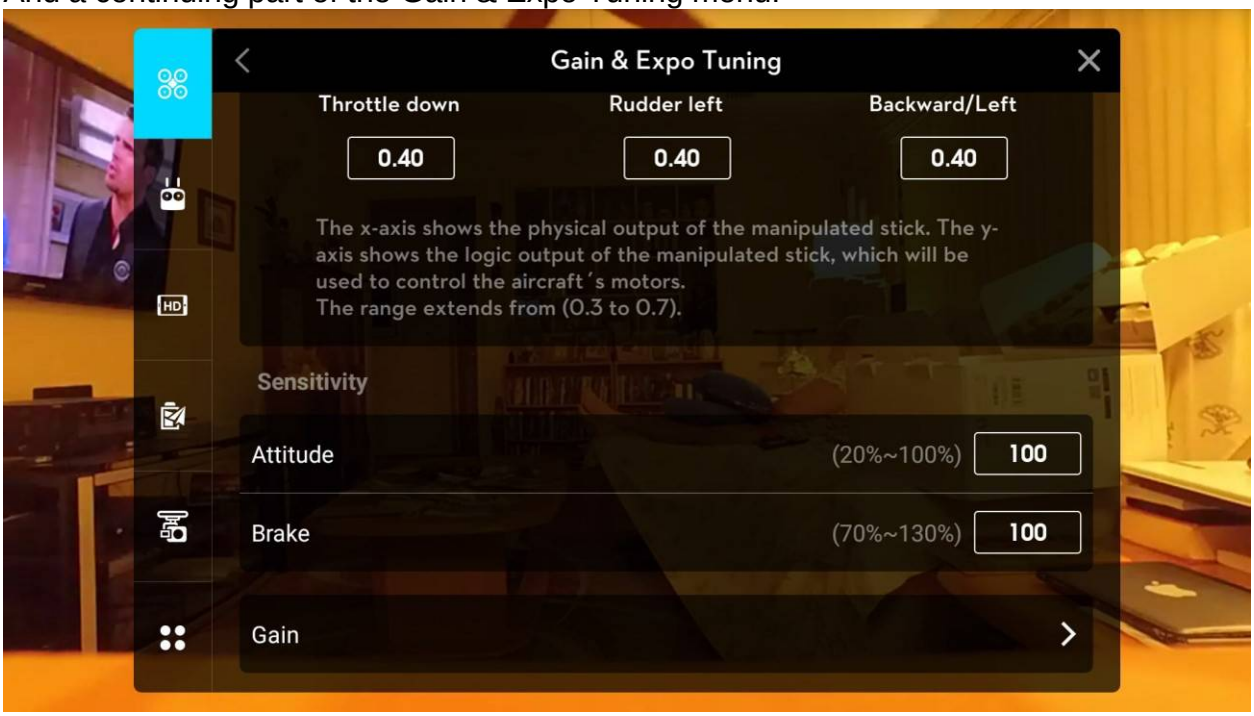
Beginner Mode can be toggled on/off Gain

& Expo Tuning



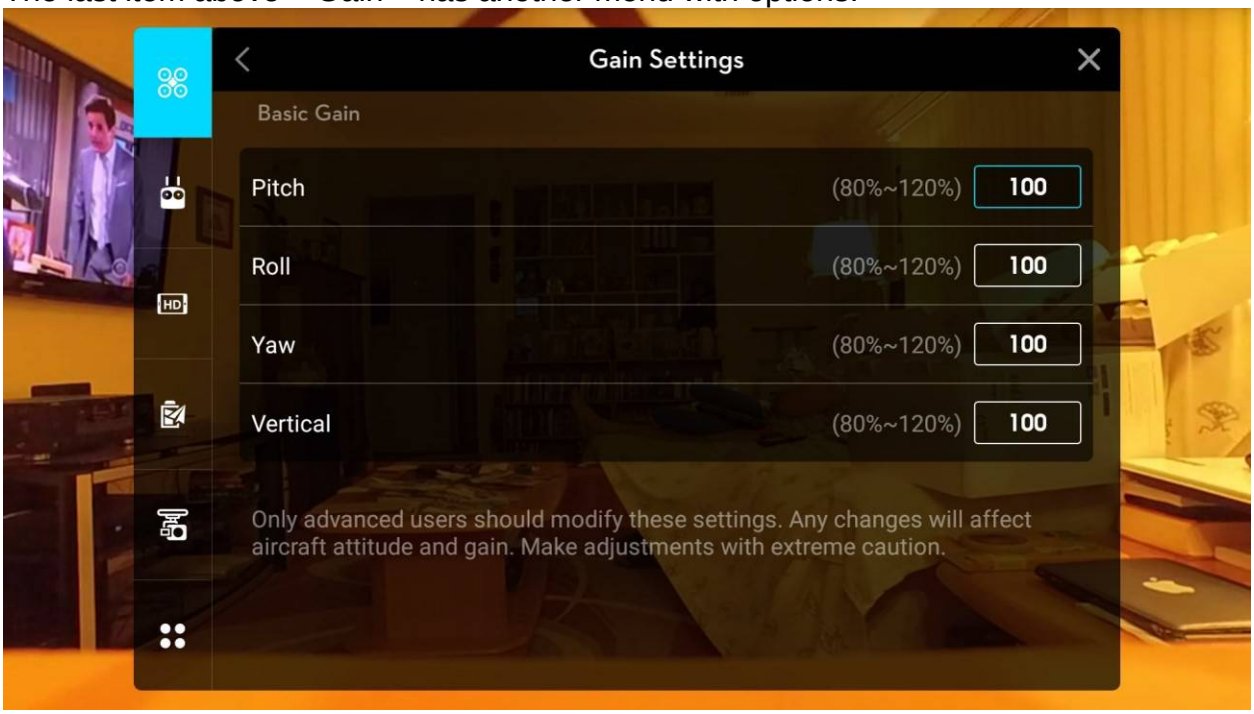
The expo tuning can be used on several of the parameters controlling your Phantom. Essentially, this part allows a little stick movement without producing potentially disastrous effects, i.e., giving the user a little "play" in the stick near the centered position.

And a continuing part of the Gain & Expo Tuning menu:



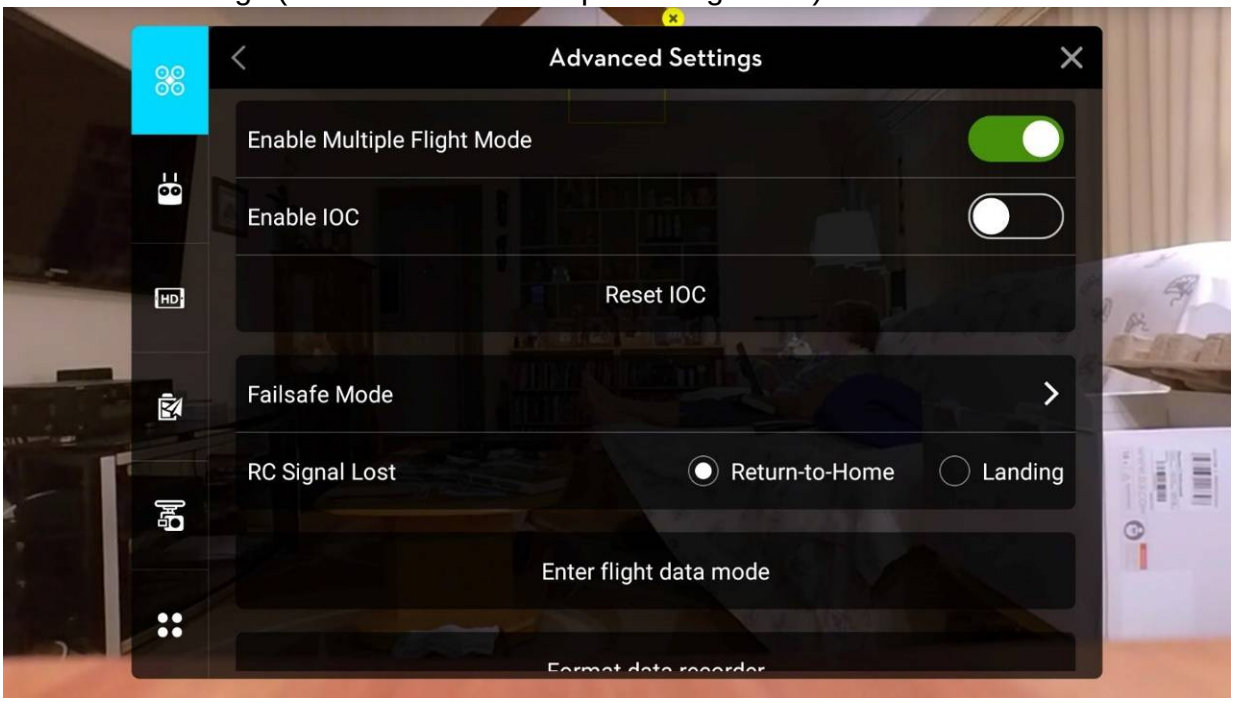
Most of us will likely never have a need to change any of the above settings. Even for non-beginners, gradual changes, if at all, are recommended.

The last item above – Gain – has another menu with options:



Like the previous menu with options we're recommended to leave be, the same applies to these settings. For the very experienced they're available. The rest of us have them, whether we can use them or not!

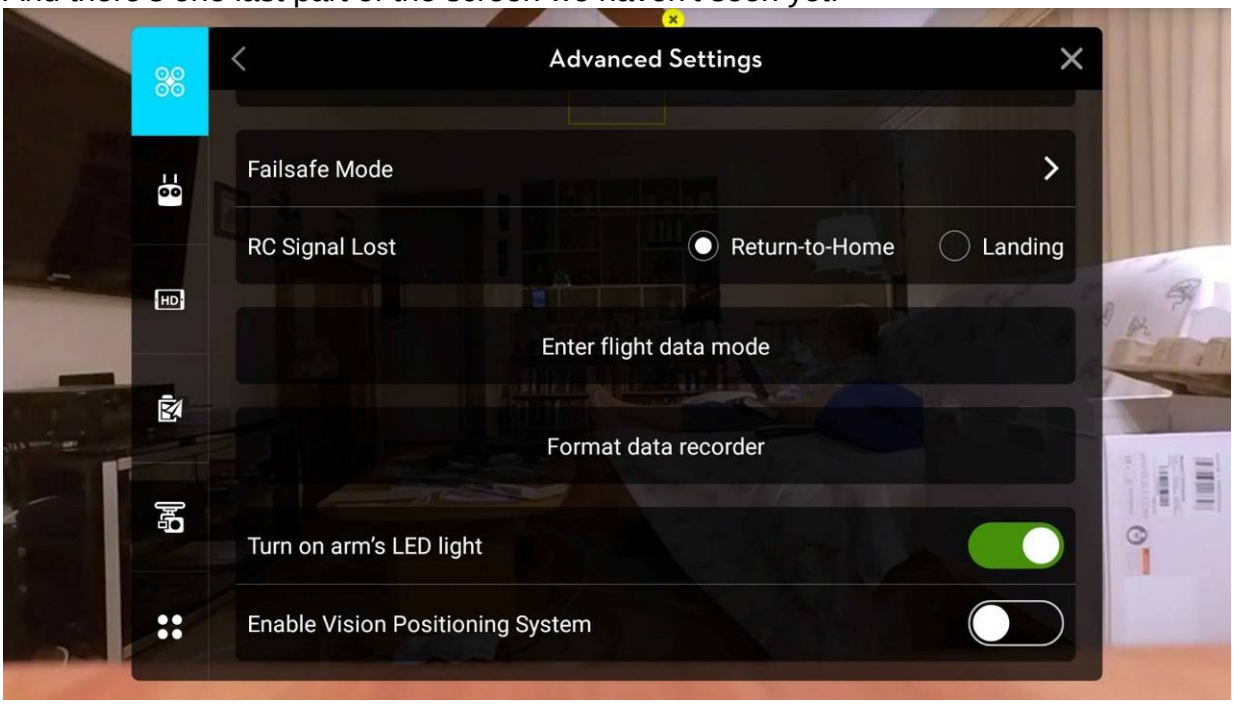
Advanced Settings (still on the Gain & Expo Setting menu)



The multiple flight mode and enabling IOC are options that provide for differing flight modes (chosen on the Remote Controller with the P-A-F switch).

Failsafe Mode – there are a few user options – come home or land on low battery warning or critical battery warning.

And there's one last part of the screen we haven't seen yet:



RC Signal Lost – user choice between RTH or Land

Enter flight data mode – user will be prompted to connect the appropriate USB cable to the front USB port of the aircraft. This port is partially hidden by a rubberized flap on the front of the Phantom, below the Phantom label.

User can download FLY**.DAT files. These files are in a format not easily read by most users, but they can be sent to DJI for analysis when requested.

The slider at the very bottom of this menu can be used to enable/disable the VPS. Many users who feel they're never going to fly inside, have arbitrarily disabled this function.

In case you forgot about it, the MC Settings menu has one last option at the very bottom:

Tap the line for Sensors and you'll see the following:

You can see if the self-checking diagnostics are happy with your IMU or, alternatively, tapping on the IMU Advanced will allow you to calibrate the IMU.

[2] GPS Signal Strength

: This icon shows the current strength of GPS signals. Green bars indicate adequate GPS strength.

[3] IOC Settings

CL : This icon displays the IOC setting when the aircraft has entered F-mode. Tap to view the IOC settings menu and select the desired IOC setting.

[4] System Status

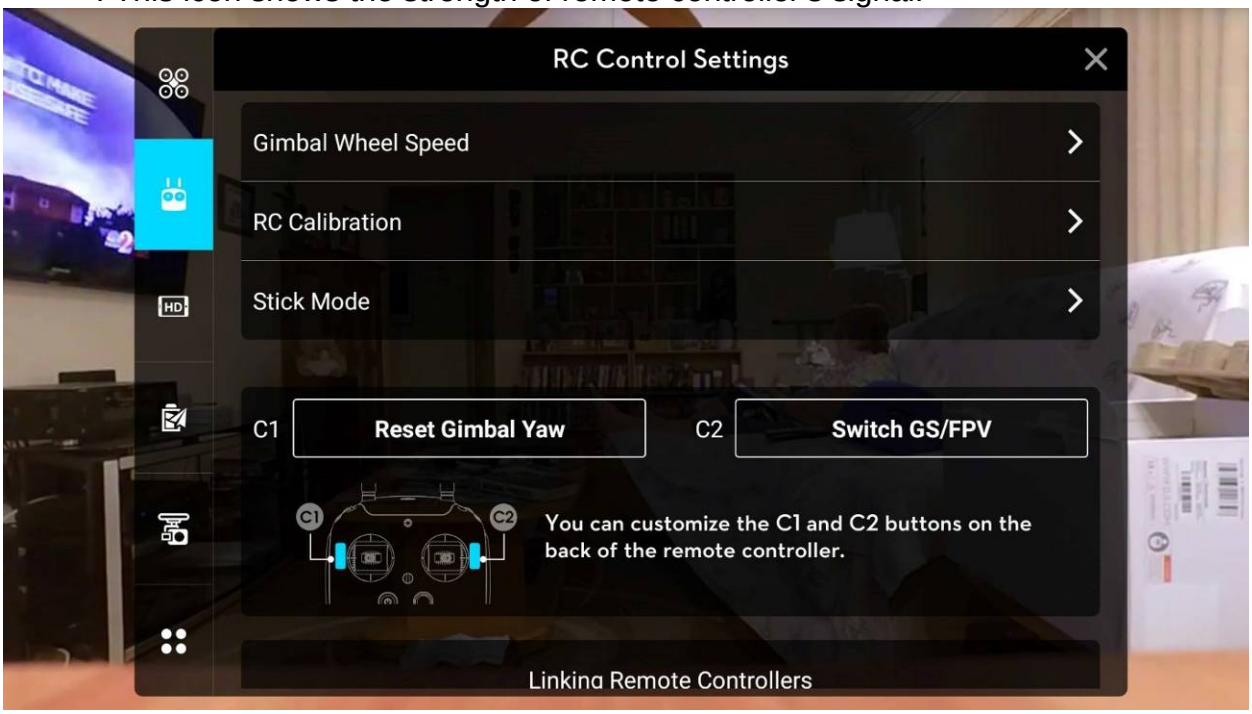
Safe to Fly (GPS) : This icon indicates the current aircraft system status and GPS signal strength.

[5] Battery Level Indicator

: The battery level indicator provides a dynamic display of the battery level. The colored zones on the battery level indicator represent the power levels needed to carry out different functions.

[6] Remote Controller Signal

: This icon shows the strength of remote controller's signal.



Gimbal Wheel Speed – tapping here will give you the option of altering the gimbal wheel speed anywhere between 0 and 100. A value of 100 moves it quite quickly and 20 moves it rather slowly.

Tapping the RC Calibration opens a dialog box with instructions on calibrating the remote controller.

Tapping Stick Mode shows settings for Modes 1, 2, 3, and custom mode.

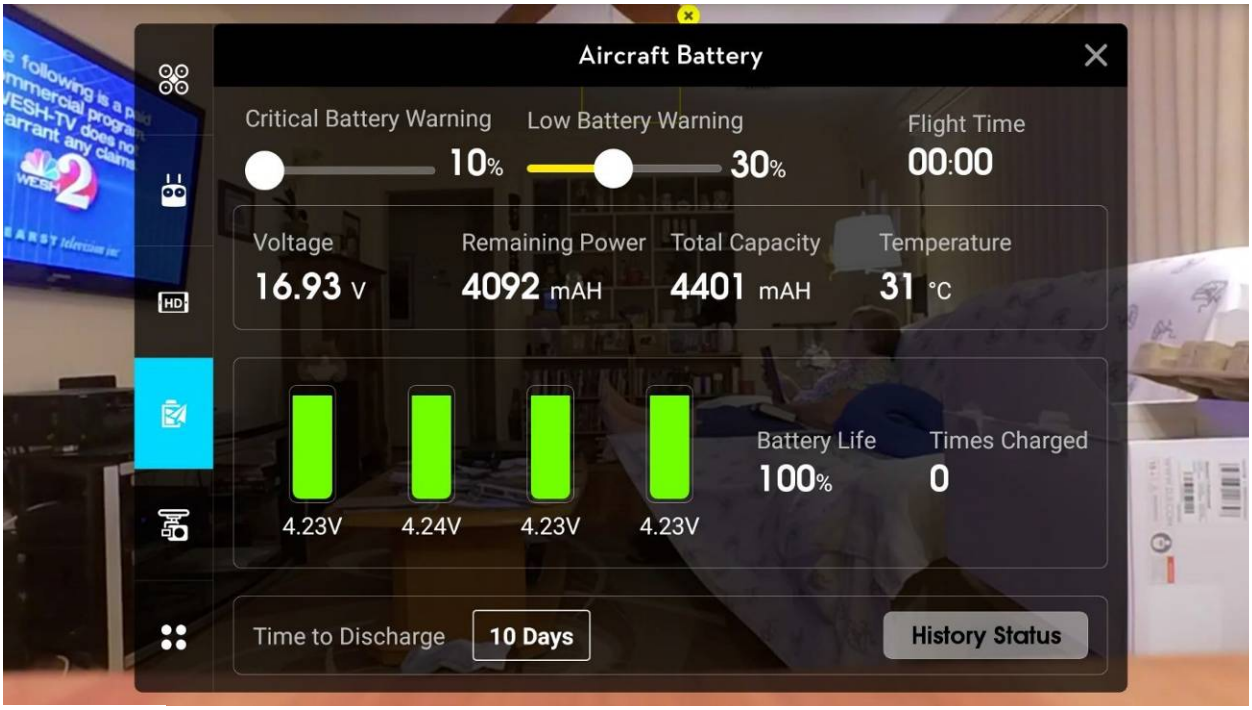
[7] HD Video Link Signal Strength

: This icon shows the strength of the HD video downlink connection between the aircraft and the remote controller.

Tapping on this icon will produce a screen that looks like:

Routinely, the channel choice for the Lightbridge signal from the Phantom back to the controller (and hence to your mobile device) is set on Auto, but the user has an option to check the custom button and choose what might look like another channel with no or less interference.

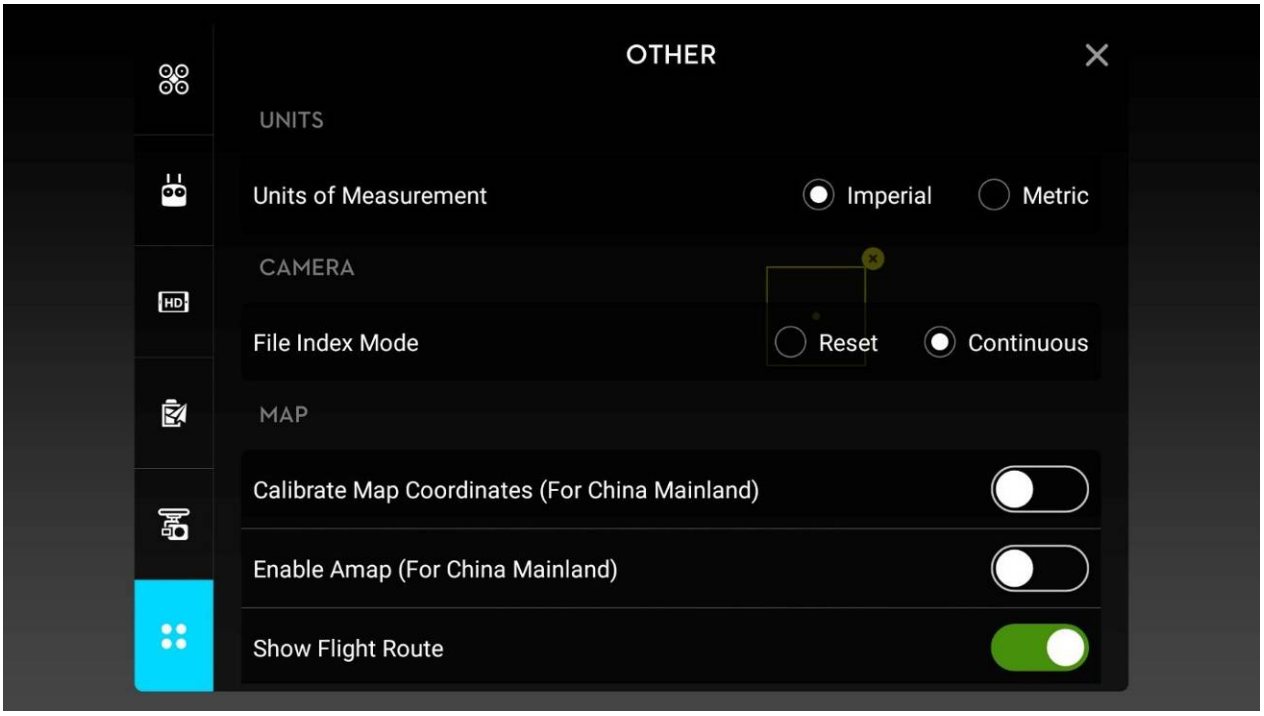
[8] Battery Level



100%: This icon shows the current battery level. Tap to view the battery information menu, set the various battery warning thresholds, and view the battery warning history.

[9] General Settings

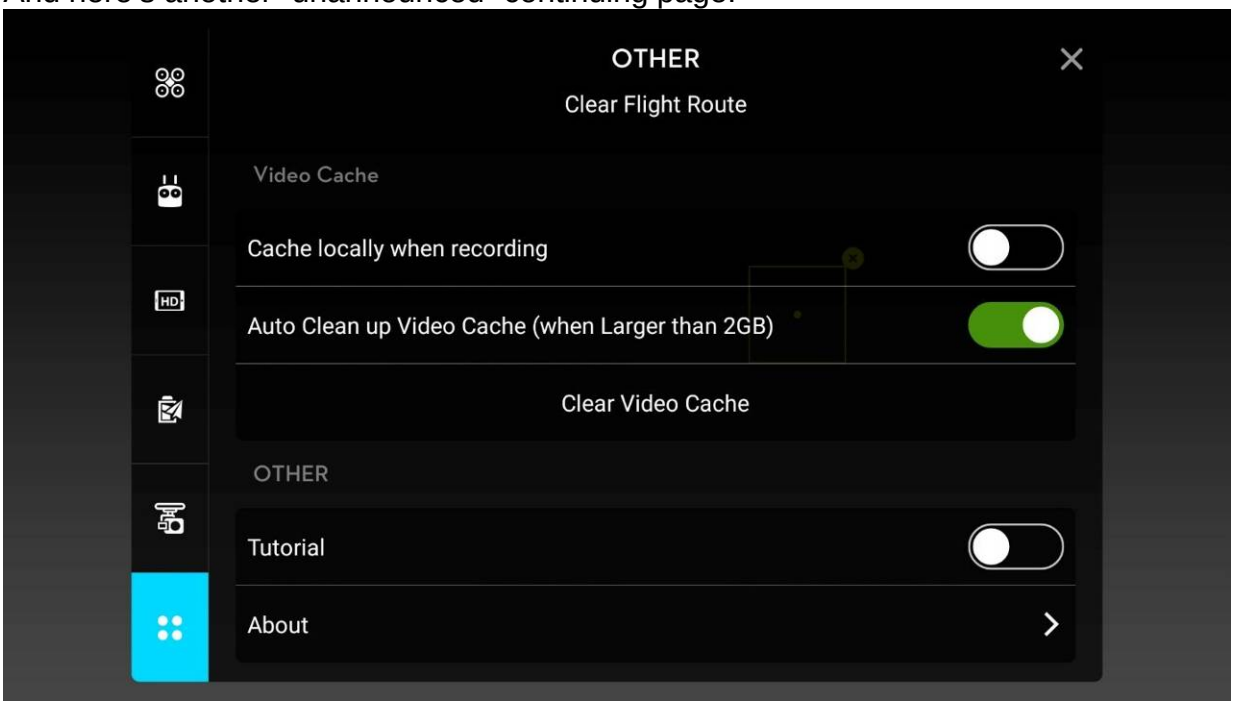
: Tap this icon to view the General Settings page. From this page, you can set flight parameters, reset the camera, enable the quick view feature, adjust the gimbal roll value, and toggle the flight route display.



File Index Mode:

Reset – each time you record on the SD card, it will restart with 001.
Continuous – file numbering will continue with the next sequential number rather than starting over.

And here's another "unannounced" continuing page:



Tapping on “Tutorial” seemingly does nothing, but when you return to the main screen (the screen where you see what the camera currently sees), just about all the icons on the screen will have labels to help you identify each icon.

Tapping on “About” will identify the version of the Pilot app you’re currently using, as well as the current installed version of firmware.

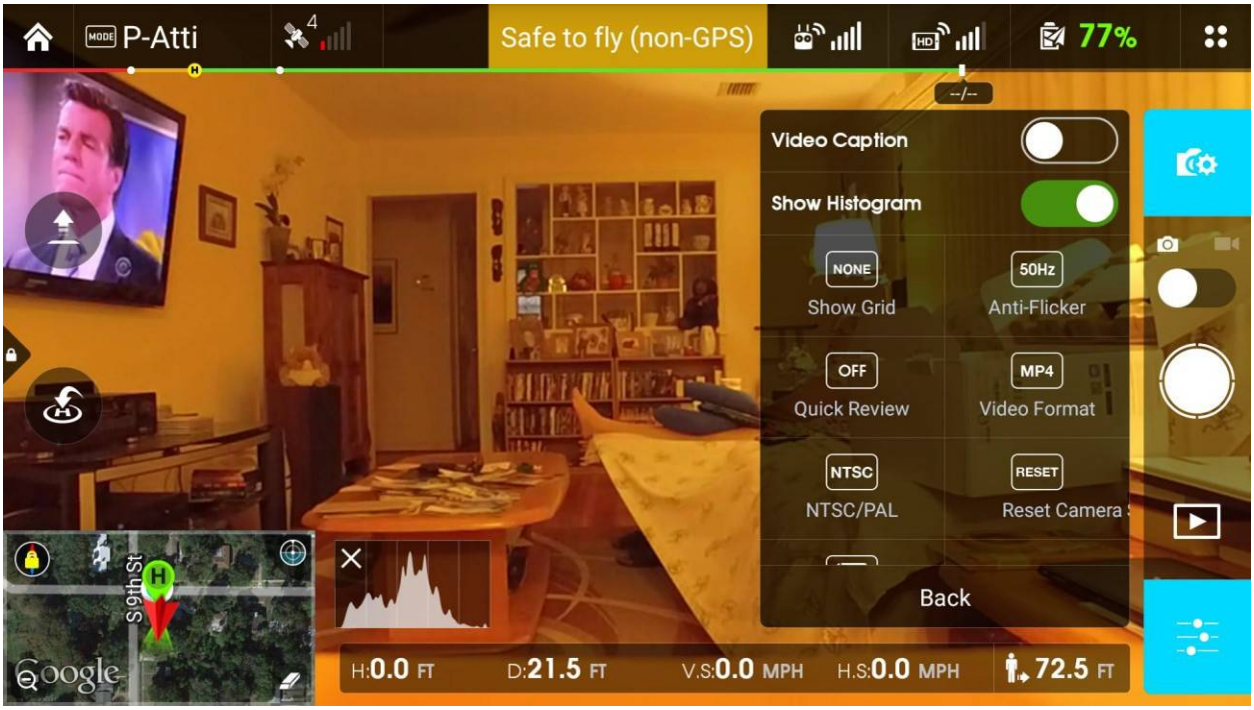
[10] Camera Operation Bar Shutter and Recording Settings

: Tap to enter various camera value settings, including color space for the recording, resolution of the videos, image size and so on.

As you can see above, there are numerous options:

JPEG – choose between JPEG, RAW or JPEG+RAW Image Size – choose between 16:9 and 4:3
White Balance – select AUTO, Sunny, Cloudy, Incandescent, Neon, Custom
Selecting Custom will provide a temperature slider to select
Video Size – choose between 1080, 4K, etc., and frame rates Style – permits user to adjust sharpness, contrast and saturation Color – choose between LOG, None, Vivid, Art, Film or B/W
(Think of LOG as if it were RAW – lots of options during processing) Tapping

the “More” button on the bottom generates yet another array of options:



If you look at the above screenshot, just to the right of the map view (lower left-hand corner), you'll see the little picture with the "mountain" in it? This is the histogram. If you display this (using that Show Histogram shown above), it will help you identify the effect of the current exposure level and adjust accordingly. Essentially, you want the "white" shown in there to be relatively evenly spread horizontally. It's a great tool and easy to learn how to use.

You can also select:

Show Grid – overlay a grid on the camera display Anti-
Flicker – hopefully self-explanatory!
Quick Review – on/off
Video Format – choose between MP4 and MOV NTSC/PAL
– Choose between the two
Reset Camera

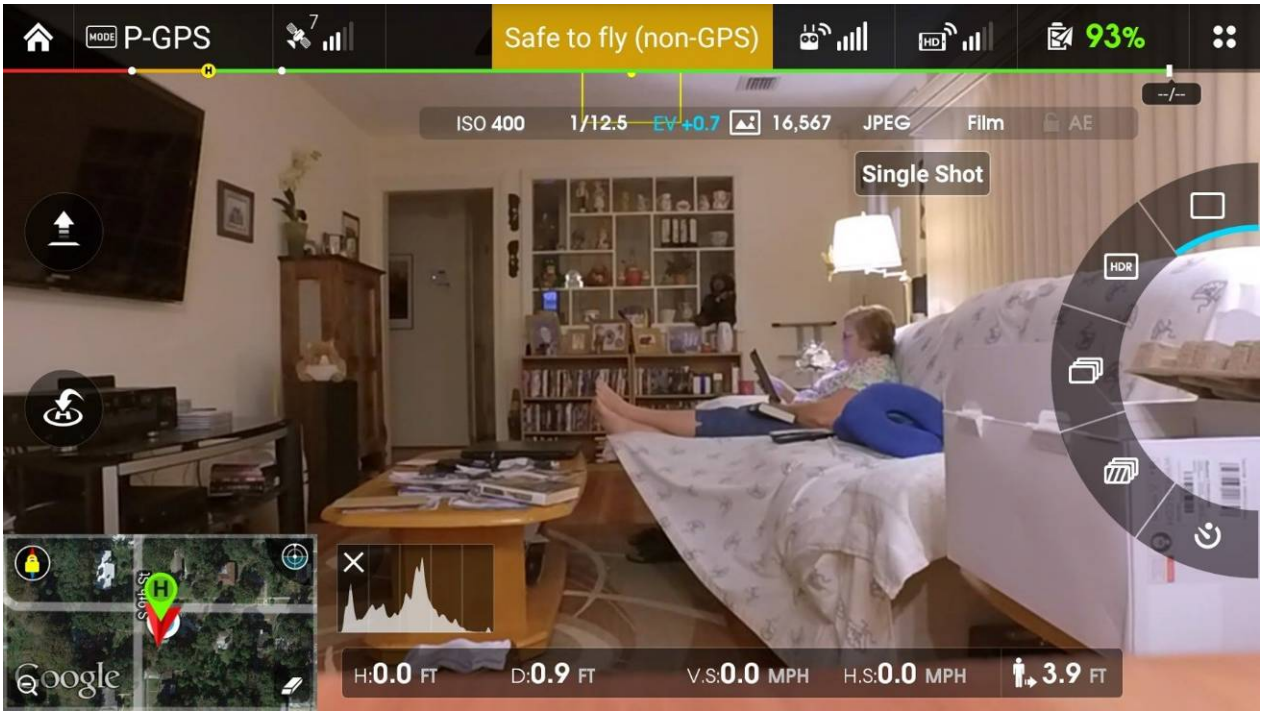
Shutter

: Tap this button to take a single photo. Press and hold this button to select single shot, triple shot or time-lapsed shooting modes.

Record

: Tap once to start recording video, then tap again to stop recording. You can also press the Video Recording Button on the remote controller, which has the same functionality.

If you press and hold the shutter button, you get a screen like this:



Starting in the upper part of the semi-circle “menu” Single Shot – the default setting

HDR – High Dynamic Range – in theory, this technique takes three pictures – one slightly overexposed, one slightly underexposed and one correctly exposed, then “marries” the result into a single picture. Reports from users appear mixed.

Burst Mode – take 3, 5 or 7 pictures consecutively.

AEB – Auto-exposure Bracketing – 3 or 5 pictures. Pictures range from underexposed to overexposed, with the “middle” picture correctly exposed. Processing is done by the user after downloading the photos.

Timer – timed exposures with options varying from 5 to 30 seconds.

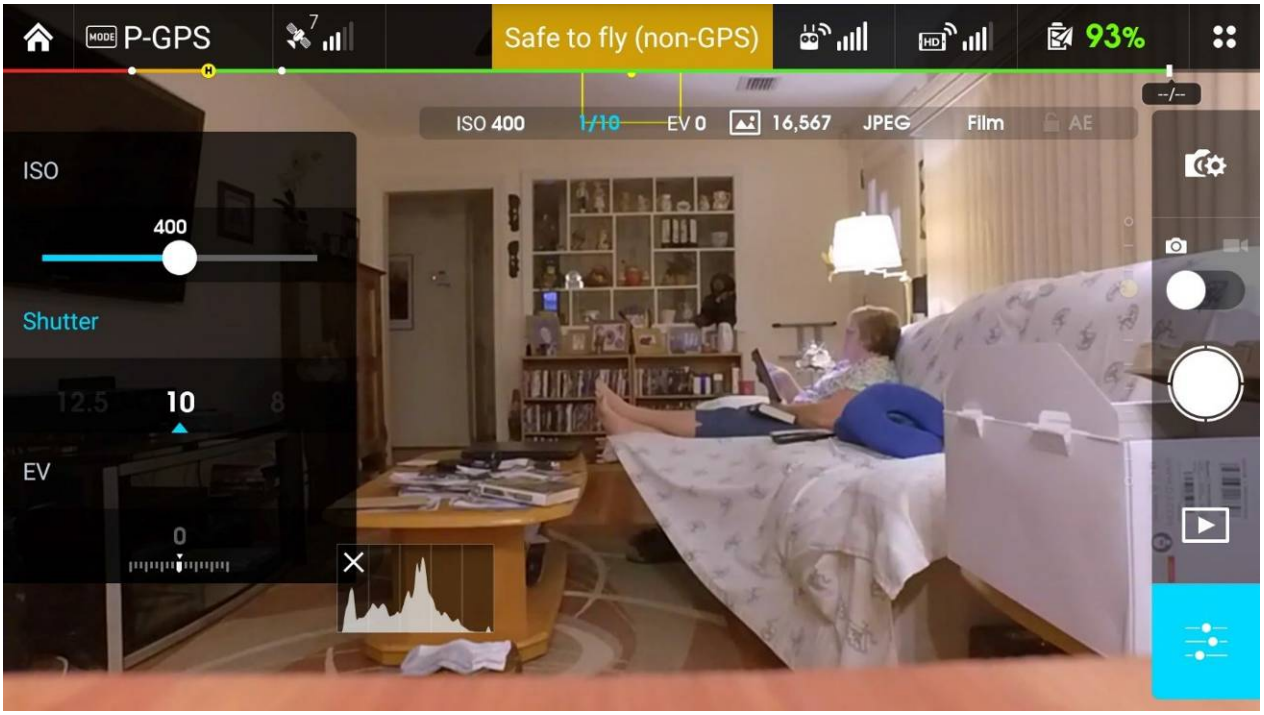
NOTE: Whatever option is selected, that option remains until changed (or until power off). Whatever option is set is controlled by either the shutter button in the Pilot app, or the shutter button on the right hand corner of the remote controller.

Playback

: Tap to enter the playback page. You can preview photos and videos as soon as they are captured.

Camera Settings

: Tap to set ISO, shutter and auto exposure values of the camera.



The highlighted icon in the extreme right hand corner is an icon that controls manual functions while shooting video. On the extreme left hand side of the screen you'll see settings for ISO, Shutter and EV. Using the wheel on the right hand side of the remote controller, you can alter these settings to help correct your exposure. You can move between the selections by pressing on the wheel (it doubles as a switch) and/or rotating the wheel to increase/decrease the selection value.

DANGER WILL ROBINSON! Just kidding!

When the icon in the lower right is highlighted, you're in manual mode. If you tap that button again, and the highlight goes away, you're back in auto mode! To stay in manual mode, instead of tapping the icon again, "wipe" the settings window (far left) off the screen from right to left – you'll see the camera view again and stay in manual mode. Confusing, isn't it?

[11] Vision Positioning

: This icon shows the distance between the surface and the Vision Positioning System's sensors. This item #11 actually "belongs to" the last item on the right in the telemetry display below, i.e., the system thinks the Phantom is 1.2m in the air.

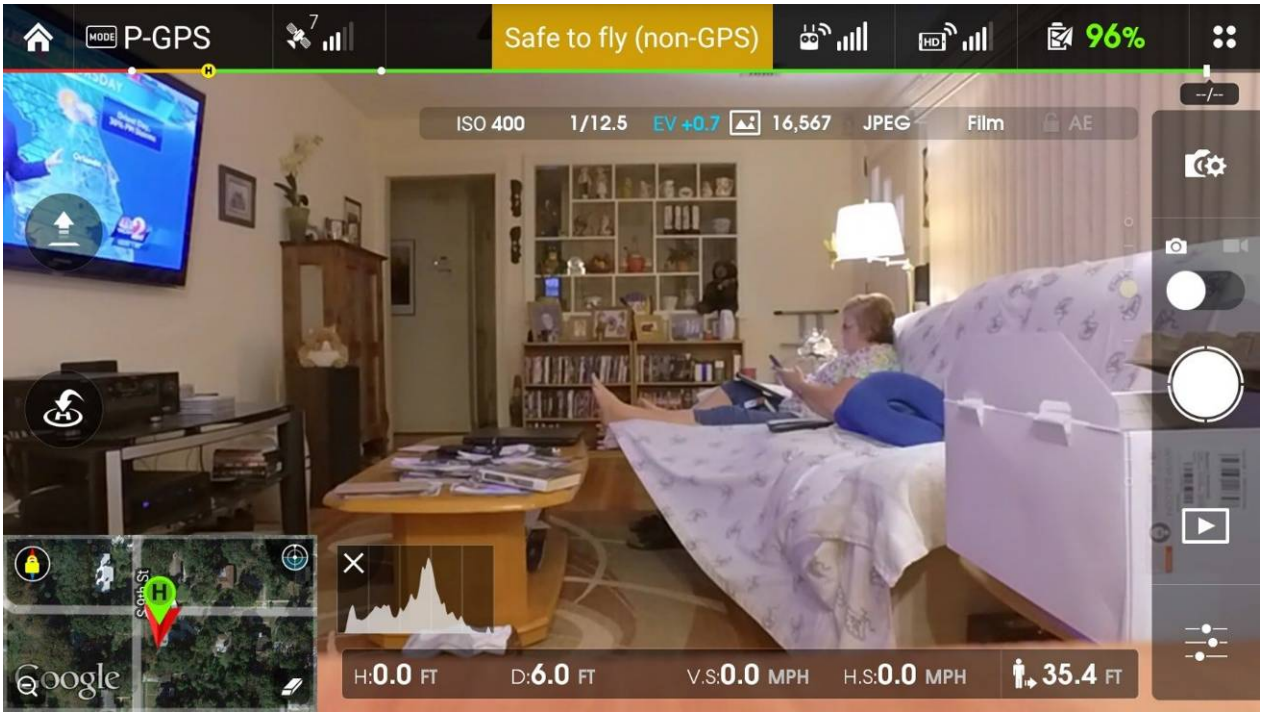
[12] Flight Telemetry

The Vision Positioning Status icon is highlighted when the Vision Positioning is in operation.

The following information is superimposed on the map view. Flight

attitude is indicated by the flight attitude icon.
(1) The red arrow shows which direction the aircraft is facing.
(2) Light blue and dark blue areas indicate pitch.
(3) The angle of the boundary between the light blue and dark blue areas indicates the roll angle.

[13] Map
Display the flight path of the current flight. Tap to switch from the Camera GUI to the Map GUI



The RTH (Return to Home) icon and the Auto-Land icon are displayed along the left side of the above screenshot.

[14] Return to Home (RTH)

 : Initiate RTH home procedure. Tap to have the aircraft return to the last recorded home point.

[15] Auto Takeoff/Landing

 : Tap to initiate auto takeoff or landing. [16] Livestream

 : Livestream icon indicates the current video feed is broadcasting live on YouTube. Be sure the mobile data service is available on the mobile device.

[17] Back

 : Tap to return to the main GUI.

How do I…

(Phantom 3 Menu Guide)

By Arthur L. Burke, Jr.

(A guide to the labyrinth of menus and settings for your Phantom 3. This document is based on a Phantom 3 Professional running with an Android version of the DJI Pilot application – v1.1.0 and running on a Samsung Galaxy S5. It should either be exactly the same or very similar to what most users will see running the same version on other devices. If you're running the Apple iOS, there might be some differences. I don't own an Apple device supported by DJI and cannot therefore identify any potential differences.)

Caveat to readers/users: Take some time and identify the icons you see on the main display (the screen you see when you see what your camera sees). In the upper left hand corner is an icon that looks like a little house. This is the HOME icon and will take you back to the main screen of the DJI Pilot app. Immediately to the right is a little box with lettering in it and some larger lettering outside the box. This is the Flight Mode icon. It not only identifies itself with the word "mode" in the box, but it shows what actual flight mode you're currently in and, also important, it is a "portal" to a series of menus/settings that you will either need or want to make your flights both possible and enjoyable.

NOTE: Many of these menu settings/options will require the controller, phantom and pilot app to be running!

Sneak a peek at the Phantom 3 manual and become at least moderately familiar with the icons you'll encounter when manipulating menus and settings in the Pilot app. This document is definitely not intended to be an end-all document – IT DOES NOT REPLACE THE MANUAL!

One last important note. There are a couple of moderately heavy-used icons that sound similar, but do not look similar. They are:

Camera Icon – near the top right of the main display is a small icon that looks like a camera with a small "gear" superimposed on it. Virtually everything this icon does relates to photo settings.

Camera Settings – down near the lower right of the main display, there is a small box/window with three lines in it. The options/settings controlled by this icon are used for video settings.

Please make sure you quickly realize the difference between these two icons so you won't be confused when you wade through this document.

And now – **How do I find the setting for……**

(*Anytime you see => that means **TAP** on that icon or line selection*)

Adjust Gimbal Roll => Flight Mode icon => Gimbal icon => Adjust Gimbal Roll
Aircraft Battery Temperature => Aircraft Status icon => Scroll Screen
Aircraft Status – This is the first screen you see after you open the DJI Pilot app and select "Camera" on the main page. It can also be retrieved later on if there's information on there you need. After the screen has disappeared and you want it back, tap on the Aircraft Status icon on the main display (pssst, it's the one that says "Aircraft Status.")
Altitude – Max Setting => Flight Mode icon
Altitude Sensitivity => Flight Mode icon => Gain & Expo Tuning – Scroll Screen
Anti-Flicker => Camera icon => More
App Version Number => General Settings icon – Scroll Screen => About
Arm LED Lights => Flight Mode icon => Advanced Settings – Scroll screen
Auto Exposure Bracketing => Shutter Button and hold => AEB icon => 3 or 5
Battery Life (IFB) => Battery icon
Battery Power Remaining in Phantom => Battery icon
Battery Power Remaining in Remote Controller => Aircraft Status icon
Battery – Time to Discharge => Battery icon => Select Days
Battery – Total Capacity => Battery icon
Battery Voltage => Battery icon
Beginner Mode On/Off => Flight Mode icon
Brake Sensitivity => Flight Mode icon => Gain & Expo Tuning – Scroll Screen
Burst Mode => Shutter Button and hold => Burst Mode icon => 3, 5, or 7
Cache Locally when recording => General Settings icon – Scroll Screen
Calibrate Compass => Aircraft Status icon
Calibrate IMU => Flight Mode icon => Advanced Settings => Sensors => IMU Advanced
Calibrate Map Coordinates (For China Mainland) =>General Settings
Camera Reset (settings) => Camera icon => More
Center Camera => Flight Mode icon => Gimbal icon
Clear Flight Route => General Settings icon – Scroll Screen
Color => Camera icon => Color => Log, None, Vivid, B&W, Art, Film
Compass Calibration => Aircraft Status icon
Contrast => Camera icon => Style => Custom
Critical Battery Warning => Battery icon
Customize C1 and C2 => RC Control icon => C1 or C2 – choose option
Distance Limit => Flight Mode icon
Enable Amap (For China Mainland) => General Settings icon
Enable IOC => Flight Mode icon => Advanced Settings
Enable Multiple Flight Mode => Flight Mode icon => Advanced Settings
EV => Camera Settings icon
Failsafe Mode Settings => Flight Mode icon => Advanced Settings => F ailsafe Mode
File Index Mode => General Settings => Reset or Continuous
Firmware Version => General Settings icon – Scroll Screen => About
Flight Data Mode => Flight Mode icon => Advanced Settings => Enter Flight Data Mode
Flight Mode can either be read directly from the Flight Mode icon or => Flight Mode icon and more detailed info will be displayed on the appropriate line
Flight Time => Battery icon
Format Data Recorder => Flight Mode icon => Advanced Settings – Scroll Screen

Format SD Card => Aircraft Status icon => Scroll Screen
Gain & Expo Tuning => Flight Mode icon => Gain & Expo Tuning
Gain Sensitivity => Flight Mode icon => Gain & Expo Tuning – Scroll Screen
Gimbal Auto Calibration => Flight Mode icon => Gimbal icon
Gimbal (FPV/Follow) => Flight Mode icon => Gimbal icon => Gimbal Mode
Gimbal Pitch and Limit => Flight Mode icon => Gimbal icon => Advanced Settings
Gimbal Roll Adjustment => Flight Mode icon => Gimbal icon => Adjust Gimbal Roll
Gimbal Settings Reset => Flight Mode icon => Gimbal icon => Advanced Settings
Gimbal Wheel Speed => RC Control icon => Gimbal Wheel Speed
HDR Photo Mode => Shutter Button and hold => HDR
Histogram => Camera icon => More
Image Format => Camera icon => Image Format => Raw, JPEG or J+R
Image Transmission Settings => Image Transmission Settings icon
- choose auto or custom. if custom, choose channel
Image Size => Camera icon => Image Size => 4:3 or 16:9
IMU Calibrate => Flight Mode icon => Advanced Settings => Sensors => IMU Advanced
IOC Reset => Flight Mode icon => Advanced Settings
ISO => Camera Settings icon
Low Battery Warning => Battery icon
Max Altitude Setting => Flight Mode icon
MP4/MOV => Camera icon => More
NTSC/PAL => Camera icon => More
Overall Status => Aircraft Status icon
Photo – AEB => Shutter Button and hold => AEB => 3 or 5
Photo – Burst Mode => Shutter Button and hold => Burst Mode icon => 3, 5, or 7
Photo Mode – Auto/Manual
Auto is the default setting.
If the mode is currently set to manual the Camera Settings icon will be highlighted.
MANUAL MODE => Camera Settings icon – adjust ISO, Shutter or EV Swipe screen right to left. The Camera Settings icon will remain highlighted! This indicates you're still in manual mode!
AUTO MODE => Camera Settings, if highlighted. Otherwise you're already in auto mode.
Photo – Single Shot => Shutter Button and hold => Single Shot icon
Pilot App Version => General Settings icon – Scroll Screen => About
Pitch => Flight Mode icon => Gain & Expo Tuning => Gain
Quick Review On/Off => Camera icon => More
RC Calibration => RC Control icon => RC Calibration
RC Signal Lost Settings => Flight Mode icon => Advanced Settings => Return- To-Home or Landing
Remote Controller Battery => Aircraft Status icon (% battery remaining)
Remote Controller Mode => Aircraft Status icon
Reset All Settings => Flight Mode icon – Scroll Screen
Reset IOC => Flight Mode icon => Advanced Settings
Roll => Flight Mode icon => Gain & Expo Tuning => Gain
Saturation => Camera icon =>Style => Custom
SD Card Capacity Remaining => Aircraft Status icon => Scroll Screen
Sensors => Flight Mode icon => Sensors
Settings – Other => General Settings icon
Sharpness => Camera icon => Style => Custom
Show Flight Route => General Settings icon
Show Grid => Camera icon => More

Shutter => Camera Settings icon
Single Shot Photo => Shutter Button and hold => Single Shot icon
Stick Mode => RC Control icon => Stick Mode
Style (Camera Setting) =>Camera icon => Style => Standard, Landscape, Soft, Custom
If Custom => Sharpness, Contrast or Saturation
Tutorial (turn on "help" bubbles") => General Settings – Scroll Screen
Units of Measurement => General Settings icon => Imperial or Metric
Vertical => Flight Mode icon => Gain & Expo Tuning => Gain
Video Caption => Camera icon => More
Video Cache Auto Clean => General Settings icon – Scroll Screen
Video Cache – Clear => General Settings icon – Scroll Screen
Video Size => Camera icon => Video Size => 4K (4096x2160),
4K (3840x2160), 1080 or 720
VPS On/Off => Flight Mode icon => Advanced Settings – Scroll Screen
White Balance => Camera icon => White Balance => Auto, Sunny, Cloudy, Incandescent, Neon or Custom
Yaw => Flight Mode icon => Gain & Expo Tuning => Gain

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