

HERO 10
BLACK
BONES

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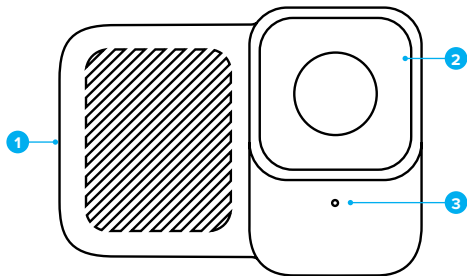
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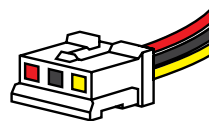
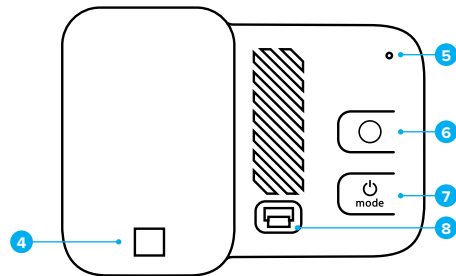
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Meet HERO10 Black Bones



- 1. microSD™ Card Slot
- 2. Removable Lens Cover
- 3. Microphone
- 4. Mount
- 5. Status Light
- 6. Shutter Button 
- 7. Mode Button 
- 8. 1.5mm Pitch 3-Pin Connector Port

Meet HERO10 Black Bones



- 1.5MM PITCH
3-PIN CONNECTOR**
-  Power
 -  Ground
 -  Shutter

Learn how to use the accessories that came with your GoPro.
See [Mounting Your GoPro \(page 47\)](#).

Setting Up Your Camera

INTRO TO HERO10 BLACK BONES

HERO10 Black Bones takes the core HERO10 Black imaging elements—the lens, image sensor, and GP2 processor—and puts them into a design that's made specifically for FPV. This gives you the same image quality of HERO10 Black, plus most of its features.

Heads Up: Some of these features may not be well suited for drone capture, but are outlined in this manual so that you can see the full capabilities of your new camera.

SD CARDS

You'll need a microSD card (sold separately) to save your videos and photos. Use a brand-name card that fits these requirements:

- microSD, microSDHC™, or microSDXC™
- Rated Class V30, UHS-3, or higher
- Capacity up to 512GB

For a list of recommended microSD cards, visit gopro.com/microsdcards.

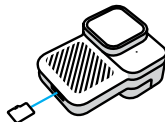
Be sure your hands are clean and dry before handling your SD card. Check the manufacturer's guidelines to see your card's acceptable temperature range and other important information.

Heads Up: SD cards can degrade over time and affect your camera's ability to save your media. Try swapping out an older card for a new one if you're having any problems.

Setting Up Your Camera

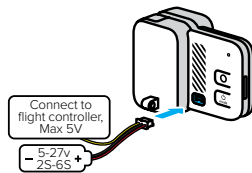
SD CARD + WIRING SETUP

1. With your camera off, insert the SD card into the card slot with the label facing the back of your camera.



You can eject the card by pressing it into the slot with your fingernail.

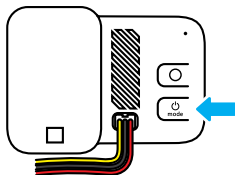
2. Connect your camera's wire harness to a power source on your flight controller that is fed by a 2S-6S (5-27V) battery. Before connecting, be sure to follow your drone manufacturer's wiring recommendations.
 - Connect the red wire to your drone's flight controller battery power pad.
 - Connect the black wire to your drone's flight controller battery ground pad.
 - The yellow wire can be connected to your drone's flight controller for trigger commands using BetaFlight.
3. Plug the male wire connector into the port on your camera.



Setting Up Your Camera

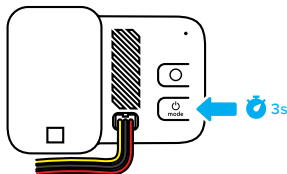
POWERING ON

Press the Mode button  to turn on your camera.



POWERING OFF

Press and hold the Mode button  for 3 seconds to turn it off.



WARNING: Use caution when using your GoPro and its mounts and accessories. Always be aware of your surroundings to avoid injuring yourself and others.

Be sure to follow all local laws including all privacy laws, which may restrict recording in certain areas.

Setting Up Your Camera

PAIRING TO THE GOPRO QUIK APP

Use the GoPro Quik app to preview your shot, easily change capture modes, adjust settings, and more.

1. Download the app from the Apple® App Store® or Google Play™.
2. Turn on your camera by pressing the Mode button .
3. Use your camera to scan the pairing QR code (also available in your camera's Quick Start Guide):



Pair Camera
(Scan QR at 1.5" x 1.5")

Your camera's status light will blink twice to confirm that the code has been scanned.

4. Open the app and tap .

Heads Up: Your camera must be within 1 meter of your phone to pair with the app.

5. Tap  to pair your camera.

Heads Up: HERO10 Black Bones will be discoverable as "HERO10 Black" when pairing with the app.

6. Follow the app's onscreen instructions to finish setting up your camera.

Heads Up: HERO10 Black Bones doesn't support automatic cloud storage. Tap "Do it Later" when asked to setup Auto Upload.

How to Control Your GoPro

Your camera gives you two ways to adjust modes and settings.

QR CODES

All modes and settings can be changed in a flash using QR codes. You can pull from a library of codes that's been set up to handle basic camera functions and commonly used settings or create custom codes to set up your camera exactly as you need for specialized shots.

1. With your camera on, scan the QR code sized at 1.5" x 1.5".
2. Your camera's status light will blink twice to confirm that the code has been scanned and that all modes and settings have been adjusted.

To learn more, access QR codes and create your own, go to gopro.com/bones.

PRO TIP: QR codes are especially useful when Wi-Fi is unavailable or when it's inconvenient to pair your camera to the GoPro Quik app.

THE GOPRO QUIK APP

Pair your camera to the GoPro Quik app for easy access to presets and to adjust the most frequently used modes and settings. The app also lets you preview your shot, frame it perfectly, and see all of the footage stored on your camera's SD card.

Heads Up: Your camera must be within 1 meter of your phone to pair with the app.

PRO TIP: Use the GoPro Quik app to automatically transform your footage into awesome video stories synced with effects and music.

To learn more, see [Creating Video Stories \(page 40\)](#).

How to Control Your GoPro

LED STATUS

The LED on the back of your camera will confirm your commands.

Initial Power to Camera	1 blink
Camera Power On	3 blinks
Camera Power Off	7 blinks
App/Remote Pairing	1 blink per 1s
QR Code Accepted	2 blinks
Idle Video Mode	1 blink per 5s
Idle Photo Mode	2 blinks per 5s
Idle Time Lapse Mode	3 blinks per 5s
Recording	1 blink per 2s
Stop Recording	3 blinks
SD Card Missing	8 rapid blinks
SD Card Full	6 rapid blinks

How to Control Your GoPro

BETAFLIGHT

You can use BetaFlight to set up shutter control for your camera. Connect your flight controller to the BetaFlight configurator. From the command line interface (CLI) execute these commands:

```
resource <free_pad_name> <optional number> NONE
resource PINIO 1 <your_pad_id>
set pinio_config = 129,1,1,1
set pinio_box = 40,255,255,255
save
```

Replace "free_pad_name" and "your_pad_id" with an available resource on your flight controller. If PINIO 1 is not available, you will need to adjust the command for your drone. Be sure to save your flight controller configuration before making any changes.

CAPTURE MODES

Your camera has four capture modes.

Video

Includes Standard, Activity, and Cinematic presets. To learn more, see [Recording Video \(page 17\)](#).

Photo

Includes Photo, LiveBurst, Burst, and Night presets. To learn more, see [Taking Photos \(page 21\)](#).

Time Lapse

Includes TimeWarp, Time Lapse, and Night Lapse presets. To learn more, see [Capturing Time Lapse \(page 24\)](#).

Live Streaming

Set up and start a live stream using the GoPro Quik app. To learn more, see [Live Streaming \(page 28\)](#).

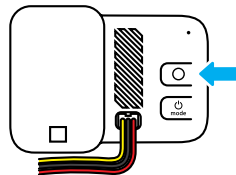
How to Control Your GoPro

PRO TIP: You can choose which preset will be loaded and ready to go when you turn on your GoPro. This can be done with a QR code or the GoPro Quik app.

1. From the app screen, tap .
2. Tap Default Preset to choose a preset.

GETTING THE SHOT

1. Simply press the Shutter button  to start recording.



2. Press the Shutter button  again to stop recording (Video, Time Lapse, and Live Streaming only).

How to Control Your GoPro

CHANGING PRESETS

Each capture mode has presets that make it easy to switch back and forth between the best mode and settings for your shot. This can be done with a QR code or the GoPro Quik app.

1. Tap  on the app screen.
2. Tap the preset that you want. All of the preset's settings will be locked into your camera and ready to go.

CUSTOMIZING THE PRESETS

You can change the settings in your presets with just a few taps. This can be done with a QR code or the GoPro Quik app.

1. Using the app, tap  next to the preset you want to adjust.
2. Tap the setting that you want to change.
For details on settings, see [Tech Specs \(starting page 52\)](#).

Recording Video

PREFERRED FPV SETTINGS

To help get your camera ready as soon as possible, scan this QR code with your camera to load the preferred FPV video settings below. This QR code is also available in your camera's Quick Start Guide.



(Scan QR at 1.5" x 1.5")

Setting	Preferred Setting
Resolution	4K
FPS	60
Aspect Ratio	4:3
Bit Rate	High
Sharpness	Medium
Color	Flat
HyperSmooth	Off

Recording Video

Your GoPro comes loaded with five video presets. Each has its own specialty. Once you've chosen your preset using a QR code or the GoPro Quik app, press the Shutter button  to start recording.

STANDARD (DEFAULT)

A versatile preset that's great for all-purpose recording. It shoots 4K video at 30 frames per second (fps) for full-screen playback on your phone and TV. The digital lens is set to Wide to capture more of the scene in the frame.

ACTIVITY

Use this preset to capture ultra immersive footage of your favorite activities. It records 4K video at 60 fps with the SuperView digital lens. This gives your video the classic GoPro look with high-resolution, full-screen playback.

CINEMATIC

Captures stunning 5.3K high-resolution video at 30 fps. This preset uses the Linear + Horizon Leveling digital lens to smooth out the fish-eye effect and give your footage a dramatic cinematic feel with an ultra steady horizon.

ULTRA SLO-MO

Great for fast-action shots, this preset records 2.7K footage at 240 fps with the Wide lens. This lets you slow things down to 8x normal speed during playback and catch details you can't see with the naked eye.

BASIC

Records 1080p video at 60 fps for easy compatibility with almost any device. The digital lens is set to Wide to capture more of the scene in the frame.

Recording Video

VIDEO SETTINGS

Use QR codes to adjust video settings or tap  if using the GoPro Quik app. Tap  next to the preset you'd like to adjust, followed by setting you want to change.

Resolution

Choose the resolution and aspect ratio for your video.

To learn more, see:

- [Video Resolution \(page 52\)](#)
- [Aspect Ratio \(page 57\)](#)

Frames Per Second

Only the frame rates available for the chosen resolutions are shown. Use higher frame rates to capture fast action or slo-mo shots.

To learn more, see [Frames per Second \(FPS\) \(page 55\)](#).

Lens

Choose the best digital lens for your shot—SuperView, Wide, Linear, Linear + Horizon Leveling, or Narrow. Available lenses will vary based on the resolution and frame rate you select.

To learn more, see [Digital Lenses \(Video\) \(page 58\)](#).

Recording Video

HyperSmooth

HyperSmooth video stabilization delivers insanely smooth, gimbal-like footage without the gimbal. The available settings are Off, Standard, High, and Boost. Options may vary based on the resolution and frame rate selected.

PRO TIP: HyperSmooth Boost provides ultimate video stabilization by tightly cropping the image. Turn HyperSmooth off for uncropped, unstabilized footage, or use the Standard or High setting for stabilized video with a wider field of view. You can also use GoPro Player + ReelSteady for pro-quality stabilization that's even beyond HyperSmooth (depending on use and settings). Explore all of these options to find what works best for your use case.

To learn more, see [HyperSmooth Video Stabilization \(page 64\)](#).

Duration

Choose how long your camera records before automatically stopping.

Scheduled Capture

Set when your GoPro will turn itself on and start recording.

HindSight

Choose whether HindSight saves 15 or 30 seconds of video before you press the Shutter button . You can set up HindSight using a QR code.

Timer

Set up a 3- or 10-second timer for your video.

Taking Photos

Your GoPro has four Photo presets. Simply choose the type of photo you want using a QR code or the GoPro Quik app and press the Shutter button  to get the shot. All photos are captured at 23MP, with the default digital lens set to Wide.

PHOTO (DEFAULT)

Use this preset to capture photos with SuperPhoto image processing. A single press of the Shutter button  will capture a single photo.

LIVEBURST

LiveBurst captures a burst of photos both 1.5 seconds before and 1.5 seconds after the Shutter button  is pressed. You can look through the burst to find the perfect shot or share the whole burst as a short video. All LiveBurst shots are captured at 12MP.

BURST

Burst captures a series of photos at blistering rates. This makes it perfect for fast-action shots. This preset automatically shoots up to 25 photos in 1 second based on lighting conditions.

NIGHT

The Night preset automatically adjusts your camera's shutter speed to let in more light for your shot. It's perfect for dim or dark scenes, but it's not recommended for handheld or mounted shots when the camera is moving.

Heads Up: To help prevent blurry low-light shots, the timer is automatically set to 3 seconds when you switch to Night photo mode.

Taking Photos

PHOTO SETTINGS

Use QR codes to adjust photo settings or tap  after connecting to the GoPro Quik app. Tap  next to the preset you'd like to adjust, followed by setting you want to change.

Lens

Choose the best digital lens for your shot—Wide, Linear, or Narrow.

To learn more, see [Digital Lenses \(Photo\) \(page 68\)](#).

Output (Photo, Burst, Night)

Set the level of processing for your shot and how the files are saved.

Output	Mode	Description
SuperPhoto (Default)	Photo	Automatically uses advanced image processing to give you the most brilliant photos possible in any lighting. May take longer to process each shot.
HDR	Photo	Takes and combines multiple photos into a single shot. Brings out the details in scenes that mix bright light and shadows.
Standard	Photo, Burst, Night	Saves photos as standard .jpg files.
RAW	Photo, Burst, Night	Saves each photo as .jpg and .gpr files for use with your favorite photo editing programs.

Taking Photos

To learn more, see:

- [SuperPhoto \(page 65\)](#)
- [High Dynamic Range \(HDR\) \(starting page 65\)](#)
- [RAW Format \(page 69\)](#)

Night Exposure/Shutter (Night)

Use a QR code to set how long your camera's shutter stays open for night shots. Choose longer exposures for darker shots.

To learn more, see [Night Exposure \(Night + Night Lapse Photo\) \(page 67\)](#).

Burst Rate (Burst)

Choose how many photos your camera will take in a 1, 3, 6, or 10 second burst. You can also choose Auto, which will automatically set the burst rate based on lighting conditions.

To learn more, see [Burst Rate \(page 67\)](#).

Scheduled Capture

Set when your GoPro will turn itself on and take a photo.

Timer

Set up a 3- or 10-second timer for your photo.

Capturing Time Lapse

Time Lapse turns long events into short, shareable videos by taking a frame of video at set intervals. Your GoPro has three Time Lapse presets that you can select using a QR code or the GoPro Quik app. All you have to do is press the Shutter button  to start recording, and then press it again to stop.

TIMEWARP (DEFAULT)

HERO10 Black Bones lets you speed up time by using TimeWarp video stabilization to capture ultra smooth time lapse video while you're on the move. This preset captures 1080p video with the Wide digital lens while automatically adjusting your capture speed for the best results.

Press the Mode button  while recording to activate Speed Ramp. This slows down your TimeWarp to real speed or half speed. Press the Mode button again to speed back up.

TIME LAPSE

Use this preset to capture time lapse video when your camera is mounted and still. It's great for sunsets, street scenes, art projects, and other shots that unfold over a long period of time. It records 1080p video with the Wide digital lens while capturing a shot every 0.5 seconds.

NIGHT LAPSE

Night Lapse was made to capture time lapse video in dark and low-light environments. It automatically adjusts the shutter speed to let in more light and picks the interval that will give you the best results. It records 1080p video with the Wide digital lens. Night Lapse isn't recommended for handheld or mounted shots when the camera is moving.

PRO TIP: Your camera can also capture Time Lapse and Night Lapse photos. Simply go to Format in settings and chose Photo.

Capturing Time Lapse

TIME LAPSE SETTINGS

Use QR codes to adjust time lapse settings or tap  after connecting to the GoPro Quik app. Tap  next to the preset you'd like to adjust, followed by setting you want to change.

Resolution (TimeWarp, Time Lapse)

Choose the resolution and aspect ratio for your video.

To learn more, see:

- [Video Resolution \(TimeWarp, Time Lapse Video\) \(page 71\)](#)
- [Aspect Ratio \(page 57\)](#)

Lens

Choose the best digital lens for your shot—Wide, Linear, Linear + Horizon Leveling, or Narrow. Available lenses will vary based on the mode you select.

To learn more, see [Digital Lenses \(Video\) \(page 58\)](#).

Speed (TimeWarp)

Set your video speed. Choose a lower speed (2x or 5x) for short activities or higher speeds (10x, 15x, or 30x) for longer activities. Leave speed on Auto (default) to let your GoPro automatically adjust the speed based on motion, scene detection, and lighting.

To learn more, see [TimeWarp Video Speed \(page 70\)](#).

Speed Ramp (TimeWarp)

Choose to slow your TimeWarp video down to real speed or half speed while recording.

To learn more, see [Speed Ramp \(TimeWarp\) \(page 71\)](#).

Capturing Time Lapse

Interval (Time Lapse)

Choose how often your camera captures a frame of video or takes a photo. Use shorter intervals for quick activities and longer intervals for extended activities.

To learn more, see [Time Lapse Interval \(page 72\)](#).

Format (Time Lapse, Night Lapse)

Switch from capturing Time Lapse and Night Lapse video to Time Lapse and Night Lapse photo.

Interval (Night Lapse)

Set how often your camera takes a shot in low and ultra low-light scenes. Choose short intervals for scenes with a lot of movement and more light. Use longer intervals in scenes with little or no movement or light.

To learn more, see [Night Lapse Interval \(page 74\)](#).

Night Exposure/Shutter (Night Lapse Photo)

Use a QR code to set how long your camera's shutter stays open for night shots. Choose longer exposures for darker shots.

To learn more, see [Night Exposure \(Night + Night Lapse Photo\) \(page 67\)](#).

Capturing Time Lapse

Output (Time Lapse Photo, Night Lapse Photo)

Save your photos as standard .jpg or RAW files.

To learn more, see [RAW Format \(page 69\)](#).

Duration

Choose how long your camera records before automatically stopping.

Scheduled Capture

Set when your GoPro will turn itself on and start recording.

Timer

Set up a 3- or 10-second timer for your time lapse.

Live Streaming

SETTING UP A LIVE STREAM

1. Connect your camera to the GoPro Quik app. For details, see [Pairing to the GoPro Quik App \(page 11\)](#).
2. In the app, tap  to control your camera.
3. Tap  and follow the instructions to set up your stream.

Heads Up: Your camera must be within 1 meter of your phone to pair with the app and maintain the live stream.

For complete step-by-step instructions, visit gopro.com/live-stream-setup.

Power Tools

Your camera comes with Power Tools—a full suite of smart capture settings that extend the capture options beyond simply pressing the shutter button.

HINDSIGHT

HindSight is a powerful feature that can capture up to 30 seconds of video before you press the Shutter button. This lets you record key moments even after they happen.

Imagine your kid making the game-winning play during their big game. This is a moment you don't want to miss. With HindSight on, you can frame your shot, but you don't have to start recording. You can press the Shutter button  after they make the big play. HindSight will save the video it captured before you pressed the Shutter button (up to 30 seconds) and will continue recording until you stop the video.

HindSight works by capturing video the entire time that it's on (even when you're not actively recording). Depending on how you use it, HindSight may use your camera's battery capacity faster than recording in normal video mode.

Your camera will also pause HindSight if you have not started recording 15 minutes after you turned HindSight on. This is another way to conserve battery power.

You can set up HindSight using a QR code.

Power Tools

LIVEBURST

LiveBurst captures a burst of photos both 1.5 seconds before and 1.5 seconds after the Shutter button  is pressed. You can look through the burst to find the perfect shot or share the whole burst as a short video. Set LiveBurst with a QR code or connect to the GoPro Quik app.

1. Tap  on the app screen,
2. Tap .
3. Select LiveBurst from the list of presets.

SCHEDULED CAPTURE

Scheduled capture lets you set your GoPro to automatically turn itself on and capture a shot up to 24 hours in advance. It's available for all presets. Set scheduled capture with a QR code or connect to the GoPro Quik app.

1. Using the app, tap  next to the preset you want to adjust.
2. Tap Scheduled Capture.
3. Set when you want your GoPro to capture the shot.
4. After setting the time, you can turn your GoPro off or continue using your camera's other presets.

Power Tools

DURATION CAPTURE

Use duration capture to set how long your GoPro records before it stops. It's available in Video, TimeWarp, Time Lapse, and Night Lapse modes in increments from 15 seconds to 3 hours. Set duration capture with a QR code or connect to the GoPro Quik app.

1. Using the app, tap  next to the preset you want to adjust.
2. Tap Duration.
3. Choose the duration for your shot.
4. Press the Shutter button  to start recording. Your GoPro will automatically stop after recording for the set duration.

Heads Up: Duration capture sets how long your GoPro will record. The length of your final video will vary based on the mode you're using. TimeWarp and time lapse videos will be shorter than the set duration.

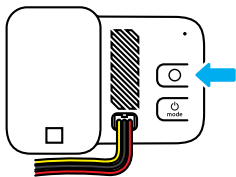
PRO TIP: Choose No Limit to capture footage without a time limit. Press the Shutter button to stop recording.

Using QuikCapture

QuikCapture is the fastest and easiest way to power on your GoPro and get the shot. All it takes is the push of the Shutter button.

RECORDING VIDEO WITH QUIKCAPTURE

1. With your camera off, press the Shutter button .



2. Press the Shutter button  again to stop recording and turn off your camera.

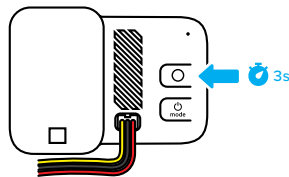
Heads Up: When using QuikCapture, your camera will start recording with the video settings that you used last.

For more Video options, see [Recording Video \(starting page 17\)](#).

Using QuikCapture

TAKING TIME LAPSE WITH QUIKCAPTURE

1. With your camera off, press and hold the Shutter button  until your camera turns on (about 3 seconds). It will start recording in the last Time Lapse mode that you used.



2. Press the Shutter button  again to stop Time Lapse and turn off your camera.

For more Time Lapse options, see [Capturing Time Lapse \(page 24\)](#).

TURNING OFF QUIKCAPTURE

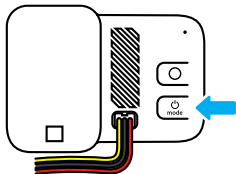
QuikCapture is on by default, but you can turn it off using a QR code or the GoPro Quik app.

1. From the app screen, tap .
2. Tap QuikCapture to turn off.

PRO TIP: Since it only turns the camera on when it's recording, QuikCapture is a great way to maximize battery life.

Adding HiLight Tags

Mark favorite moments in your videos and photos by pressing the Mode button  during recording. This adds a HiLight Tag  that makes those moments easier to find when you're watching your footage, creating a video, or looking for a certain shot.



You can also add HiLight Tags by saying, "GoPro, HiLight" when Voice Control is on and by tapping  when watching your footage with the GoPro Quik app.

PRO TIP: The Quik app looks for HiLight Tags when it creates videos. This helps to ensure that favorite moments are included in your stories.

Controlling Your GoPro With Your Voice

Voice Control gives you easy, hands-free control of your GoPro. It's great when you're busy with handlebars, ski poles, and more. Just tell your GoPro what you want it to do.

TURNING VOICE CONTROL ON + OFF

1. Use a QR code to set up Voice Control or tap  after connecting to the GoPro Quik app.
2. Tap Voice Control to toggle on or off.

CAPTURING WITH VOICE CONTROL

With Voice Control on, you can simply tell your GoPro to start capturing.

Command	Description
GoPro, capture	Starts capturing with the mode your camera is set to.
GoPro, stop capture	Stops capture in Video and Time Lapse modes. Photo, LiveBurst, and Burst mode stop on their own.

PRO TIP: Saying "GoPro, capture" and "GoPro, stop capture" is the hands-free way of pressing the Shutter button. They will start and stop capture using the mode and settings you currently have on your camera.

Controlling Your GoPro With Your Voice

LIST OF VOICE COMMANDS

There are two types of voice commands: Action commands and Mode commands.

Using Action Commands

These commands let you switch modes on the fly. If you just recorded a video, you can say, "GoPro, take a photo" to snap a photo without manually switching modes.

Action Command	Description
GoPro, start recording	Starts recording video.
GoPro, HiLight	Adds a HiLight Tag to your video during recording.
GoPro, stop recording	Stops recording video.
GoPro, take a photo	Takes a single photo.
GoPro, shoot burst	Takes burst photos.
GoPro, start time lapse	Starts capturing with the last time lapse mode you used.
GoPro, stop time lapse	Stops capturing time lapse.
GoPro, turn off	Turns your camera off.

Controlling Your GoPro With Your Voice

Using Mode Commands

Use these commands to switch capture modes on the go. Then say, "GoPro, capture" or press the Shutter button to get the shot.

Mode Command	Description
GoPro, Video mode	Switches your camera to Video mode (does not start recording).
GoPro, Photo mode	Switches your camera to Photo mode (does not take a photo).
GoPro, Time Lapse mode	Switches your camera to Time Lapse photo mode (does not start taking time lapse photos).

PRO TIP: If you're recording video or time lapse, you must stop recording by pressing the Shutter button or by saying, "GoPro, stop capture" before trying a new command.

Controlling Your GoPro With Your Voice

CHANGING YOUR VOICE CONTROL LANGUAGE

1. Use a QR code or tap  after connecting to the GoPro Quik app.
2. Tap Voice Control Language.

Heads Up: Voice Control may be affected by wind, noise, and your distance from the camera. Keep your camera clean and wipe away any debris for the best performance.

Playing Back Your Media

VIEWING VIDEOS + PHOTOS ON A COMPUTER

For desktop editing and viewing your media on a computer, you must first save the files to the computer.

1. Remove the SD card from your camera.
2. Insert the card into an SD card reader or adapter.
3. Plug the card reader into your computer's USB port, or insert the adapter into the SD card slot.
4. Copy the files to your computer.

With your content saved to your computer, it's ready to be edited with GoPro Player + ReelSteady.

VIEWING VIDEOS + PHOTOS ON A MOBILE DEVICE

1. Connect to the GoPro Quik app and tap  or  to view your media on your phone.
For details, see [Pairing to the GoPro Quik App \(page 11\)](#).
2. Use the controls on the app to play back, edit, and share your videos and photos.

PRO TIP: Use the GoPro Quik app to grab still photos from videos, create short shareable videos from full-length footage, save media to your phone, and more.

Creating Video Stories

CREATING A VIDEO STORY

You can set up your GoPro to automatically send videos and photos to your phone. The GoPro Quik app will use them to create a fully edited video story complete with music and effects.

1. Connect your camera to the GoPro Quik app. For details, see [Pairing to the GoPro Quik App \(page 11\)](#).
2. Swipe down on the app's home screen. Shots from your most recent session will be copied to your phone and transformed into a fully edited video.
3. Tap your video to view it.
4. Make any edits you'd like.
5. Save the story or share it with your friends, family, and followers.

Finding the Best Shots

Be sure to mark your best shots with HiLight Tags. The GoPro Quik app looks for tags when it creates videos. This helps ensure that favorite moments are included in your stories.

Your GoPro also knows when you face the camera, smile, and more. It automatically tags these shots with data so the app can handpick them for your videos.

To learn more, see [Adding HiLight Tags \(page 34\)](#).

Setting Camera Preferences

SETUP

To adjust preferences, use a QR code or tap  after connecting to the GoPro Quik app.

Voice Control

Turn Voice Control on and off. It can also be toggled on or off using the Dashboard.

Voice Control Language

Choose your Voice Control language.

LED

Turn the status light on (default) or off. Note that HERO10 Black Bones only has one status light.

QuikCapture

QuikCapture is on by default. You can turn it off here. It can also be toggled on or off using the Dashboard.

Default Preset

Set the preset your GoPro captures in when you turn it on using the Mode button . This setting does not affect QuikCapture.

Auto Power Off

Choose 5 Min, 15 Min (default), 30 Min, or Never.

Screen Saver Rear

Not supported by HERO10 Black Bones.

Screen Saver Front

Not supported by HERO10 Black Bones.

Front Screen Options

Not supported by HERO10 Black Bones.

Setting Camera Preferences

Auto Lock

Not supported by HERO10 Black Bones.

Orientation

Not supported by HERO10 Black Bones.

GPS

Not supported by HERO10 Black Bones.

Language

Not supported by HERO10 Black Bones.

Anti-Flicker

Choose the regional frame rate for recording and playback on a TV. Set 60Hz (NTSC) for North America. Try 50Hz (PAL) if you're outside of North America. The right format for your region will help prevent flicker on a TV/HDTV when you play back video that was recorded indoors.

Video Compression

Use HEVC to reduce file sizes or H.264 + HEVC to maximize compatibility with older devices and HEVC for advanced settings.

Video Performance Mode

Choose the Maximum Video Performance for the highest resolutions and frame rates, plus ultra slo-mo video. Extended Battery mode only uses resolutions and frame rates that preserve battery life. Use Tripod/Stationary Video mode when recording stationary shots with no airflow.

Set Date and Time

Tap to automatically sync camera's date and time with the app.

Setting Camera Preferences

DELETE

Manage the files on your SD card using the GoPro Quik app.

Delete Last File

Deletes the last photo, video, or time lapse captured by your camera.

Delete All Files from SD Card

Removes all of the files from your SD card.

CAMERA INFO

Use the GoPro Quik app to get your camera's software version or find it if it's lost.

Version

See the software version your camera is currently using.

Locate Camera

Your camera will beep to let you know where it is.

CAMERA STATUS

Check out your camera's battery and SD card capacity.

Battery Level

Use the GoPro Quik app to see how much charge is left in your camera's battery.

SD Card Capacity

See how much space is left on your camera's SD card.

Important Messages

Performance issues are rare, but here are some of the problems that could affect your GoPro.

QR NOT READING CORRECTLY

If you're unable to get a confirmation that your QR is being read by the camera, ensure that you have a correct QR and it is of the right size. Recommended size should be approximately 1.5" x 1.5". Please visit gopro.com/bones for more information.

WI-FI RANGE

Your camera's FPV-specific design limits its Wi-Fi range to 1 meter. Be sure you're within range when connecting to the GoPro Quik app to frame your shot or adjust modes and settings.

SD CARD ERROR

Your GoPro can detect a variety of problems with your SD card. Problems can be due to, but not limited to, electrostatic discharge. Restart your camera if this occurs. It will automatically try to repair any damaged files and restore your camera back to full function.

REPAIRING YOUR FILE

Your GoPro will automatically try to fix damaged files. Files can be damaged if your camera loses power while recording or if there's a problem saving the file.

Important Messages

CAMERA IS TOO HOT

Your camera requires constant airflow for continued use. It was designed to recognize when it's at risk of overheating and will shut down when needed. Simply let it sit and cool before using it again.

Heads Up: The operating ambient temperature range of your HERO10 Black Bones is 14° F ~ 95° F (-10° C ~ 35° C). High temperatures will cause your camera to use more power and drain the battery faster.

PRO TIP: Shooting video at a high resolution and frame rate will also cause your camera to heat up faster, especially in hot environments. Try switching to a lower resolution and frame rate to lower the risk of overheating your GoPro.

Resetting Your Camera

RESTARTING YOUR GOPRO

If your camera is not responding, press and hold the Mode button  for 10 seconds. This will restart your camera. There will be no changes to your settings.

RESTORING FACTORY SETTINGS

Use this QR code to restore all of your camera's original settings and clear all device connections.

This is useful if you're giving your camera to a friend and want to completely reset it to its original state.



Reset Camera
(Scan QR at 1.5" x 1.5")

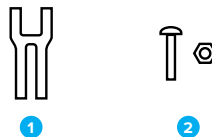
Heads Up: Restoring the factory settings will not delete any content from your SD card or have any effect on your camera's software.

Mounting Your GoPro

For FPV use, the mount on the back of your camera will give you the lightest possible mounting solution. The optional detachable Mounting Fingers hardware can be used to attach your camera to GoPro mounts.

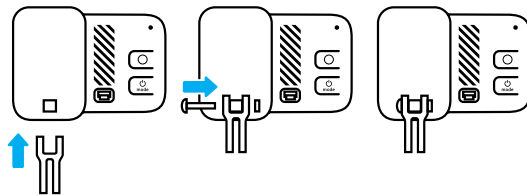
MOUNTING HARDWARE

1. Included Optional Mounting Fingers
2. Mounting Hardware



ATTACHING THE MOUNTING FINGERS

Use the included mounting screw to fasten the mounting fingers to your camera.



Mounting Your GoPro



WARNING: To avoid injury, do not use a tether when mounting your camera on a helmet. Do not mount the camera directly on skis or snowboards.



WARNING: Always use a helmet that meets applicable safety standards if you're using a GoPro helmet mount or strap.

Choose the right helmet for your sport or activity, and make sure that it's the right size and fit for you. Check to see that your helmet's in good condition, and always follow the manufacturer's instructions on safe use.

Replace any helmet that's been subjected to a major impact. No helmet can protect against injury in every accident. Be safe.



WARNING: HERO10 Black Bones is not waterproof or water resistant. Do not use your camera in any situation where it could get submerged or exposed to rain or snow.

Maintenance

Follow these tips to get the best performance from your camera:

- For the best audio performance, shake your camera or blow on the mic to remove debris from the microphone holes. Do not use compressed air to blow into the mic holes.
- The lens cover is made from extremely tough strengthened glass, but it can still be scratched or cracked. Keep it clean with a soft, lint-free cloth.
- If debris gets stuck between the lens and trim ring, wipe with a dry cloth or blow to remove debris. Do not insert foreign objects around the lens.



WARNING: Do not drop, disassemble, open, crush, bend, deform, puncture, shred, microwave, incinerate, or paint your camera. Do not insert foreign objects into any opening on the camera. Do not use your camera if it's been damaged—for example, if cracked, punctured, or harmed by water.

Power Requirements

Follow these vital battery tips to prevent damaging your camera:

- Only use a power source between 2S-6S (5-27V), such as a 2S-6S LiPo battery from your drone, to power your camera.
- The voltage to your camera's shutter connect wire should not exceed 5V. Excessive voltage may cause damage to your camera.
- Follow the instructions that came with your drone and components to ensure that your camera is properly connected. Be sure to check polarity and wire configuration.



WARNING: Failure to follow these guidelines could result in permanent damage to your camera.

Troubleshooting

MY GOPRO WON'T POWER ON

Make sure your GoPro has power. If it has power, but still won't power on, try restarting your camera. See [Restarting Your GoPro \(page 46\)](#).

MY GOPRO WON'T RESPOND WHEN I PRESS A BUTTON

See [Restarting Your GoPro \(page 46\)](#).

MY GOPRO WON'T CONNECT TO THE GOPRO QUIK APP

Your camera's FPV-specific design limits its Wi-Fi range to 1 meter. Be sure you're within range when connecting to app.

PLAYBACK ON MY COMPUTER IS CHOPPY

Choppy playback is usually not a problem with the file. If your footage skips, one of these issues is probably the cause:

- The computer doesn't work with HEVC files. Try downloading the latest version of the GoPro Player for Mac® or Windows® for free at gopro.com/apps.
- Your computer doesn't meet the minimum requirements of the software you're using for playback.

I DON'T KNOW WHICH SOFTWARE VERSION I HAVE

Tap  after connecting to the GoPro Quik app. The software version will be listed in the Camera Info section.

For more answers to commonly asked questions, see gopro.com/help.

Tech Specs: Video

VIDEO RESOLUTION (RES)

Video resolution refers to the number of horizontal lines used in each frame of video. A 1080p video is made up of 1080 horizontal lines. A 5.3K video is made up of 5312 horizontal lines. Since more lines equals greater resolution, 5.3K will deliver a more detailed picture than 1080p.

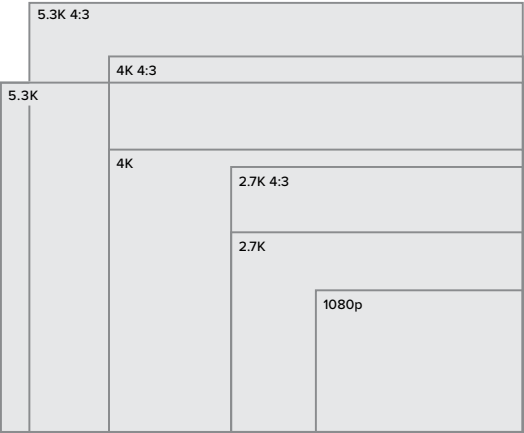
Video Resolution	Description
5.3K	Our highest resolution video. Captures breathtaking ultra HD video in the wide 16:9 aspect ratio. Can be used to grab 15.8MP stills from your video.
5K 4:3	Ultra high-resolution video that captures more of the screen with the taller 4:3 aspect ratio. Great for point-of-view footage and grabbing 19.6MP stills from your video.
4K 4:3	Ultra HD video with tall 4:3 aspect ratio captures more of the scene than 16:9 shots. Can be used to grab 12MP stills from your video.
4K	Ultra HD video with 16:9 aspect ratio. Great for tripod and fixed-position shots. Can be used to grab 8MP stills from your video.
2.7K 4:3	Great for high-resolution point-of-view body and gear-mounted shots with fluid slo-mo playback.

Tech Specs: Video

Video Resolution	Description
2.7K	High resolution 16:9 video that provides stunning, cinema-quality results for professional productions.
1080p	Standard HDTV resolution that's great for all shots and sharing to social media. High 240 fps and 120 fps options enable super slo-mo during editing.

Tech Specs: Video

This chart compares the frame size of each resolution:



PRO TIP: Be sure that your phone, computer, or TV can support the setting you choose, especially if you're using a high resolution and frame rate.

Tech Specs: Video

FRAMES PER SECOND (FPS)

Frames per second refers to the number of frames captured in each second of video. Higher fps values (60, 120, or 240) are better at capturing fast-action shots. You can also use high fps footage for slo-mo playback.

Resolution + FPS

Higher video resolutions capture more detail and clarity, but they're generally available at lower fps values.

Lower video resolutions capture less detail and clarity, but they can be shot at higher fps values.

When choosing a resolution on the RES | FPS screen, all of the available frame rates for the resolution you selected are shown in white. Unavailable frame rates are in gray.

Tech Specs: Video



High Resolutions/High Frame Rates

Shooting high-resolution or high-fps video when it's warm out can cause your camera to heat up and use more power.

Lack of airflow and connecting to the GoPro Quik app can cause your camera to warm up even more, use even more power, and shorten recording time.

Tech Specs: Video

ASPECT RATIO

Aspect ratio refers to the width and height of an image. Your GoPro captures videos and photos in two aspect ratios.

4:3

The tall 4:3 format captures more of the scene than the 16:9 widescreen format. It's great for selfies and point-of-view footage. The 4:3 resolutions are listed in the top row of the RES | FPS screen.

16:9

This is the standard format used for HDTV and editing programs. The widescreen format is ideal for capturing dramatic, cinematic footage. The 16:9 resolutions are listed below the 4:3 resolutions on the RES | FPS screen.

Heads Up: Black bars will appear on both sides of the screen when playing back 4:3 footage on an HDTV.

Tech Specs: Video

DIGITAL LENSES (VIDEO)

Digital lenses let you choose how much of the scene is captured by your camera. The different lenses also affect the zoom level and the fisheye effect in your shot.

Digital Lens	Description
SuperView (16mm)	Widest and tallest field of view, served up as 16:9 video.
Wide (16–34mm)	Wide field of view that captures as much as possible within the frame.
Linear (19–39mm)	Wide field of view without the fisheye effect of SuperView and Wide.
Linear + Horizon Leveling (19–39mm)	Captures a wide field of view without the fisheye effect of SuperView and Wide. Keeps your footage smooth and level even if your camera tilts while recording.
	<i>Heads Up:</i> Your footage will tilt if your camera rotates beyond 23°-45° (depending on chosen settings) while recording. PRO TIP: Use Max Lens Mod (sold separately) to upgrade your GoPro with Horizon Lock. It keeps your shots level and steady even if your camera is mounted off-center or rotates a full 360° while recording.

Tech Specs: Video

Digital Lens	Description
Narrow (27mm)	Narrow field of view without the fisheye effect of SuperView and Wide.

Heads Up: Only the lenses that are compatible with the resolution and frame rate you selected will be available.

PRO TIP: Use Max Lens Mod (sold separately) to boost your field of view with an ultra-wide 155° digital lens—the widest ever on a HERO camera.

Tech Specs: Video

VIDEO SETTINGS

Here's a rundown of your camera's video resolutions along with available fps, lenses, and aspect ratio for each.

Video Resolution (RES)	FPS (60Hz/ 50Hz)*	Digital Lenses	Screen Resolution	Aspect Ratio
5.3K	60/50 30/25 24/24	SuperView, Wide, Linear, Linear + Horizon Leveling, Narrow	5312x2988	16:9
5K 4:3	30/25 24/24	Wide, Linear, Linear + Horizon Leveling, Narrow	5120x3840	4:3
4K	120/100	Wide, Linear, Linear + Horizon Leveling, Narrow	3840x2160	16:9
4K	60/50 30/25 24/24	SuperView, Wide, Linear, Linear + Horizon Leveling, Narrow	3840x2160	16:9
4K 4:3	60/50 30/25 24/24	Wide, Linear, Linear + Horizon Leveling, Narrow	4000x3000	4:3

*60Hz (NTSC) and 50Hz (PAL) refer to the video format, which depends on your region. To learn more, see [Anti-Flicker \(page 42\)](#).

Tech Specs: Video

Video Resolution (RES)	FPS (60Hz/ 50Hz)*	Digital Lenses	Screen Resolution	Aspect Ratio
2.7K	240/200	Wide, Linear, Linear + Horizon Leveling, Narrow	2704x1520	16:9
2.7K	120/100 60/50	SuperView, Wide, Linear, Linear + Horizon Leveling, Narrow	2704x1520	16:9
2.7K 4:3	120/100 60/50	Wide, Linear, Linear + Horizon Leveling, Narrow	2704x2028	4:3
1080p	240/200	Wide, Linear, Linear + Horizon Leveling, Narrow	1920x1080	16:9
1080p	120/100 60/50 30/25 24/24	SuperView, Wide, Linear, Linear + Horizon Leveling, Narrow	1920x1080	16:9

*60Hz (NTSC) and 50Hz (PAL) refer to the video format, which depends on your region. To learn more, see [Anti-Flicker \(page 42\)](#).

Tech Specs: Video

VIDEO SETTINGS USING QR CODES

QR codes are an easy and convenient way to control your camera. You can switch between your favorite modes and always ensure that your camera is locked into the settings you want simply by using your camera's lens to scan a QR code before takeoff.

QR Commands for Popular FPV Settings

Popular FPV Settings	QR String Command
5.3K, wide lens, 60 fps	mVr5p60fW
5.3K, wide lens, 50 fps	mVr5p50fW
5.3K 4:3, wide lens, 30 fps	mVr5Tp30fW
5.3K 4:3, wide lens, 25 fps	mVr5Tp25fW
5.3K 4:3, wide lens, 24 fps	mVr5Tp24fW
4K, wide lens, 120 fps	mVr4p120fW
4K, wide lens, 100 fps	mVr4p100fW
4K 4:3, wide lens, 60 fps	mVr4Tp60fW
4K 4:3, wide lens, 50 fps	mVr4Tp50fW

Tech Specs: Video

Popular Controls	QR String Command
Hypersmooth Off	e0
Hypersmooth Standard	e1
Hypersmooth High	e2
Hypersmooth Boost	e3
Video Bit Rate Low	b0
Video Bit Rate High	b1
Color Flat	cF
Color Natural	cN
Color Vibrant	cG
Sharpness Low	sL
Sharpness Medium	sM
Sharpness High	sH

Tech Specs: Video

For more information, including other recommended QR codes for FPV and how to create your own codes, see gopro.com/bones.

HYPERSMOOTH VIDEO STABILIZATION

HyperSmooth delivers ultra smooth footage by correcting for camera shake. It crops your videos while recording, which lets it buffer the footage. This makes it perfect for biking, skating, skiing, handheld shots, and more. Your GoPro has four HyperSmooth settings:

Setting	Description
Boost	Maximum video stabilization with tight cropping.
High	Maximum video stabilization.
Standard	Slightly reduced video stabilization for increased battery life.
Off	Records without video stabilization or cropping.

You can smooth out your footage even more by using Touch Zoom to crop your shots before you start recording. This will give your camera an even bigger buffer to use when stabilizing your video. Using the Linear + Horizon Leveling lens will also enhance stabilization.

PRO TIP: Use Max Lens Mod (sold separately) to max out your GoPro with the ultimate in unbreakable video stabilization up to 2.7K.

Tech Specs: Photo

SUPERPHOTO

SuperPhoto automatically analyzes the scene and intelligently applies the best image processing for the shot.

Depending on the lighting, movement in your shot, and other conditions, SuperPhoto will choose one of three options:

High Dynamic Range (HDR)

Our improved HDR takes and combines multiple photos into a single shot to bring out the details in scenes that mix bright light and shadows.

Multi-Frame Noise Reduction

Automatically combines multiple shots into a single photo with less digital distortion (noise).

Standard Photo

Includes Local Tone Mapping, which enhances photos by boosting the details and contrast only where it's needed.

SuperPhoto only works for single photos. Because of the extra time needed to apply image processing, it may take a little longer to process and save each shot.

Heads Up: SuperPhoto does not work with RAW photos.

Tech Specs: Photo

Turning SuperPhoto Off

SuperPhoto is on by default. Here's how to turn it off.

1. Use a QR code or tap  after connecting to the GoPro Quik app.
2. Tap Output and switch to Standard, HDR, or RAW.

HDR

High Dynamic Range (HDR) is one of the image-processing techniques SuperPhoto uses to enhance your shots. It combines multiple shots into a single photo with better results than ever. Choose this setting if you want to use HDR every time you take a photo.

1. Use a QR code or tap  after connecting to the GoPro Quik app.
2. Tap Output and select HDR.

HDR On can only be used for single photos. For the best results, use it in high-contrast shots with minimal motion.

Heads Up: HDR does not work with RAW photos.

Tech Specs: Photo

NIGHT EXPOSURE (NIGHT + NIGHT LAPSE PHOTO)

Shutter speed lets you decide how long your camera's shutter stays open in Night and Night Lapse Photo modes. Here are your options, plus tips on when to use them:

Speed	Examples
Auto (up to 30 seconds)	Sunrise, sunset, dawn, dusk, twilight, night.
2, 5, 10, or 15 seconds	Dawn, dusk, twilight, traffic at night, Ferris wheel, fireworks, light painting.
20 seconds	Night sky (with light).
30 seconds	Night stars, Milky Way (complete darkness).

PRO TIP: To reduce blur when using Night and Night Lapse photo, mount your camera on a tripod or place it on a stable surface where it won't wobble or shake.

BURST RATE

Capture fast-action scenes with one of these high-speed settings:

- Auto (up to 25 photos in 1 second based on lighting conditions)
- 30 photos in 3, 6, or 10 seconds
- 25 photos in 1 second
- 10 photos in 1 or 3 seconds
- 5 photos in 1 second
- 3 photos in 1 second

Tech Specs: Photo

DIGITAL LENSES (PHOTO)

Digital lenses let you choose how much of the scene is captured by your camera. They also affect the zoom level and fisheye effect in your shot. There are three lens options for photos:

Digital Lens	Description
Wide (16–34mm)	Wide field of view that captures as much as possible within the frame.
Linear (19–39mm)	Wide field of view without the fisheye effect of Wide.
Narrow (27mm)	Narrow field of view without the fisheye effect of Wide.

PRO TIP: Use Max Lens Mod (sold separately) to boost your field of view with an ultra-wide 155° digital lens—the widest ever on a HERO camera.

Tech Specs: Photo

RAW FORMAT

When this setting is turned on, all photos are saved as a .jpg image (for viewing on your camera or sharing with the GoPro Quik app) and a .gpr file.

The .gpr file is based on the Adobe® DNG format. These files can be used in Adobe Camera Raw (ACR), version 9.7 or later. You can also use Adobe Photoshop® Lightroom® CC (2015.7 release or later) and Adobe Photoshop® Lightroom® 6 (version 6.7 or later).

In Photo mode, RAW Format is available for Photo, Burst, Night, Time Lapse photo, and Night Lapse photo, with these conditions and exceptions:

- SuperPhoto must be off.
- Digital lenses must be set to Wide.
- Zoom must be off.
- RAW Format is not available for capturing continuous photos.
- For Time Lapse photo, the Interval must be at least 5 seconds.
- For Night Lapse photo, the Shutter setting must be at least 5 seconds.

PRO TIP: Photos in .gpr format are saved in the same location and with the same file name as .jpg files. To access the files, insert your SD card into a card reader and locate them with your computer's file explorer.

Tech Specs: Time Lapse

TIMEWARP VIDEO SPEED

You can increase TimeWarp video speed up to 30x to turn longer activities into shareable moments. The default setting is Auto, which automatically sets the speed for you.

You can also set the speed yourself. Use this chart to estimate the length of your videos. For example, recording at 2x speed for 4 minutes will give you about 2 minutes of TimeWarp video.

Speed	Recording Time	Video Length
2x	1 minute	30 seconds
5x	1 minute	10 seconds
10x	5 minutes	30 seconds
15x	5 minutes	20 seconds
30x	5 minutes	10 seconds

Heads Up: Recording times are approximate. The video length may vary depending on the movement in your shot.

Speed	Examples
2x–5x	Driving through a scenic route.
10x	Hiking and exploring.
15x–30x	Running and mountain biking.

PRO TIP: For the best results, leave the speed on the Auto setting when shooting footage that may get bumpy.

Tech Specs: Time Lapse

SPEED RAMP (TIMEWARP)

Tap the Mode button  while recording TimeWarp to ramp down the speed of your video. Tap again to speed it back up. Choose the speed before recording using a QR code or by tapping  next to the TimeWarp preset in the GoPro Quik app. Select Speed Ramp. There are two options:

Speed	Frames per Second	Sound
Real Speed (1x)	30 fps	On
Half Speed (0.5x slo-mo)	60 fps	Off

VIDEO RESOLUTION (TIMEWARP, TIME LAPSE VIDEO)

HERO10 Black Bones shoots TimeWarp and Time Lapse video in two resolutions:

Resolution	Aspect Ratio
4K	16:9
4K	4:3
1080p	16:9

To learn more, see:

- [Video Resolution \(page 52\)](#)
- [Aspect Ratio \(page 57\)](#)

Tech Specs: Time Lapse

TIME LAPSE INTERVAL

The Interval sets how often your camera takes a shot in Time Lapse video and Time Lapse photo modes.

Available intervals are 0.5 (default), 1, 2, 5, 10, and 30 seconds; 1, 2, 5, and 30 minutes; and 1 hour.

Interval	Examples
0.5–2 seconds	Surfing, biking, or other sports.
2 seconds	Busy street corner.
5–10 seconds	Clouds or outdoor scenes for long durations.
10 seconds–1 minute	Art projects or other lengthy activities.
1 minute–1 hour	Construction work or other activities that take place over a very long period of time.

Tech Specs: Time Lapse

Time Lapse Video Recording Time

Use this chart to determine the length of your videos.

Interval	Recording Time	Video Length
0.5 second	5 minutes	20 seconds
1 second	5 minutes	10 seconds
2 seconds	10 minutes	10 seconds
5 seconds	1 hour	20 seconds
10 seconds	1 hour	10 seconds
30 seconds	5 hours	20 seconds
1 minute	5 hours	10 seconds
2 minutes	5 hours	5 seconds
5 minutes	10 hours	4 seconds
30 minutes	1 week	10 seconds
1 hour	1 week	5 seconds

PRO TIP: For the best results, mount your camera on a tripod or place it on a stable surface where it won't wobble or shake. Use TimeWarp video to capture time lapse video when you're on the move.

Tech Specs: Time Lapse

NIGHT LAPSE INTERVAL

Choose how often your GoPro snaps a shot in Night Lapse mode. Night Lapse intervals are Auto; 4, 5, 10, 15, 20, and 30 seconds; and 1, 2, 5, 30, and 60 minutes.

Auto (default) syncs the Interval with the Shutter setting. If the shutter speed is set to 10 seconds and the Interval is set to Auto, your camera will take a shot every 10 seconds.

Interval	Examples
Auto	Great for all exposures (captures as quickly as possible depending on the Shutter setting).
4–5 seconds	Evening city scene, street lighting, or scenes with movement.
10–15 seconds	Dim lighting with slow scene changes, such as night clouds with a bright moon.
20–30 seconds	Very low light or very slow scene changes, like stars with minimal ambient or street light.

Tech Specs: Protune

Protune unlocks your camera's full creative potential by giving you manual control of advanced settings, including Color, White Balance, and Shutter Speed. It's compatible with professional color correction tools and other editing software.

Here are some things to keep in mind:

- Protune settings can be adjusted using QR codes. They cannot be adjusted using the GoPro Quik app.
- Protune is available for all modes except Looping and LiveBurst.
- Changes to Protune settings in one preset apply only to that preset. For example, changing the White Balance for Time Lapse does not affect White Balance for Burst photos.

BIT RATE

Bit rate determines the amount of data used to record a second of video. Choose between high or low.

Bit Rate	Description
Low (default)	Use a lower bit rate to minimize file sizes.
High	Use higher bit rates up to 100Mbps (4K and 2.7K video) for optimal image quality.

Tech Specs: Protune

COLOR

Color lets you adjust the color profile of your videos or photos.

Color Setting	Description
Natural (default)	Captures photos and videos with a true-to-life color profile.
Vibrant	Captures photos and videos with a color-saturated profile.
Flat	Provides neutral color profile that can be color-corrected to better match footage captured with other equipment, offering more flexibility in post-production. Due to its long curve, Flat captures more details in shadows and highlights.

WHITE BALANCE

White Balance lets you adjust the color temperature of videos and photos to optimize for cool or warm lighting conditions.

Options for this setting are Auto (default), 2300K, 2800K, 3200K, 4000K, 4500K, 5000K, 5500K, 6000K, 6500K, and Native. Lower values will give you warmer tones.

You can also choose Auto to let your GoPro set the White Balance or the Native setting to create a minimally color-corrected file that allows for more precise adjustments in post-production.

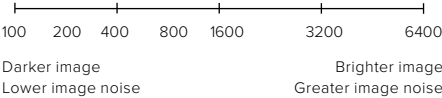
Tech Specs: Protune

ISO MINIMUM/MAXIMUM

ISO Minimum and ISO Maximum let you set a range for the camera's sensitivity to light and image noise. Image noise refers to the degree of graininess in the shot.

In low light, higher ISO values result in brighter images but with more image noise. Lower values result in darker images with less image noise.

The default for ISO Maximum is 1600 for video and 3200 for photos. The default for ISO Minimum is 100.



Heads Up: For the Video and Photo modes, ISO behavior depends on the Protune Shutter setting. The ISO Maximum that you select is used as the maximum ISO value. The ISO value that is applied might be lower depending on the lighting conditions.

PRO TIP: To lock the ISO at a specific value, set ISO Minimum and ISO Maximum to the same values.

Tech Specs: Protune

SHUTTER

The Protune Shutter setting only applies to the Video, Photo, and LiveBurst modes. This setting determines how long the shutter stays open. The default setting is Auto.

For Photo, the options are Auto, 1/125, 1/250, 1/500, 1/1000, and 1/2000 second.

For Video, the options depend on the fps setting, as shown below.

Shutter	Example 1: 1080p30	Example 2: 1080p60
Auto	Auto	Auto
1/fps	1/30 sec	1/60 sec
1/(2xfps)	1/60 sec	1/120 sec
1/(4xfps)	1/120 sec	1/240 sec
1/(8xfps)	1/240 sec	1/480 sec
1/(16xfps)	1/480 sec	1/960 sec

PRO TIP: To reduce the amount of blur in videos and photos when using the Shutter setting, mount your camera on a tripod or other stable surface where it won't wobble or shake.

Tech Specs: Protune

EXPOSURE VALUE COMPENSATION (EV COMP)

Exposure Value Compensation affects the brightness of your photos and videos. Adjusting this setting can improve image quality when shooting scenes with sharply contrasting lighting conditions. Higher values result in brighter images.

Options for this setting range from -2.0 to +2.0. The default setting is 0.0.

Heads Up: For Video, this setting is available only if Shutter is set to Auto.

PRO TIP: EV Comp adjusts brightness within the existing ISO setting. If brightness has already reached the ISO setting in a low-light environment, increasing the EV Comp does not have any effect. To continue increasing the brightness, select a higher ISO value.

SHARPNESS

Sharpness controls the quality of details captured in your video footage or photos. Options for this setting are High, Medium (default), and Low.

PRO TIP: If you plan to increase sharpness during editing, select Low for this setting.

Tech Specs: Protune

RAW AUDIO

This setting creates a separate .wav file for your video, in addition to the standard .mp4 audio track. You can select the level of processing to apply to the RAW audio track.

RAW Setting	Description
Off (default)	No separate .wav file is created.
Low	Applies minimal processing. Ideal if you want to apply audio processing in post-production.
Med	Applies moderate processing based on the Wind-Noise Reduction setting. Ideal if you want to apply your own gain.
High	Applies full audio processing (automatic gain and Wind-Noise Reduction). Ideal if you want processed audio without AAC encoding.

Insert your SD card into a card reader to access the .wav files with your computer. They're saved with the same name and in the same location as the .mp4 files.

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