Leeming LUT PRO

Camera Setup Guide:	GoPro 11
Based On:	GoPro 11 Black (labs firmware v2.10.70)
Colour Space:	Rec709 gamma 2.4
Target Exposure:	ETTR
LUT Version:	Athena III & Pro III
LUT Release Date:	2023.05.03
Guide Version:	2023.05.03

INTRODUCTION

Thank you for purchasing Leeming LUT Pro™, the most accurate and professional Look Up Tables (LUTs) for your camera.

The LUTs have been carefully developed to get the maximum dynamic range and colour accuracy out of the supported profiles, giving you unparalleled Rec709 precision as well as perfect camera matching with other supported cameras in the Leeming LUT Pro™ range. Use them in conjunction with ETTR shooting principles and you will get the highest possible quality images out of the camera every time.

I am confident you will find these the most accurate LUTs for your camera. Anything less and I wouldn't have put my name on them!

Enjoy :)

Paul Leeming
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LICENCE

You are granted a personal licence to use Leeming LUT Pro™ on two computers. For use with more computers, please contact Visceral Psyche Films for bulk discount pricing. You may not upload the LUTs anywhere, share them with other people or incorporate them into other LUTs for derivative use (i.e. making creative LUTs using Leeming LUT Pro™ as the underlying base), whether they be for sale or not. Please respect the work that has gone into the LUTs and support those supporting you.

COMPATIBILITY

Leeming LUT Pro™ is compatible with any software or hardware device that supports a 33x33x33 cube LUT. For a full list, please see the website.

REQUIREMENTS

1.   GoPro 11 action camera.
2.   Spectrally neutral white or grey card, for white balancing the camera (eg. the white balance side of an X-Rite Colorchecker Passport is designed for this).
3.   Leeming LUT Pro™ for the GoPro 11.

NOTE: Items highlighted in yellow have an adverse effect on LUT accuracy if changed away from the recommended values in this guide.

QUICK REFERENCE OF IMPORTANT CAMERA SETTINGS

The settings below are recommended for the LUTs to work properly, in conjunction with an accurate white balance prior to applying the LUT in post.

If you deviate from these settings, your colorimetry and luma curves won't match precisely to Rec709 and you may get other errors in your footage. You can find the details of how to set these in the next section.

	ProTune Flat	ProTune Flat Native	Wide Gamut log400 [1]
Color	Flat	Flat	Flat (WIDE)
White Balance	AWB or Preset Temp	Native	AWB or Preset Temp
EV Comp	-0.5	-0.5	-0.5
Resolution	5.3K	5.3K	5.3K
Sharpness	Low	Low	Low
LOGB Value [1]	N/A	N/A	400
Bit Depth	10bit	10bit	10bit

1 - Labs firmware only

FULL CAMERA SETUP GUIDE (Labs Firmware v2.10.70 or higher)

Based on the GoPro 11 Black with Labs firmware. Your camera may not have all the same features so adjust as necessary. I recommend this firmware as the best option for maximising your camera's image quality. For normal firmware instructions, go to page 7.

1. Make sure you are in Video mode, then swipe down from the top of the screen to enter the Settings menus. Swipe to the second page, set Video Mode to HIGHEST and Controls to PRO. I usually set the Screen Lock ON to avoid changing settings by accident, but it's up to you. Exit the Settings menu.
2. Now tap on the Video Mode button (usually defaults to Standard) and choose the type of activity you want to optimise for. I will use Cinematic as the guide, and note which settings should be carried across to the other profiles. Tap on the little Edit pencil icon next to the profile type to edit the technical camera settings.
3. Set Resolution as desired (I use 5.3K as default), Frames Per Second as desired (24 is my default), Lens, Hypersmooth etc as desired.
4. Scroll down to ProTune and set it ON – Set 10bit ON whenever possible, Bit Rate HIGH, Shutter as needed (Auto is default), EV Comp to -0.5 to protect highlight information (you can set this lower if your footage is often clipping the whites), White Balance Auto or one of the preset temperatures (I DON'T recommend Native as it REQUIRES white balancing in post, but the results are not always great), ISO Min and Max as needed (I recommend ISO 800 as max unless you are ok with noisier looking footage), , Resolution as desired (I recommend 5.3K as lower resolutions look mushy), Sharpness as desired (I strongly recommend LOW and then adding sharpening to taste in post for better image quality), Color FLAT, RAW Audio as needed, Wind as needed (AUTO as default), Media Mod as needed.
5. Set your On-Screen Shortcuts as desired, then scroll back to the top and hit the back arrow to exit video settings.
6. You can repeat the video settings and save more shortcut profiles if desired.
7. I recommend setting Anti-Flicker to your local frequency, and Video Compression to HEVC only. Set Date and Time as needed. Once finished, exit the menus.

8.   Now for the Labs settings. To begin with you need to download and install the Labs firmware from this link (instructions are included on the website):

https://gopro.github.io/labs/

9.   You can also download the companion QR Control app for your smartphone from the following link:

https://gopro.github.io/labs/control/

10.   Once installed you can use either the app (the recommended method so you can customise your settings), or my pre-built QR codes below, to input the settings for my Wide Gamut log400 LUT to work properly. All settings are set to 'permanent' where relevant so that they survive a reboot. Use them top to bottom (excepting the choice between Shutter Auto or 180° where you should choose one or the other) to ensure the correct order of operations. Items marked in yellow are REQUIRED for the Wide Gamut log400 LUT to work properly. Other items are optional.

11.   Simply point the camera at the QR code and you should see a QR logo with tick on screen once it has registered the setting. Be sure to only expose one QR code at a time to the camera, to avoid confusing the camera.

QR Code	Settings
wAx-.5sLcFb1d1i8M1S0	Option 1: Shutter AUTO Depth: 10bit, Bitrate: HIGH, Shutter: Auto, EV Comp: -0.5EV, White Balance: AUTO, ISO Min: 100, ISO Max: 800, Sharpness: LOW, Color: FLAT
wAx-.5sLcFb1d1i8M1S180	Option 2: Shutter 180° (maintains 180° shutter for cinematic footage – requires ND filters) Depth: 10bit, Bitrate: HIGH, Shutter: 180°, EV Comp: -0.5EV, White Balance: AUTO, ISO Min: 100, ISO Max: 800, Sharpness: LOW, Color: FLAT
!MWIDE=1	WIDE Gamut Color Profile: ON
!MLOGB=400	Log Base: 400

!MNR01=1	Noise Reduction: Minimum (better to handle the noise reduction in post as the in-camera option destroys too much of the image)
!MEXPX=48	Maximum Shutter Speed: 1/48th (based on using 24p as your framerate)
!MEXPN=8000	Minimum Shutter Speed: 1/8000th
!MDLRV=1	Disable LRV file creation: ON (stops the recording of low bitrate proxy files)
!M24HZ=1	Proper 24.00p framerate: ON (useful when shooting for cinema distribution – affects only the 24p setting)
oMSPED=1	SD Card Speed Test: Run this to check how fast your card is able to record data. Useful to ensure your card can handle the higher detail required to handle NR off and better quality image.

!MBITR=190	Recording Bitrate: 190Mbps (check your SD card can handle the speed using the test function above)
!MEXPS=1	Show ISO and Shutter Speed along the bottom of the screen: ON
!MHIST=5	Show Histogram: ON
!MHSTP=1,90,42	Histogram Position and Size: Bottom Left
!MBASE="GoPro11-[yymmdd-HHMMSS...	Better Filename: Time based for unique filenames, in the following syntax "GoPro11-[yymmdd-HHMMSS]-". NOTE: This will make the camera show NO MEDIA and be unable to play back the files. DO NOT FORMAT your SD card in camera if you use this function!

12.   Once you have finished applying the QR codes, reboot your camera and you should see a brief summary of applied settings on bootup, as well as the extra overlays if you chose to add them, like histogram and ISO/Shutter info.

13.   ==In post, be sure to apply noise reduction in the chroma range (I recommend keeping luma noise to avoid plastic-looking images) for best results from these settings==.

14.   To get a more contrasty image after applying the LUT, use a gentle S-curve after it, or use one of my Pro Quickies.

FULL CAMERA SETUP GUIDE (Normal Firmware)

Based on the GoPro 11 Black. Your camera may not have all the same features so adjust as necessary.

1.   Make sure you are in Video mode, then swipe down from the top of the screen to enter the Settings menus. Swipe to the second page, set Video Mode to HIGHEST and Controls to PRO. I usually set the Screen Lock ON to avoid changing settings by accident, but it's up to you. Exit the Settings menu.
2.   Now tap on the Video Mode button (usually defaults to Standard) and choose the type of activity you want to optimise for. I will use Cinematic as the guide, and note which settings should be carried across to the other profiles. Tap on the little Edit pencil icon next to the profile type to edit the technical camera settings.
3.   Set Resolution as desired (I use 5.3K as default), Frames Per Second as desired (24 is my default), Lens, Hypersmooth etc as desired.
4.   Scroll down to ==ProTune and set it ON== – ==Set 10bit ON== whenever possible, Bit Rate HIGH, Shutter as needed (Auto is default), ==EV Comp to -0.5== to protect highlight information (you can set this lower if your footage is often clipping the whites), ==White Balance Auto or one of the preset temperatures (I DON'T recommend Native as it REQUIRES white balancing in post, but the results are not always great)==, ISO Min and Max as needed (I recommend ISO 800 as max unless you are ok with noisier looking footage), , Resolution as desired (I recommend 5.3K as lower resolutions look mushy), ==Sharpness as desired (I strongly recommend LOW and then adding sharpening to taste in post for better image quality)==, ==Color FLAT==, RAW Audio as needed, Wind as needed (AUTO as default), Media Mod as needed.
5.   Set your On-Screen Shortcuts as desired, then scroll back to the top and hit the back arrow to exit video settings.
6.   You can repeat the video settings and save more shortcut profiles if desired.
7.   I recommend setting Anti-Flicker to your local frequency, and Video Compression to HEVC only unless you wish to record in both HEVC (H265) and H264. Set Date and Time as needed. Once finished, exit the menus.

You are now ready to use Leeming LUT Pro™ with the maximum picture quality available. ==Be sure to visit the website to read up on how to use ETTR (Expose To The Right) principles== to get the most dynamic range out of your sensor, as well as the associated Leeming LUT Pro™ LUT Installation Manual on how to apply the LUTs to your footage in post-production:

<div align="center">www.LeemingLUTPro.com</div>

HARDWARE / SOFTWARE QUIRKS AND BUGS

1. <mark>I recommend using the Labs firmware as it provides a much better WIDE Gamut colour profile along with a customisable log function for getting the best noise control, along with much more. With Labs firmware the camera is truly in a class of its own in the field of action cameras.</mark>
2. <mark>If using the normal firmware I recommend using Auto White Balance instead of Native whenever possible</mark>.
3. The camera has a wireless connection which, if left ON, can sometimes cause the camera to turn on automatically at random times. I recommend setting the wireless connection OFF unless actually using the function.
4. <mark>Due to the nature of the ProTune Flat NATIVE white balance preset, you MUST apply a white balance change in post-production before applying the LUT for this profile</mark>. I recommend shooting a white balance target in the first second or so of your clip so that you can use the WB picker function of your editing software to quickly and accurately set this in post. <mark>The regular AWB or preset temps don't require it but I still recommend tweaking white balance in post and shooting a white balance card in the initial seconds of your clip for later use in post</mark>.
5. <mark>Note that AWB can shift during the shot</mark>, so if your lighting conditions are changing significantly, you may wish to set one of the preset temperatures to avoid this.

GUIDE CHANGELOG

2023.05.03   Added Labs firmware Wide Gamut log400 LUT with instructions. This profile is now my recommended profile for the camera as it is far superior to the other profiles.

2022.11.26   Initial release.