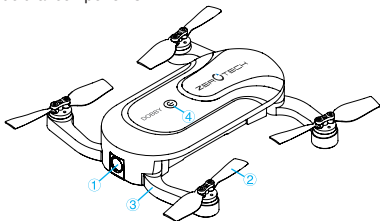ZEROTECH

DOBBY

Quick Start Guide V1.5

2016.8

1. Get to Know Your DOBBY

DOBBY is ZEROTECH's compact, portable, multi-axis aircraft that has been tailor-made for selfie-lovers. It comes with a high definition camera that can take 4208 x 3120 photos and can shoot 1080p videos @30fps. The accompanying Do.Fun app lets you control DOBBY's flight.

DOBBY's structural components:

1. Camera
2. Propeller
3. Arm
4. On/Off Switch, Power Indicator
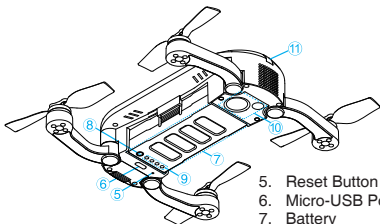
5. Reset Button
6. Micro-USB Port
7. Battery
8. Battery Level Button
9. Battery Level Indicator
10. Optic Flow and Ultrasonic Positioning Module
11. Aircraft Status Indicator

Symbols 💡 Hints ⚠ Warning

LEDs ●━● On ● Flashing ○ Off

2. Get to Know Your Do.Fun

Do.Fun is specifically designed for DOBBY. Through the app, users can use their mobile as a remote controller for flight control and to take photos and record videos. You can also directly share your photos and videos to social networks.

Downloading Do.Fun

Search for Do.Fun in App Store or Google Play, download and install the app to your mobile device.

Get to Know the Status Indicators

Outdoor Positioning Status Indicator	GPS Positioning Status Abnormal (number of searched-out satellites < 8)		
	GPS Positioning Status Normal (number of searched-out satellites ≥ 8)		
Indoor Positioning Status Indicator	Optic Flow Positioning Status Abnormal		Optic Flow Positioning Status Normal
Wi-Fi Connection Status Indicator	Wi-Fi Disconnected		Wi-Fi Connected
Aircraft Battery Indicator	Low Battery		Full Battery
Flight Distance/ Height	Current Flight Distance		Current Fight Height

Get to Know the Functional Buttons

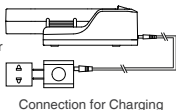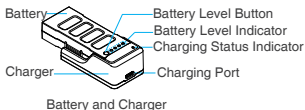|					
	Login/Register		App Settings		Indoor/Outdoor Switch
	Takeoff		Landing		Voice Control
	Photo Timer		Camera Settings		Shutter
	Photo/Video Switch		Record		Stop Recording
	More Features		Short Video		Orbit
	Target Tracking		Face Tacking		Return to Home
	Somersault		Media Library		Assisted GPS Positioning

3. Charging the Battery

Press the Battery Level Button, the Battery Level Indicator will show the current battery level. If any of the lights are off, please charge the battery.

Plug the battery down to the charger. Use the USB cable to connect the charger to the adapter, and then plug the adapter into a power socket to begin charging.

When charging, the Charging Status Indicator will be solid orange/red. If the light turns solid green, it means it has completed charging. Turn off the power source and remove the battery from the charger.

Battery — Battery Level Button
— Battery Level Indicator
— Charging Status Indicator
Charger — Charging Port

Battery and Charger   Connection for Charging

4. Preparing the Area for Flight

We suggest that you conduct the first flight in an open outdoors area and that you conduct indoor flight after getting familiar with the flight control.

Outdoors

○ Don't fly DOBBY in bad weather conditions, such as in high wind, rain, snow, etc.

○ Please fly in open area, do not fly near buildings and keep a good distance from tall buildings, for fear that the GPS signal would be blocked. If you can't fulfil the requirements for the GPS positioning, please do so for the optic flow and ultrasonic positioning, see "Indoors" for more information.

○ Do not fly near areas with abnormal magnetic fields and near complex electromagnetic environments.

Please do not fly in areas where flying is illegal or restricted. DOBBY will not be able to fly in restricted areas while using the GPS positioning.

○ During indoor flight, DOBBY uses the optic flow and ultrasonic positioning. The flight area needs to be above a clear textured surface that is not too sparse or too dense. If you can't find an appropriate textured surface, you can put a textured carpet or cloth on the ground, table or any large, horizontal surface to provide the required texture.

○ Indoor flight needs to be conducted in a well-lit area (luminosity > 15lux) such as an area illuminated by an ordinary fluorescent lamp.

○ During fast flight at low levels (0.5m or less), the ultrasonic positioning system may not work.

○ Do not fly above objects that readily absorb ultrasonic waves.

○ Do no fly above highly reflective surfaces.

5. Preparing the Aircraft

1) Unfolding the Aircraft

Fold out the four arms of the aircraft.
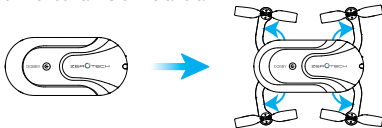
2) Adjusting the Camera's Pitch Angle

There are 6 rotations in the Camera's pitch angle limit. The lens facing the front: 0°; Push up the lens: elevation 22.5°; Push down the lens: successively depressions -22.5°, -45°, -67.5°, -90°.

There are several ink lines on the side of the Camera corresponding to different pitch angles. Push the Camera to the needed angle, just exposing the corresponding ink line.

-90°
-67.5°
-45°
-22.5°
Lens

Lens
22.5°
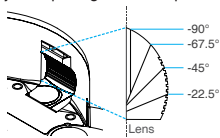
Camera's Maximum Depression -90°   Camera's Maximum Elevation 22.5°
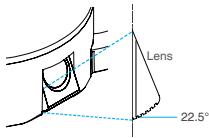
3) Turning the Aircraft On

Plug the battery into the battery compartment in the right direction (the Battery Level Indicator near to the Camera), and make sure it's clamped.

Hold the On/Off Switch for 3 seconds. Wait until the Power Indicator flashes blue, take your finger off the Switch and the aircraft will turn on.

Wait a few seconds. It will emit a noise notifying you that the ESC has turned on.

4) Calibrating the Compass

You're required to calibrate your compass before the first flight and the first outdoor flight!

Connect to the aircraft's Wi-Fi, open Do.Fun and go to "App Settings" - "Compass Calibration", and then follow the onscreen prompts to calibrate the compass.

💡 Do not calibrate your compass near large metal objects or in places with strong magnetic field interferences.

6. Connecting the Aircraft to Do.Fun

Connect your mobile device to the aircraft's Wi-Fi. The default SSID is Dobby-XXXXXX, please check the label beside the battery compartment on the base of the aircraft to acquire the SSID, and the default password is zerotech.

Open the main interface of Do.Fun. First, toggle the "Indoor/Outdoor Switch" to choose your current environment:

🏠 indicates indoor, it will use optic flow positioning. ⇄ 🏠 indicates outdoor, it will use GPS positioning.

At last, check if it shows that it's connected to the Wi-Fi 📶 , that the aircraft's battery level is high 🔋 , and that the optic flow positioning status is normal 📍 or the GPS positioning status is normal 🛰 . If so, you can take off.

7. Flying

⚠ The rotating propeller blades may cause damage to nearby people and objects. Please don't fly DOBBY near groups of people and keep a good distance from the propeller blades.

Takeoff/Landing

Tap it, the app will pop up the "Ground Takeoff" and "Palm Takeoff" options.

If you choose "Ground Takeoff", DOBBY will directly take off.

If you want to try palm takeoff, please first place DOBBY on your palm, and then choose "Palm Takeoff", the propellers will start to rotate. Wait until they fully rotate, remove your palm or slightly toss it.

Tap it, the app will pop up the "Ground Landing" and "Palm Landing" options.

If you choose "Ground Landing", it will directly start to descend.

If you choose "Palm Landing", it will start to descend slowly. Place your palm right under it, it will land onto your palm. Or it will close palm landing and restore to ground landing in 10 seconds.

Flight Control Method - Motion Sensing

Your mobile device tilted within 45° from horizontal, hold down on any part of the right hand half of your screen and tilt your mobile device backward and forward/left and right to control backward and forward/left and right movements.

Swipe the left hand half of your screen up and down to control up and down movements; Swipe left and right to control the direction. Swipe and hold to continue the movement.

Forward tilt
Backward tilt
Left tilt   Right tilt
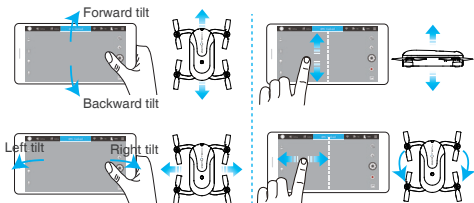
- The default control method is set to "Motion Sensing". You can switch it to "Swipe Screen" or "Sticks" in "App Settings" - "Control Method".

- The default camera orientation is set "Selfie" by default. You can switch it to "Find a View" in "App Settings" - "Camera Orientation".

Flight Control Method - Swipe Screen

Swipe the screen up and down to control up and down movements; Swipe left and right to control left and right movements. Swipe and hold to continue the movement.

Two fingers swipe the screen, get close to or away from each other to control backward and forward movements. Swipe and hold to continue the movement.

Tap the direction icon in the top right hand corner, and then swipe the screen left and right to control the direction; Swipe up and down to control up and down movements. Swipe and hold to continue the movement. Tapping again will exit direction control.
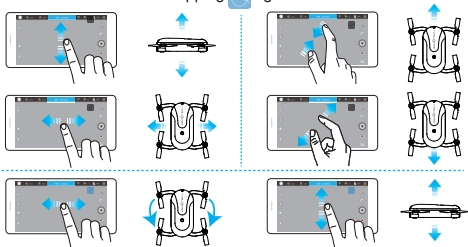
Flight Control Method - Sticks (Taking American Operator for Example)

Free Sticks: Hold down on the dot at the center and toggle up and down/left and right. Toggle and hold to continue the movement.

Left Stick

Up
Turn left — Turn right
Down

Right Stick

Forward
Left — Right
Backward
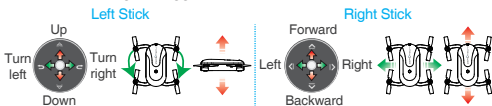
Safe Sticks: Similar to free sticks, but it uses tapping on the arrows on the four directions instead of toggling.

8. Taking Photos/Recording Videos

Taking photos

Single shot: In the single shot mode, every time you tap the "Shutter" button , it will take one photo.

Burst shot: Tap the "Camera Settings" 🔗. Tap "Burst Shot 🖼" and select how many photos to take in the "Modes" popup menu, and you're switched to the burst shot mode. Afterwards, every time you tap "Shutter" 📷, it will take a series of burst shot photos.

💡 You can press the volume buttons on your mobile device or earphones to take photos.

Conventional Video Recording

Toggle the "Photo/Video Swicth" 🔘⬛ to go to the conventional video recording interface.

Tap the "Record" button 🔴, it will begin recording. Tapping the "Stop Recording" button 🟥 will end your recording.

💡 We suggest that you enable EIS for video stabilization before recording. Tap the "Camera Settings" 🔗 to enter "Settings" - "EIS", select any of the lens angles to enable EIS.

10s Auto-Track Short Video Recording (Only under Outdoor GPS Positioning)

Tap the "Camera Settings" 🔗 to enter "Settings" - "EIS", select the needed lens angle (also enable EIS), and then tap the "More Features" 》 , choose "Short Video 🔳 " in the popup feature list to go to the short video recording interface.

Then hold the "Record" button 🔴 to record a video. Meanwhile, DOBBY will fly in the direction of the selected lens angle. Releasing your finger off the button（or the duration reaching 10 seconds）will stop recording, and DOBBY will automatically return. You can also hold 🔴 to record short videos during DOBBY's return flight.

💡 We suggest that you adjust the Camera's pitch angle to be the same as the selected lens angle.

Here we respectively take the selected lens angles 0°, -45° and -90° for example to illustrate the relationship between the flight path in the short video recording and the selected lens angle:
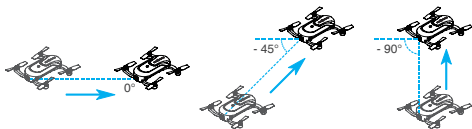
Appendix Indicators

Aircraft Status Indicator

Solid blue	Solid blue	GPS positioning normal
Slow blue flashing	Slow blue flashing	Optic flow and ultrasonic positioning normal
Fast green flashing	Fast green flashing	GPS failure
Fast yellow/green flashing	Fast yellow/green flashing	Ultrasonic failure
Fast yellow/red flashing	Fast yellow/red flashing	Optic flow failure
Slow yellow flashing	Slow yellow flashing	No-fly zone warning
Fast red flashing	Fast red flashing	Low battery warning
Solid Red	Solid Red	Critical battery warning
Fast purple flashing	Fast purple flashing	Compass failure
Solid Green	Solid Green	Horizontal compass calibration
Solid White	Solid White	Vertical compass calibration

Battery Level Indicator

- 0~25%
- 25%~50%
- 50%~75%
- 75%~100%

Charging Status Indicator

Solid orange	Fast charging
Solid green	Charging completed
Green flashing	Not charging
Solid red	Slow charging
Red flashing	Failure

Appendix Specifications

Aircraft

Weight	199g
Size	Expanded: 135mmx145mmx36.8mm ; Folded up: 135mmx67mmx36.8mm
Max. operating altitude	3000m
Flight duration	9 minutes (at sea level)
Operating temperature	0~40°C
Highest wind resistance	28km/h
Positioning system	Outdoor: GPS&GLONASS dual-mode satellite positioning Indoor: optic flow (luminosity>15lux) + ultrasonic wave
Max. ascent height	GPS positioning: 50m (may be adjusted by local regulations) Optic flow and ultrasonic positioning: 3m
Max. control distance	100m (in open air free of interference)
Hovering accuracy	Vertical: ±0.1m (ultrasonic positioning active); ±0.5m (outdoor) Horizontal: ±0.3m (optic flow positioning active); ±1.0m (outdoor)

Camera

Sensor	1/3.06" CMOS; Effective pixels: 13M
Lens	FOV75°; 28mm (35mm format equivalent); f/2.2; Focus at ∞
Pitch Range	- 90°~22.5°
Photo Size	4208x3120
Photo shooting modes	Single shot Burst shot (2-15 photos) Timed shot
Video shooting modes	HD video shooting 10s Auto-track short video shooting
EV range	- 12；- 8；- 4；0；4；8；12
Timed shot countdown	Off；3s；5s；10s；20s
Video recording	1080p@30fps after EIS on 4k@30fps
Storage format	Photo: JPG Video: MP4 (MPEG-4 AVC/H.264)
Storage capacity	16GB
Data port type	Micro-USB

Battery

Rated capacity	970mAh
Rated energy	7.37Wh
Nominal voltage	7.6V
Battery type	LiPO 2S
Operating temperature (charge)	5~45°C
Operating temperature (discharge)	5~45°C
Max. charge voltage	8.7V

Charger

Charging port type	Type-C
Input	9V⎓2A
Output	8.7V⎓1.5A

Wi-Fi

Wi-Fi frequency	2.4GHz；5GHz
EIRP	2.4GHz：19dBm 5GHz：25dBm

App

App name	Do.Fun
Real-time image transmission	640x480@30fps 320x240@30fps 1280x720@30fps
Delay	160ms (depending on actual shooting environment and mobile device)
Supported mobile device OS	Android 4.3 and higher versions iOS 8.0 and higher versions

This guide only covers basic information on DOBBY's operation. Please read *DOBBY User Manual* for more details.

This guide will be irregularly updated as necessary, and is subject to renewal without prior notice. Please visit ZEROTECH's official website (www.zerotech.com) to download the latest version.

DOBBY

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Do.Fun