

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.

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Cover: Cinematographer Maxime Cointe filming *LUPIN* with ALEXA Mini LF and Cooke Anamorphic FF. Sarah Dubien pulling focus. Photo by Emmanuel Guimier, courtesy of Netflix.

# SmallHD Ultra 7 Monitor



## Neither snow nor rain nor heat nor gloom of night...

The new SmallHD Ultra 7 monitor is ready for Vancouver, London, New York or maybe the wettest place on earth, Mount Waialeale in Hawaii. The SmallHD Ultra 7 has an IP53 rating. IP is for Ingress Protection. “5” is for solids: this monitor is well protected against dust. “3” is for liquids: “Water falling as a spray at any angle up to 60° from the vertical shall have no harmful effect.” The Ultra 7 may endure a squall—although you and your camera probably still need foul weather gear.

The new SmallHD Ultra 7 Monitor has a 1920×1200 Quantum Dot LED Edge-Lit LCD Display that is extremely bright—2300 nits. Its 6G-SDI can ingest and output a 4K signal up to 30p. The HDMI 2.0 in and out connectors manage up to 4K 60p. Ultra 7 can be powered by Gold, V or B-Mount Micro batteries, or 10-34 VDC external power.

Greg Smokler, VP Cine Products, said, “When we set out to design our next generation of ultrabright handhelds, we knew we had to create a monitor that was a major leap forward. Ultra 7 combines the processing power of our 4K production monitors with a rugged chassis and heat-management system built to withstand the harshest production conditions.”

You can control ARRI, RED and SONY cameras by buying optional, specific PageOS licenses. They work in similar ways as the Cine 7 or Ultra 5 using Ethernet or USB connectors.

All the popular PageOS tools are there: EL Zone “exposure meter,” focus assist, LUTs, overlays, Teradek RT focus scales, frame lines, anamorphic desqueeze and more.

A built-in, fully functional Ultra 7 Teradek Bolt 6 transmitter or receiver is expected soon. In other words, instead of a separate monitor and transmitter, you can have just one device, with just one video cable running from the camera. And for the DP, Director, AC or anyone else wanting to roam around on set, the integrated Ultra 7 Receiver provides a very compact package.



## Good ad agency storyboards begin with: “We see palm trees...”

You might see tropical islands, sun, surf and sailing. Maybe you see Grace Bay, Copacabana, Matira or Venice Beach. I see an ultra essential, ultra bright on-board camera monitor.

The new SmallHD Ultra 7 has buttons to summon up shortcuts. It's weatherproof for bad weather. Rubber bumpers help it endure mayhem on location. We love the joystick for times when sticky craft-service donut-encrusted fingers should not touch the touchscreen.

SmallHD says, “Ultra 7 can be purchased with a fully-integrated Teradek Bolt 6 transmitter or receiver inside the same-size chassis as the standard model. These integrated wireless monitors will feature a new rugged antenna cap to reduce antenna damage and will be available in Bolt 6 750' and 1500' range models. Ultra 7 RX kits will ship with handles, a padded strap, and a Wooden Camera Micro Battery Plate (GM, VM, or B-mount).”

Ultra 7 has a monitor sunshade/sunhood that clicks onto the monitor, has magnets for the flaps, and flips and folds like an iPad cover. Micro-fiberish anti-reflective material on the inside protects the monitor screen when you close it up for transport or for “lunch-one-hour.”

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



# SmallHD Ultra 7 Monitor

Joystick →  
 Go back/  
 Power →  
 Custom  
 function  
 buttons →



HDMI In    HDMI Out    RJ45 Ethernet & 5-pin USB for camera control    1/4-20 anti-twist mount    2-Pin 10-34 VDC Power In-Out with pass-through    6G-SDI 4K In-Out

Ultra 7 can be ordered with a self-contained, fully-functional Teradek Bolt 6 RX or TX inside. Just the antenna sticks out on top.



Rear view of Ultra 7 with 4 threaded mounting points and contacts for Gold, V or B-Mount Micro battery plate



Ultra7+Bolt 6 is compatible with all other Teradek Bolt 6 units →



Ultra 7 has all the familiar PageOS pages, overlays and tools—including EL Zone “exposure meter.”

# ZEISS Nano Primes (NP)

AFC Micro Salon, Feb 7-8. BSC Expo Feb 16-17. ZEISS launches Nano Primes: Full Frame, fast (T1.5), lightweight and compact cine lenses. They have nice ZEISS notoriously accurate lined focus scales and marks and are amazingly affordable.

There are 6 focal lengths in the set: 18mm, 24mm, 35mm, 50mm, 75mm, and 100mm.

Nano Primes come in E-mount. What, not PL or LPL?

Familiar to users of Sony Cinema Line cameras and alpha still cameras, the E-mount has a flange focal depth of 18 mm, which is much shallower than PL (52 mm) and LPL (44 mm). The E-mount diameter is 46.1 mm (PL is 54 mm, LPL is 62 mm).

Also called mirrorless because they were made for cameras without spinning mirror shutters or mirror reflex viewing, shallow flange depth lenses like E-mount come with various advantages in optical design and economy, as described in the following pages.

The mirrorless market is vast, something ZEISS surely noticed when embarking on this adventure. There are hundreds of thousands of E-mount, L-Mount, Z-Mount, X-Mount and RF Mount cameras out there—many beckoning for cine-style geared and expanded focus and iris rings.

Nano Primes initially ship in Sony E-mount. Conveniently, because they employ the ZEISS IMS (Interchangeable Mount System) familiar from CP.3 lenses, additional mounts can be attached with 4 screws and adjusted with included shims. ZEISS has not announced these mounts yet, so presumably it is up to users to weigh in.

Electronics are built into each mount, enabling the lens and



its metadata to communicate directly with the camera: focal length, focus distance, aperture and additional metadata. It's not eXtended Data but will work in a similar way. Distortion and vignetting data is available for ZEISS CinCraft, CinCraft Mapper and the CinCraft Scenario camera tracking system.

Focus and iris rings are all in the same place relative to the mount. Deliveries begin in May 2024. Nano Primes can be ordered as a set for \$25,950 / €23,000 (plus VAT) or individually at an average price of about US \$4,500 to \$4,990 each (plus tax).

[www.zeiss.com/cine/nanoprime](http://www.zeiss.com/cine/nanoprime)

## ZEISS Nano Prime Specs

Nano Prime	18mm	24mm	35mm	50mm	75mm	100mm
T-Stop	T1.5 -T16	T1.5 -T16	T1.5 -T16	T1.5 -T16	T1.5 -T16	T1.5 -T16
Close focus (mm)	250 mm	350 mm	450 mm	500 mm	750 mm	1000 mm
Close focus (in)	9.8 in	13.8 in	17.8 in	19.7 in	29.5	39.4
Length (mm)	112 mm	89 mm	89 mm	89 mm	112 mm	112 mm
Length (in)	4.5 in	3.5 in	3.5 in	3.5 in	4.5 in	4.5 in
Front diameter	95 mm	95 mm	95 mm	95 mm	95 mm	95 mm
Screw-in filter	M86 x 1	M86 x 1	M86 x 1	M86 x 1	M86 x 1	M86 x 1
Weight, with lens mount (g)	1,192 g	876 g	871 g	924 g	1,125 g	1,255 g
Weight, with lens mount (lb)	2.6 lb	1.9 lb	1.9 lb	2 lb	2.5 lb	2.8 lb
Angle of focus scale	280°	280°	280°	280°	280°	280°
Angle of iris scale	90°	90°	90°	90°	90°	90°
Number of iris blades	12	12	12	12	12	12
Focus gear diameter	100 mm	100 mm	100 mm	100 mm	100 mm	100 mm
Aperture gear diameter	80 mm	80 mm	80 mm	80 mm	80 mm	80 mm
Focus & Iris gear pitch	0.8 mm	0.8 mm	0.8 mm	0.8 mm	0.8 mm	0.8 mm

## ZEISS Nano Primes (NP)



L-R: ZEISS Nano Primes on Sony a7, FX3, FX6, FX9, BURANO, VENICE.

ZEISS Nano Primes cover Full Frame, come in E-mount, and fit Sony's entire Cinema Line as well as Sony a7 series, a9 series, and a1.



ZEISS Nano Primes come in this custom cutout, wheeled Pelican Air 1535 Case at no additional charge when you purchase the set of 6 lenses.

The carry-on case measures 21.96 x 13.97 x 8.98 in / 55.8 x 35.5 x 22.8 cm (Exterior dimensions LxWxD).

# ZEISS Nano Primes



Mount Fuji was watching over a whisper room in Makuhari where ZEISS Nano Prime lenses were revealed in an especially appropriate FDT lens testing and Kaiseki tasting.

Arato Ogura, Shin Yoneyama and Masako Misako (who named us “Film and Delicious Times” in Japan) unpacked a Pelican Case containing a set of pre-production Nano Primes and a Sony FX6 (courtesy of owner-filmmaker Hiro Matsuzaki).

Things quickly became clear. These Full Frame, E-mount cine lenses are small and lightweight. The entire set of 6 fits nicely in a small carry-on underseat case. They focus extremely close. Why else would Masako have arranged for Kaiseki close-ups? The lenses have gentle focus fall off with impressionistic bokeh and a beautiful look with silky smooth skin tones. Photos on these two pages were all taken with ZEISS Nano Primes on a Sony a7R4.





# ZEISS Nano Primes



L-R, with ZEISS Nano Prime set: Shin Yoneyama, Project Manager for Nano Prime; Masako Misako, Marketing Manager Cine, Asia and Oceania; Arato Ogura, Regional Cine Manager, Asia and Oceania.



# Christophe Casenave on ZEISS Nano Primes



Christophe Casenave. Photo by Andreas Bogenschütz.

*Christophe Casenave is Head of Product Management and Sales at ZEISS and Product Manager of the new Nano Prime Lenses.*

## **Jon: Where did the idea of Nano Primes come from?**

Christophe: It started around the time we were developing the Supreme Prime lenses, which were introduced in June 2018.

But let's take a quick detour back in time. We introduced the CP.3 Primes in April 2017. (*Christophe was the Product Manager for those as well.*) They are excellent lenses, affordable, Full Frame, with interchangeable mounts, 95 mm front diameters, with XD data on the CP.3 XD models. But their apertures are slower, at T2.9 for the 15, 18 and 21 mm lenses and T2.1 for the rest.

CP.3 lenses were the third iteration of ZEISS Compact Primes, the most widely distributed cine lenses in history. The original Compact Primes were introduced at NAB 2009. They initially came with PL mounts only.

I saw that Sony was very strong committed to their E-mount. When they launched VENICE with its PL mount in September 2017, few people took seriously that it had an E-mount underneath. It was essentially a high-end PL Mount camera with an E-mount as well. I was just thinking, imagine what you could do if you really used the power of the E-mount or any short flange focal depth mount. How much smaller could you make the lens

or, if you kept it the same size, how much faster could it be? I wondered, if Sony takes the E-mount so seriously, why are most E-mount cine lenses essentially repurposed PL lenses with elongated mounts. That's like half an answer. There were two ways to go in an E-mount cine lens design. We could reduce the size and weight, making it very much smaller than the CP.3, but keeping the slower aperture.

Or we could redesign everything, maintain a T1.5 aperture throughout the set, keep the expanded focus scale and XD data, make the lenses lighter in weight and a bit smaller. It was a completely new design.

Although the concept went back five years, we had to find a time slot for the development resources. Two years went into finalizing the Supremes and then we did the Radiance Primes. Actually, the timing worked in our favor because Sony released more Full Frame E-mount cameras in the Sony Cinema Line: FX9 in 2019, FX6 in 2020, FX3 in early 2021, VENICE 2 in late 2021, and now BURANO in September 2023.

When it came to the design, we didn't want these lenses to compete with CP.3 because I still believe strongly that CP.3 are super lenses. If you want to shoot with ARRI cameras, which have PL or LPL mounts, but you are on a limited budget, then you have the CP.3 Primes in PL mount. There are many ALEXA Minis in the Certified Pre-Owned and second-hand markets for owners with CP.3 lenses. Those cameras will probably never break. They will continue to work.

We also did not want the new Nano Primes to compete with our Supremes. Rather, we wanted them to complement the Supremes, with a look that is similar or that goes in the same direction. The look of Supremes is well appreciated. We realized that the Nano Primes would be good on productions that could not afford Supremes or where the cinematographer wanted, for example, three sets of Supremes but the budget could only afford one or two sets and they needed to add a third. Or, perhaps they needed something smaller and lighter. So that's how we designed the lenses, defined the look and established the optical parameters.

## **Does having a short flange focal depth significantly affect the optical design in terms of size, speed, weight, etc?**

Yes, it's quite significant, especially for the wider focal lengths—everything that's wider than 35mm. The Nano set includes 18, 24, 35, 50, 75 and 100 mm so far, all T1.5 and with a 95 mm front diameter. You couldn't design the lenses so small if they had a longer flange depth, like the PL mount. (*FFD of E-mount is 18mm. FFD of PL Mount is 52mm.*)

## **Why do you think Sony did not do this—make traditional 0.8M geared cine primes in E-mount and with lens metadata?**

I think they have a consistent and good strategy, which is a commitment to technological progress in autofocus and auto-iris. This works for a large segment of their market, but it doesn't cover current applications in the field of cinema, which include 0.8M gears on lens barrels for wireless lens control.

There is a certain conservatism in cinematography and that's fully understandable. Everything new is a risk if things go wrong. Feature films and drama series will stay with more traditional ways of working for some time. Although, to be fair, it's not really tra-

# Christophe Casenave on ZEISS Nano Primes



ditional because most focus pullers probably use wireless lens controls from Preston, ARRI, cmotion, Teradek, Tilta or whoever. And they will be using wireless monitors to check focus. I don't know many assistants who still work alongside the camera with a mechanical follow focus drive.

## Please take us through the development process of the NPs.

We wanted to achieve a similar look as the Supremes, but relaxed and calmed down a little bit. Nanos have a nice balance between being sharp but not too sharp, contrasty but not too contrasty, neutral but not too neutral. They are not clinical. The only thing neutral is the color, but all the rest is well balanced.

Actually, there was another constraint: I wanted to have only two sizes, not five or six different barrel lengths. Normally it would have been easier to make the 18mm a bit shorter, but that would have entailed having another size. I also wanted one consistent front diameter. Originally, we wanted to have an 80 mm front diameter, but that wouldn't have worked with the 100mm lens. We chose to have one 95 mm front diameter because it is faster and easier to change lenses on set when they are all the same front diameter. Optical design is indeed a series of choices and compromises.

CP.3 primes also have a 95 mm front diameter. And standard Supremes also have a 95 mm front, but the 15, 18, 135, 150 and 200mm lenses have 114 mm fronts. The new Nano Primes are smaller than Supremes. We achieved this in different ways. First of all, the short flange depth enables a lot of possibilities. Also, to keep them small, we decided not to have dual focus scales that invert to switch from meters to feet because that would have required a window in the barrel. So you don't just flip it, you exchange it. You can do that by yourself. It's easy and doesn't require a lens technician. That's how we kept them small.

## Tell us about lens metadata.

We wanted consistency with what we did up to now. We have been involved with eXtended Data, CinCraft Scenario, CinCraft Mapper and VFX work, so ideally we would have wanted eXtended Data in the Nano Primes. But NPs conform to the E-mount communication protocol. We have implemented E-mount lens data precisely so it will communicate the same information with the same accuracy as on the Supreme or the CP.3 XD.

Focus and iris metadata goes through the E-mount. Furthermore, we wanted to offer the eXtended Data experience, and this is possible because we will include the Nano Primes in CinCraft Mapper and in the CinCraft Scenario tracking system. Basically, when you use CinCraft Scenario, the Nano Prime lens models are embedded. When you use a Nano Prime lens, the Sony camera reads

and records the metadata and outputs it via SDI as well. CinCraft Scenario can grab the information and map it with the distortion and shading data. It works exactly like eXtendedData with the same benefits when using CinCraft Mapper.

## Are you going to offer other mounts as you did with the CP.3?

We'll try. Nothing's confirmed, but everything is in place. The lenses have been constructed with all the electronic intelligence in the mount, not inside the lens. You only have the encoders to measure ring positions in the lens. That means, if we decide to do other mounts, we will be able to support the communication protocols of other cameras as well. It's designed so that users will be able to exchange the mounts on their own. They will not need to send the lenses back to the factory. It's as easy as the CP.3. Very simple.

## Did you get feedback from DPs and rentals houses while planning the Nano Primes?

We always gather feedback as we go around and talk to people. It was a mix of opinions. One analysis showed that there were no serious mirrorless mount cinema lenses. Others said there was a greater need for high speed lenses. A third concept showed the Sony cameras gaining large popularity and the E-mount ecosystem growing. It was a combination of analyzing all those things, getting feedback and hearing users ask, "Why aren't you doing E-mount cinema lenses?" Personally, I was not so enthusiastic about the E-mount because in some situations it is not as stable as a PL mount, for example with a huge 12:1 zoom lens. But the sweet spot is really for lenses that can be smaller than their traditional PL mount equivalents.

## Is this lens intended for owner-operators or for rental houses?

The idea was to expand the owner-operator base. Actually, owner-operator is not the right term. It's more like small companies. It might involve two or three people who want to own their equipment because that's practical for them logistically. If it's a one-day shoot, they can grab the equipment and go.

But, there is also a path for these lenses at rental houses, not only to service jobs with lower budgets but also for big productions. If you look at equipment lists lately, the number of cameras (A, B, C, D and more) and lenses they use on some films is growing almost exponentially, but the budgets are not increasing proportionally.

For these scenarios, the idea was to define the Nano Primes with a look similar to the Supreme, but adapted to current budget trends, and smaller in size to complement smaller cameras. Even big-budget productions can benefit from NP lenses on scenes where they might have up to 20 cameras.

# Christophe Casenave on ZEISS Nano Primes



## What do you tell customers who ask why they have to spend more for a Supreme than a Nano Prime?

The optical design of Nano goes in the direction of the Supreme, but you have several trade-offs. The first trade-off is making it with a shorter flange depth—because then you simplify the design. Nano has fewer lens elements. You have less glass, you simplify the design. Another trade-off is that the Nano will not fit on a PL mount camera, not even with an adapter.

The second trade-off, as I mentioned, is by avoiding focus rings with both Imperial and Metric scales that would otherwise add additional cost. Also, the focus and iris rings are marked with a laser, not engraved and painted like the Supremes. They are just as accurate, but laser etching saves a lot of money.

The concept of the Nano is: don't save on the glass, save on other things. It's like going to a restaurant. If they put all their efforts into a fancy decor but skimp on the food quality, your experience will not be good. The Nano Primes would be more like a nice Paris bistro that looks like nothing when viewed from the street outside, but you will get the best dishes there. Let's not make the savings on the ingredients, but rather on the decor.

## Film and Delicious Times appreciates the tasty analogy. I look forward to lens tests in that bistro. Do Nanos have the typical ZEISS system of using different focus scales?

Same philosophy. But we have about 3 times fewer scales to reach the same accuracy. This is not only a big deal for the manufacturing, but it is also a big deal for film productions and VFX teams who might ask for six lenses of the same focal length that match.

## Tell us about the team who worked on the Nano Prime project.

We had a very international team. The optical and mechanical designs were done in Oberkochen. Thomas Steinich is the lead optical designer. You met him on the Supreme, Master Anamorphic and Zoom projects. Dennis Meyer is the Systems Engineer. Uwe Weber is the mechanical designer. You remember him from his work designing the Master Primes. Shinichi (Shin) Yoneyama is the project leader. Working from our office in Tokyo, he coordinated design in Germany and manufacturing in Japan. We worked with our long-time manufacturing partner in Japan to keep the price at an acceptable level.

Once the designs were finished, we built prototypes and did all the qualification in Oberkochen in the same lab, headed by Stefan Ballmann, where we also test the Supremes, CP.3, Master

Anamorphics, etc. It was really an international team. Benjamin Völker, (Dr. Ghost) reduced the ghosts.

## How would you describe the Nano Prime look? Similar to Supreme? Gentle?

Yes. It goes in the same direction. Of course, it cannot be 100% the same. The focus fall-off is also very smooth and "slow." Slow focus fall-off means that the transition from being sharp and in focus to where you begin to go out of focus is gentle. For example, the actor's eye is sharp, but the nose is pleasantly softened a little bit. Because the fall-off is so smooth and slow, you have the impression it's in focus. You don't need to stop down to have the whole face in focus as the contrast goes down. You will find the same thing with the Supremes.

## How did you come up with the Nano name?

That is a funny story. Normally you have an internal project code name. A company might choose names of fish, birds or cities. We said, "OK, because we want to make small cinema lenses, let's call the project Nano." Then came the point where we needed to give it a product name. The project leader said, "Well, Nano describes what the product is, so let's keep Nano." And so, the project name became the product name.

## Do you plan to have more focal lengths if users ask for them?

We have designed 6 focal lengths that are well staggered so there should be no big gap for the vast majority of applications and customers, especially talking about smaller crews.

If specific needs arise we would of course consider making some additions ... and we are always open to feedback.

## I think your only headache will be to keep up with the demand.

I think it will be OK because we are the only ones to take the E-mount so seriously for cinema—with precise marks, expanded focus barrels, lens metadata, the look, the speed, the economy. The Nano is a true cine lens. It's not bridging the gap between photography, videography and cinema. It lets you do classic cinema style production with E-mount. That is really unique.

Certainly we recognize that a large number of E-mount users will continue to use autofocus simply because they don't have a team to work with. They work alone or they are doing a documentary. In summary, we could say that the Nano Primes are premium lenses for the immense group of E-mount users.

# Thomas Steinich & Dennis Meyer on ZEISS Nano Primes



Thomas Steinich (left). Dennis Meyer (above). Photos: Andreas Bogenschütz

*Thomas Steinich is the lead optical designer and Dennis Meyer is the systems engineer on the ZEISS Nano Prime project.*

## **Please tell us about the optical design of the NP lenses.**

Thomas Steinich: A new set of cine lenses is always an exciting, challenging road until you finally put the first prototypes on a projector and MTF measurement equipment to see your results. A whole team of optical designers worked on the NPs. The task was quite challenging: make it fast at T1.5, make it small and lightweight, and make it affordable without sacrificing our ZEISS cine standards. The intention of providing a compact set led to some discussion about the focal lengths, because we needed a smart choice of steps between 18mm and 100mm. For each of the 6 focal lengths, many different potential designs were generated, evaluated and rejected until we made our final selections. As usual, the shortest and longest focal lengths needed additional effort until we agreed on the final design.

## **How did you arrive at the “look?”**

Thomas: The “look” of a cine lens is the sum of all the effort and decisions you make during the entire design process. It is not something that you can just switch on and off in your optical design software. There is no specific operand that you have to control to make “the look.” All aberrations in and out-of-focus, coatings, ghosts and the accuracy level of production contribute to the final look that DPs hopefully will cherish. As I mentioned in our last interview for the SPs back in 2018, we have special in-house optical design software at ZEISS called OASE (a motivating name: German for “Oasis”) with multiple features that are lacking in commercial optical design software packages. We can analyze the image in every detail during the optical design phase and “build” a virtual prototype that includes mechanics and stray light. These simulations are already very close to what we see and measure in the lab after actually building the hardware.

## **Is it my imagination or are skin textures even smoother on Nano Primes (NP) than Supremes (SP)?**

Thomas: Skin textures are a big topic for all DPs. It is one of the characteristics that they look at right from the beginning of working with new lenses. And therefore, it is important to us. As an optical designer, skin textures primarily translate into MTF-resolution, resolution distribution over depth of focus,

longitudinal color aberration and off-axis color fringing. You have to find an ideal balance between color-free smoothness and not being unsharp. That was an important goal during the development of the NPs.

## **Please talk about flares and ghosting—or lack thereof.**

Thomas: This is one of our central ZEISS cine standards: to analyze and optimize ghosting in all our lenses. It is a crucial step during the optical design phase, and it can really change the lens setup and geometries if necessary. Therefore, it is not a final “thumbs up or down” check but an integral part of optical design. Ghosts and flare are well removed in the NPs to get a clear and excellent visual impression.

## **How would you describe the difference (or similarities) in look between NP, SP and other ZEISS cine lenses?**

Thomas: Every ZEISS cine lens is optimized to have proper contrast within the plane of best focus with the aperture fully open, and not just in the middle of the sensor but across the field of view. There is a gentle fall off in contrast when you leave the plane of best focus to get a smooth cinematic look; color aberrations are small and ghosting is optimized. This holds true for the NPs, too. The differences between NPs and SPs, in terms of look, are small. The idea is to give film crews the option to even mix NPs and SPs on the same film set. To us, NPs are the connection between high-end/blockbuster and mid to entry-level cine lens equipment.

## **How is the Nano Prime optical design the same or different from Supremes, Master Primes, Master Anamorphics, Ultra Primes and CP.3?**

Thomas: The main difference compared to all the other ZEISS cine lenses is the extremely small size of the optics and mechanics in which they fit. NPs are tailored to the E-Mount interface to benefit from all the advantages you have with a short flange focal distance. Furthermore, the NPs are designed for the entire Full Frame sensor, compared with Super35 MPs, UPs and MAs. And yet, NPs are still very fast. From an optical design perspective, all contradictory characteristics had to be combined in these new cine lenses: big sensor, high aperture, small size and affordability.

## **Are the T\* coatings the same or different?**

Thomas: The T\* coatings are the same as with the Supremes. We did not sacrifice performance to get the cost down.

# Thomas Steinich & Dennis Meyer on ZEISS Nano Primes



## Iris? Bokeh?

Thomas: The mechanical iris consists of twelve blades to get a nice round shape to provide a proper cinematic bokeh. Again, our intention is to provide a real cinematic set of lenses for short flange-focal-distance cameras.

## How does the short flange focal depth (E-mount=18mm) help or influence the optical design?

Thomas: In short: yes. The impact on optical design is most obvious with the shorter focal lengths. For example, Supremes and CP.3s had to provide a huge clearance on the image side to fit PL mount and SLR cameras. When you design an 18mm lens for such cameras, you have to implement a strong retrofocus design to get an image side clearance of approximately 2 times the focal length of your lens. This leads to big and heavy lenses, doubles, and special glass to correct color aberrations. You use big aspheres to address distortion and field dependent aberrations. In summary, weight, cost, and complexity are added. For the NPs, a flange focal depth of 18mm means you can design an 18mm focal length lens almost symmetrically. This is great news for the optical designer, because some field aberrations (e.g. distortion, lateral color and coma) get much smaller with almost symmetric optical systems. For longer focal lengths, the advantage of E-Mount is smaller. Still, your last optical element can be positioned closer to the sensor, but the optical designer is fighting more with longitudinal color and spherical aberration which have to be corrected at other positions within the lens.

## Jon: What were the challenges getting the NP series so small, lightweight, 95mm front diameter, and yet very fast T1.5?

Thomas: Besides the advantages of the E-mount that I mentioned, one of the best options you have in optical design to reduce size and weight are aspheres. When I started my career as an optical designer more than 15 years ago, maybe one or two aspherical surfaces were acceptable in a cine lens because of complexity and cost. Today we have access to much cheaper asphere production capabilities. Therefore, multiple double-sided aspherical lenses are possible without horrendous cost. Additionally, getting the lenses small is not a one way street from the view of an optical designer. The mechanical designer, the entire production team and the assembly team have to agree on the final lens design with some rather thin lens elements. This is challenging for the whole production process along with some tight cost constraints. Dennis managed to get different working groups together technically

to come up with a common view on what is really feasible.

## Jon: Dennis, tell us about your role on the NP Project.

Dennis Meyer: As a Systems Engineer here at ZEISS and in the Nano Prime project, my primary role is to manage all aspects of the product requirements and implementation and to have an overview of the technical status of the project at all times.

My job starts at the beginning of the project by understanding the concepts of our Product Manager (in this case, Christophe). I then translate these technical requirements into a coherent and feasible system design. This involves collaborating with our engineers to develop a detailed understanding of the product's technical specifications and capabilities, and working with our Japanese manufacturing team to ensure the design can be realized effectively and efficiently. For Nano, we had around 150 technical requirements per focal length, defining all kinds of properties like T-stop, physical dimensions, maximum weight, exchangeable mount as well as all properties that affect the look and quality of the final product.

I am also responsible for verifying and validating the performance of the lenses against these requirements and the customers' expectations. This involves doing system tests together with our laboratory staff, analyzing the results and bringing necessary adjustments to optimize the system's performance into the development cycle. I also work closely with the quality assurance team and the service team. In summary, my role on the NP project and as a Systems Engineer at ZEISS is to ensure that our product is technologically sound, reliable, and meets both the company's and our customer's expectations.

## Tells us about the mechanical design.

Dennis: From the beginning of the project, Christophe had the idea of a real cine lens for E-Mount, not a hybrid between stills and cine or something similar. Tough requirements for the development team and me included having a compact housing with typical cine gears for focus and aperture positioned in the same position on all lenses to make on-set lens changes a breeze. Large rotation angles and standard front diameters were also important. We finally achieved these things with a completely new mechanical design that also passed all our strict ZEISS quality and environment tests like rapid heat changes, hot and cold temperatures, mechanical shock and so on. It is an uneasy feeling when you deliberately drop a lens prototype onto a hard floor. Yes, the lens survived.

## When did you begin this project?

# Thomas Steinich & Dennis Meyer on ZEISS Nano Primes



Dennis: Having recently completed my PhD in Experimental Physics, I joined ZEISS in October 2021 as a Systems Engineer, and Nano Primes became my first task. It felt a bit like diving headfirst into the deep end, but the exceptional colleagues here in Oberkochen and also in Japan made the transition smooth.

**Shin Yoneyama, Arato Ogura and Masako Misaki presented the NPs to me a few weeks ago in Japan. As Systems Engineer, how did you coordinate with the teams in Japan?**

Dennis: The biggest coordination effort was handled by Shin, who did an awesome job leading the teams, keeping a keen eye on schedule and budget and a lot more. My role in project coordination was more on the technical level.

**Is QC done in Oberkochen?**

Dennis: Prototypes were all qualified in Oberkochen and the serial production lenses are adjusted, measured, calibrated and quality-controlled in Japan, following the same protocol and procedures as our other cine lenses. The measurement equipment in Japan is also identical to the ones we use in Oberkochen. We carried out acceptance tests and training with the equipment on site. Our Japanese colleagues are renowned for their attention to detail, precision, and dedication to quality. A sampling of 25% of all lenses is again quality checked in Oberkochen by the same highly experienced colleagues who also ensure the quality of our Supreme Primes.

**How can these lenses be delivered at such an affordable price :)**

Dennis: Achieving an affordable price for the Nano Primes without compromising on quality and performance was a clear goal for our project team from the beginning. We focused on under-

standing the customers' needs and balancing costs, material and assembly efficiency with optimal performance and quality. This process requires a clearly defined product concept that excludes unnecessary features, along with the flexibility to investigate novel optical and mechanical designs. During the lens development, well-informed considerations and decisions need to be made, keeping in mind constraints as to budget, schedule and price.

For example, one area where we could reduce costs without sacrificing quality was in the focus and iris scale markings. Instead of using traditional stylus engraving, which is more time-consuming and requires a separate process outside the clean room, we chose to use laser etching for the Nano Primes. Laser etching not only saves time and streamlines the production process, but it also reduces costs without compromising the accuracy and readability of the markings. This also came with the advantage that the scale of the Nano can be fully parametric, meaning we can make the focus scale optimized for every lens.

You may notice that for the Nano we are not using the Supreme Prime style labels for the rings (L, N, NP, etc) but a combination of letter and numbers. This is due to the greater freedom of laser engraving and the fact that, although we save time and money with the process compared to stylus engraving, we can engrave each lens even more accurately.

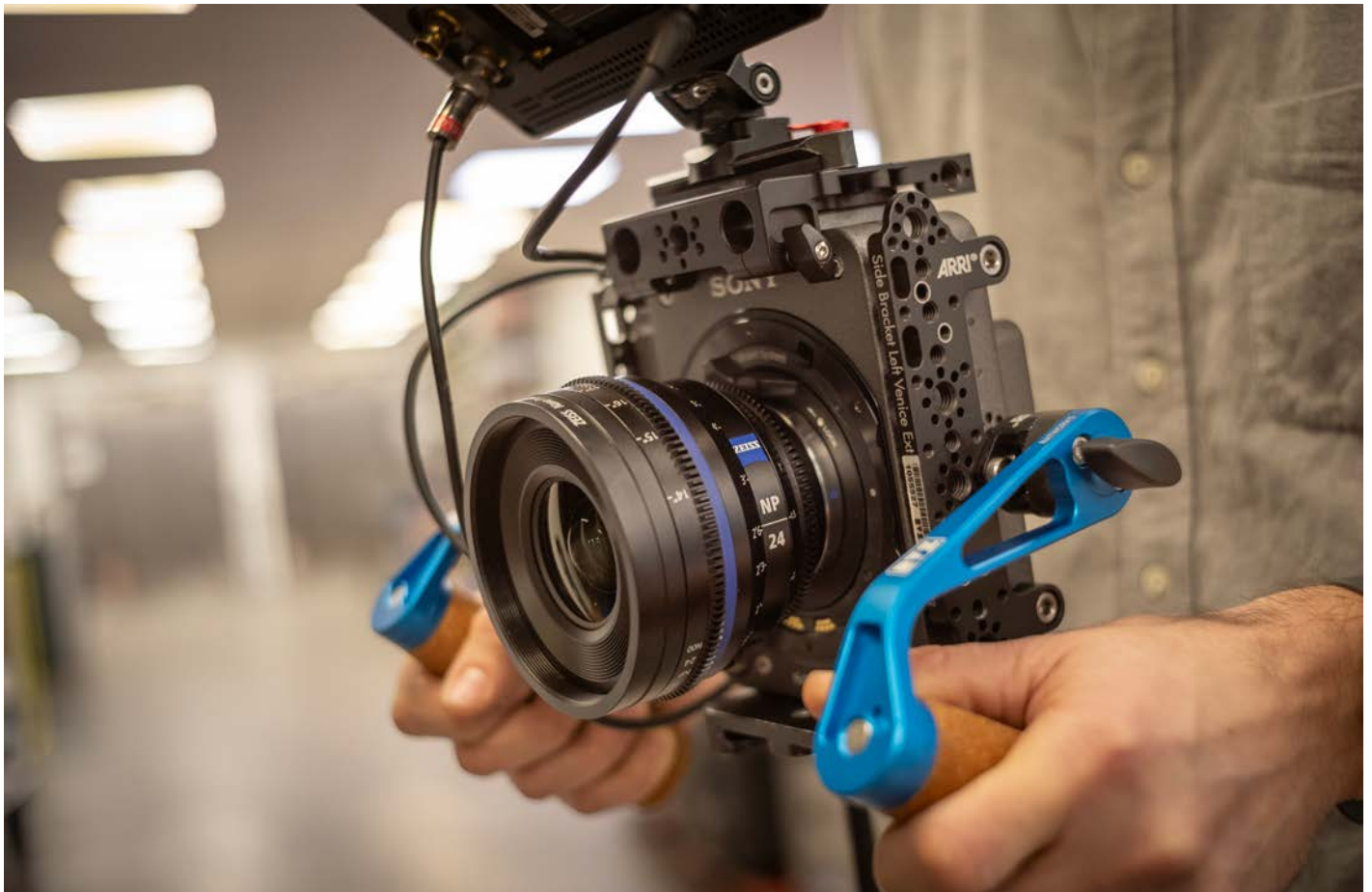
By considering each step in the development process and prioritizing the elements most important to our customers, we can provide the Nano Primes with exceptional performance and quality at a reasonable price.

## NP at RVZ

Samuel Renollet, Camera Department Manager at RVZ in Paris, provided these photos of ZEISS Nano Primes paired with Sony VENICE Rialto.

With Rialto's PL Mount removed to reveal its native E-mount underneath, the NP primes enable a lighter, smaller and more nimble combination.

RVZ provided the Sony VENICE 2 and Nano Primes that Vincent Tartar and crew used on their short film for ZEISS, shown on the next page.





## NP with Vincent Tartar



Vincent Tartar is a DP and member of the UCO (Union des Chefs Opérateurs), which is not a trade union but rather an active organization. Vincent used NP lenses on a ZEISS demo film and said, “They have a gentle sharpness. There was something very interesting about them between being precise and also having a separation from what was sharp and what wasn’t. The skin tones are amazing. Nano Primes and E-mount cameras give you a wide range of products according to the production’s possibilities and budget. I don’t think that high-end equipment will disappear. But equipment such as the Nano Primes may allow some independent filmmakers to achieve high-end quality, maybe to reach new audiences and to produce a better quality of images. And so, we may all be able to reach other new heights of filmmaking.”



# NP with Valentine Lequet

Valentine Lequet is a French cinematographer working in Paris and London. She started as a camera assistant on features and commercials, and is one of the co-founders of the UCO (Union des Chefs Opérateurs) [unionchefsoperateurs.com](http://unionchefsoperateurs.com).

Valentine was the Director/Cinematographer using Nano Primes on a short demo film for ZEISS. ZEISS provided the NPs. Will Newman at Sony UK lent a pre-release Burano and Sunbelt supplied the rest.

Valentine said, "I use a lot of Supreme Primes, so I wanted to know if this series could be a new addition for a B camera or something like that. It was very interesting. I wanted to do a project about artists and musicians, so this was a very cool way to mix all these together, and try the Nano Prime lenses on this project.

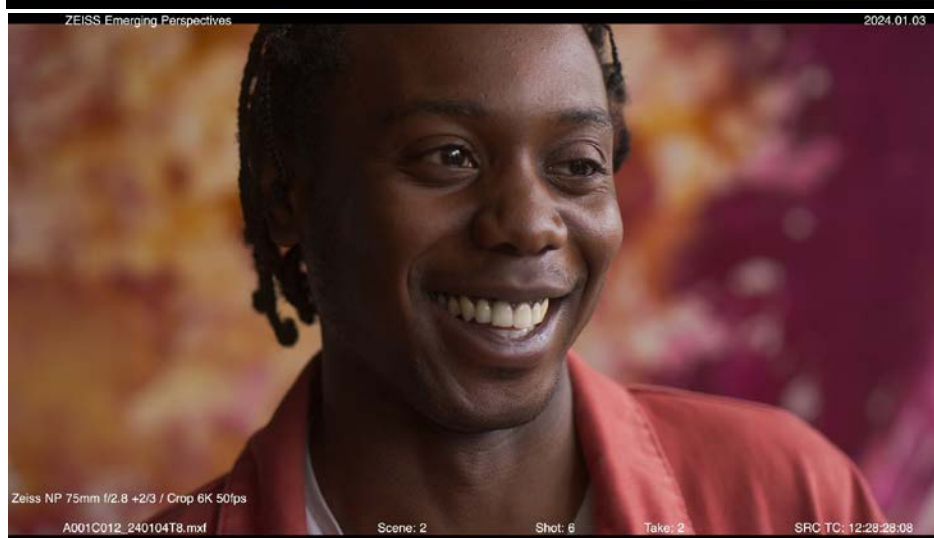
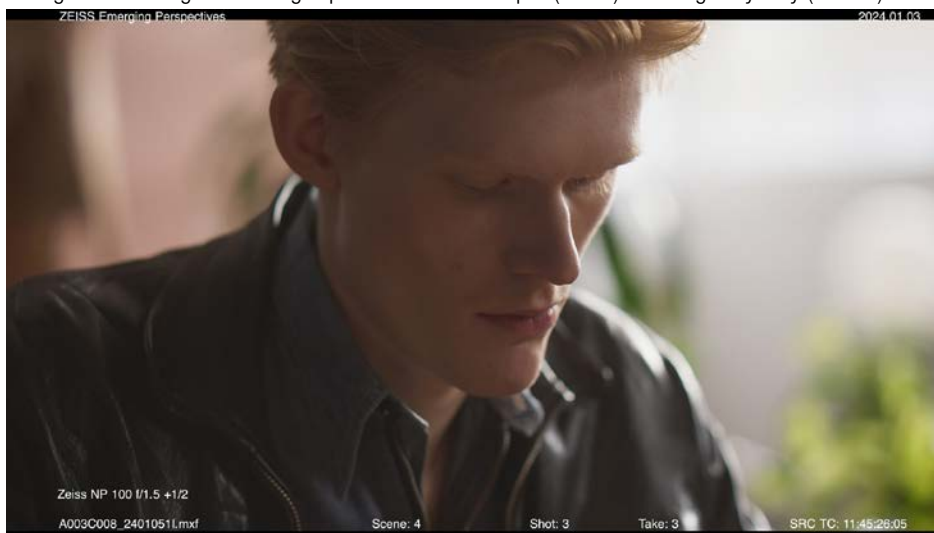
"The idea was to investigate how art is involved in society and how artists manage to live with it and to do it every day. It was a big question. The process was documentary style but we didn't want to only do interviews. There are moments of music, moments of sharing, and we wanted to have the opportunity to test the optics in different kinds of ambience.

"The Nano Primes felt exactly like the little sisters of the Supremes. The skin tones are exceptional, and when the scene is backlit, when you are filming close-up on a face, it's very beautiful. The lenses are very light. That was the first thing I noticed.

I shoot a lot of commercials, some in a documentary style, with very light equipment. I think I can now go everywhere with these lenses, for sure, even on beauty commercials, because the skin tones are very beautiful. I was very happy because it's very hard to find small lenses with such good qualities.



Above: Valentine Lequet, Director/DP. Elise Filaferro, AC, in the monitor. Photo: Sundeep Reddy. Non-graded framegrabs of singer-painter Huddie Hamper (below) and singer Ry-Guy (bottom).



Elise Filaferro, 1st AC (left) and Rodolphe De Quay, DIT (right) prepare the camera for filming.

## NP with Jon Joffin, ASC and Brendan Steacy, ASC, CSC

What happens when you pair two top DPs together with ZEISS Nano Primes? Jon Joffin, ASC and Brendan Steacy, ASC, CSC had a set of NPs on sets in Vancouver. Keslow Camera supplied a Sony VENICE 2 and BURANO. Jon was the Director/DP and Brendan was the co-DP who modestly said, "I just joined Jon."

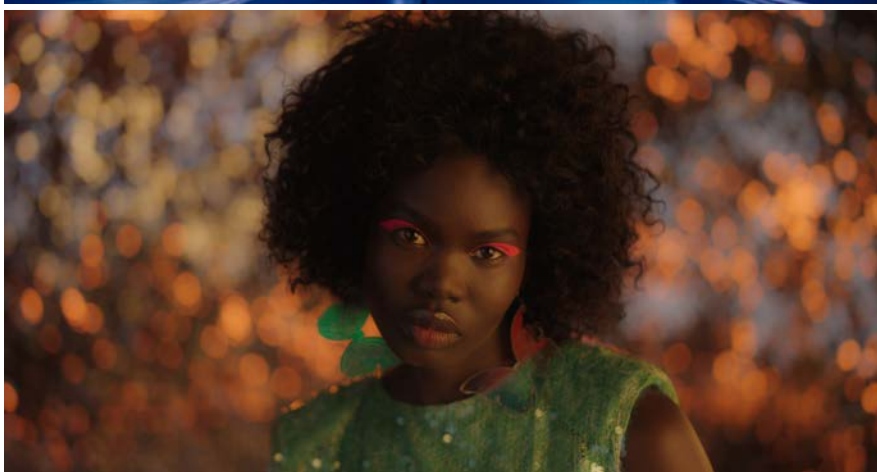
Jon explained, "We shot fashion and music video scenes in a film studio and on a volume stage, a skateboard sequence under an amazing bridge location, and underwater in a blacked-out swimming pool. It was a challenging shoot that was super interesting because the story is about two filmmakers. It's called "Shoot, Sleep, Repeat." They're bouncing out of bed every morning and they shoot three different scenarios each day. We wanted to have a rhythm where you're looking out the window and you see the sun rising, and CUT, they're out the door. Then at the very end, they win an award on the second night and then everything slows down as they bask in the glow of their achievement."

Brendan continued, "I thought the Nano Primes were really cool. They fit very nicely into every situation. The design of the NPs is really interesting. For a long time, it seemed manufacturers were trying so hard to make lenses perfect and eliminate veiling glare, and any aberrations, which has resulted in lenses that don't really flare, and are maybe a bit boring. The new ZEISS Nanos bring back some of that character - still in a modern style. They were flaring beautifully, but they were also sharp enough to render details well. They felt a lot like the Supremes, but also had enough character to make all those other situations feel organic and nice as well."

Jon added, "To echo what Brendan said, we carried a full set of Supremes and a full set of Radiance because we had a sunrise shot where we thought we might want more flare. We ended up shooting the whole sunrise, and in fact, the entire film with Nanos. They were that good. We have a scene against a shimmering wall background and I noticed that we got an almost Petzval effect with the bokeh in the background. They had a swirly spiral shape, which I love. I can never get enough of that. And then there were other interesting flares. We shot 97% of the film wide open at T1.5, which is a sweet spot that I thought looked great, stunning. That to me is the benchmark. I don't want to use a lens that I can't use wide open. I need that option."

Brendan said, "Nano Primes can work on high-end productions. They would cut well with the Supremes. But I don't think they're going to displace the Supremes. If we're shooting with a variety of PL or LPL lenses, we want the cameras to have those mounts. And the Nanos will be working on cameras with E-mounts. That's the difference."

Jon concluded, "It's worth noting that we did use the NPs full time on the Venice 2 and they performed flawlessly. The NPs are true cinema primes in every sense. They are reliable and have very pleasing character."



# Brice Michoud on ZEISS CinCraft Scenario



Brice Michoud in classic Breton striped shirt. Decreed in 1858 by the French Navy: “21 white stripes and 20 to 21 indigo blue stripes.”

I’m Brice Michoud. I’m from Lyon, France and now live in Brittany. I did my PhD at the University of Lyon where my thesis was about computer vision and marker-less human motion capture. I met the right people at the right time. That was 2011.

We created Ncam Technologies in the UK on January 1, 2012 to create systems engineered for cinema. The intention was to revolutionize how people would shoot movies, especially when they had heavy visual effects sequences. At that time, they were mainly shooting against green screen. Tennis balls were used to line things up and track where the CG elements would go, to make sure that the actors would be able to know where to look and where the action was. That’s how it all started for us over 10 years ago. Our plan from day one was to eliminate the guesswork on set when shooting VFX scenes that would consume a lot of time if they were done wrong. That’s how we started as Ncam Technologies.

When I created the original technology, it was a tool just for me, but it was not made for someone else to operate easily. If you want to make sure that the data captured on set will be useful in post-production, you need to ensure that it is easy enough to operate.

On our journey to develop the Ncam system, we needed to model lenses, and that’s where the relationship with ZEISS began. If we wanted to render live CG elements and make sure they would stay in place or where they were expected to be, we had to mimic the lenses and their optical characteristics—distortion, aberrations, flare, focus fall-off, shading, depth of field, etc. We had to calibrate (map) each lens before a shoot to make sure it matched the background. This is a time-consuming effort and not always super accurate. When we started talking with a manufacturer like ZEISS, we realized they clearly had all this information because this is what they require to build their lenses.

Our journey with ZEISS began with a whiteboard and thinking as a user. It was like: “If we want to make this technology available to the

cine industry, not just PhDs, but people who are really on the set, we need to make it something completely different, simple, starting from a different point of view, the customer.” A user does not want to learn how to calibrate the lens. A user just wants to plug in a lens and get the system configured automatically.

## CinCraft Scenario

Our new collaboration with ZEISS is different from what we’ve done before because it has been organized and planned with a lot of knowledge regarding customers and with a simple message. We want to give users a system that they can use almost everywhere to track a camera, record the data and use easily in post-production. The intention is really to optimize the way that data is captured and used for VFX scenes.

If you want to do VFX, you need to know where the camera is. So, you need camera tracking, you need to map and calibrate your lenses correctly and you need to do these things easily. You don’t need to be a specialist in computer vision or optics.

The first Ncam customers were in North America. Our first movie was *White House Down* directed by Roland Emmerich, shot in Montreal. The first broadcaster to use Ncam was Fox Sports to add 3D graphics during live shows, including Superbowl.

## A brief tour of how ZEISS CinCraft Scenario works

The “eyes of the system” are in the CamBar. It is a camera bar that can be mounted on almost any professional camera that has an SDI output and a stable clock. The second requirement is that we need to have an encoded lens so we know the exact positions of the focus, iris and zoom rings to be able to drive our virtual model with the real lens to make sure everything aligns together.

The “eyes” have a few machine vision cameras in the CamBar and do not have to be pointing at the set—only pointing at something that is stable. They are used to track the position in 3D space, using natural elements of the scene so you are not forced to put markers or anything in the environment. That gives you great flexibility. The system can work indoors, outdoors, in natural and artificial environments. We can work at the corners, edges, and with set extensions.

Obviously, there are limits. It’s not magic. This is science, and that means the camera bar needs to be able to see something that is more or less constant. Trying to point your camera bar at the sky will not work well, but if it points at the floor or ceiling of a set or location, then it’s almost constant. The system will be able to tell you about your movement, velocity and orientation at any given time, and ensure that the data is synchronized with the feed from the camera. We ensure that frame-accurate data is recorded and can be exported in various formats.

The camera bar is connected to the Origin, a “brain” that manages tracking and recording in real time. That information can be fed into a render engine like Unreal Engine, for example, to do live visualizations of your scene.

Another application of our technology in CinCraft Scenario is something that we built on top of its tracking ability. It is a module to record the data. Just as with a camera, if you can’t record your footage, what’s the point? It seems obvious now, but it wasn’t on the first day we thought about it. We needed to process the data. So, CinCraft Scenario comes with an embedded recorder that logs your takes.

Actually, there’s another unit we can put in between the CamBar and the Origin to extend the distance, or to provide a lighter, smaller module on the camera. We call it Link. Even though Origin is small

# Brice Michoud on ZEISS CinCraft Scenario

enough, it's still a micro computer, and it might be too heavy on a Steadicam, for example.

And then, we have a third element that we call CinCraft Export—to extract the data we record and make it available in the format you need. This is a translation element from our internal protocol to anyone else's protocol. Export is a piece of software that will run on a Windows platform initially. It's not running on the Origin. You take what was recorded on Origin and extract that data to the format you need. Then you'll be able to specify if you want UV maps, distortion maps, undistortion maps, and if you want the tracking information as well. We provide all that information for post-production usage. Really, the intention is to optimize the process.

(UV mapping maps input 2D coordinates in a picture to the output 2D coordinates. This is used to represent the 2D offset to distort or undistort the picture.)

In summary, just as ancient Gaul was divided by Caesar (but not by Astérix), into three parts, CinCraft Scenario also has three parts: live use, recording and exporting of data. Without those three elements, you can't really deliver value to the customer. What matters is capturing and using the data. To be fair, at Ncam, we tried doing something like this, but we did not succeed because it was not easy. I think what we have now with ZEISS will really make it succeed for users.

CinCraft Scenario provides more than what VFX teams have been receiving before. They were initially undistorting video plates, then doing match moves after that, for example. They need to know scaling, measurements, and then align what has been tracked with software to combine the CG elements. All of that will be managed by CinCraft. It's going to cover a very big portion of the practical scenarios. You will get tracking data plus lens data. You'll know the position of each focus, iris and zoom gear for every lens. At the same time, you will have field of view, distortion maps, and undistortion maps for every scene you shoot.

This is a far cry from the way things were. Too often, you spent a week or two shooting distortion grids in prep at a rental house. However, the usual procedure of measuring and mapping the lens for distortion with grids is never truly accurate. VFX teams are going to compensate for it, ultimately. With CinCraft Scenario, it's going to be just as easy as plug and play to get the right data for your lens and you know it's sub-millimeter or sub-pixel accurate without having to spend time fixing it in post.

Previously on set, you probably had a tape measure and wrote down the height of the camera and lens, what was the orientation, what was the speed, what was the lens focal length, etc. All of this information is now embedded and recorded for you. You are also reducing the possibilities of errors. This is really part of the optimization process. It's not just about those maps. We are not necessarily going to change the way you've been using data, but we are going to give you data that you didn't have before.

**What happens if you're using a lens that does not have eXtended Data? Even earlier ZEISS lenses like Master Primes, Ultra Primes, Super Speeds?**

CinCraft works with various encoders. Of course, it works seamlessly with ZEISS eXtended Data encoded lenses like Supremes, Radiance and Nano Primes.

As part of the first release, we are going to support SDI-fed metadata. Certainly, we are going to support eXtended Lens Data. We'll also have the ability to support cmotion devices through LBUS and LCUBE. We'll support LCUBE-1. We'll be supporting Preston MDR-

3 and 4. We are going to support Tilta Nucleus and Teradek RT. Worst case scenario, we will even have external encoders (to show the position of the gears) that you can attach to the lens rods. We plan to cover most combinations.

## CinCraft Mapper

ZEISS has been building a database of lenses in CinCraft Mapper to provide information about distortion and other parameters. I think there are discussions to extend the library, and in the future we are thinking of providing templates for other lenses. Ultimately, we want the DP to be able to use any lens on set or location. Our product will evolve over time. The version at launch is the first release that will only work with ZEISS lenses. We'll add support for other lenses in the future and we'll start rolling out templates for other manufacturers' lenses as well. We don't want to be a closed system because that doesn't make any sense at all. Eventually, you will be able to use any lens from any manufacturer. Only the method of how you will be using it might differ because to really make it plug and play, we have to get into discussions with third parties.

Obviously, there are plenty of ZEISS lenses around the world, so we want to enable customers who bought those lenses to be able to use them very easily. We can really ensure excellent results with ZEISS lenses. We definitely don't want to prevent customers from using other lenses if they want to use a vintage Panavision lens, for example, or anything else.

## No specialized operator needed

CinCraft Scenario only requires very simple training. We do not expect everyone to have complex training. To be fair, anyone who's in our industry and who's capable of using a camera is already a bit techy. This is the level of expectation we have. It's not going to be for my grandma, but it's definitely going to be easy enough. We are going to create tutorials and we are going to help our customers see how to do things, but the goal is not to require specialized people to use our technology. As mentioned earlier, it's really made for users, operators, camera crews and DPs, not for PhDs.

## Saving time and budget

You'll be able to produce way more than what a team would have been able to produce before. I think this is what matters in the end. When we introduced CinCraft Scenario, I expected the first question to be, "How much are you saving me?" In many cases, we're going to save you time. In other cases, we are even going to provide skills that you might not have had before. An example would be a production with no budget for VFX. Now, with our technology, you put it on the camera, and you have camera tracking, data for VFX, and they can use it almost instantly, or very quickly with a free download of Unreal Engine. This opens a very different way of producing content. Of course, we are still very interested in A-list productions, but there are so many other productions as well that we want to reach. This tool will enable that ability.

We want to focus on the movie market. We are not going to stop working in the other markets and activities that we had, for example sports and broadcast, but this product is currently better suited for movie production.

In summary, it's all about the value we want to generate at the end for the user. For some users, we want to optimize data acquisition and distribution. For others, we are simply going to create something they couldn't do before. This is super exciting. This is the first thing I always wanted to do — make an impact on how people make movies.

[youtu.be/IKbnhWUe7\\_w](https://youtu.be/IKbnhWUe7_w)

# RED V-RAPTOR [X] and V-RAPTOR XL [X]



V-RAPTOR [X] 8K VV



V-RAPTOR XL [X] 8K VV

## Global Shutter and Large Format VV.

Jan. 25, 2024. RED DIGITAL CINEMA announced new V-RAPTOR [X] 8K VV and V-RAPTOR XL [X] 8K VV cameras. Both models now have Large Format/VV global shutter sensors.

Global shutter! Traditionally, global shutter meant less dynamic range. RED says the V-RAPTOR [X] and V-RAPTOR XL [X] capture 17+ stops of dynamic range in standard modes and up to 20+ with Extended Highlights for even softer and more subtle highlight roll-off. More on this in upcoming articles.

RED introduced a Super35 global shutter in October 2020 on the KOMODO. With a global shutter, all the photosites of the sensor are exposed simultaneously—which is good when you're filming fast movement or explosions, fire, flashes, strobes, stunt sequences and even handheld work. With a rolling shutter, you might get artifacts from flashes or skewing and bending of objects.

## V-RAPTOR [X]

The V-RAPTOR [X] compact body is similar to the original V-RAPTOR, with added in-camera audio pre-amps and a lens/sensor cavity with improved contrast (less internal "barrel" veiling glare). The V-RAPTOR [X] has 2x 12G SDI outputs, locking Canon RF style lens mount, and records to CFexpress Type B media at data rates up to 800MB/s at 8K 120fps. This is the smaller, modular model.

## V-RAPTOR XL [X]

The V-RAPTOR XL [X] is the bigger brother, all-in-one SUV (Single Unibody Version :). It accepts on-board 14V or 26V V-Lock or Gold Mount batteries and has an internal electronic

variable ND filter. XL [X] comes with a PL Mount that can be swapped with other DSMC3 lens mounts that fit the regular XL.

## V-RAPTOR / V-RAPTOR XL [X] Sensor

The V-RAPTOR / V-RAPTOR XL [X] sensor can capture 8K full sensor height up to 120 fps (150 fps in 2.4:1 aspect ratio), 6K up to 160 fps (200 fps in 2.4:1), and 2K (2.4:1) at 600 fps. Wow.

RED Digital Cinema President Jarred Land said, "Ever since our sensor team cracked the code for a no-compromise global shutter sensor design in the original KOMODO, customers have been pushing us hard to bring our global shutter technology to our large-format sensors, and today we are happy to deliver beyond our wildest expectations. We are very proud to not only be at the forefront of global shutter technology but also to be the first company delivering large format global shutter cameras to filmmakers.

"Creating a global shutter sensor while maintaining dynamic range is almost impossible. And then, on top of that is the addition of an optional Extended Highlights mode. It shows we are pushing image processing far past the limits that were once believed possible and are exceeding 20 stops of dynamic range.

"V-RAPTOR [X] and V-RAPTOR XL [X] are the result of years of incredibly difficult work internally by our leading engineers and from the ongoing collaborative work with preeminent partners who bring invaluable experience and perspective to the process from cinema technology to virtual production, volumetric capture and live sports."

The standard V-RAPTOR [X] costs US\$29,995. The XL version is US\$44,995.

# RED V-RAPTOR [X] and V-RAPTOR XL [X]



V-RAPTOR [X] 8K VV

## New EVF and AKS

RED also announced their new RED Compact EVF Pack. The viewfinder has a 1080p micro-OLED display and user-assignable buttons. These buttons let you turn functions on or off, such as peaking or magnify-for-focus-check. They can also be assigned to control camera settings using the on-screen overlay system for key parameters such as ISO, FPS and White Balance. The EVF Pack is \$4,950. The standalone EVF is \$3,450.

RED's Advanced Adapter Plus includes a 6-Pin DC-IN port for external power to the camera and auxiliary power outputs. New accessories also include V-RAPTOR Advanced V-Lock Plus and Gold Mount Adapter Plus battery adapters.

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



RED Compact EVF



V-RAPTOR XL [X] 8K VV

# RED V-RAPTOR [X] and V-RAPTOR XL [X]

## Upgrade

Current V-RAPTOR and V-RAPTOR XL owners can upgrade directly with RED. The upgrade program is priced at \$12,500 for both V-RAPTOR 8K VV and V-RAPTOR XL 8K VV customers.

## RED Touch 7.0" LCD Monitor

*At right:* The DSMC3 RED Touch 7.0" LCD Monitor on this V-RAPTOR XL [X] has 1900 x 1200 resolution and SmallHD PageOS camera control.

A single-locking USB-C looking DSMC3 RMI cable provides video and power. No additional SDI or power cables are needed.

The USB-C-style RMI cable is custom-pinned and not compatible with standard USB-C cables.

Additional RED Monitor RMI cables come in 10", 18" and 39" lengths when you want to position the monitor, for example, at the rear of the top handle for comfortable viewing on a geared or fluid head.

## RED Compact EVF Pack

*Below:* The new RED Compact EVF Pack includes the EVF, a top plate with EVF bracket and 15mm rod holde, a 16-pin power and video connector plate, and 16-pin cable. The Compact EVF uses the same 16-pin Lemo-style cable that RED has used with monitors and EVFs on previous cameras.

DSMC3 RED Touch 7.0" LCD Monitor



V-RAPTOR XL [X] 8K VV



V-RAPTOR [X] 8K VV with RED Compact EVF Pack



RED Compact EVF Pack



# Maxime Cointe on *Lupin*, Season 3



## **Jon: What equipment did you use on *Lupin*, Season 3?**

Maxime Cointe: We had two ALEXA Mini LF cameras and one ALEXA LF for backup and high speed. I used two full sets of Cooke Anamorphic/i FF Special Flare 1.8x squeeze prime lenses. We recorded Full Frame, Open Gate with 2:1 aspect ratio frame-lines and release format.

## **You didn't use zooms at all?**

No zooms. Sometimes the director asked me, "Oh, Max, can you use a zoom?" I said, "No, but maybe we can do a traveling shot."

## **Did using primes slow you down since you had so many setups?**

No, because normally I use a DP/Director's Finder to choose the right lens for the shot.

## **Were you shooting multiple cameras at the same time?**

Yes. We used two cameras for almost every setup.

## **Did you use all the focal lengths?**

Yes. Every one. Normally, we used the 40mm, 50mm and 75mm. On the two episodes directed by Ludovic Bernard, he liked some longer focal lengths. When the Canadian director Daniel Grou (Podz) arrived, he told me, "I prefer wider lenses." We had different visual interpretations with the two directors. It was really different because Podz liked doing some close-ups with a 40mm, and normally Ludovic preferred using maybe a 75mm for close-ups. Sometimes we liked the 85mm Macro FF Anamorphic for its very close focus (55.5cm / 22 in). We used it for some special moves, starting very close on the main character and we track out and move onto another object.

## **Your focus puller must have loved you.**

No. Sarah Dubien has worked with Claire Mathon, AFC and has done several features with me. She knows that we go wide open and really close.

## **What led you to choose the Cooke Anamorphics?**

There are three things that are unique. They fall off toward the edges of frame, softening the image. Another thing is with their *tonneau*, the barrel distortion. They are really different from Panavision Anamorphics. But, because of that, the Cooke Anamorphics really work. And the third reason is how they render the softness of skin. It's really great on skin tones.

## **The way you used Cooke Anamorphics was exceptional. Season 3 of *Lupin* was beautiful.**

I did some tests about three months before the shooting. When we noticed that the 75mm was deliberately falling off, softer, at the bottom of frame, we decided, "Okay, so if it's like that on the bottom, we are going to take advantage of that and compose accordingly." We did that with each lens we had.

## **How would you describe the character or look?**

Smooth skin tones and smooth fall-off. The fall-off is really great on the backgrounds. If you go really wide open, you can position the main character in front of you, and you just keep something in the background, not milky, but something great. When we started to work in Place Vendôme in Paris, Ludovic told me, "I need to see the background when you film a character." And then when you see the fall-off of these lenses, even wide open, you say, "Okay, it works." You see the actor and the background still has character.

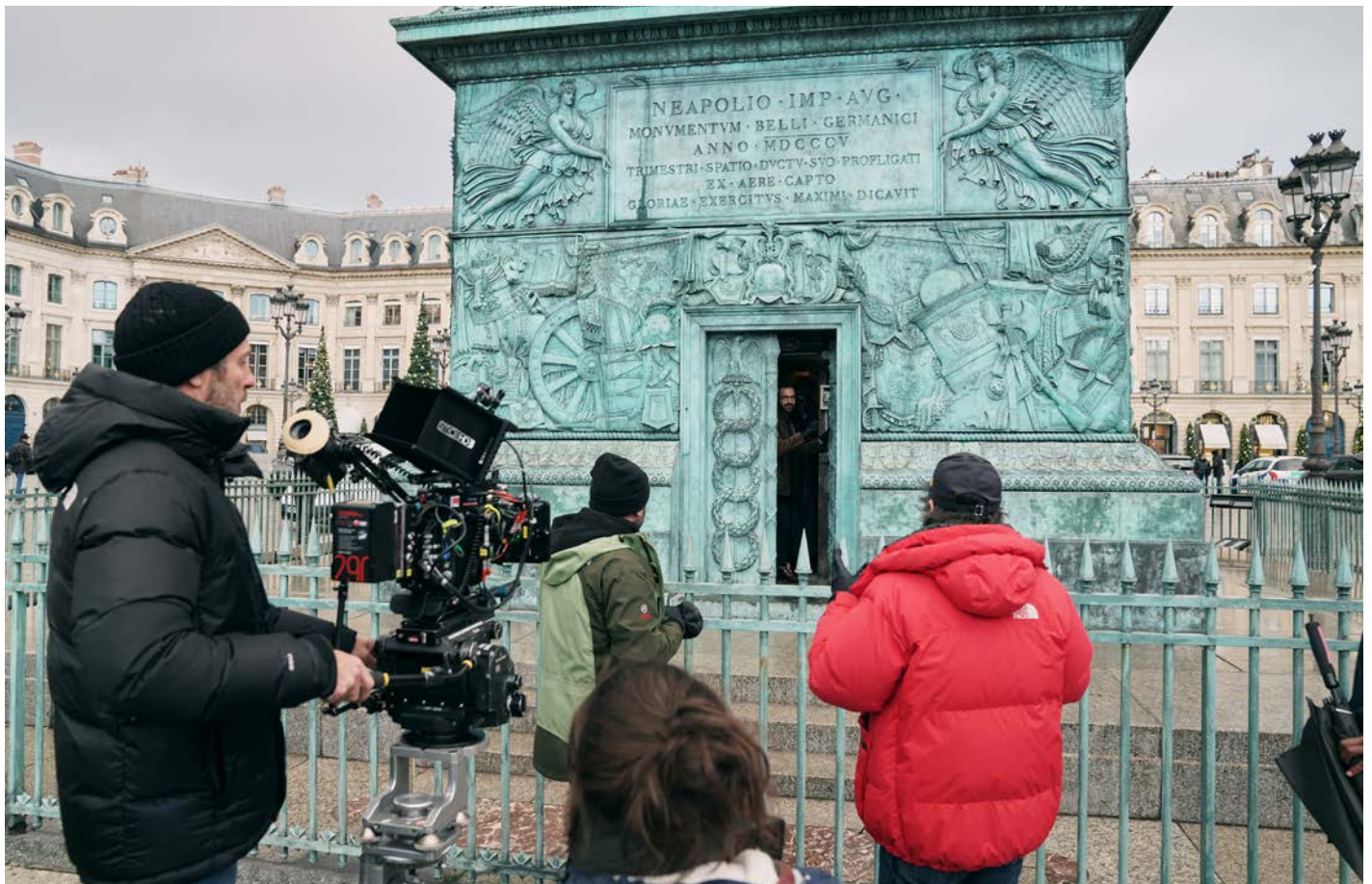
## **The sequence in Place Vendôme, when Assane goes into the jewelry shop, was interesting because everything sparkled. Things that were in focus were really sharp, not mushy or vintage. It just popped.**

It is difficult to explain. When we started the prep, we said, "How can we do something more modern, but not too sharp?" You said it's sparkly and it pops. Yes, the series is something fun. We chose to use some lenses that were a bit modern.

# Maxime Coiante on *Lupin*, Season 3



Photos by Emmanuel Guimier © 2021 Netflix, Inc.





In prep, Ludovic told me he wanted to be able to choose from a large selection of focal lengths because he likes to shoot with two cameras, sometimes with three cameras. That's another reason we chose the Cooke Anamorphics. Also, we needed lenses with a fast maximum aperture. There were not so many choices of Full Frame anamorphics with wide apertures.

The thing is, this is a big budget series. When we scouted Place Vendôme, I asked the production manager about lights. I said, "I need big lights here, big lights there."

He replied, "No, we can't put too many lighting fixtures in this place because you have the Ministry of Defense on one side and another government building over there."

I thought, "Well, you can give us some lighting balloons. But they won't let us have many." We were chatting and then I decided, "Let's shoot wide open and record the ALEXA cameras in ARRIRAW. And if I cannot light the entire place, I need fast anamorphic Full Frame lenses with a good selection of focal lengths. The Cooke Anamorphic FF lenses open to T2.3.

### **On the ALEXA Mini LF, what ISO did you use at night in Place Vendôme?**

At night, it was 1280 ISO. In daytime we went 800 ISO. Ludo wanted it to look shiny, so we rated the camera at 5,000° Kelvin which gave skin tones a nice bronze look that was interesting.

### **Were you able to add any additional lights?**

I add some balloons and a 360 SkyPanel 360 bouncing into a 12 by 12 frame. I used two AirStar 16K balloons overhead. Production told me, "You're going to see that we have many Christmas

trees in Place Vendôme with lots of little lights."

I said, "Okay, good, lots of bokeh for me." So that is how I chose to go with soft light on top and some directional light with frames.

### **Where did you rent the camera and lenses?**

Danys Bruyere at TSE. The lights, grip, cameras and lenses came from TSE.

**Legend has it that Danys was the one responsible for Cooke deciding to make anamorphics in the first place. Everyone had too many bottles of wine at a Cooke party and Danys asked why Cooke didn't make anamorphics. Did he say that? It's part of urban film legend.**

### **How did you get started in the film business?**

I did about 27 short films while I was in film school at ESRA in Paris. That's how I met a lot of people. At the end of the second year, I met a first AC. He called me and said, "I need a second assistant for feature."

I said, "Okay, I'm coming with you."

Then I met one of the best first ACs, Jean-Pierre Supe on *Le Pacte des Loups* (*Brotherhood of the Wolf*), shot by Dan Laustsen, directed by Christophe Gans. Big projects followed: Jonathan Demme, Claire Denis, Jason Bourne movies. I moved up to be a first AC, then DP. It was fun and interesting. I had the chance to see many different ways of lighting and learn different techniques. One DP might use two blondes (2KW open face lights) and another DP would use 200 fixtures and maybe 600 KW of power.

## Balazs Bolygo, BSC, HCA with SP3 on FX3



Balazs Bolygo, BSC, HCA with Cooke SP3 on a Sony FX3 on a Stabileye. Photo by Stefania Rosini, SMPSP.

Balazs Bolygo, BSC, HCA talked about working with Cooke SP3 primes on a big, recent job: “With SP3 lenses, it is quite an interesting thing that Cooke has done. Rather than going with an LPL or a PL mount, they’ve made it with a native E-mount [and other mirrorless mounts] and it’s still a high performing lens. It’s made for a camera like the Sony FX3, and I think there will be more cameras coming out in that type of form factor.

“That’s good because I think we are all looking for smaller cameras to throw around. Filmmaking is becoming more and more energetic. It’s going to be more immersive. With tools such as the FX3 and the lenses like the SP3, it really is going to make things quite exciting. It’s quite kinetic because suddenly you’ve got a camera that fits in the palm of your hand and weighs almost nothing. Shooting with that camera for me has very little trade-off compared to having something 10 times the size sitting on my shoulder.

“Look at the way cinema is evolving and what audiences expect. It’s becoming so much more interesting. As a filmmaker, you don’t want to be inhibited by the filmmaking process, the limitations of camera size anymore. I think we as cinematographers want to be able to immerse the audience into the story that we’re trying to tell. If that means you have to move the camera around and be able to devise shots that are a lot more fluid, then I think these are the tools to make that possible.”



Photo by Stanley Blundell.

# Matthew Waving, DoF, MoD, SoFT



**“Focus pulling is not about getting things in focus. It’s about choosing what needs to be in focus, or indeed out of focus, at any given time.” - Matthew Waving**

*Once upon a time, this column was called “gods of focus.” Despite the lower case “g,” there was consternation in certain spiritual circles. And so, tongue in cheek, the honorific DoF and MoD titles are bestowed, not as Depth of Field and Minimum object Distance, but rather as Director of Focus and Master of Focus Dark Arts (MoFDA?).*

*Matthew Waving is a Master of Focus with credits that run off the page (The Flash, Maleficent: Mistress of Evil; Doctor Who...). His email signature shows membership in SoFT, the esteemed Society of Focus Technicians. Like an unlisted restaurant, it is so exclusive, you cannot google-find it.*

**Please tell us about your camera and lens setups on the recent job with Balazs Bolygo (described on previous page).**

For the show with Balazs, he decided to use Atlas anamorphic and Leitz Hugo primes on Sony VENICE 2, and Cooke SP3 primes on Sony FX3 for the handheld Stabileye parts the job. As a focus puller does, I am handed a camera by the DoP who says, “This is what we’re using.” And then you have to try and figure out how you’re going to make that work.

So Balazs, with whom I really enjoy working, says, “Our Sony FX3 will get the new Cooke SP3 lenses.” He wanted to do it all handheld, and we needed to make some rigs for it. My second AC Jack Carter and I sat down with Andy Mossman, the engineer at MovieTech, which is now Sunbelt, to work out how we were going to proceed. We wanted it streamlined and simple, to get everything off the camera so we could keep it lightweight, which was the whole point of having a small, handheld camera that could fit into tight areas and in vehicles.

The camera recorded onto an Atomos Shogun 7 that was also Balazs’s viewing monitor. We put as many accessories as we could in a backpack for Balazs to carry: Preston MDR4, wireless transmitter, battery, etc. We had looms with cables that came off the camera and into the backpack. So essentially, all we had on

the camera was a cage, the SP3 lens, a lens rod, lens motor and monitor.

We tested many different cages and ended up with one from Tilta. Then, Joe Marsden, the head technician at Stabileye (who used to be my loader for about six or seven years) came in, showed the Stabileye Nano to everyone, and Balazs loved it.

## **Stabileye**

Stabileye is a lightweight, miniature stabilized head that excels as a moving remote head or gimbal style rig. There are three different Stabileye models. The original Stabileye can be operated with wheels, like a remote head. The grips can move it around and the operator works the wheels. There’s a second model, which is called the Nano, and that is the one we used. Balazs operated it himself. And now they have a new one called the Pico. It can go from low mode straight into high mode. It’s an amazing bit of kit. They’re all built in Dave Freeth’s workshop in London.

## **Do you own your own equipment?**

I have Preston Hand Units with MDR4 and MDR3 and SmallHD Cine 7 monitors.

## **Do you still pull focus by eye or do you use a monitor?**

I do a bit of both. I learned with an analog ARRI FF3. When it all started to go digital and Prestons, it took me a while to shift across to monitors. I still like to be as close as I can to the camera. I glance down now and again to check that everything’s sharp, because some of the stuff that we shoot is impossible without using a monitor. Balazs is quite considerate. He shoots at T2.8 much of the time. So it gives focus pullers a break. But I find so many DoPs now like to shoot everything as wide open as possible.

## **Is your SmallHD Cine 7 attached to the Preston Hand Unit?**

I normally have the monitor on a stand, and then I have a little bracket that comes off and I can click the handset onto it. Often, I take the hand unit off the stand and I just stand by the camera and have the monitor nearby.

## **It looks like you had a Hedén lens motor working with the Preston MDR4?**

# Matt Waving on Cooke SP3



Lens (focal length)	25mm	32mm	50mm	75mm	100mm
T-Stop range	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°
Minimum marked object distance (MOD)	250 mm	350 mm	500 mm	800 mm	800 mm
	10 in	13 in	20 in	3 ft	3 ft
Angular rotation to MOD end stop	160°	160°	160°	160°	160°
Length from front of lens to lens mount (E - Mount)	98 mm	94 mm	94 mm	98 mm	124 mm
	3.85 in	3.7 in	3.7 in	3.85 in	4.88 in
Maximum front diameter	64 mm	64 mm	64 mm	64 mm	82 mm
	2.52 in	2.52 in	2.52 in	2.52 in	3.22 in
Total weight (with lens mount)	575 g	520 g	500 g	520 g	690 g
	1.27 lb	1.15 lb	1.10 lb	1.15 lb	1.52 lb
Screw-in filter	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 coverage of 43.3mm  
 Focus scales: Dual Focus non-linear scales - Imperial and Metric, scales marked from infinity to MOD.  
 Focus & Iris drive gears: 83 teeth 0.8 Metric Module.  
 Iris scales: non-linear scale, marked in whole and 1/3 stops.  
 Mounts: E-mount, RF Mount. L-Mount and M-Mount (coming early 2024) as accessories.

Yes, it works with Preston. You have to get a specific cable.

**Here's the big question: How did you calibrate Cooke SP3 lenses for wireless focus? SP3 have distance numbers, but there are no definitive focus lines on them.**

My second AC and I set the camera up with each SP3 focal length during prep. We'd just run a tape out to the lens test chart and then eye-focus the lens. We put a strip of tape on the lens and marked each lens ourselves with an ultra fine-point Sharpie. We used all the space we could in the test room to get the focus marks. And then we went outside to get the rest of the focus marks all the way to infinity.

**Which is essentially the way Cooke has marked many of their lenses in preparation to engraving the scales. Then, how do you calibrate the FIZ Hand Unit?**

I used the Preston HU3 with an MDR4. You need 10 exact focus lines to calibrate the lens. You do this for each lens. And then you can store the mapped lens calibration for each serial numbered focal length in the Hand Unit lens library. That way, when you change lenses, on the job, all you have to do is set the lens to infinity, select it from the library, and it auto calibrates.

I said to the guys at Movietech, "You want to leave our focus calibrations on then?" But people like to try and test lenses themselves during checkout. So, after we used the SP3s, returned them,



Ultra Fine Point Sharpie focus lines on chart tape.

and then got them back again, our tape with marks had been removed. But, because we had mapped the lenses in the Hand Unit, all we had to do was set them to infinity and auto calibrate from the Preston lens library.

By the way, as you can see [in the picture above], the cogs for the focus ring are long. I quite like that, because you can slide the motor back or forward which is really helpful on a small lens. Sometimes the motor is in the way, but with these long cogs, you can put it wherever you want.

# Blackmagic URSA Mini Pro 12K OLPF



There are quite a few stills cameras that don't have an OLPF and some that offer the option of both. There is certainly validity to shooting without one.

**I tried the URSA Mini Pro 12K OLPF and it's difficult to see the difference.**

You should only really notice the difference if you are in a scenario where moiré is becoming problematic and you do an A/B comparison between the two. In most cases it isn't and we certainly wanted to keep all of the nice characteristics and feel of the image sensor when adding this filter, so it shouldn't be very apparent or jarring or different in most situations.

**I saw some side-by-side tests comparing the original URSA Mini Pro 12K (no OLPF) and the new URSA Mini Pro 12K OLPF. The OLPF does reduce moiré. And yet, why does it not seem to reduce resolution? Or does it?**

The OLPF reduces resolution on a micro level but not to the extent that you should notice any drop.

**Are there additional improvements?**

It is actually a combination OLPF and IR filter. We have tweaked the IR cut on it a bit from the previous model so you should also see a slightly more aggressive IR cut which leads to cleaner response to IR and far red in the resulting image.

**Did Blackmagic ever make OLPFs for previous Pocket Cinema Cameras — or was it always 3rd parties?**

This was handled by third parties until now. Hans Hijmering at Rawlite Optoelectronics is still offering his filters for these cameras and others of ours (Studio Camera, Pocket Cinema Cameras) that don't have optical low pass filters.

**And now the new Cinema Camera 6K has an OLPF?**

The URSA Mini Pro 12K was the first to ship with an OLPF. And yes, the new Cinema Camera 6K has an OLPF as well. The larger pixel size of the 6K Full Frame sensor lends itself to needing it more, so it felt helpful when we started looking at images.

We will still approach it on a case by case basis, but for now, an OLPF has been added to those two camera models: URSA Mini Pro 12K OLPF and Cinema Camera 6K. (See next page.)

Blackmagic Design announced their new URSA Mini Pro 12K OLPF camera in April 2023. It was subsequently added to the Netflix Approved Camera List. [tinyurl.com/Netflix-approved](https://tinyurl.com/Netflix-approved)

The original URSA Mini Pro 12K camera did not have an optical low pass filter (OLPF) in front of its 12K Super 35 image sensor. Now, users have a choice. Both models are US\$ 6,385.

OLPFs are made of birefringent crystals that reduce artifacts such as moiré and aliasing, while preserving color and detail.

The Blackmagic URSA Mini Pro 12K OLPF camera has a 12,288 x 6480 12K Super 35 sensor (27.03mm x 14.25mm—Super35). That works out to 80 Megapixels per frame—which can also be helpful when extracting still images from your video.

Oversampling from 12K results in 8K and 4K images with smooth skin tones and extraordinary detail. You can shoot up to 60 fps in 12K; 160 fps in 8K 2.4:1; and 240 fps in 4K Super16. The URSA Mini Pro 12K OLPF comes with a PL mount. You can get optional user-interchangeable EF and F mounts. There are internal IR ND filters: Clear, ND.6, ND1.2 and ND1.8 (2, 4 and 6 stops). It has one UHS-II SD and two CFast 2.0 card slots, and a USB-C port that connects directly to an SSD for external recording.

*Blackmagic teams replied to some additional questions:*

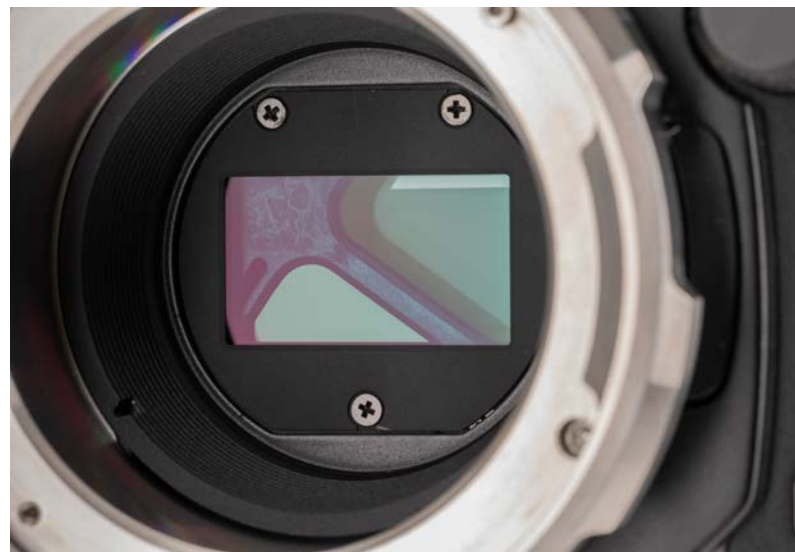
**Why did Blackmagic add an optical low pass filter to the sensor of the URSA Mini Pro 12K OLPF camera?**

We are always trying to improve the image out of our cameras so we thought it was an important thing to try. Not everyone seems to be worried about having one, but in some cases it can make a big difference.

**I thought that the higher the resolution, the less necessity there is for an OLPF?**

To some extent—but there is increasing usage of LED walls in production which all have these grid patterns that are very capable of creating problems at certain frequencies. And, modern lenses can be very sharp so we did indeed find that in some scenarios it was very beneficial to have an OLPF.

**And yet, some mirrorless cameras do not have an OLPF on their 60 megapixel image sensors?**



Blackmagic URSA Mini Pro 12K OLPF. View of PL mount, cover glass, 4-position internal filter wheel, sensor.

# Blackmagic Cinema Camera 6K



The Blackmagic Cinema Camera 6K launched on September 14, 2023.

Many new things should send fingers dialing or clicking to order Blackmagic Design's first Full Frame (36 x 24mm sensor) camera. My favorites are L-Mount and Full Frame.

- 6K (6048 x 4032).
- Full height 3:2 format.
- Optical low-pass filter (OLPF).
- L-Mount. Blackmagic is now part of the L-Mount Alliance.
- Active L-Mount supports autofocus, auto iris, lens metadata.
- Dual native ISO 400 (100-1,000) and 3,200 (1,250-25,600).
- Records full resolution up to 36 fps or 120 fps windowed.
- Records to CFexpress cards.
- Tilttable 5" LCD monitor/menu HDR 1500 nit display.
- Really good tilttable accessory Blackmagic EVF.

This is a wonderful camera with many high-end features. It is Blackmagic's first Full Frame camera. "Huzzah," as John Brawley, ASC might have said when he shot this camera's demo footage.

Not only does it have a Full Frame sensor, it also shoots the entire distance up to 24 mm picture height. It is a 3:2 sensor—no stopping at 16:9 here. This lets Full Frame anamorphic lenses take advantage of the highest resolution. The classic Super35 (24x18) format is available as a windowed area of the sensor. As with a Leica Q, you can create instant close-up versions of the shot, shooting multi-format FF and S35.

The 3:2 aspect ratio of the sensor lets you compose for almost any film format and aspect ratio, with both anamorphic and

spherical lenses. It is also helpful when you want to reframe or re-position shots in post production. You can shoot in almost any squeeze ratio Full Frame anamorphic without cropping.

Blackmagic is now a member of the L-Mount Alliance, and so, the Cinema Camera 6K has an L-Mount. Until now, Blackmagic cameras mostly had EF mounts which were not terribly conducive to attaching adapters. L-Mounts are eminently adaptable, and there are all kinds of L-Mount Adapters available: L to PL, L to LPL, L to M, L to EF, L to PV, etc. This opens up a universe of lenses to pair with the Cinema Camera 6K.

The L-Mount "aims to provide photographers and cinematographers with one unified lens mount standard. Developed by Leica Camera, the L-Mount allows photographers to combine lenses and cameras made by the Alliance partners for a new era of creative freedom."

L-Mount is a twist-lock bayonet mount, with a 20 mm flange focal depth, 51.6 mm inside diameter and lens-to-camera communication with metadata. (Sony E-mount FFD is 18 mm and ID is 46.1mm. Canon RF FFD is also 20 mm, ID is 54 mm.)

Andreas Kaufmann, Chairman of the Supervisory Board of Leica Camera AG, and founder of the L-Mount Alliance, said, "We're welcoming our new member in the L-Mount Alliance—Blackmagic Design. With the L-Mount, first shown in the Leica T (Typ 701) in 2014, photographers and cinematographers have the most versatile choices in lenses ever. Welcome to the club, dear friends at Blackmagic."

That "club" is known by the companies it keeps. It began with



# Blackmagic Cinema Camera 6K

Leica, Panasonic and SIGMA, expanded to include Leitz, DJI, Samyang and Astro Design—and now includes Blackmagic Design.

## Recording

Cinema Camera 6K records to a CFexpress card located in a slot that's accessible inside a spring-loaded hinged door on the camera right handgrip side. The camera also has a USB-C port so you can record directly to an external SSD.

## Display

At the rear of the camera body, there's a large, bright, 5-inch HDR touchscreen. This is much larger than the ones of most hybrid mirrorless cameras and it doesn't sit on top like a lollipop. On-screen overlays show status and recording parameters, histogram, focus peaking indicators, levels, frame guides and more. You can apply 3D LUTs. The monitor tilts up 90 degrees flat and down 47 degrees. At 1500 nits, this HDR display is visible in bright sunlight.

## EVF

Although Blackmagic calls it “an optional viewfinder,” it's almost essential and really good. The 1280 x 960 color OLED EVF has a built-in proximity sensor, 4 element glass diopter (-4 to +4) and attaches easily with a single screw. It's the same one used by the Pocket Cinema Camera 6K Pro and and Pocket Cinema Camera 6K G2.

## Power

The Blackmagic Cinema Camera 6K uses high capacity NP-F570 batteries. The camera also comes with an AC power supply that has a locking 12V DC power connector. The USB-C port can also be used to trickle charge the battery inside the camera. An optional battery grip attaches to the bottom of the camera, looks like a motor drive and adds all-day run-time.

## Summary

Grant Petty, Blackmagic Design CEO said, “With the new Blackmagic Cinema Camera 6K, we wanted to create the most portable camera possible for high end, large format cinematography. That's why we took the Pocket Cinema Camera platform but completely re-engineered the electronics inside around a Full Frame sensor and L-Mount.

“This means our customers get amazing large format images in an extremely portable design that also works with the accessories they already own. The L-Mount also opens up some amazing creative options like using the latest Leica lenses or using vintage lenses customers already own in an entirely new way. This is a true high end cinema camera designed for high end work and we think it gives our customers a whole new way to tell their stories.”



Blackmagic Cinema Camera 6K with SIGMA L-Mount 28-70mm F2.8 DG DN | Contemporary Zoom Lens

## Codecs Supported

- Blackmagic RAW Constant Bitrate 3:1.
- Blackmagic RAW Constant Bitrate 5:1.
- Blackmagic RAW Constant Bitrate 8:1.
- Blackmagic RAW Constant Bitrate 12:1.
- Blackmagic RAW Constant Quality Q0.
- Blackmagic RAW Constant Quality Q1.
- Blackmagic RAW Constant Quality Q3.
- Blackmagic RAW Constant Quality Q5.
- H.264 Proxy in 1920 x 1080, 8-bit 4:2:0.

## Resolutions

- 6048 x 4032 (Open Gate 3:2) to 36 fps.
- 4838 x 4032 (Anamorphic 6:5) to 36 fps.
- 6048 x 3200 (6K DCI 17:9) to 48 fps.
- 6048 x 2520 (6K 2.4:1) to 60 fps.
- 4096 x 3072 (Super 35 4:3) to 50 fps.
- 4096 x 2160 (4K DCI 17:9) to 60 fps.
- 2112 x 1184 (Super 16 16:9) to 100 fps.
- 1920 x 1080 (1080 HD 16:9) to 120 fps.

Blackmagic Cinema Camera 6K is available now for US\$ 2,595, excluding local duties and taxes.

[blackmagicdesign.com/products/blackmagiccinemacamera](https://blackmagicdesign.com/products/blackmagiccinemacamera)



Blackmagic Cinema Camera 6K with Atlas Mercury 1.5x squeeze Full Frame anamorphic lens on a SIGMA MC-31 L-Mount to PL adapter.

**The camera grabs nice .braw still frames. What app opens .braw stills for export to jpeg, png, etc?**

You can open them in Blackmagic RAW Player. To export .braw still files to other formats, go to DaVinci Resolve > File Export > Current Frame as Still (PNG, JPEG, TIFF, etc.)

**What was the [great] reason for the Full Frame sensor?**

There was certainly user demand for a Full Frame camera and the use of Full Frame glass without a crop factor. We are very excited to introduce our first camera with a Full Frame sensor, which is almost three times larger than a Super 35 sensor and has a native resolution of 6048 x 4032. With the goal to create a true high-end cinema camera, the Full Frame sensor allows users to shoot with a shallow depth of field or use anamorphic lenses uncropped, providing a true cinematic look.

We always strive for high quality with our products, and the Blackmagic Cinema Camera 6K is no different as its large Full Frame sensor allows users to work in a variety of film formats and aspect ratios. It's also about flexibility and using the full area of the sensor gives creatives a unique open gate 3:2 image, allowing for reframing shots in post. .

**I like the tiltable and sharp LCD monitor. The EVF is also good. Comments?**

We've had a few iterations of the Pocket Cinema Camera line since its introduction in 2013, and that includes form factor. When we released the most current form factor with the Pocket Cinema Camera 6K Pro, which the Blackmagic Cinema Camera 6K shares, we found users really appreciated the adjustable HDR touchscreen LCD as it was something they had been asking for. Same goes for the Pocket Cinema Camera Pro EVF, which we launched in conjunction with the Pocket Cinema Camera 6K Pro. When it comes to the Blackmagic Cinema Camera 6K, ultimately, we wanted a high-end cinematic camera that is also extremely portable. The Pocket Cinema Camera 6K Pro form

factor was a natural choice and had the added benefit of the battery grip and EVF accessories.

**Any hints on workflow with both anamorphic and spherical lenses? I am using camera with Atlas Mercury 1.5x squeeze Full Frame anamorphics.**

Choose Anamorphic desqueeze 1.6x in Open Gate 6K sensor mode. It desqueezes the image both on the monitor and in the recorded file playback. We don't currently offer a 1.5x de-squeeze option for monitoring in camera. You can currently view with 1.6x when shooting anamorphic open gate, or 2x when shooting with the 6:5 anamorphic crop mode.

Cinematographer John Brawley, ASC used Atlas Mercury 1.5x Full Frame anamorphic lenses (above) for his Blackmagic Cinema Camera 6K demo footage.

John said, "We tested with both the Mercury anamorphic lenses and we also did another version with ZEISS Supreme spherical lenses. In both tests we had a great mix of skin tones and depth to the faces. It's really nuanced and beautiful. There is so much subtlety when you look at the raw image. This was the first time I had used the Mercury anamorphic lenses and I found them to have a lot of personality and character. We also did some other tests using the Atlas 2x Orion Super35 anamorphics, but we were all genuinely blown away by the Mercury which is Full Frame with 1.5x squeeze. The Mercury lenses are so small in physical size and were just a great compliment to this camera.

"The image size of these anamorphic lenses nicely fits the sensor's 44 mm diameter image circle. These were quite fast anamorphic lenses, with a maximum aperture of T2.2. And if you get into a bit of trouble with your lighting, you can easily kick across to the second ISO range of 3200.

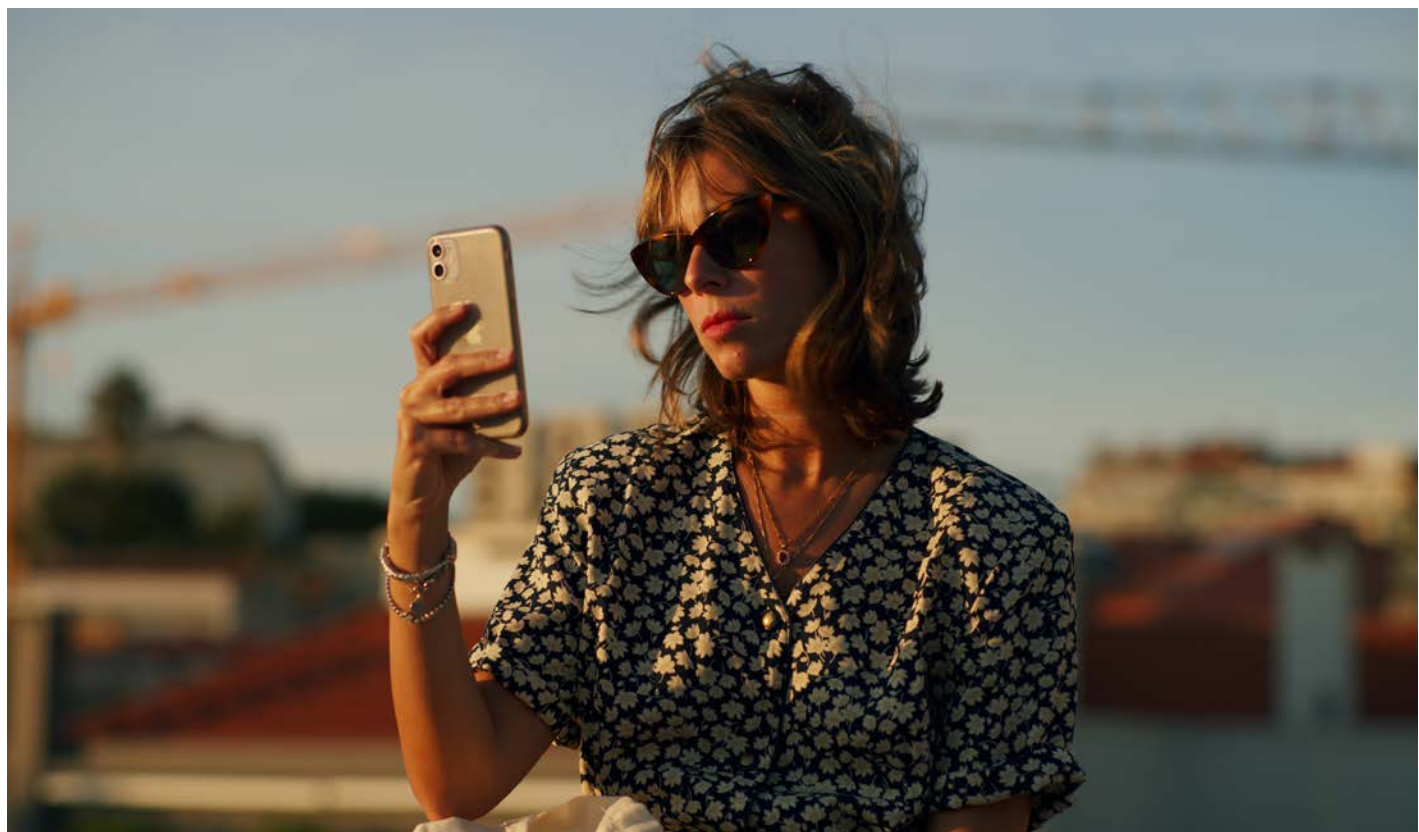
"With anamorphic you are putting more light on the sensor in a way, because you're squeezing it on using the image circle in a very efficient way. And so inherently, you do tend to feel it's a bit cleaner in both native 400 and 3200 ISO."



*Matteo Bertoli is a Director/DP based in Lisbon, Portugal. The platform is almost the same as the Pocket Cinema Camera 6K Pro, which I also like. I'm using it a lot with the my Leica R 35mm lenses. These are manual, mid-80s lenses. I use them for pretty much every project I do. This is a Full Frame L-Mount camera with an OLPF that you can take out of your backpack and I can go for an hour and twenty minutes on one battery,*

*shooting 6K Full Frame 36P, or 6K DCI at 48P. It's such a comfortable form factor with a monitor built in. The biggest difference that I see compared to previous Blackmagic Pocket cameras that there are more details in the image captured by the new 6K full frame sensor. The image also looks cleaner in the first ISO. Overall, it is fantastic camera that can be used in a lot of different situations.*

*matteobertoli.me*



# Florent Piovesan



*We last spoke to Florent Piovesan a couple of years ago after he returned from Antarctica with his Pocket Cinema Camera 6K. Florent lives in the French Alps and works around the world as a filmmaker and photographer. His company Of Two Lands produces popular YouTube content and interesting projects. [oftwolands.com](http://oftwolands.com)*

Florent discussed the Blackmagic Cinema Camera 6K: “I’m someone who has shot almost every week with the Blackmagic Pocket line regardless of which one it is. And this is different: Full Frame, new sensor, L-Mount.

Even though official specs say 13 stops of dynamic range, this feels more in every way. I was shooting in the mountains under harsh shadows, against the rocks. The sun was pretty intense and it seemed to hold up pretty well. For people who miss the internal NDs of the Pocket Cinema Camera 6K Pro, there are a few brands with L to PL Mount adapters that have slide-in slots for ND filters or Variable NDs. (*Meike MK-PLTL-C is one example.*)

With cine lenses, shooting wide open and Full Frame gives you an incredible look. It allows more flexibility in terms of very low light and shallow depth of field. We were looking at the footage and it was clear that things looked different, even in locations where I’d shot many times before.

For documentary work, I like using my Canon lenses because I know how they work and I’ve used them for 10 years or more. But having a mirrorless L-Mount allows me to just try pretty much any lens that I want using L-Mount adapters.





# Blackmagic Cinema Camera 6K L-Mount, LPL and PL Adapters



Blackmagic Cinema Camera 6K native L-Mount



SIGMA L to PL adapter



Leitz L to LPL adapter



Leitz L to LPL and LPL to PL adapter



Leitz L to LPL adapter with cover



Leitz L to LPL adapter with cover

You can tell it's an L to LPL adapter because it has a knurled ring. You can tell it's an LPL to PL adapter because the PL breech lock has "ears."

# Blackmagic Cinema Camera 6K



You can buy separate L to PL and L to LP adapters from Leitz Cine, Wooden Camera, Vocas and others.  
 Or, get an L to LPL adapter and then add an LPL to PL adapter. Leitz Cine adapters shown above and at right.

L-Mount to image plane flange focal depth (FFD) is much shorter than EF Mount.



Cinema Camera 6K — L-Mount (20 mm FFD)



Pocket Cinema Camera 6K Pro — EF Mount (44 mm FFD)



Wait, wait—can you use your vast inventory of Canon EF Mount lenses on the L-Mount Cinema Camera 6K?  
 Yes, yes. SIGMA has an MC-21 L-Mount to EF adapter with electronic pass-through that enables auto focus and auto exposure on most SIGMA EF lenses and some Canon lenses. Costs about \$224.



# Cinema Camera 6K with Atlas Mercury 1.5x Full Frame Anamorphics



NYC Skyline. Atlas Mercury 36mm wide open at T2.2. Cinema Camera 6K at 3200 ISO, 24fps, 180° shutter.



To benefit from full-height, highest resolution with 1.5x squeeze Atlas Mercury Full Frame Anamorphic PL primes, go for 6K Open Gate 6048 x 4032. (6:5 Anamorphic assumes 2x squeeze and a Super35 image that is windowed on the sensor at lower rez 4832 x 4032.) To view the image

desqueezed 1.6x in the EVF or Monitor (close enough for 1.5x), go to the MONITOR menu page and select 1.6x. This will also be recorded in the file metadata. Note: 1.5x or 1.8x (Cooke Anamorphic FF) squeezes are not yet available. Presumably future firmware updates could add these.





# Blackmagic Cinema Camera 6K



# BCC 6K Tilttable EVF and Monitor



## 5" Monitor

The Cinema Camera 6K has a big 5-inch, 1500 nit bright, touch-screen HDR monitor. It tilts up 90 degrees and down 47 degrees and doesn't fly like a square-rigger sail on top of the camera.

## Viewfinder

The accessory EVF is an essential optional accessory. For \$495 you get a 1280 x 960 OLED display that tilts 70 degrees up from horizontal. All mirrorless cameras should have this. Its 4 element glass diopter adjusts from -4 to +4.

# L-Mount Lenses

SIGMA DG DN | Contemporary I series lenses pair nicely with the the L-Mount Cinema Camera 6K. The lenses are tiny, and lightweight. Two of them can fit in the palm of your hand. Full metal housings and barrels are beautifully crafted, with smooth mechanics and superb optics. Focus and iris work in both manual and auto modes.

For long lens work, SIGMA DG DN Sports lenses in L-Mount are lightweight and versatile, especially the 60-600mm F4.5-6.3 DG DN OS | Sports.

For wider-open F1.4 apertures, look into SIGMA DG DN | Art L-Mount lenses for the L-Mount Cinema Camera 6K.

## SIGMA DG DN | Contemporary Series L-Mount Lenses on BCC 6K Camera



## SIGMA DG DN | Contemporary Primes L-Mount



Focal Length (mm)	17mm	20mm	24mm	24mm	35mm	45mm	50mm	65mm	90mm
Maximum Aperture	F4	F2	F2	F3.5	F2	F2.8	F2	F2	F2.8
Minimum Aperture	F22	F22	F22	F22	F22	F22	F22	F22	F22
Close Focus (in)	4.8 in	8.7 in	9.7 in	4.3 in	10.6 in	9.4 in	17.8 in	21.7 in	19.7 in
Close Focus (cm)	12 cm	22 cm	24.5 cm	10.8 cm	27 cm	24 cm	45 cm	55 cm	50 cm
Magnification Ratio	1:3.6	1:6.7	1:6.7	1:2.0	1:5.7	1:4.0	1:6.9	1:6.8	1:5.0
Front Filter Size Ø	55 mm	62 mm	62 mm	55 mm	58 mm	55 mm	58mm	62 mm	55 mm
Length with L-Mount	1.9 in / 48.8 mm	2.9 in / 72.4 mm	2.8 in / 72 mm	1.9 in / 48.8 mm	2.6 in / 65.4 mm	1.8 in / 46.2 mm	2.7 in / 68.0 mm	2.9 in / 74.7 mm	2.4 in / 59.7 mm
Weight with L-Mount	7.9 oz / 225 g	13.1 oz / 370 g	12.9 oz / 365 g	7.9 oz / 225 g	11.5 oz / 325 g	7.6 oz / 215 g	12.3 oz / 350 g	14.3 oz / 405 g	10.4 oz / 295 g
Elements	9 in 8 groups	13 in 11 groups	13 in 11 groups	10 in 8 groups	10 in 9 groups	8 in 7 groups	11 in 9 groups	12 in 9 groups	11 in 10 groups
Iris Blades (rounded)	7	9	9	7	9	7	9	9	9

“DG” lenses cover Full Frame. “DN” denotes mirrorless camera format. SIGMA “Contemporary” lenses (above) are compact and lightweight, with high performance. They come in L-Mount and E-Mount. SIGMA “Art” lenses (below) are sophisticated, fast, and have superb optical performance. SIGMA “Sports” lenses (see next page) are weatherproof, rugged zooms that cover longer focal lengths.

## SIGMA DG DN | Art Primes and Zooms in L-Mount



Focal Length (mm)	14mm	20mm	24mm	35mm	50mm	85mm	105mm	14-24mm	24-70mm
Maximum Aperture	F1.4	F1.4	F1.4	F1.4	F1.4	F1.4	F2.8	F2.8	F2.8
Minimum Aperture	F16	F16	F16	F16	F16	F16	F22	F22	F22
Close Focus (in)	11.9	9.1	9.9	11.8	17.8	33.5	11.6	11	7.1 - 15.0
Close Focus (cm)	30	23	25	30	45	85	29.5	28	18-38
Magnification Ratio	1:11.9	1:6.1	1:7.1	1:5.4	1:6.8	1:8.4	1:1	1:7.3	Wide 1:2.9 Tele 1:4.5
Front Filter Size Ø	---	82 mm	72 mm	67 mm	72 mm	77 mm	62 mm	---	82 mm
Length with L-Mount	5.9 in / 149.9 mm	4.4 in / 111.2 mm	3.8 in / 95.5 mm	4.3 in / 109.5 mm	4.3 in / 109.5 mm	3.7 in / 94.1 mm	5.3 in / 133.6 mm	5.2 in / 131.0 mm	4.8 in / 122.9 mm
Weight with L-Mount	41.3 oz / 1,170 g	22.2 oz / 630 g	18.3 oz / 520 g	22.8 oz / 645 g	23.6 oz / 670 g	22.2 oz / 630 g	25.2 oz / 715 g	28.0 oz / 795 g	29.5 oz / 835 g
Elements	19 in 15 groups	17 in 15 groups	17 in 14 groups	15 in 11 groups	14 in 11 groups	15 in 11 groups	17 in 12 groups	18 in 13 groups	19 in 15 groups
Iris Blades (rounded)	11	11	11	11	11	11	9	11	11

# SIGMA Lenses in 2023



Photo courtesy of SIGMA

SIGMA Global's Headquarters and Design Center (opposite page) in Kawasaki, Kanagawa is an hour's train or taxi ride from Central Station, Tokyo. It was recently completed by Kajima Design Studio. You enter a space reminiscent of a modern art museum, with pale wood, Italian furniture, windows opening onto landscaped gardens and a library that rivals the old Rizzoli bookstore in New York for its massive collection of art and photography books. Hundreds of optical and mechanical designers and planners work here, alongside the sales, logistics and operational teams in the open plan offices.

It was a busy year for SIGMA, releasing 12 new lenses in 2023 (above). Actually 13: not shown, a new 65mm High Speed Cine Prime.

*top row, l-r:*

- 17mm F4 DG DN | Contemporary — Full Frame in E-mount or L-Mount.
- 10-18mm F2.8 DC DN | Contemporary — APS-C in E-mount, L-Mount, or X Mount.
- 56mm F1.4 DC DN | Contemporary — APS-C in X Mount, Z Mount, or E-mount.
- 100-400mm F5-6.3 DG DN OS | Contemporary — APS-C in E-mount, L-Mount, or X Mount.

*middle row:*

- 23mm F1.4 DC DN | Contemporary — APS-C in X Mount, Z Mount; previously released in MFT, L-Mount and E-mount.
- 60-600mm F4.5-6.3 DG DN OS | Sports — Full Frame in E-mount or L-Mount.
- 50mm F2 DG DN | Contemporary — Full Frame in E-mount or L-Mount.

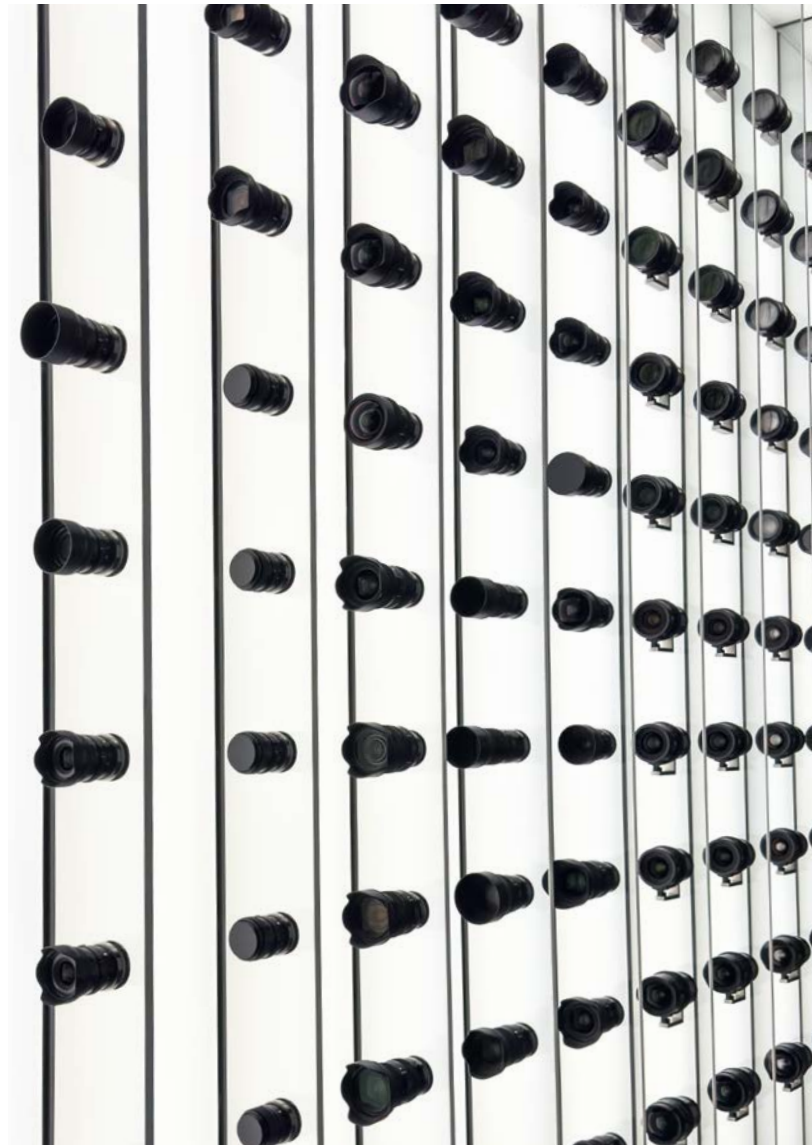
*bottom row:*

- 70-200mm F2.8 DG DN OS | Sports — Full Frame in E-mount or L-Mount, declackable iris.
- 30 F1.4 DC DN | Contemporary — APS-C in X Mount, Z Mount; previously released in MFT, L-Mount and E-mount.
- 14mm F1.4 DG DN | Art — Full Frame in E-mount or L-Mount, declackable iris.
- 16mm F1.4 DC DN | Contemporary — APS-C in X Mount, Z Mount; previously released in MFT, L-Mount and E-mount.
- 50mm F1.4 DG DN | Art — Full Frame in E-mount or L-Mount, declackable iris.

# SIGMA Headquarters in Kawasaki, Japan



Above: open work space. Below, CEO Kazuto Yamaki in SIGMA's library. Below right: display near lobby of recent lenses, as if in a modern wine cellar.



# Canon CN-R RF Mount Cine Lenses



Canon announced RF-mount Cinema Prime Lenses on September 12, 2023. Focus and iris rings have cinema-style 0.8M gears and RF mount communication. Canon said, “The first set of seven RF Mount Cinema Prime Lenses is only the beginning. Canon plans to swiftly expand the lineup of RF Mount production equipment to meet the needs of professional content for movies, TV, and commercials.”

That lineup expanded less than two months later, on November 2, 2023 with the introduction of the Canon RF24-105mm F2.8 L IS USM Z zoom lens. While the seven CN-R primes have traditional mechanical focus and iris mechanisms, the 24-105 zoom is a novel hybrid of electronic and mechanical lens control.

But first, a quick look at the Canon CN-R lenses: 14mm T3.1, 20mm T1.5, 24mm T1.5, 35mm T1.5, 50mm T1.3, 85mm T1.3, and 135mm T2.2. Paired with the two existing RF Mount Canon Cinema Cameras, EOS C70 and EOS R5 C, these lenses will en-

able RF mount protocol transmission.

As with Canon CN-E (EF-Mount) Cinema Prime Lenses, this includes control of magnification, chromatic aberration correction, peripheral light correction and dual-pixel focus guide via camera body operations. In addition, the new lenses also correct lens distortion when paired with a compatible Canon camera.

The CN-R lenses cover Full Frame large-format sensors (and S35/APS-C, of course), have 11-bladed irises, and maintain consistent Cinema EOS color balance throughout.

They have a pleasing amount of ring torque. Focus and iris gear rings are in the same positions relative to the mount. Front diameter and the lens barrel rotation angles are also the same. The red ribbed surface near the mount provides a comfortable grip when changing lenses. You no longer have to worry about gripping the iris ring by mistake when attaching and detaching lenses.

# Canon RF Mount Cine Lenses



Focal Length		14 mm	20 mm	24 mm	35 mm	50 mm	85 mm	135 mm
Maximum T-Stop		T 3.1	T 1.5	T 1.5	T 1.5	T 1.3	T 1.3	T 2.2
Mount		RF mount						
Close Focus (MOD) - meters		0.20 m	0.3 m	0.3 m	0.3 m	0.45 m	0.95 m	1.0 m
Close Focus (MOD) - feet & inches		8"	12"	12"	12"	18"	3'2"	3'4"
Close Focus Actual Subject Area	1.5:1 Full Frame	24.8 × 16.5 cm	33.8 × 22.5 cm	28.8 × 19.2 cm	20.1 × 13.4 cm	24.9 × 16.6 cm	34.3 × 22.9 cm	21.1 × 14.1 cm
	1.78:1 Super35	16.9 × 9.5 cm	23.1 × 13.0 cm	19.7 × 11.0 cm	13.7 × 7.7 cm	17.0 × 9.5 cm	23.4 × 13.1 cm	14.4 × 8.1 cm
Overall Length		118 mm	125.5 mm	125.5 mm	125.5 mm	125.5 mm	125.5 mm	139.6 mm
Maximum Diameter (approx)		118.4 mm	118.4 mm	118.4 mm	118.4 mm	118.4 mm	118.4 mm	118.4 mm
Weight (approx)		1.3 kg	1.4 kg	1.3 kg	1.3 kg	1.2 kg	1.5 kg	1.5 kg
Front Filter Thread Ø		–	105 mm	105 mm	105 mm	105 mm	105 mm	105 mm
Front Diameter		114 mm						
Number of Iris Blades		11						
Lens Gear Pitch (Module)		0.8						
Focus Gear Rotation		300°						
Iris Barrel Rotation		36°						

- Close Focus for Full Frame Sensor Area of 36.0 x 24.0 mm is calculated for 1.5:1 Aspect Ratio.
- Close Focus for Super35 Sensor Area of 24.6 x 13.8 mm is calculated for 1.78:1 Aspect Ratio.
- Focus and Iris Scales on both sides of Lens. Focus Rings available in Imperial or Metric.
- Camera Right Side of lens has phosphorescent Focus and Iris Marks for improved visibility at night and in dark locations.
- Deliveries are expected between January and April 2024, with the 24, 35, 50 and 85 mm CN-R lenses arriving in January. The 14, 20 and 24 mm CN-R lenses will have a retail price of \$4,220. The 35, 50, 85 and 135 mm will be \$3,950.

# Canon RF24-105mm F2.8 L IS USM Z

The Canon RF24-105mm F2.8 L IS USM Z steps up the game for a fast, sharp, wide-to-portrait, auto/manual, hybrid stills/cine zoom lens. This is the third Canon 24-105 in RF mount. Previous models lack linear-marked iris rings and are slower: one is F4 and another ramps from F4 to F7.1.

The RF24-70 F2.8 and RF28-70 F2 have similar excellent optical characteristics as the 24-105 F2.8, but they also lack marked iris rings and don't zoom in as tight.

Reaching out from 24mm to a popular portrait focal length of 105mm, the Canon RF24-105mm F2.8 L IS USM Z is a versatile, high quality lens for stills or cine. It is rugged, dust-protected and water-resistant. The overall length remains constant when zooming or focusing: the front mercifully does not trombone in and out. Flip a switch on the barrel to go from autofocus to silky smooth manual focus without any signs of breathing, thanks to the lens and EOS-R cameras' digital focus breathing compensation.

Optical image stabilization can be turned on or off. The zoom is almost parfocal, maintaining the same manual focus position almost throughout the entire range (except for minor corrections mid-range). Switch to Autofocus and the Nano USM motors hold

focus consistently throughout. It's almost a macro lens: you can focus to 1.5 ft (0.45 m)—a magnification ratio of 0.29x.

There are 4 lens rings, typical for some Canon RF lenses. Starting from the rear, you'll see iris, zoom, focus and a programmable control ring. The geared, linear iris is clearly marked in 1/3 stop increments from f/2.8 to f/22, with an "A" for Auto Iris protected by a mechanical slide switch. Actually, having an iris ring is a first for Canon RF lenses.

The zoom barrel is also clearly marked in focal lengths. The focus ring doesn't have any marks, but helpful arrows in the camera's viewfinder guide you to a sharp manual destination.

Optional Power Zoom Controls for the RF24-105mm F2.8 lens will be available in Spring 2024. They attach and detach easily with thumbscrews. The PZ-E2B has a 20-pin connector for a servo zoom handgrip, remote zoom or remote focus control.

Watch this space—foreshadowing a new era of lighter, smaller, faster, thriftier, focus and exposure by wire (and fingers) mirrorless mount cine lenses. Compare this Full Frame 24-105 with an analog-era venerable vintage 18-100 T3 35mm zoom which has a 150 mm front diameter, weights 13.75 lb, and is 14 inches long.



## Canon RF24-105mm F2.8 L IS USM Z Specs

- Focal Lengths: 24-105 mm. F2.8-22
- Lens Mount: RF Mount.
- Minimum Focus Distance: 17.7" (0.45 m).
- Maximum Magnification 0.08x (at 24 mm), 0.29x (at 105 mm).
- Lens Construction: 23 elements in 18 groups.
- Special Elements: 4 UD elements, 3 Aspheric elements.
- Lens Coating: Canon SSC (Super Spectra Coating), ASC (Air Sphere Coating), Fluorine Coating (resists fingerprints).
- Aperture Blades: 11
- Image Stabilization: equivalent to 5.5 stops correction with Internal Optical Image Stabilization and 8 stops correction with EOS R series camera in-body coordinated image stabilization.
- Focus Drive System: Two Canon Nano USM focus motors with full-time manual focusing capability.
- Front Control Ring: has click stops that can be removed by a Canon service facility at additional charge for silent operation.
- Focus Ring: Electronic with AF/MF switch for full-time Manual focus; no end-stops on ring rotation angle.
- Auto / Manual Aperture with linear-marked iris ring: f/2.8 - f/22. Firmware updates for compatible cameras may be necessary.
- Front Filter Diameter: 82 mm.
- Dimensions—Maximum Diameter x Length: Approx. 3.5 x x 7.8 in. (88.5 x 199 mm).
- Weight, Approx. 2.9 lb. (1330 g).
- \$2,999.00, available now.
- Power Zoom Controls will be available in Spring 2024 with an estimated retail price of \$999.99 for PZ-E2 and \$1,299.00 for the PZ-E2B version which has a 20-pin connector.



# Canon RF24-105mm F2.8 L IS USM Z



Canon RF24-105mm F2.8 L IS USM Z.



With sunshade and detachable lens support bracket.



Right side with Power Zoom Control



Top view



Power Zoom Control attaches with thumbscrews.



View showing zoom drive gear and Servo/Manual switch.



If you have an EOS R5 C, the new Canon RF24-105mm F2.8 L IS USM Z may become your go-to zoom lens.

# Canon EOS R5 C



Shutter closes when camera is off—helpful when changing lenses.



Shutter opens to reveal sensor when the EOS R5 C is turned on.

As mentioned on the previous page, if Canon's RF24-105mm F2.8 L IS USM Z is your go-to zoom lens, then a Canon EOS R5 C may be your do-everything camera. The R5 C is a Full-Frame mirrorless, RF mount, 8K, 45-Megapixel hybrid video and still camera.

From the front, the R5 C looks very similar to the R5, which launched in 2020. Both are almost similar in size: R5 C dimensions are 5.6 x 4.0 x 4.4" and R5 is 5.45 x 3.84 x 3.46". The R5 C has an active cooling system and fan inside to keep the camera cool during long takes. The extra depth of the camera also provides room for additional ports and controls. Function buttons are numbered 1 through 13, and nicely labeled with text.

There's a three-way main switch on the top left side to select Photo or Video mode and OFF. EOS R5 C is Canon's first camera to record internal 8K (8192 x 4320) 12-bit Cinema RAW Light up to 60 fps. It is also the lightest Cinema EOS camera at 1.5 lb / 680g (body only).

There are two internal slots: one CFexpress and one SD. You can record internal Cinema RAW Light to the CFexpress card and,

simultaneously, a proxy or XF-AVC file to the SD card (V90 300 MB/s recommended). It also manages relay recording from one card to the other.

There are 3 choices of Cinema RAW Light in the R5 C (and C70) — RAW HQ (high quality), RAW ST (standard quality), and RAW LT (light recording). All three modes are 12-bit at every frame rate.

(Note that the C200/300/500 series have just one variety of Cinema RAW Light, with bitrate depending on sensor mode and fps.)

- FF 8K RAW Light ST 12-bit up to 30 fps at 2.0 Gbps data rate.
- RAW LT to 60 fps at 2.6 Gbps. But not RAW HQ.
- 4K 120 fps FF uncropped and 4:2:2 10-bit XF-AVC and MP4.
- Timecode mini jack (DIN 1.0/2.3. Canare recommended).
- HDMI RAW Output.
- Atomos Ninja V+ will record ProRes RAW from the R5 C via HDMI up to 8K 30 fps.
- 3.2-inch variable-angle LCD monitor and 5.76 million-dot viewfinder.



Camera right side with one CFexpress and one SD UHS-II slot



Camera left side ports: HDMI Out, USB-C, Timecode, Mic, Headphones

# Canon RF24-105mm F2.8 L IS USM Z vs RF24-70mm F2.8 L IS USM



Canon RF24-105mm F2.8 L IS USM Z on EOS R5 C



RF24-70mm F2.8 L IS USM zoom lens: on EOS R5 C



The Lens Control Ring has a diamond pattern and can be programmed from the camera's menu. I like to assign ISO adjustment to this ring.

Video mode display on rear 3.2-inch variable-angle LCD.

Photo mode display on rear 3.2-inch variable-angle LCD.

# ARRI 360 EVO Stabilized Remote System



ARRI 360 EVO underslung.



Top-mounted.



60 EVO Control Panel and GUI.



Curt O. Schaller at the wheels.

ARRI has launched the 360 EVO, the third iteration of their 3-axis stabilized remote heads. It has 360-degree rotation of the roll axis (and the pan axis), heavier duty construction (payloads up to 30 kg), and more remote control possibilities. It has a new, logical graphical user interface (GUI). Many accessories can be shared with the ARRI TRINITY 2.

Brief detour: the first remote head was SRH-3. It could only pan 520 degrees because cables restricted unrestricted movement. And it could only roll 90 degrees.

The second generation SRH-360 had unlimited panning capability thanks to slip rings, but roll remained the same at 90 degrees.

Now, the third generation 360 EVO adds additional roll — at least two full rotations. Curt O. Schaller, ARRI Product Manager of Camera Stabilizer Systems, explains: “The roll axis of the 360 EVO is fundamentally unlimited. The potential number of 360-degree rotations in the same direction is only constrained by the length of the Roll Ring Main Cable and the length of the camera setup. The standard Roll Ring Main Cable supplied with the 360 EVO allows for at least two full rotations. With a shorter camera setup, up to three full rotations are possible. Additionally, an extra-long Roll Ring Main Cable will be available as an accessory. With appropriate cable management, this can enable up to 5 – 6 full rotations.”

The 360 EVO runs similar software as TRINITY 2, with the same GUI displayed on its touchscreen remote control panel. They also share cables, brackets and SAM plates for mounting cameras, and

can be controlled by the same wheels and heads: e.g. ARRI Digital Remote Wheels DRW-1 and new Digital Encoder Head DEH-2.

You can even control the 360 EVO over Internet.

With its remote system integration, 360-degree roll-axis rotation, payloads up to 30 kg, compact size, versatile connectivity, high-capacity 12/24 V camera power supply, and rock-steady stabilization even at long focal lengths, the 360 EVO offers an unparalleled price-performance ratio that makes it a budget-friendly product for the cine and broadcast markets.

ARRI is also releasing a dual-channel fiber optic version of the 360 EVO for events, multi camera and live broadcast.

First customer shipments of the 360 EVO and 360 EVO Fiber will begin in Q1 2024. ARRI will also begin offering upgrades of existing SRH-360 and SRH-3 systems at that time.

Curt Schaller said, “What makes the 360 EVO different from the remote heads we made before is that it is a bit more beefy from the structure side to make sure the head is not flexing, which allows you to drive faster. Because, people like Nino Pansini were using the EVO remote head for quite some time. They do extremely fast driving sequence, as in Ford v Ferrari. And the only question people like him, the camera operators, ask is, ‘Yes, but can I drive faster with your next head?’” It reminds me of Henry Ford who said, ‘When you ask people, what they need, the reply is they need a faster horse.’”

More info at [arri.com/360-evo](http://arri.com/360-evo)

# Nanlux Wired Controller



Picture this. You're lighting a location with a single-source Nanlux Evoke 2400B LED fixture and its power supply perched 25 feet high in a cherry picker, coming through the window.

Wouldn't a simple, inexpensive wired lighting controller dangling down be nice?

Nanlux has introduced WC-LM6P-C1 Wired Controllers for their Evoke (COB—chip on board—"spotlight") and Dyno (Panel) LED fixtures. The WC-LM6P-C1 connects to the fixture with a 6-pin connector and an 8m (26') cable.

The Controller duplicates the controls and read-out at the rear of the fixture—with a 3.2" display and 3 knobs. The left knob adjusts brightness. The middle knob adjusts color temperature (CCT). The right knob adjusts green/magenta offsets.

The WC-LM6P-C1 Wired Controller costs a mere US \$225 plus tax / £187.50 plus VAT. [nanlux.com](http://nanlux.com)



# Nanlux Lightweight Fresnel FL-28



Nanlux FL-28 on Evoke 900C

The Nanlux FL-28 is a new, lighter and smaller Fresnel accessory for Nanlux Evoke 900 and 1200 series fixtures.

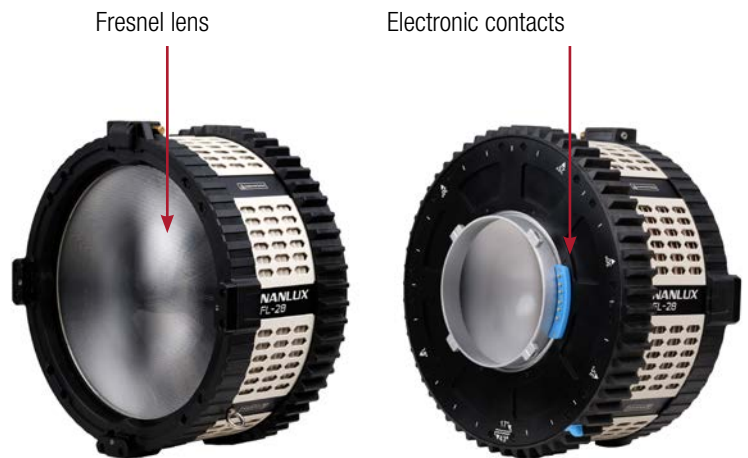
You probably have, or know, the Nanlux FL-35 Fresnel. With a glass lens that lets you focus the beam from 11° spot to 45° flood, it is not petite. It weighs about 20 lb. / 9 kg. This is great in studios and on big jobs with big crews.

The new Nanlux FL-28 Fresnel has a composite lens and weighs 8.5 lb / 3.9 kg. It focuses from 17° to 43°. So, at half the weight and a smaller size, it is well suited to life on location and places calling out for faster setups, lighter rigging or smaller trucks.

The Nanlux FL-28 Fresnel on an Evoke 1200B can put out 50,330 lux at 3m (5600K, 17° beam angle). On an Evoke 900C, you'll get 38,580 lux at 3m (5600K, 17° beam angle).

By the way, an Evoke 2400 fixture automatically dims to 50% thanks to the electronic contacts on the FL-28 mount to prevent overheating.

FL-28 will retail for US \$690 plus tax / approx. £543 plus VAT in February 2024.



Nanlux FL-28

# DJI 8K Inspire 3



Clearly it's an 8K world for high-end DJI camera systems—offering more ways of moving images from air, land and sea—images that intercut seamlessly with other cinema cameras.

April 2023. The DJI Inspire 3 took off with a Full Frame (36x24mm) 8K sensor camera (8192×4320 cine / 8192×5456 stills) with 14+ stops of dynamic range and many new features.

Looking back: DJI's Inspire 1 came in November 2014 with a 4K, 12.4 megapixel, 1/2.3" sensor. Inspire 2 arrived in November 2016 with 5.2K video from a 20 megapixel, 1" sensor with about 12 stops of dynamic range.

Ferdinand Wolf is Senior Product Manager and Creative Director at DJI. He is also a professional drone pilot and continues to work on location, getting insight and feedback about the DJI equipment and technology that he uses.

Ferdi said, "Inspire 3 is a collection of all the latest DJI technology. It has our latest transmission systems, flight controllers, color science, and camera advancements from the Ronin 4D. It combines some features from our FPV. And there's completely new technology, like the camera sensor."



DL lens mount and 8K sensor of DJI Inspire 3 with X9-8K Air camera



DJI 18mm F2.8 DL LS ASPH lens mounted on Inspire 3 X9-8K Air camera

# DJI 8K Ronin 4D 8K



DJI Zenmuse X9 8K on Ronin 4D showing DL lens mount and sensor.



DJI Zenmuse X9 8K on Ronin 4D with DJI 18mm F2.8 DL LS ASPH lens.

December 14, 2023. DJI introduced the Ronin 4D-8K, the higher resolution iteration of the Ronin 4D 6K cinema camera launched in October 2021. An 8K camera was announced at that time, but it landed 8 months after the Inspire 3 8K.

DJI Ronin 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, Auto-focus and Automated Manual Focus with a small lens motor and a LiDAR range finder.

The Flex system lets you separate the camera head from the body.

The Ronin 4D-8K combo kit includes a Ronin 4D Body, Zenmuse X9-8K Gimbal Camera, DJI DL PZ 17-28mm T3.0 ASPH lens, PROSSD 1TB media stick, PROSSD Mount, two Hand Grips, Top Handle, High-Bright Wireless Remote Monitor (NP batteries not included), one TB50 Battery, LiDAR Range Finder and a DJI Ronin 4D RAW License Key — retailing for \$12,838.

You can also upgrade an existing Ronin 4D 6K with the X9-8K Gimbal Camera, available as a standalone option at \$3,599.

## DJI Muses: Ronin 4D 6K, 4D 8K and Inspire 3 8K



DJI Zenmuse X9 6K for Ronin 4D



DJI Zenmuse X9 8K for Ronin 4D



DJI X9-8K Air for Inspire 3

# DJI Ronin 4D 8K System



DJI DL PZ 17-28 mm  
T3.0 ASPH Lens  
pairs nicely with 4D 8K



If you upgrade a Ronin 4D 6K with the new DJI Zenmuse X9 8K camera, it comes in a box like this.

DJI has cool Rimowa-style composite cases for Ronin 4D 8K (above) and Inspire 3 (below) — with everything you need packed securely inside.

# DJI Inspire 3 8K System





# DJI 8K: Inspire 3



DJI Inspire 3 is a high-end professional cinematography quadcopter with an integral 8K Full-Frame camera. As Claudio Miranda, ASC (above left) said, “Inspire 3 brings new possibilities for new shots that we haven’t been able to do before.”

Ferdinand Wolf, DJI Product Manager and professional pilot (above right) said, “The pilot can control the drone, moving it along invisible dolly tracks. The gimbal operator controls the camera. That’s important on film sets because you often have to repeat shots. With new Repeatable Routes and 3D Dolly modes, you eliminate variables when doing take after take. The flight path is always the same, and that makes filmmaking more efficient. You can set extremely complex routes that would not have been possible with manual piloting and fly them 20 times or more, without worries. RTK (Real-Time Kinematic) centimeter-level

positioning gives you even more accurate routing.”

Certainly, one person can fly and film with Inspire 3. But, flying solo was quickly revealed to be an Icarus hubris hopeless endeavor on complex shots, not dissimilar from an eyebrow-raising hyphenate of trying to be a simultaneous synchronized camera operator-dolly grip. And so, summoning inner Miranda-Wolf, Fauer-Breareley piloted an Inspire 3 along a narrow boardwalk over the Munn Point Nature Preserve of Southampton, NY. Marlena Fauer patiently ran the same course over and over, fulfilling Ferdi’s forecast of multiple takes.

Inspire 3 can achieve a maximum horizontal speed of 94 kmh / 58 mph. Maximum height above sea level is 7,000 m with high altitude propellers. We tempted neither.



# DJI Inspire 3



# DJI Inspire 3

## Dual Controllers



Pilot's Controller with FPV view displayed full screen and CAMERA view in window at lower right. Waypoints displayed in window at lower left.



Camera Operator's Controller with CAMERA view displayed full screen and FPV view in window at lower right.



Inspire 3 flying with landing gear down lets you tilt the camera up 80 degrees without seeing the rotors. DJI D-RTK2 Mobile Station at right.



Ferdi Wolf explained, “There are two modes: arms up or down. On our previous generations, arms down was basically for take-off and landing. With the arms retracted to the up position, you had 360 degrees of camera rotation (panning).

“With the Inspire 3, we rethought the transformation mechanism and use the downward position to realize an 80 degree upward tilt of the camera. Now, you can tilt from minus 90 to plus 80 degrees, without any obstruction. So you basically have a new function for the arms-down position. That’s quite novel because on a heavy-lifter drone, you can usually top-mount or bottom-mount the camera. But if you top-mount, you can only look up or level. And if you bottom-mount, you can look down or level.

“Now, with Inspire 3, you have a 170 degree range of tilt. That’s something you couldn’t do before. And you don’t have to decide whether to top- or bottom-mount the camera. You now have the flexibility of both.”



With rotors up in normal flight position, you can pan the camera 360 degrees without seeing the rotors.

# DJI Inspire 3

## Full-Frame 8K Image Sensor

- 36 x 24mm 44.7 MP CMOS Sensor.
- Dynamic range: 14+ stops.
- Dual native ISO 800/4000.
- Above 30 fps: 320/1600 ISO.

### Some Cine Recording Modes:

#### CinemaDNG

- 8192 x 4320 to 25 fps.
- 4096 x 2160 to 100 fps.
- 5568 x 2952 to 50 fps.

#### ProRes RAW

- 8192 x 4320 to 60.00 fps.
- 8192 x 3424 to 75 fps.
- 4096 x 2160 to 120 fps.
- 5568 x 2952 to 60.00 fps.

#### ProRes 422 HQ

- 8192 x 4320 to 30.00 fps.
- 4096 x 2160 to 120 fps.

#### H.264

- 4096 x 2160 to 120 fps.

#### Stills:

8192 x 5456 DNG / JPEG.

## DJI RC Plus

DJI RC Plus controllers have a 7-inch, bright 1,200-nit display, customizable buttons and dials, and HDMI output. Its built-in battery has a run-time of approximately 3.3 hours, extendable to 6 hours with an external WB37 battery.

The DJI Pilot 2 app lets you work with two controllers simultaneously: one for the pilot and the other for the camera operator.

## Spotlight Pro

Spotlight Pro locks on people, vehicles and boats. In Follow mode, the aircraft and gimbal camera orient in the same direction and remain locked on the subject. You can get circling shots without manual framing adjustments. In Free mode, the camera locks onto the subject independent of the aircraft's orientation.

## Omnidirectional Sensing System

Inspire 3 has 9 vision sensors to detect obstacles. A fisheye camera is located in each of the carbon fiber landing arms.

## Obstacle Sensing

Independently enable or disable horizontal, upward and downward obstacle sensing—and manually set an obstacle alert range.



# DJI Ronin 4D 8K



Ronin 4D 8K with separate High Bright Monitor with controller handgrips attached. In this configuration, the Ronin 4D 8K can function as a nimble, portable remote head and camera.



## Full-Frame 8K Image Sensor

- 36 x 24mm 44.7 MP CMOS Sensor.
- Dynamic range: 14+ stops.
- Dual native ISO 320/1600 and 800/4000 expanded.
- Built-in ND filters (9 stops): Clear, ND0.3, 0.6, 0.9, 1.2, 1.5, 1.8, 2.1, 2.4, 2.7.

## Dimensions and Weight

- Overall dimensions: 309×290×277 mm.
- Overall weight: approx 4.67 kg (without lens).
- Lens mount: DX Mount accepts DL, L, M, E and PL mounts. (DJI is a member of the L-Mount Alliance.)

## Recording Formats

- Apple ProRes RAW HQ/Apple ProRes RAW.
- Apple ProRes 4444 XQ.
- Apple ProRes 422 HQ/Apple ProRes 422 LT.
- H.264 (4:2:0 10-bit).

### Some Cine Recording Modes:

#### ProRes RAW

- 8192 x 4320 (17:9) Full Frame up to 60 fps.
- 8192 x 3424 (2.39:1) Full Frame up to 75 fps.
- 4096 x 2160 Full Frame up to 120 fps.
- 5568 x 2952 Super35 up to 60 fps.

#### ProRes 422 HQ

- 8192 x 4320 Full Frame up to 30 fps.
- 4096 x 2160 Full Frame up to 120 fps.
- 4096 x 2160 Super35 up to 60 fps.

#### H.264

- 4096 x 2160 Full Frame up to 120 fps.
- 4096 x 2160 Super35 up to 60 fps.

For more information about Ronin 4D 6K, see *FDTimes* Nov 2021 Issue 111, pages 1-27.



Ronin 4D 8K with controller handgrips attached.



## Jon: What have you been working on with the Ronin 4D 8K?

Chayse: DJI contacted me about doing something with their new Ronin 4D-8K. I remember them showing me an early prototype version a long time ago when they first started developing it.

I wanted to go to a place where I hadn't been to for a long time, which was Mexico City. The team included some of my closest collaborators: Jac Martinez, a stills photographer who shot second unit and was my camera operator since 2014; Alice, who worked as an assistant; Paola, a Mexican cinematographer, and Isabelle, who was our producer. We tried to make a short film that was devoid of preconception and was completely spontaneous.

On each film that I've done, I have this thing that I learned from my family members, who are all jazz musicians. I call it woodshedding. I come up with scenarios that elucidate some cinematic devices or explore it on film. So, I decided to set up a shoot that was similar to that.

Furthermore, I like to collaborate with prime artists on their films that usually end up in museums or galleries. It's basically like an investigation. You have a particular idea that you're anchored in. In this film, the idea was doing a portrait of Mexico, its traditions and contemporary identity. We ended up connecting with different artists. One was a boxer; I consider athletes to be artists. Another was an actress named Dahlia. We were trying to find a portal into their identity and who they are as human beings.

That was one facet of the project, and the other facet was going into particular areas where tradition and legacy are expressed in the culture. Mexico has these two different identities where you can interact with tradition or you can interact with the new. Once we got there, we started to figure out what kind of events were happening in the city and who could be considered. We prepped for maybe three or four days. And then we started shooting for five days. Most of the filmmaking style was completely spontane-

ous. I wanted to test the camera in that way and see if it supported the value that I have in my own work—using my cinematography as an expression of intuition rather than intellect.

When I used the Ronin 4D 8K camera in that way, it actually supported that sensibility. I built it in two different modes. One mode was where it operated very similarly to how you would shoot with an iPhone. Which is really almost like photojournalism or street photography, that kind of work. We built it almost like a Leica, or something similar. I handed one of those cameras to Jac Martinez. Sometimes we would break up into two different units. For example, I would be at a boxing gym and she would be at a rodeo.

## You had two cameras, I guess? And the second mode?

Yes, DJI lent us two cameras. The second mode was basically the way the camera was designed and intended with the 4th axis, the up-down stabilized arm. (The 1st, 2nd and 3rd axis are pan, tilt and roll.) Often, I would just rest the camera on an apple box. We would go into public places and there would be a lot of activity going on. Sometimes when you're doing street photography, if the person you're photographing is aware, they start to reveal a persona rather than their true selves. And the soul of the image dies quite quickly.

When I saw something that was connecting with me visually, or if the light was really interesting, I would put the camera right on the ground, sit on an apple box, and use the handheld monitor to compose the frame. The monitor accepts special handgrips with a joystick to control pan and tilt on one of them and a focus knob on the other. It was like an exercise in patience. I would wait for something that would express some sort of humanity to happen—a reveal or an emotional expression.

We also wanted to see the collective consciousness of the city. One of these was during the Día de la Virgen de Guadalupe, a national holiday in Mexico on December 12. Millions of people travel

# Chayse Irvin, ASC, CSC on Ronin 4D 8K



there to celebrate this religious event. I filmed inside the Basilica where there was an ocean of people.

## **In the first mode, you used the 4D 8K as a remote head?**

Yes, as a remote head on a tripod, on an apple box or on the ground. It's really handy about the way that it always finds its horizon, it will always find its own level, and I can control it like a remote head. I could frame a shot and then turn away from the camera because people become really aware when your gaze is on them. It's almost like they get a sense that they're being looked at.

## **Did you use Autofocus, LiDAR or manual focus?**

There were certain scenarios for each. There are limits to the auto focus. It won't work in every setup. I like how DJI embraced some of our traditions, like the way a focus puller works, how you calibrate lenses, swap lenses, the way the film industry works and how the camera department executes shots. And then they added other ideas. For example, the images of Dahlia dancing happened when we just walked in. She started stretching, Jac put on a song and all of a sudden she was dancing. There wasn't a call of "Action," or "Rolling," or any of that. I just walked around with the camera to get the right feel. I started working with the gimbal and found the right calibration where I went into FPV mode, where it allows me to go Dutch. And then I went into Sport mode, so it still had these vibrations. Basically, it's the idea of making sure that the camera is emulating mass in the correct way, and not trying to get rid of mass and inertia through some digital smoothing. I would calibrate so it felt like it was still in my hands, it was still raw, and then move around. I did that quickly and all of a sudden the music was playing and Dahlia was dancing and I found it and Alice found it with the focus. I liked how versatile the camera was.

## **What lenses were you using?**

I had Sony G Master and SIGMA Art primes.

## **Interesting—you had E-mount lenses. You didn't use the native DJI DL primes?**

No, I wanted E-mount because I also like to have a Sony FX3 as a Director/DP finder.

## **So, you had the Ronin 4D 8K set up with DJI's native DL mount**

## **(58 mm diameter, 16.84 mm FFD) to E-mount (46.1 mm diameter, 18 mm FFD) adapter?**

Yes. The only pitfall is that the still photography G Master lenses breathe more than cine lenses. I didn't really notice breathing because I was not doing rack focusing. But there's a DJI DL to PL mount adapter, so you could use almost any lens you wanted—like Zeiss Standard Speeds, because of how lightweight they are.

## **Or maybe the Leica M.08 with the DJI DL to M mount adapter?**

Sure. Or even a big zoom lens if the 4th axis were locked off and you used a lens support.

## **What was the longest lens you used?**

I think it was the Sony 135mm G Master. I used a counterweight on the back that DJI supplies. I pretty much had that on the entire time, because I could always balance even the smaller lenses with that counterweight.

## **Where does that counterweight go?**

If you look at the back of the camera head itself, it just attaches into the screw holes in the back where the vents are. It has the same shape, so it just looks like almost a cage or shell. The ergonomics are just enough to clear the gimbal.

## **Did you use the internal NDs?**

In addition to its stabilization, I liked the internal NDs, and also the color science. I was a little nervous about the color science at first because I hadn't adapted any lookup tables to DJI D-Log. But when I started ingesting the footage (we were shooting continuously every day and didn't have a DIT), I was very happy. We were switching between ProRes and ProRes RAW, and I was editing in DaVinci Resolve. Since Resolve doesn't edit ProRes RAW directly, I had to go through Premier to transcode to ProRes 422 HQ to have everything in ProRes in Resolve on my computer in 8K.

## **How did you create LUTs?**

I use Lattice, which is made by Video Village, to create LUTs. They have a filter that you can integrate with Resolve called Filmbox, and I used their grain and halation emulation. They also have Gate Weave. I applied all those different things that I like to do



Ronin 4D 8K as Remote Head



with all my workflows that are shot digitally. Anyway, I ingested all the footage into DaVinci Resolve, applying that lookup table, the grade and the filter. And exported directly from Resolve.

### **Getting back to the lenses, how were you able to control focus and iris remotely with the Sony G Masters on the Ronin 4D 8K?**

It calibrates. When you put the lens on, the Ronin 4D detects which lens it is and goes into calibration mode. I can do that manually with the follow focus and a chart. Or, I can have it do an auto-calibration.

When I get to a new setup, I auto tune the gimbal. Depending on the shot, if I am just doing a push-in on something, I can flip the lock button on so that it will remain positioned in one direction and not pan to follow the subject. I'm just walking in, trying to maintain a straight line. I'll line up with whatever my path is. I'll pan and tilt the camera until I get into an anchor point that I like, and then I'll click the lock button down and then I'll just try to maintain the camera's height and move in a straight line, so it doesn't try to fish. I like the camera feeling omniscient, or more of a witness to a scene than a participant. That's just my style of cinematography.

### **Are you holding the camera low? Or on your shoulder?**

I do it off my chest. The only issues with the shoulder rig when you're trying to do stabilized shots are two sensors at the bottom of the camera that look down to the floor to determine the stabilization. Whereas if you add a shoulder rig, you're blocking that. When I was shooting the boxer, I didn't want it to feel smooth. I wanted to feel like I was shooting an Arriflex 235, so I basically turned off all those stabilizing things that DJI integrated by blocking them. In fact, the best mode that I found for handholding was

by using the Ronin 4D Flex, where you tether the camera head with a cable to the camera body and you can have the body in a backpack. It's like the Rialto. I had a cage and shoulder rig from Tilta with some counterweights at the rear. I hooked up an eyepiece up on the handlebar and the camera felt as if it was trying to emulate what I would do if I had the 235.

And it was excellent like that. If you don't handhold in Flex mode with the cage, even when you lock down the gimbal and the vertical stabilization, there's still play in the pan and tilt. There's less in the roll. So if you're walking around trying to do handheld, micro vibrations might translate through that. Whereas if you just get it into Flex mode, you're not going to get any of that.

If I had more time to prepare, I would have added more mass. When I operate handheld, my preference is for heavier cameras, because I like mass and inertia. It creates stability for me.

### **Isn't the camera heavy enough?**

The entire 4D is, but I never felt fatigued by it. But I meant adding more mass to the Flex mode, which is just the lightweight camera sensor head and lens.

### **Would you use the Ronin 4D 8K as an "A" camera? It seems that it was originally designed as a specialist camera, but instead you could use it for everything.**

From what I've seen and what I've processed in Resolve and on my monitors, it is equivalent to what I would expect from an ALEXA or a Venice. I was not shooting a narrative film in Mexico City. I would consider it as an "A" camera—it depends on the project. I feel like the most experimental version of myself would gravitate towards that camera for a project that was trying to do something avant garde.



# Brightest Godox | Knowled MG2400Bi



This is the brightest COB LED fixture from Godox: the new Godox Knowled MG2400Bi.

When producers asked why the equipment order had lots of big lights instead of smaller, cheaper ones, a wise New York gaffer was fond of telling producers, “A 10K is like a 20K with a double in it. If your DP wants more light and the lens is wide open with a wrench, you can’t squeeze any more light out of that 10K. But with a 20K, all I have to do is pull the double out and things get much brighter.”

You could say the same about Godox’s new KNOWLED MG2400Bi. It matches a 4K HMI PAR in light output. That’s 44,600 lux at 3m (5600K with a 45° reflector.) It is the brightest fixture from Godox.

The MG2400Bi draws 2900W at 110 to 240 VAC. It adjusts to any color temperature from 2800K to 6500K, dims from 0 to 100%, has an average 96 TLCI and is IP54 weather resistant.

The COB light engine/housing weighs 22 kg / 48 lb (without

yoke and reflector) and connects to its controller/power supply (13 kg / 29 lb) with an 8m / 26 ft cable.

The MG2400Bi can be controlled via LumenRadio CRMX control with its built-in receiver, DMX512 (with RDM protocol), Ethernet with sACN and ArtNet protocol, and Luminair. Two Godox accessory remote controllers—RC-A6II and RC-R9II—operate via 2.4G wireless. The Godox accessory RC-11 remote connects by cable. And the Godox KNOWLED App provides DMX/CRMX control.

The Godox KNOWLED MG2400Bi comes standard with power supply/controller, U-type yoke, 45-degree reflector, AC cable, DC cable, controller clamp, etc.

Godox also provides many additional light shaping accessories: Octa Softboxes; Parabolic Softboxes; Lantern Softboxes; 15°, 30°, 45° and 60° Reflectors; Projection Attachments; Barndoors; Fresnel Lens; Soft Cases; Flight Case; etc.

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



# Duncan Parker on Spinhead, Shrimp, Snorkels, Nature Cinematography.



by Jacques Lipkau Goyard

Chaing Mai province in northern Thailand is known for its handicrafts, woodcarving, weaving, and a variety of animals including elephants, monkeys and bioluminescent shrimp. Once a year during the monsoon season these small freshwater shrimp make their way upstream to spawn. The curious thing is that they make part of the journey by land, out of the water, to avoid the river's strongest rapids.

Duncan Parker, a native of UK's Greater Bristol Area, is a renowned expeditionary nature documentary filmmaker and Director of Photography who has been capturing stunning images of the natural world for over 10 years. He worked on National Geographic's *Hostile Planet*, BBC's *Planet Earth II*, BBC's Natural World, *CATS*, *Siberian Tiger*, *Expedition Burma* and *Wild Japan*. Duncan also leads Bristol Camera Lab, the in-house technology lab for the BBC Natural History Unit. On assignment, Duncan uses an eclectic array of equipment, including Sony VENICE, FX6, FX3, A7S, RED, Cellex thermal imaging cameras for low light, grip equipment and accessories. He has gained the flexibility to shoot in a variety of styles: observational handheld, using an Easyrig, presenter-led pieces, wildlife macro and long lens cinematography.

## **FDTimes: What do you enjoy most in your work?**

Duncan: I have always had a particular passion for working on conservation films that showcase the local people and their understanding of the environment around them. Being a passionate photographer and trained conservationist, I enjoy making films that can make a difference in the world.

## **How did you start?**

When I was a kid, I met wildlife photographer Miles Badgley who lived in the woods near my house in Wales. He opened my eyes to wild animals and the joy of capturing images of them.

After studying Wildlife Conservation Biology, I worked at BBC Bristol and went on to freelance as a camera assistant on a variety of natural history and documentary shoots, before running a small-scale production company and camera innovation space.

After working at production companies, I finally managed to get a

runner job at the BBC Natural History Unit and then moved into camerawork from there. I have a real passion for telling stories about people who are entwined by nature. I am looking to work on more feature films and documentaries about the climate, water shortage and nature connection in the future.

## **Where was your Thailand location?**

The location was mainly in a specially constructed river set where we could hold the shrimp for a short time while we filmed their behavior and details, we also filmed in the wild to be used together with these more detailed shots. These river shrimps were among the most difficult animals I have ever filmed. We spent long nights just waiting for behavior.

We filmed the Lam Duan Rapids of the Lamdom River near Nam Yuen city at night with a safety team keeping us from falling in as the water rushed past us. A few Lightbridge CRLS reflectors and an Aputure 600x light allowed us to film the shrimps' bioluminescence and matching behavior. For some reason, the shrimp don't like direct light, but reflected bounce light seems fine to them for some reason.

## **What special gear did you use?**

Another complication with our shoot was that the action took place underwater. So, not only did we want to add movement to the shots while filming, but we also wanted to film underwater with the Laowa Probe lens. This is often hard to mount, but with the Cartoni Spinhead we had the ability to mount underslung so that it was very close to the water's edge while still allowing full movement.

When using the long probe lens, mounting it correctly is one challenge. The other is being able to mount it and add motion to the shots. Commercial outfits use robotic arms, like the Marc Roberts Motion Control Bolt, which are costly to run and impractical in remote locations like ours. The Spinhead allowed us to do robotic type moves in a lighter weight package.

The Spinhead let us film the tiny shrimp from any angle, in a creative way. The Cartoni Spinhead also works as a top-mounted tripod head that allows us to quickly and easily operate the camera to get the right shot. It is made of lightweight aluminum and has

# Duncan Parker on Cartoni Spinhead



Photos by Sebastian Solberg

a built-in spirit level for accurate alignment. It also has a quick-release plate for easy attachment and removal of the camera.

The Laowa Macro Probe is a special lens that is designed to film underwater, and it gives a smooth and realistic look to the footage. Often, the problem when focusing on very small subject is that moving the camera can result in disturbance if the shot unless is on a slider system. With the use of the Spinhead, we could move the camera in several planes across the filming area following the animals.

The dampening of the fluid head in every axis gave us creativity to smoothly spin around an object or slowly drift across the back of an animal. It was a real game changer when filming very small subjects.

The mounting of the Spinhead was quite straightforward. It was off a scaffold H-frame supported by four Avenger Stands, with a 150mm bowl mount slider underslung so that you could move

the Spinhead left to right, but still utilize the full possibilities of movements underneath.

I also feel that the Spinhead, when used in more classic scenarios like interviews, observation documentary or drama, allows you to be able to react to the subject more often and intuitively.

I want to take this opportunity to thank Cartoni for letting me test and use the Spinhead on our shoot. It is always exciting to be pushing boundaries of what is possible with interesting and helpful equipment. I have enjoyed working with some great production teams, getting me to some very remote and challenging locations. When I am not filming, I spend my time climbing and building filming contraptions or furniture in a workshop in Pensford. I am always up for chatting about film projects, camera innovations and gear—and whenever there's a new product, I'll be glad to test it.



Cartoni H533 Spinhead underslung

H533 Spinhead top-mounted

Spinhead photos courtesy of Cartoni

# Laowa Pro2be



Who needs Laowa's new Pro2be Macro Probe lens?

You do — when gliding over Cinnamon Toast Crunch and moist blueberries on a tabletop food commercial. With a mere macro lens on an underslung camera, you'd hit the cereal bowl.

You can — on a nature film when it's much faster, lighter, easier, to use the waterproof Pro2be than a bulky underwater housing.

And you will — on your next action feature when you look up from below the surface of a martini at the hero's shimmering face, shaken not stirred. How else are you going to get a lens, let alone camera and lens, inside a martini glass — without this probe?

All these shots and more are possible with Laowa's new 24mm T8 2x Macro Pro2be. There are three models: a direct front facing

view, a 35° offset view and a periscope 90° view. You can buy them individually or together in a case, ready for almost any setup. You may wonder, why didn't they make it modular, like probes in the past? You may remember dust on internal elements that wound up in the image. Non-modular is dust-free.

- Lens barrel 10 cm longer than earlier Laowa probes
- 36.6 cm waterproof distance
- 2x close-up magnification
- 7 Interchangeable lens mounts: ARRI PL, Canon EF, Canon RF, Nikon F, Nikon Z, Sony E, Leica/SIGMA/Panasonic/Blackmagic L-Mount.
- Aperture Range T8 - T40

The adjustable lens barrels can rotate 360°. It is easiest to adjust



# Laowa Pro2be



the degree of rotation with the Pro2be mounted on the camera. Multiple high-refractive index glass and extra-low dispersion elements provide better rendition of color, sharpness and image quality.

Laowa 24mm T8 2x Macro Pro2be			
Lens Type	Direct View	35° View	Periscope 90°
Format	Full Frame		
Focal Length	24mm		
Aperture Range	T8 - 40		
Angle of View	85° diagonal		
Lens Construction	33 elements in 24 groups	33 elements in 24 groups	34 elements in 25 groups
Iris	10 blades		
Min. Working Distance	4mm		
Max. Magnification	2x		
Focus rotation	150° - manual focus - 0.8M gear		
Aperture rotation	50° - manual iris - 0.8M gear		
Dimensions	30.4 x 507mm	30.4x500mm	30.4x500mm
Weight (PL)	1038 g	1024 g	1068 g
Mounts	PL, EF, RF, F, Z, E, L		
Price	3-lens set: \$8,499		
	\$2,849	\$3,149	\$3,349



Pro2be 3-lens set with case

# Nikon Z 9 and Leitz ELSIE



L-R: Koji Sugawara, Shigeki Kuribayashi, Osamu Tsukada.

Crowds gathered in front of a large monitor in the Nikon Booth at InterBEE this past November in Tokyo. The objects of attention were beautiful images filmed with a Nikon Z 9 and Leitz ELSIE lenses.

Osamu Tsukada, Leitz Regional Sales Manager Asia Pacific and Kazuaki Kuriyama, Product Planner at Nikon Imaging Business Unit, introduced the photographer/filmmakers—Shigeki Kuribayashi and Koji Sugawara.

They said, “We are photographers who have been doing cine productions since 2023. Our philosophy is to incorporate the sensibility of capturing light into video as professional photographers. We work together on cine projects under the company name of FUUKOU.”

About the origin of the company name, Sugawara-san explained, “We have worked as still photographers for many years with each other. And we discovered how to work as a team through a joint video shoot on Iriomote Island.

“When we talked about a team name, we were looking back on what was important for us when shooting. We found out that we were especially conscious of ‘wind’ and ‘light.’ The Japanese character 風 (FUU) means ‘wind’ and 光 (KOU) means ‘light.’

“Also, there is a Japanese word 風光明媚 (FUUKOU MEIBI) that means ‘scenic beauty,’ expressing the purity and beauty of natural scenery and landscapes. So, we choose ‘FUUKOU’ referring to the sound of those words.”

Kuriyama-san explained, “Large-scale cinema-style shooting is great, but I think their approach to video as photographers is also unique and appealing. Lighting, shooting, focus management, data management, pre-production, and post-production are all completed by just the two of them.”

## IRIOMOTE

Iriomote Island, Japan is a World Natural Heritage Site. It is a

3½ hour plane ride southwest from Tokyo to Ishigaki Island, followed by a 50-minute ferry ride. Iriomote is the second largest in the island chain of Okinawa, and about 204 km due east of Taiwan.

Shigeki Kuribayashi and Koji Sugawara travelled to Iriomote Island to make the short film *IRIOMOTE: The lights, winds of Warp and Weft*. They explained, “On Iriomote Island, there is a traditional craft called ‘Bashofu,’ which is made by weaving cloth from the fiber extracted from a type of banana. In the natural environment of mangrove forests, jungle, and ocean, we photographed a part of the craftsmanship that is at one with nature.

“Our camera was the Nikon Z 9. Among the reasons we chose this camera were its Full Frame 45.7 MP sensor, 8K 12-bit N-RAW internal recording capability and in-body image stabilization. We also found that the absence of a low-pass filter provided finer rendering of details.

“We needed a very portable system. The Nikon Z 9 is lighter than most traditional cinema cameras. It can be handheld, mounted on a tripod or gimbal. No external battery is required. Our locations involved traveling by kayak through subtropical mangrove forests, so the camera had to be weather, water and dust resistant. Because the entire crew consisted of just the two of us, in-camera recording of 12-bit N-RAW up to 8.3K 60p onto CFexpress cards was important.

“For lenses, we wanted to use the highest quality cinema lenses and selected Leitz ELSIE 25mm, 50mm and 75mm primes. ELSIE not only combines the characteristics of warmth and resolution of Leitz lenses, but we found there was also a subtle fall-off in contrast, resolution and light intensity from the center of the lens to the periphery. This draws the eye to the center of the frame. Since ELSIE lenses have an LPL mount, we used a Z mount to LPL adapter. Additional equipment included True ND filters and a DJI RS3 Pro gimbal.”

Shigeki Kuribayashi added, “Leitz ELSIE has an exquisite softness in terms of contrast and it renders skin tones delicately. The focus fall off is incredibly smooth and natural. The soft bokeh holds shape and dimensionality which adds beautiful depth to the image. Leitz ELSIE are robust modern cinema lenses that carry outstanding characteristics.”

## Volo Cosi

Film and Delicious Times also appreciated Team FUUKOU’s fine food cinematography on their short film with a long title: *Volo Cosi -A braccia aperte tra le nuvole*. They used the same equipment package: Nikon Z 9 and Leitz prime lenses.

Volo Cosi is a fine Italian restaurant in northern Tokyo. Robbie Swinnerton wrote in The Japan Times, “From the moment chef Daisuke Nishiguchi set up this excellent ristorante...there was a powerful buzz among the cognoscenti.”

## Links

- Leitz ELSIE Lenses: [leitz-cine.com/product/elsie](https://leitz-cine.com/product/elsie)
- Nikon Z 9 Camera: [tinyurl.com/z9-nikon](https://tinyurl.com/z9-nikon)
- IRIOMOTE video: [vimeo.com/834647388](https://vimeo.com/834647388)
- Volo Cosi video: [vimeo.com/884397529](https://vimeo.com/884397529)
- Volo Cosi restaurant: [volocosi.com](https://volocosi.com)

# Nikon Z 9 and Leitz ELSIE



Shigeki Kuribayashi and Koji Sugawara said, “It would have been difficult to use a tripod in the kayak, so we chose handheld shooting. The Z 9 camera’s in-body image stabilization was useful.

“The high image resolution due to the lack of a low-pass filter, enabled every strand of hair and every fiber of fabric to be depicted. There were no scenes where moiré was a concern during this shoot. The two of us carried all the equipment ourselves.

Lightweight equipment made it easier to move and to concentrate on filming. Various setups were done in a documentary style. In order not to stop the ever-changing work scenes, we used a monopod to change angles quickly.”

Bottom, right: “Walking into the mangrove corridor with Z 9, lens, matte-box and ND filter—total weight 3.5 kg—on the DJI RS3 Pro gimbal. Follow focus was done with the dial on the gimbal.”









# Nikon Engineers Discuss Development of the Z 8 Camera



L-R: Kazue Obunai, Shinichi Furukawa, Satoshi Tsuchiya, Goichiro Mori, Mitsuteru Hino.

*Nikon engineers wanted to demonstrate that in addition to the Nikon brand's strong association with still images and the breakthroughs made with the Z 9, Nikon should be considered for professional video as well. The Z 8 has been carefully designed for cine production as well—which is an important part of Nikon's business strategy. The following Nikon engineers participated in a discussion about the development of the Z 8 camera.*

- Satoshi Tsuchiya: Imaging Business Unit / UX Planning Department
- Kazue Obunai: Imaging Business Unit /Development Sector/1st Development Department
- Shinichi Furukawa: Imaging Business Unit /Development Sector/2nd Development Department
- Goichiro Mori: Imaging Business Unit /Development Sector/ Design Department
- Mitsuteru Hino: Imaging Business Unit /Development Sector/ Software Development Department

**Satoshi Tsuchiya:** Our goal was to condense the performance of the flagship Z 9 into a compact body to make an ideal hybrid mirrorless camera. Nothing inside was compromised. To create the Z 8, we strived for the kind of agility that is available only with a small, lightweight body. We didn't eliminate any features or compromise performance when reducing the body size. To reduce the size of the Z 8, we omitted the vertical grip and wired LAN connection ports. However, we offer an optional battery power pack that can also be used as a vertical grip. Wired LAN can also be accessed via a commercially available USB-LAN adaptor. In addition to the USB terminal for data transmission, there is a dedicated USB terminal for recharging the batteries. If a commercially available USB power pack, typically used for mobile phones, is connected through this terminal, power can be supplied for long hours of shooting.

**Goichiro Mori:** We were not only pursuing a small and light design. To ensure a sense of security for reliable shooting, a great deal of attention was put into achieving an optimally balanced

camera. Our goal was to pack the Z 9's performance into a body size comparable to that of the D850. As we were aware of many Z 9 users' desire for a sub-camera, we looked at how the D850 had functioned as a sub-camera for the D5 and the D6. But instead of simply following the same path as the D850, we also considered the fact that the Z 8 needed to be well balanced when using heavy, high-performance lenses such as the NIKKOR Z 85mm f/1.2 S or the NIKKOR Z 50mm f/1.2 S. Moreover, while it is difficult to use the Z 9, because of its body size, on certain types of small gimbals, the Z 8's compact size gives its users more options, allowing for video shooting with more freedom.

We wanted to keep the camera small for the sake of agility. The big challenge then, was how to deliver the same operability as the Z 9. It required considerable effort to achieve the optimum formation and arrangement of the operational parts and technology in a much more limited space than that of the Z 9.

We were not only pursuing a small and light design. To ensure a sense of security for reliable shooting, even in difficult weather conditions, subjected to shock or impact, we put a great deal of attention into achieving an optimally balanced camera. The dissipation of heat was especially challenging. The heat source and the heat volume are the same as the Z 9, generated from the same image sensor and engine. But the heat tends to stay longer in a smaller body, which is not good if you want to shoot video for extended periods. To address this, we strived to reduce heat generation while also dissipating heat through an extensive trial-and-error process. Both the Z 9 and the Z 8 are designed with video recording performance in mind, and it is our hope that users may use these cameras according to their desired use cases.

**Shinichi Furukawa:** We have made a variety of video formats available to meet the needs of a versatile range of storytelling and editing workflows. The Z 8 is a flexible camera that is suited for all kinds of shooting styles. By enabling internal video recording as well as external video recording via a cable and monitor, users can

# Nikon Engineers Discuss Development of the Z 8 Camera



shoot video in a way that fits their particular requirements. The shared goal of the development team was to create a camera that flexibly meets a variety of shooting styles. The hurdle was high, but the team worked as one to make it happen.

As with the Z 9, the Z 8 offers a wide variety of video formats, ranging from 12-bit N-RAW and Apple ProRes RAW HQ to 10-bit Apple ProRes 422 HQ to 8-bit H.265/AVC. This means the Z 8 can work seamlessly in users' existing productions, whatever bit rate or codec they are using. It is easy to add the Z 8 to an already established system, especially as multi-camera shooting becomes more common.

We would like to recommend the N-RAW format for those who pursue high video image quality. The N-RAW format is compatible with DaVinci Resolve for editing. On the other hand, the versatile ProRes RAW codec is also available. Equipped with a variety of formats that flexibly meet the needs of a versatile range of storytelling and editing styles, the Z 8 is a flexible camera that is suited for all kinds of shooting scenarios.

Certain video formats, such as ProRes RAW, which were previously recorded externally, can now be recorded internally as easily as when shooting still images. Achieving this required dedicated commitment from our memory card media partners, in addition to our own efforts. A combined team of Nikon engineers and memory card manufacturer developers worked very hard to successfully create media cards with fast write speeds for extremely heavy RAW video data rates, accomplishing our objective for internal recording.

*Mitsuteru Hino:* Our benchmark when considering video performance was the instantaneous start-up of the D5 and D6 digital-SLR cameras. The start-up time that we achieved has astounded video users. Still photographers using digital SLR cameras harshly criticized the time lag between turning the power on and an image appearing in the electronic viewfinder. While DSLRs allow users to see the viewfinder image through the optical viewfinder even when the power is turned off, the image can't be confirmed as quickly with mirrorless cameras because their electronic viewfinders result in a time lag after the camera is turned on. To achieve a much faster start-up time, we meticulously examined how long it takes for the camera to be turned on when the switch is pushed, and also how long it takes the image sensor, the

image-processing engine, and the EVF to be ready for shooting. We thoroughly considered where we could reduce time, evaluating the process from scratch, and ultimately were able to achieve the current performance. Our benchmark for start-up time was the instantaneous start-up of the D5 or D6 DSLR cameras. All we were thinking about was how to make the mirrorless camera's start-up time closer to these models. We believe the start-up time that we have accomplished has astounded our users.

Nikon cameras, especially high-end models, are developed with consideration for press photographers who need very fast workflow performance, because every second counts. This is one of the strengths of Nikon. The fact that Nikon hasn't released a dedicated video camera may at first look like a weakness, but actually, we believe the opposite is true. Not being limited by the conventions and standards of video enabled us to consider new ways to improve video workflow through the application of our standards of still photography. By removing the barriers between still photography and video, and working as one, we have created an environment that fosters new capabilities for video cameras that were previously unavailable.

Instead of accepting what's considered the standard in the video camera market, we began by questioning the current standard, and strived to always choose a path that yields better results and a higher level of performance. It has been a big challenge. But as a result, the Z 8 offers cinematographers and videographers not only the agility of a compact body, but also the speed of a stills photography camera.

*Shinichi Furukawa:* With the highly acclaimed, excellent operability of the Z 9 condensed into a compact, lightweight body, the Z 8 will be one of the best options on the market for solo videographers. When shooting video on lens-interchangeable cameras, users often opt to focus manually, instead of using autofocus. They shoot on gimbals without using vibration reduction, attach their cameras to rigs, and work with assistants as a sizeable team. But recently, more and more productions are being handled by solo videographers for the sake of efficiency and budget limitations. Videographers who previously did not utilize autofocus or vibration reduction have started using these features more often depending on the situation. We've received quite a bit of positive feedback about the overall performance of the Z 9 and how users would not have been able to manage their shoots without these

# Nikon Engineers Discuss Development of the Z 8 Camera



functions. The Z 8 was also designed to provide excellent operability for solo shooters with autofocus, vibration reduction, and ease of use during handheld shooting, in addition to high image quality. By inheriting these benefits in a smaller, lighter body, the Z 8 will enable solo shooters to work even more comfortably. We want to deliver to our customers the same excitement our development team felt when we first saw the high-resolution footage of 8K and 4K video.

During the course of product development, there is a stage where we review the product's image quality. This is when we judge whether the footage recorded in 8K and 4K meets Nikon's quality standards. During the development of the Z 9, when the development team first saw the 8K and 4K video samples during the internal preview, the room filled with excitement as the team expressed their delight at the resulting high-resolution footage. This high resolution is apparent in portraits with a shallow depth of field, just as much as in landscape video footage. The area of focus is amazingly sharp, with minimal compression noise, shadow noise or jaggies, resulting in remarkably natural footage with an incredible degree of depth. The same imaging expression is possible with the Z 8. While 8K tends to attract more attention, I would like to highlight the Z 8's unique 4K image quality. The Z 8 lets users shoot video with unparalleled sharpness when creating 4K video utilizing 8K data. We have received positive feedback from video professionals who shoot music videos and travel documentaries about the Z 9's video capabilities.

Our NIKKOR Z lenses deliver excellent optical performance. On top of this, because the lens information is communicated simultaneously with the camera body, NIKKOR lenses add further

advantages to the camera system. The Z 8, combined with NIKKOR Z lenses, produces images in which the contrast between the sharp focal plane and soft background bokeh makes a portrait subject stand out with an immersive level of depth—a kind of depiction unique to the Z mount system. Nikon image quality realizes a strong sense of “presence” through what we call “three dimensionality”—it's something beyond on-paper specifications. You need to see it to fully appreciate it.

*Mitsuteru Hino:* We want users to try N-RAW, which is based on Nikon's expertise in the still image RAW format. While dynamic range is a key indicator for video image quality, sharp resolution and suppressed compression noise also play important roles. N-RAW is a format that lets users pull great image quality from its efficiently compressed files, and offers incredible flexibility in the post-production editing process. There are a variety of RAW formats on the market. While each format has its own merits, N-RAW has a unique benefit of “reversibility” that allows for the capture of all the delicate nuances of the scene or subject as it is.

Nikon's original N-RAW format is created through Nikon's in-depth understanding of optics and hardware, and maximizes the Z 8's high image quality. It is my hope that users will experience for themselves the true value of N-RAW through their shooting.

*Kazue Obunai:* Wheat, flour, or bread? We asked ourselves what our users wanted and delivered options that let users effectively achieve their desired goals. In order to share a common way of thinking regarding video imaging making, the development team likened video image processing to “wheat,” “flour,” and “bread.” Wheat, a metaphor for the RAW file type, can be processed into

# Nikon Engineers Discuss Development of the Z 8 Camera



anything. We strived to retain high image quality after compression and kept it as unprocessed as possible to maximize the user's creative potential. Flour, representing N-Log, is processed minimally, allowing users to easily prepare a wide range of dishes. It supports the user's desired image creation, maintaining the sharp resolution of NIKKOR Z lenses, thanks to Nikon's own interpolation technology. Bread, on the other hand, includes ready-to-eat pastries or sliced bread that can be made into a sandwich with minimal effort—and can be likened to our efforts to respond to the needs for those who wish to shoot with minimal or no post-production editing, such as Picture Control. As a team, we shared clear ideas about the needs and preferences of our users, carefully setting the goals for the different formats and delivering options that let them effectively achieve their desired image processing.

Picture Control [Auto] offers ready-for-use, great-looking footage straight from the camera. With color grading in mind, the user can choose from [Neutral], [Flat], or [Log] for a less processed look. Tone compression features such as Active D-Lighting can also be applied when shooting video to further reduce the post-production workload.

*Goichiro Mori* "A "reliable" camera to us means a camera that offers the user a sense of security. During development, Nikon engineers always consider the worst-case scenarios. In recent years, more and more users are shooting stills and video to record their own stories and experiences. These users want agility — so the camera doesn't get in the way of what they are doing — but they also require a high level of reliability that allows them shoot with an underlying feeling of confidence in their gear. The Z 8 was designed to provide users a sense of security, a confidence in knowing that they can successfully record important moments and memories.

Considering worst-case scenarios during development, we test our cameras in conditions that are probably harsher than the actual conditions our users would be using the camera. It's very important for us to go the extra mile to gain the trust of our users.

*Shinichi Furukawa:* Considering future user needs is how we managed to achieve the high performance of the Z 9, a level of performance the Z 8 has now inherited. We learn from our users; we study how they use the cameras by visiting them on location. We observe every step of their shooting process and the way they use the camera settings so that we can discover hidden problems that might arise, and produce solutions. We received requests to improve the video functions from video users with their own ac-

customized shooting styles, such as wanting to focus manually instead of using the autofocus with video. Of course, we respond to these requests, but we also consider the problems and needs that users may not be conscious of. We observe very thoroughly how our users work in different shooting locations to discover not just the current needs but also what could potentially be future user needs. Through these concerted efforts, we managed to achieve the high performance of the Z 9, a level of performance the Z 8 has now inherited.

Some of the users' needs we collect on-site also include ergonomic requests, often to a sensory level, such as, "make the AF operation smoother" or "make the button easier to push." We translate these user needs, such as AF operation sensitivity, AF speed, the position of buttons on the camera—and even the degree of curvature on the surface of those buttons—into numerical figures before sharing the feedback with the development team. We have made sure that all feedback is shared across all development sections, and we frequently meet to clarify feedback to set and achieve all the necessary goals. We had a strong sense of purpose to reach the shared goal, and this required stronger teamwork than ever before. Only through a strong sense of unity were we able to produce such technological innovations as the Z 8 and Z 9.

*Obunai, Furukawa, Hino, Mori and Tsuchiya:* Looking back at the development of the Z 8 and the Z 9, and looking forward continuously offers excitement that goes beyond expectations. All of us, every single member of the development team, shares one thing in common: the Nikon DNA that drives us to keep pushing the envelope. It is our belief that business should not be limited to satisfying our users, but should go beyond to offer better products that go beyond expectations. There were many different proposals from each department to improve features and create new features. These proposals continued up to the last stage of development, which meant that the proposer would be signing up for extra work. But the strong and positive teamwork ethos fueled a drive to push our capabilities to the next level. This is how we were able to achieve products such as the Z 9 and Z 8.

The Z 8 is an exemplary hybrid still/ video model that expands the horizons of creativity. However, to keep up with the fast pace of technological evolution, the camera must continue to evolve to meet the ever-changing demands for different recording formats and viewing patterns, for both stills and video. The evolution of the industry and of imaging devices go hand-in-hand, and our purpose is to keep facing new challenges.

# Fujifilm GFX100 II – Giant Format, Larger Format



GFX100 II has a 9.44 million dot EVF – sharper than a groundglass. The 3.2-inch, 2.36 million dot LCD screen tilts in 3 directions. The camera weighs 2.27 lb / 1,030 g.

Product shots of GFX100 II taken with Fujifilm X-T5 by Jon Fauer

Stockholm. September 12, 2023. Fujifilm introduced their newly designed 102 Megapixel GFX1000 II.

Fujifilm jumped from APS-C cameras to Mirrorless Medium Format (completely bypassing Full Frame) at Photokina in September 2016 with the introduction of their 51.4 Megapixel GFX 50S.

The new GFX100 II is not much larger than a Full Frame camera. And there's the word challenge. Call it "Medium Format" and you might think its 8K multi-format 43.8 x 32.9 mm sensor would be smaller than an ARRI-dubbed "Large Format" 36 x 24mm Full Frame, once known as Leica Format.

You could call it "Larger Format" (larger than large) or "Giant Format," which the letters GFX might suggest. The format is captivating, something that did not go unnoticed by Nolan, Gerwig and other aficionados of going larger in both movies and stills. Indeed, the Fujifilm GFX100 II comes at a good time.

The newly developed 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 also opens up a 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.

In the camera's main menu, "Image Format" offers choices of sensor modes:

- GF (50.08mm Ø)
- Premista (VV 46.3mm Ø)
- 35mm Full Frame (43.19mm Ø)
- Anamorphic Full Frame squeezed (43.35mm Ø).

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

Attach a G Mount to LPL, PL or PV adapter, and the Giant Format world widens with more than 100 lenses that include ARRI 65mm series, Vintage 765, Leitz Thalia, Hawk 65 Anamorphic, ZEISS/Hasselblad, Whitepoint, Ottoblad, Panavision 65 and more.

Select Premista or 35mm Full Frame sensor mode in the camera's Menu, and you have access to more than 594 lens choices, from Angenieux to ZEISS.

Furthermore, you do not even have to abide by the GFX100 II sensor modes. Simply attach one of more than 489 Super35 or Standard 35mm lens models and crop in post.

By the way, please notice the beautiful hand-grippy textured surface on the right side of the camera. In the next edition of FDTimes, we visit the GFX100 II factory in Taiwa, Japan and compete in a Fujifilm camera assembly challenge. Since it takes two months to learn this skill, suffice it to say that the camera prepared by FDTimes is probably not leaving the factory.

## Fujifilm GFX100 II – Giant Format, , Larger Format

GFX100 II camera body — actual size with its GF Mount.  
43.8 x 32.9 mm sensor, 54.78 mm Image Diagonal Ø,  
IBIS (in-body image stabilization)  
Camera: 6 x 4.6 x 1.8" / 152.4 x 117.4 x 46.5 mm.



GFX100 II camera body with  
GF to PL Mount Adapter.



# Fujifilm GFX100 II – Spherical Lenses



Fujifilm GF55mmF1.7 R WR Autofocus, Auto Iris GF Mount



GFX100 II with GF55mmF1.7 R WR



GFX100 II with GF55mmF1.7 R WR



GFX100 II with Leitz THALIA 120mm T2.6 and PL Adapter



Leitz THALIA 120mm T2.6 PL Mount





# Fujifilm GFX100 II – Anamorphic Lenses



Orion 28mm Super35 2x squeeze captured in GFX Sensor Mode.



GFX100 II with Atlas Orion 2x Anamorphic Super35 28mm T2 and PL Adapter



GFX100 II with Atlas Mercury 1.5x Anamorphic Full Frame 42mm T2.2



GFX100 II with Atlas Mercury 1.5x Anamorphic Full Frame 42mm T2.2 and PL Adapter



Mercury 42mm Full Frame 1.5x squeeze captured in GFX Sensor Mode.



# Fujifilm GFX100 II – Sensor Modes & Some Formats

## GFX Sensor Mode

Could be called “Larger Format” or “Giant Format”

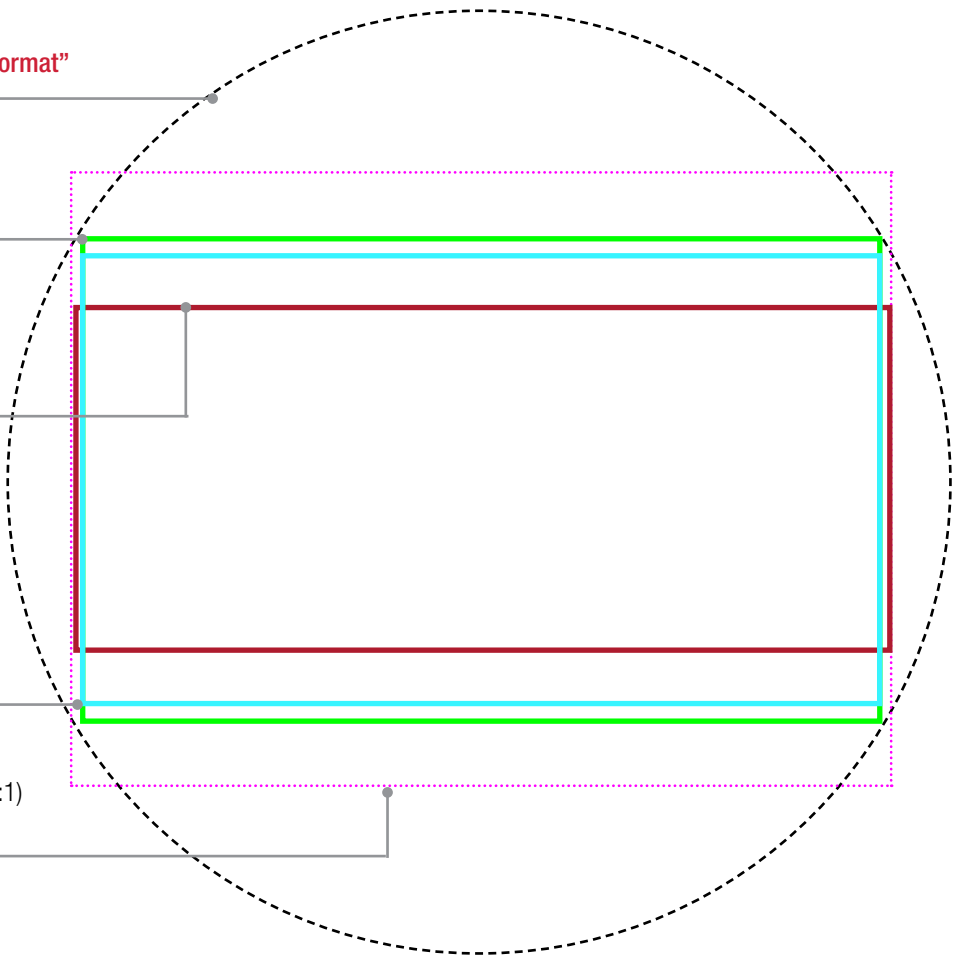
50.08 mm Image Diagonal  $\varnothing$

GFX 4K 16:9  
43.63 x 24.58 mm (3840 x 2160)  
50.08 mm  $\varnothing$  – almost full sensor width

GFX “CinemaScope” – 5.8K 2.35:1  
Spherical Widescreen  
43.80 x 18.65 mm (5824 x 2476)  
47.61 mm  $\varnothing$  – full sensor width

GFX DCI 4K 17:9  
43.63 x 23.05 mm (4096 x 2160)  
49.35 mm  $\varnothing$   
almost full sensor width

for comparison: GFX Stills Full Sensor 4:3 (1.33:1)  
43.80 x 32.9 mm (11648 x 8736)  
54.78 mm  $\varnothing$



## Premista Sensor Mode

(Often called Full Frame Plus (FF+) or VV)

46.31 mm maximum Image Diagonal  $\varnothing$

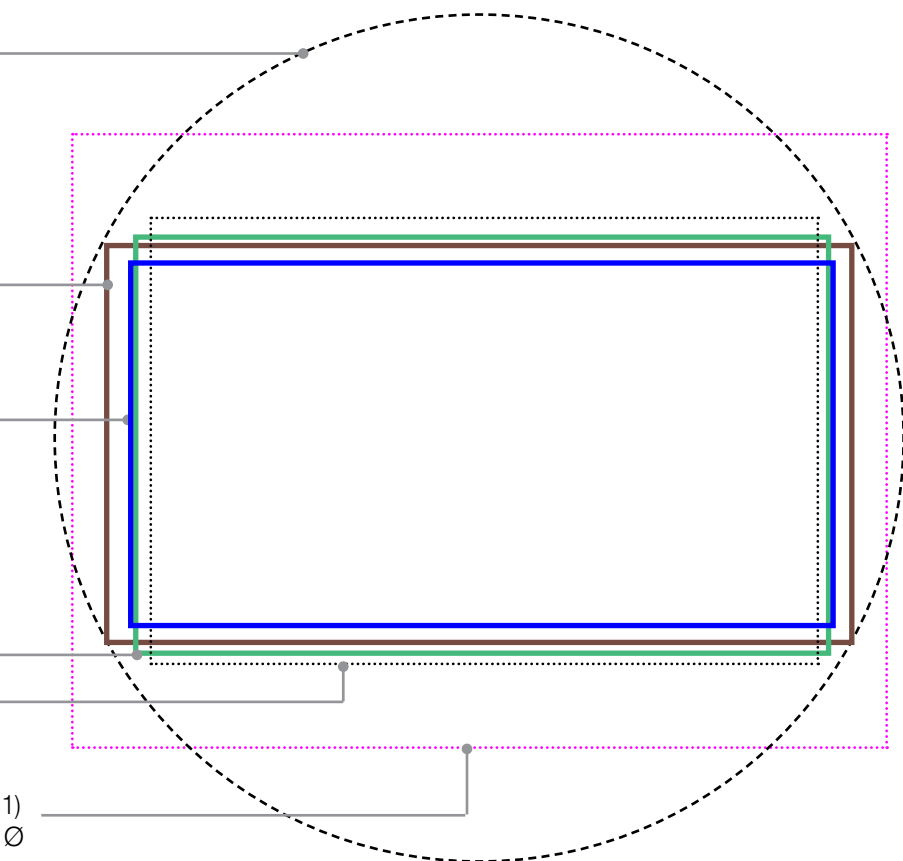
Premista 5.4K 17:9  
(5440 x 2868) 40.91 x 21.60 mm  
46.26 mm  $\varnothing$

Premista DCI 4K 17:9  
(4096 x 2160) 40.27 x 21.26 mm  
45.54 mm  $\varnothing$

Premista UHD 4K 16:9  
(3840 x 2160) 40.27 x 22.69 mm  
46.22 mm  $\varnothing$

for comparison: Full Frame 4.7K 3:2 (1.5:1)  
– 35.92 x 23.98 mm  
4776 x 3184 – 43.19  $\varnothing$

for comparison: GFX Stills Full Sensor 4:3 (1.33:1)  
43.80 x 32.9 mm (11648 x 8736) – 54.78 mm  $\varnothing$



## 35mm Sensor Mode

(Usually called “Full Frame, FF, Large Format or LF”)

43.19mm maximum Image Diagonal  $\varnothing$

(Traditional 36x24 mm Full Frame is 43.27 mm  $\varnothing$ )

Full Frame UHD 4K 16:9

35.92 x 20.10 mm (3840 x 2160) – 41.16 mm  $\varnothing$

Full Frame DCI 4K 17:9

35.92 x 18.98 mm (4096 x 2160) – 40.63 mm  $\varnothing$

Super35 8K DCI 17:9

30.8 x 16.27 mm (8192 x 4320) – 34.84 mm  $\varnothing$

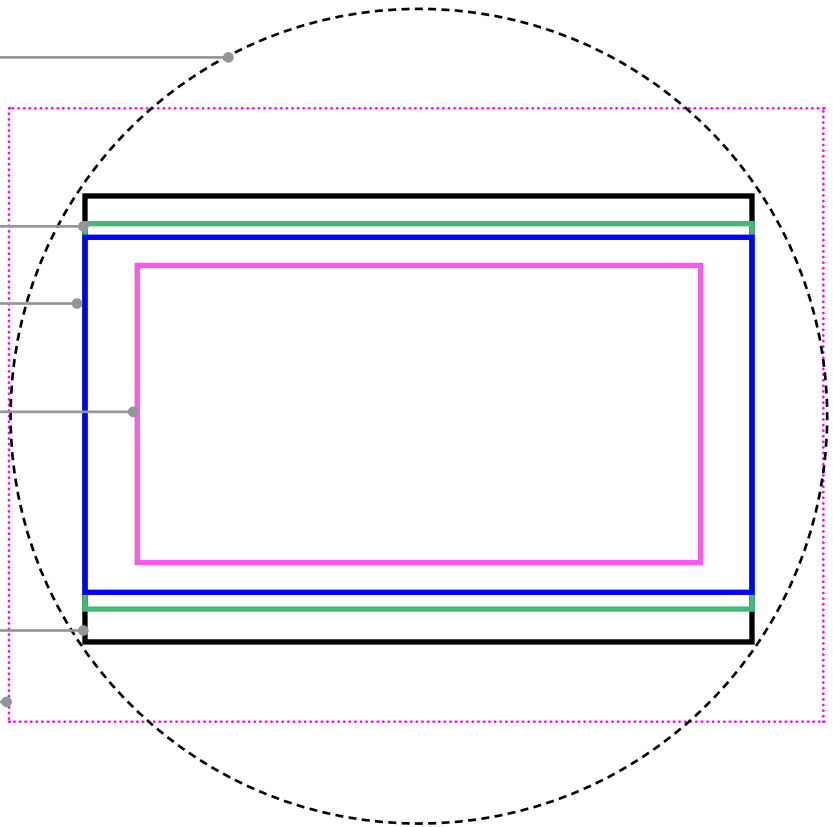
(1.42x crop from Full Frame)

Full Frame 4.8K 3:2 (1.5:1)

35.92 x 23.98 mm (4776 x 3184) – 43.19 mm  $\varnothing$

for comparison: GFX Stills Full Sensor 4:3 (1.33:1)

43.80 x 32.9 mm (11648 x 8736) – 54.78 mm  $\varnothing$



## 35mm Anamorphic Sensor Mode

(It could also be called “Full Frame Anamorphic Mode”)

2x squeeze 8K 2.76:1 / 4.6K 1.38:1 24p.

43.35 mm Image Diagonal  $\varnothing$  (larger full height than FF)

8K Full Frame Anamorphic 2.76:1

35.08 x 25.46 mm (8192 x 2968)

2x squeeze (1.38:1, shown here)

desqueezed in camera to 2.76:1

4.6K Full Frame Anamorphic – (1.38:1)

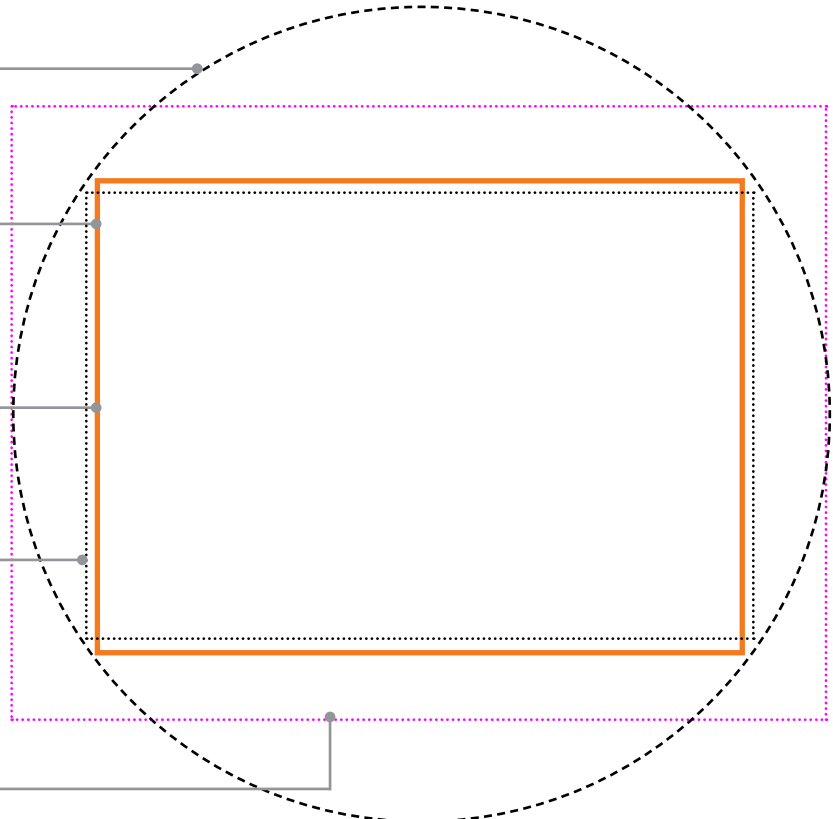
35.08 x 25.46 mm (4664 x 3380)

for comparison: Full Frame 4.7K 3:2 (1.5:1)

35.92 x 23.98 mm (4776 x 3184) – 43.19 mm  $\varnothing$

for comparison: GFX Stills Full Sensor 4:3 (1.33:1)

43.80 x 32.9 mm (11648 x 8736) – 54.78 mm  $\varnothing$



# Fujifilm GFX100 II and X-T5



Takuya Noguchi and Hideyuki Kasai with matching X-T5 cameras at Shiogama Shrine. Deliberate Dutch angle despite warnings from the level indicator in the GFX100 II.

Taken with GF20-35mmF4 R WR zoom lens at 35mm f/5.6

# Following the Path of Matsuo Basho

Matsuo Bashō was born in 1644 to a Samurai family. But what he really wanted to be was a poet, not a swordsman. Bashō is considered to be one of Japan's greatest masters of haiku poetry.

In 1689, Bashō hiked 2,400 km across Honshu, the main island of Japan. He averaged 30 to 40 kilometers each day for 150 days. The journey took him north from Edo (Tokyo) to Sendai and Shiogama—on to the west coast of Japan, then south to Ogaki (near Nagoya).

Along the way, Bashō kept a diary about his dangerous journey, peppered with poetry. He spent three years editing the resulting book, *The Narrow Road to the Deep North (Oku no Hosomichi)*.

In early November 2023, Takuya Noguchi proposed a similar adventure, following in the footsteps of Bashō to visit the Fujifilm GFX100 II factory in Taiwa, near Sendai. The itinerary was intriguing:

- 20th November: Lunch—Beef tongue at 11am.
- Taiwa Factory tour 1:00pm
- Dinner: Koban Sushi at 6:30pm
- 21st Nov: Following the footsteps of Bashō around Shiogama
- My Seafood Rice Bowl at Shiogama Seafood Market

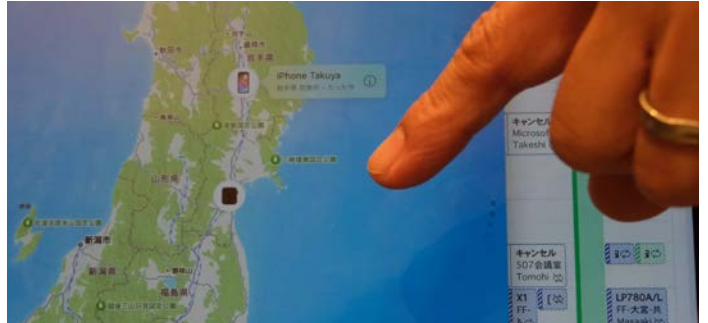
Here is a graphic novel style account of our journey, taken with Fujifilm GFX100 II and X-T5 cameras.



1. Stylishly attired and equipped with trendy Rimowa luggage, Takuya Noguchi (at left) and Hideyuki Kasai at Tokyo Station, ready for the 350 km journey, 2-hour ride by Shinkansen, considerably faster than Basho.



2. Lunch at Gyutan Tsukasa, across from the Sendai train station. Beef tongue is their delicious local specialty.



3. Takuya's phone must have fallen out of his pocket. He tracks it, still heading north on the Shinkansen. But this is Japan. Someone finds it and the phone is returned the following day.



4. Above, left: Why don't we have executive minivans like this in the US? Sento Taxi (since 1951) luxury Alphard loads up for the ride to Fujifilm's Taiwa factory where GFX100 II cameras and GF lenses are made. That factory visit will be described in the next FDTimes edition.



5. Above right: Seats more comfortable and gadgets more numerous than in ANA's The Room. Let's fast-forward to the following day and follow Basho not only to learn about the area, but also to test cameras. The GFX100 II will take hero shots and X-T5 will get behind the scenes.

# Following the Path of Matsuo Basho

Fujifilm X-T5 with PL Mount



Fujifilm GFX100 II with PL Mount



6. Fujifilm X-T5 Super35/APC camera compared with Giant Format GFX100 II.



7. Takuya carries a variety of GF lenses: GF20-35mmF4 R WR zoom; GF30mmF5.6 T/S Tilt/Shift; and the fastest autofocus medium format mirrorless lens— GF80mmF1.7 R WR.



8. Kasai lines up the 20-35mm F4 zoom with its autofocus and auto iris.



9. Above: Basho arrived in Shiogama on June 24, 1689. After lunch (beef tongue?) he visited Okama Jinja Shrine. Shiogama's name comes from "Yonku no Shinkama," sacred vats used for salt production since the area was first settled. Boiled sea water is poured through hondawara seaweed, creating a unique taste.

10. Above right: On June 25, 1689, Basho climbed the hill to Shiogama-jinja, the Shinto Shrine.

11. At right: Basho was delighted by the beautiful view overlooking Shiogama Bay.

Additional sources for this article: *Shiogama Tourism*  
For more information: [tinyurl.com/shiogama](https://tinyurl.com/shiogama)



# On the Path of Matsuo Basho



12. Three cameras, no waiting. GFX100 II and X-T5.



13. View of Sendai on a crisp morning.



14. Above, left: It's 11 am. Parched from the hill climb to Shiogama Shrine and inspired after learning that brewing and drinking sake is an act of purification, the Urakasumi brewery fortuitously is on our route. Founded in 1724, its nihonshu has the delicate flavor of "a misty breeze blowing through the pine trees of Shiogama." 14. Above, right: Tasting Urakasumi's variety of sakes from their Coravin style vending machine.



15. Time for Seafood Rice Bowl lunch at the Shiogama Seafood Market.



16. The seafood is fresh off the boats in the harbor across the street.



17. Finish with a bowl of steaming ramen in a briny seafood broth.



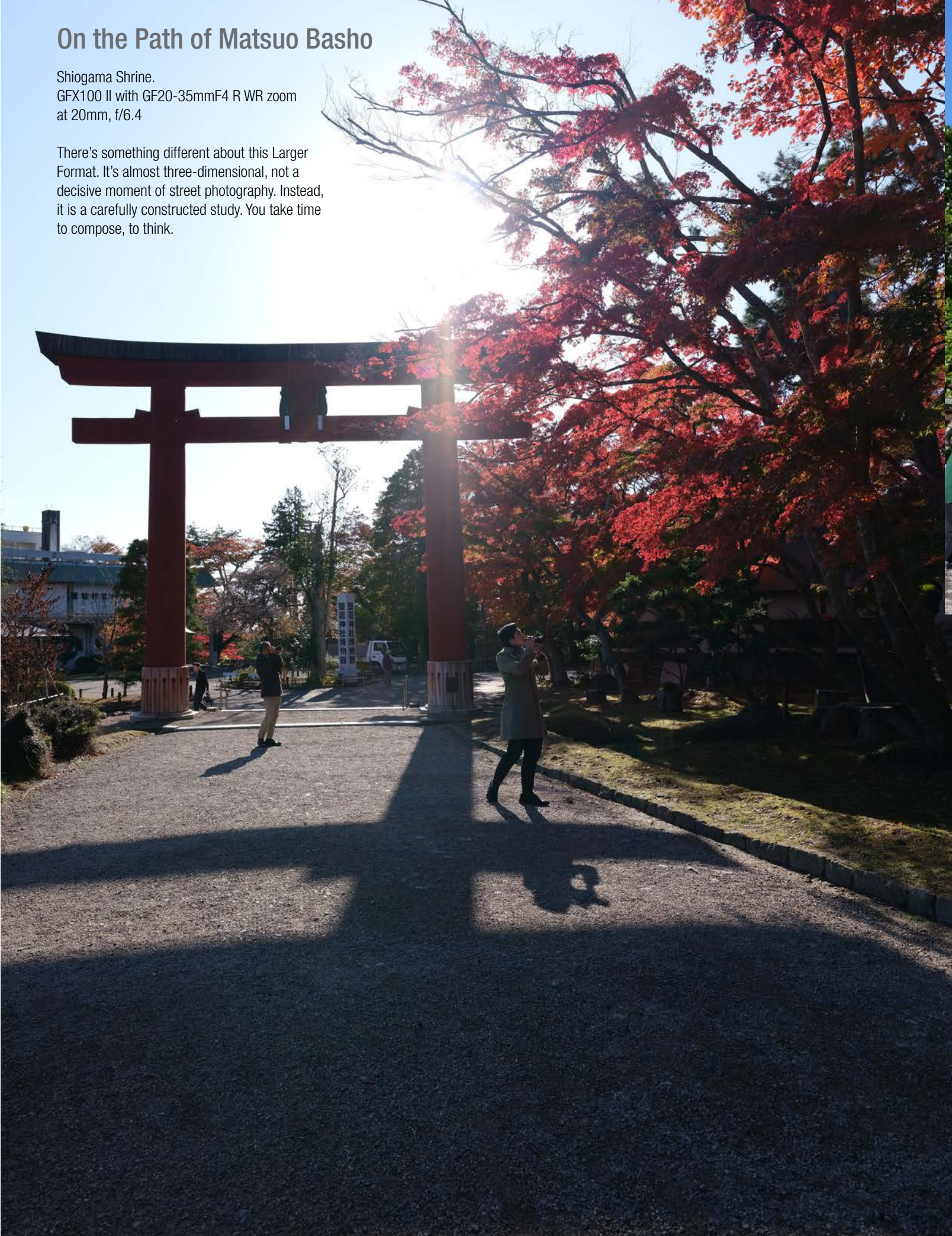
18. If you're still hungry, pick up some beef tongue burgers at Sendai station to devour on the return Shinkansen ride back to Tokyo. The burgers are named after Date Masamune, an Edo era daimyo of Sendai.

# On the Path of Matsuo Basho

Shiogama Shrine.

GFX100 II with GF20-35mmF4 R WR zoom  
at 20mm, f/6.4

There's something different about this Larger Format. It's almost three-dimensional, not a decisive moment of street photography. Instead, it is a carefully constructed study. You take time to compose, to think.





Bunji Lantern at Shiogama Shrine, placed in 1187 to commemorate an oath by Fujiwara Tadahiro to protect Minamoto Yoshitsune. After seeing this lantern in 1689, haiku poet Matsuo Basho wrote, "There is an old stone lamp in front of the shrine. The vestiges of the past five hundred years, now arising before my eyes, something rare." GFX100 II with GF20-35mmF4 R WR zoom at 20mm, f/5.6.



My Seafood Rice Bowl lunch at the Shiogama Seafood Market.

GFX100 II with GF30mmF5.6Tilt/Shift at f/5.6

## On the Path of Matsuo Basho

Magakigashima is a small island in Shiogama Bay with a shrine, Magakishima Myojin. Basho visited here, long before the bridge was built.

Photos on these two pages:  
GFX100 II with with GF20-35mmF4 R WR zoom  
at 20mm, f/5.6.







C. Kim Miles, ASC, CSC adjusting VariCon and Justin Chien as Charles Sun in *The Brothers Sun*. Photos: Michael Desmond/Netflix © 2023.

Going into *The Brothers Sun*, you might have imagined the studio pitch: “Michelle Yeoh is the star—it’s *Sons of Crouching Tiger* meet *Everything Everywhere* and *Crazy Rich Triads*.” The opening sequence of this Netflix gangster series quickly dispels any preconceptions. But we’re here to discuss cinematography, not spoilers, with C. Kim Miles, ASC, who did 5 episodes. (Andrew Mitchell did 3 episodes.)

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

Kim: My best friend in Malaysia, all through school from the time we were three years old, was the son of a couple that owned a commercial production company there. After high school, we had some time off before college, and he said, “Why don’t you come be a grip, come work at mom and dad’s place.” I grew up in Malaysia and moved to Canada in 1990.

**When did you start on *The Brothers Sun*?**

We started prep around April 2022, went to camera around the middle of June and ran until October. For all of the ambition in the show, it was pretty tight. But we got all the tools that we needed to tell the story.

**Tell us about tools to tell the story: cameras, lenses and lights.**

We tested cameras, knowing there would be a lot of scenes at night. We decided to go with the ALEXA Mini LF because it looked so good, even exposing at 3,200 ISO. We used two different sets of lenses on the show to delineate between Taiwan and Los Angeles. The edict was to give Taiwan a very slick, modern feel, and to give Los Angeles a dustier San Gabriel Valley sensibility. So, we were on Signature Primes when we were shooting

Taiwan or Taipei, and on ARRI DNA Primes in Los Angeles. We ended up re-tuning the DNA Primes to return them back to a neutral, cleaner look. We didn’t want to get into trouble with visual effects, and we knew that the pacing of the show wasn’t going to allow us to mess around too much with parts of the lens that might cause problems.

**What rental house supplied the camera and lens package?**

ARRI Rental has been my go-to rental house for many years. They’ve been very supportive of my work. One of things they were developing came into play on this show: a new version of the VariCon variable contrast filter. (Others are also doing it.) Instead of just fogging the entire frame, this one surrounds the frame with 64 separate LEDs that are RGBW and fully controllable. It goes in the filter tray of the mattebox and edge-lights the filter. We can either tint the entire frame or control it selectively to just a little corner or a little highlight here and there. The new version that we’re using on the show I’m doing right now allows us to separate the LEDs into two separate little clumps. We can put a warm wash in the top of the frame and a cool wash in the bottom of the frame to give it some color separation. So that was something that I knew I wanted to work with on *The Brothers Sun* and was a big reason for choosing ARRI Rental.

*(The original Lightflex was developed by Gerry Turpin, BSC around 1972 and used by Freddie Francis, BSC on The French Lieutenant’s Woman and other films. It had hot quartz bulbs and was the size of a teleprompter. ARRI Inc President Volker Bahnmann hired Stan Loth in New York and they developed it into the original VariCon in the 1980s to fit into two filter slots of a 6.6x6.6 mattebox. -JF)*



### **Your Taiwan sequences sparkled beautifully.**

The Signature Primes are real-world perfect. They're beautiful on skin tones. They're sharp, edge to edge. The contrast is not too extreme, but they're not flat. The focus fall-off is nicely rounded.

By comparison, our ARRI DNA Primes are softer, with less contrast and have a somewhat less than perfect aberration and veiling flares that can go all over the frame. The DNA Primes are more eclectic. Each one has its own personality, different from the others. While they're a set that works well together, each one is individual. They take flares in a more old school way. They tend to veil really quickly if hard light hits the front elements. But, they're not so imperfect that you get into trouble with them. They don't create chromatic aberration. They don't have weird magenta or green fringing on the edge of frame. They don't bend the edges. They're all around good performers. Being able to tune them is fun, although we didn't do that on this show. Also, because the DNA lenses tend to fall off pretty quickly when they're wide open, I rarely opened up more than T2.8 unless we were after a particularly shallow depth to field.

Most of our DNAs were LF DNAs, the second generation. But we did have a few of the original ALEXA 65 DNA Primes, including a 65mm portrait lens and a 35mm.

The big fight in the kitchen of Mama's house before she comes home has a bright orange sodium street streetlight outside the kitchen window and green cyan moonlight. You'll see some extended use of VariCon blue flares in the bottom edge of frame.

### **Did you have multiple cameras for the fight sequences?**

Yes, two or three cameras. The fight choreographers worked on *John Wick*, so they knew their stuff.

### **Were the dialogue scenes single camera or multiple?**

The B camera played quite a bit, about 50% of the time. It usually comes down to schedule and time of day and when we've got to get through a scene. That's when the B camera comes out.

### **Do you operate yourself?**

I do, but I like to be with the director and observe the actors during the take. I have a Preston Wireless Hand Unit with me all the time for iris control so I can make exposure adjustments on the fly if needed.

### **Did you establish show LUTs in pre-production?**

Yes. We had a LUT for Taiwan and a LUT for Los Angeles. I usually try to run some tests early on and build LUTs with my favorite colorist Maxine Gervais at Picture Shop. Then we adapt those LUTs to our particular circumstances on set with CDLs from shot to shot. I try not to do that too much because it can wreak havoc in post when they have to track too many CDLs. But sometimes when shooting, it's a choice of option A, "Let's wait 10 minutes while we bring in another fill light," or option B "Let's lift the mid-tones in the CDL." Option B often wins when we're under the gun.

### **You were there for the grading, I trust?**

Absolutely. That's one of the most critical things for me. Otherwise, it's like telling a photographer that we'll hire you for the photos, but we're going to control the Photoshop work afterwards.

### **What aspect ratio did you work in?**

We're 2.39:1 spherical widescreen. We recorded ALEXA LF Open Gate with 2.39:1 framelines. We usually put a 95% frame line up, so there's a bit of look-around if they need to stabilize in post. Visual effects needs a bit more info, and that is why we recorded the entire frame, full height. It's cropped in post. We shoot a rack leader at the beginning to match our frame lines.

### **Theoretically you could crop in camera?**

Yes, you can record in 2.39:1 sensor mode. You might save a bit of data consumption, but the downside is that you remove a lot of insurance for repositioning and visual effects. But, on average, we used two data cards in a day. So, data is not really an issue.

### **How did you rate the cameras at night?**

Often, we'd be at 1600 ISO to expose at T2.8 on the lens. It holds up really well with the LF sensor.

### **With all the fight scenes where your camera is moving around, often at night, you had a very good focus puller.**

Raymond Milazzo is awesome. He also had a Preston Light Rang-er mounted on the camera.

### **Were you handheld or on Steadicam for the fight scenes?**

Mostly remote head. We wanted to take the Jackie Chan approach to fight choreography. He explains that the difference between Hong Kong and Hollywood fight sequences is in the choreography. If you're cutting around the hits, you're missing all the intricacy that you see in the wide shots of the Hong Kong style. So we tried to stay back on remote heads and Steadicam.

### **What did you use for lighting?**

As much as I like LEDs and the options that they offer you with color correction on set, I still like big sources coming through windows. I like 20Ks and T12s pounding through windows, PAR cans making hot streaks on the floor. I use a lot of tungsten sources on stage. Oh, okay. And then we round it out with modern fixtures like SkyPanels, Creamsource Vortex, Astera Titan and Helios tube fixtures. The tubes are completely self-contained, battery powered, RGB—so you can make them any color you want. The Titans are 4-foot long, so if you put them horizontally, you get enough of a wrap onto an actor's face that it doesn't feel like a single source. It feels global.



Jeffrey Chiu, above, is Vice President of Cheng Seng Group. We met at InterBEE Tokyo and continued this discussion a week later.

## What is the history of Cheng Seng Group?

This year is our 65th year anniversary. Our family started in textile and trading businesses. In 1959, they realized that the camera and photo industry was on the rise and established the Cheng Seng Group to focus on the photo, video and film industries, as well as audio, musical instruments and consumer electronics. We are somewhat special in Asia for three reasons: financial stability to maintain inventory, having the channels to customers, and doing things differently. We're not just moving boxes. We do a lot of marketing. We exhibit at many trade shows. We provide hands-on experiences for our customers and service the equipment that we sell.

## Where are your offices and how many employees are there?

Headquarters are in Sanzhong District, New Taipei City, Taiwan (Taipei Science and Technology City). There are currently 120 employees. We have offices in Taiwan, China, Hong Kong, Singapore and also serve the Asia Pacific market.

## What markets do you serve?

Cheng Seng Group is the authorized distributor for numerous leading brands in cinema, photography, lighting and audio.

## Who are your main customers—individuals or rental houses?

We have a diverse customer base, including individual crew members, production companies and rental houses. Our high-end cine equipment business, such as ARRI, Cooke, ZEISS and Leitz, focuses on rental houses and production companies.

We see more owner-operators buying equipment. Customers for personal equipment like wireless lens control or Steadicam are individual operators. Others may have worked in a rental house or they're a DP, assistant, gaffer or camera operator and they want to set up their own rental business. I think the owner-operator market is definitely a trend.

We have a lot of rental house customers, but we do not have our own rental company because we do not want to compete with them. We also provide service to our rental partners. I remember when Martin Scorsese, was shooting part of the film *Silence* on the east coast of Taiwan, quite far away from our service center in Taipei. They had a problem with the camera and lighting equipment. Our technician took the train to their location and fixed the



products there so they didn't have to waste any time.

## How many rental houses are there in Taiwan?

In Taiwan, I think more than 30. Our Cheng Seng office in China services hundreds. In Hong Kong, we have about four big rental houses and about 10 smaller ones. The big rental houses are very strong, but many new, smaller rental houses are coming up and they are very willing to invest in new equipment.

## What about service and maintenance?

"Cheng Seng" consists of two Chinese characters. "Cheng," in the literal definition, means square—as in right, righteous and doing things properly. Recognizing that customers can buy many products online or elsewhere, we provide reasonable pricing. But, we also try to provide 24/7 service because service is the most important thing that we want to provide.

## So, you have a repair department?

We recognize the importance of after-sales service and have a highly skilled team of technicians. They attend factory training programs on a regular basis to stay current with the latest technical developments in the industry. We maintain an inventory of spare parts to facilitate swift service and to offer backup for equipment that might be undergoing repairs.

For the maintenance of high-end lenses, we have established a state-of-the-art, dust-free facility. We take pride in being one of the few entities in the Asia-Pacific region equipped with a 15-meter-long lens projection facility.

## And e-commerce?

We recently ventured into our own e-commerce platform called CSEmart, for Cheng Seng and E-Mart (cseart.com). However, many customers want to take a look at equipment first and this year we opened two flagship CSEmart stores in Taiwan. There are two locations in the center of Taipei where you can visit and experience everything. You can also make a reservation with us to check out the premium products and get a VIP demo. A noteworthy development occurred in October this year with the grand opening of our Leica camera store at Syntrend Creative Park, catering to artistic professionals and photography enthusiasts. The Leica Q3 and M11 are very popular.

## How was business in the past year?

We were fortunate to have had a record year in 2023, with about 30% growth over the previous year. We are distributors of professional,



CSEmart.



CSEmart.



Leica camera store at Cheng Seng's Syntrend Creative Park in Taipei City.



Leica camera store.

premium brands such as ARRI, Cooke, ZEISS, Leica, Freefly. For lighting, we carry ARRI, Kino Flo, Creamsource, and Astera.

As distributors of Canon, Sony, SIGMA, Tamron, GoPro, Røde, Sennheiser, Genelec and more, we see a rapidly growing market of content creators, YouTubers and podcasters who are doing both video and audio at the same time. The Sony FX series and Canon R cameras are doing very well. Everybody who wants to sell products on e-commerce needs a video camera, lenses, lighting and microphones. Many companies are starting to build their own studios to create content to communicate with their customers.

### Is that a worldwide trend—more people getting more affordable cameras and equipment?

Yes. But the high-end market definitely continues to exist. For the big budgets, big stories, you definitely need to have the best, most professional equipment. High-tech advanced technology, full frame, large format, anamorphic lenses are in great demand.

It is noteworthy that major camera suppliers in the market are not solely focusing on the high-end film market but are gradually increasing their attention to mid-to-high and mid-range customers. This expansion of the customer base enhances the willingness of advertisers and production companies to invest more in producing higher quality advertisements and dramas. We believe this new market holds significant potential.

### In conclusion?

My passion is to see my friends and customers getting the products they want need. That's what drives and motivates me.



David Chiu, Managing Director; Michelle Chen, Chairwoman; Jeffrey Chiu, Vice President.

# Band Pro - Passing the Mic

## Passing the microphone

Amid the celebration, partying, demos and gathering at the annual Band Pro Open House 2023, there was an important announcement. Amnon Band took the stage and said, “I joined this industry in 1981. I opened Band Pro in 1984. Band Pro will be 40 years old in June. It’s been an amazing journey.

“As of next year, I’m going to relinquish my position as president of Band Pro. I’m going to remain CEO. Ushering in a new era with a new generation. My son Daniel Band will be President, leading the company into the next 40 years.

“And don’t worry, you’re not going to get rid of me that quickly. So from the bottom of my heart, to this entire Industry and everyone connected to it, a huge thank you. I not going anywhere, I’m just going to pass the microphone to the next President of Band Pro.

Daniel Band stepped up and said, “Thank you so much, everyone, for being here, coming from everywhere around the world. I want to say thank you to my Dad, to the Band Pro staff for putting this event together. Thank you, Dion, for being here. It’s such an honor. I looking forward to a long journey with all of you.

## Succession

*Amnon and Daniel continued the session about succession.*

Amnon: People will see a lot more of Daniel and possibly less of me. But, I’ll never stop being involved.

Jon: Daniel, what will you be doing as President?

Daniel: It’s a lot of responsibility. For the most part, I will be reaching out to our clients, discussing their needs and wants. Of course, they’re going to assume that I don’t know what’s going on so I’ll have to prove myself.

Jon: But, you’ve been doing this for some time. You started at the company a number of years ago.

Daniel: I started as a driver four years ago. Then, I was service coordinator and director of operations.

Amnon: You build a building from the ground up. You can’t come into a company and be president right away.

Jon: So many people in the business started as runners or drivers. And there are quite a few companies that are now run by the second and third generation.

Amnon: It was time to do this when I realized that I’m dealing now with second generation clients, children of my previous clients, their parents, their fathers.

Daniel: Actually, there’s a funny coincidence. He started Band Pro when he was 27, and I’ll be 27 soon, going into this 40th year of the company.

Jon: How do you see the business evolving in the coming year and the years ahead, and what will you do to do the same or to change things?

Daniel: It looks like people are becoming comfortable with more affordable equipment as long as it functions properly. I’m not quite sure if this trend is going to continue, but it’s definitely something that we’ need to be prepared for.

Jon: But, don’t you think that there will always be a high end for the top movies each year?

Amnon: For sure.

Daniel: I definitely think that high-end products will continue to be appealing, especially for their artistic value or for people who desire the best of the best.

Amnon: If I can add a little bit to the answer. Daniel will have to usher the company into a whole new era. There are major developments in the industry happening at lightning speed: AI, automation, CGI, more owner-operators.

Jon: Does that mean more e-commerce?

Daniel: Yes. Gilbert Aguilar and our team have been strengthening Band Pro’s online sales lately.

Jon: What about education and seminars?

Daniel: We’ll be doing that more often as well: tutorials on certain products and as a source of knowledge for the community and schools. We’re working more closely with music video creators and areas that we had not dipped our toes into. Ideally, we’ll have even more technical people here, more in-house camera operators, more DPs, and become a technical place that people come to for knowledge and build it that way.

Jon: Daniel, what did you study in university?

Daniel: Psychology, with a minor in communications.

Jon: Amnon, what are you going to do? I can’t picture you sitting around on the porch doing nothing.

Amnon: I may dabble in mergers and acquisitions. I’m going to travel more. Take real time off. My longest vacation has been two weeks. I want a month vacation without my cell phone.

If Daniel was not so passionate about the business and the company, then I would’ve put it up for sale at some point.

Daniel: Five years ago, he asked me, “What should I do with the company?” I was like, “Sell it. Free yourself from the stress.” Then I started working here and I was like, “Actually, wait.”

Jon: It’s good you did.

## Honoring Dion Beebe, ASC, ACS

Moments before announcing plans to name Daniel as President, Amnon presented the annual guest of honor award to Dion Beebe, ASC, ACS..

Dion replied, “Thank you so much. This is really a great honor and surprise too. I was not expecting this or that over there. (Over there was a yellow cab with actors, a scene from Dion’s film *Collateral*, directed by Michael Mann, and shot with a Sony F900, Thomson VIPER FilmStream Camera and ZEISS DigiPrime lenses.) Seeing that F900 strapped to the front of a cab actually gives me great anxiety. Bryan Carroll over there, it probably gives you great anxiety too. From the very early days of charging into digital age and just figuring out that process, people like Amnon and companies like Band Pro have helped people like us to find our way through that complicated world that is cinematography. I think we’ve all learned as we’ve progressed our way to this point. So, a big thank you.”



# Band Pro Open House 2023



Photos by Brett Gillespie, Ben Kopetzky, Gilbert Aguilar.

# The Life of Trevor



Trevor Steele, Paris 2010.



Ben Steele, Trevor Steele, Andrew Steele (L-R) at Micro Salon 2011.

Trevor Steele passed away in Paris on Dec 20, 2023. He was a beloved, influential, innovative pillar of the cinema industry. Trevor was the center of attention, an optical centering, the life of the party wherever he went. He could explain technical details, and almost anything else, with great clarity, charm and wit.

Trevor was born in Sevenoaks, Kent, on the South Coast of England. He attended a good public school. When he was eight, the family moved to Palmers Green in North London. Trevor had no friends when he arrived until he met a boy named George Hill. They became a lifelong buddies and George was a founder of Optex. “We did practically everything together as young boys do,” Trevor said in a 2012 *FDTimes* article. “We played and went bicycling together. We joined the church choir. The church was named St. Cuthbert’s, at Chitts Hill in North London. George went on to a technical college called Arnos Grove. He trained as a technician to work a lathe and all the machinery. I failed miserably in grammar school and came out with achievements in French and woodworking. Reading, writing and arithmetic went by the board. I confused geography with history. But I did very well in French, which of course, helped later on.”

One of Trevor’s first jobs was as a projector technician for Cinex in London. They were the importers of the famous Paillard Bolex H-16 cameras and other equipment. Trevor stayed with that company for more than 15 years, gradually working his way up from Technician on the bench to Section Leader, Assistant Service Manager, and ending up as Technical Manager. He travelled to Switzerland often for intensive training courses.

Trevor got involved with the Bolex 16 Pro camera, designed and developed in Munich, and way ahead of its time except for one detail: you had to cut the film to remove it from the magazine. He gained valuable experience learning how to shoot a film as part of a crew working with Swiss television.

In 1965, Kodak (with sales of more than \$1 billion a year and 75,000 employees) came out with Super 8. Bolex was slow to adopt the new format. Trevor was out of work for a few months when he got a call from Éclair Debrise UK. This company was created by Harry Saltzman, Producer of the James Bond films.

Trevor explained, “Saltzman had saved the tragically ailing Éclair International Company in France. He opened up a subsidiary in London to be able to produce this equipment cheaper. I was invited to join them and became the first person to be employed by that company. I was responsible for setting up the camera production line, the after-sales service and then technical sales. I then joined Éclair International Cameras (E.I.C.) in rue Gaillon near the Opera in Paris, and later just off the Champs-Élysées near the Arc de Triomphe.

“I travelled around the world to train technicians on the NPR, ACL, and other cameras, and bring back news of potential sales. We trained some 150 technicians over a period of four or five years, which meant that there were plenty of technicians available to service Éclair cameras. But Éclair was about to fail. All the staff were laid off except myself, Manfred Tosseram, Michel Vacar, and Madame Gauthrie. Jean-Pierre Beauviala was called in to assist. There were no new orders for Éclair cameras because with the new Aaton and Arriflex 16mm cameras, the market was already saturated and video was coming in very fast. The writing was on the wall. There was no future for Éclair. Mr. Beauviala was very kind to me personally when it came to the showdown at the end.”

And that is how Emit began in 1982. Trevor, Manfred Tosseram, and Michel Vacar created the company to assist the Éclair camera factory in exporting their spare parts, back orders and accessories. The company was named “Modern Image Techniques.” It was set up at Epinay-sur-Seine, about 12 kilometers north of Paris, the hometown of Éclair Processing Labs, cutting rooms, and the famous Éclair Film Production Company with the largest sound stage in Europe at that time.

“Modern Image Techniques” became Emit. They brought in Cooke lenses from the UK and PAG batteries, Chrosziel matte-boxes and follow focus, and Panther dollies—under FGV at the time.

Andrew Steele said, “Trevor and his wife Marlene sowed the seeds and put down the roots that helped us—Ben and me—grow Emit into what it is today and for that we are ever grateful”.

# The Life of Trevor



Trevor modeling with Eclair NPR on Ronford Multiplan Dolly.



Trevor with LED headlamp glasses, IBC, Sept 2011.

## The Life of the Party

Andrew and Ben sent a call out to friends and colleagues for WWW— When did you first meet Trevor, Why did you meet him, and What happened. The stories that came in could fill a book. Here is the trailer, the condensed story.

“I met Trevor in 2008 at AFC Micro Salon, at the invitation of Jacques Delacoux, President of Transvideo. It was, to paraphrase the last line of *Casablanca*, ‘the beginning of a new friendship’ with him, Andrew and Ben. Trevor was up there with Denny Clairmont in exalted guru status as the first ones to call with a technical question. The answers were always long and fascinating, expanding from the technical to the artistic, with history and anecdotes in the mix. In 2012, Trevor endured a long FDT interview about the history of Emit. We agreed it should be called “The Life of Trevor: The movie rights may still be available. - *Jon Fauer, Publisher of Film and Digital Times.*

Denny Clairmont said, around 2010, “Trevor used a wonderful expression that we have adapted—about doing a production and then mucking it up by cheapening it. He said, “If you’re not going to do it right, why bother?”

“I first met Trevor Steele in 1970 when he was working for Éclair Debrie UK selling cameras and other products. At this time we (Ronford Ltd.) were making a wheelchair dolly for Stanley Kubrick. There are pictures of Trevor demonstrating our ‘Multiplan Dolly.’ Trevor sold these and a new fluid head of ours, the F2, along with the Éclair Debrie cameras. A big part of the success of the F2 head was down to Trevor’s salesmanship.” - *Jeff Lawrence, Ronford-Baker Camera Support Technology.*

“We will deeply miss Trevor. He was a legend of the cinema world. I will never forget, when I started in the industry, Trevor and Alfred Chrosziel were taking young Dominique to the Parisian brasserie facing the Gare du Nord for 4-hour seafood lunches. It goes without saying that the atmosphere was very jovial. Being with both of them was a privilege. They showed me how to make business with style. Unforgettable!” - *Dominique Rouchon, Deputy Managing Director, Angénieux International Sales-Marketing & Communication.*

“I first got to know Trevor in the early 80’s due to my Cooke 9-50 / 10.4-52 CVK zoom lens project with Brian Newman of Cooke. Distribution was convoluted. Hence I met Trevor and his dear wife Marlene. We became fast friends over the years. Trevor was always gracious introducing me to the industry in France. We had many fine times together. One of our last adventures was a trip to Grenoble to visit our old friends at Aaton. I spent many nights at Trevor’s apartment and enjoyed many good times with him and his sons Andrew and Ben.” - *Les Zellan, former Chairman of Cooke Optics, President of ZGC.*

“I met Trevor when Ben and Andrew were boys. A very young Ben, maybe 5 years old, held my hand and gave me a tour of their beautiful garden one summer, in French, while Trevor’s wife, Marlene, prepared a lovely backyard dinner for Ira Tiffen, Les and me. It was loving, relaxed and memorable. Years later, when Ben and Andrew were running Emit, Trevor and I had a conversation about art and architecture during NAB. We discovered that we were both fans of Frank Lloyd Wright. Two years later, with Les’s blessing, we embarked on a six-hour drive to visit Wright’s Falling Water in Pennsylvania. The best memories are those spent with a kindred spirit having an adventure filled with awe-inspiring moments. Trevor’s kind, affable and loving spirit will be remembered. I always thought Trevor had the coolest name ever. It just rolled off the tongue, Trevor Steele — like Bond, James Bond.” - *Barbara Lowry, former marketing manager at ZGC and Cooke.*

“I met Trevor for the first time around the end of 2004 because Emit was the French distributor of P+S Technik Products where I had just started working. I have many nice memories about what a charming and passionate dancer Trevor was at some of the parties we attended. He was a reliable businessman and a great human being.” - *Philip Vischer, Product Manager PCA Mechanical Accessories at ARRI.*

“I first met Trevor in the mid to late 1980s at a Photokina after-show meal with Ron Collins, Geoff Chappell, Alfred and Gertrude Chrosziel and the usual suspects. I was quite new at OpTex but he was very accepting of ‘the new boy.’ Trevor’s mind

# The Life of Trevor



seemed to work faster than most people could listen. He had an amazing enthusiasm for anything to do with imaging, which was ironic because his eyeglasses were forever smeared and never straight.” - *Robin Thwaites, Director of International Sales, Tiffen International Ltd.*

“My first encounters with Trevor probably go back to 2007 when I was still quite new at Tiffen and we met at the Emit office prior to a Satis Expo in Paris. Of course, they had their late-night party night at Chez Serge. Trevor was a warm, friendly, technical eccentric with countless stories of painting cameras white to withstand the scorching sun on *Lawrence of Arabia* or driving across Europe with kit to get to a set location. He had a glass of red wine in one hand, and always someone’s hand in the other.” - *Danny Hallett, Tiffen.*

“Trevor was the most passionate lens technologist geek. His personality, charisma, and style were wonderful. He was the best host. When we visited Paris, he was there for us all the time. We were like the 3 Musketeers: Trevor, Alfred Chrosziel and I. An Englishman in Paris, an East Prussian in Munich and a Hungarian in LA walk into a bar. What could possibly go wrong? We dreamed up products on the back of beer-soaked napkins. We debated, argued and ultimately reached a place where few arrive —harmony. Trevor had an amazing sense of loyalty and respect for the people he worked with.” - *Amnon Band, CEO of Band Pro Film & Digital.*

“I met Trevor in Munich in 2006 and then at all the industry trade fairs year after year. He was charming and friendly and always humorous. His wit made us all laugh in every situation. Encounters full of wonderful moments will be fondly remembered.” - *Christine Sailer, DENZ*

“I met Trevor in the early ‘90s when Emit was still in Epinay. He made time for me and answered my many questions about Cooke lenses, which were a mystery to me at the time. Trevor’s encyclopedic knowledge and kindness stayed with me for many years, and naturally, at the very first AFC Micro Salon in Paris, the first booth I stopped by was Emit. On another occasion, we ended up locked in the SATIS show because we were talking so much, and the security guards came to dislodge us just as the service lights

went out. Thanks to him, I’m still a fan of Emit, where I always learn something and am always made to feel welcome. Trevor’s two sons, Andrew and Ben, maintain the house’s reputation for excellence and warmth. I’ll always fondly remember Trevor Steele as a great man.” - *Philippe Coroyer, cinematographer, director and co-founder of Ciné Système.*

“Many of us were touched by Trevor’s passion, knowledge and kindness. He was a staple of this niche yet demanding industry.” - *Hélène de Roux, director and co-founder of Ciné Système.*

“Times with Trevor were all memorable, in particular one long evening over a few glasses of red wine at a Tiffen open day in Pinewood. He was always very welcoming to me and had a depth of knowledge of our industry that few had. He is fondly remembered and we are lucky to have had the pleasure of being in his company.” - *Tony O’Connor, Octica Professional Ltd.*

“Trevor was always exiting to meet at IBC. I think I met him for the first time in September 2000. Emit became our agent for Easyrig in France. It is truly a family company that I have trusted.” - *Johan Hellsten, Inventor of Easyrig.*

“Greetings from OZ. Great memories. I wish I had some photos but my John had most of our early contacts with the greats like Trevor. I think that Andrew and Ben are the best tributes to Trevor and the success that is Emit.” - *Sue Greenshields, Managing Director, Lemac Film and Digital.*

“I first met Trevor in the early 1980s at an exhibition in the Royal Lancaster Hotel in London. At this time, Trevor had formed a company Emit with two of his colleagues from the Éclair Company, so Emit was made up from an English man, a French man and a German, (this is not the first sentence of a joke). Emit became our distributing agent for France. We became firm friends. Trevor liked the English theatre and he often suggested that we take a trip to central London to see a show, so together with Geoffrey Chappell, the three of us went up to town. Although no tickets were ever booked, somehow Trevor always managed to acquire very good seats. These are just a few of many memories I could have told you about of my friend Trevor.” - *Nigel Gardiner, Sales Director PAG Limited UK.*

# The Life of Trevor



Trevor tempting Geek the Dog, Tatiana Pereira, Jacques Delacoux.

“Like many of us, I have many memories of Trevor. He was a key person in our creative industry. Trevor was probably the first person I met who showed me to what extent image construction, technological evolution, intelligent business and the pleasure of working among enthusiasts were interconnected and inseparable facets of the profession. I keep intact the memory of his humor, his commitment and the little sparkling lights in his eyes when we worked together. So long, dear Trevor.” - *Fabien Pisano, Media Solutions Sales Head, Sony Europe.*

“Trevor was good friends with my father. I remember them always enjoying a drink and laughing together. My fondest memory of Trevor took place back in 1984. I was 20 and in Paris on vacation. I had only worked with Trevor through my dad’s company Century Optics. Even though he did not know me well, he met me at a hotel in Paris for dinner and a few drinks in the lounge. What I remember the most about Trevor was that as a youngster in the industry, he treated me with respect and seemed to always have a smile. He will be missed.” - *Steven Manios, COO Ste-Man, Inc. dba Cartoni USA.*

“I met Trevor during my time at Century Optics — a business relationship that grew into a friendship that continued through my time with at 16x9inc. Trevor was such a special person—so enjoyable person to be around. Every conversation with him was something that stimulated me to see how to deal with personal and business situations in ways that were not necessarily the way I was inclined. That winsome wisdom is what I appreciated so much about him. He knew how to navigate his way in difficult situations with difficult people (me) to draw them to his point of view. I know that this is very obvious to Andrew and Ben because they reflect the same style and qualities in running Emit. I am sure he would be very pleased how they have learned the lessons he taught them. it was a life well lived by Trevor.” - *Jeff Giordano, at Angénieux for 10 years, 17 years at Century Optics, 12 years at 16x9inc, and 8 years consulting for Cartoni USA.*

“Where and when did I meet Trevor? Maybe Paris, Amsterdam or Munich in the late 90s. At that time, Transvideo designed a system to read Cooke optics. We never made any money with this thing but I had a good laugh with Trevor and since then I have



Trevor in Amsterdam, Sept 2012.

always considered him as a friend. For me, he was a true British gentleman with the inimitable humor that goes with it. Trevor always came to have fun at our IBC parties. He was a kind of incredible dancing queen! I remember also a good laugh in Tel Aviv where he found some plastic fantastic glasses with LEDs in the frames. He had a knack for having fun with anything. I have a lot of photos of Trevor but I like this one in particular (above). It was in Amsterdam, Trevor had stayed to sleep in our barge - look at him, everything is here. I loved him.” *Jacques Delacoux - CEO Aaton-Transvideo.*

“I met Trevor in the mid-80s. At the time, I was working mainly in Super16 with the Cooke 10.4-52mm Zoom. My assistant, Martine Gonthié, had gotten into the habit of ordering the mattebox, filters and focus controls from Emit. As I was very happy with these, she pointed out that perhaps I should take the time to meet the people who worked at this company. That was a very wise suggestion. I met Trevor, his two sons, Andrew and Ben, and all the members of Emit. From then on, I never imagined starting a project without first asking them for advice. Trevor was one of those people who changed my career: he was able to show me, with humor and intelligence, that “I didn’t know what I didn’t know.” He suggested that I open up to the theory and analysis of tools. He made me understand that if you don’t have a minimum of training (and information), it is difficult to progress. He opened essential doors, particularly regarding lenses. Trevor also had a passion for the ergonomics of cameras. His background at Eclair must have helped. He was one of the first to understand that camera accessorization played a big role in the effectiveness of camera crews on location.” - *Philippe Ros, AFC, ITC co-chair (Imago).*

“WHEN: Our first exchanges with Trevor date back to 1986. WHY: Thierry de Segonzac created the company Télégrip in 1986 to rent grip equipment in Paris. Trévor was obviously the essential and inescapable contact for importing the appropriate products: Panther dollies and Egripment accessories. We were at that time an important player in imposing Panther dollies into the French market. This was one of the foundations of the principle of a “global offer” for providing innovative technical equipment for productions filming in France which inspired a consolidation of a group of companies into what is today’s TSF.

# The Life of Trevor



Trevor and Florian Granderath at SATIS in 1984.



Stephen Chappell and Trevor at sea.

“WHAT: 40 years of collaboration with Trevor first of all, then the team he put in place, Andrew, Ben and now along with the current team, to become what it is today—creating links, professional friendships and loyalty thanks to high quality and service.”  
- *Frédéric Valay, Director of Client Services.*

“Unforgettable. I came to know Trevor 40 years ago when we first joined Satis in March 1984. We had just introduced our 1st Panther dolly at Photokina in 1982. At that time there were just 2 “Panther people” – Erich Fitz and myself and we were still showing under the name FGV Panther – luckily, I was the one to support Trevor with his show.

“Emit had been established a short time before by Trevor Steele, Manfred Tosseram and Michel “Boris” Vaccar. From what I remember it was one of the first – if not the 1st Satis. It was the time of a Francois Bogard, Claude Chevreux, Henryk Chroszicki, Rune Ericson and directors like Claude Lelouch came to the show, but at this very first start everything was a bit chaotic and Trevor and I did set up the booth till long past midnight. It was the beginning of a long-lasting friendship with absolute trust and confidence in each other. Trevor invited us to his apartment where I got to know his wife Marlene and their young son Ben – probably 7 years old but already fully focused on some type of electronic toy calculator.

“If I remember correctly there was also Alfred Chrosziel, Brian Newman from Cooke, Geoffrey Chappel from Optex and Nigel Gardiner from PAG. Over the years we often met at Satis to support Emit which soon after was entirely taken over by Trevor and Marlene. Although this was financially a very hard time for Trevor, I remember him always being an extremely generous host. Unforgettable the evening he took us to the Moulin Rouge and we watched the show, not only girls but also little dogs etc. performing. Tired from the show day Alfred quickly fell asleep during the show and we all had a lot of fun afterwards teasing him by telling what we had seen and of course inventing and adding a lot of things like elephants and giraffes. ‘Did you see the elephants, Alfred?’ which he of course affirmed to, not wanting to admit that he had slept most of the time.

“Trevor joined us later for Photokina and I remember that he got terribly lost the first time. Not that he just missed the Cologne exit, he almost ended up in Dortmund which was quite a way

off. But this was typical for Trevor, here and there a bit puzzled. “On the other hand, this was one of the things we all appreciated very much: he was someone who continued to be the way he has always been. He kept his humanity and gentle character also in business. Thanks to God he did not turn into a typical businessman but remained a very lovable friend with whom you could talk about everything. He was very open, generous and always helpful. I remember his warm words when he came to our house right after a show in Los Angeles and we had just set up the Panther office in North Hollywood in 1987.

“He very proud of his children Andrew, Jane and Ben and most of all when ‘the boys’ took over the company. It was never boring with Trevor, he had always stories to tell and a fine sense of humor. You could also discuss problems with him, he was very understanding. His enormous generosity I already mentioned but also his loyalty towards Panther when other dolly manufacturers appeared on the market. After leaving Panther we stayed in touch over the years and enjoyed seeing us and catching up at trade shows. Our whole film community will remember this very exceptional and special person.” - *Florian Granderath, Camera Support Granderath.*

“I first met Trevor in the early 1960s, both of us young lads, while I was working for Kafetz Cameras, the UK distributor, for Beaulieu and Trevor worked for Andre Fer of Cinex, the UK distributor for Bolex film equipment. A few years later, Trevor joined John Page, the UK distributor for Eclair. Years later, Trevor got together with 3 friends in the industry to launch their own company in Paris. We always said that name of their company, Emit, followed repeated discussions that took a long time, therefore the name had to become t i m e, in reverse.

“Like many of us, growing up in the 50s and 60s, Trevor was surrounded by comedy. As there were hardly any television programmes available, we had excellent comedy radio shows through BBC that we each listened to faithfully. On my many visits to Trevor in Paris, in later years, we often spent an evening listening to one of many old tapes of such programmes, of which Trevor had an enormous collection, laughing and recalling the characters and their jokes.

“We spent many family holidays together with Alfred and Gertrud Chrosziel. Our young families played together for two weeks

# The Life of Trevor



Jacques Delacoux and Trevor.



Trevor, Alfred Chrosziel, Andrew Steele, Skipper, Geoffrey Chappell

from morning to night and never complained about not understanding one another in English, German, and French. The children jointly added Spanish to the repertoire as the island of Formentera was our own “treasure island”, thanks to the generous hospitality of our dear friends, Alfred and Gertud. Over the years we all attended each other’s children’s weddings. My friendship with Trevor (and Alfred and Gertrud) was a constant one.

“There are so many memories. Regularly, Trevor enjoyed driving his faithful Renault to London to visit Nigel Gardiner at PAG, after which on to the bright lights of London’s theatre district where the 3 of us would meet up, buy whatever tickets were still available for that evening, and once in the theatre we became part of the cast on stage because of how enthusiastically we sang along. After such a show we would look for a late restaurant and wholeheartedly critiqued and relived the show all over again. Nigel would rush to catch the last train home and Trevor and I would begin the journey to try and find our cars. When I drove off to go home, Trevor would start his drive back to Paris, taking the night boat. Once on French soil he would park in a roadside resting area to have a few hours of sleep and then show up in his office by mid morning. For us, business and friendship really worked - there were several sailing adventures (one particularly scary one that included Alfred and our sons), all night adventures, theatre outings, travels and exhibitions, Carol concerts, and all always made merrier by Trevor’s own brand of comedy. A great many nights we enjoyed hearty laughter while holding a large gin and tonic, and discussing how to put world to right.” - *Geoffrey Chappell.*

*Andrew Steele weighs in.* “The Scary Sailing Trip went like this: we had two rented yachts along with a skipper. We navigated around Belle Ile and up to Quimper, Normandy. In the morning of our planned departure back to the port of Trinity, a big storm blew up. The skipper said he had to get back to Trinity that night, so he asked me if I was ok for Alfred to take one boat and he would take the second one with Trevor, Geoffrey and Steve. We were underway only to see many other sail and motor boats rushing back into harbour to shelter.

“The skipper told me after our voyage that he was pretty lonely up top with the three of you below decks ‘mapping the course’ or maybe horizontal. Alfred and I had a 6-pack up on deck for the voyage back and managed to follow the other yacht back to port

where on arrival all were in good spirits and went for an evening meal to celebrate. Real scary stuff but great memories.”

*Geoffrey Chappell rebuts:* “I was most definitely not below deck with Trevor, that would have been the worst place for us as I remember being very seasick. I don’t remember the skipper on our boat but remember Alfred, who was our most experienced sailor, so we may well have traded him with your boat. I do remember Trevor being convinced that our last hour had come. In the years that followed, we teased him plenty about that particular sailing trip.”

“My first memory of Trevor is from around 1992/3. Although my father has known Trevor before I was born, my first memory of meeting this amazing guy was during our first ‘united nations’ family holiday to Formentera with Trevor and Alfred Chrosziel — the 3 Amigos. Needless to say, I very lucky to have enjoyed holidaying and sailing with Trevor and his family while growing up. And now, I feel privileged to be working closely with both Andrew and Ben as they continue to guide Emit forward and into the future. Back in 2009, I was honoured when Trevor made one of his same-day round trips from Paris to Christchurch, Dorset, UK to help celebrate my wedding day.” - *Stephen Chappell, Sales Director, cmotion.*



Trevor at annual Chez Serge evening during Micro Salon, 2013.

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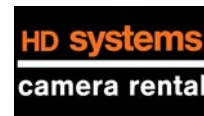


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