

# All about iPhone HDR and RAW Photography

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### What is HDR Photography

HDR stands for “high dynamic range.” For those who aren’t so acquainted with this high-tech lingo, *dynamic range* is basically just the difference between the lightest light and darkest dark you can capture in a photo. Once your subject exceeds the camera’s dynamic range, the highlights tend to wash out to white, or the darks simply become big black blobs. It’s notoriously difficult to snap a photo that captures both ends of this spectrum, but with modern shooting techniques and advanced post-processing software, photographers have devised ways to make it happen. This is basically what HDR is: a specific style of photo with an unusually high dynamic range that couldn’t otherwise be achieved in a single photograph.

At the most basic level, an HDR photo is just two (or three, or more) photos taken at different exposure levels and then merged together with software to create a picture with more range in the brights and darks.

Below are first, 4 photos taken at different exposure settings and second, the result after combining them with HDR software.



or 1/8<sup>th</sup> the range. Hence the need for HDR to bring out all the details by combining several photos shot with varying exposure levels.

## What is RAW photography

When photographers want more editing latitude with their images, they shoot in RAW format, which is the untouched data recorded from a camera's image sensor. RAW is great for working with landscape photos or portraits that benefit from the larger pool of information each image file.

Until recently, you needed a DSLR or mid-range camera to shoot in RAW, but now most smartphone cameras can also capture the format, including the iPhone. Oddly, that doesn't include Apple's built-in Camera app. So why shoot RAW on an iPhone, and how do you do it? See the next section.

## How to Shoot RAW on an iPhone

Since iOS 10, Apple has supported RAW images at the system level, but as of iOS 12, you still can't use the Camera app to capture RAW images. I suspect Apple's reasoning is twofold. Since most iPhone owners don't know or care about RAW photos, they could be confused about a RAW shooting option. And I think there's a dash of marketing thrown in, too; Apple's central messaging is that the iPhone takes perfectly magical photos as it is, so why worry about RAW?

But plenty of people want to capture RAW images. As an alternative, third-party developers can tie into the operating system to capture images and save them as RAW files in Adobe's DNG (digital negative) format. Several apps offer a RAW or DNG mode, including Halide Camera, Adobe Lightroom CC, Manual, Camera+, and ProCamera.

## File extensions

The iPhone supports the following file formats or extensions:

- JPG and HEIC –JPG is the older photo format and HEIC is the newer one. You can choose which format to use by going to Settings, Camera, Formats. The High Efficiency is the HEIC.
- PNG, this is the format for screen shots
- DNG – this is the format for RAW photos
- TIFF – some 3<sup>rd</sup> party apps support this format
- MOV – these are videos

## How does the iPhone HDR work?

In the HDR mode the iPhone XS shoots four standard-exposure photos every time you press the shutter button, and between those photos (all captured in a fraction of a second), it also shoots another set of photos at a different exposure, so it can cover both bright and dark areas.

Simultaneously, the camera shoots a ninth, long exposure, so that it can gather more light for even more detail in the shadows. Then the A12 processor analyzes all those photos and combines them into a single frame — one that can show off brightly lit objects and items that dwell in shadow.

### Added dynamic range for video, too

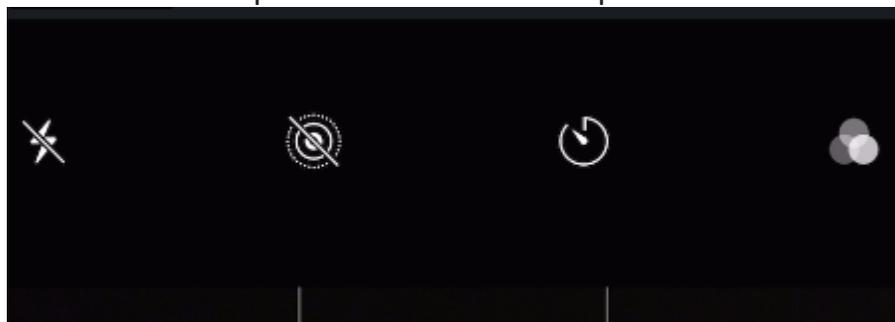
A feature promoted less by Apple is the extended dynamic range available for video shot with the iPhone XS or later, provided you're shooting at 30 frames per second or lower. In 30fps 4K video mode, the iPhone XS doesn't just take a frame every 30th of a second. Instead, it takes alternating frames every 60th of a second, alternating between bright and dark exposures, and then the A12 processor analyzes each frame pair and intelligently combines them to expand the dynamic range of the video.

It's not quite HDR, but it means videos shot with the iPhone XS will be much more capable of handling scenes that mix bright and dark elements.

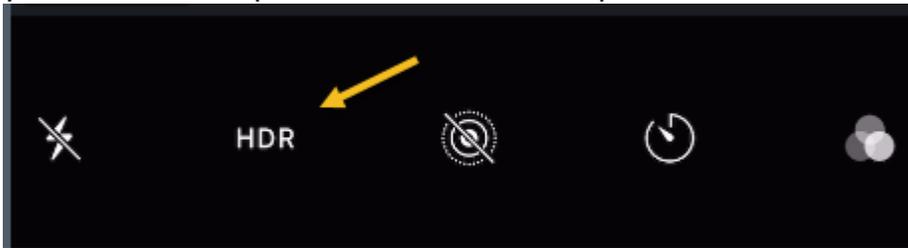
## iPhone HDR Settings

This section refers to newer iPhones in case your settings are different. There are two ways to set this up as follows:

1. Smart HDR – go to Settings, Camera and enable Smart HDR. With this setting you will not see an option for HDR at the top as shown below.



2. Manual HDR - go to Settings, Camera and disable Smart HDR. With this setting you will see an option for HDR at the top as shown below.



This setting is totally up to you. The only disadvantage to Smart HDR is that photos take a little longer to shoot since multiple photos are captured. But, if you're afraid to miss an HDR opportunity, set it to Smart HDR.

Here are two examples from my iPhone. The one on the left had HDR enabled which has a higher dynamic range..



#### Notes:

1. HDR is used both for rear and front-facing cameras when the phone thinks it's effective.
2. If you leave the setting on for Smart HDR, occasionally, the iPhone will take a regular photo when HDR might have provided more detail.
3. With Smart HDR disabled you can frame a scene with your camera and turn HDR on and off to see the difference. You can also go to Settings, Camera and in the HDR section enable Keep Normal Photo. This allows you to compare both photos in the case that HDR was used to take the photo. Note – it also doubles the quantity of photos stored on your phone.

## How to take your own HDR photos

Another way to take an HDR photo is by shooting multiple photos with varying exposure settings and combining them with software either on your iPhone or PC. Here are several 3<sup>rd</sup> party iPhone Camera Apps that will assist in taking HDR photos.

- Camera Pixels for \$5.99 as seen [here](#). There is a user guide [here](#).
  - Will allow you to take bracketed photos. You can shoot up to 15 bracketed photos and much more. This app can also shoot RAW or DNG photos.
- PureShot for \$2.99 as seen [here](#).
  - You can learn more at their web site [here](#). This app can take a 3-shot exposure bracket and can also shoot RAW or DNG photos.
- ProCamera for \$5.99 as seen [here](#).
  - You can learn more at their web site [here](#). This camera takes HDR photos and automatically generates the final HDR photo. It also offers in-camera editing prior to saving.

For best results, the bracketed photos should be transferred to your PC and converted to an HDR photo. You can use one of the programs listed below.

## Desktop HDR Programs

- Aurora HDR as seen [here](#). It costs \$99 but it is one of the best programs for the job.
- Adobe Lightroom and Photoshop cost \$9.99 per month.
- Picturenaut 3 as seen [here](#). It is free.
- On1 Photo RAW as seen [here](#). It costs \$79.99. This is the best buy since it does everything.

## Shooting RAW or DNG photos

Why shoot RAW photos? RAW photos have more latitude when editing since they have more data in the image. You can restore blown highlights or restore details in the shadows with these photos. The iPhone native camera does not have this feature but with other apps you can shoot in the RAW format.

All the 3<sup>rd</sup> party camera apps mentioned above can shoot RAW photos.

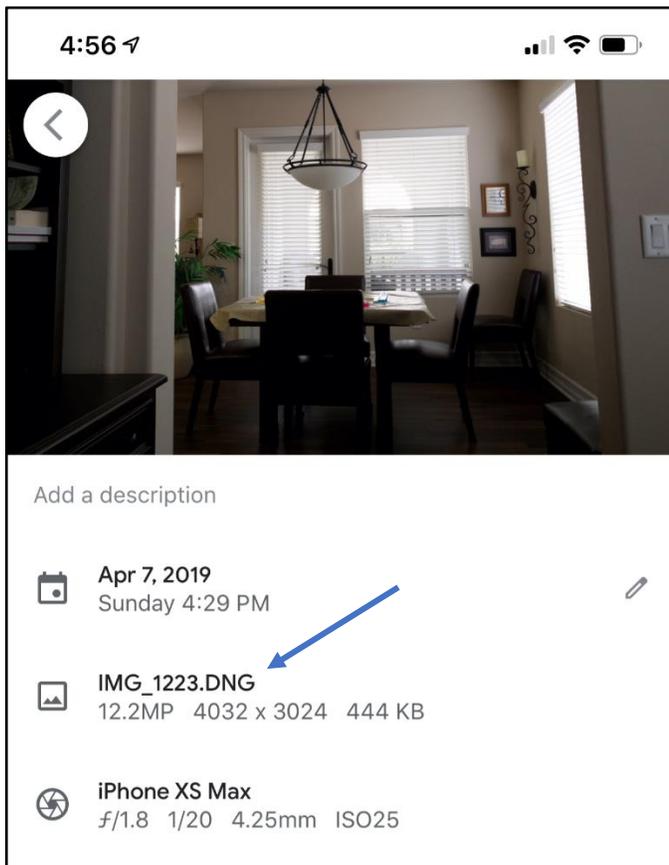
Other apps include:

- Adobe Lightroom Mobile, which is subscription based.

- Snapseed, which is free. When you open a RAW photo in Snapseed, you will see a Develop icon appear. From here you can make adjustments before proceeding to the other tools.
- RAW power which is \$2.99 and can be seen [here](#). What makes this app stand out is that it lists all your RAW photos in one place and it lists all your albums in alphabetical order. Both features make it one of my favorite apps. Another feature is that you can select all RAW photos and add them to a new or existing album in the Photos app; this doesn't take up any more storage.

### Viewing RAW photo details

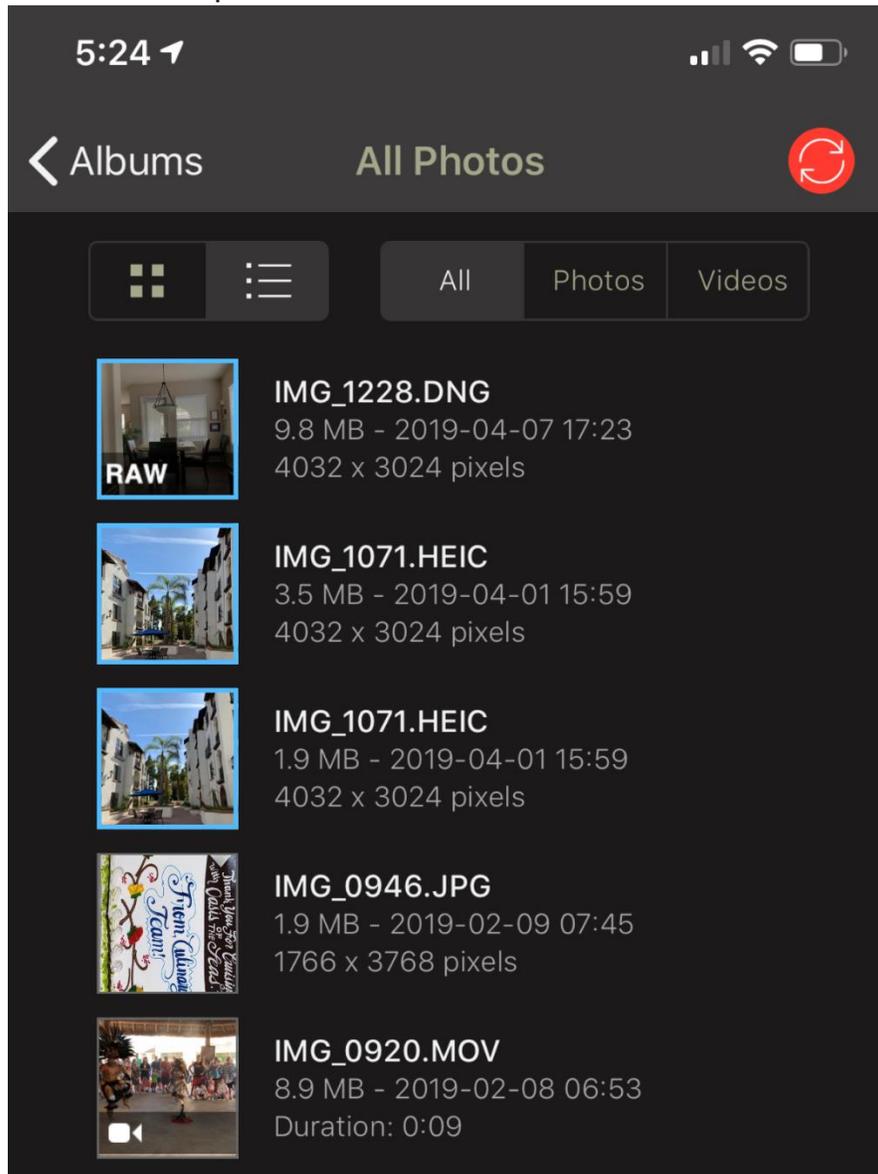
The native camera app doesn't show you whether a photo is in the RAW format. However, if you have Google Photos installed, you can open the photo and tap the 3-dot menu at the upper right and tap info, you will see the photo info as shown below.



Also, some of my favorite app for viewing photo details include the following:

- ViewExif, \$0.99, can be seen [here](#).
- Exif Viewer, free, can be seen [here](#). There's a Pro version for \$2.99 [here](#). I have not explored the differences and I use the Pro version.

- Photosync, \$3.99, can be seen [here](#). It can also be used to transfer photo to your PC or vice versa. You can see from the figure below that Photosync lists many details about photos. The DNG is a RAW file.



## Transferring photos to your PC

All the following apps will transfer all photo and video formats:

- Photosync, \$3.99, can be seen [here](#).
- Syncios Desktop program, free, as seen [here](#).
- Simple Transfer app, \$4.99, as seen [here](#). This is the easiest to use in my opinion.
- iCloud Photos online, free. There's an option to download the originals.