

TEARDOWN








GoPro Hero3 Teardown

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Introduction

The snow is falling, and it's go time! GoPro time that is! Grab your boots, tighten your bindings, and strap on your helmets; this teardown is about to get gnarly.

Want to be kept up to date on the latest radical teardowns? Follow us on [Twitter](#), or like us on [Facebook](#) to keep up with iFixit news.

This teardown is **not** a repair guide. To repair your GoPro Hero3, use our [service manual](#).

Step 1 GoPro Hero3 Teardown



- In addition to a sleeker design with more clearly-labeled buttons than the [Hero2](#), the Hero3 is shredding some sick powder with the following specs:
 - White/Silver/Black Editions with video resolution up to 1080p30 (White/Silver) / 1080p60 (Black) and 4K (!) at 15 frames per second (fps) in the Black Edition.
 - 5/11/12 megapixel camera with 30/10/3 fps burst, respectively
 - 1050 mAh rechargeable lithium-ion battery
 - Up to 64 GB of external microSD storage
 - Built-in Wi-Fi

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Step 2



- *What is inside of you, small box of joy?*
- To our dismay, we could not examine the deep dark innards of the Hero3 through the lens. Time to crack it open!
- Peeling off the water resistant port cover reveals the following ports:
 - Mini USB
 - Micro HDMI
 - microSD

2 comments

Step 3



- With the simple press of a button, the back cover is free, allowing access to—what's this—a battery pull tab?
- It's almost as if the folks at GoPro wanted you to be able to take the battery out of your HD Hero3. What a novel idea.
- The Hero3's 3.7 V battery is rated at 1050 mAh/3.85 Wh, a 50 mAh decrease from previous models, presumably due to the device's smaller size.
- As usual, caution labels on the back of the battery warn us not to store the battery in high temperatures, disassemble it, or dispose of it...with fire.
- Thanks for the heads up, GoPro.

Add a comment

Step 4



- It has come to that time in the teardown where we finally have to reach for a tool. Not just any tool, but the always-appropriate plastic opening tool.
- A few clips and a little bit of adhesive are no challenge for our trained hands, and the front cover lifts right off.

3 comments

Step 5



- We are through the adhesive and on to some of our favorite little repair-friendly friends: Torx screws!
- Four surprisingly-long (8.1 mm) T4 Torx screws hold the midframe in place, and are easily removed with the help of our [54 Bit Driver Kit](#).


[2 comments](#)

Step 6



- A little more prying, and the midframe and motherboard assembly is the next piece to practically fall off the GoPro. This is almost too easy.
- We have always pushed for product design that favors repairability, but seeing it in action still makes us do a double take.

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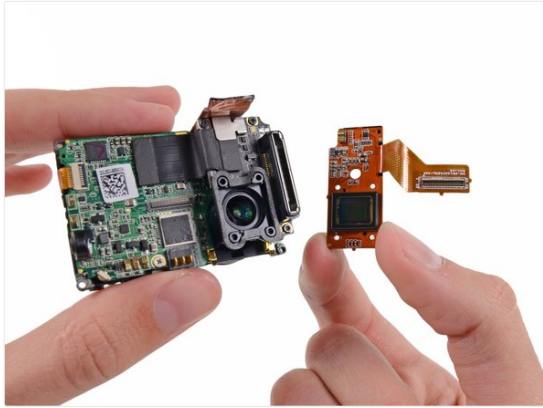
Step 7



- Two pieces of tape, one connector, four more screws, a little bit-o-prying...this device is coming apart pretty easily considering the small package and large recording ability!

[5 comments](#)

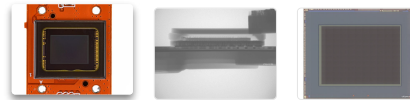
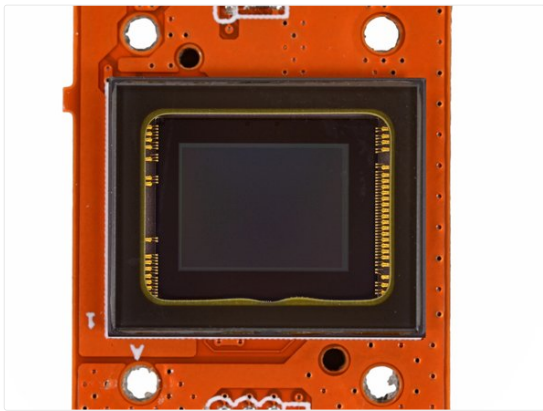
Step 8



- The image sensor pops off the motherboard assembly and can be replaced independently of the rest of the ICs. This Hero is gaining reparability cred left and right.
- Our Hero3 Black Edition comes with a 12 megapixel image sensor with improved low light capabilities, a step up from the 5 and 11 megapixel modules in its other Hero counterparts.
- While more resolution is great for stills, the pixel-crunching power that sets the Black Edition's video skills apart from the rest of the pack are in the image processor—more on that later.

6 comments

Step 9



- At the heart of the GoPro lies a **Sony IMX117** image sensor.
- According to our pals at **Chipworks**, the Exmor-R sensor features a "1.55 μm back illuminated design on a ceramic substrate"—cool!
- The sensor supports 12 MP imaging at up to an impressive 35 fps, even though the camera advertises a burst rate of 30 fps.
- Check out [their teardown](#) for even more info on the Hero3!

Add a comment

Step 10



- It's time for everyone's favorite segment: **Science with iFixit!** We decided to have a little bit of fun with the Hero3's lens and one of our **iFixit Guitar Picks**.
- For this simple demonstration, we placed a guitar pick in front of the lens upside-down and looked through the glass. As you can see, the upside-down graphic has been flipped right-side up!
- So, if the lens flips the image, why aren't all of the pictures from our digital cameras inverted?
- Well, just like the lens of our eyeball, anything viewed through an optical lens appears upside-down until it's fed through a processor of some kind. For a digital camera, that processor is an integrated circuit. Our vision, on the other hand, utilizes the most advanced processor in the world to flip the image around: the human brain.

One comment

TOOLS USED ON THIS STEP:
 **iFixit Opening Picks (Set of 6)** **\$4.99**

Step 11



- Another daughterboard flies off the main assembly; this time it's the microSD and accessory board.
- If you've never used a GoPro, this large port might look pretty foreign to you. It's okay, you're not alone. The proprietary port is used for a variety of GoPro accessories, including a [fold-out LCD attachment](#), [extended battery](#), and various A/V adapters.

🗨 Add a comment

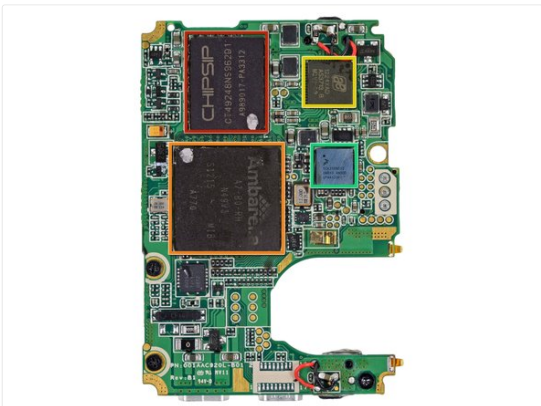
Step 12



- No new tricks here, either. Removing the motherboard requires no more than a spudger and a Phillips #0 screwdriver.
- Most components in the Hero3 use very little power and generate minimal heat. This light coating of thermal compound on the image processor is the most aggressive cooling feature in the device.

🗨 Add a comment

Step 13



- Chips on the motherboard:
 - ChipSiP [CT49248NS962D](#) 1 Gb NAND flash + 4 Gb DDR3 SDRAM
 - Ambarella [A770](#) camera system-on-a-chip
 - Austriamicrosystems [AS3713](#) system PMU with backlight driver
 - Freescale Kinetis [SCK20DN51Z](#) USB controller
 - Qualcomm Atheros [AR6233GEAM2D](#) 802.11n + Bluetooth 4.0 controller
 - AC3029

🗨 5 comments

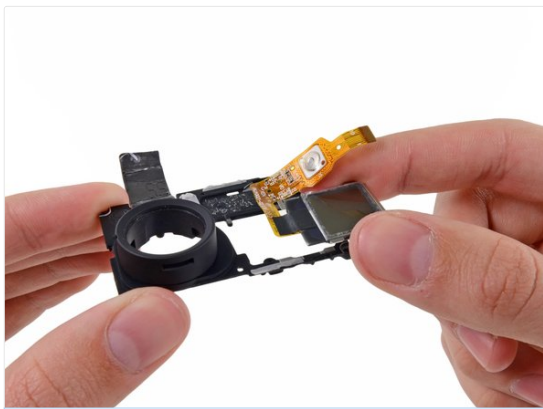
Step 14



- More tape, more screws, [moar](#) fun!
- A few more Phillips screws stand in the way of pulling out the "ultra sharp f/2.8 6-element aspherical glass lens."
- Honestly, we just had a lot of fun looking at our guitar picks through this lens—here's another look through the Hero3's eye now that it's free of the motherboard.
- Because why? Because [science](#).

[Add a comment](#)

Step 15



TOOLS USED ON THIS STEP:
Heat Gun

\$19.99



- There are only a few components left around the device casing.
- Last on the midframe is the LCD and its soldered-on cable. Repairability takes a hit here, when we have to pull out a [heat gun](#) and [metal spudger](#) to loosen the adhesive securing this cable to the midframe.
- The rear case's last component is the button/speaker assembly which is attached to the backing of the battery compartment. A couple of screws and some tape hold it in place.

[Add a comment](#)

Step 16



- GoPro HD Hero3 Repairability Score: 7 out of 10 (10 is easiest to repair)
 - The battery is intended to be easily replaced by the user, and requires no tools to access.
 - The entire device can be disassembled with readily-available tools.
 - Modular design throughout allows replacement of several individual components.
 - Minimal adhesive securing the front cover can be difficult to separate, but poses no real challenge to opening.
 - Fragile copper grounding tape can be difficult to peel and replace.
 - Because the display cable is adhered to the midframe, replacing the LCD requires use of a heat gun.

[15 comments](#)

Author

with 9 other contributors



Jake Devincenzi
 Member since: 04/18/2011
 105,831 Reputation
 57 Guides authored

Badges: 51



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60 COMMENTS

- Love it! Thanks for the take apart!!
[coasttech](#) - 01/22/2013
-
- Could you include a slide showing how to extract the lens from the lens housing? I would like to perform a lens mod, and I need to know if the lens comes out willingly or grudgingly.
[sparky](#) - 01/30/2013
- teardown video of the gopro lens change by RageCams
https://www.youtube.com/watch?v=_tUl-BzZ...
[dennis](#) - 11/28/2014
-
- Video of what needs to come apart to replace a lens.
<https://www.youtube.com/watch?v=EHTanRrO...>
[Troy](#) - 03/21/2013
- detailed lens change video by ragecams
https://www.youtube.com/watch?v=_tUl-BzZ...
[dennis](#) - 11/28/2014
-
- Would it be possible to remove the lense from the casing and mount it and have the box somewhere else and to record?
[Nick Angelopoulos](#) - 06/22/2013
- No, not a chance.
[Bosco](#) - 05/13/2014
-
- Where can I find a replacement for the USB port daughterboard. My go pro usb port is broken and ive lost the lose port. :(
[powermaxums](#) - 07/05/2013
- you would need a new motherboard. RageCams carries those:
<http://ragecams.com/shop/gopro-replaceme...>
[dennis](#) - 11/28/2014
-
- the correct way to tear down a hero3 camera by RageCams
https://www.youtube.com/watch?v=_tUl-BzZ...
[dennis](#) - 12/28/2013
-
- Hi,
 Can anyone recommend which components i would need to replace if go pro got wet. When i switch it on its switches off and on constantly and also says no sd card.
 Thanks
[Newton](#) - 01/21/2014
- Hi,
 My gopro hero 3 black camera turns off and on.
 Did you ever find out what the issue was?
 Thanks!
[Emil Burzo](#) - 09/25/2015
-
- Got my camera filled with seawater a couple months back and just now decided to tear it apart (after being told gopro doesn't warranty water and buying a new one). I tried the rice trick as soon as it happened with no luck, all I did was use this guide to tear it apart, got a toothbrush and cleaned everything then again with isopropyl alcohol and so far it works! Thank you for a good write up!
[Chris](#) - 02/06/2014
-
- where can i buy the LCD screen?
[josh](#) - 02/17/2014
- ragecams has the parts
<http://ragecams.com/shop/gopro-replaceme...>
[dennis](#) - 11/28/2014
-
- Has anybody ever attempted to extend the ribbon attaching the camera lens and sensor away from the main camera body? Id love to hear anybody's comments if they have as its something ive been wanting to do for ages, can you mail me at rob@jdp.co.uk if you have any know how.
 Thanks, Rob
[Rob Pilley](#) - 04/14/2014

-
- Where is the Wi-fi antenna situated, would it be possible to somehow add an external antenna to it, maybe through a signal booster for greater range, for UAV FPV purposes?
[Christos Oscar Kambiselis](#) - 05/06/2014
-
- I had tried a lot of things after jumping with my GoPro Hero 3 Black Edition into the ocean with the wrong back door so it filled up with water right away. It died right on the spot and there was no way of turning it on. I took it apart after these directions and cleaned every single part. I put it back together and wola it works :) thanks to you !
[valdimar johannsson](#) - 05/20/2014
-
- Hi,
 i accidently put 12V on the usb in ! anyone same experience?
 repairable?
 thnx karl
[Everaert](#) - 06/10/2014
- Hi Everaert, I did the same thing providing power from FPV battery, puff of smoke and the smell, I was wondering if you found a fix?
[Wayne](#) - 09/02/2014
- no, you would need a new motherboard, ragedcams carries them.
<http://ragedcams.com/shop/gopro-replaceme...>
[dennis](#) - 11/28/2014
-
- can i send in my gopro and have you guys fix it because i have tried everything and nothing works. My gorpo hero 3 silver edition does not turn on at all.
[alex](#) - 10/08/2014
-
- I will like to trigger photo button of camera while in a RC flight. I imagine I can use a AUX signal from receiver so I can trigger a photo with Tx Control lever. Please tell me how to do this. Thanks.
[alexcheve](#) - 10/14/2014
-
- WORD OF CAUTION. I took apart my Hero 3 white. Didn't look the same as this one. The ribbon cable for the actual camera part was soldered to the board on mine.
[Sean Cloughley](#) - 10/28/2014
-
- Is it possible to get a replacement LCD screen if the cables snap?
[Brooke](#) - 01/30/2015
-
- Hi,
 I currently have a GoPro Hero 3 and an AMKOV SJ5000 replica of GoPro. Usually I use the SJ Cam for hardcore use for motorcycle tours, mounted on foot pegs or mudguards and the GoPro for helmet cams job. So I was wondering if I can swap any hardware parts of SJ5000 cam with exisiting GoPro models? Like sensor swap? or lens? will that help me improve the SJ5000 cam in anyway. The SJ5000 is carbon copy of GoPro so I was thinking if the parts are interchangeable. Please delete this if it's not appropriate for this forum/thread.
 -Z
[San par](#) - 01/30/2015
-
- [GoPro Hero3 Teardown](#)
 STEP 15
 There is a little copper grounding tape in the other side of the orange connector. If it breaks because of blending many times, how could I repair? Now, most of the times camera does not turn on, I must to press so hard near this zone to get it. I tried put a bit aluminum foil on the copper tape to make conduction but does not work.
[GoPro Hero3 Teardown](#)
[Javixu](#) - 02/19/2015
-
- Could I combine de device (the full black mount) of the Step 15 (sorry for my english!) from a Hero3 Silver with the rest of the thing of a Hero 3 black)??
 Does it work like a full gopro 3 black o LCD screen does not show black edition options?
[Javixu](#) - 02/19/2015
-
- hero 3 and 3+ are different. There is a ribbon cable from board to housing. can you tell me how to remove anyone.
[Albert](#) - 02/20/2015
-
- Does anyone know what the part number is for the connector on the flex PCB which connects to the image sensor?
[Daniel S](#) - 03/20/2015
- Hi Daniel - Any luck finding this part number?
[Matt Whalen](#) - 10/11/2015
-
- Hi. I think I just broke the ribbon pins from the housing to the motherboard: the white female receiver. Is there anything that can be done to connect the ribbon to have the buttons and wifi working ? Thank
[Corbu Anonim](#) - 04/23/2015
-
- My internal microphone is not working. It is recording only static noises. How can I fix it?
 Please help me at zigrapa@gmail.com
 Thanks
[fzerillo](#) - 05/15/2015

-
- Thanks for NOT mentioning, that the display cable can be easily ripped off cause the display is fixed to the outer plastic case by adhesives.. So better put a finger on the display when detaching the outer plastic case...
- [michaelhoeinghaus](#) - 05/20/2015
-
- What does the AC3029 do? It's on the second picture in step 13 but no description
- [wcbusch](#) - 06/24/2015
- I was wondering the same thing.. Did you figure it out??
- [kanduryravi](#) - 04/16/2016
-
- Thank you for the guide and the LCD part. My GoPro is now back to new after I crashed the drone and the LCD stopped displaying an image. Pretty easy fix.
- [dannystriker](#) - 10/22/2015
-
- Hello,
First of all Thanks guys for all the hard work and for helping us save money! :-)
So now my question:
My wife pushed the usb to hard in and it broke off, but I manage to resolder it with a microscope and special tools, but unfortunately also that component with 4 leads right next to the microusb adapter fell off. I want to buy a new one and solder it on, but I have no clue as to what that is...
To me it seems a small high frequency transformer for the Video out? Could it be?
Where can I buy one? and what are the specifications? I know this is a hard question...
- [Derek Bernardon](#) - 02/09/2016
-
- Bonjour, ma Gopro hero 3 ne charge plus car la prise USB de l'appareil s'est dessoudee, ou pourrais je trouver cet accessoire? Et si quelqu'un la déjà fais, est ce que c'est simple? Merci
- [Floriane](#) - 02/25/2016
-
- Bonjour, il m'est impossible de charger ma Gopro, le mini port USB bouge, ou est ce que je pourrais trouver l'accessoire cassée et est ce que c'est facile à réparer? Merci
- [Floriane](#) - 02/25/2016
-
- Hello there, this is more a question topic, i have a hero 3 black dead, and a hero 3 silver with the external part of the lens crash, in your experienced opinion i can switch the part, they look the same, but the cmos sensor obviously if far more capable of the black, are the lens cover compatible?
- [ante lezama ricardo](#) - 04/25/2016
-
- Hi, what is the function of the battery on the main board, the soldered one ?
- [sami maalouf](#) - 07/07/2016
-
- Hi, what is the function of the battery on the main board ? the soldered one.
- [sami maalouf](#) - 07/07/2016
- Hello, that small internal battery is for the internal clock, so you can take out the big battery and the internal clock will keep in sync so your pictures will be up to real date.
- [Diego](#) - 08/19/2017
- Somebody knows how to replace the little internal clock and settings battery in the mainboard? My gopro got wet and after drying everything looks like the battery short circuit and loose all the power. I tried to remove but looks to be soldered to the mainboard, is there any trick?
- [Diego](#) - 08/19/2017
- The main board battery (used to save the clock settings) is number 414. The battery is spot welded to the base strip on the board (-), and the battery's top (+) is spot welded to the + tab that's folded over the battery then connected to the board. There are fine connections from the + tab to the board. While the battery can be removed using a razor (very carefully), the + tab is glued to the board and soldered to the + leads of the board. If not "very" careful you can break the + tab away from the board. If your hero does not retain its clock settings, then that battery is dead.
- [DBrown](#) - 10/31/2017
-
- Can you put a 3+ black mainboard in a normal 3 black camera since i can't find a normal 3 black board for replacement?
- [Cleveland2Steamerz](#) - 11/11/2016
-
- Got a tips on water damage for hero3?
My case broke and the GoPro was under water for 5 sec now it was turn on.
- [Ronnie Tyrell](#) - 11/23/2016
-
- Hi Jake..Your direction to dismantle were great..BUT..when I got down to motherboard,still can't get broken micro card out.! Any clues? Other than buy a new camera!! Thanks..John W
- [John Willard](#) - 11/27/2016
-
- Is the GoPro3 motherboard compatible with the GoPro3+ Black Edition's motherboard/main board?
- [lookitzserena](#) - 12/01/2016
-

Hi
 My gopro hero 3+ won't turn on. I tried the multiple tutorials on internet with the removal of battery sd card etc...
 I opened my gopro and voltage is arriving when connected to usb port, my gopro won't turn on though
 anyone knows what it could be ?
 Thanks !
[marinekeiko](#) - 12/12/2016

Would the inners of a 3+ fit in the 3 body? Any help would be greatly appreciated! Thankyou!
[dariusgibson](#) - 01/22/2017

I am on my 4th Hero 3 Black due to various failures. Multiple issues including color saturation, not turning on, vertical lines, juddering etc. They were all replaced under warranty - but left it too late to claim for a 5th and have had troubles with vertical lines and color saturation . Replaced my image sensor using these very informative instructions - seems to all be good. Thanks!
[Chris Hall](#) - 08/02/2017

Hi,
 Mine is not turning on too...
 The front red led is also not turning on when power button is turned on and not that ng comes up in the display.
 What would be the problem?
 I thought it was only frozen but it seems that it is a more complex problem to resolve.
 Cheers,
 Ricardo G.
[Ricardo Gouveia](#) - 08/06/2017

It's always good to see a quick set of straight forward instructions so I know what I can & shouldn't pry, to avoid unnecessary damage.
[Bob Mullins](#) - 09/28/2017

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