Jon Fauer ASC www.fdtimes.com Jan 2021 Issue 106

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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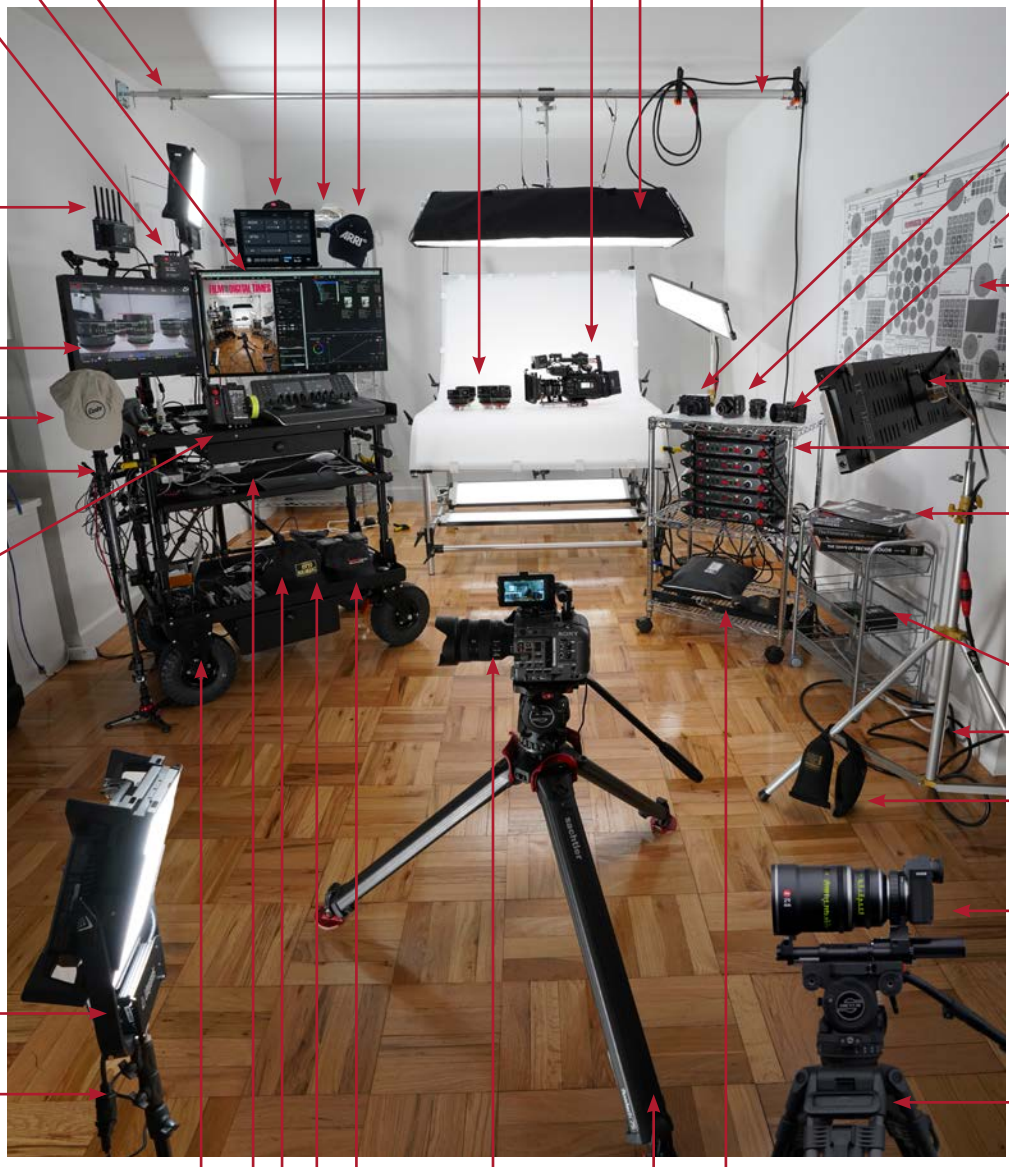


Blackmagic URSA Mini Pro 12K camera with SIGMA 18-35 T2 Zoom; Preston LR2W, HU-4; Teradek BOLT 4K 750; Anton/Bauer Dionic XT150 Battery; Bright Tangerine Top Handle, Misfit Kick Mattebox, Left Field 15mm Mk II Quick Release Blackmagic URSA Mini Baseplate, Drumstix 15mm Titanium Support Rods

Matthews Wall Spreader & Aluminum Speed Rail, Matthellini Clamp with 6" End Jaw, 32" Safety Cable

LG 32UL750W running DaVinci Resolve Studio via Mini Panel and Mac

Preston LR2 Video Overlay

Teradek BOLT 4K 750 Rx with Anton/Bauer Titon 45 Battery and Wooden Camera Ultra Arm

SmallHD OLED 22 4K Monitor

Cooke hat

Manfrotto XPRO Monopod

On the Inovativ Cart top shelf: AJA U-Tap HDMI, AJA U-TAP SDI; Sekonic Spectro-master C800; ZEISS Lens Cleaner; Cooke Microfiber Cloth; PhotoCineRent Hex Keys; Fujifilm Instax Mini 11; Preston HU-4; Vocas PL to E-mount Adapter

Litepanels Gemini 1x1 Soft

Manfrotto 1005BAC Stand

Canon Sumire Prime Lenses

iPad with Blackmagic Camera Control

JL Fisher hat

ARRI hat

DMG Lumiere by Rosco SL1 Switch LED with DOP Choice SL1 Snapbag and Half Diffusion

Matthews Wall Spreader and Aluminum Speed Rail, Matthellini Clamp with 6" End Jaw, 32" Safety Cable

Leica M10 w/ Summiliux-M 50mm f/1.4 ASPH.

Panasonic LUMIX BGH1

SIGMA fp w/ I-series 45mm & 35mm DG DN

PAT-ACC EXA test chart supplied by MYT-Works

DMG Lumiere SL1 Switch

6x SL1 Drivers

Books & Magazine: *FDTimes RED KOMODO*, *Angénieux and Cinema*, *ARRI: Filmmakers View*, *Dawn of Technicolor*

Anton/Bauer Batteries

Lowel KS Stand

Matthews 10 lb BOA Shot Bag

Leica SL2-S on Leitz HENRI Cinematog-rapher's Finder with 29mm Leitz Prime

Sachtler Cine 7+7 on HD 100 Tripod

Inovativ Echo 36 Cart with 2 BOA VESA and iPad Supports, Middle Shelf, 2 Drawers, Baby Pin Post

Inovativ Cart Middle Shelf: Tiffen Filters, MacBook Pro, lens and cavity caps

On the Inovativ Cart Bottom Shelf: URSA 12K accessories, IDX Imicro-98, Imicro-150 and CUE H90 batteries, IDX A-Vmicro2 hot swap adapter

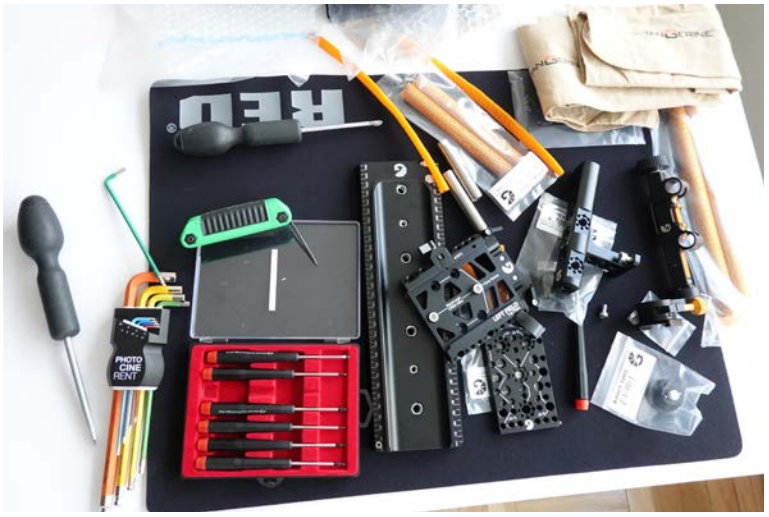
Band Pro hat

Cameras by Otto Nemenz hat

Sony FX6 with Sony FE C 16-35mm T3.1 G zoom lens

Litepanels Dual Gemini 1x1 Dual Array Kit with Yoke. DOP Choice Snapbag

Sachtler aktiv 8 head on flowtech 75mm ball carbon fiber tripod



This BTS at FDT is like a tennis pro's Bag Check.

Or, what's in your studio?

It all began with the Blackmagic URSA 12K. Things quickly clicked that the URSA 12K was not your everyday affordable camera but a contender for major feature and series production.

If you visit CVP, Band Pro, AbelCine, The Studio—B&H, EMIT and similar establishments, you know that custom camera outfitting is not the same as choosing a car with or without a towing package. It is a very personal thing. It might be like a bespoke Savile Row tailor, if only I had ever visited one. Instead, I visit the "Nike by You" Shoe Customizer. Few cinematographers' eye-to-shoulder measurements or hand diameters are the same. Furthermore, the camera outfitting process is additionally vexed by insatiable urges to retrofit and drill holes.

To equip an URSA 12K fully festooned the way I'd like it, a flurry of phone calls followed. Suggestions abounded. Accessories adjudged. Prototypes proffered. The project burgeoned with offers like, "Well, as long as we're sending you a 2-pin to 3-pin adapter cable, why don't we send you batteries, a monitor, tripod and head." Soon, the shipping room here was flooded with boxes of gear from around the world.

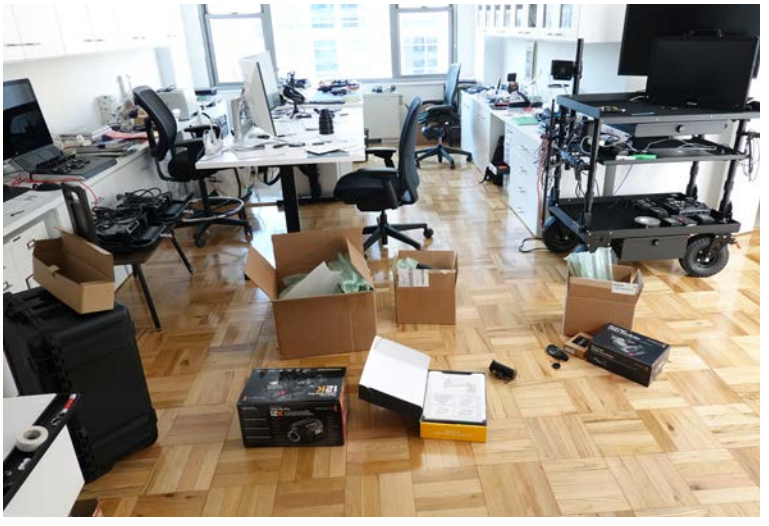
I started photographing the URSA 12K on a sandblasted milkglass plexi sweep. It was supposed to be a just an article with pictures illustrating the way URSA 12K works.

And then my wife popped off an iPhone photo of the chaos that was the FDTimes studio. Noemi Fauer, biochemist by occupation, with a preoccupation for fashion styling in which everything must be "just so," said, "This would make a nice FDTimes holiday cover if only it were not such a mess." She was already moving things here and there, just so.

My thanks to all the infinitely patient people who heroically made this cover possible:

Stephanie Hueter at Blackmagic Design. Nicol Verheem, Greg Smokler, Andrew Ng, Tim Malooly, Chris Kearns, Mariah Martinez at Creative Solutions. Mark Amir, Rick Booth, Jack Howard, Aubrey Duclos at SIGMA. Rainer Hercher, Laura Kaufmann, Silke Thape at Leitz. Stephan Schulz at Leica. Howard Preston, Alanna Berkson at Preston Cinema Systems. Don Mainardi and Jun Ishizeki at IDX. Jean de Montgrand and Lauren Proud at Rosco DMG Lumiere. Patrick Blewett at Inovativ. Canon's Rob Luckett, Alex Sax, Steve Losi and Canon CPS. Andy Subratie, Timothy Tan and Nicolae Sava at Bright Tangerine. Tom O'Neill, Steve Turner, Robert Cook, Ted Doubov, Paul Dudeck, Jeffrey Prushko at Vitec Production Solutions. Apologies to anyone missed in this paragraph of great gratitude.

See individual details beginning page 84



Blackmagic URSA Mini Pro 12K

Super35 Format Sensor:
27.033 mm wide x
14.246 mm high

Camera Body Actual size:
5.92" W x 9.2" L x 5.78" H

The Blackmagic URSA Mini Pro 12K costs less than $10K. It dares to defy a typical engineering riddle—pick any four of six: quality, resolution, easy data wrangling, size, weight, cost.

Incredibly, URSA 12K gives you all six.

As John Brawley said in FDTimes a few months ago, "Blackmagic threw millions of dollars at developing their own 12K sensor from scratch when you would struggle to even get 8K. I think that shows their ongoing maturation as an imaging company."

URSA 12K is a serious camera now shooting seriously stellar Super35 images at an astonishing 79.6 Megapixels per frame (12,288 x 6480) up to 75 fps in 2.39:1 (2.4:1), among many other aspect ratios, frame rates and resolutions.

Blackmagic RAW (BRAW) 12-bit files can be nimbly edited and finished even on a laptop. URSA 12K weighs about 5.6 lb and is slightly larger than a large can of Fosters. You probably already know Blackmagic's URSA Mini Pro 4.6K G2, so jumping in with the URSA Mini Pro 12K will be familiar. The camera body is the same size and shape. Accessories fit both. Controls, switches and dials are in the same places. Three internal ND filters and one clear filter with IR compensation can be summoned up with the twist of the ND dial: Clear, 2, 4 or 6 stops.

The camera comes with a PL mount. You can swap it quickly and easily for an optional EF or F mount. The EF mount offers autofocus and auto/user controlled exposure. The PL mount provides /i metadata embedded recording.

The main display on the camera left door shows timecode, shutter, lens settings, battery, recording status and audio levels. The display is backlit and visible in dimly lit studios or direct sunlight. Open the display door to reveal a 4-inch LCD touchscreen monitor and dual CFast 2.0 and UHS-II SD media slots. If you'd like more recording time, connect a SATA or NVMe drive to the camera's rear USB-C 3.1 Gen 2 port.

A BNC connector at the front camera right side provides HD-SDI (up to 3G). This is where you'll plug in Blackmagic's excellent 1920 x 1080 OLED URSA Viewfinder. It's an essential optional extra and the $1495 price is a bargain compared to one out-of-focus shot. The camera's rear BNC provides menu-selectable 4K SDI or HD-SDI (up to 12G) output.

Blackmagic URSA Mini Pro 12K Views

Front view with EF Mount

Rear with V-Lock Battery Bracket

Camera Left with EF Mount

Camera Right with EF Mount

Right Front with PL Mount

Top: 2 XLR 3-pin audio connectors are located under rubber flap at rear. The 4 mounting threads are ¼-20.

Bottom: the 5 mounting threads are all ¼-20.

URSA 12K Frame Grabs

Above: DaVinci Resolve Frame Grab from URSA 12K shooting Blackmagic RAW Q0, 12288 x 6480, 24 fps, 800 ISO, Blackmagic Gen 5 to Extended Video LUT; with Canon EF 100mm f/2.8L Macro IS USM at f/4.8.

Left: DaVinci Resolve Frame Grab enlarged 4x from URSA 12K, BRAW Q0, 12288 x 6480, 60 fps, 1000 ISO, Blackmagic Gen 5 to Extended Video LUT; with Canon 70-300 f/4-5.6 IS USM at f/5.6.

Frame grabs from video are larger than what many still cameras can shoot. This exported 456 MB TIF file provides massive picture information to zoom or crop in Photoshop.

DaVinci Resolve Frame Grab from URSA 12K shooting Blackmagic RAW Q0, 12288 x 6480, 24 fps, 3200 ISO, 36- degree shutter, Blackmagic Gen 5 to Extended Video LUT 3200; with Canon EF-S 18-135mm f/3.5-5.6 IS STM at 18mm f/3.5.

Vance Burberry with URSA 12K on KIA "Emmys" commercial.

URSA 12K is already at work on features and commercials.

Vance Burberry shot with two URSA 12K cameras for a major KIA spot that aired during the 2020 Emmy Awards Show. His complete interview will be published soon, and here's an excerpt:

"URSA 12K has a new sensor with an equal number of red, green, and blue pixels plus there are white pixels. Its 12K resolution has all the detail and information without being painfully sharp. Sort of like film. You imagine a digital version of film and this appears to me to get closer. I'd shoot close-ups on a female and have all this beautiful detail, but it's not harsh. I don't have to say, 'Go wide, make the lights softer.'

"It actually has sharpness and softness at the same time, if that makes any sense. It's got a beautiful quality to it. It's impressive. Normally if you said, 'here's a 12K camera,' I'd have walked away.

"I've always said that digital is like painting with acrylics and film is like painting with oil. There's a depth and luminosity to oil that acrylic paint doesn't have. I think this new camera now has grasped that concept of a film-like quality. The pixels are so fine, but they are not harsh. It's quite amazing."

Agreed.

Another analogy could be a painter's canvas. A rougher weave results in more visual texture. Seen from a distance, the painting may appear softer, less focused. Skin tones and fine detail might be more impressionistic.

The URSA 12K camera's high resolution sensor is like a canvas with a finer weave—a higher thread count. The image can appear sharper. Fine detail and skin tones are not competing with the texture of the medium. But you can still create an impressionistic image with lighting, filters and post-production procedures.

This was always going on in the film days. You had a choice of camera negatives with bigger grains like Kodak Vision3 500T or finer grains like Vision3 50D. The 500T was more sensitive to light—helpful for night exteriors and low-light locations—but the grain and texture was more apparent.

URSA 12K is rated at 800 ISO. The sensor is 27.033 mm wide x 14.246 mm high. The unpublished pixel pitch is about 2.2 microns.

URSA 12K Right Side

Up to now, hymns of "Bigger Pixels Better Pixels" and "Fewer Pixels Less Heat" have been cantillated.

So how does URSA Mini Pro 12K confound current credo with smaller pixels and more of them?

Blackmagic's 12K sensor does not have a typical RGB Bayer pattern color filter array. Instead, it's an equal arrangement of RGBW—red, green, blue and clear (unfiltered-white). The W (clear) photosites add additional values of brightness and sensitivity to the RGB color-filtered photosites to get extended dynamic range and lower noise. You can find the patent online.

The 12K sensor scales from 12K to 8K or 4K without cropping or binning. Most of us who have shot commercials never encountered an art director lacking an irresistible urge to repo (reposition) and blow up (enlarge) things in post. Often, the only restriction was resolution: blow up too far and it looks like noisy gold balls. If you're shooting in 12K and finishing for 4K, that art director will weep with joy at the almost limitless possibilities to mess with your masterpiece and zoom in on the product's logo. Even better, you can grab individual frames in DaVinci Resolve (View>Stills>Grab Still) and then Export (Right Click on the thumbnail>Export with LUT).

Bob Caniglia, Blackmagic Design Director of Sales Operations, North America, explained efficiencies of 12K: "On its own, 12K is obviously a huge number. In order to shoot 12K or 8K, you truly need to be able to use it. One of the challenges set out from the start of this project was to be able to have hardware over-sampling to make 8K files or 4K files from the 12K files, but to be able to do it without requiring a supercomputer.

"It was a combination of our managing the color science, having Blackmagic RAW, developing the sensor and having DaVinci Resolve Studio (included with the camera) on the back end to deal with the files. For example, this camera lets you shoot 12K plates for VFX. For 8K or 4K, the camera does in-camera hardware scaling. And, if you're shooting vertical video, you get a 6K vertical format."

The URSA 12K records in constant quality or constant bit rate.

Constant bit rates are 5:1, 8:1, 12:1 or 18:1. So, 12K 5:1 at 24 fps is close to 600 MB/s. 18:1 in 12K at 24 fps gets it down to 160 MB/s.

"Constant quality choices are Q0, Q1, Q3 and Q5. Image quality stays the same but the amount of compression varies depending what you are filming.

For example, if the scene involves an actor standing still in front of a white cyc, the image data can be compressed more because there is very little detail in the background and little movement. However, if you are filming an actor running in the street, the camera would demand less compression to get the same quality because there's a lot more fine detail and motion. In Q0, the highest quality, data rates are from 289 to 1200 MB/s. The compression ratio ranges from about 5:1 to 12:1, depending on the scene. Q5 is constant quality with the most compression—from 96 to 413 MB/s.

BLACKMAGIC URSA Mini Pro 12K Summary

- 12,288 x 6480 12K Super35 sensor.
- 14 stops of dynamic range and native 800 ISO.
- Up to 60 fps in 12K; 120 fps in 8K DCI; 240 fps in 4K S16.
- Dual CFast 2.0 slots for recording to 900 MB/s.
- PL mount included; EF and F mounts available.
- USB-C 3.1 Gen 2 for recording to external disks.
- Includes DaVinci Resolve Studio which edits and grades Blackmagic RAW 12K in real time.
- Size: 5.92" W x 9.2" L x 5.78" H. Weight: 5.62 lb.
- Blackmagic URSA Mini Pro 12K: US $9,995.
- Blackmagic URSA Viewfinder (essential): US $1,495.
- V or Gold Mount Battery Plate (essential): $95.
- Shoulder Kit w/ top handle for EVF (almost essential): $395.
- Blackmagic URSA Mini Hand Grip (helpful): $199.
- Comes with PL Pro PL Mount with /i contacts.
- EF Mount with lens data and power pogo pins: $175.
- Pro F Mount w/ back focus adjustment, no lens contacts: $375.
- Recorder attaches to rear for NVMe or SSD media: $395.

URSA 12K Left Side

Camera Left with Side Door Closed (above) and Open (below)

URSA 12K Menu

Open the swing-away monitor on the camera left side. The monitor does double duty for viewing and menu selection. Note: you cannot output the menu to external monitors.

Download Blackmagic's excellent and comprehensive 3202-page User Manual, in 11 languages, 292 pages of which are English. If you're working under the Rusty Gates 10-minutes to learn a camera rule, the next 3 pages offer an abbreviated cram course.

You can control basic settings things with the monitor's touch screen. But first, you should set overall project settings, codec, resolution, project frame rate and so on. Push the MENU button located below the Blackmagic Design logo. Here we go:

1. This is the MENU home page. Let's set up the main parameters that should give us the best-looking images:

CODEC AND QUALITY: Blackmagic RAW, Constant Quality Q0, 12K.

2. **DYNAMIC RANGE > Film** provides the greatest latitude, up to 14 stops on the URSA 12K.

PROJECT FRAME RATE can be thought of as "projection speed."

OFF SPEED RECORDING > ON enables the slow motion (overcranking) or quick motion (undercranking) speed that you set in the **OFF SPEED FRAME RATE** window. Here, you have **60 fps**. To calculate the effect, divide Off Speed Recording by Project Frame Rate. So, 60 ÷ 24 = 2.5 times slow motion. Be sure to assign a Function Button to turn this on and off without having to go diving into the menu.

URSA 12K Menu

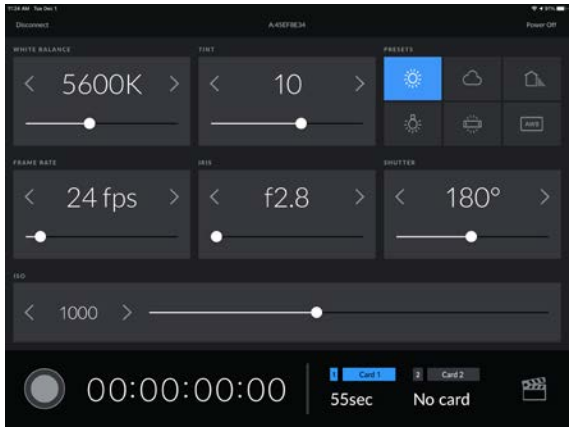
3. **APPLY LUT IN FILE** and **STOP RECORDING IF CARD DROPS FRAME.**

4. Monitor Settings Page. **LCD** is the swing-out monitor display.

5. **Front SDI** is usually the camera operator's EVF.

6. **Main SDI** is the BNC output at camera rear, usually going to Video Village.

7. URSA 12K has built-in **WiFi** that connects to iOS or Android.



8. Blackmagic Camera Control on iPad, connected by WiFi.

9. When all else fails, **Reset** camera to factory defaults.

10. Choose a **LUT** here or load your own on the next menu screen.

URSA 12K Touchscreen

1. Touch the top left framing icon to set frame lines.

2. Slide through the usual suspects shown at the bottom of the screen.

3. Touch and hold on any aspect ratio at the bottom to define your own.

4. Nice UI. Enter your own aspect ratio. Be sure to confirm **UPDATE**.

5. Your new aspect ratio is now part of the list at screen bottom.

6. Choose **FPS** on top line. Select off-speed rate at bottom. Turn ON or OFF.

7. This shows that 2 minutes remain on our CFast 2.0 card in slot 1.

8. Red means recording. Yikes, 31 seconds until empty.

Formatting URSA 12K

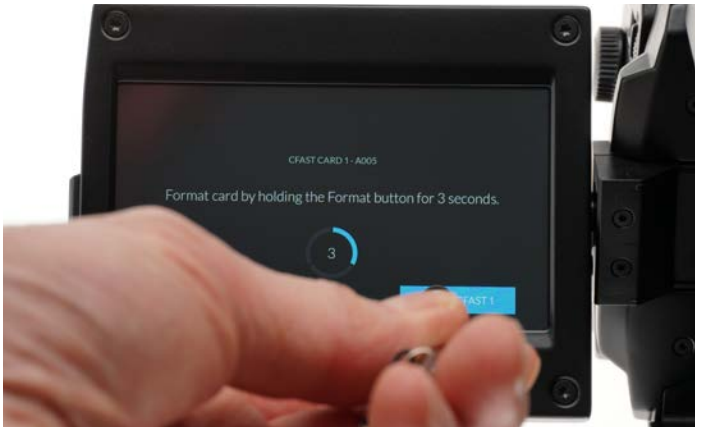
1. You can format media from the touchscreen.

2. This shows 1 minute remaining, 26 GB used on a 64 GB card.

3. Of course, you've downloaded the data. OS X Extended is for Mac.

4. Format CFAST Media in slot 1 to OS X Extended.

5. To be sure you are committed, it requires your undaunted attention.



6. Touch the Format button for 3 seconds.

7. Formatting in progress.

8. Ready to roll.

URSA 12K Accessories

URSA 12K with PL Mount

URSA 12K with EF Mount

PL Mount

EF Mount

F Mount

Shim Kit

The Pro Mounts, Shim Kits and accessories on this page are common to most of Blackmagic URSA Mini camera models.

URSA Mini Pro 12K ships with a PL Pro Lens Mount that has /i Metadata pogo pins at the typical 12 o'clock position.

EF (Canon Style), F (Nikon style) and B4 lens mounts are sold separately. Swapping them is quick and easy. To remove the PL mount, unscrew the six hex screws with a 2 mm driver. You will have to rotate the PL breech lock to access all the screws.

The EF mount is secured with four 2 mm hex screws. Blackmagic recommends a 2 mm torque driver adjusted to maximum torque of 0.45 Nm (3.99 Inch-Punds) to prevent overtightening.

The URSA Mini Pro F Mount has a mechanical iris control that works with Nikon AF-S G and AF-D lenses.

It would be almost unthinkable to change lens mounts without access to extra shims, so a Shim Kit is included with each Lens Mount Kit. A Shim Kit can also be purchased separately.

I also recommend a DENZ FDC-Multi to check flange focal depth once the new mount is installed.

Blackmagic URSA Mini Shoulder Kit

URSA Mini Hand Grip

Blackmagic URSA Mini OLED
1920 x 1080 Viewfinder

URSA Mini SSD Recorder

The URSA Mini SSD Recorder bolts onto the back of the URSA Mini Pro 12K, between the camera and battery plate. It provides another option to record media onto large, affordable 2.5" NVMe or SSD drives.

URSA 12K Math

Thanks to Blackmagic's URSA Mini Pro 12K Data Rate Calculator: tiny.cc/URSA12k-DataRate

Shooting Resolutions

- 12,288 x 6480 (12K DCI)
- 11,520 x 6480 (12K 16:9)
- 12,288 x 5112 (12K 2.4:1)
- 7680 x 6408 (12K Anamorphic)
- 8192 x 4320 (8K DCI)
- 7680 x 4320 (8K 16:9)
- 8192 x 3408 (8K 2.4:1)
- 5120 x 4272 (8K Anamorphic)
- 6144 x 3240 (6K Super16)
- 4096 x 2160 (4K Super16)
- 4096 x 2160 (4K DCI)
- 3840 x 2160 (4K 16:9)
- 4096 x 1704 (4K 2.4:1)
- 2560 x 2136 (2K Anamorphic)

Maximum Slow Motion Frame Rates

- 12K 17:9 full sensor to 60 fps
- 12K 2.4:1 to 75 fps
- 8K DCI full sensor to 120 fps
- 4K DCI full sensor to 120 fps
- 8K 2.4:1 to 160 fps
- 4K 2.4:1 to 160 fps
- 6K Super16 to 120 fps
- 4K Super16 to 240 fps

Project Frame Rates

- 23.98 fps
- 24 fps
- 25 fps
- 29.97 fps
- 30 fps
- 50 fps
- 59.94 fps
- 60 fps

Some Approximate Recording Times

Blackmagic RAW Constant Bitrate 5:1 in 12K 17:9 DCI on a CFast 2.0, 1TB Media Card:

- 24 fps 28.9 mins
- 25 fps 27.7 mins
- 29.97 fps 23 mins
- 30 fps 23.1 mins
- 40 fps 17.3 mins

Blackmagic RAW Constant Quality Q0 12K 17:9 DCI on a CFast 2.0 64 GB Media Card:

- 24 fps 1.5 mins

Codecs

- Blackmagic RAW Constant Bitrate 5:1
- Blackmagic RAW Constant Bitrate 8:1
- Blackmagic RAW Constant Bitrate 12:1
- Blackmagic RAW Constant Bitrate 18:1
- Blackmagic RAW Constant Quality Q0
- Blackmagic RAW Constant Quality Q1
- Blackmagic RAW Constant Quality Q3
- Blackmagic RAW Constant Quality Q5

Recording Formats

- BRAW Constant Quality Q0, Q1, Q3, Q5
- BRAW Constant Bitrate 5:1, 8:1, 12:1, 18:1

12,288 x 6480	5120 x 4272
11,520 x 6480	6144 x 3240
12,288 x 5112	4096 x 2160
7680 x 6408	3840 x 2160
8192 x 4320	4096 x 1704
7680 x 4320	2560 x 2136
8192 x 3408	

12-bit non-linear files with 3D LUTs embedded in metadata

Data Rates of Blackmagic RAW 5:1 Constant Bitrate

12K	17:9	12288 x 6480	24 fps:	578 MB/s
8K	17:9	8192 x 4320	24 fps:	257 MB/s
4K	DCI	4096 x 2160	24 fps:	65 MB/s

Data Rates of Blackmagic RAW Q0 Constant Quality

12K	17:9	12288 x 6480	24 fps	289 -1200 MB/s
8K	17:9	8192 x 4320	24	257- 642 MB/s
4K	DCI	4096 x 2160	24	161-268 MB/s

Outfitting URSA 12K with Bright Tangerine

Misfit Kick 3-Stage Mattebox with 95mm Frame Safe Clamp Back

ONE Tray for Misfit Kick and ARRI LMB— for Rota Pola, Variable ND and Diopters.

Many parts come in cloth pouches like the ones fancy shoes come in..

Left Field ARRI Standard Dovetail

Left Field 15mm Rod Bracket for Top Plate.

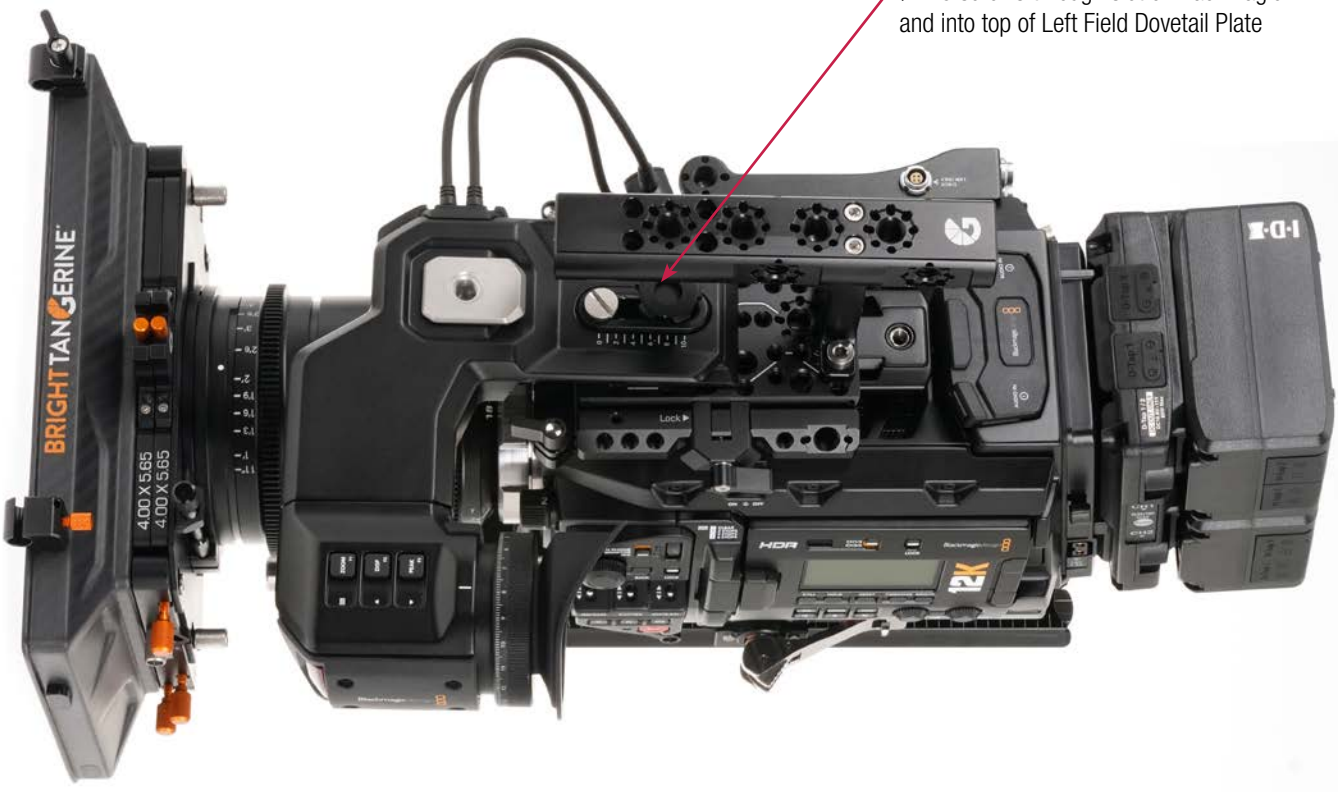
Left Field Universal 15mm LWS Core Mk II Quick Release and Blackmagic URSA Mini Baseplate

Top Handle

Sliding Top Plate Core and Left Field Dovetail Plate

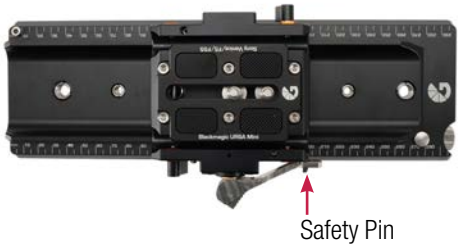
Drumstix 15mm Titanium Support Rods, 9" long

Bright Tangerine Top Handle secured with two ¼-20 screws through slot of Blackmagic EVF and into top of Left Field Dovetail Plate

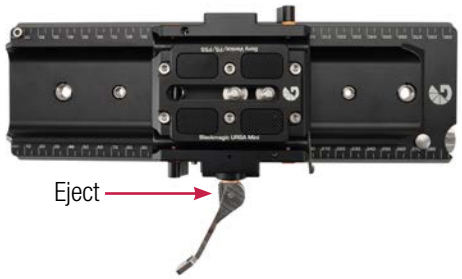


Outfitting URSA 12K with Bright Tangerine

The corners of the Frame Safe Clamp Back have convenient cut-outs in the 4 corners to avoid vignetting on wide lenses

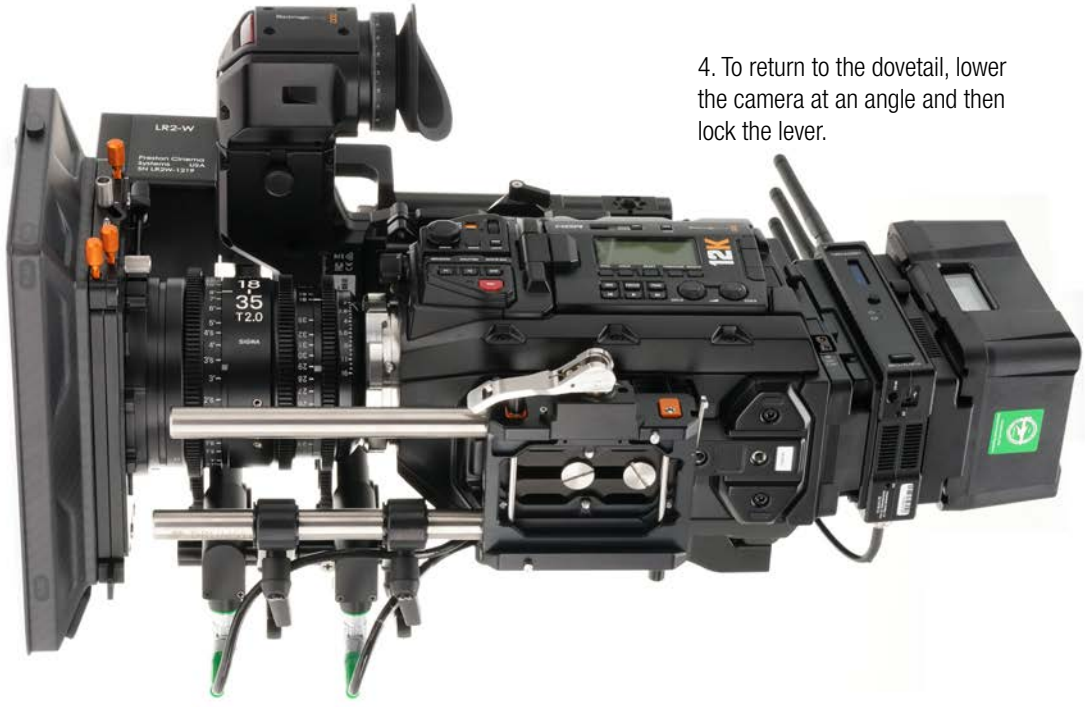


The Bright Tangerine 3-step Quick Release Open Up System. Step 1: Release lever from safety pin and open half way.



2. Half way. This is the sliding position. Press the Eject Tab to release the 2nd safety catch.

3. Open all the way and then lift up and away from the dovetail.

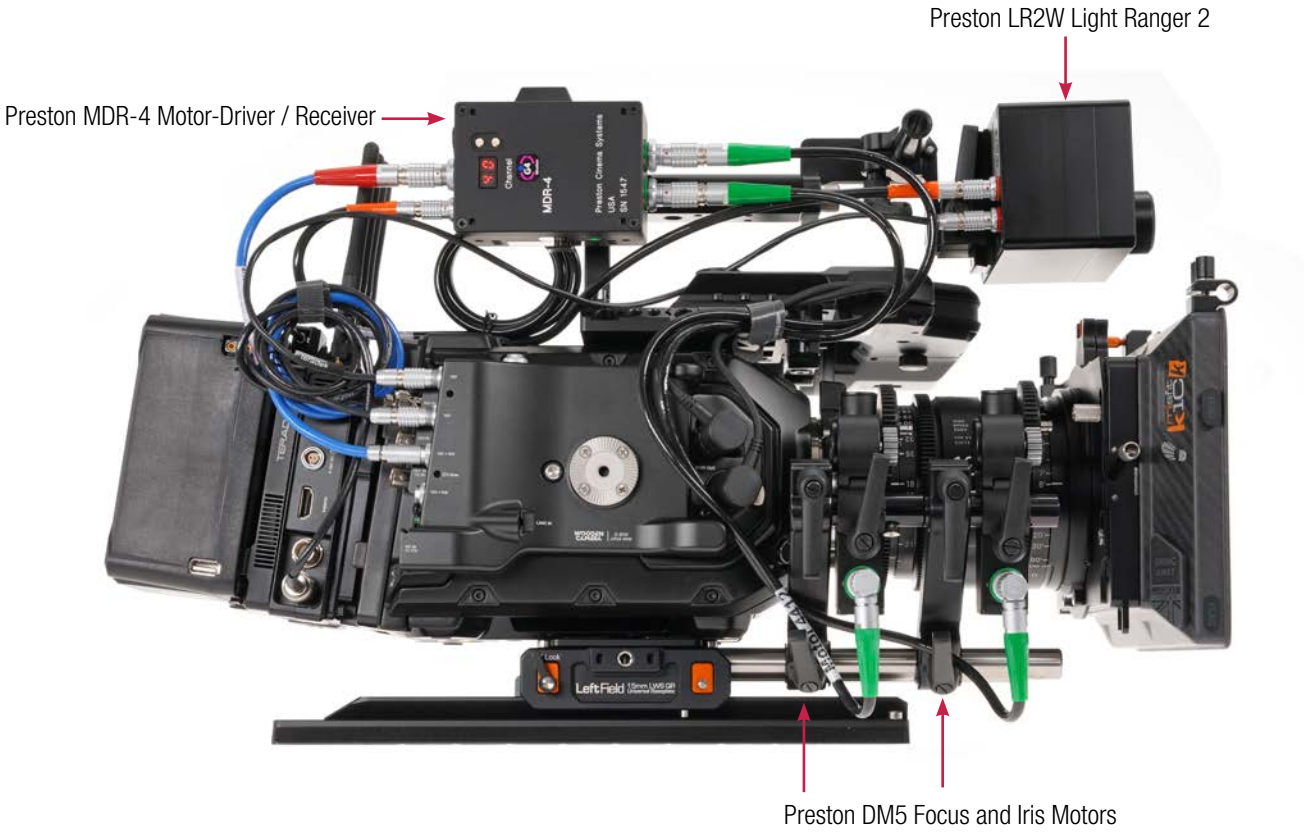


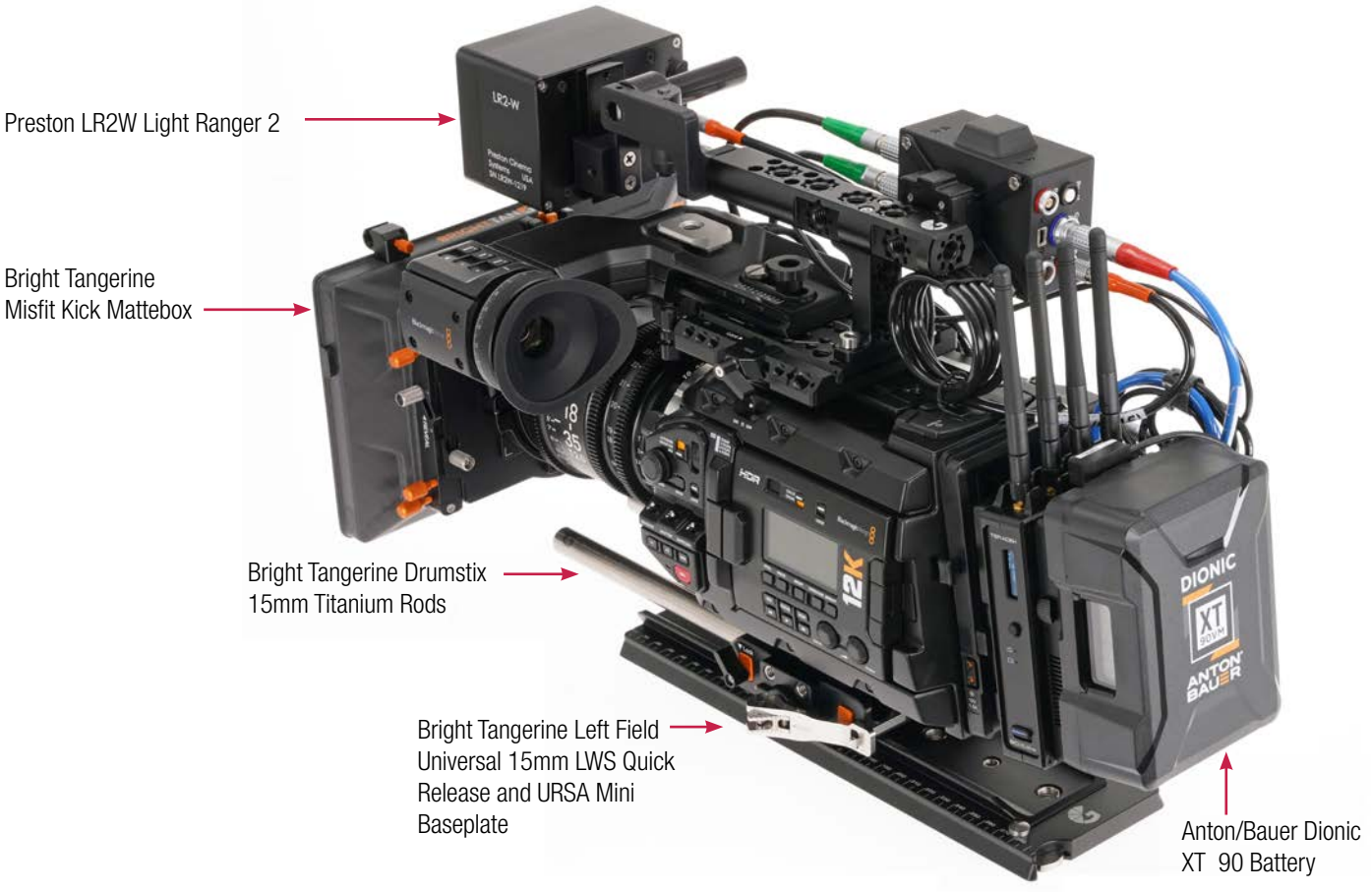
4. To return to the dovetail, lower the camera at an angle and then lock the lever.

Outfitting URSA 12K Chockers

Thanks to John Brawley for the Australian translation of "fully festooned." Chockers, as in Chock-o-Block. Because the URSA 12K camera package will be shooting major shows, you will see many of them in full chockers mode, like these photos.

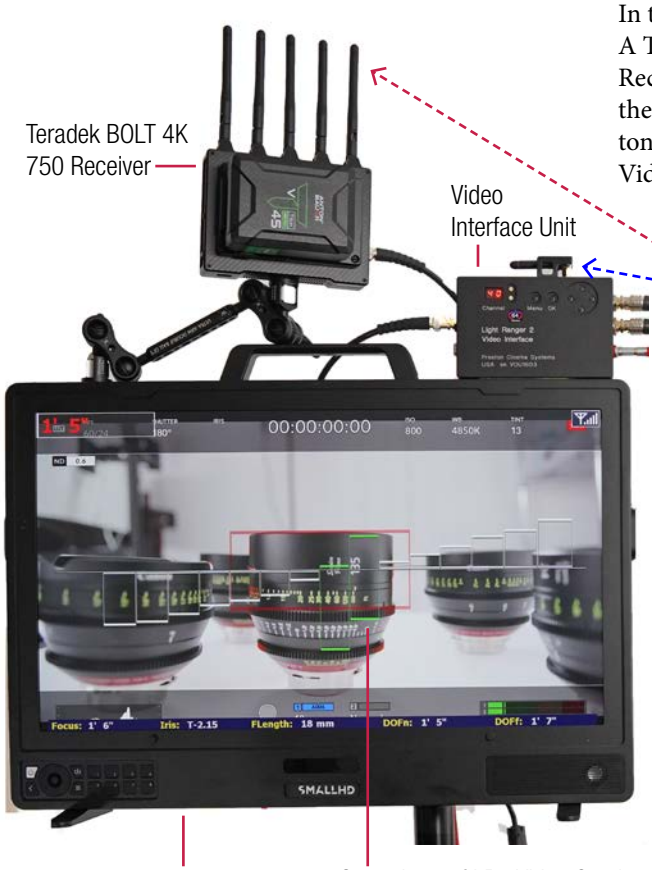
Outfitting URSA 12K Chockers

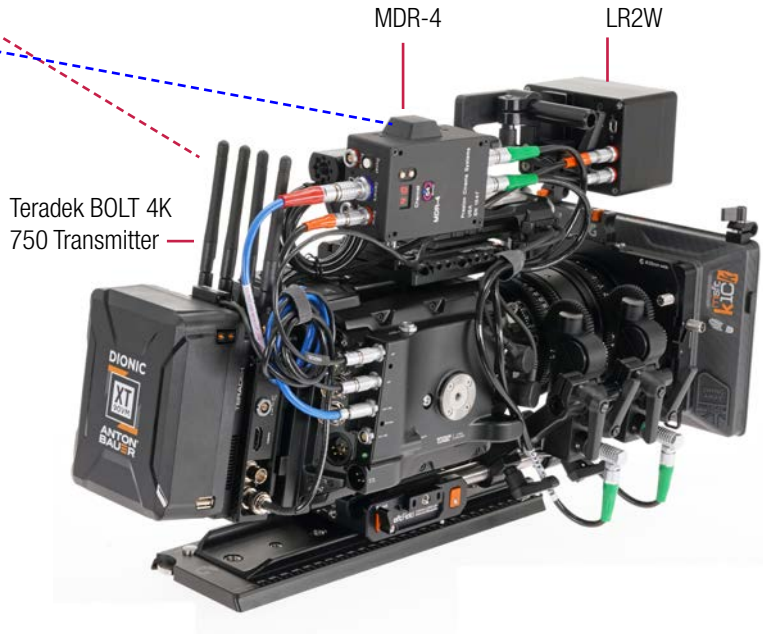




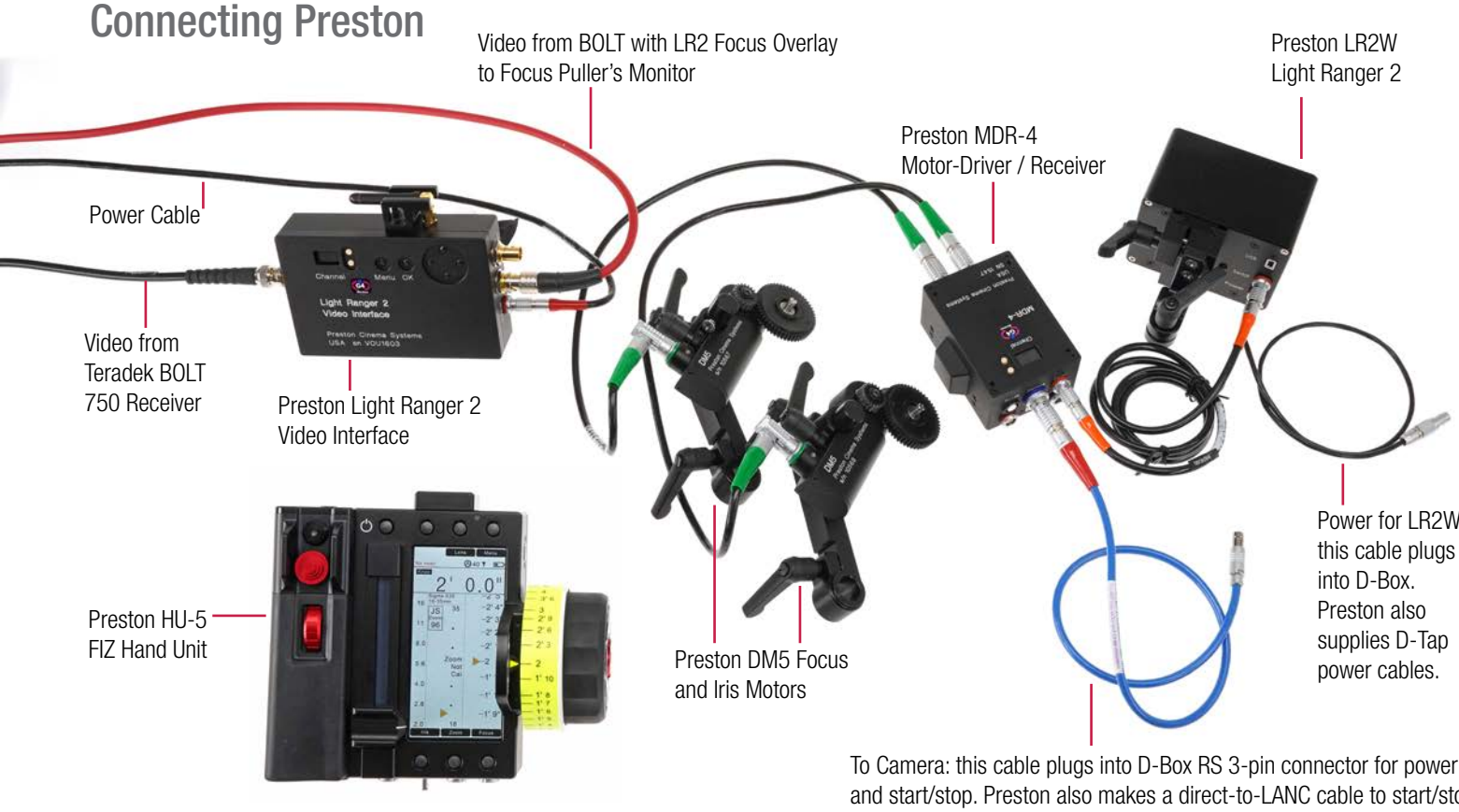
Connecting URSA 12K

In this setup, you have two wireless signals transmitting simultaneously. A Teradek BOLT 4K 750 sends video from the camera to a BOLT 4K 750 Receiver on the focus-puller's SmallHD OLED 22 Monitor. At the same time, the Preston LR2W, wired to the MDR-4, sends focus information to the Preston Video Overlay Unit. Video from the BOLT receiver is hard-wired to the Video Overlay Unit and the combined signal goes via cable to the monitor.





Connecting Preston



Outfitting URSA 12K with Wooden Camera D-Box

Two IDX Imicro-98 Li-Ion 14.5 V 6.62Ah Batteries with IDX A-Vmicro2 Hot Swap V-Mount Plate for Imicro Batteries

Wooden Camera URSA 12K D-Box provides valuable accessory power and RS 3-pin start/stop.

To attach the D-Box: Remove the two T10 Torx screws holding the rear BNC identification plate.

Attach the D-Box with its two small captive HEX screws (not Torx) at the back, and the big hex screw in the middle.

Connectors include:

- 1x D-Tap, 12V Unregulated
- 1x USB, 5V Regulated
- 2x 2-pin LEMO compatible, 12V Unregulated
- 2x 3 pin Fischer compatible 24V Regulated and Start/Stop.

Sony Cinema Line: VENICE, FX9, FX6

Sony VENICE

Sony FX9

Sony FX6

Sony announced their Cinema Line on September 2, 2020:

"The Cinema Line is a series of camera products for a wide range of content creators that will bring together Sony's expertise in image quality, attention to detail, technology and passion in digital cinema.

"Cinema Line will deliver not only the coveted cinematographic look cultivated through extensive experience in digital cinema production, but also the enhanced operability and reliability that meet discerning creators' various needs. The new series will extend beyond traditional cinema camera and professional camcorder form factors."

That hints at more Sony Cinema Line cameras to come.

The announcement continues:

"Existing cameras that will form part of the Sony Cinema Line include VENICE and FX9. The next camera will appeal to a wider spectrum of visual creators. Sony will be releasing and shipping this next addition to the Cinema Line, FX6, by the end of 2020."

Even before they were actually inducted into the "Cinema Line," previous Cinema Line cameras were introduced in the month of September: VENICE, the flagship Full Frame camera with a very usable E-mount lurking beneath its removable PL mount, was launched in September 2017.

FX9, the affordable E-mount Full Frame camera was released a year ago at IBC: September 2019.

Had there been an IBC this year, FX6 most likely would have been there in September 2020.

Sony ILME-FX6

And so, the Sony ILME-FX6 launches officially on November 17, 2020 at 10 am EST.

Like Fellini's mantra in *8½*, "Asa, Nisi, Masa," the camera beat thrums: "Lighter, smaller, faster, cheaper." The word "cheaper" is not the right one, but it resonates more melodically than "more affordable," which is what the FX6 is.

Lighter

The FX6 body weighs a mere 1 lb 15 oz.

Smaller

FX6 is the smallest member of the Cinema Line, at 6 1/8" long x 4 ⅝" high x 4¼"wide. In fact, the new FX6 is smaller and lighter than the Super35 FS7 II. FX6 is also smaller than the small S35 FS5.

Faster

FX6 records up to 120 fps in QFHD (4K UHD) and 240 fps in FHD.

More Affordable

FX6 is US $5,999.99.

And More

Like VENICE and FX9, the new Sony FX6 is a Full Frame, 4K, E-mount camera. Certainly you pay for what you get:

Sony FX6
with Sony FE 24-105mm
f/4 G OSS E-Mount Lens

VENICE has a 36.2 × 24.1mm 6042 × 4032 sensor. It can record 6K Full Frame or windowed 4K DCI Super35. High frame rates abound (for example, 4K 2.39:1 to 120 fps). As already mentioned, VENICE has an E-mount underneath its PL mount. VENICE body is $39,000. A nicely outfitted VENICE includes camera, OLED EVF, anamorphic upgrade, Full Frame upgrade and AXS-R7 external 4K recorder, and costs around US $58,900.

Sony FX9 has a 35.7 × 18.8 mm 6008 × 3168 24 MP sensor. It records Full-Frame and windowed Super35 to 60 fps, both in 4K DCI 4096 × 2160. FX9 runs around $10,999.

Sony FX6 has a 35.6 x 18.7 mm 4240 × 2236 10.2 MP sensor. It records Full Frame DCI 4K and windowed Super35 HD 1920 × 1080:

- XAVC-I 4:2:2 10-bit DCI 4096 × 2160 up to 60 fps with about a 5% crop of Full Frame.
- XAVC-I 4:2:2 10-bit QFHD 3840 × 2160 up to 120 fps with about a 10% crop when output RAW or at 100/120 fps.

The FX6 is available now for US $5,998.

It is interesting that Sony does not appear to be pursuing cine cameras that only shoot Super35.

Instead, Sony cine cameras currently do Full Frame AND also Super 35 AND are still very small. One reason may be that Sony controls the design, development, supply chain and manufacturing of the entire process in-house, as their slogan says, from lens to living room. Another reason may be strategic planning based on market research.

Significant Sony synergy is at work in the FX6. The FX6 Full Frame 10.2 MP reverse structure (back-illuminated) sensor's dimensions and photosites are similar to the a7S III. In 16:9 aspect ratio, both cameras record 4.2K — 10.2 Megapixels actual image area.

Both cameras accept CFexpress Type A or SD cards. Both cameras have rapid face detection phase detect real-time Eye AF.

The FX6 has a base ISO sensitivity of 800 and a high sensitivity of 12,800. Like the a7S III, it can achieve an astonishing 409,600 ISO. With S-Log3 at ISO 640, the FX6 was tested to more than 15 stops of dynamic range.

Sony FX6
with Sony F EC 16-35 T3.1 G (SELC1635G) Cinema Lens

FX6 footage will match its siblings in the Cinema Line. S-Log3, S-Gamut3 and S-Gamut3.Cine provide post-production flexibility. FX6 also has S-Cinetone, introduced with the FX9, which is a look profile for productions that prefer an elegant, finished look to a "camera negative" paradigm of grading in post.

S-Cinetone is covered in a Sony Whitepaper (*tiny.cc/S-Cinetone).* It can be summarized as follows:

Consider S-Cinetone as a shortcut to completion that might skip the steps of grading. It is intended for productions with limited time and budget who want beautiful images "right out of the can" as they would have said in the film days.

Sony developed S-Cinetone to build on VENICE's cinematic look and to provide pleasing, natural skin tones. The base curve of S-Cinetone is BT.709, but it has higher contrast in the low luminance levels and lower contrast in the high luminance levels. Highlight areas look smooth and details are retained. Low-light areas of the gamma curve have enhanced contrast and retain shadow detail. Objects look clear and rich. Black levels are lower than traditional video, but not clipped.

Mark Weir on FX6

Mark Weir, Sony Senior Manager, Technology, was kind enough to once again endure a torrent of questions. Two days before a pre-production FX6 landed here at FDTimes, he explained a main difference between FX9 and FX6. "The FX9 24MP image sensor is a different concept from the FX6 10.2MP sensor. Although the FX6 sensor pixel count has several advantages, the FX9 sensor pixel count has several as well, including a variety of imager scan modes (Full Frame and Super35) which aren't possible with 10.2MP FX6. The FX9 has 6K oversampling, which is particularly important in scenes with high spatial frequency. 6K oversampling allows control of moiré and aliasing that is not possible with lower pixel counts. With this in mind, the image sensors of these two models pursue different ideals. It's also worth noting that the FX9 and FX6 have many other differences in the use cases they support—especially the FX9 for broadcast and multi-camera applications.

"The Cinema Line represents a new opportunity for Sony—to integrate our experience in professional digital motion picture cameras and our digital interchangeable lens mirrorless camera

Sony FX6
with Sony F EC 16-35 T3.1 G
(SELC1635G) Cinema Lens

system. It's part of our 'One Mount' strategy with the large selection of E-mount cameras and lenses. We now have 58 lenses in our E-mount lineup for both stills and movies."

I should add that ZEISS, SIGMA, Tokina and many other companies also make E-mount lenses. And, because the E-mount has an 18 mm flange focal depth, adapters let you shoot with PL, LPL, PV, SP70, EF, F, M, R, S, H, BNCR and many other lenses.

All three Sony Cinema Line cameras come with E-mounts. VENICE and FS7 II have a Lever Lock E-mount. FX6 has a standard alpha series style E-mount.

Mark continued, "VENICE has been very successful for feature productions worldwide. FX9 has established an outstanding track record in documentary production. So, FX6 is the next step for our Cinema Line in the area of lightweight mobility and high performance."

Of course, few DPs have ever been satisfied to use cameras as their creators intended. As surely as sunsets are called magic hour, the FX6 will be called upon to shoot features, documentaries, spots, TV, series and corporate videos. It will be equally at home on tripods as on gimbals, drones and remote heads. It will be mounted to helmets, helicopters, planes, trains and automobiles. It will work inside underwater housings and on top of cranes.

I asked how this was all possible. Mark said, "We've packaged the FX6 in a chassis that's reminiscent of the FS5 to realize outstanding mobility. But while it may be reminiscent of FS5, which is Super 35, the FX6 is a Full Frame camera.

"The magic of FX6 is that we've been able to incorporate a Full Frame sensor in a professional camera with high performance, operability and expandability into a package that is even smaller than the FS5.

"The FX6 uses the Bionz XR processing engine that we introduced in a7S III. Other similarities include very high sensitivity with very large pixels, delivering images with low noise and high dynamic range. FX6 has a very fast scan speed for minimized rolling shutter. And we're very excited by the autofocus capability. We've been pursuing it now for a couple of years and we think we're approaching acceptance of it in a motion picture camera—it's that good."

FX6 Camera Views

Camera Left Side.

Left Front.

Front View.

Front Right.

Camera Right Side.

Rear Right.

FX6 Camera Views

Rear.

Rear Left.

Detail of CFexpress and SD Slots with Door Open and Battery in Place.

Detail of Audio Controls with Door Open.

Top of FX6. Front of Camera is at Left of Photo.

Bottom View showing Mounting Threads. Front of Camera is at Right.

Sony FX6: These are a few of our favorite things

User definable aspect ratios.

Enter your own Custom Aspect Ratio. This ushers in an era of even greater aspect ratio agnostic abandon. You are free to create your own. Be sure to shoot a framing chart for post production.

Rear-loading battery compartment. Two media slots. Mix or match CFexpress Type A cards and/or SD cards. Sony's a7S III also uses these. Read and write speeds reach 800 / 700 MB/s. Currently, CFexpress Tyoe A cards come in 80 and 160 GB capacities and cost around $200 and $400. The new Sony SD/CFexpress Type A card USB-C reader has a 10 Gbps data rate and runs around $120.

CFexpress SD CFexpress SD

CFexpress Type A cards are actually smaller than SD cards.

I like E-mount because you can use almost any lens with adapters, like the Vocas PL adapter above and LPL below.

Lenses on FX6

Sony / Carl Zeiss Sonnar FE 2.8 /35mm ZA

Sony FE 4/24-105mm G OSS Zoom. This is the "Kit" lens for the FX6.

Leitz Wetzlar Hektor 135mm F4.5 vintage 1950s with M to E-mount adapter.

Leitz Wetzlar Elmarit 90mm F2.8 with Leica M to E-mount adapter.

Leitz Wetzlar Summicron 50mm F2 with M to E-mount adapter.

Contemporary Leica Summilux-M 50mm F1.4 with M to E adapter.

Sony FX6 Monitor Mounting Choices

There are 2 mounting points on the top of the body. The FX6 is so small, you can grab it like a Medium Format camera.

There are 3 mounting points for the monitor on the top handle, offering all kinds of viewing positions: forward, aft, sideways, high, low, etc.

Sony FX6 Descriptions

Onboard 1280x720 3.5" LCD Monitor and nicely collapsible sunshade

RECORD Start / Stop

Switchable ND Filter Control: Auto, Manual, Clear, Presets, Variable. Dial for Electronic Variable ND: 1/4 ND (2 stops) - 1/128 ND (7 stops) equivalent to ND.6 - ND2.1

Top Handle attaches with 2 thumbscrews

Kit Lens, and a very good one it is, familiar to a7 and a9 series users: FE 24-105 F4 G OSS Zoom

2x CFexpress and SD Media Bays

2x Audio Control channels

Media Bay Slot Select

Main POWER On / Off

Multi Function Dial

MENU: push momentarily for quick menu. Push and hold for full menu.

Switchable Auto/Manual ISO/ Gain, White Balance and Shutter

"Cinema Line" is now proclaimed

Monitor / Finder Connection

Image Plane and Focus Tape Hook

2x XLR Audio Inputs

Zoom Control Lever for servo zooms. (The FE 24-105 is not motorized.)

HDMI OUT

SDI OUT Selectable 12G, 6G, 3G

TIMECODE IN / OUT

REMOTE / MULTI

19.5 V DC IN

Dial assignable to Variable ND or Iris control

Sony FX6 compared to VENICE, FX9 and FS7 II

FX6

Full Frame
FX6 Weight: (body only): 885 grams / 1 lb 15.4 oz
Dimensions (body only): 110 mm / 4.33" wide approx
115 mm / 4.5" high
140 mm / 5.5" long
Voltage: 19.5 V DC (18 - 20.5 V)
Power : 18 W (body, EVF, lens) - 36 W (with external recorder)
Battery: Sony BP-U35 (supplied), 14.4 V DC 2.42 Ah 35Wh,
also BP-U70, BP-U100
Battery slides into rear of camera

FX9

Full Frame
Weight: (body only): 2.0 kg / 4.4 lb
Dimensions (body only): 146 mm / 5.75" wide
142.5 mm / 5.61" high
229 mm / 9.02" long
Voltage: 19.5 V DC
Power : approx 35 W
Battery: Sony BP-U35 (supplied), BP-U70, BP-U100
14.4 V DC
Battery slides into rear of camera

VENICE

Full Frame
Weight: (body only) 3.9 kg / 8 lb 9.6 oz
Dimensions: (body only) 147 mm / 5.24" wide
159 mm / 6.26" high
172 mm / 6.77" long (with E-mount)
Voltage: 12 V DC (11 V to 17 V) and 24 V DC (22-32 V)
Power : approx 60 W
Battery: V-Lock or Gold Mount

FS7 II

Super35
Weight: (body only) 2.0 kg / 4 lb 6.5 oz
Dimensions: (body only, approx) 135 mm / 5.31" wide
140 mm / 5.51" high
197 mm / 7.76" long
Voltage: 12 V DC (11 V to 16.5 V)
Power : 19 W (body, lens, XAVC-I QFHD 59.94P, viewfinder on)
Battery: Sony BP-U30 (supplied), BP-U60, BP-U60T, or BP-U90
Battery slides into rear of camera

Sony FX6 (Full Frame) compared to FS5 (Super35)

FX6 (repeated from previous page)

Full Frame
FX6 Weight: (body only): 885 grams / 1 lb 15.4 oz
Dimensions (body only): 110 mm / 4.33" wide approx
115 mm / 4.5" high
140 mm / 5.5" long
Voltage: 19.5 V DC (18 - 20.5 V)
Power : 18 W (body, EVF, lens) - 36 W (with external recorder)
Battery: Sony BP-U35 (supplied), 14.4 V DC 2.42 Ah 35Wh,
also BP-U70, BP-U100
Battery slides into rear of camera

FS5

Super35
Weight: (body only): 830 grams / 1 lb 13.2 oz
Dimensions (body only): 111.3 mm / 4.5" wide
128.7 mm / 5.1" high
172.4 mm / 6.8" long
Voltage: 12 V DC
Power : approx 11.8 W
Battery: Sony BP-U Series
14.4 V DC
Battery slides into rear of camera

To remember which model does what, think of FX as Format eXtremely large and so Full Frame. Think FS as in Format Super35.

FX6 in a Minimal Mode

There are two mounting points on the top of the camera, so you do not need the carrying handle to put the FX6 a Minimal Mode

Convergence of Technology in Sony E-mount Cameras

FS7 introduced
September 2014

Cinema Vérité, E-mount, S35, Smart Handgrip, Extension Unit

FS5
September 2015

PXW-FS5, E-mount. S35. 3840x2160 8-bit 4K QFHD. OLED viewfinder in back.

FS7 II
November 2016

Lever Lock E-mount, S35, Electronic Variable ND, Improved Handgrip and EVF

VENICE
September 2017

Top of the Cinema Line. Color Science, Full-Frame and S35, Dual Base ISO, E-mount and PL.

a7R IV
July 2019

New Auto Focus Algorithms, Full-Frame. E-mount.

FX9
September 2019

Full Frame and S35. New 19 MP sensor. Fast hybrid phase-detection and contrast Auto Focus. Lever Lock E-mount. Cinema Line.

FX6
November 2020

10.2 MP Full Frame sensor, ISO to 409,600. 120 fps in QFHD. Alpha style E-mount. Cinema Line

a7S III
July 2020

12 MP 4K full pixel readout in all modes. Up to 10-bit 422 internal recording to CFexpress cards, Full-Frame. E-mount.

ILME-FX6 Specifications

- Full-Frame 10.2 MP CMOS 4K Reverse Structure Sensor.
- E-mount (18mm FFD and 46.1 mm Inside Diameter).
- XAVC-I 422 10-bit 4K DCI 4096x2160 at 600 Mbps up to 60 fps (with approximately a 10% crop of Full Frame.)
- QFHD (4K UHD) 3840x2160 to 120 fps (with a 5% Full Frame crop).
- Full Frame FHD 1920x1080 up to 240 fps.
- Super 35 FHD 1920x1080 sensor window mode up to 120 fps
- Dual CFexpress Type A and/or SD card slots.
- Fast, hybrid Autofocus: Focal plane phase detect Autofocus with face detection and eye AF compatible with more than 50 E-mount lenses.
- Dual base ISO: 800 and 12800. Maximum sensitivity to ISO 409,600.
- S-Log3 gamma and S-Gamut3, S-Gamut3.Cine color space.
- S-Cinetone look profile, also used in FX9.
- 15+ stops of dynamic range with S-Log3 at ISO 640.
- Minimized rolling shutter because of fast imager scan rate.
- 1x HD, 3G, 6G, 12G SDI output.
- Filmic look, VENICE-like color science.
- Up to 4K 4:2:2 10-bit internal recording
- 16-bit RAW output in DCI 4K and QFHD via SDI connector.
- Electronic Variable ND filter Clear and ND.6 to ND2.1 (7 stops)
- Aperture-Variable ND ramps are possible.
- Detachable Smart Handle with lens and camera controls
- ILME-FX6V Body only: $5,998.
- ILME-FX9VK Kit with 24-105 (SEL24105G) zoom: $7,199.99.
- Available Dec 2020.

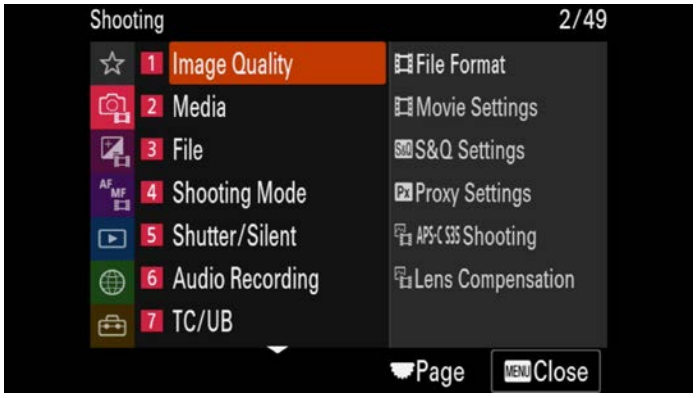
More information: sonycine.com and alphauniverse.com

Sony FX6 v FX9

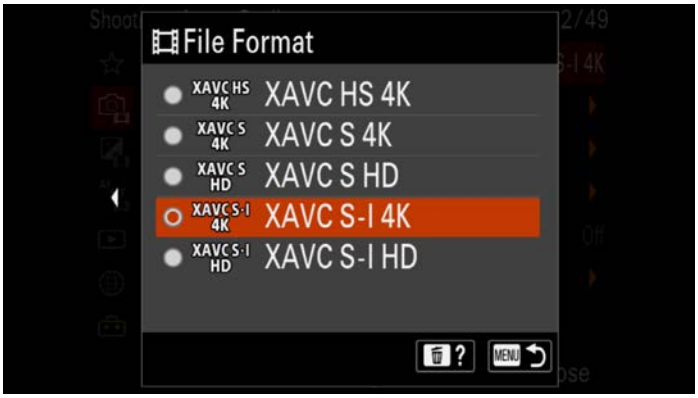
ILME-FX6

PXW-FX9

Sony a7S III Menus are similar to...

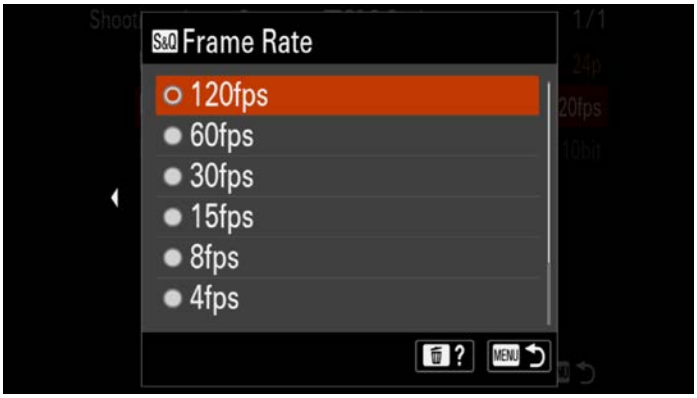


a7S III menus are easy to navigate: 3 columns are visible.



a7S III: XAVC S-I 4K Inter Frame File Format selected.

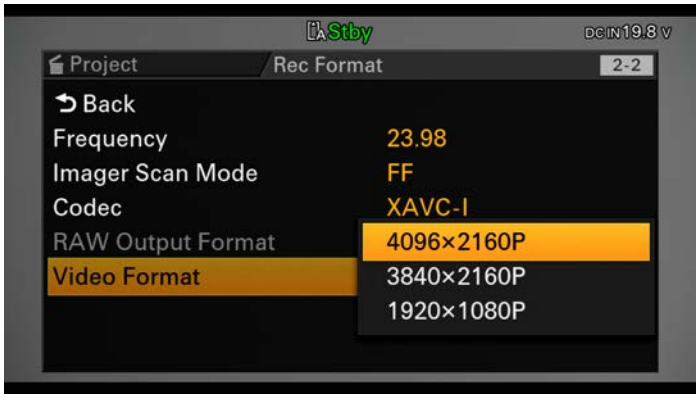
a7S III: Recording Frame Rate: 24p = 24 fps.



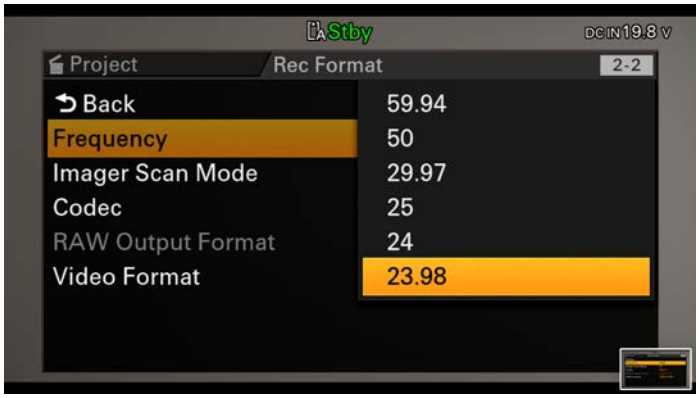
a7S II: Records up to 120 fps in XAVC S-I 3840x2160 QFHD.

...Sony FX6 Menus

FX6 PROJECT Menu is almost comparable to a7S III SHOOTING MENU.



FX6: XAVC-I 4096x2160 Video Recording Format selected.

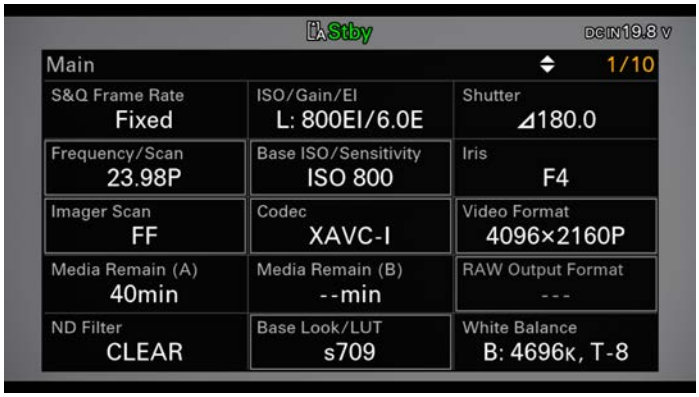


FX6: Project Frame Rate offers both 23.98 and 24 fps.

FX6 takes us up to 60 fps in XAVC-I 4096x2160 4K DCI 23.98.

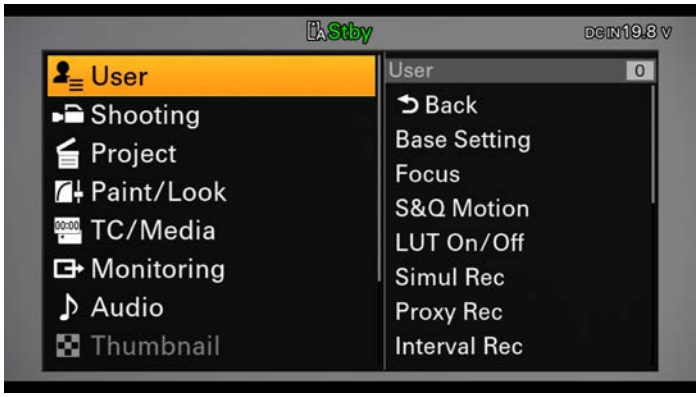
Sony FX6 Menus

This is what the monitor/finder can look like with onscreen information.



Push the MENU button and you'll see this touchscreen readout.

There are 10 pages. The first 2 pages are good for quick choices.



Push the MENU button for at least 2 seconds to get the full, traditional menu.

Top view.

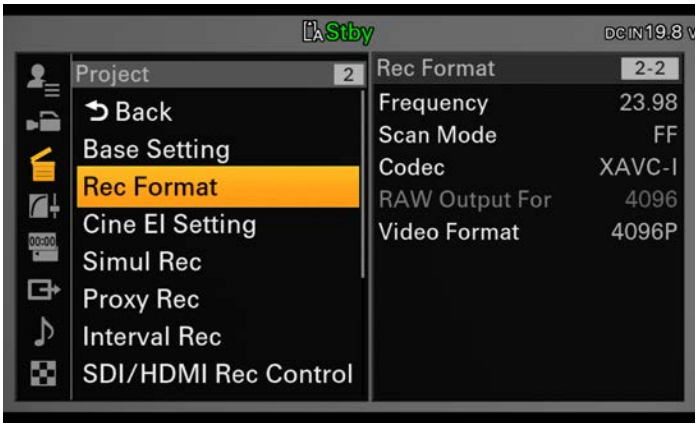
Bottom view.

FX6 Curated Menu Selections

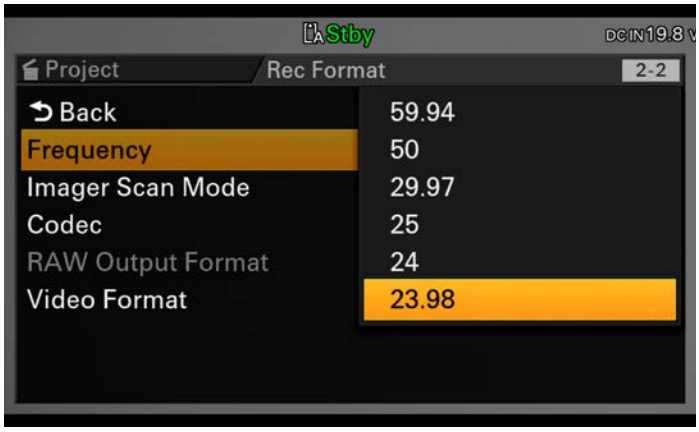
1. Let's begin with PROJECT settings.

2. BASE SETTING > SHOOTING MODE > CineEI.

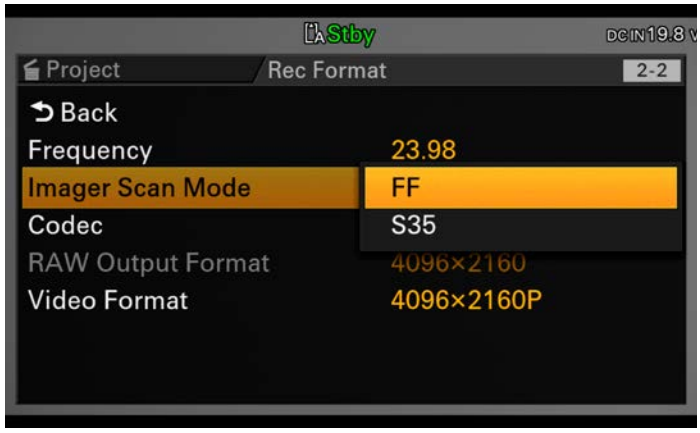
3. CineEI offers the best image quality and dynamic range.



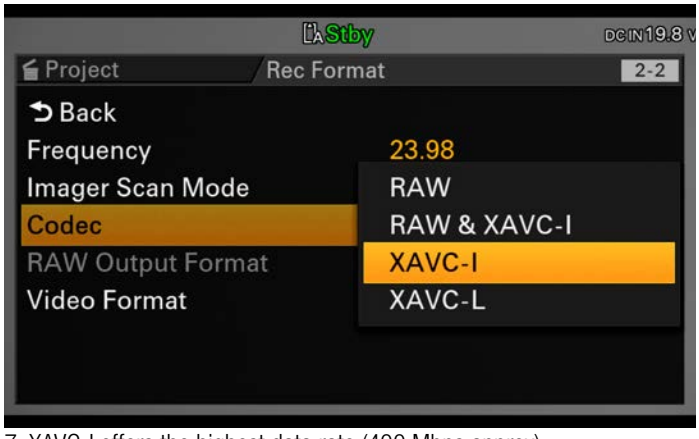
4. Let's choose the RECORD FORMAT.



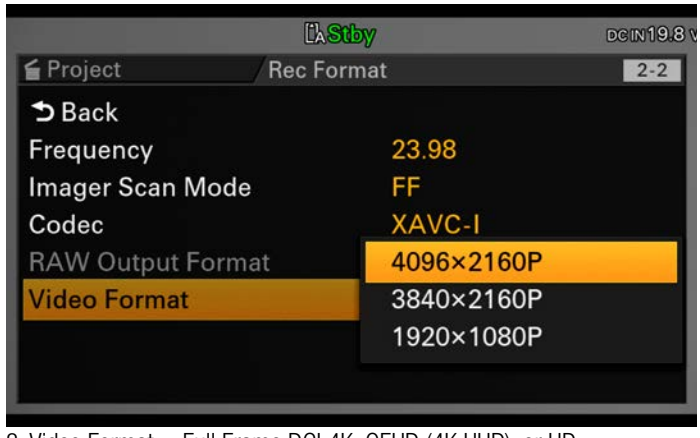
5. Let's go with 23.98.



6. Full Frame or Super35 Sensor Modes. Super35 is windowed.

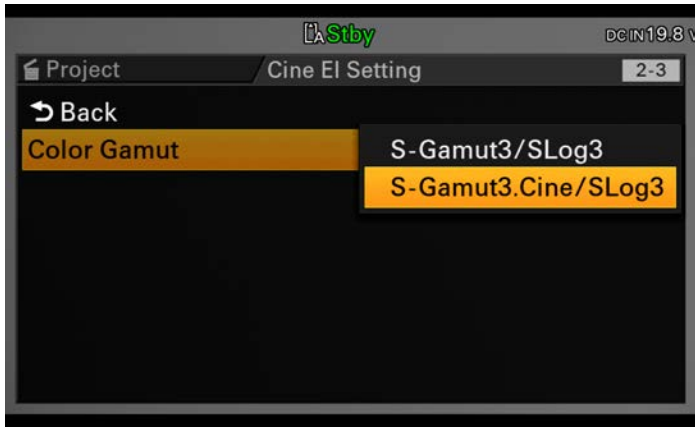


7. XAVC-I offers the highest data rate (400 Mbps approx).



8. Video Format > Full Frame DCI 4K, QFHD (4K UHD), or HD.

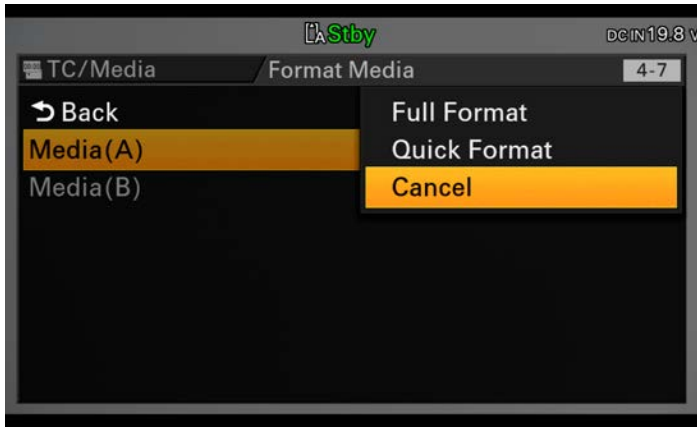
FX6 Curated Menu Selections



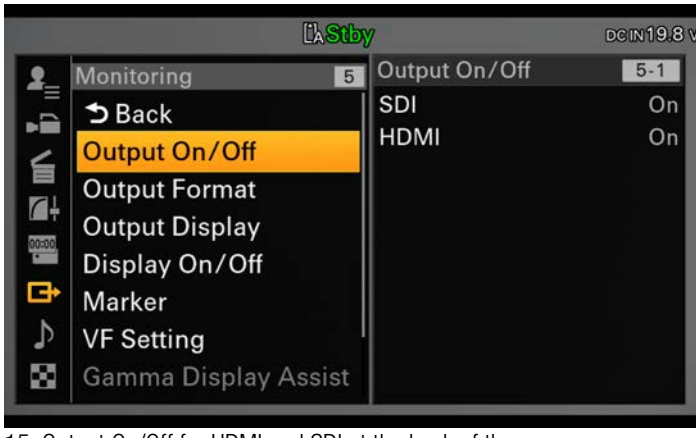
9, 10. CINE EI Color Gamut > S-Gamut3.Cine is easier in post production, although S-Gamut3/SLog3 offers wider range.

11, 12. Select the 3 ND filter presets here. 1/4 = ND.6 = 2 stops; 1/8 = ND.9; 1/16 = ND1.2; 1/32 = ND1.5; 1/64 = ND1.8; 1/128 = ND2.1 = 7 stops.

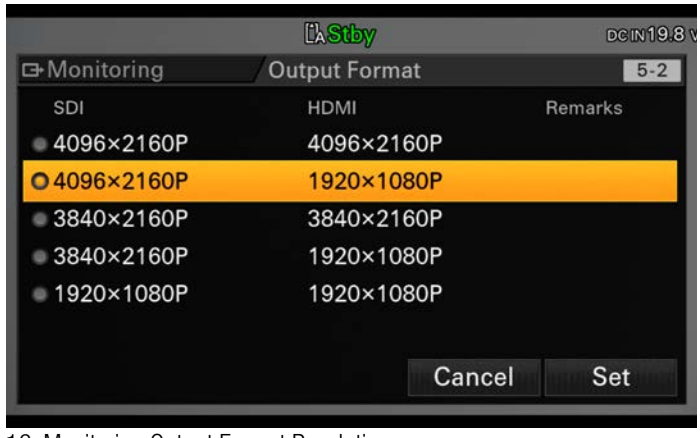
13. Format the Media Card in the TC/Media Page



14. Be sure to select the correct Media slot A or B.



15. Output On/Off for HDMI and SDI at the back of the camera.



16. Monitoring Output Format Resolutions.

FX6 Curated Menu Selections

17. MONITORING > MARKER is where you set framelines.

18. Let's select an aspect ratio.

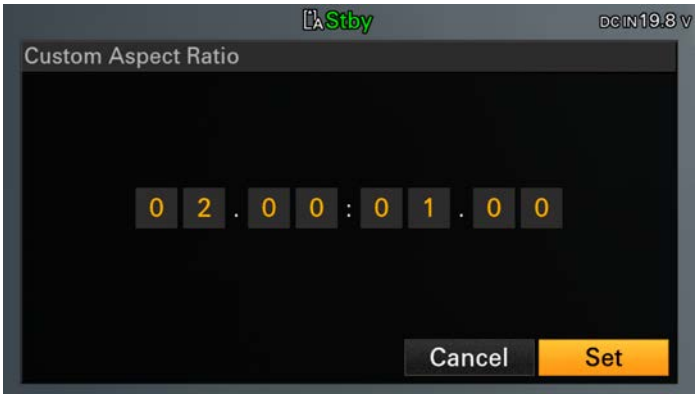
19. Here, we'll take 1.85:1.

20. But what if we want a ratio not in the selections? Go to CUSTOM.

21. Now, let's define a custom frameline aspect ratio.

22. This is amazing and had me jumping for joy. All cameras need this.

23. And here we have 2.66:1 (02.66:01.00) - Cinerama.



24. Or how about popular 2:1 (Univisium). Be sure to set the SET selector.

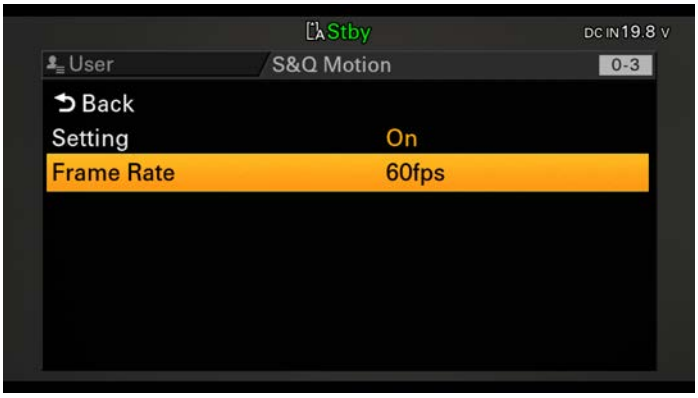
FX6 Curated Menu Selections

25. Go to the USER BOX selection to establish a second aspect ratio

26. Turn it on.

27. This is not as intuitive as the Custom Aspect Ratio.

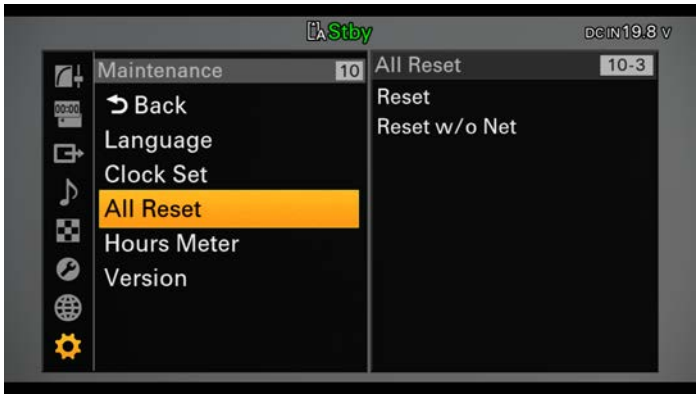
28. The User Box can work as a second set of framelines.



29. Turn S&Q on for slow motion. Assign On/Off to a User button.

30. Let's go for 60 fps.

31. To return camera to default settings: MAINTENANCE > ALL RESET.



32. All Reset.

Sony F EC 16-35mm T3.1 G Cinema Lens

16-35 T3.1 zoom on FX6

Welcome to "fly by wire" Cinema Lenses.

The Airbus A320 took off in 1984 and was one of the first commercial airplanes with digital, rather than mechanical or hydraulic, controls. Although we've seen cine lenses controlled electronically, the Sony F EC 16-35 T3.1 G (SELC1635G) Cinema Lens is altogether unique.

Externally, the 16-35 T3.1 lens looks familiar, albeit a bit smaller than what you'd expect. There are three separate, geared M0.8 rings for focus, iris and zoom. The iris has a mechanical switch to click or declick the aperture settings.

This 16-35 T3.1 lens has a servo zoom drive familiar to videographers, anathema to many cinematographers, but here, something to be enjoyed. A switch on the servo, at the right side of the lens, engages the drive or disengages it for manual operation or when using an external lens motor. There's a small H-L switch on the left side to change speeds from high to low.

The servo zoom is extremely smooth and can be set for an imperceptible move that might be especially beautiful for a title sequence landscape. Don't expect this small servo to do a snap zoom. If you must zoom in quickly, for example to check manual focus, disengage the servo. Or, remove the miniscule servo mechanism with three screws.

16-35 T3.1 zoom on a7R IV.
The two photos on this page are the same magnification and show how the FX6 is not much larger than the Alpha Series a7R IV.

Sony F EC 16-35mm T3.1 G Cinema Lens

Specifications

Mount	Sony E-mount
Format	Full Frame (and S35, of course)
Focal Lengths	16-35 mm
Lens Groups / Elements	13 / 16
Maximum aperture	T3.1 (F2.8)
Minimum Aperture	T24 (F22)
Aperture Blades	11 (Circular iris blades)
Minimum Focus Distance (m)	0.28
Minimum Focus Distance (ft)	0.92
Maximum Magnification ratio	0.19x
Focus barrel rotation	140˚
Front Diameter	114 mm
Zoom system	Both manual and servo

For full autofocus (with manual over-ride), slide the focus barrel forward. For fully manual focus control, slide the barrel back.

Here's where focus by wire gets really interesting. Up to now, most autofocus or electronically assisted lenses did not easily perform repeatable moves. This 16-35 has a linear response mechanism that provides repeatable, tactile, accurate manual focus control. You will consistently return to a marked focus position on the 140 degree rotating barrel. And yes, there are end stops.

Welcome to the future of cine lens design.

Why? Shorter flange focal depths, like the Sony E-mount's 18mm, benefits optical design, especially at wide focal lengths. Moving optical elements with independent internal electronic actuators, rather than mechanical helical threads or cams, enables faster response time, precision and silence.

Note: Sony's Full-Frame FE PZ 28-135 mm F4 G OSS Full-Frame Zoom came out with the FS7 in September 2014. But it did not have consistently repeatable focus marks. The new FE C 16-35mm T3.1 G E-mount Full-Frame zoom has repeatable focus marks.

There are two XA (Extreme Aspherical) and three Aspheric elements to minimize color aberrations, geometric distortion, field curvature and astigmatism as well as to reduce the physical size of the lens. Optical surfaces are coated with Nano AR to reduce flares and ghosting. The 11-bladed circular iris assembly maintains round bokeh at all apertures.

Of course, the 16-35 T3.1 G is also fully functional on Sony a7 and a9 series cameras, complete with servo zoom and autofocus capability.

The Sony FE C 16-35mm T3.1 G zoom lens is available now for US $5,499.99.

Line up locating pin and hole.

There are 3 hex screws to remove or reattach the Servo Zoom module. When removed, be sure to cover the Servo contacts on the lens with the provided rubber cover. Reattach the Servo by aligning the locating pin and with the Servo switch in manual. Jiggle to engage the zoom drive gear.

Sony FE C 16-35 T3.2 G - SELC1635G

Cine lenses do not often come in festive boxes.

Left side

Right side

Akira Saito on the FX6

Akira Saito is Deputy Senior General Manager, Camera System Business Div. 2, Consumer and Professional Business Section (CPBS) of Sony Imaging Products & Solutions Inc. This discussion was conducted by email.

Jon Fauer: How did the idea of "Cinema Line" begin and what were the reasons for establishing it?

Akira Saito: The diversification of video content on the internet, social media, and streaming services is increasing. The demand for video is also increasing in marketing, advertising, and personal use. As a result, more creators want impressive cinematic expressions. To meet such demand, we have defined and decided to introduce Cinema Line. This series of products, including existing models, combines the technology Sony has cultivated over many years in digital cinema production, Sony's passion for movie production, and our cutting-edge digital imaging technology.

Cinema Line products are equipped with both film-like rich cinematic expression - based on the color science of VENICE - and the operability required by creators at the cinema level.

Is this a global initiative? What is it called in, for example, France, Spain, Italy, Japan…?

Yes, we will introduce this Cinema Line worldwide. We will use the name "Cinema Line" worldwide.

Would you call this a branding initiative, a product group, a new division of Sony, or something else?

Cinema Line is series of professional cameras that have a filmic look, cultivated from Sony's long experience in digital cinema production, and enhanced operability and reliability responding to the wide variety of creators' high demands.

Is there a Cinema Line team? Who are the people involved?

It is a cross-sectional project by the Alpha team and the professional equipment team. Using expertise of both teams, FX6 combines the best of Sony's industry-leading digital cinema technology with advanced imaging features from Alpha mirrorless cameras.

I guess this signals that Sony is even more committed to cinema than ever before?

With the introduction of the Cinema Line, we will continue to meet the needs of a wide range of users and creators with a strong product lineup including VENICE, FX9 and FX6.

VENICE and FX9 have been great successes.

VENICE has been used in the production of a wide range of movies, dramas, and live productions.

So far, the Cinema Line cameras are VENICE, FX9 and soon-to-be announced FX6. Any others?

We cannot provide any specifics on future product development, but we will expand its line-up with a wider range of products.

What about a7S III? Would that camera be considered part of the Cinema Line?

Alpha 7S III is not included in Cinema Line. Cinema Line is strategically selected by the look and the operability of the camera. "Look" is a comprehensive term for us to explain the image's character, which is composed of color, tone, sharpness, etc.

Will the name "Cinema Line" be shown on the cameras?

The name "Cinema Line Camera" will be used in online promotion and catalogs.

What about lenses? Will they become part of Cinema Line?

No, Cinema Line is a name for series of professional cameras and does not include lenses.

I believe the new 16-35 T3.1 will be referred to as part of a series of new cinema lenses. Comments?

The FE C 16-35mm T3.1 G (model SELC1635G) lens, announced at IBC 2019, will be available in December 2020 to pair with FX6, FX9 and other Full-Frame Sony cameras. This new lens supports intelligent shooting functions unique to E-mount cameras—such as fast and accurate AF even within shallow depth of field—while also offering manual focus options in a form factor familiar to professional cinema creators.

Would you like to comment on whether Cinema Prime lenses are being considered?

We have planned the cinema lens series as a lens group with both the operability that meets the higher demands of movie professionals and advanced functions such as high-performance AF. It will expand image expression with a large aperture. We will refrain from commenting on the future lineup, but we will listen to our customers' reaction and demand for future lineup studies.

I consider the 16-35 T3.1 G as a groundbreaking, disruptive (in a good way) lens. It might signal a larger shift away from PL, and a move toward shallow flange depth, in high-end and popular cinema production.

We hope that cinematographers will accept this lens and the E-mount camera system as an effective way to freely pursue cinema-like expressions — even for high-end, single-camera setups and productions.

Please comment on E-mount in the Cinema Line philosophy.

By supporting E-mount, Cinema Line can be combined with a wide range of more than 50 lenses, and we believe that it can meet the needs of many creators for new forms of video expression.

Please comment on Sony sensor technology and color science in the Cinema Line concept.

The image sensor is one of the key elements of production, and Sony has an understanding cultivated with creators in our long history of digital cinema starting with the F900. By fully incorporating that knowledge, we select the most suitable sensor according to the characteristics of each Cinema Line product.

Cinema Line is also specially designed for film-like and rich cinematic expression, which is based on the well-received color science of VENICE. It can deliver the film-like rich "look" especially for skin tones, by featuring s709, S-Cinetone, etc.

Would you like to say anything about future additions to the Cinema Line — cameras or lenses?

We cannot provide any specifics on future product development, but we will continue to develop products that have both the operability and the reliability to meet the needs of today's demanding creators. We are glad if many creators will choose our Cinema Line to more comfortably enjoy impressive content creation.

A Guide To Remote Production Using AJA Products

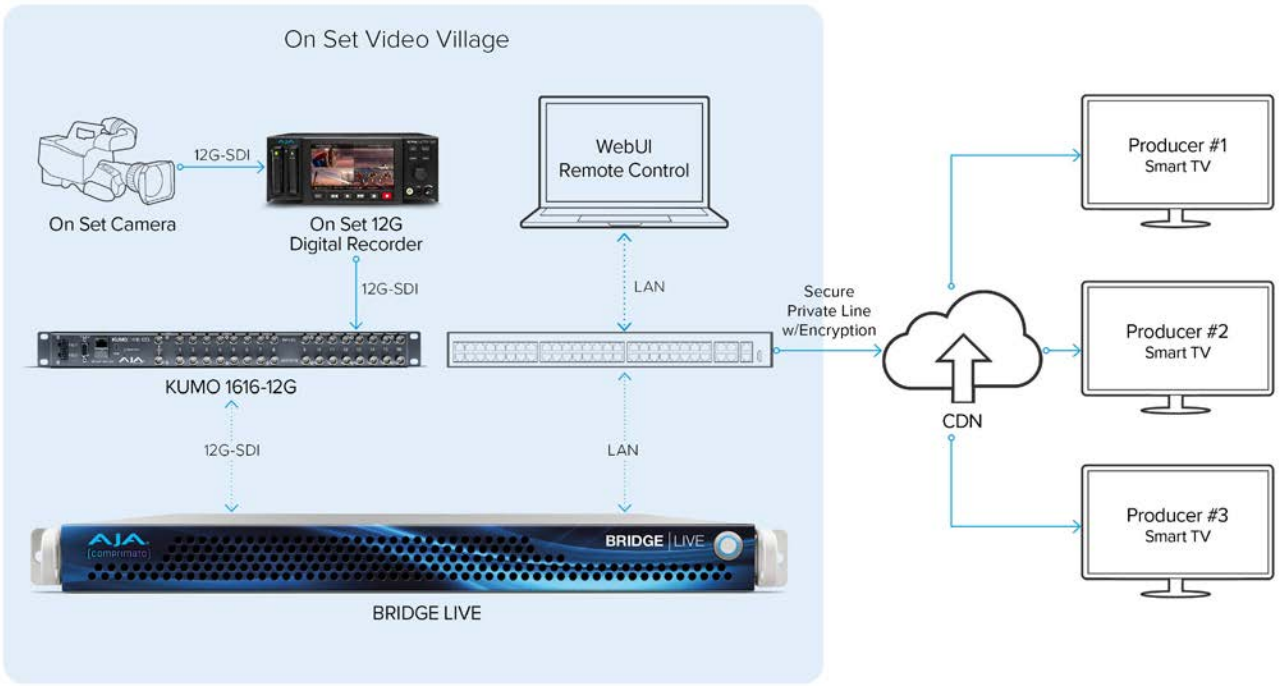


Fig. 1

by Andy Bellamy, Product Marketing Manager at AJA Video Systems

As the Film and Television production community inexorably returns to work, new guidelines for social distancing are being firmly implemented.

Season One, Episode One (FDTimes August 2020) showed how we can create safe on-set environments for cast and crew using distinct technologies available from AJA. We covered how Optical Fiber converters were able to add distances up to 10 km for SDI cables running up to 4K HDR content. And, we could use conversion technology to provide the best possible viewing experience on-set, even in difficult circumstances.

In this article, Episode Two, we will take a look at how AJA can provide easy-to-deploy, but highly sophisticated, hardware to assist in remote production. This includes providing close to real-time safe and secure feeds for creatives virtually anywhere in the world, a reality for any modern production seeking to create safer working practices during this challenging time.

Connecting The Set For Remote Viewing

First. let's take a look at how we connect the updated technology discussed in part one with production staff who must work outside of the restricted on-set environment. As we saw, we can use fiber technology to create distance safely within a set to provide monitoring to the Director of Photography, the Director and the Producer. But if producers are not able to be on set, we can use dedicated streaming technology from AJA to provide a link to on-set camera monitoring and playback, along with corresponding audio.

BRIDGE LIVE

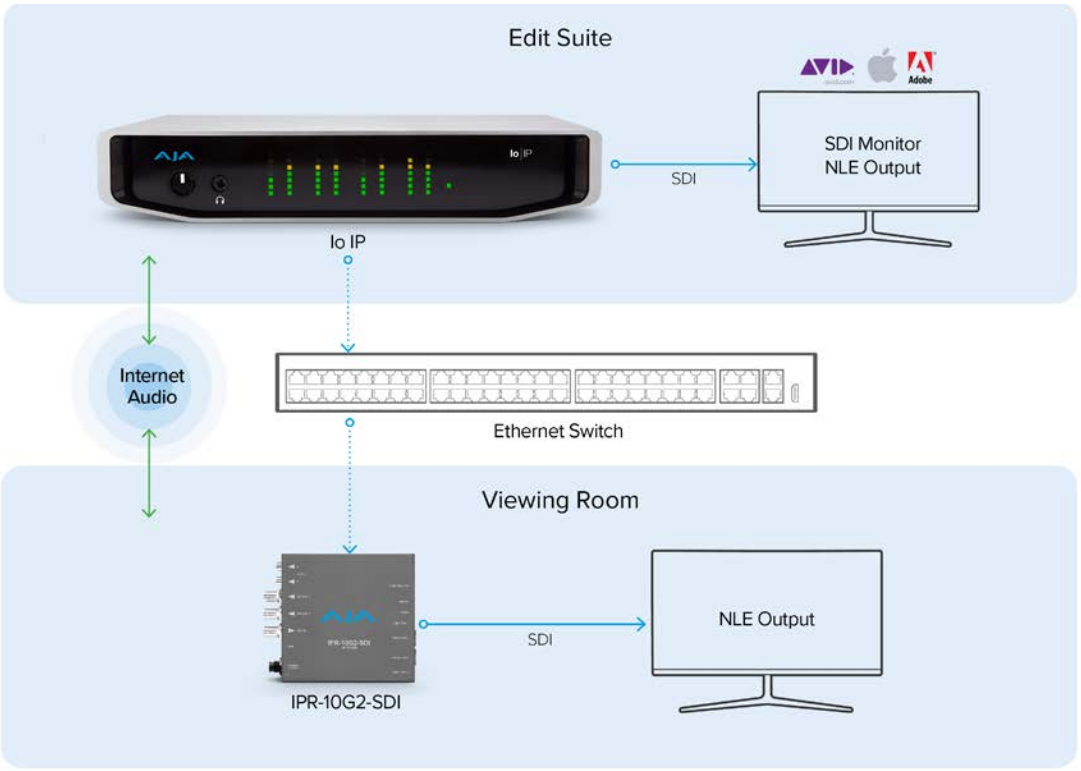
If we need to provide a viewing facility to any producer or other staff requiring monitoring, we can connect both the camera feed and playback feed from the socially distanced video village using BRIDGE LIVE from AJA.

(See figure 1.)

BRIDGE LIVE is a powerful, but easy to use, device for multi-channel HD streaming or single channel UltraHD, taking source video over SDI and converting it in real time into H.265 (HEVC), H.264 (AVC) or H.262 (MPEG-2) as well as an option to offer JPEG 2000.

BRIDGE LIVE can utilize a secure, private internet connection on set to provide low latency video and audio camera feeds and playback to a smart TV, laptop or desktop computer at a remote location via a CDN (Content Distribution Network) to anywhere in the world with a suitable bandwidth connection by simply following the appropriate URL.

A telephone, mobile phone or internet phone service like Skype



Realtime IP Based Remote Editorial for UltraHD/HD Video

Fig. 2

or Zoom can provide real time voice communication if necessary. BRIDGE LIVE supports up to 4K 60p, with H.265 high quality compression with SRT (plus encryption) ensuring a detailed, insightful real time viewing experience. The same link can be repeated securely to as many staff as is necessary.

Additionally, a second BRIDGE LIVE can be utilized at a facility to receive the same feed from the set and convert the compressed streaming format back to baseband video for 12G-SDI monitoring, routing and recording.

Post Production Review Processes

In the pre-pandemic world of post production, traditional practices for editorial approval have meant that producers, editors, agencies and clients would typically congregate in edit suites and viewing rooms. Once seated together in the edit suite or viewing rooms, the review and approval process could begin. Close proximity is of course not possible under new regulations and we can look once again to AJA's implementation of key technologies to help create the flexibility and distance needed.

IMAGE IP Converters

IP Converters and Editing I/O Remote Workflows

First of all, we can create distance within a facility by making use of an existing IT infrastructure and by adding AJA Mini-Converters that allow the use of ethernet cabling to pass uncompressed video and audio. AJA IP (Internet Protocol) Mini-Converters offer the transport, reception and decode of video that adheres to the SMPTE ST 2110 group of standards. An adjacent standard set from SMPTE, known as SMPTE 2022-6/7 is also supported.

AJA IPT-10G2-SDI & AJA IPR-10G2-SDI

By using a 10GigE network, server and the appropriate AJA Mini-Converters, in this case a transmitter like the AJA IPT-10G2-SDI can take the baseband video from the SDI output of an editing system and transmit it without loss via the ethernet network.

(See Figure 2.)

We can then provide a safe reviewing environment for a producer at another network point in the same building, using a receiver like the AJA IPR-10G2-SDI. The producer would be able to communicate with the editor via a telephone, mobile phone or internet phone service but would be able to see the timeline and editorial adjustments in real time as if they were in the same room.

IPT-10G2-HDMI and IPR-10G2-HDMI

AJA IP Mini-Converters also support HDMI, as is the case with the IPT-10G2-HDMI and IPR-10G2-HDMI, allowing the use of cost effective 4K HDMI displays for monitoring.

A common scenario would be to utilize the SDI version in

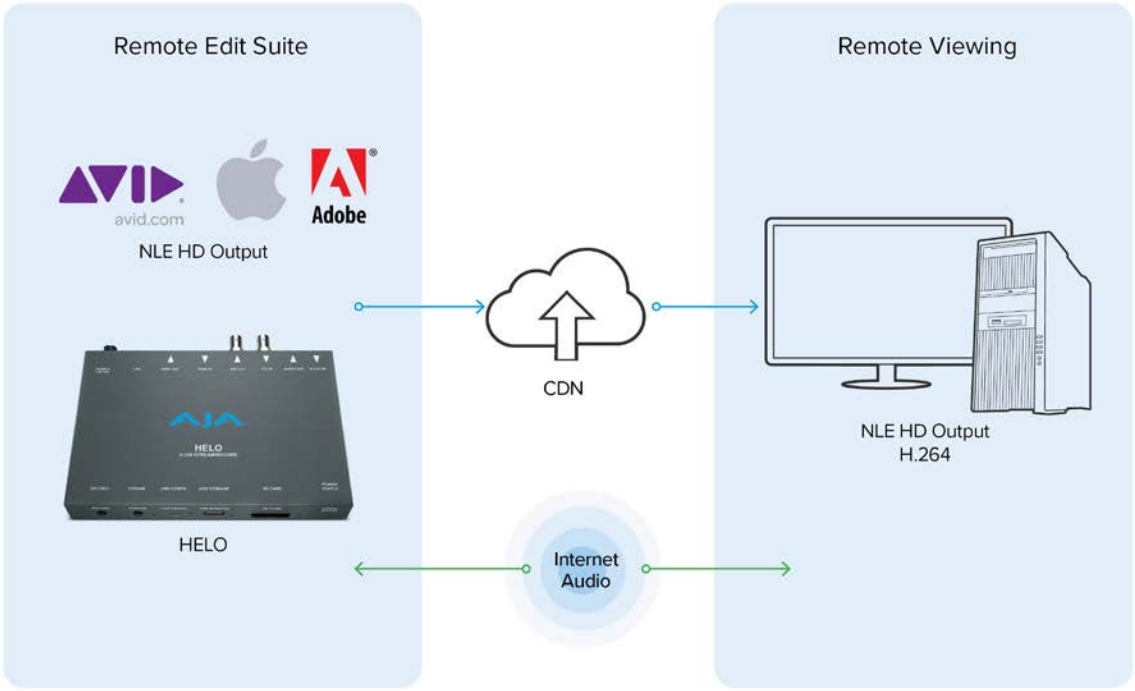


Fig. 3

our example for transmission and utilize the HDMI model for reception in the producer's office or remote location.

AJA Io IP

To make things even simpler on the NLE side, AJA offers the portable Thunderbolt 3-based Io IP with 10GigE connectivity for conveying SDI over IP from the outset from an NLE. AJA Io IP has broad application support for all major editorial software, like Apple Final Cut Pro, Avid Media Composer, Adobe Premiere Pro and After Effects.

Via a simple Thunderbolt 3 connection to the host computer, Io IP gives a direct IP output that can be passed through the network and again sent to another network point where an IPR-10G2-HDMI or IPR-10G2-SDI takes the IP video and outputs baseband video monitoring. For workstation use, KONA IP is a PCIe NLE I/O card that can be fitted internally to a PC.

Updating to an IP based infrastructure gives immense flexibility in providing safe working spaces with almost no compromise in the workflow itself, meaning review time is still both equally collaborative and productive.

One editorial video source can even be easily mapped to multiple simultaneous end points within a facility for even more detailed review cycles requiring more than one producer or post staff member.

Using AJA Streaming Products to Create Safe Review Environments

We've seen that using AJA IP products can extend production boundaries and enhance safety within a single facility, but what if the editor and producer are separated by even larger geographic challenges?

Restrictions in travel have meant that it may not be possible for a producer to even journey to the same location as the editor so that they could work in the same building. In such cases we can again turn to AJA streaming products to help, with their ability to take source video and audio and create a compressed, but high quality stream that can be shared safely to almost anywhere, regardless of physical origin over public internet.

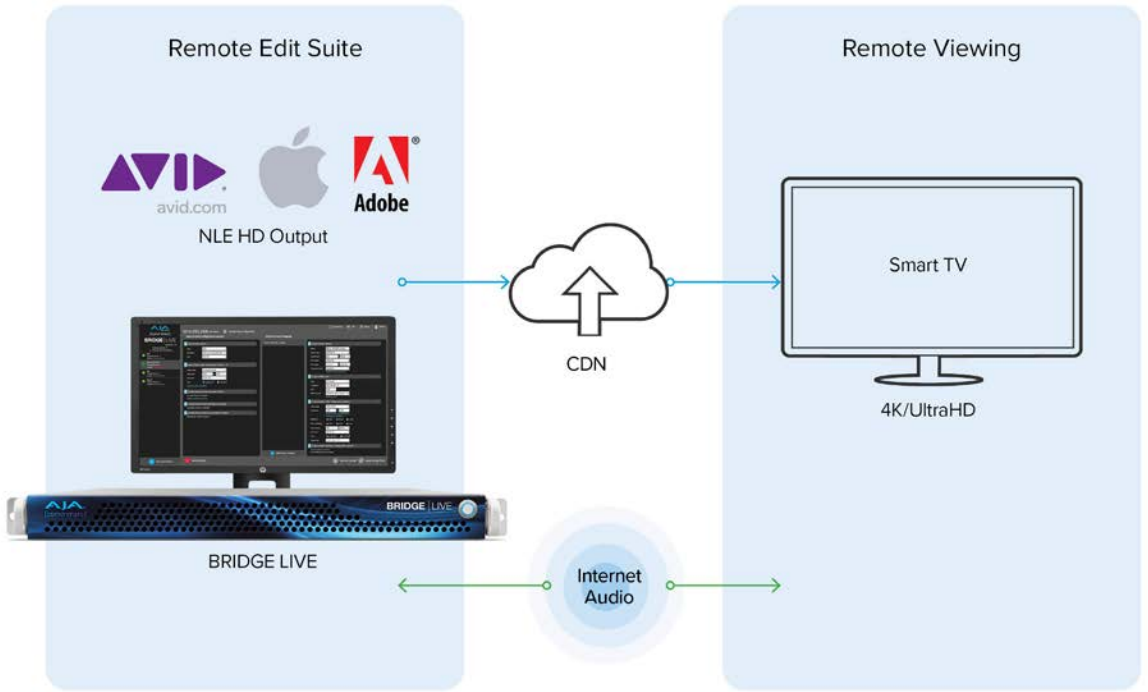
AJA HELO

A very simple set-up would utilize the AJA HELO streaming device.

(See Figure 3.)

HELO takes either HDMI or SDI video inputs with embedded audio and provides a real time conversion to H.264.

H.264 is a video compression format that offers excellent image quality to file size ratio and is widely accepted across multiple



Realtime Remote Editorial for 4K/UltraHD Video

Fig. 4

platforms, including mobile devices, smart TVs, as well as Macs and PCs. In this setup, the timeline output from the editing suite NLE I/O is connected via SDI or HDMI to the HELO device.

The HELO device is then set up to point to a CDN (Content Distribution Network), which could be a service like YouTube, Wowzer or Twitch, for example, or a private CDN for production needs.

A telephone, mobile phone or internet phone service is used for the editor and producer to communicate, with the video and audio from the timeline being viewed by the producer in a web browser. Using a secure connection can provide security for the content being viewed, with only the intended viewer being able to receive the stream. A single stream can also be streamed to more than one location for review processes that require it.

HELO very neatly covers all video up to HD, but what if we have a project that requires UltraHD/4K remote viewing?

BRIDGE LIVE Remote Workflow

(See figure 4.)

For both HD and UltraHD/4K projects we can turn again to the BRIDGE LIVE. H.265 offers an excellent choice for providing UltraHD/4K video and audio via streaming, but with the quality remaining high at up to 10-bit 4:2:0.

In this setup, the editor operates the editing system with the NLE timeline output being shared via SDI to the BRIDGE LIVE.

The output of the timeline is converted via BRIDGE LIVE to H.265, which is streamed to the smart tv in the producer's viewing room, who utilizes standard or internet telephony to communicate with the editor in real time during the review process.

The use of a smart TV that supports streaming also allows high quality viewing of the video stream with very little setup.

For image-critical applications, BRIDGE LIVE also offers optional JPEG 2000 support which, when combined with SRT (plus encryption), provides high quality transmission within a secure protocol.

Best of all you can send to multiple locations and services all from the same source in real time.

As we have seen, AJA provides a wide range of devices that respond to the exacting social distancing requirements of modern production. No matter the scale of production, from HELO and IP Mini-Converters to Io IP, KONA IP and the immensely powerful BRIDGE LIVE, AJA's commitment to high quality and ingenuity will increase safety and productivity.

Canon Sumire Primes — Episode 2

This the one and a half year anniversary of our first discussion about Canon Sumire Prime lenses.

The adventure continues.

Since their introduction in April 2019, Sumire Primes have distinguished themselves on features, TV, series, spots, docs, reality and many productions. They are unique to Canon in that products are usually designated by letters and numbers, like C70, R5, CN-E and K-35—and not names like Sumire.

Consider this as the second episode of our Sumire Saga. It's about Sumire look, design, science and art. Spoiler alert: it's not about vintage lenses, as we'll soon find out from Canon Senior Fellow Larry Thorpe on the following pages.

Canon Sumire Primes

Focal Length	14 mm	20 mm	24 mm	35 mm	50 mm	85 mm	135 mm
Maximum T-Stop	T 3.1	T 1.5	T 1.5	T 1.5	T 1.3	T 1.3	T 2.2
Mount	PL mount						
Close Focus - meters	0.20 m	0.3 m	0.3 m	0.3 m	0.45 m	0.95 m	1.0 m
Close Focus - feet & inches	8"	12"	12"	12"	18"	3'2"	3'3"
Length (from front to flange)	86.0 mm	93.5 mm	93.5 mm	93.5 mm	93.5 mm	93.5 mm	107.6 mm
Weight (approx)	1.2 kg	1.2 kg	1.2 kg	1.1 kg	1.1 kg	1.3 kg	1.4 kg
Front filter thread Ø		105 mm	105 mm	105 mm	105 mm	105 mm	105 mm
Front diameter	114 mm						
Lens Gear Pitch (Module)	0.8						
Focus Gear Rotation	300°						
Iris Barrel Rotation	36°						
Iris Blades	11						

Larry Thorpe on Canon Sumire Primes

Larry Thorpe and Jon Fauer, first blue blazers from the left, front row.

Background

Larry Thorpe is a distinguished Senior Fellow at Canon. He and I had the good fortune of traveling together in February 2019 for a firsthand look at Sumire Prime design and manufacturing in the Canon Utsunomiya Lens Factory (photo above).

During our February 2019 discussions in Japan, Larry said, "The recent move to Full Frame sensors has changed the cine camera and lens landscape. And so, we figured it was time to think about what Canon might offer with a new look in a set of prime lenses. Our new Sumire Primes are the results of those efforts."

In a meeting at the Utsunomiya Lens Plant, Ryuji Nurishi, Senior Optical Designer, said, "Both art and science are essential in lens design. It's really about pursuing a level in the design and also the 'Monodzukuri' (the way of making things) that can take it to a higher level. That involves aspects of science. High technology is required. But there's also a great degree of craft, art and artisanship. It's about the nuances, the instincts that people have, and combining all those things together. You have the latest technology but are always pursuing an ideal level, if you will."

Yasuyuki Tomita, Senior General Manager, added, "For me, optical design is almost like painting a picture. Different people take different approaches as to how they might interpret a subject and how they would express themselves in creating a painting. Certainly, if you translate this concept to the cine lens industry, it's about the different philosophies of the various companies.

"Different people have different ways of designing and creating. Even if we pursue the best technology in a lens, if the person who uses it, the DP for example, does not appreciate it and cannot bring out the best in it, that's why you have to have a good balance of both science and art."

Recently, Mr. Nurishi added another word to my lens and philosophy vocabulary: "San-ji." It is one of the guiding principles of Canon and refers to self-motivation, self-management and self-awareness. He said, "The essential process in the design of Sumire Primes was to translate the "look" that was requested in terms of artistic expressions by the DPs and rental houses, and to define the target optical characteristics to achieve it (Seidel's five aberrations, two chromatic aberrations, color balance, ghost, flare, etc).

"Our design approach included multifaceted simulations with super computers. These were just tools. The major work of translating artistic expressions to optical characteristics can best be explained as extremely independent and proactive designs that were achieved primarily by each optical designer's own sharpened senses, Canon's optical design technology cultivated by our long history, and the uniqueness of Canon's optical designers who have been trained in the San-ji spirit."

At our 2019 meeting, I asked Mr. Nurishi what Cinematographers' requests resulted in these latest Sumire lenses? He replied, "Creamy. Organic. Pleasing skin tones. But sharp for the eyelashes and hair. Gentle focus fall-off. Beautiful bokeh."

To my question about what it means to a lens designer when DPs say they would like a vintage, old-fashioned look, he did not look heavenward. Instead, he patiently replied, "20 DPs will have 20 different definitions of 'vintage.' In the days when we used film, as a lens maker, we were always providing lenses that possessed the finest line pair resolution—the finite, if you will. But depending on what brush you use, and I'm talking about the finite, how thick is it, how big? The brush, the lens, actually changes the expression of the art and that's what DPs are looking for: different types of expression depending on the paintbrush that they would use.

The Sumire Prime was designed for the purpose of creating the best way to represent, to film, a human being. That's the paint brush. The Sumire is for the human face.

Larry Thorpe smoothing a lens at Canon's Utsunomiya Lens Factory, under the close watch of Lens Meisho (Master Craftsman) Toshio Saito.

Kamiki 96% Whiskey and Omiwa Shrine, tutelary shrine of the Japanese alcohol producers. Notes of heather honey, sweet caramel, Japanese plum, balanced oak, peat, toffee, sandalwood and green tea."

A Lens for Formats S16 to S35 to Full Frame and Resolutions 2K to 12K

Larry Thorpe added, "A central design priority of the Sumire Primes has been to do justice to the remarkably high-resolution capabilities of Full Frame digital cine cameras. The new Sumire Primes achieve the requisite sharpness in the central range of lens aperture settings. Lens resolution is bounded by diffraction as the lens aperture is stopped down and by the collective of the multiple optical aberrations as the aperture setting approaches wide open. The optical designers worked on fine adjustments to the aberrations that created a gentle modulation of the lens sharpness that imparted a subtle and aesthetic nuance to a broad range of facial skin tones. It further imparted a smoothness to the transition between in focus and out of focus regions of a scene. We learned a great deal from cinematographers as to what they wanted. We listened closely to camera crews and rental houses. We heard them talk about character, special personalities and unique characteristics, and of course, the vintage look."

And so we get to the word "vintage." Despite an optical design to the contrary, by November 2020, quite a few Cinematographers were referring to Sumires as "vintage." It was time for a Zoom meeting with Larry to clear things up. Or should we say, "To scotch the rumors."

This we took quite literally. It was after hours, after magic hour, as I poured a glass of Kamiki and Larry a loyal Jameson. This was not out of line, as descriptions of lenses often follow cues from the worlds of art, wine and whisky tasting.

Larry and I had visited Japan a number of times. In fact, it was in Kyoto where he introduced me to the almost optically clear and perfectly spherical ice cube. The concept is surface area reduction and therefore less dilution of the drink. The look of a glistening orb in the golden glow of a Yamazaki 18 quickly encouraged lens analogies.

Meanwhile, back at our recent Zoom meeting, the Kamiki Whisky label reads, "Omiwa Shrine is one of the oldest in Japan. It is a tutelary shrine of the Japanese alcohol producers. It is located in the ancient capital of Nara, amid a dense forest of Yoshino Sugi, Japanese Cedar, which for centuries has been used to build temples as well as casks for aging whisky. Kamiki is balanced with heather honey, sweet caramel, Japanese plum, balanced oak, peat and toffee with hints of sandalwood and green tea."

That almost sounds like a DP poetically extolling the virtues of a Sumire lens. But are they vintage? I asked.

Jon Fauer: So, Larry, do Sumire Primes indeed carry on the Canon legacy of vintage K-35 lenses?

Larry Thorpe: Let me start by saying no to "vintage." In all of our discussions over the years since we entered the cinema market, Directors and DPs all over the world gave us three types of input. There were certainly constituents who said, "We love vintage lenses. Canon, could you develop vintage lenses?" There was a second constituent who said, "We don't believe in vintage lenses. We want a contemporary lens that is sharp over most of the aperture range. But on facial closeups, when we typically open the aperture wide or wide, we would like to see some modulation, if you will, of the sharpness, but only as we approach the wide open." Then there was a third constituency who were saying, "We're stuck with digital. Digital is getting higher and higher in resolution; we think it's too sharp. We want lenses to soften that a little bit."

We had to wrestle with these three slightly different messages. I should add to that, on the vintage discussion, many people have said to us, "Canon, you mastered the beloved K-35 primes. They were manufactured in the 1970s and 1980s. They won a Sci-Tech award in 1976. Can you recreate these vintage lenses?"

We responded, "Sorry, the vintage look of the K-35 series is a result of many factors. The first is the fact that optical design and

14, 20, 24, 35, 50, 85, 135 mm Sumire Primes

manufacturing capabilities of four decades ago don't compare with those of today. Then there is the deterioration of the lenses over the past 40 or 50 years. This includes the inevitable creeping physical ageing of the individual glass elements themselves (that affect optical performance), changes due to accumulated physical perturbations to the lenses over those years, further changes due to element wiping, scratches, fogging and dirt. And finally, there is the progressive deterioration of the optical coatings on the lens elements. And all of that has been different from lens to lens." Very few K-35s today look the same. They all have a vintage look, but they're different. So, we said no to that.

Instead, we decided to coordinate the comments we received from those DPs and rental houses worldwide, seeking an appealing look with the long experience of our optical designers and ally that with the use modern, high-powered computer simulations in a quest for that look.

We sifted through the many descriptors we got from different DPs of what they want in a contemporary look. And they used descriptors, they used adjectives, rather than technical. They'd say, "We want a creamy look. We want the nose to ear to have a slow focus fall-off." Some DPs were able to be a little more descriptive – and this was particularly important for our optical designers. The computer simulations showed that we could design a modern lens that had the desired look as you approach wide open. And that is what we did in Sumire. It's very important to understand that we distinguish it from vintage. We'd never, ever say that Sumire is vintage. Some people may say, "Oh, the look is vintage." And that's all right, if that look meets their own individual definition of the unique look they seek.

That's a good description. They are smooth and gentle on skin tones. The look is consistent and the mechanics are excellent.

There was an overarching teamwork underlying the design of Sumire. This included the regional sales organizations around the world who reported on the desires of DPs and rental houses, the regional marketing and product teams who very effectively transmitted those desires to the design team in Japan, and, of course, the positive responsiveness of those experienced designers to these multiple inputs.

These are lenses that embody the very best of modern development techniques. The optical characteristics being sought had to consider F number, depth of field, color balance, ghost, flare, etc.—and of course, optical aberrations. You have high resolution over most of the aperture range – but, as you get to F4, it slowly starts to migrate into this look that increases as you go all the way to wide open of T1.3 and T1.5.

Practically or hypothetically, we have started seeing 8K and 12K cameras. What happens if you put a Sumire lens on those cameras?

You will get the same effect. Sumire and all of our lenses are Cinema EOS lenses. They can resolve at least 8K. Not with the same depth of modulation as 4K, but they are certainly reproducing 8K detail. So you can put this lens on an 8K camera. On a 12K, honestly I don't know yet. I think it will resolve.

What do you think would happen? Color fringing or chromatic aberration?

No, you just get a slight softening. The lens is behaving like an optical low pass filter. It's not killing the detail, it's just lowering it gently.

This might be what many people want.

Yes, it absolutely could be. My count is there are seven Super35 8K cameras at various stages from prototype to completed products by different manufacturers. I noticed myself at last NAB and IBC that many of those were using Canon lenses. When asked why, they said, "We tested a few lenses and we liked Canon's look on 8K.

Canon EOS C70 with RF Mount

Canon EOS C70 with RF 24–105mm F4 L IS USM

What happens when you put a Full Frame Sumire on the new Super35 Canon C70 camera using a PL to EF to RF mount adapter? What's the look effectively going to be?

It's going to be very much a 4K look because the C70 has a 4K Super35 image sensor. There would probably be a slight softening of the MTF. It wouldn't be as sharp as if you had a full-frame image sensor at 6K or 8K, but it is still going to be very respectable 4K.

And now for some math gymnastics, what happens when you use a Full Frame EF lens like the Canon EF 85mm f/1.2L II USM at f/1.2 with the new Canon EF to RF adapter (EF EOS-R 0.71x) on the EOS C70 camera?

The adapter has a fortuitous combination that preserves of angle of view and elevates the speed. You gain about a stop. And it carries all of the electronic communication between an EF lens and the camera's RF mount.

Your example of the Full Frame 85mm lens at f/1.2 with this adapter on the Super35 C70 camera retains the same angle of view. So, the angle of view is comparable to having a 60mm lens designed for Super35 / APS-C . And you gain a stop, so your f/1.2 effectively becomes an f/0.9. Most EF lenses are optically compatible with the EF-EOS R 0.71x adapter and contribute to the effective transfer of full frame imagery to a S35mm image sensor with the benefit of a one-stop gain in optical speed.

In terms of full electronic communication – associated with the lens-camera communication through that adapter – three specific EF lenses at this juncture are fully compatible in terms of implementation of all electronic corrections for optical aberrations and high accuracy auto focus. These lenses are: EF16-35 F2.8, EF24-70 F2.8 and EF24-105 F4.0. Moving into 2021 Canon will progressively update the stored files within the remaining family of EF lenses to achieve full electronic compatibility with the EOS C70.

I like the RF mount and hope there will be more RF mount Canon Cinema EOS cameras and lenses. The RF mount opens up a universe of possibilities with its short 20mm flange depth.

It does, and in the long term, we are going to be able to make higher optical performance lenses because of that short flange back.

For example, the new Canon RF 85mm F1.2 L USM DS is an amazing lens.

Oh, that's a beauty, a real corker of a lens. I've been reading reports on that lens from around the world. Everybody loves it. We did something awfully good there.

Why do so many Cinematographers obsess about vintage looks? I've rarely heard any still photographer asking for a similar thing?

That question requires a delicate answer. I think there's still a deep sentimental love of motion picture film. That's where you start to hear about the sharpness of digital. Then it becomes a matter of maybe the lens can help soften that a bit.

The other thing is the tweaking of the look happening more often in post-production rather than on set. DPs and directors were able to dictate the look and nobody messed with it downstream. Today, with digital, there can be a lot of tweaking in post. I think a lot of people want to put vintage lenses on so that the look is defined on set. We're in a transition era of people still adjusting to digital and digital moving so fast. Look, 4K is what? Five years old? And suddenly it's 6K, then 8K, and now it's 12. That is very interesting.

You mentioned earlier about counting all those Super 35 cameras. But for the past three years, I thought we were migrating to Full Frame. Including Canon. But recently, we saw your C70, RED KOMODO and Blackmagic URSA Mini Pro 12K all coming out within weeks of each other. Is that a trend or just another choice for DPs?

My view is that Super 35 is entrenched globally. It's got a massive history with an enormous inventory of 35mm format lenses. All of us started our digital saga on Super35. The first Full Frame 36x24mm format cine cameras are only three years old. Then we

Canon EOS C70_with_EF-EOS R 0.71x_EF to RF adapter and EF 24-70mm f/2.8L II USM

all jumped on the bandwagon. But there are two worlds. We think Super35 is going to stay rock solid. Full Frame is growing. There's no question. We felt comfortable to play in both vineyards. For example, in the last year, we brought out the C500 Mark II Full Frame camera, and a few months later, the C300 Mark III Super35 camera, followed by the C70 Super35 camera a few weeks ago.

It's not unlike the thing we're facing in still photography, with DSLR and mirrorless cameras. I think that's Canon's viewpoint: the world is very big and there are legions of people who appreciate choices. Especially in this new, golden age of digital cinematography. So we produced major new products in both categories during the past twelve months.

I believe I see kind of two simultaneous threads in production. One is the high-end for big budget movies. And then there are also the more affordable cameras like your new C70. It seems that the affordable products are soaring in sales. How do you think it's going to continue? Will there still be a high-end or is that going to be replaced by the more affordable business model?

I think there will always be a high-end. When you look at the specs that, say, Netflix has written and the way they test all the cameras in their lab, they've defined a bar for their originated programs. They've set bars on the camera manufacturers. They still do tiering in programming. They do the really high-end shows like "The Crown" but they have documentaries, reality and other things. That's where you have the spectrum of price-performance with the lenses and cameras that will be there. That said, there's no question that prices of many cameras are becoming more affordable, I'm still stunned how we packed all that we did into a $5,500 camera. But then you can't discount competition. There is more digital competition out there now and we all have to be competitive.

The Canon C70 could be a model for many more cameras to come as to form factor and philosophy, not just in Super35, but also in Full Frame, because it has such a user-friendly shape.

Exactly. And there is an awful lot of run and gun type of filming, even in major motion pictures and episodic television. People are shooting in confined spaces and on drones, gimbals and hand-held where compactness, size and weight all are very important.

That could be an interesting request for the next generation of Canon RF mount, Full Frame cine lenses. They probably should be small and light and very high performance as well.

Well, if you look at the compact servos that we made, the 18-80 and the 70-200, they were little miracles. I'm passionate about them. 2.65 pounds, 4K, built-in image stabilization, the servo drive built into the lens, also wireless, manual Iris, camera control of iris—all in those tiny little lenses that are 7.2 inches long. For documentaries, nature, sports and reality shows, these are dream lenses. And I think they set the stage for further innovative developments.

And the Canon Cine-Servo 25-250 T2.95 zoom is amazingly versatile.

I bragged for three years about our 20x zoom, the CINE-SERVO 50-1000mm T5.0. That was the technology we spun down for the new, 6.7 pound 25-250. And that includes a built-in 1.5x range extender. Established 10x S35mm zoom lenses typically weighed 16 pounds. It's a gem.

If we look back at our FDTimes interview last year in Japan, February 2019, a gentleman named Larry Thorpe said, "Lens resolution is bounded by diffraction as the lens aperture is stopped down and by the collective of the multiple optical aberrations as the aperture setting approaches wide open." Would you please explain.

Sure. All lenses have an issue as you stop down. Diffraction is the great dictator. You progressively lose MTF as you stop down. Then, as you open up the aperture, diffraction sort of moves to the side, it becomes less of an issue. And then you confront the aberrations. There are five monochromatic aberrations. I think you know them: spherical aberration, coma, astigmatism, field

curvature and geometric distortion. And there are two chromatic aberrations: lateral and longitudinal. As you open up, you're fighting the aberrations quite a bit. They become more challenging on wide aperture in all lenses. Lens designers have spent years and years to combat those aberrations, to try and reduce them.

As our optical designers considered the many requests for a new full frame prime lens they carefully considered the ramifications of translating the many artistic expressions they received into optical characteristics. To do this they had to mobilize their accrued experiences and sharpened senses – honed over many years of optical design – with their cultivated optical design technologies. And, the latter brings us to the very latest in optical simulation tools.

We could simulate glass materials, glass geometries, element groupings, et cetera, to fight those aberrations, to lower them. But in getting all of that acumen into our computers and all of the multiple technical details on the different glass materials – our optical designers had acquired a deep familiarity with all of the associate imaging characteristics – and were able to essentially reverse engineer things.

With the Sumire Primes as a new design goal, we could say, "Wait a minute, suppose we don't want to combat them. Suppose we want to exercise the aberrations themselves to impart a look?" We know the looks that we formerly considered to be nasty and that took away sharpness. But if people are asking for a softening, or smoothing, can we play with each of these aberrations in simulation? Could we try a different footprint and maybe some combinations to create a different sort of look?

Canon in Japan were able to show those simulations to some high-end DPs. When they received enough positive feedback and got certain blessings, they went ahead in building Sumire Primes. We will not reveal which aberrations we played with. That's our secret sauce. But the essence was to exploit what we formerly always combated as we opened the aperture and then said, "Back off, let's exploit it". It's as simple as that.

That must have driven the optical designers crazy because they have spent entire careers ironing out these aberrations.

Yes. The simulations were performed on Canon's super computers. They run 24/7. They search for glass materials, combinations of geometries and groupings. You are talking about billions of calculations.

Once we were able to do this in simulation, then had to have terrific consultations with our actual manufacturing people to ask, "If we can do it in computer simulation, can you do it physically?" And that was what became Sumire Primes. They are a product of the most sophisticated simulations and the most sophisticated manufacturing precision to be able to tweak geometries and to implement what the computer predicted. That's the magic of Sumire.

Leica SL2-S with Leitz 35 mm Summilux-C using Leitz PL to L-mount adapter. All photos courtesy of and copyright Leica

The new Leica SL2-S launched on December 10, 2020. Think of the last "S" in "SL2-S" as "Special" or maybe "Sinematographer" with an "S." That is because the SL2-S will be specially suited for cinematographers and anyone shooting stills and cine.

The SL2-S has a 24.6 Megapixel sensor inside. (Its sister SL2 has a 47 MP sensor). What is it about 24 MP sensors? They also reside inside Panasonic S1H and S5, as well as SIGMA fp. Is this a conspiracy by members of the L-Mount Alliance? What do they know that we should know?

As you know, the L-Mount Alliance was allied at Photokina in September 2018. Leica Camera, Panasonic and SIGMA standardized on the L-Mount's 20 mm flange focal depth and 51.6 mm inside diameter. That shallow distance from lens mount surface to sensor offered both optical and mechanical design advantages. Lenses can be smaller, faster and different. Furthermore, you can attach almost any cine or still lens—PL, PV, LPL, M, R, Mitchell, SP70, Nikon, Canon, Mamiya—with mechanical adapters.

About the SL2-S and 24 MP sensors, Leica Supervisory Board Chairman Dr. Andreas Kaufmann explained, "As you know, a 47 Megapixel sensor shooting video creates a lot of data and generates a lot of heat. The SL2-S camera's 24 MP sensor provides elevated video capabilities with a lot less noise in the image."

Ironically, there was a lot of noise in the low-rez video images that Dr. Kaufmann and I endured during a video chat that proceeded to lose all audio—requiring simultaneous cell phone voice "dubbing."

Dr. Kaufmann continued, "When you're shooting a major motion picture with a big camera package, you probably are on a dolly with big batteries and size doesn't matter. But for the expanding market of users doing independent productions or shooting stills and video together, the decision is always to go small, go simple. I see a lot of those smaller cameras on fashion shoots, documentaries, corporate videos and commercials. That is because they create great pictures. I would say this new Leica SL2-S is an especially good test case for people who shoot both stills and video. Our friends at Ernst Leitz Cine have simultaneously launched 'Henri,' which suddenly elevates the SL2-S as a serious tool, even for cinema. (More about Henri soon.)

"And it's not just independents. I still remember a meeting with David Fincher a few years ago on the set of *Gone Girl*. He said, 'I would like to have one person on set with a camera, and me with an iPad, because I want to have small setups. It will take a bit, because we still have these huge engines with all the stuff around, but down the road, I think it would be possible a few years from now.'"

On the outside, Leica's new SL2-S (Type 2998) looks like the SL2 that was introduced at Paris Photo on November 6, 2019. The form follows functional design concept carries on from the original SL ((Type 601) introduced in 2015.

SL2-S controls are elegantly ergonomic and minimal. Three buttons on the back are pretty much unified across the Leica M, Q,

CL and SL product lines. The L-Mount's 20 mm shallow flange depth and in-camera stabilization accommodate Leica M, S and R lenses with adapters. PL, LPL and other cine lenses also attach with adapters and additionally benefit from the sensor's 5-axis in-body image stabilization. Meanwhile, Leica, Panasonic and SIGMA continue to expand their impressive lines of new L-Mount lenses—with 40 native L-Mount lenses currently available from these three manufacturers. By the end of next year, there could be more than 50 in the Alliance.

The next person on my speed dial was Leica Head of Product Management Stephan Schulz. Discussing the compelling video capabilities of the SL2-S, Stephan said, "This camera is more dedicated to video. We have been working with well-respected colorists and post-production people in Hollywood to integrate viewing LUTs. So, when filming in Log, you can view a nice image on the rear LCD monitor. There are many additional improvements. And, a firmware update in early spring will add even more important features: timecode import, additional bit-rates, waveform monitor, more framelines and H.265 formats. We are committed to move forward for the video and filmmaker worlds. The SL2 was already not so bad. This one, the SL2-S, will be much better for cine production."

Just as I was wondering whether the final "S" in SL2-S stood for Schulz, he said, "On top of all that, the price will be much more affordable. The SL2 today is 6,000 Euros. The new SL2-S will cost around 4,500 Euros."

My Zoomed expression must have been one of disbelief because Stephan hastened to add, "We have an economy effect because it's almost the same platform and camera body, with mainly a different sensor. The yield of those 24 Megapixel sensors in manufacturing is much better than the 47 MP ones. So the basic price for the sensor is lower.

"Regarding low light performance, the bigger pixels provide better performance. It's a BSI (back-side illuminated) sensor. Also, we do not have a low pass filter. We were a little bit nervous about having moiré, but the images are very clean. We like to have as little extra glass between the sensor and the rear of the lens.

"We shot some tests accompanied by some cinematographers. We found that the image quality is almost three-dimensional. It's not as flat as many cameras with low pass filters."

I asked why 24 Megapixels was the magic number and not something less.

Stephan replied, "Some people may say that a so-called one-to-one pixel ratio in video should be better. But it's not, really. I would add that we do not want to limit resolution and crispness. And besides, one-to-one with a Bayer pattern sensor is not really one-to-one. You always need more pixels in order to get rid of the limitations of that Bayer pattern. So, I think the SL2-S camera has an advantage. It goes from 24 Megapixels to a 4096 x 2160 (for example) 8.9 Megapixel image through downsampling. We have a very good video engine that results in excellent image quality."

Leica SL2-S Details and Specs

Leica SL2-S Type 9584

- Sensor : CMOS sensor, Full Frame Leica Format (24.6 MP): 6072 x 4056 pixels / APS-C (10.6 MP): 3984 x 2656 pixels.
- Pixel pitch: 5.94 µm
- Stabilization: 5 axis Body Image Stabilization. equivalent of up to 5.5 stops.
- Cover glass: UV/IR filter, no low-pass filter.
- Mount: L-Mount. 20 mm Flange Focal Depth. 51.6 mm I.D. Pogo pins for L bayonet lens data communication and metadata.
- Still formats: DNG (raw data), DNG + JPG, JPG (DCF, Exif 2.31)
- ISO: ISO 50 to ISO 100000
- Cine formats: MP4: H.264/MPEG-4 AVC with 2ch 48 kHz/16 bit, AAC audio.
  MOV: H.264/MPEG-4 AVC (with 2ch 48 kHz/16 bit, LPCM audio.
- Bit rates: 8 or 10-bit internal recording onto SD card, 10 bit external recording via HDMI.
- Cine color space: Rec. 709 /Rec. 2020 (HLG / L-Log). Cine gamma: Rec. 709, L-Log Rec. 2020, HLG Rec. 2020
- Cine modes: Full Frame - C4K (17:9) 4096 x 2160 (Downsampled from 6000 x 3168)
  Full Frame - 4K (16:9) 3840 x 2160 (Downsampled from 6000 x 3368)
  Full Frame - Full HD (16:9) 1920 x 1080 (Downsampled from 6000 x 3368 pixels)
  Super35 - C4K (17:9) 4096 x 2160 (Downsampled from 4128 x 2176)
  Super35 - UHD 4K (16:9) 3840 x 2160 pixels (Downsampled from 3984 x 2240)
  Super35 - Full HD 1920 x 1080 (Downsampled from 3984 x 2240)
- 10-bit max: MOV C4K, 29.97 fps, 4:2:2 10-bit (internal SD & external HDMI) Full Frame & S35, H.264, ALL-I, 400 Mbps
- Media: Dual internal UHS-II SD slots.
- EVF: 5,760,000 dots, 120 fps, 0.78x mag; 4:3 aspect ratio; 21 mm exit pupil position; +2 to -4 diopters; 0.005 s latency.
- LCD Panel: 3.2" backlit LED with anti-fingerprint and anti-scratch coating, 2,100,000 dots; 3:2 aspect ratio, touch screen.
- Top Display: 1.28" trans-reflective monochrome LCD, 128 x 128 pixels, viewing angle 120°; anti-fingerprint coating.
- Connections: ISO hot shoe with contacts; Full size HDMI 2.0b Type A; USB 3.1 Gen1 Type C; Audio- in & Out 3.5 mm.
- Size / Weight: 146 x 107 x 83 mm / approx. 850 g (without battery), approx. 931 g (with battery).

Leica SL2-S

PLAY button is for:
- Start / Stop playback
- Return to full-screen display

Function buttons
(there are 6 total) and here are a few choices:
- Switch from Still to Cine mode
- Magnify image in EVF
- Focus Mode, Focus Peaking
- ISO, Timelapse, Exposure, etc.

MENU button:
- Access Menu and Status Display
- Accessing Playback choices
- Exit current menu page

Top Dial:
- Menu navigation
- Setting the shutter speed
- Exposure compensation
- Zoom in / out on playback image

Rear Dial:
- Menu navigation
- Submenu
- Set menu items and functions
- Exposure compensation
- Set program shift
- Scrolling through playback
- Playback video
- Confirm prompts

Joystick:
- Focus area choice
- Menu navigation
- Submenu
- Set selected menu item
- (Field or Spot AF)
- Exposure lock
- Playback video
- Confirm prompts

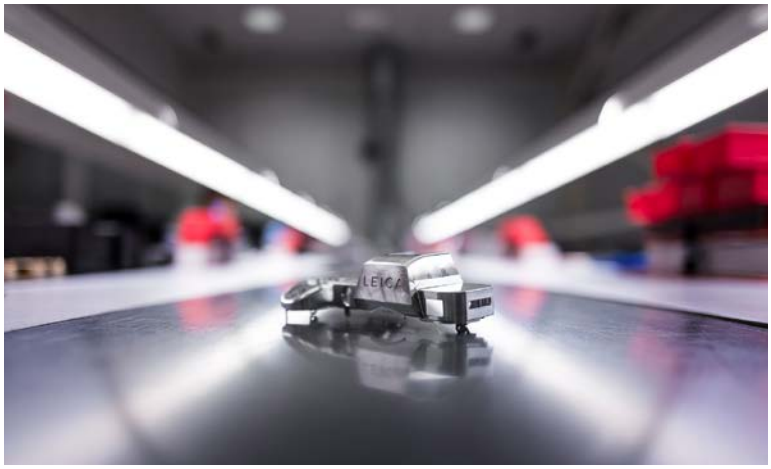
The Display switches between PHOTO to VIDEO mode.

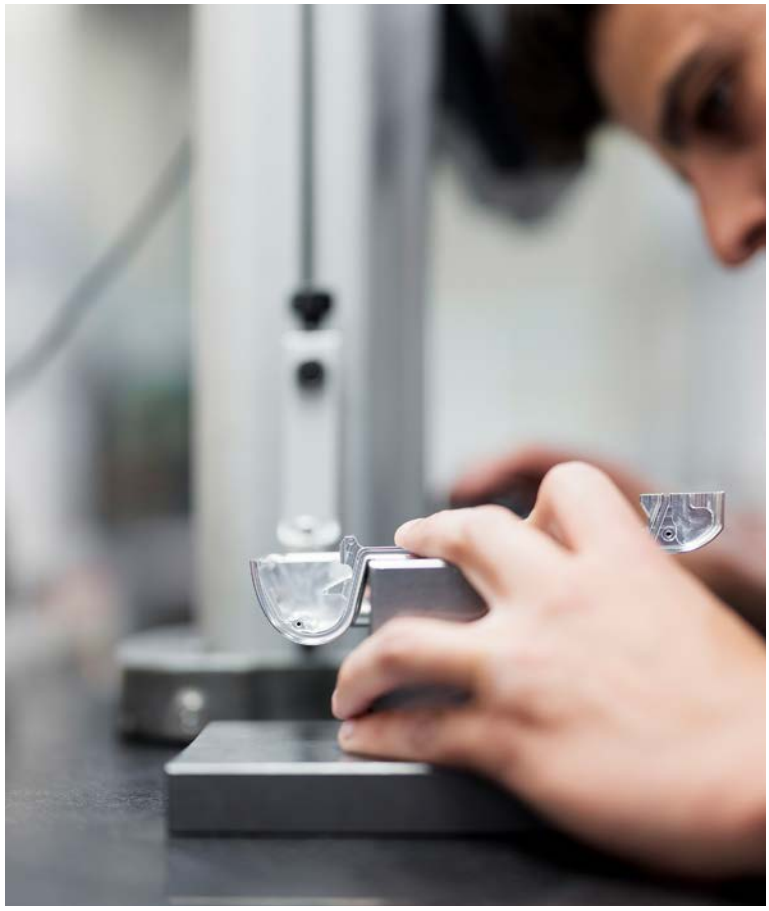
VIDEO mode shows shutter angle, timecode and audio levels

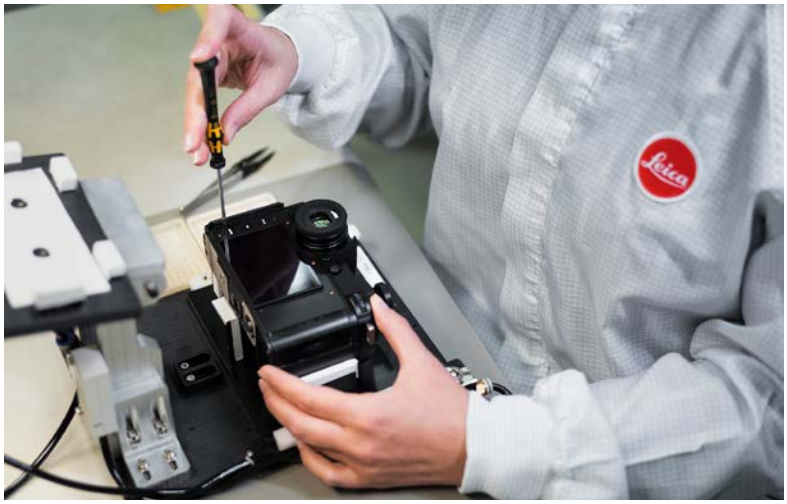

LEICA
SUPER-VARIO-ELMAR-SL


LEICA
LEICA
APO-SUMMICRON-SL 1:2/50 ASPH.
24 21 19 16
16-35

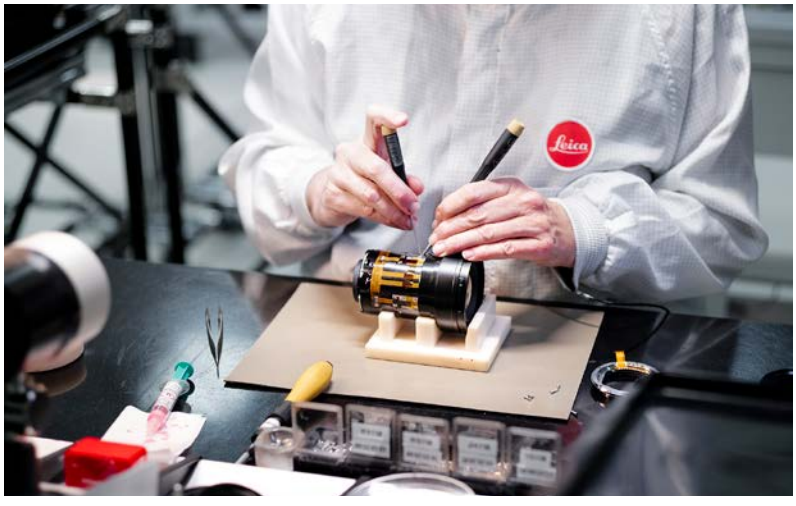
Crafting Leica SL2-S







Crafting Leica SL2-S



Photos and renderings by Leitz and Leica.

Concurrent with Leica's launching the SL2-S camera, please welcome Henri. Here is the original press release with additional notes.

December 10, 2020, Wetzlar—Cine Lens Manufacturer Ernst Leitz Wetzlar Gmbh adds HENRI—a Cinematographer's Viewfinder

The upgraded cine application of the new Leica SL2-S camera was the main incentive for Leitz to collaborate on this project.

This new system is based on the unique knowledge and experience of Leica in camera development for professional users, combined with Leitz's deep understanding of the cine lens market and the particular needs of its professional users worldwide.

HENRI consists of a newly designed support system for Leica's SL2-S camera with a pivoting handle including integrated camera controls. By flipping in the handle, the system can be easily attached to a monopod or tripod plate.

The modular system allows the camera to be easily attached and removed. L-PL and L-LPL mount adapters are available.

Weighing only 4 lb., HENRI and the Leica SL2-S Camera is a comfortable, practical and ultra-lightweight package for Cinematographers and Directors on set and on location.

Technical details

- Construction: aluminum with carbon fiber rods.
- HENRI weighs 800 g. The L-PL mount is 250 g. The Leica SL2-S camera is 800 g.
- So, the complete unit without lens is 1.8 kg / 4.07 lb. This is comfortable for a Finder in use all day.
- The Leica SL2-S has a great viewfinder and some basic framelines. Additional framelines will become available with future firmware updates.
- Fold the pivoting handle back to attach HENRI directly to a tripod.
- The pivoting handle comes with an integrated record start/stop switch.
- Comes with 15mm rods. 19mm studio rods will become available for HENRI in Q1-2021.
- Simple balance of camera and lens.
- HENRI will be available with L-PL and L-LPL mounts. An LPL-PL adapter is planned. Also, a complete system of SL2-S, HENRI, mounts and a custom carrying case is said to be under consideration.

Rainer and Henri

And now for some tongue-in-cheek commentary followed by a serious discussion:

I'm delighted to see the Leitz is calling HENRI a Cinematographer's Viewfinder and not a Director's Finder in their press release.

Usually this kind of thing has been called a Director's Finder. But it's really a shared object.

Perhaps it all began when Movie Directors grew jealous that Cinematographers had their own unique badge of office. You could immediately identify the DP on set by the contrast glass dangling around the neck. We'll mention that the Gaffer also had one.

Of course, the Director also wanted a badge of office. And so it was that the Director's Viewfinder was born. By 1979, venerable vintage 1979 Alan Gordon Enterprises Mark IV (followed by the V and Vb) Finders were draped around Directors' necks everywhere. The Finder had a flashy, silvery chain that snagged on shirts and skin. It was heavy. It bounced annoyingly on one's stomach. Kish Optics had a lighter smaller finder. Over the years, many additional models wound up in Directors' and DPs' hands.

Which brings us back to Leitz and HENRI being called a DP Finder. It is a team effort, after all. I can't imagine any DP on set or location not demanding equal time with HENRI and the latest Leitz Prime, as Rainer Hercher, Managing Director of Ernst Leitz Wetzlar GmbH (Leitz Cine), demonstrates above.

To my question of how and where the concept for HENRI began, Rainer replied, "We started earlier this year, following up an idea that we were looking into for a long time. The concept was to implement Leica cameras, and especially the Leica SL, for lens testing. As you can imagine, when we had the first prototypes of lenses to try out, we often found that there was no existing system from any of the manufacturers for the Leica SL together with an LPL Mount. Also, we wanted to make our own system to get the camera into the cine world by using 15mm rod supports.

"Next, we started thinking that it would be good to have a Director's or Cinematographer's Viewfinder because the SL2 camera, in my opinion, has the best viewfinder in the business. It's very good and very sharp. The colors and contrast are excellent. The SL2 has a button to zoom in on the image for critical focus.

"Therefore, we considered this as a system where you can easily rig camera accessories, a lens, even a follow focus. It should be equally comfortable holding by hand or on a tripod. After many talks with Leica, we also asked them to include more framelines, which they did on the latest SL2-S. This makes the camera quite useful on set and they are working on doing more framelines and aspect ratios in the future with firmware upgrades. I believe HENRI will be an amazing and very popular Finder. You can record high quality video with the SL2-S, and you can also grab still frames, which is very useful as well."

Noticing that HENRI + SL2-S would probably not be dangling directly onto any Directors' tummies, but would rather be ready to go on an AC's cart or in a nice Peli case, I ventured that even though they're calling it a "Cinematographer's Finder," what

they've created is also a really good system that could potentially turn the SL2-S into a camera of choice for documentaries, fashion, independents, sports and action films.

Rainer agreed, "What I like about HENRI is the handle that swings in or out. When you extend it, HENRI has a bit of the feeling of a handheld Beaulieu Super 16 camera. Perhaps we should look back even further to a vintage Super 8 camera like the Leicina 8 V, which also had a swing-out handle. You hold it with your right hand, look into the eyepiece and your left hand pulls focus. You might attach a small follow focus to the rods. As a former documentary cameraman, I quite like working that way. I think it's quite handy. A good thing about the SL2-S camera is how well it works with not only Full Frame 36x24 format lenses, but also 24x18 Super 35. It is quite a good system for doing handheld work. And then, if you swing the handle in, you can quickly put HENRI on a tripod. I think that makes the system quite unique."

A cable connects HENRI to the remote start/stop of the SL2-S. And what about lens mounts? How about HENRI working with native L-Mount lenses as well? With more than 50 L-Mount lenses, will they make inroads into the cine world?

Rainer replied, "HENRI has L to PL as well as L to LPL mount adapters. We will also make an LPL to PL mount, so you have an array of choices. As for using HENRI with the SL2-S and native L-Mount lenses, sure, you just attach the camera directly to Henri, most likely without the rods.

"Speaking of the L-Mount, we are announcing that Leitz Cine is also joining the L-Mount Alliance. We are enthusiastic about the synergy that can be gained from the combined know-how of these four companies."

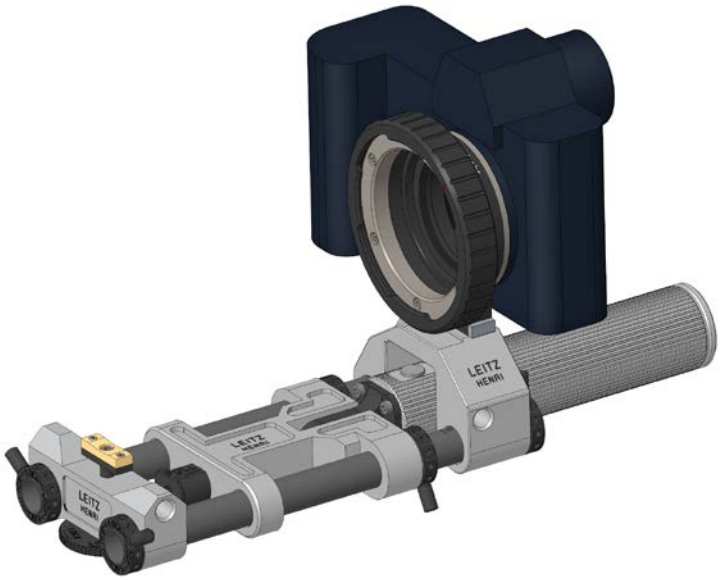
Presumably additional companies might be interested in joining as well. "In Unity there is Strength." The Dutch translation is "Eendracht Maakt Macht" and that is the motto of Collegiate School, oldest school in the US, and so decreed by the Dutch in New York in 1628. "Eendracht Maakt Macht" is forever remembered by generations of Collegiate schoolboys, including me, having been doomed to write those lines hundreds of times during detention for deeds deemed dubious. But I digress. What I really wanted Rainer to explain was how HENRI would compare and contrast with current optical Directors' Finders.

"The SL2-S EVF is probably better than most ground-glass viewfinders you've ever seen. Remember when ARRI came out with the original ALEXA EVF? At first, some distinguished DPs resisted and said they wouldn't shoot digital until an ALEXA had an optical spinning mirror shutter finder system. Well, ALEXA Studio eventually arrived. But by then, most Cinematographers were so accustomed to and comfortable with ARRI's excellent electronic viewfinder that few of them wound up working with the Studio. Not to mention that in dark interiors or night scenes, some ALEXA Studio users were actually framing off their video monitors instead of looking through the viewfinder. So everybody got used to it.

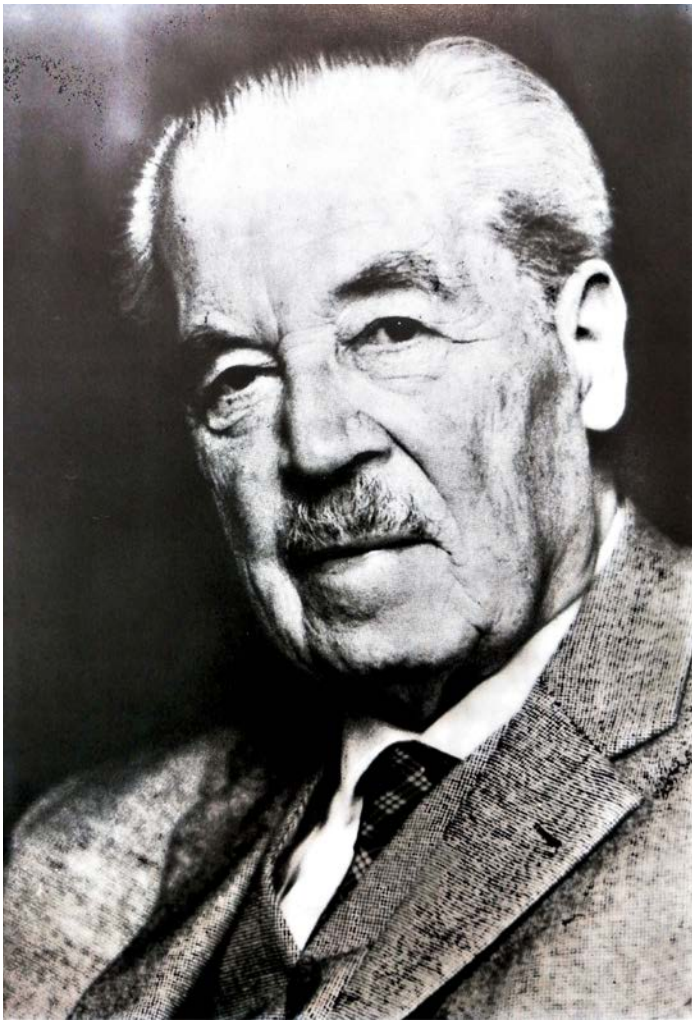
"And that's why, in my opinion, we see the SL2-S with HENRI as a balanced system where you can put on various lenses. If you have heavier lenses, you can support them. You can shoot handheld or with a tripod, on Steadicam, gimbals, drones, remote heads, car mounts, helicopters, and more. Also, Leica sensors are really good. I think we'll see the SL2-S to be a competitive camera. There's quite a big market where I think its price is attractive. From the tests we did this week, the data rates were substantial, there was a lot of information in the files, they played back nicely in 4K and the results were really good. We tried the two Log modes: Cine Log and Classic Log.

"HENRI was designed and built in-house here in Wetzlar by the same teams who manufacture our lenses. We get all the components locally and the supply chain is good. We are not a mass market manufacturer. We have always been a boutique, small manufacturer with low volumes and high quality. I hope you will enjoy trying HENRI."

Leitz HENRI Preliminary Renders



Henri Dumur



The Leitz Cinematographer's Finder HENRI is named after Dr. Henri Dumur, Managing Director of Ernst Leitz Optische Werke Wetzlar.

Henri Dumur (1885-1977) was the Swiss grandnephew of Ernst Leitz I. Dumur joined the company in 1903 at the age of 18. He spent 60 years working for and supporting the company and the Leitz family. To this day, he is fondly remembered and well-respected.

The following notes come from German Wikipedia, with citations from the book *Ernst Leitz I: From Mechanic to World-Famous Entrepreneur*, by Knut Kühn-Leitz, Stuttgart 2010, pp. 219, 220.

By 1915, Dumur was in charge of the Leitz commercial department. He traveled abroad often. With trips that included North and South America, he was able to renew business relationships after WWI. He established sales organizations in a number of countries. Dumur enhanced the reputation and economic prospects of the company significantly.

Photo courtesy of LFI Magazine, June 1977.

Panasonic LUMIX DC-BGH1

Panasonic calls it a box camera.

Perhaps that is too modest a name for the LUMIX DC-BGH1.

"Box" reminds me of the first Kodak box camera of 1888. It had a simple fixed lens and lacked controls. "You take the pictures, we do the rest." A century of box cameras followed: Brownie, Instamatic, Crown, Cadet, Ansco, Warwick.

Calling the BGH1 a box camera could be like comparing a Jiro (dreams of Sushi) Omakase experience to a box lunch.

"Cube" calls up the BGH1's great potential.

Yes, the LUMIX BGH1 is boxy on the outside, with sculpturally beveled and rounded edges. It will feel familiar for broadcasting, streaming, multi-cam and IP remote control.

But the BGH1 is much more. Imagine a hypothetical product development meeting that could have launched the concept. Designers, engineers and planners are assembled in a meeting room, pre-pandemic, at Panasonic headquarters in Osaka. Twenty cinematographers join by video conference. They are simultaneously singing the praises of Panasonic's popular LUMIX GH5s 10.2 Megapixel, video-friendly, Micro Four-Thirds camera. They ask, "What if you take that sensor and electronic support system and repackage it into a rugged, mountable, adaptable body with high-end connections?"

What really happened is explained by Mathew Frazer, LUMIX Business Development Manager at Panasonic USA. I took notes so the following is paraphrased from his description of the BGH1's background:

"For image quality, the BGH1 is a slight step below the S series, but in terms of features, it's well above. In fact, it does things not even found on an EVA-1.

"During product development that began more than a year ago, we took a look at market conditions. We had already noticed that streaming applications were growing substantially. This was even before COVID-19. Since then, obviously the demand for high quality streaming options has grown exponentially. We expect this camera will get a lot of use in streaming. Also, we looked at broadcast and realized that a cinema quality camera at this price was missing. There are going to be a lot of other uses for this camera. We considered the strengths of the GH5s, S1H and S5 cameras: compact size, light weight and good for handheld work. They don't draw much attention when you're doing documentary work.

"So, we took those strong points and applied them to a box camera form factor. And then we saw additional applications. For example, you could use up to 12 BGH1 cameras in a multi-camera array. Mount it in vehicles. Attach it to a drone or gimbal. Use it for VR, live events, reality shows, docs and certainly streaming.

"One complaint that we got from the cinema community with cameras like the GH5s and the S1H was the latency over HDMI. So we added a 3G SDI port for instantaneous viewing on monitors. We improved the autofocus system with AI that detects faces and even fast-moving animals. We made it as lightweight as possible, and it is about 35 grams lighter than a GH5s. In the market research phase, users requested lots of ¼-20 threads because they wanted mounting flexibility. We think the BGH1 provides all these things and achieves a price point that people haven't expected before. We see lots of opportunities."

The press release arrived on October 13, 2020: "Panasonic is proud to announce the release of the brand's first box-style LUMIX Digital Single Lens Mirrorless Camera DC-BGH1. Based on the Micro Four Thirds (MFT) System standard, the new LUMIX BGH1 takes advantage of high mobility, an extensive interchangeable lens lineup, and includes technologies Panasonic has acquired though the development of professional cinema cameras, camcorders and the LUMIX GH series. It can be used in

a variety of ways from shooting on drones to IP remote control to live streaming and more."

Yes, lots more. What do BGH1, FX6 and Komodo have in common? Their bodies are roughly 4-inch cubes. (BGH1 is 93.0 x 93.0 x 78.0 mm / 3.66 x 3.66 x 3.07".) They are lightweight. (BGH1 is 545g / 1.2 lb.) They have lots of places to mount accessories and secure the camera. Komodo is Super35, FX6 is Full Frame and BGH1 is MFT.

Is there a good reason for Micro Four Thirds? Yes, the lenses are tiny and plentiful. There is a vast inventory of Micro Four Thirds lenses from more than 15 manufacturers. The standard was established in 2008 for interchangeable mirrorless digital cameras. Flange focal depth is 19.25 mm. Image diagonal is 21.6 mm on the sensor's image area of 17.3 x 13 mm.

So, the BGH1 is an interchangeable lens camera that shoots C4K to 60 fps for adrenaline adventures with gimbals, drones, helmets, helicopters, jets, hang gliders, ultralites, bikes, boards, skis and even on a tripod.

The BGH1 has a 10.28 Megapixel Sensor with a Venus Engine (image processor) and Dual Native ISO made famous by Panasonic VariCams where we all learned about shot noise and separate circuits for regular and high ISO ranges. Maximum ISO is 51,200.

Internal All-I recording to SD cards reaches 4:2:0 10-bit C4K/UHD 4K up to 60 fps or 4:2:2 10-bit to 30 fps. External 4K 4:2:2 10-bit C4K/UHD 4K 60p output is available simultaneously via the camera's HDMI and SDI connectors. V-Log L is included. Under and overcranking ranges from 2 fps to 240 fps in FHD.

The rugged BGH1 body is made of aluminum and magnesium. Its advanced thermal management with heat dispersion and cooling fan provides unlimited recording times.

Panasonic LUMIX BGH1 Details

- 10.28 MP Sensor. 17.3 x 13 mm Image Area.
- Dual Native ISO: 160 & 800 Normal; 400 & 2000 in V-Log L.
- Micro Four Thirds Lens Mount. 19.25 mm Flange Focal Depth.
- Numerous Recording Permutations, including:
  - 4096 x 2160 C4K and 3680 x 2760 Stills
  - MOV: H.264/MPEG-4 AVC, H.265/HEVC
  - MP4: H.264/MPEG-4 AVC, H.265/HEVC
  - C4K: 24, 30 fps @ 400Mbps (4:2:2 10-bit ALL-Intra)
- Power over Ethernet+ (PoE+ for power, signal and control).
- Control up to 12 LUMIX BGH1 cameras via Panasonic LUMIX Tether for Multicam application.
- Future firmware update will support IP streaming over wired ethernet (RTP/RTSP).
- Ethernet port, USB 3.1 Type-C, 3G-SDI and HDMI Type-A connectors provide simultaneous output.
- Genlock IN and Timecode IN/OUT.
- Dual UHS-II SD Card slots
- Anamorphic desqueeze viewing via SDI/USB-C/Ethernet
- Anamorphic desqueeze ratios: 2x / 1.8x / 1.5x / 1.33x / 1.30x.
- 3.5mm Audio In/Out. Optional XLR adapter DMW-XLR1.
- Remote control via 2.5 mm connector.
- 2.4GHz Wi-Fi and Bluetooth 4.2.
- Remote camera control and tethered still shooting with LUMIX Tether for Multicam and LUMIX Sync.
- SDK for camera control via USB.
- Dimensions: 93.0 x 93.0 x 78.0 mm / 3.66 x 3.66 x 3.07"
- Weight: Approx. 545 g / 1.2 lb (Body only)
- External Power: 12V, 3A AC Adaptor included; PoE.
- Batteries: Optional onboard VBR 7.28V Li-ion 43, 65 or 86 Wh.
- The Panasonic LUMIX BGH1 costs around US$ 1,999.

Panasonic DC-BGH1

Front

Actual Size. W: 93.0 mm, H: 93.0 mm, D: 78.0 mm / 3.66 x 3.66 x 3.07". Weight body only 545 g. / 19.2 oz.

Rear

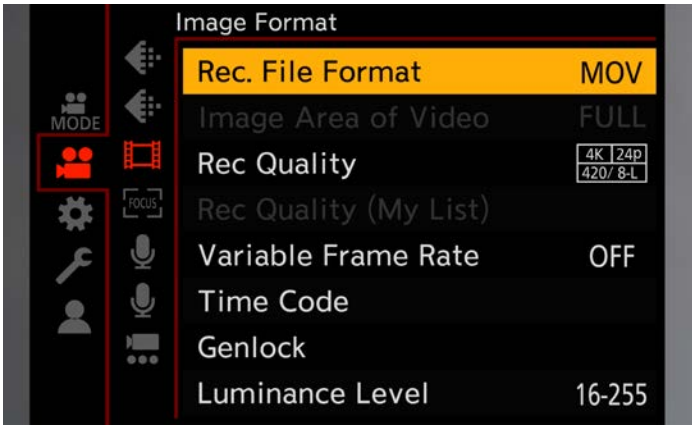
Panasonic DC-BGH1

Top

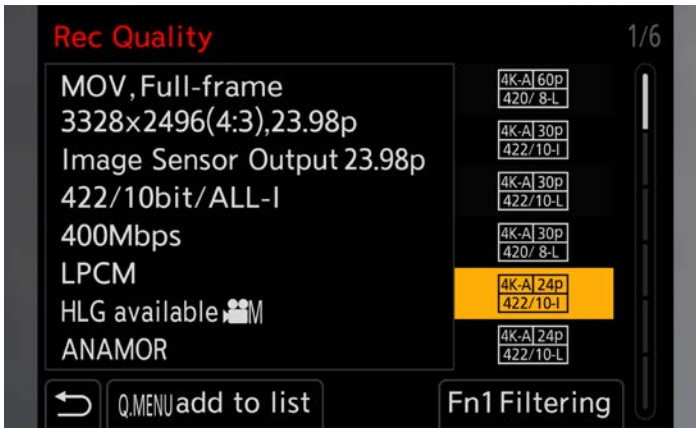
Left Side

BGH1 Menus

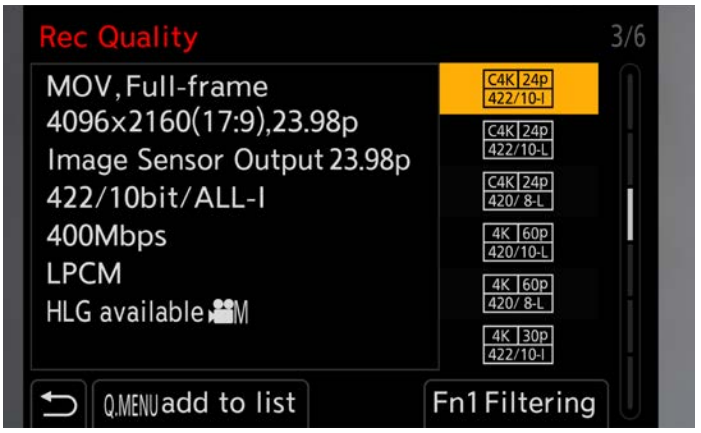
Menus are familiar to Panasonic LUMIX users.



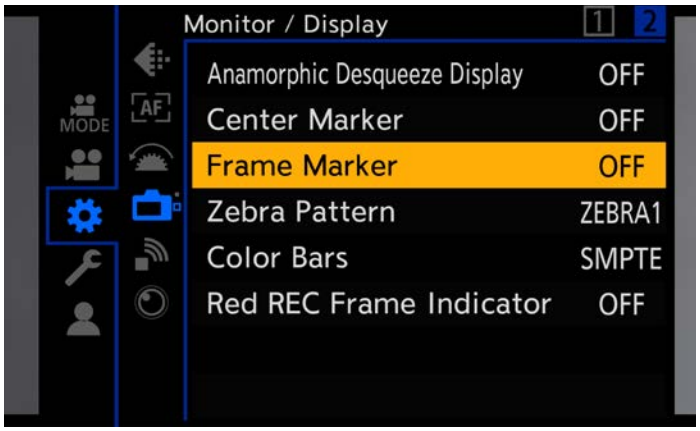
.MOV Recording Format (or MP4)



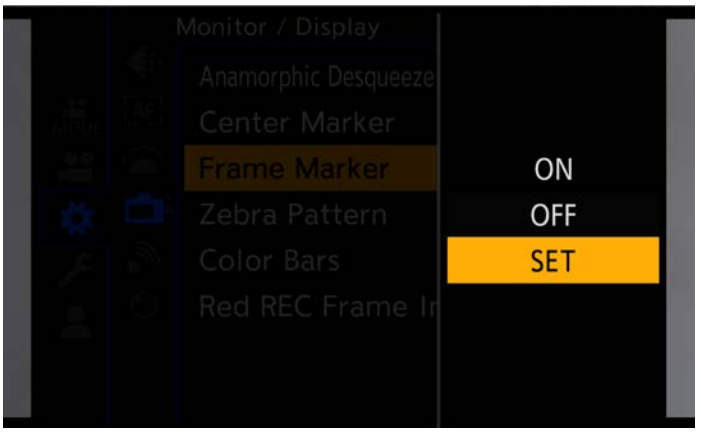
4K-A is good for 1.33:1 (4:3) Anamorphic 3328x2496.



Here's C4K, 24p (23.98) 17:9, 4096x2160 24p 422 10-bit, All-I

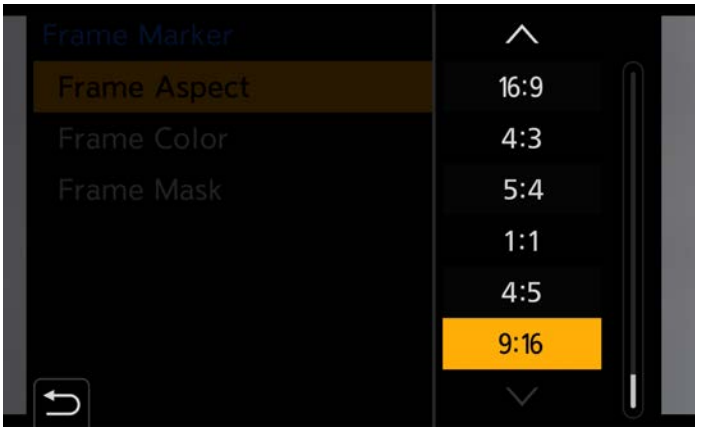


Frame line menu starts here.



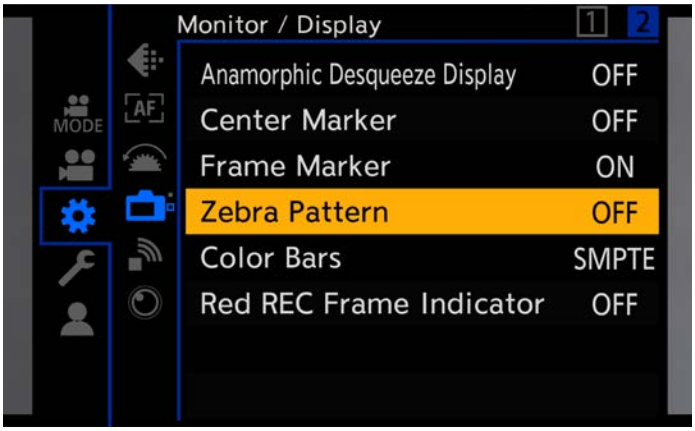
SET to choose aspect ratios

Let's select 2.00:1



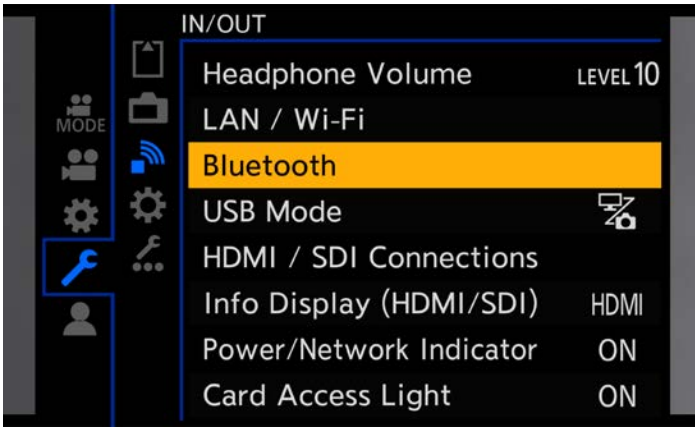
Lots of possibilities, including social media vertical formats

BGH1 Menus

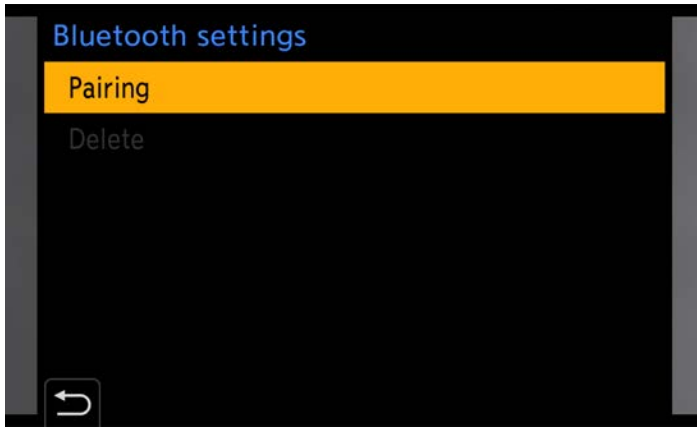


Turn off Zebra Pattern here.

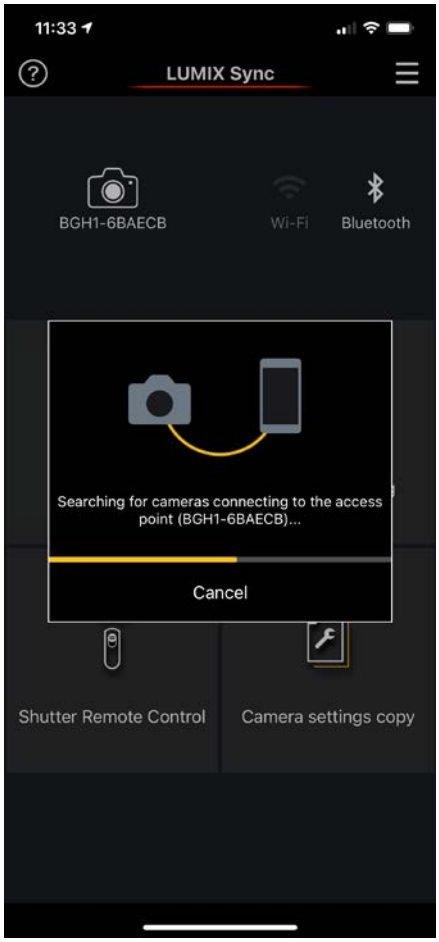
Our display screen now looks like this.



For LUMIX Sync remote operation from iPhone, start here



Download LUMIX Sync from iPhone App Store



Panasonic DC-BGH1

Above and Below: BGH1 with Leica DG LUMIX MFT Vario Elmarit 50-200mm F/2.8-4 ASPH.

BGH1 with Leica DG LUMIX MFT Vario Elmarit 12-60mm F/2.8-4 ASPH.

Above: BGH1 with Leica DG LUMIX MFT Vario Elmarit 50-200mm F/2.8-4 ASPH.

Below: BGH1 with Leica DG Summilux MFT 15mm F/1.7 ASPH, onboard SWIT S-8D58 battery and SmallHD Focus 5-inch HDMI Monitor with Anton/Bauer L-Series battery.

Panasonic DC-BGH1 on DJI Ronin RS 2

DJI Ronin-S gimbal stabilizers have been redesigned and renamed.

DJI introduced the new line on October 14.

RS 2 carries camera packages up to 10 lb. RSC 2 carries up to 6.6 lb.

In addition to being lighter and accepting heavier loads, carbon fiber in the RS 2 reduces overall weight to 1.3 kg (2.86 lb). The quick-change battery grip runs about 12 hours. A 15-minute quick-charge can add an extra 2 hours of shooting.

There's a built-in 1.4" color touchscreen that shows camera data, gimbal settings, or a live feed from the camera. You can also get live-view on an iOS orAndroid device with the Ronin app.

Accessories attach onto combo Manfrotto / Arca-Swiss mounts.

RS 2 weight: approx. 1072 g / 2.36 lb (excluding Quick-Release Plates).

Size unfolded: 410×260×195 mm (including BG30 grip, excluding extended grip/tripod)

US$ 849

SIGMA fp on DJI Ronin RSC 2

SIGMA fp is the lightest, smallest camera that shoots 4K Full-Frame 12-bit RAW onto tiny SSD drives via USB-C. Its 20mm Flange Focal Depth L-Mount shares lenses from Leica, Panasonic and SIGMA. Leitz Cine recently joined this L-Mount Alliance.

SIGMA's new series of beautifully-built I-series lenses are excellent choices for a lightweight ensemble, handheld or on DJI's new RSC 2 gimbal stabilizer, shown above. The RSC 2 weighs 1200 g / 2.65 lb and supports a payload up to 3 kg / 6.6 lb.

My SIGMA fp with 45mm F2.8 DG DN lens, Samsung T5 2TB drive in a LanParte cradle does not move the scale beyond 793 g / 1.75 lb.

DJI's RSC 2 has a 1" OLED Menu Screen. Unfolded, the RSC2 measures 400×185×175 mm (including handle, excluding the Extended Grip/Tripod).

DJI RSC 2 with SIGMA fp

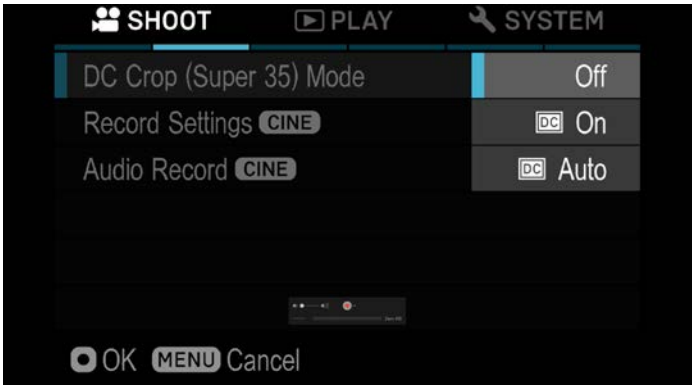
Here are some suggestions for 4K 12-bit RAW recording with a SIGMA fp on or off a DJI RSC 2.

If possible, use the USB-C cable that comes with the SSD drive. If you choose another USB-C to USB-C cable and your recording only lasts for a few seconds, the cable is probably intended for charging only. Usually fatter USB-C cables work better.

The USB-C port on the SIGMA fp can be configured for Mass Storage or Camera Control. If you prefer to have control over focus or iris, plug the USB-C cable into the DJI RSC 2 or RS2 Remote RSS port. Then, record up to 4K CinemaDNG 8-bit or MOV to the fp's internal SD card.

For external recording, use SIGMA fp's Micro HDMI port for ProRes RAW on an Atomos Ninja V or Blackmagic RAW via HDMI on a Blackmagic Video Assist 12G.

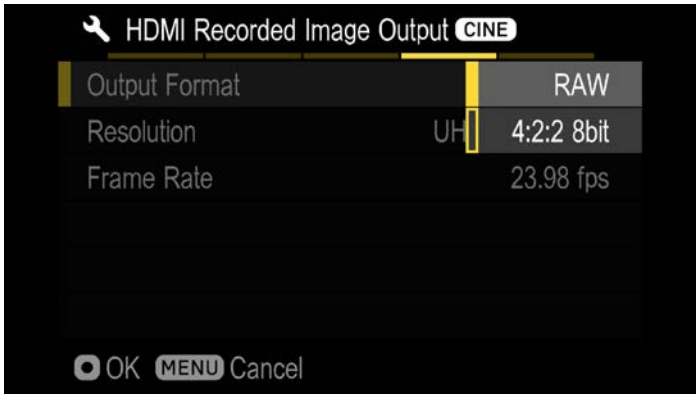
SIGMA fp External RAW Recording



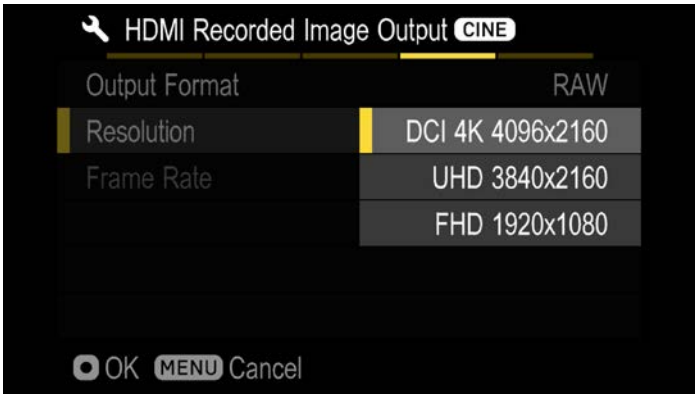
Be sure DC Crop Mode (Super35) is **OFF** if you are shooting **Full Frame**. (In SIGMA Terminology, DC means APS-C. DG means Full Frame. DN means it's for a mirrorless camera, like the fp.)

A **Super35** cine lens with a PL to L-Mount adapter would vignette unless you set DC Crop Mode to ON. This windows the image to fill the frame and monitor. The SIGMA fp will automatically sense an APS-C L-Mount lens like the Leica 18-56 Vario-Elmar and window the image to fill the frame.

With an external SSD connected to the SIGMA fp's USB-C port, you can shoot CinemaDNG RAW 12-bit.

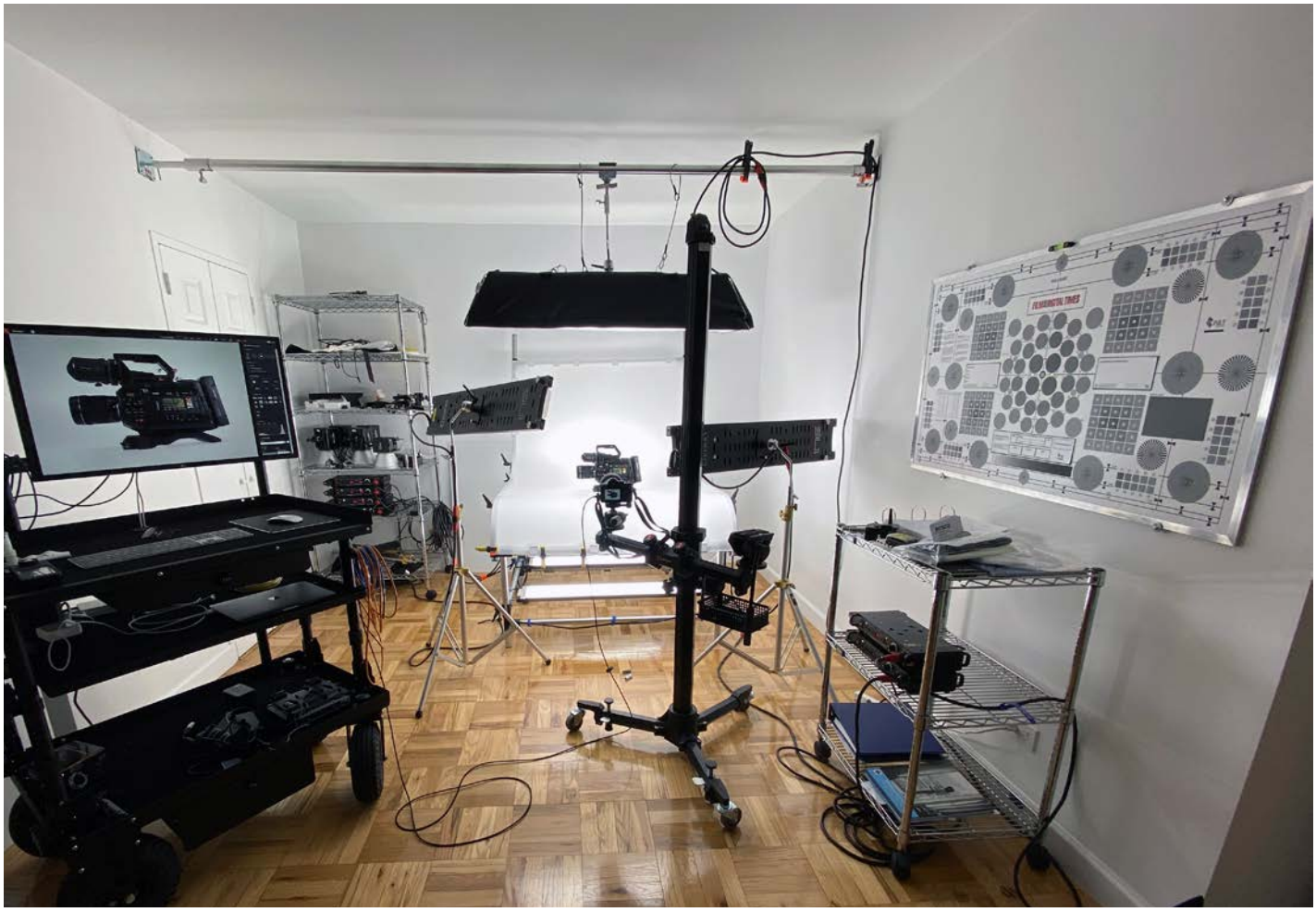


If you are recording to a Blackmagic Video Assist 12G or Atomos Ninja V, set the SIGMA fp's HDMI Output to RECORDED IMAGE > RAW.



External HDMI recording goes up to DCI 4K 4096x2160

For external RAW HDMI recording, be sure to set TONE to OFF.



The following 9 pages deconstruct the cover of this edition. It's a behind-the-scenes view of a day in life at FDT, with a look at the tools and techniques used daily. Actually, it was more like a month in the life as waves of additional equipment arrived.

It began benignly enough: the almost bare body of a Blackmagic URSA Mini Pro 12K is perched upon the matte-finish milkglass plexi sweep of a Manfrotto Still Life Table 220.

There are 6 DMG Lumiere by Rosco SL1 LED fixtures lighting the sweep: 2 below, 1 behind, 2 on Lowel KS stands, and 1 above, softened with a Snapbag and Half Diffusion. It is supported by a Matthews Wall Spreader and Aluminum Speed Rail using a Matthellini Clamp with 6" End Jaw, and 2x 32" Safety Cables.

I have been known to rail against a thousand points of light. Yes, I would very much like a single-source Mole 20K LED with a 6x10 216 frame on camera left and a 4x8 beadboard below and at right. Stay tuned.

The STA-01-360 studio camera stand comes from Studio Titan America. Most product shots at FDTimes are currently taken with a Sony a7R IV camera with SIGMA Art 24-70mm F2.8 DG DN and SIGMA Art 105mm F2.8 DG DN Macro.

I usually shoot at 1000 ISO, 1/90 second at f/16. The a7R IV has a 61 MP sensor, which lets you shoot wider for even greater depth of field, and then crop in post.

6 Bi-Color dimmable DMG Lumiere fixtures are controlled by 6 SL1 drivers with 24' cables. I decided to stack them. Sort of a DMX alternative, but it is quick and easy.

On and Off the Plexi Sweep

URSA 12K camera package with SIGMA 18-35 on the plexi sweep with an array of Sumire Primes

Canon Sumire Primes in custom SKB Case

SIGMA 18-35 mm T2 Cine High-Speed Zoom Lens.

Photo by Chuck France

Since URSA 12K is a Super35 camera, let's shoot with SIGMA's 18-35mm T2 Cine High-Speed Super35 Zoom Lens.

What better objects of our attention than a set of Canon Sumire Prime Lenses in a lovely custom case by SKB? Sumires are the subjects of Larry Thorpe's great discussion beginning on page 52.

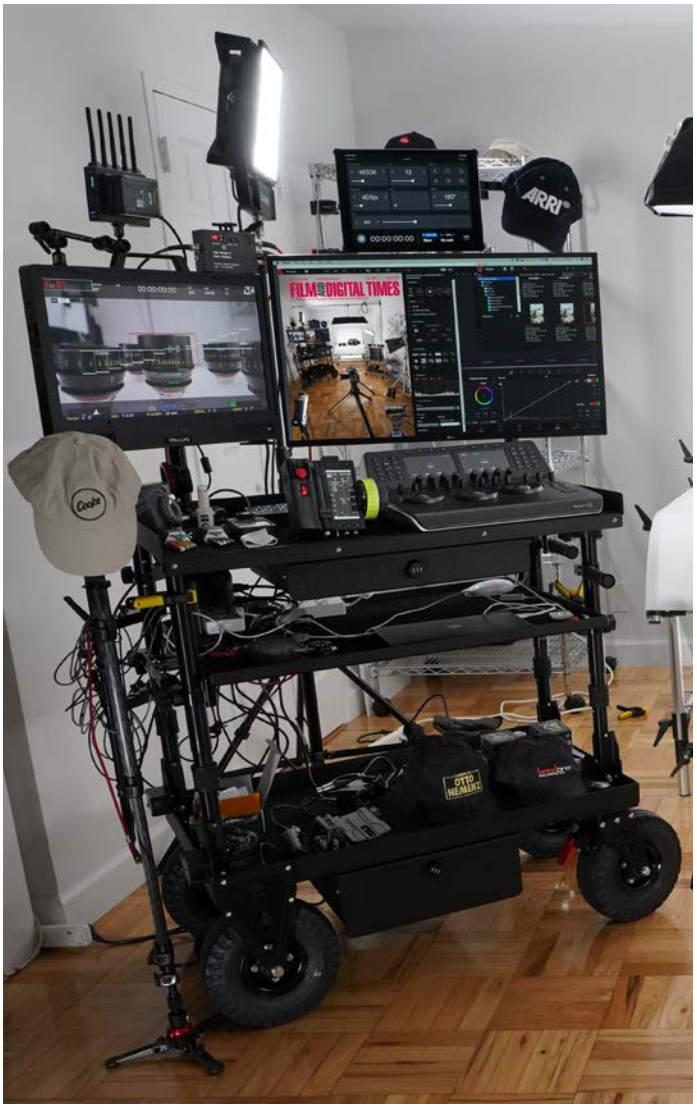
To mitigate the conspiracy of shallow depth of field, a Preston LR2W Light Ranger 2 Wide is attached atop Bright Tangerine's Misfit Kick mattebox. The LR2W is set to auto focus and keeps the 12K image sharp where we want it. Would that a God of Focus were here to manually perform a dextrous rack-focus up the line of Sumires.

Canon Sumire Primes

Light Ranger LR2W

URSA 12K

Misfit Kick



Inovativ Echo 36 Cart

I don't know how we managed before the Inovativ Echo 36 arrived. It's almost the size of some cars parked outside the building here in Manhattan. But we're inside and you don't have to move it on alternate side of the street parking days. Some day, I imagine Inovativ CEO Patrick Blewett will motorize and remote-control this cart and it will glide electrically from place to place around the studio. Meanwhile, the Millennium Falcon, as it is called here, carries almost everything for immediately accessibility.

Tiffen Filters

The first investment made by CFL Equipment Company was in Tiffen Filters. Coleman, Fauer and Laszlo were working together on *Top of the Hill*. Billy Coleman and Jeff Laszlo nicely organized the complete inventory into three cases: one for filters you need, the second for filters you like and the third for filters you use all the time. We split CFL up years ago. But the filters I use almost all the time are Tiffen Pro-Mist, Glimmerglass and NATural ND Grads.

All those filters need bright ways to go in front of your lenses. Andy Subratie worked as camera department manager at ARRI Media in London. Then he founded Bright Tangerine, where he is the CEO, designing and building accessories from their headquarters in Church Crookham, UK.

Lots of Bright Tangerines on Blackmagic URSA 12K, pp 18-21.

Misfit Kick Mattebox

AJA U-TAP HDMI and U-TAP SDI

U-TAP HDMI and U-TAP SDI from AJA are at work here almost constantly. That's how we get framegrabs of the camera menus that populate these pages.

Connect your camera's HDMI or SDI HD output to the U-Tap's Input. Connect the U-Tap's USB 3.0 (USB 3.2, Gen 1) Output to the computer's USB Input. On Mac, open Quicktime Player and choose File>New Movie Recording. Select U-Tap from the drop-down menu. Go full screen. To grab the frame on Mac, it's Shift-Command-3. VLC app also works nicely when Quicktime coughs. U-Tap works on Windows, macOS and Linux. It is bus powered and supports frame rates up to 1080p 60.

Oh, and please read Andy Bellamy's excellent "Guide to Remote Production" on pages 48-51.

On the top shelf, DaVinci Resolve Mini Panel connects to an LG 32UL750W monitor above and a MacBook Pro on the shelf below. It's running Sony Imaging Edge Remote and Viewer tethered to the Sony a7R IV to check our progress on a large screen. DaVinci Resolve Studio grades the footage from URSA 12K. The left side of the top shelf is usually messier than this.

Hex Drivers

Three Michelin Stars for Albrecht Gerlach's PhotoCineRent hex driver sets in Imperial and Metric sizes. Color coded with a grippy finish, they are used constantly.

Cleaning Spray

ZEISS Lens Cleaning Spray works without leaving a residue. Use on a microfiber cloth. There's a newer version. Available almost everywhere and where Supremes are shooting.

Microfiber Cloth

Cooke Microfiber Cloths are prized take-aways from trade shows, presumably after you have purchased a set of S7/i primes.

Vocas makes Sony E-Mount to LPL and to PL Lens Mount Adapters.

Vocas also makes Leica/ SIGMA/ Panasonic L-Mount to PL and LPL adapters.

And they make Canon/ Komodo R-Mount to PL and LPL mounts.

The 15mm LWS with rods is a useful optional extra.

Vocas Lens Adapter

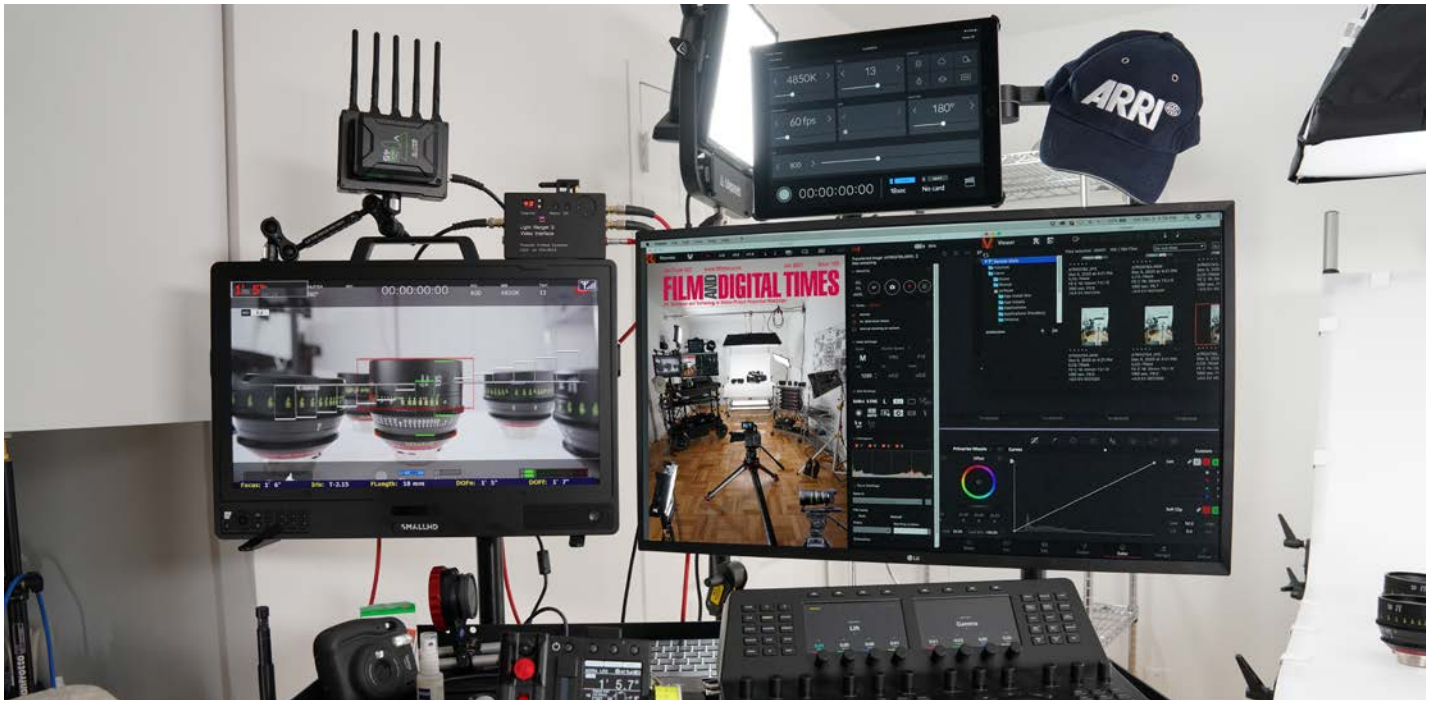
The Sekonic C-800 Spectro-Master is a full-spectrum color meter for HMI, Fluo-rescent, Tungsten, Natural Light and Flash—and has a 4.3" color touchscreen.

The C-800 offers many color rendering indexes: CRI, TLCI, TLMF, TM-30-18 and the Academy's Sci-Tech recommended SSI.

The C-800 provides x, y values to help match and correct fixtures easily.

At right, the meter shows 4540K, 154 fc, 2.0 Green CC, x coordinate of 0.3562 and y 0.3438.

C-800



Here's the setup: the rear SDI BNC of Blackmagic URSA 12K is connected to an on-camera Teradek BOLT 4K 750 transmitter. The video signal arrives at a Teradek BOLT 4K 750 receiver with onboard Anton/Bauer Titon 45 Battery, attached on top of a SmallHD OLED 22 (at left) with a Wooden Camera Ultra Arm.

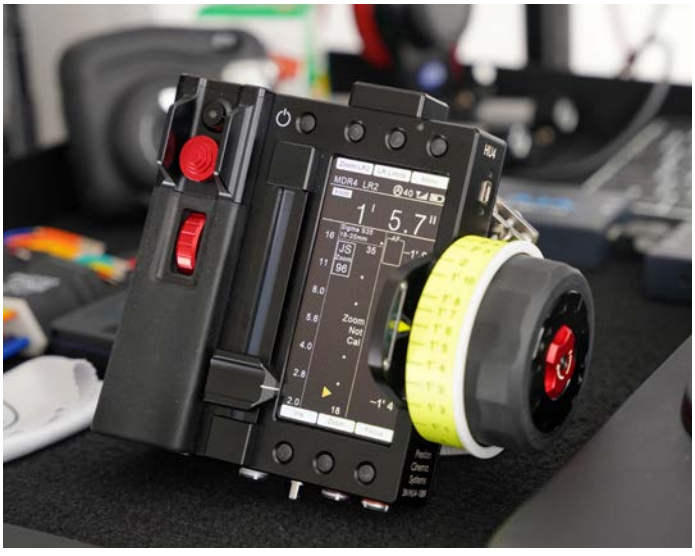
The Teradek BOLT 4K video output feeds Preston's Video Overlay Unit that sends the video image, with superimposed graphics showing focus zones, to the SDI input of the SmallHD OLED 22. The red rectangle on the monitor shows the optional LR2W Autofocus area.

Teradek Bolt 4K 750 TX (Transmitter), shown with V Mount battery plates that connect directly to the camera. 12G SDI Input and pass-through. RX 4K has 4 antennas. TX 4K has 5 antennas.

Teradek Bolt 4K 750 RX (Receiver). Power up TX and RX and they satisfyingly connect automatically.

The SmallHD OLED 22 4K Reference Monitor has a 21.6" diagonal 3840 x 2160 10-bit color display. Inputs are selected with buttons and joystick on the front left: 4x 12G-SDI and 1x HDMI 2.0 with 4 SDI pass-through outputs. HDMI is planned.

An included power block connects via a 3-pin XLR (also accepts 12V-34V) or you can use an optional dual GM / VM battery plate. There are two convenient 2-pin Lemo style accessory connectors . The OLED 22's rugged unibody aluminum housing is so thin and light (9.35 lb / 4.2 kg) that it almost seems to take flight, as it does here, floating above the Inovativ Cart on its VESA BOA mount.



At left, the new Preston Hand Unit 4 (HU4) has a big 4.65" touchscreen that's visible in bright daylight. The famous red-button Preston Micro Force control is built in. The menu joystick can adjust the position and size of the Auto Focus area when working with a Light Ranger 2. Buttons provide additional LR2 control, including hand-off from manual to Auto Focus. (By the way, Preston's Video Overlay requires HD, not 4K. So, the URSA 12K rear SDI output should be set to HD from the menu.)

The array of ARRI, Cooke, Nemenz and Band Pro hats is not frivolous. Shooting at f/16 is blazingly bright and the brims are beneficial.

Cover, Camera Right

Meanwhile, back on the studio floor, at camera right, sitting on the shelf above the SL1 LED Drivers, is a Leica M10 at the ready for decisive moments with its Summilux-M 50mm f/1.4 ASPH. The mount, of course, is M: 27.8 mm FFD.

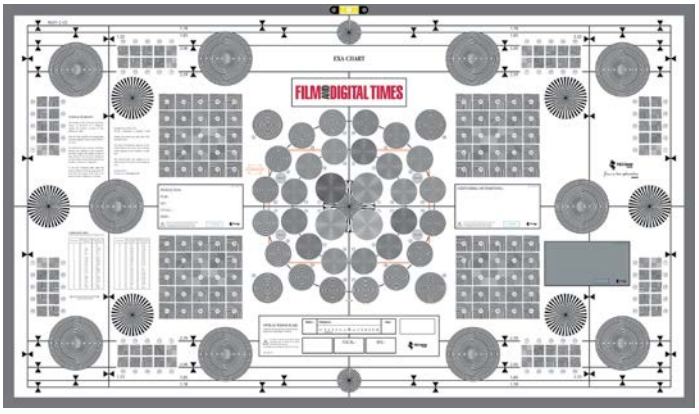
Compare the M to the new Leica SLS-2, above right, with its L-Mount, 20mm FFD.

Panasonic is a member of the L-Mount Alliance. But its new BGH1 has a Micro Four Thirds mount and sensor.

To the right of the BGH1 is the other charter member camera of the L-Mount alliance: SIGMA fp, (see bottom of this page).

At left: SIGMA MC-31 PL-L Mount Adapter.

At right: LEICA MC-31 M to T Adapter. "T" was later renamed "L."



PAT-ACC EXA chart is great for checking lenses and cameras. The US distributor is MYT Works. (PAT is for Prêt à Tourner. MYT is pronounced "Mighty.")

Panasonic BGH1 is smaller than a 4-inch cube. Its 10.28 MP MFT Sensor can shoot 4096x2160 C4K.

It is covered in depth in this edition on pages 72-80.

The SIGMA fp is a constant companion, a deconstructed "best camera is the one that's always with you." It shoots great stills and uncompressed 4K 12-bit RAW. It has an L-Mount.

On December 1, SIGMA announced a new I series of lenses for full-frame L-Mount and E-mount cameras. The metal barrels are stylish, compact, and optically splendid. The new SIGMA I series Contemporary lenses are: 24mm F3.5 DG DN, 35mm F2 DG DN, and 65mm DG DN.

They join the previously released 45mm F2.8 DG DN that is shown on the SIGMA fp, above left.

The newest member of Sony's Cinema Line is the ILME-FX6, above. It has a 35.6 x 18.7 mm 4240 x 2236 10.2 MP sensor that records Full Frame DCI 4K and windowed Super35 HD 1920x1080. XAVC-I 4:2:2 10-bit DCI 4096×2160 framerates go up to 60 fps. Read all about it on pages 24-47.

Steve Turner, Product Manager at Vitec Production Solutions, Zoomed in with an advanced tutorial on the new Sachtler aktiv fluid head. Anyone who has ever grappled and groped for the tie-down screw under a tripod head will appreciate the aktiv. It has a brilliant lever in front that you simply pull up to release the leveling lock. You don't even have to bend over or risk crushed fingers.

Sachtler aktiv illuminated bubble level

Sachtler aktiv 8 on flowtech 75mm tripod

29mm Leitz Prime PL to L-Mount

The new Leica SL2-S launched on December 10. It has a Full Frame Leica Format (24.6 MP) sensor with 5-axis in-body Image Stabilization and one of the best Electronic Viewfinders out there.

As a member of the L-Mount Alliance, the SL2-S benefits from more than 50 lenses from the partners.

"Aha," Rainer Hercher probably exclaimed at Leitz Cine. "With lens mount adapters and a support system we'll call 'HENRI' , the SL2-S will make a magnificent Cinematographer's Finder. It attaches nicely to a tripod. You can frame the scene, shoot reference stills and record video. You can swing the handle down and use the finder handheld." See story on pp. 60-71.

The Manfrotto 1005BAC Monopod (at right) is an excellent support for the SL2-S and HENRI Finder.

Manfrotto Monopod

Book Covers

Holiday reading:

Film and Digital Times. November 2020.
Cover story on RED KOMODO.
fdtimes.com

99 Years Leica.
© 2012 99pages Verlag GmbH Hamburg. English edition ISBN: 9783942518338.
Find used editions at bookstores online.

Angénieux and the Cinema, From Light to Image.
© 2019 Silvana Editoriale.
Available at Amazon, bookstores and eshopintl.angenieux.com

The Filmmakers View, 100 Years of ARRI.
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At Amazon, bookstores and hirmerverlag.de

The Dawn of Technicolor, 1915-1935.
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At bookstores, The ASC, Amazon, eastman.org

Litepanels Gemini 1x1 Soft

On the cover, a Litepanels Gemini 1x1 Soft illuminates the foreground Leica SL2-S with HENRI and spills fill onto a Sony FX6. The Gemini 1x1 Soft is an RGBWW LED Panel with 16.7 million colors, 11 lighting effects, gel libraries, and oh yes, even regular full spectrum dimmable light from 2,700K to 10,000K.

It's a Wrap.

Packing up is the hardest thing. Putting every part in the right place in the correct box is like fitting square pegs into round holes. This is not life on location. This must be like wrapping up after a trade show.

Someone suggested that I apply as Captain of Coiling, having wrangled the spaghetti of cables that once were neat.

Twenty boxes went out the door via FedEx to fifteen companies. But alas, when all were gone, one two-pin to D-Tap adapter and a 2mm hex screw remained on the worktable. If they are yours, please let me know.

Band Pro is Angénieux Distributor in the Americas

At left: Severine Serrano in an appropriately stylish scarf, announces via Zoom that Band Pro is now the exclusive distributor of Angénieux in the US, Canada and Latin America.

Above, right: Amnon Band and Severine Serrano last year.

OMG AGX + BPB BFF [1]

Inevitably there is breaking news at the annual Band Pro One World Open House.

This year it was virtual—at 4 pm PST on December 10.

Severine Serrano, Managing Director, Angénieux International Sales & Marketing (above left), announced that effective December 10, 2020, Band Pro will be exclusive distributor of the Angenieux brand of products in the US, Canada and Latin America.

This has been in the works for some time. Now it's official, signed and celebrated.

For the past five years, Thales LAS France SAS (parent company of Angenieux) and Band Pro have been working together to design, produce and deliver new lenses for Full Frame cinematography: specifically Angénieux Type-EZ zooms and the new Optimo Primes.

In their press release, Angenieux said, "Band Pro's proven track record as an industry innovator, combined with the company's extensive lens distribution experience, made them best suited for this important partnership.

"Band Pro's history of innovation began with the early transition from film to digital, and evolved as the company helped pioneer the adoption of HD, 4K, Full Frame acquisition, and beyond. Band Pro's success in helping to usher in important lens design milestones, starting back in the year 2000, continues to this day."

Severine Serrano added, "Based on the success of our previous partnerships with Band Pro, we are very enthusiastic about this new organization which will reinforce our presence in the US and Americas market and give our customers one single contact point for sales and service."

Band Pro's President and CEO, Amnon Band said, "It's with great pride that we share this news. The Angénieux name has been synonymous with excellence in our industry for a very long time. Having the opportunity to enhance and expand upon this legacy, and to provide clients in the Americas with the hands-on personal attention that Band Pro is known for, is a great honor. This is a big step and one we're eager to take."

Angenieux lens sales and service for the Americas will be based at Band Pro's corporate headquarters in Burbank California under the supervision of Jean-Marc Bouchut, Band Pro's Senior Manager of Angenieux Products.

Band Pro's Burbank Service Department is equipped with Full Frame lens projection and a Class 100 Clean Room. Band Pro service technicians are fully Angénieux-certified to perform lens repairs, diagnostics, and assist with parts inquiries.

The Optimo Prime Lens Series is another joint effort by Band Pro Film & Digital Inc., Jebsen Industrial Technology Co LTD, and Thales LAS France SAS. Their previous effort together has been the Type EZ Series of lightweight zooms (EZ-2 15-40 T2 S35 / 22-60 T3 FF and EZ-1 30-90 T2 S35 / 45-135 T3 FF).

The first Optimo Primes going to rental houses worldwide include Koerner Camera, Keslow Camera, Hand Held Films, TCS (USA), Beijing Hai Yang You Chuang Television & Culture Development Co Ltd (China), Camalot (Netherlands) and Ljud & Bildmedia (Sweden).

For the Americas, customers, partners and users will now have one single contact point for all Angénieux sales & service needs. Contact Band Pro at bandpro.com or 1-888-BAND-PRO.

[1] *AGX=Angenieux abbreviation. BPB = Band Pro Burbank.*

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