

Phantom 3 Training



Phantom 3 Training

TRAINING COURSE:

Unboxing, familiarization, setup, pre-flight checks, restricted flight, full instrumentation application flight, line-of-site flight, beyond line of sight flight, and Federal Aviation Administration restrictions.

This class is intended for the beginning pilot. More than just the syllabus will be covered, but this will get all of you on the right path to becoming a safe and reputable quadcopter pilot. The Phantom 3 Professional & Advanced are, in my opinion, the most forgiving aircraft on the market. Be an ambassador for enhancement of its abilities and post-flight aerial platform productions, rather than a liability to all responsible pilots.

(Full Phantom 3 Advanced User's Manual can be found at, DJI.com under the downloads section)



Phantom 3 Training

SAFETY

- Read the User's Manual, watch reputable videos, use forums. (If it "ain't" broke, don't fix it)
- When in doubt, bailout-land the craft
- Nothing takes precedence over safety and avoiding accidents
- **THE BEST DEFENSE IS COMMON SENSE** LIVE BY THIS: ALWAYS calibrate the compass. The "Return-To-Home" (FAILSAFE) location is set at your take off position
- **Calibrate the compass before every flight**
- Never begin a flight without fully charged batteries
- SUGGESTION: BEGINNER'S FLIGHT MODE should be a must for all students. In beginner's mode, practice your various flight modes like POI, and Return-To-Home, circular flights, elevation, movement and radius turns
- Propeller Guard's: Doesn't mean you are a novice pilot, it means you are an intelligent one, remove them later on as you fly more
- ACCIDENTS: They can occur, but most of the time, it is the pilot error
- MOST IMPORTANT TECHNIQUE: Unless you want a nice paperweight, you should NEVER, EVER, NEVER, EVER place both Combination Stick Command (CSC) controls of either sticks to the INSIDE & OUTSIDE stick locations (7 o'clock & 5 o'clock) positions at the same time. This will kill your engines and create a rather expensive paperweight
- **THE BEST DEFENSE IS COMMON SENSE**



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SYLLABUS

QCCC (DJI P3AQuadCopter Certification Course)

TIME	Day #1	Day #2	Day #12	Day #22
9:00-9:30	Introduction	Review of Day #1	Self-introduction, Instructors briefing	Day 1 Review
9:30-10:30	Aircraft Highlights	Aircraft Maneuvering	Day 1 : Capabilities & limitations of aircraft, FAA information, restriction of fly zones	Day 2 : Beginner mode movement to range, camera settings, RTH verification
10:30-10:45	Break	Break		
10:45-11:15	Aircraft Familiarization	Beginner Mode Flight #2	Day 1 : Configuration of aircraft and components	Day 2 : Beginner mode movement beyond 30 meter range, camera settings, RTH verification
11:15-11:45	Aircraft Components	Advanced Mode Flight #1	Day 1 : GPS, Props, Motors, Battery, Flight Modes, Camera	Day 2 : Advanced mode movement beyond 300 meter range, line of sight controlled
11:45-1:15	Lunch	Lunch		
1:15-1:45	Controller Familiarization	Advanced Mode Flight #2	Day 1 : Configuration of controller and components	Day 2 : Advanced mode movement beyond 500 meter range, line of sight controlled
1:45-2:15	Controller Components	Free Flight #1	Day 1 : Antennas, Flight Status, Extender, Interference, Recording video and photographs	Day 2 : Limitations removed, beyond line of sight flights, waypoint flights
2:15-2:30	Break	Break		
2:30-3:00	Aircraft/Controller Pairing	Free Flight #2	Day 1 : Synchronization of unit to pair before flights, troubleshooting	Day 2 : Limitations removed, beyond line of sight flights, POI flights
3:00-3:30	Software Version & Updating	Free Flight #3	Day 1 : Uploading and verifying the latest firmware and fail safe modes are installed	Day 2 : Limitations removed, beyond line of sight flights, "Follow me" flights
3:30-3:45	Break	Break		
3:45-4:15	Initial Flight Setup	Free Flight #4	Day 1 : Propellers installation, status check, GPS verification, Compass calibrations	Day 2 : No limitations
4:15-4:45	1st Flight (Beginner Mode)	Free Flight #5	Day 1 : GPS confirmation, Engine to operating level, flight sequence, hover and movements	Day 2 : Limitations removed, beyond line of sight flights
4:45-5:00	Aircraft Maneuvering	Class Completion	Day 1 : Beginner mode movement to range, camera settings, RTH verifications	Day 2 : FAA registration, DHS validation, general information for students

Phantom 3 Training

AIRCRAFT CHARACTERISTICS

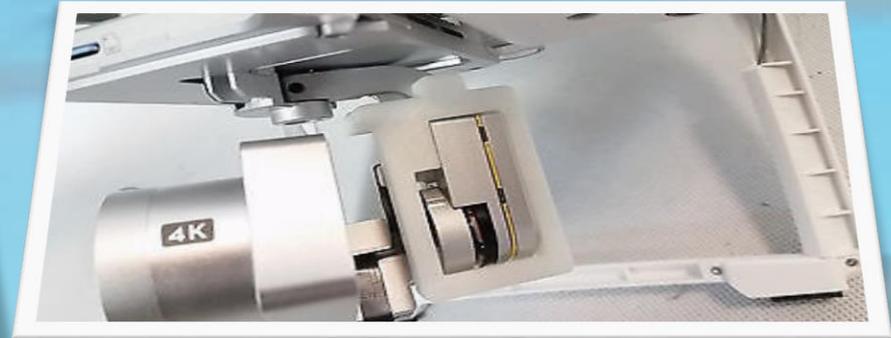
Weight (including battery and propellers)	1280 g
Diagonal size (including propellers)	590 mm
Max Ascent Speed	5 m/s
Max Descent Speed	3 m/s
Hover Accuracy	
Vertical:	+/- 0.1 m (when Vision Positioning is active) or +/- 0.5 m
Horizontal:	+/- 1.5 m
Max Speed	16 m/s (ATTI mode, no wind)
Max Service Ceiling Above Sea Level	6000 m (Software altitude limit) 120 m above takeoff point
Operating Temperature	0°C to 40°C
GPS Mode	GPS/GLONASS

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GIMBAL CHARACTERISTICS

Controllable Range
Stabilization

Pitch -90° to $+30^{\circ}$
3-axis (Pitch, Roll, Yaw)



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REMOTE CONTROL CHARACTERISTICS

Operating Frequency

2.400 GHz-2.483 GHz

Max Distance

Up to 5 km or 3.1 miles (unobstructed, free of interference)
when FCC compliant

Up to 3.5 km or 2.1 miles (unobstructed, free of interference)
when CE compliant

Video Output Port

USB

Operating Temperature

0°C- 40°C

Battery

6000 mAh LiPo 2S

Mobile Device Holder

For tablet or phone

Receiver Sensitivity (1%PER)

-101 dBm \pm 2 dBm

Transmitter Power

(EIRP)

FCC:

20 dBm

CE:

16 dBm

Working Voltage

1.2 A @7.4 V



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INTELLIGENT FLIGHT BATTERY CHARACTERISTICS

Capacity	4480 mAh
Voltage	15.2 V
Battery Type	LiPo 4S
Energy	68 Wh
Net Weight	365 g
Max Flight Time	Approximately 23-25 minutes
Operating Temperature	-10°C to 40°C
Max Charging Power	100 W



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CAMERA CHARACTERISTICS

Sensor

Sony EXMOR 1/2.3" Effective pixels: 12.4 M (total pixels: 12.76 M)

Lens

FOV 94° 20 mm (35 mm format equivalent) f/2.8, focus at ∞

ISO Range

100-3200 (video) 100-1600 (photo)

Shutter Speed

8s -1/8000s

Image Max Size

4000 x 3000



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CAMERA “STILL PHOTOGRAPHY MODE” CHARACTERISTICS

Single Shot

Burst Shooting:

Auto Exposure Bracketing (AEB):

Bracketed Frames at 0.7EV Bias

Time-lapse

3/5/7 shots

3/5



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CAMERA “VIDEO RECORDING MODE” CHARACTERISTICS

2.7K: 2704 x1520p 24/25/30 (29.97)

Supported SD Card Types

Max capacity:

Max Bitrate of Video Storage

Supported File Formats

Operating Temperature

Vision Positioning

Altitude Range

Operating Range

Operating Environment

Battery Charger Voltage

Rated Power Phantom 3 Advanced

App / Live View

DJI GO EIRP

Live View Working Frequency

Live View Quality

Latency

FHD: 1920x1080p 24/25/30/48/50/60

HD: 1280x720p 24/25/30/48/50/60

Micro SD

64 GB. Class 10 or UHS-1 rating required

40 Mbps

FAT32/exFAT

Photo: JPEG, DNG

Video: MP4, MOV (MPEG-4 AVC/H.264)

0°C to 40°C

8 m/s (when 2 m above ground)

50 cm-300 cm

50 cm-300 cm

Surface with clear pattern and adequate lighting (Lux > 15)

17.4 V

57 W

Mobile App

100mW

2.4GHz ISM

720P @ 30fps (depending on conditions and mobile device)

220ms (depending on conditions and mobile device)

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REQUIRED OPERATING SYSTEMS

Required Operating Systems Android 4.1.2 or later

Recommended Devices

iOS: iPhone 5s, iPhone 6, iPhone 6 Plus, iPad Air, iPad Air Wi-Fi + Cellular, iPad mini 2, iPad mini 2 Wi-Fi + Cellular, iPad Air 2, iPad Air 2 Wi-Fi + Cellular, iPad mini 3, and iPad mini 3 Wi-Fi + Cellular. This app is optimized for iPhone 5s, iPhone 6, and iPhone 6 Plus

Android: Samsung tabs 705c, Samsung S6, Samsung S5, Samsung NOTE4, Samsung NOTE3, Google Nexus 9, Google Nexus 7 II, Ascend Mate7, Nubia Z7 mini, SONY Z3 EXPERIA, MI 3, MI PAD

**Support for additional Android devices available as testing and development continues.*

Phantom 3 Training

GENERAL INFORMATION

- Gimbal Clamp: When transporting by hand, or in a storage configuration, it is essential, the Gimbal Clamp remain in place. Always remember to remove the Gimbal Clamp before activating the aircrafts power button. Failure to do so will possibly ruin Gimbal.
- The two major differences between the DJIP3 Advanced and Professional are; the Professional has a 4K camera, while the Advanced has a 2.7K camera. The charger for the Professional has a 100W capability, and the Advanced has a 57W capability. Both has a removable camera bezel ring to allow ND Filters to enhance camera video and photography imaging. Both have the same after video production program.
- Indoor Flights are available with the Phantom 3's. It uses a VSP, Vision Positioning System when indoors to control its location. It is highly recommended novice pilots **DO NOT ATTEMPT** to conduct indoor flights until fully capable and have gained confidence of the flight stick controls.
- Propellers with a black center pivot are to be used only on the motors with black thread. A silver center pivot is only used with the motors which have silver motor threads. The black propellers will spin **COUNTER-CLOCKWISE** to tighten, and the silver will spin **CLOCKWISE** to tighten. **DO NOT OVERTIGHTEN ANY PROPELLERS.**
- For exact title and nomenclature of each item on the flight systems, refer tot he DJI User's Manual, pages 8 & 9.

Phantom 3 Training

GENERAL INFORMATION

- Flight Modes for the aircraft are categorized into three different types; P-GPS, P-OPTI, P-ATTI, A-MODE and the F-MODE.
- P-GPS, is the when the GPS and Vision Positioning both are available. In this position, the aircraft is using GPS for flight positioning. Usually the most accurate based on the satellites linked to your aircraft.
- P-OPTI, is the Vision Positioning Mode and available for when the GPS signal is weak, and flying is conducted by vision referencing.
- P-ATTI, neither GPS nor Vision Positioning is available. Aircraft is only using barometer for positioning, so only altitude can be stabilized.
- A-MODE, is also known as ATTITUDE Mode. GPS and Vision Positioning Systems are not used in stabilization. The aircraft only uses its barometer. The aircraft can still automatically return to the home point if the control signal is lost and the Home Point was successfully recorded.
- F-MODE, is also known as the FUNCTION Mode. Intelligent Operation Control (IOC) is activated in this mode. For more information about IOC. refer to the User's Manual section in the appendix.
- Aircraft Front will always be designated via the red lights

Phantom 3 Training

AIRCRAFT STATUS LIGHTS

AIRCRAFT STATUS LIGHT INDICATOR DESCRIPTION

NORMAL STATUS

	Red, Green & Yellow Flash Alternatively	→	Turning On & Self-Diagnostic
	Green & Yellow Flash Alternatively	→	Warming Up
	Green Flashes Slowly	→	SAFE-TO-FLY (P-MODE with GPS & Global Positioning)
	Green Flashes Twice	→	SAFE-TO-FLY (P-MODE with Vision Positioning but WITHOUT GPS)
	Yellow Flashes Slowly	→	SAFE-TO-FLY (A-MODE but with NO GPS and NO VISION POSITIONING)

WARNING STATUS

	Yellow Flashing Fast	→	Remote Controller's Signal Lost
	Red Flashing Slowly	→	Low Battery Warning
	Red Flashing Fast	→	Critical Battery Warning
	Red Flashing Alternatively	→	IMU Error
	Solid Red	→	Critical Error
	Red & Yellow Flashing Alternatively	→	Compass Calibration Required

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VIDEOS



Mountains



Water Flight



Bungalows



Islands



Ghost Town



Peaks