Jon Fauer ASC www.fdtimes.com Aug 2021 Issue 109

FILM AND DIGITAL TIMES

Art, Technique and Technology in Motion Picture Production Worldwide

FILM AND DIGITAL TIMES

Art, Technique and Technology

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

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

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Cover Photo Credits

Cover: Agnès Godard, AFC, with her Pierre Angénieux Tribute lifetime achievement award, a personalized Optimo 28-76 Zoom. To her left is actress Emmanuelle Béart and at right is Emmanuel Sprauel, President of Angénieux. On stage in the Buñuel Theatre of the Cannes Palais des Festivals.
Photos © Pauline Maillet. This is the 12th award for Agnès and the 4th FDTimes cover by Pauline. Bravo.

Pierre Angénieux Tribute to Agnès Godard, AFC

On the red carpet at Cannes, above, left to right: Agnès Godard, AFC, Claire Denis, Emmanuelle Béart.
Below, L-R: Rose Bush, Severine Serrano, Emmanuel Sprauel, Pamela Albarrán, Dominique Rouchon and Issa Perica. Photos © Pauline Maillet.

Pierre Angénieux Tribute to Agnès Godard, AFC

Left to right: Dominique Rouchon, Claire Denis, Agnès Godard, AFC, Pamela Albarrán, Emmanuelle Béart, Emmanuel Sprauel, and Séverine Serrano on stage in the Buñuel Theatre of the Cannes Palais des Festivals. Photo © Pauline Maillet.

On Friday, July 16, 2021, Agnès Godard, AFC, ascended the red-carpeted stairway of the Cannes Palais des Festivals to be honored with this year's Pierre Angénieux Tribute for achievement in Cinematography.

Director Claire Denis introduced Agnès on stage with a touching remembrance of things past, references to lenses ("they are both companions and safety barriers") and memories of a viewfinder they both received from Wim Wenders ("le viewfinder"). She concluded, "Agnès, you who see everything, you see the living beauty, the beauty of life, especially you who cherish this quest, because it is the quest for cinema."

Claire Denis and Agnès Godard met when they were both students at l'IDHEC film school. Agnès went on to shoot more than 15 films directed by Claire, including the 2001 César-winner *Beau travail*. Additionally, Agnès has won 11 awards and 13 nominations for her Cinematography.

Former President of the Association of French Cinematographers Nathalie Durand, AFC gave an introduction, "To film is to transcribe stories and with you it is above all the transmission of sensations. The setting is something you experience. It is finding the right image to convey the thoughts of a filmmaker. Having seen you at work, I can attest to this relentless search for frame and light, for the right image...but always the expression of feelings, the result of a gesture, the culmination of a commitment. I counted in your filmography about fifty films.

"And, of course it would be difficult not to talk about your collaboration with Claire Denis. Always different, always looking for the right tool for the upcoming project. I admire your work, and I'm not the only one. I thank Angénieux for highlighting your work, your talent and for reminding us that Godard is not always Jean-Luc; today Godard is the feminine name: Agnès.

As an official partner of the Cannes Festival, Angénieux has celebrated a prominent Cinematographer every year since 2013 with the Pierre Angénieux Tribute. Emmanuel Sprauel, President of Angénieux, presented the Angénieux award, an Optimo 28-76 specially engraved with her name. Emmanuel said, "With Agnès, you believe in motion pictures because you know exactly what it is; because you feel emotions and trust; because her particular point of view is full of love and transmission, so that every picture, full of precious inner value, makes you travel with her, and learn from her intuition. By doing so, Agnès makes you look at what you do not see, but is inside: Life!"

Accepting the award, Agnès said, "The first time I looked through a lens was a 12x120 Angénieux mounted on an Eclair Coutant, at l'IDHEC in 1976, I believe. Looking through a lens has become a mania or a passion. I would like to share this tribute with all my collaborators, chief electricians, chief machinists [key grips] and camera assistants for their generous and indispensable contributions and to thank all the directors who chose me.

"Beyond their universally acclaimed technological performance, the tactile sensation that emerges from the images made with Angénieux lenses, this mysterious nothingness that turns reality into cinema is akin to alchemy. I never got tired of it.

"Thank you Angénieux for being this Great Spirit of Cinema. Thank you for this immense honor tonight. Thank you Claire and Emmanuelle for being here to share this moment. Thank you to all my friends at AFC who have come this far."

Pierre Angénieux Tribute to Agnès Godard, AFC

Agnès Godard, AFC checking the sun on *Beau Travail* (1999) with Director Claire Denis. Photo © Patrick Grandperret.

Interview with Agnès Godard

Jon Fauer: Have you been very busy recently?

Agnès Godard: Yes. I finished a film in Switzerland and now I'm preparing another in the UK. In between, I will go scouting in Portugal for a film later on.

What cameras do you plan to use for these films?

I will probably use an analog motion picture camera shooting negative in Portugal. I'm testing Sony digital cameras for the UK production.

Did you own equipment over your career?

Yes, and I still have an original Super16 Aaton XTR with prime and zoom lenses. I would have loved to have a 35mm Aaton Penelope, because I must say I was in love with that camera. It was like putting on a pair of gloves. I had the feeling that you could do anything you wanted with this camera—you could look at things without any hindrance. This was very exciting. You were freed to discover things. I really believe that there is something special about the first time you look at something or somebody through a camera and lens.

Even if it's simple, the effect belongs to emotion, to spontaneity. I have the feeling sometimes that if you are able to catch such kinds of images for the audience, it's as if these images become your own point of view. And so it's very attractive, very convincing.

Did you always have this feeling?

I was aware of these visual experiences when I was First AC with Robby Müller, NSC, BVK on *Paris, Texas* (1984). Robby was very impressive when he was lighting, but his relation with the camera was just as fascinating. I loved, and still love, his work. His images left me speechless.

Is that specific to the camera he was using?

Actually, Robby was working with an Arriflex 35BL camera. I have also done many films with the 35BL. The ergonomics of this line of camera is quite close to Aaton. With the Aaton being so lightweight, you could do what you wanted. You could run, you could shoot low angles. Technical or physical difficulties were forgotten behind the great pleasure of being able to improvise. It was like a jam session in music.

Do you agree that the technology that we use influences the style and the way we work? Cameras do not seem to get much credit for that. It's usually all about lenses, and we'll get to lenses in a minute. A lot of people think the camera is just a box onto which you put a lens, but is it not much more?

It's much more than that. Choosing the tools for a film is very, very important not only for the Cinematographer, but also for the Director because the tools have to be able to answer what they are looking for. There must be really a good marriage. And so there should be a good marriage between camera and lenses.

Agnès Godard and Ursula Meier on *Sister* (*L'enfant d'en Haut;* 2012), photo © Roger Arpajou.

That's why I test each time I prep for a movie. In the analog days, I tested with camera negative to choose the emulsion and to choose the lenses. I still do it with digital. Of course, you always have some favorites. You think you want to have certain lenses, and you build everything around them.

In a way, it's the same process while scouting locations. For me, it's extremely important to visit every one. For example, we want to shoot in an apartment that is going to be the main location. We go and see maybe ten alternatives. At each place, you try to figure out the central theme and then see how you can develop the scene around that space.

It is similar with a camera and lenses. Whether the image is formed on a sensor or a negative, it's a kind of layer—one on top of the other—to define the texture, the design, the "skin" of the visuals. As I mentioned, with the Aaton camera, you were unencumbered. You could go easily from handheld, on your feet, to sitting on a crane and then moving on a dolly.

It was a bit complicated at the beginning of digital because the camera was like a square box, and once you had all the accessories you needed, it was like a Christmas tree.

The comfort and the way to embrace the camera is very important because your whole being, your whole body, is involved in the movement. You are entirely devoted through the camera to what you are filming.

You once compared a Camera Operator to a dancer.

Sometimes, yes. It's also because I had many opportunities to do that, especially with Claire Denis, the Director. I enjoy the experience of experimentation where you do not know the path ahead. When you're dancing with someone, you may not know exactly where you're going. It's the same in film; it is risky but very exciting. The rhythm of a shot is conducted by the actors. You follow them in a kind of magnetic effect, and while finding the harmony, if you can add that on top the camera's rhythm, a rhythm inside a rhythm, catching a detail, it becomes more alive.

Is your cinematography improvised or carefully planned?

Personally, I like to jump into things and react to things as they come. But this has to be the taste of the Director. Some of them like to prepare everything in advance, *le mise en image et le decoupage* (planning the shots and the cutting prior to shooting). Claire wants to have the feeling that she's reacting to something she has not already seen. So, sometimes she makes small and quite abstract drawings, but it is never really previewed.

Her way of working is to put together all that's needed—actors, wardrobe, makeup, lighting, camera crew—and see what will happen. It's like cooking: seeing how the ingredients will develop, turning into an alchemical transformation while also watching how we, collaborators, react, to see if we look at things in same way, and if we do enjoy the process as much as she does.

Agnès Godard and Wim Wenders on *Wings of Desire* (*Les Ailes du désir;* 1987), Photo © François Lehr.

She knows what she's looking for; her process is to get intense moments concisely.

Other Directors may ask for storyboards to follow precisely or as a common base on which we can exchange ideas and then move on as we work through the scenes. It's good to always stay open to what happens on the set because the actors are there. They may bring something special, unplanned. Often, they do something that nobody thought about before, and you have to be free and ready for that.

To summarize about actors, camera, and improvising, it relates to the kind of production you are shooting. Nevertheless, I think there is always something happening on the set that nobody thought about and if you pay attention enough, you see it and you can use it. That is why I don't like to talk too much on the set.

If the Camera Operator can be like a dancer and the Cinematographer might be like the chef, how do you, as the chef, choose the ingredients—which lenses to select?

I always test by filming the actors' faces. The choice will be based on the rendering of the skin tones and texture of the women and men in the image. My tendency is to choose lenses that are not too harsh. I prefer something smoother with gentle fall-off behind defined edges. It's more impressionistic.

Lately, I have been very excited to investigate the new digital cameras further. Some of them are very good now and I continue to search and discover their interesting possibilities. Also, their Full Frame sensors are quite appealing because they provide a lot of presence, richness and volume to the image and to the actors' faces.

I assume that you like to work as both the DP and the Camera Operator?

Yes. That is very important for me. I really miss not operating the camera. After all, the real starting point, the seed of a film, is an image. It's a frame from which everything else grows, even the lighting.

What camera and lenses did you use on your recently-wrapped film *La Ligne* directed by Ursula Meyer in Switzerland?

I had the Sony VENICE and the Angénieux EZ Zooms. We were filming in Full Frame. I really enjoyed the EZ Zoom. It felt as if you could touch the actors' faces. As a matter of fact, it reminded me of the first time I looked through a camera in film school, shooting with a 16mm format Angénieux 12-120 zoom.

That Angénieux 12-120 zoom was my first lens as well—on a Beaulieu R16.

For me, the camera was an Eclair Coutant [also called Eclair NPR] with the Angénieux 12-120.

Where did you go to film school?

The school was named Institut des hautes études cinématographiques [IDHEC], which became La Fémis, in Paris.

Agnès Godard and Sacha Vierny on Peter Greenaway's Belly of an Architect (1987). Photo © Jacques Prayer.

Did you grow up in Paris?

No, I was born in the country, right in the middle of France. My father was a veterinarian in the very small town of Dun-sur-Auron. He used to make a lot of family pictures and films and organize screening sessions. I went to Paris to become a student just after high school to study journalism because my family was not so keen about me working on movies. My brothers are all doctors, so my desire was quite a bit frightening. I started to work in an agency. Then I met some students from l'IDHEC and they said, "Come and see." I went there and was so amazed. I decided to try to take the entrance exam. I did. I passed.

Did you have experience in cinema at that time?

Not at all. But because I had already spent a few years in Paris, I often went to the Cinémathèque Française, watching a lot of films. There were many different steps to pass the entrance exam for l'IDHEC. I think there were 750 students applying for 18 places. I did not have much hope of success.

Good work getting in. How did you find your first job after school? That's usually the hardest.

In the final year of my studies, I was shooting the short films of other students. A classmate had a small project that he wanted "monitored" by a real professional. He asked Cinematographer Henri Alekan to visit. I worked with him for two days. A few months later, I got a phone call from Henri. He said, "Listen, I just met a young German director named Wim Wenders who is going to shoot a film in Portugal and I would like you to be my assistant." So that's how I started right away, on *State of Things,* on my first day out of school. It was like a fairy tale.

[NYTimes film critic Vincent Canby wrote: "*State of Things* was named the best film at the 1982 Venice Film Festival, a movie with a very romantic, very European sensibility, not about life, but about films and the people who make them...Sam Fuller plays the crochety, hard-drinking cameraman..."]

It must have been scary, pulling focus for the first time.

Exactly. I say to Henri, "You know, it's a bit strange because I haven't done this before." And he said, "It doesn't matter. I'm the only one who knows that." He was a very nice man who greatly enjoyed teaching young people. Always busy, always inventing things. I remember when he was 90 years old, he told me, "You know my problem is that the days are too short. I can't do everything I would like to do."

How long did you work as an assistant?

Not long. I was offered work as a Camera Operator quite soon after by Sacha Vierny on Peter Greenaway's *Belly of an Architect"*and later by Henri Alekan on Wim Wenders' *Wings of Desire.*

How did you get your first job as a Cinematographer?

On a documentary with Claire Denis *Jacques Rivette le veilleur*

Stephanie Blanchoud and Valeria Bruni Tedeschi in a frame from *La Ligne* (2021), courtesy of Ursula Meier, Bandita Films, using Angénieux EZ 1 Zoom 45-135 on Sony VENICE.

and Wim Wenders *Chambre 666* in Cannes, then on Agnès Varda's feature *Jacquot de Nantes*.

Is there a certain style that goes through all your films?

It's difficult to think about your own style. I never consciously worked on developing a personal style, but for sure the impulse or the attraction is related to my personality. I have worked on many different kinds of films. I always try to do something different, something new. Maybe there is something in common, I don't know. But I really tried to find the image of a film, not to work on my style.

How is the look of your films influenced? By the story or references?

It's a mix. First of all, it is the conversation with the Director. Trying to understand, to find, to discover what the Director is looking for. There are various ways to discover that. It can be watching films, stills, paintings, walking in locations, talking, or reading powerful Faulkner novels. Even speaking about something else, getting to know each other a little bit, to feel close to the story.

It can become a guessing-game to understand because sometimes it can drive you to think in different ways. In French, we say *l'interprète*, interpretation. The Cinematographer is an interpreter, translator, companion. The image is the result of interpretation and visual translation with the Director. Sometimes, it might be an unspoken thought. You would think about this or that, you would suggest, but it has to fit entirely with the Director.

As for me, in the camera department, I also have a lot of conversations with the Gaffer, who is an essential collaborator. The Key Grip is also essential, and of course the Camera Assistants. What we have in the image belongs to everyone in all departments.

How do you decide if you're going to use a zoom or a prime lens on a show, or do you use both?

I shot many films with only primes. Then I shot with a mix of primes and zooms—Optimo Zooms—let's say in the 2000s. And it was just recently that I experienced, for the first time, using only zooms—the Angénieux EZ Zooms. It depends on the style of the storytelling, the movement, the music of the shots and the *découpage*. Once more it is a shared choice with the Director.

Have you seen the new Angénieux Optimo Prime lenses?

I have seen a demonstration but I have not tested yet. I hope I will soon. I heard that, long ago, the very first lenses built by Angénieux were primes. So these are like the return. It's fantastic. I must say that I was influenced by Wim Wenders and Robby Müller working for quite a long time with prime lenses.

Which ones mostly?

I started as a focus puller working with very old Cooke S2 Panchros. That was difficult [because they were not rehoused and the focus marks were very close together]. Nevertheless, I choose to work with Cooke S2, then Cooke S3, S4, ZEISS T2.1 and Panavision primes—depending on the result desired and the marriage of camera and lenses.

It seems that the role of the lens has changed. In the analog film days, the lens tried to overcome the grain and the bouncing of the film in the lab processing machines and then the projector. But now with the sensor being static, you don't have all those artifacts. These days, do you rely on the lens not to be perfect, but to give more character? Is that a fair way to describe the difference between lenses in the analog and the digital world?

My observation is that when the digital cameras first arrived, the lenses at that time were extremely sharp, designed a bit, I would say, opposite of an impressionist feeling. Suddenly it seemed that everybody was looking for vintage lenses that were softer, to somehow escape the precision of the sensor. I must say that for a while, I was among those who would work with old, softer lenses to avoid having an image that was too flat, too straight.

Recently, shooting Full Frame on On *La Ligne*, I found the

Frames from *La Ligne*

Above: Stephanie Blanchoud and Valeria Bruni Tedeschi in a frame from *La Ligne* (2021), courtesy of Ursula Meier, Bandita Films, using Angénieux EZ 1 Zoom 45-135mm on Sony VENICE. Below: frames from La Ligne with EZ 2 Zoom 22-60mm.

Angénieux EZ Zooms. They had such a beautiful feeling of depth of field and bokeh. Suddenly I was in love with the EZ Zoom's bokeh because I recognized something. It was elegant. The out-of-focus areas, the bokeh, had a nice way of slightly disappearing, vanishing out of focus. It reinforces this idea of volume, of course. I was shooting 6K Full Frame on the VENICE and the EZ Zoom aperture was wide open a lot of the time.

All I am saying does not mean that I research the similarities between digital and negative. I think that is a lost cause. It is different option, better to cultivate each singularity.

If you shot Sony VENICE in Full Frame, wide open on the EZ Zoom, and with minimal depth of field, I guess your focus puller may not have been too happy?

Yes, it is difficult, but it went okay. You need those new accessory devices to help with focus. I must confess, I discovered on this film how shallow the depth of field was. I made some tests comparing 4K and then 6K on the VENICE. Ultimately, I decided to record in 6K because it showed the fine details so much better and gave a feeling of more volume. It was almost a similar sensation to using an anamorphic lens—maybe not a 2x squeeze but more like a 1.5x. For the audience, it's also another kind of relation between the character and the image.

Did you have both the EZ1 (45-135mm T3) and the EZ 2 (22-60mm T3) zoom lenses?

Yes. And if I wanted to go even tighter, I had a 270mm (almost a 300mm) with a doubler, a 2x extender.

When you operate in digital, do you look through the eyepiece or off the monitor?

I prefer to operate through an eyepiece. Sometimes you have to use a small monitor for certain shots. The image quality is better with a monitor at night for example, but you still feel as if you are outside the camera.

Another thing—I am happy to experience new and different cameras. Sometimes it is very nice not to think only of luxurious equipment. It's nice to test everything, for example less expensive cameras like the Sony FX9 as a second camera or simply for a question of budget or because it is more accurate to the *mise en scène*. It is interesting to investigate a way to personalize the use of all cameras, to test low and high base ISOs, color temperature, and to research and remap the gamma curves.

Do you spend a lot of time in pre-production with the lab and then also in post-production during the grading?

Yes, in pre-production as much as possible. I would always like the privilege to do as much as possible on the set, to establish what I'm looking for. And then we can eventually push forward the previous direction in the grading room. But for me, it's important to already establish the light and the direction that I'm looking for on the set.

Have new LED fixtures changed the way you're lighting?

The change is mostly a question of time on the set. It is a great help also for small locations, or low ceilings, for example. I still think sometimes a gel on the old lights can offer a different quality than an LED. But frankly it is also related to your production budget and other things. LEDs can be really helpful. But perhaps an old open-face Red Head fixture with a fantastic color gel remains more "precious." Definitely it's not only the color, it's something else. The light goes through something and there is a transparency, a purity of color. Flowers, which are not transparent, offer these powerful colors.

That is an interesting comment about how light goes through something, either a gel or a diffusion. In another way, the image goes through something: it goes through a lens and perhaps a filter or net.

Yes. There is this distance going through something along the way: photons, light!

So, congratulations to you on going the distance, creating beautiful images along the way, and being honored at Cannes for your amazing career in Cinematography.

Agnès Godard, AFC

Agnès Godard, Claire Denis, *Beau Travail*, (1999). photo © Patrick Grandperret

Agnès Godard, *Beau Travail* (1999). photo © Patrick Grandperret

Peter Handke, Director, and Agnès Godard behind camera. *L'Absence* (1992). Photo © Ruth Walz.

Agnès Godard on *Land* (2018). photo DR.

Agnès Godard on *Tu honoreras ta mère et ta mère* (2012), directed by Brigitte Roüan. Photos © Manu Tilinski.

Agnès Godard, AFC

Agnès Godard, AFC with Angénieux Optimo 28-76mm Zoom on finder for Ursula Meier's *Sister (L'enfant d'en haut*; 2012). Photo © Roger Arpajou.

Angénieux Optimo Ultra Compact Zooms

Meet the family

Angénieux lifted the mystery at Cannes on July 15. Christophe Remontet, Managing Director Cinema Optics, announced two new Full Frame zoom lenses:

- 21-56 mm T2.9 Optimo Ultra Compact Zoom
- 37-102 mm T2.9 Optimo Ultra Compact Zoom

Specifications are expected in August at BIRTV, with the official launch of prototypes at Cine Gear in September and IBC in December. Christophe said that deliveries could be early 2022.

In a streamed presentation that was attended by DPs, rental house managers and industry personnel, Christophe explained that these two lightweight and compact zooms complement and match existing Optimo Full Frame lenses. I would expect these two new zooms also match the existing line of Angénieux Super35 zooms.

And so, the new 21-56 and 37-102 Full Frame Ultra Compact Zooms will be added to the existing collection of Full Frame, high-end cine lenses offered by Angénieux:

- Optimo Ultra 12x FF/VV Zoom 36-435 mm T4.2 *

and

- 12 Optimo Primes: 18mm T2, 21mm T1.8, 24mm T1.8, 28mm T1.8, 32mm T1.8, 40mm T1.8, 50mm T1.8, 60mm T1.8, 75mm T1.8, 100mm T1.8, 135mm T1.8, and 200mm T2.2

** note, the Optimo Ultra 12x Zoom FF/VV can be configured in 3 different versions with dedicated rear sections and lens rings:*

- *Full Frame / VV* *36-435 T4.2 (Ø 46.3mm)*
- *Ultra35* *26-320 T3.1 (Ø 34.6mm)*
- *Super35* *24-290 T2.8 (Ø 31.1mm)*

Optimo Ultra 12x FF/VV Zoom

21-56 mm and 37-102 mm Optimo Ultra Compact Zooms (renders — not actual photos)

12 Optimo Primes

Business of the Business at ARRI: Dr. Michael Neuhaeuser & Markus Zeiler

L-R: Markus Zeiler, Dr. Michael Neuhaeuser. Photos © ARRI.

Jon Fauer: In this discussion of the business of ARRI's business, would you please tell Film and Digital Times readers what you do and who does what?

Markus Zeiler: Michael, would you like to begin?

Michael Neuhaeuser: We always ask each other, "Who should start?" That's the reason I'm smiling. ARRI as a company has had two Executive Board members for quite some time. We have two separate responsibilities. My job is more like a classical CTO and COO role. I'm responsible for R&D activities, technology roadmaps and assessments of future technologies in our industry. The other part includes the operational activities here at ARRI—production sites, IT, quality control and supply chain.

Markus, would you please explain your responsibilities?

Markus: I like to explain our Executive Board as sharing two responsibilities: demand creation and demand fulfillment. My side is demand creation: talking to customers, trying to find out what is needed for future products and also trying to get orders for current products.

Michael oversees demand fulfillment; that means not only shipping products but also developing the right products for the right time and for the right markets across the globe. So, if you're using C-level descriptions, my job is somewhere between CSO, CMO, and a bit of CEO. It's difficult to translate our roles precisely into C-level positions because, like many German companies, we do not adhere exactly to that kind of corporate structure.

ARRI has an Executive Board consisting of Michael and myself and a global group of managers who report to us. Some are Managing Directors because they head companies within the ARRI Group—the business units Camera Systems, Lighting, and Rental. We report to a Supervisory Board of seven members who meet every quarter. ARRI is a privately held company. The Supervisory Board includes two of ARRI's founding family members: Dr. Carolin Stahl and Christoph Stahl.

And it seems that you two gentlemen are very hands-on in the daily running of ARRI. It must have been quite a year.

Michael: Markus and I could never have imagined how much work goes into managing a company through such a crisis. So, yes, we are hands-on board members. However, this increased workload has been felt by most of us.

Markus: Many of our top-level managers have been working as entrepreneurs. That makes it special. As you know, once you get addicted to the motion picture business, you don't want to leave.

What were some of the biggest concerns for you? You both look fine in this Zoom video meeting.

Markus: It must be the make-up [laughs]. But, in all seriousness, yes, it was stressful because of the sudden changes caused by the spread of the virus and its impact. We had to ramp down quickly. Rental equipment was suddenly returned from productions within a few days of lockdowns in March 2020 and our revenues dropped dramatically from one week to the next.

Our hardware business was not hit as hard because we sell globally and some regions were not affected as much as others. It was like following the sun within a month as business shifted and dropped around the globe. Within a very short time, we went to shorter hours, working at home or furloughs and applied to the German government to protect the employees. We somehow managed to save costs and handle all the parts and material in the supply chain that had been ordered.

Then, in August 2020, things suddenly reversed and film production ramped up very steeply. For example, in Germany, August and September 2020 were all-time highs in the rental business. One good outcome was that the management team grew even closer because we realized we had to get through this all together. Our challenge now is to get out of this crisis.

Michael: Your comment that Markus and I are looking good is very nice. But I can tell you a secret. In the past, I ran marathons. Managing a company in a crisis is like running a marathon. You are in it for the long distance. The past year was really a roller coaster. I came to ARRI at the end of 2018 when the new ALEXA Mini LF camera entered the market. In parallel, we were also thinking about future technology, roadmaps, new sensors, and so on.

And then, from one day to the next, as Marcus described, revenue tumbled, and we had to switch our working models immediately from future-oriented products on the roadmap to a crisis management strategy. We were able to manage this and luckily business swung back in the other direction.

Markus: The good news is that the market is really on the rise and business is really hot. We had some very good months, especially this year, and that makes things a bit easier. We still have some challenges, of course.

One of the big challenges lately has been supply chain. Is the concept of just-in-time manufacturing out the window?

Michael: This is one of the biggest problems worldwide. I think it will persist until the end of the year. We have now come out of a reduced-hour work period to our current situation where we are working by far more than 100%. That means we need to get our workforce back again, increase working hours, and we need to get access to all the parts, including semiconductors, PCBs, cables, and so on. The good news is that I think ARRI did an excellent job in the past developing good relationships with all our suppliers. This helps us a lot.

In the future, will you stock more supplies? Will you try to narrow your supply chain to a smaller radius around Munich?

Michael: That is a very difficult question, and to be honest, there is no simple answer. For now, with the supply level we have, we are able to manage the current situation.

At ARRI, moving the entire supply chain to Munich is not likely due to the number of critical parts that are produced around the world. The effort to bring them back here to Germany or to Europe in the near future seems unrealistic.

Markus: We still have a lot of suppliers locally, and they source from the regions. It's quite normal to see a Central European-based manufacturer with a subsidiary somewhere else in the world. This also makes it easier for communication, quality assurance, all those things.

Can you please talk about the trends you see in camera, lighting, lenses and accessories?

Markus: It's not only the demand for hardware but also the demand for knowledge and how to bring things together. Trends include mixed reality productions where you have an active background of LED panels powered by Unreal Engine from Epic Games.

Our products have already been used on these shows, but there's a continuous learning curve, and this is where we're adding resources. The new details that we have to learn as an industry are enormous, and the possibilities are great. During the pandemic, travel was difficult and crews tried to stay local. They went into closed studios. Demand for indoor space increased. Even old industrial buildings were converted into studios across the globe. It felt, in a way, like the new industrialization of the film industry. Productions with mixed reality—active backgrounds—are part of what I would consider industrialization. Most feature films will shoot a certain portion in that environment, in addition to shooting outdoors in a traditional way. Crews worked in these industrial buildings and stages close to main hubs like London, New York and LA. That could be the new paradigm: creative industrial workers going to a fixed hub and working there. That's how I see our future.

I like your term "active backgrounds" better than "mixed reality" or "virtual production," because it resonates descriptively, avoiding jargon.

Markus: We learned from a lot of members of the industry who had already tried it. There was a concern, for example, about flicker and color matching. So, we decided to set up a more robust system with fewer hurdles. As you know, we have our own studio setup in Uxbridge, London, and took part in the Dark Bay project in Babelsberg, Berlin. We did all the design, project work and networking for the Netflix series "1899." Additionally, we have test environments in Burbank and Munich for the R&D team and industry training. Training is part of our responsibility to give back to the industry.

Is this a permanent trend? Or is it like a pendulum as directors and producers will want to travel on location again?

Markus: I believe it's a trend that will stay. At the moment, there's a certain threshold on spending and investment, but the prices of LED background panels are also coming down. It will just be a part of studio production as green screen has been. You can't do everything with it, and it has limitations for sure, so you will still have to travel on location. But based on the demand for content, I think it will be a lasting part of our business.

Michael: I see a lot of advantages for active backgrounds. In Berlin, I visited the crew preparing a Netflix series. You do not have to travel to a location. You can change the background easily. If you have the technology under control, you can achieve a lot of things. I personally think it will have a future. Companies worldwide are investing so much money in creating content. Never before was so much money invested in content creation, and that means we are now in a new phase where efficiency becomes more and more important.

The creative part is still vital, but now you need to add what we might call "fabrication." I know that in our industry people do not like this word, but if you produce a lot of content, you also

In front of the active LED background at DARK BAY Virtual Production Studio in Babelsberg, near Berlin (left to right): Jantje Friese, Baran bo Odar, Philipp Klausing (all DARK BAY), Nik Summerer (DP of "1899"), Christina Caspers-Roemer (DARK BAY), Dr. Michael Neuhaeuser, Dr. Johannes Steurer, Stefan Soellner, Stephan Schenk, Elfi Kerscher, and David Bermbach (all ARRI). Photo by Alex Forge.

need to think about how you can produce all this content within a certain budget.

We know that ARRI has made good cameras for more than 100 years. Cameras are still a very important part of our business. And so are these new studios along with the lighting. ARRI can deliver the lighting systems, the camera systems, and with our rental business, we are also addressing the needs of our customers.

We're bringing all the pieces together in these environments because it's a big piece of technology you need to get under control. You need to think about networking on a set. You need to synchronize your lighting and cameras in real-time with Unreal Engine, an essential piece of software originally from the gaming industry.

Markus: It's not about one manufacturer or one particular system. For us, it's more about trying to combine the players in the industry, and to be as flexible and open-minded as possible. There are a number of things at play: camera, tracking systems, data management, Unreal Engine plug-ins for our lamp heads and the ability to change the lighting in the active (virtual) background to match the real-life environment—the actors—in front of the camera.

This suggests history repeating itself in the pendulum that is of our business. In the Golden Era of Hollywood—from the 1920s to the 1960s, it was a huge machine, an industry where the studios maintained enormous control over the film industry. Are we returning to that business, with new and different players from the streaming world? Does the pendulum swing back as a larger portion of filmmaking returns to studios—with large LED backgrounds providing industrial magic to bring exterior locations indoors?

Markus: I don't see that happening because there's so much momentum on the technology side. It would be very difficult and a huge investment to keep up. I think production studio investments will be more on content creation, how to create content in a more effective way, and how to manage that content.

The industrialization that we discussed has been a progression. At first, before the pandemic, they were short on writers to keep up with the growing demand. For the past 16 months, the writers probably had the chance to catch up. As production ramped up, they were running out of space; there were not enough studios. Now, they're running out of crews. The equipment shelves of most rental houses are bare. The post-pandemic phase accelerated everything, and we are now on a huge wave based on that demand. How to manage that demand is absorbing most of the energy. Not the technology.

But do you see a continuing demand for newer, lighter, faster, better technology?

Markus: The technology is here and it is almost at a saturation point in some ways. We have to admit that. It's more about how to interconnect the technology that is available. The studios and the big streaming content providers, who focus on creating and managing the content, seem mostly focused on market share.

Please explain market share.

Markus: Market share of streaming platforms. It's not only the Hollywood studios as we used to know them. There have been several announcements, the latest one with MGM, and with big investors coming into that field it's changing the industry. The good thing is there's a high demand. I also strongly believe that the cinema business will come back with theatrical releases and live audiences. There will be renewed interest as people return to movie theaters.

If you were a movie theater owner, would you not be very worried in the face of all this streaming?

Michael: No. They run in parallel.

Markus: In China, during the Chinese New Year, the cinemas had an all-time high attendance rate. We will see that worldwide. I strongly believe people will return to the movie theaters.

As for streaming, it feels similar to the telecommunications companies two decades ago when they were fighting for market share. At a certain point, the cake was divided but the customer base remained the same. You don't change your telecommunications provider on a daily basis and now you probably do not change your Internet provider too often. This is the race we're in right now. Stimulating questions are, of course, how much content you can provide and how are you going to get it to customers.

With that in mind, would you like to talk about anything else coming in the future to address these demands? Would you like to get into specifics about lighting, camera, lenses, or software?

Michael: As Markus said, maybe it's no longer so easy to differentiate with a single product because the technology is already quite optimized. But then you may ask what will happen ten years from now. Do we double the dynamic range? Will the picture be twice as good as today? I would reply that it's a question of technology and physics. To continue constant improvement of certain functionalities becomes, at a certain point, problematic—especially if it will no longer generate much of an advantage for the customer.

At the moment, our customers are used to having beautiful images coming out of ARRI digital cameras. That is what we continue to work on at the moment. But, if I tell you that I can continue the next ten years to differentiate simply in the same way I did during the previous ten years, I do not think that is sustainable. You can compare this with a lot of other industries. When technology reaches a certain point, it becomes more difficult to improve the parameters and deliver added value to the end customer.

If Markus and I ask what is the next advantage we can deliver to our customers, we are talking about complex studios where a lot of technology has to work together. Software, game engines, multiple cameras, lighting systems with IP networks, real-time synchronization, and so on. It becomes a combination of the virtual world and the real world, and I hope you forgive me if I cannot go into specific confidential details. If you think along these lines, then it becomes clearer where our industry has to go.

Markus: The Internet today is like the steam engine during the industrial revolution. Demand for content is like the textile industry at that time. Earlier, the textile industry was creative, manual, and you had to weave cloth by hand. It was very creative, but as demand grew, you had to find a way to get more cloth produced at a faster rate.

Today we have the Internet. Suddenly, we have Internet providers like AT&T entering our industry. Stimulated partly by the COVID crisis, there is even more demand for viewing good quality content. To produce that content, with a shortage of crews, space and gear, you need to find modern methods. That's the big challenge, and of course we don't want to have lousy TV series or feature films. It should be as entertaining and high quality as possible.

In addition to improvements indoors in studios, what happens in the outside real world? Are there ways to improve what we do now on location and in nature, without virtual backgrounds?

Markus: For now and the years ahead, of course, we continue to work on developing the best sensors available. Dynamic range is still a key, especially for exterior scenes where there's less control and natural light can change often. That is definitely still the way to go for some time. And, at the moment, we also have a lot of storage media to juggle around. Do you think there is any way to really have top picture quality that would stream through 5G, or at least a network connection? This is an open question we have at the moment.

Do you think that in-camera storage media will become smaller, faster, cheaper?

Markus: Faster, for sure. But, at the moment, it's the other way round. The prices are going up. Not even linear; it feels almost exponential because we're reaching the limits of available technology right now. It's getting better, but with ARRIRAW recording and increasing pixel counts, it's quite a vicious circle. You don't want to lose out on picture quality when storing the content.

I see optics as having an ever greater impact. It is gratifying to see the demand grow for Signature Primes and Signature Zooms. There is still room for top-quality optics. The feedback we get is tremendous, so it's great to see that Cinematographers around the world are still in love with possibilities as well as great tools.

Speaking of tools—if more equipment is being purchased by DPs and crews, are they also the ancillary financing engines for rental houses if that equipment is kept on consignment there?

Markus: It's an interesting mix in how the market behaves now. The classical roles are not there anymore. If a certain percentage of gear comes on consignment from the crew, the rental houses need to add something to the equation. It's not only about storing equipment and then having it available on time. It's also about knowledge, service, technical support, customer support, adjusting and customizing lenses, technical service, repairs, replacement—as well as insurance, billing, inventory, supply and logistics, especially on big productions. In the future, it may include those things we discussed, where you will need servers, IP networks, routers, you name it.

It could be a new business model with additional responsibilities for the rental houses.

Michael: Exactly. For example, in the past, you went into a shop and maybe bought or rented a hammer. You said, "I need a hammer. I want to renovate something in my house."

Compare this to renting a drill press or CNC machine. You go to the shop and you do not simply rent this machine. You also need somebody to explain how it works, how to program it. That means the shop needs to offer additional competence, additional services.

At ARRI's new headquarters in Munich, L-R: Markus Zeiler, Walter Trauninger, Dr. Carolin Stahl, Judith Gerlach, Bavarian State Minister for Digital Affairs, Christoph Stahl, Stephan Schenk, Dr. Michael Neuhaeuser.

Markus: Also, I see rental operations diverging a bit. You have the traditional rentals and now there are B2B rentals, big players in the background who offer subrentals to other companies. They have large inventories but no direct customer interaction. There is a synergy because the traditional rental houses are still the ones working directly with their customers.

Are all these trends connected?

Michael: Yes. Essentially, I see three major trends. First of all, the distribution of movies has changed completely because we are all streaming now. Content distribution will be done over the Internet.

The second topic we discussed is how content is produced.

The third important trend is how we consume or view the content. How many people will go back into the cinemas after this crisis? And how many people will sit at home in front of iPads, laptops, TVs, headsets and video projectors? I think we'll see a tremendous impact here. I see how my kids are viewing content and it's a completely different experience.

All three pillars of our industry have changed recently. The COVID crisis accelerated them all.

ARRI has manufactured cameras and lighting equipment for more than 100 years. Will that legacy of providing cameras to capture superb moving images continue?

ARRI's digital cameras of the past decade, starting with the first ALEXA, were wonderful pieces of technology that provided a good sensor with a very high dynamic range to deliver wonderful pictures. Those are the fundamentals we are still providing today. Our continuing development in sensor technology and dynamic range is still very important, and we will continue to work on our own new sensors and cameras. This is a very important topic. We need to address the cameras of today and the next few years, as well as the second phase of digitization and optimization.

Twenty years ago, it was an analog camera, a wonderful mechanical engineering device.

Then, in the last decade, it became completely digital. And now we are in the middle of the digitization of our industry. Step one was from analog camera to digital. Step two was digital content creation and storage. And now, step three is how we can mix the real world and the virtual world in a better way so that production costs are optimized.

In our digital motion picture world, the next step is maintaining the high level of quality and building up efficiency in these environments. To achieve this efficiency and quality for the market, I think we need to deliver additional and new technology along with new ways of working. That means it's not only about running the race of dynamic range or increased pixel count. It is also about whether you can deliver added value to the end customer.

Markus:

We all remember discussions with Franz Kraus at ARRI, saying that we consider ourselves toolmakers for the creative industry. We will continue to produce the best equipment for filmmakers; this is, after all, our heritage and our future. However, the industry is changing because of higher demand and a greater need for content. Currently, ARRI is adapting to meet these new challenges. Even though the industry is moving toward a type of industrialization, it is still, of course, a highly creative industry at its heart. Our goal remains to be an innovative partner with reliable products, services, and know-how. I think we're on a good path forward in supporting the future creative process.

Stephan Schenk on ARRI Camera Systems, Lighting and Solutions

Stephan Schenk. Photo © ARRI.

Stephan Schenk has been subjected to frequent interviews in FDTimes over the years. He jumped in at ARRI, probably at 240 fps, on August 1, 2009, as head of ARRI's Business Unit Camera Systems. That was just a month before a camera later to be named ALEXA was first announced as a concept at IBC on September 10, 2009. Stephan was appointed Managing Director of Arnold & Richter Cine Technik in July 2014. And then on January 1, 2021, he was named General Manager Global Sales & Solutions at ARRI.

Some of the same topics and questions that follow also appear in the interview with Dr. Michael Neuhaeuser and Markus Zeiler on previous pages. But, as the movie Rashomon demonstrated, different viewpoints from different people can be illuminating, especially when conducted, as Stephan calls them, in "Mixed Reality Interviews" on Zoom and emails.

Jon Fauer: Congratulations on your new position. How is it different from what you were doing before?

Stephan Schenk: As the General Manager for Global Sales and Solutions, I have taken over responsibility for the worldwide sales and service of ARRI's Camera Systems and Lighting products and the company's solutions business. This newly created position aims to combine and align the sales and service activities across all ARRI product groups and expand the solutions business across all markets and regions. We already have a Solutions team in Berlin (formerly named Systems Group) that focuses on Broadcast and Lighting. Now, in addition, we will also offer solutions with our camera systems that are especially relevant for virtual productions or, as we prefer to call it, mixed reality productions.

I will ask what solutions business means in a few minutes. But first, it seems you have been busy ever since you joined ARRI in 2009, just a month before the introduction of the first ALEXA that September. You really jumped in with your wheels spinning.

It was a very challenging time because, if you remember those days, sales of analog cameras had essentially stopped and, because there were rumors of ARRI having a new camera coming, no one bought our digital camera—the D21. So, I was in charge of camera systems sales with only a few cameras. That was a challenge at first. But then, the story evolved very quickly. You followed that story of all those years very closely. It really was a fantastic journey.

What a run. I guess in some ways, history is repeating itself. You mentioned that, in 2009, there were rumors of the new camera, the new ALEXA, and here we are in 2021 and there are rumors of a yet another new ARRI camera. Do you want to say anything about that?

Actually, it's not a rumor. In fact, you can even read about it in the Film and Digital Times interview we did in April 2019. After our interview, I went on a worldwide marathon tour to launch the ALEXA Mini LF. In every one of those presentations, I emphasized that we still believed in Super35.

[Jon rummaging through the pages.] **Here it is. Issue 93-94, page 7. You said, "We at ARRI still believe in Super35. Not everybody will shoot Large Format. A great number of productions, in particular television, will remain with Super35 for the foreseeable future, for a variety of reasons. And I say this very**

ARRI UK permanent LED volume stage in collaboration with Creative Technology at Uxbridge, West London, with a 30m wide by 5m high main curved wall. There are two moveable side screens and a height-adjustable ceiling. Photo: ARRI / Landscape plate: David Noton.

openly here: we are also working on a dedicated Super35 4K camera (not LF). So, the choices for Cinematographers will increase again. But for now, I am really looking forward to seeing how and where the creative community will use our LF camera system—with its new member, the ALEXA Mini LF."

As we all know, prominent customers and productions have been demanding native 4K in Super35 for quite a while. But we have always said that we would not just launch a native 4K camera for the sake of having more resolution. Since 2010, we have promised to bring out a camera with a higher pixel count only if it could demonstrate at least the same overall image quality as our current ALEXA range of cameras with its ALEV3 type sensors. It is not an easy task and also COVID hasn't helped, but next year we will introduce the Super35 camera.

Matty Libatique was talking about lenses recently and said he's looking forward to a new ARRI Super35 camera especially because of all the choices of lenses from the last 50 years. Do you think a new Super35 camera will stimulate manufacturing of brand-new Super35 lenses, or is the market already saturated?

Rental houses have a vast inventory of Super35 lenses. I think it is beneficial in terms of the business side of things that existing inventories of lenses can be used. The past year was a drain for everyone. To have something that you can reuse is certainly of benefit. But also it makes sense creatively. Every story has a different way to be told, with different looks and styles, vintage and contemporary, Super35 and Large Format, spherical and anamorphic.

On the other hand, our Signature Primes and Zooms can be used for both Large Format and Super35 and they will look absolutely beautiful, also on our S35 4K camera. So, we will see when we launch our new camera next year whether there is additional demand for more Super35 lenses. But clearly the investment in the S35 4K camera is great for the re-use of all the existing S35 lenses and the investment in Signature Primes and Signature Zooms is safe for LF and Super35 cameras.

***Nomadland*, shot with AMIRA and Ultra Primes may be a good example of Super35 still being relevant. Its "documentary style" favored a lighter and smaller system.**

Nomadland is a wonderful example of a Super35 feature film, indeed. And Joshua James Richards really deserved the Golden Frog at Camerimage and the Academy Award nomination for his outstanding Cinematography. There are also many TV series that will continue shooting Super35. There are horses for courses, tools for the story, and camera systems with and for different formats. For example, 16mm and 35mm have always coexisted nicely.

How are you doing with your Large Format products?

It's been phenomenal up to now. We see a lot of demand for the Mini LF worldwide. We are struggling to keep up with the demand, actually. I've said it before, and I'll say it again: customers who purchased ALEXA Mini LF cameras made good investments. And what I can share already is that the media drives our customers bought for the ALEXA Mini LF can be used for the S35 4K camera as well.

Also, the Signature Primes are booming together with Large Format in general. The shelves of rental houses are bare in almost all regions—all their equipment is out on jobs. They're shooting at one hundred percent. But also, standard ALEXA Minis are flying off the shelf. That again proves the point of Super35 being relevant.

And talking about the camera system, I would be remiss not to mention how well our Camera Stabilizer Systems like the SRH-3 and 360 Remote Heads and TRINITY have taken off. Whether cine-style or broadcast work, so many projects have gained a new sense of control and creativity with the help of these tools, which is nice to see. Our Electronic Control Range has also seen an ever-increasing acceptance in the market. And we have more to share with you here. [*See following article on Hi-5.*]

Has your customer base shifted more towards owner-operators recently?

Yes. Actually, it started with the ALEXA. Before ALEXA, one basic camera system for a high-end feature film could cost more than $250,000. ALEXA changed the paradigm. Then, a few years later, the ALEXA Mini caught the attention of many owner-operators, especially all the drone, handheld, and rig operators. Many high-end DPs bought their own ALEXAs and ALEXA Minis. And increasingly, we are seeing this now with the ALEXA Mini LF.

More episodic series now shoot for six to nine months. You might be able to pay a camera package off in one season. I think we're going to see more long-term projects.

And it's become a business. There's one part of the owner-operator business where they only use it themselves. The other is the owner-operator working together with the rental house. The rental house has a base supply of cameras, but they also supplement their inventory with additional cameras on consignment from DPs. That's a business model that has evolved.

Do you also see studios starting to invest in equipment, as they did in the days when companies like Universal and Paramount had their own camera departments? Will Netflix or Amazon do something similar?

Studios will continue to buy permanently installed equipment like rigging and lighting. On top of that, they rely on rental houses for cameras and lenses because there's more to it than meets the eye. There's checking in and out, cleaning, repairs, billing, keeping track of technology, knowing when to sell, when to buy, having the right portfolio. One DP prefers this, another DP prefers that. An equipment package for a period piece is different from a sci-fi movie. There is a lot that you need to tackle as a rental house to have all these things available for all the various shows and all the changes in the technology. So, I rather believe that studios are focusing on productions and happy to let the rental houses support them.

Please tell us about CPO—Certified Pre-Owned. Is that part of your domain?

Yes. It's another layer of sales that we set up two years ago under the lead of Chris Richter, and it's a very successful one. We address different needs and different price points. Every camera we get back—and the same is true for lenses and soon for lighting— goes directly to the service department. We do a full check-up and it gets a full one-year warranty. It's a very relevant choice for clients.

Is there still a substantial market for used ALEXAs?

Definitely. ALEXAs happily run thousands of hours. We have seen some with over 10,000 hours. It's really amazing. And if you think of the alternative, i.e., products going out of service after just a few years, we are also doing something very positive here for our planet earth.

Your new role also encompasses sales and service in ARRI's Lighting division. Anything to report so far?

The lighting business is going through the roof. There is an unprecedented demand for SkyPanels at the moment. It's really incredible. Unfortunately, it is sometimes difficult to commit to a fixed delivery time due to the high demand on one side and the global supply chain challenges that we all currently face on the other side.

This is also true for our Tungsten and Daylight/HMI fixtures. We really appreciate the trust in our products.

Our newest lighting product on the market, the Orbiter, has been designed to be a highly versatile tool. It took us longer than expected and again, the COVID-19 pandemic certainly hasn't helped, but we will be rolling out an adaptor and additional optics in order to meet this expectation. The pieces are coming together, and we are working towards bringing the versatile lighting system we promised to the market.

Another new aspect of your job is the so-called "Solutions" business. What does the word "Solutions" mean at ARRI?

The ARRI Solutions Group is focused on the design and engineering of customized production infrastructures, including innovative mixed-reality environments and state-of-the-art TV studios. Our customers can rely on an international team of experienced engineers and project managers combined with ARRI products and our worldwide network.

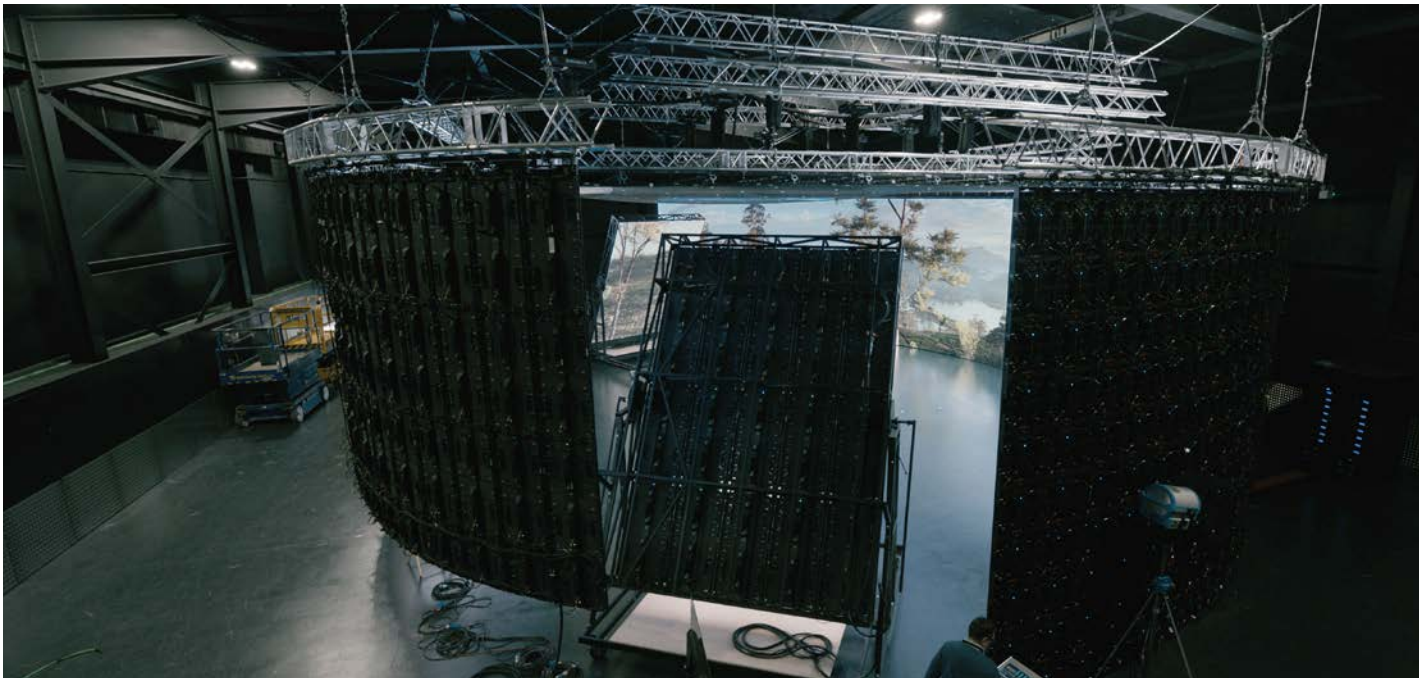
ARRI is not just a hardware manufacturer anymore. But, of course, our products will remain a significant focus and they are at the heart of our solutions business. Our customers are looking to optimize the entire production process from pre-production to production to post-production.

To help facilitate these efforts, in addition to our products, we offer solutions in form of services for mixed reality, broadcast, and remote productions. Whether consulting, configuration, or turnkey installation, the experts of the ARRI Solutions Group precisely design the solutions our cine, broadcast, or corporate clients need. Furthermore, coordination and good cooperation with companies offering other products and services is very important to us. With the establishment of global technology partnerships and our regional contacts and testing environments, ARRI is driving the development of innovative products and solutions forward.

Is this whole world of virtual production or mixed reality new for your team?

We actually prefer the term mixed reality. We feel it's more fitting since this new way of content creation combines the reality of acting and shooting on stage with the virtual reality on the LED wall. So it is not a purely virtual production. DPs and gaffers, with their camera systems and lighting tools, continue to be as important as when they are shooting with green screen.

And as to your question whether it's new for us: yes and no. Our equipment has already been used successfully in mixed reality environments. For example, ARRI cameras were used on Disney's highly acclaimed Star Wars TV series *The Mandalorian* by Greig Fraser and Baz Idoine. Then some weeks ago, Netflix started the production of *1899*, and here, ARRI not only provided cameras, lenses and lighting. We also were responsible for the overall technical planning and coordination of the equipment installation for the mixed reality studio DARK BAY Virtual Production Studio in Babelsberg near Berlin, which is now one of Europe's largest permanent LED studios for virtual film productions. I personally visited DARK BAY and have to say it



Behind the set at ARRI UK/CT LED volume. ("Volume" is motion capture vocabulary; it's still a set on a stage. Note the curved LED sections and curved, as well as straight, overhead lighting trusses. Photo: ARRI / Landscape plate: David Noton.

looks really impressive. From our discussions with DPs, color graders, DITs and everyone involved in the process, we've learned a lot. We would like to pass this know-how we have gathered onto other studios and productions by consulting and engineering tailor-made systems for clients. It's not at all plug and play.

What are your plans for passing that knowledge onto other productions?

To help with this, ARRI has built up demo stages in the US and Europe. One is in our Burbank office, another is close to our Munich office, and the biggest and brightest at the moment is in Uxbridge near London. Be sure to stop by the next time you are in the UK. The studio is used for events, education, testing, and demos but also can be rented for productions; they have already been busy with a variety of commercials. Together with DARK BAY, it is one of the biggest permanent mixed reality production spaces in Europe with 343 square meters of LED wall.

Is ARRI on its way to becoming a systems integrator?

Well, no. We want to work together with system integrators. ARRI does not want to be their competition. Instead, we offer our services for detailed solutions for studios and production companies when it comes to cameras, lenses, lighting, LED walls, tracking systems and accessories. Since every location and every project is unique, we strive to find the best individual solutions in the interests of our clients.

A recent project at the new Axel Springer Campus in Berlin is a good example. WeltN24 commissioned two state-of-the-art TV studios for the station WELT. The lead system integrator here was Qvest Media. ARRI was brought on board to handle the consulting, planning and turnkey installation of the studio lighting and control systems. Both news studios are equipped with Ethernet/IP-capable lighting fixtures throughout which allow for IP-end-to-end communication and efficient workflows that are fully integrated into the broadcast infrastructure. With this IP-based control system, there is a direct connection to the control stations. As a result, the broadcast engineers are able to take total control over the components for video, audio and light in the studios.

Is your Solutions Group currently based in Berlin?

I've mentioned a couple of projects in Berlin, but we have always been interested in being close to our clients in their regions.

In Berlin, we have the core of our System Group business and they have been at the top of their game for years now. When we established the ARRI Solutions Group, we also realigned our System Group. This division, which previously specialized in broadcast and lighting, is now a part of the ARRI Solutions Group. Therefore, it now offers solutions and expertise—consulting, planning, visualization, design, implementation, training—for the cine market as well. In the future, camera systems such as AMIRA Live will be considered in addition to lighting systems such as SkyPanel and Orbiter. We want to expand our business and are looking for talented professionals to join us.

With all that you mentioned, it's going to be a very busy year.

It will not be boring. But, honestly, these are exciting times. The pandemic accelerated many trends in the industry, for example, IP-based workflows for remote productions. And more than ever before, people are hungry for more top-quality content. So business is great. But of course, we are doing all we can to further improve the entire production process for filmmakers. Mixed reality productions are only one recent development where we are investing our time and efforts. We are really looking forward to working with all creatives and partners to push the envelope in the development and application of these new technologies for the benefit of our customers and users.

Hi-5. Welcome to the latest ARRI wireless control unit with a catchy name. I'm getting in trouble already. Hi-5's predecessors, WCU-3 and WCU-4, stand for Wireless Compact Unit, not control unit, as I was admonished by Hendrik Voss, ARRI Product Manager Cameras & Electronic Accessories.

Hendrik explained, "We introduced the WCU-4 in 2012. And so it was time for us to consider all the feedback we had received from users along with everything we learned, and plan the successor. Above all, the name was a tongue-twister.

"For this new hand unit, we started with the name '5th generation Intelligent Hand' unit. Spelling that backwards, we saw it was 'Hi-5.' A high five is a positive hand gesture; it connects people. The Hi-5 hand unit is also a positive and fun tool that connects the camera and the focus puller."

A few days before this edition went to press, Michael Best, ARRI Project Manager for Sales and Technical Support, arrived with a pre-production Hi-5. Here are some things that elicited applause:

1. Tail Slate Mode protects you from the muscle memory impulse to cut when the Director says "Cut." To prepare for a Tail Slate, press the REC button for 1 second (instead of a short press). A red icon alerts you that Tail Slate is active. Then, when the Director or AD yells, "Cut," you have to press the red REC button again for a full second.
2. The display screen lets you navigate by touch or buttons.
3. There are 10 pre-engraved focus rings. A smart chip is embedded within each ring and the Hi-5 automatically adjusts accordingly.
4. OCU-1 Camera Operator override and Focus Puller handoff is seamless and a joy to have. We'll get to that in a minute.

Here are additional highlights that stand out:

1. Hi-5 stands out by sitting up. Hi-5 has a built-in base so it can rest at a comfortable angle on a flat surface like your Inovativ Echo camera cart's top shelf.
2. A pivoting bracket slides onto the Hi-5's top NATO rail to support a monitor with a 3/8-16 thread and a pair of swing-away anti-twist pins.
3. Three different Radio Modules are available to plug into the rear of Hi-5 for different ranges and regions:
   - RF-EMIP 2400 MHz radio module has direct-sequence spread spectrum (DSSS) modulation. It connects to ARRI's white-coded (EMIP) internal radios (ALEXA Mini, Mini LF, cforce mini RF). 14 channels. Up to three hand units can connect to one camera.
   - RF-2400 2400 MHz frequency-hopping spread spectrum (FHSS) radio module provides a more robust radio link with better interference protection and point-to-point communicaton. 100 channels. One Hi-5 with RF-2400 radio module connects to one Radio Interface Adapter RIA-1 that attaches externally to the camera.
   - The RF-900 900 MHz frequency-hopping spread spectrum (FHSS) radio module works point-to-multipoint to connect one camera with up to three hand units.

     The RF-900 is only certified in the US and Canada. This module has the largest antenna of the three modules.
4. Both the RF-2400 and the RF-900 require an ARRI Radio Interface Adapter (RIA-1) attached externally to the camera.
5. Weatherproof. Presumably the Hi-5 withstands long hours in wet exteriors like Vancouver.

6. As host and client, Hi-5 goes both ways. Focus control is sent from the Hi-5 to the lens motors and camera control to the camera. For the roundtrip, camera and lens data is sent back to the Hi-5—for example, time remaining on the media card, camera voltage, lens focal length, actual focus distance, etc.
7. An LDS lens on an ARRI camera will be recognized immediately by the Hi-5. Non-LDS lenses send data as encoder values generated by the lens motors and you have to manually load the corresponding lens file.
8. The Hi-5 lets you change basic camera settings on ALEXA cameras. (AMIRA setup works when combined with the Universal Motor Controller UMC-4 or the cforce mini RF lens motor.) Some functions include:
   - Shutter Angle
   - Exposure Index
   - White Balance
   - Internal ND Filter (ALEXA Studio, AMIRA, ALEXA Mini/Mini LF
   - Full Playback Control (ALEXA Mini/Mini LF/AMIRA)
   - Sensor Frame Rate
   - Peaking on Monitor Output (on/off)
   - Surround View on Monitor Output (on/off)
   - False Color on Monitor Output (on/off)
   - Status Info on Monitor Output (on/off)
   - Frame Lines on Monitor Output (on/off)
   - User Buttons
   - Camera User Setups (ALEXA Mini/Mini LF)
9. The focus knob has a smooth drag adjustment from free-wheeling to tight.
10. The force pad, usually used for zoom, is also a 4-direction navigation button.
11. All Hi-5 units include ALEXA camera control by default. Sony and RED camera control is planned with a future software update.
12. Hi-5 accepts ARRI's newly-branded LBP-3500 batteries (7.4 V, 3500 mAh. Their internal chip enables the display of remaining battery capacity on the Hi-5. L-Series Sony-style batteries such as NP-F550 also work, but they do not show power status.
13. Hi-5 backlight. Focus knob illuminates in different colors for bright or low light locations.
14. For left-handed Focus Pullers, the display flips upside down, so the knob is on the left side of the Hi-5.
15. There are various mounting points to attach to a stand.
16. Hi-5 has three mounting points for a hand strap or a comfortable shoulder sling/strap that nicely balances the Hi-5 with a monitor attached.
17. Motor trail. It looks like the tail of a comet. For example, the lag of a lens motor in relation to the actual position of the focus knob will be displayed. This could happen with a fast focus rack. When the motor has arrived at its target value, the trail disappears. This is also useful for OCU-1 override.
18. Focusbug Cine RT Ultrasonic Rangefinder System integration is expected with future firmware updates. The Hi-5 system and Cine RT will have bi-directional communication. Distance values and Bug Transmitter focus marks from the Cine RT will be displayed on the Hi-5. In the other direction, you will be able to set up the Cine RT Range Finder from the Hi-5 menu.

ARRI Hi-5

Right Side

Friction / tension adjustment

Rear

Serial connector

LBUS connector

User buttons

Rear Left

RF-EMIP radio "default" module that connects directly with internal White Radio of ALEXA Mini, Mini LF.

Bottom

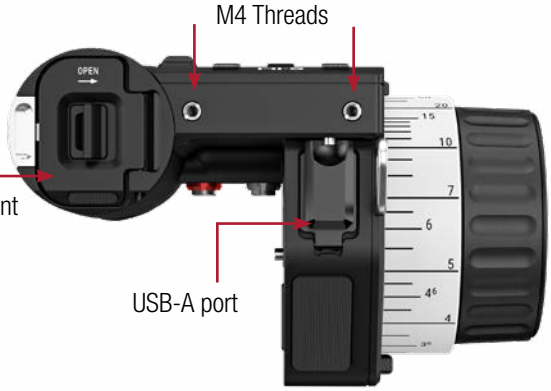
Radio Module Release

Shoulder/Hand Strap Attachment "D-Ring"

Hand Strap Attachment

Shoulder Strap Attachment

Bottom

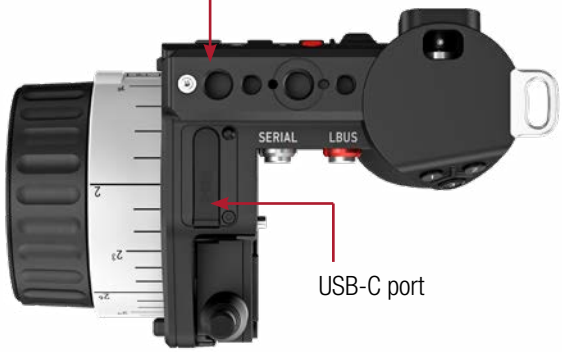


M4 Threads

Battery Compartment

USB-A port

Top



NATO Rail with 3/8-16 and 1/4-20 threads

USB-C port

ARRI Hi-5 Radio Modules, RIA-1, etc.

You always need a pair of the same radio module — one in the Hi-5 and one in the RIA-1 or camera. ALEXA Mini/Mini LF/Plus cameras and existing ARRI motor controllers have the so-called EMIP radio (color-coded with a white ring around the antenna) already integrated. In this case, just attach the RF-EMIP module to Hi-5 and, as Hendrik Voss said, they will "shake hands".

Hendrik continued, "The radio modules are the backbone of this completely new wireless system. More devices supporting them will come, and as on-set networks evolve, new radio modules may arrive. It's a flexible system."

Left to right: RF-EMIP, RF-2400 and RF-900 Radio Modules.

One Radio Module slides into Hi-5 module slot.

Hi-5 with RF-EMIP (current default for ALEXA Mini/Mini LF).

RIA-1 Radio Interface Adapter.

RIA-1 with RF-EMIP installed

As mentioned, Radio Modules work in pairs. Slide a Radio Module into the RIA-1 Radio Interface Adapter. The RF-2400 and RF-900 radio modules require the RIA-1 to be attached to the camera. It's like a motor driver. Cameras with built-in white radios (e.g. ALEXA Mini, Mini LF) do not require the RIA-1 with the RF-EMIP.)

Bracket to attach RIA-1 to Camera. *(Not to scale.)*

Hi-5 Battery

Monitor Bracket slides onto top NATO rail of Hi-5.

Hi-5 Smart Focus Rings. 10 Metric and 10 Imperial rings are available.

Hi-5 and OCU-1 Handoff

One of my favorite things about the Hi-5 is how effortlessly it works with ARRI's OCU-1 (Operator Control Unit) as both host and client.

The OCU-1 lets the Camera Operator take over focus (or zoom or iris) control from the Hi-5 and then return control back to the Focus Puller. The Focus Puller can also give and take.

Christine Ajayi-Scheuring, ARRI Product Manager Camera Systems, said, "The OCU-1 override function is well-implemented in the Hi-5 and it works as you enjoyed with the WCU-4. Of course, we have improved things; the Hi-5 has a better GUI and user experience. It's cleaner, but the concept is the same."

For example, you are lining up a shot. The Hi-5 is connected, sitting unattended on its built-in pedestal on the camera cart. But you had asked the Focus Puller to call the lab about a LUT. Have you ever tried to focus by turning the lens barrel while the motor is still engaged?

You press the OCU-1 override button to take over from the Hi-5. Adjust focus with the OCU-1 knob. Press the Override button again to return control to the Hi-5. When the Focus Puller arrives, a red warning bar on the LCD focus scale signals that the Hi-5 scale differs from actual lens focus distance, a button is pushed, and order is restored to the focus universe. See below.

Hi-5 shown with Monitor Bracket attached to top NATO Rail

1. Focus is 10' on the knob and 10' on the digital lens scale and 10' on the center readout.

2. Camera Operator has pushed the OCU-1 Override button and the scale glows warning red.

3. The center numerical readout shows that the Camera Operator has movied the lens focus to "7 feet."

4. Time for the Focus Puller to regain control. Push the F-OVR (Focus Override) button. The scale turns green for go.

5. Focus Puller turns the knob to align scale towards 7'.

6. When 7' nirvana is achieved, the green for go scale returns to its normal neutral background state and the Focus Puller is back in complete control.

AJA Pak Dock Pro

AJA PAK Dock Pro Media Reader
with AJA PAK Media

The new PAK Dock Pro media reader from AJA Video Systems connects to your computer via USB-C. It is bus powered: no external power supply is required. Files recorded on an AJA Ki Pro Ultra 12G digital video recorder can be transferred to desktop or laptop running macOS or Windows. Blazingly fast transfer speeds up to 10Gbps are achieved via PAK Dock Pro's USB 3.1 Gen 2 USB-C connection.

Here's how it works. The AJA Ki Pro Ultra 12G records Apple ProRes and Avid DNx files to AJA PAK solid state drives. These are not off-the-shelf SSDs with do-it-yourself plastic shell housings. PAK Media use Enterprise Level flash m emory w ith t he highest quality rating available for digital media.

AJA PAK Media SSD

Yikes, if you have been recording to consumer grade SSDs, as I have also been guilty of doing, we should remember that solid state AJA PAK Media can have up to 10 times the endurance overall and greater data retention during a power loss. Consumer media often varies in quality from batch to batch under the same name and label. Enterprise Level media like AJA PAK Media is guaranteed to run to the same high quality standards every time, from unit to unit.

PAK Media is housed in an AJA custom-designed hard aluminum enclosure that protects the internal SSD drive from the bumps and bounces of life on location.

AJA PAK Media Gold-Plated Connectors

AJA Ki Pro Ultra 12G Recorder/Player

AJA Pak Dock Pro

Each AJA PAK Media has gold-plated, reinforced connectors rated for 10,000 insertion and removal cycles. This is much different from the smaller connector built into standard SSD drives, which are designed primarily to be installed inside a computer and rarely removed.

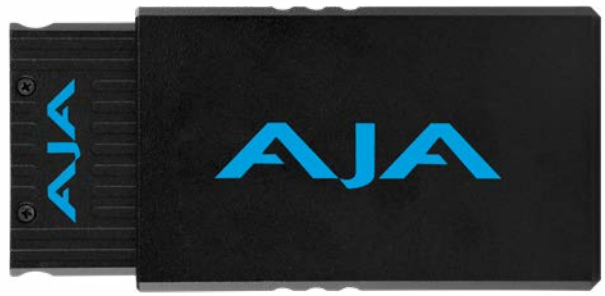
There are four PAK Media sizes: 256GB, 512GB, 1TB and 2TB. They come pre-formatted by AJA in either HFS+ or exFAT. Also, they are compatible with the current Ki Pro Ultra 12G, Ki Pro Ultra and Ki Pro Ultra Plus recorder/players.

To transfer files:

- Remove the PAK Media drive from your Ki Pro Ultra 12G.
- Insert the Media into the PAK Dock Pro
- Connect PAK Media drive to your computer with a USB-C cable.

AJA PAK Dock Pro is available now through AJA's worldwide reseller network for $195 US MSRP.

For more information, go to: *aja.com/products/pak*



AJA PAK Dock Pro Media Reader with AJA PAK Media top view

AJA PAK Dock Pro front, media access bay

AJA PAK Dock Pro rear, USB-C connector

RED KOMODO RF Mount

Clock to lock: twist a Canon RF lens clockwise to lock.

RED KOMODO PL Mount

Clock to lock: Rotate PL Mount clockwise to lock.

Maybe like a *Lonely Planet* style geeky guidebook, but not as amusing as Mark Twain's *The Innocents Abroad*, and hopefully less strenuous than *Survivor*, here is a quirky travel guide of a RED KOMODO's journey to Film and Digitial Times. The accessories and methods listed here are not comprehensive. In fact, they are the result of things that happened to be shipped, arrived and tried.

KOMODO with Native RF Mount

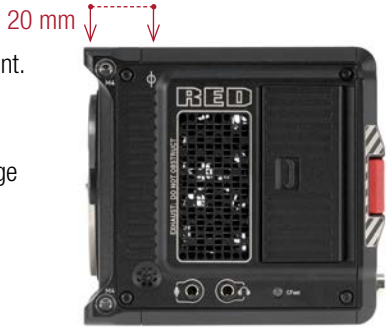
- RF is Canon's lens mount on Canon EOS R mirrorless cameras.
- 20 mm flange focal depth.
- 54 mm diameter.
- The RF mount accepts native RF Canon lenses and the shallow depth lets you use all kinds of lens mount adapters.
- 12 pogo pins for electronic connections.
- 6K Super35 Sensor (6144 x 3240).
- Global Shutter (all the photosites are exposed simultaneously).
- Sensor size: 27.03 x 14.26 mm.
- Sensor image diagonal: 30.56 Ø.
- 6K to 40 fps.
- Shown actual size, approximately 4" x 4" (10.16 x 10.16 cm).
- Weight: 2.10 lb / 0.95 kg (without Body Cap or CFast Card).

KOMODO with RF to PL Mount Adapter.

- PL mount has a 52 mm flange focal depth.
- 54 mm diameter.
- Careful: the native RF mount is not as strong as a native PL mount. RF to PL adapters with support brackets are recommended. Use a lens support and rods for heavy lenses.

RED KOMODO with EF Mount Adapter

Clock to lock: twist Canon EF lens clockwise to lock.



KOMODO with native RF Mount. 20 mm flange focal depth.

(FFD is the distance from the lens mount flange to the image plane.)

KOMODO with RF to EF Mount Adapter. 44mm flange depth.

KOMODO with RF to PL Mount Adapter. 52mm flange depth.

Why did RED choose the RF Mount instead of EF Mount, as most previous RED cameras had? The RF mount keeps the camera smaller—by almost an inch. You can still use EF lenses, as well as PL, PV, LPL, Leica M and almost any other lens with a flange focal depth longer than the RF's 20mm distance. Of course, the RF mount accepts both Super35 and Full Frame / VistaVision lenses.

- To use one of the more than 130 million EF lenses out there, attach a Canon Mount Adapter EF-EOS R to your KOMODO.
- EF Mount has a 44 mm flange focal depth.
- 54 mm diameter, same as RF Mount.
- The EF Mount has 8 pogo pins for lens to camera communication.
- The Canon Mount Adapter EF-EOS R passes lens metadata and power through by connecting 8 pogo pins in the EF Mount to 8 or the 12 pins in the native RF Mount.
- Another excellent choice: Canon's Drop-In Filter Mount Adaptor EF-EOS R with Variable ND Filter / Clear Filter / Circular Polarizer.
- EF lenses cover Full Frame. They have a red dot and line up with the red dot on the camera's lent mount.
- EF-S lenses cover APS-C / Super35. They line up with the white square on the camera's lens mount. EF-S lenses are generally smaller, lighter, faster and cheaper than EF.
- To remember which is which, think of EF-S as in Super35 or smaller.
- Note: there's also a white dot on KOMODO's native RF mount. So far, I haven't seen any APS-C format RF lenses. But they could be called RF-S lenses and they would make sense.
- If you're satisfied with totally manual mode, then most EF lenses will work fine on KOMODO.
- However, to benefit from electronic and metadata communication from lens to camera, some Canon RF and EF lenses have been tested (so far) to provide aperture control, autofocus and image stabilization. See the KOMODO Operation Guide or list online.

Speaking of User Manuals, the RED KOMODO Operation Guide is thorough, well-written and complete with great photos:

red.com/download/komodo-operation-guide

RED KOMODO

Index Mark for RF Lenses and Adapters

RF Mount

Tally LED ON when Recording

RF Mount Lens Release

Right Internal Mic

Left Internal Mic

CFast 2.0 Card Eject

CFast 2.0 Media Card

CFast Status LED

Camera Beep Speaker

3.5 mm Stereo External Mic IN

3.5 mm Stereo Headphone IN

M4 Mounting Thread

M4 Mounting Thread

Two separate Canon style BP-900 series 7.4V battery slots. Left slot takes priority over right.

Left Battery Release

Right Battery Release

Power Status LED

9-pin Extension Port

12G-SDI OUT

2-pin DC IN 7-17 V DC

Wi-Fi Antenna for 2.4 GHz or 5 GHz connection

Charge onboard BP-900 batteries by connecting AC Power Adapter to DC-IN jack.

M4 Mounting Thread

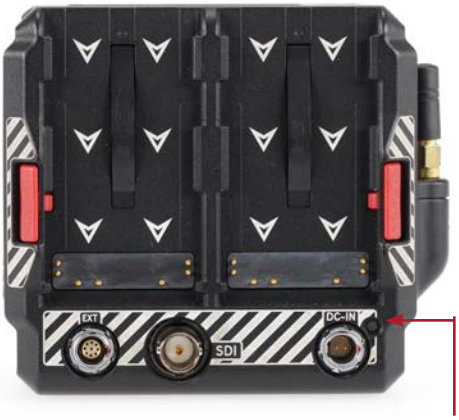
M4 Mounting Thread

RED KOMODO

Front

Disregard the RF Mount's white Index Mark. (With EF Mounts, it's for EF-S APS-C Lenses)

Rear



DC-IN Status LED. **Green** = External DC power is connected and / or battery is fully charged. **Flashing Amber** = Camera communicating with battery. **Amber** = Charging onboard batteries. **Red** = Error charging batteries.

Camera Left

Image Plane (20mm behind RF lens mount flange)

CFast 2.0 Media Bay Door Lock

CFast Status LED: **Off** = No media mounted. **Green** = Media mounted, more than 10% remaining. **Amber** = Recording ending or playback. **Amber slow flashing** = Formatting media. **Red slow flashing** = between 5% and 10% media remaining. **Red fast flashing** = less than 5% media remaining. **Red** = Recording.

Camera Right

Power Status LED: **Off** = Camera OFF. **Amber** = Camera booting up. **Green** = Camera ON. **Amber flashing** = 5 -10 mins batt remaining. **Red flashing** = less than 5 mins batt. remaining. **Red** = Camera shutting down.

Camera Main Power ON - OFF

Cooling fans inside

Top

Accessory Multipin Connector

4x ¼-20 Mounting Threads on top

MENU

LCD Touchscreen Display

SELECT & Fn

Playback

Bottom

Service Access Cover, Do NOT Remove

RED KOMODO – Minimal Mode

You probably remember this photo by Brad Pitt of Jarred Land, President of RED. This is the minimalist KOMODO mode. Jarred explained back in October 2020, "You hold the KOMODO just like you do when you shoot a Medium Format camera, cradling the camera in a very specific way. The Mamiya RZ67 is my favorite camera of all time. You can see that camera has been referenced into many of the things that we've done before, but never as much as the KOMODO. Just the way you hold the KOMODO, even if you do use a handle, has a certain intimacy that I always loved about shooting with Medium Format cameras, and the KOMODO shares that.

"This is probably why there are a few people working on Hasselblad-like top prism finders and waist level, fold-out focusing hood attachments for the KOMODO. I just love the connection you have holding the camera like that—there's just something about it that really excites me."

We'll get to attachments and accessories shortly. But first, here's the bare minimum KOMODO.

KOMODO ready to roll with REDVOLT battery and native RF mount.

Add a Canon Mount Adapter EF-EOS R to use EF lenses.

This is a Wooden Camera PL to RF Mount Adapter Pro.

Attach one or two BP-900 Canon style 7.4V batteries to the back and you're ready to roll. Minimal KOMODO consumes about 20 to 24 Watts.

One REDVOLT BP 6300 mAh battery ran KOMODO for more than 2 hours. Your mileage may vary.

You can hot swap. The left battery runs out first.

RED KOMODO – Minimal Mode

At right and bottom: Canon Mount Adapter EF-EOS R — with Canon EF-S 18-135mm f/3.5-5.6 IS USM APS-C Zoom lens. Covers Super35 and, of course, KOMODO is a Super35 camera. This lens is smaller and lighter than its Full Frame counterparts.

Note, it's not yet on the official RED compatibility list, below:

These Canon Lenses fully functional on KOMODO

Canon RF 24-70mm F2.8 L IS USM
Canon RF 24-240mm F4-6.3 IS
Canon RF 28-70mm F2 L USM
Canon RF 50mm F1.2 L USM
Canon RF 70-200mm F2.8 L IS USM
Canon RF 85mm F1.2 L USM DS
Canon EF 14 mm f/2.8L II USM
Canon EF 24 mm f/1.4L II USM
Canon EF 35 mm f/1.4L II USM
Canon EF 50 mm f/1.2L USM
Canon EF 85 mm f/1.2L II USM
Canon EF-S 17-55 f/2.8 IS USM
Canon EF 24-70 f/2.8L II USM
Canon EF 16-35 f/2.8L III USM
Canon EF 24-105 f/4L IS II USM
Canon EF 70-200 mm f/2.8L IS III USM

Top view of KOMODO with Wooden Camera PL to RF Mount Pro (shimmable) Adapter. Accepts Full Frame and, of course, Super35 PL lenses.

RED KOMODO and SmallHD Focus Pro LCD Monitor

Video Cable. RED recommends 12G-SDI cables with KOMODO.

SmallHD's Focus Pro RED Kit is an 800 nit, 5" LCD Touchscreen Monitor with camera control for KOMODO (and DSMC2 cameras).

Connect the Focus Pro's 5-pin USB receptacle to the KOMODO's 9-pin Extension receptacle. Connect camera to monitor video via BNC cable. An Anton/Bauer Sony L-style onboard battery powers the monitor. You can also power it from an external battery.

A Focus Pro Monitor connected to KOMODO can control recording formats, resolution, frame rates, shutter speed, aperture of compatible lenses, autofocus on compatible lenses, output tone map, highlight roll-off, 3D LUTs, Start/Stop, and more.

SmallHD Focus Pro KOMODO Control

Connect 9-pin KOMODO to 5-pin Monitor control cable.

SmallHD Focus Pro home page with red RED run “button.”

Exposure Index adjustment on touchscreen LCD display.

Shutter adjustment.

Set lens aperture for enabled lenses.

Adjust white balance.

Project settings sub-menus.

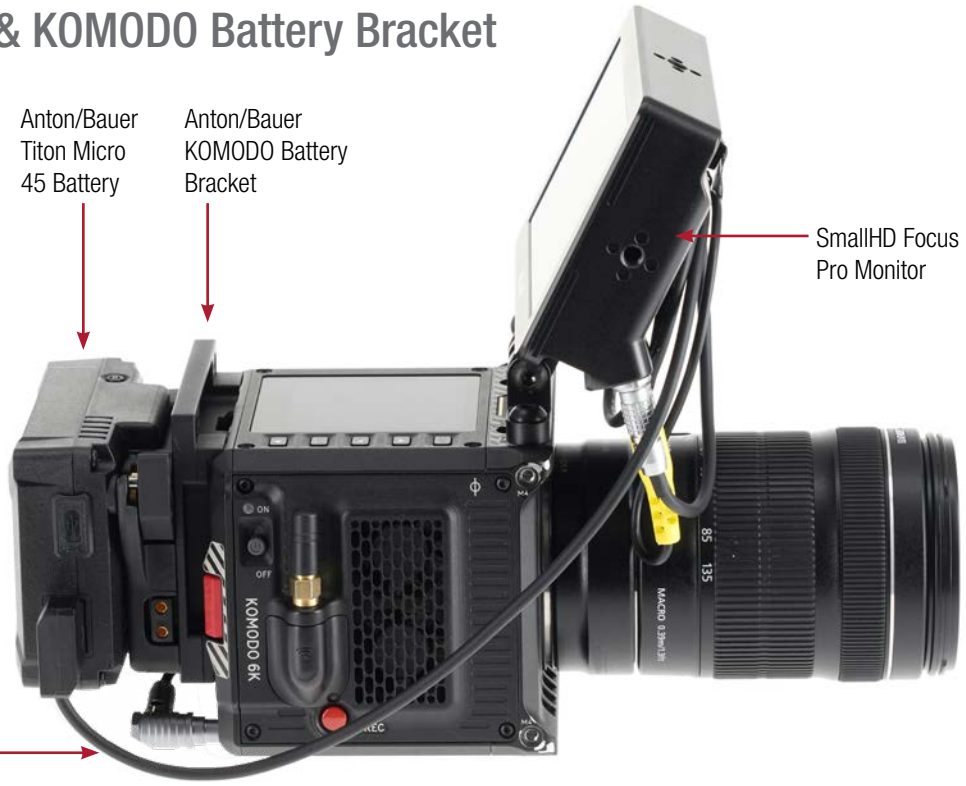
Set project resolution.

Anton/Bauer Titon Micro & KOMODO Battery Bracket

Anton/Bauer's Battery Bracket for RED KOMODO comes in Gold-Mount or V-Mount. It attaches directly to the camera's empty rear two BP Battery slots. The Micro Bracket connects to KOMODO's 2-pin EXT power jack with a short pigtail cable and LEMO plug. There are two D-Tap accessory power outlets, one on each side.

Anton/Bauer's Titon Micro 45 fits nicely on KOMODO. It delivers 14.4V DC, 47 Wh, 8 Amps.

In the photos at right and below, the SmallHD Focus Pro Monitor is being powered from the D-Tap of the Titon Micro 45 battery.



Anton/Bauer Micro Battery Bracket

Anton/Bauer Titon Micro 45 Battery

Wooden Camera Battery Slide Pro for KOMODO

Wooden Camera's Battery Slide Pro for KOMODO is another alternative for Gold-Mount or V-Mount 14.4V battery power. It adds extra distance in back, swivels away and slides up/down for access to the camera's rear. Battery Slide Pro attaches to KOMODO's camera-left BP-900 battery slot and plugs in with a right angle LEMO style connector.

Three D-Taps on the plate provide power for accessories.

DC Input on the camera-right side can be used for power when hot-swapping.

Another hot-swap option would be to use a Gold or V-Mount battery together with a BP-900 series battery. To do this, add the Wooden Camera Battery Slide Extension for Canon BP-955 Hot Swap (RED KOMODO). It moves the battery plate further back from the camera body to provide room for a BP-900 series battery.

Wooden Camera B-Box (RED KOMODO) attaches to the camera-right BP-900 battery slot as a breakout for the camera's EXT connector.

Wooden Camera Battery Slide Pro attaches to KOMODO's camera right BP-900 slot. Shown here with Anton/Bauer Titon 45 Gold Mount battery.

Wooden Handgrip on KOMODO

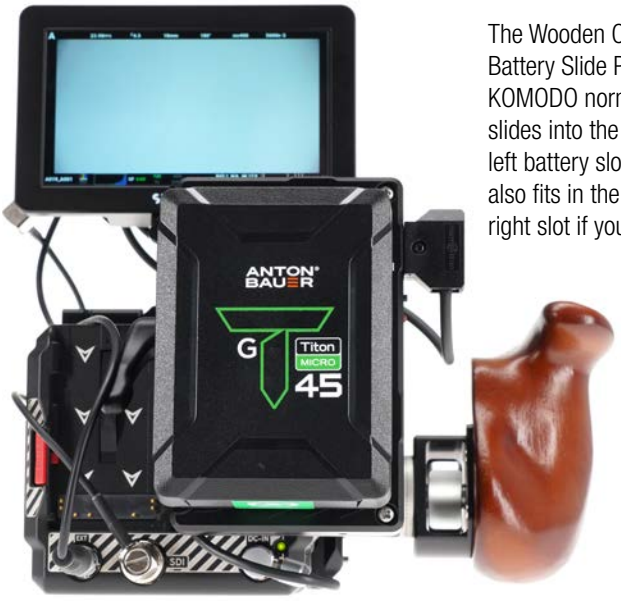
Satisfy your inner original Aaton spirit with a much-flattered, often imitated, carved wood right-side handgrip from Aaton, Vocas, Tilta, Element Gear, ErgoCine, Smallrig, Wooden Camera and others. These handgrips are all mechanical at the moment. The trick is in the attachment.

Here is the KOMODO festooned with Wooden Camera accessories: right-side Camera Safety NATO Arm (RED KOMODO), NATO Rosette, Right Handgrip—as well as Wooden Camera Battery Slide Pro for KOMODO, Anton/Bauer Titon 45 Battery, SmallHD Focus Pro Monitor, Wooden Camera Top Mount with ARCA Swiss dovetail clamp and Monitor Hinge.

Anton/Bauer Titon 45 Gold Mount battery

Wooden Camera Battery Slide Pro

Monitor folds almost flat on top



The Wooden Camera Battery Slide Pro for KOMODO normally slides into the camera left battery slot. But it also fits in the camera right slot if you like.

Bright Tangerine LeftField System for KOMODO

Bright Tangerine's LeftField System for KOMODO is designed so you can switch quickly between tripod, gimbal, car mount, remote head and handheld modes.

Threaded NATO and QD mounting points are located on each side of the Left-Field System. Every thread is stainless steel helicoil for added strength. These fittings prevent stripping or binding. QD (Quick-Detach) sockets are there to attach camera straps. A new addition to the patented Open•UP Baseplate system is a DJI dovetail release as a second top stage. You can seamlessly go from the 15mm baseplate to handheld to a DJI RS gimbal in seconds without having to reconfigure the rig.

There are many choices of lens adapters for KOMODO's native RF mount. Instead of restricting the cage to a specific adapter, Bright Tangerine's LeftField offers a range of adapter supports, including Vocas, Kippertie, Metabones and Canon's 0.71x expander. More supports will be made available as demand grows.

The camera right cheeseplate accessory attaches with a NATO clamp and makes mounting wireless transmitters and lens controllers a breeze.

The LeftField Komodo System is available now as a series of kits. You can also choose individual parts. Rest assured you won't be left out in left field.

VOCAS RF to PL Mount for KOMODO

The Vocas PL to RF mount kit provides extra support for PL lenses. It's still a good idea to use lens rods for heavier lenses.

The complete assembly should include the Vocas Canon R mount to PL adapter kit (0900-0018), the Vocas PL adapter support for KOMODO (0900-0030) and the Vocas side cage kit for RED KOMODO (0600-0100).

The side cage brackets are mounted to the left and right side of the camera, using the total of four M4 attachment points on the camera.

RED Accessories for KOMODO

RED KOMODO Expander Module attaches to the bottom of the camera. It plugs into KOMODO's 9-pin EXT port. The breakout connections provide Genlock (BNC), GPI (BNC), Timecode IN (BNC) and CTRL (4-pin).

RED KOMODO Wing Grip attaches to the camera right side's M4 threads.

At right: The KOMODO Link Adaptor adds a USB-C port for a hard-wire connection. Attach the KOMODO Link Adaptor to an iPhone or Android device for a live preview with little latency via RED CONTROL.

Attach an off-the-shelf USB-C to Ethernet adapter for remote camera control and FTPS (File Transfer Protocol Secure). In addition to camera control and menu access over IP, you can control multiple networked cameras and download media files.

the free KOMODO RED Control app provides remote and wired access from an iOS or Android device. RED CONTROL runs via Wi-Fi, USB-C or Ethernet.

You can live stream from the camera, access the entire menu, and monitor video.

Sebastien Gonon with Sony FX9, FX6, FX3

Photo of Sebastien Gonon with Sony FX3, FX6 and FX9 by Erwan Hamel, technician at Photocinerent, Paris

by Sebastien Gonon, Cinematographer

I am currently using the Sony FX3, 6 and 9 for a documentary about a famous luxury fragrance and clothing brand. The project is still in process and so I cannot reveal the name. Setups include product shots, architecture, nicely lit interviews in beautiful environments and following people documentary-style.

Most of the time I control the lighting, but there are situations where it is not possible to do classic cinema set-ups. In those cases, using the FX9 at 4000 ISO with no noise (dual sensitivity) happened to be very useful and efficient.

All 3 of these Sony Full Frame cameras have their own characteristics but they match extremely well. That makes the colorist's job easy.

Why I Used All 3 Cameras

FX9 was the main camera and also for very low light locations. The FX6 has a 12800 2nd base, but I really liked the look, absence of noise, and color rendition at 4000 ISO base cine mode.

FX6 was the 2nd camera and also for handheld with no shoulder set. I find the rolling shutter very acceptable. Sometimes, I used the autofocus and softened the look of AF Sony primes and zooms by using Low Contrast and/or Tiffen Glimmerglass filters.

FX3 was there for its incredibly small size. Mounted with autofocus lenses, the FX3 was the camera we used on a DJI Ronin S2. It is great to have such a lightweight and compact stabilized system that is very easy to use and to configure. The size of the FX3 matches the ergonomics of the RS2 nicely. Sony did a tremendous job with this compact camera sharing the Cinema Line features with its two bigger siblings.

Major Differences

The FX9 is the top of the FX line and has more features than the FX6, such as anamorphic mode, 6K, and better Super35 mode resolution when using vintage lenses that don't cover Full Frame. The FX9 and FX6 both have internal ND filters which is very helpful when shooting documentary style. The FX3 is more like a DSLR. Its main difference is its compactness.

Similarilites

FX3, 6 and 9 share the same sensor size and characteristics, the same codecs and color science. They also have the ability to autofocus which is sometimes convenient when shooting run-and-gun scenes on a documentary project. The sound department also appreciates the XLR input.

Ergonomics

FX3, 6 and 9 are extremely lightweight. The FX9 weighs only 2.0 kg (body only) and the FX6 is even less that half that. I like the right hand grip design that rotates quickly by simply pushing a button. That way operating from any angle is always comfortable for the wrist. The FX3 is an amazing achievement regarding size and weight as it is even more compact than an a7S III.

Recommended Settings

I recommend using these cameras in Full Frame so the depth of field is shallower—the separation between the subject and the background is enhanced. Not to mention the increased definition. I shoot XAVC-Intra, 4:2:2, 4K. These settings also allow me to shoot slow motion up to 60 fps, which is enough for the current project I am doing. I also apply S-Log3 in Cine mode so there is latitude when color grading.

Sony FX9, FX6, FX3 — Cinema Line

FX9

FX6

FX3

FX9
Sensor: 20.5 MP actual / 19 MP effective
Sensor size: 35.6 x 23.8 mm
Internal Variable ND: ND.6 - ND2.1
Dual base ISO: 800 and 4000
Max Res: 4096 x 2160p XAVC-I 4:2:2 10-bit
Variable framerate 4K: 1-60 / UHD: 1-120 fps
External RAW: 4096 x 2160 16-Bit SDI
HDR-HLG, S Cinetone, S-Log 3, Std
Lever Lock E-mount — Full Frame & Super35
Weight (body only): 2.0 kg / 4.4 lb
Size (body only): 146 mm / 5.75" wide 142.5 mm / 5.61" high 229 mm / 9.02" deep
Battery: Sony BP-U Series 14.4V DC
Camera Introduced September 2019

FX6
Sensor: 12.1 MP actual / 10.2 MP effective
Sensor size: 35.6 x 23.8 mm
Internal Variable ND: ND.6 - ND2.1
Base/Enhanced ISO: 800 and 12,800
Max Res: 4096 x 2160p XAVC-I 4:2:2 10-Bit
Variable framerate 4K: 1-60 / UHD: 1-60 fps
External RAW: 4096 x 2160 16-Bit SDI
HDR-HLG, S Cinetone, S-Log, S-Log 3
Alpha style E-mount — Full Frame & Super35
Weight (body only): .885 kg / 1 lb 15.4 oz
Size (body only): 110 mm / 4.33" wide 115 mm / 4.5" high 140 mm / 5.5" deep
Battery: Sony BP-U Series 14.4V DC
Camera Introduced November 2020

FX3
Sensor: 12.1 MP actual / 10.2 MP effective
Sensor size: 35.6 x 23.8 mm
No Internal ND
Base/Enhanced ISO: 800 and 12,800
Max Res: 3840 x 2160p XAVC S-I 4:2:2 10-Bit
Variable framerate UHD: 1-120 fps
External RAW: 44264 x 2408 16-Bit HDMI
HDR-HLG, S Cinetone, S-Log2, S-Log 3, Std
Alpha style E-mount — Full Frame & Super35
Weight (body only): .640 kg / 22.6 oz
Size (body only): 129.7 mm / 5.1" wide 77.8 mm / 3.1" high 84.6 mm / 3.3" deep
Sony Z-Series 7.2V DC
Camera Introduced Feb 2021

Sony Airpeak S1 Drone

This is not your father's Sony. My father's Sony was an iconic 5" tummy TV. Being a Mad Ave ad man, he also loved Sony's print ad: "For waist sizes 38 to 46. For smaller tummies, buy the 4 inch set."

Nor is this your Sony, familiar for VENICE and Alpha.

This is the Sony of Vision-S electric vehicles and Airpeak S1 drones. The sibilant letter "S" suggests something special.

June 9, 2021, Sony Electronics Inc. announced the takeoff of their Airpeak S1 drone. Foreshadowing things to come, Sony called it "an introductory model in the new Airpeak line." Since the introductory price is $9,000, gimbal not included, the S1 is intended for the professional market or money-is-no object consumers. Why would anyone want a drone without a gimbal? Well, for industrial uses like deliveries, mapping, surveying, lifting, construction...

The Sony Airpeak S1 was also designed around carrying Full-Frame Sony Alpha series (a7, a9, a1, FX3) mirrorless interchangeable-lens cameras. These Sony cameras connect to

Sony of Vision-S electric vehicle road tests in Austria last winter. With an abundance of image sensors, could Vision-S work as a camera car as well?

Airpeak S1
Remote Controller
Tablet Display

the drone directly via USB for start-stop and extensive camera control (as shown in the picture above).

The S1 flies at a maximum speed of 55 mph and stays steady against headwinds and gusts up to 44.7 mph. Sony engineers explained: "Wind direction and velocity is constantly changing in the real world. Developing agile and responsive control functions is essential. The key to stable flight is the ESC (Electric Speed Controller) design that is both highly responsive to the environment and can maintain control under any condition." Rotors are 17 inches long and powered by lightweight, high-performance brushless motors. S1 also has obstacle detection, automatic flight control via sensing technology, and safety measures provided by cloud management of the aircraft and flight information.

The remote controller comfortably cradles an iPad or iPhone and includes an iOS and iPad OS app to monitor the S1 aircraft, its transmitter, camera, and gimbal. The display shows and adjusts flight distance, remaining battery power of drone and camera, distance, altitude, speed, camera settings, Shutter, ISO, Aperture, and other settings.

Airpeak S1 has its own FPV (first person view) camera and can send the live view of both the FPV camera and the camera mounted to the gimbal. In single controller mode, the user can select back and forth between these video streams. In dual controller model (one for pilot, one for camera operator), the pilot can use the FPV stream and the camera controller can use the alpha camera stream.

Here's where the convergence of advanced electric cars and UAVs (Unmanned Aerial Vehicles) intersect. Sony Stereo cameras with Sony image sensors are installed in 5 locations (front, back, left, right, bottom) of the S1 drone. A Sony Vision Sensing Processor handles camera data rapidly and with low power consumption. Proprietary algorithms accurately estimate the aircraft's spatial position and orientation in real time, enabling stable flight even in environments where GNSS (Global Navigation Satellite System) reception may be hindered, such as indoors or under bridges. The Airpeak S1 is also equipped with a high-performance flight control system that integrates all sensor information such as IMU (Inertial Measurement Unit), direction, barometric pressure and infrared ranging.

The Airpeak S1 uses multi-directional sensors to enable its obstacle braking function. The front, rear, left and right stereo cameras and the infrared range-finding sensor mounted on the top recognize obstacles in the vicinity of the aircraft, allowing it to automatically decelerate.

Airpeak Base

S1 includes Airpeak Base, a web application to manage and check equipment, create flight plans, and handle flight logs. Flight plans automatically fly the aircraft along the same course repeatedly, like a dolly in the sky. You can set the position (latitude, longitude and altitude), speed along the timeline, orientation of the gimbal and the timing of still or video capture. You can also navigate by drawing smooth curves on a map. Reproduction flight is an automatic function that guides the flight route, gimbal, and camera movements based on the flight logs that have been flown in the past.

All aircraft information, including logs, can be uploaded to the cloud with the Airpeak Flight mobile app.

Pricing and Availability

The new Sony Airpeak S1 suggested retail price will be approximately $9,000.00 when it ships in Fall 2021. It comes with 2 pairs of propellers, the remote controller, 2 batteries and a battery charger. The gimbal is made by Gremsy specifically for Airpeak and will be sold separately. Airpeak S1 is made in Japan.

Sony Airpeak S1 Drone

Airpeak S1 Remote Controller

Airpeak S1 Drone with Sony a7S III camera on Gremsy gimbal

Mikiya Takimoto on URSA Mini Pro 12K and Cooke 35-140 Anamorphic

Cinematographer and photographer Mikiya Takimoto used a Blackmagic URSA Mini Pro 12K camera for a short film to accompany BRUTUS Magazine's print articles. BRUTUS is a Japanese men's magazine about pop culture, lifestyles, and trends in Tokyo.

The short film can be viewed on the BRUTUS website, YouTube and social media channels. https://brutus.jp/article/926/36579

Mikiya Takimoto was the DP on three features directed by Hirokazu Kore-eda: *Our Little Sister (Umimachi Diary), The Third Murder (Sandome no satsujin)* and *Like Father, Like Son (Soshite chichi ni naru)*. Hirokazu Kore-eda, by the way, was honored with the Palme D'Or at Cannes 2018 for *Shoplifters*.

In addition to shooting features, Takimoto works in stills and cine on advertising photos, TV commercials and other projects.

In August 2020, he was asked by BRUTUS to shoot still photos for an upcoming article about "The answer of Love" on Izu Oshima, a small island about 2 hours southwest of Tokyo by ferry. Takimoto convinced BRUTUS executives to also include a short film to go with the article.

FDTimes: Tell us more about BRUTUS Magazine.

Mikiya Takimoto: The magazine has been popular for long time and I myself subscribe it. It is a print magazine, issued bi-weekly. They have four editorial teams who compete with each other to create interesting articles. They dig deeply into topics they cover.

Originally, I was asked to only do a photo shoot. But many magazines nowadays make movies to accompany their content, and I wanted to try a new kind of art using Blackmagic URSA Mini Pro 12K, so I decided to shoot the movie as well.

What was the original concept for the Brutus article with stills photos and how did you convince them to do video?

The feature article is about "the answer of love." And I interpreted it as "pure desire." When I was offered this job from BRUTUS, it was during the time of quarantine and all my work was indoors, in studios. Even though we were shooting inside, I had to be concerned about ventilation. And although we had natural light coming in through windows of the studio, the ambient noise from outside was quite loud.

Therefore, I craved to shoot in nature; I was falling in love with nature. Love, especially during this time period, could mean not only something romantic but also something more broad. I thought that shooting in the middle of mother nature would lead the actress to express something different than shooting in a studio or city. I also thought it would be interesting to make a short film, not just photos. BRUTUS itself hasn't actively created video content, but when I offered them this idea to create a short film, they were very interested and happy with my idea.

Tell us about the location.

Izu Oshima is a volcanic island covered by scoria, which is a dark volcanic rock.

How did you get cast, crew and equipment to Izu Oshima?

We took a high speed ferry which took a couple hours from Tokyo. We didn't have extra budget for the production, so we all took the same vessel on the same day as the shoot. There was no time for location scouting. So I decided to shoot inside the ferry as well. It worked out well as I could improvise the story of a heart-broken lady leaving the city and empowered by the nature.

Was it a one-day shoot?

It was one day with the actress, which included taking photos for magazine, and a second day for nature shots.

Why did you choose the Blackmagic URSA Mini Pro 12K? Look or resolution?

I actually do not care too much about resolution. However, it was a good opportunity for me to shoot in nature in such high resolution, so I decided to shoot in 12K. The main part of my job was taking photography for the magazine and I used a still photo camera for the purpose. However, I actually used some still frames from the Blackmagic RAW images of the URSA Mini Pro 12K for the print magazine. I was surprised that the resolution of those still images was actually higher resolution than that of latest digital still photography camera.

I shot a dance sequences mostly at 60 fps, and for some shots, I went to 120 fps. It was beneficial that the camera allowed me to

shoot in high speed with high resolution, and so I did not need to rent extra cameras dedicated to high speed. This saved me from having to bother about setting up and carrying extra cameras around.

What were your URSA 12K settings?

12K Blackmagic RAW at a Constant Bitrate 5:1 setting.

And your lenses?

We had a Cooke 35-140 mm anamorphic lens. An onboard Blackmagic Video Assist 4K was also used on set for the camera assistant to check focus.

Why did you choose the 35-140 mm anamorphic ? Why not a spherical lens in 2.39:1 wide-screen? I'm sure your answer will be "for the look." Please describe.

The Cooke 35-140 mm anamorphic lens gives us nice and unique bokeh in the background, especially when shooting in nature. The Cooke anamorphic zoom provides a beautiful gradation of bokeh and that was the main reason I chose the lens. Also, we shot with a minimum of crew and the schedule was very tight, so I wanted to reduce the quantity of equipment on location. That is why I chose the zoom lens.

Where did you rent the equipment?

I rented most of the equipment from Kokihifumi. The Cooke Anamorphic 35 -140 mm came from VIDEO Service CO., LTD as Kokihifumi didn't have one.

Tell us about grading.

"Grading for the URSA Mini Pro 12K footage was done using DaVinci Resolve Studio by Naotaka Takahashi at L'espace Vision. What I cared the most about when grading was to match the tone of the Blackmagic RAW image to the film tone of the photos I took. Generally, digital camera images tend to look too clean, so I asked my colorist to keep the filmic look and also to get a rather natural tone, not a heavy color styling this time.

What LUT did you apply to the BRAW in camera?

It was Blackmagic Extended Video

Congratulations on a beautiful film.

It was tight schedule because it was on location and we had to shoot both movie and photos. However, the compact setup of the URSA Mini Pro 12K allowed me to shoot effectively. I am now also interested in using the Blackmagic Pocket Cinema Camera 6K Pro which is even smaller.

Toyotaro Shigemori on *niko and ... WINTER BOOK*

Cinematographer Toyotaro Shigemori used Blackmagic URSA Mini Pro 12K to shoot the web movie *niko and … WINTER BOOK*. The film, which was created as part of an ad campaign for the fashion/lifestyle brand "niko and …" was also graded using DaVinci Resolve Studio.

Toyotaro Shigemori's credits include commercials, corporate films, music videos and features. Eighty percent of his work has been shot on film cameras. For *niko and … WINTER BOOK,* starring actors Masaki Suda and Nana Komatsu, Shigemori captured the fantastic world of a picture book created by renowned art director, Chie Morimoto,

Shigemori said, "I have been working with Morimoto, the art director, for the brand and had mostly shot their movies on 35mm film. However, for the previous project of this winter version, I used a different camera—the Blackmagic Pocket Cinema Camera 4K. I was asked what kind of movie we should make, and I suggested that we have the actors pose as mannequins and let them freeze their movement, as the project was originally used for still photography. They liked the idea, so I needed a camera that was easy to move around since the actors couldn't move at all. So I shot that project with the Pocket Cinema Camera mounted on a RONIN and I liked it."

Shigemori usually does the cinematography for most of his projects; however, this time he decided to direct and shoot with the URSA Mini Pro 12K. "I actually had directed the previous autumn version as well, and they liked it so I was asked to direct again. However, Morimoto had already planned the visuals very precisely, so what I did was tell the actors how they should move while not to ruining her visual style.

"I shot on the URSA Mini Pro 12K recording in 8K 8:1. The movie was to be uploaded to Instagram, so I used an anamorphic lens and made a 4:3 side-cut [pillars]. If you do a side-cut when using a regular camera, you will lose picture quality greatly. On the other hand, the URSA Mini Pro 12K allows you to film in high resolution, so you don't have to worry about the quality loss."

Loving the unique look of motion picture film, Shigemori planned to recreate that tone with the URSA Mini Pro 12K. "Most digital cameras are set to 800 ISO as the base ISO, however I hardly use the 800 ISO setting as I feel it makes the picture look too digital and kind of boring. I always try to use a higher ISO when shooting in digital and this time I worked in 1600 ISO. I often bring the ISO setting to 3200 to help prevent the image from looking 'too real.' Whether it is film or digital, you need to somehow 'distress' your picture to get an interesting tone.

"That is why I used the anamorphic lens as well. The production company, Tohoku Shinsha, owns the 40mm vintage anamorphic lens, but I don't know which kind. I actually asked TFC Plus, Tohoku Shinha's rental house, but they did not know either. I assume it's a Kowa anamorphic, but we're not 100% sure. You don't get clear focus with the lens, which makes the image a little fuzzy. I like an audience to be imaginative by leaving some fuzziness in the image, so I try not to make my picture look too clear.

"We shot at Yellow Studio in Yokohama. It was a two-day production, including building the set.

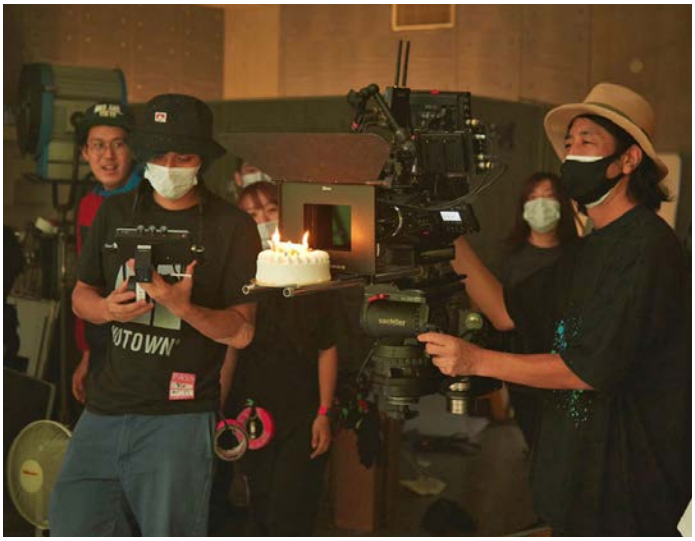
"I shot in very flat lighting for this project, which was unusual to me. I usually like to create more shades when shooting, but this was supposed to be a snowscape in winter so I intentionally used flat lighting. I also used smoke in the studio, which made the image whitish."

Grading was done at the post house Omnibus Japan using DaVinci Resolve Studio. Shigemori explained his goal in color grading: "I wanted to leave the mood and atmosphere acquired from the lighting and smoke effect but still wanted to see each color, so I asked my colorist to grade carefully and bring up more colors. It was unusual to me to make the image a very soft tone, but it came out very nice."

About shooting in Blackmagic RAW, Shigemori said, "At the time of shooting, only a prototype of the 12K camera was available, so the post production could not support 12K yet. That is why I shot in 8K. Even so, I thought a regular computer would not run 8K RAW. I was so surprised how 'light' Blackmagic RAW was when I used it, which was beyond my expectation. While some RAW footage from other digital cameras requires more computer processing power, Blackmagic RAW is really easy to handle."

Search web with "niko ... and winter book 2020" to watch the video.

Toyotaro Shigemori on *niko and ... WINTER BOOK*



Andre Dupuis and Scott Wilson with URSA Mini Pro 12K


Second Camera Operator Aaron Bird

Andre Dupuis and Scott Wilson of Echo Bay Media shot with an URSA Mini Pro 12K, recording Blackmagic RAW, on the documentary series "Arctic Vets." The ten episode series on CBC follows a team of experts who rescue, protect and heal animals in the Canadian Arctic and the veterinarians at Assiniboine Park Conversancy. Assiniboine Park is known for taking care of polar bears, arctic foxes, timberwolves, gray wolves, beluga whales, seals, and more.

Jon Fauer: Please tell us about the job, camera and lenses.

Scott Wilson: We were approached by the production company Entertainment One to shoot Arctic Vets for CBC, here in Canada. The program follows the lives of several veterinarians at the Assiniboine Zoo in Winnipeg. The specialty for them, as the name might suggest, is their expertise in Arctic animals. The Assiniboine Zoo, while not the biggest zoo in Canada, has a specialty niche in Arctic animals. Not the least of which, polar bears, which are all actual rescues from the wild.

Assiniboine is not in the Arctic, is it?

Scott: No, the Assiniboine River in Winnipeg runs through there and is not at all Arctic. But a lot of times Winnipeg is seen as a bit of a gateway to the North, to Churchill on Hudson's Bay, which considered as one of the polar bear capitals of the world. It lies right on the migration route of polar bears.

The series follows the lives of the veterinarians on their trips up North into the Arctic and to Churchill. In season one, they're doing their best to lend expertise to the people up there during the polar bear migration and the interaction, or hopefully the lack thereof, between humans and polar bears.

André and I enjoyed the appeal and adventure of going to some of the further-flung areas of our own country. Churchill had eluded me and had been on my to-do list for a while.

How did you divide up your production roles?

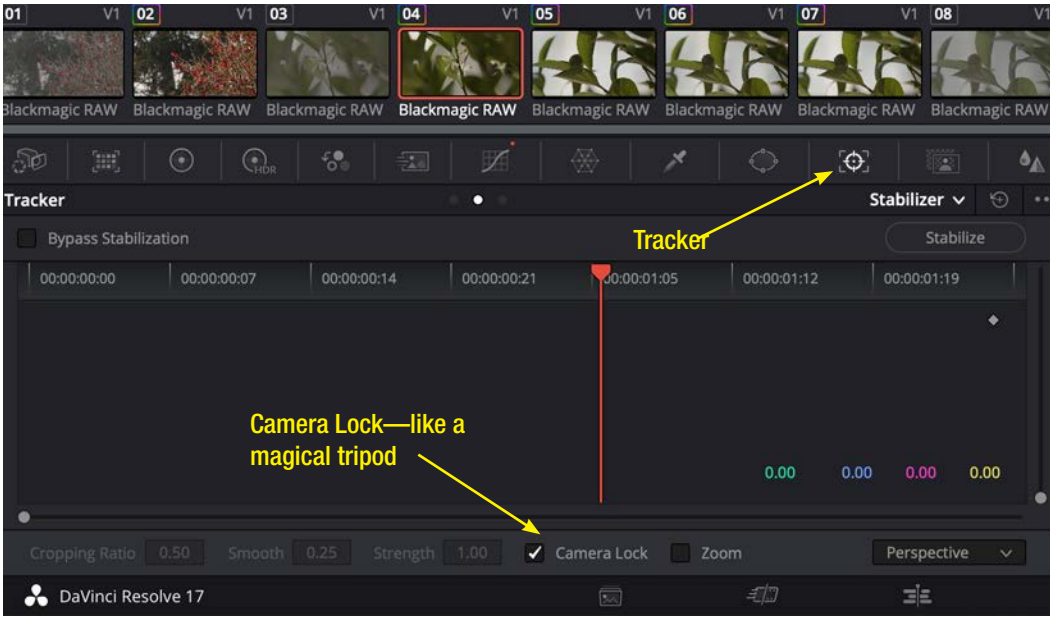
Scott: I was more focused on the A unit in Churchill. But, every time we would travel through Winnipeg to get to Churchill, I had limited interaction with the Assiniboine Zoo. Andre had more interaction with both the A unit and B unit, which was oftentimes shooting simultaneously at the Assiniboine Zoo in Winnipeg as we were up in Churchill.

Andre, would you like to talk about cameras and lenses?

Andre: We had three main cameras for the A unit. Camera A was the Blackmagic URSA Mini Pro 12K, which I'll call the 12K; camera B was the Blackmagic Pocket Cinema Camera 6K, which I'll just refer to as the 6K from now on; camera C was the Pocket 4K. The 12K as our main camera was excellent for its flexibility in terms of shooting; we were shooting in 4K.

As you know, the Blackmagic 12K can give you a full frame 8K or 4K image that's down sampled from the 12K, and there's no pixel binning. It's a really beautiful down-sample. We shot mostly at 4K, but then we would use 8K for specific shots. Say we were doing a shot that potentially needed to have some post stabilization. We would easily just select 8K in the menu and shoot in 8K. If we were shooting an interview, we would have the A camera shoot at 8K so that we could do punch-ins in post.

What was amazing for us, since we were filming polar bears and Arctic foxes, was that we could shoot on our 150-600mm lens at 8K, which would give us both the chance to punch in and to have room for post stabilization. Because up in Churchill, there were days where we were dealing with really high winds, and it didn't matter how good of a tripod we had or how much we tried to buffer the camera from the wind, take off all the microphones and stuff that would add vibration to the shot because the wind would



DaVinci Resolve color page with locations of Tracker button and Camera Lock option.

catch it. Having that flexibility was amazing to be able to shoot, to know that we're shooting in 8K, and have the room to do some post stabilization and get rid of any of this vibration that we're getting in the shot because of the wind.

Which 150-600 zoom lens was it?

Andre: The SIGMA 150-600 F5-6.3 DG OS HSM | S Sport. It's small and light for a zoom lens that goes out to 600mm and it was easy to take with us into these remote areas. It has image stabilization. This lens in combination with shooting 8K on the URSA 12K was great. We were shooting some seals for one of the stories, the wind was just ripping and I was just really nervous because we couldn't get very close to the seals, otherwise they'd spook. And I was nervous because of the wind and I'm like, there's just too much vibration. It wasn't until we went back that evening and with our DIT set up, we loaded in the footage and did some post stabilization and we were able to punch in and the image was still sharp and it was rock solid and I didn't get fired, which was great.

You're using an EF mount? How do you do the post stabilization? Is that in DaVinci Resolve?

Andre: Yes, EF Mount. And we were using the post stabilization in Resolve, which is great.

In Resolve, there's a tracking and stabilization window. You can just click on the shot that you would add color nodes to, and you just hit stabilize, it'll go through and examine the footage and it'll stabilize the footage based on how much shake there is and what it's tracked.

You don't have to put in tracking points?

Andre: No track pinpoints. It'll just stabilize the whole image.

Where is Stabilization in Resolve?

Andre: Go to the color window. Select a shot. Click on the icon that says tracker, it's like a little target. To the right, it says window. Click on the tab that says window, and from the drop-down menu, select stabilizer. Then, just click stabilize. It'll analyze the shot and then automatically stabilize it. At the bottom, you have some things where you can add the cropping ratio. You can add more smoothness, how strong the stabilization is. Then you can choose whether you want perspective, similarity or translation, and that's how it affects the stabilization, how it applies to stabilization.

One really cool thing is camera lock. For certain drone shots, where we were getting beautiful drone shots of polar bears, we were very low to the ground and not only did we have buffeting wind just moving the drone around a little bit, we were also so low that we were getting ground effects, prop wash from the drone. The drone was just wobbling in space and you could see this sort of parallaxing, this motion. In DaVinci Resolve, if you just go camera lock, it looks as though we were standing there on a tripod filming this polar bear. It was awesome.

Thanks for the DaVinci Resolve lesson. Were you shooting in native 12K? Or you were down-rezzing to 8K?

Andre: We were down-rezzing in camera to 4K most of the time, for the majority of the shooting. And then we would go up to 8K just if there was a shot that we knew needed post stabilization, maybe we were shooting outside of a vehicle or hand holding a shot that we could only handle because it's a documentary and we just had to get the shot. We would pump up to 8K so we would have that extra room in post to post stabilize. In interviews for our A camera, we had that ability to punch in that gives the editor that extra angle to be able to punch into a shot and not lose resolution and maintain a 4K image. Then mainly again with the wildlife, we would shoot at 8K, so that we could post stabilize and we could do punch ins. The nice thing about the URSA 12K is when you shoot in 8K or 4K, it is the full sensor, and it is the full 12K pixels with a beautiful down sample to either 8K or 4K. It just improves the sharpness and image quality all around.

That answers a lot of questions that people ask—why do you need so much resolution? And there's the answer, nicely done, but just to play devil's advocate, why not shoot in 12K?

Scott: I think because the post team was going to murder us if we did. And to be honest, in fairness to them, because of COVID,

things were obviously a lot different and the post team was entirely remote instead of an entire post team being together and being able to access one RAID Array under one roof, that sort of thing. This footage now needed to be sent out and remotely dropped to different people. Saving them from making many copies of many hard drives, the post production supervisor, Jonathan, quite rightly said, "I get that you have this new 12K toy to play with, but please be kind to us."

I assume you shot Blackmagic RAW? In constant quality, like last time we spoke?

Scott: Q5 on the Pocket Cinema Cameras and Q3 on the URSA 12K. That's the nice thing about BRAW, it's having that ability. To have that kind of flexibility is really nice.

The file sizes are still reasonable.

Andre: In certain situations, even though the post team was saying, don't shoot any higher data rates, if I was shooting a shot that had a lot of Arctic grass in frame, or if you're shooting sparkling water with the sun setting, and you have all those highlights, or tree foliage, that's where a lower data rate is just going to look chunky. You're going to get macro blocking. Situations like that, I would just bump the data rate up a little bit. Just so it would maintain quality.

Speaking of settings, what was your usual ISO sensitivity?

Andre: We would shoot on the URSA 12K pretty much at 800 ISO. We wouldn't go higher than that because the URSA 12Ks are great and the resolution is great, but over 800, you start getting some noise. In low light, the Pocket Cinema Cameras are just amazing. As the sun set, we would transition to our B and C cameras, which were the Pocket Cinema 6K and the Pocket Cinema 4K. For the URSA 12K, we would stay at around 800 ISO. Sometimes we would even drop down to 400.

But you could still do your night exteriors in low light with a fast lens?

Andre: Yes. Our fastest lens was the Sigma Art 35, which is an F1.4. If we had to go really low light, we put that lens on our Pocket 4K, which had a speed booster on it. That gave us an extra stop and a half of light because it's squeezing the 35mm image down to Micro Four Thirds. And our 4K camera was on the Ronin RS-2 all the time, ready to go at any moment. That lens, I think, ends up being an effective stop of like an F1 with the Speed Booster. Then you can crank that camera to 3,200 ISO, and the noise is fine at 3,200. It was essentially shooting in the dark.

What other lenses did you have for the URSA 12K?

Andre: Most of the lenses were the SIGMA Art series and I love the look of them. I love their bokeh. We had the SIGMA Art 18-35 Zoom, the 24-35 Zoom. For Primes, we had the SIGMA Art 35, 50, and 85. We had a ZEISS 135 F2, which I love, great lens. Then we had the SIGMA 150-600. We had the Canon L 70-200 F2.8. There's nothing yet that I've found to match its range and motion stabilization. We find that even though there's a color shift between Canon and SIGMA, it's not that big of a deal in Resolve to pull that out.

What's the difference?

Andre: Canon to me feels just a little warmer. We shoot color charts and it's so easy to make a quick little LUT to get rid of that or a small correction in post. But the flexibility of that Canon 70-200 lens, shooting handheld on a B camera, the second operator can be picking off detailed shots while I can be wider on the URSA 12K or on the gimbal camera covering the action.

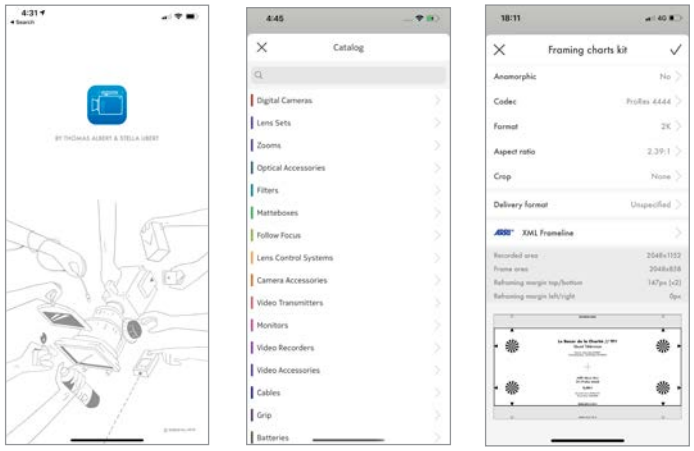
And you're pulling focus just on the lens barrel by eye, right?

Andre: Just pulling focus by eye. And even on the gimbal when I'm operating the Ronin, I pull my own focus.

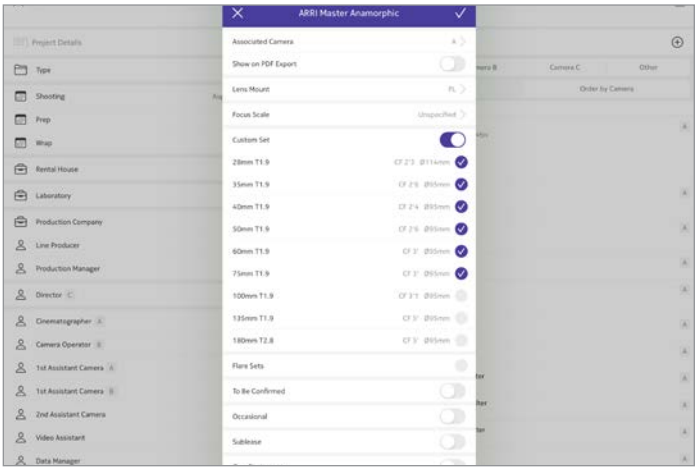
Did you use auto-focus on the URSA 12K?

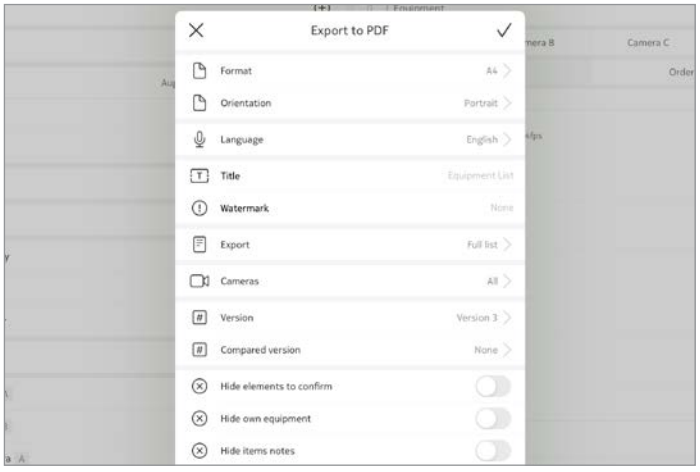
Andre: I haven't used auto focus. I'm just so used to pulling my own focus.

Camlist: Order your Equipment



Above: Camlist for iPhone. Below: Camlist for iPad.





Camlist by DP Stella Libert and AC Thomas Albert is a helpful collaborative app to create and manage the myriad of necessary details that go into ordering a camera package. It has a big catalog of cameras, lenses and accessories that is updated periodically. You can add additional items and make notes for specific camera configurations. Export framing charts and print lens labels directly from the app. Alerts warn of gear incompatibilities in your list and remind you to include essential accessories. Look up the technical specifications of each item directly in the application. If you add equipment to your list for specific dates, Camlist can create reminders in your calendar. A PDF of the equipment list can be saved, printed and sent by email.

Get Camlist for iPhone and iPad: *camlist.fr/en/*

Musashi Optical TL-FFX2

The new TL-FFX2 OptMore 2x Extender from Musashi Optical System Co. doubles the focal length of Full Frame (and Super35) PL-mount lenses.

For example, you might be all the way out on the long end of an Angénieux EZ 1 Zoom (45-135mm T3) and want to go tighter—as Agnès Godard described in her interview in this edition.

The TL-FFX2 2x Extender effectively gives you a 90-270mm T6.0.

(That's a 2-stop light loss.)

The OptMore TL-FFX2 2X Extender is compatible with most Full Frame and Super35 PL mount lenses.

The TL-FFX Extender has 7 multi-coated elements in 4 groups.

Its optical design minimizes optical aberrations.

The body of the FFX2 is anodized aluminum and both PL mounts are stainless steel.

Specificatons: OptMore 2X Extender for Full Frame

- Model: TL-FFX2
- Magnification: 2x
- Maximum Format Coverage: Full Frame / Large Format
- Maximum Sensor Area: 40.91 x 21.60mm
- Maximum Image Diagonal: 46.3mm
- Mounts: PL to PL Mount
- Size: 81mm Maximum Diameter x 66mm Length when mounted
- Made in Japan
- US list price is $5,500

www.musashi-opt.com/optmore-extenders

Teradek Bolt 4K LT MAX

Bolt 4K LT MAX TX (Transmitter) and RX (Receiver) Set

Bolt 4K LT MAX RX (Receiver). 5 antennas.

Bolt 4K LT MAX TX (Transmitter). 2 antennas.

"Video Village is a dot on the horizon. The walkie barks for a quick reset. The sun is setting."

That's how Teradek introduces their new Bolt 4K LT MAX wireless video system. This good and terse writing style catches your imagination. It follows the 1917 Kansas City Star Style Sheet used by Hemingway:

- Use short sentences. Use short first paragraphs.
- Use vigorous English. Be positive, not negative.
- Never use old slang. Slang to be enjoyable must be fresh.
- For example, in 2021, Hemingway would never have written: "Leveraging an end-to-end workflow solution for cloud deliverables of scalable assets in a pipeline backbone ecosystem."

And so Teradek's new Bolt 4K LT MAX sends and receives 4K, 10-bit HDR, zero-delay video from camera to crew and video village over a line-of-sight distance of more than 5,000 feet, in a lighter, smaller, less power-hungry, more affordable 4K wireless video transmitter and receiver system,

The Bolt 4K LT MAX has a third-generation Amimon 4K chipset inside. It works with the full Bolt 4K lineup: Bolt 4K, Bolt 4K LT, and Bolt 4K Monitor Modules.

Greg Smokler, General Manager of Cine Products at Creative Solutions, said, "The Bolt 4K LT line is the on-ramp to 4K and HDR on-set monitoring, but it has been missing an ultra long-range powerhouse," said "We've taken the pocket-sized envelope of the 4K LT and packed in the incredible long-range performance of the full Bolt 4K MAX, resulting in an excellent balance of size and performance."

Teradek Bolt 4K LT MAX

Above: Bolt 4K LT MAX TX (Transmitter) on ALEXA Mini

Bolt 4K LT MAX System

- SDI: 4:2:2, 10-bit; HDMI: RGB 4:4:4, 8-bit
- 4K 23.98/24/25/29.97/30 fps (HDMI only)
- up to 1080p23.98/24/25/29.97/30/50/59.94/60 (SDI)

Bolt 4K LT MAX TX (Transmitter)

- Video Inputs: 3G-SDI BNC; HDMI 1.4b Type-A
- Video Output: 3G-SDI BNC
- SDI transmits metadata, timecode, and start/stop flags from most camera manufacturers.
- Power: 6-28 VDC; Gold Mount or V-Mount battery; up to 9 watts.
- Dimensions: 2.4” x 4.1” x 1.3” (60 x 103 x 33mm)
- Weight: 7.3 oz (206 g)

Bolt 4K LT MAX RX (Receiver)

- Video Output: 3G-SDI BNC; HDMI 1.4b Type-A
- Dimensions: 4.8” x 3.7” x 1” (122 x 94 x 27mm)
- Weight: 10.3 oz (292 g)
- Power Input: 6-28 VDC; Gold Mount or V-Mount battery; up to 11 watts.

Bolt Manager

Bolt 4K LT MAX connects to Android and iOS devices via the Bolt App for pairing, configuration and connectivity status.

Below: Bolt 4K LT MAX RX (Receiver) connected to SmallHD Cine 13” 4K High-Bright Monitor

Teradek Bolt 4K Monitor Module TX

Teradek Bolt 4K Monitor Module TX (Transmitter) attached to SmallHD Cine 7 Monitor, on an ARRI ALEXA Mini, provides onboard camera monitoring, Bolt 4K wireless video transmission to Bolt 4K receivers, as well as wired and wireless camera control of ALEXA camera functions including start/stop.

Teradek Bolt 4K Monitor Module TX

Once Upon a Time in Teradek

Once upon a time, Teradek Bolt Transmitters (TX) and Receivers (RX) were separate, self-contained entities. You connected them to video monitors with cables. Later, SmallHD packaged some monitors with internal receivers. Now, Teradek offers the Bolt 4K Monitor Module family. It's a receiver or transmitter module that attaches to the rear of a SmallHD Smart 7 Touchscreen Monitor with 3 screws. This reduces cable clutter and modular makes upgrades easier. Since there are several permutations, let's narrow the choices to Cine 7 Monitors and ARRI ALEXA Minis.

Bolt 4K Monitor Module TX Camera Control Sandwich

Opposite page: Teradek's new Bolt 4K Monitor Module TX is sandwiched to the back of a SmallHD Cine 7 Monitor that is sitting on top of an ALEXA Mini. This lets you monitor video, transmit video around the set, and also control the ARRI ALEXA Mini (as well as Mini LF or AMIRA camera). You can start/stop recording, adjust frame rate, ISO, shutter angle, white balance and change the camera's internal NDs.

Why would you want to do that? Don't these ARRIs have perfectly good menu screens on their swing-out viewfinder display? Well, yes, but the touchscreen Cine7 display is bigger and gives you a GUI choice so, for example, the camera operator can continue to line up a shot while the AC or DIT messes with the menus.

Connections

Here are the steps to connect your Monitor Module, Cine 7 for hard-wire control of an ALEXA Mini.

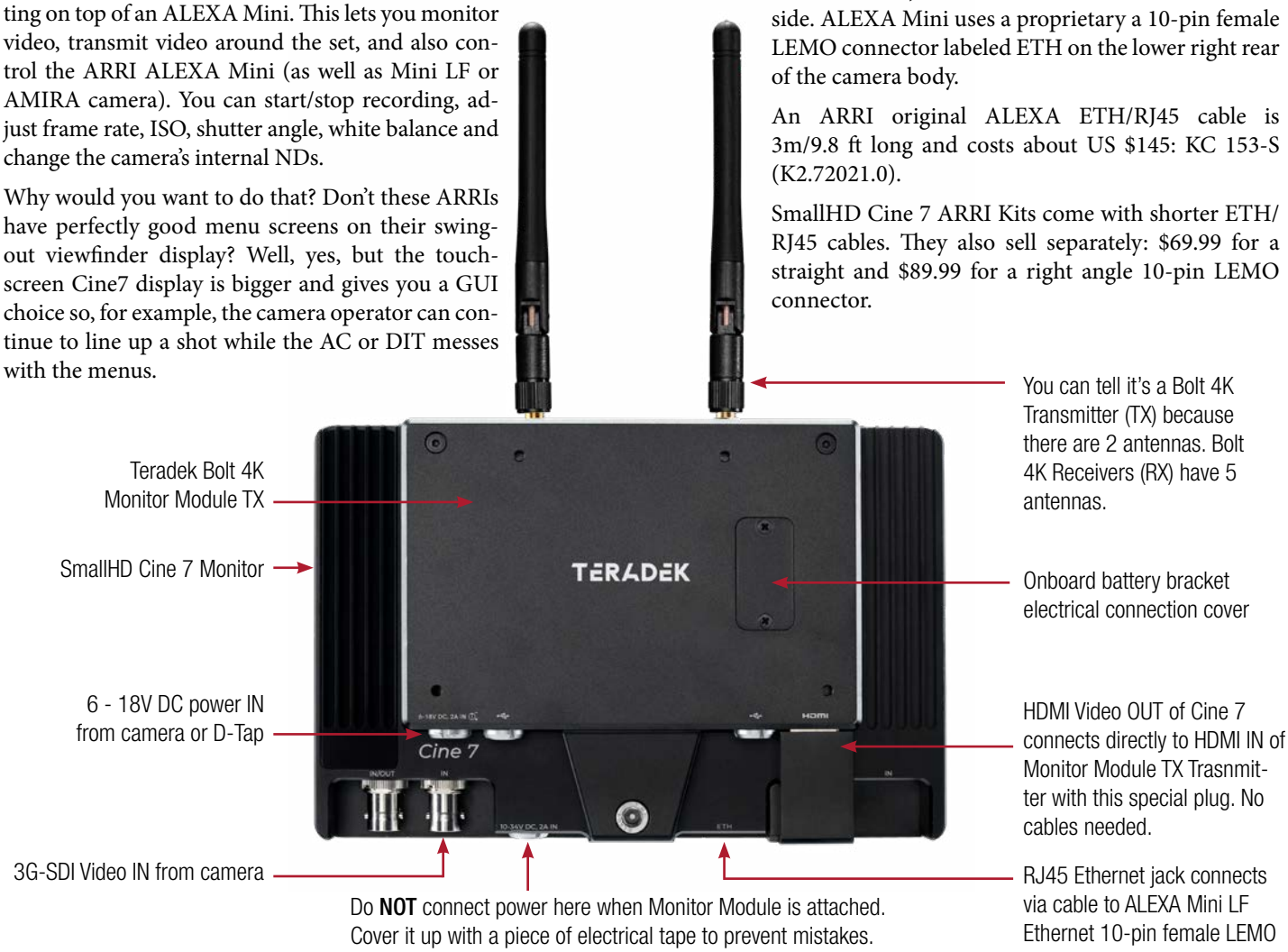
1. POWER. Connect the Monitor Module TX **6-18V DC IN** jack to the Mini LF's 12V 2-pin LEMO or a D-Tap. Because the Cine 7 gets its power directly from the Monitor Module, do NOT connect to its 10-34V receptacle. You can also attach a bracket to the back of the Monitor Module for a Gold Mount or V-Mount battery.

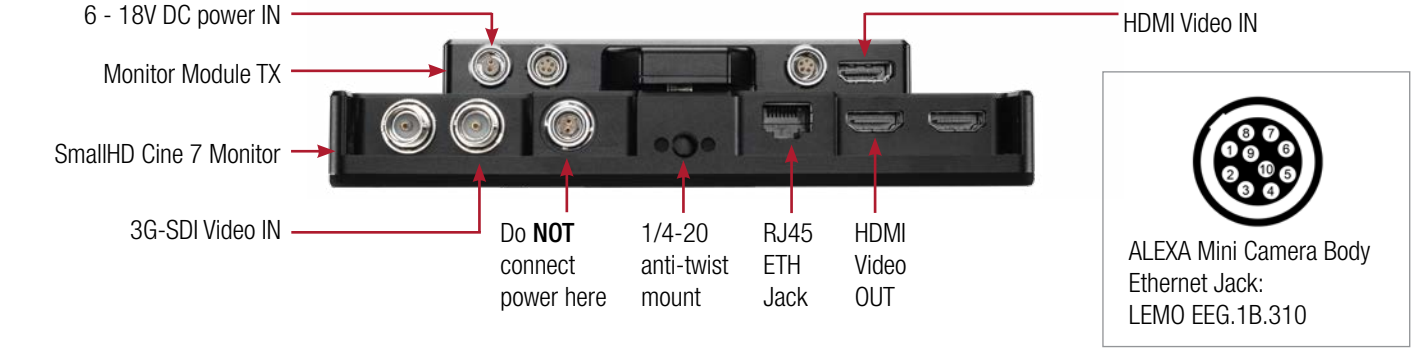
2. VIDEO. Connect the SDI output of the ALEXA Mini to the SDI IN of the Cine 7.

3. CAMERA CONTROL. The Monitor Module TX + Cine 7 package connects to the ALEXA Mini by ethernet cable. The Cine 7 has a standard RJ45 ethernet connector on its bottom side. ALEXA Mini uses a proprietary a 10-pin female LEMO connector labeled ETH on the lower right rear of the camera body.

An ARRI original ALEXA ETH/RJ45 cable is 3m/9.8 ft long and costs about US $145: KC 153-S (K2.72021.0).

SmallHD Cine 7 ARRI Kits come with shorter ETH/RJ45 cables. They also sell separately: $69.99 for a straight and $89.99 for a right angle 10-pin LEMO connector.





ALEXA Mini Camera Body Ethernet Jack: LEMO EEG.1B.310

Teradek Bolt 4K Monitor Module 750 TX + RX Wireless Camera Control

Above: Focus Puller using a Teradek RT Wireless Lens Control with Cine 7 + Bolt 4K Monitor Module RX (Receiver). Note the REC and camera control overlays on the monitor. ALEXA Mini with Cine 7 + Bolt Monitor Module TX (Transmitter) in background.

Wireless Camera Control

Bolt 4K Monitor Modules bring **wireless** camera control to the set or location. To do this, you need two Cine 7 monitors, one Bolt 4K Monitor Module TX (Transmitter), one Bolt 4K Monitor Module RX (Receiver), and one camera control license.

The Monitor Module TX + Cine 7 remains hard-wired to the camera, as we discussed on the previous page.

The second Cine 7 has a Monitor Module RX attached. This is the roaming, remote receiver+monitor for real-time video, for perambulating Focus Pullers, DPs and DITs. As such, they can not only view video but also control camera settings.

Back Channel for Wireless Camera Control

But don't you need a TX (Transmitter) to control the camera? How can an RX (Receiver) do this?

The on-camera Cine 7 + Monitor Module TX transmits video and camera data to the roaming Cine 7 + Monitor Module RX—up to 750 feet.

The peregrinating Cine 7 + Monitor Module RX is able to work as a wireless camera controller it also has a back channel that transmits any changes you make to the camera settings back to the TX Module. Essentially, TX and RX "talk" to each other. It also enables wireless, remote start/stop.

With this setup of dueling devices, the camera can be controlled from the onboard Cine 7 or the perambulating Cine 7.

Greg Smokler, GM of Cine Products at Creative Solutions explained, "The launch of the Bolt 4K Monitor Module TX is the culmination of a multi-year R&D effort to completely overhaul our Bolt wireless system based around our new 4K Chipset."

The Bolt 4K Monitor Module TX has a range up to 750 feet. It is completely compatible with the entire Bolt 4K line of products. Longer range 1500-ft TX/RX models, RED KOMODO and DSMC2 wireless controls are coming later this summer.

Teradek Bolt 4K Monitor Module RX (Receiver) on the back of a SmallHD Cine 7 Monitor

Larry Thorpe Takes Off

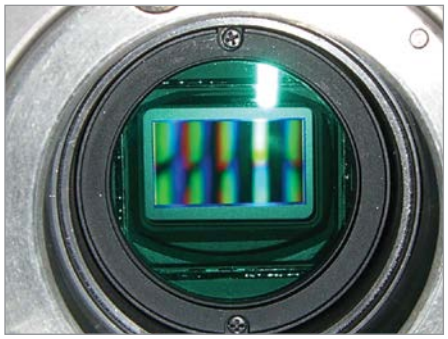
Above left: Canon Senior Fellow Larry Thorpe with his Charles F. Jenkins EMMY Lifetime Achievement Award on Jan 8, 2015 at the 66th Primetime Emmy Engineering Awards ceremony in Las Vegas. Above right: Larry Thorpe model widely distributed at the event.

Introduction

Following a career that included BBC, RCA and Sony, Laurence J. Thorpe joined Canon USA Inc. in 2004 as National Marketing Executive for Broadcast & Communications. After 60 years in the business, to the day, Larry retired on April 30, 2021.

Larry has been a friend and mentor to Film and Digital Times, having contributed scores of beautifully-written pages that illuminated the intricacies of Canon technology. Larry has held audiences spellbound at NAB and other gatherings with articulate lectures, quick wit, clear explanations and great enthusiasm. He has a unique ability to elicit joyful understanding of complex topics. Above all was a masterful vocabulary. Larry eschewed technical jargon. He would never say "leverage" but rather "mobilize," as in "mobilize resolution." Never "workflow solution," but rather something like "marry the PL mount."

Larry first appeared in the **June 2006** fledgling 16-page FDTimes

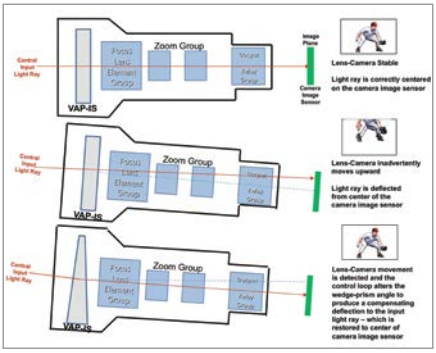


Issue 6, with his article "One Chip or Three Chips."

He wrote: "The new digital Super35 format cameras are based upon physical and optical principles long established by 35mm motion picture film cameras and associated optics. Indeed, these film-style digital cameras specifically seek to emulate their film counterparts as closely as possible — especially in the ability to mount existing 35mm primes and zoom lenses and duplicate all of the optical behavior and characteristics in the digital domain. The shallow depth of field is one of the most notable."

This was not obvious to everyone in these early digital days. Panavision's Genesis single CCD Super35 camera had recently been introduced in 2005. A limited quantity of Arriflex D-20 single CMOS S35 cameras arrived in November 2005. The RED ONE launched as pre-order serial numbers engraved on a metal component at NAB in April 2006 and then in person in 2007. Sony F35 would not appear until August 2008; Canon 5D Mark II in November 2008; ARRI ALEXA in April 2010 and Canon C300 in November 2011.

In **December 2010**, Larry wrote an FDTimes article explaining



the mysteries of optical image stabilization: "The Variable-Angle Prism is a truly ingenious innovation consisting of two precision glass plates mounted in a hermetically sealed arrangement that contains a special high-refractive index liquid.

The housing has a flexible bellows made of a multi-plastic material. The bellows, the liquid, the technique of filling and hermetically sealing the assembly—all constituted a design challenge spanning some years."

December 2011, following the Hollywood launch of Cinema EOS a month earlier: "Central to the Canon EOS C300 camera is a totally new Super 35mm CMOS image sensor with full 4K sampling. The image sensor design was specifically optimized to emulate, to the degree possible, the superb imaging attributes of 35mm motion picture film—that include high sharpness, excellent tonal and color reproduction, a wide exposure latitude, and high exposure index".

In April 2018, Larry introduced the C700 FF to FDTimes readers: "To accomplish on-board image capture, the Canon C700 FF implements a very unique 'Over-Sampling 4K Processing' algorithm that effectively mobilizes the significant resolution of the 5.9K sensor to produce outstanding image quality."

November 2018 "The RF 50mm f/1.2 L USM is a striking example of the powerful new flexibility offered by the new RF mount in achieving f/1.2 in a compact lens. To have gotten this level of optical quality in an f/1.2 design with the standard EF mount would have entailed a significantly larger lens."

April 2019: "The recent move to Full Frame sensors has changed the landscape. And so, we figured it was time to think about what Canon might offer next with a new look in a set of prime lenses. The time had come to marry the PL mount with new state of the art cine primes that might add a unique creativity to all of those wonderful new Full Frame digital cine cameras. Our new Sumire Primes are the results of those efforts."

Interview

Jon Fauer: Do we begin this portrait of Laurence J. Thorpe as a young man by recalling James Joyce and his *Portrait of the Artist as a Young Man*: "Once upon a time and a very good time it was..."

Larry Thorpe: My story begins with a little Irish boy back in the 1940s in Dublin, Ireland. I lived there until I graduated from school, and then two weeks later I skipped over to London to the begin work at the BBC at age 21.

Were your parents in the business as well?

My father was the radar engineer at Dublin Airport.

So, it does run in the family.

He instilled the instincts for engineering, no doubt.

When did you first have an interest in electronics, engineering, radio and television?

As a young person and in my teens, I built crystal wireless radio sets that to listen to different stations with earphones. We didn't have television in Ireland back in those days, so I didn't have much exposure to television except to read about this awesome new medium.

You are famous for Larry Thorpe White Papers. Where did you learn to write so well?

High school. The Irish had quite a reputation for good schools. We were raised by the Christian Brothers who were very severe and they pummeled stuff into us. We learned writing there. And then, at the College of Technology in Dublin, where I was doing electronic engineering, we had a Jesuit chaplain who had us for three hours every Friday afternoon for four years. He said, "I'm here to open your little minds—you guys who are being constricted by all this technology." And he taught us a great deal about writing and public speaking. That stood me in good stead in the ensuing years. We studied philosophy, ethics and cosmology with him. It was quite a remarkable thing for an engineering school.

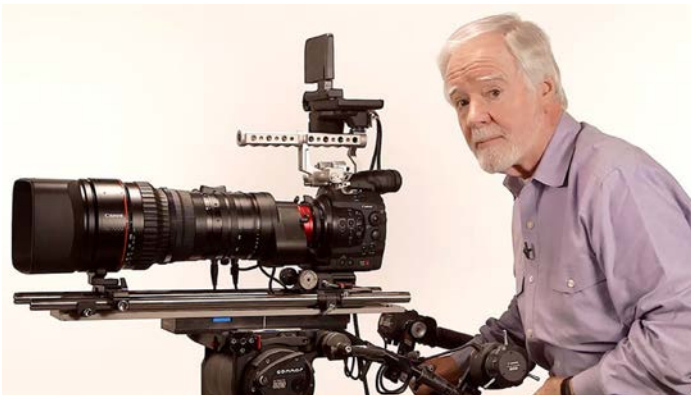
When did your beard first appear? Early photos do not show one.

1969. I was in my third year at RCA and they had hired a lot of Europeans because American engineers were going into aerospace and they had to find television broadcast engineers overseas. There were a lot of us in Camden, New Jersey. One day, there was a bet made by an English colleague and engineer who bet he could grow an RAF mustache quicker than I could grow my first beard. I was in the elevator one day at RCA Camden and a senior executive climbed aboard that elevator, took a look at me and said, "Get rid of that beard." I remember stomping out, saying, "I will never get rid of that beard." And I never did.

Moving to your years at Canon—how did you wind up there?

Through a relationship. Back in my RCA days in the 70s and 80s, and then my Sony days, I became good friends with Toru Yamasaki, a top executive at Canon. When I retired from Sony in December 2003, he called to congratulate me and ask what I would do. I said, "I'm going to get another job." He said, "Could we have dinner?" We had dinner and he asked if I might be willing to join Canon for a couple of years to help him in marketing their broadcast lenses. I joined in 2004 for a couple of years, and stayed for 17 years.

Advancing to Distinguished Senior Fellow at Canon.



Left: June 2008. Larry Thorpe, National Marketing Executive of at Canon U.S.A. Broadcast and Communications Division, showing a Digisuper broadcast lens with a trackable focus controller.

Above: Larry with Canon CINE-SERVO 50-1000mm T5.0-8.9, introduced in October 2014.

It was during that time that the Cinema EOS line was born, beginning 2011, when we made the formal announcement at Paramount Studios on November 3rd. I retained activity in the broadcast world, but I was greatly energized to now include Cinema EOS cameras, optics and reference displays.

It all really kicked off with the famous 5D Mark II. It was the first camera in the EOS still camera line to provide video recording functions. That was one spark for interest in a cinema line. There were entities at Canon in Japan that who were thinking, "Maybe the time has come." The Canon USA team nudged them. We had a lot of to and fro with them and then we started to flesh out the approach we should take, and they listened. That was the spring board. We had the technologies of optics, sensors and processors. They built it and that was the EOS C300, and the rest is history. You were there for the great inauguration in 2011.

That was a spectacular launch at Paramount Studios in November 2011. What was your favorite project in the time you worked at Canon?

My favorite was all that prepping for the Cinema EOS, the launch, the immersion in the marketplace and then the ongoing escalating dialogue with Japan about what's next. That led to the C300 Mark II, the C700, our first entry into an A camera, and then more recently the famous C500 Mark II and C300 Mark III. Many very interesting lenses stepped into the full frame format recently. Separately, I remained intensely interested in 4K rolling out in the 2/3rd inch domain. These broadcast lenses were getting longer and longer and their optical performance were increasing; we came out with the 122:1 zoom lens. That's just extraordinary technology from a great team of designers on those lenses.

And the Canon CINE-SERVO 50-1000mm T5.0-8.9?

That was the Super35 format cine zoom lens developed by the broadcast group. What is remarkable about that lens is the size and weight. Here you had a 20-1 zoom and a 1.5x range extender, and the weight came in at under 15 pounds and the length under 16 inches, which is just extraordinary. And born of all that, they developed our Super35 Canon CINE-SERVO 25-250mm T2.95, a very sweet range in the cinema world. Weighing about 7 pounds, it is less than half the weight of its competition.

What do you think was the reason for the great success of the C300? It had an odd shape at the time for a cine camera.

Yes. But that shape was something we spent a great amount of time talking about. Some of our colleagues at Canon felt very strongly that we should acknowledge the way people hold DSLR cameras. "Just be different and realize that we make cameras largely for handholding," they said. It can, of course, be tripod mounted, but the driving force was to make it very compact. It won the hearts and minds of people in the documentary world. The broadcasters started to use it as well. The C300 was really quite a hit.

When did your famous White Papers begin?

I started doing White Papers on the broadcast lenses shortly after I joined Canon.

Why is it called a White Paper?

That goes way back. [According to Stanford Law School, the term originated when government papers were coded by color to indicate distribution, with white designated for public access.] White Papers generally go on the technology side. It's a paper to explain the technical rationale behind the new product, its underlying technologies, and technical performance specifications rather than all the traditional marketing specifications and operational specifications you find in the product brochures. You outline the underlying technologies of optics, sensors, processors, recording codecs etc., and then leave the product brochures to go into all of the more practical details of the operations side and specifications.

Is there a White Paper about the official date on which you took off to begin your next "career"?

I took leave of this career on April 30, 2021. That was my last day with Canon. There's a nicety about my first day of retirement, Saturday, May 1st, 2021. I started at the BBC on May 1st, 1961. So, I've had a precise, to the day, 60-year career. The engineer in me said, "That's a tidy way of doing it."

That is a very tidy way to say, "It's a wrap." Somehow, I think you'll find something else to do when you grow up.

A few people have asked me what am I going to do for my second career. It's hard enough to let go. It is with real, real mixed emotions that I'm suddenly stopping, but I just decided it was the right thing to do. I'll keep busy. As my wife and I are both from Ireland, we have gone there at least twice a year for the last 60 years. We have a lot of family, all of whom have done very well

Canon Senior Fellow Larry Thorpe with his Charles F. Jenkins EMMY on Jan 8, 2015 at the 66th Primetime Emmy Engineering Awards ceremony in Las Vegas, with his wife Mary Thorpe and colleagues from Canon.

and all of whom have beautiful homes, so we hop from home to home between her family and my family.

If you were to look back 60 years, how would you say the industry has changed?

Dramatically. I was asked to give a keynote speech by Hearst Broadcasting in December 2019 in Florida. They specifically asked, because of my venerable age, would I do a keynote on all that I've seen in my 60 years. I started with the BBC and the EMI and Marconi cameras. I showed some of the things we were designing. I was in a designs department at the BBC designing broadcast studio equipment. And then, I marched them the RCA years, from the big 4-tube 4½- inch image orthicon when I arrived there and how that migrated to the 30mm plumbicon and the 2/3-inch.

Then I marched all the way through the Sony, all the formats, the Betacam, Betacam SP, Digital Betacam, HD, and the migration of HD into digital cinematography. It's an interesting narrative. Certainly, high definition took almost 20 years to get sensibly packaged and priced. When we started in HD with pickup tubes, they were just pushing the limits of imaging and recording. You had huge, very expensive equipment. And then we had the arrival of the CCD and the solid-state recording that we have today.

So many formats have come and gone in that time.

Those were the days of the great format wars as we used to call them.

Where are we heading next?

You can't stop the march. We may have views on things like 4K and 8K, but they're unstoppable. I think 4K was slowed up a little bit here because high dynamic range and wide color gamut suddenly loomed very large because people could see that across the living room on any size of set. Accordingly, broadcasters have become very enamored with 1080p HDR wide color gamut while at the same time they're all experimenting with 4K. Indeed, many have added 4K productions even though they down-convert to 1080, which is what's within the contemporary digital transmission capability. In high-end production, of course, it's migrated largely to Super35 and Full Frame for episodic television and, of course, motion pictures. Now, we're seeing a very interesting move just recently in the last six months of the broadcasters with their 2/3-inch cameras and lenses covering major sporting events working alongside Full Frame cameras. Some are mirrorless DSLRs, and some of them are professional cinema cameras.

We are in there with our Canon C500 Mark II, especially when they want to get into the flurry of activity at an event and "up close and personal" with the key players. We now see de-focused backgrounds in sports, and it's taken off like wildfire. All of the recent events have had that. It looks beautiful. I think you're going to see imaging broaden. 2/3-inch will remain because that allows you to have huge long lens zooms at sensible sizes. The 2/3-inch 4K capability is well established in the cameras and optics. 8K is the big debate. It's very active in Japan and China, but so far it is being ignored by US broadcasters except a small number of 8K cameras that they use to do wide angle shots so they can then do digital zooming down to HD raster to show whether a player's foot is on the line for the replay.

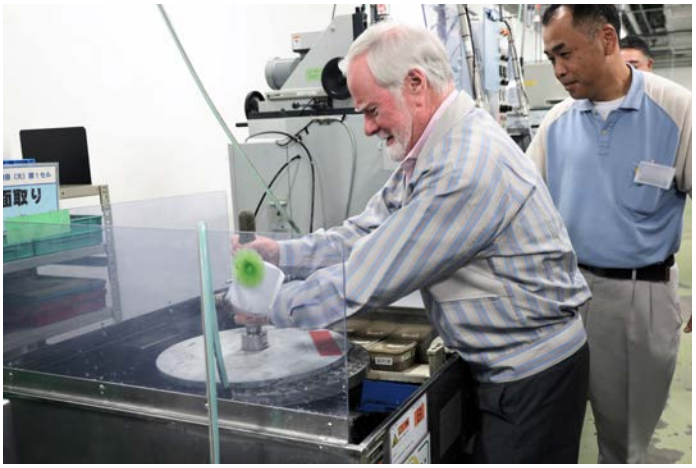
I saw that you have a number of patents.

They were in my RCA years. I have 10 patents; 6 of them are shared with others because it was a team design effort, and then I have 4 that are under my name for things that I have developed.

I enjoyed going to Japan with you a couple of times to visit Canon. Those were great trips.

Yes, they were. We did a lot of walking.

November 2018. Larry Thorpe and Jon Fauer at Canon's Utsunomiya lens factory to see development of Sumire Prime lenses.



Above: Larry smoothing a large lens element. Canon lens precision standards are strict. If this lens were made to a diameter the size of a soccer stadium, precision of the curvature would be within 30 microns.

Below: NDAs are also strict. Was Larry administering the "NDA by fugu" as we retired to Asuka restaurant in Utsunomiya that evening? Larry reminded me that the actual worldwide Sumire Prime launch was four months hence. Swimming in a pool by the entrance were fugu, the notorious fish carrying a fatal neurotoxin one thousand times more potent than cyanide. Larry and the Canon team explained that Japanese Fugu chefs undergo years of training and must pass rigorous exams almost as tough as those administered to Canon Lens Meisters.

I remember walking down Marunouchi Avenue in Tokyo in search of a Japanese whisky tasting place.

We found it.

And in Kyoto you introduced me to Yamazaki 12-year chilled with a perfectly round ice ball.

If we look into crystal balls, not ice balls, do you think the cinema industry will trend totally towards Full Frame? Or, do you think we'll continue to have a hybrid of Full Frame and Super35/APS-C? Canon R Series mirrorless cameras so far have all been Full Frame. And yet, Canon's first RF mount cine camera, C70, is Super35.

Well, certainly, we planned for the duality. The Super35 format is so hugely established worldwide. There is a colossal inventory of Super 35mm lenses, Prime, Zooms, etc. And there is great affection for that format. We just think that duality, at least for the foreseeable future, is pretty solid. And that's why, in the last year and a half, we brought out the C500 Mark II Full Frame, C300 Mark III Super35 and C70 Super35 cameras.

I was influenced by your White Paper about the advantages of short flange focal depth mirrorless cameras.

That short flange back has all the advantages of getting closer to the sensor and having large rear optical elements. You can see it in the RF lenses that Canon has rolled out for the R Series cameras. They're remarkable. We dipped our toe in the water with the C70, our most recent cine camera with an RF mount. Reactions have been very positive.

You've been a Senior Fellow at Canon for how long? And what is a Senior Fellow?

Since 2012. As to what is a Senior Fellow, I remember my wife talking to her sister in Ireland back then. She said, "Oh, by the way, Larry has just been made a Senior Fellow." And the sister said, "Hey, we call them old fellows over here."

Anyway, at Canon it's a position where you're a resource. I'm there to help the salespeople with technical matters. I went on a lot of trips with salespeople to meet customers, to help participate with marketing on strategies and implementation of the assets, to write White Papers because I've got more time than most other people to write White Papers, and to also consult with Japan. I've made a number of trips during those years to Japan to consult with my colleagues there. I worked with many of the technical field people who are out there with the lenses and the cameras and I work with Canon Burbank. So, Senior Fellowship stretched across a lot of things.

When's your next trip?

We have plans to visit children, grandchildren, family and friends every month. In mid-July we take a granddaughter on an adventure trip in the San Juan Islands in Washington State.

Fabulous. I look forward to visiting Japan with you again to celebrate your successes and continue our search for that perfect beverage with optically clear ice spheres. Congratulations.

Curt Schaller. June 2009.

Michiyo Funayama in the artemis booth at Showbiz Expo NY. 1998.

I first met Curt O. Schaller, BVK, SOA, in 1998. It was his first Showbiz Expo in New York. His booth was bare: no carpet, no electric, probably no sign. Michiyo Funayama, Steadicam agent from Tokyo was taking pictures (above right). I thought perhaps Curt was a Leica representative, because an M6 seemed permanently affixed to his face. (Curt is an accomplished still photographer and Leica fanatic.)

Within the booth, there was a camera stabilizer with a bright gray finish. This was his Ur-artemis.

That's artemis with the a lowercase "a" that makes it difficult to begin a sentence, as with cmotion and sachtler, but not ARRI.

So why in the world did the world need another camera stabilizer?

Ever since Garrett Brown, ASC, invented the Steadicam and Cinema Products first released working models in 1975, the camera operators who used them were a very innovative bunch. Steadicams almost cried out to be customized, modified and adapted to the individual styles of those who operated.

Of course, the "guiltiest" of these was Garrett himself, who not only was the "A" list Steadicam Operator on major shows (*Bound for Glory, Marathon Man, Rocky, The Shining*), but also kept on innovating. In between jobs, he was a Pied Piper Rock Star, constantly conducting classes and attracting a great cadre of talented new Steadicam Operators.

One of these superstars of stabilization was Curt O. Schaller in Munich. Over time, he figured out ways to make the vest more comfortable and form-fitting, the batteries longer-lasting and hot-swappable and the cabling HD-SDI compatible. And that is how artemis started.

The story really began at the Montreux 1996 trade show where Curt met Transvideo President Jacques Delacoux. Curt had his first prototype and Jacques showed him to the first Transvideo Rainbow Monitor. "It was the first flat panel monitor at a time when most Steadicam operators used bright green CRT displays and if it wasn't green, it wasn't good," said Curt. "The relationship with Jacques and his monitors was win-win from the beginning."

Curt started out working as a camera assistant at Bavaria Film Studios in 1984 in Munich. From 1988, he was shooting international documentaries, TV dramas and comedy series. He grew tired of handheld, found the tripod boring, the dolly too big. In 1994, a German DP and first generation Steadicam Operator coached him on the Steadicam 2 and gave him an old vest. Curt explained, "There was one problem. I'm a small, skinny operator and I didn't fit into the vest. I needed a lighter and smaller rig. So I started playing around with bits and pieces and eventually made a complete unit, as did George Paddock in the US.

"I was shooting ENG and film at that time. If you were shooting film, you used the film version of Steadicam. Video required the EFP version. I wanted something to do both: to balance a film camera with magazine or a TV camera with a zoom lens. It would be good to be modular, come apart, fit into one Pelican case. Also, the Steadicam used Imperial screws and fittings and you had to go to the Harley Davidson store to get those in Germany. I wanted metric screws.

"In 2000, Sachtler asked me to join their company in Munich. They made tripods and they wanted something different. At NAB in April 2001, we introduced sachtler artemis with an already-patented gimbal, an HD wiring harness, tuning and dynamic balance to accept almost any camera at any weight. This was the first stabilizer with 3 video signal wiring for HD RGB. You could switch from SD to HD and 24 to 12 volts. The artemis system got HD SDI wiring soon after. This was important for the Japanese market, where I had visited NHK in 2002.

"Vitec took over Sachtler management. I learned a lot from the English designers and engineers working at Vinten headquarters in Bury St. Edmonds. I flew there every two weeks. I joined ARRI in 2016 when they acquired the artemis line. We have had a good run; it's been a good year. I'm happy to keep the business running."

Curt is hard to miss at trade shows. When they return, you can identify him as the man who appears to be a Leica street photographer among the exhibits. His other signature characteristic is the way he almost appears to be like a bespoke tailor in the way he fits camera operators with the highly adjustable artemis vest and adjustable components.

Curt Schaller at ARRI 2021

2008. artemis carbon fiber vest modular 7-segment design.

2010. Curt Schaller with ALEXA on artemis Cine HD Pro stabilizer system from Sachtler, with ACT2 Vest, artemis ACT2 Spring Arm, Transvideo CineMonitorHD 6" SBL, and Anton/Bauer Dionic-HC Li-Ion batteries.

2008. RED ONE on artemis with Transvideo monitor.

2016. Curt Schaller and Jessica Lopez with ARRI artemis Trinity.

20 years of artemis camera stabilizer systems

Curt O. Schaller, BVK, SOA dancing with TRINITY. Photo by Yves Krier.

by Mark Hope-Jones

In 2021, artemis celebrates 20 years in the field of camera stabilization. For the past five of those 20 years, artemis has been part of the ARRI product family, advancing new technology and being used by some of the world's top filmmakers. The flagship product is TRINITY, a 5-axis hybrid camera stabilizer that combines classic mechanical design with advanced active tilt-and-roll axis electronic stabilization. Complementing TRINITY are artemis vests and spring arms—all part of a complete and ever-growing system.

The inventor of artemis is Curt O. Schaller, BVK, SOA, who is now Product Manager for Camera Stabilizer Systems at ARRI in Munich. It all began in 1998 when Curt was tinkering with his first artemis model and trying to generate interest in the industry. A key moment came when he took his handiwork to Showbiz Expo in New York that year, and was approached by Michiyo Funayama, who today, by a twist of fate, also works for ARRI as a Local Business Development Manager at ARRI Japan.

"It was a great turning point in my life when I talked to Curt at his small booth at Showbiz Expo," said Michiyo. "I convinced him to bring artemis to Japan, partly because the vest was able to fit the smaller body frames of Asian operators, and partly because all the parts were metric, making it easier to service in Japan—American stabilizers offered neither of these advantages. Curt has always listened to operators, focusing on how usability and service could be done quickly and simply. The fact that TRINITY is now recognized worldwide, with artemis as its foundation, is a testament to his great work."

In 2000 artemis was acquired by the Sachtler Corporation, based in Munich. With the help of Sachtler engineers, the artemis system was made ready for a full market launch at NAB 2001. It was a complete system of arm, vest, and rig, manufactured in Europe. The breakthrough was that it was the first stabilizer designed for HD digital cinematography, using a patented HD-SDI wiring loom. Efficient battery management was critical, since an HD camera drew around four times the power of a 16 mm film camera.

This HD capability, as well as the attributes Michiyo had recognized at Showbiz, helped artemis establish itself in the Japanese broadcast market, which was at the forefront of HD capture. In collaboration with Japanese broadcaster NHK, artemis rigs were used at the 2004 Olympic Games in Athens.

That same year, with the system gaining greater traction in Europe, a DP/camera operator named Igor Savatovic took notice: "In 2004 I went to IBC to buy my first big stabilizer rig," he said. "I saw Curt at his booth with the artemis and asked if I could try it out, and immediately he started putting the vest on me. The thing I remember is that he completely disassembled it first, and then adjusted it strap by strap as he helped me put it on. Nobody else had done that before, and for the first time in my life I felt completely comfortable carrying a rig.

"So, I bought the artemis and it still works well today. I stayed in touch with Curt and would call him a friend; he has introduced so many new and useful innovations for operators. That's what makes artemis stand out—not just its modularity and ease of use, but it is a system that has been regularly updated over the years. It was the first rig to be designed for HD-SDI, the first with hot-

Igor Savatovic with TRINITY.

Frédéric Chamberland, SOC with an early model artemis.

swap batteries, the first to use carbon fiber."

Reflecting on these incremental technological improvements, Curt said, "All of this was only possible in a team and with the support of other companies. One company that was there for artemis from the very beginning has been Transvideo. It was Jacques Delacoux who provided me with a monitor at my first trade show in 1996, starting a decades-long collaboration developing the specifications and applications of monitors. To achieve such a high industry standard, you need top engineers and CAD designers. Without the great work of the international design and service team, and the support of regional dealers over the past 20 years, none of my ideas would have been implemented in a product."

ESPN was the first major broadcaster in the United States to produce sports programming in HD, and artemis started to establish itself on the East Coast. An early adopter in this market was operator Frédéric Chamberland, SOC. In fact, he was the first North American to buy the complete artemis system. "It was my very first rig and one of the biggest purchases of my life at that point," said Frédéric. "Naturally, I was anxious about making such an investment without having seen the artemis in action, but I remember speaking to Curt on the phone and he answered all my questions. I bought the rig and am still operating an artemis TRINITY system today, with beautiful results. Curt has always stood by his products and I have to thank him for creating a system that evolves with the operator, and not the opposite."

At IBC 2015, the new artemis TRINITY stabilizer, developed in cooperation with FoMa Systems, caught ARRI's attention and Curt found himself hosting a crowd of ARRI senior managers and engineers at the Sachtler booth. At the same show, ARRI was showcasing its new ALEXA Mini camera, which was an excellent companion for TRINITY, so the timing was serendipitous.

ARRI entered into negotiations with Sachtler to acquire the artemis product line, and the deal was finalized in time for ARRI to display TRINITY as an ARRI product at NAB 2016. Thanks to the partnership with FoMa, products such as the SRH-3 and the 360, as well as the high-performance external wireless modules ERM, have emerged over the past five years. The cooperation between ARRI and FoMa focuses on function, compatibility and ease of use to address the increasingly complex requirements of the Cine and Broadcast industries in the future.

Work behind the scenes was intense. Curt's team was taken on by ARRI, and together with ARRI engineers, they meticulously migrated the artemis technology, re-tooling every component from new drawings to meet ARRI's tolerances and specifications.

"The artemis philosophy is, and has always been, focused on ease of use," said Curt. "We don't want operators to waste a single second on set; it's better for the storytelling if they can spend time speaking to the director and observing the way actors move, instead of fiddling with equipment or stressing about balance. Many productions can only afford one camera, so artemis equipment was always designed to allow fast transitions from the rig to a tripod or dolly and back again, with no delay. Having a TRINITY on set brings so much production value."

In residence at ARRI, artemis has influenced other developments, such as the ARRI SAM (Stabilizer Adapter Mount) plates and the decision to construct ARRI Signature Prime lens housings from magnesium to make them as lightweight as possible. Expertise in efficient battery management has also benefitted ARRI's wider product line. All in all, the move of artemis to ARRI has been constructive for both parties. "ARRI has brought artemis to a level that few could have done," said Curt. "We're part of a bigger team here—a collection of smart people with whom you can talk and collaborate."

This cross-pollination and its contribution to advances in cinematic storytelling was exemplified by the combination of ARRI products used by director Sam Mendes and cinematographer Sir Roger Deakins CBE, ASC, BSC on the film *1917*. An ALEXA Mini LF camera and Signature Prime lens worked on a TRINITY rig to capture the longest take in this masterclass of long takes, operated by Charlie Rizek.

From its earliest days, artemis has been committed to education, not just sales, and ran about six training sessions per year. The 20th anniversary is a celebration of the results of that training and assistance as much as of the products themselves. Many operators were helped into the industry by artemis, and have stayed loyal to the brand throughout their careers.

Happy anniversary, artemis.

SIGMA 60–600mm F5-6.3 DG OS HSM | Sports on SIGMA fp L Full Frame camera. Above: at 200 mm close focus. Below and opposite: at 600 mm.

SIGMA 60-600 mm Full Frame Zoom

SIGMA 60–600mm F4.5-6.3 DG OS HSM | Sports zoom lens on SIGMA fp L Full Frame camera with SIGMA MC-21 L to EF Mount Converter.

This is the long range long zoom you want in your backpack for sports, nature and documentary jobs. Or in the camera truck as part of any package where long lens scenes are in the script.

The SIGMA 60–600mm F4.5-6.3 DG OS HSM | Sports lens has a 10x optical zoom range. It is lightweight, compact, technically prodigious, and covers Full Frame. Images are beautiful.

Many nature photographers and cinematographers are familiar with the SIGMA 150–600mm F5-6.3 DG OS HSM | Sports lens. The 60-600mm lets you go wider and focus closer with a lens of the same superb image quality that is lighter and shorter.

SIGMA's 60-600mm 10x hyper-telephoto zoom lens is constructed with a magnesium alloy barrel and rear section, TSC (Thermally Stable Composite) mid section, and CFRP (Carbon Fiber Reinforced Plastic) front lens shade. These provide weight reduction, durability and ability to withstand temperature variations without loss of optical quality.

The 60-600 is dust and splash resistant with special sealing at the manual focus ring, zoom ring, and where the mount meets the camera. Note: SIGMA says the lens can be used in light rain, but it is not waterproof.

There are 25 elements in 19 groups. The front lens element has a water and oil-repellent coating.

Optical image stabilization (OS) gave Fisher Dolly steadiness to my wind-buffeted monopod. Autofocus was quick and accurate with a seamless Manual override (MO).

When shooting at 200mm, the SIGMA 60–600mm F4.5-6.3 DG OS HSM | Sports can also be used for telephoto macro photography, with a maximum magnification ratio of 1:3.3.

Specifications

- Optical design: 25 elements in 19 groups
- Angle of View: 39.6-4.1°
- Iris: 9 rounded blades
- Minimum Aperture: F22-32
- Minimum Focusing Distance: 60-260 cm / 23.6"-102.4"
- Maximum Magnification Ratio: 1:3.3 (at 200mm)
- Filter size: 105 mm Ø
- Dimensions from the filter surface to the mount: 120.4 Ø × 268.9 mm long / 4.7" Ø × 10.6" long.
- Weight: 2,700 g / 95.2 oz.

Blackwing7 News on 7/7

7 Blackwing7 primes, L-R:
27, 37, 47, 57, 77, 107, 137 mm.
At front center is a "dark arts lens," custom-tuned,
and a taste of things to come.
Photo by AbelCine's Caleb Dawdy.

There's something special about the number 7. Tribe7, makers of Full Frame, tunable Blackwing7 lenses are especially attuned to sevens. Initially, there were seven focal lengths, each ending in a seven: 27, 37, 47, 57, 77, 107 and 137 mm. An additional focal length, 20.7mm, has been introduced.

And so, on 7/7 of this year, Tribe7 announced that Blackwing7 lenses are distributed exclusively in North America by AbelCine. The news followed on the heels of Tribe7 announcements that Second Reef GmbH is the exclusive distributor of the Blackwing7 lenses in Europe. And, CVP is the exclusive distributor in the UK.

Tribe7

BLACKWING7 lens tuning allows parameters such as sharpness, contrast, focus roll-off, spherical aberration, field curvature, edge halation and flare to be modified as sets of "curated" optics to suit the personality and style of the owner. Many of the design cues for BLACKWING7 primes originate in optics manufactured during the 1930 - 1960s.

I had the impression that one of Tribe7 Co-Founder Neil Fanthom's original intentions was to offer amazing yet affordable lenses to a new generation of filmmakers. Of course, few cinematographers adhere to a manufacturer's original intent. And so, the list is long of top DPs around the world who have been working with Blackwing7 lenses on major motion pictures.

Tribe7 Co-Founder Neil Fanthom elaborated, "There are three basic lens options: S (Standard), T (Transient) and X (eXpressive). Custom tuned variants are possible, enabling some proprietary deviation from the three standard tunings, and the ability to mix the variants.

"As a baseline, S lens optics are multi-coated to suit a 1970s style with controlled pupil (rainbow) flare and higher contrast. "T lens optics are single coated to suit a 1950s style, and are tuned with a higher degree of Blackwing7 pupil flare (most notably on 37mm, 57mm and 77mm focal lengths). "X lens optics are vintage single coated with peripheral element un-coating to help reduce contrast and create milkier flares. The pupil flare is further exaggerated on X-tuned lenses to create 'percussive' rainbow flares and distortion when wide open on each focal length — akin to a Marshall valve guitar amp dialed up to 11."

Indeed—Neil and Tribe7 co-founder Bradford Young, ASC are profoundly into music as well as visuals.

Neil continued, "During 2021, Tribe7 expects to announce further tuning capability, allowing Blackwing7 primes to take on additional characteristics which will be field-retrofittable, and reversible back to the manufactured state.

"We're highly aware that our current policy of returning lenses to the factory for re-tuning is not ideal, and we have the pandemic to blame for delaying our plans to roll out a field tuning program. That said, the tuning process is proprietary, requires significant skill, process control and specialized equipment. So, the factory is absolutely the best place to achieve that and to preserve warranty.

"But it's time to plan for change, to the point where later this year our three manufactured variants will be able to be modified on the fly to suit project-by-project needs. Initially, our new distributor network will shake down this process to control the quality. But ultimately, with the right training and spares stocks, we'll open up the field tuning program to rental houses, and even to owner-operators who have access to a competent lens technician with the right equipment.

"On the subject of the pandemic, Tribe7 worked every day throughout this difficult period to ship as many Blackwing7 lenses to clients as humanly possible. Our design and production partner IB/E provided amazing levels of support to help us fight the fight. But inevitably, component supply chains have been affected during the past 16 months and capacity has been limited to about 30% of where we expected to ramp up to in 2021. We've just begun to break the pandemic chains though, and clients will see the business move ahead at a much faster pace as we work through the rest of this year. We really appreciate everyone's understanding and patience. The strength and support we have seen from the Blackwing7 community has been astonishing."

AbelCine is Blackwing7 North America Distributor

Pete Abel (right side), Rich Abel (second from right) and AbelCine's New York Optical Tech Team.

AbelCine's Burbank, CA Optical Tech Team.

The latest news of AbelCine's appointment is fitting. AbelCine has been involved in fine lenses since the beginning. Barely out of school, Pete Abel worked as a lens repair technician in New York.

Pete remembered, "AbelCine started in 1989. My brother Rich was a camera assistant and provided Aaton camera and Cooke and Angénieux lens repairs on the side. He met with clients, picked up their cameras, took the cameras home, and maintained them. That was in my old bedroom, set up as a shop. I later joined him. We turned our garage into a machine shop, then added a second bench. That's how it started."

Pete, CEO and Co-Founder of AbelCine, was ebullient in describing the back-story of the Tribe7 partnership and Blackwing7 distribution. He said, "I see many similarities in Tribe7 to Aaton, the rebel innovators of their day. With in-camera time code, video assist, Super 16—they really were out there, pushing technology to give documentary filmmakers greater intimacy with their subjects. There was a certain personality type among the early Aaton adopters, like Al Maysles, Ricky Leacock, D.A. Pennebaker and Haskell Wexler. They were innovators in their own right, constantly modifying their tools.

"These days, that desire for cinematographers to adapt their tools continues, and it's the lenses that have become the area of creative exploration. The wonderful thing about Blackwing7 lenses is how they can be tuned to one's personal aesthetic, at a price point that filmmakers at all stages of their career can afford. What's exciting about AbelCine's role is not just distributing and servicing Blackwing7 lenses, but enabling creatives to explore tuning variations and achieve the look they envision."

Second Reef is Blackwing7 European Distributor

L-R: James S. Bouchie and Alexander Schwarz of Second Reef in Weiden, Germany. Photographed on SIGMA fp with PL to L-Mount adapter and 57mm Blackwing7 X-Tuned prime at T2.8 2/3.

Below: Set of 7 Blackwing7 primes at Second Reef.

Bottom: Second Reef's Blackwing7 20.7mm Binary lens, S-tuned with a T roll-off.

"Second reef" is where I start to get nervous at sea as the wind picks up. Reefing means you lower the sail and furl it around the boom or tie reefing lines to reduce surface area. Second reef shortens the sail about 24%. You do this in winds of 20 to 30 knots (25 to 34 mph).

Alexander Schwarz is also a fellow sailor. And so, with co-founder James S. Bouchie, they founded the company Second Reef to distribute, among other things, Blackwing7 lenses. Alexander has a degree in Computer Science and entered the film business with an innovative Video Assist System. He became a Senior Director of key accounts at a major camera rental house. Jim worked for 7 years in sales and marketing in the business after 16 years of university teaching in Europe and Asia.

When asked why they chose the name, they said, "Our focus is navigation. We want to do things a little bit differently and bring risk-takers and innovators together to create new strategic partnerships. So why Second Reef? We sail when others go home. Our extensive experience working in the film industry with optics, manufacturing and rental houses gives us a strategic lookout to see and help our clients get where they are going.

"We have worked with Tribe7 hand-in-hand from early on and have been pushing sales worldwide since 2019. We were excited about tuned lenses as soon as we heard from Neil Fanthom and Bradford Young what they were planning; we were happy to represent the Blackwing7 lenses. We felt that the newer, sharper camera sensors changed what DPs wanted in a lens. We were already seeing many cinematographers using vintage lenses to break up that image. When combined with the loss of film as a controllable variable, we were sure lenses would gain even more importance as a creative tool. The Blackwing7 lenses provide many new aesthetic choices into a system that can be used in innumerable ways to create emotional, powerful and cinematic images."

To these intrepid navigators, Second Reef is not a time for apprehension, but rather the enjoyment of a successful journey.

CVP is Blackwing7 UK Distributor

CVP Creative Space Director Aaron George.

CVP in London has been distributing Blackwing7 lenses in the UK. Aaron George, CVP Creative Space Director, said, "There has been a certain mystery and mystique behind the lenses that has been intriguing. They weren't advertised. They developed a large and almost underground following of people wanting to know what these lenses were all about and wanting to test them.

"At the last BSC show in January 2020, we had a lens bar with hundreds of lenses. It seemed that people mostly wanted to play with the Blackwing7s. They were by far the most asked-for lenses, in particular with the younger crowd, perhaps influenced by their Instagram fame and reputation.

"Blackwing7 primes sit in a range where few others sit in terms of look, specifications, attractive price and image coverage beyond Full Frame. DPs are not the only ones seeking them out; producers are even calling us to purchase them. So, they're interesting little beasts."

I had never heard lenses being referred to as "little beasts," but why not? Fantastic Beasts and Where to Find Blackwing7s? Lenses of the Dark Arts? Wingardium Leviosa. Meanwhile, back in the land of Muggle filmmaking, I asked how CVP was supporting these beastly beauties.

CVP Managing Director Jon Fry replied, "In terms of the capability of CVP, as with all the other manufacturers we represent, it is much more than a single item purchase. We offer all the expertise that sits behind them: testing, trying the lens on all the different cameras, repairing, lens projecting, customizing and sitting down with Aaron to work out how they fit a particular project. Customers can come to our showrooms at Charlotte or Newman Streets and get a feel for these lenses on almost any camera available."

Aaron talked about users and projects in the UK: "The requests for the lenses have all been for high-end projects so far. Independent and lower budget productions would love to have them, but there just are not enough sets in the world right now to supply the demand. Once they become available in greater numbers, they'll certainly cover a larger range of projects. But currently, the high-end dramas and commercials are taking the lion's share of the rentals of those lenses for the simple fact that you just can't get enough of them. So that's a good situation to be in.

"As mentioned, I have producers asking to buy Blackwing7 sets. That is rather interesting and never happened before. I think it's the reputation of the lenses: producers want to have them available for whenever DPs ask for them on projects. They realized that there are so few, so far, and they're putting orders in."

Is this a new hyphenate? We have Owner-Operators, Producer-Directors and now Producer-Blackwing7 owners.

Distribution

- Blackwing7 lenses will be distributed worldwide as follows:
- North America: AbelCine *(abelcine.com)*
- UK: CVP *(cvp.com)*
- Europe: Second Reef *(second-reef.com)*
- Elsewhere: Tribe7 *(blackwing7.com)*

Blackwing7 Specifications

Focal Length	Aperture	Image Circle Maximum Illumination	Close Focus		Weight	
mm		mm	in	cm	lb	kg
20.7	T1.9-T22	50	<9.0	<23.0	TBA	
27	T1.9-T22	55	13.0	34.0	3.6	1.7
37	T1.9-T22	60	18.0	45.7	3.4	1.6
47	T1.9-T22	60	17.5	44.5	3.2	1.5
57	T1.9-T22	60	19.0	48.3	3.5	1.6
77	T1.9-T22	60	26.0	66.0	3.0	1.4
107	T1.9-T22	62	27.0	68.5	3.2	1.4
137	T1.9-T22	62	32.0	81.3	3.2	1.5

Front Diameter:	104mm for all lenses
Iris:	14 blades
Image Distortion:	Less than -4% / +0.5%
Color And Tonality:	Matched Across All Lenses
Mount:	PL Mount
Aperture Scale & Drive:	Non-Windowed Left/Right 90-Degree Rotation
Aperture Gearing:	134 Teeth, 0.8mm Mod, 3mm width, 108.8mm Dia.
Focus Scale & Drive:	Windowed Focus Marks 27 To 137mm: Left/Right in Feet (Meters on Request) 20.7mm: Left Side Only in Feet (Meters On Request) 270-Degree Rotation
Focus Gearing:	142 Teeth, 0.8mm Mod, 6mm width, 115.2mm Diameter
Magnification Shift (Breathing):	Less than 4% (from ∞ to Close Focus)

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