

Jon Fauer, ASC

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# FILM AND DIGITAL TIMES

Art, Technique and Technology in Motion Picture Production Worldwide



# FILM AND DIGITAL TIMES

## Art, Technique and Technology

Film and Digital Times is the guide to technique and technology, tools and how-tos for Cinematographers, Photographers, Directors, Producers, Studio Executives, Camera Assistants, Camera Operators, Grips, Gaffers, Crews, Rental Houses, and Manufacturers.

It's written, edited, and published by Jon Fauer, ASC, an award-winning Cinematographer and Director. He is the author of 14 bestselling books—over 120,000 in print—famous for their user-friendly way of explaining things. With inside-the-industry “secrets-of-the-pros” information, Film and Digital Times is delivered to you by subscription or invitation, online or on paper. We don't take ads and are supported by readers and sponsors.

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**Cover: Reflecting IBC attendees worldwide visiting Amsterdam. Terrestrial Globe. 1645 - 1648.**

Room 2.15 Rijksmuseum, Amsterdam. Willem Janszoon Blaeu, diameter c.68cm × h c.110cm × w c.100cm × d c.100cm

Blaeu, father and son, were world famous cartographers. The globes they made were not only practical, but also were works of art. They included the latest discoveries of distant lands, including "Nieu Nederland" (New York). Many areas still remained unexplored by Europeans at that time. For example, only a small section of the Australian coast had been charted – by Dutchmen – as the name 'Hollandia Nova' indicates.

# Blackmagic URSA Cine 12K LF



The new Blackmagic URSA Cine 12K LF is definitely an “A” Camera. There are lots of things about this Large Format camera that are Bonzer—Aussie slang for our “Awesome.” Or maybe Ripper, as in “Excellent.”

The camera landed at FDTimes almost in time for the deadline to this edition to be missed as words and images kept flowing. Thanks to Blackmagic Design’s Senior Product Manager Tim Schumann for all the help, advice and hard yakka. Good on ya!

## URSA Cine 12K LF Details

Here are some of URSA Cine 12K LF things that are corker:

- Full Frame 12K sensor (35.64 x 23.32 mm). 1.5:1 (3:2) ratio.
- 12,288 x 8,040 effective pixels.
- speeds up to 80 fps at 12K 3:2 Open Gate. 224 fps at 8K 2.4:1.
- 16 Stops of dynamic range.
- PL Mount. EF Mount included and LPL Mount as accessory.
- Internal IRNDs: Clear, 2, 4 and 6 stops.
- Optical Low Pass Filter.
- 8TB Removable Blackmagic Media Module.
- 6 Anamorphic de-squeeze options in all recording formats.

Tim Schumann explained: “We developed our own sensor with an entirely new non-Bayer color filter array. Since this new sensor is Full Frame 12K, the pixels are larger than our previous URSA Mini Pro 12K Super35 camera, so the dynamic range is much higher at 16 stops.”

## History

Diviners and DPs have been saying for years, “Keep your eyes on Blackmagic Design. They are going to make a high-end camera at an astonishingly affordable price.”

Twelve years ago, Blackmagic Design CEO Grant Petty held aloft their first 2.5K Blackmagic Cinema Camera at NAB 2012. It sort of looked like the control stick on an airplane. They built it because he wasn’t satisfied with what he had to take family videos and finish them in DaVinci Resolve. A year later, he introduced the new 16mm 2K Pocket Cinema Camera. By 2014, they had the first URSA camera, with a Super35 4K sensor, global shutter, 12 stops of dynamic range, and internal dual CFast 2.0 slots. And so it went, an almost annual progression of innovative cameras.

## Rugged and Ergonomic

The URSA Cine 12K LF body is made of magnesium alloy and a lightweight carbon fiber polycarbonate composite skin to withstand hostile environments, long days and nights on set, and all the ways cameras are mounted to cars, cranes, planes and so on.

## 5" Monitors on Both Sides

Why don’t all cameras have this? The URSA Cine 12K LF does not assume that there’s a smart side and a dumb side.

There are two 1500 nit, 5" monitors with full menus and video— one monitor on each side of the camera. The monitor on the camera left side flips out 90° and pivots 360°. When it’s closed, there’s a status screen on the outside for basic settings.

# Blackmagic URSA Cine 12K LF



The monitor on camera right is flush against the body and is super helpful for camera assistants and DITS to check important status parameters such as frame rates, ISO, shutter angle, codec, etc. How often have you, dear camera operator, swatted away eager fingers of ACs and DITs fiddling with your camera left monitor while you're lighting a shot.

## PL, LPL, EF Mounts

The URSA LF (its shorter name in this article) ships with a native PL Mount installed and a locking EF Mount. LPL mounts are available as optional accessories and Hasselblad HC mounts are in the works. It's easy to swap mounts with just four 3mm hex screws. The mounts themselves are all individually shimmable.

Lens and lens mount makers, please note: with the PL Mount, the distance from the PL flange to the front of the sensor's cover glass is 31.98 mm.

For the LPL Mount, the distance is 24 mm between the LPL flange and the front glass element.

Tim Schumann notes: "There is a light baffle built into the LPL mount that comes in slightly at the sides from about 13.7 mm—but that can be unscrewed from the mount if there are any lenses that will fit but are hitting the baffle.

## Power

URSA LF uses a 24V power supply. It has a B-Mount on-board battery plate in back. The B-Mount battery interface is an open

industry standard developed by bebob. It supplies 24V at 15 amps or more. The internal release mechanism of the B-Mount Battery allows for smaller battery plates than with V- or Gold-Mount plates.

12 volt V-Lock and Gold-Mount plates are available. But 24V is recommended for powering the camera as well as lens motors and multiple accessories. An Anton/Bauer 26 volt plate will also be possible.

## URSA Cine EVF, Extender, Top Handle

The camera has a new URSA Cine EVF. It has soft-touch backlit buttons and uses a single USB-C cable for power and video. The viewfinder brackets and extender are works of art. They have dovetails for quick release. The viewfinder extender works with standard eyepiece levelers. You get the extension arm with the larger of the URSA Cine kits or if you buy the viewfinder on its own. The top handle has a similar dovetail mounting mechanism and you can very quickly and easily remove the entire viewfinder system and the top rods completely.

## URSA Cine Baseplate 19

The camera ships with an URSA Cine Baseplate 19 which works with 19 or 15mm rods, and it works with ARRI standard dovetail plates. When you position the Baseplate's lever in the central position, you can slide the camera backwards and forwards. Push the safety catch in and move the level to the rear position to lift the camera straight up off the dovetail plate.

# Blackmagic URSA Cine 12K LF



## Sensor and Anamorphic Desqueeze

Every in-camera recording format has the option of anamorphic desqueeze, with 2x, 1.8x, 1.66x, 1.6x, 1.5x, and 1.3x ratios.

## Focus Pullers Rejoice

Push the LENS button on the camera right side. The right-side monitor displays focus distance and aperture opening. Touch the “+” icon on screen to set focus marks. You can also choose between Metric and Imperial focus scales. Lens name, focal length, maximum aperture and serial number are shown for lenses with /i data contacts. This LENS screen can be sent via an SDI output if you’re pulling focus with a bigger monitor on set.

## Connections Forward (in Front)

- 3-pin Fischer style RS Remote Start-Stop and 24V 2A.
- 7-pin LEMO for Start-Stop and Serial connection. Also shares 24V 2A with the 3-pin RS port.
- The Viewfinder port has a USB-C connector to supply power and video. It locks with a 2mm hex screw.
- There are three different USB-C cables in the kit: one long cable and two short ones, one of which has a right angle connector at both ends. The other cable has a right angle at one end and a straight connector at the other end.

## Connections in Top

- Top right: 2 USB-C ports with weather-resistant covers. Use the rear USB-C port for camera updates and data downloads.
- Top, rear: 2x WiFi antennas, 2.5 and 5G.
- 2x 3-pin XLR connectors for Mic, Line or AES audio input.
- 2-pin LEMO 12V 1.5A power out port on top of battery plate.

## Connections Aft (at the Rear)

- Two 12G SDI BNC connectors. Each is independently configurable. You can send a clean feed from one and a “dirty” feed on the other, for example, with your focus puller’s screen.
- BNC Connector for Genlock or Timecode.
- RJ-45 10G Ethernet port – For media file downloads, web media management, camera control, Blackmagic Cloud media uploads, and more.
- 8-pin LEMO EXT. 24V DC external power input (pin compatible with ARRI ALEXA Mini, Mini LF and their cables).

## Media Bay - Camera Left

Open the flip-out monitor for access to the media bay. The camera ships with a Blackmagic Media Module 8TB SSD. It’s extremely fast — well over 5GB/s — with 16 PCI Express lanes.

In addition to the 8TB M.2 solid state storage Media Module, there will be a 2-slot CFexpress (Type B) module if you prefer CFexpress cards. A 16TB model is also planned.

## File Formats

URSA LF records Blackmagic RAW internally and also records simultaneous H. 264 proxy files.

With a 24V power supply or battery, the top speed is 80 fps in 12K Full Frame full height, 12,228 x 8,040 Open Gate 3:2 aspect ratio—and 120 fps in 2.4:1 (2.39:1) full width 12,228 x 5,112.

## Remote Control

The familiar Blackmagic Camera Control app will connect to the camera via Bluetooth. You can also connect to the camera via its

# Blackmagic URSA Cine 12K LF



10G Ethernet port or Wi-Fi and control the camera remotely.

The 7-pin LEMO connector at the front of the camera can also be used for start-stop and camera control from FIZ Hand Units. The serial control connected to this 7-pin LEMO will be able to use all the same Camera Control REST API commands that the Ethernet also responds to. Third party developers of follow focus equipment will be able to power their motors, send simple run-stop commands on the RS pins and also send camera control commands through this 7-pin port as well. Almost every function of the camera can be controlled through this connector.

## Price

The Blackmagic **URSA Cine 12K LF** camera system is US \$14,995. It comes in a nice, custom carry-on Pelican case with PL lens mount, Media Module 8TB, Top Handle and bolts, Top 15mm Rod Mount, Cine Baseplate 19 for 19mm rods, B-Mount Battery Plate, Locking EF mount, 24V 250W power supply, Da-Vinci Resolve Studio activation card., etc.

**URSA Cine 12K LF + EVF** camera system is US \$16,495. It comes in a slightly larger, equally nice custom Pelican case with all the things above, and: URSA Cine EVF, EVF Rotating Bracket with attached 19mm carbon fiber rod, EVF Bracket Rod Mount, EVF Finder Extension, 2x short carbon fiber 15mm rods, 3x viewfinder cables, rubber eyecup and chamois eyecup cover.

The Blackmagic Media Dock with 3 Media Module Bays is US \$1,995.

Additional 8TB Blackmagic Media Modules are US \$1,695 each.

[blackmagicdesign.com/products/blackmagicursacine](http://blackmagicdesign.com/products/blackmagicursacine)



URSA Cine 12K LF Camera System



URSA Cine 12K LF + EVF Camera System

# Blackmagic URSA Cine 12K LF

## Camera Left - Monitor Door Closed



## Camera Left - 5" LCD Monitor / Door Open





# Blackmagic URSA Cine 12K LF

Brilliant!

There's a second 5" HDR LCD 1920x1080 Monitor / Menu 1500 nit Touchscreen Display on the URSA Cine 12K LF camera on the camera right side.

Up to now, this has been derided as the "dumb side."

No more. The touchscreen lets you access all camera settings.

Focus pullers can enjoy the advanced "focus page" which displays focus and iris scales and marks on /i-equipped lenses.

Camera operators will rejoice not having to swat away the eager fingers of ACs, DITs or sound recordists attempting to make adjustments on the "smart-side" operator-side of the camera where menu controls previously resided on URSA cameras.

LENS: Focus Pullers, press here to cycle between rich, lean and clean views. Press DISPLAY button to view status, codec, resolution, audio, etc.

## Camera Right



Rear USB-C port: use this when updating camera

USB-C

/i lens data contacts at standard 12 o'clock position of PL Mount.

7-pin LEMO EXT connector: serial port, AKS power and start / stop.

- Pin 1 = Serial 2 RX
- Pin 2 = Serial 2 TX
- Pin 3 = Serial 1 RX
- Pin 4 = Serial 1 TX
- Pin 5 = 24V DC Out
- Pin 6 = Ground
- Pin 7 = RS Run / Stop

3-pin Fisher RS connector.  
Pin 1 = Ground  
Pin 2 = 24V DC Out  
Pin 3 = RS Run Stop

MENU

RECORD

## Rear



Camera comes with this B Mount (bebob style) for 24 volt onboard batteries. Using 12-14 volt batteries limits speeds above 60 fps and powering RS or EXT connectors.

USB-C

12G-SDI A OUT

12G-SDI B OUT

Timecode IN and REF IN

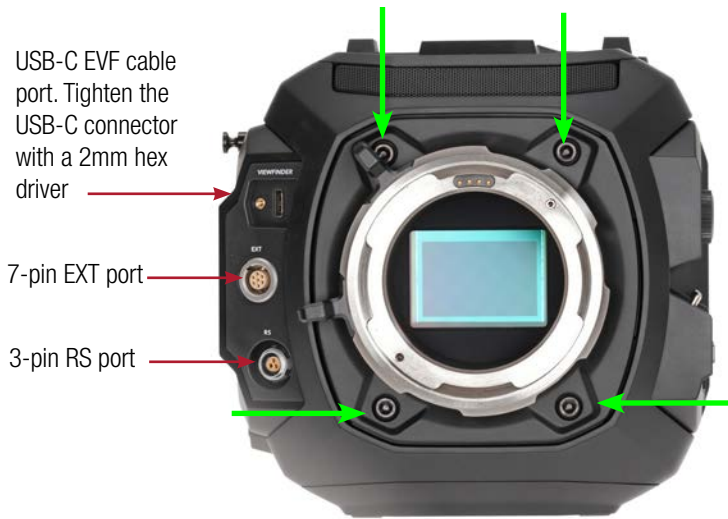
RJ-45 10G Ethernet

8-pin LEMO External Power IN. Camera comes with a 24V DC 250W power supply. Also accepts +12 - 34 V DC, but works best at +24 - 34 V DC. Pins 2,3,4 = ground. Pins 6,7,8 = DC + power.

Headphones

# Blackmagic URSA Cine 12K LF Lens Mounts

## Front



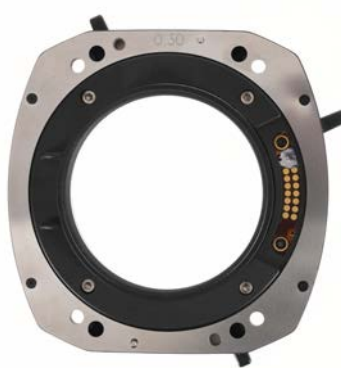
1. The URSA Cine 12K LF camera comes with a PL Mount attached. The PL Mount is distinguished by its two breech-lock tabs. An LPL Mount has three tabs.

There's a locking EF mount in the case.

Blackmagic also has an optional LPL mount and presumably more mounts will follow from them or third parties like Panavision, etc.

2. To swap mounts, remove the four 3mm hex screws in front (shown with green arrows).

3. Below: this is what the front of the camera looks like with the lens mount removed:



LPL Mount rear (toward camera) view



LPL Mount front view

4. Below: the LPL Mount is installed:



Locking EF Mount rear (toward camera) view



Locking EF Mount front view

# Blackmagic URSA Cine 12K LF

Top view with Top Handle, EVF, Bracket and Rods (15mm)



2-pin LEMO on top of battery plate for 12 V accessories.  
Pin 1 = Ground  
Pin 2 = +12 V DC 1.5A

Top



3x 1/4-20 and 4x 3/8-16 threads on top →

Keep vents clear.

Bottom



4x 1/4-20 and 5x 3/8-16 threads on bottom →

# Blackmagic URSA Cine 12K LF Studio Mode



URSA Cine 12K LF with EVF, Rotating EVF Bracket with attached 19mm carbon fiber rod, EVF Bracket Rod Mount, EVF Finder Extension, 2x short carbon fiber 15mm EVF rods, Blackmagic URSA 12K Baseplate and Bright Tangerine Misfit Kick Mk II 3-Stage Mattebox Kit, clipped onto SIGMA FF 65mm T1.5 prime lens and LeftField Standard Dovetail plate.

View from the Top



# Blackmagic URSA Cine 12K LF Handheld with Bright Tangerine

Bright Tangerine makes bright accessories to complement your Blackmagic URSA Cine 12K.

Like a perforated art installation, or Nike Flyprint marathon running shoes, or cool robot, Bright Tangerine's KASBAH Atman Universal Shoulder Rig Kit and Handles comfortably fit to your form.

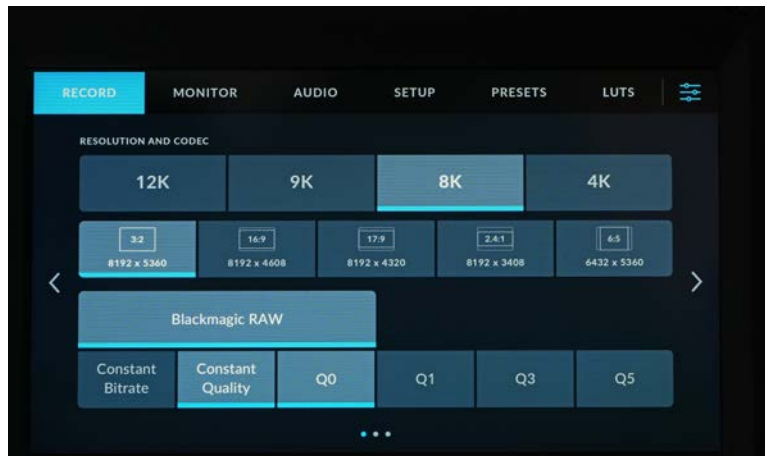
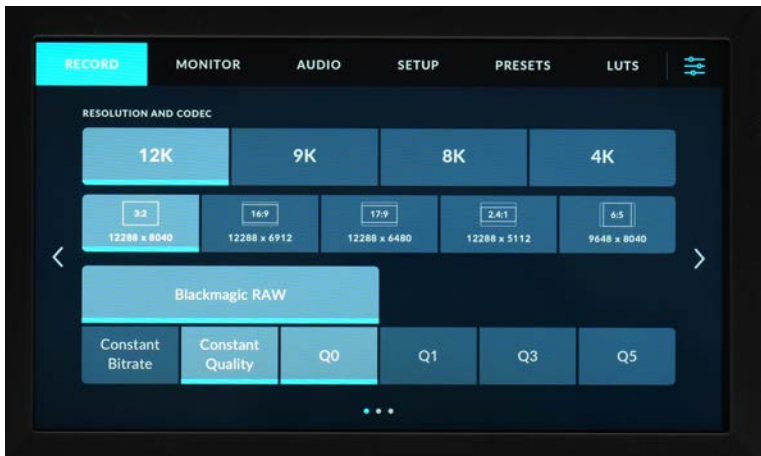
Complete with Bright Tangerine's 15mm LWS Support Kit, Drumstix 15mm Titanium 6" Support Rods, Misfit Kick Mk II 3-Stage Mattebox with Frame Safe Clamp Adapter, clipped onto SIGMA 65mm T1.5 FF prime.

[brighttangerine.com](http://brighttangerine.com)



The KASBAH ÄTMAN Universal Shoulder Rig has a sliding, perforated shoulder pad and articulating hand grips. It is extremely lightweight, well-balanced, and as comfortable as a parrot perched upon a shoulder for long hours of handheld camera work. When a tripod is needed, it attaches to a VCT-14 plate.

# Blackmagic URSA Cine 12K LF Q & A



RECORD. This is the opening page of the URSA Cine 12K LF menus. If you've worked with earlier Blackmagic URSA cameras, it will be familiar.

**Q: For the very best quality, what best: Constant Bitrate or Constant Quality ?**

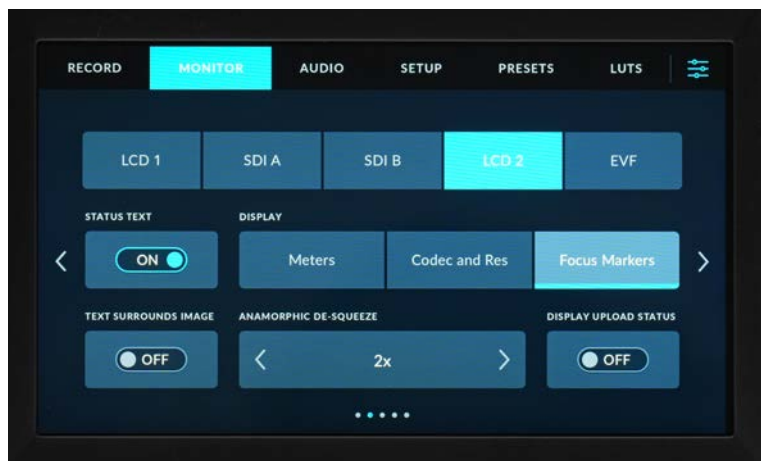
A: It's always good to ask the Product Manager. Tim Schumann replies: Constant Bitrate of 3:1 is good. Arguably Constant Quality Q0 or Q1 settings will get you slightly better results if you are doing a shot that is insanely difficult to compress (think a glitter cannon going off at the Super Bowl on a wide shot at 12K 80 fps on a very sunny day with absolutely no motion blur or bits that are out of focus in the shot). In normal shooting conditions it will be very hard to spot any difference between them. Even the higher compression Q3 is a really nice sweet spot for image quality and data rate.

**Q: For 2.39:1 spherical widescreen best quality for theatrical and streaming delivery, what is best: 12K or 4K BRAW and choose the 2.4:1 sensor mode?**

A: For best quality in terms of resolution, 12K at whatever aspect ratio is closest to what you are finishing in is best. If you aren't as concerned with resolution and are after best motion rendition, then 8K will have a bit of an edge over 12K as we run the sensor faster, so sensor readout time is decreased substantially. 4K has the same temporal benefits of the 8K modes but also saves you a bit of space in terms of file size.

**Q: Does the Menu setting "Apply LUT in file" embed it forever?**

A: We aren't baking in the LUT. This setting means that the LUT will be turned on by default when looking at the RAW file in DaVinci Resolve. The LUT will be saved in the header of the file.



**ANAMORPHIC**

**Q. What sensor mode do you recommend for 1.3x squeeze Full Frame full height anamorphic for 2.39:1 delivery ?**

A: Using the chart on page 114 of the URSA Cine 12K manual—available online: [blackmagicdesign.com/support/family/professional-cameras](http://blackmagicdesign.com/support/family/professional-cameras)

I'd say shooting in 16:9 or 17:9 would be the best formats for getting to 2.39:1 with a 1.33x squeeze. Granted this isn't full height but even if you do shoot full height in 3:2 or 6:5 you are going to have to crop off the top and bottom of your image to get to 2.39 anyway.

Capture Format	3:2	16:9	17:9	2.4:1	6:5	
Capture Format :1	1.50:1	1.78:1	1.89:1	2.40:1	1.20:1	
	Desqueezed Aspect Ratio					
Squeeze Factor	None	1.50:1	1.78:1	1.89:1	2.40:1	1.20:1
	1.33x	2.00:1	2.36:1	2.51:1	3.19:1	1.60:1
	1.5x	2.25:1	2.67:1	2.83:1	3.60:1	1.80:1
	1.6x	2.40:1	2.84:1	3.02:1	3.84:1	1.92:1
	1.66x	2.49:1	2.95:1	3.14:1	3.98:1	1.99:1
	1.8x	2.70:1	3.20:1	3.40:1	4.32:1	2.16:1
	2.0x	3.00:1	3.56:1	3.78:1	4.80:1	2.40:1

This Anamorphic Desqueeze chart, derived from Blackmagic's, is helpful and saves time working through the math of figuring out how wide your desqueezed windscreen anamorphic delivery format will be.

For example, using a 2x squeeze Full Frame anamorphic lens with URSA Cine 12K LF's Full Frame 3:2 (1.5:1) capture format will result in a 3:1 desqueezed image. But your delivery format is 2:1. You can crop in post.

Or, let's say you want to shooting with a 1.5x squeeze anamorphic in URSA Cine LF's other full-height 23.32mm capture format of 6:5 (1.2:1) for a 2.39:1 delivery. The chart shows that you will not achieve 2.39:1.

And, if you see 2.40:1 in the chart, you can always crop slightly vertically or horizontally in post to get 2.39:1 instead of 2.40:1.

# URSA Cine 17K 65mm Camera. Lenses Available.



URSA Cine 17K 65  
Camera with LPL mount  
Sensor size:  
50.81 x 23.32 mm  
Diagonal: 55.9mm



URSA Cine 12K LF  
Camera with PL mount  
Sensor size:  
35.64 x 23.32 mm  
Diagonal: 42.59 mm

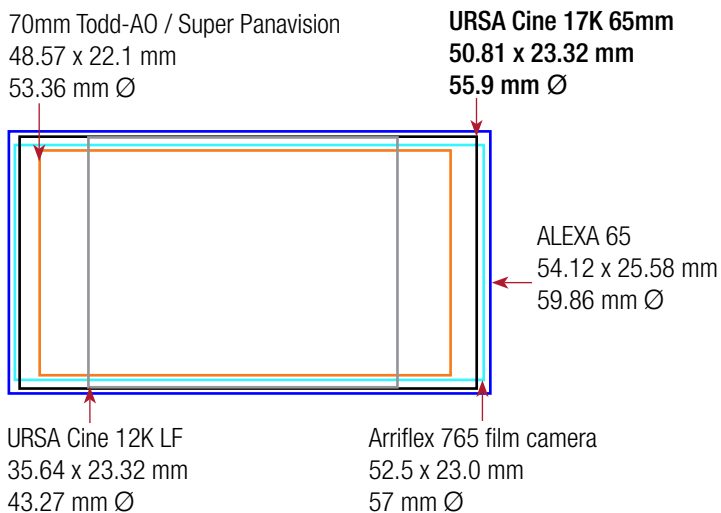
Blackmagic's URSA Cine 17K 65mm camera was announced in April. It was under glass at NAB and Cine Gear. Soldering and software deities willing, a touchable pre-production camera will appear at IBC in Amsterdam.

We'll probably hear the first rumblings of new 65mm format lenses at IBC as well. Meanwhile, the Larger Format world opens up with many existing 65mm and Larger Format lens series—vintage, ancient and modern. Here's a quick preview.

- Blackwing7 primes: 20.7, 27, 37, 47, 57, 77, 107, 137 mm T1.9 in PL mounts.
- Leitz Thalia: 24, 30, 35, 45, 55, 70, 100, 120, 180 mm. T2.2 to T3.6. Image diagonal is 60mm. Thalias come in user-swappable PL or LPL mounts.
- Whitepoint Optics TS70 Large Format Prime Lens Series, rehoused Hasselblad: 30, 40, 60, 80, 100, 120 mm T2.8 to T4. Image circle: 80mm.
- Ottoblads from Otto Nemenz International Rental: 30, 40, 50, 60, 80, 100, 120, 150, 180, 250, 350, 500 mm T 3.5 to T4.0.
- ARRI Rental Prime 65 (rehoused Hasselblad): 24, 28, 35, 50, 80, 100, 150, 300, 50-110 mm T2.2 to T4.5.
- ARRI Rental Prime 65 S: 35, 45, 55, 75, 90, 120, 150 mm T2.5 to T2.8.
- ARRI Rental Prime DNA: 35, 45, 55, 70, 80, 110, 150, 200 mm T2.8 to T3.5.
- TLS rehoused Mamiya 645, in LPL mounts: 24mm fisheye, 35, 45, 55, 70, 80, 110, 150 mm T2.3 - T3.3
- Panavision System 65 (Rental): 24, 35, 40, 50, 75, 100, 150, 180, 300 mm T1.9 to T3.5.
- Panavision 65 Vintage (Rental): 24, 29, 35, 40, 50, 65, 80, 100,

- 135, 180, 300 mm T1.4 to T2.8
- Super Panavision 70: 28, 35, 50, 75, 100, 150 mm T 2 to T3.
- Ultra Panavision 70: 35, 40, 50, 65, 75, 100, 180, 290, 400 mm T2 to T6.
- Panavision System 65: 24, 35, 40, 50, 75, 100, 150, 180, 300 mm T1.9 to T3.5.
- Panavision Sphero 65: 24, 35, 40, 50, 75, 100, 135, 180, 300 mm T2 to T2.8.
- Vantage Hawk and many more.

## 65mm / 70mm Image Size Comparison



# Canon EOS C80



September 9, 2024. Canon announced the new Cinema EOS C80 Camera. Full Frame, RF mount, compact and lightweight, it has a 6K (26.67 Megapixel) sensor that measures 36.0 x 19.0 mm (40.7 mm diagonal). And look—it has a 4K 12G SDI Output BNC!

You could say this is the inevitable successor to the Cinema EOS C70 Camera that came out four years ago—September 2020. The C70 was the first RF mount Cinema EOS Camera. It became a breakthrough success because its Super35 4K sensor was similar to the Canon EOS C300 Mark III and yet it came in a much smaller body, albeit with fewer capabilities.

At that time, FDTimes wrote, “I expect the new Canon EOS C70 will blaze the path for an entire line of new RF mount cine cameras from Canon in both Super35 and Full Frame.”

Fast forward to November 2023. At InterBEE in Tokyo, Canon Inc Manager Isamu (Sam) Senoo warned me, “Jon, without telling you how, we’re going to keep you very busy in the coming year with new products.” He was right. It’s been a steady stream: RF mount Cinema Primes, EOS R5 C, RF24-105 F2.8, EOS C400, EOS R5 Mark II...

And so, on August 9, 2024, Yuji Tanaka (Canon USA Senior Man-

ager and Product Planner) and Paul Hawxhurst (Canon USA Senior Technical Specialist) arrived, bearing cameras and lenses and a pre-production Cinema EOS C80.

If you know how to use a C70 (and who doesn’t?) the new C80 will be familiar and you’ll be shooting almost immediately. It will also be familiar to users of the new C400—with main differences being lower top speeds and recording to SD cards rather than CFexpress and SD.

The EOS C80 camera bridges the gap between Canon Photography EOS and Cinema EOS families. This is the camera you want when you want high quality video with something that is unobtrusive or easy to carry in a backpack. It is small and lightweight—2.6 lb—and a pleasure to handhold.

The C80 has a thin, motorized ND filter unit that is only 6 mm thick. It fits within the 20 mm gap between the RF mount and the sensor. ND + and - buttons are in the familiar Cinema EOS location, on the camera left side, with 0, 2, 4, 6, 8 and 10 stops of light reduction. *Note that for 8 and 10 stops (ND2.4 and ND3.0) two filters are engaged in the optical path, shifting the flange focal distance of the lens accordingly. Your focus marks will be different and you may not reach infinity on some lenses.*



# Canon EOS C80



There are 13 assignable custom buttons for quick access to more than 80 functions. Have your P-Touch Label Maker ready with 6mm white on black tape to identify all those buttons.

The camera has a Canon Full Frame 6K back-illuminated stacked CMOS sensor with Dual Pixel AF II and Triple Base ISO, like the EOS C400. It records to SD media—there are two SD card slots on the camera right side.

The camera records in RAW LT, RAW ST, XF-AVC, XF-AVC S and XF-HEVC S formats. For example, Full Frame RAW LT 6000x3164 12-bit is available from 1 to 30 fps. XF-AVC Intra-Frame Full Frame 4K goes from 1-60 fps and 2K from 1-120 fps. In XF-AVC, AF-AVC S, and AF-HEVC S, the top frame rate in 4K is 120 fps, while in 2K resolution it's capable of 180 fps.

There are two available sensor modes: Full Frame and Super35. In Full frame, the effective image size is 36.0 x 19.0 mm (40.7 mm diagonal) at 6000x3164, 4096x2160 and 2048x1080 resolutions.

At 3840x2160 and 1920x1080 resolutions, image size is 33.8 x 19.0 mm (38.7 mm diagonal) So, yes, you can have Full Frame HD.

In Super 35mm (Crop) Sensor mode, the effective image size is 26.2 x 13.8 mm (29.6 mm diagonal) at 4368x2304, 4096x2160 and 2048x1080 resolutions.

And at 3840x2160 and 1920x1080 resolutions, image size is 24.6 x 13.8 mm (28.2 mm diagonal).

The Cinema EOS C80 has an active fan cooling system. Air intake is on the camera left side. The exhaust vent is on the camera right side, above the handgrip. This cooling system is isolated from the sensor and electronics to protect them from water, sand, and dust and allows uninterrupted recording for extended periods of time.

The menu lets you select ALWAYS ON or AUTO. In AUTO mode, the fan will automatically stop when you're shooting, but if the camera gets hot, the fan will go on during a take. You can adjust this setting from the menu as well: FAN SPEED (REC).

The camera uses the same onboard battery as the EOS C400: BP-A30N or A60N — "N" as in new style 14.4 V DC battery. Canon's CG-A10 or A20 charger will fully charge the A30N battery that comes with the camera in about 175 minutes. An A60N will take about 310 minutes to full charge.

There's a 24 V DC (23.7 - 25 V) DC IN external power connector at the rear and the camera comes with a CA-CP300 B Compact Power Supply.

By the way, older style BP-A60 and A30 will also work, though run time may not be as long.

# Canon EOS C80

Canon Cinema EOS C80 with Canon RF 24-105mm F2.8 L IS USM Z zoom lens.

Accepts optional Canon Power Zoom Adapters (servos) PZ-E2 and PZ-E2B. (The EZ2B has a 20-pin connector for external or remote zoom control.)



Canon Cinema EOS C80 with Canon RF 35mm F1.4 L VCM lens



## Canon Cinema EOS C400: A few Quick Specs

Lens mount	RF mount. 20 mm Flange Focal Depth, 54 mm Inside Diameter.
Sensor	Full Frame 6K CMOS sensor. Approx. 26.7 megapixels total (6202 x 4300). Actual picture area at 6000 x 3164 Full Frame Sensor Mode: 36.0 x 19.0 mm (40.7 mm diagonal)
ISO sensitivity	160-25600 (Extended: 100-102400)
Triple BASE ISO	Clog2 / Clog3 RAW = 800, 3200, 12800. Canon 709, PQ, HLG, Wide DR = 400 / 1600 / 6400 BT. 709 Standard = 160 / 640 / 2500
Sensor modes	Full Frame, Super35 Crop.
Dynamic range	16 stops in Canon Log 2 at Base ISO 800.
Recording formats	Cine: Cinema RAW ST, LT, XF-AVC, XF-HEVC S, XF-AVC S / Photo: JPEG
LCD Monitor:	3.5-inch (8.8 cm diagonal) touchscreen, approx. 2.76 million dots, (1280 x RGB x 720)
Outputs:	Full size HDMI connector and SDI BNC connector
Dimensions — camera body only	160 x 138 x 116 mm / 6.3 x 5.4 x 4.6 in. (W x H x D)
Weight — camera body only	1310 g / 2.9 lb

# Canon EOS C80

Front



Top

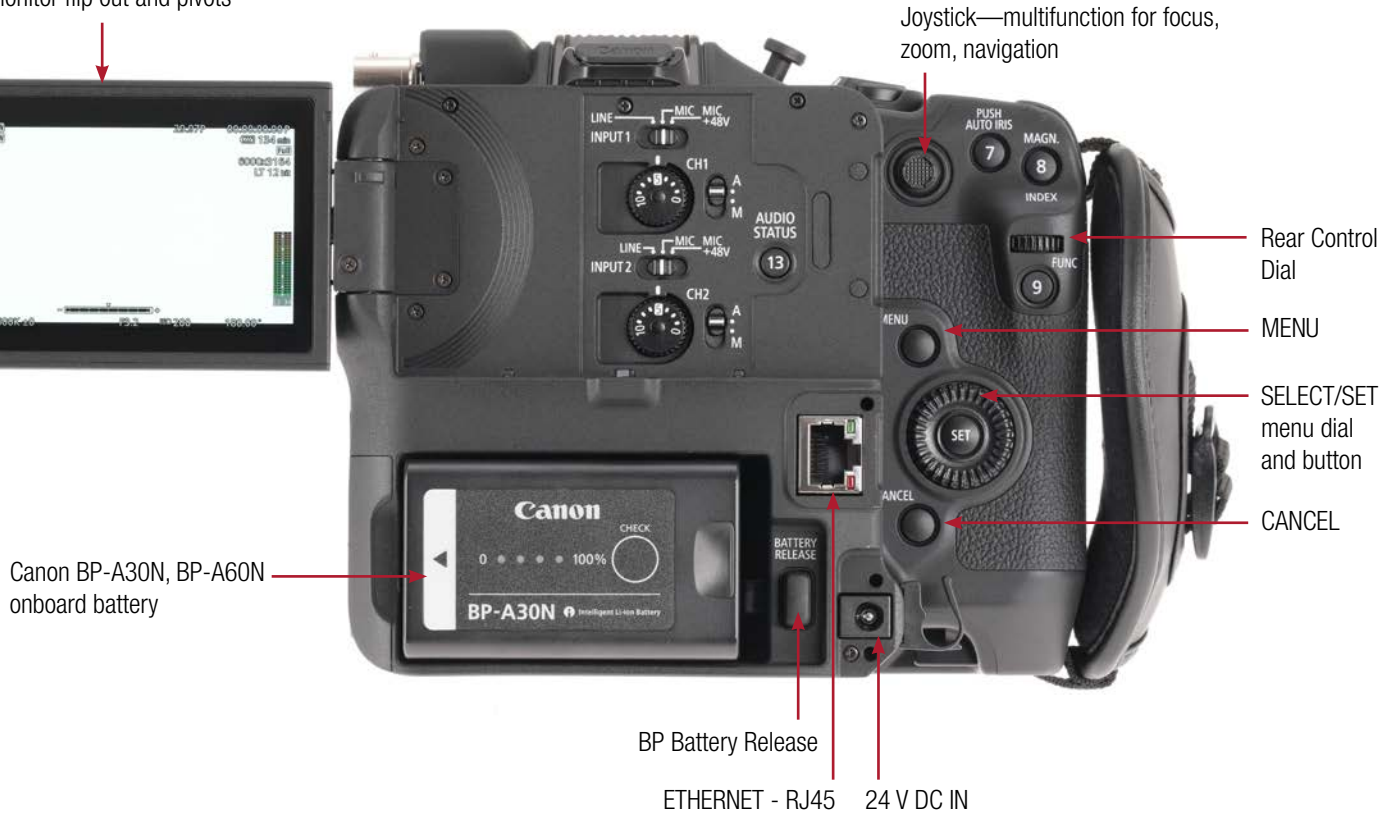


# Canon EOS C80

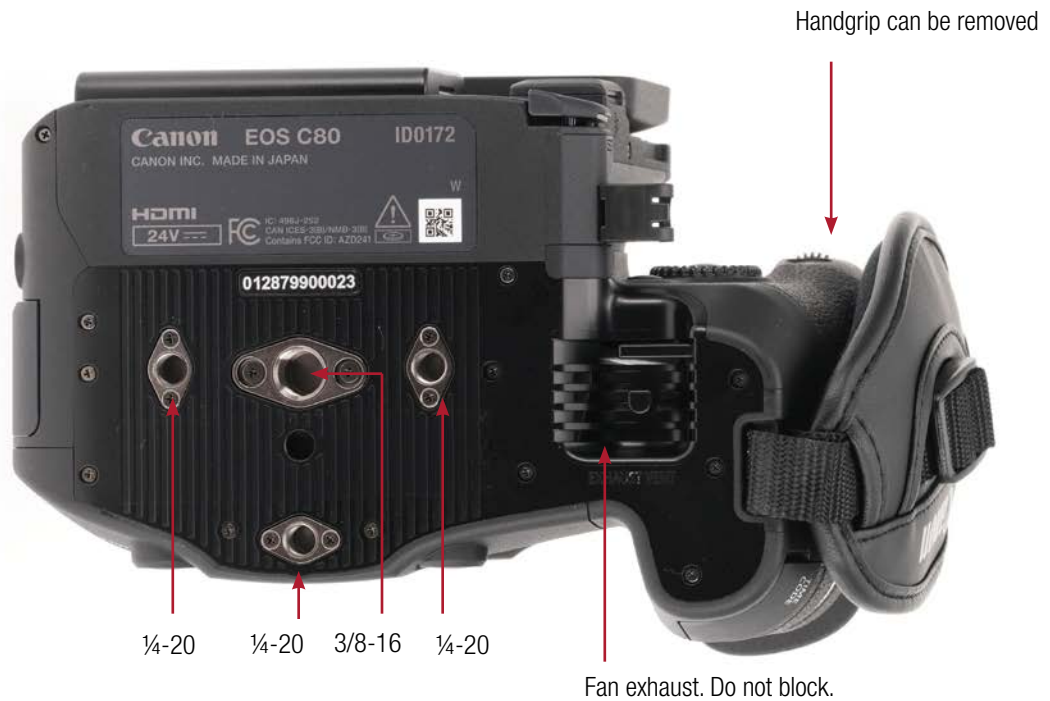
3.5" (8.8 cm) 2.7 million dot 1280x720 LCD monitor flip out and pivots



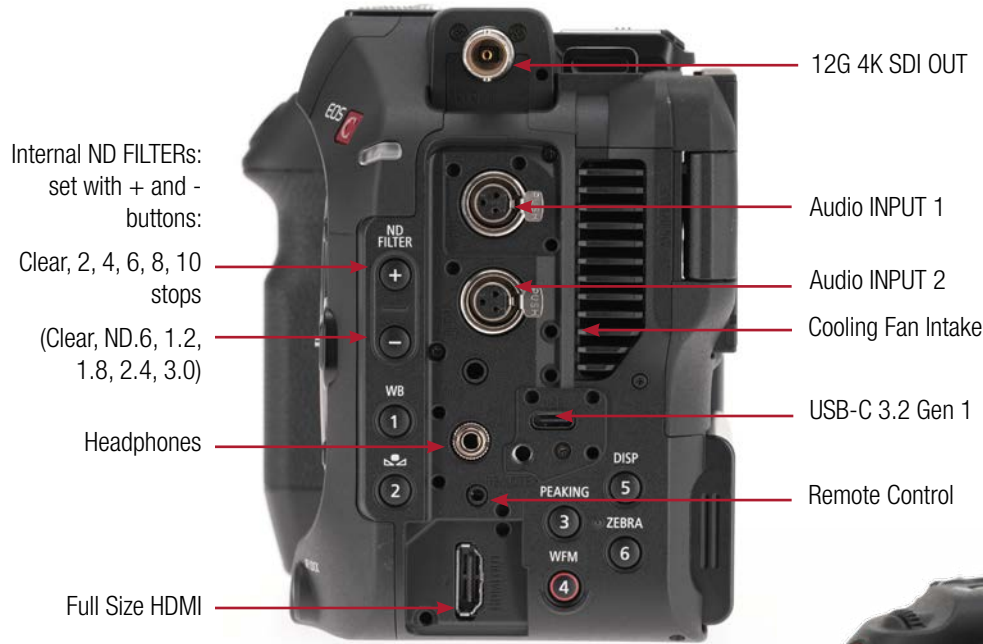
## Rear



## Bottom



# Canon EOS C80



**Camera Left Side  
with connector covers  
removed**

**Camera Left Side  
with covers on**



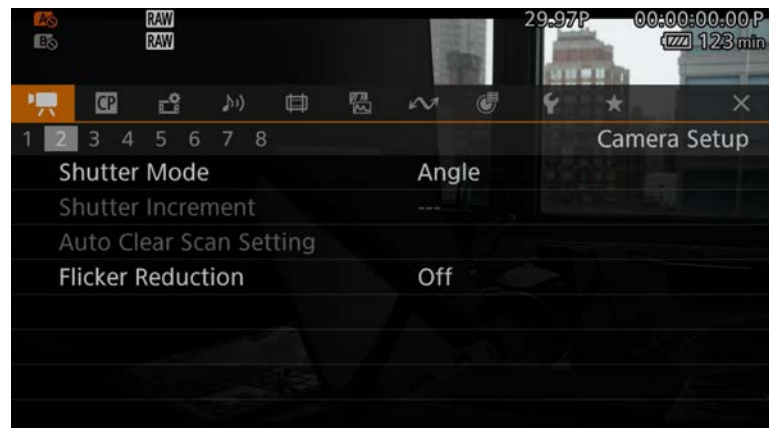
**Camera Right Side  
with SD Media Door  
open, BNC cover  
removed, and  
Handgrip strap  
removed**



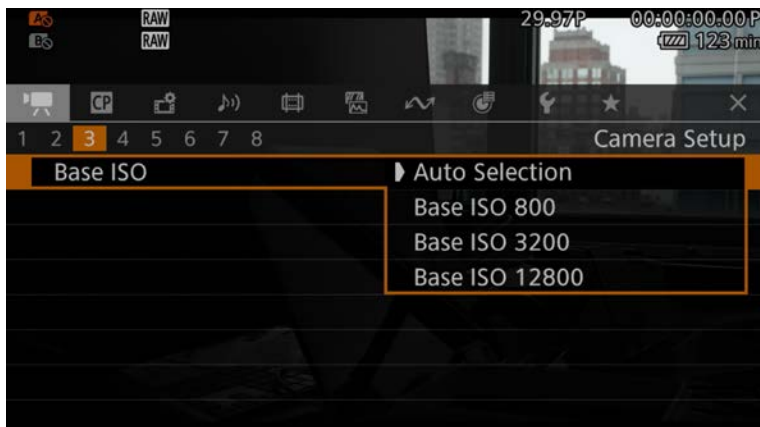
# Canon EOS C80 Menus



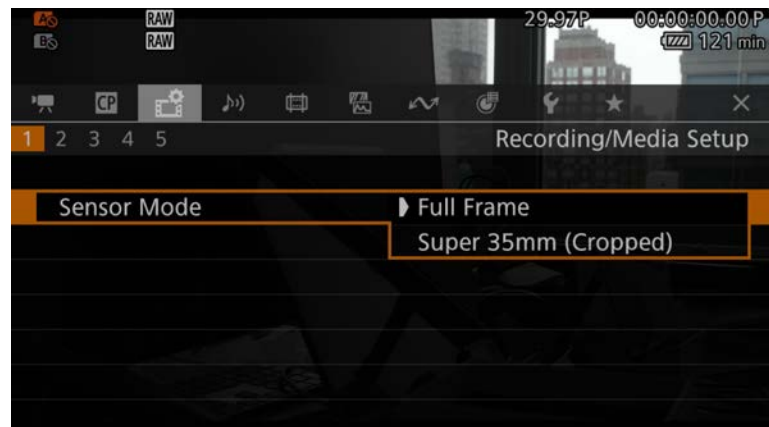
1. Set internal ND filter units to stops or ND or fraction. I like stops.



2. Set Shutter Mode to Angle, as in 180° shutter and not 1/48th second.



3. Base ISO: Auto Selection works well.



4. Sensor Mode: Full Frame.



5. Let's record in Canon Cinema RAW LT.



6. There are 2 SD Card Slots. Choose how to use the 2nd Slot.



7. There are lots of Aspect Ratios from which to choose.

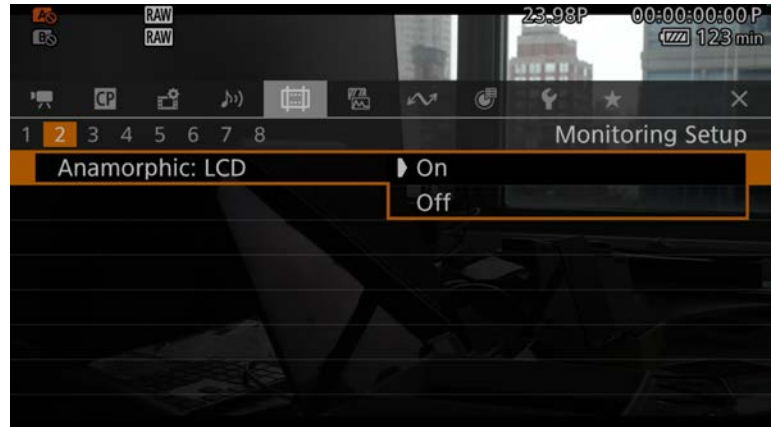


8. Or, create your own Custom Aspect Ratio with easy numerical entry.

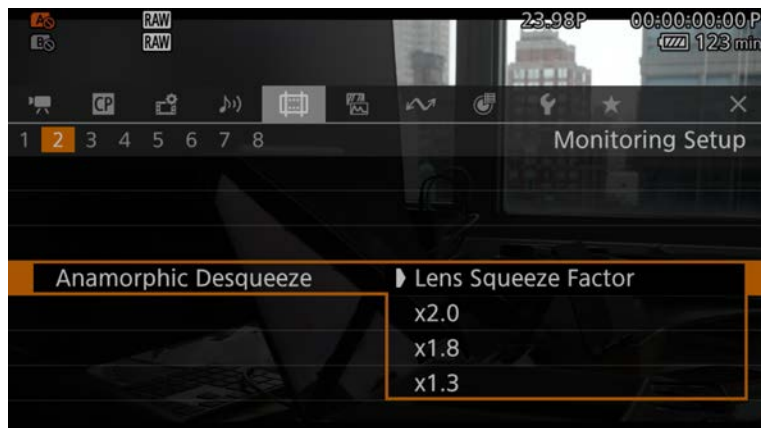
# Canon EOS C80 Menus



9. For anamorphic lenses, choose where to view desqueezed.



10. Here, we turned on the onboard monitor's anamorphic desqueeze.



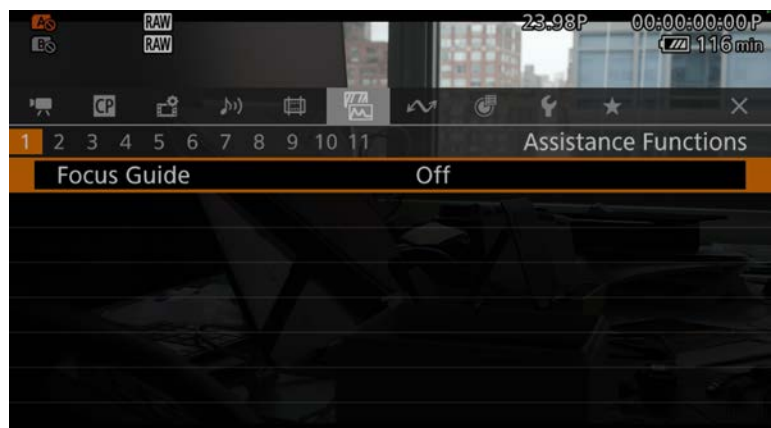
11. These are the anamorphic desqueeze factors so far.



12. Choose the appropriate SDI Output for an external monitor.



13. Focus distance can be displayed in the viewfinder.



14. The Focus Guide is very good. Turn it ON for manual focusing.

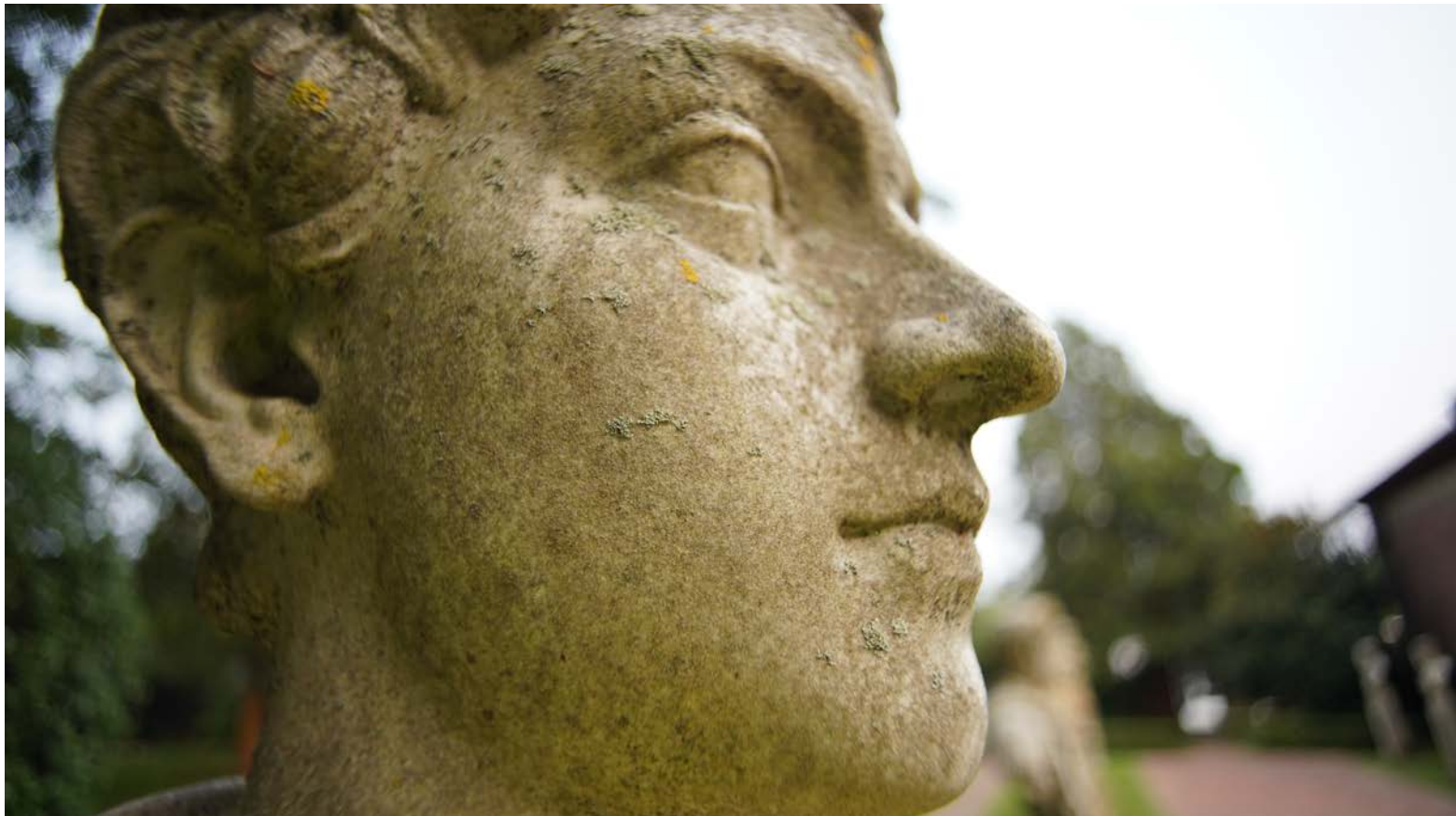


15. Paul and Yuji. C80, C400, lenses and everything in one small case.



The best menu: Chicken Chashu Ramen at Meijin New York City.

## Cooke 18mm SP3



Captured with the new Cooke SP3 18mm wide open at T2.4.

Before *Gladiator* (2000), there was *Caligula* (1979) starring Malcolm McDowell and Helen Mirren (yes, her), and before that, this statue, above.



Hail, Caesar! (Also the title of a good 2016 Coen brothers film.) Here's Hadrian, Roman emperor, 2008 BBC documentary and this statue.



## Cooke 18mm SP3



Cooke Optics has added an 18mm T2.4 prime to their SP3 line of mirrorless cine lenses, available in E-mount, RF, L and M mounts.

Smooth skin tones, even on stone Caesars at the Southampton Arts Center, opened in 1898 by Samuel Longstreth Parrish who was fond of Italian Renaissance art and reproductions of Caesar statuary. The new 18mm SP3 has an extremely close 10" minimum

focus that enables nicely shallow depth of field, Cooke-look focus fall-off, and wonderfully round bokeh with a swirly periphery.

The Cooke SP3 series launched last year ago with 5 prime lenses from 25 to 100 mm. Inevitably, Oliver Twist, BSC and many other famous DPs asked the nice designers at Cooke, "Please, sir, I want some more. Something wider." And so, the gorgeous 18mm.





Cooke 18mm SP3 prime lens at the Southampton History Museum, built by Captain Albert Rogers in 1843.



# Cooke 18mm SP3



Cooke introduced SP3 prime lenses on September 5, 2023 — a year ago. Tim Pugh, CEO at Cooke Optics, said, “The SP3 lens series represent a significant strategic move into an exciting new sector that expands the horizons for such an iconic brand.” They proved to be the right lenses at the right time: a new line of compact, lightweight, mirrorless mount, affordable lenses.

The new Cooke SP3 primes are based on a reincarnation of the legendary Cooke Speed Panchros.

- They have modern mechanics and a single optical coating.
- They all cover Full Frame and have a T2.4 maximum aperture. The lens mount is easy to swap. You do not have to be a lens tech, nor do you need a clean room.

- SP3 lenses come in E-Mount. RF, L and M mounts are available as accessories. You can choose a second mount free of charge within 90 days of purchase.
- Focus scale has both Imperial and Metric marks —no need to swap or flip.
- SP3 lenses match Panchro/i Classic FF and S35 series.
- SP3 are small, lightweight and share the same focus and iris gear positions.
- There’s a ¼-20 threaded lens support at the bottom of the lens.
- [cookeoptics.com](http://cookeoptics.com)

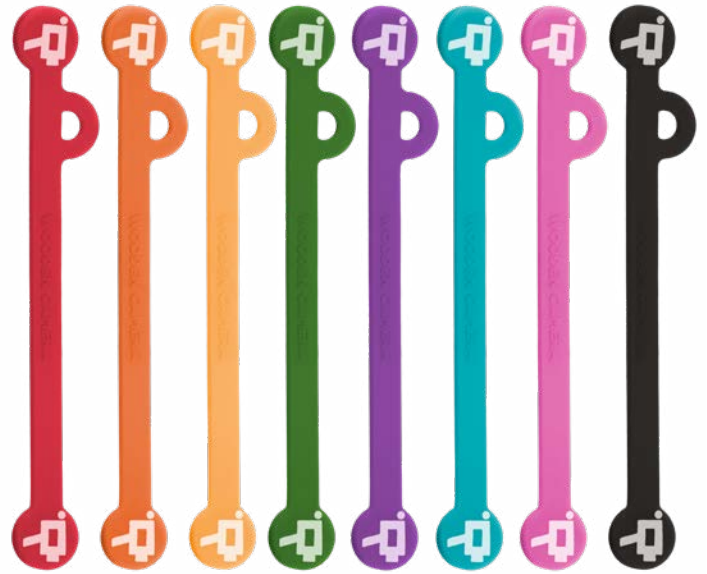
Lens (focal length)	18mm	25mm	32mm	50mm	75mm	100mm
T-Stop range	T2.4 - T16	T2.4 - T16	T2.4 - T16	T2.4 - T16	T2.4 - T16	T2.4 - T16
Angular rotation of iris scale	78°	78°	78°	78°	78°	78°
Minimum marked object distance (MOD)	.25 m	.25 m	.35 m	.50 m	.800 mm	.80 m
	10 in	10 in	13 in	20 in	3 ft	3 ft
Angular rotation to MOD end stop	160°	160°	160°	160°	160°	160°
Length from front of lens to lens mount (E - Mount)	109 mm	98 mm	94 mm	94 mm	98 mm	124 mm
	4.29 in	3.85 in	3.7 in	3.7 in	3.85 in	4.88 in
Maximum front diameter	82 mm	64 mm	64 mm	64 mm	64 mm	82 mm
	3.22 in	2.52 in	2.52 in	2.52 in	2.52 in	3.22 in
Total weight (with lens mount)	688 g	575 g	520 g	500 g	520 g	690 g
	1.51 lb	1.27 lb	1.15 lb	1.10 lb	1.15 lb	1.52 lb
Screw-in filter	M77 x 0.75	M58 x 0.75	M58 x 0.75	M58 x 0.75	M58 x 0.75	M77 x 0.75



- Maximum format coverage: Full Frame, optimized for 43.3mm coverage
- Focus scale: Non-linear, Imperial and Metric scale, marked from infinity to MOD.
- Focus & Iris drive gears: 83 teeth 0.8 Metric Module.
- Iris scale: Non-linear scale, marked in whole and 1/3 stops.
- Available lens mounts: E, RF, L and M mounts.



# SmallHD Custom Colors and Colorful Wooden Camera Cine Mag Ties



Colorful Wooden Camera Cine Mag Ties

Summon your inner arts & crafts creativity and make life on set just so. Color code camera systems; organize chaos.

SmallHD now has custom colors for their Ultra 7 Monitors (2300-nits, 6G-SDI, HDMI 2.0, PageOS, IP54). Wooden Camera has colorful Cine Mag Ties (magnetic cable organizers).

“Instead of the endless hours spent cutting and applying color-coded tape, we’re offering the ability to order a custom Ultra 7 Monitor built with 10 different color options,” said Greg Smokler, VP of Cine Products at Creative Solutions.

Ultra 7, Ultra 7 Bolt 6 RX and Ultra 7 Bolt 6 TX can be customized with bumpers, buttons and Teradek antenna bands in a riot of colors. Each custom color Ultra 7 is made to order at SmallHD. MSRP for a custom color is \$200 above the original price. Delivery time varies depending on color and availability. This special customization is only available online. [smallhd.com](http://smallhd.com)

Visit SmallHD at IBC in the Videndum - Creative Solutions booth: 13.A05



Custom Colored Buttons and Bumpers for SmallHD Ultra7 Monitor (shown with EL Zone Exposure “Meter” in PageOS)

# Wooden Camera's Elite Accessory System for Canon EOS C400



Here's Wooden Camera's new Elite Accessory System for the Canon EOS C400.

Dominick Aiello, Senior Director of Accessories at Creative Solution, said, "We worked hard to develop a really adaptive, modular system that lets users quickly build out their setup with their preferred accessories, and it was great to watch people validate our efforts in a hands-on environment."

"Wooden Camera designed its Elite Accessory System for Canon EOS C400 to integrate with a wide range of Wooden Camera, Canon, and third-party accessories, giving users the flexibility to fine-tune their setups for a variety of camera setups. This collection lets users increase the number of mounting points and power options well beyond the base camera package."

[woodencamera.com](http://woodencamera.com)

Visit Wooden Camera at IBC in the Videndum - Creative Solutions booth: 13.A05

Ultra Handle with Adaptor for Canon C400 EVF



Top plate system



Battery Slide Pro



NATO Side Rail



Riser plate



Base plate accepts 15mm rods



# Anton/Bauer VCLX Li 1600 Battery



VCLX 2 charger  
can attach to  
VCLX Li Battery



Until now, the Anton/Bauer VCLX lunch-box block battery sitting on your dolly or at the feet of your tripod was Nickel Metal Hydride (NiMH). Maximum power output was about 700 Wh. It weighed about 29.4 lb / 13.3 kg.

Anton/Bauer's new VCLX Li 1600 battery uses Lithium-Ion cells to deliver more than twice the power at a lighter weight.

Andrew Hutton, Head of Products at Anton/Bauer, showed a preview model at Cine Gear in June. He said, "Our goal is to support the dynamic needs of cinematic production by continually innovating power technology. The VCLX Li 1600 embodies this commitment by offering exceptional power, a durable design, and advanced safety features, providing reliable and efficient power for any production environment."

The VCLX Li Battery delivers 14.4 VDC, 28 VDC and 48 VDC at 1600Wh. So, for example, your camera package thirsts for about 300 Watts at 28V DC — 135 Watts for the camera, along with another 165 watts for monitor, wireless transmitter, wireless focus lens motors and receiver, focus assist and lens light. The VCLX will power that package for 5.3 hours (1600 ÷ 300 = 5.3).

- Power output: two 4-pin XLR connectors for 14.4V and one 3-pin XLR connector for 28V or 48V.
- USB Connector: 5V at 2A
- The VCLX Li 1600 Battery is compatible with Anton/Bauer's VCLX 2 charger.
- Charging: 8 hours to full charge.
- LCD Screen: 2.4" color LCD displays real-time information, including exact run-time (accurate to the minute) with load, time to full when charging, as well as system and fault information.

- In addition to seeing battery information displayed on the LCD screen, details can be downloaded as a CSV file, or viewed on Anton/Bauer's Fleet Management app via the battery's built-in Wi-Fi.
- Smart electronic fuses have automatic reset and self-heal capability.
- A Microprocessor Fuel Computer enables precise monitoring of energy flow, factoring in battery age and charge cycles.
- Built-in Self Test (BIST) assesses battery health and performance.
- There are tactile buttons for functions and menu navigation.
- Low voltage cut-off at 10V safeguards against battery damage.
- Multi-voltage output (14.4V, 28V, 48V) and high power output is useful for cameras, monitors and lights.
- Capacity: 1642 Wh
- Maximum Output: 750W
- Continuous DC Output: 24 Amps at 14.4V  
16 Amps at 28V  
16 Amps at 48 V
- IP65 rated Anodized lightweight aluminum chassis with durable over-molded elastomer end caps and handle protection.
- Silent running: passive cooling technology eliminates fan noise.
- Discharge Temperature Range: -4 to 138.2°F / -20 to 59°C
- Charging Temperature Range: 32 to 104°F / 0 to 40°C
- Dims: 10.04 x 12.99 x 6.02 in / 255 x 330 x 153 mm (WxHxD)
- Weight: 25.49 lb / 11.56 kg

[antonbauer.com](http://antonbauer.com)

# Fujifilm Duvo 14-100 Zoom Lens



The new FUJINON DUVO HZK14-100mm T2.9-3.9 Portable PL Mount Zoom Lens (DUVO 14-100mm) begins shipping soon.

As with FUJINON's DUVO HZK25-1000mm F2.8-F5.0 and DUVO HZK24-300mm T2.9-4.2, these are PL Mount zoom lenses that work well for cine, multi-cam and broadcast productions.

Stosh Durbacz, National Sales Manager at Optical Devices Division, FUJIFILM North America Corporation, said, "It offers coverage for nearly any creative demand while keeping operability well in mind, and its relatively small size and light weight make it well suited for everything from handheld use to balanced remote-head mounting. It really combines the best of two worlds. The addition of this portable wide-angle zoom lens expands the range of focal lengths available for the DUVO Series from 14mm to 1000mm. Being relatively compact and lightweight, DUVO 14-100mm is a comfortable handheld lens that can be used for shoulder-mounted operation, as well as with a Steadicam or remote head work on a crane."

The new DUVO zoom ranges from 14-100 mm in Super35 format and 21-150 mm in Full Frame / Large Format with its built-in 1.5x Expander. It is the smallest and lightest in the DUVO series, at 10.5" (266.9mm) long and 5.6 lb. (2.54 kg) weight.

## Details

- Minimum Object Distance: 0.6 m from the image plane (0.28 m from the front of the lens).
- Image circle: 28.5 mm in Super35. 41.33 mm in Full Frame /

Large Format (using built-in 1.5x expander).

- Maximum aperture in Super35: T2.9 from 14-75 mm, then T3.9 at 100mm.
- Maximum aperture in Full Frame: T4.5 from 21-111mm, then T5.85 at 150mm.
- Equipped with the same drive unit as the DUVO HZK24-300mm zoom lens.
- Supports multi-camera and live productions.
- Connects to wireless lens controls — focus, iris and zoom.
- The focus ring has an industry-standard gear pitch of 0.8M.
- Front diameter: 114 mm.
- A rubber lens hood with 127mm filter thread is included.
- Breathing Compensation Technology (BCT) automatically corrects focus breathing by syncing focus with zoom when the Duvo Drive unit is attached and powered.
- Remote Back Focus (RBF) enables control of Flange Focal Depth from a control panel or remote system that supports it.
- Lens data: /i Technology with ZEISS eXtended Data provides focus, zoom, and iris lens metadata as well as lens distortion and shading information.

Pricing: FUJINON DUVO 14-100mm T2.9-3.9 Portable PL Mount Zoom Lens is available at a manufacturer's suggested retail price of \$31,999 USD and will be shipping soon.

IBC booth 12.B20

[fujinon.com/duvo](https://www.fujinon.com/duvo)

# Fujifilm GFX100 II Larger Format – Multi Format Camera



GFX100 II camera body with its GF Mount.  
Camera dimensions: 6 x 4.6 x 1.8 in. / 152.4 x 117.4 x 46.5 mm.



GFX100 II camera body with GF to PL Mount Adapter.

Fujifilm introduced their 102 Megapixel GFX100 II a year ago, on September 12, 2023. You can call it “Larger Format” (larger than large) or “Giant Format,” which the letters GFX might suggest. The GFX100 II sensor measures 43.8 mm wide x 32.9 mm high (55 mm diagonal). That is about 1.7 times larger than Full Frame.

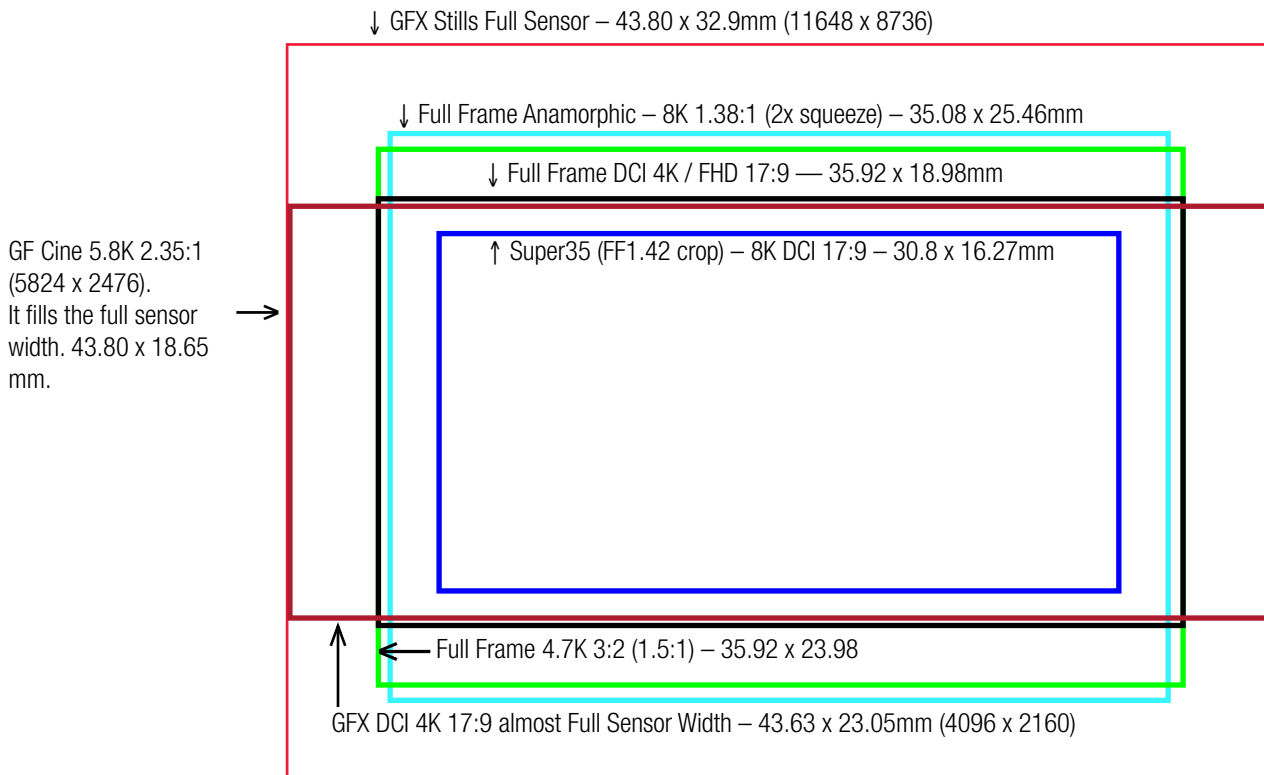
The camera’s Fujifilm G Mount has a flange focal depth of 26.7 mm with a very wide inside diameter around 65.0 mm. That opens up the world of almost any cine lens on the planet with

lens mount adapters—which is why Fujifilm calls the GFX100 II a multi-format cine camera.

There are at least 17 Fujifilm “Larger Format” GF lenses, including the fast 55mm F1.7R WR, 30mm F5.6 Tilt Shift and 110mm F5.6 Tilt Shift Macro.

These are more than 32 formats and sensor modes available on the GFX100 II, listed on the next page. However, you do not even have to abide by those. Just compose as you like and crop in post.

## GFX100 II Sensor Modes and Formats





# GFX100 II Formats, Sensor Modes, Resolution, Aspect Ratios, FPS, Sizes

Format	Mode	Output Resolution	Aspect Ratio	Width mm	Height mm	Diagonal mm	Maximum fps
<b>GF</b> (Giant Format, Larger Format)	Full Size Still Photography	11648 x 8736	4:3	43.8	32.9	54.78	8.0 fps
	DCI 8K	8192 x 4320	17:9	30.8	16.27	34.84	24 fps
	8K	7680 x 4320	16:9	28.88	16.27	33.15	30 fps
	5.8K CineScope (Widescreen Spherical)	5824 x 2476	2.35:1	43.8	18.65	47.61	30 fps
	DCI 4K	4096 x 2160	17:9	43.63	23.05	49.35	60 fps
	4K	3840 x 2160	16:9	43.63	24.58	50.08	60 fps
	FHD	2048 x 1080	17:9	43.63	23.05	49.35	120 fps
	FHD	1920 x 1080	16:9	43.63	24.58	50.08	120 fps
<b>Premista</b> (Full Frame & VistaVision)	DCI 8K	8192 x 4320	17:9	30.8	16.27	34.84	24 fps
	8K	7680 x 4320	16:9	28.88	16.27	33.15	30 fps
	5.4K	5440 x 2868	17:9	40.91	21.6	46.26	30 fps
	DCI 4K	4096 x 2160	17:9	40.27	21.26	45.54	60 fps
	4K	3840 x 2160	16:9	40.27	21.26	46.22	60 fps
	FHD	2048 x 1080	17:9	40.27	21.29	45.55	120 fps
	FHD	1920 x 1080	16:9	40.27	22.69	46.22	120 fps
<b>35mm</b> (Super35 & Full Frame)	DCI 8K	8192 x 4320	17:9	30.8	16.27	34.84	24 fps
	8K	7680 x 4320	16:9	28.88	16.27	33.15	30 fps
	35mm Format 3:2	4776 x 3184	3:2	35.92	23.98	43.19	24 fps
	35mm Format 16:9	4776 x 2688	16:9	35.92	20.25	41.23	30 fps
	DCI 4K	4096 x 2160	17:9	35.92	18.98	40.63	30 fps
	4K	3840 x 2160	16:9	35.92	20.1	41.16	30 fps
	FHD	2048 x 1080	17:9	35.92	18.98	40.63	60 fps
	FHD	1920 x 1080	16:9	35.92	20.23	41.23	60 fps
<b>35mm Anamorphic</b> (Super35 & Full Frame)	Anamorphic 8K 2x	8192 x 2968	2.76:1	35.08	25.46	43.34	24 fps
	Anamorphic 4.6K	4664 x 3380	1.38:1	35.08	25.46	43.34	24 fps
	DCI 8K	8192 x 4320	17:9	30.8	16.27	34.84	24 fps
	8K	7680 x 4320	16:9	28.88	16.27	33.15	30 fps
	35mm Format 3:2	4776 x 3184	3:2	35.92	23.98	43.19	24 fps
	35mm Format 16:9	4776 x 2688	16:9	35.92	20.25	41.23	30 fps
	DCI 4K	4096 x 2160	17:9	35.92	18.98	40.63	30 fps
	4K	3840 x 2160	16:9	35.92	20.1	41.16	30 fps
	FHD	2048 x 1080	17:9	35.92	18.98	40.63	60 fps
	FHD	1920 x 1080	16:9	35.92	20.23	41.23	60 fps

Format names in **red** in the Left Column are Fujifilm's.  
Our designations / explanations are in the smaller black font.

## Leitz HUGO Family adds 3 new Series II Primes



Leitz HUGO Series. Photos courtesy of Leitz Cine.

Leitz Cine introduces three new HUGO lenses: 66mm T2.1, 75mm T2.1, and 90mm — all T2.1.

The HUGO family has grown from 10 to 13. The original 9 lenses, excluding the 50mm Noctilux, are referred to as Series I. They are the faster siblings at T1.5 (except the 135mm at T1.9). The three new Series II HUGOs are slightly slower at T2.1. The 50mm T1.0 fits into the HUGO N Series.

But speed comes with a consequence. With a bigger aperture, you get bigger size and weight, as we see in the group photo above and on the next page. The new Series II HUGOs are lighter and smaller.

The HUGO 75mm T2.1 and 90mm T2.1 lenses are based on Leica Summicron-M lenses. Being one stop slower than their T1.5 counterparts allows them to be significantly shorter and

lighter, more closely matching the dimensions of the rest of the Series I T1.5 set from 18mm to 50mm.

The HUGO Series II 66mm T2.1 lens is based on the mythical “spy lens” created by legendary Leica lens designer Walter Mandler for the US Navy during the Cold War. Built for ultra high resolution imaging and never intended for the public, it’s estimated that less than 200 were ever produced. With minor modifications of the original design, the new Series II 66mm T2.1 HUGO pairs and plays nicely with the rest of the family. Although considered extremely sharp for its time, the images match well with the modern day HUGO lenses.

With the addition of the HUGO II series, the Leitz HUGO family of lenses now includes 13 focal lengths from 18mm to 135mm. They come in LPL, M or L mounts. [leitz-cine.com](http://leitz-cine.com)



# Leitz HUGO Family adds 3 new Series II Primes



	Series I									New Series II			N
Leitz HUGO Lens	18	21	24	28	35	50	75	90	135	66 II	75 II	90 II	50-N
Focal Length	18mm	21mm	24mm	28mm	35mm	50mm	75mm	90mm	135mm	66mm	75mm	90mm	50mm
Aperture	T1.5	T1.5	T1.5	T1.5	T1.5	T1.5	T1.5	T1.5	T1.9	T2.1	T2.1	T2.1	T1.0
Close Focus (ft)	0'9"	1'	1'	1'2"	1'2"	1'8"	2'6"	2'10"	3'3"	2'	2'6"	2'10"	1'8"
Close Focus (m)	0.22	0.3	0.3	0.35	0.36	0.5	0.75	0.85	1	0.6	0.75	0.85	0.5
Weight (lb)	2.29	1.85	1.9	1.83	1.78	1.9	3.02	3.04	3.5	1.81	1.98	2	2.45
Weight (kg)	1.04	0.84	0.86	0.83	0.81	0.86	1.37	1.38	1.59	0.82	0.9	0.91	1.11
Length (in)	2.8"	2.7"	2.7"	2.7"	2.7"	2.7"	4.4"	4.4"	4.7"	3.2"	3.2"	3.2"	3.2"
Length (mm)	71	68	68	68	68	68	112	112	121	82	82	82	82

Image Circle: 43.3 mm  
 Lens Mount: LPL, Leica M, Leica L Mounts  
 Front Diameter: 95 mm  
 Front Filter: M 92 mm x 1 screw-in  
 Gear Rings: Matched locations for all focal lengths

Focus Rotation: 270°  
 Iris Rotation: 70.5° (except 50-N = 81°; 135 mm = 64.5°; 66, 75, 90 T2.1 = 62.5°)  
 Focus Scales: Imperial or Metric, easily swapped  
 Iris: 11 Blades, Circular Shape



HUGO Series II 66mm T2.1

At left and right: The new HUGO Series II 66mm T2.1.

Below, left and right: the original ELCAN 66mm F2 lens on which the HUGO 66mm T2.1 is based.

Japan Camera Hunter wrote about the mythical ELCAN 66mm in 2021: "Rare lenses come and go. This is one of those lenses. During the late '60s and early '70s, Elcan (Ernst Leitz Canada) was asked by the US Navy to produce a number of Leica Format ultra high resolution lenses for military applications. These were designed by Walter Mandler, produced in very limited numbers."

The new 66mm Leitz HUGO Series II is actually quite a bargain considering that the ELCAN Leica M 2/66mm US Navy lens shown here, with serial number 283-0008, went for € 90,000 at the 37th Leitz Photographica Auction in Vienna in 2020.

From the Leitz Photographica Auction 37 catalog:

Condition : A-  
 Manufacture Year : c.1970

An extremely rare lens, engraved with military delivery number VH6760-168-3240. Fewer than 200 were made by Ernst Leitz Canada for the U.S. Navy, it comprises of 9 glass elements in a robust, compact housing; the lens offered here is in beautiful and almost mint condition, with close to perfect optics, it is one of the best examples we have seen so far.

Thanks to Alexander Sedlak and Michal Kosakowski at Leitz Photographica Auction for the photos and details. [www.leitz-auction.com](http://www.leitz-auction.com)



HUGO Series II 66mm T2.1



ELCAN Leica M 2/66mm



ELCAN Leica M 2/66mm

# AJA Ki Pro GO2



AJA Ki Pro GO2 was introduced in June 2024. It is a multi-channel HEVC/AVC recorder and the latest model in AJA's Ki Pro line, replacing the original Ki Pro GO.

Whereas the ever-popular Ki Pro Ultra 12G records up to 4K Apple ProRes or Avid DNxHR, the new Ki Pro GO2 records high quality HD or SD at lower bit rates and longer recording times.

And, Ki Pro GO2 records to off-the-shelf USB sticks (3.2 Gen 1) rather than the ULTRA 12G's proprietary AJA SSD media PAKs.

**So, when and why would you want a GO2 rather than an Ultra 12G?**

AJA President Nick Rashby explains: "Adapting to a range of production scenarios has grown vital to modern productions, whether on set or in a venue, so AJA keeps versatility top of mind when designing new products. Ki Pro GO2 brings professionals all the great features that Ki Pro GO has to offer, with a sleek design and the added flexibility to record in H.265 or H.264, depending upon each production's unique needs. The product was inspired by user feedback in several regions across the globe where H.265 is used extensively, and we're thrilled to introduce it to the market."

Ki Pro GO2 comes in a portable 2RU housing. It can record up to four channels of H.265 (HEVC) or four channels of H.264 (AVC) onto cost-efficient USB 3.2 Gen 1 drives and/or network storage — with redundant recording and single-channel playback. There are four 3G-SDI and four HDMI inputs, four SDI outputs, as well as an SDI and HDMI Monitor Output.

The built-in HD screen on the front displays a single picture or a quad split of the 4 input channels, menus and status overlays. Tactile record, play, stop, rewind, and fast-forward buttons are also at the front.

On the back, there's an RJ-45 10/100/1000 Ethernet LAN connector for remote configuration and control of the device over a network from any web browser using Ki Pro GO2's web user interface, or for use as a real time recording destination, which allows the unit to record directly to network storage (in addition to the local storage options). There are two 3-pin XLR Analog Audio Inputs. Two 4-pin 12-18 VDC XLRs provide redundant power connections.

When you're doing a live multi-camera concert, you may not have time to genlock every camera. The Ki Pro GO2 has built-in frame synchronizers for genlock-free incoming video.

## Ki Pro GO2

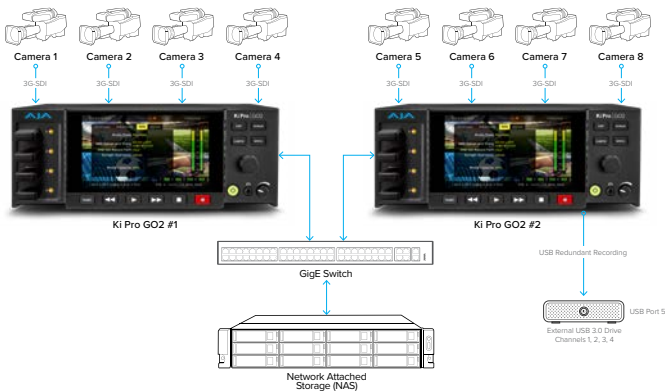
- Multi-channel HD/SD H.265 (HEVC) or H.264 (AVC) recording to USB thumbdrives with capability for redundant network storage.
- Easy-to-navigate web UI, compatible with standard web browsers.
- Built-in HD monitor, menu and status screen.
- 5x USB recording media ports (compatible with off-the-shelf USB 3.2 Gen 1 media), 4x 3G-SDI inputs, 4x HDMI inputs, 4x 3G-SDI outputs, 1x 3G-SDI monitoring output, 1x HDMI monitoring output, balanced XLR analog audio inputs, mic/line/48v switchable, and an Ethernet LAN port.
- FAT16, FAT32 and exFAT drive formatting.
- Built-in frame sync.
- Support for HDMI and SDI multi-channel matrix monitoring, HDMI and SDI.
- Output monitoring of timecode, media status, audio levels.
- Front panel buttons.
- Single-channel H.264 or H.265 playback.
- Playback of H.264 or H.265 files created in DaVinci Resolve, Avid Media Composer, Apple Final Cut Pro, and Adobe Premiere Pro.
- Selectable VBR recording settings with five options.
- Timecode SDI RP-188 Input Support: Time of Day or Timecode Value.
- LTC support, when using a single channel of Analog Audio In.
- Two channels of embedded audio per video input.
- Network Storage with SMB support via GiGE port.
- Video input: 4:4:4 RGB 8, 10-bit; 4:2:2 YCbCr 8, 10, 12-bit; 4:2:0 YCbCr 8-bit
- Ki Pro GO2 is available for \$4,749 US MSRP.
- For more information, go to [www.aja.com/ki-pro-go2](http://www.aja.com/ki-pro-go2)
- IBC Booth 7.B19

# AJA Ki Pro G02



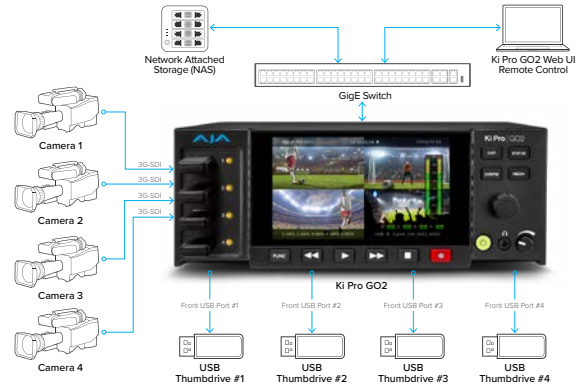
## Some Ki Pro G02 Setups

### 2 Ki Pro G02s - 8 cameras



8 cameras feed 2 Ki Pro G02s recording to USB thumbdrives. Both Ki Pro G02s are connected via Gigabit Ethernet to a switch and the NAS is simultaneously recording the 8 cameras.

### 1 Ki Pro G02 - 4 cameras



One Ki Pro G02 recording video from 4 cameras to USB drives. The Ki Pro G02 can be connected to a Network Attached Storage unit for simultaneous recording.

### 1 Ki Pro G02, Editorial, Graphics, etc.



This Ki Pro G02 is recording from 4 cameras onto USB thumbdrives. The Ki Pro G02 is also connected via Gigabit Ethernet to a Gigabit Ethernet switch and a Network Attached Storage device for simultaneous recording. Editorial, Graphics and Digital Asset Management workstations are also connected to the same network and NAS as the Ki Pro G02.

### 1 Ki Pro ULTRA 12G + 1 Ki Pro G02



Great for multi-camera productions. Connect 4 cameras directly to a Ki Pro Ultra 12G for high quality Apple ProRes on AJA Pak Media. Connect the four 12-SDI outputs of the Ki Pro Ultra to a Ki Pro G02 for H.265 or H.264 for redundant, backup or proxy recording.

# DJI Ronin 10 Year Anniversary

**2014**



## 2014: Ronin

The original Ronin (also called “Ronin 1”) is introduced on June 25, 2014 as DJI’s first entry into the market of digitally controlled gimbal stabilizers for lightweight cinema and DSLR cameras. You operate it with both hands—it had two handles. Maximum payload is 16 lb (7.25 kg).

**2015**



## 2015: Ronin M

The Ronin M is lighter and smaller. It comes with a 1580mAh battery but is also backwards compatible with the higher capacity battery of the original Ronin.

**2016**



## 2016: Ronin MX

The MX is designed for higher G-forces and aerial work. It also works well with Ronin M style handles attached. It has more powerful motors than the M model. Payload is increased to 10 lb (4.5 kg) over the M when used conventionally or 8.49 lb (3.85 kg) when used on a DJI M600 drone.

**2017**



## 2017: Ronin 2

This is the largest of the Ronin series so far, designed for bigger and heavier cinema camera.

Payload capacity is 30 lb (13.6 kg).

Instead of handles, it has a ring that encircles the entire camera, providing many operating opportunities and mounting positions.

# DJI Ronin 10 Year Anniversary

## 2018

### 2018: Ronin S

This is the first Ronin with a single handle.

ActiveTrack 3.0 firmware update provides the ability to auto-track a person when using a smartphone and the DJI Ronin app.



**2018: DJI Master Wheels**  
Master Wheels are also introduced this year—praised by camera operators who want precise and repeatable moves for remote cameras.

## 2019



### 2019: Ronin SC

As in “Compact,” the Ronin SC is lighter, smaller and intended for lightweight cameras.

## 2020



RS 2



RSC 2

### 2020: RS 2 / RSC 2

RS 2 gets a built-in touchscreen and focus wheel. DJI's optional RavenEye system and ActiveTrack works directly from the onboard 1.4" color LCD touchscreen. Payload up to 4.5 kg.

The RSC 2 is the lighter, smaller, more affordable version: payload up to 3 kg.

## 2021



### 2021 4D – 6K

DJI Ronin 4D is a Full Frame cine camera system consisting of 4-axis stabilization (pan, tilt, roll, and up-down Z-axis), integrated video TX and RX, onboard and wirelessly connected monitors, dual handgrips for local and remote control, and Lidar guided Autofocus/Automated Manual Focus/Manual Focus.

The Ronin 4D 6K sensor records 6K 6008x3168 (17:9) up to 50 fps at a maximum data rate of 326 MB/s.

# DJI Ronin 10 Year Anniversary

## 2022



RS 3 Pro shown with focus motor

RS 3

### 2022: RS 3 Pro / RS 3

The RS 3 Pro updates the previous RS 2—with a larger, 1.8" OLED full-color touchscreen, a switch for changing shooting modes (Pan follow, Pan and Tilt follow, and FPV), a fine-tuning balance knob, and it accepts wider-body cameras. Like the Ronin 4D cinema camera, the RS 3 Pro introduces support for an optional LiDAR system.

## 2023



### 2023: 4D Flex

Ronin 4D Flex is announced in March 2023. It lets you tether the 4D camera head with a 2m cable from the body.

The DJI High-Bright Remote Monitor with Cage and Handgrip Controls is a popular addition for operating the 4D Flex.

## 2024



### 2024: 4D - 8K

2024 is a very busy year. DJI Ronin 4D-8K ships. It was actually announced in 2021 with the original 4D-6k. The 4D-8K is a Full Frame 8K/60fps and 4K/120fps camera with 800/4000 Dual-Native ISO, up to 14.7 stops of dynamic range, with internal ND filters for up to 9 stops of exposure control. It has DL/E/L/PL/M interchangeable lens mounts, Autofocus and Automated Manual Focus with a small lens motor and a LiDAR range finder. You can also upgrade an existing Ronin 4D 6K with the X9-8K Gimbal Camera, available as a standalone option.

Ronin 4D has a native DX mount with a very shallow distance of about 6 mm from flange to cover glass. DJI lightweight prime and zoom DL lenses cover Full Frame: 24, 35, 50 and 17-28 mm. DL to E-mount, M, PL, EF and other adapters are available.





# DJI Ronin 10 Year Anniversary

2024



## 2024: DJI RS 4 Pro

DJI RS 4 Pro stabilizes payloads up to 4.5 kg (10 lb). It has carbon fiber arms, Teflon coatings for smooth adjustment, 20% increase in motor torque on all three axes, a knob for fine-tuning balance adjustments, OLED touch-screen, auto-lock, dual sets of bearings on the roll axis and improved vertical shooting mode.

The RS 4 Pro is not only for single-hand, or two-hand operation (using accessory dual grips). It's also an extremely capable remote head—that can be

attached to a tripod, dolly, crane, jib arm, car rig, Steadicam, Tilta Shock-Absorbing Arm, Flowcine Blackarm, cablecam, slider, etc. With Bluetooth Remote Control, Trigger Function Customization, and Gimbal Mode Switching, the RS 4 Pro plays nicely with DJI Master Wheels, DJI Ronin 4D Hand Grips, and DJI High-Bright Remote Monitors.

2024



## DJI RS 4

DJI RS 4 stabilizes camera payloads up to 3 kg (6.6 lb). The tilt arm has been extended 8.5 mm for a greater range of balance for heavier lenses and filters. Its 4th generation stabilization algorithms provide better performance.

Stability for vertical shooting has been improved with a redesigned gimbal plate that enables quick change from “landscape” to “portrait” modes. Automated axis locks help with quick start-up, balancing and storage. All three

axis arms have Teflon coatings for smoother balancing. A fine-tuning knob helps with precise adjustments when balancing or changing lenses.

The RS4 has solo camera operators in mind and also works with other DJI PRO products. It pairs with the new DJI Focus Pro Motor via Bluetooth and the top speed is 30% faster. You can quickly toggle between different gimbal modes, including a customizable FPV setting.

Additional intelligent features include Motionlapse, Track and Panorama. The new Joystick Mode Switch enables quick changes between zoom or gimbal control.

2024



**2024: DJI Focus Pro** is a modular system that includes a LiDAR Range Finder, Focus Pro Grip, 3-channel Hand Unit, and lens motors. The single-channel Focus Pro Grip communicates up to 160 meters (525 ft) for start/stop

and wireless control of mirrorless camera functions and menus.

The Focus Pro system with Focus Pro LiDAR has a working distance that has been increased about three times further than the previous generation, which you may have used on a Ronin 4D. DJI's next-generation ActiveTrack Pro with advanced machine-learning algorithms and LiDAR technology improve subject tracking, even in tough conditions.

Focus Pullers can enable LiDAR Waveform on their DJI High-Bright Remote Monitor for intelligent focus assist when using DJI's 3-Channel FIZ (Focus, Iris, Zoom) Hand Unit or Focus Pro Grip. The DJI Focus Pro System also includes new lens motors for improved wireless control. Enhanced autofocus functions include subject recognition and tracking, adjustable focus speed and selectable focus areas.

Automated Manual Focus (AMF) mode is available for both the Focus Pro Grip and the 3-Channel Hand Unit. It works like this: AMF focus transition, AMF focus lock and AMF focus speed control provide tactile feedback and almost instant switching between manual and autofocus. DJI calls it a “seamless integration of technology and human intuition.” Camera Assistants can enjoy interactive and intuitive focus pulling with AMF and LiDAR.

LiDAR Waveform focus assist shows you an overhead, bird's-eye view, looking straight down (plan view) to help with artistic focus decisions and sharp images. You probably used DJI's FIZ 3-Channel Hand Unit with a Ronin 4D or Inspire 3. The Hand Unit has Magnetic Dampening for stepless real-time drag adjustments and focus marks that can be set electronically. And now, the Hand Unit has been upgraded with AMF.



# DJI Ronin 10 Years in FDTimes



Photo by Stefania Rosini

**FDTimes September 2015** was the first FDTimes article about a Ronin. DP Michael FitzMaurice shot the feature *Monolith* with a Panasonic VariCam 35 cameras and Ronins. Michael said, "For the longer scenes where the talent is walking distances, I used a Ronin with a Readi Rig. We configured it as a backpack with a bungee system on the back and a cantilever system so that when I'm walking around with the Ronin, I'm holding it with my fingertips. I'm not holding any of the weight."



**FDTimes April 2018.** Ronin 2 and VENICE camera in Venice for the IMAX production *Venice: La Serenissima*. Ronin 2 is being operated as a remote head. From left: Peter Chang, Director, Producer, Cinematographer. Violet Angell, Producer. Pedro Guimaraes, SOC, Camera and Ronin Operator. Michel "Mick" Pacifici, First AC, Focus Puller & DIT.



**FDTimes Feb 2019.** Ronin-S, single-handed.



**FDTimes April 2019.** Ben Richardson, DP on the TV series *Yellowstone* said: "We used a DJI Ronin 2 gimbal in a range of configurations throughout the season. It was controlled by DJI's Master Wheels. The Ronin 2 is very lightweight compared to traditional remote heads — the entire system is hand-holdable. You can also mount it for almost any scenario. We also used it traditionally: handheld by the operator. And, we used it attached to a piece of speed rail, carried by grips, if we wanted to skirt the ground. We put it on a 13 foot jib arm; on our Giraffe crane; and we also rode it on the dolly because it was a great way to take out little lumps and bumps in challenging locations."



**FDTimes June 2019.** Steven Finestone was the Camera Operator on *Yellowstone*. "For many sequences, we worked with the DJI Ronin 2 as a remote head controlled by DJI Master Wheels. There were numerous scenes involving animals (buffalo, cattle, coyotes, bears) and actors performing while riding horses over rough terrain. To capture these sequences we would rig the camera system on ATV vehicles at varied speeds. The Ronin 2 worked beautifully. It has robust brushless motors and allowed us to steadily follow the action at speeds from 40 to 60 miles an hour, which was quite impressive. The Master Wheels were a game changer. It is imperative that the camera be positioned properly in space to achieve the appropriate aesthetic. There is something beautiful and fulfilling when these many moving parts come together to achieve the concept of the Director and Cinematographer."

# DJI Ronin 10 Years in FDTimes



**FDTimes April 2024.** “DJI PRO has three interesting new products to keep scenes steady and in focus: DJI RS 4 Pro, DJI RS 4, and DJI Focus Pro. They are part of DJI’s next generation of tools that are intuitive, work together harmoniously, setup quickly, and provide advanced focus control. DJI RS 4 Pro is the new, top-of-line RS single-handle gimbal stabilizer that, among other features, supports heavier payloads and has carbon fiber arms, as shown above, working as a remote head on a Tilta Hydra Arm Mini.”

**FDTimes Nov 2021.** Forty six years after *Marathon Man* in 1975, Jon Fauer ASC takes Ronin 4D for a run. Marlana Fauer follows Dustin Hoffman’s route around Central Park Reservoir. Jon said, “Close your eyes and dream of a protean primordial portable 1895 Lumière Brothers Cinématographe, mixed with 1970s Beauviala Aaton LTR, styled by a dreamed-up team of DaVinci, Gaudí and Ive, commingled with stabilizers, Lidar, wireless video, wireless control, inspired by Inspire 2, Zenmuses and ancestral Ronins. It is an astonishingly seamless cinematographic system.”



“DJI RS 4 is a more affordable stabilizer for lighter payloads.”



**FDTimes April 2023.** Claudio Miranda talked about DJI Master Wheels: “They really got it together with the Inspire 3. You know how I like to work with wheels? That is the way I normally operate most cranes and dollies. It was great to operate the Inspire 3 with the DJI Master Wheels. Some of those moves that we did wouldn’t have been possible with a joystick. You can be really precise with wheels that a joystick wouldn’t give you. By the way, the DJI Master Wheels work in a similar seamless way with the Ronin 4D.”



“DJI Focus Pro wireless FIZ control supports Lidar focus assist.”

# Paul Pan DJI Senior Product Line Manager discusses Ronin



Paul Pan at BIRTV 2024

*Paul Pan is Senior Product Line Manager at DJI. He joined the company in 2013. Growing up in California, he graduated from University of California-Davis, and then worked as a designer, developer and photographer, before moving to DJI headquarters in Shenzhen.*

## **Jon Fauer: Why was the “Ronin” name dropped with the RS 4 PRO and RS 4?**

Paul Pan: As we expanded our filmmaking product lines, we wanted to differentiate between our prosumer and professional products. We now use RS instead of Ronin for our single-handed stabilizer series starting with DJI RSC 2/DJI RS 2 and Ronin for professional-level dual-handed stabilizer series.

## **You have come out with a new model like clockwork every year. Was this planned as a roadmap from the beginning?**

While a general roadmap that allows us to plan out the bigger picture, it isn't written into stone and is constantly changing based on market conditions and user needs. Our R&D team is constantly innovating, which has allowed us to regularly enhance each new generation of our product lines with the latest technologies. In the end, our goal is to ensure that filmmakers can bring stories to life with the best equipment possible.

## **How and when did the idea for the Ronin originally begin?**

It's kind of a funny story how we came up with the name “Ronin”

and the vision for this product line. During our early brainstorming sessions, I had all kinds of names written on a large 11” x 17” sheet of paper and this was, by far, the hardest part of developing the product. It wasn't until I watched the Keanu Reeves movie called “47 Ronins” that I learned about the Japanese word, “ronin” which refers to a wandering Samurai without a master.

At the same time, I was putting a lot of thought into what this product was and what we were trying to accomplish with it. With our new professional product line, we wanted to free cinematographers from being grounded and tied down by the traditional ways of filmmaking. Instead, we wanted this product to give them the freedom to get the shots that they wanted. I thought the “Ronin” name could be appropriate for “wandering” (freelance) cinematographers without a master — where “master” referred to being bound by tradition. And that is how we settled on Ronin.

If you look back to the early days of DJI around 2012, we pioneered the brushless gimbal and developed 3-axis stabilizers for drones that were dedicated to a very specific camera model and lens. Back then, there were small cameras like the Sony NEX-7 or the Canon EOS 5D Mark II, and you had to buy the exact gimbal for your camera and lens — and it would only work with that combination. Even though these were made to be attached to a drone, we would actually test these gimbals and stabilizers by holding them in our hands while we walked up and down the hallways of our R&D labs and then review the footage. This sparked the idea that ground-based filmmakers would want the same technologies to make smooth footage possible for aerial cinematography. So, in 2013, we took on the task of developing a hand-held stabilizer that could work with any camera and lens combination within the weight limit of 15 lb / 6.8 kg. This was created not only for professionals on big budget productions but for anyone who wanted to capture smooth and cinematic footage with as small a learning curve as possible.

## **Please describe the physics of how gimbal stabilizers work — for those who may not know Ronin.**

DJI started with building flight controllers that were made to stabilize a flying aircraft such as a helicopter or a drone. To stabilize an aircraft, the flight controller is using an IMU/accelerometer and a gyro sensor. This “box” is connected to the aircraft to collect and interpret information about the surrounding environment, which is communicated to the motors. The motors then spin faster or slower to keep the aircraft flying smoothly in the air.

It's like holding a wooden board with a marble on top. You're trying to balance this marble and keep it from rolling off the board. Now, with a Ronin stabilizer, you have brushless motors instead of your wrists and hands, and the marble is now the camera. Ronin is, of course, much more precise than human hands and also reacts much quicker—resulting in sub-pixel level stabilization.

## **People call them “gimbals” but isn't “stabilizer” a better word? Or is there another word?**

Both could work. It depends on personal preference.

## **Tell us how the Z-axis of the Ronin 4D works. How does it differ from putting a regular Ronin on a traditional body-mount stabilizer, which some camera operators do?**

The DJI Ronin 4D adds a Z-axis to the traditional 3-axis gimbal,

# Paul Pan on Ronin



Ronin SC



RS 4 Pro

which effectively decreases vertical camera shake and offers stabilization performance on par with a dolly. The four axes work together with a downward ToF (Time of Flight) sensor, forward and downward dual-visual sensors, a built-in IMU (Inertial Measurement Unit) and barometer, and an advanced new algorithm to bring the overall stabilization to a whole new level. With the innovative design of the Ronin 4D, each of these sensors and parts are integrated in a lightweight design that enables operators to capture stable shots with a more streamlined setup.

More importantly, the Ronin 4D transcends the conventional definition of a stabilizer. Instead of being separate features, it seamlessly integrates cinematic imaging capabilities with advanced 4-axis stabilization, a versatile modular design, precision LiDAR focusing, and seamless wireless transmission into a single, cohesive system.

Body-mount stabilizers are designed for professional use in film and television and are known for their ability to carry heavier camera setups. They require a lot of technical knowledge and experience to operate. By comparison, the DJI Ronin democratizes access to high-quality gimbal operation, empowering a broad range of creators to capture high quality footage. Beyond its stabilization prowess, DJI Ronin can be regarded as an integrated system that encompasses advanced features such as LiDAR focusing, image transmission, and remote-control capabilities.

## **Describe some of the work that goes into your product management (listening to customers?), design and manufacturing.**

Customer feedback and iterative testing are integral to our product development process, and part of the reason why we are able to develop the next generation of our products so quickly. We spend a lot of time collecting and analyzing user feedback to determine common pain points and opportunities for enhancement. This information fuels a continuous refinement of our design process, ensuring that our products evolve in direct response to user needs and feedback.

In fact, when we develop new features, even if it's an idea that has never existed before, we make sure to validate the idea with user studies. Only after this validation is completed do we then start work on that feature or product.

## **In the beginning, was the intended market for “prosumers?”**

No, our goal was to develop filmmaking technologies that could be adapted and serve a broad range of creators, from those creating social media content to professional filmmakers. We want every storyteller to benefit from our products, whether they are consumers, prosumers, or professionals.

## **So, when did you first consider the professional market?**

When we launched the first Ronin in 2014, we spent a lot of time with professionals to examine the way they work on set and discussed the issues they previously ran into. At that time, we were so new to the industry that standards like the universal spacing between ¼”-20 threaded holes wasn't something we considered. This was information that was taught through experience and not something we could look up in a guide book.

We were taking the camera drone technology that we had and trying to invent a new way of using it. At the same time, we were trying to disrupt a steadfast market that was used to traditional tried and true equipment. The film industry wasn't always quick to adapt to new ideas. As they say, why fix something when it's not broken? Why introduce a new tool that could be unreliable and risk the entire shoot?

From that point on, we learned from our earlier products to create Ronin 2. From the beginning, we designed this product to cater specifically to the needs of the professional film and television industry — and it was the first time we took this approach.

## **What were some of the biggest challenges and achievements along the way?**

When it comes to creating a new product or even an entire product line, it's important to ensure you're solving something for users, specifically: (1) does it save them time? (2) does it save them money? and (3) does it make their work better? Everything else — the design, branding, and experience — is all secondary.

The motorized stabilizers that existed before Ronin were very large, very expensive, and very complex. Our first big challenge was to solve these issues. So, we designed the Ronin's balancing and mounting system to be easy to use. We invented an auto-tune feature to adjust the settings and motors with a single click. We

## Paul Pan on Ronin



*Yellowstone* crew: Steven Finestone (Camera Operator); John Cook (Dailies Tech); Nic Edwards (2nd AC); Matt Leslie (2nd AC); Lisa Konecny (DIT); Brett Harrison (Gimbal Rig Operator); Danna Rogers (1st AC); Angel Fisher (Video); Ben Richardson (DP); Alex Worster (1st AC); Elver Hernandez (2nd AC). Bottom row: Christina Voros (Camera Operator); Emerson Miller (Still Photographer); Valentine Marvel (1st AC)



Director Chloé Zhao and DP Joshua James Reynolds with Ronin 2 on *Nomadland*

also leveraged our vertically integrated supply chain and economical manufacturing facilities to build these products, ensuring the end-product would be affordable for most users.

The other really big challenge was adoption. We need to build trust with the industry if we wanted DJI to be accepted as a brand in this industry of giants. The most trusted companies among filmmakers have been around for decades before us, and we were an infant by comparison. It did take some time but I think we've succeeded.

Within ten years, we have transformed from being manufacturers of discrete components within the film and television production sector to becoming the architects of the highly-integrated DJI Ronin stabilizer and camera system. This success is thanks to the unwavering dedication of our entire team. We feel immensely proud when we see our products genuinely empowering creatives and filmmakers throughout the industry. It is incredibly satisfying to know that our products are enabling these visionaries to fully realize their creative potential, transcending the limitations imposed by traditional equipment.

### What are your favorite movies that used Ronin stabilizers?

It's difficult to name just one or two. Instead, let me share what we thought were the most notable productions to use Ronin to their full potential.

*Yellowstone* was one of the first projects to really adopt Ronin 2 in such a way that it became inherent to the language of the show. They started testing it in collaboration with us before it launched. By the end of Season 1, Ronin 2 was fully adopted and used throughout Season 2. Creator Taylor Sheridan and DP Ben Richardson felt it amply met their needs and it has been a key part of the production of the show ever since.

On the Netflix TV series *Mindhunter*, and later on the film *Mank*,

Director David Fincher developed a complex process to gather car shot exteriors that incorporated up to nine Ronin 2 systems shooting every angle from a VFX plate vehicle. These images would then be used to light the car interior shoots with the actors safely on a soundstage. Ronin 2 was also used on dollies and cranes throughout both productions. Fincher needed precision and efficiency, which Ronin 2 delivered. Today, Ronin 2 has become an important tool for so many more Academy Award winning films such as *The Banshees of Inisherin*, *The Whale*, and *Nomadland*.

Director Gareth Edwards amazed the world with his use of the RS gimbals on *The Creator*, showing how a small gimbal and mirrorless camera can create a stunning and expansive sci-fi epic. Most recently, Director Alex Garland used the Ronin 4D on his film, *Civil War* and demonstrated how much our cameras can create such an immersive look.

Other notable films and TV series using DJI products include *SHOGUN*, *The Marvelous Mrs. Maisel*, *Nyad*, *Only the Brave*, *Fantastic Beasts: The Secrets of Dumbledore*, *The Beekeeper* and *Killers of the Flower Moon*.

### What's next or what is in the future for these products? (I think heavier cameras for the high-end, not just lighter ones)

In the future, we envision our Ronin products to be omnipresent in the film production process, addressing the critical needs of filmmakers. Within the DJI Ronin system, these products will integrate with each other seamlessly and work together to enhance the film. In the broader context of the film industry, our products are designed to be open and integrative, complementing the offerings of various industry players to enhance on-set creativity and streamline the user experience. By lowering the barriers to entry, we aim to foster the creation of a multitude of exceptional cinematic works.



# Santosh Sivan, ASC, ISC: Pierre Angénieux Tribute at Cannes



L-R: Emmanuel Sprauel (VP, Thales); Preity Zinta; Santosh Sivan, ASC ISC; Dominique Rouchon (Managing Director, Angénieux); Kadri Koop.  
Photo © Pauline Maillet.

*Santosh Sivan, ASC ISC, was honored with the Pierre Angénieux Tribute in the Buñuel Theater of the Palais des Festivals at Cannes on May 24, 2024. As cinematographer, he has done more than 50 features and 50 documentaries. He's directed 23 films and DP credits include Moha (2023), Lies We Tell (2017, with Harvey Keitel and Gabriel Byrne), The Mistress of Spices (2005), Asoka (2001), Halo (1996), etc.*

*Santosh was one of the founders of the Indian Society of Cinematographers (ISC) and is the most awarded cinematographer in India. He was the first DP in the Asia-Pacific region to be inducted into the American Society of Cinematographers (ASC).*

## **Jon: How long will you stay in Cannes?**

Santosh: I arrived on the 19th of May and I leave on the 25th. Then I'm back to work after that.

## **Busy man.**

Yes, quite.

## **How did you get started? Did you go to film school?**

I attended film school. But before that, my father was a very prominent still photographer. He also shot documentaries. I got to learn all this firsthand as a child. My grandmother was an artist who taught painting in the Travancore Palace to the little princes. She used to show us works by the great artist Raja Ravi Varma. Every painting of his told a story.

So, visual education and the idea of telling a story was introduced to me at a very young age through grandmother's stories, some of which I later made into films. I have a tendency when I shoot something to make up my own world, and not just be realistic, but to make up your own world.

I attended The Film and Television Institute of India (FTII) in Pune. It has an archive with films from all over the world and is very well-equipped. I think it's one of the finest in Asia.

## **How did you get your first job after film school?**

Actually, it was very funny because no one wanted to give me a job until I apprenticed with someone who was a big cinematographer. But I didn't want to follow into that journey because I didn't want to go assist someone. So I decided to travel and teach children in the Himalayas and other places. I learned quite a bit about life and other things.

I still teach and do workshops. I go to tribal places and bring some people into the mainstream if they're interested. Cinematography has become a difficult thing to learn because the schools are expensive. Some people who are talented don't have the means to go to a film school, and the film schools here, which are run by the government, are very competitive. Even when I shoot abroad, I take these young people with me so they also get a chance to travel. I think travel is the best form of education.

I made a film in the Himalayas using local children. I directed, wrote and shot it. It received good reviews and was well attended by audiences. As a result, I got a lot of offers to shoot films for good directors and producers. I was still very young, hardly 20 or something. I got a lot of work. And, I have been working continuously ever since.

I directed a few films. But mostly, I have always been working as a cinematographer. I received all kinds of awards, including a Padma Shri (awarded by the Government of India for distinguished contribution in the arts, education, etc.) I was also invited by Michael Chapman, ASC to be a member of the American Society of Cinematographers.





Santosh Sivan is awarded a set of Angénieux Optimo Primes (24, 32, 50, 75, 100 mm T1.8), presented by Preity Zinta and Emmanuel Sprauel. Photo © Pauline Maillet.

And now I am honored to walk on the Red Carpet and receive an award at Cannes from Angénieux.

### **Do you ever get any rest between film projects?**

I have a beautiful farmhouse on two acres in Pondicherry, next to Auroville. It's an experimental town designed in 1968 by Mirra Alfassa, a French-Indian guru, and French architect Roger Anger. Endorsed by UNESCO and supported by the Government of India, it is a community of people from all over the world.

I bought the land eight years ago and planted trees. Now they are all big trees. Then I built the house. I did a film on farming. After that, I wanted to become a farmer, in planting trees, not fruits. I like the idea of birds coming in. You will love Pondicherry. It's a beautiful place.

### **Since you never worked as a camera assistant, are you more artistic or technical?**

I think it's a combination, a blend of both. I am technical because from early on I was very keen to learn to do my own chemical processing. I used to love to tend to my own cameras. I think the artistic side comes from my interest in paintings. I like the way Caravaggio and Rembrandt managed light. I have been very keen about Klimt's work.

When I was shooting in the Himalayas, I landed in a place that was only forest, Arunachal Pradesh, very near the Chinese border. It's very cold, and the people in those days, 30 years back, had never seen any films. They said that everything with mystery has to have a blend of light and darkness, otherwise the object is not mysterious, which is what I applied in my photography. So when you look at a tree, you never look at the roots, you look up at the branches. A tree grows in two directions. It grows into the

skies, as well as into the ground. So growth is not only one way, it has to be two ways. It is the same with cinematography. There should be a blend of both light and darkness. Only then will you see mystery and a lot of depth in your work, which I have used to apply in my work. I used to think of these stories when I filmed something.

As cinematographers, we are often asked to shoot very difficult things, maybe with not enough equipment and lights and lenses. That's something I learned. One day, I was returning home with these tribal children, when suddenly they surrounded me and took out their daggers and swords as if to protect me. So I asked, "What happened?" They looked shocked and said, "See sir, there are two tiger marks here, two tigers."

### **Don't worry, when you see a tiger, you will learn everything very fast.**

"And they're fresh tiger marks." So I'm thinking, my God, tall grass, you can't see any tigers. But what if the tiger actually comes? So I ask these kids, "If a tiger comes, what will you do?" They said, "We will run very fast and climb a tall tree very fast." But I couldn't even think of running fast like them or climbing tall trees. So I said, "I don't know how to climb trees and run very fast. What will I do?" They answered, "Don't worry, when you see a tiger, you will learn everything very fast."

I remember this whenever I'm given a difficult scene to light. I think about the tiger story because it isn't so much what you actually do, it's just that you have to be motivated enough with the tiger behind you. Then everything falls in place. I think it's something that it stays with you.

# Santosh Sivan, ASC, ISC: Pierre Angénieux Tribute at Cannes



## **I guess you have to work fast lighting a set in India?**

Actually, India has different film industries. The one in South, which is lower budget and more experimental. There you have to work much faster. Bollywood is very calm and it does lots of big films, so there's no issue with equipment, time, money or anything like that. It is much more comfortable to work there. Whereas, in the South, you have to be more organic and more innovative, and fresh ideas will come out of the process there.

## **Do you experience more pressure to shoot faster and get more setups per day?**

Yes, But it all depends. When you do a big film, no one will tell you to hurry up. But at the same time, you hurry anyway so they don't think you're wasting time. You are always on the move. But no one says hurry up.

## **Is the camera crew structure the same in India as it is in the US and the UK?**

Not really. Here we DPs love to operate. Also, the clapboard is not done by the camera team, like they do in UK. In India, an assistant director does it.

## **When you are operating, do you use a fluid head or gear head?**

We prefer fluid heads. Gear heads went off with the Mitchells. As cameras became lighter, things changed rapidly.

## **What was the first camera and lens that you used in the Himalayas?**

At that time, I used an Arriflex BL and the Angénieux 25-250.

## **What about Anamorphics for which India has been famous?**

Anamorphics at that time were not very good. They used to be Kowa lenses, and we had an old Angénieux zoom with an anamorphic adapter attached at the rear.

## **And are Anamorphics still pretty popular?**

They are always popular, but ever since digital cameras came, we have been shooting spherical lenses, composing for widescreen.

I like the lack of distortion in spherical lenses, and also the faster aperture. In fact, I'm doing a film after I leave Cannes that is based on Shivaji, the great Maharaja. I'm actually planning to shoot with available fire and flames and faster lenses will be helpful.

## **Are you mostly shooting Full Frame or Super35?**

Full frame, almost always these days. But for every film, I test the cameras and lenses.

I test with costumes and actors. I have a good interaction with the DI people so that I know how flexible I can be. I prepare a lot. And then, I try to make sure that we do a minimum amount of post production work and are not too dependent on the DI. Capture everything fresh, then everything will look fresh.

## **The best fish curry is in the fisherman's hut because the fish is fresh.**

There's a story that the best fish curry you will get is in the fisherman's hut because the fish is fresh. If you buy fish from a supermarket, you have to bring it home and then put all kinds of sauces on it to make it taste like it was caught recently. So I don't want to do that. I'd rather have a fresh capture.

## **Do you have a particular style or a philosophy that goes through all of your work? Or does it depend on the individual film and the story?**

Often, style will creep through. Somewhere it will come in a film and everyone will say, "That is Santosh Sivan's work." I think there is a style that runs through my work, even though I don't try to deliberately do it. But when you do it with honesty, I think you



might have a style that is easily identified by people.

But I think you can find variations in this style, because I've shot six feature films for Mohanlal, the big director. And all six films are very different. Maybe there is some common element that you can't really pinpoint. But all six films are very different from each other, which is very good.

I actually benefit a lot by shooting documentaries as well. I like to do documentaries before I do a feature, to get things simpler and simpler and not too elaborate. On most features, your sets are so big and elaborate, you end up using a lot of lights and things like that. I would like to know that even without all this, you can create interesting images.

**Do you try to use more available light or try to make it look like it's available?**

I try to make it look like available light, but I'll try to stylize it a little bit. I feel that light and shadow is the melody, and I feel that movement and compositions are the rhythm. When both of them blend, you get music. That's what I want to see in visuals. I want to see both light and shade as well as composition and mood, and if there's movement, then fantastic. If these are all there, then I feel that you are telling a story.

**Has your lighting style changed with the new digital cameras as they become more sensitive?**

I think it has changed a bit. I used to look at something by eye and shoot. Now you depend a lot on the monitor.

**Are you using LED lights more and more?**

I still like the Mole fixtures with Fresnels, especially the 10K, and the big ARRI Max 18K HMI. But we also have a lot of LED fixtures.

**Getting back to lenses, when you're doing a big feature, are you mostly using Primes or Zooms?**

I've been using Angénieux Zoom ever since I started my career. I have been using all the models and they are with us on every job. But, I use Prime lenses most of the time. Unless you are on a mobile crane or something, there you might use a short zoom.

**Why do you prefer Primes?**

It's more planned. If you want to go closer, you can move the camera rather than adjust it with the lens. Sometimes we shoot an entire film with just a few Prime lenses.

**Does that slow you down in terms of setups?**

No, it doesn't. Also, on Primes, we can work at much wider apertures. So you have that advantage of not going crazy with lights.

**Are you directing a lot these days?**

Not really. I don't want to make directing a way of making a living. I just want to do it for fun—sometimes about what I learned in school, some childhood stories, something I desperately want to do. But, I don't want directing to be the source of income to feed my family and me. I let my DP work take care of that. When I direct a film, I just direct it for fun of it.

**Being a DP is a very zen-like job.**

**Which do you prefer?**

Actually, I feel directing is more satisfying in a way. But the fact is that being a DP is a very zen-like job. You don't have to interact with anyone if you don't want to interact. But as a director you have to interact with actors, the financiers, have meetings. There's a lot of PR work you have to do. As a DP, when you pack up, you can go home and think about what you have done, be happy or sad or whatever. But you don't really have to. It's more zen. You have your light and shade.

# Kadri Koop: Angénieux Special Encouragement Tribute at Cannes



L-R: Dominique Rouchon, Kadri Koop, Mélanie Laurent, Emmanuel Sprauel on the red carpet at Cannes. Photo © Pauline Maillat.

*The Angénieux Special Encouragement Tribute has been presented at Cannes since 2018. This year, Kadri Koop, an Estonian cinematographer based in LA, was honored. She received an endowment providing Angénieux lenses to be used on her next productions.*

## **Jon: How did you get into film?**

It's been a long journey. I went to Amsterdam University College to study liberal arts. I was kind of clueless about what I could do in this life, and ended up studying literature and film criticism. But, the academic approach of film studies felt dry and isolating. I decided to find ways to explore actually making films. It was tricky. My family is all science based and I was the only one who wanted to do something outside of that.

While studying in Singapore during my exchange semester in college, I became interested in Chinese cinema and documentaries. Somehow I got the idea that I should go to Beijing and start making documentary films, even though I had never made one. I ended up enrolling at Beijing University to study Mandarin. That's kind of how I have navigated most of my life. Up until my thirties, I was in different schools just to be able to be anywhere I wanted. So I studied Mandarin and worked as an intern at a production company.

I made my first little film, applied for a documentary MFA program at Stanford and won a scholarship to attend, and that brought me to the US. Then a couple of years after I did another MFA at the American Film Institute studying cinematography.

## **You have two MFA degrees?**

Eternal student. There were 28 students in my year at AFI and we crewed on each other's films.

## **How did you get your first job after school?**

Good question. I graduated straight into COVID and the industry had shut down. Nevertheless, I shot my first feature, *A Place in the Field*, with another student from AFI. She had no money and I was maybe the third or fourth cinematographer whom she asked. We got all kinds of free gear because it was the early days of COVID and we all worked for free owning a part of the movie in return. We had very generous sponsorship from Bianca Halpern at BeCine. They provided all the camera equipment essentially at no cost. I'm so thankful to them! We couldn't have done the movie without Bianca and BeCine!

Next, I have to thank AFI for the first real, paid job. It was a documentary about Richard Williams, the father of Serena and Venus Williams. The director had asked AFI about up-and-coming DPs and they suggested a couple of former students, me being one.

## **Do you take still photos to inform your work as a DP?**

I'm an avid photographer, so I take photos every day. Life as I encounter it on day-to-day basis inspires me because I often think about framing. Somehow, I have been thinking about it since I was a little kid. I loved putting photos in photo albums. I have all these albums from when I was young from the pre-social media era. I think these albums somehow translate into framing and my wider interest in context.

I come from Estonia. It is a very small place, with only about 1.3 million people. And it is also sort of at the cusp of the east and west in some ways. It is Europe, but it is literally neighboring the Russian border. I was born into the Soviet Union, and within the first two years of my life, Estonia became independent. But growing up in the post-Soviet aftermath, I think there was a lot of reexamining that happened because people had lived through

## Kadri Koop: Angénieux Special Encouragement Tribute



Photo by Mitchy McGhan.



Above: photo by Hyun Kim. Below: photo © Pauline Maillet.

a regime from which they now wanted to disassociate. As a kid, I spent a lot of time thinking about the context in which we were born. I was very upset that I was born into this place where people speak a language that basically nobody else speaks.

It's really hard to learn any other language if you speak Estonian unless it's Finnish or Hungarian. It just doesn't resemble anything else. From early on, I was aware of how much the context around you shapes your identity and the way you think.

I started to travel at a young age out of the curiosity that was provided by my parents. I was a lot more curious than my brother. I always wanted to go somewhere. Every summer I would go to some other country for summer camp in Sweden, Finland or the US. It was a driving force for me to learn languages and see the world from different perspectives. Even moving to China as a young adult wasn't something that was necessarily easy or comfortable, but I was driven by curiosity to see how people in other parts of the world understand life. It was fascinating to understand other cultures and what perspectives stemmed from those experiences. I think I've been driven by these ponderings over the context into which we were born.

### **When did you come to the US?**

It was in 2014.

### **Have you used Angénieux lenses in your films?**

Yes. I've used plenty of Angénieux EZ Zooms on documentaries. Recently, I shot a film in New York with the Angénieux Optimo 4.7x 19.5-94mm Zoom. We only had that Zoom, and it was a great experience because it's a really beautiful lens.

**Well, congratulations on the Angénieux Tribute.**



## Melodie Pr el, Cinematographer on *Becoming Karl Lagerfeld*



*M elodie Pr el graduated from ESRA, the French cinema school in Paris. After that, she started working on productions as a driver, doing video assist, and kept shooting short films. Then, she became a Second AC for four to five years, followed by another five years as a First AC/Focus Puller, and more recently as a Cinematographer. M elodie shot episodes 1, 2 and 6 of Becoming Karl Lagerfeld for Gaumont Television and Disney+ (Hulu) last March and April.*

### **Jon: How did you get started on the Karl Lagerfeld film?**

M elodie: It began because I knew J er ome Salle, the director, from when I was a camera assistant. I worked on the *Odyss e* as an AC. Then he followed me from a distance, saw that I became a DP and called me for this amazing project.

### **What lenses did you have on this film?**

The Blackwing7 from Tribe7. I love those lenses.

We had many discussions about how we would film Karl because the show is about a character who does not express feelings and everything is hidden. He is very reserved and sometimes says something but feels the opposite. So how do you connect with him? During prep, it was super exciting to think about this guy, how you feel compassion for him even if you don't understand what he's going through. First we thought about being very close with wide lenses and to avoid foregrounds, even when he is speaking with somebody.

J er ome wanted a very shallow depth of field, so I went to the large

format ALEXA Mini LF. We had two cameras but ended up working not so much with both cameras at the same time, which was great. So, I needed two sets of Full Frame lenses with wide apertures. I tested a lot and chose the Blackwing7 lenses. One set was T-Tuned, as in *Transient*. The other set was B-Tuned, *Bespoke*.

*Lemac Rentals Australia has a good description: "T-tuned BLACKWING7 primes are the workhorse lenses in the BLACKWING7 range. They have a tuning profile that exaggerates contrast roll-off to the edge of the frame and provide increased edge halation. They have a unique personality and render a slightly softer, artistic image, with a higher degree of light reactivity and more vibrant flaring characteristic."*

*T-tuned lenses use single coated optics, while the B-tuned have customized multi-coated optics from the S-tuned range. Single coated can provide a more vintage '60s European look. Multi-coated arrives at a look more reminiscent of 1980's lenses from Japanese manufacturers.*

For some sequences, to enhance his feelings or the strangeness of the situation, we used some Petzval lenses and an Atlas Silver Orion 32mm Anamorphic as well. For example, the first time Jacques and Karl meet at the bar, I used the Petzval. Then, the first time they met in the famous Club 7, I used the Anamorphic.

**What lenses did you use did you use for the first fashion show where Karl tells the models to have fun and be natural. The look was natural and sharp, with nice bokeh in the background.**

## Melodie Pr el on *Becoming Karl Lagerfeld*



Exterior of location where they had discussions about fashion.



Yves Saint Laurent fashion show with Nanlite 120 Softboxes as top light.

I think it was the Blackwing7. They're really great lenses.

### **Which focal lengths were you mostly using?**

Usually the 27mm and 37mm. We used the 20mm as well, but not that often. For the close-ups, we had the 57mm and 77mm.

### **And you were shooting in ARRIRAW?**

Yes, absolutely. We composed for the classic 1.66:1 format. We were at 800 ISO. I would go 1,600 for some of the sequences.

### **Do you operate the camera yourself?**

I usually operate the camera myself, but actually on this show I was pregnant, so at some points we had a camera operator and I focused on the lighting and everything else—but it really depended on the setup. We didn't have any rules as to when he would operate. We had dolly, handheld and Steadicam sequences.

### **It was beautifully lit as well.**

Thanks. Maybe it was also because we used old lights from the seventies. Jean Rabasse, the set designer, helped us on every location. There were a lot of lights at that time—everywhere, in the nightclubs and on fashion shows. And so we found some old tungsten fixtures from this period.



ALEXA Mini LF camera with fun decorations and function buttons that have been thoughtfully labeled.

## Melodie Prével on *Becoming Karl Lagerfeld*

**Did you use quartz lights most of the time, or HMIs or LEDs?**

In Paris, it's difficult now to use generators, so on many locations I couldn't even use HMIs. I ended up blacking out all the windows and kind of lit like we were in a studio. We used LEDs and we could adjust the lighting whenever we wanted from inside. It really depended on accessibility. If we had a genny, I would prefer to use HMIs and tungsten, but sometimes it was just not possible.

**How did you light some of the big locations?**

The Karl Lagerfeld fashion show was shot in the famous hotel Lutetia in Paris but it was supposed to represent a restaurant in the 7th, and in this location I had to block all windows with Litetile (carpet light) and lit from inside with old tungsten light. At first, I was worried because the walls and windows were very far away. Not easy.

We also did a lot of lighting from outside. We had Nan-lite 120 softboxes as a top light, and everything else came through the windows. We were lucky to have a genny that day, otherwise it wouldn't have been possible.

**You said you did not shoot two cameras often?**

Jérôme prefers to shoot with one camera, which was really great for me. I would say we had two cameras about 20% of the time—mainly for the big sequences and fashion shows. The two cameras were for just a few shots because, as we were shooting with wide lenses, we were not able to shoot two cameras and Jérôme didn't want to compromise.

**Did you have a DIT?**

Yes, we had a DIT. Because we were shooting on the ALEXA Mini LF in HDR, we had an HDR monitor on set so there was no gap between what you saw on set and what you had in the edit and grading.

**What about LUTs?**

During the camera tests, we did some tests to find the look. We ended up using a Kodachrome LUT, but we scaled down the curve of the HDR in order not to have strong highlights. We added some black and white as well. We played with strong colors because the red pops a lot on Kodachrome. Fabien Pascal was our colorist at LUX post production studio in Paris. He's really good.

**How did you establish the look of the show with Jérôme?**

We looked at a lot of pictures. Jerome and I both had many images for inspiration that we would share with each other. We also looked at a lot of Polaroids from that period of time. But he wanted something modern, not the look of the seventies. He wanted something shiny with strong saturation and we had to be truthful to all the colors of the costumes and interiors like Karl's apartment with its shiny blue walls.

Also, we worked together during prep with the colorist and with Jean Rabasse. We did costume tests to see how the colors would turn out. Jérôme wanted a modern look with strong saturation and the concept was to find a balance between modernity and shooting a period piece.



Frames courtesy of Disney+. Top to bottom: Marlene Dietrich apartment; Yves Saint Laurent fashion show; Club 7.



## Mari Yamamura, Cinematographer, on *Scarlet Silence*



Mari Yamamura, Cinematographer

*Mari Yamamura is a Japanese cinematographer based in the UK. We met by email when, as an early subscriber to of Film and Digital Times, her print editions often went missing. We blamed it on the postal service couriers who might have enjoyed reading it as well.*

*Mari studied economics at University of Southampton and then worked at an advertising agency in Tokyo. Her dream to become a painter led to the Film and Photographic Arts department at the University of Westminster.*

*She then started as a camera trainee and worked her way up through the camera department in TV dramas and commercials. Her credits as a focus puller include Doctor Who, Dracula, VW, Nike, IKEA, etc.*

*Her first feature as DP was Fields of War, released on Amazon Prime in 2020 leading to work as cinematographer on many award-winning TV dramas, commercials, corporate films, music videos and shorts. Highs received Special Mention for Best Cinematography at Unrestricted View Film Festival 2023.*

*Recently, her short film Scarlet Silence won the award for Best Thriller at London Global Film Awards. Mari described the production in an interview with Mel Noonan of StylusMC:*

As a cinematographer, I was pleased to be able to develop this thrilling project with the director, Zen Nguyen, and help her achieve the look to complement the story visually.

It's early days with the festival run. So far, the film has also been selected by Budapest Movie Awards, Stockholm Short Festival and Toronto International Nollywood Film Festival (an Academy of Canadian Cinema & Television Qualifier).

### The Story Line

It's about an up and coming painter Harvey who works on his newest exhibit piece surrounded by his girlfriend Mimi and the art critic Zoe, and things start to ruminate around love and jealousy. There are three characters in the film, the painter, Harvey, his girlfriend, Mimi, and the art critic, Zoe. However, Mimi and Zoe are lovers, and Zoe and Harvey are also lovers.

### How the film came to be made

Director Zen Nguyen approached me for her Masters Graduation film at MetFilm School but it was intended to be a teaser for a feature version. The film revolves around art and she looked for a DP with a similar interest and background. She read in my bio that I originally wanted to be a painter so she thought I would be a good fit for the project.

Zen showed me an early draft of the script. It was the kind of story I like: complex human relationships about life, love and creativity. I was impressed by her detailed creative views, so I got on board.

### Preparation and Location

We had about two months to prepare. We had a great location that accommodated all our scenes in one place, so we did an initial recce fairly earlier on and developed the project over the months remotely until just before the shoot.

Filming in a Grade 1 listed building meant that we had to take particular care with the location. We were not allowed to touch the walls, windows or put any kit directly on to the original vintage floor boards. To move a tripod or a light stand required two to three people, because somebody had to make sure a



Framegrab. Zoe and Harvey seduction scene with a drink. Natural ambient 3/4 backlight from the window) with KFLECT for soft fill, and Tiffen Pearlescent filter.

protective sheet was under our kit at all times even for a small move. (Pitzhanger Manor. [pitzhanger.org.uk](http://pitzhanger.org.uk))

### Camera and Lenses

Zen and I wanted the best and highest recording format we could afford. We wanted to shoot in ARRIRAW with sharp optics because Zen wanted a “clear look” to show off the beautiful location and reveal the characters’ intricate emotions with a naturalistic pleasing palette. My ideal camera-lens combination would have been ALEXA Mini LF with Leitz THALIA lenses. But, for a low budget short film, we were very happy to have ALEXA Mini with Leitz SUMMICRON-C primes.

### Lighting

One of our references was the “soft, light and clear look” in *Portrait of a Lady on Fire*. This was particularly for the female intimate scenes and possibly the night scene.

Another visual reference was *The Handmaiden*. Originally used as a reference for the music, Zen came to think that a slightly stronger contrast but still clean look would add more suspense to the film as a thriller. Regarding the lighting, I called for a help from my cameraman friend, Craig Jones, who has a lot of lighting gear and asked if he would act as my gaffer with his gear.

We mostly used his KFLECT Reflect Lighting System. I love the quality of the light that it produces and it’s an efficient way to light as you can create multiple light sources using multiple different size reflectors with one light. It allowed us to keep the lighting rig to a minimum, as it negated the need for additional flags and diffusion, which turned out to be the best choice for this

location due to the restrictions of the Grade 1 listed building. I used natural light and supplemented it with KFLECT.

As with the Lightbridge system, you can create required quality and size of light by choosing the right reflector. KFLECT comes with an extensive choice of textured surfaces. Each of these surfaces can create a different quality of light and a shape of shadow. It’s not just beautiful light, but also create interesting “character” to the light—suitable for the subject of complex intertwined human relationships and emotions.

### Visual References

The film contains an intimate scene between two female characters, and Zen organized an intimacy coordinator to help her construct this scene with sensitivity. When Zen described the scene to me, I wanted it to be classy rather than erotic, and it jolted my memory of some striking imagery that I had seen in the past but forgotten: a clip that a music lecturer showed us in class, which was Venus on Ken Russell’s *View of The Planets*. It showed several female bodies intertwined without being obvious as to which part of the body they are and then dissolved seamlessly into curvatures of a sand dune. I felt that the combination of such beautiful imagery and the emotive, “cinematic” music from Holst’s *The Planet* felt very powerful. Zen was onboard with the idea and that was the basis of the bedroom scene.

Additionally, Zen used paintings as a reference for each set up. It was more for the mood and the composition. Edward Munch’s *Puberty* (1895), *Madonna* (1895) and Edward Hopper’s *Summer Interior* (1909) were for the bedroom scene. Edward Munch’s *Vampire* (1893), *The Kiss* (1897) and *Jealousy* (1907) were for the



Framegrab. Mimi and Zoe in bed – faces. Most of the natural light was blocked. To create a soft and more pleasing daylight look (love scene happening during the day not night), lighting included a 2x1 panel light with diffusion and grid, with flags to contain the spill. Tiffen Pearlescent filter.”

night scene.

For the night scene, we had to shoot during the day due to our budget constraints. We had the window shutters closed and created our own moonlight inside. Observers from the museum were watching us at all times. We were not allowed to touch the windows ourselves, so we asked them to close the shutters.

### Optical filters

I used two types of Tiffen filters: Pearlescent for the day scenes and Night Fog for the night scenes.

For the day scenes, I wanted a glossy beauty feel, so Pearlescents were ideal for that and gave a beautiful glow to the image. At the same time, I was surprised how subtle they were. The halation was minimal and gave just enough bloom.

I chose Night Fog to keep the same strand of beauty for the night scenes but wanted to add some dreaminess to it, as the story is quite ambiguous as to whether it really happened or not. Night Fog is one of Tiffen’s new line of diffusion filters. They have interesting properties that are different from their traditional fog filters. They can be used for both day and night but they provide different effects depending on when you use them. I think Night Fog slightly mutes the colors and create a beautiful night look when used for night.

I did some tests comparing Night Fog and Black Fog myself and also remembered Seamus McGarvey, ASC BSC, saying that Night Fog was the best type of diffusion he used to achieve Day for Night. It made me want to use them even more for these scenes.

As we were shooting in the Grade I listed building, we couldn’t

use a haze machine. I think Night Fog added a mysterious atmosphere to the scenes.

### Grading

A colorist friend, James Wong, gave us a helping hand to finish the film. Because the film was about art and art work, I wanted to make sure we retained the green hues of the painting and the location. I think James brought the naturalistic, beautiful mood to the film. I always try to attend a grading session whenever possible. Especially with digital, I feel our job as DPs is not finished until we oversee the grade.

The film is going through the festival circuit at the moment. Here is a link to the trailer: [youtube.com/watch?v=G-Rf\\_o4enE8](https://www.youtube.com/watch?v=G-Rf_o4enE8)

Mari Yamamura: [www.yamamura.co.uk](http://www.yamamura.co.uk)





LUMIX GH7 actual size

Panasonic has licensed ARRI LogC3 for the LUMIX GH7 camera—to match the colors and looks of ARRI ALEXAs.

### Why would you want ARRI LogC3 in a LUMIX Camera?

Matt Frazer of Panasonic answered that question at the GH7 launch in Warner Bros Studios, Los Angeles on June 5: “With the addition of LogC3, the GH7 introduces a totally new range of possibilities for aspiring filmmakers who will for their first time be able to use the powerful technical LUTs and looks that are a staple of cinema colorists. And not just aspiring filmmakers—professionals will enjoy this as well.”

For example, your “A” camera is an ALEXA and you have a dozen LUMIX GH7s as digital neo-Eyemos to mount on car rigs and cover stunts from every angle the director has dreamed up. With LogC3 inside, your colorist will be delighted that everything matches so beautifully.

It’s also great way to quickly compare, on location or on set, many of the LUTs in ARRI’s LogC3 Look Library. Sort of like a look swatch book.

### What is LogC3?

Glenn Kennel of ARRI explained at the Warner Bros launch, “When Kodak developed the Cineon system (Glenn was part of that team as well), it was about digitizing film in a compatible way. And then, when ARRI developed their scanner, the encoding was called LogC, with C as in Cineon. ALEXA cameras use LogC3 up to the ALEXA 35 which has LogC4. The difference is essentially about 14 1/2 stops of dynamic range compared with 17 to 18 stops.”

### LogC3 Loading and Recording

With a DMW-SFU3A Software Upgrade Key (sold separately), ARRI LogC3 is enabled in the GH7.

### The LUMIX GH7 Camera

The GH7 is a Micro Four Thirds (MFT) camera—the sensor measures 17.3 x 13.0 mm. Matt continued, “Micro Four Thirds offers high quality and high mobility to increase the freedom of shooting. Lenses can be lighter and smaller. Of course, we have LUMIX cameras for Full Frame as well and we hope that these two systems will provide creators with a wide range of shooting possibilities.

- The LUMIX GH7 has a 25.2 Megapixel BSI CMOS sensor with Phase Detect Autofocus and Real-time Recognition for a variety of things that may appear in your high resolution viewfinder: Human/Animal/Car /Motorcycle/Train/Airplane.
- Built-in Wi-Fi pairs camera to smartphone via the new LUMIX Lab App for easy cropping, transferring content, adjusting picture, applying LUTs, simple editing; also connects to Adobe Frame.io for Camera to Cloud.
- Real-time LUTs.
- Internal recording of Apple ProRes RAW
- For example, ProRes RAW HQ 5.7K 30p can be recorded onto an internal CFexpress Type B card (but not an SD card).
- Supports “.VLT” and “.CUBE” LUT file formats. User LUTs can be installed in the camera.
- Unlimited recording time— even with 4:2:2 10-bit C4K 60p internal recording when used at the recommended operating temperature (-10°F to 104°F).
- Simultaneous internal and external recording via HDMI output as well as simultaneous 4K and proxy recording.
- [shop.panasonic.com/pages/lumix](https://shop.panasonic.com/pages/lumix)

# LUMIX GH7 and G Series Lenses



LUMIX GH7



G Series Panasonic LEICA 12-60mm F2.8-4.0 ASPH; 10-25mm F1.7 ASPH; 25-50mm F1.7 ASPH.



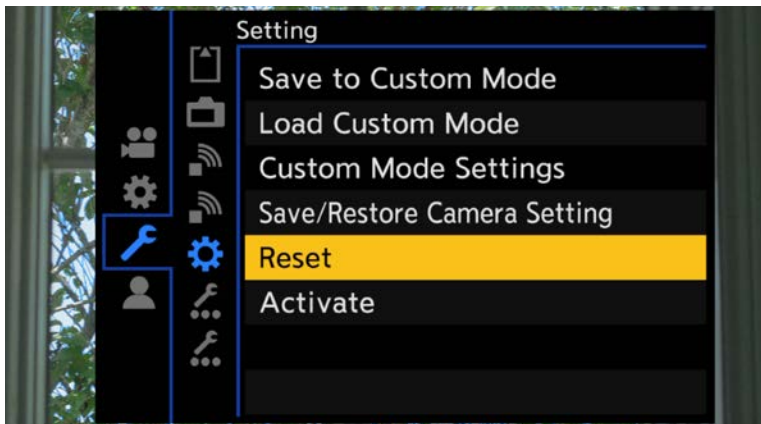
CFexpress Type B and SD card slots



Full size HDMI and USB-C



# Setting up LUMIX GH7



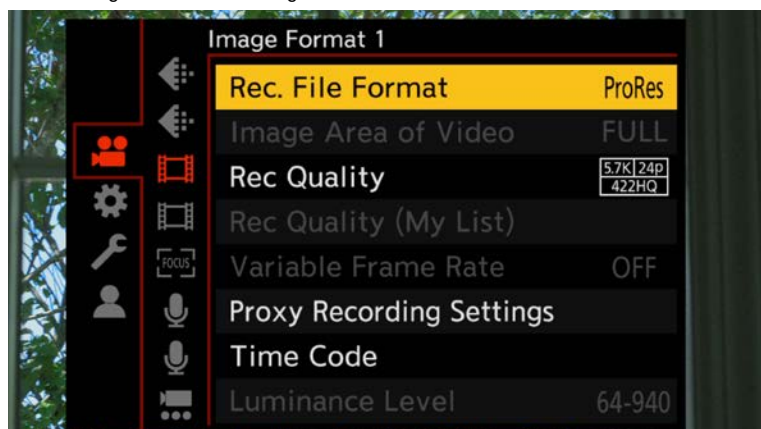
1. You may want to reset the camera if it's been out of your hands.



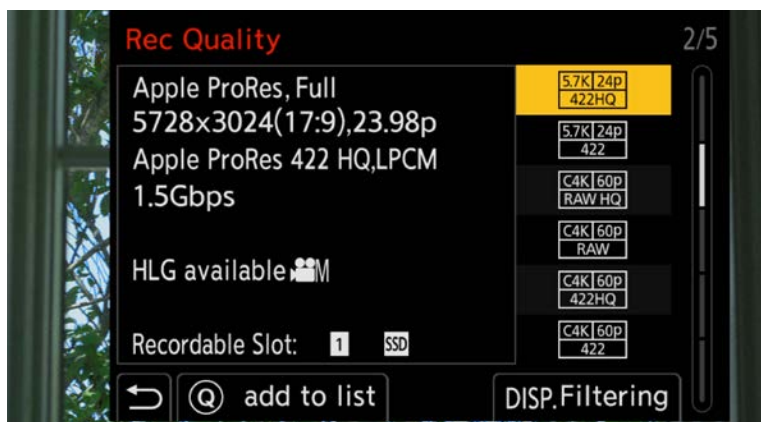
2. Let's begin. Here are settings that Matt Frazer recommends and I like.



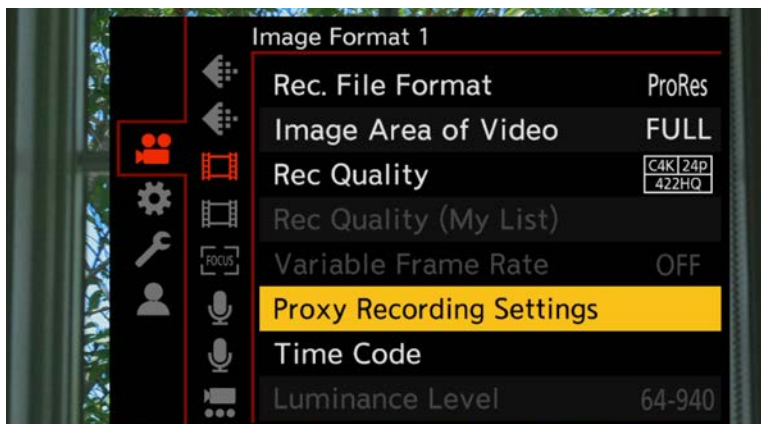
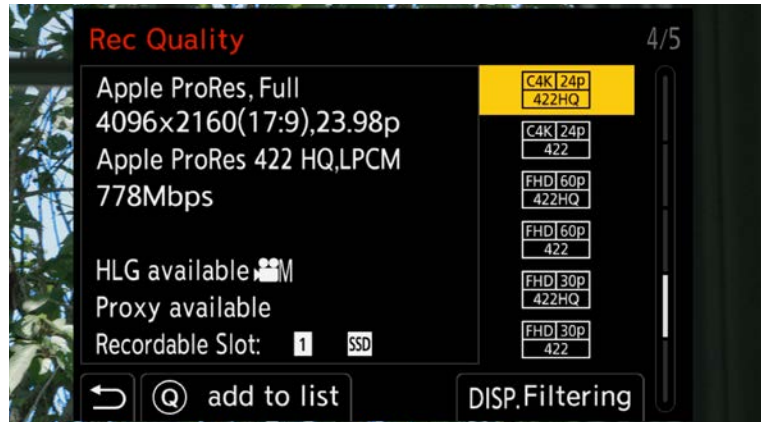
3. Shutter Angle instead of Shutter Speed and ISO instead of Gain.



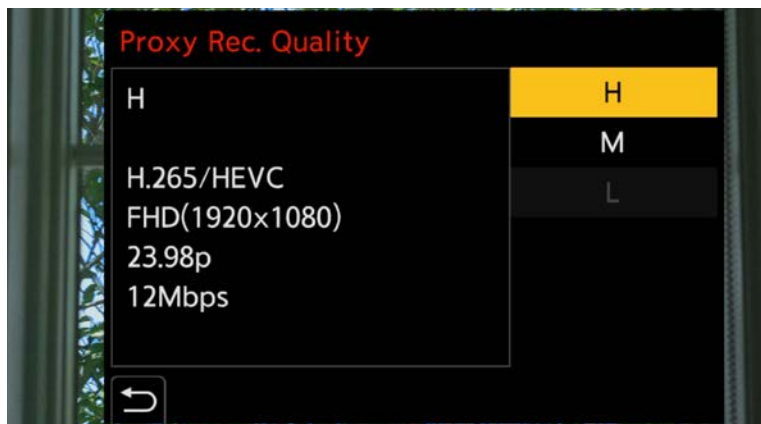
4. Recording File Formats are MP4, MOV or Apple ProRes.



5. There are many pages of Recording Formats. Note that 5.7K doesn't allow simultaneous proxy recording to SD card. Apple ProRes C4K 24p does.

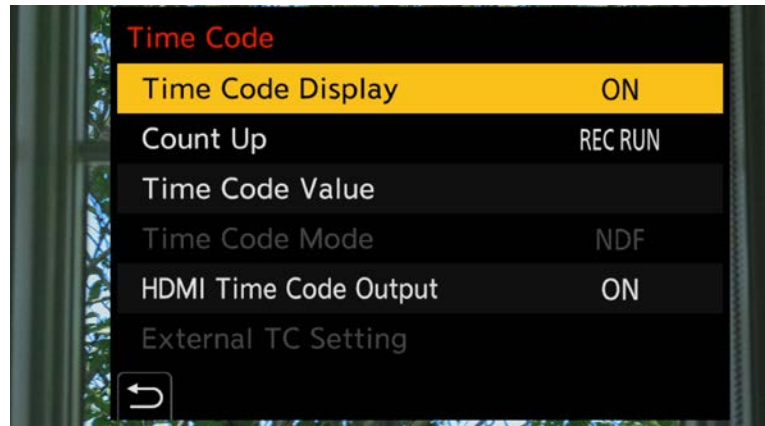
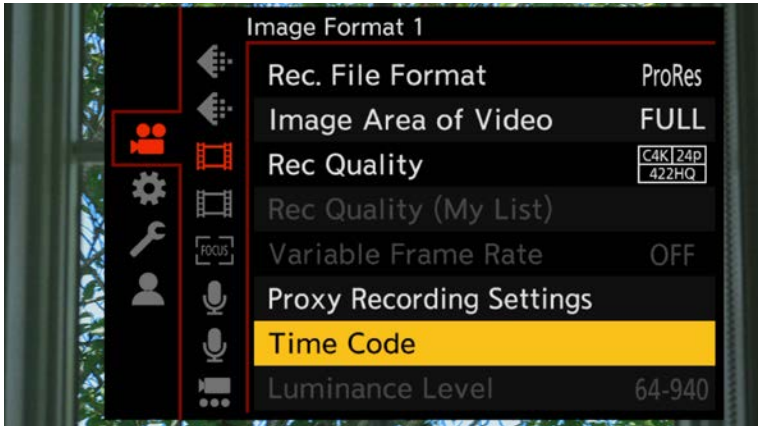


6. Turn Proxy Recording ON.

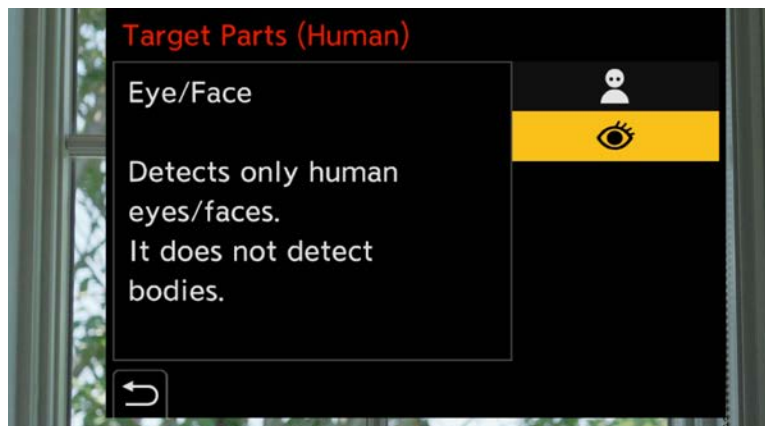
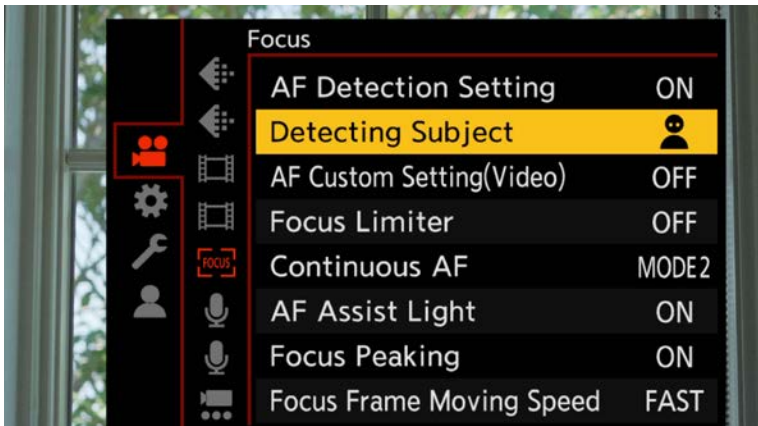


7. Set the proxy recording quality. The screen shows bitrate, etc.

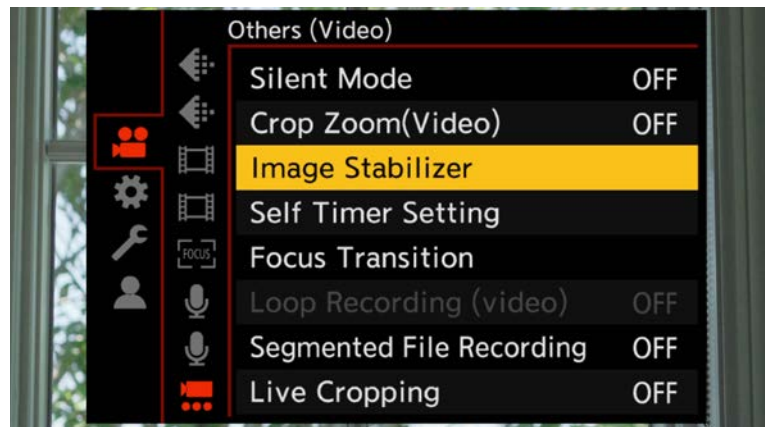
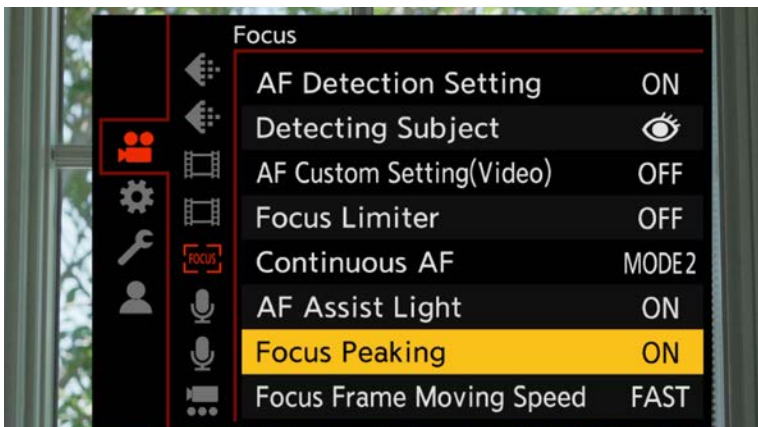
# Setting up LUMIX GH7



8. Enable Time Code and select its parameters—Free Run (counts up all the time) or Record Run (only counts when you're recording).

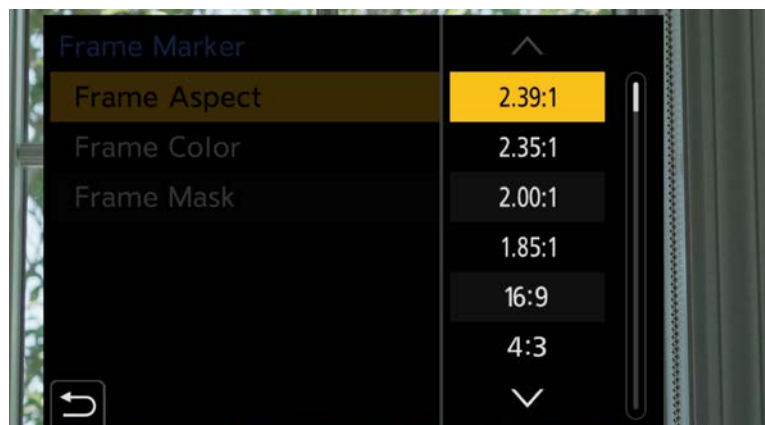
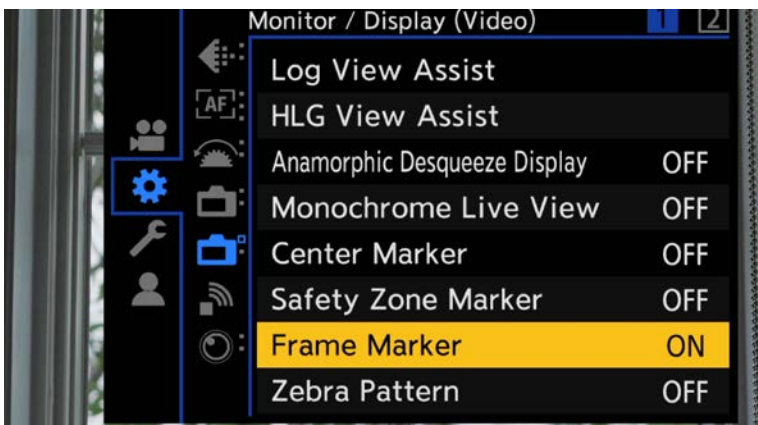


9. Focus: Human, Animal, Car, Motorcycle, Train, Airplane, Eye, Face—or manual, of course.



10. Focus Peaking is good on the GH7.

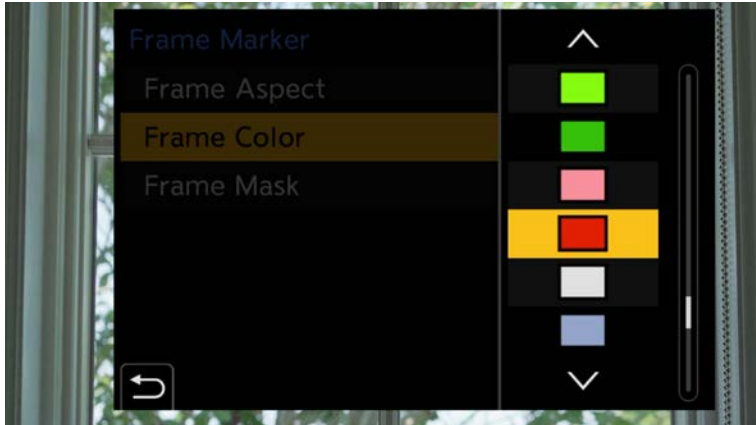
11. Set Image Stabilization to Normal. Turn it off for anamorphic.



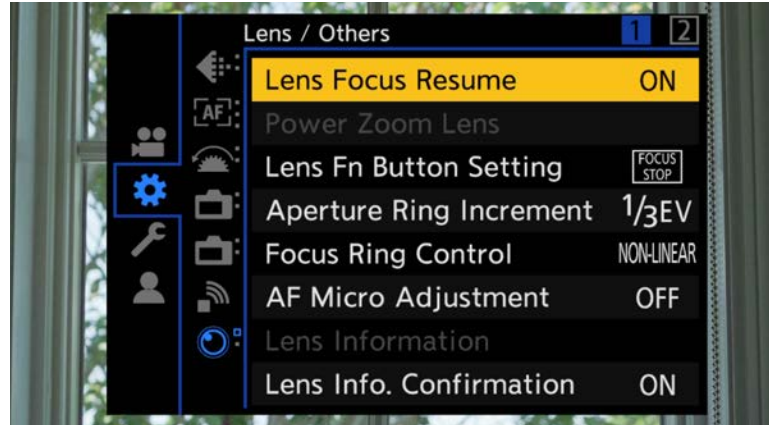
12. Frame Marker = Framelines.

13. Lots of choices for framelines.

# Setting up LUMIX GH7



14. Select your frameline color.



15. Some LUMIX lenses maintain manual focus even after camera is off.



16. Uh-oh, why no anamorphic desqueeze? It's grayed out here.



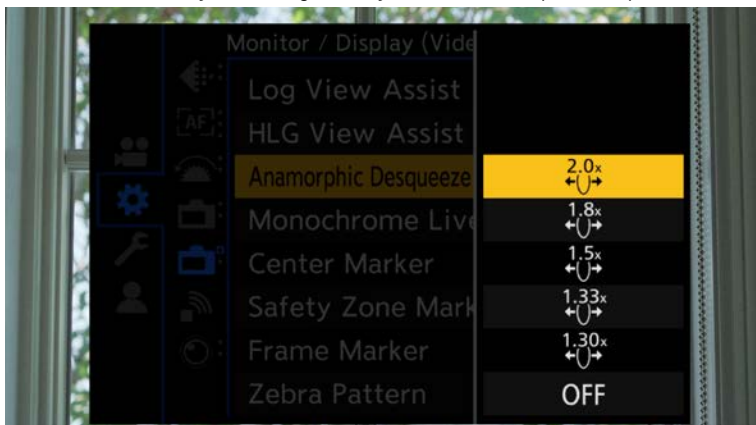
17. You can't do Proxy Recording and Anamorphic Desqueeze simultaneously.



18. Turn Proxy Recording OFF if you want anamorphic desqueeze.



19. Now you can select an anamorphic desqueeze.

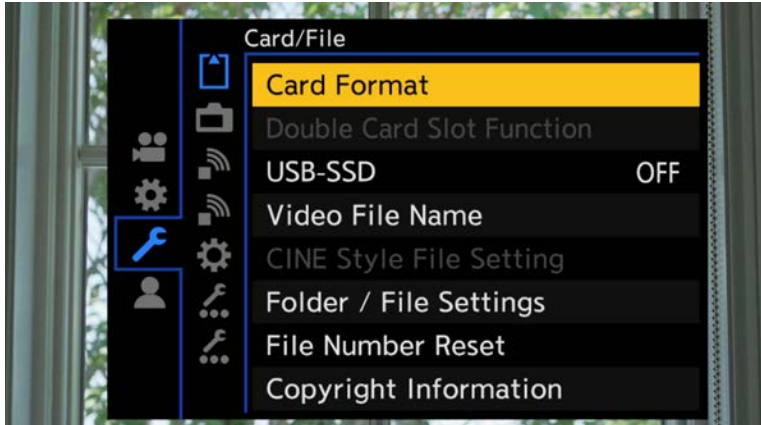


20. Select the desqueeze factor of your anamorphic lens. The image looks like this on the camera monitor. It doesn't desqueeze on HDMI output.

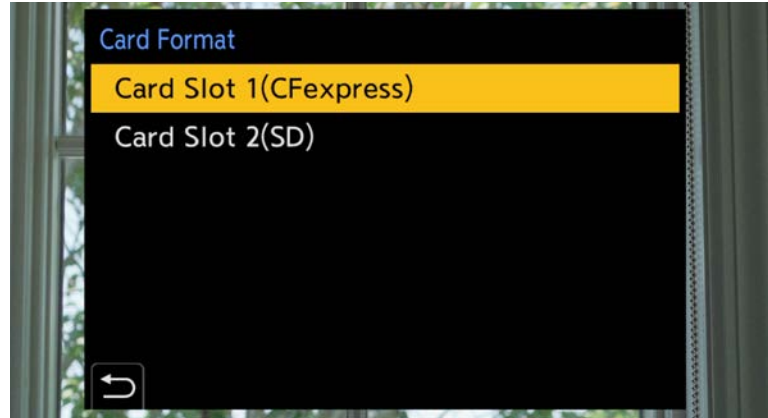




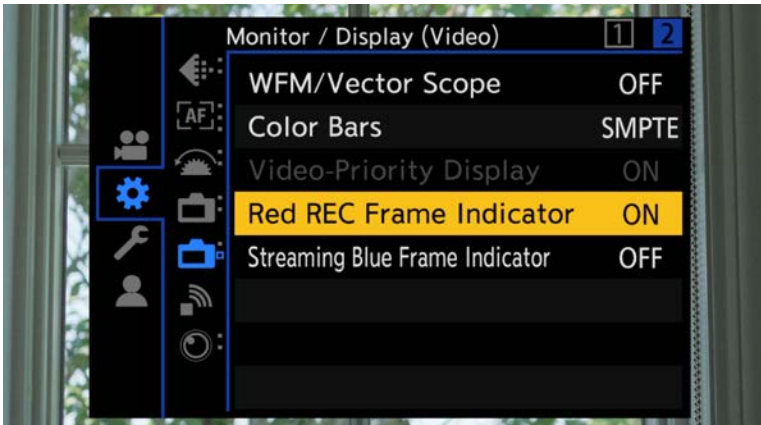
# Setting up LUMIX GH7



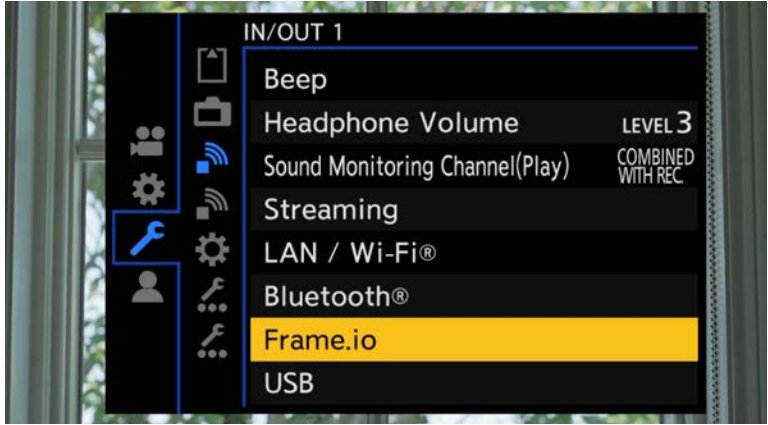
21. Here's the menu location to format media cards.



22. Card slot 1 is CFexpress, which you want for high rez or high fps.



23. A red frame is displayed when you're recording.



24. Establish a Frame.io connection here.



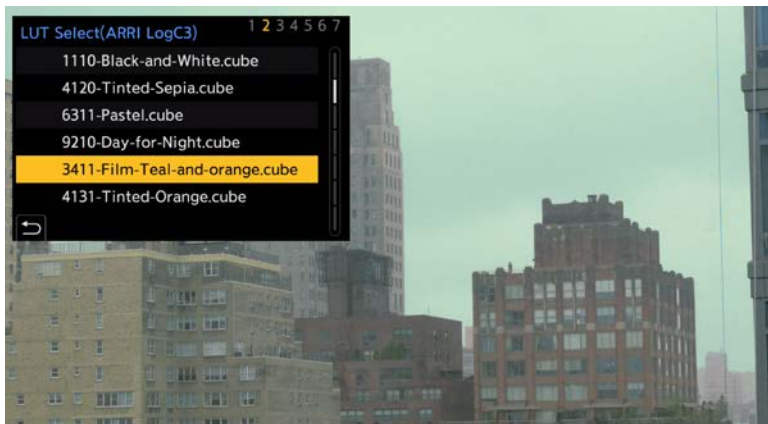
25. This is spherical 2.39:1 widescreen frameline and format.



26. Here, we have the camera level indicator turned on.



27. Select an ARRI LogC3 viewing LUT: Menu>Gear>Log View Assist



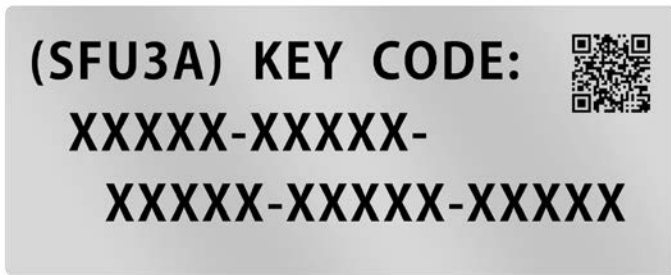
28. Read on...lots more about ARRI LogC3 and the LIMIX GH7....

# LUMIX GH7 LogC3 Software Key

Panasonic writes: “We are proud to announce a new Software Upgrade Key DMW-SFU3A (sold separately) on the LUMIX GH7. With this upgrade, ARRI LogC3 is enabled, and seamless color matching with ARRI’s digital cinema cameras can be achieved. The image processing of the ARRI LogC3 curve on LUMIX GH7 has been certified by ARRI. The options for Log recording, which provides rich color information and wide dynamic range, have been expanded to include ARRI LogC3 in addition to the conventional V-Log, further improving LUMIX’s workflow compatibility.”

Again, thanks to Matt Frazer for all his help with this article.

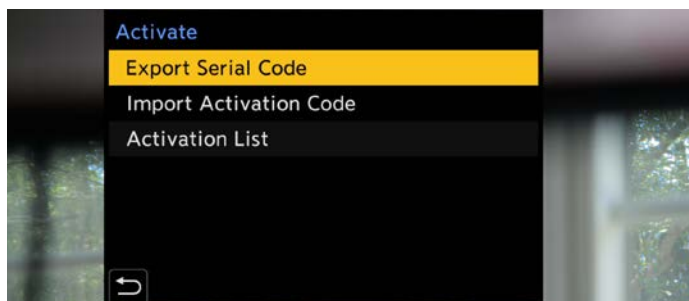
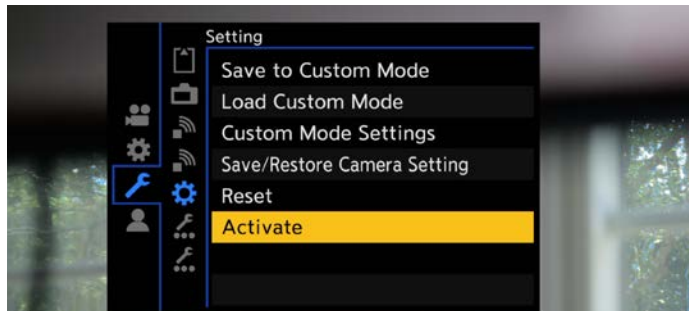
First you need to purchase the Panasonic DMW-SFU3A LUMIX ARRI LogC3 Upgrade Software Key. Actually, the software is already in the camera. This is just the license for activation, and well worth the cost of \$199.99. It’s available to ship in a small box directly from Panasonic, B&H Photo, and the usual suspects. Of course, you should have, could have, purchased the Upgrade Software Key when you got the camera.



Format an SD or CFexpress card in your GH7. Then press Menu > Wrench > Gear > Activate > Export Serial Code.

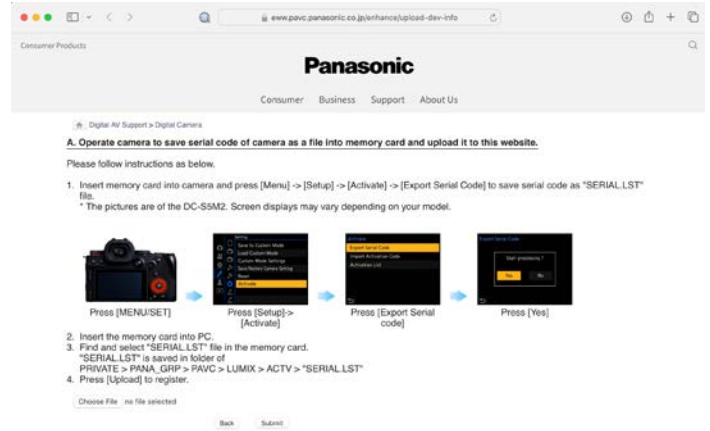


Your camera’s serial number will be saved to the memory card with the file name SERIAL.LST.

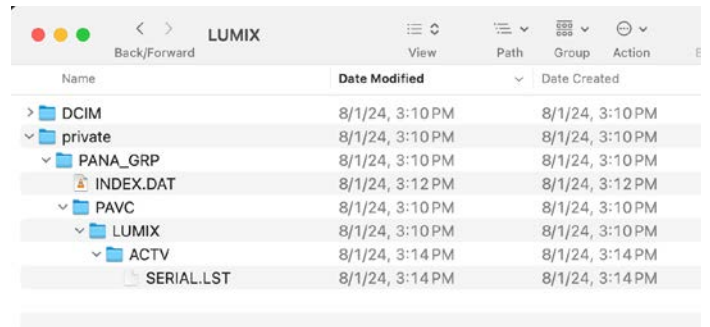


Next, insert the memory card into your computer and go to: <https://eww.pavc.panasonic.co.jp/enhance/activation-top/index/> DMW-SFU3A

Click on the CHOOSE FILE button:



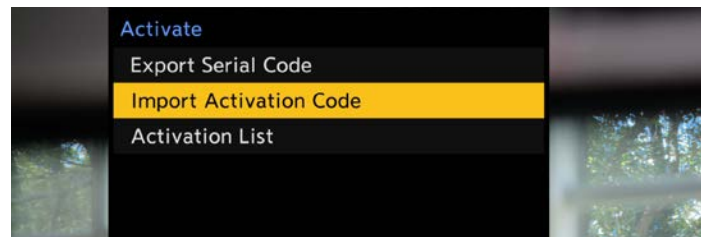
You’ll find the SERIAL.LST file on the SD card at: PRIVATE > PANA\_GRP > PAVC > LUMIX > ACTV > SERIAL.LST.



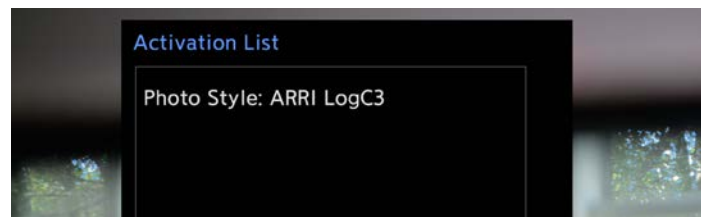
Check the box next to SERIAL.LST, click SUBMIT and UPLOAD. Enter your 25-digit Key Code.

Next, save the Activation Code to the SD or CFexpress card. (When you click “Save to Memory Card,” the file ACTIVE.LST may wind up in your Downloads folder. If so, copy it to PRIVATE > PANA\_GRP > PAVC > LUMIX > ACTV on the memory card.

Put the SD card back into your LUMIX GH7. From the same screen as before, IMPORT ACTIVATION CODE. Follow the on-screen directions to enter the code that comes in the DMW-SFU3A LUMIX box.



Select ACTIVATION LIST, and see your new license confirmed:

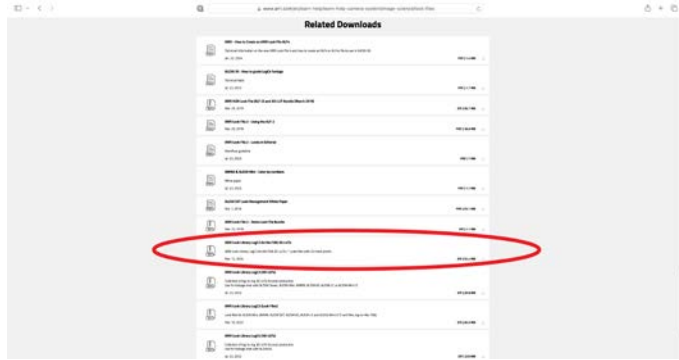


# Loading LUMIX GH7 with LogC3 LUTs

1. go to: [arri.com/en/learn-help/learn-help-camera-system/image-science/look-files](http://arri.com/en/learn-help/learn-help-camera-system/image-science/look-files)

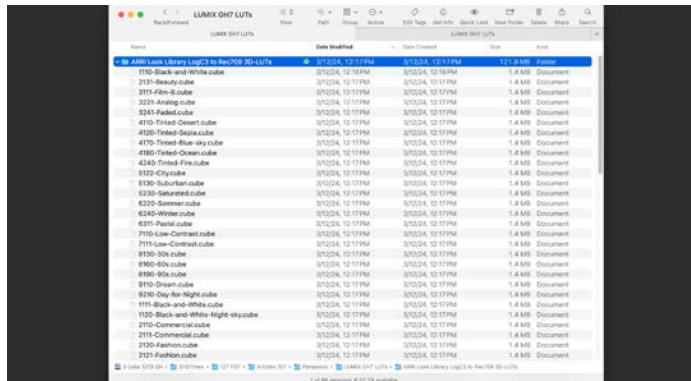
2.. Download ARRI Look Library LogC3 (to Rec709) 3D-LUTs (ARRI Look Library LogC3 (to Rec709) 3D-LUTS / \*.cube files with 33 mesh points. Mar. 12, 2024

and scroll down to the bottom of the page, under RELATED DOWNLOADS.

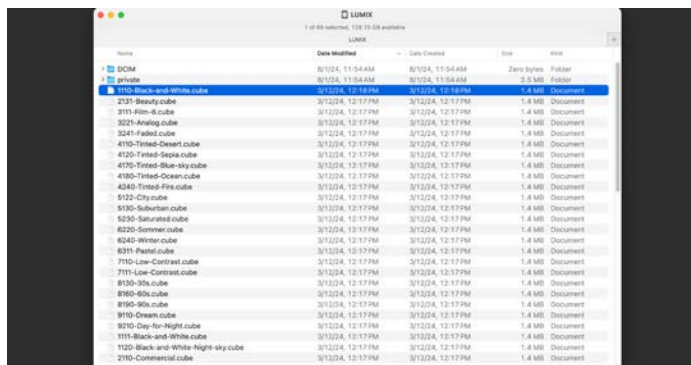


This is the ARRI Look Library for viewing in camera and on set monitors. Not to be confused with ARRI Look Library LogC4 (Look Files) or ARRI Look Library LogC3 (Look Files) towards the top of the download list — these are essentially for post.

3. Unzip the file and you get a folder named “ARRI Look Library LogC3 to Rec709 3D-LUTs” with 87 .cube files inside.



4. Copy all (or some) of these .cube files to the root of an SD or CFexpress card that has been pre-formatted in your LUMIX GH7. (Do not put these files inside any folder.)



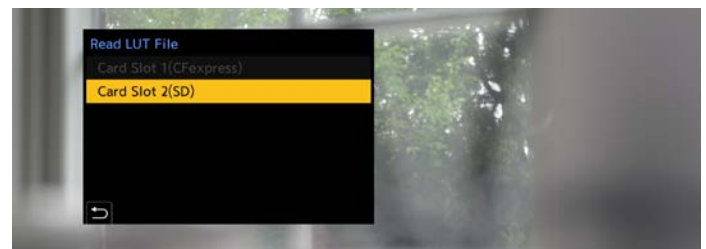
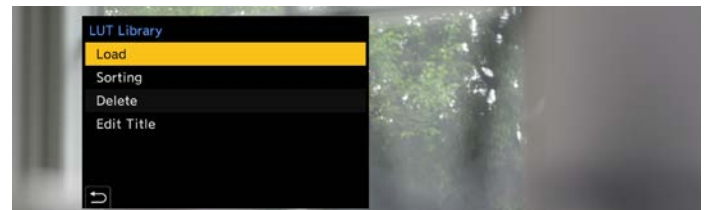
Note: a CFexpress card or SDXC card greater than 128 GB is important because it must be formatted exFAT to allow filenames longer than 8 characters. For recording, a CFexpress or SD card with Video Speed Class 90 is required.

5. Insert the SD or CFexpress card containing the ARRI LOOK Library files into the GH7.

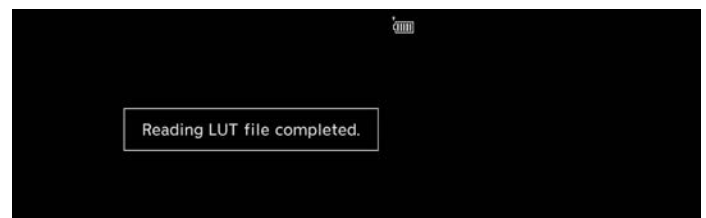
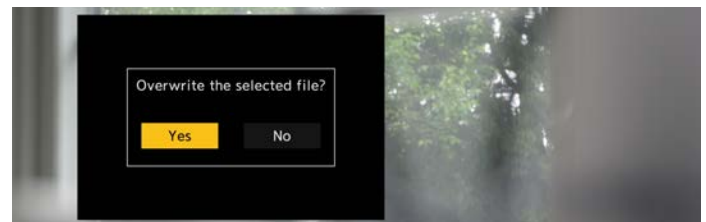
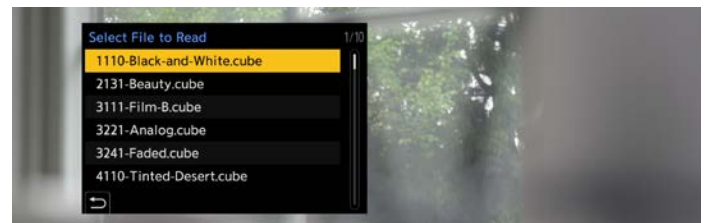
6. Press Menu > Gear > Image Quality > LUT Library



7. Now we're going to load some ARRI LogC3 LUTs into the GH7 camera. Don't mess with the top two items—Vlog\_709 or ARRI 709. If you want to keep the default three Sample LUTs, skip to the next page. If not, continue: Sample LUT1 > Load ... and select the Card Slot with your ARRI Library:

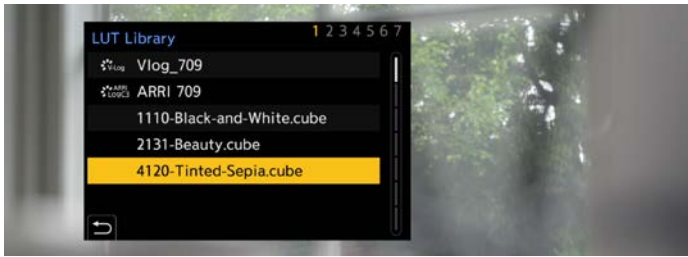


8. Select a LUT from the list, confirm, completed:

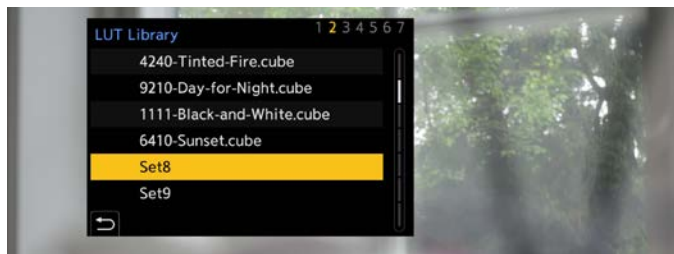


# Working with LUMIX GH7 and LogC3 LUTs

10. Continue filling up the first LUT Library page:



11. And load more on the following pages:



12. I prefer to work with viewing LUTs (Looks) and not bake them in. Your mileage may vary.

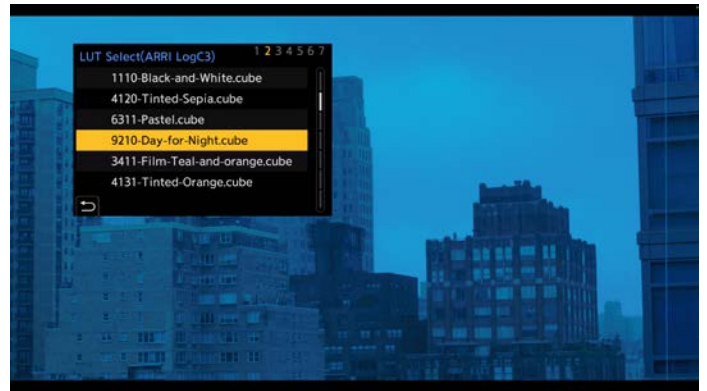
For viewing LUTs not baked in: MENU > Log View Assist...



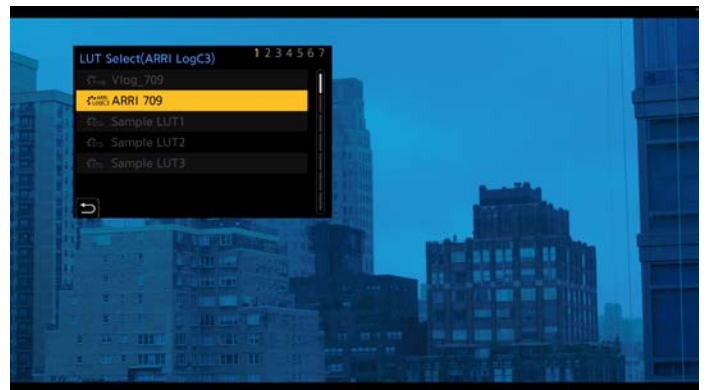
13. Be sure LUT View Assist (Monitor) and (HDMI) are turned ON. In this example, we have Day-for-Night already selected. To load a different look, click LUT Select (ARRI LogC3).



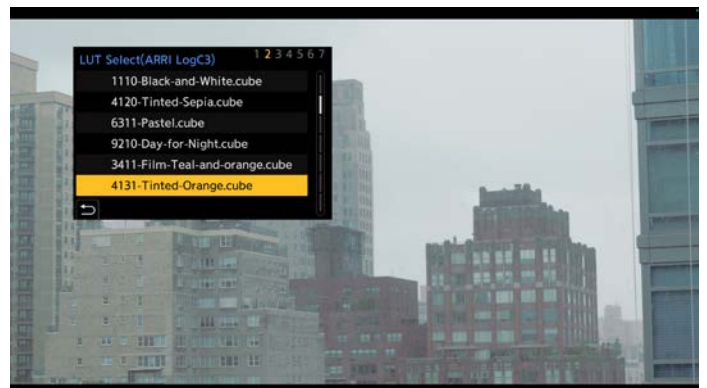
14. This presents the list of ARRI LogC3 LUTs that you previously loaded.



15. Turn the viewing LUT off by returning to MENU > Log View Assist and turn (Monitor) and (HDMI) OFF, or scroll up and select ARRI 709. (This is ARRI's transform for Rec.709)

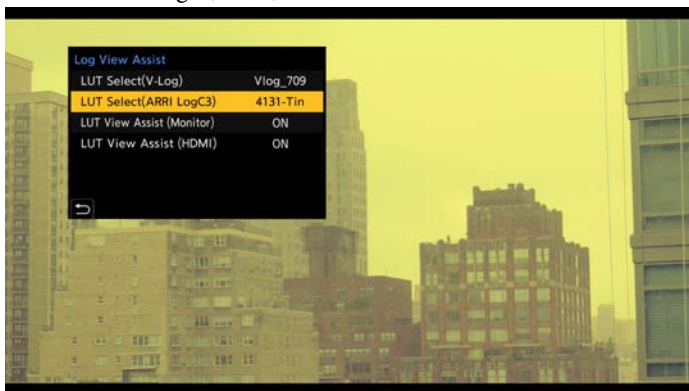


16. "Wait, wait," the Director calls out. "Can we see New York on a sweltering summer day?" Yes, easily:



# Working with LUMIX GH7 and LogC3 LUTs

17. Tinted Orange (.cube) looks like this.

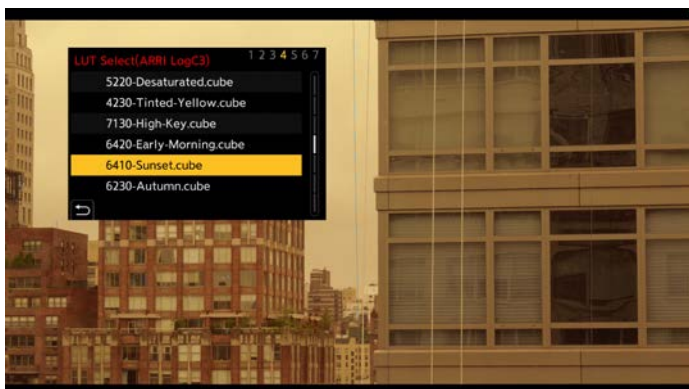


## Function Button Quick Access

18. Here's a quick way to jump directly to choose a LUT. Press a Function Button for 3 seconds—for example, the Fn3 Button, at the bottom left side as you face the front of the camera. Scroll down the many screens of Page 2 in the Custom Menu: LUT Select (LUT View Assist). Press Menu/SET to save it.

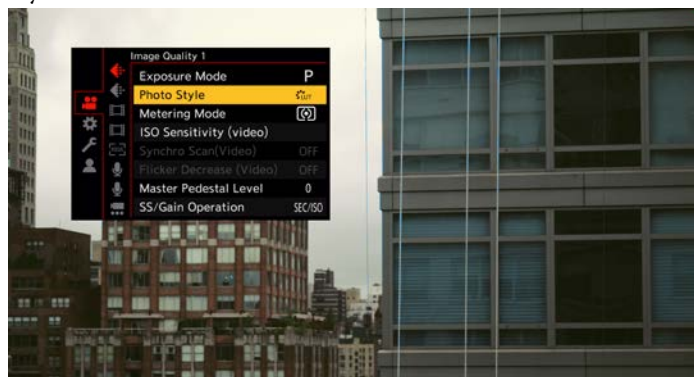


19. Now you can select a LogC3 LUT quickly.

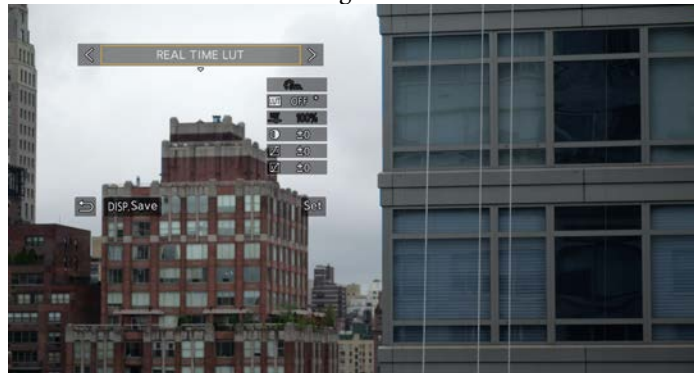


## Baking in a LUT

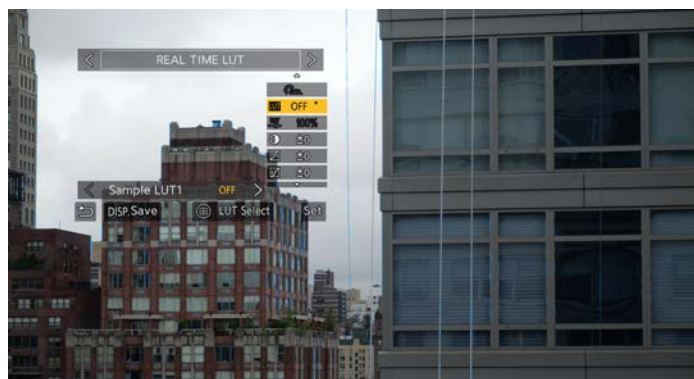
20. To bake in a LUT, go to: Menu > Image Quality 1 > Photo Style...



21. Use the touchscreen to navigate to REAL TIME LUT.

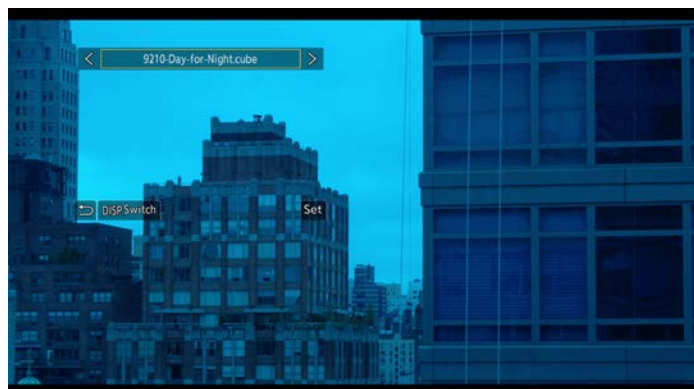


22. Touch the [LUT Select] box toward the bottom center.



23. In the box at the top, scroll left or right to look at all your loaded LUTs. When finding the one you like, press SET.

Remember, the LUT (Look) is now baked into your video. Not for those who prefer flexibility in post.



## SIGMA 28-105mm F2.8 DG DN | Art Zoom Lens



Mark Amir, President of SIGMA Corp of America, taken with new SIGMA 28-105 mm F2.8 DG DN | ART on SIGMA fp L camera. Above, at 28mm. Below, at 105mm. Depth of field is the same for equal image sizes at the same aperture. But, the tighter focal length "feels" shallower because of compression.



# SIGMA 28-105mm F2.8 DG DN | Art Zoom Lens



SIGMA introduces new zoom lenses in their Art series at a rapid rate. The dedicated iris ring with its clear, linear manual aperture scale and Auto option is applauded.

With fast autofocus, and superb optical performance, the new SIGMA 28-105mm F2.8 DG DN | Art lens joins SIGMA's Art series of fast-aperture F2.8 zoom lenses. As with the 24-70mm F2.8 DG DN II | Art and the 28-45mm F1.8 DG DN | Art, the new 28-105mm F2.8 has an aperture ring with click/declick and an Auto Iris lock, two AFL (Auto Focus Lock) buttons and a zoom lock switch. It resists dust and moisture. The front element has a water and fingerprint repellent coating.

The new Full Frame, SIGMA 28-105 F2.8 DG DN | Art zoom comes in E-mount (Sony) and L-Mount (SIGMA, Leica, Panasonic, Blackmagic, etc).

Why 28-105 when SIGMA recently launched the wonderful 24-70mm F2.8 DG DN II | A? The answer is another question: how many times did you wish you could zoom past 70mm for that beautiful portrait focal length of 105mm? See portrait on previous page. And then, focus extremely close: to 15.8 inches (40cm) at all focal lengths for almost macro magnification of 1:3.1, shown on next page.

- 18 elements in 13 groups (2 FLD, 1 SLD, 5 aspherical elements)
- Filter size: 82mm
- Length x Max. Diameter: 157.9 x 87.8mm Ø x / 6.2. x 3.5in Ø.
- Weight: 995g / 35.1oz.

SIGMA Corporation: [sigma-global.com](http://sigma-global.com)

SIGMA Corporation of America: [sigmaphoto.com](http://sigmaphoto.com)

Visit SIGMA at IBC booth 12.D55.

## SIGMA 28-45, 24-70 II, and new 28-105



SIGMA Art Zoom  
28-45mm F1.8 DG DN | A



New SIGMA Art Zoom  
24-70mm F2.8 DG DN II | A



SIGMA Art Zoom  
28-105 mm F2.8 DG DN | A

## SIGMA 28-105mm F2.8 DG DN | Art Zoom Lens



SIGMA 28-105 mm F2.8 DG DN | A focuses to 40cm / 15.8" throughout its entire zoom range. That's a macro magnification ratio of 1:3.1. No SIGMA FDT lens tryout would be complete without fine subjects. At El Verano, Southampton: Pomegranate Margarita and Truffle Quesadilla.





# Kinefinity SDI e-Viewfinder



Rosette + Quick Lock

Side View



Bottom



RS Run/Stop

Diopter Adjustment

Brackets

Kinefinity EAGLE SDI e-Viewfinder on Canon Cinema EOS C400 Camera



If you, like me, prefer to look through an EVF rather than operate from a monitor, then look at this.

The new Kinefinity EAGLE SDI e-Viewfinder is a superb, compact, extremely lightweight, ergonomic Micro OLED 1080P EVF that works with many cameras. It is one of the most compact and lightweight EVFs on the market, powers up quickly, has low power consumption, and supports RS camera start-stop.

There are five function buttons, a function knob and a power switch. To attach the EVF, there's a clever combination rosette with a 1/4-20 thread and Movcam Quick-Lock. Mounting options include a Mini Mount pivoting bracket.

The Kinefinity EAGLE SDI e-Viewfinder software includes Luma Waveform, Peaking, Histogram, False Color, SDI Metadata (future firmware update) and more.

## Details

- The Kinefinity EAGLE e-Viewfinder works with digital cine cameras that have 3G SDI or HD SDI outputs (1080p and 1080i) at camera frame rates from 23.97 to 60 fps.
- 0.7" Micro-OLED Full HD 1080 display.
- High quality optics and diopter adjustments from -6 to +2.
- Zero-delay.
- 2.5W power consumption.
- No internal fan—e-Viewfinder runs silently.
- Power Input: 7-24 V DC
- SDI Input: 3G/1.5G SDI 1920x1080  
3G: 47.95p, 50p, 59.94p, 60p  
HD-SDI: 23.98p, 24p, 25p, 29.97p, 30p  
and 23.98psf, 24psf, 25psf, 29.97psf, 50i, 59.94i, 60i
- Size: 05 x 62 x 58 mm / 4.1 x 2.4 x 2.3 in.
- Weight: 348 g / 12.2 oz.

## Pricing and Availability

- Kinefinity EAGLE SDI e-Viewfinder comes in Black or Cyber (Metallic).
- EAGLE SDI e-Viewfinder MSRP US \$1,299.
- EAGLE SDI e-Viewfinder KIT MSRP US \$1,399.
- Visit Kinefinity at IBC: Booth 3.A27e in the Beijing Pavilion

[evf.kinefinity.com](http://evf.kinefinity.com)

# Nanlite Alien Series



# Nanlite Alien Series – Powerful LED Full Color Panel Lights



Nanlite Alien 150C



Nanlite Alien 300C



Nanlite Alien 150C and Alien 300C LED fixtures are compact, sturdy and powerful Panel Lights. For working on location in a London mist or Amsterdam downpour, the lamp heads are IP55 rated and rain covers are provided for the control units.

The 150C and 300C Alien lights have a wide CCT range of 2700K-12000K with G/M adjustment, 151 gel presets, HSI Mode, XY Coordinates, RGBW Mode (4 channels of color control) and 15 customizable effects. Dimming has been improved and there are multiple power options.

As shown in the images on the opposite page, these Alien Panel Lights are excellent for a wide range of applications. They look stylish and work seamlessly as part of a practical set design. They are compact enough for a small set and flexible for big studios spaces. A Nanlite representative said, “The Alien 150C and Alien 300C are reliable tools that demonstrate Nanlite’s ongoing commitment to advancing lighting technology.”

## Key Features

- LED full color Panel Light.
- Alien 150C lamp head weighs 3.6 kg / 7.94 lb. and measures 39.2 x 37 x 9.5 cm / 15 x 14.6 x 3.74 in.
- Alien 300C weighs 6.6 kg / 14.6 lb and measures 51.36 x 45.41 x 9.93 cm / 20 x 17.9 x 3.91 in.
- Alien 150 C power input is 175W and it delivers 13,050 lux at 1m, 5600K.

- Alien 300 C power input is 350W and it delivers 28,630 lux at 1m, 5600K.
- Dimming: from 0.0% to 100.0%, in 0.1% increments.
- CCT range of 2700K-12000K with  $\pm 150$  green/magenta adjustments.
- Excellent color rendition with CRI/TLCI average of 96 and 97, TM-30 Rf average 94, TM-30 Rg average 100.
- Control methods: on-board, remote controller, Nanlink App, DMX/RDM, LumenRadio CRMX.
- Power choices: AC / DC / V-mount battery.
- Lighting modes: CCT, HSI, RGBW, Gel, XY Coordinates, Effects.
- 15 built-in effects with customizable parameters for each.
- Five fan modes: Smart, Full Speed, Low Speed, Pause, Off.
- Firmware update via USB port on the lamp head.
- Newly designed interface has intuitive icons and minimizes text.
- Preset function for to save and recall parameters quickly.
- IP55 rated lamp head. Includes a rain cover for the control unit.
- Pop-up softbox is included. Barndoors are available as options.

For more information, please visit [www.nanlite.com](http://www.nanlite.com)

IBC Booth 12.F42

Framegrabs on the opposite page: courtesy of Nanlite, from their excellent product introduction video.



Albrecht Gerlach, owner of the PhotoCine group of companies (Rent, Shop, Live) called. He was on the ferry from Denmark, heading toward Paris, having just taken delivery of his brand-new, state-of-the-live-production-art OB3 truck.

Albrecht explained, “The 20-ton truck is 12m long, 4m high and 2.6m wide, powered by 3 phase 32 amp. Compared to other OB trucks, this one is non-expanding. It doesn’t accordion out when you park it. This was a deliberate choice, because we needed the truck to be as compact as possible, but at the same time, spacious inside. On many cine multi-camera jobs, when you use big trucks that are made for sports, lots of their technical resources are not used. At a stadium, you have all the space you need, but if you’re shooting in a theater or opera house in a European city, then you’re often limited as to where you park and how much space you can take up.

“Another unique thing about this truck is that it’s intended for large sensor cinema cameras. It doesn’t have the typical CCUs. Instead, we use the Ereca CAM RACER fiber optic transmission systems. You’re familiar with MultiDyne in America. CAM RACER is similar, made in France and nicely camera agnostic.

“I would say that 80% of what we do is around Sony cameras, mostly VENICE, but also use BURANO, FX9 and a lot of FR7 large-sensor PTZ cameras. We also use ARRI, Canon and Black-magic. We can remote control all camera settings—including iris. All the equipment that’s in the truck is 12G and HDR capable.

“OBtech in Denmark worked with us to build the truck. It’s a good partnership because we’ve been working with them on fashion shows, concerts, and so on. Since we are based in Paris, there are many fashion productions that happen regularly with four or five Fashion Weeks each year. And then we have out-of-season events,

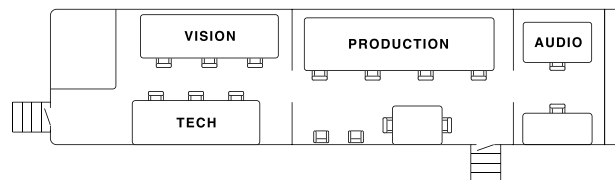
called cruise shows, all over Europe. We did a big show in Berlin last year and we’re working with them again next month in Paris. “Cinema style production works very well on music shows and live performances or sometimes just for a live broadcast. Most post-produced shows are shot on large-sensor cameras. They’re really a standard today for multi-camera except maybe sports and news. And by large-sensor, we’re talking about both Super 35mm and Full Frame. The difference in look and quality between a 2/3-inch sensor is huge.

“Sometimes we do a mix between VENICE 1 and VENICE 2 or ALEXA 35 and Mini LF. The wide shots are VENICE 1 in Full Frame mode and the tight shots, for example, with a Fujifilm 25-1000 are VENICE 2 cropped. Both are recording 6K.

“But, a truck is only as good as the cameras and lenses. For us, as a rental house, and for customers, it’s very important that people have choices: spherical, anamorphic, modern, vintage, Super35 or Full Frame. On many shows, there will be a focus puller on every camera. That’s another unique thing about this style of production. So, we want to leave the choice of camera and lenses to the creative people—the director or the DP—and for this new truck to basically make life as easy as possible for them.”

See the PhotoCineLive OB3 truck outside Hall 12 at IBC.

[photocinelive.com](http://photocinelive.com)





Production area: Sony XVS G1 UHD switcher 24 In / 12 Out, ICP-X1224 & X1116 panels. 6x LG 48" HDR OLED monitors. Ross FR12 Router. Riedel Artist 1024 intercom system with 1200 series panels and Bolero Beltpacks. Refrigerator. Nespresso coffee machine. Separate Audio Room with Yamaha DM7-EX console, Genelec 5.1, DANTE network, Netgear AV Switches.



Vision and Tech area: Three DIT / Shader positions with up to 20 RCPs and Pomfort LiveGrade via AJA Colorboxes. AJA FSHDR units for HDR/SDR conversion. Sony PVM X2400 & X3200 monitors, Telestream Prism MPS vectorscopes. There will almost always be a sophisticated color grading session after the shoot using RAW or high-res files. Normally, the routine is to record X-OCN in the VENICE cameras and simultaneously capture Apple ProRes on AJA Ki Pro Ultra 12G recorders for a very quick edit. For more information: [photocinelive.com](http://photocinelive.com)

# Godox KNOWLED MG1200R



# Godox KNOWLED MG1200R



The Godox KNOWLED MG1200R is a high-output, full-color LED spotlight. It draws 1600W of power and can be plugged into many household circuits. It is lightweight, has a range of 1800K-10000K CCT, 0.1% smooth dimming, built-in CRMX, and flicker-free performance at high frame rates.

The MG1200R delivers 1500W output — 118,000 Lux at 3m, 5600K with a 15° reflector.

MG1200R has six color modes: HSI, RGBW, GEL, X-Y, CCT, and FX (effects). Effects include flash, lightning, TV, candle, fire, fireworks, explosion, police car, etc. Moonlight and candlelight are much more realistic than possible with typical bi-color lights. GEL mode lets you adjust saturation and hue to precisely match gel colors.

The MG1200R uses advanced color management and has a helpful color calibration system to prevent visible color shifts when used with other KNOWLED lights. It also has selectable color spaces to match different screen standards.

The MG1200R introduces a new low-light mode, paired with 0.1% precision adjustment, ensuring smoother transitions at lower brightness levels.

The MG1200R supports a wide range of control options, including DMX, CRMX, Ethernet, Bluetooth and onboard. When paired with the Godox KNOWLED app, on-set lighting controls such as light mapping, visual layouts, and upcoming common FX are available.

The Godox KNOWLED MG1200R is fully compatible with the Godox G-Mount accessory system, including: GP-Lens 19 and 36 degree GP lenses; GP-26K projection attachment; GL3 and GL4 lantern softboxes; GF14 Fresnel Lens; GR 15, 30, 45 and 60 degree reflectors; BeamLight Max90 Parallel Beam Unit; rectangular and parabolic softboxes, etc.

## Details

- Power Supply: 100V-240V~60/50Hz
- Input Power: 1600W
- CCT: 1800-10,000K
- Brightness Range: 0%-100%

- Dimming Curves: linear, S-curve, exponential, logarithmic
- FX Modes: 14
- Average CRI: ≥96
- Average TLCI: ≥95
- Waterproof Rating of Light Body/Controller: IP54
- Removable Controller / Light Body Control (sold separately)
- Bluetooth Controlling Distance: Max. 40m
- U-type Bracket Angle: 360°
- Type-A USB Port: Firmware Upgrade / 5V 1.5A power
- Controlling Methods: DMX512 Control (supports RDM protocol) / LumenRadio CRMX Control / Bluetooth APP Control / Ethernet (supports Art-Net & sACN protocol)

## Dimensions

Light Fixture Head (including U-type Bracket):

- 400 × 589 × 339 mm / 15.75 × 23.19 × 13.35 in.

Controller:

- 189 × 174 × 404 mm / 7.44 × 6.85 × 15.91 in.

Weight

- Head (excluding U-type bracket and reflector): 9.8 kg / 21.6 lb.
- Controller: 6.7 kg / 14.8 lb

[www.godox.com](http://www.godox.com)

IBC Booth 12.H38



# Optica Magnus - Artiste Impressionism 2x FF Anamorphics



Artiste Impressionism lenses from Optica Magnus are ARRI/ZEISS 2x squeeze Master Anamorphics that have been rehoused and upgraded for Full Frame coverage. Contrast is slightly detuned at the edges. The original set off ARRI/ZEISS Master Anamorphic 2x primes consisted of 28, 35, 40, 50, 60, 75, 100, 135 mm T1.9 and 180mm T2.8. They cover Super35 sensors up to 29.26mm diagonal.

Peiqi “Eric” Wu, Marketing Operation Manager at KO Film Rental in Beijing, Paris and Japan, explained:

“The Artiste Impressionism lenses fully cover Full Frame or Vista Vision (up to 44.71 mm diagonal image coverage) without any vignetting. Our philosophy is to create a Full Frame 2x Anamorphic lens that’s also affordable for a rental house or individual to own.

“There is also a 90mm Macro lens in the set, which gives you the capability of capturing some close-ups and inserts without using

diopters. For example, in one take, you can pull focus from an extreme close-up of a watch to a medium shot of an actor sitting in a chair and then continue focusing to infinity to show the landscape.”

Optica Magnus in Burbank, CA is the US distributor of Artiste Impressionism Lenses. They said:

“This set of 2x Full Frame Anamorphic lenses come in a PL Mount. They have unique characteristics in color reproduction, light and shadow representation and flare that align with the Impressionist painting style. They are compatible with the ALEXA 65, ALEXA Mini LF, Sony VENICE Venice 2, the RED V-RAPTOR and many other cameras.

“The cost to convert each of your lenses will be \$9,500.00 USD, plus shipping. The turn around time is approximately 100 days.”

[opticamagnus.com/pages/lenses](http://opticamagnus.com/pages/lenses)

Lens mm	T-Stop	Min Focus	Weight lb	Weight grams	Length inches	Length cm	Front Diameter	Image Coverage	Mount
39	2.6	2'1"	6	2700	9 3/16	23.3	114 mm	44.71 mm	PL
50	2.6	2'6"	6.2	2800	9 3/16	23.3	114	44.71 mm	PL
55	2.6	2'3"	6.4	2900	9 3/16	23.3	114 mm	46.63 mm	PL
70	2.6	2'7"	6.2	2800	9 3/16	23.3	114 mm	46.63 mm	PL
85	2.6	2'11"	6.2	2800	9 3/16	23.3	114 mm	46.63 mm	PL
105	2.6	2'11"	6.2	2800	9 3/16	23.3	114 mm	46.63 mm	PL
140	2.6	3'10"	7.7	3500	10 3/16	25.9	114 mm	46.63 mm	PL
190	2.6	3'9"	8.6	3900	10 13/16	27.5	114 mm	46.63 mm	PL
90 Macro	3.4	1'3"	4.7	2143	8 17/64	21	95 mm	46.63 mm	PL
252	3.4	TBD	7.7	3500	10 13/16	27.5	114 mm	46.63 mm	PL



# iodyne Pro Mini: smart drive

If you are a runner, or if you watched the Paris Olympic marathoners trying to keep cool with special clothing, ice packs and water, it's pretty clear that heat slows you down.

If you're a DIT, DP, AC, creator or crew rushing to download the day's footage onto an off-the-shelf SSD, you know that heat can also slow transfers down, often to a frustrating crawl.

Now there's a super fast SSD that can take the heat: iodyne Pro Mini. It launches on September 10, 2024. Incidentally, iodyne is the company that also makes Pro Data Thunderbolt storage (NVMe 12/24/48TB 5 GB/s SSDs.) The name iodyne comes from "i/o" like in/out, and "dyne," a unit of force, as in dynamic.

Pro Mini is iodyne's smart drive, about the size of your iPhone, developed specifically for cinema production and photography. Think of it as a Thunderbolt shuttle drive with sophisticated features—speedy, sustained read/write speeds; Passkey authentication, security and encryption, digital labeling and Find My tracking. It comes in 4TB or 8TB capacities.

## iodyne Pro Mini details

- Sustained 3+ GB/s read/write speeds. Encryption and internal RAID protection is enabled full-time. This is about two to ten times faster than typical SSDs.
- Pro Mini uses solid-state AirJet Mini active cooling chips by Frore Systems. Tiny membranes vibrate silently at ultrasonic frequencies to generate a powerful air flow, while still staying protected against water, dust and moisture particles as small as 0.3µm.
- Digital Label. No more writing on tape with a Sharpie. Pro Mini's Digital Label identifies each drive in E-Paper style.
- Find My Tracking. Find your Pro Mini drives easily with Apple and Google Find My Device networks.
- Device Passkeys. Who can remember all those passwords for all those drives? Pro Mini uses secure Passkeys.
- Manage all your Pro Minis. With iodyne Cloud's new Fleet Management service, you can set up and manage individual and groups of Pro Mini and Pro Data devices—locally or remotely.
- Hardware-accelerated RAID-6 data protection.
- Hardware-accelerated XTS-AES-256 encryption.
- Bus-powered. Plug directly into your computer—works with USB2.x, USB3.x, and USB 4 / Thunderbolt.
- Metadata can be accessed through NFC or Cloud.
- Weatherproof, durable, machined and anodized aluminum chassis.
- In IBC Hall 6 Booth A22.
- [www.iodyne.com](http://www.iodyne.com)



Approximate actual size



# DENZ PLC MKIII Portable Lens Projector



This is the portable, compact lens projector for a well-equipped camera crew, service department or rental house. The DENZ PLC MKIII attaches to a tripod head, camera cart, service desk or checkout bay pedestal. Take it on location in its optional carry-on Peli style case.

A projector reveals many things about a lens. It may not tell you how the lens “looks” — for that, you really should look with the lens on a camera.

## So, why would you need this portable projector?

1. Determine whether the focus marks engraved on the barrel are accurate.
2. Quickly check flange focal depth and whether the lens needs to be shimmed. Did it suffer damage during shipment or that crazy car chase sequence?
3. Evaluate image circle, shading and illumination.
4. Get immediate details on lens geometry (pin cushion, barrel distortion), focus fall-off, chromatic aberration (shifting from magenta to green when focusing).
5. Anamorphic lenses can also be tested.

## Then, what is the difference between this projector and, for example, a Chrosziel P-TP7 II?

At about a third the weight, size, complexity and cost, the DENZ PLC MKIII is a portable companion. It may lack lens data and advanced features, but it is still a valuable and essential instrument.

This is the third generation DENZ lens projector. The new MKIII has an LED light source that barely heats up and is much brighter in the highest of its three settings than the second generation.

There are three brightness levels, cooled with an internal fan.

The PLC MKIII uses DENZ interchangeable lens mounts: including LPL, PL, E, EF, RF, and SP70. The native flange depth is a mere 9mm, so you can check almost any cine lens out there. Flange focal depth is indicated by a scale on top.



Rotating the knurled barrel adjusts the reticle with a precision linear drive mechanism.

The base has threaded sockets that can attach to a standard bridgeplate and lens rods.

The DENZ PLC MKIII Portable Lens Checker and interchangeable lens mounts are available from DENZ, Chrosziel and local dealers.

Visit Denz and Chrosziel at IBC booth 12.D10.

[denz-precision.com/en/cinetec/denz-plc-mk-iii/](http://denz-precision.com/en/cinetec/denz-plc-mk-iii/)

# DENZ PLC MKIII Lens Projector



Below: DENZ PLC MKIII lens projector, set up on an Inovativ cart on location with an ARRI 58mm Signature Prime.

What does it show us?

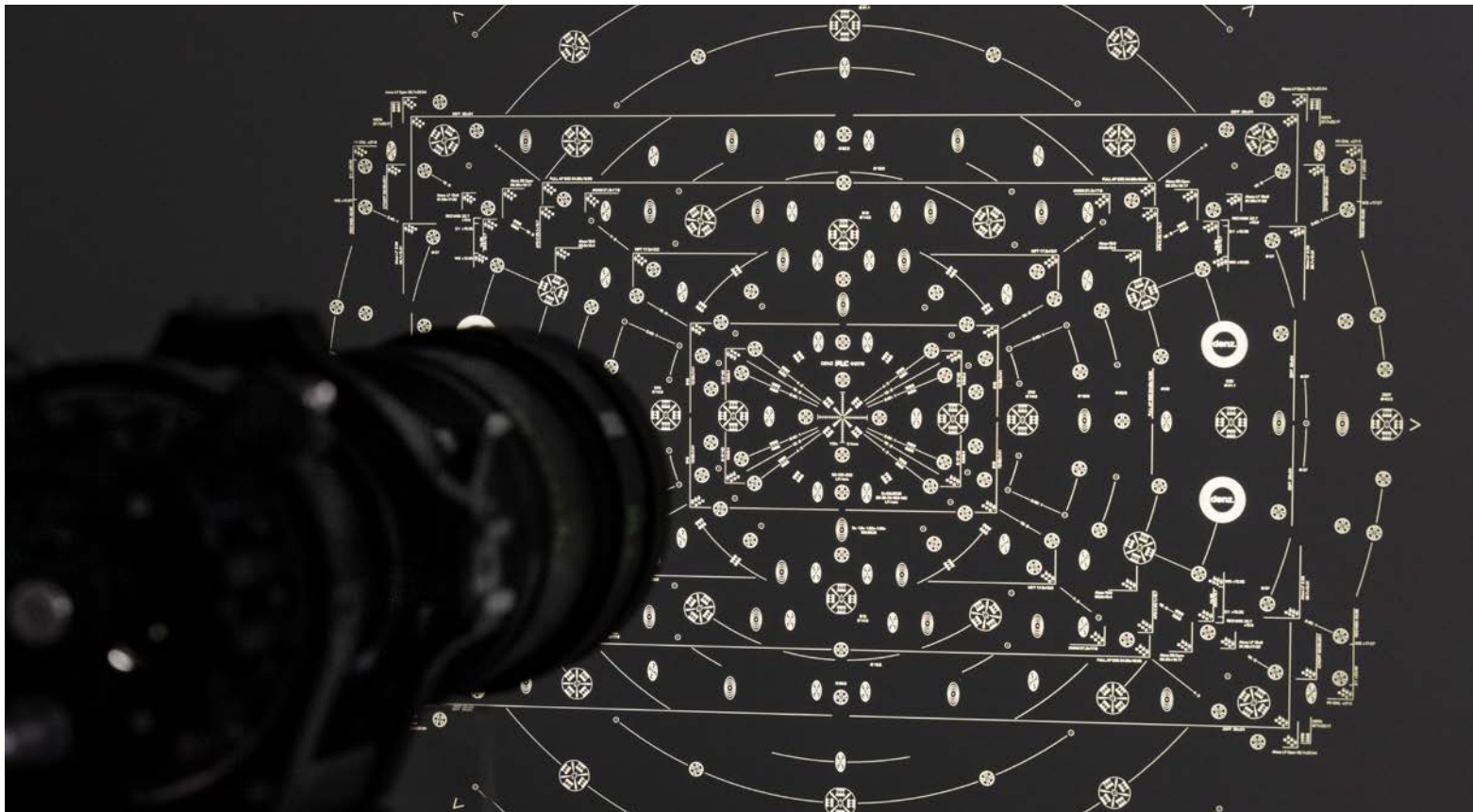
- The straight and perpendicular lines indicate that this lens has almost no distortion.
- Illumination of the entire Large Format (Full Frame) area is even, with minimal shading (vignetting) toward the edges.
- There is a gentle, deliberate fall-off of focus toward the edges of frame.
- And, the 4'3" focus mark matches the distance from image plane to the wall.

Knurled ring: rotate to adjust flange focal depth (FFD)

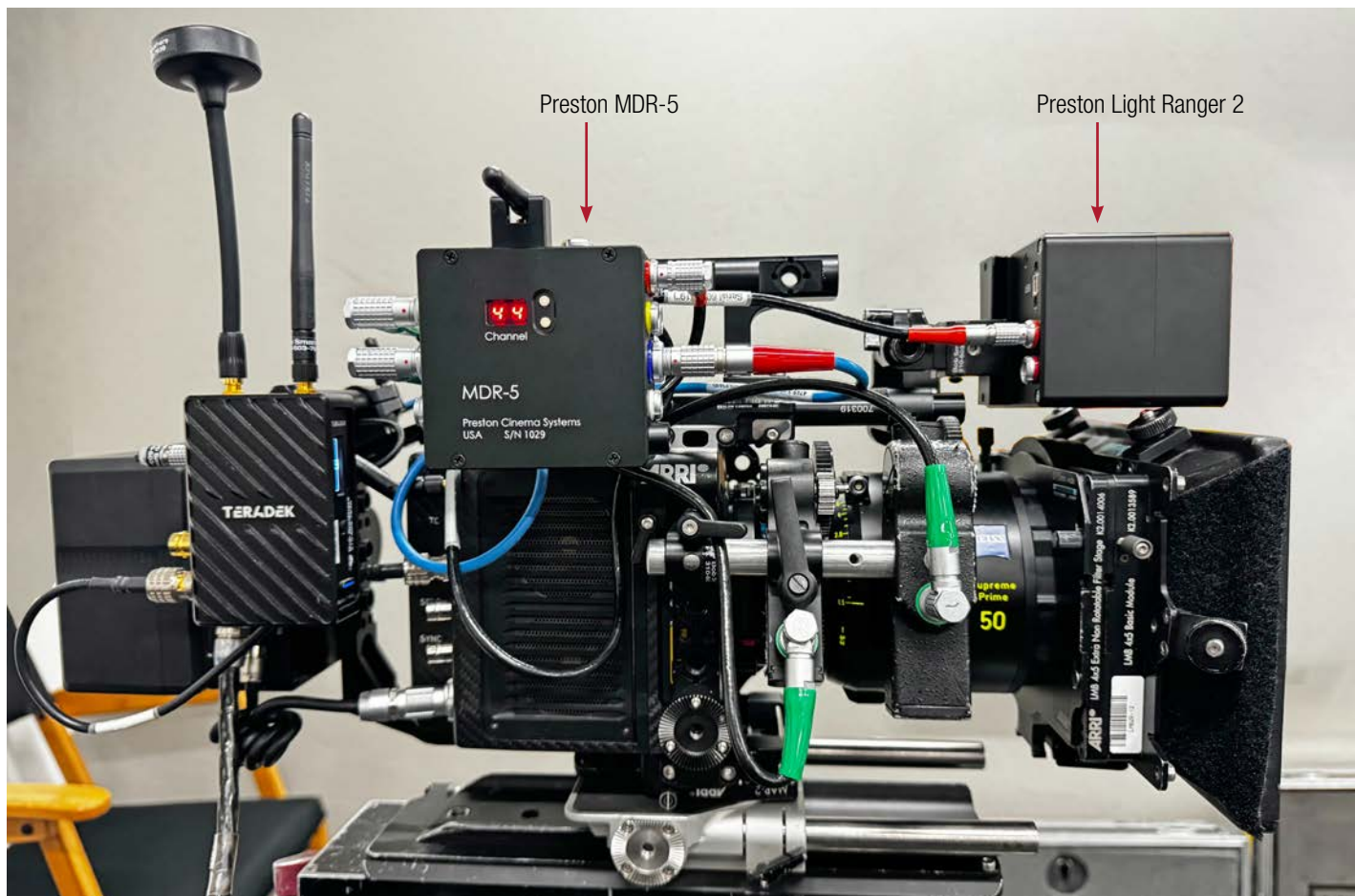


Minus:  
(decreasing  
FFD) in 1/100  
mm increments

Plus:  
(increasing  
FFD) in 1/100  
mm increments



# New Preston Cinema Systems MDR-5



MDR-5 on ARRI ALEXA Mini LF. Photos above and top of opposite page by Preston Cinema Systems Head of Sales Alanna Berkson. With Focus Puller / AC Bob Smathers and James Smathers at Keslow Camera.

The new MDR-5 (Motor Driver) from Preston Cinema Systems is lighter, smaller and more nimble than your familiar MDR-3 or 4.

The MDR-5 drives up to three digital lens motors and supports advanced Hand Unit 4 (HU4) and LR2 lens functions — all in a very compact package.

The MDR-5 housing measures 83 x 81 x 36 mm (3.3 x 3.1 x 1.4").

It weighs 285 g (10 oz.)

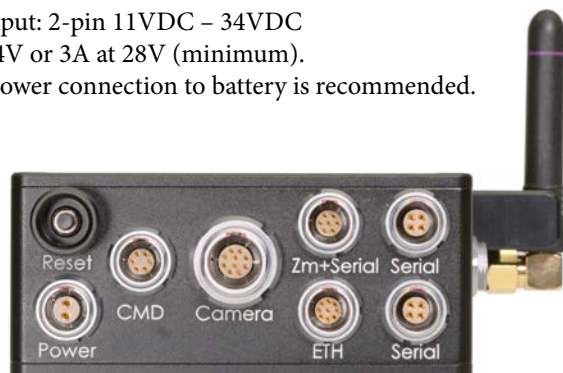
There are 30 robust and secure 2.4GHz wireless channels to connect with your Preston FIZ devices.

In comparison, the MDR-4 only supports 2 motors.

MDR-3 supports 4 motors but is about twice the size and weight.

**Shown below: This is the most interesting side of the MDR-5 with lots of new connections and ways to control cameras and devices.**

- CMD (Command) to hard-wire to a Hand Unit.
- Camera, ETH (Ethernet), and Serial ports are for camera control, start-stop, menu functions, etc.
- Serial ports also connect to and support the Preston Light Ranger 2 (LR2) Sensor head that sits at the front of your camera.
- Zm+Serial is a combined RS-232 and Analog port to connect a Microforce Zoom Control by cable. For example, the Microforce is attached to your fluid head's pan bar.
- Power input: 2-pin 11VDC – 34VDC 6A at 14V or 3A at 28V (minimum). D-tap power connection to battery is recommended.



# Preston Cinema Systems MDR-5



MDR-5 on Sony VENICE 2 with Light Ranger 2, controlled by Bob Smathers on his Preston HU-4 Hand Unit.

MDR-5's Micro SD card slot for recording lens metadata and updating firmware. USB-C port: output metadata (e.g. to SSD storage) or for real-time data acquisition, and for firmware updates.

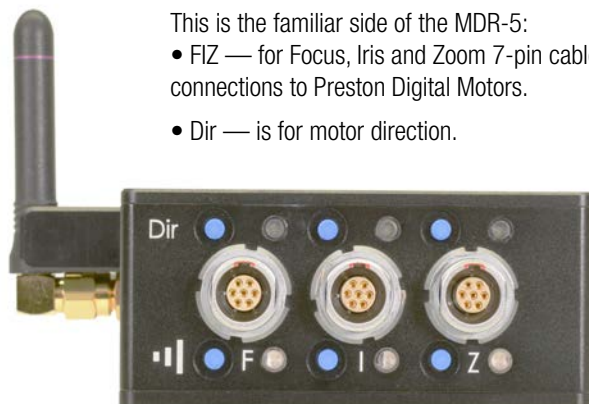


MDR-5 power indicator, antenna and 5-pin T/C Timecode input — jam sync here.



This is the familiar side of the MDR-5:

- FIZ — for Focus, Iris and Zoom 7-pin cable connections to Preston Digital Motors.
- Dir — is for motor direction.



- The MDR-5 has high current capability for fast and accurate motor positioning.
- Actual current draw depends on the torque of the lens.

For a complete list of cables, accessories and more information, go to: [prestoncinema.com](http://prestoncinema.com)

and visit Preston Cinema Systems at IBC in Hall 12 Booth 12.H74.

## “Scarlet Sparkles” with ZEISS Nano Primes



*by Masako Misaki. Photos by Arato Ogura, Shin Yoneyama, and Masako Misaki.*

In “Scarlet Sparkles,” a 3-minute ZEISS Nano Prime showreel, a young woman discovers the other side of her inner self while strolling through an abandoned botanical garden.

The short film was created and shot by Tokyo-based Sho Tamura. At the age of 34, he is already heading the camera department as DP on various episodic TV shows, and is one of the fast rising stars in the Tokyo film production scene.

“Unlike TV shows and commercials where I know pretty much what and how to shoot in advance, I was the one to create the story and translate it into visually appealing language for this showreel. The only condition was to include the beauty and benefits of Nano Prime lenses, which were still confidential products at the time, and only few people in the world had used them so far. How exciting it is to create a new lens launch film—an opportunity like this does not happen often!”

After a week of research, Sho found an abandoned botanical garden about 80 km east of Tokyo. There, he found a glasshouse filled with weeds and flowers living wild, which ignited the idea to make a story around life and its strength.

“It was inspiring to see those wild flowers and grass in the abandoned place, the sense of decay and life mixed in the same place. I also liked the thought of shooting indoors because we could continue shooting regardless of the weather changes outside.”

Shooting with a brand-new lens (which you don’t know much about) is like being a test pilot for a jet plane. Throttle full forward and put the equipment through real-use circumstances to see the performance—that is exactly what Sho did for this project.

“Because the lenses were so small, we could keep the camera package compact. That meant we could choose smaller tripods, lighter jibs and dollies. A Nano Primes (with E-mount) on a Sony

FX6 or BURANO felt like less than half the weight and size of a Supreme Prime on VENICE. It was easy to hand hold the rig when I needed to do so. This helped us run the production lean and efficiently, but without sacrificing the image quality.”

Sho also pointed out that the ISO sensitivity on the latest cinema cameras helped him and the crew to reduce the amount or size of lighting fixtures.

“We had to have a full set of lighting equipment in the old days just to get the correct exposure. But now, with these large format cameras and fast T-stop lenses, I can use the lights purely to flatter and add mood to the scene. The remote controllable multi-color LED lights are really useful.”

After a day of testing and another day of shooting, Sho concluded:

“I particularly loved the smooth focus falloff in the front and back of the focal point. When I focused on the actor’s eyes, the bokeh from her cheeks to her ears and then to the background looked so three-dimensional and pleasing. The fast T-stop, clean and natural look with fascinating bokeh, and a long smooth focus throw are undoubtedly inherited from legendary ZEISS lenses. Nano Primes are the authentic cinema lenses for the E-mount camera system we were waiting for.”

### Crew and Production

“Scarlet Sparkles” [youtu.be/DnaF-m0Y-vI](https://youtu.be/DnaF-m0Y-vI)  
Director/DP: Sho Tamura (Upside)

1st AC: Nao Hagiwara (Upside)  
2nd AC: Itsuki Miyamoto (Upside)  
Gaffer: Daisuke Miura (Fuji Media Technology)  
Key Grip: Motohiro Ohsawa (NKL, Inc.)  
Production company: Upside  
Cameras by Video Service

“Behind the Scenes of Scarlet Sparkles” [youtu.be/9CI\\_Jrh3fGU](https://youtu.be/9CI_Jrh3fGU)  
Director / DP: Haruyuki Takada JSC (Upside)

# “Scarlet Sparkles” with ZEISS Nano Primes



## Jakob Bonfils on Steadicam Workshops



*Jakob Bonfils (below at left), born in Denmark and now residing in Sweden, has worked as grip, gaffer, renowned Steadicam operator and rigger. He was the race unit camera mount advisor on Ron Howard's *Rush*, filmed by Anthony Dod Mantle ASC, DFF, BSC—for whom he also built custom camera rigs on *Slumdog Millionaire* and other films.*

### by Jakob Bonfils

Chris Fawcett (above, at center with gray shirt) called me a couple of years ago and asked if I would like to teach a Steadicam Workshop again? Well, of course I would!

I have known Chris for a number of years. We have taught on workshops together and I always liked his laid-back attitude and way of instructing. So, it was an easy decision to say yes and off I went to Tuscany. Steadicam Action, a company run by Diego Allegro, arranges workshops in Europe (mainly in Italy and the Canary Islands) with Chris as the lead instructor along with instructors Evrim Kaya, Giovanni Gebbia, Richard Mallaby, Jo Vermaercke, Robin Thwaites and Danny Hallett.

It turned out that this Steadicam workshop was located at the fantastic Castello di Gargonza, on top of a hill in Tuscany. The castle dates back to the 13th century. It has been converted into a hotel, surrounded by small houses, a watchtower, a church and only one entrance. It was an ideal place for a workshop as we were the only guests, with lots of places from which to shoot and a large room for lectures. Since then, I have taught at Gargonza again, as well as at workshops in the Canary Islands and in another Castle, called Valenzano in Tuscany this past spring.

The workshop is a six day adventure for 20 students, from Sunday to Sunday. We start every day at 9:00 am, have lunch around noon, dinner at around 18 -19:00 and then lectures until 22:00. By that time, most students just want to go to sleep to be ready for the next day's challenge. That goes for the teachers as well.

All the students are highly motivated and it's a joy to teach and get to know everybody a little bit. Students come from around the world: Korea, Spain, Mexico, Denmark, USA, Canada, France, Poland, Sweden, Italy, Serbia, Norway, Hungary, Belgium, Holland, Germany, Portugal, Jordan, Ireland, Switzerland, UK, Tune-





# Jakob Bonfils on Steadicam Workshops



sia, India and I could go on. Many friendships develop during these workshops.

When Steadicam operators and Steadicam students meet, it's just a matter of minutes before the talking starts. "Have you tried this or did you hear about that?" Steadicam connects people, no matter where you come from, experienced or novice—spending a week together inspires you at all levels—also as a teacher. It's quite interesting to watch students operate simple shots by the second day of the workshop as they start to feel at home with the gear.

Chris's way of teaching is both humorous and very serious. We divide up—five teachers supervising four students in each team. Chris demonstrates what the exercise is all about and talks about what to concentrate on, the difficulties and tricks, and most importantly, he talks about aesthetics, creating images that are worth watching. Each day, the students gather more and more knowledge about what they and Steadicam are able to do. It's not only for the newcomers—operators with some experience can also pick up a thing or two.

After dinner, we continue with talks about framing, aesthetics of the image, concentrating on the shot, remembering all the information, politics on a set, watching specific Steadicam shots from existing films and breaking them down to see how they were done. There's also time for the inevitably good production stories

from real life, as all the instructors are very experienced operators working on many films. We all share what we know; we have no secrets. The bottom line is the image—that's what it's all about.

One evening is reserved for a video conference with Garrett Brown, ASC, where he explains about his beautiful invention and talks patiently with every student. It's as close as you can get to the source and your chance to ask a bright question.

The great thing is that Steadicam is used more and more, not only on features and drama, but also in news and documentaries. New inventions like the Steadicam Volt level the horizon, stabilize and can add adjustable drag all three axes. It's still all physical with direct action from your operating hand.

We also try hard-mount operating from vehicles, such as camera cars or dollies. We try stepping on and off a crane, operating with the rig attached to a rickshaw, stepping on and off a rickshaw soft-mounted (wearing the gear), indoors, outdoors, in sunshine and rain, although shooting in the rain can create problems. But problems are there to be solved.

I must remember to thank our workshop problem solver, production coordinator IsabelLa Católica, who takes care of us all with a great warm smile. I also want to thank Tiffen (makers of Steadicam) and Cartoni (Steadicam representatives in Italy), who supply all the equipment.

[www.steadicamaction.com](http://www.steadicamaction.com)

# The Business of the Business: Creative Solutions



*Greg Smokler is head of cine products at Teradek, SmallHD and Wooden Camera—in the Videndum Creative Solutions division. Photos by Joel Andrews at SmallHD and Huy Bui at Teradek and Wooden Camera.*

## **Jon Fauer: How do you develop equipment, decide what customers might like, and then embark on R&D, engineering and manufacturing?**

Greg Smokler: Coming up with a new product is a complicated process. How to conceive it: everyone has a million ideas of “you know what would be cool?” Do you have the technical prowess to execute on the idea; will you finish it in time? Do you have a team that would even know how to sell it to the end user? Do you have the logistical capabilities to get it to those customers? Can you afford the cash to speculatively acquire enough inventory so that you can make the product available throughout the year?

Let’s use the analogy of a restaurant. It’s easier said than done to set up a restaurant. People like to say, “Oh, I want to start a restaurant” or “This restaurant is bad—they should do it this way.”

A hardware product for cinema is like an ingredient in a restaurant. It is something that we, the manufacturer, must order and put on a shelf before we can send it out. We can’t order it one at a time by pressing a download button. It has to be on hand. It is an asset that represents cash that we had, and now it is sitting on a shelf in our warehouse. To commit and even have it on the shelf represents an incredible amount of resources, effort and guts because someone had to say, “People will want this.” You can’t just snap your fingers and say, “Make a camera that shoots Full Frame video, weighs 1 ounce and is the size of a Nabisco cracker,” and it appears. You have to design what you are capable of actually building.

## **Who at Creative Solutions decides what to design and build?**

It’s a team effort. For example, you recently purchased a large quantity of chips that promised to be very fast, with a lot of RAM and a bunch of built-in connections for different types of interfaces like Ethernet, USB, SDI, HDMI and can turn a 2K video input into a 2K video stream. Then the chip manufacturer comes out with the 4K version. But that chip doesn’t work unless you build an entire platform around it and ask, “How many SDI ins, how many SDI outs, how many LUTs and what’s the voltage input range?”

You have to consider all of those elements and then you start developing for this new chip. You have a central processor that is

the core of the product. It’s based on a piece of electronics that has firmware and software running on it. You make an app but you want to add other things.

It doesn’t just arrive from the stork. You have to design an electronic schematic and circuit board layout, and decide how it is mechanically shaped, mounted, packaged and how the user will ultimately interact with it. And so, as a product manager, you work with the engineers who are building up this “entrée.” PMs represent the voice of the customer in a variety of ways. Good product management creates a specification—a set of problems to solve—rather than work on technical implementation.

If product managers are spending time trying to solve a technical problem, your organization is probably not set up properly or you’re doing bad product management. Instead, you want to be able to propose something for the engineers to solve. Don’t say, “Hey, we should make this product ‘more better.’” That is too abstract. Instead, the PM should describe to the engineers what the final “product” is that would be “more better,” but not how to get there.

The other side of being a product manager is working with customers. Almost every DP, AC and DIT would love to design the things they use. They look at their own equipment and tell you, “This connector should be over here.”

## **If you, as product manager, talk to 50 customers, do you get 50 different opinions? Or is there a consensus at some point?**

There are archetypal customers, especially in our industry, who speak for a cohort or who can say, “You’re doing it wrong; do it like this.” I think that the best companies do things with intention and don’t ignore feedback. Talk to 50 users and you might get 50 other ideas. You have to synthesize all of the feedback. Obviously, there are very clear indications of a failed product or one that could be better. Can you iterate on those challenges to solve problems or to improve them? As with filmmaking, it is about attention to details and making decisions. You just have to do it better the next time. Sometimes you have to challenge the market with something that is a bit more technical. You can’t always blanch at, “Are people going to be confused?” Sometimes, people need to learn how to use professional equipment that may be complex.

But, if something is pointlessly complex, that’s also a bad result. You need to make equipment that is intuitive, but you can’t put a movie camera on AUTO mode. It is a constant dialogue every day.

# The Business of the Business: Creative Solutions



That's what we do. We are continually engaged with the people whose jobs involve using our gear to tell stories and make movies.

We have offices in LA where camera assistants, DPs, DITs and crew come in every day to learn, play with our gear, get things serviced or pick up an order. Our design teams and our product management teams are there talking to them every day. That feedback loop provides an excellent environment to make products. It doesn't mean that we're always going to be successful and make perfect products. There's the reality of chaos, forgetting or missing something. There may be a software bug. There are lessons learned every day. Maybe you take a step back because you just blew it or you tried something and it didn't work. Ideally it gets better. You fix it in the next model. In general, the momentum is forward, improving, optimizing and making a more delightful and useful tool for someone to make a movie.

## **But Creative Solutions didn't happen by accident.**

It was through good fortune, which you have to be prepared for with hard work, heart and soul. Everybody at Teradek, SmallHD and Wooden Camera has worked tirelessly at making great stuff. It's what we do for a living. We want to make the best possible tools for filmmakers. But what annoys me is when someone takes all of our failures, color calibrations, successes, sweat, tears, and relationships that go into a product which is the culmination of those efforts and then copies it and tells people, "Hey, their products are actually not that valuable. We could sell them to you for half the price." It takes almost nothing to copy something, but it takes everything to put your life's work and your committed efforts into making great products. If someone just comes in at the very end, copies it and sells it without any of the costs to get there, I think it hurts the company and people that expended so much effort to innovate.

## **How do you address those knock-offs?**

It's hard. Although we may be perceived as being relatively large, Creative Solutions is a small company. We are only a few dozen people here making stuff. Even our parent company, Videndum, is quite an intimate, small entity at the highest level. The challenge is to try to communicate the humanity behind it. In this day and age, as a consumer or a citizen, you have a reductive choice to make. I would like to show people what's behind the things we make.

## **For example?**

Let's start with SmallHD. You probably use iOS or Android

every day. You might not think much about all the choices in the software that go into your iPhone, phone or your computer. You just see what is available in the menu settings, and you use it.

SmallHD has our own PageOS operating system in every monitor. It has been thoughtfully planned, has a consistent look, feel and flow. Each menu setting has been considered within the totality of the user experience. If one menu choice does something with a slider or a number value, that has ramifications on every other menu setting. We've just redesigned the configuration of video processing, what we call "color pipes" in PageOS, so that every element of it is as clear as possible. We try to pull people seamlessly through the configuration process while informing them what the options are. We show how to use presets and how to proceed to the next steps—making sure that you don't forget to press enter when you return to your live image.

My axiom for products, especially for cinematography, is that it needs to disappear. The tool should disappear. You don't just go to use a camera; you want to go make a movie. You should be using equipment because it's easy and fast. It should be intuitive. We often fail at that, but then we improve it and it gets better.

## **Are SmallHD and Teradek hardware or software companies?**

We are product companies, and while we generally sell hardware devices, they are all completely powered by software engineering. At SmallHD, we try to bring the user experience, the operating system, to the forefront since it is the thing that you interact with. Whereas at Teradek, while the Bolt product has an incredible amount of software innovation inside to make it work, you shouldn't have to interact with the software at all. You turn it on and it works. It's like pulling focus: you only are noticed when you screw up.

## **But good focus pulling is an art and we'll get to your Teradek RT wireless focus devices in a minute.**

Pulling focus is highly engaging and a critical part of cinematography. But Teradek's job is to truly disappear with the Bolt wireless video transmitter and receiver products. You may even forget that they're there. If you notice them, it's usually because something got unplugged or there's interference that you need to manage with a new channel. Whereas a SmallHD monitor has functions that you use to analyze the video or to look at two images at the same time or to check focus with peaking.

# The Business of the Business: Creative Solutions



The development of the software is done simultaneously with the development of the hardware and electronics platform. The architects of the electronics are critically involved in the design of the user experience.

It's a conceptual journey ultimately carried out by software running on top of hardware. The brilliant developers at SmallHD all work together to make something that is useful. Blake Johnson is the head of R&D. Russell is our system architect. Mike is the head of color science. Jeffrey is head of software. Norbert is senior electronics design engineer. Barrett is our UX/UI Designer. We have mechanical engineers and product managers and we sit in meetings every week, after Jeffrey has hashed out the next implementation of a user experience problem to solve. Then we all work on it until it is ready. And then we move on to the endless list of next things.

## **At SmallHD, who goes out and talks to the customers?**

I'm the head of product for Creative Solutions Cinema Products, Teradek and SmallHD. Dominick Aiello is the senior director of accessories for Creative Solutions. He basically manages all the products at Wooden Camera. Mike travels to do a lot of color calibrations and connects with people on set. Our engineers come to many of our major events. But generally, it's a couple of product managers and me and our sales and support teams who feed information to us.

## **Is it the same setup at Teradek and Wooden Camera?**

It's a similar process, just a different location, with different technology and different engineers. SmallHD engineering and manufacturing is in the Raleigh-Cary metropolitan area of North Carolina. Teradek and Wooden Camera engineering and manufacturing is in Irvine, California. SmallHD has the luxury of one kind of monolithic mission (it's always a monitor).

Teradek has an engineering and design team for very diverse technologies and applications. Marius van der Watt is the COO and SVP of R&D for all CS. Ryan is the Director of Software at Teradek and Dennis is the Director of Engineering. We have our Bolt zero delay wireless video for cine. And then we have streaming systems where you can connect video to a device like the Serv 4K to view locally on a WiFi network or through the cloud. You can also record proxy files, camera to cloud. Our cloud application is called Teradek TV. It's a live feed and recording device to be used on set, off set or in post to see a secure, high quality, very low latency video stream up to 4K. It's designed for sharing and

management by non-technical, non-camera department people.

And then we have our Teradek RT lens control systems, which have an entirely different series of technologies: mechatronics and algorithms to drive lens motors and control their behavior when they encounter different amounts of resistance. Communications from the radio of the handset to the motors and all the other interfaces in between have their own constellation of technologies. We also develop a whole array of products for the Live Broadcast market at Teradek.

As an example of how engineering overlaps at CS, the video and touchscreen components of our new Teradek RT CTRL.5 focus hand unit was developed with an LCD panel that we rolled out for the SmallHD 5-inch Ultra Bright Monitors. The touchscreen operating system comes from our Teradek Wave deck encoder. The communication software comes from the current generation of Teradek RT. That is just an example of the iterative nature of taking these ingredients that you have and then making something new out of them that's hopefully better and more useful.

## **And what about Amimon?**

Amimon is also part of Creative Solutions in the Videndum group of companies. They're focused on continually improving the capabilities of wireless technology. They do our wireless video chip set and algorithm design. They also develop end products for medical and industrial applications: endoscopes, operating rooms and construction cranes.

## **I sense that there's something else you want to say...**

Without being crass, I would like to talk about some knockoffs that are competing with Teradek Bolt. There are wireless video companies that have nothing to do with us, but they also use our Amimon chips and make kind of a competitive product to the Bolt. Basically, the chip is not illegal to purchase, but the way that they are running it is. The special sauce that runs on our chip set for long range transmission and for more robust transmission is something that was developed by Amimon for us alone and was never sold to anyone else.

But it goes beyond that. When something transmits, it's making radio waves. Radio transmission is governed by international treaties and enforced in every region of the world. There are agreements on chunks of the RF spectrum that are set aside for military, police, corporate, broadcast, government, airplanes, boats, and emergency services. And then there are little chunks

# The Business of the Business: Creative Solutions



that are set aside for civilians to have wireless devices like a walkie-talkie, a phone, or (sadly) a refrigerator. Those frequencies and the way that they must behave are also governed by laws. If your device is transmitting in those civilian frequencies, how much power are you permitted to emit? If it's a device that goes near a human being, the power level has to be low because of safety. High powered transmission can actually have a physiological effect on people.

So, with our Teradek wireless products, we have spent a large amount of time, effort and money to make our products with low power output and safe even when used extremely close to people. That's technology, innovation, effort. But if you can't do that because you don't have the software to copy and sell, then you have to do it the other way, which is to increase your power level. More power equals more range, but may be dangerous. If you look at these knock-offs, you'll see power levels that are over-loaded on a lot of channels. You might say, "That's not a big deal." And users say, "Great, it's more powerful. No problem. It even has an FCC sticker on it. It is legal, right?"

But that's unethical, potentially irresponsible or even unsafe. There are certain channels that are set aside for behavior that you must maintain, like the DFS band. The DFS channels are the main chunk of the 5 GHz band that is set aside for boats, aircraft, and radar systems to have priority. When a device uses those channels, it must have the technical capability to leave those channels when it detects a priority user "on air."

When our Teradek products detect that, we will vacate the channel. We also have to wait 60 seconds to rejoin a channel. Waiting 60 seconds to get video on set is not a happy place when the director is yelling at you. But it's the law, so we have to do it.

But, some other companies may say that their transmitters are certified, just put it on channel 6. But, channel 6 is actually a DFS channel. They don't wait and check, and all you're doing is spewing your transmission all over the restricted spectrum. You might say, "It's not really going to affect an airplane or a boat radar." Perhaps you won't interfere with an airplane. But do you really want to assume that risk, the liability, and take responsibility? It probably won't have any impact...but what if it did?

## How and why did you get into wireless video?

It was luck. I was a Local 600 member, working as an AC, DIT, camera operator and DP shooting my own low budget stuff, trying to make a career at the time, and then got pulled away from

filmmaking and into designing tools for filmmakers.

We founded Paralinx in 2012 when we came across a technology that was totally the right thing for sending video wirelessly without delay in the HD era of film production. This was new because delay, also called latency, was the biggest problem along with having a signal that did not drop out. There were things being used at that time for standard definition video, which transmitted on the UHF TV band. Grandma may have been watching her soap opera and instead saw Video Village. At the time, there were few options.

But we came across the technology from Amimon and realized that it was something the motion picture business could use. We decided to get it to market by working with the people who were designing it and we built a bunch of lightweight, affordable transmitters. We made more new things and high-end professional products. And then we were acquired by Teradek in 2015, and I've been a product manager for Bolt ever since.

## Remind me of "the origin story."

I was an assistant on *Californication*, a TV show (released in 2007). They abandoned film in prep and decided to shoot with Sony F950 2/3" cameras, which had massive looms of cable coming out the back—two SDI cables and a camera control cable for the master setup box at the DIT station. I was constantly keeping both cables away from the dolly or having to wrangle these huge cables behind the Steadicam operator. I was continually hazed and hated by the dolly grips, and I would wake up in a cold sweat at night hearing them yelling, "Smoker!" as the wheels of the dolly got snagged on my cables. I realized that this was not a good way to work or to make a movie.

Just as the HD era opened up, there were some really bad transmitter systems or some other ones designed for sports or broadcast and you had to pay an incredible amount of money for them. Almost all had latency. And so, all those things culminated in an opportunity where we identified the technology that could be used in our market. That's the confluence of technology rising to a level that would suffice for our industry's insanely hardcore needs and the persistence toward making a finished product that people would want to use: a useful tool containing the features, capabilities and ergonomics that pro camera crews would accept. And the rest is history.

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From top left, clockwise: Yke Erkens and Sebastiaan van Zuylen; Gert Bauwens; Max Maloney; Erno Das.

The Camalux Group is the brand-new partnership between Camalot, Lux & Co / Stroom & Co and Maloney in Amsterdam, and with Camalot Belgium in Vilvoorde. They discussed the new adventure via video conference just a few weeks before IBC:

“Our partnership came about because we believe we are stronger together: four leading camera and lighting rental companies each with our own specialty and niche in the market in which we complement each other well. This allows us to invest smarter and thus provide the broadest range of equipment for our customers at the best price.

“In the coming years, we will look at how we can further expand our cooperation in areas such as the transformation to green energy, electric transportation, a wider range of equipment and ways to work more efficiently. For our clients, we want to offer the possibility to test, collect and return equipment in multiple locations and to transfer loyalty discounts across the different companies, and much more, including one-stop shop package deals.

“For over 25 years, Camalot has been a leading rental company in Amsterdam with a focus on high-end digital cinema, the latest and best equipment, specialist in-house knowledge and technicians. Yke Erkens and Sebastiaan van Zuylen took over the company from its founders Bernd Lesscher and Philippe Vié in January 2023. Camalot Belgium has been operational for over seven years and has grown into a well-known local player. Recently, Camalot Belgium has expanded their catalogue with lighting

equipment, which has accelerated their growth and potential for the coming years. Gert Bauwens has been with Camalot Belgium from the start and currently serves as General Manager.

“Lux & Co, in combination with Stroom & Co, were initially founded in 1989. They have grown into the leading light and power rental company in The Netherlands, with a focus on commercials and high-end feature films. As an owner, Erno Das is always ahead of the game. He develops and produces products and systems for the film lighting market—for his own use and for other businesses in Europe and worldwide. Examples include the Litemover, an innovative remote control for film lights, and the first electric-drive battery car in the Netherlands that can be used as an alternative to a generator.

“Maloney, started by Max Maloney in his basement in 2012, rents both camera and lighting equipment. Besides high-end equipment, Maloney has a big market share in the middle segment. Maloney is an accessible company with a strong online presence and provides affordable quality equipment for the ever growing content and online market, with an additional focus on specialty equipment, such as drones and gimbals.

“We four look forward to serving the full demands of the market, working together and with clients to build strong relationships and thus strengthen each other.”

[camalot.nl](http://camalot.nl)   [camalotbelgie.be](http://camalotbelgie.be)   [luxenco.nl](http://luxenco.nl)   [stroomenco.nl](http://stroomenco.nl)  
[maloney.amsterdam](http://maloney.amsterdam)

Producers



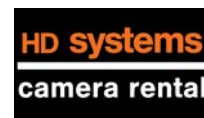
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