Mini Gimbal Camera

Introduction:

Arkbird-Hawkeye FIREFLY Split Gimbal Camera is specially designed for small FPV planes, by Arkbird and Hawkeye team cooperation.

It's extra light and its maximum resolution is 4K.

Specs:

- Total weight: 80g
- Working voltage: **10-13V (3S battery). If you're planning to use a higher voltage, you may need to add an external BEC module, supporting 14v-26.2v (4-6s)**
- Dimensions:
  - Width： 55mm / 2.28 inches
  - Length： 58mm / 2.17 inches
  - Height： 60mm / 2.36 inches

  Working Area: Spherical area. Diameter: 75mm

Camera parameters:

- Video: 4K50/30FPS,1080P120FPS,2.7K60FPS
- Supports PAL/NTSC output
- Lens: 170 degrees WDR
  Distortion correction

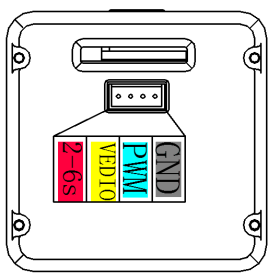
Gimbal function:

- Supports PWM (pitch) control
- Pitch angle: -90 degrees to 20 degrees
  Roll angle: -90 degrees to 90 degrees

Details:

- TF Card Slot → At the bottom of the camera

Video size is 6Mb/second @4K, One 128G card is recommended, Max video recording time are 6 hours. Please use U1 speed SD card at least(8-128G). Format the SD card in the camera at the first time.



The port behind the camera is: Power , Video , PWM(Not used) , Ground
(This port supports 7-26V, you can use 2S-6S battery (only for camera!))

Usage：

- Video function：
  Short pressing “REC” key you can start/stop video.

- Connect the keyboard to the back of the camera, to set Video parameters.

Video Settings:

Resolution： 4K 50(4:3),4K 30、2.7K 60、 2.7K 30(4:3)、 2K 60、2K 30fps、1080P 120、1080p 60fps、1080p 30fps、720p 240、720P 60fps、720P 30fps. Note: High frame rates make the TV output more smooth! We advice to use >=50fps for FPV!

Loop recording： Off、3、5、10 minutes. When the SD card is full, video will be auto loop recording. The oldest file will be deleted first.

WDR： Off、On. WDR effect will be On/Off. Wide dynamic Range function. Note: When this function is turned on, the image will not become dark even toward the sun. The image would not looks so clear if this function is ON sometimes. As a FPV cam, this function should be turned ON.

Exposure： +2.0、+5/3、+4/3、+1.0、+2/3、+1/3、0、-1/3、-2/3、-1.0、-4/3、-5/3、 -2.0. Note:Higher value for brighter image. If you want brighter image, set this value higher. If the image is over exposure, set the value smaller.

Time-lapse record： Off、0.05、0.1、0.5、1、3、5、10，30、60sec. Note: Time-lapse is a video recording mode that captures video at a very low frame rate: around one to two frames per second, although this depends on the length of the recording. When played back, time-lapse video is almost the opposite of slow motion. Higher value for shorter video. There’s no voice in this mode.

Slow Motion： Off，1080P 120. Slow motion (commonly abbreviated as slo-mo or slow-mo) is an effect in film-making whereby time appears to be slowed down.

Auto Recording： Off、On. Note: The camera will turn on and record automatically without pressing button.When you stop recording, you need to press the record button. When the power is suddenly cut off or the stop recording button is not pressed, the file will be damaged. You need to use the keyboard to enter the playback mode. When you play back the damaged file, the file will be repaired automatically.

Codec： H.254、H.265. H.265 has better compression efficiency. Perhaps some players can’t play the files. We recommend using kmplayer player.

Fixed frame rate：ON,OFF. Turn on this function, the video will not drop frame rate, and

the TV out will be more smooth too. Turn off this function, the image will become brighter in dark conditions. We recommend to turn on.

Sharpness： High、Medium,Low. Higher sharpness ,clearer image. We recommend to set it Medium. If set to High the TV out will be clear, but the HD video would probably over sharp.

Contrast： High、Medium,Low. Higher contrast, clearer image. But high contrast may affect the WDR effect, so we recommend Medium.

Electronic shutter： Auto, 1/60, 1/120, 1/240, 1/480, 1/960, 1/1200, 1/1440, 1/1920, 1/3840, /17680. Note: Fixed value makes the image more stable. Higher vale, brighter image. Please use fixed ISO at the same time.

System Settings:

Auto power off： Off、1、2、3、5、10 minutes. The camera will turn off when there's no operation.

Language： Multi languages.

Frequency： 50、60HZ. Light frequency. When the video flickers indoor, change this setting.

TV mode： PAL、NTSC. NTSC is 30fps, PAL is 25fps. NTSC is smoother than PAL.

OSD Mode： Off、On. OSD on TV output. To disable the OSD, turn this Off.

ISO: Auto、100、200、400、800、1600、3200. The term was carried over from film, when the ISO rating was known as the "film speed" and "ASA." Having a standard of sensitivity is important, as it allows you to shoot the same ISO on different cameras and trust that the exposure value will be equal. Lower ISO, darker image, less noise.

Image effect： Color，Black&white，Sepia，Sketch，ColorPencil，Negative，Rock， Cool green,Warm yellow。

Scene： Auto,Portrait、Landscape.

White balance： Auto 、 Hawkeye, Hawkeye2,Hawkeye3, Hawkeye4 、 Cloudy 、 Tungsten、Fluorescent、Diving mode. White balance affects the image, warmer or cooler. Different Lens should use different white balance too.

Distortion Correction： Off、On. Distortion Correction. Large lens could cause distortion at the edges of the image. Turn on to correct the distortion. The image will be cropped by 10%.

FOV： Large,Medium,Small. Field of view of the video. Crop the edges of the video to avoid capturing the propellers.
Image rotation： Off,On. Turn the image upside down.(do not change when set on Gimbal)

Format： Format the SD card. Note: format the SD card at the first time,or the camera can't recognize the SD card.
Default settings: if you have any question, you can set to default settings.

Version. Version number. Check its the newest firmware on www.CNfpv.com.

Update Firmware of camera:

1.Delete all the files and folders in the SD card(suggest:8G/16G).
2.Download the bin firmware to SD card .
3.Insert the SD card into the camera.
4.Power on the camera and it will update firmware automatically.
5.When updating, the LED will flash.
6.When the update process is finished, the LED will stop flashing.
7.The camera will reboot again.
8.Please check on www.CNfpv.com for new firmware updates.

PWM control function:

The gimbal can use PWM channels (control signal of the servo) to control the pitch angle of the gimbal;

Gimbal Details: (Wires description)

A	Yellow	Video Output
	Red	Power input (9-12.6V)
	Black	Ground wire
B	White	RX wire
	Blue	Gimbal pitch control (PWM signal) TX
	Black	Signal wire

PWM Control:

The blue line is used to control the camera's pitch angle, neutral position. Camera level. When the rudder is positive (> 5%), the camera tilts up, and when the rudder is negative (<-5%), the camera tilts down.

Gimbal Level Calibration:

The gimbal calibration can be used when the tilt does not return to the center, or not used for a long time(eg.1 month).

Step 1: Disconnect the gimbal.
Step 2: Short connect the blue and white wires.
Step 3: Put the camera on a level surface.
Step 4: Power up.
Step 5: Wait for 10 seconds (The blue led light will flash fast).
Step 6: Finished (The blue led light will flash slowly).
(Notice: During calibration, the camera needs to be level and the buttons to be up! Not the gimbal base level! As shown on the right)

After the calibration is complete, if the blue PWM tilt control line is suspended, the lens will automatically tilt down 15 degrees.

Note: The firmware before 191213, short-circuited the blue and black wires to enter the calibration.

There are one blue LED and one red LED at side of gimbal, both flash slowly in normal condition. The red LED is indicator light, if it double flashes, that means it need to be re-calibrated. The blue LED will flash fast when calibrate sensor.

Gimbal reverse-install:

At first,remark the screw hole on the top of motor, then unload the four screws, rotate the aluminum sheet 180 degrees at the back of motor, then re-install it while keeping the motor and the top screw hole position static.

By the same way, the gimbal can be side-installed.

FAQ:

Q: Gimbal cannot go back to center or gimbal shaking, what we should do?
A: Check the red LED light on the gimbal rocking arm if double flash or not, if double flashes, that means the sensor is not initialized successfully. If the red LED light normal flash slowly, please short connect the blue wire and GND wire, then power on and re-calibrate sensor.

Q: Why did the video stopped during the flight?
A: Check if the aluminum part on the back of the gimbal is bent down due to the installation process. If the lens touches the base, it will trigger collision protection and the recording will stop. During the installation process, please straighten the aluminum part upward to ensure that the camera is Do not collide with the base.