

Jon Fauer, ASC

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Issue 120

FILM AND DIGITAL TIMES

Art, Technique and Technology in Motion Picture Production Worldwide

DJI Inspire 3

Inspire 3 Cover Story

Claudio Miranda, ASC

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Stargate, Rialto 2, Optimo Primes

FILM AND DIGITAL TIMES

Art, Technique and Technology

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

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

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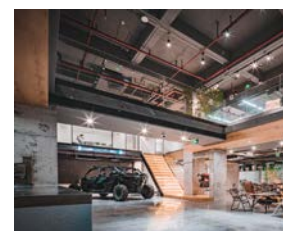
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Cover: Claudio Miranda, ASC, Cinematographer of the DJI launch film for the new DJI Inspire 3, on set in Sofia, Bulgaria, coming up with new possibilities for new shots that haven't been done before.

Cover Story: Introduction to the new DJI Inspire 3.

Claudio Miranda, ASC on DJI Inspire 3



The 2½ minute launch film for DJI's new Inspire 3 is a spirited sand-and-sandals epic chase through an ancient Roman marketplace.

EXT. Imperium Romanum Market - DAY.

Wide crane shot moves into CU of a pickpocket snatching the purse from a vintage vegetable vendor. Wait, wait—this cannot be a crane shot because the camera keeps moving along a narrow alleyway. Centurions pursue pickpocket, jumping over carts, skirting columns and obstacles, under beams, through a torch-lit interior, culminating in a fun anachronism of an ending as the camera soars from extremely close to very, very wide.

Claudio Miranda, ASC (Top Gun: Maverick, Life of Pi, The Curious Case of Benjamin Button) was on the phone from Los Angeles,



Claudio Miranda, ASC operating DJI Master Wheels on the Inspire 3 film.

talking about this latest adventure with the new DJI Inspire 3.

Jon: How did this excellent DJI Launch Film begin for you?

Claudio: DJI asked me to do this launch film with the new Inspire 3, so I just hopped on over and did that shoot for a couple days.

It looks like you were at the Cinecittà backlot in Rome.

We were at the Nu Boyana Film Studios in Sofia, Bulgaria. They had very cool Roman sets and streets already built and we just used them. DJI had the art department prop it and dress the sets.

Who directed?

Yehonatan Richter-Levin was the director. We had what seemed like a million cameras running: our Inspire 3 doing the launch film, BTS cameras, DJI Ronin 4Ds, flying sequences, product shots. I was happy to be shooting.

And the Inspire 3 pilot?

The pilot was Ferdinand Wolf. He's the creative director of DJI Europe and flies lots of their stuff. He was the guy I mainly dealt with. We blocked the shots together. I found some other interesting locations and we made it work. I mean, that drone is really pretty amazing. It's a massive step up from everything that came before.

In what way?

They really got it together with the Inspire 3. You know how I like to work with wheels? That is the way I normally operate most cranes and dollies. It was great to operate the Inspire 3 with the DJI Master Wheels. Some of those moves that you see on the video wouldn't have been possible with a joystick. You can be really precise with wheels that a joystick wouldn't give you. By the way, the DJI Master Wheels work in a similar seamless way with the Ronin 4D.

How did your assistant pull focus?

DJI has a nicely integrated wireless focus system that we used. Our camera assistant was pulling focus as she would with a normal film-like wireless device, not an actual Preston FIZ, but it is a sophisticated system. The hand unit feels like what assistants are normally used to. You have focus and iris controls and now it's just

Claudio Miranda, ASC on DJI Inspire 3



like a professional film set with the Inspire Control Unit. It looks the same as the one for the Ronin 4D.

How did you navigate over, under, around and through the obstacle course that was your ancient Roman backlot set?

DJI also has a very cool navigation system with an RTK (Real-Time Kinematic) base station that you set up on a tripod on the ground and it gives you centimeter accuracy. For example, we programmed a 13 waypoint move and then flew between all of them in an incredibly precise, continuous shot, wrapping around someone, taking off and then landing in an impossible position, inches away from things. And it was so accurate. The pilot can use

the throttle and concentrate on how fast it should go between all those points.

We were flying the Inspire 3 with the RTK through places that were much narrower than we ever thought were possible and around obstacles that were previously impossible. It gives the pilot much more confidence than ever before. We were able to fly paths with precision—past trees that were right next to us, in buildings, through pillars, and into tight spaces with narrow passageways and overhangs. Those precise waypoints let you do shots that you could never have done before, that had been just impossible.

We haven't had that accuracy before. Another thing that's great is





how the Inspire 3 now stays perfectly level. You're not fighting it to keep a level pan. It is much more stable.

What about monitoring and video transmission?

Other things are more stable—for example, video transmission. There's no delay, so now you are able to focus like never before because it's real-time and much more responsive. What's different for me from Inspire 2 to 3 is how the image quality is so much better. Now I can just totally look at the image in a more confident way than I ever have before.

The image quality is massively improved on the new transmission system. We can see higher quality images on the screens. And because there's much less latency, it's easier to operate the wheels. Everything is much improved. It's easier for focus. The new HD video transmission system is much clearer, with more definition and a higher bit depth.

It gave us such a good live view, with no delay, that shots aren't missed anymore. It's just makes my life so much easier. Oh, and the control system is much better as well.

Your live video feed for viewing and operating was HD. But did your camera record 6K or 8K?

We used the Inspire 3's new 8K camera. It is pretty amazing. It

has dual ISO. You might think it's the same camera as the Ronin 4D, but this is a different and lighter version. The Ronin 4D has a different task. To save weight, the Inspire 3 camera doesn't have internal NDs like the Ronin 4D. Also, on the Ronin 4D, you can attach a DJI DL Mount, E-mount or L-Mount.

But the Inspire 3, as far as I could tell, only has a DJI DL lens mount. That was because they made a concerted effort of having it light and nimble. We used the DJI lenses, including the new 18mm Full Frame prime. It is an excellent lens.

There are no gears on the DJI lenses. When your assistant is pulling focus, it's being done electronically, internally?

Correct.

Is that in our future?

It's nice to have it all built in. But I don't know like how "finessey" it can handle really intricate shots. Sometimes those internal electronics can get finicky. They make the DJI lenses light-weight because the lighter they are, the more air-time you get and the more maneuverable it can be. So, the lenses are F2.8. If they were faster, they would be bigger and heavier. They don't have gears or external motors and you cannot use different lens mounts as you can with the Ronin 4D.

Claudio Miranda, ASC on Inspire 3



What did you record to?

It's the same media as the Ronin 4D, which is so smart because you don't need an adapter to download the data. It's an SSD that you just connect with a USB-C cable. I thought that was super clever.

You've been heavily involved with aerials. How did that begin?

I remember we were doing *Only The Brave* about the Granite Mountain Hotshot firefighters, and I wanted to fly the drones myself because it was a smaller movie. So Dan Ming, my regular assistant, and I got our pilot's licenses, which got us our drone licenses. So we were certified and FAA approved. Dan and I were the pilots for all of the aerials in *Only The Brave*.

We were having problems with some drones and DJI came on their own and really helped us out with their whole team. They donated all their drones and were really amazing. So, I felt like I owed DJI a favor and helped them with suggestions, R&D and discussions about future wish-lists. We talked a lot, about the 4D as well, and they allowed early access to new products and heard my opinions about things.

It sounds like the Inspire 3 opens the arena for new ways of performing interesting camera moves.

We had a massive shooting schedule in a very short amount of

time in Bulgaria. We were in winter months and only had 8 hours of daylight shooting. What we accomplished in that time was incredible. We pushed things beyond all limits. We were doing shots where I had to back pan and spin around someone and it was completely in frame for the entire time.

It's funny, we started a day with just three waypoints. I thought, we were just going to do a simple thing and cover a portion of the scene. And then we just found ourselves adding more and more waypoints until we wound up with 13. We ended up with a push in, then a wrap around, chased the actor, and then did a full 360-degree move. We were doing some crazy stuff.

We flew up over some beams while the talent was down below. As we came back down, an operator with a protective helmet caught the drone and dragged it through a tavern. We were doing iris pulls and focus pulls and they were rock solid. All the while, I was whipping around with the wheels, left and right, up and down, nailing frames and whipping back. It was almost a three minute shot.

I thought with all the craziness we were at least going to break three drones. And we actually didn't break anything. After seeing what the Inspire 3 could do, I have great confidence that I can show, to any of the directors I'm working with, new possibilities of new shots that we haven't been able to do before.

DJI Inspire 3



DJI Inspire 3 is a high-end professional cinematography quadcopter with an integral 8K Full-Frame camera. As Claudio Miranda said, “Inspire 3 brings new possibilities for new shots that we haven’t been able to do before.” A DJI product manager said, “It captures images with exquisite detail and minimal noise—low-light cityscapes or bright beaches—putting it on par with ground-based cinema cameras with footage that intercuts seamlessly.”

Inspire 3 has a new aerodynamic design that reduces air resistance. The maximum dive, vertical ascent and descent speeds have been increased. Maximum horizontal speed is 94 kmh / 58 mph. Maximum height above sea level is 7,000 m with high altitude propellers. Flight time has been increased to 28 minutes.

Inspire 3 has an all-new design. It weighs about 4 kg / 8.8 lb. With the landing gear retracted, you can pan 360° and tilt up to +80°.

Full-Frame 8K Image Sensor



Inspire 3 comes with the X9-8K Air—a lightweight, Full-Frame three-axis gimbal camera custom-built for Inspire 3. Maximum resolution is 8192 x 4320 for video and 8192 x 5465 for stills. CineCore 3.0 is DJI’s latest image processing system—enabling internal recording up to 8K 25 fps CinemaDNG video and up to 8K/75 fps Apple ProRes RAW in S&Q mode at 2.39:1 aspect ratio

(with optional licenses). In S&Q mode, X9-8K Air records up to 4K/120 fps Full-Frame ProRes RAW without cropping. Dynamic range is +14 stops in Full Frame and below 30 fps.

DL Mount Lenses



The X9-8K Air camera on Inspire 3 has a DJI DL lens mount, also found on Ronin 4D. Flange focal depth is 17mm. Inside diameter of the DL mount is 58mm.

A new 18 mm F2.8 Full-Frame prime joins the existing series of 24, 35 and 50 mm F2.8 DL LS ASPH lenses. A telephoto lens is planned for future release. These lenses are custom-made for aerial cinematography, with internal electronic focus and iris control.

The lens housings are made of lightweight, monocoque carbon fiber. They weigh from 178 to 182 grams. The lighter the lens, the more maneuverable Inspire 3 can be. The new DL 18 mm F2.8 ASPH Full-Frame prime has a 100° field of view. It was designed for 8K resolution, with well-controlled chromatic aberration.

RTK Positioning: Centimeter Accuracy

Inspire 3 integrates high-precision RTK (Real-Time Kinematic) positioning technology, which is also used in architecture and surveying, for centimeter-level accuracy.

DJI Inspire 3

Compared to traditional meter-level positioning supported by Global Navigation Satellite Systems (GNSS), RTK not only makes flying more stable, but also makes flight-route planning more accurate, creative and efficient.

Stacked ceramic RTK antennas are built into the airframe and enable three types of GNSS (GPS, BeiDou, and Galileo) with dual-frequency positioning down to the centimeter level. By activating an RTK network or setting up a D-RTK 2 Mobile Station, you can achieve highly accurate positioning.

Ultra-Wide Night-Vision FPV Camera



Inspire 3 is equipped with a new 1/1.8-inch sensor FPV camera with a 3µm pixel pitch, an ultra-wide 161° field of view and the ability to transmit live feeds at up to 1080p/60 fps. This is almost twice as wide an angle-of-view compared to its predecessor. The FPV camera has better light sensing capability that allows pilots to observe their surroundings clearly, even at night, and ensure greater levels of flight safety.

Dual-Antennas

Inspire 3 has built-in front and rear stacked ceramic antennas with antimagnetic interference properties for flight accuracy.

Waypoint Pro

Specifically designed for aerial cinematography, Waypoint Pro enables flight route and shot planning with a wide range of customized settings, repeatable routes and 3D dolly modes.

Repeatable Routes

Using Repeatable Routes, Inspire 3 will fly the same route and maintain all preset parameters such as altitude, speed, gimbal angle and camera settings. Repeating the same flight plan lets you do complex takes, or fly at different times in the same place—for example, for day-to-night or season-to-season transitions.

3D Dolly

3D Dolly can simulate a dolly, Steadicam, Ronin, crane or cablecam move.

It can also soar to new heights. After planning a flight route, you can repeat the camera moves back and forth along the route while adjusting parameters such as speed, height, pan and tilt angles—for example, to compensate for how and where the actor goes. This repeatability simplifies complicated camera moves and is also helpful for visual effects.

Dual Native ISO



X9-8K Air has dual native ISO. At Full-Frame 30 fps and below, it is 800/4000 ISO. Above 30 fps, it is 320/1600 ISO.

14+ Stops of Dynamic Range

X9-8K Air has 14+ stops of dynamic range / exposure latitude.

Spotlight Pro

Spotlight Pro has improved automatic subject recognition that 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 so that the pilot 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 nine visual sensors to detect obstacles in all directions for safe flying. A fisheye camera has been added to each of the four landing arms. This helps to avoid obstruction by the airframe when the landing gear is raised and allows horizontal obstacle sensing when the landing gear is lowered.

Customizable Obstacle Sensing

Independently enable or disable horizontal, upward and downward obstacle sensing—and manually set an obstacle alert range for different scenarios. When active avoidance is turned off, you can still view the distance from an obstacle on the navigation display in real-time and get an audio alert when an obstacle is within a set range, without the aircraft doing an automatic avoidance move.

Multi-Camera Timecode Sync

You can jam-sync the Inspire 3 camera with timecode via a 3.5 port.

DJI RC Plus

Inspire 3 comes with the DJI RC Plus professional controller. It has a built-in, bright 7-inch 1,200-nit display, customizable buttons and dials, and HDMI output. The RC Plus has a built-in battery with a run-time of approximately 3.3 hours, extendable to 6 hours with an external WB37 battery. It also supports battery hot-swapping. The new DJI Pilot 2 app for Inspire adds helpful monitoring of exposure, video specifications, focal length and gimbal angle.

O3 Pro Video Transmission

Inspire 3 uses O3 Pro, DJI's latest video transmission system with a

DJI Inspire 3



maximum transmission distance of 15 km in single control mode and 12 km in dual-control mode. Both the gimbal camera and FPV camera transmit 1080p/60 fps live feeds with a low latency of 90 ms. Compared to Inspire 2, O3 Pro is a great improvement in transmission distance, latency and overall stability. For the first time, 4K/30 fps live feeds are also supported with a maximum 5 km transmission distance for UHD monitoring and live-streaming.

Independent Links for Dual Control

Two remote controllers can receive live feeds and control Inspire 3 independently, so the pilot and gimbal operator can work from different positions on set. This breaks Inspire 2's limitations of binding the primary and secondary control links. If the pilot loses the aircraft signal, the gimbal operator is now able to take control of the aircraft to return safely home or land directly.

DJI High-Bright Remote Monitor

Inspire 3 also allows use of the DJI High-Bright Remote Monitor as a second remote controller. This remote monitor can pair directly with Inspire 3 to receive live feeds, control gimbal and focus when the Ronin 4D Hand Grips are attached. HDMI and SDI ports on the remote monitor can also output live feeds to other monitoring devices.

DJI Master Wheels

When a DJI High-Bright Remote Monitor is paired as the second controller (as the intermediary to the PRO system), DJI Master Wheels can control Inspire 3's gimbal.

Dual-Battery System



Inspire 3 uses a new TB51 dual-battery system with improved reliability and performance. TB51 batteries are smaller, lighter, more streamlined and higher voltage compared to TB50. They



have a redesigned battery release for easier hot-swapping. If the temperature of the battery drops below 18° C / 64° F, the battery will trigger an auto-heating function to maintain adequate flight performance even with temperatures as low as -20° C / -4° F.

New Battery Charging Hub

The new foldable charging hub can accommodate eight batteries and can charge two batteries to 90% simultaneously in just 35 minutes in fast charge mode, and to 100% in 160 minutes. Its 65W USB-C port can charge the RC Plus.

DJI 3-Channel Follow Focus

The new DJI 3-Channel Follow Focus can transmit control signals to Inspire 3 via the O3 Pro transmission system (this requires a DJI High-Bright Remote Monitor to act as an intermediary device). With 3-Channel Follow Focus, the focus puller can control accurate wireless focus and stepless aperture adjustments.

When DJI's 3-Channel Follow Focus is used with two DJI RC Plus remote controllers, the intermediary DJI High-Bright Remote Monitor must connect to the gimbal operator's RC Plus via HDMI and USB A-C cables. This enables piloting, gimbal control, and focus control to be done independently, so the pilot, camera operator and focus puller can each "stay in their own department."

DJI PROSSD 1TB Included



The included DJI PROSSD 1TB supports a top read-speed of 900MBps and the footage can be viewed on a computer directly through the provided USB-C to USB-C cable without the need for a card reader. It is the same SSD that is used on the DJI Ronin 4D.

See DJI instructions, notes, warnings and footnotes.

www.dji.com/inspire-3

DJI Ronin 4D Flex



March 7, 2023. DJI introduced Ronin 4D Flex.

When the original Ronin 4D launched in October 2021, it was intended for DJI's DL primes and other lightweight lenses. But what DP ever wanted to use a camera as its designers intended? And now, Ronin 4D Flex tethers camera head to camera body, much as ALEXA M (nicknamed Marie Antoinette) did in 2012 and Rialto did in 2018. Ronin 4D Flex enables lighter, nimbler handheld shots, not to mention using large zooms and primes—for which its up-down Z axis arm was not intended.

The Ronin 4D Flex is an add-on to the Ronin 4D system, tethering the Zenmuse X9 camera to the main recorder body. The 4D Flex reduces weight and size substantially. Instead of a 4.67 kg / 10.3 lb package, the 4D Flex camera head weighs 1.8 kg / 4 lb. You can carry the camera recorder body in a backpack. For big, heavy zooms and primes, the Zenmuse X9 gimbal camera head can attach directly to a tripod, car rig or be used as an extremely small and very flexible remote head. A very thin, coaxial 2m / 6.6' long cable carries lossless video up to 8K without latency.

Ronin 4D Flex works with a wide range of DJI accessories. Attach Ronin 4D Hand Grips and and LiDAR focus assist, shown

above. Attach a High-Bright Main Monitor, Leica M Mount or Sony E-mount and a Zenmuse X9 Focus Motor for geared prime lenses. Or, try the new DL PZ 17-28mm T3.0 ASPH lens—DJI's first cinema-grade zoom. Focus, iris and servo zoom motors are internal. The 17-28 has a 67mm front diameter and focuses to 7.5" / 19cm at 17mm. Made of aluminum magnesium alloy, the DL PZ 17-28mm T3.0 Lens weighs 520 g. It does not have to be recalibrated or rebalanced when swapping lenses.

Ronin 4D Flex is USD \$929, and includes Ronin 4D Flex, one Pan Axis Quick-Lock, two Ronin 4D Hand Grip Adapters, and 2 Hand Grip Adapter Cables. The DL PZ 17-28mm T3.0 Lens is USD \$1,339. The Apple ProRes RAW license for Ronin 4D is USD \$979.

Paul Pan, Senior Product Line Manager at DJI said, "4D Flex and the DL PZ 17-28mm Lens show the capabilities of this platform to allow cinematographers to capture footage in completely new ways. With these products, we want to express that when it comes to what's possible with DJI Pro, we're only getting started."

dji.com/Ronin-4D



RED V-RAPTOR XL 8K VV

Imagine you are a camera designer. Your mission, should you choose to accept it, is to build a truly ergonomic camera and think of everything a DP, Camera Operator or Assistant would crave. It must have every conceivable connector, accessory and mounting point built in—a system camera ready for almost any setup. You would build the V-RAPTOR XL.

That is what RED did. On most productions, a typical RED V-RAPTOR is festooned with break-out boxes, handles, cage, lightweight lens support and so many cables that it looks like a Christmas tree.

With V-RAPTOR XL, they cleaned up those cables with a single special USB-C style RMI connection from top of camera to 7-inch touchscreen monitor. They attached Hirth-tooth rosettes on each side for handgrips. Nobody else remembers to do this. If you are as afflicted with retrofit syndrome as I am, and most DPs and ACs have been for the past 100 years, you cannot resist drilling, slicing and modifying most cameras and equipment that come your way. But not with this RED V-RAPTOR XL 8K VV. This is a salubrious antidote to Retrofit Syndrome. This is an amazing camera, thoughtfully conceived and beautifully built.



But don't take my word for it. Jarred Land, RED Digital Cinema president, announced the camera in August 2022, "The V-RAPTOR XL is one of the most innovative cameras we've launched, and I'm excited to get it into filmmakers' hands. The XL builds off our V-RAPTOR and adds more outputs, additional power flexibility and an incredible internal ND system. The entire RED team is so proud of the advancements this brings to cinematographers, and we can't wait to see what they create."

As with the V-RAPTOR, the V-RAPTOR XL has an 8K VV/Full Frame and 6K Super35 multi-format sensor. (40.96mm wide x 21.6mm high, 46.31mm diagonal). That means Full Frame lenses cover the full 8K large format image area. Super35 lenses cover a 6K image area.

Recently, RED announced a V-RAPTOR XL 8K Super35 model (26.21mm wide x 13.82mm high, 29.63mm diagonal.) If you're a nature filmmaker with a 50-1000 Super35 zoom and yearning for more resolution, here's a camera for you.

As with DSMC2, the DSMC3 V-RAPTOR XL has four screws in front to change the stock PL mount to EF. Wooden Camera makes an LPL mount. Careful: some LPL lens rear elements protrude too far and may hit the XL's cover glass.

Note that V-RAPTOR has a lever-locking RF mount and uses lens mount adapters. What are the other major differences? It comes down to style of shooting. V-RAPTOR is modular, smaller, lighter, like a sports car. V-RAPTOR XL is the "studio" version, more like an compact SUV of cameras.

RED V-RAPTOR XL 8K VV



V-RAPTOR XL has 2-pin 12 V and 3-pin 24 V accessory power ports.



How is it that the SmallHD 7" is showing camera controls without any visible sight of battery or power? Composite.

The camera can run with either 14.4 V or 26 V batteries, but you need 26 V to enable most of the accessory power ports.

The unique dual voltage Gold Mount battery interface accepts 14.4 Volt batteries, 26 Volt Gold Mount Plus, Core SWX Dual Voltage Helix Max and REDVOLT XL Dual Voltage batteries.

You can also get V-RAPTOR XL with a Dual Voltage V-Lock battery plate.



V-RAPTOR XL 8K VV

The V-RAPTOR XL sensor has the widest dynamic range and cleanest shadow performance of any RED camera. Sensor scan time is two times faster than previous RED cameras and lets you shoot up to 150 fps at 8K 2.41 and 600 fps in 2K 2.4:1.

V-RAPTOR XL has:

- Internal Clear to Electronic ND with 2 to 7 stops of exposure control in $\frac{1}{3}$, $\frac{1}{4}$ or 1 stop increments.
- Familiar REDCODE RAW settings of HQ, MQ, and LQ.
- Dual Voltage 14/26V V-Lock or Gold Mount battery interface.
- Interchangeable PL and locking EF mounts with lens data.
- Wireless timecode and Genlock via Ambient ACN

- Remote camera control using RED Control (free) or RED Control Pro apps.
- Front-facing 3G-SDI, 2-Pin 12V and two 3-Pin RS 24V accessory power ports.
- GIG-E connector for camera control and PTP Master Clock synchronization.
- Phase-detect autofocus options.
- 3-stage cooling system with thermoelectric heat exchanger
- Body: 8.5× 6.5 × 6" and about 8 lb with lens mount and battery plate. (V-RAPTOR is 6 × 4.25 × 4.25" and weighs 4.03 lb.)

For more information, go to: red.com

Operation Guide: red.com/download/v-raptor-operation-guide

RED V-RAPTOR XL 8K VV



Internal Electronic ND filters:
Clear and adjustable in 1/4,
1/3 or 1 stop increments from
2 to 7 stops (ND0.6 to ND2.1).



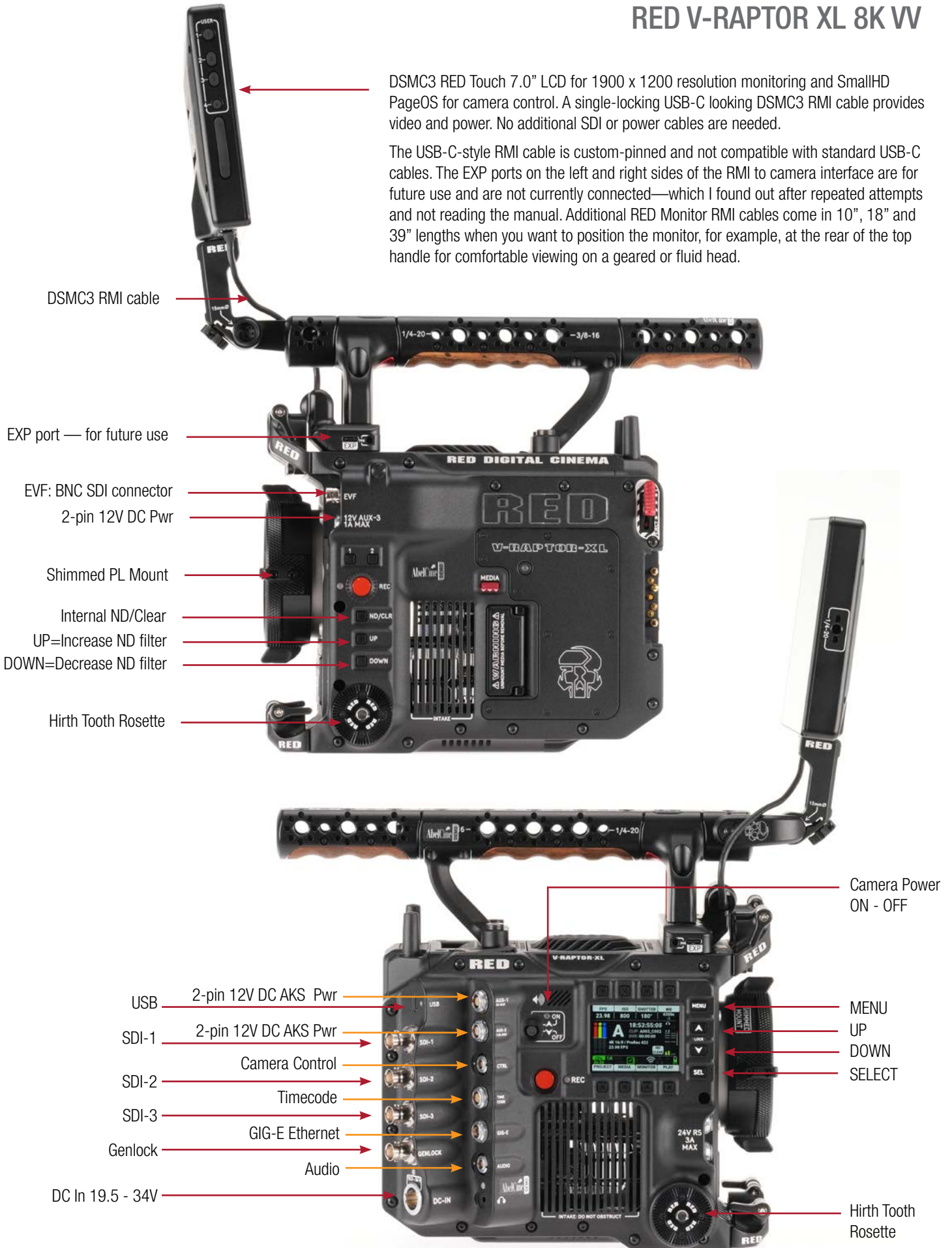
Top

Bottom

RED V-RAPTOR XL 8K W

DSMC3 RED Touch 7.0" LCD for 1900 x 1200 resolution monitoring and SmallHD PageOS for 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. The EXP ports on the left and right sides of the RMI to camera interface are for future use and are not currently connected—which I found out after repeated attempts and not reading the manual. 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.

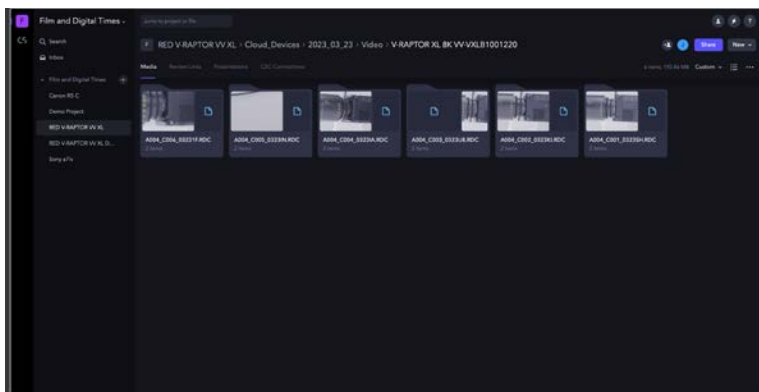
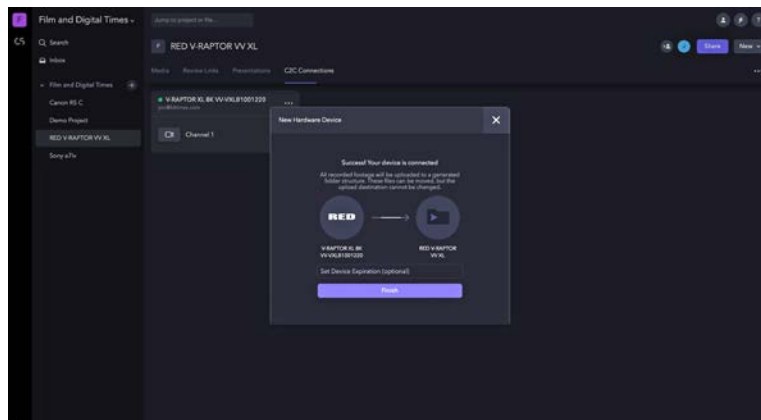


Camera to Cloud (C2C) with RED and Frame.io



RED V-RAPTOR can begin uploading each shot as soon as you cut.

At right: the camera is connected to cloud on Frame.io's browser interface.



Each take loads as a distinct thumbnail. Click to view and review.



Play the clip. Comment, share, download. This shot is a close-up on Ryan Avery's Revlar Cine scale model of a RED V-RAPTOR, taken with the full-size RED V-RAPTOR XL.

Frame.io Camera to Cloud (C2C) with RED



RED V-RAPTOR and V-RAPTOR XL

RED V-RAPTOR XL (as well as V-RAPTOR and KOMODO) can upload files directly from camera to cloud with Frame.io C2C.

Earlier RED cameras have been able to do this with a Teradek CUBE. But we're working with the V-RAPTOR XL today. Let's jump in. Begin by connecting the camera to cloud with the camera's internal Wi-Fi or Ethernet receptacle. Then, whenever you roll camera, files are automatically sent to your designated Adobe / Frame.io cloud account. "Cloud" is just an aspirational word for abiologic storage that resides not somewhere in the ether but on servers in massive warehouses presumably somewhere electricity is cheap. You can select which files to upload from the V-RAPTOR XL camera: 8K RAW R3D, log file, CDL, ProRes proxy file, WAV audio and custom LUTs—all associated by timecode with each take.

ProRes files upload faster; 8K REDCODE RAW take longer. High-speed Internet is important. The paradigm is already here. When you take a photo with your iPhone, it stores immediately on the phone and uploads to your iCloud account in the background. Depending on whether it's a lower rez HEIC file, 12 MP or iPhone 14 Pro 48MP ProRAW image, upload time varies when those files appear on your other devices, desktop or tablet.

As Michael Cioni said, "The best way to get media off your phone today is the cloud. And the best way to get all media off a cinema camera in 10 years will be the cloud. Even though we are planning for internal RAW uploading by 2028, we're actually delivering it working today.

Productions that shoot on stages can deliver original camera files (OCF) directly to the post house as they're being shot. Virtual productions or complex visual effects can send OCF directly to the VFX house. ProRes files can be automatically delivered right

to production offices and cutting rooms for immediate editing. And for productions that want the highest quality dailies, RAW video and audio files can be synced, color corrected, and transcoded in the cloud through Frame.io's integration with Colorfront."

Practical ProRes Camera to Cloud

If you lose internet connections, the process will resume once it is restored. Since you may not want to be tethered to an Ethernet cable when climbing Everest, V-RAPTOR XL's onboard 2.4 GHz and 5 GHz Wi-Fi connects easily to nearby Everest Link hotspots or your dedicated on-set modem.

ProRes proxies upload much faster than REDCODE RAW. They populate the Frame.io browser-base app almost immediately. Click on a clip to playback in a large window. The files can be shared by the entire production and post team for high-quality viewing, reviewing, commenting and editing.

C2C Belt and Suspenders

Since filmmaking plays in the fields of belt and suspenders, it's comforting that C2C works as an almost real-time back-up and clone. Pomfort shouldn't have to worry about Silverstack at risk, and you won't have to worry about lost-in-transit media drives. You'll still record to V-RAPTOR XL's onboard CFexpress media card. But, remember those analog cautionary tales of exposed camera negative cans tripping into a New York puddle.

All cameras should have this. As round-trip speed limits from camera to cloud increase, so will expectations for immediate access to footage and instant gratification. Frame.io and RED V-RAPTOR XL are working together in this quest for faster, more efficient, seamless production.

frame.io adobe.com

Frame.io Camera to Cloud (C2C) with RED V-RAPTOR XL 8K VV



Here's a jump start to connect a RED V-RAPTOR XL to Frame.io C2C Cloud. It needs firmware 1.4.2 or higher.

1. Connect the camera to WiFi or hard-wire Ethernet. Details are in the RED V-RAPTOR XL 8K VV Operation Guide: red.com/download/v-raptor-operation-guide

We'll use WiFi here.

2. Press MENU.

Down arrow from the Main Menu to **Communication**.



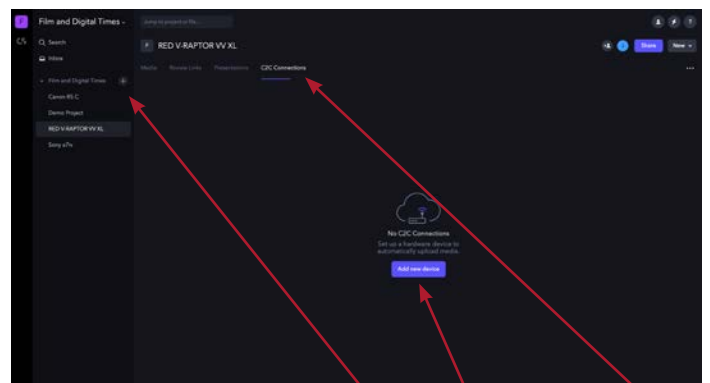
3. Select **Cloud Upload**.



4. Press the SEL button to toggle **Enable** to ON and make sure **Frame.io** is selected as the **Service**.



5. Open **Upload File Types** to toggle the files that will upload to Frame.io. If you have a slower network, you might want to exclude R3D and upload ProRes (MOV) only.



6. Open your browser on a Wi-Fi connected device and go to <https://frame.io>
Sign in or start a free Frame.io trial.

7. Click on the + sign (upper left side of screen) to add a new project or go to an existing project.

8. Click the **C2C Connections** Tab,
9. Add a new device if you have not already done so. Then begin pairing.

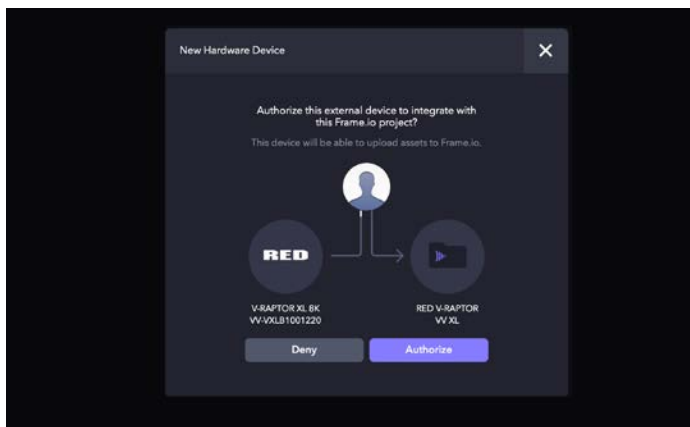
Frame.io Camera to Cloud (C2C) with RED V-RAPTOR XL 8K VV



10. Go back to the camera and set: **MENU > Communication > Cloud Upload**, go to **Connect** and select OK.



11. You will see a 6-digit code to pair the camera to your Frame.io project.



12. Frame.io is ready to pair when you see: **Device Ready to Connect**. Enter the **6-digit code**, **Authorize** and **Finish**.



13. **State: Connected.**



14. After having been paired, the V-RAPTOR XL will begin uploading as soon as you cut the camera.

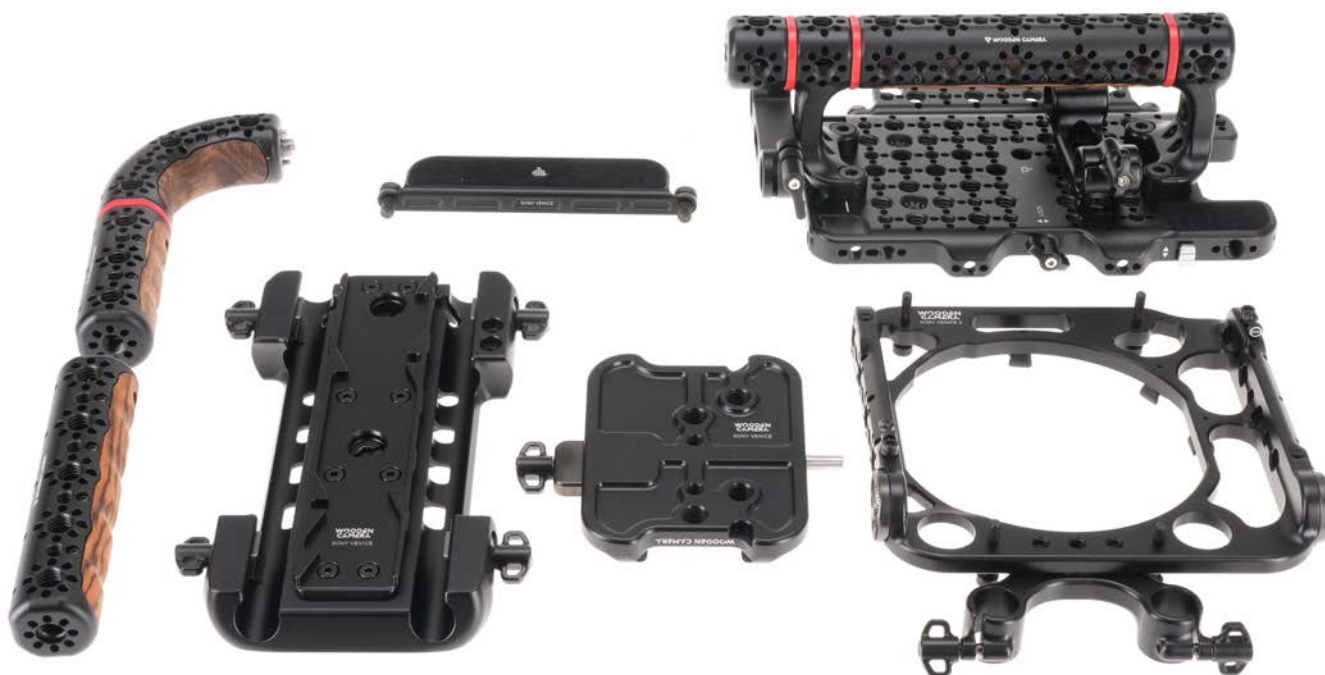
15. On the Home Screen, moving **green dots** to the left of the WiFi icon show that clips are uploading.



15. **Menu>Communication>Cloud Upload**: also shows clips uploading, time remaining, upload speed, etc.

For making this article possible: thanks to AbelCine for lending the RED V-RAPTOR XL and to Jeff Lee at AbelCine for the guidance; to Anton-Bauer for the batteries; SIGMA for the 65mm lens; Jill Johnson, Loren Simons and the team at RED; Charlie Anderson, Rob Loughlin and the team at Adobe and Frame.io.

Wooden Camera Elite Accessory System for Sony VENICE 2



How do you get from here

to elite AKS status here?



I guess Dominick Aiello and the wizards of Wooden Camera give thanks each day to camera manufacturers for conveniently-located nubbins and threads onto which brilliantly ergonomic accessories (AKS) can be attached.

Dominick is Senior Director of Accessories at Creative Solutions, working on Wooden Camera, SmallHD and Teradek brands. You probably remember him from Panavision and his mantra: “Accessories should disappear on the camera and not look like some obtrusive bolt-on kit.”

Picture the design process. This may be magical realism poetic license, but still... A new Sony VENICE lands on Dominick's desk. Four 3mm hex screws surrounding the lens mount stare at him from the front. “Aren't these four of the six screws you unscrew to transmogrify VENICE 2 into RIALTO?” he might have wondered.

“What if we attach a cage where few or none have gone before, in front? Not a stack of fussy, fiddly, Lego-like parts just to get side rosettes. And what if we use those four front threads so the same module works in both VENICE 2 full-camera mode and RIALTO 2 mode?”

We pause with the usual disclaimer, but you know this already: RIALTO 2 is the unofficial but ubiquitous name for Sony's VENICE Extension System 2 (CBK3620XS) that tethers camera body to camera head with a 9.8 or 39 foot cable.

The result is the new Wooden Camera Elite Accessory System for Sony VENICE 2 that deserves to be in the Museum of Modern Art Design Collection—artistic, ergonomic, practical, thoughtful—essential on every VENICE 2 camera.

woodencamera.com/pages/sony-venice2-accessory-kits

Wooden Camera Elite Accessory System for Sony VENICE 2

Let's "build" the Sony VENICE 2 camera with the Wooden Camera Elite Accessory System. You don't have to do it in this order—you can pretty much assemble it as you want with what you like.

1. Remove the four, shiny 3mm hex screws from the front of the camera (shown with red arrows, at right.)

Save them for future use.

Don't worry, the lens mount / sensor block will not come off—to do that when you want to go to RIALTO 2 mode, there are two additional screws at the bottom front of the camera.

Be sure to cover the PL mount with a cavity cap to prevent dropping a screw onto the sensor.



2. Below: Attach the Baseplate to the bottom of the VENICE 2 with two captive screws. It has an Arca Swiss style dovetail to which the riser plate slides on. It is a very low profile system that keeps the camera center of gravity low. Rod clamps with two gripping surfaces are thoughtfully located front and rear. They tighten onto the rods on two planes with a tight grip that prevents rotation or binding. The riser plate locks with one butterfly-wing thumbscrew. A studio (ARRI style) bridgeplate can attach to the bottom of the riser plate.



Bottom View



Top View



Front View of Baseplate system attached to bottom of VENICE 2

The camera icon indicates which end faces forward



Wooden Camera Elite Accessory System for Sony VENICE 2



3. Above: Attach the Wooden Camera Elite Front Cage. It has 4 captive screws in the same position as the silvery ones you just removed from the camera. This is the heart of the system. It is a uni-body, lightweight, milled aluminum sculpture with Hirth tooth rosettes on both left and right sides, lots of mounting points, anti-twist locating receivers and cutouts so all the original parts and connectors of the VENICE 2 front section is accessible. An additional 15mm lightweight rod holder attaches in front of the cage for added support, as well as on top or the side.



Top View



Bottom View - faces camera



4. Slide the top plate onto the top dovetail of the Sony VENICE. It clicks into place. Tighten the lock knob.



5. The top handle is cleverly configurable from simple to SUV, streamlined to “Hollywood” style. Color coded spacer rings help to identify cameras. Screw the handle onto the top plate.

Wooden Camera Elite Accessory System for Sony VENICE 2



VENICE 2 camera right-front side
with Wooden Camera Elite Accessories



VENICE 2 RIALTO
Camera Head with Wooden
Camera Elite Accessories



*Thanks to Wooden Camera for an early look
and all the help, to AbelCine for lending the
VENICE 2 camera, and to SIGMA for lending a
65mm High Speed Full Frame Prime.*

For more information, go to the Wooden Camera
Elite Accessories landing page:
woodencamera.com/pages/sony-venice2-accessory-kits

Canon Flex Zooms



CN-E 31-95 T1.7 in PL mount.

The /i (and eXtended Data) contacts are in the standard 12 o'clock position and there's a redundant 4-pin LEMO connector.



CN-E 31-95 T1.7 in EF mount.

EF lens data contacts are in the 6 o'clock position.



RL-S1 or RL-S2 Relay Kit reduces from Full Frame to Super35.



RL-F1 or RL-F2 Relay Kit expands from Super35 to Full Frame.

Stop the Presses.

April 4, 2023. Canon announced new models and permutations in their line of Flex Zoom Cinema Lenses.

It was almost a year ago to the day when Canon launched their original Flex Zooms: Full Frame CN-E20-50mm T2.4 L F/FP and the CN-E45-135mm T2.4 L F/FP.

Now, Canon adds two Super35 format Flex Zooms: CN-E14-35mm T1.7 L S/SP and CN-E31.5-95mm T1.7 L S/SP.

But wait, wait. If you divide the original 20-50 or 45-135 focal lengths by the magic Full Frame to Super35 conversion factor of 1.4, don't you get the same 14-35 or 31.5-95 as the new S35 lenses? This was a head-scratcher until, with 3 hours to print deadline, Canon's Rob Lockett and Paul Hawhurst came to the rescue with images and details that explained the mysteries of multiple format modification.

The secret is Canon's addition of four new "relay kits"—RL-S1 and RL-S2 (to reduce from Full Frame to Super 35) and the RL-F1 and RL-F2 (to expand from Super35 to Full Frame). Here are some examples:

You are currently shooting with Super35 cameras. Last year you bought Full Frame Flex Zooms. Now, for about \$4,999, you can buy a Relay Kit (Reducer), get wider angles and gain about a stop.

Or, you are shooting with a Super35 camera but don't own lenses. Buy the new Canon 14-35 and 31.5-95 T1.7 Flex Zooms, confident in the knowledge that that when you land your next Full Frame job, you can buy a Relay Kit (Expander) to cover Full Frame with the same lenses converted to 20-50 and 45-135.

Or, you run a rental house. Canon Flex Zoom Relay Kits enable flexible and easy conversions to cover both formats. A Lens Tech and AC relay race has not yet happened, but because the Relay Kit consists of a self-contained rear group, 3 lens barrels and a red, rear cover with identifying engravings, it should be painless, quick and even possible in the back of a camera truck.

Canon Flex Zooms do not use shims. When you change formats, an adjustment screw sits under a rubber flap at the rear to adjust flange focal depth.

Flex Zooms are available in interchangeable EF and PL mounts.

The new Super35 14-35 T1.7 Flex Zoom with PL mount is 9.2" / 233.3mm long and weighs 7.7 lb / 3.4 kg. The 31.5-95 T1.7 with PL mount is 9.4" / 238.4 mm long and weighs 7.8 lb / 3.5 kg.

The original Full Frame Flex Zooms same have similar dimensions and weights. All Flex Zooms have 11 iris blades and focus rotation is 300 degrees.

The Super35 format Canon CN-E14-35mm T1.7 L S/SP and Canon CN-E31.5-95mm T1.7 L S/SP are scheduled to be available in late June 2023 and late October 2023, respectively, for an estimated retail price of \$21,999.00.

The Canon RL-S1 and RL-F1 and Canon RL-S2 and RL-F2 Relay Kits are scheduled to be available in late June 2023 and late October 2023, respectively, for an approximately \$4,999.00.

Canon will show the new Flex Zoom Lens lenses and Relay Kits at NAB 2023 (Booth #C3825). usa.canon.com

Canon Flex Zooms

Super35 (New)



CN-E14-35mm T1.7 - Left



CN-E14-35mm T1.7 - Right



CN-E31.5-95mm T1.7 - Left



CN-E31.5-95mm T1.7 - Right

Full Frame



CN-E 20-50mm PL Left



CN-E 20-50mm PL Right



CN-E PL45-135mm Left



CN-E PL45-135mm_ Right

Tiffen Night Fog



The Boulevard Montmartre at Night

Camille Pissarro, 1897

Oil on canvas, 53.3 × 64.8 cm, National Gallery, London

Summon your inner Pissarro with Tiffen's new Night Fog and Black Fog filters.

Night Fog adds a painterly post-Impressionism luminescence to your scenes, especially at night as the name suggests. Night Fogs let highlights glow. Street lamps bloom vibrantly, as if squeezed from an Impressionist's paint tube. You might expect shadow areas to brighten, lighten, contaminated by spill from the highlights. But they do not. That is the magic of Tiffen Night Fogs.

Camille Pissarro was born in 1830 in Charlotte Amalie, St. Thomas, at that time a part of the Danish West Indies. Like young Alexander Hamilton 73 years earlier in St. Croix, Pissarro worked as a shipping clerk. But what he really wanted to be was a painter. He moved to Paris and became known as the Father of Impressionism. He and a group of artists—Monet, Manet, Renoir, Cézanne and Degas—established an alternative to the prestigious and traditional Salon when the exhibition of the Académie des Beaux-Arts in Paris refused to display their work.

In 1873 they set up the *Société Anonyme des Artistes, Peintres, Sculpteurs et Graveurs* and held their first exhibition the following year. Pissarro's work was on display in seven subsequent Paris Impressionist exhibitions from 1874 to 1886.

Jules-Antoine Castagnary reviewed the 1874 exhibition in *Le Siècle* newspaper: "The common view that brings these artists together in a group...is their determination not to aim for perfection, but to be satisfied with a certain general aspect. Once the *impression* is captured, they declare their role finished. ...One would have to coin the word *impressionists*. They are *impressionists* in that they do not render a landscape, but the sensation produced by the landscape."

Which brings us to 1897. As reported in the NIH Library of Medicine, Pissarro "presented with dacryocystitis on his left eye," inflammation of the tear sac, perhaps caused by allergies from painting so often *en plein air*, outdoors, as a good Impressionist liked to do. It would be another 40 years until the discovery of antihistamines, so we can imagine his doctor advising Pissarro

Tiffen Black Fog



The Boulevard Montmartre on a Winter Morning

Camille Pissarro, 1897

Oil on canvas, 64.8 x 81.3 cm, Metropolitan Museum of Art, NYC

to stay indoors for a while. Pissarro booked a room at the Grand Hôtel de Russie in 1897, at the intersection of Boulevards des Italiens and Haussmann. He could "see down the whole length of the boulevards...almost a bird's-eye view of carriages, omnibuses, people, between big trees, big houses."

The view from a Film and Digital Times office window is not as grand as Pissarro's Grand Boulevards, nor was it designed by Baron Haussmann at the request of Napoleon III, nor did New York have any Winter Morning snow this winter. Nevertheless, the Night Fog and Black Fog filters work their magic.

New Night Fog

Andrew Tiffen, SVP/COO of The Tiffen Company describes Night Fog Filters in terms that would have made the art critic Castagnary proud: "Night Fog filters yield a natural fog effect with overall atmospheric softening and gentle glow, coupled with unique contrast reduction technology that lowers highlights without darkening shadows. In light grades, it provides a beautiful new look. In strong grades it flattens the contrast and desaturates color. It is useful for day-for-night."

It is also great at night-for-night. *See next page, at top.* Highlights halate. Shadows maintain definition. Note that Night Fogs did not create the star patterns in the point sources in this image—they were natural effects from the falling snow.

New Black Fog

Andrew describes Black Fog: "Tiffen Black Fog Filters provide an overall atmospheric softening that creates a wide glow from the highlights—yet keeps the blacks looking black, without overly muting colors or losing detail in shadows. This more subtle effect can be used to add an overall look to a project."

Next page, at bottom: Tiffen Black Fog filters remind me of veiling glare—for example, internal barrel flare in a vintage lens. I hope you enjoy using these new filters as much as I do—in various grades and different lighting setups for interesting new looks.

tiffen.com

Tiffen Night Fog



Above: Tiffen Night Fog 2. 135mm G Master @ f1.8. A7R5, 1/60 sec, ISO 2500. Below: Tiffen Black Fog 2. 50mm G Master @ f/6.3, 1/125 sec, ISO 100.

Tiffen Black Fog



Sony FR7 Tutorial with AbelCine



Sony ILME-FR7 with RM-IP500 Remote Controller

Sony introduced the FR7 at IBC in September 2022. It looks like R2D2 mated with a PTZ (pan-tilt-zoom) camera, with the guts of an FX6, and aspirationally added to Sony's Cinema Line. While it has mostly landed in the worlds of multi-cam, sports, and broadcast, with a few tweaks and NODO wheels, FR7 becomes a versatile and affordable mini remote head.

AbelCine introduced me to Boyd Hobbs, NODO founder and cinematographer. A few days later, the best geared head I ever used arrived. More on that soon.

The ILME-FR7 has been on some interesting jobs. James Coker and his engineering team at Funicular Goats, working with AbelCine, had one spinning above Elton John during his *Live Farewell from Dodger Stadium*, as well as on the *Rihanna at the Super Bowl Halftime Show*, and *Alicia Keys for Apple Music Live*.

AbelCine and their partners have been working with FR7 extensively, especially on comedy shows such as *Atsuko Okatsuko: The Intruder*. They've had it on sliders, AGITO dollies, rigged, and remote. JC Sciacca (AbelCine Integration Engineer) and Jeff Lee (AbelCine Director of Education and Product Specialization) described the details. And, soon after, Jeff arrived at FDTimes with an entire system and provided a master class on its use.

Jeff explained, "Because we got involved so early on with the FR7, we had insight into a lot of projects. People were coming to us because we were using pre-production and prototype cameras. Then, as a third-party accessories started to come online, we got really interested in moving those integrations along as well. Where we see this camera really succeeding are in the worlds of multi-cam, concerts, live events, theater, and sports."

JC said, "On a number of our productions, in order to get all of the signals back to video control, we primarily use a MultiDyne SilverBack V. This allows us to gain control of the camera, video, timecode, and genlock back and forth.

"We usually mount the SilverBack next to the FR7 because it's of-

ten in hard-to-reach areas, such as up in a lighting grid on a truss or in front of the stage. If it's close enough to video control, you may not need to run over fiber. It depends on the venue and the position. We are working closely with MultiDyne and providing them feedback on their fiber base for the camera."

"A primary reason for going over fiber is in places with very long cable runs and to manage multiple cameras. Because the FR7 camera only has one SDI output, if you're in a live situation and someone wants a clean and a dirty feed, we actually use the SDI for one and the HDMI for the other. We'll add a small adapter box that converts HDI to SDI and sends those two feeds along the fiber to the control room or truck. Depending on the use case, one could also use NDI to transport a clean or dirty feed to the desired location, there's a lot of flexibility.

"We 3D-printed a base and cheeseplate at AbelCine to give us more mounting options, and we are planning additional things. For most of the concerts we're involved with, everything is internally recorded so that production has highest recording quality from the camera. Usually, the 1080p live feed is going to air or to be used as reference for editing later on. One thing to mention: if we're using POE (Power Over Ethernet), this disables the internal recording on the FR7. In this case, we need to run a dedicated AC to DC power adapter, which isn't a big issue."

It seems that the FR7 could democratize remote heads—maybe not in this iteration, but perhaps in future models that are more rugged and rain-resistant. Jeff agreed, "In addition to not blocking audience views on concerts, we're seeing that the FR7 is often replacing typical lock off camera positions. Now you can move it, or you may want to reposition it a few times during the performance, which begins to open up the possibility for more creative shots. I think as directors and DPs get comfortable with FR7, they'll find even more creative uses than we're seeing today."

Jeff talked about using FR7 on the AGITO modular remote dolly: "We did some tests utilizing two access points to run the FR7 on an

Sony FR7



AGTIO wirelessly and got it to work very well. The camera operator was looking at a feed from a Teradek and, using wheels or the joystick, was able to move, pan and tilt the camera exactly as you would expect. Where we saw some delay issues was when we utilized the iPad at the same time to view the video feed that was being streamed over WiFi to the little preview window in the webpage app. In these situations, we do not use the web app as our preview, but rather use a dedicated production monitor with a Teradek system to transmit and receive the picture, and only use the iPad for menu controls and those type of things. The AGITO dolly operator, of course, has their dedicated controls on another channel.”

The FR7 looks like a mini RIALTO-style camera head with an E-mount in front for interchangeable lenses and a Full-Frame (35.6 x 23.8 mm) sensor with an internal variable ND.6 to ND2.1 (2 to 7 stops). It’s essentially an FX6 sliced in half, and the camera specs are almost the same as FX6. The guts of the camera are in the base. Pan and tilt motors are in the usual places. Since it has an interchangeable lens mount, Sony’s 16-35 T3.1, 18-110 f/4 or 28-135 f/4 zooms

pair nicely. If it’s still lenses you want, Sony has them from 12mm to 1200mm. Add a geared band to a still zoom lens and use it with Chrosziel’s new CDM FSR zoom control for FR7.

The FR7 is approximately \$9699.99 USD. FR7K, which includes the FR7 and SELP28135G lens, is \$12,199.99 USD.

pro.sony.com abelcine.com

Sony FR7 Brief Specs

- Internal XAVC Recording (dual slots for CFexpress Type A and SDXC).
- External RAW Output.
- Total pixels: approx. 12.9 MP. Effective Pixels: approx. 10.3 MP.
- Base ISO 800 or ISO 12800. 15+ stops of dynamic range.
- Sony S-Log3 gamma, wide S-Gamut3 and S-Gamut3.Cine.
- Up to 120 fps 4K (QFHD) and 240 fps FHD.
- Pan Angle: ~340° (does not pan continuously).
- Tilt Angle: -30° to + 195°. Pan Speed: 0.02 deg. to 60 deg./s.



NODO Inertia Wheels



If you want smooth moves with Sony's FR7, it's NODO Inertia Wheels you want from NODO Film Systems. Pete Abel introduced me to Boyd Hobbs, a talented cinematographer who founded the company and launched Inertia Wheels in 2019. A few days later, NODO wheels arrived and made operating the Sony FR7 a pleasure and much smoother than a joystick. From my first day operating a Panahead, so nervous that the eyepiece fogged up, to years of using Moy, CP Mini-Worrall, Arrihead and more, nothing else was as much fun to use as NODO.

NODO wheels are elegantly designed and beautifully crafted (by hand). The wheels are standard sized. The body is compact and very portable. Menus, dials, buttons and connectors are intuitive.

Boyd explained, "NODO Inertia Wheels are all about the Camera Operator experience, starting with the physics of the hand wheel itself. We use in-line motors in the wheels and high-speed processors to adjust the haptics of the wheel.

Haptic control involves two important things: mass and drag. Brake pads adjust drag on mechanical geared heads. Inertia Wheels control drag using contactless electromagnetics in the brushless motors.

"Adjustable mass is not offered in any other wheels. Normally, to get more mass, wheels have to be heavier. NODO Inertia Wheels use motors and encoders to sense the Operator's force, and then the wheel position is adjusted relative to the equations of physics. So, the wheels feel and behave like heavier wheels which operators can change on demand. Give physics a spin."

The Sony FR7 uses VISCA protocol, an IP-based, camera control system. NODO uses an RDX (Rapid Development of X) box to communicate with the wheels—wirelessly or wired directly over a single Ethernet cable or across a network. In addition to FR7, NODO Inertia Wheels work with DJI Ronin, DJI Inspire, ARRI Trinity, MOVI Pro/XL, and many other remote heads.
nodo.film



Chrosziel CDM-SFR Zoom Control for Still Lenses on Sony FR7

Sony ILME-FR7
with Sony
E-mount still
photography zoom
lens and Chrosziel
CDM-SFR



Chrosziel's CDM-SFR Zoom Control lets you zoom with many E-mount still photography zoom lenses on the Sony FR7.

CDM-SFR means: **Chrosziel Digital Motor** (for) **Sony FR(7)**.

The zoom motor attaches onto a 15mm lightweight support rod below the FR7's lens mount. Two clips attach to the top and bottom of the FR7's tilt housing on the right side.

Next, connect the CDM-SFR RJ45 cable to the OPTION port at the back of the FR7 (not the Ethernet port—that is used to connect the Sony controller).

Connect the power cables, and you're ready zoom.

Here is a list of Sony approved still photo zoom lenses. Many more will surely follow—and not only Sony.

SEL1224G	12-24mm G Full Frame
SEL1224GM	12-24mm G-Master Full Frame
SEL1635GM	16-35mm G-Master Full Frame
SEL2470GM	24-70mm G-Master Full Frame
SEL2470GMII	24-70mm GMaster II Full Frame
SEL70200G	70-200mm G Full Frame
SEL70200GM	70-200mm G-Master Full Frame
SEL70200GMII	70-200mm G-Master II Full Frame
SEL1670Z	16-70mm Z APS-C lens

chrosziel.com



Above: Chrosziel's CDM-SFR Zoom Motor, front and back

Sony ILME-FR7 with Chrosziel CDM-SFR



Sony RM-IP500
Remote Controller





Blackmagic cameras are working on a lot of car jobs lately.

Pocket Cinema Camera 4K and Pocket Cinema Camera 6K were the main cameras on the BMW web movie series *with BMW* in Japan. The series was produced by the creative company *bird and insect*. Shuma was the Director. (bird-and-insect.com)

The series, which began in 2020, is a collaboration with the magazine *Discover Japan*. The series features BMW cars as they travel around Japan to visit creators and artists.

Shuma, the Director at *bird and insect* said, “Since this series is based on the theme of craftsmanship in Japan, I wanted to bring that sensibility in colors as well. For me, the colors of Japan are more ambiguous and subtle, not like clear-cut colors, and I thought that the tints produced by Blackmagic cameras would be highly compatible with such subtle expressions.”

At least 15 *with BMW* web movies have been completed. When shooting began in 2020, they were using a Pocket Cinema Camera 4K. From 2021, all were shot with a Pocket Cinema Camera 6K—with DaVinci Resolve Studio being used for editing, grading, VFX and audio post production.

Shuma said, “We introduced a variety of creators each time. One of the recent episodes for this project was a visit by the virtual human, *imma*, to the studio of the glass artist Mr. Kenichi Sasakawa. She drives a BMW to his studio. We were in charge of all of the production and post production except the compositing process. (youtu.be/8LugbSVAOBE)

“We have about three days for each episode, including location scouting and shooting, so it’s pretty busy. The crew is only three: the DP, the drone operator/photographer, and me. So, we can’t bring a lot of equipment. We often shoot using natural available or practical light at the locations. Therefore, the performance of the Pocket Cinema Cameras and their ability to retain color data helps us a lot. When we switched from the Pocket Cinema Camera 4K to the 6K model, I could feel the difference in resolution. The subtlety of the images increased, and it’s more like looking at a photograph. I created the LUTs with DaVinci Resolve in advance of the shoot and used them with all of the



Pocket Cinema Cameras.”

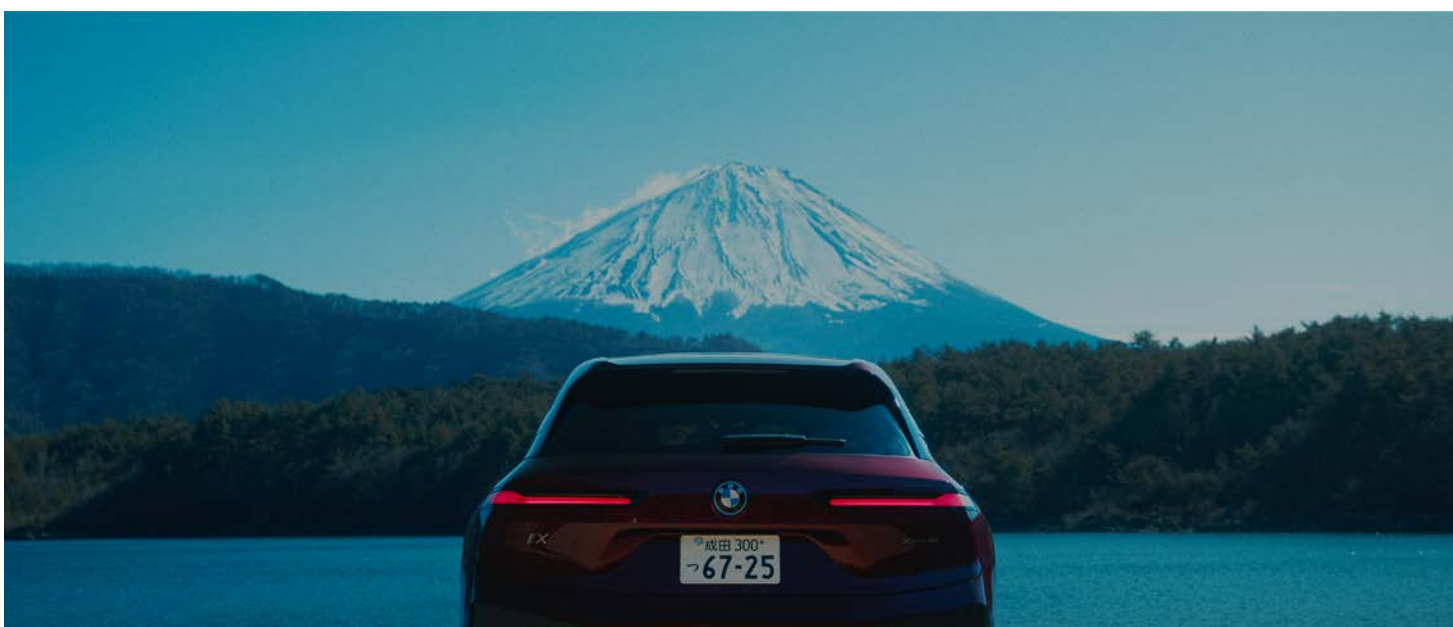
This project is mainly live action with very little use of effects and emphasizes the beauty of the footage itself. Shuma was particular about the colors for this project, as he edited and graded the footage with DaVinci Resolve Studio by himself.

Shuma continued, “DaVinci Resolve is very compatible with the MacBook Pro. I travel a lot, and the combination of the MacBook Pro and DaVinci Resolve Studio allows me to work comfortably through the entire process anywhere I go. Compared to when this project began, the concept of the work has gradually changed and the color palette has changed accordingly. Before, I used to make the look a little brighter. Now, the look is slightly darker and more bluish. The beauty of Pocket Cinema Cameras is that I can bring out the colors the way I want them.”

Credits

Director/Editor/Colorist: Shuma (bird and insect ltd.)
Cinematographer: Daisuke Abe (bird and insect ltd.)
Drone Operator: Ryusuke Honda (bird and insect ltd.)
Music: Go Hiyama (echoes breath)
Producer: Discover Japan Inc.

Framegrabs from *with BMW*



Blackmagic Cameras on Nokian Tyres Commercial



L-R: Ashton Sterling Bingham and Sam Sargeant



Motocrane Ultra Isolator and Flowcine Tranquilizer.



Blackmagic URSA Mini Pro 12K, Pocket Cinema Camera 6K Pro and Pocket Cinema Camera 4K cameras were used on an international commercial for Nokian Tyres. Ashton Sterling Bingham was the Director and Sam Sargeant was the DP.

Jon: Tell us about the background and concept.

Ashton Sterling Bingham: I've worked with this client for several years. Nokian Tyres (spelled with a "y") are unique. They come from Finland and were the first winter tires. Their Scandinavian heritage and backstory is both aesthetic as well as product-driven, which is why the Nokian Tyres are a bit more than most tires. And so, we wanted to make something that was refined, but also something that mixed American advertising with Scandinavian style. Scandinavian style is very moody and minimalistic.

We wanted to add a fast paced, high octane feeling that keeps you engaged. Take us on a journey, make us feel the tires. What can we do to highlight a tire other than make us feel like, oh, that would be fun or that would be challenging, or that would be cool?

I had to wear a producing hat as well as a writing hat. I can write myself into oblivion with all the ideas we have, but it essentially comes to what we can do that's financially feasible, that encompassed Scandinavian style and American high octane energy.

The tire itself is supposed to be able to handle everything. It's an all terrain tire, but they also wanted us to focus on how it handles snow and ice. This is tricky because where are you going to catch something that has all of those locations without shooting for more than three days? We were lucky because we filmed in places that ranged from dry and hot to cold and snow.

Where were these locations?

Ashton: We shot across the state of Utah, in various areas. These included Swing Arm City, which is a clay playground for off-road motorsports, the Uinta National Forest and Uinta Mountains during a snowstorm, and near the Bonneville Salt Flats and Knolls Recreation Area for dirt and dune shots.

Sam Sargeant: We pushed the limits and just went for it. The cameras worked in very cold temperatures, in extremely dusty and windy places, in the snow, dirt, mud, on the car, in the car, and even underneath the car. They never failed.

Cameras, lenses, accessories, rigs?

Sam: We used a range of Blackmagic Design cameras, shooting Blackmagic BRAW. The lenses were Atlas Orion anamorphic Super35 2x squeeze 40, 65 and 100mm T2 primes—with EF mounts.

Blackmagic Cameras on Nokian Tyres Commercial



DJI Ronin 2 as remote head controlled from inside car. The Ronin 2 also worked as a handheld gimbal, along with a DJI FPV, and Mavic 3.



How did you protect the front element from getting dinged?

Sam: I had a clear filter on the front of the Bright Tangerine mattebox. In fact, I had extras as backups, because inevitably they can get cracked on these off-road commercials.

Ashton: Any time you're doing something off-road, the closer you get to the vehicle, the faster it feels and the more dangerous it also gets for the camera. Sam came prepared with a couple of clear filters, but luckily we didn't crack any on this job.

Sam: And then behind the clear filter, we used a $\frac{1}{8}$ Schneider Hollywood Black Magic filter as well.

A lot of Blackmagic and Black Magic and this job :)

Sam: Haha. So that added double protection, but also gave us just a little bit of softening to ease out the contrast a little bit in the highlights. And we also had hard mattes in front, both as protection and to reduce flares.

PL mounts on the Atlas Anamorphic lenses?

Sam: Normally, I prefer PL Mount, but the Pocket Cinema Camera 6K Pro has a native EF mount. As opposed to using a lens adapter, we just swapped the PL mount to EF mount on the URSA Mini Pro 12K and had lens rods to provided support, since

clearly the EF mount is not as durable as a PL mount. The Bright Tangerine Misfit matteboxes clipped directly onto the Atlas lenses.

Ashton: The cameras were a game changer since we were able to pre-rig each camera, allowing us to move from setup to setup. We also had more peace of mind knowing we would be able to mix and match in post with greater ease. The Pocket Cinema Camera 6K Pro and Pocket Cinema Camera 4K miniaturized designs got us into tight places—interiors of cars, right next to the tires and underneath the vehicle.

Sam: BRAW was key to matching all these setups.

Ashton: Blackmagic RAW gave us the benefit of working with RAW without the need for mega processing power in post or filling up our media cards or drives. BRAW is incredibly efficient and provided all of the control in post with DaVinci Resolve Studio—especially for grading.

Great gear facilitates great storytelling. As a director, I want to give all my mental energy to what's in front of the camera. The best tools are the ones I think about the least because they allow me to focus on what's on the canvas and not what's in my hands, which is what the Blackmagic cameras and DaVinci Resolve Studio delivered.

blackmagicdesign.com

ARRI ZMU-4 Wired/Wireless Zoom Control



ARRI introduces the ZMU-4 zoom controller. It works seamlessly in wired and wireless configurations. You will probably begin by attaching the ZMU-4 to a tripod handle and connect to the camera by cable. After marveling at the smooth moves and feathered end stops, you will hesitantly insert a radio module, disconnect the cable and see how it runs wirelessly. You may never go back. You're a smooth operator, blissfully unencumbered by cables.

This is the fourth incarnation of the ZMU. It is ergonomic, rugged and weather-resistant. Zoom motor control, camera start/stop and camera functions controls are combined in one device.

- Slide in any ARRI ECS radio module to go wireless.
- Set speed, feathering, start and end stops for the zoom move.
- Status display can show lens data.
- Provides wireless expansion for other devices, such as OCU-1.
- Works seamlessly with ARRI Hi-5 hand unit.

Wired: the ZMU-4 can plug directly into the 4-pin LBUS connector of a cforce motor. Start/stop and camera control—even when not using a zoom lens—are achieved by connecting the ZMU-4's 7-pin CAM port to the camera's LBUS or Control port.

Wireless: when you slide an RF-EMIP radio module into the ZMU-4, it easily joins a wireless network with multiple ARRI ECS devices, such as the Hi-5 and SXU-1.

The ZMU-4 uses the same swappable radio modules—RF-EMIP, RF-2400 and upcoming RF-900 (long range)—as ARRI's fifth-generation Hi-5 hand unit. These three optional modules offer untethered, unfettered choices of different frequencies for different territories and distances. The radio module slides into a recessed slot in the ZMU-4. You can go from wired to wireless quickly and easily.

The ZMU-4 can do much of what ARRI's RIA-1 (Radio Interface Adapter) can do, so you don't need an extra box on a pre-ALEXA camera. It replaces the lens motor controller. In fact, the ZMU-4 allows almost any camera and lens from any manufacturer to work with the ARRI Hi-5 or WCU-4 hand units.

The ZMU-4 can be paired with an ARRI OCU-1 (Operator Control Unit) or Master Grips. The combination of ZMU-4,

OCU-1 and RA-8 Rosette Adapter could be used as a compact, handheld zoom and iris control unit for the camera assistant, DP or DIT.

The ZMU-4 does not assume you are right-handed. You can operate with either hand. The display screen shows the exact focal length at any point in the zoom range, and the zoom speed. Three user buttons offer custom shortcuts. You can adjust the zoom speed buttons with your index finger. And, the ZMU-4 is backward-compatible with all existing ARRI ECS equipment.

Use widely-available Sony NP-F550/570 batteries, although they may not run as long or display power levels as accurately as ARRI LBP-3500 batteries. Like the Hi-5, the ZMU-4 was designed to use ARRI LBP-3500 batteries for consistent power and a run-time of at least 15 hours with the RF-EMIP radio module. The ARRI batteries also allow the ZMU-4 to display remaining power as an accurate percentage.

arri.com



ARRI ZMU-4 Wired/Wireless Zoom Control



Above: ZMU-4 attached to the pan handle of a fluid head with an RA-7 Rosette Adapter—and connected to camera by cable. You could avoid cables and go wireless by adding a Radio Module.



This ZMU-4 works as a handgrip and zoom control on an ARRIFLEX 435. One cable connects to the camera's RS port for start/stop. The other cable connects to a cforce mini zoom motor that is daisy-chained with focus and iris motors. The ZMU-4 works as a receiver—with focus and iris controlled by a Hi-5 hand unit.



Attach a ZMU-4 to a monitor for the DP to adjust framing wirelessly.



Cut the cord. The ZMU-4 works untethered and cable-free with a radio module that slips into a dedicated slot.
All photos by ARRI.

AJA ColorBox v2.0



April 12, 2023. AJA updates ColorBox with firmware v2.0 for Colorfront Engine support, the latest ORION-CONVERT and BBC HLG LUTs — introduces new user overlay features and expanded test patterns.

What is AJA ColorBox?

- ColorBox is a compact, high-performance conversion, look and color management device for cine production, live events and broadcasting.
- Key modes include AJA Color, Colorfront and NBCU. ColorBox also offers licensed upgrades for advanced color-management, including Colorfront Engine, the ORION-CONVERT algorithm, and BBC HLG LUTs.
- ColorBox is controlled with a web browser user interface that includes video preview. It doesn't need an Internet connection.
- ColorBox supports Standard Dynamic Range (SDR), High Dynamic Range (HDR), and Wide Color Gamut (WCG) signals using 12G-SDI and HDMI 2.0 single wire connections for 4K/UltraHD HDR up to 4:2:2 10-bit 60p or 4:4:4 12-bit 30p.

ColorBox V2.0

AJA Video Systems ColorBox with v2.0 firmware supports low latency in-line HDR/SDR algorithmic and LUT color transforms

for live production, live event, in-studio, and on-set applications. The update introduces an add-on license to expand ColorBox's Colorfront Engine video processing options with all-new TV Mode and Live Mode.

Adding support for the latest v1.6 BBC HLG LUTs, the release also has an ORION-CONVERT update with a gamma compensation function to ensure compatibility between different color transform philosophies. Many additional customer requested features are included in the release at no charge, such as support for frame line overlays, graphics, and five additional built-in test patterns.

Colorfront Engine Support for New TV and Live Modes

ColorBox's new Colorfront TV Mode is an intuitive color processing engine aimed at broadcast production. When licensed, it provides operators access to new Brightness, Highlight, Super Highlight, and Colorfulness tools that enable greater control over critical elements in color conversions. Users gain access to more controlled corrections within the guardrails of Colorfront's perceptual processing algorithm, which will maintain perceived color, hue, and saturation without hard clipping artifacts.

New TV Mode also introduces Sony S-Log3 conversions as part of the license upgrade. These had been popular in current live

production applications. The same license also enables Colorfront Live Mode, which includes several camera log formats beyond SDR, HLG and PQ—such as the recent ARRI Log C4 color space. These new Colorfront Engine capabilities mirror those available with the newly announced FS-HDR v4.2 firmware update.

ORION-CONVERT and BBC HLG LUTs

While ORION-CONVERT v1.0 is the origin of popular NBCU LUTs, ORION-CONVERT v1.1 adds new compatibility with alternate LUT based broadcast conversions through ORION's new Gamma



User Overlay with Framelines and LUTs applied

AJA ColorBox v2.0

Compensation, which is supported via ColorBox v2.0. This Gamma Compensation applies the optional OOTF (described in section 5.1 of ITU-R BT.2408-5) to compensate for the subjective change in appearance between SDR and HDR. BBC HLG LUTs are also updated to the latest v1.6, including a new combination LUT that fuses two LUTs into one for camera shading applications and a new down-mapping LUT based on the Color Appearance Model (CAM) of the human visual system that attempts to preserve the artistic intent of original HDR content.

User overlays

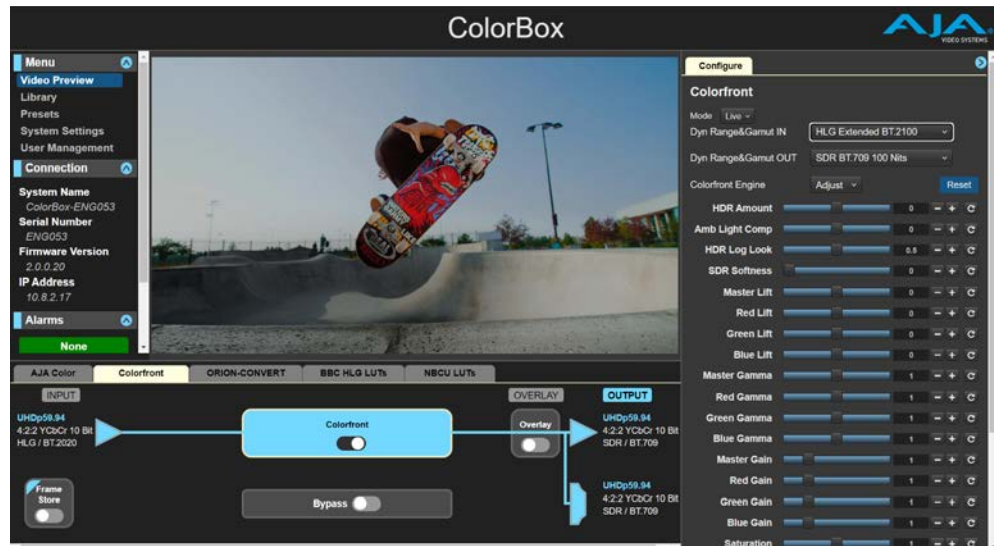
Composition requires framelines. Is that C-stand in the shot or not? Giving the DP, camera operator, director, DIT and everyone on set the ability to see frame-lines is essential. ColorBox v2.0 has a new User Overlay feature, providing the ability to import and overlay custom images onto the output. Those images can be frame-lines or any other image, such as a logo. These images are imported as .png files to the new Overlay library and recalled along with, or without, the already available overlay information.

Test Patterns

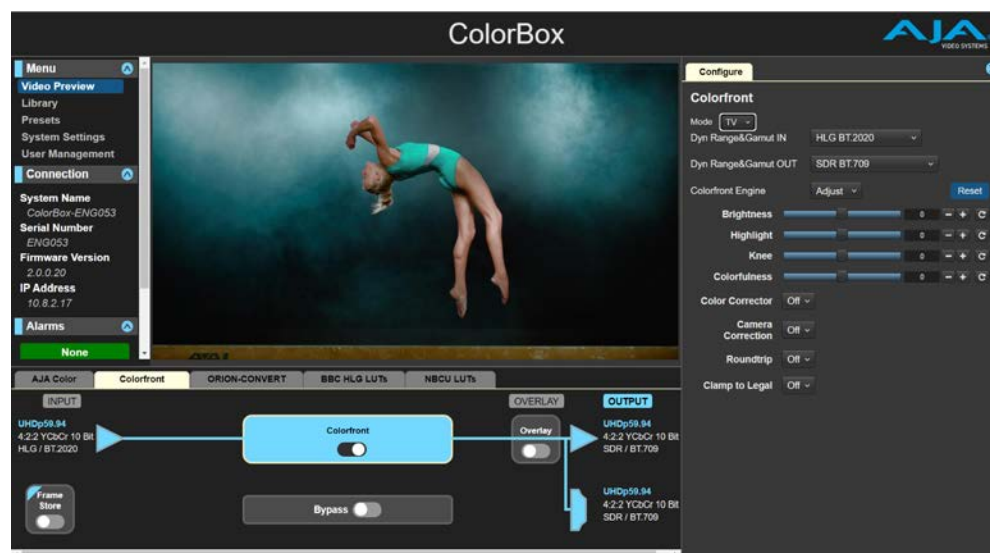
ColorBox plays a key role in a production ready to roll. Five new test patterns have been added for a total of 14 to help users set up quickly. The five test patterns consist of three BT.2111 HDR variants, NBCU Fancy Bars, and a circle pattern.

Using ColorBox's SDK, Light Illusion ColourSpace display calibration software and IN2CORE QTAKE video assist software recently completed integrations with ColorBox. This is an example of additional markets and supported applications where the professional features of ColorBox can be implemented.

AJA President Nick Rashby said, "We strive to simplify color managed workflows, allowing our customers to focus on capturing interesting content rather than wasting time on solving compatibility challenges. ColorBox already has impressive capabilities and unmatched functionality, and v2.0 firmware further extends its value with compelling new features, including a Colorfront upgrade option."



Colorfront Live Mode



Colorfront TV Mode



Orion-Convert with Gamma Compensation

AJA ColorBox v2.0



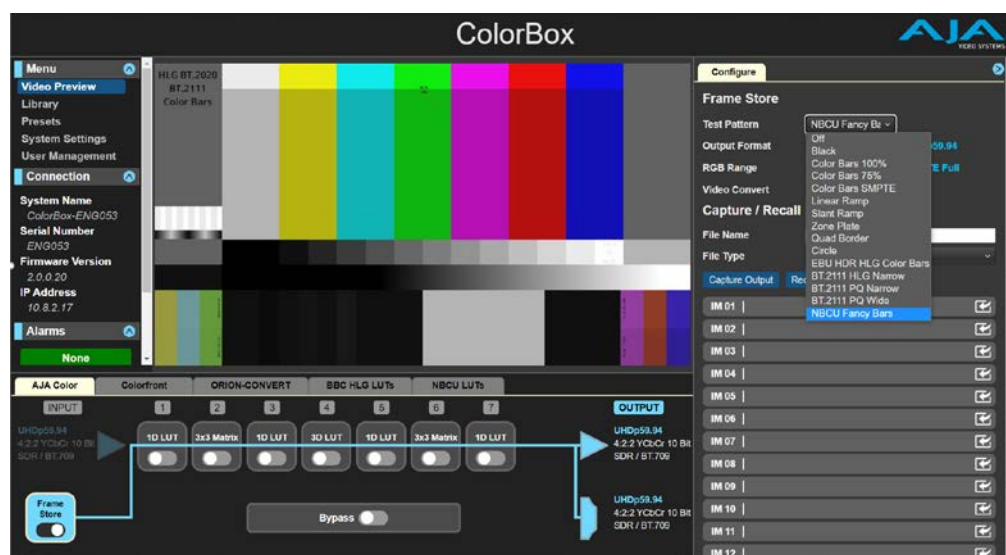
Price and Availability

ColorBox is available today from AJA's worldwide network of resellers for \$1,995 US MSRP, with optional licenses for Colorfront at \$995 US MSRP, the ORION-CONVERT pipeline at \$695 US MSRP and the BBC HLG LUT pipeline at \$145 US MSRP. For rack mounting, the new AJA 1RU Utility Rack accessory is available for \$120 US MSRP.

The firmware v2.0 update is now available for free via AJA's support page. To learn more, visit www.aja.com/colorbox, or go to AJA's What's New Page.

NAB 2023 visitors can try AJA ColorBox in person in the West Hall, booth #2600.

aja.com/colorbox



AJA ColorBox with Test Pattern and Test Pattern Generator at right

AJA FS-HDR v4.2



Ethernet and Fiber Inputs and Outputs

SDI BNC Connectors

Inputs and Outputs

SDI and HDMI
to Monitor

April 12, 2023. AJA Video Systems updates FS-HDR with v4.2 firmware for new Colorfront Engine TV Mode Color Science, ARRI LogC4 transforms and BBC HLG LUTs.

What is AJA FS-HDR?

- FS-HDR is a real-time HDR/WCG converter/frame synchronizer with Colorfront Engine video processing.
- It fits in a 1RU, rackmount.
- FS-HDR is designed to meet the HDR (high dynamic range and WCG (wide color gamut) needs of motion picture production, post, live events, broadcast and OTT.
- FS-HDR provides real-time, low-latency processing and color fidelity for 4K UltraHD and 2K/HD production.
- Developed in partnership with Colorfront, its HDR/WCG prowess is powered by Colorfront Engine video processing algorithms.

Why do you need this?

FS-HDR provides a very accurate representation of lighting, look and color that you may not always get directly from the camera.

If you are monitoring on set in SDR, AJA's FS-HDR provides a good representation of how your work will look in HDR in post and on screen. And, you can view up to 4 cameras on a 4K/UHD display in HDR.

AJA Video Systems v4.2 firmware for its FS-HDR is a free firmware update. It introduces the new Colorfront TV Mode, utilizing the latest color science advancements from Colorfront, as well as updates to the Live and Film Modes that make FS-HDR more powerful by adding support for ARRI LogC4 transforms. BBC LUTs have been updated to v1.6, including a new combination LUT for camera shading in live productions and a new CAM (Color Appearance Model) based LUT.

As color management strategies continue to evolve, so do the tools needed to facilitate those strategies in the real world. FS-HDR's new TV Mode is a simple-to-use color processing engine aimed at broadcast workflows. It provides operators access to

new tools that enable greater control over critical elements in color conversions. These new Brightness, Highlight, Super Highlight, and Colorfulness tools offer controlled corrections within the guardrails of Colorfront's perceptual processing algorithm, which will maintain perceived color, hue, and saturation without hard clipping artifacts. TV Mode also introduces Sony S-Log3 conversions, which have proven advantageous in modern live production applications.

FS-HDR's Colorfront Live and Film modes have also been upgraded with added support for ARRI LogC4 conversions, the latest color science that ARRI introduced with its ALEXA 35 camera launch. The addition of ARRI LogC4 allows FS-HDR users to convert to/from this new colorspace to/from a wide range of input and output color spaces available in both Live and Film modes.

BBC HLG LUTs are also updated to the latest v1.6 from BBC, including a new combination LUT that fuses two LUTs into one for camera shading applications and a new downmapping LUT based on the Color Appearance Model (CAM) or human visual system that attempts to preserve the artistic intent of original HDR content.

“The state of the art in color science is continually advancing, and the tools to manage color must keep pace,” said AJA President Nick Rashby. “We’re committed to expanding FS-HDR support for the latest camera workflows and requirements for film and television, and the new firmware adds impressive capabilities to its already comprehensive feature set.”

Price and Availability

FS-HDR is available today from AJA's worldwide network of resellers for \$9,569 US MSRP. The v4.2 firmware update is now available for free via AJA's support page. For more information, visit www.aja.com/fs-hdr, or check out AJA's What's New Page. AJA FS-HDR will also be on display at NAB 2023 in the West Hall, booth #2600.

aja.com/fs-hdr

Jean-Marie Dreujou, AFC, ASC and *Notre Dame on Fire*



Framegrab: at the top of the Belfry, fireman attaching hose. From Technocrane. Grading by The Lab, Colorist Giles Granier. DIT: Brice Barbier.

Notre-Dame on Fire (*Notre-Dame brûle*) is a dramatic feature film based on the Notre-Dame de Paris fire on April 15, 2019, directed by Jean-Jacques Annaud (*Seven Years in Tibet*, *Wolf Totem*, *The Bear*). *Notre-Dame on Fire* was released in France in March 2022 on IMAX, Dolby Cinema, and standard formats. Not to be confused with a series of a similar name, it has not yet been released in the US. The only place for me to watch was on a Virgin Atlantic flight from JFK to London where BSC Expo also beckoned. A rather expensive way to see a movie, but BSC Expo also beckoned on the other end.

It is an edge-of-your seat film. Firefighters get stuck in Paris grid-lock traffic and try not to get stuck in claustrophobic spiral staircases barely wide enough to get through with gear and air tanks. Jean-Marie Dreujou, AFC, ASC was the cinematographer. He does wonderful work in often-difficult places: Mongolia (*Wolf Totem*), Cambodia (*Two Brothers*), Tunisia (*Day of the Falcon*).

Jon Fauer: When and where did you prep and shoot?

Jean-Marie Dreujou, AFC, ASC: I started prepping in June 2020 and shooting began in March 2021 for 11 weeks. We shot in a studio in Paris and on location at Bourges Cathedral, Sens Cathedral, Amiens Cathedral, Saint-Denis Basilica and the parvis of Notre-Dame.

You encountered many challenges (fire, effects, objects falling—in the middle of the Covid pandemic). How did you and your crew stay safe?

It was a very technical film for me. Challenges involved shooting the fire itself, of course, but also maintaining lighting continuity throughout. The film started in the morning and finished at night when the fire was finally extinguished. The actual day when the fire took place was sunny and without clouds. Jean-Jacques

Annaud wanted to respect this. Another challenge was to keep the continuity between all the cathedrals and the studio.

Jean-Jacques also wanted to have some scenes directly inside the fire. We built a special cage with silicate material, an air-lock where the camera was cooled by cold air from an air conditioner and an quartz optical glass to withstand the high temperature of the fire.

Equipment: cameras, lenses, lighting, grip, cranes?

- 3x ARRI ALEXA LF — Large Format (Full Frame).
- 2 Blackmagic Micro Cinema Camera with Panasonic MFT Zoom lens and Cosmocar 12.5mm S16 prime.
- 1 Blackmagic Pocket Cinema Camera 4K camera
- Angénieux 45-135 and 22-60 EZ Zooms.
- 2x Angénieux Optimo 12x FF (36-435) Zooms.
- Cooke S7 Primes.
- 2 Super Technocranes with Scorpio Mini EZ Heads and MoSys/Cartoni remote head.
- Dino Lights on a dimmers for exteriors to simulate the flames.
- Skypanels in the studio to add flame effects.

How did you get wide shots of the entire *Notre-Dame on fire*?

We used archival footage from firefighters and the prefecture of Paris and also from individuals who filmed the fire as it happened. For some shots, the VFX team relied on archival footage and plates made with a drone, added flames and did additional work retouching and removing elements of the set.

How did you get those narrow staircase shots?

We built a special staircase in the studio where there were two openings to place the cameras.

For some special shots, we attached a helicoidal rail above the claustrophobic stairway on which a small head traveled with a

Notre Dame on Fire



Blackmagic Pocket Cinema Camera 4K. This was pulled with a wire so we could follow the firefighters in their ascent.

We also did many handheld shots.

For lighting, I use practical lights on the firefighters and I also held a torch in my hand to add more light.

What was your most difficult and favorite sequence?

My favorite sequence is the Belfroit (Belfry) scene and it was the most difficult. We were often hand-held in the belfry with the firefighters and it was very, very hot. We were equipped with special heat-resistant clothing that firefighters use.

I guess you used primes there?

I shot handheld with Cooke S7 in the Belfry, in the staircase and other locations. I used Angénieux zooms on cranes and on all the scenes that were not hand-held.

How did you avoid burning down the studio?

All the flames were controlled by the prop/effects team. They had gas burners and it was carefully planned. The difficulty was figuring out the exposure. We did a lot of tests to learn the exposure relative to the size of the flame. We rated the camera at 800 ISO and often stopped down to T11-T16 when the fire was at maximum height. I augmented the ambient light with some handheld, gas torches so the shadow areas would not go completely dark. Around the belfry, we had Dino lights (24 x 1K Tungsten) on dimmers.

Production stills by David Koskas and others. angenieux.com

Notre Dame on Fire



Jean-Jacques Annaud and Jean Rabasse (set designer) during prep.



J-J and J-M at camera with Angenieux Optimo 12x.



The belfry with a Technocrane. BMD Micro in fireproof box at top.



In Bourges. PAR lights on reflectors to simulate flames on dimmers.



Jean-Marie Dreujou, AFC, ASC.



J-M and J-J in firefighter's gear, camera protected against fire and water.



Fireproof box with silicate walls for Blackmagic Micro camera.



J-M at wheels of Techo-Scorpio head and J-J at Bourges Cathedral. Arthur Chassaing pulling focus.

CARTONI Lifo 25, E-Maxima 5.0, E-Maxima 30, News

CARTONI introduces Lifo Tripods and Encoded Heads.

Lifo 25

Lifo 25 is a new, motorized support for PTZ (pan-tilt-zoom) cameras with a unique remote-control elevation (up-down) system. For example, using Lifo 25 in a live concert with a Sony FR7 on top could save the shot when a fan stands up and blocks the view in front of the camera. Remotely raise the camera.

Lifo 25 also addresses the increased use of PTZ cameras by smaller studios in news, talk, educational and corporate programming. The head adds height control as a natural complement to the camera's pan, tilt and zoom capabilities. Camera height can be adjusted remotely via wire or radio.

Lifo 25 can lift a camera from 70 cm (2.3 ft) to 250 cm (8.2 ft) in two stages. Maximum payload is 25 kg/50 lb. With that much capacity, you might even imagine having a "real" camera on top with a lightweight Ronin-style remote head. Lifo's SDS (Smart-Stop double stage) tripod structure ensures stability and torsional rigidity. Lifo 25 comes with a built-in spreader and rubber feet. It can also be mounted on a lightweight Cartoni dolly.

E-Maxima 5.0 and E-Maxima 30

E-Maxima 5.0 and E-Maxima 30 are new, encoded versions of two of Cartoni's most popular fluid heads. Elisabetta Cartoni, President and CEO said, "E-Maxima 5.0 and E-Maxima 30 are the latest results of our ongoing initiative to apply encoding to manually operated heads for visual effects, virtual production and similar applications. The advent of VR and AR have made it imperative to accurately track movements and match them with the virtual backgrounds and characters. Virtual composition is now used in all segments of the industry, from studio cinema productions and sports to newsgathering."

Cartoni E-series heads have high resolution encoders that are mounted internally on the pan and tilt rotation shafts. They provide highly accurate readings of angles with 4 million counts on both axes. Data is supplied in binary code to work with the most widely-used virtual engines, including Real-Time VFX, Unreal Engine and FreeD Engine, or streamed to virtual boxes along with other camera and lens metadata.

CARTONI Acquires STE-MAN/Manios Digital & Film

February 28, 2023. Cartoni announced the acquisition of STE-MAN Inc/Manios Digital & Film, the North Hollywood-based supplier of camera and support equipment. Manios Digital & Film has represented Cartoni products across the United States since 1989. Elisabetta Cartoni said, "In acquiring our US distributor, we will be more directly involved with our number one market and improve our response to the industry's evolving needs. This merger will also allow us to further expand and better serve the rest of the Americas with a dedicated warehouse and service center."

Steve Manios assumes the position of Vice President of Sales and Marketing. Members of the Manios Digital & Film staff will continue in their current roles, including: Western Regional Sales Manager David Butler, Eastern Regional Sales Manager Gus Harilaou, Inside Sales Manager Chris Lobos and Accounting Director Selma Top.

cartoni.com



Cartoni Lifo 25



Cartoni E-Maxima 5.0 for payloads up to 110 lb / 50 kg. Tilt range +/-90°. Mitchell flat base with optional 150mm bowl.



Cartoni E-Maxima 30 for payloads up to 23 lb / 30 kg. Tilt range +/-90°. Mitchell flat base with optional 150mm bowl.



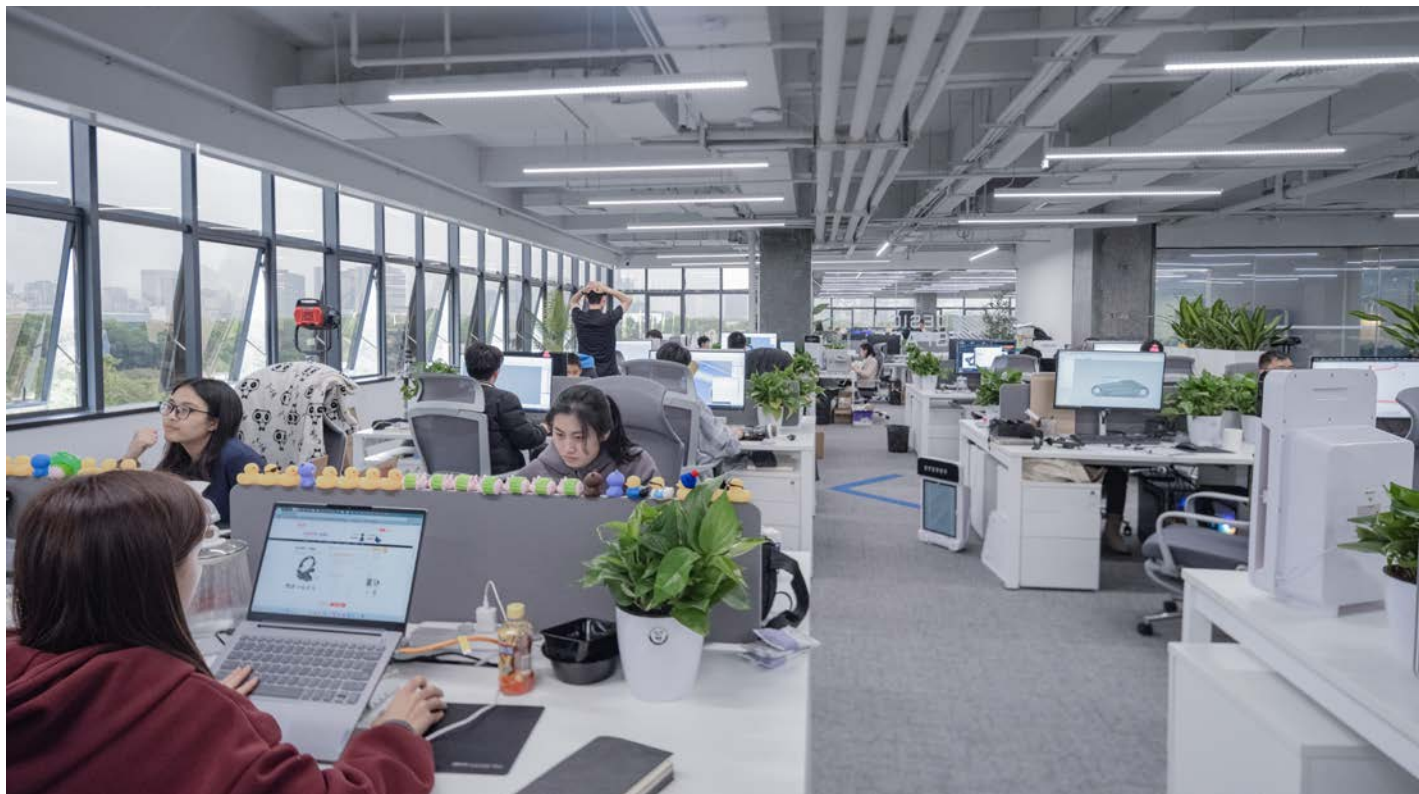
Above: Tilta China headquarters, R&D and design center. Below: Lobby.

The two founders of Tilta, Wenping Zeng and Kefeng Zhou, started out in the film and television industry. They had studied fine arts in university, which provided a foundation for their interest in design. During those university years, they gained practical experience working with a range of equipment that included motorized jib arms, sliders, Mini35 adapters and matte boxes. This hands-on experience and background in structural design and aesthetics, along with market intuition, helped them develop Tilta into a successful company delivering products to meet the demands of a rapidly-evolving industry.

Wenping Zeng and Kefeng Zhou founded Tilta in 2008 with three engineers in a commercial and residential building in Shenzhen. They set up a small-scale manufacturing factory in the suburbs of Shenzhen in 2010 and corporate offices in Shenzhen's Guangming New District in 2014.

Today, Tilta has expanded its operations to include multiple locations in and around Shenzhen. Its headquarters are divided into three areas. R&D, production and sales are centered in the Nanshan High-Tech Park. Production, supply chain and logistics operations are in Shenzhen. Core operations were moved to





Above: Marketing and R&D Department. Below: Design Team.

the new headquarters building in downtown Shenzhen in 2021 to address the growing demand for development and talent. *FDT had some questions for Wenping Zeng and Kefeng Zhou.*

Jon: How many people work at the Shenzhen headquarters?

Wenping Zeng, Kefeng Zhou: Around 290 people work at Tilta's Shenzhen headquarters.

Please tell us more about founding Tilta and the early years.

Tilta was established in 2008, at a crucial turning point in the development of imaging technology. The launch of the Canon

5D Mark II changed the way images were captured and enabled more people to experience cinematic visuals. Based on our work experience and market demand, we designed a first-generation kit for the 5D Mark II. Shenzhen is a highly developed manufacturing city, and Tilta became successful with its design capabilities, affordability and efficiency. Initially, Tilta focused on mechanical camera kits for five years, with a relatively simple product line.

However, in 2013, the company embarked on a two-year journey to develop a three-channel professional follow focus system. Though the high price meant that the product was not





Above: Design Department. Below: Warehouse for Inventory.

a commercial success, it allowed us to gain valuable experience in electronic technology. This led to the development of the Nucleus-M in 2015, which has been Tilta's best-selling product for seven years. We then introduced the smaller Nucleus-N electronic follow focus system, which has been very popular.

Tilta's product range has also expanded to include handheld stabilizers and vehicle-mounted products. In 2019, Tilta partnered with DJI to develop nearly 50 peripherals for multiple DJI products.

Today, Tilta's product lines range from simple mechanical accessories to intelligent electronic and mechanical products as well as large-scale mobile electronic control devices.

Please describe Tilta's company values and culture.

The Tilta team has gained insight into the needs of the film and television industry and its users. We pride ourselves on having top-notch technology and product design teams. Also, our access to the supply chain allows us to introduce new products quickly.

At Tilta, we believe in fostering a culture that values innovation in an open atmosphere that benefits our company, our employees and our customers. Feedback from our users and consumers is encouraged. Please contact Tilta with suggestions. We believe that working together is essential to driving progress in this industry and creating a virtuous cycle of growth and improvement.







Above: Tilta Burbank at magic hour. Below: Showroom and Lobby.

Tilta USA was established in 2016, in a single-floor office on Magnolia Boulevard in Burbank, California. Over time, they gradually expanded operations by stocking inventory, setting up a repair team and launching an online store. In 2021, Tilta USA relocated to their current location nearby. It looks like a spread in *Architectural Digest*, with a 10,000 square foot two-story building featuring a showroom, warehouse, repair center and offices.

A team of 20 takes care of sales, technical support, marketing, repairs and shipping for the North and South American regions. Despite the challenges of pandemic-related delays and construction obstacles, Tilta Burbank is excited to announce the grand opening of their new showroom on April 22, 2023

Yang Shao is the CEO of Tilta Burbank. He received an MFA degree from Art Center College of Design in Pasadena. As a student, his knowledge of cameras, lenses and accessories helped him to get work as an assistant and filmmaker. At that time, Tilta was already a leading camera accessory brand in China, but it was not well known in the US. However, Yang was a fan of the brand, and that led to his collaboration with Tilta. He shared the same

passion for the industry as his former art school classmates, the two founders of Tilta in China. At the start of their partnership, Yang was responsible for sales, repair and marketing all by himself in Los Angeles, using a van to transport Tilta's products. Some of Tilta's earliest clients in LA might still remember buying their camera cages from his van in a parking lot.

Yang knocked on the doors of rental houses to introduce the camera cage and wireless video transmitter, and became friends with many of them. Soon, Tilta products began showing up on Hollywood sets. Yang said, "It was a challenging time, but the experience taught me many things about our users' requirements and the products they wanted."

Two years later, the Tilta US office embarked on a new phase with the first showroom and the original team of six close friends. Local cinematographers, assistants and crew started to visit the store, to test products and get service. Sometimes they just came by to chat. To paraphrase Bogart to Rains in *Casablanca*, this was the beginning of a beautiful friendship and collaboration—listening to users' valuable insights about Tilta products. tilta.com



Tilta Hydra Arm Mini



One of Tilta's latest products is the Hydra Arm Mini.

Picture this: car commercial and running footage. Location: far, far away in a place without camera cars, camera arms or even cameras. You will be expected to ship everything to this beautiful, remote location. Camera and lenses are relatively easy to bring. A high performance SUV or car is no problem to rent locally. But where do you get the camera arm?

That's when you want a Hydra-Arm Mini. It is a portable, lightweight and affordable camera car crane. It packs in 3 cases and can fly as oversized baggage on most commercial airlines.

Hydra-Arm Mini was initially designed for the DJI RS 3 PRO and RS 2. However, it is compatible with the Ronin 4D, Ronin MX, Freefly Movi Pro and other gimbal stabilized systems—as long as they can be mounted, powered with V-Mount batteries and stay within a 22 lb payload limit.

The lightweight, counterweight-free design makes the system fast to set up. The Pro Kit includes suction cups, speed rail and ratchet straps so you can mount the Hydra-Arm Mini system to most vehicles that can support the 176 lb weight of the arm plus a 22 lb maximum payload for camera and gimbal.

A Basic Kit will be available in the near future without mounting hardware for users who already own 50mm Speed Rail or who want to build their own permanent mount.

Optional suction cup kits for various vehicles will be available soon, as well as an Electronic Kit that monitors the suction cup pressure remotely for added safety. The included controller connects by wire. The operator controls include pan, tilt, speed, dampening and motion limits.

The Hydra-Arm Mini works at speeds up to 74 mph (120 km/h) in ideal conditions. However, depending on camera weight, gimbal strength, weather conditions and terrain, Tilta recommends keeping speeds below 37 mph (60 km/h).

The arm itself does not have any power or video pass-through

features, which means that, to view real-time images, you need a wireless video transmitter / receiver system.

This is a serious piece of equipment, even if it is eminently affordable. You must have experienced operators and follow safety procedures. Tilta will be prioritizing sales to experienced users, but new users can still learn and use the system. To that end, Tilta will also conduct training and certification classes. As they say in the spots, "Do not attempt (unless you are very qualified). Highly skilled drivers on controlled course with highly skilled camera arm operator and camera operator."

Hydra Arm Mini Specs

- Arm length: 12.7 ft / 3.87 m
- Maximum pitch (up-down): 14.8 ft / 4.5m
- Maximum arm speed up-down: 80° in 1.7 sec.
- Maximum arm speed horizontal: 360° in 6 sec.
- 10kg / 22 lb payload. Fits most vehicles
- Packs in 3 cases — each 39.37 x 19.69 x 15.75in (100 x 50 x 40cm).
- Pro Kit: \$11,999. Basic Kit: \$9,999.
- tilta.com





Flying recently from New York to visit Brompton's new headquarters in London, it was ironic that every seat-back video screen on a relatively new A350 Airbus looked different.

Brompton Technology was founded in 2011 to ensure, among other things, that every modular panel in your LED active background looks the same. Picture a 100' x 20' LED Video Wall made up of individual 19.69" x 19.69" individual panels bolted seamlessly together. That's 60 panels across and 12 panels high, a total of 720 panels. Brompton Technology ensures that each one of those individual LED displays is going to match in color, contrast, brightness and more—unlike the 335 untamed monitors on the A350 flying theater.

Brompton was established in 2011 to provide LED processing hardware and software for film, live events and broadcasting. The parent company is Carallon, founded in 2004 to develop lighting consoles and broadcast equipment. Today, Brompton provides a line of Tessera Processors that range from the SX40 for high-end 4K production to the more affordable T1.

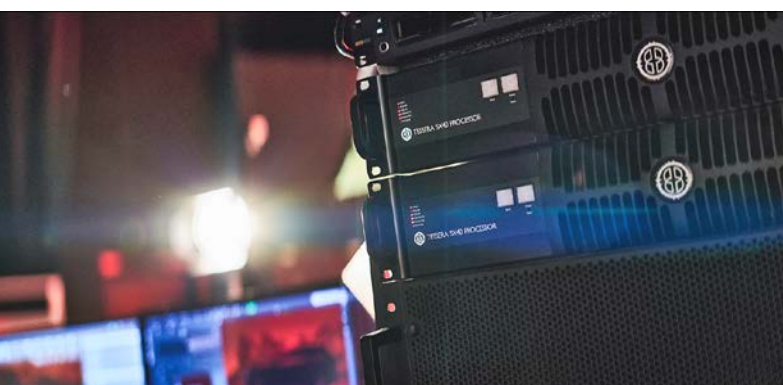
To paraphrase Hamlet to Horatio, there are more things in managing LED Volumes than were dreamt in my philosophy. A tour of Brompton's large, new, modern headquarters, halfway between London Heathrow and London Eye, reminds you how much goes on behind the scenes. Hardware is assembled there. A room full of programmers work on software and firmware. Color scientists measure and test the latest displays. Brompton's calibration sys-

tem ensures that each LED diode inside every pixel package in every display is precisely identified and measured. A large Research and Development team works on products that are coming next.

Why is it that the LED display manufacturers do not provide this themselves? Most of their displays have multiple uses—for large outdoor advertising signage and sports. "But, you only get one take to get it right at a live event and not too many takes in a volume," said Daniel Warner, Technical Projects Specialist.

Here's a simplified overview of a scenario. You're shooting a car commercial in a volume. The camera faces a large LED Wall. Props and car prep teams place the car between camera and wall. Background video plays from a server, enters a Brompton Tessera SX40 Processor that is controlled by Brompton software, viewed on the operator's monitor, travels via 10 Gbps Ethernet to Brompton's XD Data Distribution Box and feeds to Brompton receiver card driving each display panel in the wall. LED tracking markers enable seamless camera moves by turning on and off directly out of phase (the dark side) with the camera's exposure.

Now, along this flow of video are a number of challenges that Brompton addresses. The director wants the LED Wall to play back in slow motion at 1,000 fps. For another scene, the art director asks for a very dark night scene. Of course, it is 12-bit HDR at light levels so low the agency producer is astonished how good the resulting composited image looks—without spill and contamination from the highlights in the shot. bromptontech.com



Sony VENICE 2, Rialto 2, Optimo Primes, Stargate, Band Pro



by Tim Smith, Chief Creative Officer, Band Pro.

Technology is touching every part of the filmmaking process—advances in lighting, set design, volumes and LED walls. Pulling focus, operating cameras, handling camera original, viewing images, watching dailies, grading and finishing—it is all a progression from the analog age.

So, with the generous support of Sony, as well Stargate Studios, Band Pro and Angénieux, and lots of help from our friends in the industry, we decided to make a short film that would not just show how well these technologies work but more importantly how well they work together.

The concept was to create a story that would allow us to use an AI/LED wall, the amazing image sensor of Sony VENICE 2 8K cameras, along with the Angénieux Optimo Primes and their Internal Optical Palette (IOP), combining advanced imaging technology with the beautiful qualities of high-end, customizable cine lenses.

(The Internal Optical Palette—IOP—of the Angénieux Optimo Primes consists of selections of a swappable internal element, a front filter and a rear filter. You can use them together or separately to create interesting, unique, personal looks.)

We reached out to one of the most respected visual effects houses in the industry, Stargate Studios. Sam Nicholson, ASC, award-winning president of Stargate, jumped on board without hesitation and with the eagerness of a kid in a candy store. This is no surprise. Sam has always been at the forefront of embracing new technology and new techniques. This was shot on the Stargate Studios VP ThruView stage, which features Unreal models and DaVinci Resolve playback on AOTO P1.5 LED walls. Lighting included Kino Flo MIMIK, Prolycht and Nanlux DMX lights, with accessories from Bright Tangerine.

We wanted a story that would allow us to use many different looks and diverse shooting scenarios that would let us really test the technology we had available. With that, Sam wrote the script *Make Believe*. It is about a woman remembering times in her childhood bedroom all the wonderful adventures she had in her dreams. Sam used his LED walls to take the character to some amazing locations, from a pirate ship to the top of the Santa Monica Ferris wheel.

We invited three additional DPs to collaborate with their own shooting styles and approaches. Richard Crudo, ASC, Eve

Sony VENICE 2, Rialto2, Optimo Primes, Stargate, Band Pro



Cohen, and Randy Wedick joined Sam Nicholson, ASC. Each cinematographer approached the project from a different direction.

Sam had his hands full with background plates, the AI/LED wall, and was also the director. Randy Wedick, in addition to being a DP, is CTO and head of the Optimo Prime Internal Optical Palette project at Band Pro / Angénieux Americas.. Few people know the Angénieux Primes better than Randy.

The film was shot completely on two Sony VENICE 2 8K cameras with the new Rialto 2 Extension Systems (CBK-3610XS). It turned out that four DPs could not get enough of the Rialto 2. By separating the camera head from the heavier body, a lighter and smaller remote head like the Ronin 2 could easily carry the payload of sensor, mount and high-end Full-Frame cine lens.

It also turned out that the four DPs—Richard, Eve, Randy and Sam—became more like one creative force than four separate entities. They made creative choices together, such as which IOP would best serve the different parts of the story. Richard was not just handling the “Hollywood” style scenes but was involved in all of them. Eve somehow started operating the B camera, even though we never planned on a simultaneous B camera. Randy, along with his DP job, was even pulling focus, and of course, Sam, was the ringleader of this circus.

The Sony VENICE 2 cameras handled the light beautifully—from the LED walls to the cinema lights. The Rialto 2 rig allowed us to work on a small stage without getting in the way of the jib

that supported the A camera. The Full-Frame 8K VENICE 2 sensor, combined with the Full-Frame Optimo Primes, gave us breathtaking cinematic images.

The swappable IOPs gave the DPs a chance to craft images with an eclectic flexibility that was like having six different types of lens series on set just. All the IOP choices came from the cinematographers. They used many—Tiffen Glimmerglass, Low Con, Pearlescent, Coated and Uncoated. Each one offered a range from subtle to dramatic. We learned a very important thing. You don't have to swap the IOP internal element in a clean room. Contrary to our previous warnings, it should be a room that is clean; it doesn't have to be an industrial clean room. This makes things a lot simpler.

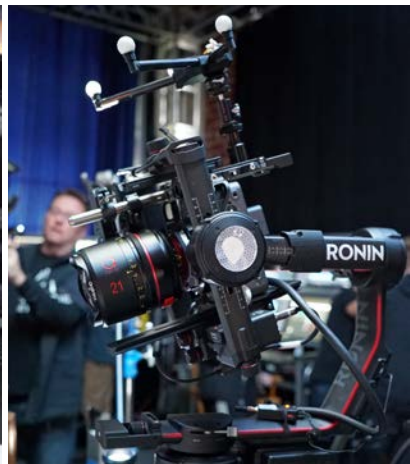
The internal optical element of the 3-part IOP system creates a look that is quite different from attaching a similar filter in front of or behind the lens. It catches internal barrel flares and reflections in unique ways. Best of all, you can use the same grade of filter when it is fitted internally. No more going heavier on the wide lenses and lighter on the longer lenses.

All four cinematographers fell in love with the Tiffen Pearlescent IOP. I think we will see that look a lot until cinematographers' styles change (as they always do). But these Optimo Prime lenses were built for change, and I don't ever see them going out of style. The film *Make Believe* will be shown at NAB 2023 and is planned for wide distribution and screening throughout the year.

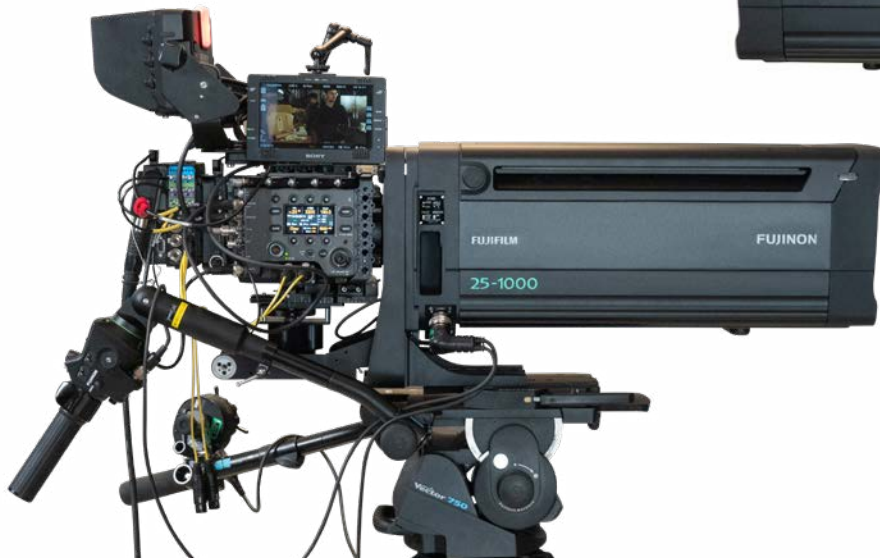
bandpro.com

Photos by Brett Gillespie.

Sony VENICE 2, Rialto 2, Optimo Primes, Stargate, Band Pro



FUJINON Duvo 25-1000 Zoom



The FUJINON 25-1000 F2.8 - 5.0 PL Mount Zoom was announced in October 2022. It is shipping now, and has a name: FUJINON Duvo HZK25-1000mm F2.8-F5.0 PL Mount Cinema Box Lens. The short version is Duvo 25-1000. “Duvo” comes from “Dual” (as in Dual formats—Super35 and Full Frame) and “Vivo” (as in live events, broadcast and cinema).

This native PL-mount cinema box lens has a zoom ratio of 40x and a telephoto focal length of 1000mm, a very high combination of magnification and telephoto reach for S35/FF cinema sensors. Fujifilm North America Corporation is shipping initial orders of Duvo 25-1000 to its customers now.

Fujifilm said, “The 40x zoom ratio Duvo 25-1000 is the first in Fujifilm’s new Duvo series of cinema lenses.” Wait, that means more are coming? They explained, “Fujifilm will continue its efforts to enhance the world of cinematic image expression by expanding its lineup of lenses that employ its dual-format system to accommodate both [S35 and FF] large sensors.”

Stosh Durbacz, National Sales Manager, Optical Devices Division, Fujifilm North America Corporation, said, “With a pedigree from the highly respected FUJINON PREMIER Series, Duvo 25-1000 provides flexibility and reach, while producing the highly sought-after cinema look for movies, commercials, sports, broadcasts, concerts and live events.”

Duvo 25-1000 has a built in 1.5x expander/extender to cover S35 or Full Frame up to 1500mm. For film and commercial production, you can connect a motor driver for film-style wireless lens control. For live events and broadcasting, existing FUJINON box lens accessories can be used for multi-camera operation. Duvo 25-1000 also has Breathing Compensation Technology, so the framing does not change while focusing. Compatible cameras can also compensate for aperture ramping. See Duvo 25-1000 at Fujifilm’s NAB booth C5725.

fujinon.com

Wooden Camera Duvo Cage



Wooden Camera is at work cinematizing the Duvo 25-1000. A prototype should be at NAB. It is a cage for camera assistants to attach accessories—focus devices, on-board monitor, focus/iris/zoom digital readout, top and side eyebrows.

The cage attaches by compression between rubber pads and the exterior of the lens housing. There are three NATO rails with ¼-20 and ⅜-16 threaded holes and locating pin slots to mount accessories. A thumb knob lets you install or remove the cage.



woodencamera.com

9 SIGMA DG DN | Contemporary Primes



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	1:5.7	1:4	1:6.9	1:6.8	1:5
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
Length with E-mount	2.0 in / 50.8 mm	2.9 in / 74.4 mm	2.9 in / 74 mm	2 in / 50.8 mm	2.7 in / 67.4 mm	1.9 in / 48.2 mm	2.8 in / 70.0 mm	3 in / 76.7	2.5 in / 61.7 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	10.5 oz / 295 g
Weight with E-mount	7.8 oz / 220 g	13.1 oz / 370 g	12.7 oz / 360 g	8.1 oz / 230 g	11.5 oz / 325 g	8.1 oz / 230 g	12.2 oz / 345 g	14.3 oz / 405 g	10.5 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
Horizontal angle of view, Full Frame	103.7°	94.5°	84.1°	84.1°	63.4°	51.3°	46.8°	36.8°	27.0°

Now there are nine. SIGMA adds two new lenses to their DG DN | Contemporary series: 17mm F4 and 50mm F2.

“DG” means the lens covers Full Frame. “DN” denotes mirrorless camera format. “Contemporary” stands for high-performance, compact and lightweight—the kind of lenses you want to take everywhere. “I” is for Instinctive, Iconic, Identity Style.

SIGMA DG DN | Contemporary I series lenses are tiny. Two of them can fit in the palm of your hand. Handling is solid and smooth. Full metal housings and barrels are sculptural, beautifully crafted fine mechanical designs with superb optics. They are machined individually, made and assembled at SIGMA’s Aizu factory in northern Japan. Function follows form. These are the lenses you’ll put on a still or cine camera alone or attached to a gimbal, drone, rig, car mount, helmet, skateboard, ski or stabilizer. SIGMA Corporation CEO Kazuto Yamaki said, “Much of the superb operational feel is the result of our experience with cine lenses where we gained the technology and craftsmanship.”

The 17mm F4 DG DN | Contemporary is tiny and lightweight. Amazingly, it has almost no geometric distortion. Architectural lines remain straight and true. The image is sharp to the edges with no discernible fall-off (shading).

The 50mm F2 is a street photographer’s omniscient companion. As with all DG DN I Contemporary lenses, your inner Cartier-Bresson may be fulfilled when you switch from auto to smooth manual focus and slide the aperture ring from A (Automatic) to engraved F stops.

SIGMA DG DN | Contemporary lenses come in L-Mount for SIGMA, Leica and Panasonic Lumix, or in E-mount for Sony cameras.

sigmaphoto.com

sigma-global.com



Laowa Proteus Anamorphics



Laowa Proteus 2x Anamorphic lenses from Venus Optics are intended for Super35 cameras. They have a 2x squeeze ratio.

Proteus Anamorphic lenses come in 35mm, 45mm, 60mm and 85mm focal lengths—all T2. Minimum focus is 1.8 feet. They are sharp and have smooth elliptical bokeh. You can order Proteus lenses with blue, amber or silver flare characteristics.

Kevin Yeung at Laowa said, “The patented front anamorphic design enables a classic optical composition. It can deliver the image with modern quality and sharpness while retaining a vintage look with anamorphic characteristics, including elliptical bokeh and signature flares.”

Each Proteus lens can be ordered individually at \$4,999 each or \$9,499 for a 2-lens set.

More Proteus Anamorphic Primes

New Anamorphic Proteus 28mm and 100mm Macro primes will arrive later this year. Laowa is also developing Proteus 20mm and 135mm Anamorphics. The Proteus 20mm will be rectilinear (no fisheye-like distortion). The Proteus set will then include: 20, 28, 35, 45, 60, 85, 100 and 135mm.

Specifications

- Super35 Format. T2 Large Aperture.
- Constant 2x squeeze ratio (no mumps).
- Outstanding sharpness.
- Close focusing distance of 55 cm (1.8 ft).
- Pleasing oval bokeh.
- Choice of amber, blue or neutral silver flare colors.
- Low Focus-breathing.
- User-friendly cine housing.
- Unified gear positions. All Proteus lens barrels are in the same position, saving time when changing focal lengths.
- 0.8 Mod gear for both aperture and focus gears.
- Ø 114mm front diameter.
- Ø 105mm front filter thread.
- 300° focus barrel rotation.
- Lens support included.
- Full-Frame coverage with 1.4x Expander

laowacine.com/

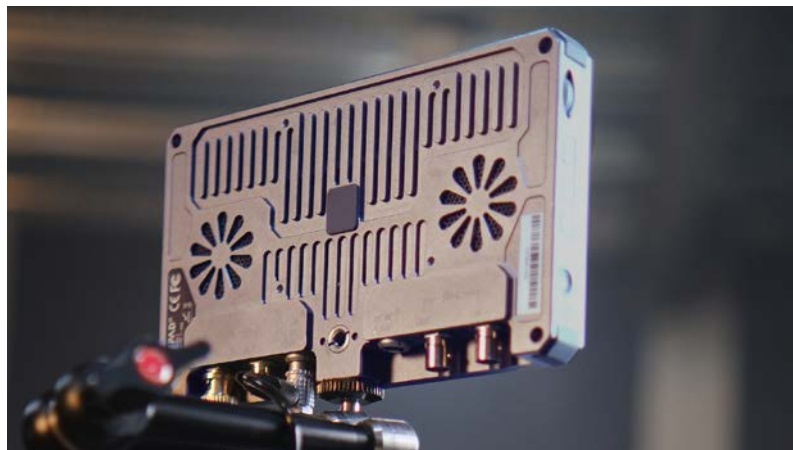
Venus Optics Nanomorphs

Venus Optics, parent company of Laowa, launched the tiny Nanomorph anamorphic lenses last year. Nanomorphs are 1.5x squeeze anamorphic lenses in 3 focal lengths: 27mm T2.8, 35mm T2.4, and 50mm T2.4. You can order them with amber, blue or silver, neutral colored flare characteristics.

Nanomorphs come with a choice of 9 interchangeable lens mounts: Canon EF, PL, Canon R, Sony E-mount, M43, DJI DL, Nikon Z, L-Mount, and Fuji X.

- For Super35 and Micro Four Thirds cameras.
- 3.5" long and weigh less than 0.7 lb.
- No Anamorphic Mumps— 1.5x constant squeeze ratio.
- Front Anamorphic Design
- Close focusing distance (17" from subject to the sensor)

venuslens.net



If you work at a major rental house, what do you do when everything locks down for several years? If you are at Ko Film Rentals in Beijing, you begin designing and building new monitors and start another new company: CINEPADs.

We asked HU Cong at CINEPADs how the idea to build monitors began. He said, “Rather than talking about inspiration, let’s just say that we saw the status quo and were determined to make a high-quality professional monitor, at a low price, made here. Our monitor design has been recognized by the CNCSC, the Chinese Society of Cinematographers. CNCSC is also committed to promoting the industrial development of China’s film and television industry. With their assistance, we have more contacts and interactions with cinematographers, and can combine their requests with products. We are planning to build 4K monitors, 4K wireless video transmitters and capable 7-inch wireless monitors in 2023. All our products will have the same design idea and quality.

“In the past three years, Covid-19 has changed our society in many different ways. Many cities have been locked down; cinemas have been closed. People could view content via Internet using their phones, computers or TVs, whereas they used to go to cinemas and watch on big screens only. Today’s display manufacturers are making better and better displays. Now audiences can see images using their much more accurate color displays.

“Cinematographers are now very involved in how to properly balance color and exposure that will be destined to go to different color pipelines for different deliveries. More cinematographers wish to see something even more colorful, not just Rec. 709. Viewing HDR is great, but it is also costly, which was contrary

to our goals. But viewing a DCI-P3 monitor is doable. DCI-P3 has much more color information than Rec. 709. With a DCI-P3 display, clients can easily use our CINEPADs 7 monitors on set, viewing images as intended for delivery.

“Also, during the past three years, global supply chains have been impacted. Raw materials became more expensive and shipping became slower. A broken component takes more time to repair. We think if a monitor has redundant connector backups, it will save our clients time. Our design considers how to reduce the probability of monitor damage and down-time: for example, the four-corner protective cushion, metal-encased screen, backup design of dual SDI ports and dual LEMO ports.

“Our CINEPADs have accurate color. We selected high-quality, wide color gamut screens and conducted many tests. We have an interface on the back of the monitor that is convenient for color calibration. The menu of CINEPADs is accessed by a tactile dial and buttons, or you can use the touch-screen. The principle of development is that the menu is simple and easy to operate, and the usage habits of many cinematographers and camera assistants have been consulted.”

The main menu of CINEPADs consists of 6 commonly used first-level menus, and each has some second-level and third-level menus, which are clearly named and defined. In the shortcut menu, we have selected 22 commonly used settings. At the same time, we also support customizing the order of the shortcut menu to adapt to the habits of different users.

cinepads.com

Lensworks NEO-AO 2x Anamorphics



NEO-AO anamorphics from Lensworks Rentals are the result of years of development using classic (vintage) Cooke Speed Panchros and custom anamorphic front cylinders. The optics and mechanical rehousings are designed and assembled by Lensworks in Los Angeles, CA. NEO-AO anamorphics have a 2x squeeze, internal focus, well-placed focus and iris gears, predominantly LF/FF coverage, and no telescoping. All lenses can be used on spinning-mirror film cameras.

Optical characteristics include low chromatic aberration, gentle edge fall-off, positive distortion, smooth bokeh and purple horizontal flares. The lenses have the “classic” Panchro look and feel—providing excellent resolution with gentler contrast and sharpness profiles. Lens coatings have been chosen to have a lower amount of veiling glare and increased clarity.

The set consists of 8 lenses—6 built with Taylor Hobson Series 2 and Series 3 Cooke Speed Panchro donor lenses and 2 ULTRA-X lenses. The 85mm donor glass is from Canon FD 85mm 1.8 SSC lenses and the 60mm provenance cannot be named other than that it matches color and optical quality.

The NEO-AO name honors the legacy of older anamorphic lenses. “NEO” references “new” or “remade” and is also part of the name “Cineovision,” a Japanese brand of high speed anamorphics. “AO” comes from American Optical and TODD-AO.

At a later time, Lensworks will also offer a higher performance version of the wider focal lengths for improved edge-to-edge, wide open resolution. The lenses can also be tuned to have more flare and veiling glare.

Coverage for 2.39:1 Full Frame 2x extraction is 30mm wide x 24mm (full height)—an image diagonal of 38.42mm. NEO-AO 2x squeeze anamorphics have modern mechanical housings and excellent close focus. The anamorphic cylinders are a new design, with new lens coatings to give an approximation of the classic anamorphic look but with less extreme veiling glare. Lensworks currently has 6 sets available to rent, with about 10 sets expected by year’s end.

Founded in 2013, Lensworks rents professional motion picture camera equipment with a large and eclectic inventory of high-end, ancient, vintage, modern and hard-to-find optics for cinematography and still photography.

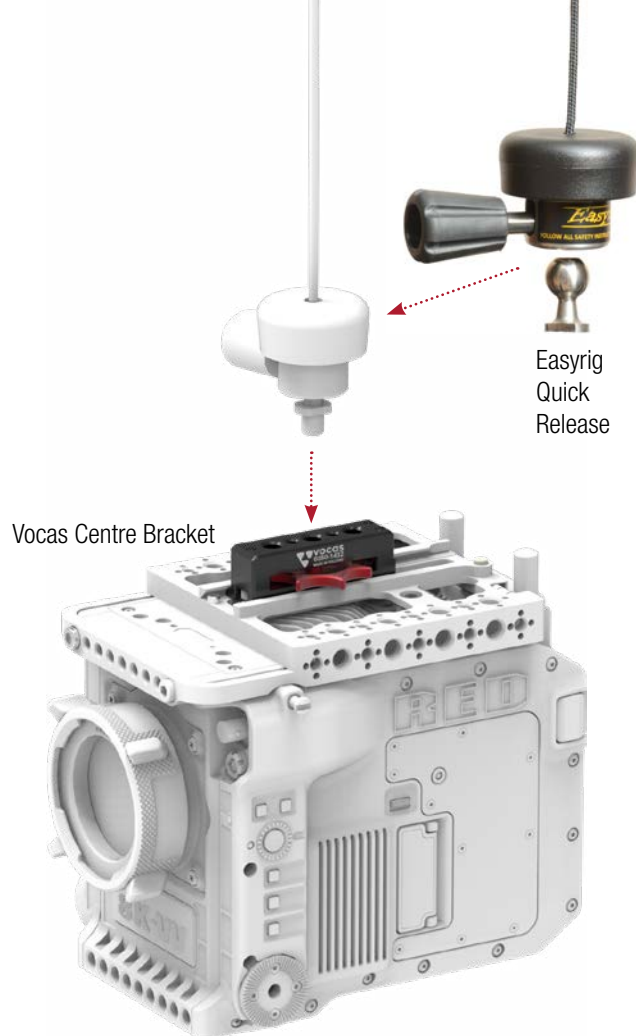
lensworksrentals.com

Specifications

	Series	CF	Length	lb	Fr Diam	Covers
32mm T2.3	CSP	3'	4.75"	6	136mm	S35
40mm T2.2	CSP	2.6'	4.75"	4	114mm	S35
50mm T2.1	CSP	2'	5.75"	5	114mm	FF @ 2.00:1
60mm T1.6	UltraX	2'	7"	5	114mm	FF @ 2.40:1
75mm T2.1	CSP	2'	7"	5.5	114mm	FF @ 2.40:1
85mm T1.8	UltraX	<2'	11"	6	114mm	FF @ 2.40:1
100mm T2.6	CSP	2.5'	11"	6.5	114mm	FF @ 2.40:1
127mm T3	CSP	2.5'	11.5"	6.5	114mm	FF @ 2.40:1

CSP = Cooke Speed Panchro inside. ULTRA X = Canon FD or other inside.

Vocas Accessories for RED V-RAPTOR XL



Vocas Top Plate for RED V-RAPTOR XL

In addition to their wide range of universal accessories that fit most cameras, Vocas has a new line dedicated specifically to the RED V-RAPTOR XL.

The new, low-profile RED V-RAPTOR XL Top Plate accepts the Vocas Universal Sliding Top Handle. This lightweight plate provides many industry-standard $\frac{1}{4}$ -20 and $\frac{3}{8}$ -16 attachment points with anti-twist locating slots, as well as a helpful, integrated Bubble Level.

Vocas Centre Bracket

When suspending the RED V-RAPTOR XL from an Easyrig, remove the Sliding Top Handle and slide the new Vocas Centre Bracket directly into the dovetail on top of the Top Plate. It has $\frac{1}{4}$ -20 and $\frac{3}{8}$ -16 threaded holes into which you can attach Easyrig's Quick Release. The Vocas Centre Bracket slides forward and back so you can quickly and easily balance the camera.



Vocas Universal Sliding Base Plate

The Vocas Universal Sliding Base Plate (USBP) System (at left) is compatible with the RED V-RAPTOR XL when you mount the RED Camera Adapter plate underneath the camera. This plate enables easy and tool-free switching between gimbal, Steadicam, 15mm and 19mm lens rod supports, shoulder and tripod setups.

For a full list of RED V-RAPTOR XL accessories please visit: vocas.com

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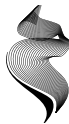
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